SEMPELL ELECTRO PNEUMATIC RELIEF VALVE

TYPE EPRV

Protect your main valves reliable with our pneumatic actuated relief valve type SEP in combination with the control unit type STE8

FEATURES AND BENEFITS

- Small opening and closing pressure difference
- High reproducibility
- Lifting of the SEP also below set pressure possible
- Adjustment control of the SEP without changing the system pressure
- Check of the control function without response of the SEP
- System pressure signal at pressure switch
- Compact
- Easy to operate
- Very ruggedly design for high pressure and temperature
- With removable seat insert, replacing the seat while the valve can stay installed
- Simple replacement of parts, no special tools necessary

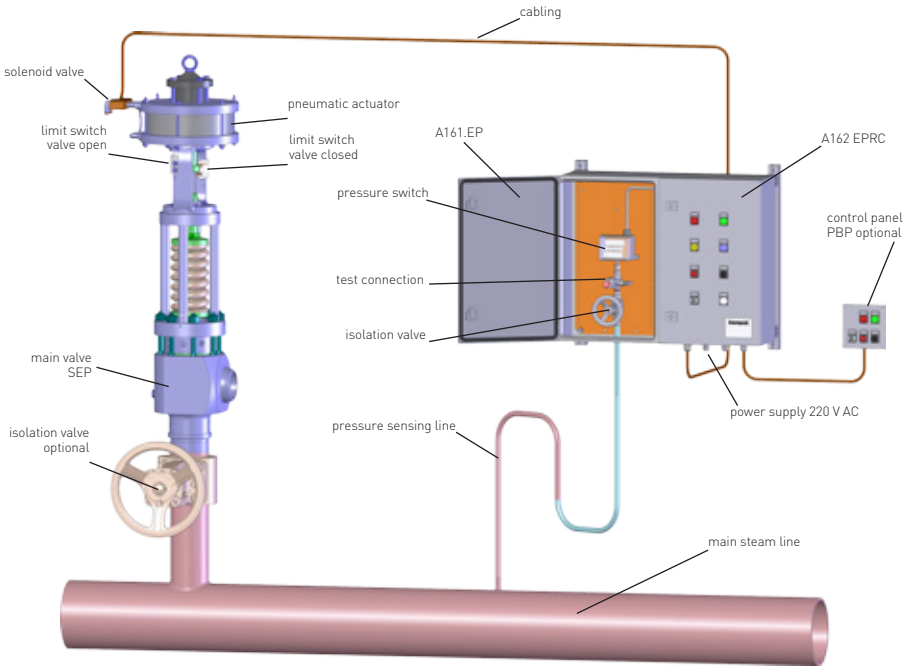
APPLICATION

Providing overpressure protection for steam boilers.

TECHNICAL DATA

Standard size:	2½" x 4"
Pressure:	up to 350 barg (5000 psig)
Temperature:	up to 630°C (1150°F)
Connection:	Flanged or welded
Body material:	A105, A182 F11, A182 F22, A182 F91, A182 F92
Activation:	Pneumatic

SEMPELL ELECTRO PNEUMATIC RELIEF VALVE
TYPE EPRV



EPRV DESIGN

cert.no.: 64077

According to the ASME I code one or more power-actuated pressure relieving valves shall be provided in direct communication with the boiler when the boiler is under pressure and shall receive a control impulse to open when the maximum allowable working pressure at the super heater outlet as shown in the master stamping is exceeded.

The Sempell Electro Pneumatic Relief Valve (EPRV) is designed to provide automatic or manual overpressure protection for steam boilers. It is configured for dependable service in superheated and saturated steam applications.

MAIN COMPONENTS OF EPRV

The typical arrangement of EPRV consists of:
- spring loaded main valve type SEP including a double acting pneumatic actuator A160 and solenoid valve
- pneumatic control unit STE8 with two boxes:
  - A161 contains a double acting pressure switch with lockable isolation valve and test connection
  - A162 electrical control box for operating and monitoring the valve automatic or manual
- optional push button box PBP for remote control.

MODE OF OPERATION

During normal operation of the plant the valve is kept closed by the spring and by a pneumatic closing force.
Pressurized air is connected via a 5/2 solenoid valve to the upper side of the actuator.
In case of pressure increase to the set point of the pressure switch the solenoid valve is energized and it switches the air supply from upper chamber to the lower one. By this the pneumatic force changes from closing to opening action and the main valve opens.
When during relieving the pressure decreases to the closing set pressure of the pressure switch, the air supply is reconnected to the upper chamber again and the main valve closes.
At the front of the electric control unit lamps are installed giving information on status of main valve position and of the pressure switch.
Typically the unit works in automatic mode.
The opening of the main valve can be initiated manually or by a signal i.e. from control room.

SEMPELL ELECTRO PNEUMATIC RELIEF VALVE
TYPE EPRV

PNEUMATIC ACTUATED RELIEF VALVE TYPE SEP

In combination with our control unit STE8 you have a proper system to protect your main valves.

The design of the main valve follows the principle of spring operated safety valves. The primary closing force is achieved by the spring. The double acting pneumatic actuator A160 opens and re-closes the valve. The valve is equipped with a balance piston and a cooling spacer to minimize the steam emission and protect the spring against high temperature. In valves for high pressure the seat can be replaced. With the setting of the spring the mode of the fail safe status can be selected. As default the spring setting is higher than pressure switch setting. In case of pneumatic pressure loss the valve will stay closed.
As option the spring can be set to a lower value. This results in fail safe open mode that the valve opens spring operated without pneumatic pressure.

Actuator
Emergency supply
Compressed air 4-8 barg
24 V DC for actuation (other commutation on request)

Option
Increased pneumatic actuator size possible, to open the valve at atmospheric system pressure.

CONTROL UNIT STE 8

Control system for our EPRV electro pneumatic relief valve.

The control system consists of two boxes one for the pressure switches and on for the electric part. The system design is for a proper function of the EPRV.
Performed by logic opening "1 of 1" and closing "1 of 1".

With monitoring for the relief valve and switches for open and close position of the valve.

Pressure switch Box
A161.EP pressure switch box with one adjustable high precision switches with test connection.
Standard blowdown 1%.
Additional blowdown adjustable.
Shut-off valve for pressure tapping line.
Test connection with shut-off valve.

Local control Box
A 162 EPRC local electric control box with one switch for "auto-off-manual".
Applicable for the A162.EPRC " Push Bottom Panel".
With function for "off-on-hand".
With function for EPRV opening and closing.
Monitoring of pressure switch's with control lamps.
Monitoring of valves position with control lamps.

Electrical power for solenoid valve 220 V / AC
Consult the factory for specific voltage for your applications.

OPTION - PUSH BUTTON PANEL

This option you can order later or direct and assembled it with our STE8 without modification of the local control box.

PBP Remote control system with identical function of the A162.EPRC, and with an optically monitoring to our local control box.

ORIFICE

Orifice	Area mm²	kdr	Standard size in	out
J1	1134	0,878	21/2	4
K1	1590	0,878	21/2	4
L	2206	0,878	21/2	4

SELECTION GUIDE MAIN VALVE SEP

Example	SEP	...	K1	21/2"	4"	06X	80.2	A160.4.22
Valve Type								
Inlet								
(...) = Welded end or class for flange								
01 = 150 lbs								
03 = 300 lbs								
06 = 600 lbs								
09 = 900 lbs								
15 = 1500 lbs								
25 = 2500 lbs								
Orifice								
Inlet size								
Outlet size								
Material code based on								
05X carbon steel								
06X high temperature steel								
Outlet								
80.2 = Welded end or class for flange								
01 = 150 lbs								
03 = 300 lbs								
06 = 600 lbs								
Fail safe status								
Blank = standard close								
O = open								
Pneumatic actuator								

STYLE DESIGNATION CONTROL UNIT STE 8

Example	STE8	220 V AC
Control Unit Type		
Pressure controlling		
PE = pressure switch (electronical)		
PT = pressure transducer		
Voltage		
220 V AC = Standard or		
Customer requirement		

Option
Push button box