

CASE STUDY



Safety Shut-off Device (SSD)



GAS
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Inspired By Challenge

Safety Shut-off Device (SSD)

A device that will stay in the open position under normal operating conditions and will shut off the flow automatically and completely when the monitored pressure exceeds a pre-set value.

Customer's process parameters

| Process conditions | |
|---|------------------------|
| Line pressure (upstream) | 250 bar |
| Design pressure (upstream) | 280 bar |
| Downstream line pressure (after 1 st pressure regulator) | < 46 bar |
| Downstream line pressure (after 2 nd pressure regulator) | < 2.5 bar |
| Temperature range (in-line) | -29°C ÷ +100°C |
| Media | Sweet natural gas |
| Line size | 1 1/2" DN40 |
| Connections | Flanged Class 2500 RTJ |
| Piping material | Carbon steel |
| Instrument air pressure | 6 bar |

Habonim's SSD is based on an indirect acting shut-off device in which the energy required to move the closing member or to operate the controller is supplied by an external energy (e.g. compressed air). The first condition that the Habonim SSD is designed for, is to ensure that the maximum downstream line pressure after the customer's first pressure regulator would not exceed 46 bar, as long as the downstream pressure is below 46 bar, the main valve stays open.

In case the pressure exceeds 46 bar at the downstream side of the pressure regulator, the high pressure pilot will switch position, and, vent the COMPACT™ 4-piston actuator pressure to activate springs that force the main gas line closed in less than 1 sec.

The second condition the Habonim SSD is designed for, is to ensure that the maximum downstream line pressure after the customer's second pressure regulator would not exceed 2.5 bar, as long as the downstream pressure is below 2.5 bar, the main valve stays open. In case the pressure exceeds 2.5 bar at the downstream side of the pressure regulator, the low pressure pilot valve will switch, vent the COMPACT™ 4-piston actuator pressure to activate springs that force the main gas line closed in less than 1 sec.



In addition, a secondary safety loop cuts the air supply to the system in any case one of the pilot valves tripped. recovery of the system can only be done manually, after a qualified personnel identify the malfunction, corrected it, and reset the system back to service.

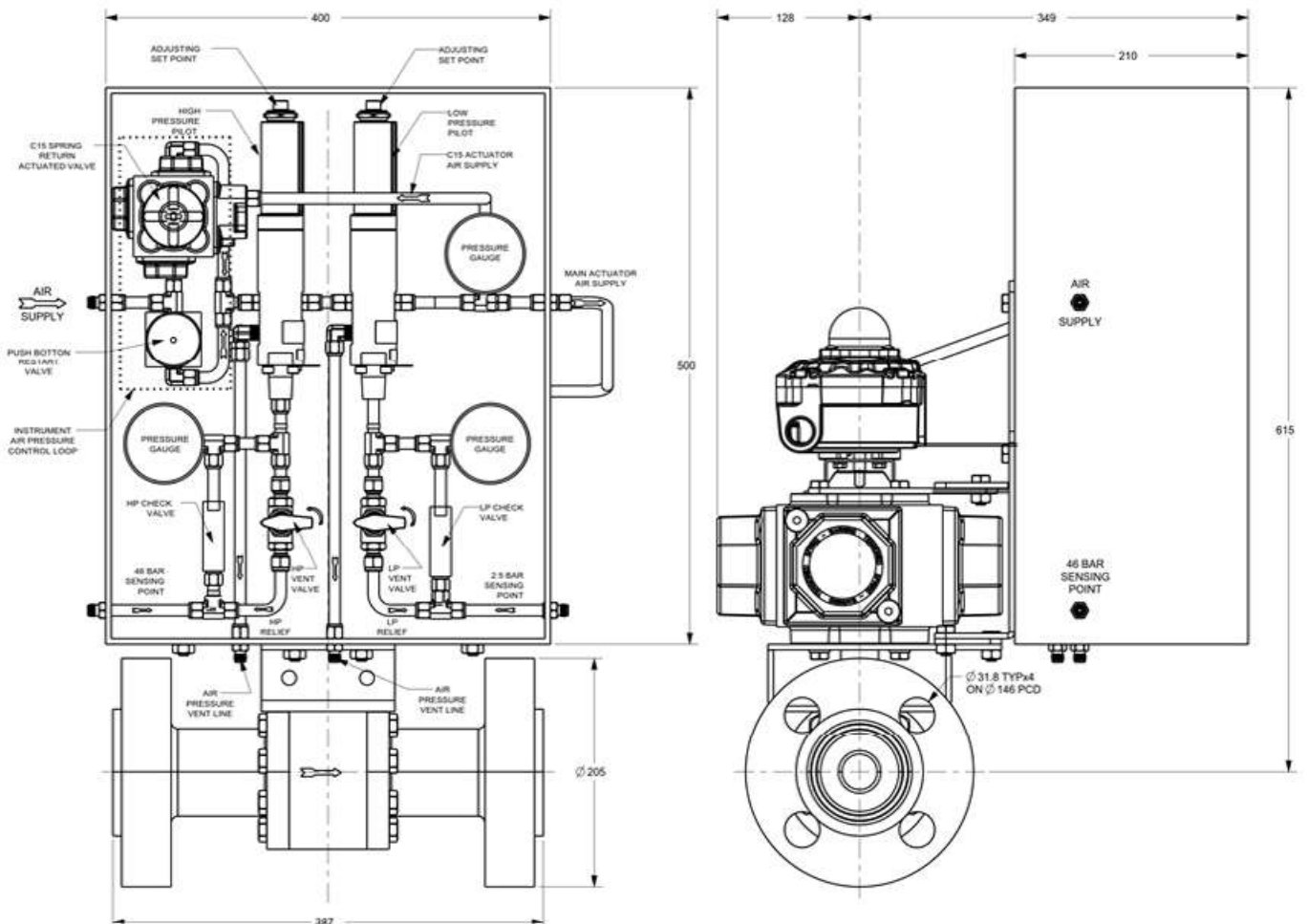
The SSD drive train components are calculated with a safety factor of higher than 2.

A safety factor of 1.8 is used for sizing the actuator.

The complete SSD unit was tested at the low and high temperature limitations specified by the customer, and passed successfully the stringent type test dictated by EN 14382:2005+A1:2009

1½" (DN40) HP VALVE CLASS2500 SSD

General assembly drawing





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