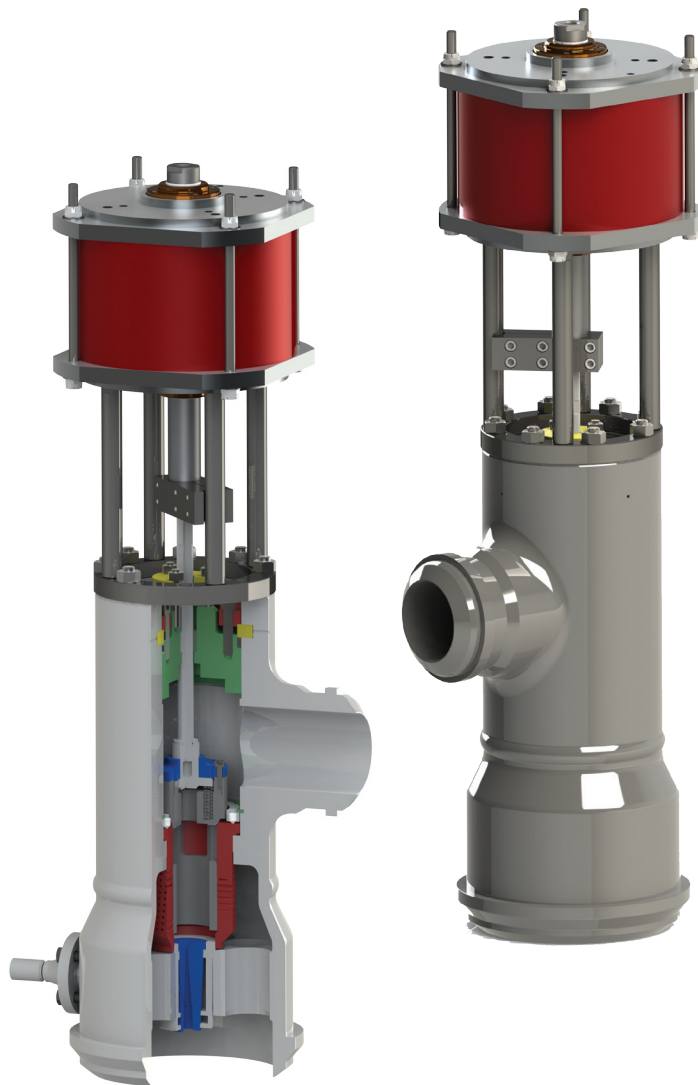


# Aeroflow SCV

Steam Control | Steam Conditioning | Turbine Bypass Valve

High Performance in a Competitive Package

- > ZERO Leak Technology
- > Non-Binding Trim Design
- > Quick, Easy Maintenance



Leslie Controls

# Product Information

For OEM's, EPC firms, and Power and Industrial Energy Producers who need a cost effective, reliable performing Turbine Bypass and/or Steam Conditioning valve solution, the Aeroflow SCV is a Severe Service Control Valve System that minimizes end user ownership and installed cost. Unlike other leading severe service valve suppliers, the Aeroflow SCV product offers zero leakage, steam assisted desuperheating and multiple actuation options in a competitive package.



## Key Target Applications – Steam Control

The Aeroflow SCV is well suited for a variety of severe service applications:

- > **Steam Vent** - Diverts steam from steam header to atmosphere during startup or upset condition. This requires ZERO leakage tight shutoff.
- > **Auxillary Steam** - Controls steam pressure for downstream header. Typically continuous modulation.
- > **Soot Blower** - Uses steam to remove soot from the boiler tubes to increase thermal efficiencies. This application is usually closed and sees rapid load swings. ZERO leakage tight shutoff is required.

## Key Target Applications – Steam Conditioning/Turbine Bypass

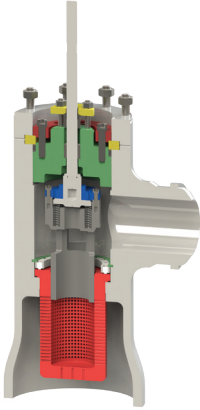
- > **Steam Conditioning** - Precisely and continuously controls steam pressure and temperature.
- > **Turbine Bypass** - Diverts steam from the turbine to the next level steam header, or condenser. This application sees high pressure drop and thermal shocks, requiring tight shutoff with fast response. Startup conditions require special trim for cold start requirements.

# Aeroflow SCV Model Options

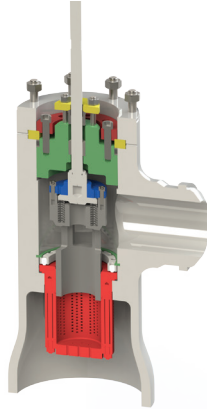
The Next Generation Aeroflow SCV offers six models; two for Steam Control, two with our Laval Nozzle using steam assisted desuperheating, and two utilizing a spray ring header for desuperheating. All models offer ZERO leakage.

Steam Control Valve

**Drilled Hole Cage**  
Aeroflow SCV-C



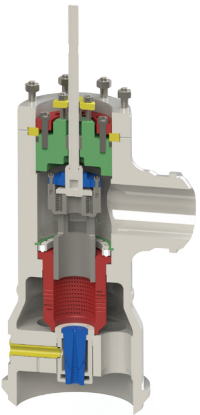
**Disk Stack Cage**  
Aeroflow SCV-D



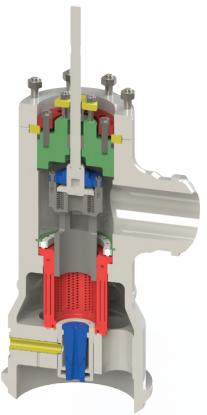
The Aeroflow Steam Control Valve offers superior performance in a smaller package, utilizing a pressure seal bonnet. The Aeroflow SCV is available with a drilled cage (SCV-C) or a disk stack trim (SCV-D). The Aeroflow Steam Control Valve is the platform utilized for our Steam Conditioning models. Decades of demonstrated performance is now incorporated into this next generation Aeroflow, which features a hung cage, protected seat, pilot balanced trim and ZERO leak technology.

Steam Assist

Aeroflow SCV-LC



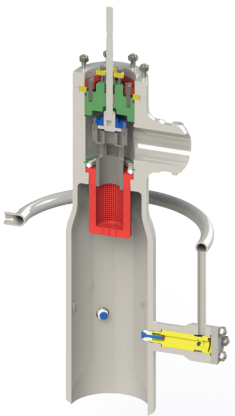
Aeroflow SCV-LD



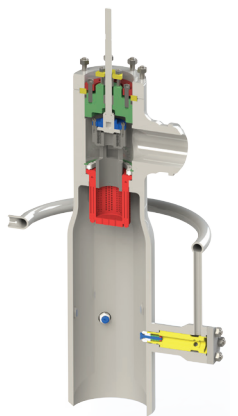
The Aeroflow Steam Assist Desuperheating models (SCV-LC/LD) utilize the features of the Aeroflow Steam Control valve with the addition of a Laval Nozzle. The Laval Nozzle atomizes attemperating spray water by using steam assist technology. The performance benefit is excellent controllability and rangeability with final temperature met immediately downstream of the desuperheater (within 3 pipe diameters). The installed cost is lower due to requiring very short run of special desuperheater piping.

Spray Ring Header

Aeroflow SCV-RC



Aeroflow SCV-RD



The Aeroflow Steam Conditioning Spray Ring Header models (SCV-RC/RD) utilize the features of the Aeroflow Steam Control Valve with a traditional attemperator solution, which is customized for application requirements. The performance benefit is good controllability and rangeability with final temperature met within 10 pipe diameters. The spray ring portion can also be used as a stand-alone unit for attemperation when pressure reduction is not needed.

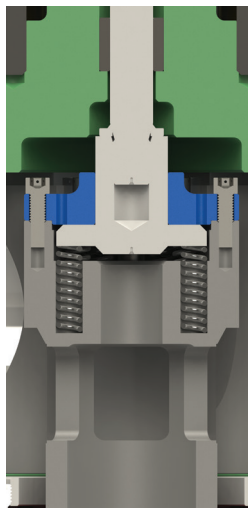
# Aeroflow SCV Features & Benefits

## ZERO Leak Technology

No steam leakage. No wasted energy. Eliminating valve leakage helps increase the life of the valve and surrounding equipment, all while increasing the overall efficiency of the facility. The Aeroflow SCV is the only valve on the market with ZERO leakage (less than one drop per minute at rated differential pressure), tighter than Class VI shutoff.

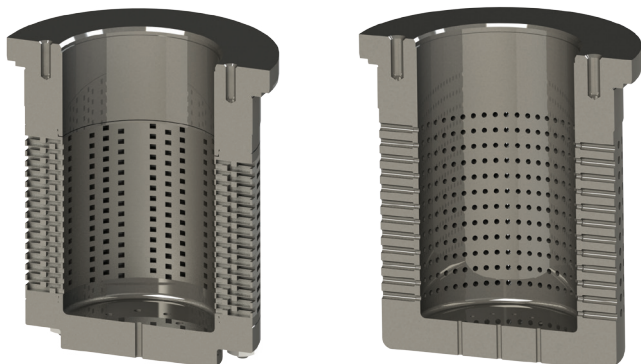
## Pilot Balanced Plug

The Pilot Balanced trim design offers the excellent shutoff properties of an unbalanced design, and conserves actuator thrust as a balanced design.



## Noise / Vibration Control at Start Up

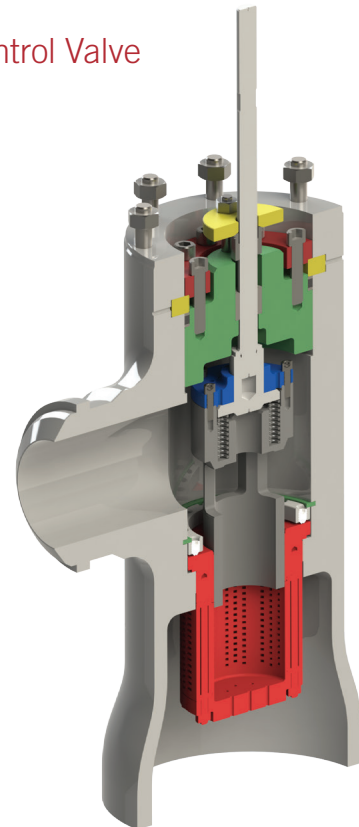
Most SCV/TBV valves have undesirable high vibration and noise at startup. These conditions are unpleasant and can cause damage to the valve. The Aeroflow SCV reduces the vibration and noise with characterized trim for startup mode. The trim options allow for noise control at startup with less vibration, all while extending trim life.



## Protected Seat Design

The Aeroflow SCV has a unique protected seat configuration. As the valve begins to open, the main sealing surfaces have separated, but flow does not start until the secondary seat opens. This keeps high velocity flow from eroding or wire drawing the precision machined surfaces of the primary seat which reduces maintenance and extending the life of the valve.

## Steam Control Valve



## Controllability

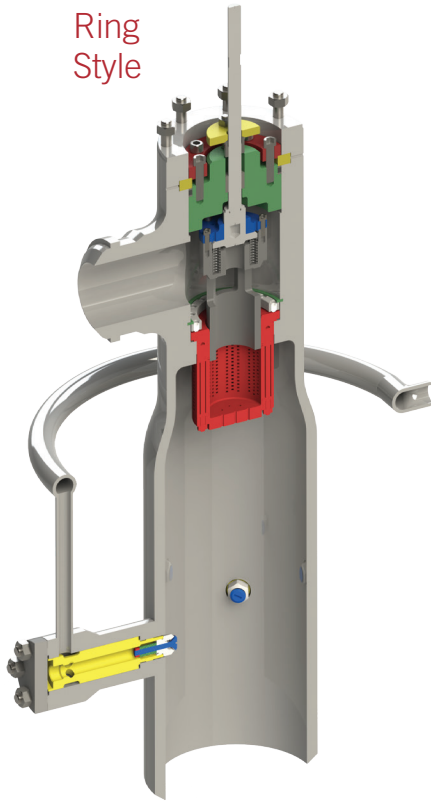
Excellent controllability with high rangeability is vital for severe service valves. The ability for wide range of control from cold startup through full flow is crucial for plant efficiency and longer life of valve assets. The Aeroflow SCV improves controllability at cold startup conditions.

# Aeroflow SCV Features & Benefits

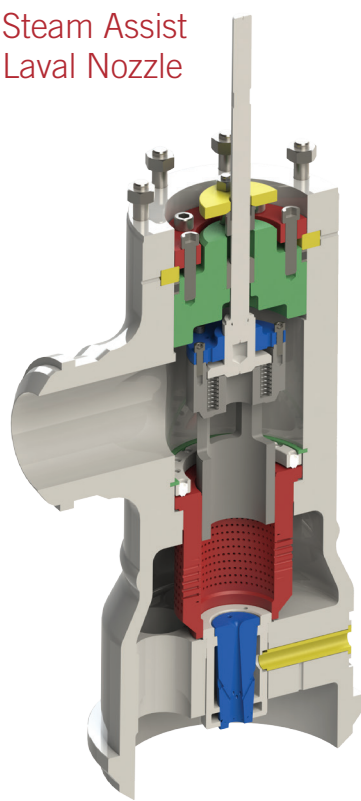
## Pneumatic Quick Stroke Actuation

There are many options when it comes to actuation, including: Pneumatic, Electric, and Hydraulic. The Aeroflow SCV offers a pneumatic actuator that modulates in less than two seconds and trips in less than one second, all in a cleaner, lower cost package. Hydraulic & Electric actuation are easily engineered to specifications.

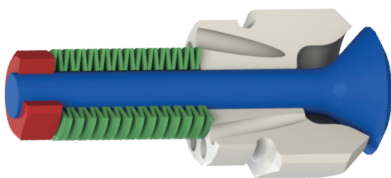
Ring Style



Steam Assist Laval Nozzle



Spray Nozzle with Belleville Washer

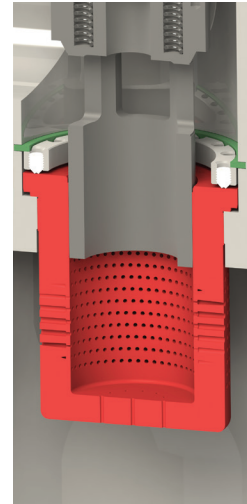


Laval Nozzle with Spray



## Non-Binding Trim Design

The Aeroflow SCV has a hung cage, which eliminates the sticking of trim often experienced in many valve applications due to thermal expansion that occurs with high temperature swings.



## Quick, Easy Maintenance

Reducing downtime and maintenance is critical in any facility. The ability to quickly disassemble and reassemble a valve during an outage is a major benefit. With proper training, the Aeroflow SCV can be disassembled and reassembled in the same day. This equals a reduction in your maintenance hours, and will have the equipment back to where it should be... operating.

## Steam Assist Models

Reducing expensive downstream piping is a major benefit for customers. The Aeroflow SCV's steam assist laval nozzle option requires shorter downstream pipe length (within 3 pipe diameters) to realize full attemperation. Our steam atomization technology results in lower cost of expensive downstream piping. A spray ring desuperheater is available as an option.

# Aeroflow SCV Specifications

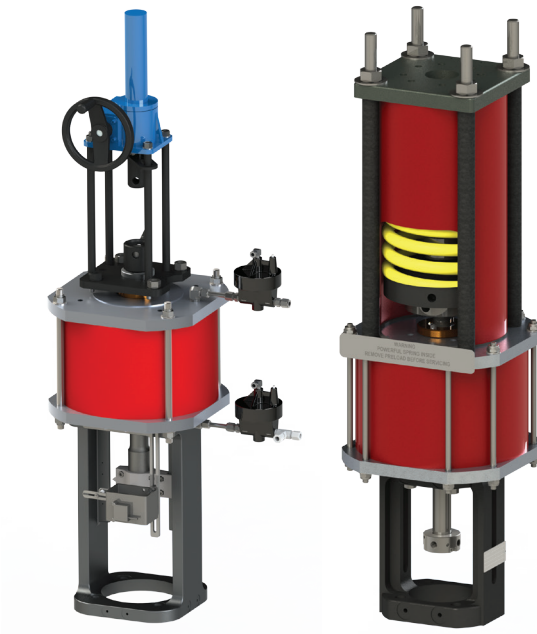
Body Assembly..... Welded Forged Components; Angle Pattern  
 Bonnet..... Pressure Seal, Top Loaded >600#, Bolted <600#  
 Plug Type..... Pilot Balanced w/ Helical Pilot Springs  
 Seat / Cage Type..... Drilled Hole (1 to 3 Stages Modulating) or Disc Stack (2 to 24 stages); Load Ring Retained (Serviceable)  
 Packing Type..... Braided Teflon Graphite or Laminated Graphite  
 Flow Characteristic..... Linear, Equal Percent, Modified Equal Percent, Modified Linear, or Customer Specified  
 End Connections..... Butt Weld (All Sizes), Socket Weld (2" only), RFF (All Sizes up to ANSI 2500), RTJ (All Sizes up to ANSI 2500)  
 Water Injection..... Steam-Assist de Laval Nozzle or Multi-Nozzle Ring Header  
 Plug Sizes..... 2" to 30"  
 Inlet Sizes..... 2" to 30"  
 Outlet Sizes..... 4" to 48"  
 ANSI Class..... 150 to 4500, Dual Rated, Job Rated  
 Leakage Class..... ANSI/ISA 70-02, MSS SP61, Class V or Leslie ZERO LEAKAGE  
 Cv..... 20 to 10,000  
 Differential Pressure..... 20 to 10,000 PSIG (Water or Steam)  
 Warming Loop..... Single Manual Ball Valve, ABV, Double Block and Bleed Flanged, or per Customer Specification  
 Actuation..... Double Acting Pneumatic Piston (Electric, Electro-Hydraulic, and Hydraulic Available)  
 Stroke Time..... <1 sec to >10 sec  
 Travel..... 4" to 18"  
 Failure Mode..... Remote Pneumatic Tank or Mechanical Spring  
 Controls..... HART, Foundation Fieldbus, 4-20ma, 3-15PSIG, or Customer Specified  
 Certifications..... CRN, PED, IBR, Customer Specified

	Item	Material Spec			
		Temp Range	0-800°F	0-1100°F	0-1100°F
Main Valve Components	Body Weldment	A105	A182 Gr F11 Cl 2	A182 Gr F22 Cl 3	A182 Gr F91
	Bonnet	A105	A182 Gr F11 Cl 2	A182 Gr F22 Cl 3	A182 Gr F91
	Segment Ring	A105	A182 Gr F11 Cl 2	A182 Gr F22 Cl 3	A182 Gr F91
	Packing Flange	Type 303 Stainless Steel			
	Seat Ring/Cage	Type 440C Stainless Steel	F22 / Stellite 12		
	Disc Stack	Type 420 Stainless Steel	Inconel 718		
	Stem	Type 416 Stainless Steel	Inconel 718		
	Pilot Plug	Type 431 Stainless Steel	Inconel 718		
	Main Plug	Type 420 Stainless Steel	F22 / Stellite 6		
	Nozzle	Type 316 Stainless Steel			
Soft Goods	Pressure Seal	Laminated Graphite			
	Seat O-Ring	Inconel X-718			
	Water O-Ring	Inconel X-718			
Fasteners	Bonnet Load Bolts	A193 Gr B7	A193 Gr B16	A193 Gr B16	A193 Gr B8M

# Actuator Offerings

## Piston Actuator

The Aeroflow SCV is available with a powerful piston actuator. This actuator provides high thrust for its size by taking advantage of higher air supply pressures. The piston actuator offers precise performance, long stroke capability, and stiffness that effectively buffers high fluid dynamic forces experienced in more extreme flow conditions. Standard positioners and a variety of accessories cleanly mount on this actuator.



## Electric Actuator

Electric Actuators can be offered with different torque, speed and voltage requirements based on specification.

## Hydraulic Actuator

Hydraulic Actuation can be offered for high force applications or when specified by the customer.

Features	Advantages	Benefits
ZERO leakage	No Steam Leakage	No wasted energy, Reduced maintenance on valve internals
Steam Assist Model	Shorter downstream pipe length to realize full attemperation	Lower cost of expensive downstream piping
Excellent controllability (< 2% resolution) with high rangeability (> 50:1)	Ability for wide range of control from cold startup through full flow	Longer life of valve assets
Noise / vibration control at startup	Characterized trim for startup mode	Longer life of valve assets
Improved reparability features	Ability to disassemble valve in less than 2 hours	Reduced maintenance hours
Protected Seat Design	Protects the main seating surface	Longer trim life, Reduced Maintenance
Pilot Balanced Plug	Conserves Actuation Thrust	Smaller actuation needed
Hung Cage Design	Eliminates sticking, No issue with Thermal expansion	Minimize downtime, reduced maintenance costs



CIRCOR Energy is a global manufacturer of highly engineered valves, fittings, pipeline and associated products for general, critical and severe service applications in the Oil & Gas, Power Generation and Process Industry markets. CIRCOR Energy continuously develops precision technologies to improve our customers' ability to control the flow of the world's natural resources.

Continuously Improving Flow Control. Worldwide.

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