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# **Phoenix Controls**

creating healthy environments **Silada** 

conserve more energy. spread of airborne pathogens and maintenance costs, reduce the healthcare facility owners can reduce healthcare facilities. Using Theris, control systems designed for woltant (VO) emulov trasteroo of variable air volume (VAV) amulov is sldsinsv fo Theris® is Phoenix Controls' family healthcare solutions



environmental integrity of the most importantly, maintain the HVAC renovation costs, and, in airflow demands, reduce future can easily accommodate changes Traccel, life science facility owners today's life science facilities. With to absen sht team of bengiseb smətaya lortnos wolfria fo ylimaf Traccel<sup>®</sup> is Phoenix Controls' snoitulos sonsios stil

research facility.

optimum energy efficiency.

environments, while offering

environment in critical control

manufacturing facilities. Celeris

containment and pharmaceutical

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VAV) airflow control valves for

performance Variable Air Volume

Celeris<sup>®</sup> is a platform of high-

laboratory solutions

precision control for critical spaces

ELIS

protects researchers and safeguards

the integrity of the research

# Valve Ordering Guide



#### ensuring environmental integrity

For more than 20 years, the name Phoenix Controls has meant peace of mind for thousands of corporations and universities around the globe. Our customers know the quality and reliability of Phoenix Controls' venturi valve and control system are second to none. Yes, we know safety is the primary reason our customers choose us. But today, there are even more reasons to design our venturi valves into projects. Our innovative airflow control solutions provide new ways to save energy and reduce the costs of maintaining HVAC systems.



# VALVE ORDERING GUIDE

									<u>M A V</u>	<u>A</u>	1	<u>14</u>	Μ	-	<u>A</u>	Μ	<u>E</u>	H	<u>C</u>	
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	cvv	VALVE FAMILY •	<b>↑</b>	Ť	Ť	1	1		1	Ť	1	1	Ť	▲
						J		CSV = Constant volume Supply Valve												• F
						J		CEV = Constant volume Exhaust Valve												
							J	CVV = Constant volume, Cage Rack valve												ļ
					J			PSV = Pneumatic Supply Valve (no feedback)												C
					J			<b>PEV = Pneumatic Exhaust Valve</b> (no feedback)												C
				J				BSV = Base upgradeable supply valve												Z
				J				BEV = Base upgradeable exhaust valve												
			J					MAV = Analog Supply Valve												<u> </u>
			J					EXV = Analog Exhaust Valve												H
		J						HSV = Theris Supply Valve Healthcare												U
		J						HEV = Theris Exhaust Valve Healthcare												D
	J							TSV = Traccel Supply Valve Life Science												
	J							TEV = Traccel Exhaust Valve Life Science												
J								MAV = Celeris Supply Valve												
J								EXV = Celeris Exhaust Valve												
								* All Supply Valves (see note 1)												
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV	VALVE CONSTRUCTION •												
J	J	J	J	J	J	J		A = Body and cone - uncoated aluminum; Shaft - uncoated 316 stainless steel												
J	J		J	J	J	J		B = Body and cone with baked phenolic coating; PFA-coated 316 stainless steel shaft												
J			J	J	J	J		C = Body, cone and hardware with baked phenolic/e coating; PFA-coated 316 stainless steel shaft	poxy phenolic											
J			J	J	J	J		D = Body, cone and hardware with PVDF coating; PFA-coated 316 stainless steel shaft (see note	2)											• (
							J	R = CVVR - "Rack" Valve: Body and cone - uncoated aluminum; Shaft - PFA coated 316 stainless stee	1											C
																				F
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV	NUMBER OF VALVE BODIES •												B
J	J	J	8,10, &12"	Note 3	J	J		F = Single valve with welded Circular Flanges												F
J	J	J	8,10, &12"	Note 3	J	7	J	1 = One valve body (single, no flange)												-
J	J	1	10 & 12 "	Note 3	10 & 12 "	10,12, &14"		2 = Two valve bodies (dual) (see note 2)												Z
		* CV 12&14"	12" only	Note 3	12" only	10,12, &14"		3 = Ihree valve bodies (triple) (see note 2) (Analog and Uncontrolled Valves only)												А
		12&14"	12" only	Note 3	12" only	10,12, &14"		4 = Four valve bodies (quad) (see note 2) (Analog and Uncontrolled Valves only)												E
*Letter	s in this c	nart refe	r to "Tracc	cei and Th	ieris Prod	uct Mode	eis"	l												L
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV	VALVE SIZE •				]								Ν
J	J	J	J	J	J	J	J	08 = 8" valve (7.88" actual diameter) (see note 4)												Ν
J	J	J	J	J	J	J		10 = 10" valve (9.88" actual diameter)												
J	J	J	J	J	√ Cingle	J		12 = 12" valve (11.88" actual diameter)												• \
*L&M		J	to #0	3	Only	J		2 & 5)												А
Letter	S III UTIIS C	nart rete	to Cont	ioi iype"					05											(
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV	FLOW/PRESSURE OPERATING RAN	GE											с 1
J	J	J	J	J	J	J	J	M = Medium pressure (0.6" to 3.0") (see note 5)												L
J	1	J	J	J	J	J		L = Low Pressure (0.3" to 3.0") (see notes 6 & 7)												

## TRACCEL AND THERIS PRODUCT MODELS

<b>TP</b> - (Tracking Pair VAV) — To meet the need of directional airflow, TP features tracking valve pairs that maintain a prescribed CFM offset to enable accurate space pressurization and complete room climate control.	<b>TX RTN</b> - (Enhanced Tracking Pair w additional return valve) — Similar feature set to the TX-EXH. The TX-RTN provides the ability to add an optinal return valve (Ratio Metric) without an additional controller (3 valves - 1 controller). This is an ideal solution for common areas near a lab or for the use in a lab being monitored by IAQ with pandemic switch.	<b>CV - (Constant Volume; Theris Only)</b> — For fixed-flow facility, CV provides a solution for constant volume supply a
<b>TX</b> - (Enhanced Tracking Pair VAV) — For tracking pair applications, TX provides extra I/O to meet the needs of humidity control and pressure monitoring, plus optional shut-off capability for decontamination procedures.	<b>SO</b> - (Supply-only VAV) — In VAV applications where ducted exhaust is sufficient to meet local codes and engineering guidelines, SO provides a cost-effective supply valve when no tracking exhaust valve is required.	<b>EXH - (Exhaust)</b> — Tracking exhaust valve in TP or TX trac
<b>TX EXH</b> - (Enhanced Tracking Pair w additional tracking exhaust) — Along with many of the standard TX tracking pair features, TX-EXH provides the ability to locally control an additional exhaust valve without an additional controller (3 valves - 1 controller). This is an ideal solution for spaces that have an additional PSC or 2 state have	<b>EO</b> - (Exhaust-only VAV; Shut-off capable) — Theris EO provides an additional exhaust valve with controller to allow 2 state LED control from a switch (Min or Max flow limits), shut-off and alarming for a 2 state hood, snorkel or Bio Safety Cabinet.	

## Standard Valves - Celeris / Traccel / Theris / Analog Flow/Pressure Operating Range

Size	Single	Dual	Triplo			
*00"			TTPle	Quad	Across Valve	
00	35-700 (60-1185)	_	_	_		
10"	50-1000 (85-1695)	100-2000 (170-3390)	-	_	0.6-3.0" WC	
12"	90-1500 (155-2545)	180-3000 (310-5090)	270-4500** (465-7635)	360-6000** (620-10,180)	(150-750 Pa)	
14"	200-2500 (340-4245)	400-5000 (680-8490)	600-7500 (1020-12,735)	800-10,000 (1360-16,980)		
08"	35-500 (60-845)	_	-	_		
10"	50-550 (85-930)	100-1100 (170-1860)	-	_	0.3-3.0" WC	
12"	90-1050 (155-1780)	180-2100 (310-3560)	270-3150** (465-5340)	360-4200** (620-7120)	(75-750 Pa)	
14"	200-1400 (340-2375)	400-2800 (680-4750)	600-4200 (1020-7125)	800-5600 (1360-9500)		
	10" 12" 14" 08" 10" 12" 12" 14" 0 cfm to 210 cfm (	10" 50-1000 (85-1695)   12" 90-1500 (155-2545)   14" 200-2500 (340-4245)   08" 35-500 (60-845)   10" 50-550 (85-930)   12" 90-1050 (155-1780)   14" 200-1400 (340-2375)	$10"$ $50.1000\\(85.1695)$ $100-2000\\(170-3390)$ $12"$ $90.1500\\(155-2545)$ $180.3000\\(310.5090)$ $14"$ $200-2500\\(340-4245)$ $400.5000\\(680.8490)$ $08"$ $35.500\\(60.845)$ $ 10"$ $50.550\\(60.845)$ $100.1100\\(170.1860)$ $12"$ $90.1050\\(85.930)$ $180.2100\\(310.3560)$ $12"$ $90.1050\\(155.1780)$ $180.2100\\(310.3560)$ $14"$ $200.1400\\(340.2375)$ $400.2800\\(680.4750)$ $0 \text{ cfm to } 210 \text{ cfm } (55 \text{ m3/hr to } 355 \text{ m3/hr}) \text{ Medium Press}$	$10"$ $50-1000$ (85-1695) $100-2000$ (170-3390) $ 12"$ $90-1500$ (155-2545) $180-3000$ (310-5090) $270-4500^{**}$ (465-7635) $14"$ $200-2500$ (340-4245) $400-5000$ (680-8490) $600-7500$ (1020-12,735) $08"$ $35-500$ (60-845) $  10"$ $50-550$ (85-930) $100-1100$ (170-1860) $ 10"$ $50-550$ (155-1780) $100-1100$ (310-3560) $ 12"$ $90-1050$ (155-1780) $180-2100$ (310-3560) $270-3150^{**}$ (465-5340) $14"$ $200-1400$ (340-2375) $400-2800$ (680-4750) $600-4200$ (1020-7125) $0$ cfm to 210 cfm (55 m3/br to 355 m3/br) Medium Pressure only $-$	$10"$ $50.1000$ (85-1695) $100-2000$ (170-3390) $  12"$ $90.1500$ (155-2545) $180-3000$ (310-5090) $270-4500^{**}$ (465-7635) $360-6000^{**}$ (620-10,180) $14"$ $200-2500$ (340-4245) $400-5000$ (680-8490) $600-7500$ (1020-12,735) $800-10,000$ (1360-16,980) $08"$ $35-500$ (60-845) $   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) $0cm$ to 210 cfm (55 m3/hr to 355 m3/hr) Medium Pressure only**/	

## Shut-off Valves - standard "S" and low leakage "L" designs Flow/Pressure Operating Range (see notes 2,4,5,6,7 & 8)

		Operating Range in CFM (							
Designation	Size	Single	Dual	Triple					
	08"	35-600 (60-1015)	_	-					
M =	10"	50-850 (85-1440)	100-1700 (170-2880)	-					
Pressure	12"	90-1300 (155-2205)	180-2600 (310-4410)	-					
	14" ("S" Only)	200-1600 (340-2715)	400-3200 (680-5430)	_					
	08"	35-400 (60-675)	_	-					
L = Low	10"	50-450 (85-760)	100-900 (170-1520)	-					
Pressure ("S" Only)	12"	90-900 (155-1525)	180-1800 (310-3050)	-					
	14"	200-1000 (340-1695)	400-2000 (680-3390)	_					

#### FAIL SAFE POSITION

#### All Valves

- = Normally closed valve
- = Normally open valve Not applicable

#### VALVE ORIENTATION

- = Horizontal
- Vertical upflow
- = Vertical downflow

Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV		
J			*A&E	B only	J				
J			*A&E	B only	J				
V	J	J	*E only	F, I & Z		J	J		
*Letters in this chart refer to "Control Type"									
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV		
,	,	,	,	,	,	,	,		

1

1

1

1

1

1

J

Note 6

1

Note 6

J

Note 6

VALVE OPTIONS - (As required; list alphabetically separted by dashes, when multiples are ordered)

- EVI = Exhaust Valve with insulation and blocks IB0 = Insulation blocks only, no insulation
- = Pressure switch, low limit (see notes 12, 13 & 22) PSL
- REI Remote electronics, indoor (see note 14)
- Remote electronics, outdoor; for pneumatic actuation REO only (see note 16)
- Weather resistant electronics, outdoor; for electric WRE actuation <u>only</u> (see note 18) Square flange on both ends of single body valve SFB (see note 2)
- Square flange on one end of single body valve: inlet on SFX exhaust; discharge on supply (see note 2)
- SFM = Scaling function module (see note 20)
- Solenoid-valve, high wattage, 24 Vac; controlled SHA by non-Phoenix device Solenoid-valve, high wattage, 24 Vdc; controlled SHD by FHM530 monitor
- Valve-mounted power supply, 120 Vac to  $\pm 15$  Vdc VPO (see note 21) Valve-mounted power supply, 230 Vac to  $\pm 15$  Vdc VPT
- (see note 21) Reducer on both ends of cage rack valve (see note 22) RDB
- Reducer on discharge side of cage rack valve RDD (one 6"-to-4" reducer)
- Reducer on inlet of cage rack valve RDI
- (one 8"-to-4" reducer)

Е

Х

0

Α

В

Υ

Ζ

D

н

G

White powder coating on valve and reducers, WPC if present, of cage rack valve

#### VALVE CONTROLLER DESIGNATION

- N = No electronics (Traccel/Theris Tracking Valve or CV) Celeris/Analog Electronic Controller (Analog without boosters only) LONMARK Electronic valve - Controlling Valve of Е Tracking Pair LONMARK Electronic valve - Controlling Valve of Tracking Pair with Expanded Features (see note 23) = LONMARK Supply only Valve - No Tracking Pair Ability BACnet Electronic Valve - Controlling Valve of Tracking Pair BACnet Electronic Valve - Controlling Valve of Tracking Pair with Expanded Features (see note 23) BACnet TX-RTN (3 Supply controlling primary exhaust an Return Valve) (see note 23) BACnet TX-EXH (Supply controlling primary exhaust and locally controlled exhaust) (see note 23) C = BACnet Supply Only Valve - No Tracking Pair Ability BACnet Exhaust Only Valve - No Tracking Pair Ability (see note 23) = Hood exhaust valve with pressure switch Two-state controller and high wattage 24 Vdc solenoid valve - No Feedback F = Flow Feedback in Small Black box Two-state controller, flow feedback and high wattage 24 Vdc solenoid valve pneumatic solenoids; All: for flow feedback function on Associated or standalone analog valve without pneumati solenoids; BxV flow feedback in standard metal enclosure
- with alarm relay output and pressure switch Hood exhaust valve with no booster valves; includes H/I card with alarm relay output and pressure switch
- Hood exhaust valve with booster valves; includes H/I card and pressure switch

Hood exhaust valve with booster valves; includes H/I card

- М Main electronic valve with booster valves

						(				
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV			
J	J	J	J	J	J	J	J			
J	J	J	J	J	J	J	J			
J	J	J	J	J	J	J	J			
J	J	J	J	Note 15						
*N only			*A only	Note 17						
I & M	Note 19	Note 19	*E only							
J	J	J	J	J	J	J				
J	J	J	J	J	J	J				
			J							
				*B only	J					
				*B only	J					
			*A only	* B & F						
			*A only	* B & F						
							J			
							J			
							J			
							J			
*Letters	*Letters in this chart refer to "Control Type"									

	Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV
		EXH	EXH CV		J	J	J	J
	J			J				
		*TP	*TP					
		*TX	*TX					
		*S0	*S0					
		*TP	*TP					
		*TX	*TX					
nd		*TX-RTN	*TX-RTN					
ł		*TX-EXH	*TX-EXH					
		*S0	*S0					
		*E0	*E0					
	Note 11			Notes 12 & 13				
					J	J		
					J			
					J			
ly				Note 12				
ic re				Note 13	J			
				J				
rd				J				
				V				
				J				
	*Letters	s in this cl	hart refer	to "Tracc	el and Th	eris Prod	uct Mode	ls"

#### CONTROL TYPE - (Platform and Actuator) = Constant Volume (field adjustable with 7/16" hex head nut driver)

- = Pneumatic
- = Base upgradeable Pneumatic
- = Fixed, field adjustable with knob and increase/decrease flow label
- = All: IP54 electric actuator with fail-to-last position; BxV: Floating point = Proportional electric actuator with
- fail-to-last position
- = Analog Pneumatic
- = Analog High-speed electric
- = Digital Low-speed electric Digital - High-speed electric
- = Digital Pneumatic (see note 8)

#### **ALVE DESIGN**

- Conical -Shape diffuser (Accel II) (see note 2)
- = Compact Valve Body
- = Standard Shut-Off Valve
- (see notes 2,4,6 & 8) = Low Leakage - Shut-Off Valve
- (see notes 2,4,5,7 & 8)

Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	cvv
		*CV				J	
					J		
				J			
				J			J
Note 9	Note 9	Note 9		Note 10			
				J			
			J				
			J				
J	J	J					
J							
J							
*Letters	s in this c	hart refer	to "Tracc	el and Th	eris Prod	uct Mode	ls"
Celeris	Traccel	Theris	Analog	BxV	PxV	CxV	CVV
J	1	1	J	J	1	1	

his chart refer to "Traccel and Theris Product Models"										
ccel	Theris	Analog	BxV	PxV	CxV	CVV				
1	J	J	J	J	J					
						J				
1	J									
,	1									

peration and stable airflow throughout the dexhaust applications.	1. 2.

#### king valve pairs.

m3/hr) Pressure Drop Quad Across Valve \_ \_ 0.6-3.0" WC (150-750 Pa) ----0.3-3.0" WC (75-750 Pa) \_ \_

### **NOTES**

\*I, L &M

\*I, L &M

- All Supply valves are provided standard with insulation except CVVR Cage Rack Valves. Construction "D" is ONLY available in:
- or four single-body round-flanged valves into multi-body configurations.
- Design "A" (NOT available with Standard (S) or Low Leakage (L) Shutoff)
- single-body units without flow feedback (BxVx114x-ABNxx or BxVx114x-AFNxx)
- 5. 14-inch Valves are currently NOT available as Low Leakage Shut-off (Design = L) with Medium Pressure (Range = M).
- 6. Low Pressure (Range = L), Standard Shut-off (Design = S) valves are NOT available in Orientation "U" (vertical upflow)
- 7. Low Pressure (Range = L), Low Leakage (Design = L) valves are currently *NOT* available in any size. 8. Shut-off and Low Leakage (Design = S & L) valves are *NOT* available with Pneumatic actuation
- ONLY available on Single Body valves (as dual "L" actuators are already IP54)
- of all Sizes
- 11. "Celeris" Hood valves cannot have Low Speed actuators (Control Type = L or I)
- Designation "P" and a Pressure Switch (Option PSL)
- 13. "Analog" Hood Booster valves with Electric actuators (Control Type = E) must have Controller Designation "S" and a Pressure Switch (Option PSL)
- 14. Option "REI": Remote Electronics, Indoor installations ONLY. The distance to the valve controller is limited to:
- 75 feet (22.8 meters) of pneumatic tubing for pneumatic actuators (Control Type = A, B or N) - 40 inches (1 meter) of 18 gauge cable for high-speed electric actuators (Control Type = E or M) - 150 feet (45.7 meters) of 22 gauge cable for low-speed electric actuators (Control Type = L or I) 15. Option "REI" with "BXV" valves: *MUST* have flow feedback (Controller Designation = F, G or S)

- Limited to PNEUMATICALLY actuated valves **ONLY** (Control Type = A, B or N). - HORIZONTAL orientation **ONLY**
- Includes: sealed Vpot, small weather-resistant IP34 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's specifications.
- 17. Option "REO" with "BXV" valves: **ONLY** available with Pneumatic actuation (Control Type = B) and **MUST** have flow feedback (Controller Designation = F or S)
- 18. Option "WRE": Weather Resistant Electronics, outdoor installations. - Applies to ELECTRICALLY actuated valves with sufficient IP ratings only (Control = E, I or M only for 8, 10, & 12 inch single-body valves; Control = "E", "L" or "M" <u>only</u> for multi-body valves and single 14inch). - HORIZONTAL orientation **ONLY**
- Includes: sealed Vpot and large weather-resistant IP66 box mounted on base channel that houses the controller and all electric connections to/from it.
- When used in Low-Speed Electric applications for "8", "10", & "12" inch Single-body valves, WRE must ALSO be ordered with Control Type "I" (IP54 actuator) in place of the standard Control Type "Ľ".
- When used in High-Speed Electric applications, standard actuators are sufficient (Control Type = E or M) since they are IP56 actuators
- REQUIRES use of a "dog house" enclosure, provided by others, to protect valve from the elements and maintain temperature and humidity conditions within Phoenix's specifications.
- 19. Option "WRE" with "Traccel" and "Theris" valves: limited to LONMARK product (Valve Controller Designation = E, 0 or X) **ONLY**; currently **NOT** available for tracking valves or BACnet product (Valve Controller Designation = A, B, C, D or N).
- 20. Option "SFM": ONLY available with Controller Designations "E" & "M" (fully electronic controllers with no other top cards)
- 21. Options "VPO" and "VPT": are
- Limited to Control Types "A", "B" and "F" ONLY - NOT available in conjunction with Options: "REI", "REO", & "WRE".
- 22. Option "RDB": is required when a pressure switch (Option PSL) is ordered on a Cage Rack Valve.
- 23. Shut off valve design (S&L) is *ONLY* available on Controller Designations X, B, D, Y, Z, and Celeris E & H.

# 16. Option REO: Remote Electronics, Outdoor installations **ONLY**.

- Single-body valves (Bodies = F or 1). WITHOUT square flanges (Options "SFB" or "SFX"). Rectangular plates can be purchased as special products to field assemble two, three
- Sizes "8", "10", "12" & "14".
- 3. "BXV" 14-inch Pneumatically actuated and Fixed, Field-Adjustable valves are **ONLY** available in
- 4. 8-inch Shut-off Valves (Design = S & L) are available ONLY in Construction "A" (uncoated)

- (Control Type = N) 9. Control Type "I" actuators for "Celeris"/"Traccel"/"Theris": are
- ONLY available in Sizes "8", "10" and "12" (as actuators for single "14"-inch are already IP54) 10. Control Type "I" actuators for "BXV": available on Single, Dual, Triple and Quad Body valves
- 12. "Analog" Hood Booster valves with Pneumatic actuators (Control Type = A) must have Controller





