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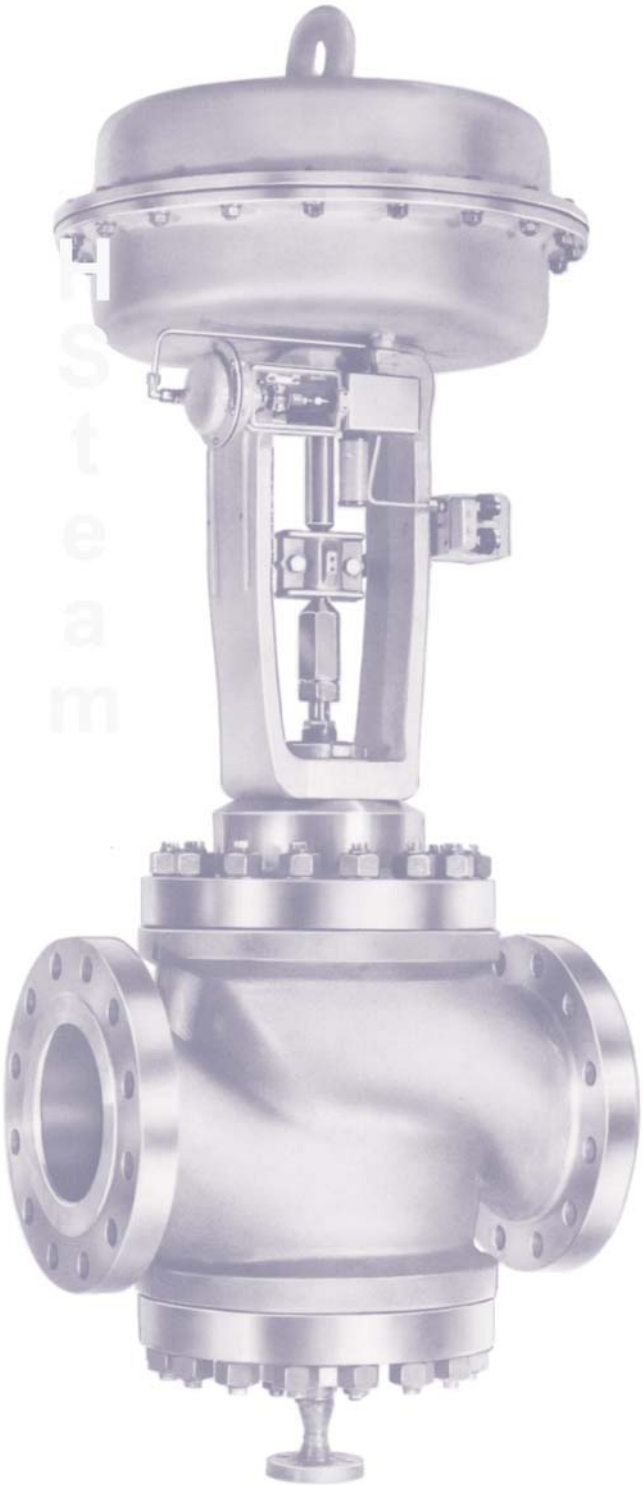

Steam Conditioning Valves

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Excellence is our standard

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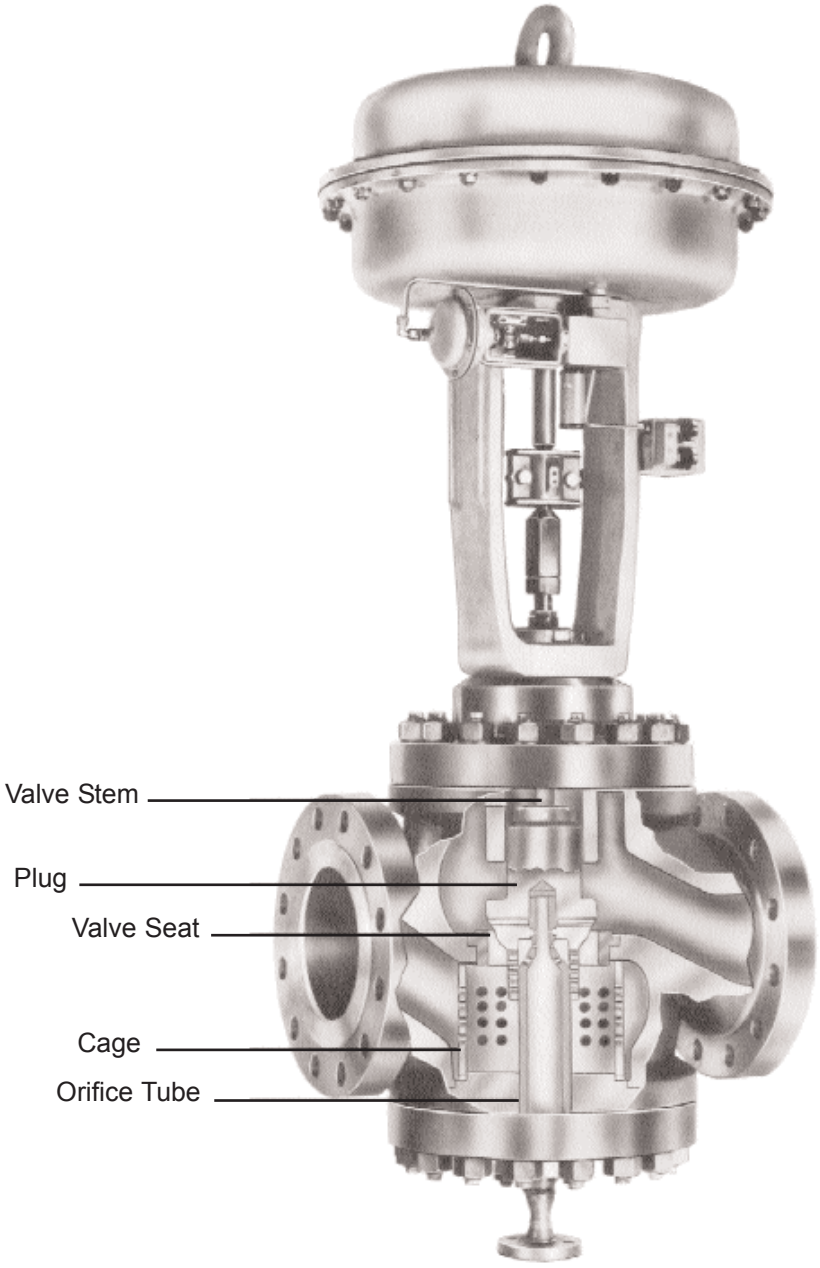

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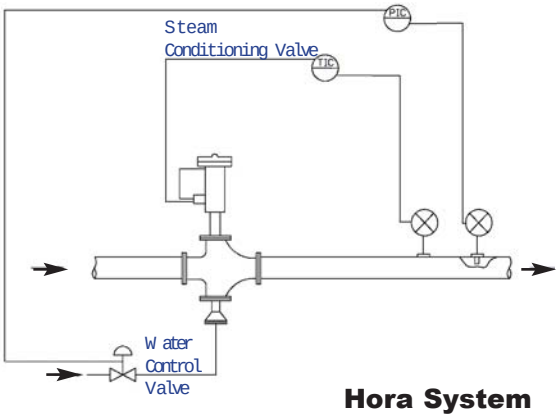
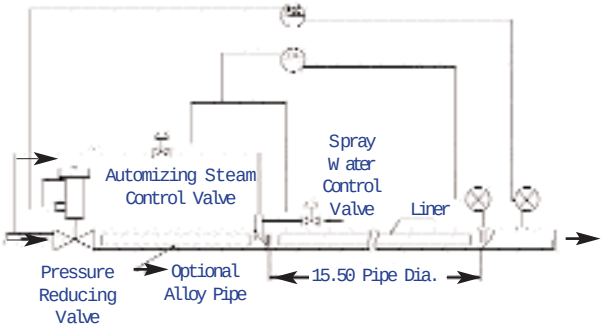
Steam Conditioning Valves

The use of combination control valves, commonly called "Steam Conditioning Valves" has grown steadily during the past twenty years. The reason is clear when considering the simplification of the overall control system versus that of a conventional one utilizing separate desuperheating and pressure reduction components.



Hora System



Conventional System

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Hora's background in steam pressure and temperature control began with the introduction of the integrated steam conditioning concept. The current range of Hora Steam Conditioning Valves represents the end product of this experience and marks a significant advance in the design technology of this type of valve.

Hora Steam Conditioning Valves are available in a wide range of design configurations engineered to meet the challenges of current industry application requirements.

The technology of steam conditioning is of major importance in modern power and process industries. As the name itself states, steam is conditioned or more correctly, it's status changed. Steam pressure reduction is taken in one or more stages in an effort to control velocities and noise. The valve plug may be machined and the cage drilled to provide any characteristic desired.

Desuperheating water is introduced through the flanged water connection on the lower valve bonnet. The water travels upward through the orifice tube and is injected into the steam flow through a series of orifices which are progressively uncovered by the lower section of the plug as it rises to pass more steam. The plug travel and the cooling water orifices sizing are predetermined so that desuperheating water and steam flow are in a constant ratio to one another as indicated by the heat balance across the valve. Minor upsets in steam flow or temperature are compensated for by a water control valve in the incoming water line.

Applications

Typical power plant applications in which precise steam temperature and pressure control can be maintained by steam conditioning valves include:

1. Turbine bypass
2. Drying rolls, kettles
3. Start-up service
4. Air preheater coils
5. Unit tie lines
6. Process reactors
7. Fan drives
8. Compressor drives
9. Plant heating
10. Fuel oil heating
11. Evaporator supply
12. Atomizing steam

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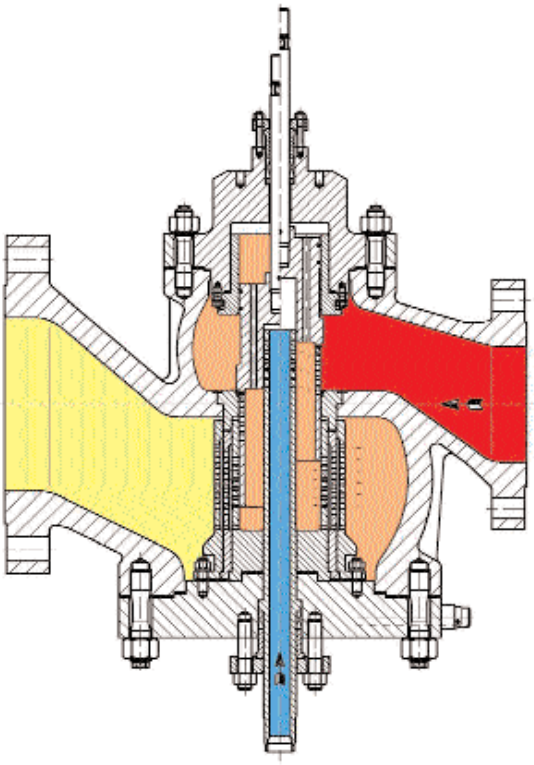
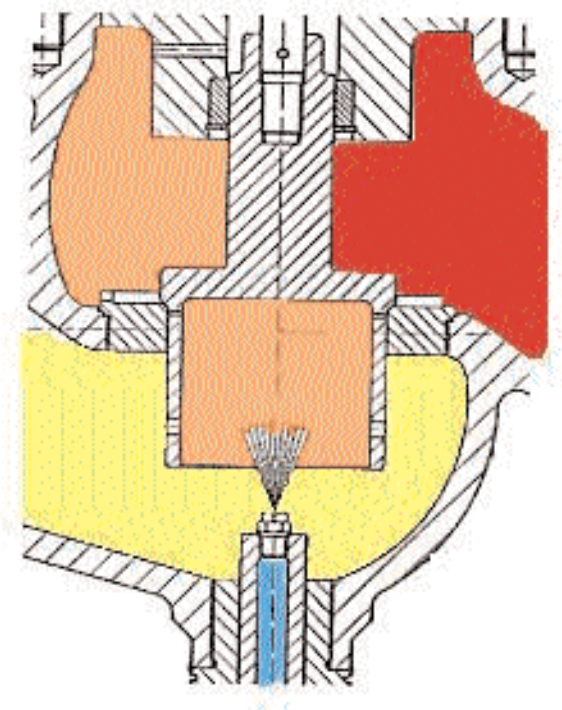


Steam Conditioning Valve - Orifice Tube (SCV-OT)

The Hora variable orifice cooling injection system employed in SCV-OTs offers proven performance spanning a period of thirty years. This advanced steam conditioning system utilizes water injection in direct proportion to plug lift.

Cooling water is injected into the valve through a tube having multiple orifices. In the closed position, the perforated plug covers these orifices preventing the flow of cooling water. As the plug lifts, holes become uncovered allowing water to mix with the flowing steam. The appropriate number, size and arrangement of the holes determines the injection of the correct volume of water in proportion to the steam volume. This ensures optimal atomization and evaporation over the complete flow range.



Steam Conditioning Valve (SCV)

The Hora SCV with fixed spray nozzle is designed for low cooling capacity applications where the steam load remains fairly constant. The water is injected below the seat area of the pressure reducing valve utilizing a special stainless steel nozzle. As with SCV-OTs rapid evaporation and optimal control are the result of high turbulence and efficient mixing in this area.

The SCV design limits cooling water flow to no greater than 20 percent of steam load. The set point temperature is controlled by regulating the cooling water flow with a separate control valve. This, combined with a fixed open area nozzle limits the rangeability of this design.

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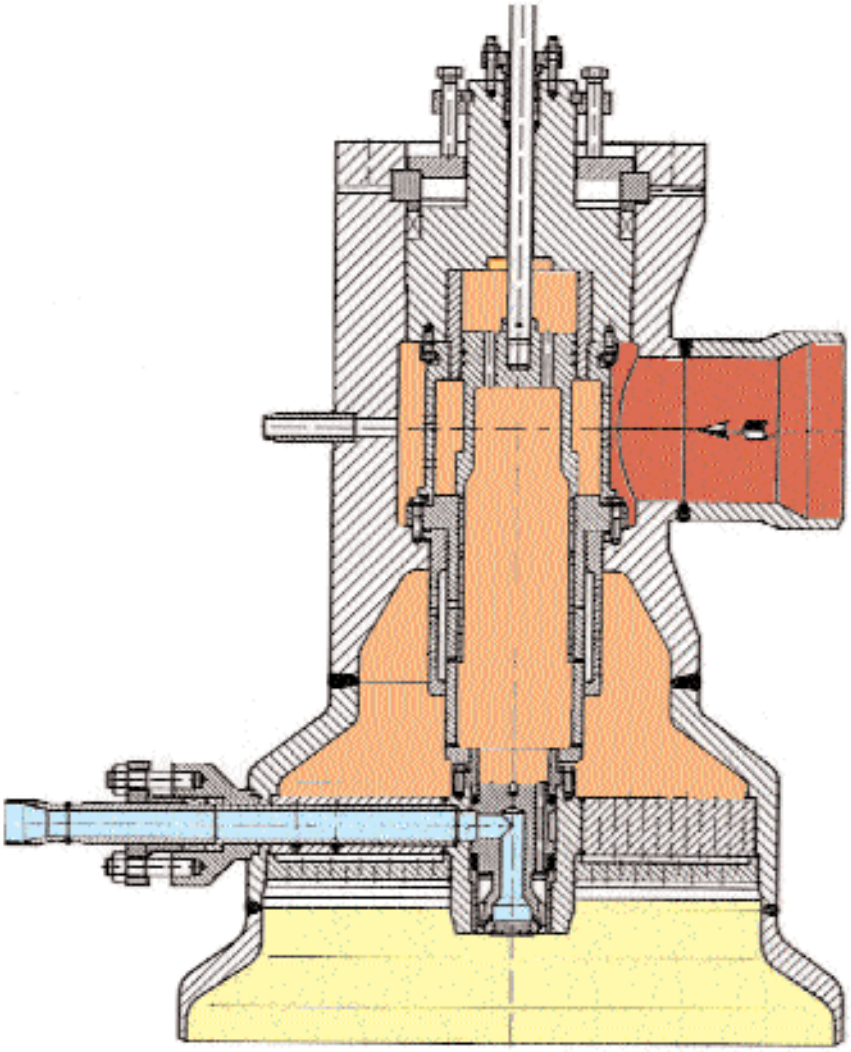

Steam Conditioning Valve - Steam Assist (SCV-SA)

When severe or unusual requirements dictate the need for a different cooling solution, an integrated atomizing system can be implemented in the SCV-SA. This design utilizes the kinetic energy present in the flowing steam to assist efficient droplet dispersal and evaporation.

Conditions requiring an integrated atomizing system include:

- Steam cooling close to the saturation temperature
- High water/steam ratio (greater than or equal to high temperature drop)
- High steam flows
- Available cooling water pressure is less than half the steam pressure

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Data Sheet for steam conditioning system

Date: _____

Customer: _____ Name: _____

Address: _____ Telephone: _____

Inquiry No. / Order No.: _____ Telefax: _____

Quantity: _____ Item No.: _____ Tag No.: _____

Valve Description: _____

Layout Data	Inlet		Outlet		
Design pressure					PSIG
Design temperature					°F
Piping diameter					in.
Piping Material					
Pressure rating					lbs
End connections					RF/BW

Process Data	Minimum	Normal	Maximum	
Main Steam Flow W1				lbs/hr.
Main Steam Flow W2				lbs/hr.
Inlet Steam Pressure P1				PSIG
Desired outlet Steam Pressure P2				PSIG
Inlet Steam Temperature T1				°F
Desired Outlet Steam Temperature T2				°F

Conditions of available cooling water

Water Pressure PW _____ PSIG

Temperature TW _____ °F

Valve type: ☐ globe ☐ angle ☐ Z - type

Valve Characteristic: ☐ linear ☐ equal percentage ☐ square

Leakage Class: ☐ II ☐ III ☐ IV ☐ V ☐ VI

Selection of actuation system

Positions of valve on supply failure ☐ closed ☐ open ☐ fixed

Actuating time control ___ s/stroke quick opening ___s quick closing ___ s

☐ p actuator max. _____

pneumatic

Air pressure _____ PSI

☐ Handwheel

☐ Positioner pneum _____ mA

☐ Positioner E/P _____ PSI

☐ Transmitter

☐ Air set

☐ Limit switches Quanitity _____

☐ Solenoid valve

☐ Ex - protection

tubing ☐ CU ☐ SS

electric

Manufacturer _____

Type _____

Voltage _____ V

Frequency _____ Hz

☐ Torque Switch Quantity _____

☐ Travel Switch Quantity _____

☐ Transmitter

☐ Positioner

☐ Ex - protection

hydraulic

Type

☐ Cylinder with hydraulic power pack

☐ Compact unit

Voltage _____ V

Frequency _____ Hz

☐ Handweel ☐ Handpump

☐ Limit switches

☐ Transmitter

☐ Ex - protection

Terms of delivery

☐ EN 1349 ☐ ASME B 16.34 ☐ _____

Documentation / test certificate

☐ Pressure - Equipment Directive 97/23/EC ☐ _____

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