

APPLICATION FOR OSHPD SPECIAL SEISMIC	OFF	ICE USE ONLY
CERTIFICATION PREAPPROVAL (OSP)	APPLICATION #:	OSP – 0290 – 10
OSHPD Special Seismic Certification Preapproval (OSP)		
Type: 🗌 New 🛛 Renewal		
Manufacturer Information		
Manufacturer: Phoenix Controls (a business of Honeywell Internation	al, Inc.)	
Manufacturer's Technical Representative: <u>Lloyd Le, Engineering Mar</u>	ager, Honeywell – Co	nnected Building
Mailing Address:		
Telephone:	e@honeywell.com	
Product Information FOR CODE	0,	
Product Name: Accel II Airflow Control Valves	A.P.L.	
Product Type: Mechanical Equipment	- F	
Product Model Number: See attachments (List all unique product identification numbers and/or part numbers) Airflow control valves featuring various control	lers, actuators and ad	ditional options as specified
General Description: in attachments. Seismic enhancement made to the test units and modi observed during the tests shall be incorporated into the production un		ddress the anomalies
Mounting Description: Horizontal in-line duct mounted (ceiling suspe	nded) and vertical in-li	ine duct mounted
	-	
Applicant Information	COD	
Applicant Company Name: The VMC Group		
Contact Person:		
Mailing Address:113 Main Street, Bloomingdale, NJ 07403		
Telephone: (973) 838-1780 Email: john.g	uliano@thevmcgroup	.com
I hereby agree to reimburse the Office of Statewide Health I accordance with the California Administrative Code, 2016.	Planning and Deve	elopment review fees in
Signature of Applicant:	Da	ate: <u>2/8/19</u>
Title: President Company Name: The VI	MC Group	
Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs	AM.AMAA	OSHPD
STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY OSH-FD-759 (REV 12/16/15)	had h hala haa	Page 1 of 3



California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)
Company Name: The VMC Group
Name: Kenneth Tarlow California License Number: SE-2851
Mailing Address:113 Main Street, Bloomingdale, NJ 07403
Telephone: _(973) 838-1780 Email: <u>ken.tarlow@thevmcgroup.com</u>
Supports and Attachments Preapproval
Supports and attachments are preapproved under OPM- (Separate application for OSHPD Preapproval of Manufacturer's Certification (OPM) of Supports and attachments is required)
Supports and attachments are not preapproved $CODE$
Certification Method
Testing in accordance with: ICC-ES AC156 Other (Please Specify): OSP-0290-10
BY:Ali Sumer
Testing Laboratory
Company Name: DCL Labs
Contact Name:Josh Sailer, Laboratory Manager
Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV 89431
Telephone:(775) 358-5085 Email: _josh@shaketest.com

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"

STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY OSH-FD-759 (REV 12/16/15) OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters
Design in accordance with ASCE 7-10 Chapter 13: 🖂 Yes 🔲 No
Design Basis of Equipment or Components (Fp/Wp) = <u>1.88</u>
S_{DS} (Design spectral response acceleration at short period, g) = <u>2.5</u>
a _p (In-structure equipment or component amplification factor) = <u>2.5</u>
R _P (Equipment or component response modification factor) = <u>6.0</u>
Ω_0 (System overstrength factor) = 2.0
I _p (Importance factor) = 1.5
z/h (Height factor ratio) = _1.0
Equipment or Component Natural Frequencies (Hz) = <u>See attachments</u>
Overall dimensions and weight (or range thereof) = <u>See attachments</u>
Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: 🗌 Yes 🛛 No
Design Basis of Equipment or Components (V/W) =
S _{DS} (Design spectral response acceleration at short period, g) =
S _{D1} (Design spectral response acceleration at 1 second period, g) =
R (Response modification coefficient) = <u>OSP-0290-10</u>
Ω_0 (System overstrength factor) =
C₄ (Deflection amplification factor) = ^B Y:ALL Sumer
I_p (Importance factor) = 1.5 DATE: 07/29/2019
Height to Center of Gravity above base =
Equipment or Component Natural Frequencies (Hz) =
Overall dimensions and weight (or range thereof) =
Tank(s) designed in accordance with ASME BPVC, 2015: 🔲 Yes 🖾 No
List of Attachments Supporting Special Seismic Certification
Image: Specify Image
OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2022
Signature: Data: July 28, 2010
Signature: Date: July 28, 2019
Print Name:Ali SumerTitle:DSESpecial Seismic Certification Valid Up to : $S_{DS}(g) = 2.5$ $z/h = 1.0$
Condition of Approval (if applicable):
"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"
STATE OF CALIFORNIA – HEALTH AND HUMAN SERVICES AGENCY OSH-FD-759 (REV 12/16/15) Page 3 of 3

Table 1- Certified Components, Constant Volume - Horizontal Orientation

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

Valve Family	Model Number	Valve Body	Diameter (in)		Dimensions (in)		Weight (lb)	Max. Hanger Rod	Sds (g), z/h=1	Connection Type ¹	Unit
valve ranniy	Woder Number	valve bouy	Diameter (iii)	Depth	Width	Height	weight (ib)	Spacing (in)	5u3 (g), 2/11-1	connection type	onit
	CSVA108M-ACNHZ	Single	8				6			NF	UUT1a
	CSVA108M-ACNHZ	Single	8	23.5	7.9	12.0	8			DB	UUT1b
	CSVA108M-ACNHZ-SFB	Single	8				8			SF	UUT1c
	CxVxx08x-ACNxZ	Single	8							NF, DB, SF, WF ²	Interpolated
	CxVxx08x-ACNxZ-SFB	Single	8				6 to 16			NF, DB, SF, WF ²	Interpolated
CxVxx10x-ACNx CxVxx12x-ACI CxVxx12x-ACNx	CxVxx10x-ACNxZ	Single	10	23.5 to 30.0						NF, DB, SF, WF ²	Interpolated
	CxVxx10x-ACNxZ-SFB	Single	10		7.0 4- 14.0	12.0 to 19.5				NF, DB, SF, WF ²	Interpolated
	CxVxx12x-ACNxZ	Single	12		EOR C					NF, DB, SF, WF ²	Interpolated
	CxVxx12x-ACNxZ-SFB	Single	12				Co			NF, DB, SF, WF ²	Interpolated
CSV/CEV Constant Volume	CxVxx14x-ACNxZ	Single	14				M.	48	2.5	NF, DB, SF, WF ²	Interpolated
volume	CxVxx14x-ACNxZ-SFB	Single	14			TUDE				NF, DB, SF, WF ²	Interpolated
	CSVA114M-ACNHZ	Single	14	47		DTIFL	12			NF	UUT3a
	CSVA114M-ACNHZ	Single	14	30.0	14.0	19.5	15	T.		DB	UUT3b
	CSVA114M-ACNHZ-SFB	Single	14	Δ	OSP	-0.290 - 1	16	2		SF	UUT3c
	CSVA210M-ACNHZ	Dual	10	24.0	20.0	14.0	18	A G		SF	UUT4
	CxVx210x-ACNxZ	Dual	10	R.				E		SF	Interpolated
	CxVx212x-ACNxZ	Dual	12	24.0 to 33.0	B 20.0 to 30.0	14.0 to 18.5	18 to 33			SF	Interpolated
	CxVx214x-ACNxZ	Dual	14			sulle.				SF	Interpolated
	CSVA214M-ACNHZ	Dual	14	33.0	30.0	18.5	33			SF	UUT2

Notes:

1. No Flange (NF) , No Flange with Drawband Clamps (DB) , Square Flange (SF), Welded Flange (WF)

2. Welded Flange (WF) connection type tested in UUT 9

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Table 2- Certified Components, Variable Volume - Horizontal Orientation

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

			D ()		Dimensions (in)		Weight (lb) Max. Ha			2	
Valve Family	Model Number	Valve Body	Diamter (in)	Depth	Width	Height	Weight (lb)	Spacing (in)	Sds (g), z/h=1	Connection Type ²	Unit
	PxVxx08x-xxxxx-xxx	Single	8							NF, DB, SF, WF	Extrapolated
	PxVxx10x-xxxxx-xxx	Single	10							NF, DB, SF, WF	Extrapolated
PSV/PEV Pneumatic ¹	PxVxx12x-xxxxx-xxx	Single	12							NF, DB, SF, WF	Extrapolated
PSV/PEV Pneumatic ¹	PxVxx14x-xxxxx-xxx	Single	14	23.5 to 33.0	10.3 to 30.0	14.6 to 20.5	9 to 49	48	2.5	NF, DB, SF, WF	Extrapolated
	PxVx210x-xxxxx-xxx	Dual	10							SF	Extrapolated
	PxVx212x-xxxxx-xxx	Dual	12							SF	Extrapolated
	PxVx214x-xxxxx-xxx	Dual	14							SF	Extrapolated
	BxVxx08x-xxxxx-xxx	Single	8			CODR				NF, DB, SF, WF	Extrapolated
	BxVxx10x-xxxxx-xxx	Single	10		GOK	CODE	C			NF, DB, SF, WF	Extrapolated
	BxVxx12x-xxxxx-xxx	Single	12		2		OM			NF, DB, SF, WF	Extrapolated
BSV/BEV Base Upgradeable ¹	BxVxx14x-xxxxx-xxx	Single	14	23.5 to 33.0	10.3 to 30.0	14.6 to 20.5	9 to 49	48	2.5	NF, DB, SF, WF	Extrapolated
opprocessie	BxVx210x-xxxxx-xxx	Dual	10			STPL				SF	Extrapolated
	BxVx212x-xxxxx-xxx	Dual	12					T		SF	Extrapolated
	BxVx214x-xxxxx-xxx	Dual	14	\land		0.200 1	0	'Z		SF	Extrapolated
	EXVA108M-AMEHO	Single	8	E	USP	-0290-1	9	A C.		NF	UUT5a
	EXVA108M-AMEHO	Single	8	R4 23.5	10.3	14.6	11	E		DB	UUT5b
	EXVA108M-ALEHZ-SFB	Single	8	23.5	BY:A1i	Cumo	11			SF	UUT5c
	EXVA108M-AIEHZ-SFB	Single	8		PI·ALI	Sulle	11			SF	UUT5d
	EXVDF08M-AAEHO-PSL / EXVDF08M-AAHHO	Single	8	C ^{23.5}		14.6	17	0		WF	UUT9
	MAV/EXVxx08x-xxxxx-xxx	Single	8	Z	DALE: U	/ 29/ 20.	19			NF, DB, SF, WF	Interpolated
	MAV/EXVxx10x-xxxxx-xxx	Single	10		10.24-12.0	1154214	0.44 20	2		NF, DB, SF, WF	Interpolated
	MAV/EXVxx12x-xxxxx-xxx	Single	12	23.5 to 30.0	10.3 to 13.9	14.6 to 21.4	9 to 20			NF, DB, SF, WF	Interpolated
	MAV/EXVxx14x-xxxxx-xxx	Single	14				L.			NF, DB, SF, WF	Interpolated
MAV/EXV Analog / Celeris	EXVA114M-AMEHO	Single	14	30.0	13.9	21.4	20	48	2.5	NF	UUT6a
Celens	EXVA114M-AMEHO	Single	14	30.0	13.9	21.4	23			DB	UUT6b
	EXVB114M-SMEHO	Single	14	30.0	13.9 ⁰ U	TT. 721.4 N	24			SF	UUT10
	EXVA210M-AMEHC	Dual	10				30			SF	UUT7a
	EXVA210M-ANEHO	Dual	10	25.0	20.0	16.5	30			SF	UUT7b
	EXVA210M-ANEHC	Dual	10	25.0	20.0	16.5	30			SF	UUT7c
	EXVA210M-AEEHC	Dual	10				30			SF	UUT7d
	MAV/EXVx210x-xxxxx-xxx	Dual	10							SF	Interpolated
	MAV/EXVx212x-xxxxx-xxx	Dual	12	25.0 to 33.0	20.0 to 30.0	16.5 to 20.5	30 to 49			SF	Interpolated
	MAV/EXVx214x-xxxxx-xxx	Dual	14	1						SF	Interpolated
	EXVA214M-AMEHC	Dual	14	33.0	30.0	20.5	49	1		SF	UUT8a

Notes:

1. PSV/PEV and BSV/BEV are depopulated units from the MAV/EXV valve families

2. No Flange (NF) , No Flange with Drawband Clamps (DB) , Square Flange (SF) , Welded Flange (WF)



Table 2- Certified Components, Variable Volume - Horizontal Orientation (Continued)

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

Valve Family Model Number		Valve Body	Diamter (in)		Dimensions (in)		Weight (lb)	Max. Hanger Rod	Sds (g), z/h=1	Connection Type ²	Unit
valve raililiy	Wodel Number	valve bouy	Dialiter (III)	Depth	Width	Height	weight (ib)	Spacing (in)	5us (g), 2/11-1	connection type	OIIIt
	HxVxx08x-xxxxx-xxx	Single	8							NF, DB, SF, WF ³	Extrapolated
	HxVxx10x-xxxxx-xxx	Single	10	23.5 to 30.0	10.3 to 13.9	14.6 to 21.4	9 to 24			NF, DB, SF, WF ³	Extrapolated
	HxVxx12x-xxxxx-xxx	Single	12	25.5 10 50.0	10.5 10 13.9	14.0 10 21.4	91024			NF, DB, SF, WF ³	Extrapolated
HSV/HEV Theris ¹	HxVxx14x-xxxxx-xxx	Single	14					48	2.5	NF, DB, SF, WF ³	Extrapolated
HSV/HEV ITIENS	HSVA114M-ALOHZ-SFB	Single	14	30.0	13.9	21.4	24	40	2.5	SF	UUT6c
	HxVx210x-xxxxx-xxx	Dual	10							SF	Interpolated
	HxVx212x-xxxxx-xxx	Dual	12	25.0 to 33.0	20.0 to 30.0	16.5 to 20.5	30 to 49			SF	Interpolated
	HxVx214x-xxxxx-xxx	Dual	14		D	CODT				SF	Interpolated
	TxVxx08x-xxxxx-xxx	Single	8		HOK	CODE	Co			NF, DB, SF, WF ³	Extrapolated
	TxVxx10x-xxxxx-xxx	Single	10	23.5 to 30.0	10.3 to 13.9	14.6 to 21.4	9 to 24			NF, DB, SF, WF ³	Extrapolated
	TxVxx12x-xxxxx-xxx	Single	12	23.5 10 30.0	10.3 10 13.9	14.6 (0 21.4	91024			NF, DB, SF, WF ³	Extrapolated
TSV/TEV Traccel ¹	TxVxx14x-xxxxx-xxx	Single	14	52		DAL		48	2.5	NF, DB, SF, WF ³	Interpolated
ISV/TEV Traccel	TxVx210x-xxxxx-xxx	Dual	10					7	2.5	SF	Interpolated
	TxVx212x-xxxxx-xxx	Dual	12	25.0 to 33.0	20.0 to 30.0	- 0 ^{16.5 to 20.5}	30 to 49	.Z		SF	Interpolated
	TxVx214x-xxxxx-xxx	Dual	14	H	USP-	-0290-11		M G		SF	Interpolated
	TSVA214M-ALXHZ	Dual	14	A 33.0	30.0	20.5	49	E		SF	UUT8b

Notes:

Notes: 1. HSV/HEV and TSV/TEV valves are similar to the MAV/EXV valve families, and ony differ by the type of controller (Theris controller tested in UUT6c and Traccel controller tested in UUT8b).

2. No Flange (NF) , No Flange with Drawband Clamps (DB) , Square Flange (SF), Welded Flange (WF)

3. No Flange with Drawband Clamps (DB) Tested in UUT 1b, 3b, 6b, welded Flange (WF) Tested in UUT 9



Table 3- Certified Subcomponents - Horizontal Orientation



Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

Subcomponent [MFR]	Model Number	Description	Appoximate Weight (lbs)	Sds (g), z/h=1	Unit
	C2V LOSEA	Low Speed	0.5		UUT5c-d
	THERIS	Low Speed	0.5		UUT6c
Controller Board [PHOENIX CONTROLS]	TRACCEL	Low Speed	0.5		UUT8b
	LVC HISEA	High Speed	0.7	2.5	UUT5a-b, 6a-b, 7a, 8a, 10
Material: PCB	AVC HISEA	High Speed Analog	0.7		UUT7d
	C2V PNU	Pneumatic	0.7		UUT7b-c
	VLV CNTRL ANALOG	Pneumatic Analog	0.7		UUT9
Actuator [PHOENIX CONTROLS] Material: galvanized carbon steel	Integral Part of Valve	Manual Control Actuator	0.5	2.5	UUT1a-c, 2, 3a-c, 4
Actuator [PHOENIX CONTROLS]	490-000-073	High Speed Electric Linear Actuator	2.6		UUT5b, 6a, 7d
	490-000-092	High Speed Electric Linear Actuator	2.6	2.5	Same as UUT5b, 6a, 7d
Material: plastic and carbon steel	490-000-095	Medium Speed Electric Linear Actuator	2.6		Same as UUT5b, 6a, 7d
Actuator [THOMSON]	DH12-17W41	High Speed Electric Linear Actuator	1.9	2.5	UUT8a
Material: plastic and carbon steel	DH12-17W42	High Speed Electric Linear Actuator	1.9	2.5	UUT5a, 6b, 7a, 10
	GMB24-3 PH	On/Off Floating Point Control, Non-Spring Return, Direct Coupled, 24 V	2.5		UUT8b
	GMB24-SR	Proportional Control, Non-Spring Return, Direct Coupled, 24 V	2.5		Same as UUT8b
	AMQBX24-MFT	Programable, Non-Spring Return, Direct Coupled, 24 V	2.7		Interpolated ¹
Actuator [BELIMO]	AMB24-3.1 PH	On/Off Floating Point Control, Non-Spring Return, 24 V	2.7	2.5	UUT6c
Material: plastic and carbon steel	AMB24-SR	D A Proportional Control, Non-Spring Return, 24 V	2.7	2.5	Same as UUT6c
	NMQBX24-MFT	Programable, Non-Spring Return, 24 V	4.5		Same as UUT6c
	NMB24-3.1 PH	On/Off Floating Point Control, Non-Spring Return, Direct Coupled, 24 V	4.6		UUT5d
	NMB24-SR	Proportional Control, Non-Spring Return, Direct Coupled, 24 V	4.6		Same as UUT5d
Actuator [HONEYWELL]	ML6174B2019	On/Off Floating Point Control, Non-Spring Return Damper Actuator, 24 V	2.8	2.5	UUT5c
Material: plastic and carbon steel	ML7174A2001	Proportional Control, Non-Spring Return Damper Actuator, 24 V	2.9		Same as UUT5c
Actuator [KMC]	MCP-0335	3" Pneumatic Control Actuator (Open/Closed Position)	2.7	2.5	UUT7c, 9
Material: plastic and carbon steel	MCP-0435	4" Pneumatic Control Actuator (Open/Closed Position)	3.6	2.3	UUT7b
Pressure switch [HONEYWELL] Material: plastic and carbon steel	1227D1/A, 0.30" WC PF	Pressure Switch	0.2	2.5	UUT9

Notes:

1. Same as controller tested in UUT8b, except slightly smaller and with software change.



Table 4 - Options - Horizontal Orientation

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

Namandet	Duessist	Allewski Mal	Nomenclature: AAA B C DD E - F G H I J - xxx	C + - (-) //	
Nomenclature	Property	Allowable Value	Allowable Value Description	Sds (g), z/h=1	Unit
		CSV/CEV	Constant Volume		UUT1-4
		PSV/PEV	Pneumatic		Interpolated ¹
		BSV/BEV	Base Upgradeable		Interpolated ¹
AAA	Valve Family	MAV/EXV	Analog	2.5	UUT7d, 9
		MAV/EXV	Celeris		UUT5, 6a-b, 7a-c, 8a, 10
		HSV/HEV	Theris		UUT6c
		TSV/TEV	Traccel		UUT8b
		А	Body and cone - uncoated aluminum; shaft - uncoated 316 SS		UUT1-8
В	Valve Construction	В	Body and cone with baked phenolic coating; PFA- coated 316 SS shaft	2.5	UUT10
в	valve construction	С	Body, cone and hardware w/ baked phenolic/epoxy coating; PFA-coated 316 SS shaft	2.5	Interpolated ²
		D	Body, cone and hardware with PVDF coating; PFA- coated 316 SS shaft		UUT9
		F	Single valve with welded circular flange	2.5	UUT9
	Number - C L	1	One valve body (single, no flange)	2.3	UUT1, 3, 5, 6, 10
С	Number of valve bodies	2	Two valve bodies (dual)		UUT2, 4, 7-8
	boules	3	Three valve bodies (triple) D P	2.5	Extrapolated ³
		4	Four valve bodies (quad)		Extrapolated ³
		08	8" valve	M	UUT1, 5, 9
		10	10" valve	2.5	UUT4, 7
DD	Valve Size	12	12" valve	K.Y	Interpolated
		14	14" valve	2.5	UUT2, 3, 6, 8, 10
	Flow/Pressure	м	Medium Pressure	Ň	UUT1 -10
E	Operating Range	L	Low Pressure	2.5	Extrapolated ⁴
		A Q	Conical-shape diffuser (Accel II)		UUT1-9
F	Valve Design	S	Standard - Shut-Off Valve	2.5	UUT10
		L	Low Leakage - Shut-Off Valve MCL		Extrapolated ⁵
		c	Constant Volume		UUT1-4
		P	Pneumatic		
		B	Base Upgradeable- Pheumatic 2019		
		Y I	Base opgradeagle, Priedinatic Z O I S		Interpolated ⁶
		F	Fixed, field adjustable to increase/decrease flow		Same as UUT1-4
		I	IP54 Electric Actuator with fail-to-last position; floating point		UUT5d
		А	Analog Pneumatic		UUT9
		E	Analog High Speed Electric	D'	UUT7d
		L	Digital - Low-speed electric	C	UUT5c, 6c, 8b
G	Control Type	н	Digital - Medium-speed electric	2.5	Same as UUT5a-b, UUT6a-b, 7 8a, 10
		М	Digital - High-speed electric		UUT5a-b, UUT6a-b, 7a, 8a, 10
		Ν	Digital - Pneumatic		UUT7b-c
		Y	Base Upgradeable - Low Speed Electric (0-10 VDC)		Same as UUT5d
		Z	Base Upgradeable - Low Speed Electric (2-10 VDC)		Same as UUT5d
		Q	Base upgradeable- Med. Speed Electric (2-10 VDC)		Same as UUT5d
		R	Base upgradeable - Med. Speed Electric (4-20 mA)		Same as UUT5d
		S	Base upgradeable- Med. Speed Electric (0.5-10 VDC)		Same as UUT5d

Notes:

1. PSV/PEV pneumatically operated valves are the same as the pneumatic actuator valves tested for UUT7b, UUT7c and UUT9 except the controller and potentiometer are removed. BSV/BEV are the same as the tested Celeris MAV/EXV valves, except potentiometer and/or controller tested in the MAV/EXV are removed.

2. Within the confines of the tested options

3. Within the confines of the tested options. Three and Four valve bodies consist of a combination of the One and Two valve bodies mounted next to eachother in the

4. Extrapolated option is identical to tested option.

5. Low Leakage Shut-Off valve is the same construction as the Standard Shut-Off Valve.

6. Pneumatic and base-upgradeable pneumatic control types are represented by the valves tested for UUT7b and UUT7c except the controller and/or potentiometer

7. Fail Safe Position: EVI and IBO valve options were represented in constant volume valves UUT1 - UUT4.

8. Within the confines of the tested options.



Table 4 - Options - Horizontal Orientation (Continued)

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

omenclature	Property	Allowable Value	Allowable Value Description	Sds (g), z/h=1	Unit			
		N	No electronics		UUT1-4			
		E	Celeris/Analog Electronic Controller (Analog without					
		E	boosters only)		UUT5, 6a-b, 7a-c, 8a, 10			
		Е	LonMarkElectronic Valve - Controlling Valve of		UUT7d			
		L	Tracking Pair		66174			
н		х	LonMark Electronic Valve - Controlling valve of		UUT8b			
		-	tracking pair with expanded features					
		0	LonMark Supply only Valve		UUT6c			
		А	BACnet Electronic Valve - Controlling Valve of		Same as UUT7d			
			Tracking Pair BACnet Electronic Valve - Controlling Valve of					
	Valve Controller	В	Tracking Pair with expanded features		Same as UUT8b			
	Designation			BACnet TX-RTN - Supply controlling primary exhaust	2.5			
		Y	and return		Same as UUT6c			
				-	BACnet TX-EXH - Supply controlling primary exhaust		C	
		Z		and locally controlled exhaust		Same as UUT6c		
		С	BACnet Supply only Valve		Same as UUT6c			
		D	BACnet Exhaust only Valve		Same as UUT6c			
		н	Hood exhaust valve with pressure switch		UUT9			
		F	Flow feedback in small black box		Smaller version of UUT9			
					Р	BACnet Electronic Valve for Phoenix Control brand		Same as UUT6c
		1	BACnet Electronic Valve for Alerton brand	On	Same as UUT6c			
		н	Horizontal	2.5	UUT1-10			
1	Valve Orientation	U	Vertical upflow	$ \langle \rangle \rangle$	N/A			
		D	Vertical downflow	2.5	N/A			
J	Fail Safe Position	c L	Normally closed value 9 0 - 1 0	2.5	UUT7a, c, d; UUT8a			
-		0 R	Normally open valve		UUT5a-b, 6a-b, 7b, 9-10			
		Z	Not applicable		UUT1-4, 5c-d, 6c, 8b			
		EVI	Exhaust valve with insulation and blocks		Interpolated ⁷			
		IBO	Insulation blocks only, no insulation	menered MAX	Interpolated ⁷			
		PSL O	Pressure Switch, low limit		UUT9			
XXX	Valve Options	• Options SFB Square flange on both ends of single body valve		2.5	UUT1c, 3c, 5c-d; 6c			
		SFX	Square flange on one end of single body valve; inlet on exhaust; discharge on supply		V Interpolated ⁸			

1. PSV/PEV pneumatically operated valves are the same as the pneumatic actuator valves tested for UUT7b, UUT7c and UUT9 except the controller and potentiometer 2. Within the confines of the tested options

3. Within the confines of the tested options. Three and Four valve bodies consist of a combination of the One and Two valve bodies mounted next to eachother in the

4. Extrapolated option is identical to tested option. 5. Low Leakage Shut-Off valve is the same construction as the Standard Shut-Off Valve.

6. Pneumatic and base-upgradeable pneumatic control types are represented by the valves tested for UUT7b and UUT7c except the controller and/or potentiometer

7. Fail Safe Position: EVI and IBO valve options were represented in constant volume valves UUT1 - UUT4.

8. Within the confines of the tested options.

Table 5- Certified Components, Constant Volume - Vertical Orientation

Manufacturer: Phoenix Controls



Mounting Description: Vertical in-line duct mounted

	Model Number				mensions	(in)	Weight	Max. Vertical	Orientation (Upflow	Sds (g),		
Valve Family		Valve Body	Diameter (in)	Depth Width Height		(lb)	Duct Support Spacing	/ Downflow)	z/h=1	Connection Type ¹	Unit	
	CSVA108M-ACNDZ	Single	8	23.5	7.9	12.0	6		D		NF	UUT11
	CxVxx08x-ACNxZ-xxx	Single	8					16	U,D		NF, DB, SF, WF ²	Interpolated
	CxVxx10x-ACNxZ-xxx	Single	10	23.5 to	7.9 to	12.0 to	6 to 16		U,D		NF, DB, SF, WF ²	Interpolated
	CxVxx12x-ACNxZ-xxx	Single	12	30.0	14.0	19.5	0 10 10		U,D		NF, DB, SF, WF ²	Interpolated
	CxVxx14x-ACNxZ-xxx	Single	14			C (CODF	Within 12" from	U,D		NF, DB, SF, WF ²	Interpolated
CSV/CEV Constant Volume	CSVA114M-ACNDZ	Single	14	30.0	30.0 14.0 1		12	the edge of the	D	2.5	NF	UUT12
Volume	CSVA210M-ACNDZ	Dual	10	24.0	20.0	14.0	.0 18	valve	D		SF	UUT13
	CxVx210x-ACNxZ-xxx	Dual	10		20.01		D		U,D		SF	Extrapolated ³
	CxVx212x-ACNxZ-xxx	Dual	12	24.0 to 33.0	20.0 to 30.0	14.0 to 18.5	18 to 33		U,D		SF	Extrapolated ³
	CxVx214x-ACNxZ-xxx	Dual	14	33.0	30.0	10.5			U,D		SF	Extrapolated ³
	CSVA214M-ACNUZ	Dual	14 [1]	33.0	30.0 ^S	P 1 8.5 ²	$90_{3\overline{3}} \pm 0$		D U		SF	Extrapolated ³

Notes:

1. No Flange (NF) , No Flange with Drawband Clamps (DB) , Square Flange (SF), Welded Flange (WF)

2. DB tested in UUT 15a/b and 17, WF tested in UUT 16

3. Dual valve bodies tested in UUT 18, 19, 20





Table 6- Certified Components, Variable Volume - Vertical Orientation

Manufacturer: Phoenix Controls



Mounting Description: Vertical in-line duct mounted

				Dir	mensions	(in)	Weight	Max. Vertical	Orientation (Upflow	Sds (g),		
Valve Family	Model Number	Valve Body	Diameter (in)	Depth	Width	Height	(lb)	Duct Support Spacing	/ Downflow)	z/h=1	Connection Type ²	Unit
	PxVxx08x-xxxxx-xxx	Single	8						U,D		NF, DB, SF, WF ³	Extrapolated
	PxVxx10x-xxxxx-xxx	Single	10		10.2.1				U,D		NF, DB, SF, WF ³	Extrapolated
PSV/PEV	PxVxx12x-xxxxx-xxx	Single	12	23.5 to		14.6 to		Within 12" from	U,D		NF, DB, SF, WF ³	Extrapolated
Pneumatic ¹	PxVxx14x-xxxxx-xxx	Single	14	23.5 to 33.0	10.3 to 30.0	20.5	9 to 49	the edge of the	U,D	2.5	NF, DB, SF, WF ³	Extrapolated
Theumatic	PxVx210x-xxxxx-xxx	Dual	10	33.0	50.0	C(DDE	valve	U,D		SF	Extrapolated
	PxVx212x-xxxxx-xxx	Dual	12		EOI		D L	Co	U,D		SF	Extrapolated
	PxVx214x-xxxxx-xxx	Dual	14					COM	U,D		SF	Extrapolated
	BxVxx08x-xxxxx-xxx	Single	8	17		SL			U,D		NF, DB, SF, WF ³	Extrapolated
	BxVxx10x-xxxxx-xxx	Single	10	(2) 		$\mathbf{D1}$		Ĭ.	U,D		NF, DB, SF, WF ³	Extrapolated
BSV/BEV Base	BxVxx12x-xxxxx-xxx	Single	12	22.5.40	10.3 to 30.0	14.6 to		Within 12" from	U,D	2.5	NF, DB, SF, WF ³	Extrapolated
Upgradeable ¹	BxVxx14x-xxxxx-xxx	Single	14 [1]	23.5 to 33.0 B		20.5	9 to 49	the edge of the	D,D		NF, DB, SF, WF ³	Extrapolated
opgradeable	BxVx210x-xxxxx-xxx	Dual	102		0010	2010		valve	JU,D		SF	Extrapolated
	BxVx212x-xxxxx-xxx	Dual	12		Y:A1	ic	ume		U,D		SF	Extrapolated
	BxVx214x-xxxxx-xxx	Dual	14		- • • • • 1	L D	une.		U,D		SF	Extrapolated
	EXVD108M-AAEUC	Single	8	23.5	10.3	14.6	11		U		DB	UUT15a
	EXVD108M-AMEUC	Single	8	23.5 D	A 10.3	074,62	9/1101	9 ,	U		DB	UUT15b
	MAV/EXVxx08x-xxxxx-xxx	Single	8 2				YTO MANDELL		U,D		NF, DB, SF, WF ³	Interpolated
	MAV/EXVxx10x-xxxxx-xxx	Single	10	23.5 to	10.3 to	14.6 to	9 to 20	\sim	U,D		NF, DB, SF, WF ³	Interpolated
	MAV/EXVxx12x-xxxxx-xxx	Single	12	30.0	13.9	21.4	5 10 20	Within 12 [®] from	U,D		NF, DB, SF, WF ³	Interpolated
MAV/EXV Analog /	MAV/EXVxx14x-xxxxx-xxx	Single	14	TA.				the edge of the	U,D	2.5	NF, DB, SF, WF ³	Interpolated
Celeris	MAVC114M-ALEUZ	Single	14	30.0	13.9	21.4	24	valve	U	2.5	DB & SF ⁴	UUT17
	MAV/EXVx210x-xxxxx-xxx	Dual	10	25.0	20.18	16.4	J 7301 C		U,D		SF	Interpolated
	MAV/EXVx212x-xxxxx-xxx	Dual	12	30.0	24.5	18.4	32 to 36		U,D		SF	Interpolated
	EXVA212M-ANEDO	Dual	12	30.0	24.5	18.4	36		D		SF	UUT19
	MAV/EXVx214x-xxxxx-xxx	Dual	14	33.0	30.0	21.4	45 to 49		U,D		SF	Interpolated
	EXVA214M-AMEUO-PSL	Dual	14	33.0	30.0	21.4	49		U		SF	UUT20

Notes:

1. PSV/PEV and BSV/BEV are depopulated units from the MAV/EXV valve families

2. No Flange (NF), No Flange with Drawband Clamps (DB), Square Flange (SF), Welded Flange (WF)

3. Welded Flange (WF) tested in UUT 16

4. Valve constructed with a Drawband Clamp on one end and a Sqaure Flange on the other



Table 6- Certified Components, Variable Volume - Vertical Orientation (Continued)

Manufacturer: Phoenix Controls



Product Line: Accel II Airflow Control Valves

Mounting Description: Vertical in-line duct mounted

				Dime	ensions (in	ches)	Weight	Max. Vertical	Orientation (Upflow	Sds (g),		
Valve Family	Model Number	Valve Body	Diameter (in)	Depth	Width	Height	(lb)	Duct Support Spacing	/ Downflow)	z/h=1	Connection Type ²	Unit
	HSVAF08M-LIXDZ-SFB	Single	8	23.5	10.3	14.6	11		D		WF	UUT16
	HxVxx08x-xxxxx-xxx	Single	8						U, D		NF, DB, SF, WF ³	Interpolated
	HxVxx10x-xxxxx-xxx	Single	10	23.5 to	10.3 to	14.6 to	9 to 24	Within 12'' from the edge of the valve	U, D		NF, DB, SF, WF ³	Interpolated
HSV/HEV Theris ¹	HxVxx12x-xxxxx-xxx	Single	12	30.0	13.9	21.4	91024		U, D	2.5	NF, DB, SF, WF ³	Interpolated
	HxVxx14x-xxxxx-xxx	Single	14		T				U, D	2.5	NF, DB, SF, WF ³	Interpolated
	HxVx210x-xxxxx-xxx	Dual	10	25.0 to 33.0	401	10 5 4-			U, D		SF	Interpolated
	HxVx212x-xxxxx-xxx	Dual	12		20.0 to 30.0	16.5 to 20.5	30 to 49	M	U, D		SF	Interpolated
	HxVx214x-xxxxx-xxx	Dual	14		50.0		I D L		U, D		SF	Interpolated
	TxVxx08x-xxxxx-xxx	Single	8	(z)	10.3 to	14.6 to	9-to 24		U, D		NF, DB, SF, WF ³	Interpolated
	TxVxx10x-xxxxx-xxx	Single	10	23.5 to					U, D		NF, DB, SF, WF ³	Interpolated
	TxVxx12x-xxxxx-xxx	Single	12 [1]	30.0	13.9 S	P 21(4 2	90-10		U, D		NF, DB, SF, WF ³	Interpolated
TSV/TEV Traccel ¹	TxVxx14x-xxxxx-xxx	Single	142					Within 12" from the edge of the	U, D	2.5	NF, DB, SF, WF ³	Interpolated
ISV/IEV ITACCEI	TxVx210x-xxxxx-xxx	Dual	10	$25.0 \pm \mathbb{R}$	L-Co eV	de r + C	1100	valve	U, D		SF	Interpolated
	TxVx212x-xxxxx-xxx	Dual	12	25.0 to 33.0	20.0 to 30.0	16.5 to 20.5	30 to 49		U, D		SF	Interpolated
	TxVx214x-xxxxx-xxx	Dual	14	55.0	30.0	20.5			U, D		SF	Interpolated
	TSVA214M-ALXUZ	Dual	14	33.0 _D	A 30.0	0 '21/42	9/4901	.9 ,	U		SF	UUT18

Notes:

1. HSV/HEV and TSV/TEV valves are similar to the MAV/EXV valve families, and ony differ by the type of controller.

2. No Flange (NF), No Flange with Drawband Clamps (DB), Square Flange (SF), Welded Flange (WF)

3. DB tested in UUT 15a/b and 17, NF tested in UUT 11 and 12

BUILDING

Table 7 - Certified Subcomponents - Vertical Orientation



Mounting Description: Vertical in-line duct mounted

Subcomponent [MFR]	Model Number	Description	Approx. Weight (lbs.)	Sds (g), z/h=1	Unit
	C2V LOSEA	Low Speed	0.5		UUT17
	THERIS	Low Speed	0.5		UUT16
Controller Board [PHOENIX CONTROLS]	TRACCEL	Low Speed	0.5		UUT18
	LVC HISEA	High Speed	0.7	2.5	UUT15b,20
Material: PCB	AVC HISEA	High Speed Analog	0.7		Interpolated
	C2V PNU	R CODPneumatic	0.7		UUT19
	VLV CNTRL ANALOG	Pneumatic Analog	0.7		UUT15a
Actuator [PHOENIX CONTROLS] Material: galvanized carbon steel	Intergral part of valve	Manual control actuator	0.5	2.5	UUT11-13
Actuator [PHOENIX CONTROLS]	490-000-073	High Speed Electric Linear Actuator	2.6		UUT15b
	490-000-092	High Speed Electric Linear Actuator	2.6	2.5	Same as UUT15b
Material: plastic and carbon steel	490-000-095	SMedium Speed Electric Linear Actuator	2.6		Same as UUT15b
Actuator [THOMSON]	DH12-17W41	High Speed Electric Linear Actuator	1.9	2.5	Same as UUT20
Material: plastic and carbon steel	DH12-17W42	High Speed Electric Linear Actuator	1.9	2.5	UUT20
	NMB24-SR	Proportional Control, Non-Spring Return, Direct Coupled, 24V	2.5		UUT18
	NMB24-3.1 PH	On/off Floating Point Control, Non-Spring Return, 24 V	2.5		Interpolated ¹
	NMQBX24-MFT	DATE: Programable, Non-Spring Return, 24 V	2.7		Interpolated ¹
Actuator [BELIMO]	AMB24-SR	Proportional Control, Non-Spring Return, 24V	2.7		UUT17
	AMB24-3.1 PH	On/off Floating Point Control, Non-Spring Return, 24 V	2.7	2.5	Extrapolated ²
Material: plastic and carbon steel	AMQBX24-MFT	Programable, Non-Spring Return, 24 V	4.5		Extrapolated ²
	GMB24-ST	Proportional Control, Non-Spring Return, 24V	4.6		Extrapolated ²
	GMB24-3 PH	On/Off Floating Point Control, Non-Spring Return, Direct Coupled, 24V	4.6		Extrapolated ²
Actuator [HONEYWELL]	ML6174B2019	On/off Floating Point Control, Non-Spring Return Damper Actuator, 24 V	2.8	2.5	UUT16
Material: plastic and carbon steel	ML7174A2001	Proportional Control, Non-Spring Return Damper Actuator, 24 V	2.9		Same as 16
Actuator [KMC]	MCP-0335	3" Pneumatic control actuator (open/closed position)	2.7	2.5	UUT15a
Material: plastic and carbon steel	MCP-0435	4" Pneumatic control actuator (open/closed position)	3.6	2.3	UUT19
Pressure switch [HONEYWELL] Material: plastic and carbon steel	1227D1/A, 0.30" WC PF	Pressure Switch	0.2	2.5	UUT20

1. Same as tested in UUT18, except slightly smaller and with software change.

2. Same as tested in UUT17, except slightly smaller and with software change.

Table 8 - Options - Vertical Orientation



Mounting Description: Vertical in-line duct mounted

			Nomenclature: AAA B C DD E - F G H I J - xxx		
Nomenclature	Property	Allowable Value	Allowable Value Description	Sds (g), z/h=1	
		CSV/CEV	Constant Volume	-	UUT11-13
		PSV/PEV	Pneumatic		Interpolated ¹
		BSV/BEV	Base Upgradeable		Interpolated ¹
AAA	Valve Family	MAV/EXV	Analog	2.5	UUT15a,b
		MAV/EXV	Celeris		UUT17, 19, 20
		HSV/HEV	Theris		UUT16
		TSV/TEV	Traccel		UUT18
		А	Body and cone - uncoated aluminum; shaft - uncoated 316 SS		UUT11-13, 16, 18-20
В	Valve Construction	В	Body and cone with baked phenolic coating; PFA-coated 316 SS shaft	2.5	Interpolated
5		С	Body, cone and hardware w/ baked phenolic/epoxy coating; PFA- coated 316 SS shaft		UUT17
		D	Body, cone and hardware with PVDF coating; PFA-coated 316 SS shaft		UUT15
		F	Single valve with welded circular flange	2.5	UUT16
	Number of valve	1	One valve body (single, no flange)	2.5	UUT11-12, 15a,b, 17
С	bodies	2	Two valve bodies (dual)		UUT13, 18-20
	boules	3	Three valve bodies (triple)	2.5	Extrapolated ²
		4	Four valve bodies (quad)		Extrapolated ²
		08	8" valve		UUT11, 15a-b, 16
		10	10" valve		Interpolated
DD Valve Size	12	12" valve	2.5	UUT19	
		14	14" valve	2.5	UUT12, 17, 18, 20
_	Flow/Pressure	M	OSP - Medium Pressure 0		UUT11-13, 15-20
E	Operating Range		Low Pressure	2.5	Same as UUT11-13, 15-2
		A	Conical-shape diffuser (Accel II)	.,	
F	Valve Design	S	BY: A Standard-Shut-Off Valve	2.5	
			Low Leakage - Shut-Off Valve		
		с	Constant Volume		
		P	DATE: 07/Preumátic 019	P	
		ВН	Base Upgradeable - Pneumatic	¥ / -	
		F	Fixed, field adjustable to increase/decrease flow	-	•
		1 4	IP54 Electric Actuator with fail-to-last position; floating point		UUT 16
		А	Analog Pneumatic		UUT15a
		E	Analog High Speed Electric		
		L	Digital - Low-speed electric		UUT17, 18
G	Control Type	Н	Digital - Medium-speed electric	2.5	
		M	Digital - High-speed electric		
		N	Digital - Pneumatic	1 F	
		Y	Base Upgradeable - Low Speed Electric (0-10 VDC)	1 F	
		Z			· · · · · · · · · · · · · · · · · · ·
			Base Upgradeable - IP54 Low Speed Electric (2-10 VDC)		
		Q	Base upgradeable - Med. Speed Electric (2-10 VDC)		Same as UUI17, 18
		R	Base upgradeable - Med. Speed Electric (4-20 mA)		Interpolated ¹ UUT15a,b UUT17, 19, 20 UUT17, 19, 20 UUT16 UUT18 UUT11-13, 16, 18-20 Interpolated UUT17 UUT17 UUT15 UUT15 UUT16 UUT11-12, 15a,b, 17 UUT13, 18-20 Extrapolated ² Extrapolated ² UUT11, 15a-b, 16 Interpolated UUT19 UUT12, 17, 18, 20 UUT12, 17, 18, 20 UUT11-13, 15-20 Same as UUT11-13, 15-20 UUT11-13, 15, 17-20 Same as UUT16 UUT16 UUT16 UUT16 UUT16 UUT15a Interpolated ³ Same as UUT11-13
		S	Base upgradeable - Med. Speed Electric (0.5-10 VDC)		Same as UUT17. 18

1. PSV/PEV pneumatically operated valves are the same as the pneumatic actuator valves tested except the controller and potentiometer are removed. BSV/BEV are the same as the tested Celeris MAV/EXV valves, except potentiometer and/or controller tested in the MAV/EXV are removed.

2. Within the confines of the tested options. Three and Four valve bodies consist of a combination of the One and Two valve that are structurally independent.

3. Pneumatic and base-upgradeable pneumatic control types are represented by the valves tested for UUT15a and UUT19 except the controller and/or potentiometer are removed.

4. Interpolated option: using the same PCB as UUT15a and actuator as UUT15b

Table 8 - Options - Vertical Orientation (Continued)

Mounting Description: Vertical in-line duct mounted

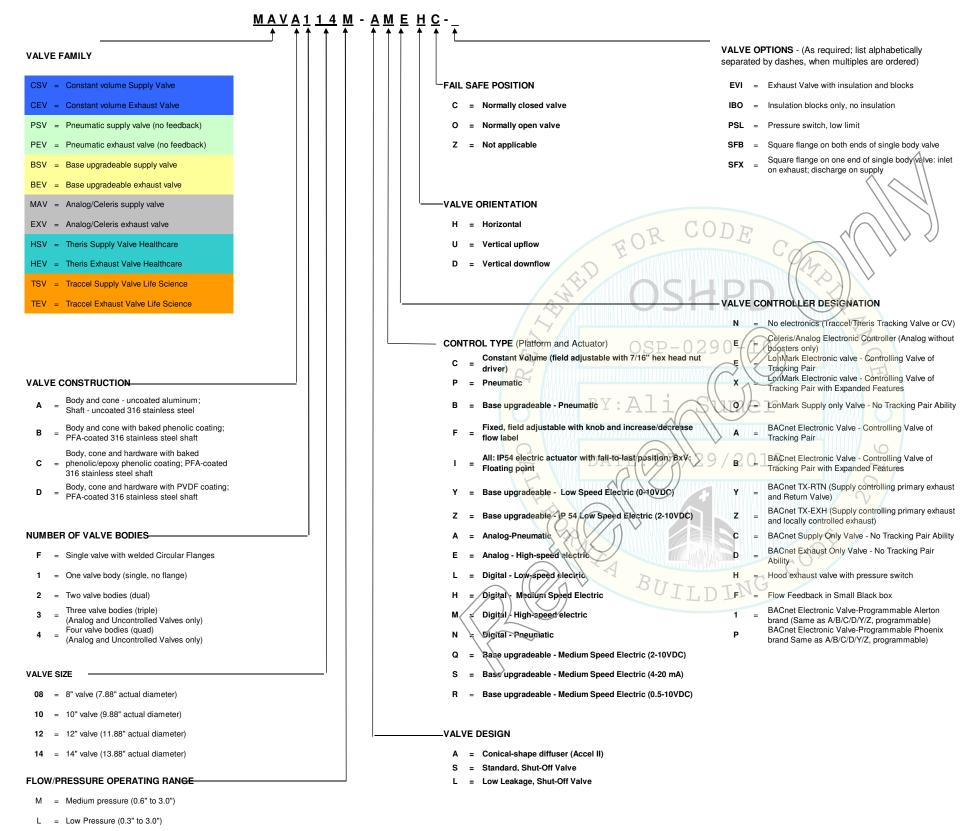
			Nomenclature: AAA B C DD E - F G H I J - xxx		
Nomenclature	Property	Allowable Value	Allowable Value Description	Sds (g), z/h=1	Unit
		Ν	No electronics		UUT11-13
		E	Celeris/Analog Electronic Controller (Analog without boosters only)		UUT15a,b
		E	LonMarkElectronic Valve - Controlling Valve of Tracking Pair		UUT19, 20
		х	LonMark Electronic Valve - Controlling valve of tracking pair with expanded features		UUT18
		0	LonMark Supply only Valve		Same as UUT18
		А	BACnet Electronic Valve - Controlling Valve of Tracking Pair		UUT16
н	Valve Controller Designation	В	BACnet Electronic Valve - Controlling Valve of Tracking Pair with expanded features	2.5	Same as UUT16
	Designation	Y	BACnet TX-RTN - Supply controlling primary exhaust and return		Same as UUT16
		Z	BACnet TX-EXH - Supply controlling primary exhaust and locally controlled exhaust		Same as UUT16
		С	BACnet Supply only Valve		Same as UUT16
		D	BACnet Exhaust only Valve		Same as UUT16
		н	Hood exhaust valve with pressure switch	[Same as UUT20
		F	Flow feedback in small black box	[Smaller version of UUT15a
		Р	BACnet Electronic Valve for Phoenix Control brand	1	Same as UUT18 UUT16 Same as UUT16 Same as UUT20
		1	BACnet Electronic Valve for Alerton brand	1	Same as UUT16
		н	Horizontal	2.5	N/A
I	Valve Orientation	U /	Vertical upflow	2.5	15a-b, 17-20
		D	Vertical downflow	2.5	UUT10-13, 16
		C C	OS PNormally closed-valve		UUT15a,b
J	Fail Safe Position	0	Normally open valve	2.5	UUT19,20
		z H	Not applicable		UUT16,17,18
		EVI	BY Exhaust valve with insulation and blocks		UUT 17
		IBO	Insulation blocks only, no insulation		Depopulated UUT17
xxx ¹	Valve Options	PSL	Pressure Switch, low limit	2.5	UUT20
		SFB	Square flange on both ends of single body valve		UUT 16
		SFX	Square flange on one end of single body valve; inlet on exhaust; discharge on supply		Extrapolated ²

1. Not all valves have options. Optionless valves have this portion of the model number left blank RAVIA BUILDING CODE

2. Within the confines of the tested options.

((
)) DCL Dynamic Certification Laboratories

Nomenclature Chart: Phoenix Controls Accel II Airflow Control Valves



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Table 9 - Tested Units - Horizontal Orientation

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Tested Product Construction: Valve construction is Type A, B, C or D. Body and cone are aluminum with 316 stainless steel shaft (coated or uncoated).

Tested Options: Various valve construction, valve body number and size (8" to 14"), horizontal orientation, controllers, actuators and pressure switch.

Mounting Description: Horizontal in-line duct mounted (ceiling suspended)

				Di	mensions	(in)	Weight	Max. Hanger Rod		Sds (g),	
Model Number	Valve Family	Valve Body	Diameter (in)	Depth	Width	Height	(lb)	Spacing (in)	Connection Type ¹	z/h=1	Unit
CSVA108M-ACNHZ	CSV/CEV Constant Volume	Single	8	23.5	7.9	12.0	6		NF	2.5	UUT1a
CSVA108M-ACNHZ	CSV/CEV Constant Volume	Single	8	23.5	7.9	12.0	8	1	DB	2.5	UUT1b
CSVA108M-ACNHZ-SFB	CSV/CEV Constant Volume	Single	8	23.5	7.9	12.0	8		SF	2.5	UUT1c
CSVA214M-ACNHZ	CSV/CEV Constant Volume	Dual	0 14	33.0	30.0	18.5	33		SF	2.5	UUT2
CSVA114M-ACNHZ	CSV/CEV Constant Volume	Single	14	30.0	14.0	19.5	12		NF	2.5	UUT3a
CSVA114M-ACNHZ	CSV/CEV Constant Volume	Single	14	30.0	14.0	19.5	15		DB	2.5	UUT3b
CSVA114M-ACNHZ-SFB	CSV/CEV Constant Volume	Single	14	30.0	14.0	19.5	16		SF	2.5	UUT3c
CSVA210M-ACNHZ	CSV/CEV Constant Volume	Đual	0S ¹⁰ -0	2 34:0-	1 20.0	14.0	18		SF	2.5	UUT4
EXVA108M-AMEHO (Celeris)	MAV/EXV Analog / Celeris	Single	8	23.5	10.3	14.6	<u>[9]</u>		NF	2.5	UUT5a
EXVA108M-AMEHO (Celeris)	MAV/EXV Analog / Celeris	Single	, , , ⁸ ;	23.5	10.3	1 4.6	11		DB	2.5	UUT5b
EXVA108M-ALEHZ-SFB (Celeris)	MAV/EXV Analog / Celeris	Single		23.5	10.3	14.6	11		SF	2.5	UUT5c
EXVA108M-AIEHZ-SFB (Celeris)	MAV/EXV Analog / Celeris	Single DA	TE: 0 7/2	2 923/52	0 110,3	14.6	911 ₇	48	SF	2.5	UUT5d
EXVA114M-AMEHO (Celeris)	MAV/EXV Analog / Celeris	Single	14	30.0	13.9	21.4	20		NF	2.5	UUT6a
EXVA114M-AMEHO (Celeris)	MAV/EXV Analog / Celeris	Single	14	30.0	13.9	21.4	23		DB	2.5	UUT6b
HSVA114M-ALOHZ-SFB	HSV/HEV Theris	Single	14	30.0	13.9	21.4	24		SF	2.5	UUT6c
EXVA210M-AMEHC (Celeris)	MAV/EXV Analog / Celeris	Dual	10	25.0	20.0	16.5	30		SF	2.5	UUT7a
EXVA210M-ANEHO (Celeris)	MAV/EXV Analog / Celeris	Dual	BIGTT	-25.0	G20.0	16.5	30		SF	2.5	UUT7b
EXVA210M-ANEHC (Celeris)	MAV/EXV Analog / Celeris	Dual	10	25.0	20.0	16.5	30		SF	2.5	UUT7c
EXVA210M-AEEHC (Analog)	MAV/EXV Analog / Celeris	Dual	10	25.0	20.0	16.5	30	1	SF	2.5	UUT7d
EXVA214M-AMEHC (Celeris)	MAV/EXV Analog / Celeris	Dual	14	33.0	30.0	20.5	49		SF	2.5	UUT8a
TSVA214M-ALXHZ	TSV/TEV Traccel	Dual	14	33.0	30.0	20.5	49		SF	2.5	UUT8b
EXVDF08M-AAEHO-PSL / EXVDF08M-AAHHO (Analog)	MAV/EXV Analog / Celeris	Single	8	23.5	10.3	14.6	17		WF	2.5	UUT9
EXVB114M-SMEHO (Celeris)	MAV/EXV Analog / Celeris	Single	14	30.0	13.9	21.4	24		SF	2.5	UUT10

Notes:

1. No Flange (NF), No Flange with Drawband Clamps (DB), Square Flange (SF), Welded Flange (WF)



Table 10 - Tested Units - Vertical Orientation

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Tested Product Construction: Valve construction is Type A, B, C or D. Body and cone are aluminum with 316 stainless steel shaft (coated or uncoated).

Tested Options: Various valve construction, valve body number and size (8" to 14"), vertical upflow/downflow orientation, controllers, actuators and pressure switch.

Mounting Description: Vertical in-line duct mounted

	Malua Familia	Mahar Dada			mensions	(in)	Weight	Max. Vertical Duct	Connection	Sds (g),	11-14
Model Number	Valve Family	Valve Body	Diameter (in)	Depth	Width	Height	(lb)	Support Spacing	Type ¹	z/h=1	Unit
CSVA108M-ACNDZ	CSV/CEV Constant Volume	Single	8	23.5	7.9	12.0	6		NF	2.5	UUT11
CSVA114M-ACNDZ	CSV/CEV Constant Volume	Single	0R14C0	D30.0	14.0	19.5	12		NF	2.5	UUT12
CSVA210M-ACNDZ	CSV/CEV Constant Volume	Dual	10	24.0	20.0	14.0	18		NF	2.5	UUT13
EXVD108M-AAEUC	MAV/EXV Analog / Celeris	Single	8 L	23.5	10.3	14.6	11		NF	2.5	UUT15a
EXVD108M-AMEUC	MAV/EXV Analog / Celeris	Single	0-811	23.5	10.3	14.6	11	Within 12" from the	DB	2.5	UUT15b
HSVAF08M-LIXDZ-SFB	HSV/HEV Theris	Single		23.5	10.3	14.6	11	edge of the valve	WF	2.5	UUT16
MAVC114M-ALEUZ	MAV/EXV Analog / Celeris	Single	14	30.0	13.9	21.4	24		DB & SF	2.5	UUT17
TSVA214M-ALXUZ	TSV/TEV Traccel	Dual	14	33.0	30.0	21.4	49		SF	2.5	UUT18
EXVA212M-ANEDO	MAV/EXV Analog / Celeris	Dual	$A \perp \frac{1}{12}$	30.0	24.5	18. <mark>4</mark>	36		SF	2.5	UUT19
EXVA214M-AMEUO-PSL	MAV/EXV Analog / Celeris	O Dual	14	33.0	30.0	21.4	49		SF	2.5	UUT20

Notes:

1. No Flange (NF), No Flange with Drawband Clamps (DB), Square Flange (SF), Welded Flange (WF)

((
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Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA108M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, single valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

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)) DCL Dynamic Certification Laboratories

			UUT	Properties					
Operating Weight		Dim	ensions (inch		Lowest N	latural Freque	ency (Hz)		
(lb)	Depth	Width Height		ight C	Front-Back	Side-Side	Vertical		
6	23.5	7	.9	1	12 M	N/A	N/A	N/A	
		in the second se	Seismic	Test Paramet	ers				
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)	
CBC 2016	ICC-ES AC156	2.5	1.0 OS	P – 0 ₁ 2590 –	10 _{4.00}	3.00	1.67	0.67	

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Unit Mounting Description:



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UUT 1a was ceiling-suspended. Duct was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA108M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 8" valve

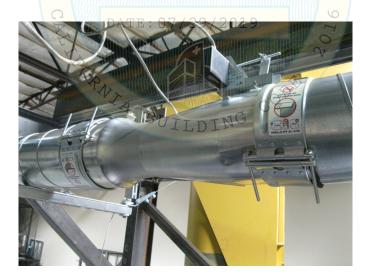
Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			υυτ	Properties								
Operating Weight		Dime	ensions (inche	s) COD	F	Lowest Natural Frequency (Hz)						
(lb)	Depth	Depth Width Height C				Front-Back	Side-Side	Vertical				
8	23.5	7.	9	CLID	12 70	N/A	N/A	N/A				
	Seismic Test Parameters											
Building Code	Test Criteria	Sds (g)	z/h	al	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)				

Building Code	Test Criteria	Sas (g)	2/ n	IP	Alix-n (g)	Arig-n (g)	Allx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.53	1.0 ^{OS}	P-0290- 1.5	104.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 1b was ceiling-suspended. Duct was attached to the unit with (2) DBK-1-08 drawband clamps. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA108M-ACNHZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

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)) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	latural Freque	atural Frequency (Hz)			
(lb)	Depth	Wi	dth	Height		Front-Back	Side-Side	Vertical
8	23.5	3	.9	SHD	12	N/A	N/A	
		13	Seismic	Test Paramet	ers	T		
Building Code	Test Criteria	Sds (g)	z/h os	p_0 9 0_	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2,5	1.0	1.5	4.00	3.00	1.67	0.67
			BV·Λ	1 Sum	or /			

Unit Mounting Description:



UUT 1c was ceiling-suspended with square flange mount; the flange was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the flange with (4) #14 self tapping screws, one on each side. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA214M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, two valve bodies, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(((•)) DCL Dynamic Certification Laboratories

	UUT Properties										
Operating Weight		Dimensions (inches)	CODR	Lowest Natural Frequency (Hz)							
(lb)	Depth	Width E	Height C	Front-Back	Side-Side	Vertical					
33	33	30	18.5	N/A	N/A	N/A					
Seismic Test Parameters											

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1 23	0S 1.0	P-0290- 1.5	-10 4.00	3.00	1.67	0.67

Sumer

Unit Mounting Description:



UUT 2 was ceiling-suspended; the rectangular duct was attached to the unit with (10) #14 self tapping screws, (3) on each long side,
(2) on each short side, approximately 1" in from the corners and in the center. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA114M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

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)) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	es) COD	F	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	Wi	dth E	H	eight Co	Front-Back	Side-Side	Vertical
12	30	1	4	CIIÉ	19.5	N/A	N/A	N/A
		L'ET	Seismic	Test Parame	ters			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	0S 1.0	P-0290- 1.5	4.00	3.00	1.67	0.67
			BY:Al	i Sun	ner	O		
Unit Mounting Des	cription:	a				9		
		1 A COM	DATE: (07/29/2	2019			
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UUT 3a ceiling-suspended. Duct was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA114M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

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)) DCL Dynamic Certification Laboratories

		UU	T Properties						
	Dime	ensions (inch	es) CODj	F.	Lowest N	latural Frequency (Hz)			
Depth	Width		He	ight CO	Front-Back	Side-Side	Vertical		
30	1	4	19.5			N/A	N/A		
	127	Seismic	Test Paramet	ers	1				
Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)		
ICC-ES AC156	2.5	0.S 1.0	P-0290- 1.5	4.00	3.00	1.67	0.67		
	30 Test Criteria	Depth Wid 30 12 Test Criteria Sds (g)	Dimensions (inch Depth Width 30 14 Seismic Test Criteria Sds (g) z/h	Depth Width He 30 14 1 Seismic Test Paramet Test Criteria Sds (g) z/h Ip	Dimensions (inches) Depth Width Height 30 14 19.5 Seismic Test Parameters Test Criteria Sds (g) z/h Ip Aflx-H (g)	Dimensions (inches) Lowest N Depth Width Height Front-Back 30 14 19.5 N/A Seismic Test Parameters Test Criteria Sds (g) z/h Ip Aflx-H (g)	Dimensions (inches) Lowest Natural Frequencies Depth Width Height Front-Back Side-Side 30 14 19.5 N/A N/A Seismic Test Parameters Test Criteria Sds (g) z/h Ip Aflx-H (g) Arig-H (g) Aflx-V (g)		

Unit Mounting Description:



UUT 3b ceiling-suspended. Duct was attached to the unit with (2)DBK-1-14 drawband clamps. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA114M-ACNHZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

((
)) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	Lowest N	Natural Frequency (Hz)			
(lb)	Depth	Wi	dth	Не	Height Front-Back		Side-Side	Vertical
16	30		.4	SHP	19.5		N/A	N/A
		27	Seismic	Test Paramet	ers	L'E		
Building Code	Test Criteria	Sds (g)	z/h _{OS}	-0 9 90-	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	P2,5	1.0	1.5	4.00	3.00	1.67	0.67
			BY:A	i Sum	er			



UUT 3c was ceiling-suspended with square flange mount; the flange was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the flange with (8) #14 self tapping screws, spaced 1" in from the corners. The duct was fastened top and bottom 15/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 15/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA210M-ACNHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, two valve bodies, 10" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			UU	T Properties					
Operating Weight		Dim	ensions (inch	F.	Lowest N	t Natural Frequency (Hz)			
(lb)	Depth	Wi	idth E	He	Front-Back	Side-Side	Vertical		
18	24	2	20 14			N/A	N/A	N/A	
		127	Seismic	Test Paramet	ers	1			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)	
CBC 2016	ICC-ES AC156	125	0S 1.0	P-0290- 1.5	104.00	3.00	1.67	0.67	

Unit Mounting Description:



UUT 4 was ceiling-suspended; the rectangular duct was attached to the unit with (10) #14 self tapping screws, (3) on each long side,
(2) on each short side, approximately 1" in from the corners and in the center. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA108M-AMEHO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	es) COD3	Lowest N	st Natural Frequency (Hz)		
(lb)	Depth	w	idth E	He	Front-Back	Side-Side	Vertical	
9	23.5	1	10.3				N/A	N/A
		127	Seismic	Test Paramete	ers	1		
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	175	0S 1.0	P-0290- 1.5	104.00	3.00	1.67	0.67

 $BY: \mathbf{A}$

Unit Mounting Description:



UUT 5a was ceiling-suspended. Duct was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA108M-AMEHO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			UU	T Properties					
Operating Weight		Dim	ensions (inch	es) COD3	7	Lowest N	Lowest Natural Frequency (Hz)		
(lb)	Depth	Wi	dth E	He	ight CO	Front-Back	Side-Side	Vertical	
11	23.5	10	0.3	1	4.6	N/A	N/A	N/A	
		LE I	Seismic	Test Paramete	ers	1			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)	
CBC 2016	ICC-ES AC156	2:5	0S 1.0	P-0290- 1.5	10 4.00	3.00	1.67	0.67	

Sumer

Unit Mounting Description:



UUT 5b was ceiling-suspended. Duct was attached to the unit with (2) DBK-1-08 drawband clamps. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA108M-ALEHZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

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)) DCL Dynamic Certification Laboratories

			Con	Properties				
Operating Weight		Dim	nensions (inches)	CODI	E C	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	w	idth	He	ight M	Front-Back	Side-Side	Vertical
11	23.5	1	0.3		4.6	N/A	N/A	N/A
		127	Seismic Te	st Paramet	ers			
Building Code	Test Criteria	Sds (g)	z/h	, ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2,5	1.0	1.5	4.00	3.00	1.67	0.67
			BY:Ali	. Sum	er			
Unit Mounting Des	crintion							
Unit Mounting Des	cription.	CP	DATE:07	7/29/2	019	7 0		
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III IT So was calling	suspended with		a mount: the flag			pit with (4) #14	colf tapping c	
UUT 5c was ceiling				-				
at 90 degrees. Th	e duct was attacl	ned to the fla	ange with (4) #14	self tappin	g screws, one	on each side. T	he duct was f	astened top
at 90 degrees. Th and bottom 15/8	e duct was attacl ' 12 ga strut; the	ned to the fla strut was at	ange with (4) #14 tached to the du	self tappin ct, 24'' fron	g screws, one n the center of	on each side. T the valve with	he duct was f (6) #14 self ta	astened top pping screws
at 90 degrees. Th and bottom 15/8 per strut spaced ap	e duct was attacl ' 12 ga strut; the proximately 2'' c	ned to the fla strut was at n center. Th	ange with (4) #14 tached to the du ne unit was suspe	self tappin ct, 24'' fron ended with	g screws, one n the center of 3/8-inch diame	on each side. T the valve with eter threaded r	he duct was fa (6) #14 self ta od spaced at 4	astened top pping screws 18" and hung
at 90 degrees. Th and bottom 15/8 per strut spaced ap approximately 24''	e duct was attacl ' 12 ga strut; the proximately 2'' c down. Rod stiffe	ned to the fla strut was at in center. Th eners and ro	ange with (4) #14 tached to the du ne unit was suspe d stiffening clips	self tappin ct, 24" fron ended with were used.	g screws, one n the center of 3/8-inch diamo 22'' lengths of	on each side. T the valve with eter threaded r 1 5/8" 12 ga st	he duct was fa (6) #14 self ta od spaced at 4 rut with (3) Po	astened top pping screws 18" and hung ower Strut PS
at 90 degrees. Th and bottom 15/8 per strut spaced ap approximately 24''	e duct was attack ' 12 ga strut; the proximately 2'' c down. Rod stiffe stiffening clips.	ned to the fla strut was at on center. Th eners and ro Lateral braci	ange with (4) #14 tached to the du ne unit was suspe d stiffening clips	self tappin ct, 24" fron ended with were used. Mason SCB	g screws, one n the center of 3/8-inch diamo 22'' lengths of hangers with 1	on each side. T the valve with eter threaded r 15/8"12 ga st /8-inch diamet	he duct was fa (6) #14 self ta od spaced at 4 rut with (3) Po	astened top pping screws 18" and hung ower Strut PS

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA108M-AIEHZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

((•)) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	es) COD)E	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	Wi	dth F	He	eight COL	Front-Back	Side-Side	Vertical
11	23.5	10	.3		4.6	N/A	N/A	N/A
		127	Seismic	Test Paramet	ters			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0	SP-0290 1.5	-10 4.00	3.00	1.67	0.67
				li Su				
Unit Mounting Des	scription:	Q	DATE	93/28/	2019	0		
		A E.				0		
	4		PA		Salar State	No. of the second se		
				- Carl	T'E COL			
				VIED1	NO			

UUT 5d was ceiling-suspended with square flange mount; the flange was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the flange with (4) #14 self tapping screws, one on each side. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA114M-AMEHO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 14" valve, medium pressure operating range, conical shaped diffuser, digital high speed electric controller type, Celeris electronic controller designation, horizontal orientation, normally open valve fail safe position. Phoenix Controls actuator, horizontal orientation.

(()) DCL Dynamic Certification Laboratories

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			UU	Properties				
Operating Weight		Dime	ensions (inch	es) CODJ	प	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	Wie	dth E	He	ight CO	Side-Side	le Vertical	
20	30	13	.9	C 1 2	1.4	N/A	N/A	N/A
		127	Seismic	Test Paramet	ers	1		
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2:5	0S. 1.0	P-0290- 1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 6a was ceiling-suspended. Duct was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximatelty 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA114M-AMEHO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, one valve body, 14" valve, medium pressure operating range, conical shaped diffuser, digital high speed electric controller type, Celeris electronic controller designation, horizontal orientation, normally open valve fail safe position. Thomson DH12-17W42 actuator.

(()) DCL Dynamic Certification Laboratories

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			UUT	Properties					
Operating Weight		Dime	ensions (inche	s) COD	F.	Lowest N	: Natural Frequency (Hz)		
(lb)	Depth	Wie	th E	He	Side-Side	Vertical			
23	30	13	.9	21.4		N/A	N/A	N/A	
		LE LE	Seismic T	est Paramet	rers	1			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)	
CBC 2016	ICC-ES AC156	2:5	0S 1.0	2-0290- 1.5	10	3.00	1.67	0.67	
			D 77 7 7	- a					

Unit Mounting Description:



UUT 6b was ceiling-suspended. Duct was attached to the unit with (2) DBK-1-14 drawband clamps. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: HSVA114M-ALOHZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Theris valve family, valve construction A, one valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

 $((\bullet))$ DCL Dynamic Certification Laboratories

			UUT P	Properties				
Operating Weight		Dim	ensions (inches)	CODI	F C	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	Wi	dth	He	ight M	Front-Back	Side-Side	Vertical
24	30	1	3.9	2	1.4	N/A	N/A	N/A
		127	Seismic Te	st Paramet	ers	T.		
Building Code	Test Criteria	Sds (g)	z/h		Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2,5	1.0	1.5	4.00	3.00	1.67	0.67
	I I		BY:Ali	. Sum	er			
Unit Mounting De	scription:	a			0.1.0	0		
		The second				108		
		- th				V		
		10						
			A starter					
					C			
					170	TVP		
	4		VIE					
			1 9 1 .					
						State State State		
		-		ALC: N		-		
						Tie		
				F		THE		
		U				ALC.		
UUT 6c was ceiling	-suspended with	square flange	e mount; the flag	nge was att	ached to the u	nit with (4) #14	self tapping s	crews spaced
at 90 degrees. Th	ne duct was attac	hed to the fla	ange with (8) #14	4 self tappir	ig screws, spac	ed 1" in from t	he corners. T	he duct was
at 90 degrees. Th fastened top and	ne duct was attac bottom 15/8'' 1	hed to the fla 2 ga strut; th	ange with (8) #14 ne strut was atta	4 self tappir ched to the	ng screws, spac duct, 24'' fron	ced 1" in from t n the center of	he corners. The valve with	he duct was (6) #14 self
at 90 degrees. Th fastened top and tapping screws pe	ne duct was attack bottom 15/8" 1 er strut spaced ap	hed to the fla 2 ga strut; th proximately	ange with (8) #14 ne strut was atta 2'' on center. Th	4 self tappir ched to the ne unit was	ng screws, spac duct, 24'' fron suspended wit	ced 1" in from t n the center of th 3/8-inch dian	he corners. The valve with neter threader	he duct was i (6) #14 self d rod spaced
at 90 degrees. Th	ne duct was attact bottom 15/8"1 er strut spaced ap approximately 24	hed to the fla 2 ga strut; th proximately '' down. Rod	ange with (8) #14 he strut was atta 2" on center. Th I stiffeners and r	4 self tappir ched to the ne unit was od stiffenin	ng screws, spac duct, 24'' fron suspended wit g clips were us	ed 1" in from t in the center of th 3/8-inch dian sed. 22" lengths	he corners. The valve with neter threaders of 1 5/8" 12	he duct was 1 (6) #14 self d rod spaced ga strut with

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA210M-AMEHC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, two valve bodies, 10" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

		UU	Properties				
	Dime	ensions (inch	F.	Lowest N	latural Freque	ency (Hz)	
Depth	Wie	th E	He	ight CO	Front-Back	Side-Side	Vertical
25	2	0,7		6.5	N/A	N/A	N/A
	127	Seismic	Test Paramet	ers	1		
Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
ICC-ES AC156	2.5	0S 1.0	P-0290- 1.5	10	3.00	1.67	0.67
	25 Test Criteria	Depth Wid 25 22 Test Criteria Sds (g)	Dimensions (inch Depth Width 25 20 Seismic Test Criteria Sds (g) z/h	Depth Width He 25 20 1 Seismic Test Paramet Test Criteria Sds (g) z/h Ip	Dimensions (inches) Depth Width Height 25 20 16.5 Seismic Test Parameters Test Criteria Sds (g) z/h lp Aflx-H (g)	Dimensions (inches) Lowest N Depth Width Height Front-Back 25 20 16.5 N/A Seismic Test Parameters Test Criteria Sds (g) z/h Ip Aflx-H (g)	Dimensions (inches) Lowest Natural Frequencies Depth Width Height Front-Back Side-Side 25 20 16.5 N/A N/A Seismic Test Parameters Test Criteria Sds (g) z/h Ip Aflx-H (g) Arig-H (g) Aflx-V (g)

Unit Mounting Description:



UUT 7a was ceiling-suspended; the rectangular duct was attached to the unit with (12) #14 self tapping screws approximately 1" in from the corners and in the center. The duct was fastened top and bottom 15/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 15/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

UUT7b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA210M-ANEHO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, two valve bodies, 10" valve, medium pressure operating range, conical shaped diffuser, digital pneumatic controller type, Celeris electronic controller designation, horizontal orientation, normally open valve fail safe position. 4" pneumatic actuator.

(()) DCL Dynamic Certification Laboratories

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			UU	T Properties						
Operating Weight		Dim	ensions (inch	es) CODj	प	Lowest N	Natural Frequency (Hz)			
(lb)	Depth	Width Height				Front-Back	Side-Side	Vertical		
30	25	2	20		6.5	N/A	N/A	N/A		
		LET N	Seismic	Test Paramet	ers					
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)		
CBC 2016	ICC-ES AC156	2.5	0S 1.0	P-0290- 1.5	10	3.00	1.67	0.67		

Sumer

Unit Mounting Description:



UUT 7b was ceiling-suspended; the rectangular duct was attached to the unit with (12) #14 self tapping screws approximately 1" in from the corners and in the center. The duct was fastened top and bottom 15/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 15/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA210M-ANEHC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, two valve bodies, 10" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

((
)) DCL Dynamic Certification Laboratories

UUT Properties								
Operating Weight (lb)	Dimensions (inches) COD F					Lowest Natural Frequency (Hz)		
	Depth	Width		Height C		Front-Back	Side-Side	Vertical
30	25	2	20	16.5		N/A	N/A	N/A
Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1 22 2	0S 1.0	P-0290- 1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 7c was ceiling-suspended; the rectangular duct was attached to the unit with (12) #14 self tapping screws approximately 1" in from the corners and in the center. The duct was fastened top and bottom 15/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 15/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA210M-AEEHC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, two valve bodies, 10" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

((
)) DCL Dynamic Certification Laboratories

			UUT	Properties				
Operating Weight		Dim	ensions (inche	s) CODI	E	Lowest N	latural Freque	ency (Hz)
(lb)	Depth	W	idth	Не	ight M	Front-Back	Side-Side	Vertical
30	25		20	СЦВ	6.5	N/A	N/A	N/A
		[2]	Seismic T	est Paramet	ers			
Building Code	Test Criteria	Sds (g)	z/h	lp D	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3:00	1.67	0.67
		0	BY:Al	i Sum	ler	0		
Unit Mounting Des	cription:	a		7/20/2	010	0		
					bit with (12) #			imately 1" in
UUT 7d was ceiling from the corners 24" from the c suspended with 3/ clips were used. 2 of Mason SCB hang	and in the center enter of the valve 8-inch diameter t 2'' lengths of 1 5/	The duct w with (6) #1 hreaded rod '8'' 12 ga stri	vas fastened top 4 self tapping so I spaced at 48'' a ut with (3) Powe	o and bottom crews per str and hung ap er Strut PS 3	n 15/8"12 ga rut spaced app oproximately 2 500, A307, rod	strut; the strut roximately 2" o 4" down. Rod s stiffening clips	was attached in center. The stiffeners and . Lateral braci	to the duct, unit was rod stiffening ng consisted

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA214M-AMEHC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

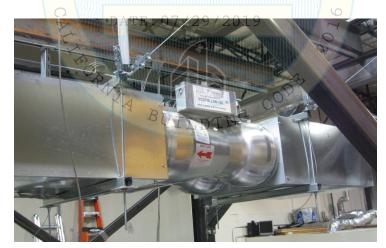
Celeris valve family, valve construction A, two valve bodies, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dim	ensions (inch	F.	Lowest Natural Frequency (Hz)			
(lb)	Depth	pth Width Height					Side-Side	Vertical
49	33	3	30	2	0.5	N/A	N/A	N/A
		LE I	Seismic	Test Paramet	ers			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	125	0S 1.0	P-0290- 1.5	104.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 8a was ceiling-suspended; the rectangular duct was attached to the unit with (10) #14 self tapping screws, (3) on each long side, (2) on each short side, approximately 1" in from the corners and in the center. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: TSVA214M-ALXHZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Traccel valve family, valve construction A, two valve bodies, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(((•)) DCL Dynamic Certification Laboratories

			UU	T Properties				
Operating Weight		Dime	ensions (inch	Lowest Natural Frequency (Hz)				
(lb)	Depth	epth Width Height				Front-Back	Side-Side	Vertical
49	33	30 21			0.5	N/A	N/A	
		27	Seismic	Test Paramet	ers	T		
Building Code	Test Criteria	Sds (g)	z/h _{OS}	$P = 0^{10} 2 9 0$	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.67	0.67



UUT 8b was ceiling-suspended; the rectangular duct was attached to the unit with (10) #14 self tapping screws, (3) on each long side, (2) on each short side, approximately 1" in from the corners and in the center. The duct was fastened top and bottom 1 5/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVDF08M-AAEHO-PSL / EXVDF08M-AAHHO

Product Construction Summary:

Body, cone and hardware - aluminum with PVDF coating; PFA-coated 316 stainless steel shaft.

Options / Component Summary:

Celeris valve family, valve construction D, single valve with welded circular flange, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(((•)) DCL Dynamic Certification Laboratories

			UU	T Properties	F			
Operating Weight		Dim	ensions (inch	E Co	Lowest Natural Frequency (Hz)			
(Ib)	Depth	Wi	dth	Не	Front-Back	Side-Side	Vertical	
17	23.5 10.3 14.6 N/A N/A							N/A
		14	Seismic	Test Paramet	ers	T.		
Building Code	Test Criteria	Sds (g)	z/h os	P-0 2 90-	Afix-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.67	0.67
			BY:A	- Sun	ter (

Unit Mounting Description:

DATE: 07/29/2019



UUT 9 was ceiling-suspended. Duct was attached to the unit with (6) 1/4" diameter, grade 5, bolts spaced at 60 degrees. The flanges attached to the duct with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the top of the strut with steel 3/4" wide, 24ga strap using 3/8-inch diameter Grade 5 bolts. The strap was attached to the duct with three #14 self tapping screws per side, spaced at 90 degrees. The strut was suspended with 3/8-inch diameter threaded rod spaced at 48" apart and 24" down from the fixture. 22" lengths of 1 5/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

UUT10

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVB114M-SMEHO

Product Construction Summary:

Body and cone - aluminum with baked phenolic coating; PFA-coated 316 stainless steel shaft

Options / Component Summary:

Celeris valve family, valve construction B, single valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			רטט	Properties				
Operating Weight		Dime	ensions (inche	7	Lowest Natural Frequency (Hz)			
(lb)	Depth Width Height				ight CO	Front-Back	Side-Side	Vertical
24	30	13	.9	C I I C ²	1.4	N/A	N/A	N/A
		LET .	Seismic	Test Paramet	ers			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	0S 1.0	P-0290- 1.5	10	3.00	1.67	0.67

UUT 10 was ceiling-suspended with square flange mount; the flange was attached to the unit with (4) #14 self tapping screws spaced at 90 degrees. The duct was attached to the flange with (8) #14 self tapping screws, spaced 1" in from the corners. The duct was fastened top and bottom 15/8" 12 ga strut; the strut was attached to the duct, 24" from the center of the valve with (6) #14 self tapping screws per strut spaced approximately 2" on center. The unit was suspended with 3/8-inch diameter threaded rod spaced at 48" and hung approximately 24" down. Rod stiffeners and rod stiffening clips were used. 22" lengths of 15/8" 12 ga strut with (3) Power Strut PS 3500, A307, rod stiffening clips. Lateral bracing consisted of Mason SCB hangers with 1/8-inch diameter cable, 2 per drop rod, angled at approximately 45 degrees horizontally and vertically.

07/29/2019

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA108M-ACNDZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			UU	T Properties						
Operating Weight		Dime	nsions (inch	es)		Lowest Natural Frequency (Hz)				
(lb)	Depth	Wid	th	R COHe	ight	Front-Back	Side-Side N N/A	Vertical		
6	23.5	7.9	9	1	2 M	N/A	N/A	N/A		
			Seismic	Test Paramete	ers	2				
Building Code	Test Criteria	Sds (g)	z/h		Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)		
CBC 2016	ICC-ES AC156	2.5	1.0	SP- 0 290	-1 (4.00	3.00	1.67	0.67		
Unit Mounting Des	scription:	CALLER	DATE.		ner 2019 NG COT	0 9 TO2				

UUT 11 was mounted in a vertical orientation, in-line with duct. Unit was attached to one square and one round duct using (4) #14 self tapping screws per each duct spaced evenly at 90 degrees. The top duct was attached to the DCL steel shake table interface frame with 24 ga steel strap (3) #14 screws spaced at 90 degrees. The bottom duct was attached to the interface frame with angle (8) #14 self tapping screws. This lateral bracing of the assembly was provided at 8-feet on-center. The interface frame was mounted to the shake table using M12 threaded rod at approximately 8-inches on-center.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA114M-ACNDZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, one valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			וטט	Properties								
Operating Weight		Dime	nsions (inche	es)		Lowest Natural Frequency (Hz)						
(lb)	Depth	Wid	th	R COHe	ight	Front-Back						
12	30	14	D F	19	9.5 OM	N/A	N/A	N/A				
Seismic Test Parameters												
Building Code	Test Criteria	Sds (g)	z/h)) ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)				
CBC 2016	ICC-ES AC156	2.5	1.0 0.5	SP- 0 290	-1 (4.00	3.00	1.67	0.67				
Unit Mounting Des	scription:	A CHT	BY: A	1 Sur 07/29/	ner 2019	E 0 9702						

UUT 12 was mounted in a vertical orientation, in-line with duct. Unit was attached to one square and one round duct using (4) #14 self tapping screws per each duct spaced evenly at 90 degrees. The top duct was attached to the DCL steel shake table interface frame with 24 ga steel strap (3) #14 screws spaced at 90 degrees. The bottom duct was attached to the interface frame with angle (8) #14 self tapping screws. This lateral bracing of the assembly was provided at 8-feet on-center. The interface frame was mounted to the shake table using M12 threaded rod at approximately 8-inches on-center.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: CSVA210M-ACNDZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Constant Volume valve family, valve construction A, two valve bodies, 10" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			דטט	Properties							
Operating Weight		Dime	ensions (inche	es)		Lowest N	N/A N/A N/A				
(lb)	Depth	Wie	dth	R COHe	ight	Front-Back	Side-Side	Vertical			
18	24	2	0		14 O _M	N/A	N/A	N/A			
			Seismic 1	Test Paramet	ers	N. N.					
Building Code	Test Criteria	Sds (g)	z/h	D ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)			
CBC 2016	ICC-ES AC156	2.5	1.0 _{OS}	P- 0 290	-14.00	3.00	1.67	0.67			
Unit Mounting Des		rientation, in-		o7/29/	NG CO	rectangular du	ucts using (1) #	ŧ14 screws p€			

UTU 13 was mounted in a vertical orientation, in-line with duct. Unit was attached to two rectangular ducts using (1) #14 screws per each duct spaced at 1" in from the corners and in the middle on the long side. The top duct was attached to the DCL steel shake table interface frame with 24ga steel strap (3) #14 self tapping screws. The bottom duct was attached to the interface frame with angle (8) #14 self tapping screws. This lateral bracing of the assembly was provided at 8-feet on-center. The interface frame was mounted to the shake table using M12 threaded rod at approximately 8-inches on-center.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVD108M-AAEUC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction D, single valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			0011	Properties					
Operating Weight		Dime	Dimensions (inches)			Lowest Natural Frequency (Hz)			
(lb)	Depth	Wic	dth πO^{R}	He	ight	Front-Back	Side-Side	Vertical	
11	23.5	10	.3	1	4.6 1	N/A	N/A	N/A	
		E.	Seismic Te	st Paramet	ers				
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)	
CBC 2016	ICC-ES AC156	2.5	1.0 OSP	- 0 ₁ 259 0 -	10 _{4.00}	3.00	1.67	0.67	
Unit Mounting De	scription:	0	BY:Ali			0			
		LEV	DATE: 0	7/29/2	019	070			
			NIA BU		00			1	

interface fixture with (2) 1/4" diameter, grade 5, bolts and washers with a 1.5" x 1.5" x 3/16" low carbon steel plate washer.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVD108M-AMEUC

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction D, single valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			וטט	Properties				
Operating Weight		Dime	ensions (inche		Lowest Natural Frequency (Hz)			
(lb)	Depth	Depth Width Height					Side-Side	Vertical
11	23.5 10.3 14.6 N/A						N/A	N/A
		E.	Seismic	Test Paramet	ers			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0 OS	-0 _{1.5} 90-	104.00	3.00	1.67	0.67
		NG MIN			ATTERNA MANAGERY			

:Ali Sumer

Unit Mounting Description:





(()) DCL Dynamic Certification Laboratories

UUT 15a was mounted in a vertical orientation, in-line with 8" diameter duct. The unit was attached to the ducts using (2) DBK-1-08 drawband clamps. The duct was attached to the DCL steel shake table interface frame with 3/4" wide, 24ga hanger strap and (3) #14 self tapping screws spaced 90 digress apart. The strap was spaced 12" from the edge of the duct. The strap attached to the DCL interface fixture with (2) 1/4" diameter, grade 5, bolts and washers with a 1.5" x 1.5" x 3/16" low carbon steel plate washer.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: HSVAF08-LIXDZ-SFB

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Theris valve family, valve construction A, single valve body, 8" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

(()) DCL Dynamic Certification Laboratories

			UUT	Properties				
Operating Weight		Dim	ensions (inche	s) dob		Lowest N	latural Freque	ency (Hz)
(lb)	Depth	Wi	dth πO^{R}	He	eight	Front-Back	Front-Back Side-Side	
11	23.5	1(0.3	1	.4.6	N/A	N/A	N/A
		E.	Seismic T	est Paramet	ters			
Building Code	Test Criteria	Sds (g)	z/h	lp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	_{1.0} OS	- 0 _{1.5} 90 -	104.00	3.00	1.67	0.67
Unit Mounting Des	scription:	I O C ATTAC				2030		44
			NIA BU	JILDI	NG SOS	0.0		THE REAL PROPERTY OF

UUT 16 was mounted in a vertical orientation, in-line with 8" diameter duct. The unit was attached to the duct using (6) 1/4" diameter, grade 5, bolts spaced 60 degrees apart. The duct was attached to the DCL steel shake table interface frame with 3/4" wide, 24ga hanger strap and (3) #14 self tapping screws spaced 90 digress apart. The strap was spaced 12" from the edge of the duct. Strap attached to the DCL interface fixture with (2) 1/4" diameter, grade 5, bolts and washers with a 1.5" x 1.5" x 3/16" low carbon steel plate washer.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves Model Number: MAVC114M-ALEUZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Theris valve family, valve construction C, single valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

			UU	T Properties				
Operating Weight		Dimer	Lowest Natural Frequency (Hz)					
(lb)	Depth	Widt	h	R COHĚ	ight	Front-Back	Side-Side	Vertical
24	30	13.9	Fr	2	1.4 COL	N/A	N/A	N/A
			Seismic	Test Paramet	ers	P,		
Building Code	Test Criteria	Sds (g)	z/h	Jp	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
						J T		

1.5

4.00

Unit Mounting Description:

CBC 2016



ICC-ES AC156

2.5

1.0





1.67

0.67

(()) DCL Dynamic Certification Laboratories

3.00

top attachment

UUT 17 was mounted in a vertical orientation, in-line with 14" diameter duct on one side and square duct on the other. The unit was attached to the round duct using a DBK-1-14 drawband clamp. The unit was attached to the square duct with (8) #14 self tapping screws spaced 1" from the corner. The round duct was attached to the DCL steel shake table interface frame with 3/4" wide, 24ga hanger strap and (3) #14 self tapping screws spaced 90 degrees apart. Attachment points were spaced 12" from the edge of the duct. The square duct was attached to the DCL steel shake table interface frame with (8) #14 self tapping screws, spaced 2" on center, into (2) 1 5/8" 12 ga strut. Strut was attached with (4) 3/8" diameter, grade 5 bolts via angle bracket.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: TSVA214M-ALXUZ

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Traccel valve family, valve construction A, dual valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties										
Operating Weight		Dimensions (inches)	Lowest Natural Frequency (Hz)							
(lb)	Depth	Width	COHeight	0	Front-Back	Side-Side	Vertical			
49	33	30	24.1	NO.	N/A	N/A	N/A			
	Seismic Test Parameters									

Building Code	Test Criteria	Sds (g)	z/h		Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0 00	SP- 0 290	_1 (4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 18 was mounted in a vertical orientation, in-line with rectangular duct. The unit was attached to the square duct with (10) #14 self tapping screws spaced 1" from the corners and in the center of the valve in the long direction. The duct was attached to the DCL steel shake table interface frame with (8) #14 self tapping screws, spaced 2" on center, into (2) 1 5/8" 12 ga strut. Strut was attached with (4) 3/8" diameter, grade 5 bolts via angle bracket and spaced 12" from the edge of the valve.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA212M-ANEDO

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, dual valve body, 12" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

	Depth 30 Test Criteria CC-ES AC156 iption:	Dime Wid 24. Sds (g)	5 Seismic T z/h	$C O_{He}$ 18 est Paramete 19 $P = \frac{1}{2} \frac{5}{2} 9 0$	ight 8.4 ers Aflx-H (g) - 1 (4.00	Lowest N Front-Back N/A Arig-H (g) 3.00	Side-Side N/A Aflx-V (g) 1.67	ency (Hz) Vertical N/A Arig-V (g) 0.67
36 The second se	30 Test Criteria CC-ES AC156	24. Sds (g)	5 Seismic T z/h 1.0	18 est Paramete p P - $\frac{1}{2}$ 9 0	8.4 ers Aflx-H (g)	N/A Arig-H (g) 3:00	N/A Aflx-V (g)	N/A Arig-V (g)
Building Code 1 CBC 2016 10	Test Criteria CC-ES AC156	Sds (g)	Seismic T z/h 1.0	est Paramet Ip P - $\frac{1}{2}$ 9 0	ers Aflx-H (g)	Arig-H (g) 3.00	Aflx-V (g)	Arig-V (g)
CBC 2016 10	CC-ES AC156	2.5	z/h 1.0	P Ip P - 1 , 5 290	Aflx-H (g)	3.00		
CBC 2016 10	CC-ES AC156	2.5	1.0 05	P- 0 290		3.00		
		[I]			-1(4.00		1.67	0.67
Unit Mounting Descri	iption:	No C	BY:Al	i Sur				
Unit Mounting Descri	iption:	0	BY:Al	i Sur				
		2			ner			
				6		0		
		Y	DATE	07/29/	2019	H H		
		EAN	LAN MUAT					
			B					
UUT 19 was mounted self tapping screws sp steel shake table inter	paced 1" from t	he corners ar	nd in the cente	er of the valv	e in the long d	irection. The du	uct was attach	ed to the D

with (4) 3/8" diameter, grade 5 bolts via angle bracket and spaced 12" from the edge of the valve.

Manufacturer: Phoenix Controls

Product Line: Accel II Airflow Control Valves

Model Number: EXVA214M-AMEUO-PSL

Product Construction Summary:

Body and cone -- uncoated aluminum; Shaft -- uncoated 316 stainless steel

Options / Component Summary:

Celeris valve family, valve construction A, dual valve body, 14" valve

Note: The UUT was operational before, during and after shaking. The structural integrity of the component attachment system and force-resisting systems was maintained.

UUT Properties											
Operating Weight		Dimensions (inches)	Dimensions (inches)				Lowest Natural Frequency (Hz)				
(lb)	Depth	Width	COHeight	0	Front-Back	Side-Side	Vertical				
49	33	30	21.4	OM	N/A	N/A	N/A				
	Seismic Test Parameters										

Building Code	Test Criteria	Sds (g)	z/h	Э _{lp}	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.5	1.0 0.9	SP- 0 290	_1(4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 20 was mounted in a vertical orientation, in-line with rectangular duct. The unit was attached to the square duct with (10) #14 self tapping screws spaced 1" from the corners and in the center of the valve in the long direction. The duct was attached to the DCL steel shake table interface frame with (8) #14 self tapping screws, spaced 2" on center, into (2) 1 5/8" 12 ga strut. Strut was attached with (4) 3/8" diameter, grade 5 bolts via angle bracket and spaced 12" from the edge of the valve.