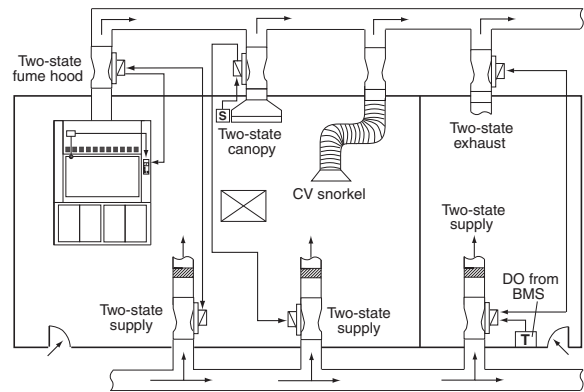


Phoenix Controls constant volume, two position, and base upgradeable Low Pressure Accel II valves provide essential airflow control solutions.

Constant volume (CV)—Constant volume controllers (C) are typically used for snorkels, biosafety cabinets, CV fume hoods, ventilated cabinets and outside air regulation.

Two-Position—Pneumatic controllers (P) are typically used for canopy hoods and two-position fume hoods. Base upgradeable controllers (B) can be substituted when flow feedback is required or upgradability to VAV is desired.



SPECIFICATIONS

Construction

- 16 ga. spun aluminum valve body with continuous welded seam
- Valve bodies available as uncoated aluminum; or with corrosion-resistant baked-on phenolic coating, or PVDF (Polyvinylidene fluoride) coating
- 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 is 1.5 lb/ft³ (24.0 kg/m³)

Operating Range

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

Sound

Designed for low sound power levels to meet or exceed ASHRAE noise guidelines.

Performance

- Pressure independent over a 0.3"-3.0" WC (75-750 Pa) across valve
- Pressure independent airflow accuracy to ± 5% of airflow feedback signal
- No additional straight duct runs needed before or after valve
- Available in flows from 35-5600 CFM (9514 m³/hr)
- Response time to change in duct static pressure: <1 second

Pneumatic Actuation

- Only applicable to PEV, PSV and BEV/BSV
- 20 psi (-0/+2 psi) with a 20 micron filter main air required
- Compressor sizing: Accel II Valves are not continuous air-consuming devices. For compressor sizing, use:
 - single and dual valves: 10 scim
 - triple and quad valves: 20 scim

Electric Actuation

Control Types I and Z only

- Single I: 24 Vac ± 20% or 24 Vdc ± 10%, 50/60 Hz @ 4 VA
- Dual I: 24 Vac ± 20% or 24 Vdc ± 10%, 50/60 Hz @ 5.5 VA
- Single and Dual Z: 24 Vac ± 20% or 24 Vdc ± 10%, 50/60 Hz @ 5 VA

Flow Feedback Card

Mounting

The flow feedback card is factory installed in a ABS flame retardant black box enclosure.

Enclosure (Valve Controller Designation F)

- Dimensions: 6 x 3.2 x 1.9 inches
- Color: Black

Power

- ±15 Vdc, ± 15%, 35 mA
- Or
- 24 Vac, ± 15%, 50/60 Hz, 1.5 VA



See wiring diagrams

Teflon is a registered trademark of DuPont Company.

FEATURES

Feature/Option	Constant Volume (CEV/CSV)	Two-Position (PEV/PSV)	Base Upgradeable (BEV/BSV)
Control Type	C Constant Volume	Pneumatic	B Base Upgradeable
Actuator Type	—	Pneumatic	Pneumatic or CV
Flow Feedback Signal	—	—	Option*
Fail-Safe	Fixed	NO/NC	NO/NC**
Factory Insulated Supply Valve Body	Option	X	X
Field-Adjustable Flow	X	X	X
Flow Alarm via Feedback Circuit	—	—	—
Flow Alarm via Pressure Switch	Option	Option	Option
Low Noise Diffuser Construction	X	X	X

All valves include pressure-independent controller.

+ Accel II 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.

* Not available with the 14-inch valve at this time.

** Fixed fail-safe for CV actuation.

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ORDERING GUIDE

BSV A 1 10 L - A B F H C - PSL

VALVE FAMILY

Note: Supply valves come standard with insulation.

- CSV = Constant volume supply valve
- CEV = Constant volume exhaust valve
- PSV = Pneumatic supply valve (no feedback)
- PEV = Pneumatic exhaust valve (no feedback)
- BSV = Base upgradable supply valve
- BEV = Basic upgradable exhaust valve;

VALVE CONSTRUCTION

- A = Body and cone uncoated aluminum; uncoated 316 stainless steel shaft
- B = Body and cone with baked phenolic coating, PFA-coated 316 stainless steel shaft
- C = Body and cone with baked-on phenolic coating, hardware with titanium or baked-on phenolic coating, PFA-coated 316 stainless steel shaft
- D = Body and cone with a PVDF-coating, hardware with baked-on corrosion-resistant epoxy phenolic coating or PVDF-coating, and a PFA-coated 316 stainless steel shaft; only available for 8-, 10-, and 12-inch Design A single-body valves no flanges

NUMBER OF VALVE BODIES

see Note 1

- F = Single valve with a welded circular flange
- 1 = One valve body, no flange
- 2 = Two valve bodies (dual); for PxV and BxV - only 10" and 12" valves
- 3 = Three valve bodies (triple); for PxV and BxV - only 12" valves
- 4 = Four valve bodies (quad); for PxV and BxV - only 12" valves

VALVE SIZE

- 08 = 8" valve (7.88"/200mm actual diameter)
- 10 = 10" valve (9.67"/246mm actual diameter)
- 12 = 12" valve (11.84"/301mm actual diameter)
- 14 = 14" valve (13.88"/352mm actual diameter); see Notes 1, 6

FLOW/PRESSURE OPERATING RANGE

L = Low pressure operation; pressure independent over a range of 0.3 to 3.0" WC (75 to 750 Pa), associated pressure switch trips at 0.2" WC
See Standard Valve Flow/Pressure Operating Range table below

VALVE DESIGN

- A = Conical shape diffuser (Accel II); this valve is not available as a shut-off valve

VALVE OPTIONS

- EVI = Exhaust valve with insulation blocks and insulation
- IBO = Valve with insulation blocks only (no insulation provided)
- PSL = Pressure switch, low limit (0.2" WC); one per each valve body
- REI = Remote electronics, indoor (BxV only) - see Notes 2, 3
- REO = Remote electronics, outdoor, pneumatic actuator only (BxV only) - see Notes 4, 5
- SFB = Square flanges on both ends of single body valves
- SFX = Single square flange mounted on either the exhaust inlet or supply discharge
- SHA = High wattage 24 Vac solenoid valve, controlled by non-Phoenix device (for BxV - Control Type B only)
- SHD = High wattage 24 Vdc solenoid valve, controlled by FHM530 monitor (for BxV - Control Type B only)
- VPO = Power supply valve-mounted, 120 Vac to +/- 15 Vdc (BxV Control Types B and F only; not available in conjunction with REO, REI)
- VPT = Power supply valve-mounted, 230 Vac to +/- 15 Vdc (BxV Control Types B and F only; not available in conjunction with REO, REI)

FAIL SAFE POSITION

- C = Normally closed valve; Control Types P and B only
- O = Normally open valve; Control Types P and B only
- Z = Fails to last position (not available for PxV)

VALVE ORIENTATION

- H = Horizontal
- U = Vertical upflow
- D = Vertical downflow

VALVE CONTROLLER DESIGNATION

- N = No electronics
- T = Two-state controller and high wattage 24 Vdc solenoid valve - no feedback; Control Type B only
- F = Flow feedback in a small black plastic enclosure
- G = Two-state controller, flow feedback and high wattage 24 Vdc solenoid valve; Control Type B only
- S = Flow feedback in a standard metal enclosure (BxV only)

CONTROL TYPE

- C = Constant volume (field adjustable with hex head driver)
- P = Pneumatic (PxV only)
- B = Base upgradable - pneumatic (BxV only)
- F = Fixed, field adjustable with knob and increase/decrease flow label (BxV only)
- I = Floating point IP54 electric actuator with fail-to-last position (BxV only)
- Z = Proportional electric actuator with fail-to-last position (BxV only)

STANDARD ANALOG VALVE FLOW/PRESSURE OPERATING RANGE

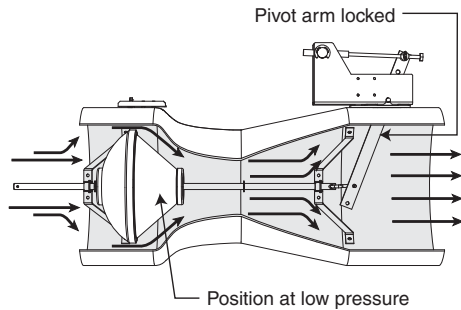
Designation	Size	Operating Range in CFM (m3/hr)				Pressure Drop Across Valve
		Single	Dual	Triple	Quad	
L = Low Pressure	08"	35-500 (60-845)	—	—	—	0.3-3.0" WC (75-750 Pa)
	10"	50-550 (85-930)	100-1100 (170-1860)	—	—	
	12"	90-1050 (155-1780)	180-2100 (310-3560)	270-3150 (465-5340)	360-4200 (620-7120)	
	14"	200-1400 (340-2375)	400-2800 (680-4750)	600-4200 (1020-7125)	800-5600 (1360-9500)	

NOTES:

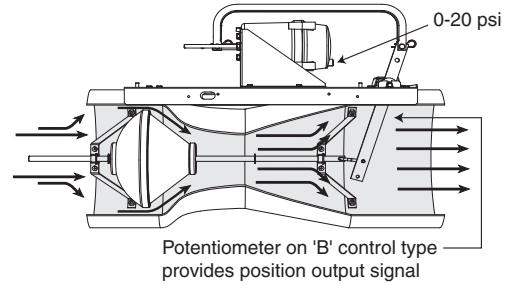
1. BxV 14-inch Pneumatically actuated and Fixed, Field-Adjustable valves are only available in single-body units without flow feedback.
2. Option REI: Remote Electronics, Indoor installations only.
 - * For low-speed electric actuators (Control Type = I or Z): the distance to the valve controller is limited to 150 feet (45.7 meters) of 22 gauge cable.
 - * For pneumatic actuators (Control Type = B): the distance to the valve controller is limited to 75 feet (22.8 meters) of pneumatic tubing.
3. Option REI with BxV valves must have flow feedback (Controller Designation = F, G, or S).
4. Option REO: Remote Electronics, Outdoor installations only. Limited to Pneumatically actuated valves only (Control Type = B). Horizontal orientation only. Includes sealed Vpot, small weather-resistant TP34 box mounted on base channel for others to connect Vpot cables, and a valve controller in an enclosure that has been disconnected from the base channel and shipped in the same box as the valve.
 - * Maximum distance between remote mounted enclosure and valve is 75 feet (22.8 meters) (maximum allowable length of pneumatic tubing).
 - * 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.
5. Option REO with BxV valves is only available with Pneumatic actuation (Control Type = B) and must have flow feedback (Controller Designation = F or S).
6. 14" Dual, Triple, Quad available for CxV only.

VALVE CONTROLLER DESIGNATIONS AND OPTIONS

Valve Controller Designations	
Flow Feedback (F)	Includes a feedback circuit board in a black plastic enclosure installed on a base-series control valve to provide a 0-10 Vdc feedback signal scaled to indicate airflow. not available for the 14-inch valve at this time.
Flow Feedback Controller (S)	Includes S-type control board (no solenoids) in the standard enclosure box on a base-series control valve to provide a 0-10 Vdc feedback signal scaled to indicate airflow. not available for the 14-inch valve at this time.
Valve Options	
Single Square Flange (SFX)	Provides a single connection from a round single-body valve to a square duct; on the inlet of exhaust valves, on the discharge of supply valves. Typically used in Neutralizer™ applications.
Square Flanges (SFB)	Square flanges on both ends of a round single-body valve provide connections to the square duct work.
Solenoid Valves (SHA, SHD)	Installed on a two-position valve to pneumatically switch the valve between maximum and minimum flows.
Pressure Switch (PSL)	Detects low static pressure across the valve.
Power Supply (VPO, VPT)	Valve-mounted power supply provides +15 Vdc, -15 Vdc power to Phoenix Controls base upgradable valves with flow feedback.



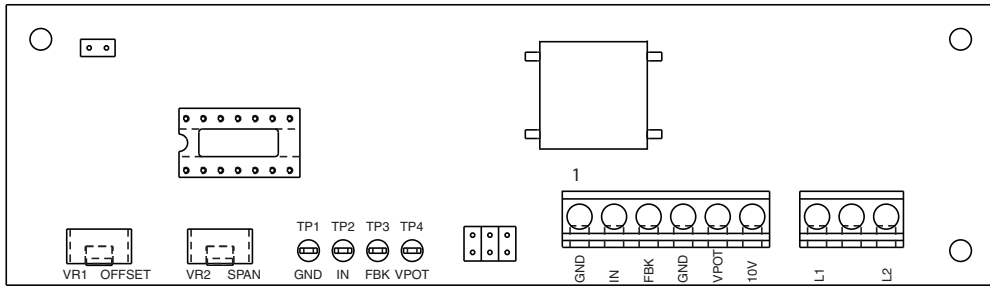
Constant Volume Valve



Two-Position Valve

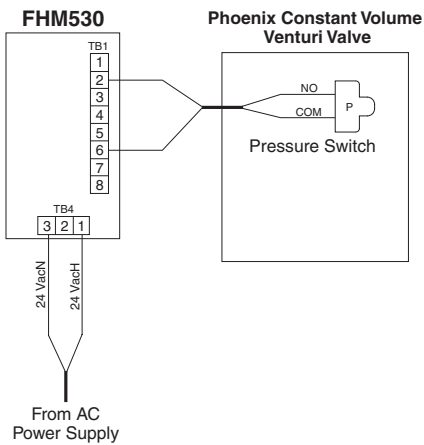
POINTS AND WIRING

Flow Feedback Option

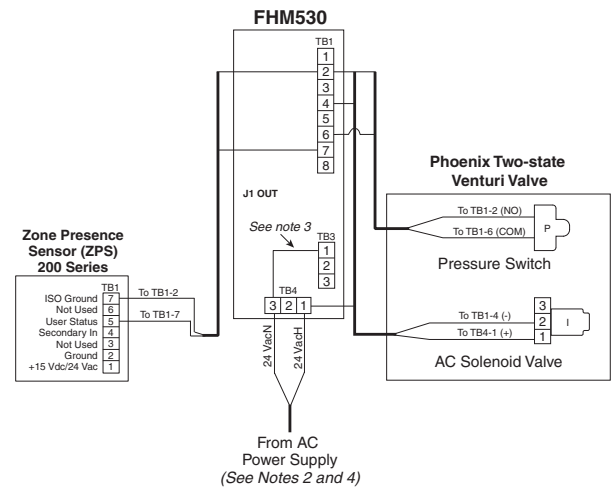


Typical Pneumatic Wiring Diagrams

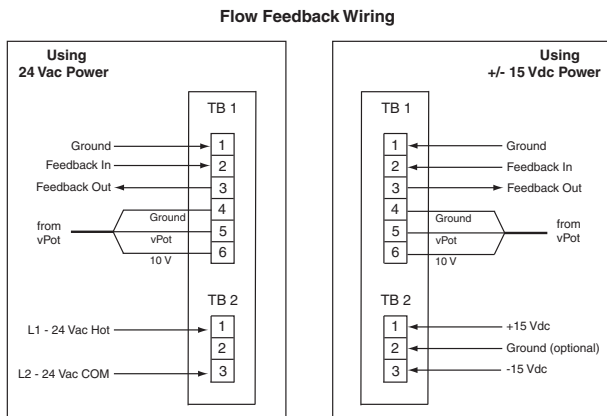
Hood Applications: Constant Volume



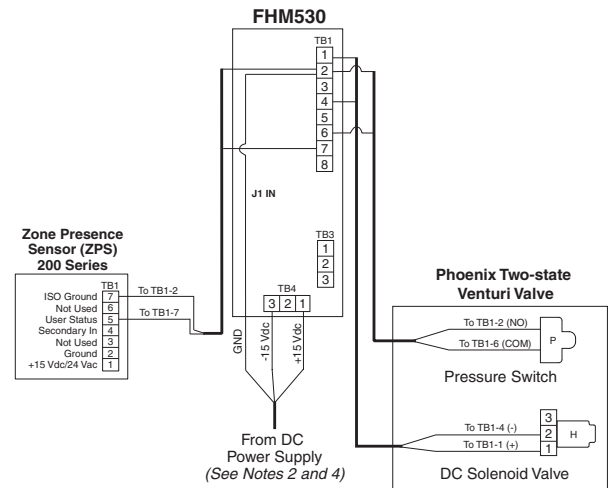
Hood Applications: Two-Position with AC Solenoid



Flow Feedback Wiring (24 Vac and +/- 15 Vac)



Hood Applications: Two-Position with DC Solenoid



Notes:

1. See Phoenix Recommended Cables for more wiring information.
2. Fume hood monitor enclosure must be earth grounded via the mounting hole ground straps.
3. For AC-powered solenoid, two-position applications, you must install a field jumper between TB3-1 and TB4-3 (not required for DC-powered solenoids).
4. AC solenoids require the fume hood monitor to have AC power. DC solenoids require the fume hood monitor to have DC power.

Typical Electric Actuator Wiring

BXV with Z Control

<p>PROPORTIONAL (2-10 Vdc)</p>	<p>NORMAL ACTUATOR SWITCH POSITION</p>
<p>PROPORTIONAL (4-20 mA)</p>	<p>NOTES:</p> <ol style="list-style-type: none"> 1. Transformer sized to meet power requirements by local electrician. Transformer should meet CLASS 2 requirements (100 VA or less). 2. Actuators are NORMALLY in switch Position 1 for Tracking Pair applications. 3. Inverse GEX applications can use actuator switch Position 0 on one of the valves when using a common external switch.

BXV with I Control

<p>2-STATE 24 Vac POWER</p>	<p>NORMAL ACTUATOR SWITCH POSITION</p>
<p>FLOATING POINT 24 Vac POWER</p>	<p>NOTES:</p> <ol style="list-style-type: none"> 1. Transformer sized to meet power requirements by local electrician. Transformer should meet CLASS 2 requirements (100 VA or less). 2. Actuators are NORMALLY in switch Position 1 for Tracking Pair applications. 3. Inverse GEX applications can use actuator switch Position 0 on one of the valves when using a common external switch. 4. Switch sized by local electrician based on transformer sizing.

PHOENIX RECOMMENDED CABLES

Cable Type	Plenum Rated	Function	Wire Gauge	Primary Vendor/Part #	Alternate Vendor/Part #	Color Code	Notes
2C Round	No	24 Vac power	18	Belden 9409		1: Red 2: Black	Must be stranded
			14	Belden 9411			
2C Round	Yes	24 Vac power	18	Belden 82740	Windy City NP002360	1: Red 2: Black	Must be stranded
			14	Windy City NP007960			
TSP	No	I/O signal wiring	22	Belden 9501		1: Black&Red	Twisted Shielded Pair
2 TSP	No	I/O signal wiring	22	Belden 9502		1: Black&Red 2: Black&White	Two Twisted Pair, Shielded
3C Round	No	Signal	22	Belden 8443		1: Red 2: Black 3: Green	Must be stranded
3C or 4C Round	Yes	Signal	22	Belden 88444	Windy City 004380	1: Red 2: Black 3: Green 4: White (not used as 3C)	Must be stranded
4C Round	No	Signal	22	Belden 8444	Manhattan M13304	1: White 2: Green 3: Black 4: Red	Must be stranded
5C Round	No	Signal	22	Belden 8445	Manhattan M13305	1: White 2: Brown 3: Black 4: Red 5: Green	Must be stranded
8C	No	Signal	22	Belden 9421	Manhattan M13308	1: White 2: Orange 3: Black 4: Red 5: Green 6: Yellow 7: Blue 8: Brown	No substitutes
8C	Yes	Signal	22	Comtran 4956		1: White 2: Orange 3: Black 4: Red 5: Green 6: Yellow 7: Blue 8: Brown	No substitutes
3C MS/TP	No	Shielded	22	Belden 3106A (120 ohm)		1: White with Orange stripe 2: Orange with White stripe 3: Blue with White stripe	Shielded with drain
3C MS/TP	Yes	Shielded	22	Connect-Air W223C-2060YPC		1: Black 2: White 3: Red	Foil shield with drain wire