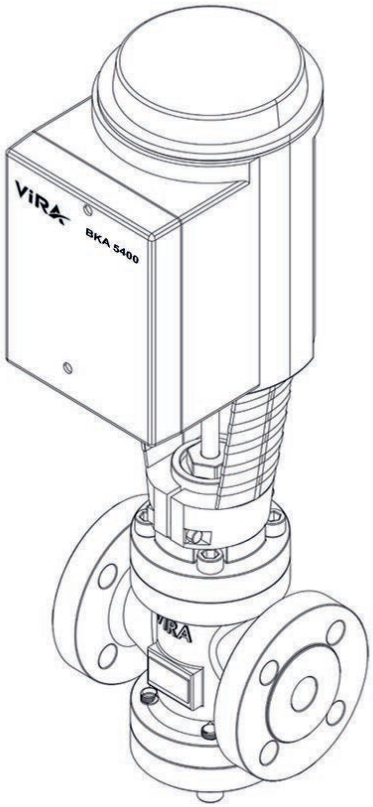
Blowdown Control Valve
DN20

Installation, Operating and Maintenance Instructions



Electrical Actuated BKV Boiler Blowdown Valve

Local regulations may restrict the use of this product to below the conditions quoted.
In the interests of development and improvement of the product, we reserve the right to changle the specification without notice.

EN

ENGLISH

1. Safety Information

Safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.

Tools

Before starting work, make sure that you have suitable tools and consumables available.
Use only genuine Vira replacement parts.

Temperature

After isolation, let the temperature to cool down to avoid danger of burns.

Freezing

Required precautions must be taken to protect products in environments where they may be exposed to temperatures below freezing point.

Pressure

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Do not assume that the system has depressurized even when the pressure gauge indicates zero. exposed to temperatures below freezing point.

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.

Residual Hazards

The external surface of the product may be very hot. Take essential care when removing the product from an installation.

Hazardous Environment

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

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.

Supervision

All work must be carried out or 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.

Disposal

Unless otherwise stated in the Installation and Operation Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken.

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 and Application

Vira BKV blowdown control valves are spesifically designed for the blowdown of steam boilers or for other high pressure drop, low flow applications, and are generally used with a blowdown controller as part of an Automatic blowdown control systems.

Note : BKV 5420 is a reverse acting valve. It works on principle “energy to open” and “fail-closed”.

2.1 Standards and Certification

This product fully comply with the requirements of the EU Pressure Equipment Directive.
This product is available with material certification to EN 10204 3.1.

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

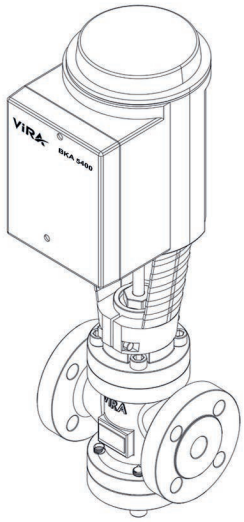


Figure 1 : BKV Blowdown Control Valve

3. Technical Data

3.1 Actuator Technical Data

Media	Water
Actuator	BKA 5400
Supply Voltage	230V A C ± 15%
Supply Frequency	50 or 60 Hz
Power Consumption	Max 21VA / 13 W
Control Signal	3-position
Positioning Force	1000 N
Nominal Stroke	20 mm

Table 1 : Actuator Data

3.2 Working Limits

Body Design Condition	PN 25
PMA Maximum Allowable Pressure	25 bar g @ 120 °C
PMO Maximum Operating Pressure for satured steam service	219 °C @21.8 Bar g
Minimum Allowable Temperature	-10 °C

Table 2 : Working Limits

Designed for a maximum cold hydraulic test pressure of : 1.5 x PMA

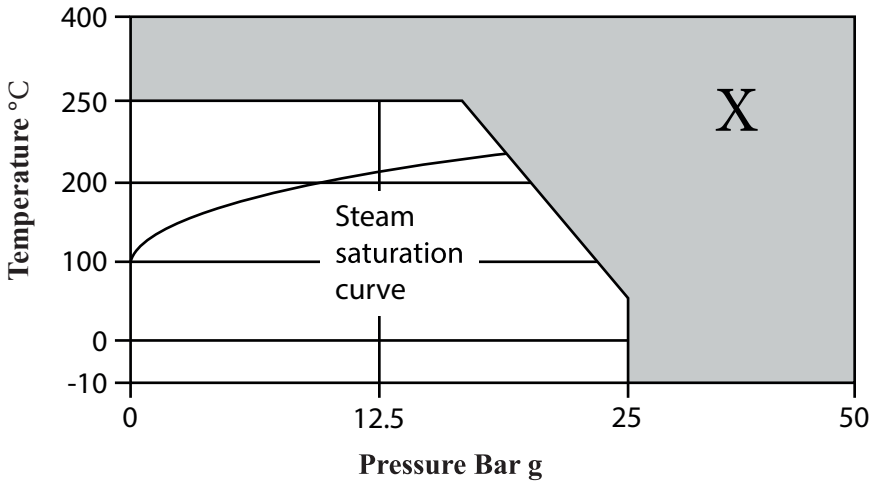


Figure 2 : Pressure and Temperature Limits

X : The product must not be used in this region.

4. Operation Installation and Dimensions

The valve initially remains closed due to both its spring-loaded mechanism, set to the closed position (marked as 0 on the actuator scale in Fig. 3), and the pressure from the boiler. Upon applying power to the actuator via terminals 21 and Y1, the valve starts to open to a fully open position (20 mm stroke).

Manual opening of the valve is possible by turning the actuator handwheel clockwise. For automatic operation, the handwheel must be rotated fully counterclockwise until the 'MAN' indicator is no longer visible.

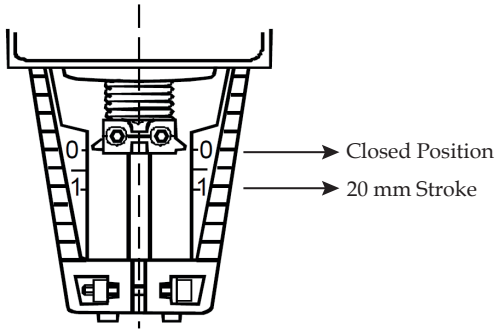


Figure 3 : Actuator Scale

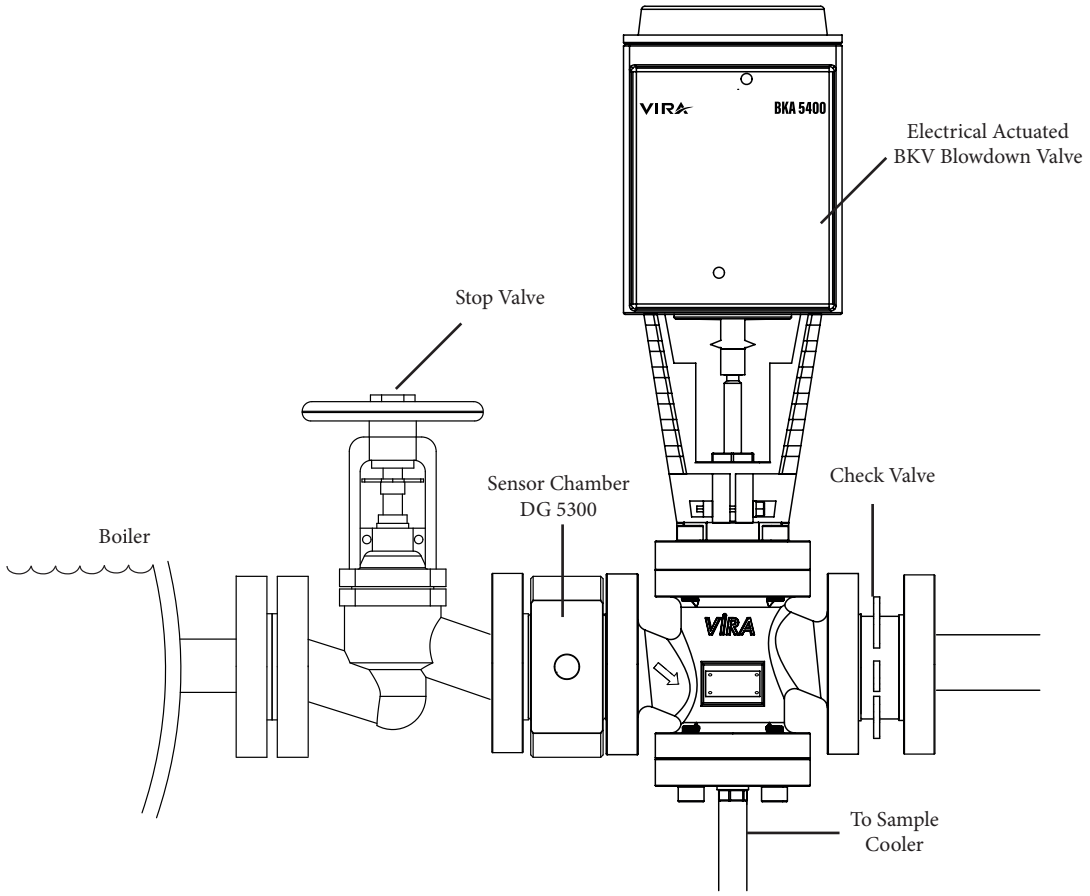


Figure 4 : Installation to Boiler Side, in Line Position

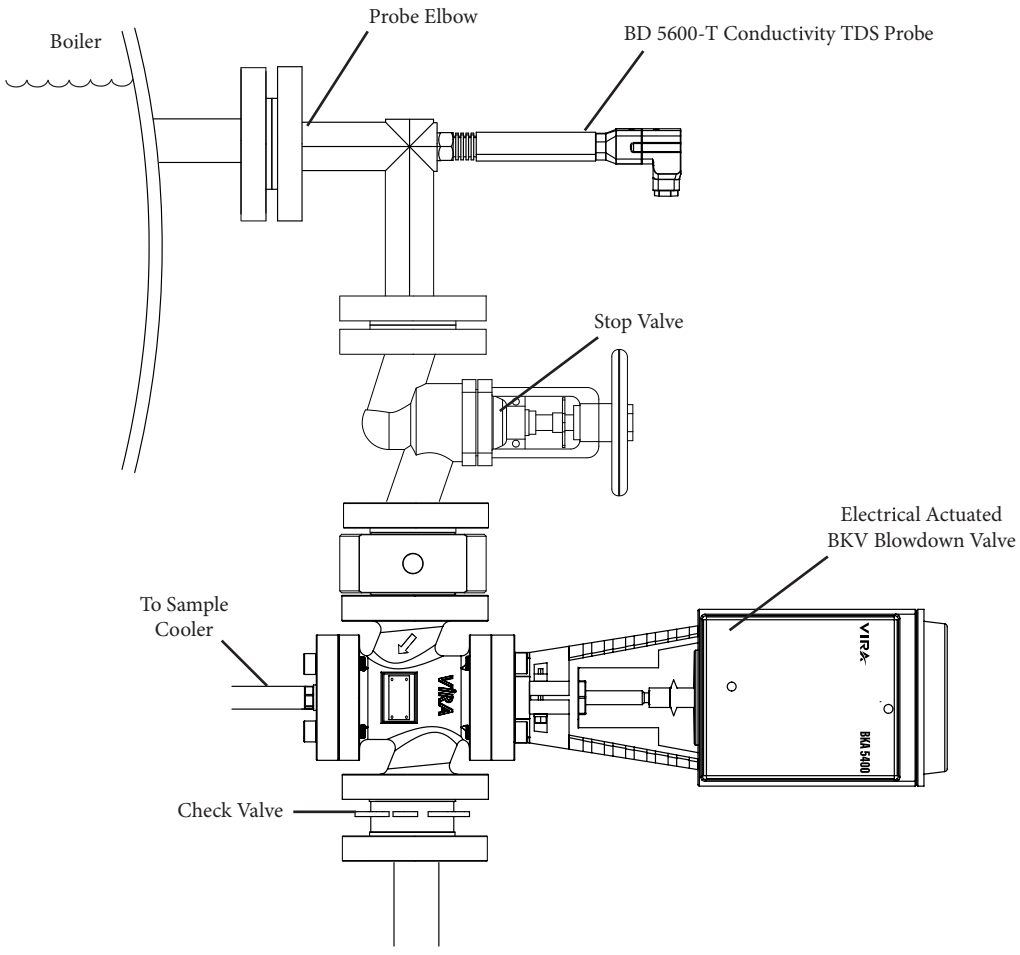


Figure 5: Installation With Elbow, Vertical Position

Electrical Actuator – Dimension and Weight (approximate) in mm and kg

SIZE	L	H1	H	D	Weight
DN 20	155	380	470	105	12

Table 3 : BKV 5420 Dimensions

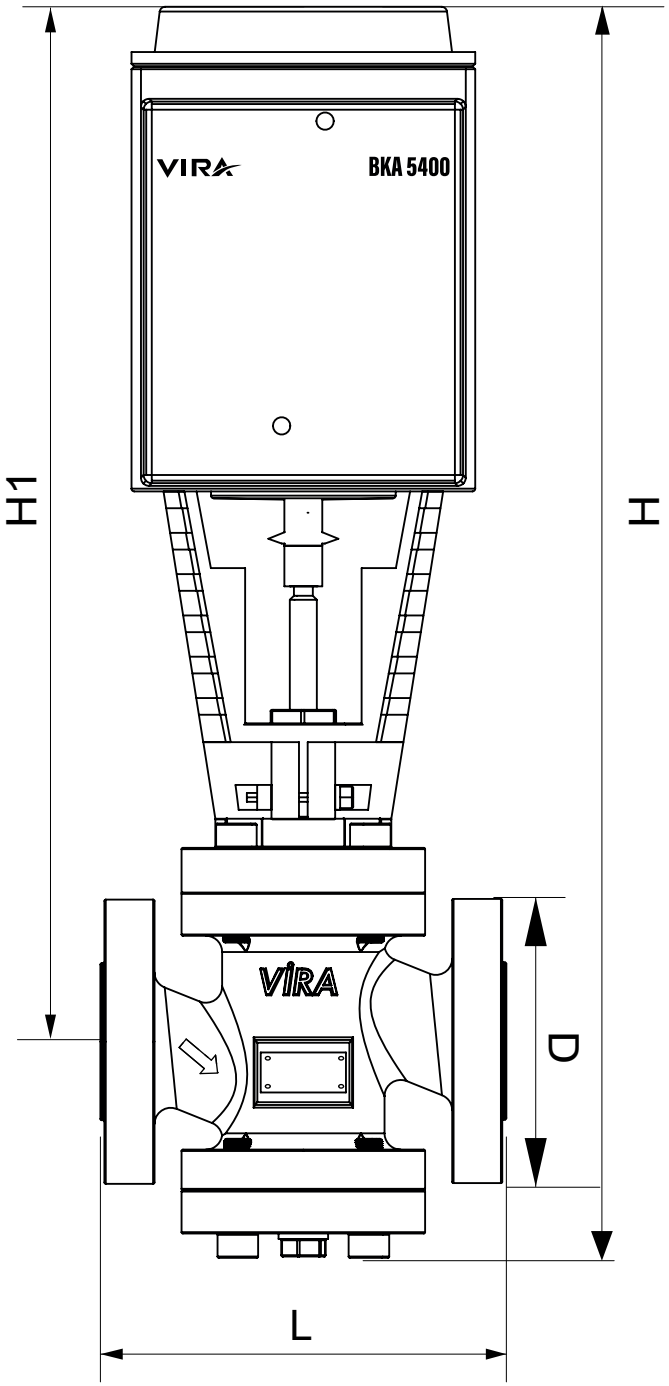


Figure 6 : BKV 5420 Dimensions

5. BKA Actuator With Spring Return

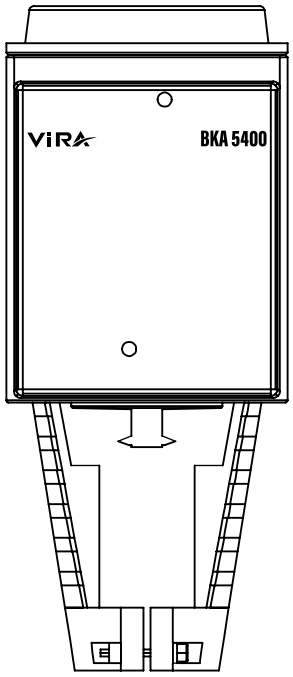
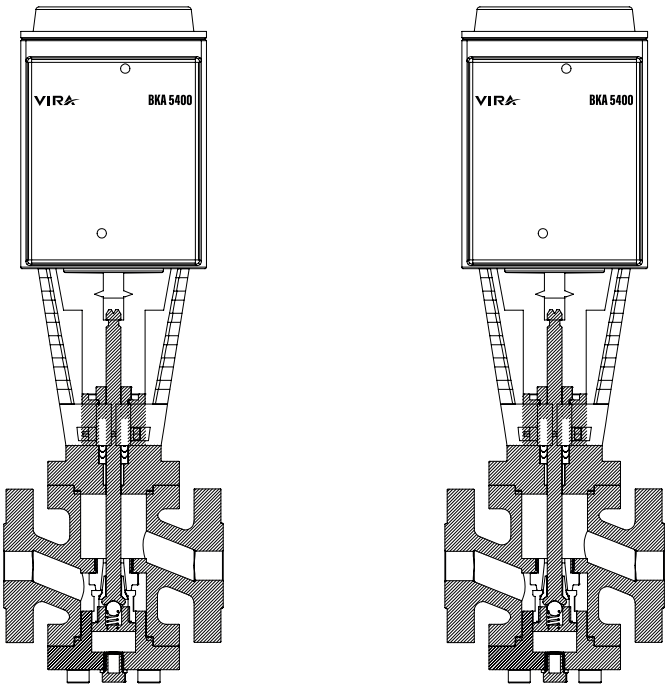


Figure 7 : BKA Actuator

Operating Voltage	AC 230V +- 15%
Frequency	50 or 60 Hz
Max. Power Consumption at 50 Hz	21 VA / 13 W
External Supply Cable Fuse	Min. 0.5 A, Slow Max. 0.6 A Slow
Control Signal	3 position
Positioning Time at 50 Hz	Opening / Closing 120 s
Spring-Return Time (Closing)	8 s
Positioning Force	1000 N
Nominal Stroke	20 mm
Cable Entry	4 x M20 (Ø 20.5 mm)
CE - Conformity	2004/108/EC
EMC Directive	Immunity EN 61000-6-2 Industrial
Low Voltage Directive	2006/95/EC
Electrical Safety	EN 60730-1

Table 4 : BKA Serie Actuator Technical Data

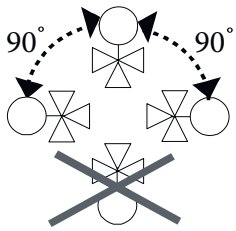


Opening the valve	The hydraulic pump forces oil from the suction chamber to the pressure chamber and thereby moving the pressure cylinder downwards. The valve stem retracts and the valve opens. Simultaneously the return spring is compressed.
Closing the valve	Activating the solenoid valve allows the oil in the pressure chamber to flow back into the suction chamber. The compressed return spring moves the pressure cylinder upwards. The valve stem extends and the valve closes
Manual operation mode	Turning the manual adjuster clockwise moves the pressure cylinder downwards and opens the valve. Simultaneously the return spring is compressed. In the manual operation mode the control signals Y and Z can further open the valve but cannot move to the «0%» stroke position of the valve. To retain the manually set position, switch off the power supply or disconnect the control signals Y and Z. The red indicator marked «MAN» is visible.
Note: Controller in manual operation	When setting the controller for a longer time period to manual operation, we recommend adjusting the actuator with the manual adjuster to the desired position. This guarantees that the actuator remains in this position for that time period. Attention: Do not forget to switch back to automatic operation after the controller is set back to automatic control.
Automatic mode	Turn the manual adjuster counterclockwise to the end stop. The pressure cylinder moves upward to the «0%» stroke position of the valve. The red indicator marked «MAN» is no longer visible.
Minimal volumetric flow	The actuator can manually be adjusted to a stroke position > 0 % allowing its use in applications requiring constantly a minimal volumetric flow.
Spring-return facility	The BKA 5400 actuator, which feature a spring-return function, incorporate an additional solenoid valve which open if the control signal or «0 %»stroke position and closes the valve

Signal either via terminals Y1 or Y2 and generates the desired stroke by means of above described principle of operation.

- Voltage on Y1 Piston extends valve opens
- Voltage on Y2 piston retracts valve closes
- No voltage on Y1 and Y2 piston / valve stem remain in the respective position

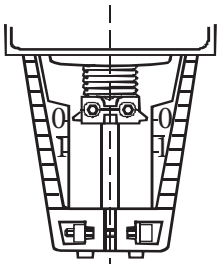
5.4 Orientation



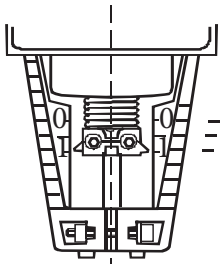
5.5 Commissioning Notes

When commissioning the system, check the wiring and functions, and set any auxiliary switches and potentiometers as necessary, or check the existing settings.

Coupling fully retracted
→ stroke = 0%

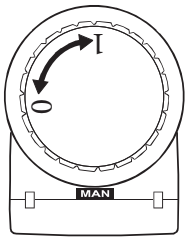


Coupling fully extended
→ stroke = 100 %



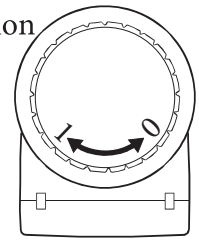
The manual adjuster must be rotated count erclockwise to the end stop, i.e. until the red indicator marked «MAN» is no longer visible.

Manual operation



« MAN »

Automatic operation



« AUTO »

The BKA actuators are maintenance-free.

When servicing the actuator:
- Switch off pump of the hydronic loop
- Interrupt the power supply to the actuator
- Close the main shutoff valves in the system
- Release pressure in the pipes and allow them to cool down completely
- If necessary, disconnect electrical connections from the terminals
- The actuator must be correctly fitted to the valve before recommissioning.

A damaged housing or cover represents an injury risk

- NEVER uninstall an actuator from the valve
- Uninstall the valve-actuator combination (actuating device) as a complete device
- Use only properly trained technicians to uninstall the unit
- Send the actuating device together with an error report to your local Siemens representative for analysis and disposal
- Properly mount the new actuating device (valve and actuator)

Parts could fly ultimately resulting in injuries from uninstalling an actuator with a damaged valve housing due to the tensioned return spring.

Disposal

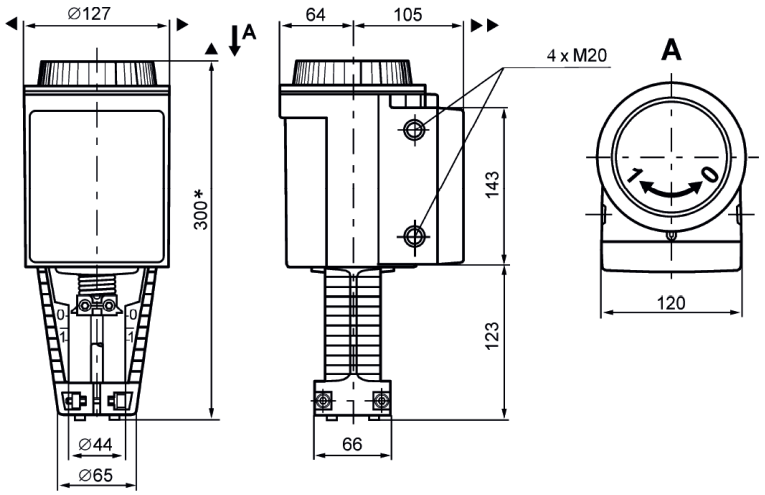
The device contains electrical and electronic components and must not be disposed of together with domestic waste. This applies in particular to the PCB.

Legislation may demand special handling of certain components, or it may be sensible from an ecological point of view.

Current local legislation must be observed.

5.7 Actuator Dimensions

All Dimensions in mm



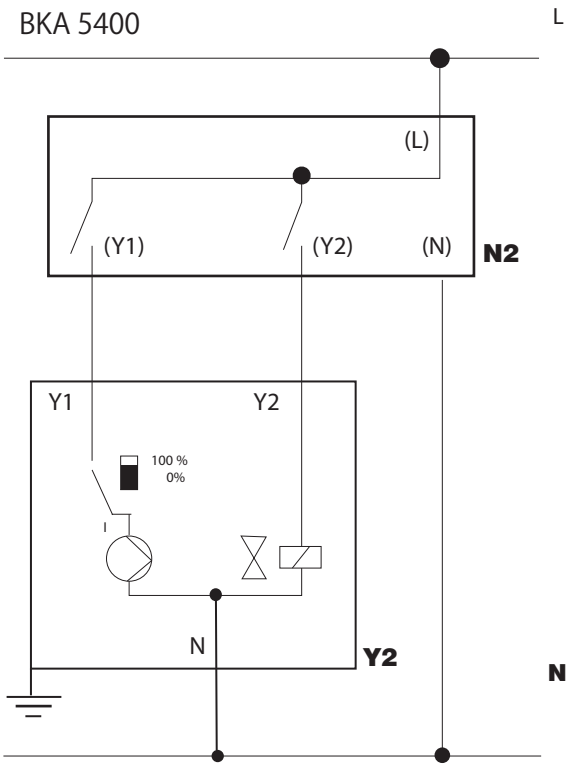
6. Wiring

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 to the Local and National Electrical code (NEC) or the Canadian Electrical Code (CEC).

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

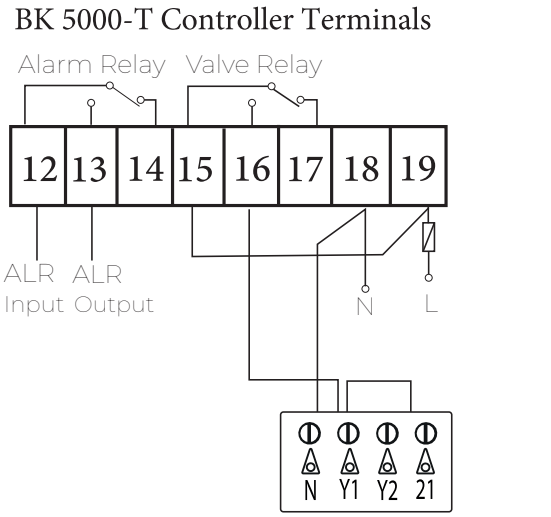
- Electrical connections (max. 2.5 mm²) with screw terminals
- Three pre-scored cable inlets for M20 × 1.5 (2×) and M16 × 1.5

6.1 Connection Diagram



Y1	Positioning signal open
Y2	Positioning signal close
21	Spring-return Function

6.2 Wiring Between BK 5000-T Controller and BKV 5420 Blowdown Valve



7. Maintenance

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

Valve parts are subject to normal wear and must be inspected and replaced as necessary. Inspection and maintenance frequency depends on the severity of the service conditions. This section provides instructions on replacement packing, stem, plug and seat and bellows. All maintenance operations can be performed with the valve body in the line.

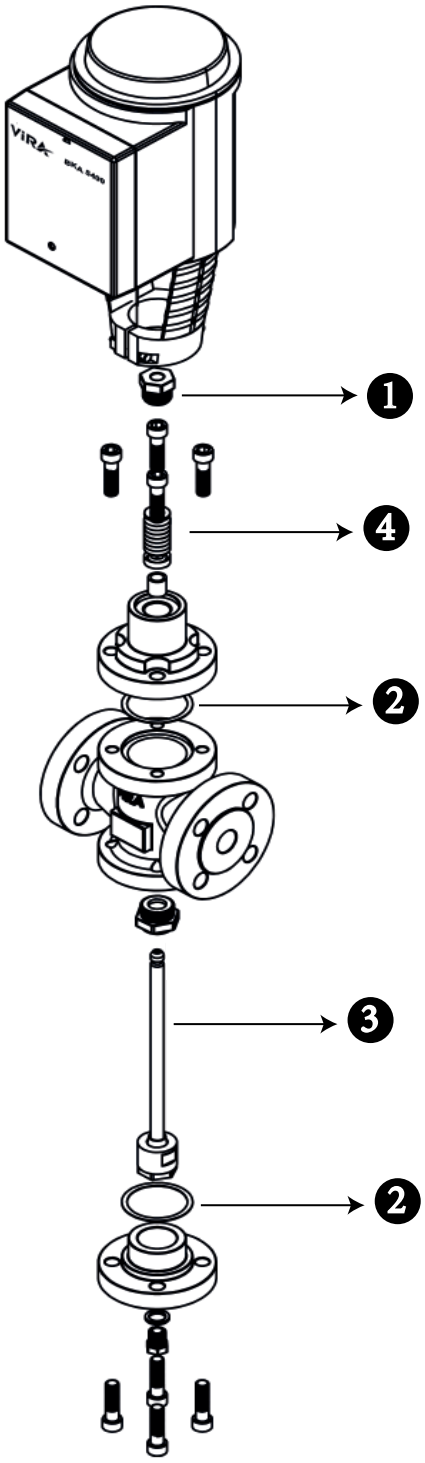
The valve should be inspected for wear and tear replacing any worn or damaged parts such as valve plug and stem, valve seat and gland seals, refer to Section 8 'Spare parts'.

Note 1: High temperature graphite packed seals are subject to wear during normal operation. We therefore recommend the graphite packing be replaced during this routine inspection to prevent premature failure of the packing during normal operation.

Note 2: It is recommended that all soft seals and gaskets be replaced whenever the valve is disassembled.

8. Spare Part

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



8.1 Available Spare Parts

1	Actuator clamping nut
2	Gasket set
3	Plug stem and seat kit
4	Stem seal kit

8.2 How to Order Spare Parts

Always order spares by using the description given in the column headed “Available spare parts” and state the size and type of valve and specify clearly the full description as found on the label of the valve body.

Example : 1 off “stem seal kit” for a Vira BKV 5420 blowdown control valve.

9. Technical Assistance

For technical assistance or sevice requests, please directly contact Vira service center by making a phone call or sending an e-mail to **servis@viraisi.com.**

Return faulty or servie items to Vira itself or authorized agency in your area. Ensure all items are subitably packed for (preferably in the original cartons).

Please provide the following information with any equipment being returned:

- Your name, company name, addres and telephone number order and invoice ans return delivery address
- Description and the serial number of equipment.
- Full description of the fault or repair required.
- If the equipment is being returned under warranty, please indicate the date of purchase.

The manufacturer reserves the right to make change without prior notification.

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