

## Sample Cooler

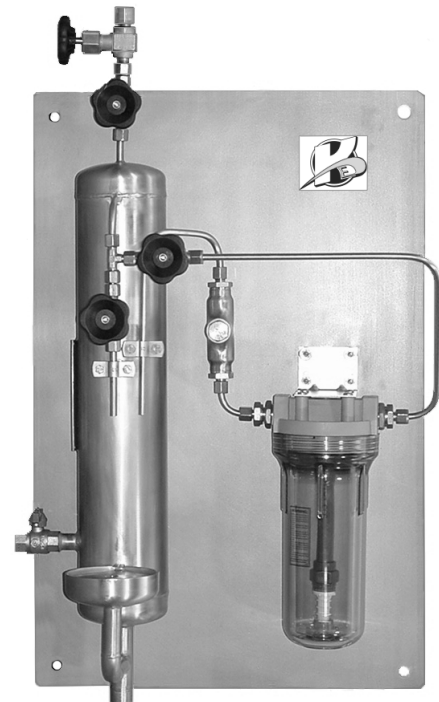
### 1 Description

A proper steam boiler operation requires regular monitoring of the water chemistry.

The sample cooler described in this manual serves for easy, safe and accurate sampling and cooling of condensate, boiler feed water and boiler water.

The sample cooler consists of a vessel with inner cooling loop and welded on collecting cup with discharge, connections for cooling and sampling water, a shut off valve for cooling water and a throttling valve for sample water.

For cooling, the sample water within the cooling loop flows through the cooling water within the vessel, in counter-current direction.



Picture: sample cooler with cation exchanger and connection for conductivity measurement (not included in the standard design)

### 2 Intended Use

The device described in this manual exclusively serves for cooling of boiler feed water, boiler water and condensate samples within the described limitations. Any other kind of use is not permitted.

### 3 Safety Advice

#### 3.1 Temperature

During operation, hot water flows through the device.



**WARNING: Danger of burns and scalding due to hot water and hot device parts!**

Sample taking is only permitted if cooling water is fully flowing through the device.

Before maintenance or repair works, the device needs to be shut-off and cooled down.

#### 3.2 Pressure

The device operates at over-pressure.



**WARNING: In case of opening or de-assembling of pressure-loaded device parts, there is the danger of injuries as well as damage to the device!**

Before maintenance or repair works, the device needs to be shut-off and relieved of pressure.

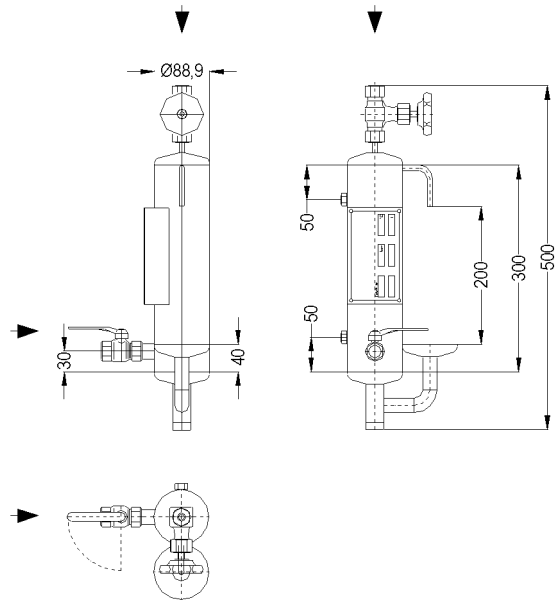
## 4 Technical Data

### 4.2 Type 80-300

hot water temperature, max.	150	°C
primary hot water pressure, max.	10	bar
sample water flow rate, max.	40	l/h
sample water outlet temperature	25 / 45	°C
(amount and temperature of cooling water varies)		

diameter	88.9	mm
cylindrical casing height	300	mm
total height	500	mm

hot water connection	DN 6
cooling water connection	R ½"
waste water connection	R ½"



#### Material:

casing, cooling loop, collecting cup completely made of stainless steel 1.4571

#### Accessories:

- 1 throttling valve DN 6 for hot water, for connection to pipe  $\varnothing 8 \times 1$ , made of stainless steel
- 1 shut-off ball valve R 1/2" for cooling water, made of brass

### 4.3 Type 80-500

hot water temperature, max.	250	°C
primary hot water pressure, max.	40	bar
sample water flow rate, max.	40	l/h
sample water outlet temperature	25 / 45	°C
(amount and temperature of cooling water varies)		

diameter	88.9	mm
cylindrical casing height	500	mm
total height	750	mm

hot water connection	DN 6
cooling water connection	R ½"
waste water connection	R ½"

#### Material:

casing, cooling loop, collecting cup completely made of stainless steel 1.4571

#### Accessories:

- 1 throttling valve DN 6 for hot water, for connection to pipe  $\varnothing 8 \times 1$ , made of stainless steel
- 1 shut-off ball valve R 1/2" for cooling water, made of brass



## 5 Installation

The sample cooler is equipped with mountings for installation of fastening clips, or for fixation at a wall.

The hot water or sample water line respectively is connected to the hot water throttling valve via a male stud coupling.

The inlet and outlet line for the cooling water are each connected to the device with a threaded connection.

## 6 Operation

### 6.1 Manual Sample Taking

In order to take a water sample, the cooling water valve needs to be opened slowly until it is fully opened. As soon as cooling water is flowing through the entire cooling vessel, the hot water throttling valve is to be slowly opened until the sample water exits as a thin jet of water. The sample vessel, for example an Erlenmeyer flask, now needs to be flushed with sample water a few times. After wards, the sample water can be taken in the required amount. Excess sample water is drained off through the collecting cup.

### 6.2 Continuous Sample Taking

For continuous sample taking, the sample water flow through the device needs to be adjusted during commissioning, as described in 6.1.

## 7 Maintenance

In order to prevent sedimentation and corrosion, only soft water or demineralised water free of iron and chlorine may be used as cooling water.

Should hardness sedimentation occur despite, the device can be cleaned with citric acid. To this end, the complete sample cooler needs to be inserted into a 5% citric acid dilution for about 8 hours.

## 8 Manufacturer Contact Data

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