

Valve controllers for Phoenix Controls medium-pressure shut-off venturi valves are determined by the Control Type:

- Celeris® valve controllers for low-speed electric applications.
- Celeris® valve controller for high-speed electric applications only.

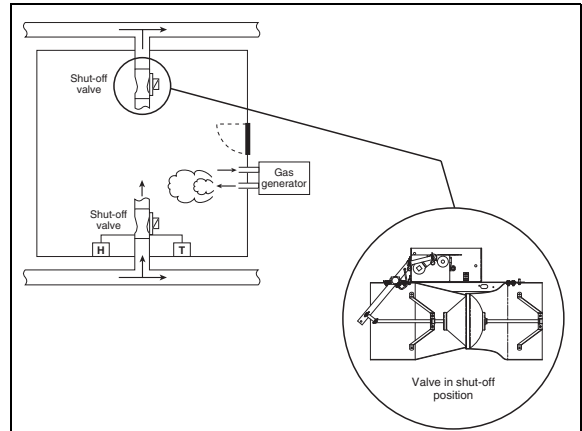
Medium-pressure shut-off valves are available in two valve designs: standard (Design S) and lower leakage (Design L). Both designs are intended for use in critical airflow applications, where isolating the HVAC system from the room is necessary.

Under normal operation, a shut-off valve provides the critical airflow control performance demanded by a modern research facility. In the shut-off mode, it provides isolation of the HVAC system from the room. A typical application example is a laboratory research building space using gaseous biodecontamination.

FEATURES

- All valves include a pressure-independent assembly, factory-calibrated position controller.
- The shut-off sequence can be initiated either locally through a universal input or remotely via the Celeris network.
- The valve can function as a standalone device or in a fully integrated system.
- Celeris valve controllers provide room pressurization, temperature, humidity, occupancy and emergency control functions.
- Precise airflow control - the factory-calibrated flow rate controller performs accurately throughout its operating range.
- Self-balancing pressure-independent operation - the valve maintains the airflow set point by compensating automatically for static pressure fluctuations in the system.

See the following page for more Feature details.



Typical Room Setup for Biodecontamination

OSHPD Certified

This device is certified for OSHPD Seismic Certification Preapproval per 2013 CBC, 2012 IBC, ASCE 7-10, and IEC-ES-AC-156. OSHPD Special Certification number OSP-0290-10.

NVLAP Accreditation

All venturi valves are characterized on NVLAP Accredited Airstations, Lab Code 200992-0. NVLAP is administered by the National Institute of Standards and Technology (NIST).

ISO

Phoenix Controls Designs, Develops, Manufactures, and sells products, systems, and service to control the environment and airflow of critical spaces. Phoenix Controls is registered to ISO 9001:2015.

Warranty

Phoenix Controls Warrants all venturi valves against defects in material and workmanship for a period of 5 years. In addition, all other equipment manufactured by Phoenix Controls, such as sash sensors, fume hood displays, and equipment supplied but not manufactured by Phoenix Controls is covered by a 3 year warranty.

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FEATURES

FEATURE	Control Type			
	H	I	L	M
Actuator type	Low-speed electric	Low-speed electric	Low-speed electric	High-speed electric
Response Time	< 1.5 min	< 1.5 min*	< 50 sec	< 1 sec
Flow feedback signal	✓	✓	✓	✓
Fail-Safe	Last Position	Last Position	Last Position	NO/NC/Last Position
Shut-off function	✓	✓	✓	✓
Shut-off mode activation	Local UI or remote via Celeris network	Local UI or remote via Celeris network	Local UI or remote via Celeris network	Local UI or remote via Celeris network
Factory-insulated valve body (supply)	✓	✓	✓	✓
Field-adjustable flow	✓	✓	✓	✓
Flow alarm via feedback circuit	✓	✓	✓	✓
Flow alarm via pressure switch	Option	Option	Option	Option**
Low noise diffuser construction†	†✓	†✓	†✓	†✓

All valves include a pressure-independent assembly and factory-calibrated position controller.
 †Phoenix Controls venturi valves are designed to reduce sound over all frequencies, but significantly target the lower bands (125-500 Hz) to help eliminate the need for silencers.
 *Except dual 14": 120 seconds.
 ** Mandatory for fume hood applications.

SPECIFICATIONS

Construction (Standard Shut-off Design S)

- 16 ga. spun aluminum valve body with continuous welded seam
- Valve bodies available as uncoated aluminum or with corrosion-resistant baked phenolic coatings
- Composite Teflon® shaft bearings
- Spring grade stainless steel spring and polyester or PPS slider assembly
- Supply valves insulated with 3/8 (9.5 mm) flexible closed-cell polymer-based foam. Flame/smoke rating 25/50. Density 1.5 lb/ft³ (24.0 kg/m³).

Construction (Low-leakage Shut-off Design L)

- Same construction as S Valve Design
- Cone gasket material in Class A, Class B, and Class C is Viton
- Seal wheel material is polypropylene

Operating Range

- 32-122 °F (0-50 °C) ambient
- 10-90% non-condensing RH

Performance

- Pressure independent over a 0.6" - 3.0" WC (150 - 750 Pa) drop across valve.
- Volume control accurate to ±5% of airflow command signal throughout normal operating range.
- No additional straight duct runs needed before or after valve.
- Available in flows from 35 - 2600 CFM (60 - 2888 m³/hr).
- Response time to change in command signal:
 - < 1 second: Control Type M
 - < 50 seconds: Control Type L
 - < 1.5 minute: Control Type H (with 60 Hz power) and I (except dual 14")
 - < / = 2.5 minutes: Control Type I on dual 14"
- Response time to change in duct static pressure: <1 second.
- Shut-off leakage: See charts on pages 3 through 4.

Power

- 24 Vac (±15%) @ 50/60 Hz

Power Consumption

Singles/Dual *per valve*. All power consumption VA ratings listed here are based on fully-loaded I/O.

- Low-speed Electric (Control Type H, I, and L): 10 VA

- High-speed Electric (Control Type M): 70 VA

VAV Controller

I/O:

- 3 universal inputs. Accepts volt, mA, ohms or NTC 2 or 3 thermistor signals.
- 1 digital input
- 2 analog outputs. Provides volt or mA signals.
- 1 digital output (Type C, 1 amp @ 24 Vac/Vdc)
- Input accuracy
 - Voltage, current, resistance: ±1% full scale
- Output accuracy
 - 0 to 10 Vdc: ±1% full scale into 10 kΩ minimum
 - 4 to 20 mA: ±1% full scale into 500 Ω +0/-50 Ω

Room-Level Communications

FTT-10, 78 KB, bus topology, LonTalk™ network

Building-Level Communications:

TP-1250, 1.2 MB, bus or tiered topology, LonTalk™ network

Regulatory Compliance



- RoHS
- FCC

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

 1. This device may not cause harmful interference.
 2. This device must accept any interference received, including interference that may cause undesired operation.
- EU Contact Address:

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Teflon is a registered trademark of DuPont Company.
 LonWorks is a registered trademark of Echelon Corporation.

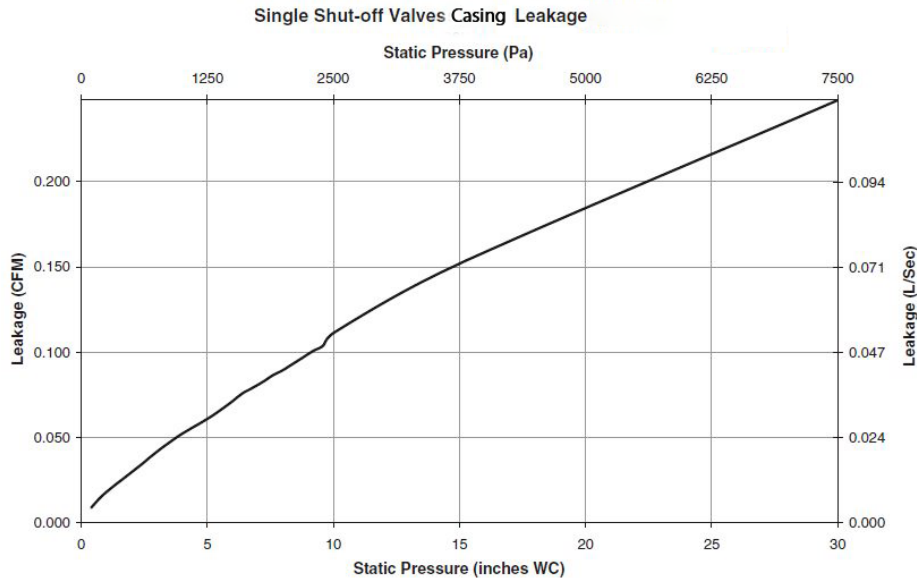
SHUT-OFF LEAKAGE PERFORMANCE

In the following graphs, the term *shut-off leakage* refers to the expected airflow through the valve in the shut-off position. The term *casing leakage* refers to the expected airflow through the penetrations of the valve body.

Note:

- Leakage data has been provided for pressures of 5", 10" and 30". These pressures are for reference only and were recorded during leak rate testing. For details, see the following graphs.
- System pressure for valve operation shall be as specified in the Ordering Guide, Flow/Pressure Operating Range Table, 0.6"- 3.0" WC on page 6.

Casing Leakage: Shut-off Valves (Designs S and L)



Note:

- Leakage rates shown in this graph are for all four valve sizes: 8-, 10-, 12-, and 14-inch.
- Exceeds Eurovent Class A, B, C and D specifications (Eurovent Committee of Air Handling and Equipment Manufacturers) when valve duct surface areas are taken into account.
- Design S leakage rates are for all four valve sizes (8", 10", 12", 14").
- Design L leakage rates are for 8-, 10-, and 12-inch valves only. A 14-inch low-leakage valve is not available at this time.

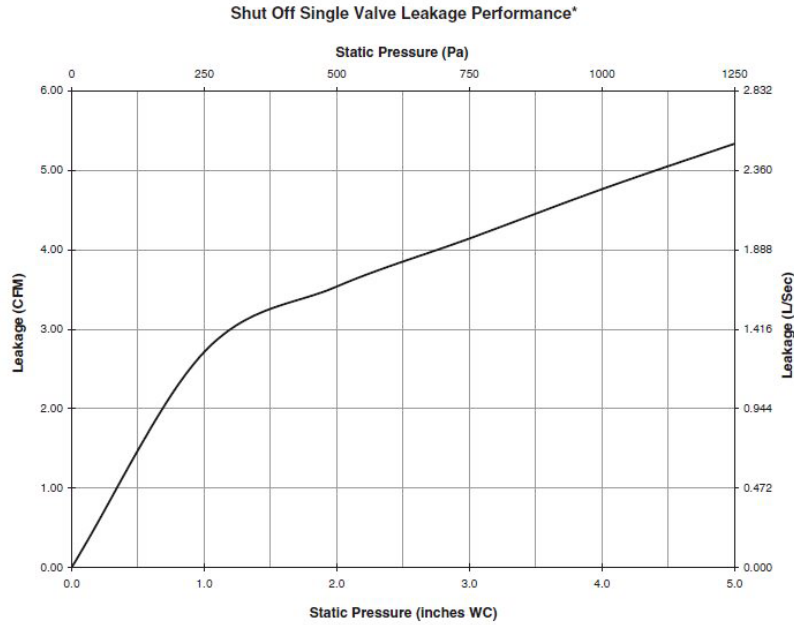
To calculate leakage areas that take into account valve and duct area, use the *Casing Leakage* graph above and the *Valve Area Specifications* table below. Select the valve leakage at the appropriate design pressure and the related valve area from the table and perform the calculation as in the following example:

$$\text{Leakage Specification} = \text{Leakage} / \text{Valve Area} = 0.150 \text{ CFM} / 3.60 \text{ ft}^2 = 0.42 \text{ CFM per ft}^2$$

Valve Area Specifications

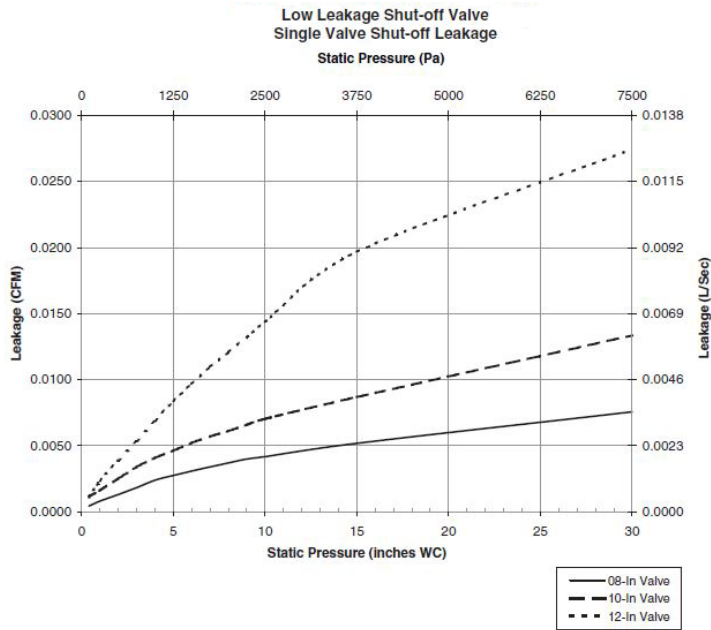
Valve Size	Area (ft ²)	Area (m ²)
8-inch	3.60	0.33
10-inch	4.26	0.40
12-inch	6.28	0.58
14-inch	8.52	0.79

Shut-off Leakage: Standard Shut-off Valve (Design S)



Note: Leakage rates shown in this graph are for all four valve sizes: 8, 10, 12, and 14-inch.

Shut-off Leakage: Low Leakage Shut-off Valve (Design L)



LOW-LEAKAGE SHUT-OFF VALVE

The Low-leakage Shut-off Valve accommodates applications requiring a near bubble-tight ventilation system for critical environments, needing emergency isolation or gaseous biodecontamination. This valve has been tested with ASME N510's pressure decay method.*

In many projects, the duct volume entering and exiting these critical spaces must be leak tested to ensure they are truly isolated. Most governing standards consider an acceptable leakage rate from 0.1 to 0.2% of volume per minute of the duct volume at a given pressure. The Low-leakage Shut-off Valve contributes minimally to the overall volume tested. This insignificant leakage volume, combined with the valve's ability to control airflow precisely and compensate instantly to changes in pressure, makes the Low-leakage Shut-off Valve the ideal choice for these critical applications.

* Source: American Society of Mechanical Engineers (ASME), *ASME N510, Testing of Nuclear Air-Treatment Systems*, 1989 (reaffirmed 1995).

RECOMMENDED VALVE CONSTRUCTION FOR DECONTAMINATION

Gaseous Decontamination Agent	Recommended Valve Construction
Hydrogen peroxide vapor	A
Ethylene oxide	B
Ammonium chloride	A
Chlorine dioxide	A**
Paraformaldehyde	A
Note: -See Ordering Guide > Valve Construction for details about these construction codes. -Chemical resistance data acquired from Compass Corrosion Guide. -**For concentrations up to 800 ppm. To achieve higher concentrations during decontamination use Construction B valves.	

ORDERING GUIDE

MAVA 1 12 M - S ME H O - PSL

VALVE FAMILY

EXV = Celeris exhaust valve
 MAV = Celeris supply valve (comes standard with insulation)

VALVE CONSTRUCTION

A = Body and cone uncoated aluminum; uncoated 316 stainless steel shaft
 B = Body and cone with baked-on phenolic coating; PFA-coated 316 stainless steel shaft
 C = Body and cone with baked-on phenolic coating; hardware with titanium or baked-on epoxy phenolic coating; PFA-coated 316 stainless steel shaft

NUMBER OF VALVE BODIES

F = Single valve body with welded circular flanges
 1 = One valve body no flange
 2 = Two valve bodies as one unit (dual); 10", 12", and 14" valves only

VALVE SIZE

08 = 8" valve (7.88"/200 mm actual diameter); see Note 1
 10 = 10" valve (9.67"/246 mm actual diameter)
 12 = 12" valve (11.84"/301 mm actual diameter)
 14 = 14" valve (13.88"/353mm actual diameter); see Note 2

FLOW/PRESSURE OPERATING RANGE

See Flow/Pressure Operating Range table below.

M = Medium pressure operation; pressure independent over a range of 0.6 to 3.0" WC (150 to 750 Pa), associated pressure switch trips at 0.3" WC

VALVE DESIGN

S = Standard shut-off valve (metal-on-metal seal); see Note 1
 L = Low leakage shut-off valve (gasketed seal); see Notes 1, 2

VALVE OPTIONS

EVI = Exhaust valve with insulation blocks and insulation
 IBO = Insulation blocks only, no insulation
 PSL = Pressure switch, low limit
 REI = Remote electronics - indoor applications only; see Note 5
 WRE = Weather resistant electronics - outdoor applications, electric actuation only; see Note 4
 SFB = Square flanges on both ends of bodies = 1
 SFD = Single square flange on discharge of bodies = 1 (supply or exhaust)
 SFI = Single square flange on inlet of bodies = 1 (supply or exhaust)

FAIL-SAFE POSITION

C = Normally closed
 O = Normally opened
 Z = Fails to last position

VALVE ORIENTATION

H = Horizontal
 U = Vertical upflow
 D = Vertical downflow

VALVE CONTROLLER DESIGNATION

E = Electronic controller
 H = Hood exhaust valve with pressure switch; see Note 3

CONTROL TYPE

Pneumatic actuation is not available on standard or low-leakage shut-off valves
 H = Rotary, low-speed electric actuator; NEMA 1; on single 8", 10", and 12" only
 I = Rotary, low-speed electric actuator; IP54
 L = Linear, low-speed electric actuator; IP56
 M = Linear, high-speed electric actuator; IP56

FLOW/PRESSURE OPERATING RANGE FOR SHUT-OFF VALVE DESIGNS S AND L

Designation	Size	Operating Range in CFM (m3/hr)		Pressure Drop Across Valve
		Single	Dual	
M = Medium Pressure	08"	35-600 (60-1015)	—	0.6-3.0" WC (150-750 Pa)
	10"	50-850 (85-1440)	100-1700 (170-2880)	
	12"	90-1300 (155-2205)	180-2600 (310-4410)	
	14"	200-1600 (340-2715)	400-3200 (680-5430)	

NOTES:

- 8-inch shut-off valves (Design = S or L) are only available as uncoated (Construction = A).
- 14-inch valves are not available as low-leakage shut-off (Design = L).
- Celeris Hood valves cannot have low-speed actuators (Control Type = H, I, and L).
- Option REI: Remote Electronics, Indoor installations ONLY. The distance to the valve controller is limited to:
 - 40 inches (1 meter) of 18 gauge cable for high-speed electric actuators (Control Type = M).
 - 150 feet (45.7 meters) of 22 gauge cable for low-speed electric actuators (Control Type = H, I, and L).
- Option WRE: Weather Resistant Electronics, outdoor installations. Applies to ELECTRICALLY actuated valves with sufficient IP ratings only. HORIZONTAL orientation ONLY.
 - Must be ordered with IP54 or IP56 rated actuators: Control Types I or M, or L, respectively.
 - Includes sealed Vpot and large weather-resistant IP65 box mounted on base channel that houses the controller and all electric connections to/from it.
 - REQUIRES use of a dog house enclosure, provided by others, to protect valve from the elements and maintain temperature and humidity conditions within Phoenix specifications.