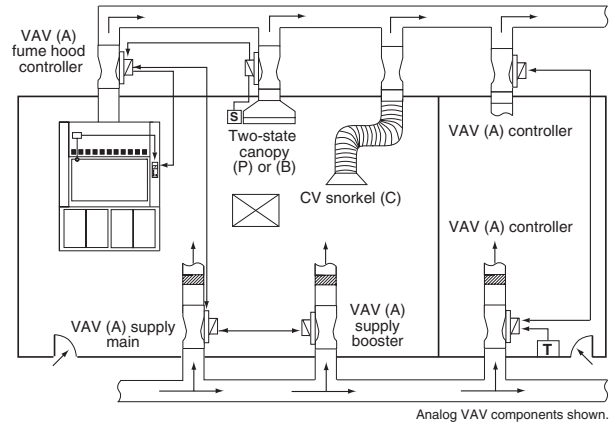


**APPLICATIONS**

**Airflow Volume Control**

Variable air volume (VAV): Analog and Digital VAV valve controllers are available. Both types are commonly used for laboratory airflow control of fume hoods, general exhaust, and room supply air.

- Analog (A): Typically used for standalone and point-to-point BMS integrated systems, using analog circuitry with 0-10 Vdc input and output signals. Associated analog valves are used as booster valves, receiving a command signal from an analog main valve.



Analog VAV components shown.

**SPECIFICATIONS**

**Construction**

- 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 polyethylene. Flame/smoke rating 25/50. Density is 2.0 lb/ft<sup>3</sup> (32.0 kg/m<sup>3</sup>)

**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 0.6"-3.0" wc (150-750 Pa) drop across valve
- Volume control accurate to ±5% of airflow command signal
- No additional straight duct runs needed before or after valve
- Available in flows from 35-6000 CFM (60-10,000 m<sup>3</sup>/hr)
- Response time to change in command signal: <1 second
- Response time to change in duct static pressure: <1 second

**VAV Controller**

Analog:

- ±15 Vdc, ±5% @0.145 amp (pneumatic only)
- 0-10 Vdc command signal
- 0-10 Vdc flow feedback signal
- 0-10 Vdc alarm signal

**Actuation**

Pneumatic:

- 20 psi (-0/+2 psi) with a 20 micron filter main air required (except for CVV)
- Compressor sizing:\* Accel II Valves are not continuous air-consuming devices, yet for compressor sizing, use:

- single and dual valves: 10 scim
- triple and quad valves: 20 scim

Electric (analog only):

- 24 Vac (±15%) @60Hz
- single and dual valves: 96 VA
- triple and quad valves: 192 VA
- UL 916 listed

Teflon is a registered trademark of DuPont Co.

**FEATURES**

| FEATURE/OPTION                        | VAV (EXV/MAV) Pneumatic | VAV (EXV/MAV) Electric |
|---------------------------------------|-------------------------|------------------------|
| Control type                          | A                       | E                      |
| Flow feedback signal                  | ✓                       | ✓                      |
| Failsafe                              | NO/NC                   | NO/NC or Last Posit.   |
| Factory-insulated valve body (supply) | ✓                       | ✓                      |
| Field-adjustable flow                 | ✓                       | ✓                      |
| Flow alarm via feedback circuit       | ✓                       | ✓                      |
| Flow alarm via pressure switch        | Option                  | Option                 |
| Low noise diffuser construction†      | ✓                       | ✓                      |

All valves include pressure independent controller, factory-calibrated position controller, and are available in flows from 35-6000 cfm (60-10000 m<sup>3</sup>/hr).

†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.



## ORDERING GUIDE

**MAV A 1 1 0 M - A E M H N - P**

**VALVE FAMILY**  
**EXV** = Electronic exhaust valve  
**MAV** = Electronic supply valve

**VALVE CONSTRUCTION**  
**A** = Body and cone—uncoated aluminum; Shaft—uncoated 316 stainless steel  
**B** = Body and cone with baked phenolic coating, Teflon-coated stainless steel shaft (for standard fume hood applications)  
**C** = Body, cone, and hardware with baked phenolic coating, PFA coated stainless steel shaft (for highly corrosive fume hood applications)  
**S** = Special coating and/or components

**NUMBER OF VALVE BODIES**  
**F** = One valve body with welded circular flange (single flanged)  
**1** = One valve body (single no flange)  
**2** = Two valve bodies (dual)  
**3** = Three valve bodies (triple)  
**4** = Four valve bodies (quad)

**VALVE SIZE**  
**08** = 8" valve (7.88"/200 mm actual diameter)  
**10** = 10" valve (9.88"/251 mm actual diameter)  
**12** = 12" valve (11.88"/302 mm actual diameter)

**FLOW/PRESSURE OPERATING RANGE**

**FAIL-SAFE POSITION**  
**Exhaust Valves**  
**O** = Normally open exhaust valve  
**E** = Normally closed exhaust valve  
**M** = No fail-safe exhaust valve (electric actuation only)  
**Supply Valves (provided with insulation)**  
**C** = Normally closed supply valve  
**S** = Normally open supply valve  
**N** = No fail-safe supply valve (electric actuation only)

**VALVE ORIENTATION**  
**H** = Horizontal  
**U** = Vertical upflow  
**D** = Vertical downflow

**CONTROL TYPE**  
**A** = Analog/pneumatic  
**E** = Analog/electric

**VALVE DESIGN**  
**A** = Conical shape diffuser (Accel II®)

**VALVE OPTIONS**  
*(As required, list alphabetically then numerically)*  
**B** = Two single square flanges mounted on both ends of single body valves  
**F** = One single square flange mounted on inlet of single body exhaust valves or discharge of single body supply valves  
**M** = Module, scaling function (E or M analog only)  
**P** = Pressure switch (*see note 1*)  
**O** = Power supply, valve-mounted, 120 V  
**T** = Power supply, valve-mounted, 230 V  
**01-99** = Denotes factory-assigned special

**VALVE CONTROLLER DESIGNATION**  
**E** = Electronic valve with no booster valves  
**M** = Main electronic valve with booster valves  
**H** = Hood exhaust valve with no booster valves, includes H/I card and pressure switch  
**I** = Hood exhaust valve with booster valves, includes H/I card and pressure switch  
**R** = Hood exhaust valve with no booster valves, includes H/I card with alarm relay output and pressure switch  
**Q** = Hood exhaust valve with booster valves, includes H/I card with alarm relay output and pressure switch  
**S** = Associated (or standalone) analog valve without pneumatic solenoids  
**P** = Associated analog valve with pneumatic solenoids (*see note 2*)

| Designation         | Size | Specified cfm (m <sup>3</sup> /hr) Range |                        |                        |                          | Pressure Drop Across Valve   |
|---------------------|------|--|------------------------|------------------------|--------------------------|------------------------------|
|                     |      | Single                                   | Dual                   | Triple                 | Quad                     |                              |
| M = medium pressure | 08   | 35-700<br>(60-1175)                      | —                      | —                      | —                        | 0.6"-3.0" wc<br>(150-750 Pa) |
|                     | 10   | 50-1000<br>(85-1700)                     | 100-2000<br>(170-3350) | —                      | —                        |                              |
|                     | 12   | 90-1500<br>(150-2500)                    | 180-3000<br>(300-5000) | 270-4500<br>(450-7500) | 360-6000<br>(600-10,000) |                              |

**NOTES:**  
 1. Pressure switch setpoint = 0.3" wc (75 Pa).  
 2. All hood exhaust booster valves must have "P" type controllers and pressure switches.

## VALVE CONTROLLERS & OPTIONS

### Valve Controller Designations

**Hood exhaust (H or I):** Includes an interface board and pressure switch for tri-state alarming and connection to fume hood monitor.  
**Hood exhaust with relay (R or Q):** Same as analog H or I, but also includes an alarm relay output.  
**Associated analog valve (S or P):** Depopulated versions of the analog valve controller.

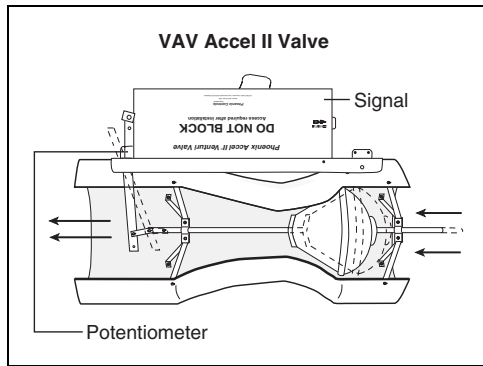
### Valve Options (components added to enhance a valve's functions)

**Single square flange (F):** Provides a single connection from round single body valve to square duct. On inlet of single body exhaust valves; discharge of single body supply valves. Typically used in Neutralizer™ applications.

**Scaling function module (M):** Electronic board installed on an analog E or M valve controller to adjust input signal for offset control, inverse operation or scaling.

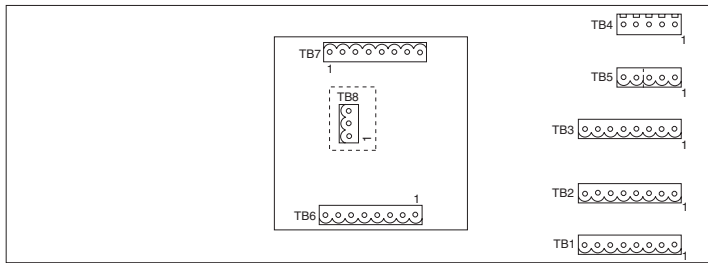
**Pressure switch (P):** Detects low static pressure across the valve. Installed on non-hood exhaust valves to provide low static pressure alarm monitoring.

**Power supply (O, T):** Valve-mounted power supply provides +15 Vdc, -15 Vdc power to Phoenix Controls system.



**POINTS & WIRING** (see submittal wiring diagram for project-specific details.)

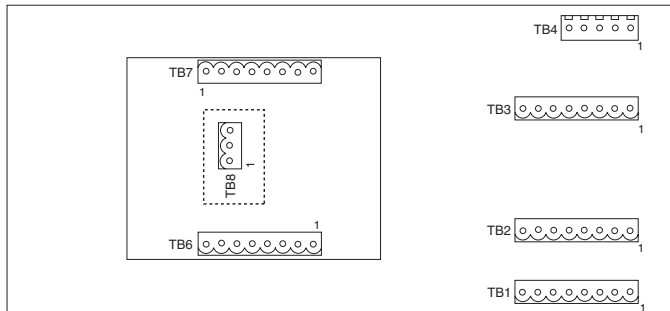
**Analog Pneumatic Controller**



**TERMINAL BLOCK—ANALOG PNEUMATIC VALVE CONTROLLERS**

| Terminal Block | Typical Function              | No. of Terminations |
|----------------|-------------------------------|---------------------|
| <b>TB1*</b>    | Input from command device     | 8                   |
| <b>TB2*</b>    | Output                        | 8                   |
| <b>TB2S*</b>   | Booster valve output          | 8                   |
| <b>TB3</b>     | Prior booster valve input     | 8                   |
| <b>TB4</b>     | Pot and pressure switch       | 5                   |
| <b>TB5</b>     | Power input                   | 3**                 |
| <b>TB6*</b>    | Input from monitor (H/I card) | 8                   |
| <b>TB7*</b>    | Hood valve output (H/I card)  | 8                   |

**Analog Electric Controller**



**TERMINAL BLOCK—ANALOG ELECTRIC VALVE CONTROLLERS**

| Terminal Block | Typical Function              | No. of Terminations |
|----------------|-------------------------------|---------------------|
| <b>TB1*</b>    | Input from command device     | 6                   |
| <b>TB2*</b>    | Output                        | 6                   |
| <b>TB2S*</b>   | Booster valve output          | 6                   |
| <b>TB3</b>     | Prior booster valve input     | 6                   |
| <b>TB4</b>     | Pot and pressure switch       | 5                   |
| <b>TB5</b>     | Power input and test          | 3**                 |
| <b>TB6*</b>    | Input from monitor (H/I card) | 8                   |
| <b>TB7*</b>    | Hood valve output (H/I card)  | 8                   |
| <b>TB8*</b>    | Relay output                  | 3                   |
| <b>J1</b>      | Power Input (Note 3)          | 2                   |

**NOTES:**

1. Cable is 22 ga. Eight-conductor is Beldon 9421 or equivalent.
2. Each termination block (except TB4) uses a depluggable connector with screw-down terminations for ease of installation.
3. Electric actuation power wiring must be 14 AWG, connected in a star configuration.

**LEGEND:**

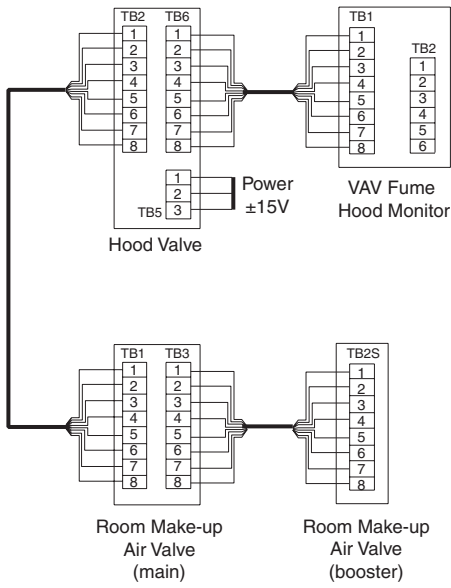
Dashed box around TB 8 denotes HR option.

\*These terminal blocks are application specific and are provided only when required.

\*\*For electric actuation, S and P type valve controllers, TB5 is a 5 pin.

# Typical Wiring Diagrams

## ANALOG PNEUMATIC VALVES



## ANALOG ELECTRIC VALVES

