

BVT-SC

Pressure reduction valve



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.

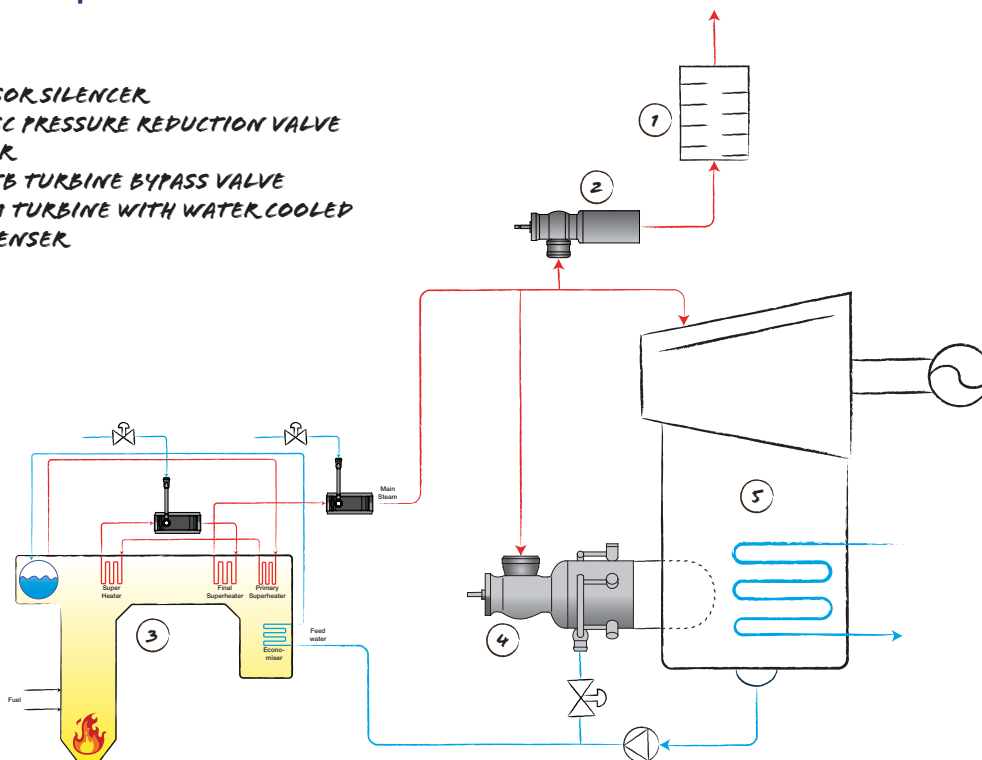
BVT-SC pressure reduction valve

The BVT-SC is a pressure reducing valve used in steam turbine systems, typically used in vent to atmosphere applications. In this application, the valve is placed in a steam pipe branched from the connection between boiler and turbine allowing the steam to be vented to atmosphere in case of a turbine trip. Pressure regulation is taken place in the valve trim where a plug reveals a series of perforations in the valve cage. A set of static pressure reduction pipes may also be installed in the outlet, depending on the pressure drop, providing noise reduction.

The BVT-SC can also be combined with a downstream desuperheater such as the BVT-DLP to perform steam conditioning in installations where downstream straight pipe lengths do not allow for desuperheating in the pressure reducing valve.

Application example

- 1. DIFFUSOR SILENCER
- 2. BVT-SC PRESSURE REDUCTION VALVE
- 3. BOILER
- 4. BVT-TB TURBINE BYPASS VALVE
- 5. STEAM TURBINE WITH WATER COOLED CONDENSER



BVT-SC IN A VENT TO ATMOSPHERE APPLICATION

BVT-SC

Pressure reduction valve

Specifications

Valve sizes

Up to 500 mm seat diameter

Pressure class

Up to ANSI 4500 (higher rating on request)

Design temperature

620 °C as standard (650 °C on request)

Leakage class

ANSI Class III, IV, V, MSS SP 61

Regulatory requirements

ASME, PED, IBR, CRN

Materials

Forged material adapted to connecting pipe material

Actuation

Pneumatic, hydraulic or electrical

Options

- Quick change type seat
- Erosion resistant trim with long cage
- Expanded outlet
- Live load gland seal packings

Key features

- ✓ Fully customizable inlet, outlet connections
- ✓ Complies with the following standards: ASME, PED, ISO 9001/14001
- ✓ Forged valve body with uniform thickness and trim design optimized to withstand thermal cycling
- ✓ High shut-off class
- ✓ Pressure reduction stages optimized for operating conditions, and for reduced noise.
- ✓ Balanced plug design requires smaller actuating forces, and so allows for smaller and pneumatic actuators
- ✓ Pressure seal bonnet for simpler and quicker maintenance. No special tools necessary
- ✓ Compatible with pneumatic, hydraulic and electrical actuation
- ✓ Easily exchangeable seat as option for further reduced maintenance downtime
- ✓ Optimized packing design
- ✓ Long cage design reduces wear on trim internals caused by wet steam or particles by moving the critical pressure drop

BVT - SC - 90 B T C - Z1

Steam Conditioning

Seat size

56 - 500 [mm]

Trim options

B: Balanced plug

T: Tight seal

C: Cage design

Seat options

(blank): Welded seat

Z1: eZ change seat

Z2: eZ change seat with stellite coating

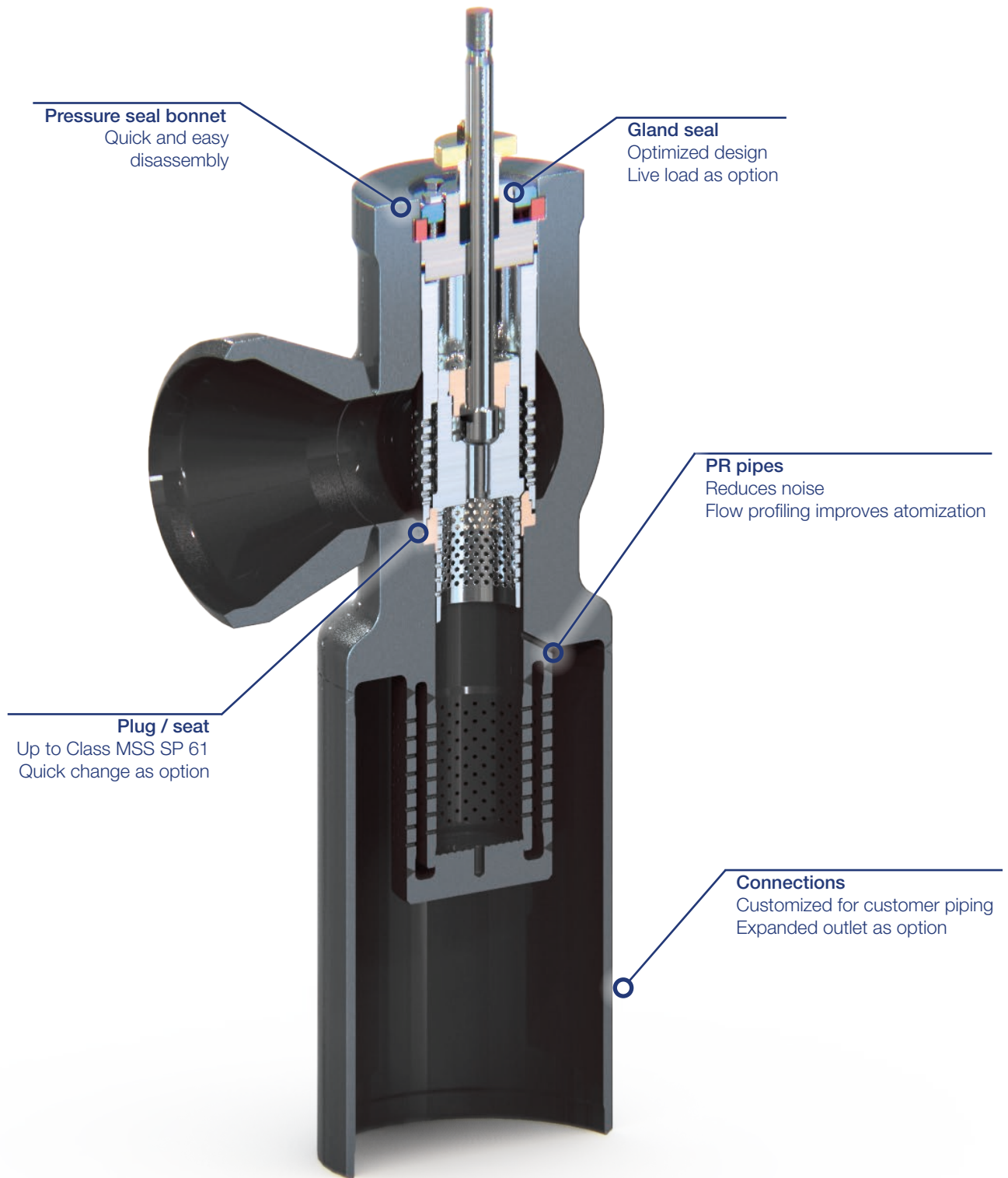
ZP: eZ change seat with long plug

BVT-TB PRODUCT CODE

BVT-SC

Pressure reduction valve

Overview



BVT-TB HP BYPASS VALVE

BVT-SC

Pressure reduction valve

Water valves

BVT provides a multitude of spray water control valves, selected and designed to match operating conditions and customer requirements. The trims are chosen to prevent cavitation and flashing and prevent aerated liquids from corroding or eroding valve parts. They are equipped with quick exchange trims for more convenient inspection replacement. Among the options of trim designs are contour plugs, multi-step plugs, multi-cage and labyrinth disc stacks.

Trim types

PT (Plug throttling)

Cv Range: 1.4 ~ 9930

Rangeability: 25 to 1

Leakage class: IV / V

HSC (Micro High Step Cascade)

Cv Range: 0.24 ~ 406

Rangeability: 100 to 1

Leakage class: V

HEST (Single seat, drilled cage)

Cv Range: 38 ~ 8900

Rangeability: Varies

Leakage class: IV / V



LEFT: ANGLE-STYLE VALVE BODY
RIGHT: GLOBE STYLE VALVE BODY

BVT-SC

Pressure reduction valve

Pneumatic actuation

BVT valves can be equipped with pneumatic piston actuators. The cylinders are chosen to overcome the forces created by steam flow, and the accessories are chosen to handle the required stroke speeds and functionality.

Features and options

Cylinder types

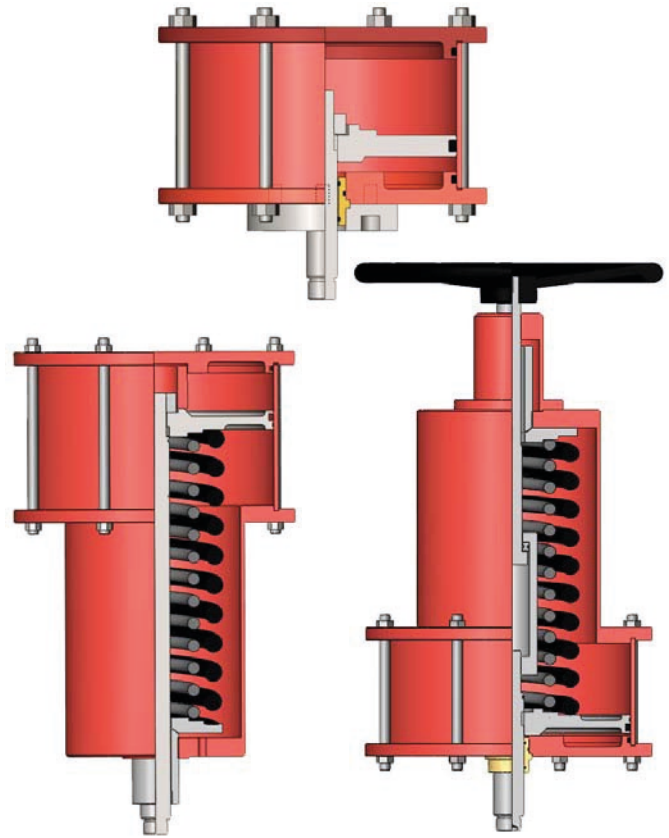
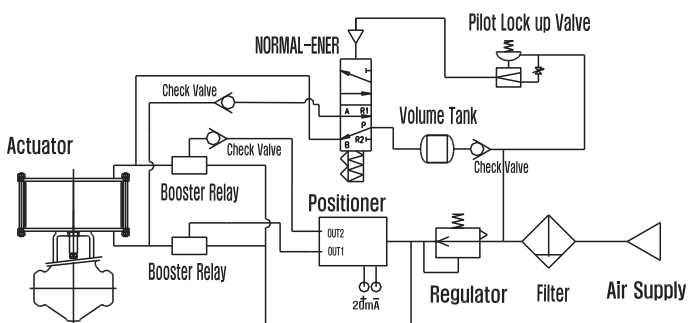
- Double Acting, Single Acting
- Spring Open, Spring Close
- Top mounted hand wheel, side mounted hand wheel

Air supply

4 - 10 bar

Accessories and options

- Air filter regulator as standard
- 3-way valves (quick open/close)
- Limit switches (open/close position)
- Position transmitters, air locks, boosters as option



**TOP: DIFFERENT CYLINDER SOLUTIONS AVAILABLE
LEFT: PNEUMATIC SCHEMATIC OF MODULATING
ACTUATOR WITH AIR LOCK AND BOOSTERS**

BVT-SC

Pressure reduction valve

Hydraulics

As an alternative to pneumatic actuation, BVT can also provide our valves with electro-hydraulic actuators. To power and control these actuators, BVT also supply Hydraulic Control Panel (HCP) and Hydraulic Power Generator (HPG). Pump control in the HPG is by default handled by the Intelligent Power Manager (IPM). The IPM monitors oil level, temperature and pressures and warns the DCS of any issues. Positioning is by default is handled by the Intelligent Actuator Control (IAC), which can control two modulating and two on/off actuators.

Commissioning tools and hydraulic pipes, fittings and hoses are also available.

Features

Hydraulic Linear Actuator

- C4 RAL7003 painting as standard, C5M as option
- Double rod seals & metal scrapers
- Precise movement and positioning
- No programming of transmitter required
- 2x Limit switches DPDT
- Spring and cylinder mounted valve block (HCB) as option

Hydraulic Control Panel

- Dual gain proportional valve for quick open/close
- Roof and floor stand as option
- Local accumulator as option
- Intelligent Actuator Control positioner as standard

Hydraulic Power Generator

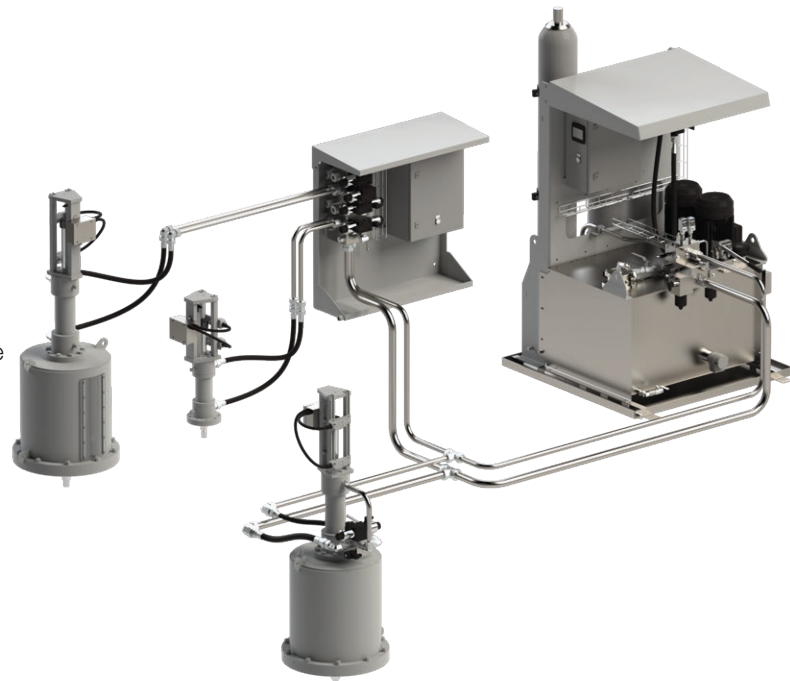
- Intelligent Power Manager pump controller as standard
- Dual pumps, accumulators, spill tray
- Analog pressure, temperature and level transmitters as standard

Intelligent Actuator Control

- 2x modulating + 2x on/off control
- Smooth movement and accurate positioning
- One-click calibration of transmitters
- IP66, -20° to +55°C ambient temperature
- PC based service tool for setup
- S shaped ramps for smooth movement

Intelligent Power Manager

- HMI display as standard
- IP66, -20° to +55°C ambient temperature
- Automated pipe flushing function
- Local / remote control
- Redundancy as option
- Different bus protocols as option



HPG, HCP AND THREE HYDRAULIC CYLINDERS

LR Lloyd's Register
Certificate No. / Zertifikat Nr. 50329/1

CERTIFICATE
in accordance with the requirements of the Pressure Equipment Directive 2014/68/EU

ZERTIFIKAT
in Übereinstimmung mit den Anforderungen der Druckgeräterichtlinie 2014/68/EU

This is to certify that the quality assurance system of
Hiermit wird bescheinigt, dass das Qualitätssicherungssystem des Unternehmens

BVT Sweden AB
SE-653 46 Karlstad
Sweden / Schweden

has been assessed by LR Deutschland GmbH in accordance with the requirements of Annex III
durch die LR Deutschland GmbH entsprechend den Forderungen des Anhangs III

Module H

to the Pressure Equipment Directive 2014/68/EU and
conforms to the requirements of the products shown below:
der Druckgeräterichtlinie 2014/68/EU geprüft und bewertet wurde und für die folgenden Produkte die Anforderungen erfüllt:

**Valves and accessories for power and process applications,
for details see Annex 1 to this certificate.**
**Ventile und Ausrüstungsteile für Anwendungen in der Wärme- und Verfahrenstechnik,
Einzelheiten siehe Anhang 1 dieses Zertifikates.**

Approval is subject to continued maintenance of the quality assurance system
in accordance with the requirements of the above-mentioned directive.
Die Zulassung gilt unter der Voraussetzung, dass das Qualitätssicherungssystem fortlaufend aufrechterhalten wird und
die Forderungen oben genannter Richtlinie erfüllt.

Authorisation is hereby given to use the below-mentioned Notified Body Identification Number
of LR Deutschland GmbH in accordance with the requirements of the specified directive
in relation to the products as named above:
Hiermit wird die Genehmigung erteilt, folgende Kennnummer der LR Deutschland GmbH als Notifizierte Stelle
in Übereinstimmung mit der angegebenen Richtlinie in Bezug auf die oben genannten Produkte zu verwenden:

CE 0525

Certificate expiry date / Zertifikatsgültigkeit bis: **31.01.2022**

Hamburg, 01.11.2019
Place and Date
Ort und Datum

K. Wolf
Name, Signature, Certifier
Name, Unterschrift, Zertifizierer

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MODULE H

LR Lloyd's Register
Certificate of Approval

This is to certify that the Management System of:
BVT Sweden AB
Körkarlsvägen 8, 653 46 Karlstad, Sweden

has been approved by LRQA to the following standards:
ISO 14001:2015 | ISO 9001:2015

P.G. Cornelissen - Area Manager North Europe
Issued by: LRQA Sverige AB
for and on behalf of: Lloyd's Register Quality Assurance Limited

Current issue date: -
Expiry date: -
Certificate identity number: 10169985

Original approval(s):
ISO 14001 - 1 February 2019
ISO 9001 - 1 February 2019
Approval number(s): ISO 14001 - 00002108 / ISO 9001 - 00002109

The scope of this approval is applicable to:
Sales, development, engineering, service and upgrades of valves and accessories for power and process applications.

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ISO 14001 AND ISO 9001