Safety Thermostat type SH4S
Automatic Release System

Characteristics

- Closing power 400 N
- Setting range 30-140ºC
- Combined use with regulating thermostat
- Built-in hydraulic brake against pressure surge
- Complies with the requirements of DIN 3440

Application

Safety thermostat SH4 is an on/off actuator which, together with a valve, is used for the protection of secondary pipe installations in heat exchanger systems, which on the primary side are connected to steam, district heating, high-pressure hot water or hot-oil supplies.
The safety thermostat can be used either separately or combined with a regulating thermostat, whereby the regulating valve will also serve as a safety valve.
By activating the thermostat the valve will close, whereby unintended increases in temperature and pressure in the secondary installations are avoided.
The appropriate possible combination of regulating valve and thermostat simplifies the total pipe installation and makes it cheaper.
The safety thermostat is useable with all our valves from DN 4-150 mm diameter, dependent on $\Delta p_{max.}$ and can be combined with all thermostats of the V2 and V4 types.
It is recommended to combine the safety thermostat with a single seated, respectively a single seated balanced valve to minimize the leakage rate.

Dimensioning

For sizing of control valves and for closing pressures, please see “Quick Choice” leaflet no. 9.0.00.

Construction

The thermostat SH4S consists in principle of two cylinders built together in parallel as well as a fluid-filled sensor system.
The first cylinder - the power part - is fitted directly onto the valve and contains a through spindle, which can partly transfer the power from a possible regulating thermostat and partly, by means of a tightened spring, close the valve by force by activating the release mechanism (hinged joint). The build-in hydraulic brake is also contained in the cylinder.
The other cylinder - the selector - is supplied with a hermetically sealed fluid-filled metal bellow, which on expansion or contraction can influence the release mechanism on the power part by means of two selector rings. One ring (break safe) is set permanently at +5ºC and normally only comes into use when there is a leak in the sensor system. The other ring is the actual temperature-selector, which from the factory is set at 110ºC. The bellows system is connected to the fluid-filled sensor via a capillary tube.

Operation

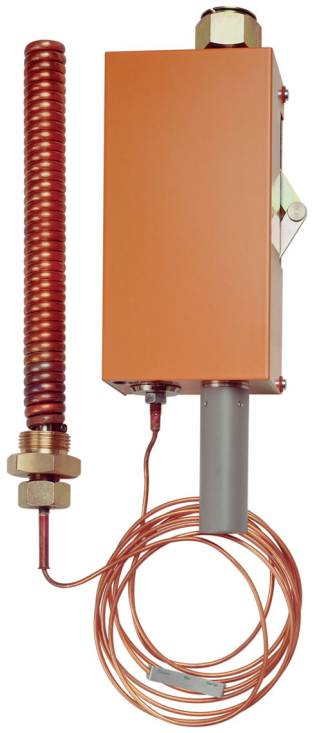
The safety thermostat’s sensor is installed in the exposed pipe system (the heat exchanger’s secondary side). With a temperature rise above the selected setting the greatly expanded fluid of the sensor compresses the bellows of the selector in such a way that the selector ring influences the release mechanism, and the valve closes.
The build-in hydraulic brake ensures a slow closing of the valve, whereby pressure surge is avoided.
The return of the safety thermostat to its setting is made manually by means of the special tools supplied. Re-setting can only take place when the sensor temperature has dropped below the set temperature.

Adjustment for Ambient Temperature

As a bellow system necessarily contains a relatively large volume of fluid in proportion to the sensor, it is necessary to correct the release ring’s setting, if the ambient temperature deviates from the 20ºC, for which factory adjustment has been made.

Adjustment Instructions

Adjustment instruction are given inside the SH4S casing and in the instructions.



Technical Data

Closing power	400 N
Travel	22 mm max.
Closing time	2 sec.
Lower release temp.	+5ºC firm
Range for upper release temp.	30-140ºC
Factory setting of upper release temp.	110ºC
Capillary tube	3 m Cu (copper)
Sensor data:	
- Type	Copper spiral
- Max. temperature	165ºC
- Max. pressure	40 bar
- Time coefficient	12 sec. in water 50 sec. in oil
Ambient temperature range	0-70ºC
Valve connection	ISO 228 - G1
Release indication	Hinged joint visible outside thermostat casing
Weight	Approx. 3 kg
Basic standard	DIN 3440

Subject to change, without notice

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Mounting

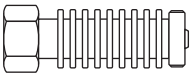
In order to minimize wear and tear, the valves - especially the larger ones - should be mounted with vertical stem.
At valve temperatures of max. 170ºC the valves are mounted optionally with the connecting boss below or above the valve.
At valve temperatures above max. 170ºC cooling unit type KS is used according to the following lines:

Connecting boss	Valve temperature	Cooling unit
Up- or downwards	max. 170ºC	-
Downwards	max. 250ºC	KS-4
Downwards	max. 350ºC	KS-5

To ensure the function of the valve a strainer ought to be inserted in the pipe system in front of the valve.

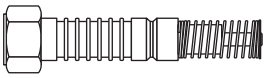
Accessories

Cooling Unit KS-4



Cooling unit protecting the stuffing box of the thermostat. Is used at valve temperatures between 170ºC and 250ºC.

Cooling Unit KS-5



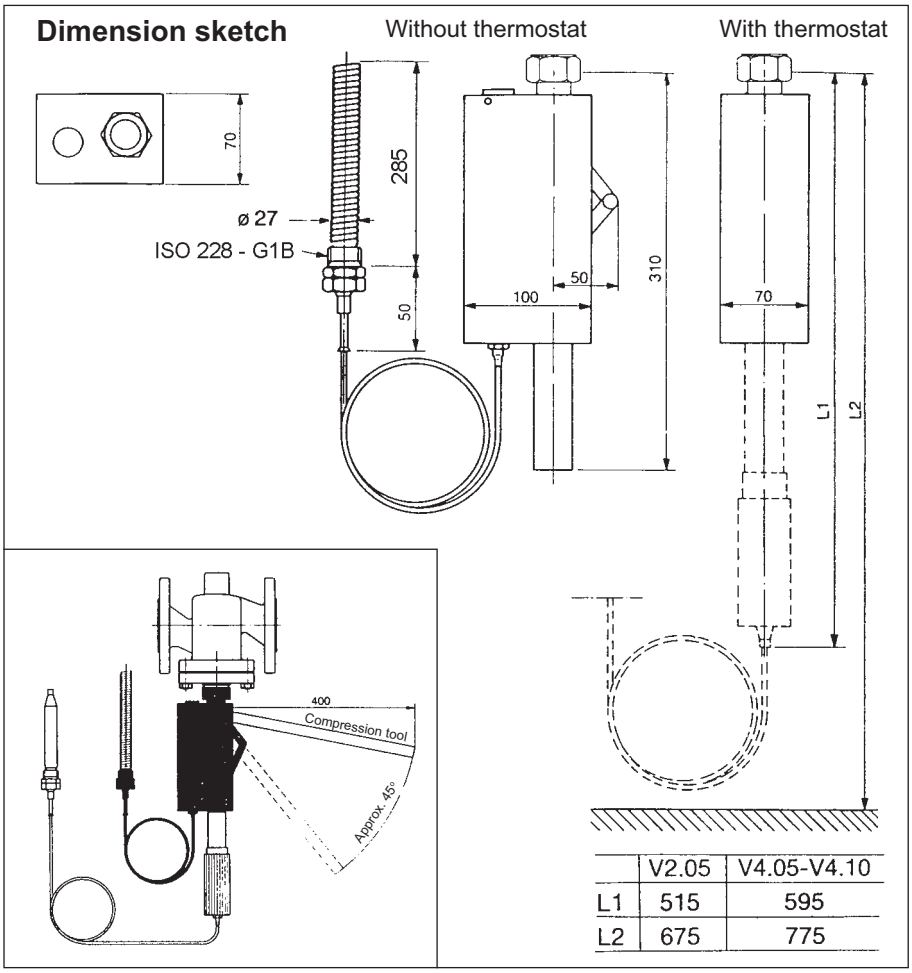
Cooling unit with built-in bellows gland substitutes the stuffing box of the thermostat. Compulsory at valve temperatures between 250ºC and 350ºC.

Spare Parts

Compression tool
Stuffing-box

Subject to change, without notice.

Dimension sketch



	V2.05	V4.05-V4.10
L1	515	595
L2	675	775

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