

Phoenix Controls Valve Upgrade Kit provides migration from constant volume (Accel II bodies only), PxV, base upgradable, analog, Celeris® 1, Celeris® 2, and Traccel® valves to the latest Critical Spaces Control Platform (CSCP®)(certain sizes/vintages only) generation of digital valves. Upgrades engender substantial energy and operational savings as well as enhanced functionality. Upgrading the valves is non-invasive and can be done without removing the valve from the duct work.

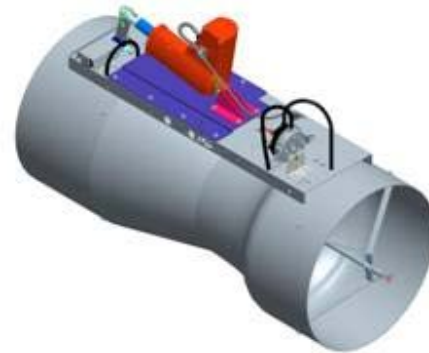
- Upgrade kits provide all the necessary hardware to upgrade legacy valves.
- A three-year warranty covers all upgrade components and is extended to out-of-warranty upgraded legacy valves with warranty registration (see the *Valve Upgrade Warranty Registration* section on page 18).
- Infrastructure for the new digital networks can be configured first then phased in when advantageous to facility scheduling.

## ENERGY BENEFITS

Moving to the Critical Spaces Control Platform (CSCP) provides enhanced control and native BACnet™ MS/TP at the room level. The upgrade provides all the features that are included in the CSCP platform.

- Enhanced occupied, stand-by, timed bypass, and unoccupied control.
- Advanced temperature control including cascade control, thermal anticipatory or BTU compensation control, temperature sensor averaging, primary and auxiliary reheat/cooling control, and chilled beam control.
- Indoor Air Quality Control (IAQ) lowers standard air changes per hour based on air quality; while maintaining work environment safety.
- Hibernation mode that allows hood valves to be driven to the minimum valve flow when not in use (might require fume hood monitor upgrade to FHD500 or FHD131).
- Usage-based controls to reduce hood flows.

Control Type	Description
<b>B</b> ACM (Actuator Control Module)	For high-speed CSCP valves.
<b>P</b> PBC (Programmable BACnet Controller)	Room-level BACnet MS/TP Controller needed for low-speed systems.
<b>D</b> Includes both Designation B and P (ACM and PBC)	For high-speed CSCP valves with ACM and PBC mounted to the valve.
<b>T</b> Terminal Strip	Terminal Strip Connector (Tracking Valves) for PVU field linked to PBC either on a valve or as standalone.



## OPERATIONAL BENEFITS

Upgrading to the Critical Spaces Control Platform (CSCP) supports facility goals for reduced operating costs and more sustainable control programs. Valve upgrade kits help facilities work within their annual maintenance budgets and allow scheduled, phased-in retrofits.

- CSCP creates a more flexible system for adding devices such as sensors or switches as your facility grows.
- Expedites point integration from valves or other devices on the network to the BMS, reducing the complexity of BMS programming.
- Gives operations staff better troubleshooting tools for managing or monitoring devices.
- Enables maximum benefits of Phoenix Controls digital devices and their features:
  - Pressure monitors and display devices.
  - Advanced control sequences like active pressure control, temperature control, and demand-based ventilation.
- Leverage new front-end solutions such as Vision CE for data analysis and energy savings.

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# SPECIFICATIONS

### Applicability

- VAV valves: Hourglass and Accel II bodies
- CV valves: Accel II bodies only

### Operating Range

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

### Performance

- Volume control accuracy: Equivalent to or better than valve being upgraded
- Available with flows based on the original valve ordered. See the *Legacy Valve Flow/Pressure Operating Range* table on page 2.
- Response time to change in the command signal:
  - <1 second (Valve Controller Designation B and D)
  - <1 minute (Valve Controller Designation P only)
- Response time to change in the duct static pressure: <1 second

### Power Consumption

Singles/Duals *per valve*

- 24 VAC (±15%) @50/60 Hz
- All power consumption VA ratings listed here are based on fully-loaded I/O
- Standard-speed Electric (Control Type H, I, and L): 50 VA Max
- High-speed Electric (Control Type M): Single 50 VA Max, Dual 70 VA Max

### Notes:

Requires dedicated 24 VAC transformer.

### I/O (CSCP)

Available for connecting field devices:

- 16 universal inputs/outputs (UIO), programmable
- 8 Solid State Relays (SSR)
- 4 dry contacts
- 24 VAC/VDC output 50/60 Hz
- 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

### Additional Information

- *Programmable BACnet Controller (PBC) Datasheet (MKT-0511)*
- *Actuator Control Module (ACM) Datasheet (MKT-0513)*
- *CSCP Venturi Valves Datasheet (MKT-0525)*

### Regulatory Compliance

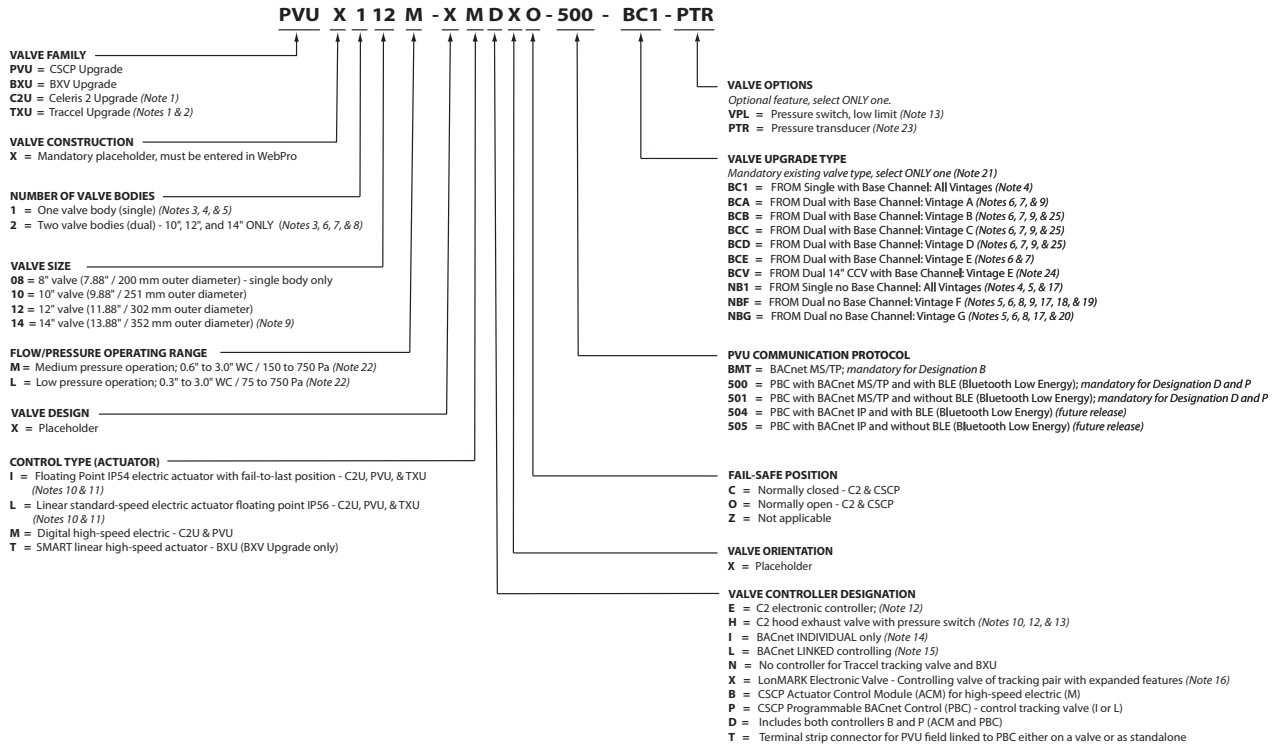


- RoHS
- FCC: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
  1. This device may not cause harmful interference.
  2. This device must accept any interference received, including interference that may cause undesired operation.
- **EU Contact Address:**  
 Pittway Tecnologica Srl  
 Via Caboto 19/3  
 34147 Trieste TS  
 Italy

## LEGACY VALVE FLOW/PRESSURE OPERATING RANGE

Valve Body/Size	Flow Operating Range in CFM (m <sup>3</sup> /hr)					
	Low Pressure			Medium Pressure		
	Accel I (Hourglass)		Accel II (Conical Shaped Diffuser)	Accel I (Hourglass)		Accel II (Conical Shaped Diffuser)
	Standard Flow	"HIF" Option	All (Non-Shut-off)	Standard Flow	"HIF" Option	All (Non-Shut-off)
Single 8"	N/A	N/A	35-500 (60-845)	N/A	N/A	35-700 (60-1185)
Single 10"	60-550 (105-930)	N/A	50-550 (85-930)	60-900 (105-1525)	60-1000 (105-1695)	50-1000 (85-1695)
Single 12"	165-1050 (280-1780)	N/A	90-1050 (155-1780)	165-1400 (280-2375)	165-1500 (280-2545)	90-1500 (155-2545)
Single 14"	N/A	N/A	200-1400 (340-2375)	N/A	N/A	200-2500 (340-4245)
Dual 10"	120-1100 (205-1860)	N/A	100-1100 (170-1860)	120-1800 (205-3055)	120-2000 (205-3390)	100-2000 (170-3390)
Dual 12"	330-2100 (565-3560)	N/A	180-2100 (310-3560)	330-2800 (565-4755)	330-3000 (565-5090)	180-3000 (310-5090)
Dual 14"	N/A	N/A	400-2800 (680-4750)	N/A	N/A	400-5000 (680-8490)
Triple 12"	495-3150 (845-5340)	N/A	270-3150 (465-5340)	495-4200 (845-7135)	495-4500 (845-7635)	270-4500 (465-7635)
Triple 14"	N/A	N/A	600-4200 (1020-7125)	N/A	N/A	600-7500 (1020-12735)
Quad 12"	660-4200 (1125-7120)	N/A	360-4200 (620-7120)	660-5600 (1125-9510)	660-6000 (1125-10180)	360-6000 (620-10180)
Quad 14"	N/A	N/A	800-5600 (1360-9500)	N/A	N/A	800-10000 (1360-16980)

# ORDERING GUIDE



**NOTES**

1. All upgrade valve controller boards require field generated or factory curve download and validation.
2. Family = TXU: Cannot be ordered for sizes/vintages that contain two single kits for a dual upgrade; therefore, not with Existing Valve Type = NBF or with [Size = 14" and Existing Valve Type = NBG].
3. All triple and quad valves require two valve upgrade catalog numbers.
4. Single upgrades (Bodies = 1) MUST be ordered with one of the following Existing Valve Types: BC1 or NB1 which provide a comprehensive kit, regardless of vintage, tailored for existing valves with base channel (BC1) or no base channel (NB1).
5. Single valves with NO Base Channels: can ONLY be upgraded if the original valves have Accel II conical-shaped diffuser bodies and shipped on or before 09 August 2017.
6. Dual upgrades (Bodies = 2) MUST be ordered with one of the following Existing Valve Types: BCA, BCB, BCC, BCD, BCE, NBF, or NBG.
7. Dual valves WITH Base Channels: MUST be visually inspected to determine the vintage of the original valve if it shipped
  - (a) prior to 01 January 1998, or
  - (b) during December 2002 (Valves shipped after 16 December 2002 should have a new design base channel that does not require an actuator adapter plate. However, all valves shipped in that month should be physically checked to verify which edition of the base channel they have.)
8. Dual valves with NO Base Channels:
  - (a) can ONLY be upgraded if the original valves have Accel II (conical-shaped diffuser) bodies and shipped on or before 09 August 2017, and
  - (b) MUST be visually inspected to determine: [1] the vintage of the original valve, and [2] if vintage NBG, whether pivot arms are positioned to accommodate the upgrade's dual base channel (if not, order two C2UX1xx upgrade kits per dual instead of one C2UX2xx kit).
9. Size = 14" cannot be ordered with Existing Valve Type = BCA, BCB, BCC, BCD, or NBF (vintages on which 14" valves did not yet exist).
10. "Celeris" Hood valves cannot have Low Speed actuators (Control Type = I and L).
11. Control = I and L cannot have Fail-safe = C or O.
12. Designation = E & H: All CZU valve controller boards require firmware application download based on the upgrade's model code.
13. Designation = H cannot have Optional Feature = VPL.
14. Designation = I: Generic small individual BACnet controller with two unattached labels (one of which gets thrown away after the other is field applied to the product). Factory default application image is EO; can be field programmed to SO when needed.
15. Designation = L: Generic large linked BACnet controller with four unattached labels (three of which are thrown away after one is field applied to the product). Factory default application image is TX; can be field programmed to TP, TX-EXH, or TX-RTN when needed. NOTE: Although this TXU will be linked to its tracking valve(s) through field wiring, they will NOT be linked on the RSS.
16. Designation = X: LON TX controller with SBRC (Single Board Room Controller) application image (which can also perform TP and SO applications). NOTE: Although this TXU will be linked to its tracking valve through field wiring, they will NOT be linked on the RSS.
17. Existing Valve Type = NB1, NBF, & NBG: Existing No Base Channel CxV & PxV valves with hourglass bodies CANNOT be upgraded.
18. Existing Valve Type = NBF: Dual upgrade contain two single kits and can only be ordered with Family = C2U.
19. Existing Valve Type = NBF: Cannot be ordered in Size = 14".
20. Existing Valve Type = NBG: Dual 10" & 12" upgrades contain one dual kit (if existing pivot arms are not properly positioned for dual base channel install, MUST order two single catalog numbers instead); Dual 14" upgrades contain two single kits and can only be ordered with Family = C2U.
21. Base channels were added to CEV/CSV on 10 August 2017.
22. Medium pressure: From 0.3"-0.6" WC (75-150 Pa), ±5% accuracy not guaranteed. Low pressure: From 0.1"-0.3" WC (25-75 Pa), ±5% accuracy not guaranteed.
23. CSCP option ONLY.
24. BCV kit for Vintage E includes a bridge for the actuator and dual pivot arm linkage.
25. Designation D: BCB, BCC, and BCD kits include an additional enclosure for the PBC, but this enclosure requires alternate or remote mounting that is not supplied in this kit.

## PRE-ORDER CHECKLIST

The following table dictates the minimum information that you need to gather before you order a kit or perform an upgrade. There might be additional information that you need based on the particular site.





Action	Single Valves	Dual Valves
Evaluate the room for ease of access to valves.	X	X
Visually inspect all valves to be upgraded for signs of damage.	X	X
Verify the integrity of coated valves.	X	X
Verify and generate documentation on the physical room performance (lab verification) before any upgrade work is performed.	X	X
Verify pressure independence and flow accuracy.	X	X
Check the physical room offset using an instrument such as a Shortridge AirData multimeter.	X	X
Identify the original job number and date of manufacture (found on valve label).	X	X
<b>For single valves <u>with</u>* base channels:</b> Hourglass valves that shipped prior to 01 January 1990 cannot be upgraded. For vintage reference, see the <i>Determining Existing Valve Type</i> section on page 5.	X	—
<b>For dual valves <u>with</u>* base channels:</b> Identify and take photos of valves that either shipped prior to 01 January 1998 or during December 2002. For vintage reference, see the <i>Determining Existing Valve Type</i> section on page 5.	—	X
<b>For single valves with <u>NO</u>** base channels:</b> Only valves with Accel II bodies can be upgraded. For vintage reference, see the <i>Determining Existing Valve Type</i> section on page 5.	X	—
<b>For dual valves with <u>NO</u>** base channels:</b> Identify and take photos of all valves to be upgraded. For vintage reference, see the <i>Determining Existing Valve Type</i> section on page 5.	—	X
<b>Vintage <u>NBG 10 &amp; 12-inch Dual Valves with <u>NO</u>** Base channels:</u></b> Make sure that both pivot arms are parallel and located in a 12 o'clock position (not skewed; see the <i>NBG 10 and 12-inch Pivot Arms need to be parallel at 12 o'clock</i> section on page 6 for images).  If visually deviant from parallel at 12 o'clock: the base channel provided in the dual upgrade kit will not fit and <b>you must order <u>two single upgrade catalog numbers instead</u>.</b>	—	10 and 12-inch Only

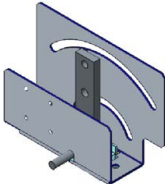
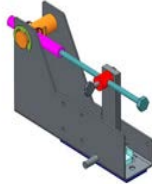
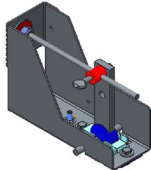
\* Existing valves **WITH** base channels are Celeris 1, Analog, Base Upgradable, and Pneumatic without Vpot (PxV).

\*\* Existing valves with **NO** base channels are Constant Volume.

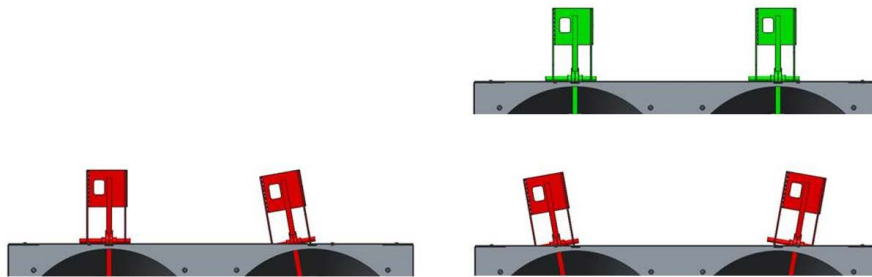
## DETERMINING EXISTING VALVE TYPE

Refer to the following table to determine the type and vintage of the valve to be upgraded:

		Valves <b>WITH</b> Base Channels				
		Vintage A	Vintage B	Vintage C	Vintage D	Vintage E
Existing Valve Type	Single	BC1				
	Dual	BCA	BCB	BCC	BCD	BCE
<b>Original Valve Design Elements</b>						
Nomenclature Style	EXV210M-HOR			EXVA210M-AAEHO		
Valve Design	Accel I (Hourglass; from 01 January 1990)			Accel II (Conical-shaped Diffuser)		
NOTE: <i>Hourglass valves prior to 01 January 1990 cannot be upgraded.</i>						
	Primary Base Channel Type	U-Channel 		Flat 		
DUAL Base Channel Orientation	Flat	Angled			Flat	
Dual Actuator/Controller Qty.	Two each		One each			
3D Image of Original Valve	Refer to the <i>Application Examples</i> section on page 7.					
<b>Valve Upgrade Elements</b>						
Vpot	Replacement plus Extension Kit			Replacement Only		
Valve Upgrade Curve Type	Default from <i>Phoenix Controls Tech Forum</i>			Created from <i>Curve Import Wizard</i>		

		Valves with <b>NO</b> Base Channels		
		Vintage F	Vintage G	
Existing Valve Type	Single	NB1		
	Dual	NBF	NBG	
<b>Original Valve Design Elements</b>				
Nomenclature Style	CVVA210M-ACNH[F or X] or C[S or E]VA210M-ACNHZ			
Valve Design	Accel II (Conical-shaped Diffuser)			
CV Bracket Type	Dual-Slotted 		Adjustable #1 (might have knob) 	Adjustable #2 
	3D Image of Original Valve	Refer to the <i>Application Examples</i> section on page 7.		
<b>Valve Upgrade Elements</b>				
Vpot	Mounts onto field installed base channel			
Valve Upgrade Curve Type	Default from <i>Phoenix Controls Tech Forum</i>			

## NBG 10 AND 12-INCH PIVOT ARMS NEED TO BE PARALLEL AT 12 O'CLOCK



**GOOD:** Order one dual kit with - NBG

**BAD:** Order two single kits with - NB1

## KIT COMPONENTS

Valve upgrade components are detailed in the following table. When only specific vintages are listed for a particular component, that item is not required for all unlisted vintages.

Upgrade Kit Component	Low-Speed Electric (I)	Low-Speed Electric (L)	High-Speed Electric (M)
<b>Actuator and Mounting Gear*</b>	Low-Speed Electric Actuator (IP54)	Low-Speed Electric Actuator (IP56)	High-Speed Electric Actuator (IP56)
<b>Actuator Description</b>	Rotary	Linear 12V with 3 wires and ribbed motor casing	Linear 24V with 2 wires and smooth motor casing
<b>Actuator Adapter Bracket</b>	Included for BC1	Included for BC1	Included for BC1, BCB, BCC, and BCD
<b>Bridge Bracket</b>	Included for BCA, BCE (10" & 12" only) and NBG (10" & 12" only)	Included for BCA, BCE (10" & 12" only) and NBG (10" & 12" only)	Included for BCA and NBG (10" & 12" only)
<b>Left And Right Linkage Between Pivot Arms</b>	Included for BCA and NBG (10" & 12" only) <i>BCE must reuse existing</i>	Included for BCA and NBG (10" & 12" only) <i>BCE must reuse existing</i>	Included for BCA and NBG (10" & 12" only) <i>BCE must reuse existing</i>
<b>Linkage to Actuator</b>	<ul style="list-style-type: none"> <li>• Straight links included for BC1, BCA, BCE, and NBG (10" &amp; 12")</li> <li>• BCV for Constant Volume (14")</li> <li>• Horseshoe link included for BCB, BCC, and BCD</li> <li>• U links included for NB1, NBF, and NBG (14")</li> </ul>	<ul style="list-style-type: none"> <li>• Straight links included for BC1, BCA, BCE, and NBG (10" &amp; 12")</li> <li>• BCV for constant volume (14")</li> <li>• Horseshoe link included for BCB, BCC, and BCD</li> <li>• U links included for NB1, NBF, and NBG (14")</li> </ul>	Horseshoe link included for BCB, BCC, and BCD
<b>Electronics Enclosure and Cover*</b>	Included	Included	Included
<b>90 Degree Vpot*</b>	Included	Included	Included
<b>Required Terminal Blocks*</b>	Included	Included	Included
<b>Celeris Control Board*</b>	Included	Included	Included with fail-safe
<b>Traccel Control Board</b>	Included	Included	N/A
<b>CSCP Control Board</b>	PBC optional	PBC optional	ACM with optional fail-safe
<b>Hardware</b>	Hardware only	Hardware only	Hardware only
<b>Base Channel, Mounting Brackets and Band Strap***</b>	Included with NB1, NBF, and NBG (upgrades from CV only)	Included with NB1, NBF, and NBG (upgrades from CV only)	Included with NB1, NBF, and NBG (upgrades from CV only)

\* ONE set included for BC1, BCA, BCB, BCC, BCD, BCE, and NB1 of all sizes, and NBG for 10 & 12-inch. TWO sets included in kit for NBF of all sizes and NBG for 14-inch only.

\*\* Straight links on Normally Closed (N.C.) units and reversing arms on Normally Open (N.O.).

\*\*\* ONE set included in single upgrade kit. TWO sets included in dual kit.

## All Upgrade Kits

Not all upgrades require installation of a new Vpot.

### Some Low-Speed Actuators

To honor the extended upgrade kit warranty, all Vpots and actuators need to be replaced. If you are not registering for the warranty extension, Vpots and some low-speed actuators do not need to be replaced from Celeris 2 to CSCP upgrades.

### Vintages that Require REUSE of Existing Linkage

- BCB, BCC, and BCD upgrades to pneumatic must reuse existing "linkage to actuator" (straight links on normally closed units and reversing arms on normally open).
- All BCE upgrades (to Control Type = I, M, and N) must reuse existing "left and right linkage between pivot arms."

### Vintages that Do NOT Require Linkage

Only upgrades to high-speed electric (Control Type = M) for BC1, BCA, BCE, NB1, NBF, and NBG require no "linkage to actuator."

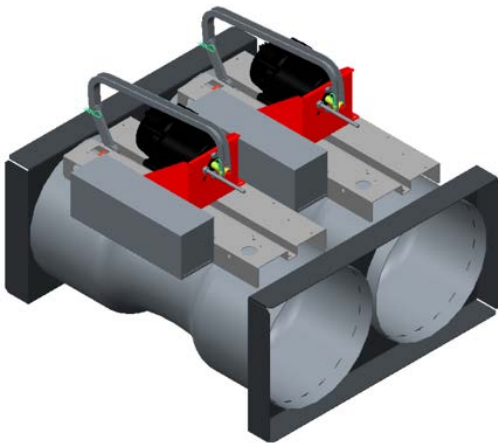
## APPLICATION EXAMPLES

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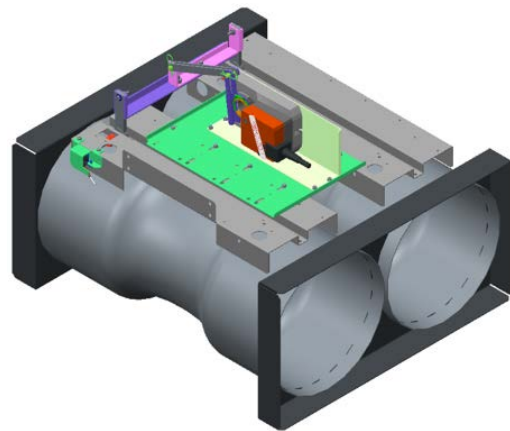
Refer to the following drawings for visual depictions of existing valve vintages and examples of those valves after the upgrade.

NOTE: Valve controller enclosures might not be shown in the following images for clarity.

### Vintage A (VAV)

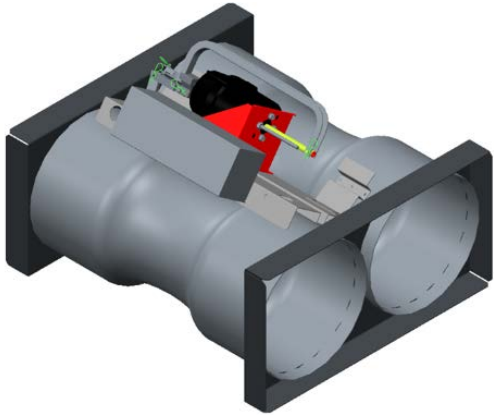


BCA from existing EXV212M-HOR valve

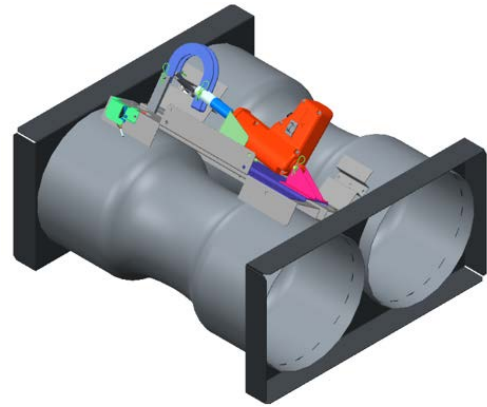


Upgraded via C2UX212M-XIEXZ-BCA to low-speed electric

Vintage B (VAV)

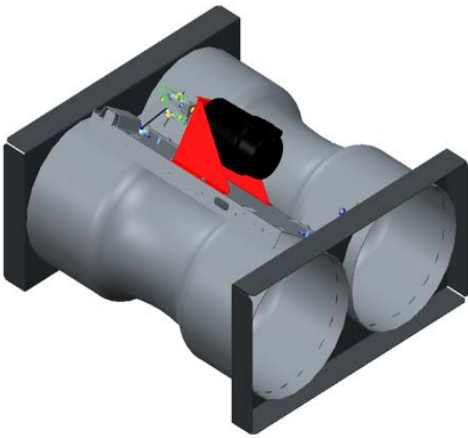


BCB from existing EXV212M-HOR valve

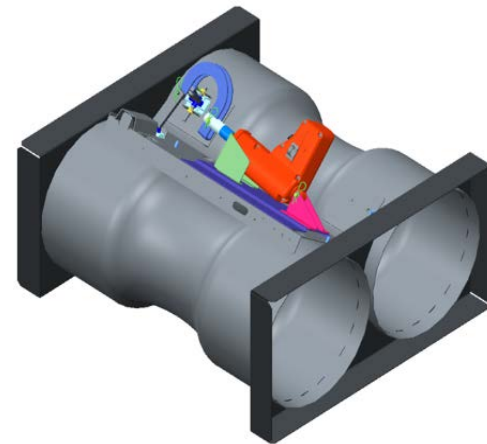


Upgraded via C2UX212M-XMEXO-BCB to high-speed electric

Vintage C (VAV)



BCC from existing MAV212M-HOR valve



Upgraded via C2UX212M-XMEXC-BCC to high-speed electric

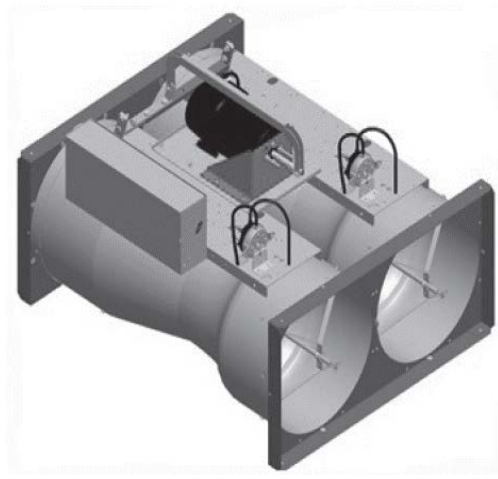


### Vintage D (VAV)



BCD from existing EXVA212M-AAEHO valve

### Vintage E (VAV)

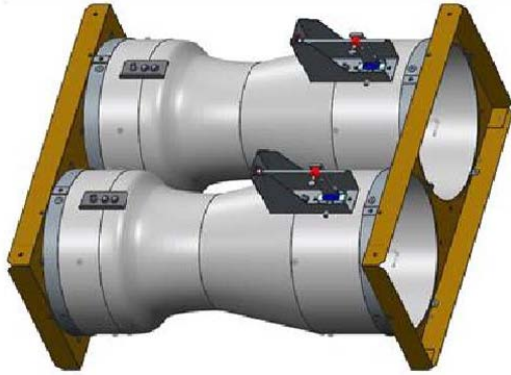


BCE from existing EXVA212M-AAEHO valve

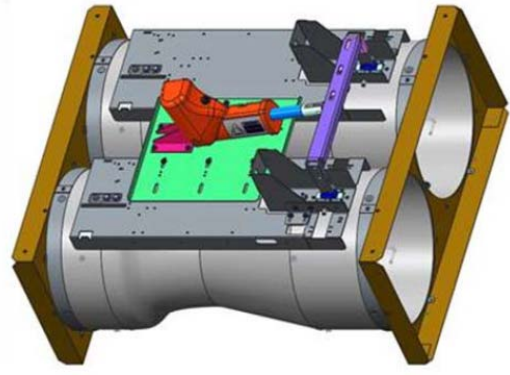
### Vintage F (CV)

Existing valves are similar to the following vintage G, except with a dual-slotted bracket (see *Vintage F, CV Bracket Type* on page 5) instead of the adjustable #2 bracket that is shown. Upgraded dual valves consist of two single kits on the dual unit (twice what is shown for the following upgraded single valve).

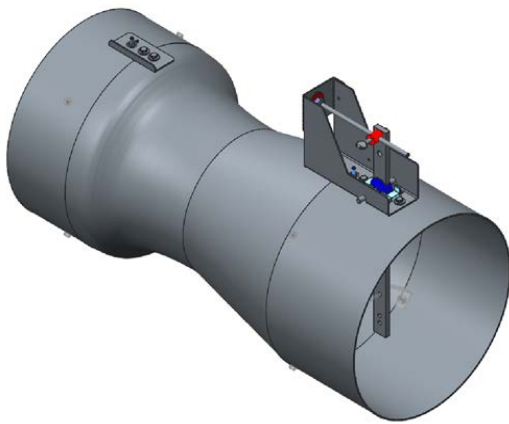
## Vintage G



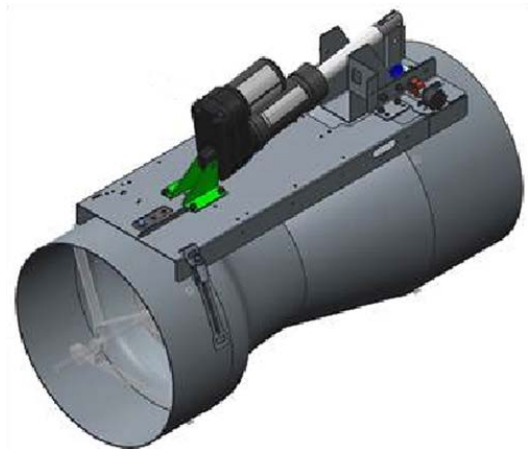
NBG from existing CEVA212M-ACNHZ valve



Upgraded via C2UX212M-XMEXZ-NBG to high-speed electric



NBG from existing CEVA112M-ACNHZ valve



Upgraded via C2UX112M-XMEXO-NB1 to high-speed electric

## UPGRADE PROJECTS OVERVIEW

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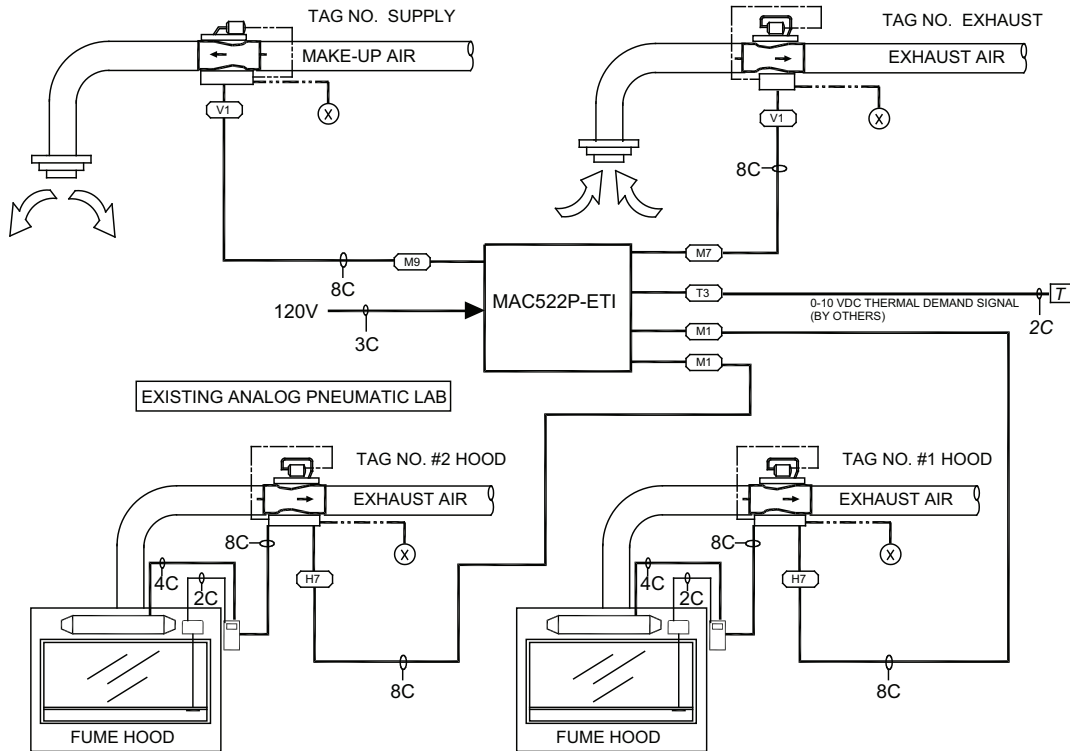
This upgrade migrates analog and legacy Celeris labs integrated through a Makeup Air Controller or mature Gateway to the current version of the Critical Spaces Control Platform (CSCP). BACnet MS/TP or BACnet IP offers the optional use of the Phoenix Controls Integrator (PCI8000). This upgrade also ensures continued product support for integration and room-level operation.

Migration to the current CSCP BACnet architecture requires the following:

1. Optional installation of the Phoenix Controls Integrator (PCI8000) or BACnet MS/TP to IP router to the BMS.
2. Installing 24 VAC transformers with new power runs as required based on new power requirements. Existing valves powered with  $\pm 15$  VDC require new power runs and associated 24 VAC transformers.
3. Replacing existing temperature sensors with current design temperature sensors if local bypass override is required. New cable runs are required in lab applications where temperature control is moving from the CCU100 or Celeris 2 controller to a Programmable BACnet Controller (PBC).
4. Existing fume hood controls (Fume Hood Monitor, Zone Presence Sensor) requiring  $\pm 15$  VDC need to be replaced.
5. Coordinating with BMS during the transition from Celeris 1 Accel-Works databases, Celeris 2, Traccel, Theris, analog, MAC, MIJ, or MIX integration to new CSCP.

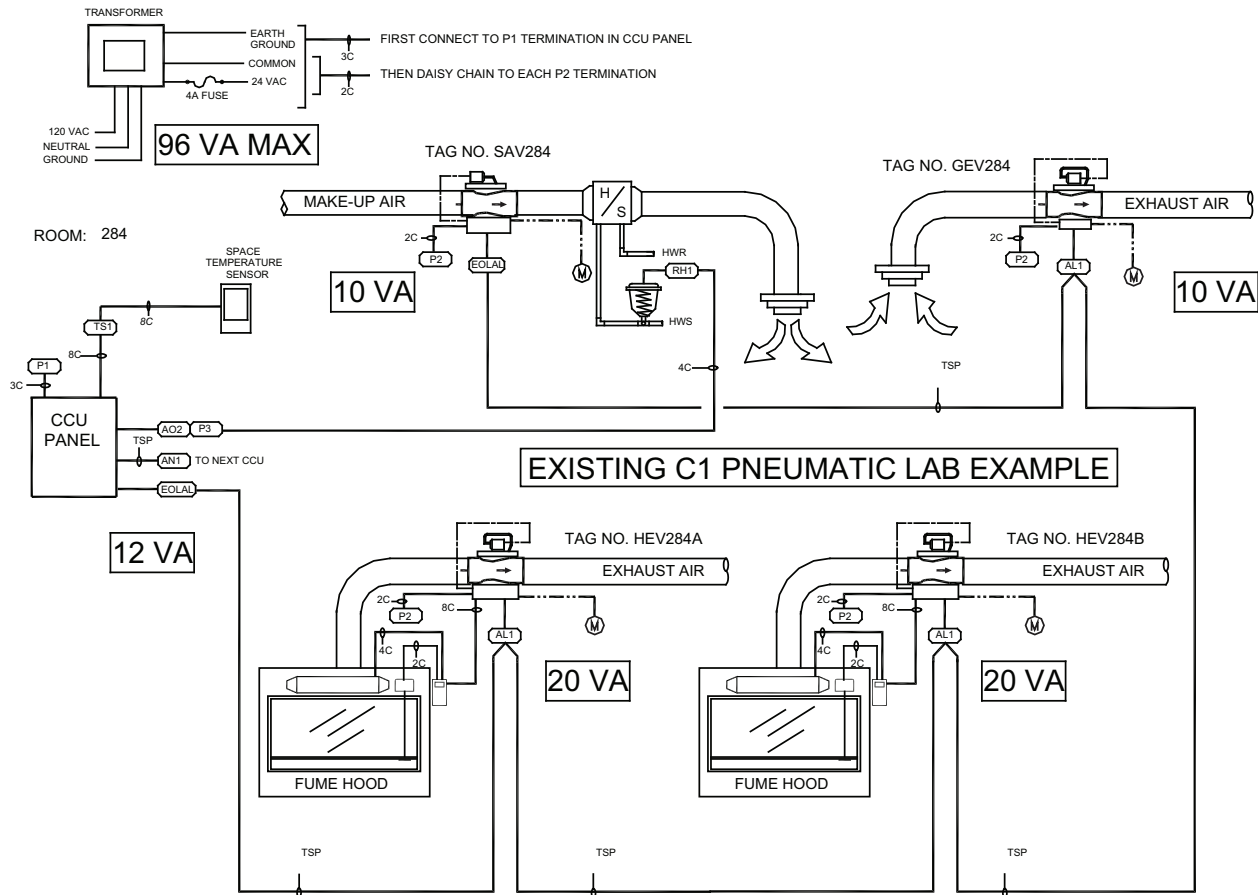
- If you are replacing a Celeris 1 system, you can reuse the room-level wiring in some cases. However, legacy systems do not have communication wires that run to all valves. Audit the system, and replace or add communication cables if needed. When you upgrade Celeris 2 systems to CSCP, you must replace the communication wire with the appropriate BACnet MS/TP cable.

### Existing Analog Pneumatic Lab



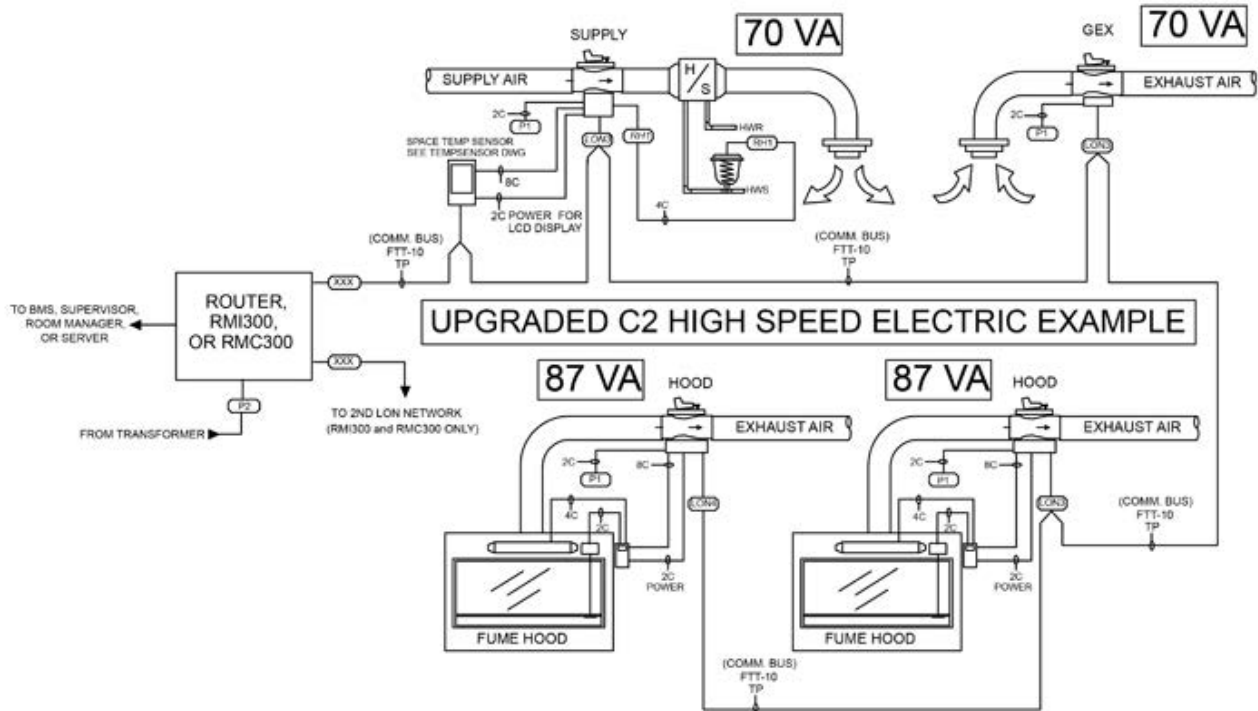
Existing analog labs utilize an MAC, MIJ, or MIX panel for zone balance and temperature control. Analog pneumatic labs are powered exclusively by  $\pm 15$  VDC, while analog high-speed electric labs are a combination of 24 VAC power and  $\pm 15$  VDC power. Additional transformers based on CSCP power requirements are necessary. MAC, MIJ, or MIX panels are eliminated and new temperature sensors are required. In labs and tracking pair rooms, the temperature sensors are wired to the supply valve. Installing new integration devices, routers, and repeaters, room-level and building-level network wiring is required.

## Existing Celeris 1 Pneumatic Lab



Existing Celeris 1 labs utilize CCU Panels for temperature control. Celeris 1 pneumatic labs are powered by 24 VAC on Celeris 1 valves and  $\pm 15$  VDC on the analog tracking valves typically. Additional transformers based on CSCP power requirements are necessary. CCU Panels are eliminated and replaced with CSCP integration devices or routers, and temperature sensor wiring must be relocated to the PBC for the zone. Installation of building-level network wiring is required.

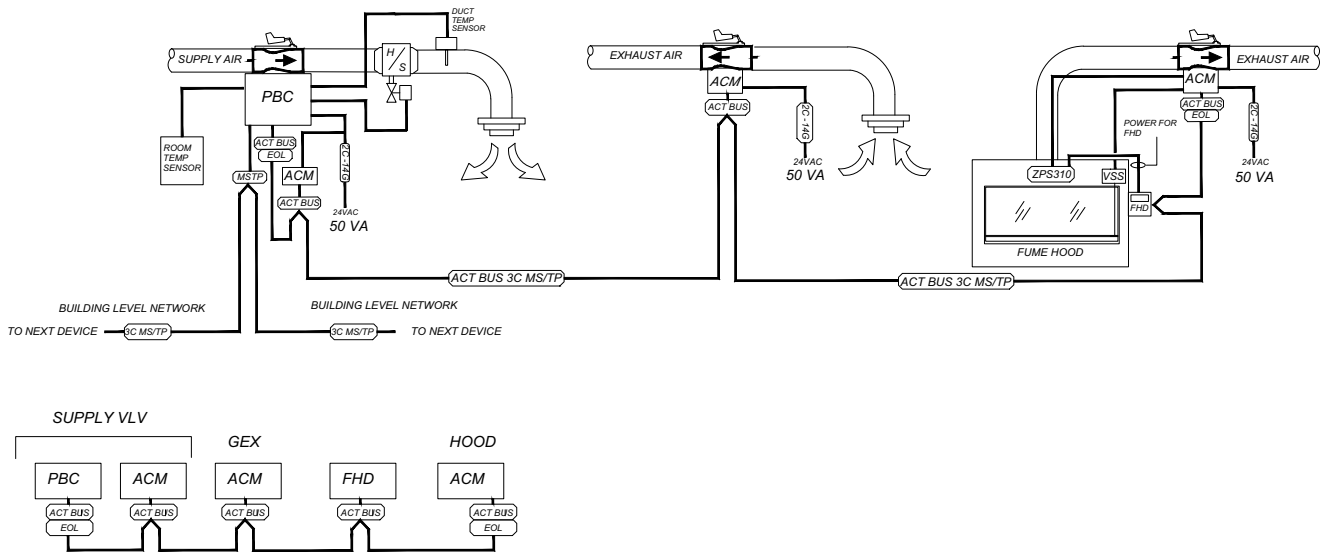
## Existing Celeris 2 High-Speed Electric Lab



Existing Celeris 2 labs utilize the Phoenix Controls Integrator (PCI8000) which you can optionally use with CSCP. C2 high-speed electric requires a dedicated 100 VA transformer to each valve. Only 50 VA transformers are required for CSCP. All peripheral fume hood monitors and zone presence sensors are powered by dedicated 24 VAC, 100 VA transformers on standard 4-8 foot hood installations. If you are using existing legacy Zone Presence Sensors that require  $\pm 15$  VDC, each fume hood should have a dedicated WPS440. In most cases, a new temperature sensor is required if local occupancy bypass control or local display is required. A new BACnet-based Fume Hood Display (FHD) is also required.

## UPGRADED CSCP LAB SPACE

The following diagram illustrates a typical CSCP system architecture that includes both high-speed and standard-speed applications:



## UPGRADING FROM CELERIS 1

Existing pneumatic legacy Celeris systems can be upgraded to CSCP. Existing single and dual Celeris 1 and associated analog valves require one valve upgrade kit each; existing triple and quad units each require two upgrade kits. As part of the upgrade, all valves are provided with new Vpots, actuators, and control boards (*Kit Components* on page 6). A new flow curve must be generated using the *Phoenix Controls Curve Import Wizard* in *Phoenix Controls Workbench* v5.2.1 or later. Air flow verification and flow curve adjustment might be required.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. You must reuse the existing actuator links (straight links on normally closed units and reversing arms on normally open).

The following table is a guide for valve replacement that uses single valves as examples. Dual applications differ from the following chart. Consult your Application Engineer with any questions at the time of your order.

Valve Type	C1 Model Code	CSCP Model Code	Upgrades Available	Upgrade Example	
Supply	SP4	ACM_ZONE	CSCP	PVUX112M-XMDXY-500-BC1	
	SP5, SV5	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1	
	MAV	ACM_ZONE		PVUX112M-XMDXY-500-BC1	
	BAV	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1	
	SUP, CVS, GP4, CVSTE, CVCR, CVCTER, LSCR, LSCTER, LSCCR, VAVC, VAVCR, VAVCTE, VAVCTER, LSC, LSCTE	ZV1		ZV1 ZV2	PVUX112M-XMDXY-500-BC1
					PVUX112M-XIPXN-500-BC
					PVUX112M-XIPXN-500-BC1
Exhaust	STDHD, AUXHD, HDING, HDMAV	ACM_HOOD	CSCP	PVUX112M-XMBXY-BMT-BC1	
	GP4	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1	
		LV1		PVUX112M-XITHN-BC1	
	GP5, GV5	ACM_ZONE		LV1	PVUX112M-XMBXY-BMT-BC1
		LV1			PVUX112M-XITHN-BC1
	GEX	GM - GEX Main LF - Lab Full			PVUX112M-XMBXY-BMT-BC1
	RET, EXH, CVE, CVETS, LEC, LECTS	ACM_ZONE		ACM_ZONE	PVUX112M-XMDXY-500-BC1
ACM_ZONE		PVUX112M-XMDXY-500-BC1			

## UPGRADING FROM ANALOG

Analog valves can be upgraded to CSCP (certain sizes/vintages only). Existing single and dual valves require one valve upgrade kit each; existing triple and quad units each require two upgrade kits. As part of the upgrade, all valves are provided with new Vpots, actuators, and control boards (*Kit Components* on page 6). A new flow curve must be generated using the *Phoenix Controls Curve Import Wizard* in *Phoenix Controls Workbench* v5.2.1 or later. The wizard will not work with Accel I valve bodies – these are easily identified as having the hourglass-style valve body and old nomenclature. You must use a generic curve that is provided on the *Phoenix Controls Tech Forum* for each valve size. Air flow verification and flow curve adjustment might be required.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. You must reuse the existing actuator links (straight links on normally closed units and reversing arms on normally open). All BCE upgrades (to Control Type = I, M, and N) exclude the "left and right linkage between pivot arms" and those on the existing valve must be reused.

The following table is a guide for valve replacement that uses single valves as examples. Dual applications will differ from the chart below. Consult your Application Engineer with any questions at the time of order.

Valve Type	Analog Model Code	CSCP Model Code	Upgrades Available	Upgrade Example
Supply	LC - Lab Compact	ACM_ZONE	CSCP	PVUX112M-XMDXY-500-BC1
	SS2, SS3, SP3, SV1, SV2, SV3, SP1, SP2, SI2	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	SNI, SMI	ACM_ZONE		PVUX112M-XMDXY-500-BC1
	BP - Bypass Valve	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	SSI	ZV1		PVUX112M-XMDXY-500-BC1
	SSI	ZV1 ZV2		PVUX112M-XIPXN-500-BC1 PVUX112M-XIPXN-500-BC1
Exhaust	HI2, HI5, H5I, HNI, HI1	ACM_HOOD	CSCP	PVUX112M-XMBXY-BMT-BC1
	GP1, GP2, GP3, GS1, GP3, GS2, GS3, GV1, GV2, GV3	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	GS1	LV1		PVUX112M-XITHN-BC1
	GS4	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1

## UPGRADING FROM BASE UPGRADABLE (BXV)

Base Upgradable valves can be upgraded to CSCP. Existing single and dual valves require one valve upgrade kit each; existing triple and quad units each require two upgrade kits. As part of the upgrade, all valves are provided with new Vpots, actuators, and control boards (*Kit Components* on page 6). A new flow curve must be generated using the *Phoenix Controls Curve Import Wizard* in *Phoenix Controls Workbench* v5.2.1 or later. The diagnostic tool will not work with Accel I valve bodies - these are easily identified as those having the hourglass style valve body and old nomenclature. Therefore, a generic curve (provided on the *Phoenix Controls Tech Forum* for each valve size) must be used. Air flow verification and flow curve adjustment might be required.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. So the existing ones must be reused (straight links on normally closed units and reversing arms on normally open). All BCE upgrades (to Control Type = I, M, and N) exclude the "left and right linkage between pivot arms" and those on the existing valve must be reused.

### A. The following example is for a BEV fixed flow hood valve of vintage E

Base Upgradable Hood Valve BEVB212M-AFFHO can be upgraded to the following example:

CSCP High-Speed Electric Hood Valve

PVUX212M-XMDXO-500-BCE

**B. The following example is for a BSV pneumatic quad supply valve of vintage D**

Base Upgradable Supply Valve BSVA412M-ABNHC can be upgraded to the following example:

CSCP Low-Speed Electric Supply Valve                      PVUX212M-XIPXZ-500-BCD (Two kits required)

**UPGRADING FROM PNEUMATIC, NO Vpot (PxV)**

Existing PXV (pneumatically actuated without Vpots or electronics) valves can be upgraded to CSCP. Existing single and dual valves require one valve upgrade kit each; existing triple and quad units each require two upgrade kits. As part of the upgrade, all valves are provided with Vpots, actuators, and control boards (*Kit Components* on page 6). Because the existing valve had no Vpot, a factory flow curve does not exist. Therefore, a generic curve for the body design of the existing valve, hourglass or Accel II, must be used. Generic flow curves are provided on the *Phoenix Controls Tech Forum* for each valve size in both body designs. Air flow verification and flow curve adjustment might be required.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. You must reuse the existing actuator links (straight links on normally closed units and reversing arms on normally open). All BCE upgrades (to Control Type = I, M, and N) exclude the "left and right linkage between pivot arms" and those on the existing valve must be reused.

**A. The following example is for a PEV general exhaust valve of vintage C**

Pneumatic, without Vpot, GEX Valve PEV210M-HOR can be upgraded to one of the following examples:

C2 High-Speed Pneumatic GEX Valve                      PVUX210M-DNEXO-500-BCC  
 C2 High-Speed Electric GEX Valve                      PVUX210M-DMEXO-500-BCC

**B. The following example is for a PSV quad supply valve of vintage B**

Pneumatic, without Vpot, Supply Valve PSV412M-HOR can be upgraded to one of the following examples:

C2 High-Speed Pneumatic Supply Valve                      PVUX212M-DNEXC-500-BCB (Two kits required)  
 C2 High-Speed Electric Supply Valve                      PVUX212M-DMEXC-500-BCB (Two kits required)  
 C2 Low-Speed Electric Supply Valve                      PVUX212M-DIEXZ-500-BCB (Two kits required)

**UPGRADING FROM CONSTANT VOLUME**

Existing constant volume valves can be upgraded to CSCP. Existing single and dual valves require one valve upgrade kit each; existing triple and quad units each require two upgrade kits. As part of the upgrade, all valves are provided with Vpots, actuators, and control boards (*Kit Components* on page 6). Because the existing valve had no Vpot, a factory flow curve does not exist. Therefore, a generic curve for the Accel II valve body only design must be used. Generic flow curves are provided on the *Phoenix Controls Tech Forum* for each valve size in both body designs. Air flow verification and flow curve adjustment might be required.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. You must reuse the existing actuator links (straight links on normally closed units and reversing arms on normally open). All BCE upgrades (to Control Type = I, M, and N) exclude the "left and right linkage between pivot arms" and those on the existing valve must be reused.

The following table is a guide for valve replacement that uses single valves as examples. Dual applications differ from the following chart. Consult your Application Engineer with any questions at the time of your order.

Valve Type	Model Code	Upgrade Model Code	Upgrades Available	Upgrade Example
Supply	N/A	ACM_ZONE	CSCP	PVUX112M-DMDXY-500-NB1
		ZV1		PVUX112M-XMDXY-500-NB1
Exhaust	N/A	ACM_HOOD	CSCP	PVUX112M-BMBXY-BMT-NB1
		LV1		PVUX112M-PITHN-NB1



**The following example is for a CxV pneumatic quad supply valve of vintage F**

Constant Supply Valve CxVA412M-ACNHZ can be upgraded to one of the following examples:

- CSCP High-Speed Electric Supply Valve                      PVUX212M-XMDXC-500-NBF (Two kits required)
- CSCP Low-Speed Electric Supply Valve                      PVUX212M-XIPXZ-500-NBF (Two kits required)

**NOTE:** Check to ensure that pivot arms are properly aligned. Four kits might be necessary.

**UPGRADING FROM CELERIS 2, TRACCEL, THERIS**

Existing Celeris 2, Traccel, or Theris valves can be upgraded to CSCP. Existing single and dual valves require one valve upgrade kit each. As part of the upgrade, all valves are provided with Vpots, actuators, and control boards (*Kit Components* on page 6). Because the existing valve had no Vpot, a factory flow curve does not exist. Air flow verification and flow curve adjustment might be required. For Celeris 2 valves, flow curves are extracted from the database or you can request a flow curve from Phoenix Controls by providing the serial number of the Celeris 2 valve.

Certain upgrades require the reuse of linkage from the existing valve. BCB, BCC, and BCD upgrades to pneumatic do not contain actuator links. You must reuse the existing actuator links (straight links on normally closed units and reversing arms on normally open). All BCE upgrades (to Control Type = I, M, and N) exclude the "left and right linkage between pivot arms" and those on the existing valve must be reused.

The following table is a guide for valve replacement that uses single valves as examples. Dual applications differ from the following chart. Consult your Application Engineer with any questions at the time of your order.

Valve Type	Model Code	Upgrade Model Code	Upgrades Available	Upgrade Example
Supply	LC - Lab Compact	ACM_ZONE	CSCP	PVUX112M-XMDXY-500-BC1
	BT - Booster Tracking	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	MT - Main Supply	ACM_ZONE		PVUX112M-XMDXY-500-BC1
	BP - Bypass Valve	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	ZV - Zone Valve	ZV1		PVUX112M-XMDXY-500-BC1
	ZV1 - Traccel/Theris Standalone	ZV1		PVUX112M-XIPXN-500-BC1
	ZV2 - Traccel/Theris Tracking Pair	ZV2		PVUX112M-XIPXN-500-BC1
Exhaust	HM - Hood Main or HC - Hood Controller	ACM_HOOD	CSCP	PVUX112M-XMBXY-BMT-BC1
	BT - Inverse GEX or Tracking Exhaust LF - Lab Full	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	TV1- Tracking Valve	LV1		PVUX112M-XITHN-BC1
	BT - Booster Tracking	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	GM - GEX Main LF - Lab Full	LV1		PVUX112-XITHN-BC1
	ZV - Zone Valve	ACM_ZONE		PVUX112M-XMBXY-BMT-BC1
	ZV1 - Traccel Zone Valve	ACM_ZONE		PVUX112M-XMDXY-500-BC1

## POINTS AND WIRING, NETWORK WIRING, AND TRANSFORMER SIZING

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Refer to the following table for the appropriate Product Datasheet for board layout, terminal block connectors, network wiring, and transformer sizing.

Product Datasheet	P/N
Programmable BACnet Controller (PBC)	MKT-0511
Actuator Control Module (ACM)	MKT-0513
CSCP Venturi Valves	MKT-0525

## VALVE UPGRADE WARRANTY REGISTRATION

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Warranty registration provides three years extended warranty for Phoenix Controls legacy valves fitted with our factory-designed valve upgrade kits. To qualify for the extended warranty, the following conditions **MUST** be met:

- A Phoenix-certified technician **MUST** install the valve upgrade kits.
- Upon completing the upgrade, a Phoenix-certified technician **MUST** certify the performance accuracy of the upgraded valve.
- Warranty registration must be completed and submitted to the Phoenix Controls Order Management Department by the channel partner **within 90 days** from the date of shipment of the valve upgrade kits. Warranty registration for valves not received within 90 days from date of the upgrade kit shipment will not qualify for the extended valve warranty.

To register for the extended warranty, download and complete the *Valve Upgrade Warranty Registration Form (MKT-0473)* from the Form section on the Phoenix Controls Partner Site.