

Gestramat
Cooling-Water Control Valve

CW 44
CW 44k

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Foreword

This Installation & Operating Manual will help ensure proper, safe and cost-efficient use of the following valve models:

- ▶ CW 44
- ▶ CW 44k

These valves are referred to below simply as equipment.

This Installation & Operating Manual is intended for all persons bringing this equipment into service, and operating, using, servicing, cleaning or disposing of the equipment. In particular, the Installation & Operating Manual is aimed at service technicians, trained specialist personnel, and qualified and authorised operating personnel.

Each of the above must have read and understood the content of this Installation & Operating Manual.

Following the instructions in the Installation & Operating Manual helps to avoid danger and increases the reliability and service life of the equipment.

In addition to the instructions in this Installation & Operating Manual, compliance with the applicable binding rules on accident prevention in the country and location of use, and with the generally recognised technical regulations for safe and proper working, is essential.

Availability

Always keep this Installation & Operating Manual together with the system documentation. Make sure that the Installation & Operating Manual is available to the operator.

The Installation & Operating Manual is part of the equipment package. Hand over this Installation & Operating Manual if you sell or pass on the equipment to a third party.

Formatting features in the document

Different types of information in the Installation & Operating Manual are formatted in different ways. This helps you to distinguish easily between the following types of information:

Normal text

Cross references

▶ Lists

- ▶ Bullet points in lists

➤ Action to be taken.



This tips contain additional information, e.g. about cost-efficient use of the equipment.

Formatting features for warnings in the document



DANGER

Instructions with the word DANGER warn of a dangerous situation that results in death or serious injury.



WARNING

Instructions with the word WARNING warn of a dangerous situation that may possibly result in death or serious injury.



CAUTION

Instructions with the word CAUTION warn of a situation that may result in minor or moderate injury.

Formatting features for warnings of property damage

Attention!

This information warns of a situation resulting in property damage.

Safety

Usage for the intended purpose

The following types of cooling-water control valve are employed in the cooling-circuit return, in order to maintain a constant return temperature:

- ▶ CW 44
- ▶ CW 44k

The equipment may only be used within the admissible pressure and temperature limits, with due consideration of chemical and corrosive influences.

Usage for the intended purpose also includes reading and adhering to all instructions in this manual, particularly the safety notes.

Any other use of the equipment shall be considered as improper use.

Improper use also includes using equipment made of materials that are unsuitable for the fluid used.

Basic safety notes

Risk of serious injury

- ▶ The equipment is under pressure during operation and can get hot or cold. Only perform work on the equipment if the following conditions are satisfied:
- ▶ The pipes must be isolated from pressure.
 - ▶ All fluid must be thoroughly removed from pipes and the equipment.
 - ▶ Before carrying out any work, the higher-level system must be switched off and secured so it cannot be switched back on by unauthorised persons.
 - ▶ The pipes and equipment must have cooled to around 20 °C (lukewarm).
- ▶ The equipment may only be used with fluids that are not aggressive in contact with its material and seals. Otherwise, leaks may occur and hot or toxic fluid may escape.

- ▶ The equipment and its components may only be installed or removed by specialist personnel. Specialist personnel must have knowledge and experience of the following areas:

- ▶ Connecting pipes.
- ▶ If the admissible pressure and temperature ratings are exceeded, the equipment may be destroyed causing hot or pressurised fluid to escape.
- ▶ Make sure the equipment is always used within the admissible pressure and temperature ratings.

You can find information on the pressure and temperature ratings on the rating plate and in the "Technical data" section.

Risk of minor injury

- ▶ There is a risk of cuts from sharp-edged internal parts of the equipment. Always wear protective gloves when working on the equipment.
- ▶ If the equipment is inadequately supported during installation, there is a risk of getting squashed if it falls. During installation, secure the equipment so it cannot fall. Wear sturdy safety boots.

Information on property damages or malfunctions

- ▶ Installing the equipment against the specified direction of flow or in the wrong location will result in malfunctions. This could cause damage to the equipment or the higher-level system. Install the equipment in the pipe in the direction of flow indicated on the body.
- ▶ Equipment made from materials unsuitable for the fluid used wear faster. This can cause the fluid to escape. Make sure the material is suitable for the fluid used.

Personnel qualifications

Specialist personnel must have knowledge and experience of the following areas:

- ▶ Explosion and fire precautions and occupational health & safety provisions applicable at the site of installation
- ▶ Work on pressure equipment
- ▶ Producing connections on pipes
- ▶ Work with hazardous (hot or pressurised) fluids
- ▶ All information in this Installation & Operating Manual and other applicable documentation

Protective clothing

The plant operator must ensure that the protective clothing prescribed for the particular activity is worn during all work at the site of installation. Protective clothing must be selected as suitable for the fluid to be used. It must ensure protection from the risks to be expected during the respective activity at the site of installation. In particular, protective clothing must protect against the following risks:

- ▶ Head injuries
- ▶ Eye injuries
- ▶ Bodily injuries
- ▶ Hand injuries
- ▶ Foot injuries
- ▶ Damage to hearing

This list is not exhaustive. The plant operator must compile instructions for additional protective clothing in accordance with the specific risks at the site of installation.

Further information

Application of European Directives

Pressure Equipment Directive

The equipment conforms to this directive (see "Manufacturer's Declaration" section) and can be used for the following fluids:

CW 44

- ▶ Fluid group 2

CW 44k

- ▶ Fluid groups 1 and 2

ATEX Directive

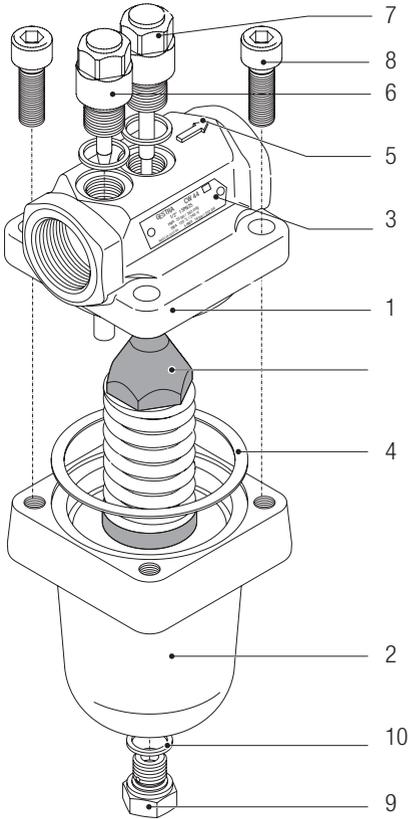
The equipment does not have its own potential ignition source and is therefore not subject to this directive (see "Manufacturer's Declaration" section).

Once installed, static electricity may arise between the equipment and the connected system.

During use in potentially explosive atmospheres, the discharge or prevention of possible electrostatic charging is the responsibility of the manufacturer or owner of the system.

If there is a possibility that fluid might escape, e.g. via actuating devices or leaks in screwed couplings, the manufacturer or owner of the system must take this into consideration when dividing the area into zones.

Product package and description of equipment



No.	Designation
1	Body
2	Cover
3	Name plate
4	Body gasket
5	Direction of flow arrow
6	Bleed flow adjustment unit
7	Outlet temperature adjustment unit
8	Bolts (4x)
9	Sealing plug for drainage
10	Sealing ring

Name plate

On the name plate, you will find the following information:

- Manufacturer
- Type designation
- Version
- Nominal size
- Pressure rating
- Maximum admissible differential pressure

On the body, you will find the following information:

- Date of manufacture
- Material
- Direction of flow
- Batch identification

There are two types of thermostat for different outlet temperatures:

- n-thermostat for an outlet temperature from -2 to 106 °C (CW 44)
- k-thermostat for an outlet temperature from -32 to 71 °C (CW 44k)

Types of connection

The equipment can be supplied with the following types of connection:

- Screwed end

Task and function

Task

Cooling-water control valves are directly actuated proportional controllers. They are used to maintain a constant return temperature in a cooling-water or cooling-solution return. The return temperature can be adjusted.

This enables a higher return temperature and therefore increased heat absorption by the cooling water or cooling solution. The consumption of coolant and energy is therefore reduced.

Cooling-water control valves also ensure the demand-based supply of coolant to heat exchangers connected in parallel.

Function

When the equipment becomes hot, the expansion material in the thermostat expands in volume. When the return temperature increases, a pin is pushed out of the thermostat. This opens the orifice, and increases the flow rate.

A bleed flow is continually present, even when the equipment is closed. The bleed flow enables the equipment to react quickly to changes in the return temperature.

Storing and transporting the equipment

Attention!

Storing or transporting the equipment incorrectly can damage it.

- Seal off all openings with the supplied – or comparable – covers.
- Make sure the equipment remains dry and is protected against a corrosive atmosphere.

Storing the equipment

Store the equipment solely in the following conditions:

- ◆ Connecting and sealing surfaces must be protected against mechanical damage.
- ◆ The equipment and all components must be protected against jolts and impacts.
- ◆ The equipment may only be stored in closed rooms in the following ambient conditions:
 - ◆ Air humidity below 50%, non-condensing
 - ◆ Clean room air, not salty or corrosive in other ways
 - ◆ Temperature 5–40 °C.

Make sure that these conditions are constantly maintained throughout storage.

Transporting the equipment



CAUTION

Risk of injury from the equipment falling.

- Support the equipment during transport and installation.
- Wear sturdy safety boots.

Installing, connecting and dismantling the equipment



DANGER

Risk of severe injury or death due to burns or intoxication during work on pipes.

- Make sure there are no hot or hazardous fluids in the equipment or pipes.
- Make sure the pipes to the equipment are not under pressure.
- Make sure the system is switched off and secured so that it cannot be turned on by an unauthorised person.
- Make sure the equipment and pipes have cooled to a lukewarm temperature.
- Wear suitable protective clothing for the fluid, and use suitable personal protective equipment if necessary.

You will find information on suitable protective clothing and personal protective equipment in the safety data sheet for the fluid used.

Preparations for installation

- Inspect the equipment for transport damage.
- If you discover transport damage, please contact the manufacturer.

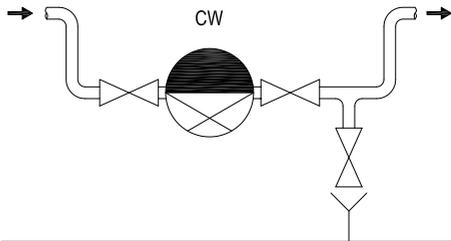
Connections may be sealed with plugs on delivery.

- Remove sealing plugs before installation.
- Switch off the system and secure so that it cannot be turned on by an unauthorised person.
- Shut off the supply lines to the equipment.
- Drain the pipes.

Connecting the equipment

Installation with a horizontal direction of flow and the cover facing down ensures optimum function.

- Install the equipment in the cooling-water return as close as possible to the heat exchanger.
- Install the equipment in a water pocket.
- If the fluid is dirty or contains foreign bodies, install a dirt trap upstream of the equipment.
- If there are chalk deposits, use a water softener.
- If the equipment is being used as an end valve, make sure that it cannot run empty. Otherwise, drying out or deposits are possible.
- If there is a risk of freezing, install a drainage valve in the water pocket.



The equipment can be damaged if connections are too weak.

- Make sure connections are sufficiently sturdy to withstand the weight of the equipment and the forces to be expected during operation.
- Make sure the system's pipework is clean.
- Make sure the equipment is free of foreign bodies.
- Install the equipment in the desired direction of flow. Make sure the direction of flow in the pipe matches the flow direction arrow on the equipment.
- Correctly connect the equipment to the pipes as suitable for the type of connection provided.

Operation

Adjustment

You can adjust the equipment using a size 5 Allen key

- Remove the plastic plugs from the adjustment units.

Adjusting the bleed flow

- Adjust the bleed flow on the adjustment unit (6). Turning it anti-clockwise increases the bleed flow.

A 1/8 turn changes the flow by a factor of 1.4.

As a rule, no more than a quarter to a half turn is required.

Adjusting the outlet temperature

- Adjust the outlet temperature using the adjustment unit (7). Turning anti-clockwise raises the outlet temperature, turning clockwise lowers it.
- Wait 5 minutes until the system has adapted to the new setting.

Total travel of temperature adjustment:

approx. 23 turns from the lower to the upper limit.

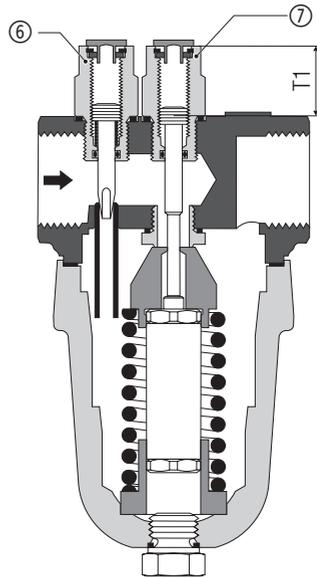
1 turn equals a travel of

1 mm = approx. 4.5 to 5.0 K temperature difference.

Basic setting

The orifice is still straight in its seat, then rotate it 1 turn clockwise, i.e. the valve is now open. In the basic setting the outlet temperature is approx. 16 ± 2 °C at an ambient temperature of 21 ± 2 °C.

Starting from the upper limit, the basic setting corresponds to approx. 17 turns clockwise.



Adjustment aid: Point of reference T1

Measured with a depth gauge from the upper edge of the adjuster to the lower end of the hole in the adjusting screw Allen key:

- The upper limit is approx. 8-9 mm, or max. outlet temperature
- Basic setting approx. 25- 26 mm

After operation

Attention!

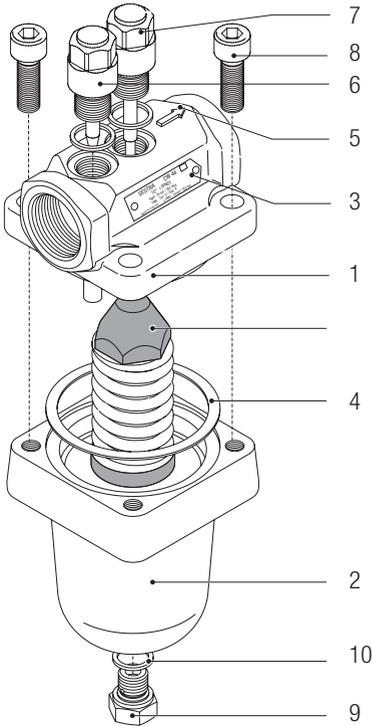
Frost damage can occur when the system is not in operation.

- Drain the equipment if there is a risk of frost.

Servicing the equipment

The equipment does not require any particular maintenance work. You must remove the equipment prior to any cleaning or repair work.

Spare parts



No.	Designation	Order no.
6	Bleed flow adjustment unit	355249
7	Outlet temperature adjustment unit	355250
4	Body gasket (20x)	560493

The following tools are required for working on the equipment:

- ▶ Size 5 and 8 Allen keys
- ▶ Size 19 and 22 open-end spanners

Tightening torques

No.	6	7	8	9
Nm	40	40	35	40

Removing the equipment

- Drain the pipes.
- Shut off the supply lines to the equipment.
- In the event of back pressure, block off the drainage line downstream of the equipment.

To drain the equipment, proceed as follows:

- Make sure that fluid exiting the system is caught.
 - Slacken the sealing plugs slightly.
- Fluid exits the system.
- Wait until the pressure has dissipated and the equipment has drained.
 - Unscrew the sealing plug from under the cover.
 - Remove the sealing ring.

Dispose of the sealing ring in accordance with regulations at the location of use.

- Slacken the screwed ends.

Attention!

The equipment is under spring tension.

- Completely unscrew the screws evenly in turn.

Assembling the equipment

Use new gaskets.

- Lubricate all threads and contact surfaces of nuts and bolts with temperature-resistant lubricant.

The lubricant must have the same properties as OKS®217.

Disposal of the equipment

The equipment consists of the following materials:

Component	Material
Body	1.0460/A105
Inner parts	Brass/ stainless steel
Cover	1.0460/A105
Bolts	1.7225
Body gasket	Graphite CrNi
O-ring	EPDM

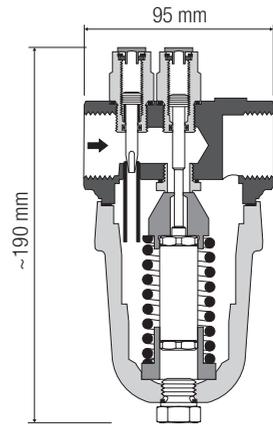
Technical data

Dimensions and weights

► CW 44, CW 44k

Weights

Nominal size	G 3/8	G 1/2	G 3/4	G 1
Weight [kg]	3.2	3.1	3.1	3.0



Temperature & pressure ratings

Pressure	p [barg]	25
Temperature	T [°C]	120 (CW 44) 85 (CW 44k)
Maximum differential pressure	Δ PMX [bar]	16
Adjustable outlet temperature	[°C]	n-thermostat: -2/106 (CW 44) k-thermostat: -37/71 (CW 44k)

Troubleshooting

Problem	Cause	Action
The flow rate is too low. The planned return temperature is not reached.	The size and design of the equipment differ from the system data.	Change the equipment settings. Check the size. Use equipment of a size that conforms to the system data.
Fluid is escaping (leakage).	The equipment or body is damaged.	Replace the equipment.
Fluid is escaping (leakage).	A gasket is damaged.	Replace the damaged gasket. Clean the sealing surfaces.
The equipment does not regulate the flow perfectly.	The control unit is damaged or worn.	Replace the equipment.
The equipment is working irregularly. Inner parts open and close at intervals.	The pipe between the heat exchanger and the equipment is too long.	Increase the bleed flow. Install the equipment immediately downstream of the heat exchanger.
The flow rate is too high. The planned return temperature is not reached.	The equipment is incorrectly set.	Check the equipment settings. Reduce the bleed flow.
	The movement of inner parts is obstructed by deposits.	Check the equipment settings. Reduce the bleed flow. Clean the equipment. Make sure that the movement of inner parts is not obstructed.



Agencies all over the world: www.gestra.de

Manufacturer's Declaration

You can find details on the conformity assessment in accordance with European Directives in our Declaration of Conformity or Manufacturer's Declaration.

You can request the valid Declaration of Conformity or Manufacturer's Declaration from the address below.

Modifications to the equipment not approved by us will cause this Declaration to become invalid.

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