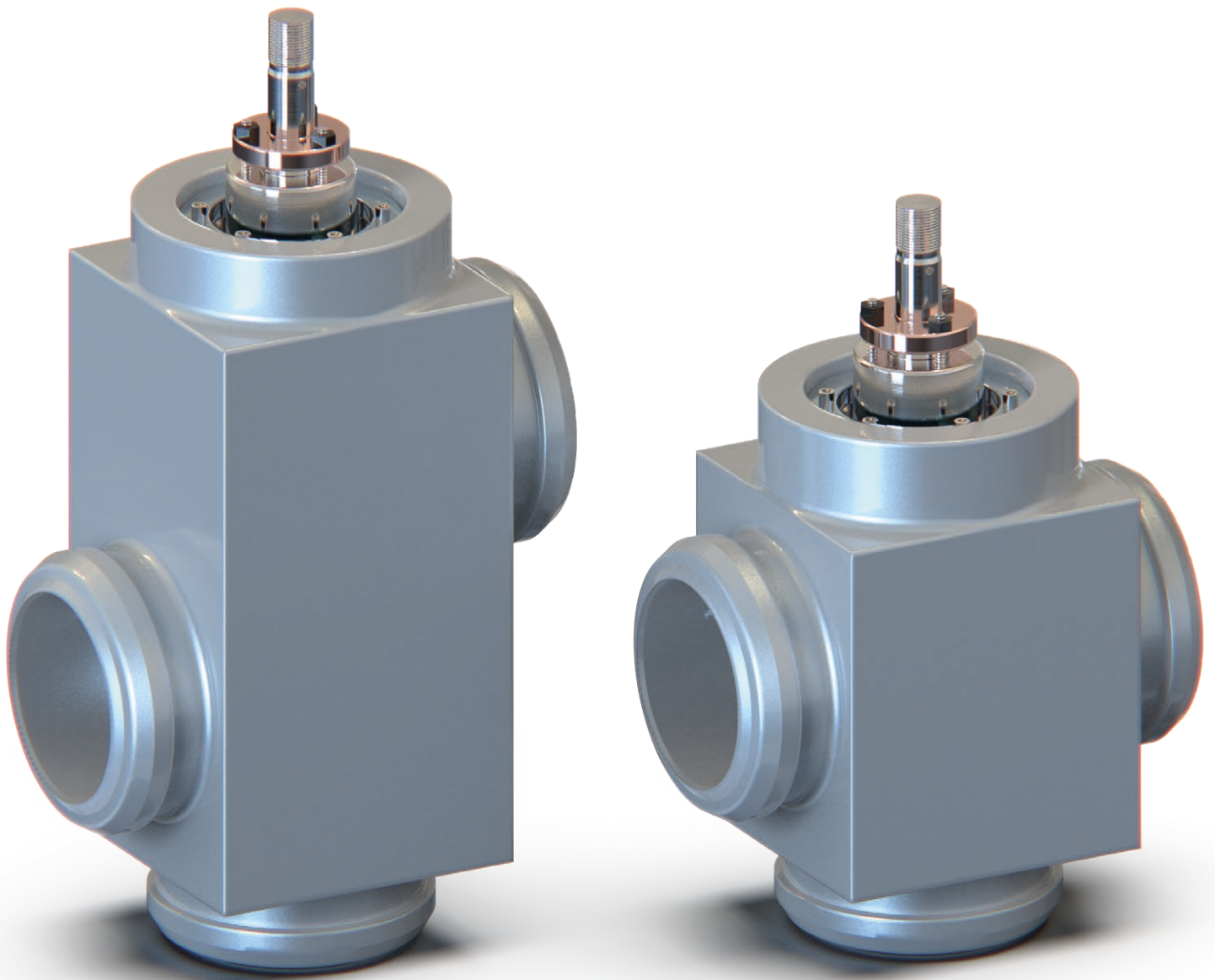


# BVT-HB/HBS

Feedwater heater bypass valves

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## About us

BVT Sweden was started with the ambition of becoming world leading in critical applications in process steam and thermal power plant turbine bypass. Based in Säftele, BVT Sweden employs experts with over 30 years experience in turbine bypass, steam conditioning, temperature control, design and manufacturing processes. We design turbine bypass valves, select actuation to fit our customer's requirements. Our products are optimized on a per-order basis, and we have the experience necessary to design special solutions. These products cover steam conditioning valves, pressure reduction valves, stop valves, desuperheaters and spray water control valves.

## Feedwater bypass

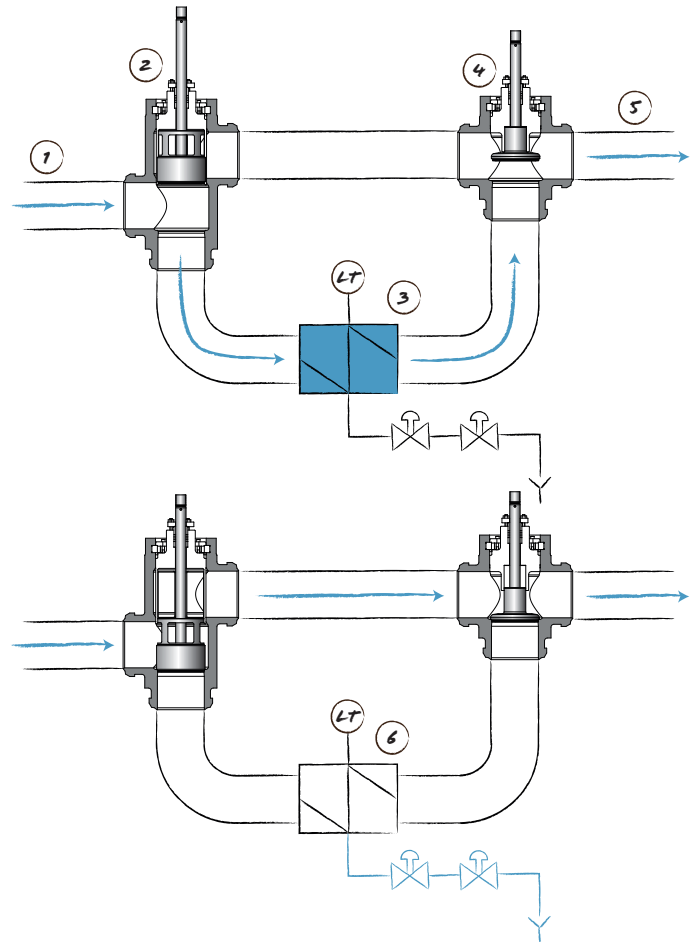
Feedwater heaters are used in power generation to pre-heat the feedwater coming from the feedwater pump before being fed to the boiler in order to improve steam generator efficiency. The bypass system consists of two 3-way isolation valves, the HB is installed upstream from the heater, and the HBS is installed downstream. In normal operation both valves are opened, allowing water to flow through the heater.

## Bypass mode

In case maintenance is required for the preheater, water needs to be bypassed around it, and it needs to be isolated. A quick shutoff prevents further damage to the preheater, and maintains feedwater supply to the boiler. The heater bypass system can be automatically controlled by measuring the water level in the heater jacket. If the level is too high, or if the pressure in steam heating line increases, the HB and HBS valves can be closed, isolating the heater and allowing the feedwater to pass through the bypass line. The internal pressure caused by the water forces the plug against the seat and provides a tight shutoff.

## Normal operation

When the level in the feedwater jacket has returned to normal, or any maintenance work is done and the heater is to be put into operation, both valves are opened and feedwater is passed through the heater. Actuation is performed by an external actuator as standard.



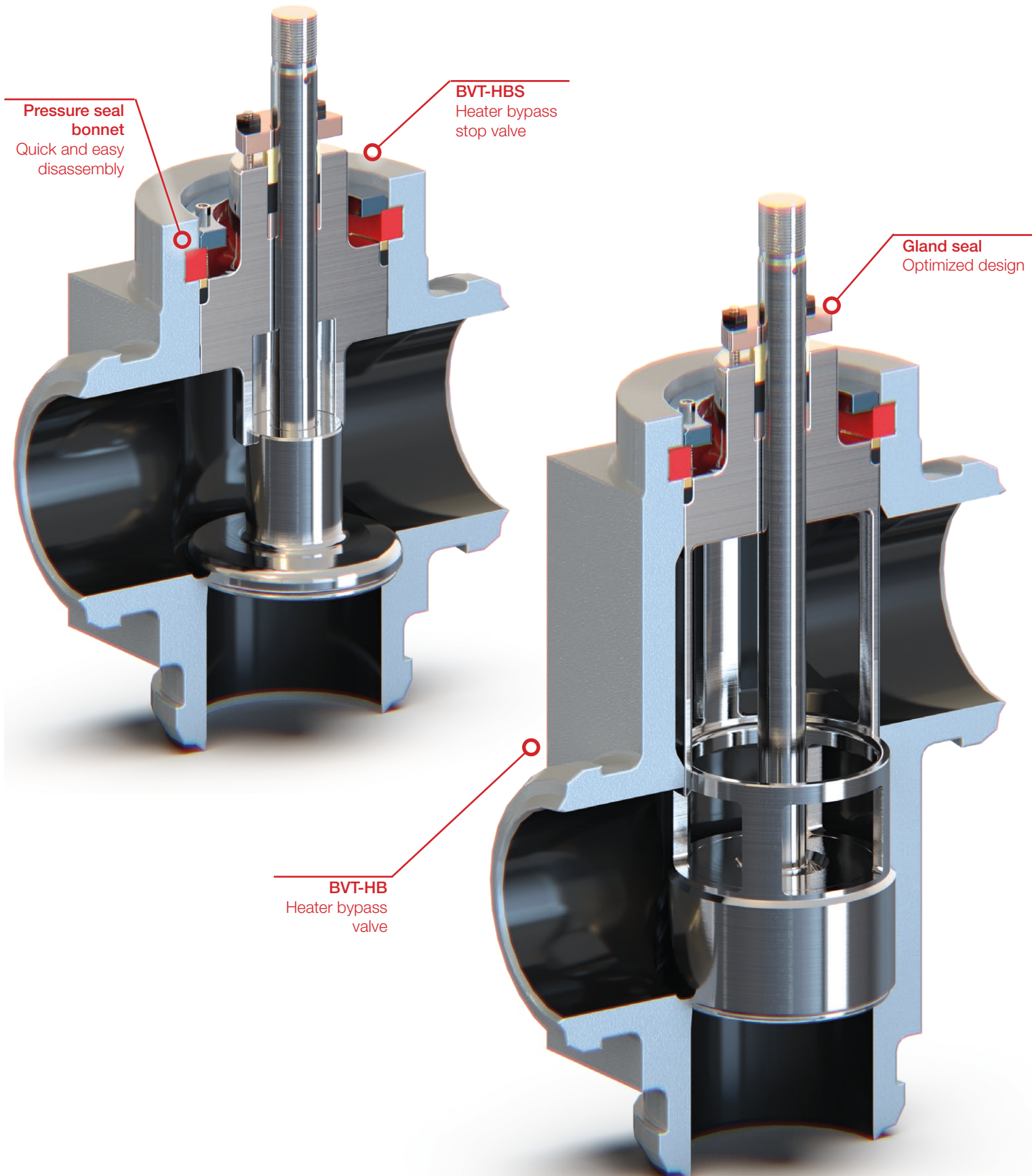
**ABOVE: IN NORMAL MODE**  
**BELOW: IN BYPASS MODE**

1. FROM FEEDWATER PUMP
2. HB FEEDWATER BYPASS VALVE
3. FEEDWATER HEATER IN NORMAL OPERATION
4. HBS FEEDWATER STOP VALVE
5. TO BOILER
6. BYPASS WATER PIPE
7. ISOLATED FEEDWATER HEATER

# BVT-HB/HBS

Feedwater heater bypass valves

## Overview



# BVT-HB/HBS

Feedwater heater bypass valves



## Key features

- ✓ Protects feedwater heater steam jacket against rupture and leakage
- ✓ Protects turbine extraction from excessive back pressure
- ✓ Allows bypass of feedwater heater to be isolated without disrupting the water circulation
- ✓ Can bypass the feedwater heater during plant start-up and during low turbine load
- ✓ Allows bypassing of the heater at peak loads in order to increase power output from the turbine and improve overall plant efficiency
- ✓ Easy maintenance

## Design

The HB and HBS valves are designed and manufactured for reliable function and long service life. The body is manufactured from a fully machined forging, with circular connections in order to reduce asymmetrical stress patterns. Connections are selected based on connected pipings, valve sizes are selected to reduce pressure drop. Pressure seal bonnets are used as standard, allowing for easy maintenance and safe and tight connection at valve neck. Plugs are contoured and designed to reduce pressure drop over the trim. Seats are stellite and integrated with the valve body.

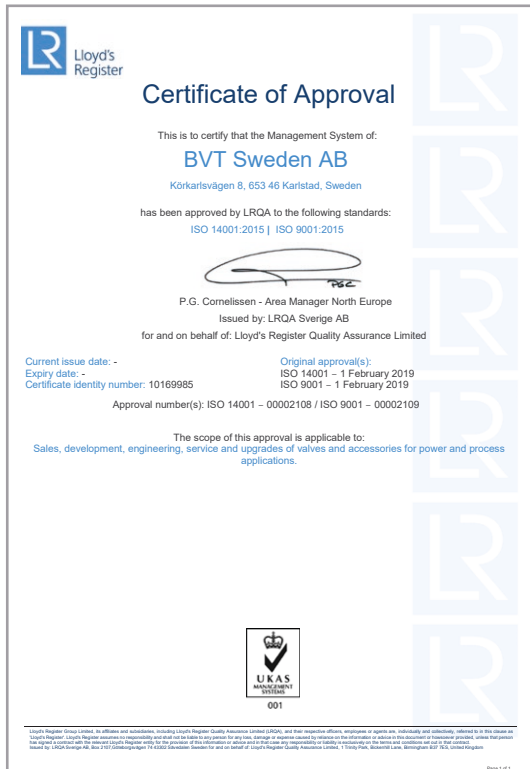
## Specifications

Actuator type  
**Electrical as standard, other on request**

Pressure class  
**Up to ANSI-4500**

Leakage class  
**ANSI class III against bypass line**  
**ANSI class V against feedwater heater**

Regulatory standards  
**PED, ASME**



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