Phoenix Controls Valve Upgrade Kits provide migration from constant volume (Accel II bodies only), PxV, base upgradable, analog, and Celeris® 1 valves to the latest Celeris® 2 and Traccel® (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.
- Infrastructure for the new digital networks can be configured first then phased in when advantageous to facility scheduling.

**ENERGY BENEFITS**

Moving to Celeris 2 and Traccel technology provides enhanced control with energy management features previously unavailable. Upgrade will provide all the features included in the Celeris 2 and Traccel platforms.

- Enhanced occupied, stand-by (LON only), timed bypass, and unoccupied control
- Advanced temperature control including cascade control, thermal anticipatory or BTU compensation control (C2 only), temperature sensor averaging (LON only), 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
- Automatic GEX shut-off in lab spaces can be configured for energy savings (requires replacing GEX valve with a shut-off valve) (C2 only)
- Hibernation mode that allows hood valves to be driven to the minimum valve flow when not in use (may require fume hood monitor upgrade to FHM631 or Sentry-SE) (C2 only)
- Usage based controls to reduce hood flows (C2 only)

<table>
<thead>
<tr>
<th>Control Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Low-Speed Floating Point (IP54) Electric</td>
</tr>
<tr>
<td></td>
<td>For temperature control on standalone supply valves; tracking pair valves in</td>
</tr>
<tr>
<td></td>
<td>offices, alcoves, and vivariums to maintain minimum air flow, temperature,</td>
</tr>
<tr>
<td></td>
<td>and space pressurization or offset.</td>
</tr>
<tr>
<td>N</td>
<td>Digital Pneumatic (C2 only)</td>
</tr>
<tr>
<td></td>
<td>For high-speed fume hood containment in laboratories using pneumatically</td>
</tr>
<tr>
<td></td>
<td>controlled actuators.</td>
</tr>
<tr>
<td>M</td>
<td>Digital High-Speed Electric (C2 only)</td>
</tr>
<tr>
<td></td>
<td>For high-speed fume hood containment in laboratories using electrically</td>
</tr>
<tr>
<td></td>
<td>controlled actuators.</td>
</tr>
</tbody>
</table>

**OPERATIONAL BENEFITS**

Upgrading to Celeris 2 and Traccel 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.

- The Celeris 2 and Traccel platforms create 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 Supervisor and Portal for data analysis and energy savings
SPECIFICATIONS

Applicability
- VAV valves: Hourglass (from 1/1/1990) 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
- Pressure independent over 0.6”-3.0” WC (150-750 Pa) drop across valve for medium pressure, 0.3”-3.0” WC (75-750 Pa) for low pressure
- Available with flows based on original valve ordered. See Legacy Valve Flow/Pressure Operating Range table below.
- Response time to change in command signal:
  - <1 second (control type M and N)
  - <1 minute (control type I)
- Response time to change in duct static pressure: <1 second

Pneumatic Actuation (excluding Traccel)
- 20 psi (-0/+2 psi) with a 20 micron filter main air required
- Compressor sizing: Accel valves are not continuous air-consuming devices. For compressor sizing, use:
  - Single and dual valves: 10 scim
  - Triple and quad valves: 20 scim

Power Consumption
Singles/Duals per valve
- Low-speed electric:
  - All Celeris, Traccel SO, Traccel EO: 10 VA
  - Traccel TP, Traccel TX: 12 VA
  - Traccel TX-EXH, TX-RTN: 15 VA
- High-speed Electric: 70 VA (see Note 2)
  - Requires dedicated 100 VA transformer.

Notes:
1. All power consumption VA ratings listed here are based on fully-loaded I/O except for floating point reheat actuators.
2. Requires dedicated 100 VA transformer.

I/O (Celeris 2 and Traccel LON)
Available for connecting field devices:
- 3 universal inputs. Accepts volt, mA, ohms or NTC 2 or 3 thermistor signals. Traccel TX has 5 universal inputs
- 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

I/O (Traccel BACnet)
- See Traccel® BACnet® Controllers Product Data Sheet (MKT-0242)

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:
  Honeywell GmbH
  Boeblinger Str. 17
  71101 Schoenaich
  Germany

LEGACY VALVE FLOW/PRESSURE OPERATING RANGE

<table>
<thead>
<tr>
<th>Valve Body/Size</th>
<th>Flow Operating Range in CFM (m³/hr)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low Pressure</td>
</tr>
<tr>
<td></td>
<td>Accel I (Hourglass)</td>
</tr>
<tr>
<td></td>
<td>Standard Flow</td>
</tr>
<tr>
<td>Single 8”</td>
<td>n/a</td>
</tr>
<tr>
<td>Single 10”</td>
<td>60-550 (105-930)</td>
</tr>
<tr>
<td>Single 12”</td>
<td>165-1050 (280-1780)</td>
</tr>
<tr>
<td>Single 14”</td>
<td>n/a</td>
</tr>
<tr>
<td>Dual 10”</td>
<td>120-1100 (205-1860)</td>
</tr>
<tr>
<td>Dual 12”</td>
<td>330-2100 (565-3560)</td>
</tr>
<tr>
<td>Dual 14”</td>
<td>n/a</td>
</tr>
<tr>
<td>Triple 12”</td>
<td>495-3150 (845-5340)</td>
</tr>
<tr>
<td>Triple 14”</td>
<td>n/a</td>
</tr>
<tr>
<td>Quad 12”</td>
<td>660-4200 (1125-7120)</td>
</tr>
<tr>
<td>Quad 14”</td>
<td>n/a</td>
</tr>
</tbody>
</table>
ORDERING GUIDE

C2U  X  1  12  L  -  X  ME  X  O  -  BC1  -  VPL

VALVE FAMILY

C2U = Celoris 2 Upgrade (see Note 1)
TXU = Trascoil Upgrade (see Notes 1, 2, and 9)

VALVE CONSTRUCTION

X = Mandatory place holder, must be entered in WebPro

NUMBER OF VALVE BODIES

1 = One valve body (single) (see Notes 3, 4, 5)
2 = Two valve bodies (dual); 10", 12", and 14" only (see Notes 3, 6, 7, and 8)

SIZE

08 = 8" valve (7.88" actual diameter) - single only
10 = 10" valve (9.88" actual diameter) - single and dual
12 = 12" valve (11.88" actual diameter) - single and dual
14 = 14" valve (13.88" actual diameter) - single and dual (see Note 9)

FLOW/PRESSURE OPERATING RANGE

M = Medium pressure operation; 0.6 to 3.0MPa
L = Low pressure operation; 0.3 to 3.0MPa

VALVE DESIGN

X = Place holder

CONTROL TYPE

E = Floating Point IPS4 electric actuator with fail-to-last position; (see Notes 10, 11)
D = Digital high-speed electric (C2 only)
N = Digital pneumatic (C2 only; see Note 12)

VALUE OPTIONS

Optional Feature

VPL = Pressure switch, low limit (see Notes 4 and 14)

Mandatory Existing Valve Type (Select ONLY One); see Note 22

BC1 = FROM Single with Base Channel All Vintages (see Notes 4)
BCC = FROM Single with Base Channel Vintage A (see Notes 6, 7, 9)
BCC = FROM Dual with Base Channel Vintage B (see Notes 6, 7, 9)
BCC = FROM Dual with Base Channel Vintage C (see Notes 6, 7, 9)
BCC = FROM Dual with Base Channel Vintage D (see Notes 6, 7, 9)
BCC = FROM Dual with Base Channel Vintage E (see Notes 6, 7, 9)
NB1 = FROM Single no Base Channel All Vintages (see Notes 5, 6, 8, 9, 18, 19, 20)
NB1 = FROM Dual no Base Channel Vintage F (see Notes 5, 6, 8, 9, 18, 19, 20)
NBG = FROM Dual no Base Channel Vintage G (see Notes 5, 6, 8, 18, 21)

FAIL-SAFE POSITION

C = Normally closed (C2 only; see Note 11)
O = Normally open (C2 only; see Note 11)
Z = Not applicable (see Note 12)

VALUE ORIENTATION

X = Place holder

VALUE CONTROLLER DESIGNATION

E = C2 electronic controller (see Note 13)
H = C2 hood exhaust valve with pressure switch (see Notes 10, 13, and 14)
I = BAcont INDIVIDUAL only (see Note 15)
L = BAcont LINKED controlling (see Note 16)
N = No electronics (Trascoil Tracking Valve)
X = LowMARK Electronic Valve - Controlling valve of tracking pair with expanded features (see Note 17)

Notes

1. All upgrade valve controller boards require field generated or factory curve download and validation.
2. Family = TXU; Cannot be ordered for existing vintages that contain two single kits for a dual upgrade; therefore, not with Existing Valve Type = NBG or with (Size = 14" & 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), respectively.
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 08/09/2017.
6. Dual upgrades (Bodies = 2) MUST be ordered with one of the following Existing Valve Types: BCA, BBC, BCD, BCC, BNE, NB, 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 1/1/1998; or
   (b) during December 2002 (Valves shipped after 12/16/02 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 08/09/2017, and
   (b) MUST be visually inspected to determine: [1] the vintage of the original valve, and [2] if vintage NBG, whether pilot arms are positioned to accommodate the upgrade’s dual base channel
      (if not, order two C2UX1xx upgrade kits per dual instead of one C2UX0xx kit).
9. Size = 14" cannot have Control Type = N, nor be ordered with Existing Valve Type = BCA, BBC, BCD, or NBG (vintages on which 14" valves did not yet exist).
10. “Celsius” Hood valves cannot have Low Speed actuators (Control Type = I).
11. Control = C cannot have FailSafe = C or O.
12. Control = N cannot have FailSafe = Z.
13. Designation = E & A: All C2U valve controller boards require firmware application download based on the upgrade’s model code.
14. Designation = H cannot have Optional Feature = VPL.
15. Designation = L Generic small individual BAcont 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 SD when needed.
16. Designation = L Generic large linked BAcont controller with four unattached labels (three of which get thrown away once field applied to the product). Factory default application image is TX; can be field programmed to TP: TX-DXH, or TX-TRN when needed.

NOTE: Although the TXU will be linked to its tracking valve(s) through field wiring, they will NOT be linked on the RSS.
17. 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.
18. Existing Valve Type = NB1, NBG & NBG Existing No Base Channel CV & PV valves with hourglass bodies CANNOT be upgraded.
19. Existing Valve Type = NBG: Dual upgrade contain two single kits and can only be ordered with Family = C2U.
20. Existing Valve Type = NBG: Cannot be ordered in Size = 14".
21. Existing Valve Type = NBG: Dual 10" & 12" upgrades contain one dual kit if existing pilot 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.
22. Base channels were added to CEV/CSV on 08/10/2017.
## PRE-ORDER CHECKLIST

The table below dictates the minimum information you need to gather before ordering a kit or performing an upgrade. There may be additional information you need based on the particular site.

<table>
<thead>
<tr>
<th>Action</th>
<th>Single Valves</th>
<th>Dual Valves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluate room for ease of access to valves</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Visually inspect all valves to be upgraded for signs of damage</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Verify integrity of coated valves</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Verify and generate documentation on the physical room performance (i.e., lab verification) before any upgrade work is performed</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Verify pressure independence and flow accuracy</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Check physical room offset using an instrument such as a Shortridge AirData multimeter</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Identify the original job number and date of manufacture (found on valve label)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><em><em>For single valves with</em> base channels:</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hourglass valves that shipped prior to 1/1/1990 cannot be upgraded. For vintage reference, see “Determining Existing Valve Type” on page 5.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td><em><em>For dual valves with</em> base channels:</em>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and take photos of valves that either shipped prior to 1/1/1998 or during December 2002. For vintage reference, see “Determining Existing Valve Type” on page 5.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td><strong>For single valves with NO</strong> base channels:**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only valves with Accel II bodies can be upgraded. For vintage reference, see “Determining Existing Valve Type” on page 5.</td>
<td>X</td>
<td>—</td>
</tr>
<tr>
<td><strong>For dual valves with NO</strong> base channels:**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Identify and take photos of all valves to be upgraded. Then determine the exact vintage by referring to the “Determining Existing Valve Type” on page 5.</td>
<td>—</td>
<td>X</td>
</tr>
<tr>
<td><strong>Vintage NBG 10 &amp; 12-inch Dual Valves with NO</strong> base channels:**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Check to ensure that both pivot arms are parallel and located in a 12 o’clock position (not skewed; refer to “NBG 10 and 12-inch Pivot Arms need to be parallel at 12 o’clock” on page 6 for pictures).</td>
<td>—</td>
<td>10 and 12-inch Only</td>
</tr>
<tr>
<td>If visually deviant from parallel at 12 o’clock: the base channel provided in the dual upgrade kit will not fit and you must order two single upgrade catalog numbers instead.</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

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

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