APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0593

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☒ New ☐ Renewal

Manufacturer Information

Manufacturer: Siemens Industry, Inc.

Manufacturer's Technical Representative: Mike Schuler, Engineer

Mailing Address: 1000 Deerfield Parkway, Buffalo Grove, IL 60089

Telephone: (847) 941-5764 Email: mike.schuler@siemens.com

Product Information

Product Name: Venturi Airflow Valves

Product Type: Mechanical Equipment

Product Model Number: See attached
(List all unique product identification numbers and/or part numbers)

General Description: Venturi airflow valves in single, dual, and triple body

Mounting Description: Units are ceiling suspended or vertical in-line duct mounted

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Guiliano

Mailing Address: 113 Main Street, Bloomingdale, NJ 07403

Telephone: (973) 838-1780 Email: john.giuliano@thevmcgroup.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2016.

Signature of Applicant: _____ Date: 3/8/19

Title: President Company Name: The VMC Group

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: ken.tarlow@thevmcgroup.com

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

Certification Method

☒ Testing in accordance with: ☒ ICC-ES AC156

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: Dynamic Certification 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

Seismic Parameters

Design in accordance with ASCE 7-10 Chapter 13: ☒ Yes ☐ No

Design Basis of Equipment or Components (F_p/W_p) = 1.875

S_{DS} (Design spectral response acceleration at short period, g) = 2.50

a_p (In-structure equipment or component amplification factor) = 2.5

R_p (Equipment or component response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1

Equipment or Component Natural Frequencies (Hz) = See attachment

Overall dimensions and weight (or range thereof) = See attachment

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) =

Ω_0 (System overstrength factor) =

C_d (Deflection amplification factor) =

I_p (Importance factor) = 1.5

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

☒ Test Report(s) ☒ Drawings ☐ Calculations ☒ Manufacturer's Catalog

☐ Other(s) (Please Specify):

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2025

Signature: Date: February 8, 2021

Print Name: Timothy J. Piland Title: SSE

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.50 z/h = 1

Condition of Approval (if applicable):

Table 1:

Certified Units, Venturi Airflow Control Valves

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control Types (AVC) Constant Air Volume, (AVV) Variable Air Volume, (AVZ) Variable Air Volume w/ Shutoff

Certified Product Construction: Valve body 14 ga. spun aluminum; cone 18 ga. spun aluminum with 316 stainless steel cone rod, Teflon-coated. Epoxy phenolic coating in airstream option.

Certified Options: Various valve bodies (1 to 3) and valve diameter (6" to 14"), horizontal or vertical upflow/downflow orientation, control packages (controller/actuator/pressure sensor), accessory reheat coils, and accessory silencers.

Mounting Description: Horizontal in-line duct mounted (ceiling suspended) or vertical in-line duct mounted, using no-flange, no-flange with drawband clamps, square flange, or welded flange mount.

Product Line	Family	Model Number[1,2,3]	Valve Size	Mounting Option (Horizontal, Vert Upflow, Vert Downflow)[4]	Dimensions (inches)[5]			Venturi Weight[6] (lb)	Control Package Weight[7] (lb)	Total Valve Weight[8] (lb)	Horizontal In-Line Mounting					Vertical In-Line Mounting	Estimated Maximum Weight (lb)[11]	Sds (g), z/h=1	Unit[10]
					Length	Width	Height				Reheat Coil Weight[9] (lb)	Reheat Coil Length[9] (in)	Silencer Weight[9] (lb)	Silencer Length[9] (in)	Max. Hanger Rod Spacing	Max. Vertical Duct Support Spacing			
Venturi Airflow Control Valves	Single Body	AVx106xxyyyxxxx	6"	H, U, D	21.8	5.9	6.0	4.8 to 6.0	6.5 to 17.3	4.8 to 23.3	5.0 to 10.0	18.8, 26.8	5.0 to 16.5	14.0, 18.0, 36.0	Within 12" of duct-to-valve connection and at the connection point of accessory-to-valve connection point	Within 12" of duct-to-valve connection	82	2.5	Extrapolated
		AVx108xxyyyxxxx	8"	H, U, D	27.5	7.9	8.0	7.3 to 9.1	6.5 to 17.3	7.3 to 26.4	6.5 to 13.0	18.8, 26.8	5.4 to 19.8	14.0, 18.0, 36.0			92	2.5	Extrapolated
		AVx110xxyyyxxxx	10"	H, U, D	27.0	9.9	10.0	8.8 to 11.0	6.5 to 17.3	8.8 to 28.3	8.5 to 15.0	18.8, 26.8	5.9 to 23.1	14.0, 18.0, 36.0			99	2.5	Extrapolated
		AVx112xxyyyxxxx	12"	H, U, D	32.3	11.9	12.0	12.1 to 15.1	6.5 to 17.3	12.1 to 32.4	11.0 to 19.0	18.8, 26.8	6.4 to 25.3	14.0, 18.0, 36.0			109	2.5	Extrapolated
		AVV114MxAIOMXBM	14"	H, U ,D	35.5	13.9	14.0	15.3	16.3	31.6	14.0	18.8	13.0	18.0			91	2.5	UUT1a, 1b, 1c
		AVx114xxyyyxxxx	14"	H, U, D	35.5	13.9	14.0	15.3 to 19.0	6.5 to 17.3	15.3 to 36.3	14.0 to 25.0	18.8, 26.8	9.3 to 28.6	14.0, 18.0, 36.0			122	2.5	Interpolated
	Dual Body	AVx210xxyyyxxxx	10"	H, U, D	30.0	22.3	11.3	17.6 to 25.3	6.5 to 25.6	17.6 to 50.9	14.0 to 25.0	18.0, 27.0	6.4 to 25.3	14.0, 18.0, 36.0			211	2.5	Interpolated
		AVx212xxyyyxxxx	12"	H, U, D	35.5	26.3	13.3	24.3 to 34.2	6.5 to 25.6	24.3 to 59.8	16.0 to 29.0	18.0, 27.0	9.7 to 29.7	14.0, 18.0, 36.0			228	2.5	Interpolated
		AVV214MxAIOEC11 / AVC214LxASOECZZ	14"	H, U, D	38.5	31.5	16.0	30.6	25.6	56.2	38.0	27.0	24.4	36.0			228	2.5	UUT2a, 2b, 2c
		AVx214xxyyyxxxx	14"	H, U, D	38.5	31.5	16.0	30.6 to 43.7	6.5 to 25.6	30.6 to 69.3	21.0 to 38.0	18.0, 27.0	11.1 to 34.1	14.0, 18.0, 36.0			251	2.5	Interpolated
	Triple Body	AVx312xxyyyxxxx	12"	H, U, D	35.5	39.3	19.0	36.4 to 51.1	6.5 to 33.9	36.4 to 85.0	21.0 to 40.0	18.0, 27.0	12.9 to 39.6	14.0, 18.0, 36.0			275	2.5	Interpolated
		AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP	12"	H, U, D	35.5	39.3	19.0	51.1	33.9	85.0	40.0	27.0	36.0	36.0			275	2.5	UUT3a, 3b, 3c

Notes:

1. First "x" in model number may be C, V, or Z. AVC is same construction as AVV, except Control Package and Enclosure are replaced by a Calibration Lock or Calibration Lock with optional Control Package consisting of Differential Pressure Sensor on Bracket.
2. First "x" in model number may be C, V, or Z. AVZ is same construction as AVV, except Shut-off seals have been added to the Cone valve seat and shaft (seals not available for 14" valves).
3. "yyy" in model number stands for the construction code, and relates to coating, insulation, and end type (slip or flange). Heresite coating option tested in UUT3, PVDF at 60% weight by volume of Heresite is bookended by None in UUT1 and 2. Insulation tested in UUT2 and 3, None in UUT1. Slip ends tested in UUT1 and 2, and flange ends tested in UUT3.
4. Venturi Airflow controls fine tuning by attaching Cone to Rod using two dampening spring assemblies. Certified Mounting Options Horizontal uses two standard springs, Vertical Upflow uses heavy duty spring on Inlet side, and Vertical Downflow uses heavy duty spring on Outlet side.
5. Dimensions for single valve body, flange add 3" to O.D, for multi-body flange included in width and height. Dimensions do not include height increase of 5" for Calibration Lock or 8" for Control Enclosure.
6. Valve Weight Range includes Certified Options for Flanges, Coatings and Control Lock Only (No Brackets or Enclosure).
7. Control Package Weight Range includes Control Enclosure with Bracket and Variations of Certified Options such as Actuator, Pressure Sensor, and Controller. Dual Body includes a 2nd Bracket/Actuator. Triple Body includes 2nd and 3rd Bracket/Actuator.
8. Total Product Weight Ranges from lowest Valve Weight only to Largest Valve Weight + Largest Control Package Weight.
9. Reheat Coils and Silencer Certified Option in Horizontal Orientation only. Reheat Coil Weight Range depends on body size, 1 or 2 rows of coils, and Adapter Collar. Silencer Weight Range depends on body size, material (Galvanized Steel 22 ga., or 304/316 Stainless Steel 24 ga), and slip or flange ends. Reheat Coil Length listed is without and with Outlet Adapter Collar. Silencer length is available in three sizes.
10. UUT 1a, 2a and 3a are tested in the horizontal orientation with the Reheat Coil and Silencer horizontal accessories attached. UUT 1b, 2b, 3b are tested in vertical up orientation, and UUT 1c, 2c, 3c are tested in the vertical down orientation. Horizontal accessories are removed for both vertical orientations.
11. Tested units reflect *Tested Total Weight* and Interpolated/Extrapolated units reflect *Estimated Total Weight* , based upon the maximum subcomponent weight and estimated weights of ducts and required supports; RDP to verify all assembled weights.

Table 2: Certified Options for Venturi Airflow Control Valves

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Air Valves

Venturi Air Valves = Model Number AVabbbcxyyyzzzz					
Allowable Value	**Allowable Value Description**		**Tested/Certified Valve Orientation**	**Sds (g), z/h=1**	**Unit**
AVabbbcxyyyzzzz	Venturi Air Valve (Part Numbers)		H, U, D		
a = Volumetric Control Application					
C	Constant air volume		H, U, D	2.5	UUT2(a,b,c), UUT3(a,b,c)
V	Variable air volume		H, U, D	2.5	UUT1(a,b, c), UUT2(a,b,c), UUT3(a,b,c)
Z	Variable air volume - shut off		H, U, D	2.5	UUT3(a,b,c)
bbb = Valve Body Number and Size					
106	Single Valve Body 6" Diameter		H, U, D	2.5	Extrapolated
108	Single Valve Body 8" Diameter		H, U, D	2.5	Extrapolated
110	Single Valve Body 10" Diameter		H, U, D	2.5	Extrapolated
112	Single Valve Body 12" Diameter		H, U, D	2.5	Extrapolated
114	Single Valve Body 14" Diameter (AVC, AVV Only)		H, U, D	2.5	UUT1(a,b,c)
210	Dual Valve Body 10" Diameter		H, U, D	2.5	Interpolated
212	Dual Valve Body 12" Diameter		H, U, D	2.5	Interpolated
214	Dual Valve Body 14" Diameter (AVC, AVV Only)		H, U, D	2.5	UUT2(a,b,c)
312	Triple Valve Body 12" Diameter		H, U, D	2.5	UUT3(a,b,c)
c = Pressure Range (Calibration Only, Same Hardware)					
M	Medium		H, U, D	2.5	UUT1(a,b,c), UUT2(a,b,c), UUT3(a,b,c)
L	Low		H, U, D	2.5	UUT2(a,b,c), UUT3(a,b,c)
x = Mounting Option					
H	Horizontal		H	2.5	UUT1,2,3(a)
U	Vertical Upflow		U	2.5	UUT1,2,3(b)
D	Vertical Downflow		D	2.5	UUT1,2,3(c)
yyy = Construction Code (Coatings are for Corrosion; PVDF weight is between None and Heresite) - Reference footnote 3 on Table 1					
	Coating	**Insulated**	**Ends**	**H, U, D**	
ASO	None	No	Slip	H, U, D	2.5	UUT1(a,b,c)
AIO	None	Yes	Slip	H, U, D	2.5	UUT2(a,b,c)
AFO	None	No	Flange	H, U, D	2.5	Interpolated
AJO	None	Yes	Flange	H, U, D	2.5	Interpolated
VSO	PVDF	No	Slip	H, U, D	2.5	Interpolated
VIO	PVDF	Yes	Slip	H, U, D	2.5	Interpolated
VFO	PVDF	No	Flange	H, U, D	2.5	Interpolated
VJO	PVDF	Yes	Flange	H, U, D	2.5	Interpolated
HSO	Heresite	No	Slip	H, U, D	2.5	Interpolated
HIO	Heresite	Yes	Slip	H, U, D	2.5	Interpolated
HFO	Heresite	No	Flange	H, U, D	2.5	Interpolated
HJO	Heresite	Yes	Flange	H, U, D	2.5	UUT3(a,b,c)

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Table 2 (Continued): Certified Options for Venturi Airflow Control Valves

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Air Valves

zzzz = Control Packages

Allowable Value	Allowable Value Description	Tested/Certified Valve Orientation	Sds (g), z/h=1	Unit
CLZZ	Calibration Lock Only (Extrapolated Weight < 1 lb included in CLDP)	H, U, D	2.5	UUT2(a,b,c)
CLDP	Calibration Lock and DP Transmitter	H, U, D	2.5	UUT3(a,b,c)
MCLM	Lab Controller Module – Standard speed with OAM – Normally Closed	H, U, D	2.5	Same as UUT1
MCZZ	Actuator – Normally Closed	H, U, D	2.5	Same as UUT1
MODP	DP Transmitter – Normally Open	H, U, D	2.5	Same as UUT1
MOZZ	Actuator – Normally Open	H, U, D	2.5	Same as UUT1
MOLM	Standard Speed with OAM Normally Open	H, U, D	2.5	Same as UUT1
MXDP	DP Transmitter – Fail-in Place	H, U, D	2.5	Same as UUT1
MXLM	Lab Controller Module – Standard speed with OAM – Fail-in Place	H, U, D	2.5	Same as UUT1
MXZZ	Actuator – Fail-in Place	H, U, D	2.5	Same as UUT1
ECDP	DP Transmitter – Normally Closed	H, U, D	2.5	Same as UUT1
ECLV	Lab Controller Module – High speed with OAM – Normally Closed	H, U, D	2.5	Same as UUT1
ECZZ	Actuator – Normally Closed	H, U, D	2.5	Same as UUT1
EODP	DP Transmitter – Normally Open	H, U, D	2.5	Same as UUT1
EOPF	Fume Hood Controller -Off-board Air Module -High Speed Normally Open	H, U, D	2.5	Same as UUT1
EOZZ	Actuator – Normally Open	H, U, D	2.5	Same as UUT1
MCBO	Off-board Air Module - Normally Closed	H, U, D	2.5	Same as UUT1
MOBO	Off-board Air Module - Normally Open	H, U, D	2.5	Same as UUT1
MCBM	Lab Control Module Standard speed with OAM - Normally Closed	H, U, D	2.5	Same as UUT1
MOBM	Lab Control Module Standard speed with OAM - Normally Open	H, U, D	2.5	Same as UUT1
MXBO	Off-board Air Module Fail-in Place	H, U, D	2.5	Same as UUT1
MXBM	Lab Control Module Standard speed with OAM - Fail-in place	H, U, D	2.5	UUT1(a,b,c)
ECBV	Lab Control Module High speed with OAM - Normally Closed	H, U, D	2.5	Same as UUT1
ECBO	Off-board Air Module -High Speed - Normally Closed	H, U, D	2.5	Same as UUT1
EOBO	Off-board Air Module -High Speed Normally Open	H, U, D	2.5	Same as UUT1
EOBF	Fume Hood Controller -Off-board Air Module -High Speed Normally Open	H, U, D	2.5	Same as UUT1
MC10	Airflow Pressure Sensor 1" - Normally Closed	H, U, D	2.5	Same as UUT3
MO10	Airflow Pressure Sensor 1"- Normally Open	H, U, D	2.5	Same as UUT3
MC11	Lab DXR(IP - 30 Data Points) Standard speed with APS 1"- Normally Closed	H, U, D	2.5	Same as UUT3
MC12	Lab DXR(IP - 60 Data Point) Standard speed with APS 1"- Normally Closed	H, U, D	2.5	Same as UUT3
MC13	Lab DXR(MSTP - 30 Data Points) Standard speed with APS 1"- Normally Closed	H, U, D	2.5	Same as UUT3
MC14	Lab DXR(MSTP - 60 Data Point) Standard speed with APS 1"- Normally Closed	H, U, D	2.5	Same as UUT3
MO11	Lab DXR (IP - 30 Data Point) Standard speed with APS 1"- Normally Open	H, U, D	2.5	UUT3(a,b,c)
MO12	Lab DXR (IP - 60 Data Point) Standard speed with APS 1"- Normally Open	H, U, D	2.5	Same as UUT3
MO13	Lab DXR (MSTP - 30 Data Point) Standard speed with APS 1"- Normally Open	H, U, D	2.5	Same as UUT3
MO14	Lab DXR (MSTP - 60 Data Point) Standard speed with APS 1"- Normally Open	H, U, D	2.5	Same as UUT3
MX10	Airflow Pressure Sensor 1" Fail-in Place	H, U, D	2.5	Same as UUT3
MX11	Lab DXR (IP - 30 Data Point) Standard speed with APS 1" - Fail-in place	H, U, D	2.5	Same as UUT3
MX12	Lab DXR (IP - 60 Data Point) Standard speed with APS 1" - Fail-in place	H, U, D	2.5	Same as UUT3
MX13	Lab DXR (MSTP - 30 Data Point) Standard speed with APS 1" - Fail-in place	H, U, D	2.5	Same as UUT3
MX14	Lab DXR (MSTP - 60 Data Point) Standard speed with APS 1" - Fail-in place	H, U, D	2.5	Same as UUT3
EC10	APS 1" -High Speed - Normally Closed	H, U, D	2.5	Same as UUT2
EC11	Lab DXR (IP - 30 Data Point) High speed with APS 1" - Normally Closed	H, U, D	2.5	UUT2(a,b,c)
EC12	Lab DXR (IP - 60 Data Point) High speed with APS 1" - Normally Closed	H, U, D	2.5	Same as UUT2
EC13	Lab DXR (MSTP - 30 Data Point) High speed with APS 1" - Normally Closed	H, U, D	2.5	Same as UUT2
EC14	Lab DXR (MSTP - 60 Data Point) High speed with APS 1" - Normally Closed	H, U, D	2.5	Same as UUT2
EO10	APS 1" -High Speed Normally Open	H, U, D	2.5	Same as UUT2
EO11	Lab DXR (IP - 30 Data Point) High speed with APS 1" - Normally Open	H, U, D	2.5	Same as UUT2
EO12	Lab DXR (IP - 60 Data Point) High speed with APS 1" - Normally Open	H, U, D	2.5	Same as UUT2
EO13	Lab DXR (MSTP - 30 Data Point) High speed with APS 1" - Normally Open	H, U, D	2.5	Same as UUT2
EO14	Lab DXR (MSTP - 60 Data Point) High speed with APS 1" - Normally Open	H, U, D	2.5	Same as UUT2

Table 3: Certified Subcomponents for Venturi Airflow Control Valves

Model Number	Manufacturer	Description	Material	Tested/Certified Orientation	Sds (g), z/h=1	Unit
Actuators						
GMA151.1P	Siemens	Spring Return	Die Cast Al, polycarbonate	H, U, D	2.5	UUT3(a,b,c)
GLB161.1P	Siemens	Non-Spring Return	Plastic, polycarbonate	H, U, D	2.5	UUT1(a,b,c)
GNP191.1P	Siemens	High Speed Spring Return	Die Cast Al, polycarbonate	H, U, D	2.5	UUT2(a,b,c)
Pressure Sensors						
590-78x	Siemens	DP Transmitter, 4-20mA	Plastic	H, U, D	2.5	Same as UUT3
590-782	Siemens	DP Transmitter, 4-20mA		H, U, D	2.5	UUT3(a,b,c)
550-819B	Siemens	Off-Board Air Module	Plastic	H, U, D	2.5	UUT1(a,b,c)
DXA.S04P1	Siemens	Lab DXR Airflow Pressure Sensor	Plastic	H, U, D	2.5	UUT2(a,b,c), UUT3(a,b,c)
DXA.S04Px	Siemens	Lab DXR Airflow Pressure Sensor		H, U, D	2.5	Same as UUT2
Controllers						
550-767DN	Siemens	P1 TEC Standard-speed Modulating	Plastic, polycarbonate	H, U, D	2.5	Same as UUT1
570-802PA	Siemens	BACnet TEC Standard-speed Modulating		H, U, D	2.5	UUT1(a,b,c)
550-767CN	Siemens	P1 TEC High-speed Modulating		H, U, D	2.5	Same as UUT1
570-00700N	Siemens	P1 TEC Fume Hood High-speed Modulating		H, U, D	2.5	Same as UUT1
570-804PA	Siemens	BACnet TEC High-speed Modulating		H, U, D	2.5	Same as UUT1
570-00701PA	Siemens	BACnet TEC Fume Hood High-speed Modulating		H, U, D	2.5	Same as UUT1
DXR2.E17C-103B	Siemens	BACnet IP DXR 30	Plastic, polycarbonate	H, U, D	2.5	UUT2(a,b,c)
DXR2.E17CX-103B	Siemens	BACnet IP DXR 60		H, U, D	2.5	Same as UUT2
DXR2.M17C-103B	Siemens	BACnet MSTP DXR 30	Plastic, polycarbonate	H, U, D	2.5	Same as UUT3
DXR2.M17CX-103B	Siemens	BACnet MSTP DXR 60		H, U, D	2.5	UUT3(a,b,c)
Venturi Accessory Valve Actuators - Mounted on Ball Valve Attached to Reheat Coil Return Pipe						
SSC81.5U	Siemens	Electronic Spring Return Valve Actuator 44 LBF	Plastic, polycarbonate	H, U, D	2.5	UUT1(a,b,c), UUT2(a,b,c)
SSC81U	Siemens	Electronic Non-Spring Return Valve Actuator 44 LBF		H, U, D	2.5	Interpolated
SSC61.5U	Siemens	Electronic Spring Return Valve Actuator 67 LBF		H, U, D	2.5	Interpolated
SSC61U	Siemens	Electronic Non-Spring Return Valve Actuator 67 LBF		H, U, D	2.5	UUT3(a,b,c)

Table 4: Certified Subcomponent Accessories - Reheat Coils and Silencers

Model Number	Manufacturer	Description Fits Valve Type, L x W x H, Weight/Range	Material	Tested/Certified Orientation	Sds (g), z/h=1	Unit
Venturi Accessory Reheat Coils - Added to UUT for Certification in Horizontal Orientation, Not Certified for Vertical Orientation						
AVA106RHCxxxx	Price Industries	Single 6", 28-3/4 x 12 x 8 in, 5.0 to 10.0 lb	1 or 2 Rows Reheat Coils Aluminum sine wave fins (thickness 0.0045") Copper tubes, 0.016"wall Duct Casing, Inlet Collar and opt. Outlet Adapter Collar 22 ga. Galvanized steel Insulation Foam 3/4" thick closed-cell fiber-free Slip Ends	H	2.5	Extrapolated
AVA108RHCxxxx	Price Industries	Single 8", 28-3/4 x 12 x 10 in, 6.5 to 13.0 lb		H	2.5	Extrapolated
AVA110RHCxxxx	Price Industries	Single 10", 28-3/4 x 14 x 12-1/2 in, 8.5 to 15.0 lb		H	2.5	Extrapolated
AVA112RHCxxxx	Price Industries	Single 12", 28-3/4 x 16 x 15 in, 11.0 to 19.0 lb		H	2.5	Extrapolated
AVA114RHCxxxx	Price Industries	Single 14", 28-3/4 x 20 x 17-1/2 in, 14.0 to 25.0 lb		H	2.5	Extrapolated
AVA114RHC1RAC	Price Industries	Single 14", 28-3/4 x 20 x 17-1/2 in, 14 lb (1 Row)		H	2.5	UUT1(a)
AVA210RHCxxxx	Price Industries	Dual 10", 38 x 22 x 17-1/2 in, 14.0 to 25.0 lb		H	2.5	Interpolated
AVA212RHCxxxx	Price Industries	Dual 12", 38 x 26 x 18 in, 16.0 to 29.0 lb		H	2.5	Interpolated
AVA214RHCxxxx	Price Industries	Dual 14", 38 x 30 x 18 in, 21.0 to 38.0 lb		H	2.5	Interpolated
AVA214RHC2RAC	Price Industries	Dual 14", 38 x 30 x 18 in, 38 lb (2 Rows, Adapter Collar)		H	2.5	UUT2(a)
AVA312RHCxxxx	Price Industries	Triple 12", 38 x 39 x 18 in, 21.0 to 40.0 lb		H	2.5	Interpolated
AVA312RHC2RAC	Price Industries	Triple 12", 38 x 39 x 18 in, 21.0 to 40.0 lb		H	2.5	UUT3(a)
Venturi Accessory Silencers- Added to UUT for Certification in Horizontal Orientation, Not Certified for Vertical Orientation						
LGAxxxxxx06RDx	Price Industries	Single 6", 14/18/36 x 14 x O.D. in, 4.2 to 15.6 lb	Length and Silencer Type 14" Packless, 18" Absorptive, 36" Packless or Absorptive Single Body Round Dual & Triple Body Rectangular Packless solid metal casing with perforated metal liner. Absorptive solid metal casing with acoustic fiberlass and Tedlar film liner. 22 ga. Galvanized steel, 24 ga. 304 Stainless steel, or 24 ga. 316 Stainless steel with Slip or Flanged Ends	H	2.5	Extrapolated
LGAxxxxxx08RDx	Price Industries	Single 8", 14/18/36 x 16 x O.D. in, 5.0 to 19.8 lb		H	2.5	Extrapolated
LGAxxxxxx10RDx	Price Industries	Single 10", 14/18/36 x 18 x O.D. in, 5.9 to 23.1 lb		H	2.5	Extrapolated
LGAxxxxxx12RDx	Price Industries	Single 12", 14/18/36 x 20 x O.D. in, 6.4 to 25.3 lb		H	2.5	Extrapolated
LGAxxxxxx14RDx	Price Industries	Single 14", 14/18/36 x 22 x O.D. in, 9.3 to 28.6 lb		H	2.5	Extrapolated
LGAACX18S14RDGP	Price Industries	Single 14", 18 x 22 x O.D. in, 13 lb (Absorptive, Slip, Galv.)		H	2.5	UUT1(a)
LGAxxxxxx1021x	Price Industries	Dual 10", 14/18/36 x 22 x 11 in, 6.4 to 25.3 lb		H	2.5	Interpolated
LGAxxxxxx1225x	Price Industries	Dual 12", 14/18/36 x 26 x 13 in, 9.7 to 29.7 lb		H	2.5	Interpolated
LGAxxxxxx1429x	Price Industries	Dual 14", 14/18/36 x 30 x 13 in, 11.1 to 34.1 lb		H	2.5	Interpolated
LGAPRX36S14296	Price Industries	Dual 14", 36 x 30 x 13 in, 24.4 lb (Packless, Slip, 316 SS)		H	2.5	UUT2(a)
LGAxxxxxx1238x	Price Industries	Triple 12", 14/18/36 x 39 x 13 in, 12.9 to 36.0 lb		H	2.5	Interpolated
LGAARX36F1238GP	Price Industries	Triple 12", 36 x 39 x 13 in, 36.0 lb (Absorptive, Flange, Galv.)		H	2.5	UUT3(a)

Table 5: Certified Options for Subcomponent Accessories - Reheat Coils and Silencers

Venturi Reheat Coil - Accessory = Model Number AVAaaaRHCbbcc				
Allowable Value	**Allowable Value Description**	**Tested/Certified Valve Orientation**	**Sds (g), z/h=1**	**Unit**
AVAaaaRHCbbcc	Venturi Reheat Coil (Part Numbers)			
aaa = Inlet Types				
106	Round Inlet w/ 6" Diameter	H	2.5	Extrapolated
108	Round Inlet w/ 8" Diameter	H	2.5	Extrapolated
110	Round Inlet w/ 10" Diameter	H	2.5	Extrapolated
112	Round Inlet w/ 12" Diameter	H	2.5	Extrapolated
114	Round Inlet w/ 14" Diameter	H	2.5	UUT1(a)
210	Rectangular Inlet 2 x 10"	H	2.5	Interpolated
212	Rectangular Inlet 2 x 12"	H	2.5	Interpolated
214	Rectangular Inlet 2 x 14"	H	2.5	UUT2(a)
312	Rectangular Inlet 3 x 12"	H	2.5	UUT3(a)
bb = Number Rows				
1R	1 Row	H	2.5	UUT1(a)
2R	2 Rows	H	2.5	UUT2,3(a)
cc = Adapter Collar				
__	Inlet Adapter Collar Only	H	2.5	Extrapolated
AC	Inlet Adapter Collar And Outlet Adapter Collar	H	2.5	UUT1,2,3(a)
Venturi Silencer - Accessory = Model Number LGAaaabbcxxxxyz				
Allowable Value	**Allowable Value Description**	**Tested/Certified Valve Orientation**	**Sds (g), z/h=1**	**Unit**
LGAaaabbcxxxxyz	Venturi Silencer (Part Numbers)			
aaa = Packing Type				
ACX	Absorptive, Circular	H	2.5	UUT1(a)
PCX	Packless, Circular	H	2.5	Interpolated
ARX	Absorptive, Rectangular	H	2.5	UUT3(a)
PRX	Packless, Rectangular	H	2.5	UUT2(a)
bb = Length				
14	14" (Packless Only)	H	2.5	Extrapolated
18	18" (Absorptive Only)	H	2.5	UUT1(a)
36	36" (Absorptive and Packless)	H	2.5	UUT2,3(a)
c = End Type				
F	Flanged	H	2.5	UUT3(a)
S	Slip	H	2.5	UUT1,2(a)
xxxx = Size				
06RD	6" Diameter, Circular	H	2.5	Extrapolated
08RD	8" Diameter, Circular	H	2.5	Extrapolated
10RD	10" Diameter, Circular	H	2.5	Extrapolated
12RD	12" Diameter, Circular	H	2.5	Extrapolated
14RD	14" Diameter, Circular	H	2.5	UUT1(a)
1021	10" x 21", Rectangular, 10" Dual	H	2.5	Interpolated
1225	12" x 25", Rectangular, 12" Dual	H	2.5	Interpolated
1429	14" x 29", Rectangular, 14" Dual	H	2.5	UUT2(a)
1238	12" x 38", Rectangular, 12" Triple	H	2.5	UUT3(a)
y = Material Type				
G	Galvanized Steel, 22 ga.	H	2.5	UUT1,3(a)
4	Stainless Steel, Grade 304, 24 ga.	H	2.5	Interpolated
6	Stainless Steel, Grade 316, 24 ga.	H	2.5	UUT2(a)
z = Coating Type				
none	Uncoated	H	2.5	UUT2(a)
P	Tedlar® Polymer Film (Absorptive Only)	H	2.5	UUT1,3(a)

Table 6: Tested Units

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control Types (AVC) Constant Air Volume, (AVV) Variable Air Volume, (AVZ) Variable Air Volume w/ Shutoff

Mounting Description: Horizontal in-line duct mounted (ceiling suspended) or vertical in-line duct mounted, using no-flange, no-flange with drawband clamps, square flange, or welded flange mount.

Valve Family	Model Number	Valve Size	Mounting Option (Horizontal, Vert Upflow, Vert Downflow)	Dimensions (inches)			Venturi Weight (lb)	Control Package Weight (lb)	Total Valve Weight (lb)	Horizontal In-Line Mounting					Vertical In-Line Mounting	Sds (g), z/h=1	Unit
				Length	Width	Height				Reheat Coil Weight (lb)	Reheat Coil Length (in)	Silencer Weight (lb)	Silencer Length (in)	Max. Hanger Rod Spacing	Max. Vertical Duct Support Spacing		
Single Body	AVV114MxAIOMXBM	14"	H	35.5	13.9	14.0	15.3	16.3	31.6	14.0	18.8	13.0	18.0	Within 12" of duct-to-valve connection and at the connection point of accessory-to-valve connection point	Within 12" of duct-to-valve connection	2.5	UUT 1a
	AVV114MxAIOMXBM	14"	D	14.0	14.0	35.5	15.3	16.3	31.6	N/A	N/A	N/A	N/A			2.5	UUT 1b
	AVV114MxAIOMXBM	14"	U	14.0	14.0	35.5	15.3	16.3	31.6	N/A	N/A	N/A	N/A			2.5	UUT 1c
Dual Body	AVV214MxAIOEC11 / AVC214LxASOECZZ	14"	H	38.5	31.5	16.0	30.6	25.6	56.2	38.0	27.0	24.4	36.0			2.5	UUT 2a
	AVV214MxAIOEC11 / AVC214LxASOECZZ	14"	D	16.0	31.5	38.5	30.6	25.6	56.2	N/A	N/A	N/A	N/A			2.5	UUT 2b
	AVV214MxAIOEC11 / AVC214LxASOECZZ	14"	U	16.0	31.5	38.5	30.6	25.6	56.2	N/A	N/A	N/A	N/A			2.5	UUT 2c
Triple Body	AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP	12"	H	35.5	39.3	19.0	51.1	33.9	85.0	40.0	27.0	36.0	36.0			2.5	UUT 3a
	AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP	12"	D	19.0	39.3	35.5	51.1	33.9	85.0	N/A	N/A	N/A	N/A			2.5	UUT 3b
	AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP	12"	U	19.0	39.3	35.5	51.1	33.9	85.0	N/A	N/A	N/A	N/A			2.5	UUT 3c

UUT1a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV114MxAIOMXBM

Product Construction Summary: Spun aluminum valve body with slip connection to duct

Options / Component Summary: Single valve body with reheat coil and silencer in horizontal configuration

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

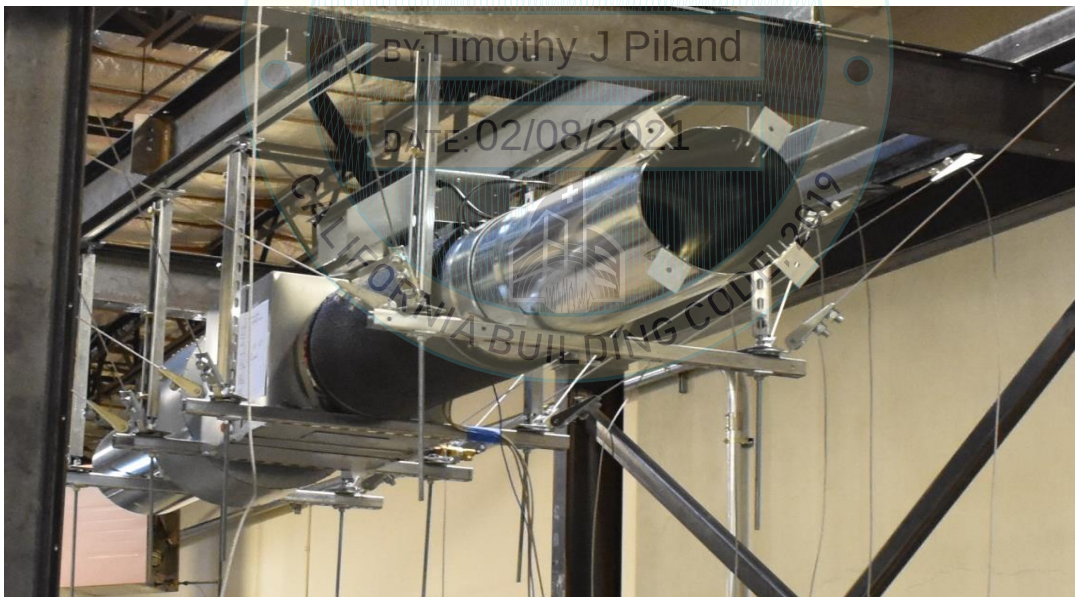
UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
31.6	UUT1a total valve	35.5	13.9	14.0	N/A	N/A	N/A
91.0	UUT1a complete assembly	146.0	20.0	22.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 1a was ceiling suspended from the DCL interface fixture with (8) 1/2” diameter Grade B8 Class 2 drop rod of 29” length. The drop rod was located at the valve-to-accessory attachment point and at the duct 12'' from the edge of the unit. Each drop rod was stiffened with a 24” length of 12 gage strut and (3) Cooper Industries SC228 1/2” rod stiffener. The drop rod was attached to the unit via a horizontally oriented piece of 32” strut. The unit attached to the strut via 26 gage, 3/4” wide band with (3) #14 self-tapping screws spaced 90 degrees apart. The (4) bands attached to the duct with (2) 3/8” diameter, grade 5, bolts and a 1.5” x 1.5” x 3/16” low carbon steel plate washer. The unit was braced laterally by (2) Mason industries SCB -2 cable sway bracing kits at each drop rod which was placed between the top of the strut and a 3”x3”x3/16” low carbon steel plate washer secured by (2) 1/2” diameter nut and washer on top and (1) 1/2” diameter nut, washer, and plate washer on bottom. Cable sway bracing was oriented at 45 degrees outward and upward from the strut. The valve, reheat coil, and silencer were attached together with Grainger model number GRQS14GA drawband clamps.

UUT1b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV114MxAIOMXBM

Product Construction Summary: Spun aluminum valve body with slip connection to duct

Options / Component Summary: Single valve body in vertical in-line duct configuration, downflow

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
31.6	UUT1b total valve	14.0	14.0	35.5	N/A	N/A	N/A
34.0	UUT1b complete assembly	23.0	14.0	96.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 1b was vertically in-line duct mounted in the down-flow orientation to (2) sections of round duct 36'' length. The valve attached to each section of duct with a single drawband clamp (Grainger model number GRQS14GA). Each section of duct was attached to the DCL wall fixture 12'' from the edge of the valve with a 24ga 3/4'' wide band with (3) #14 self-tapping screws spaced at 90 degrees. The bands attached to the DCL wall fixture with (2) 1/4'' diameter, grade 5 bolts and washers with the 1.5”x1.5''x3/16'' low carbon steel plate washer.

UUT1c

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV114MxAIOMXBM

Product Construction Summary: Spun aluminum valve body with slip connection to duct

Options / Component Summary: Single valve body in vertical in-line duct configuration, upflow

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
31.6	UUT1c total valve	14.0	14.0	35.5	N/A	N/A	N/A
34.0	UUT1c complete assembly	23.0	14.0	96.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 1c was vertically in-line duct mounted in the up-flow orientation to (2) sections of round duct 36'' in length. The valve attached to each section of duct with a single drawband clamp (Grainger model number GRQS14GA). Each section of duct was attached to the DCL wall fixture 12'' from the edge of the valve with a 24ga 3/4'' wide band with (3) #14 self-tapping screws spaced at 90 degrees. The bands attached to the DCL wall fixture with (2) 1/4'' diameter, grade 5 bolts, washers and 1.5”x1.5''x3/16'' low carbon steel plate washers.

UUT2a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AAVV214MxAIOEC11 / AVC214LxASOECZZ

Product Construction Summary: Spun aluminum valve bodies with slip connection to duct

Options / Component Summary: Dual valve body with reheat coil and silencer in horizontal configuration

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

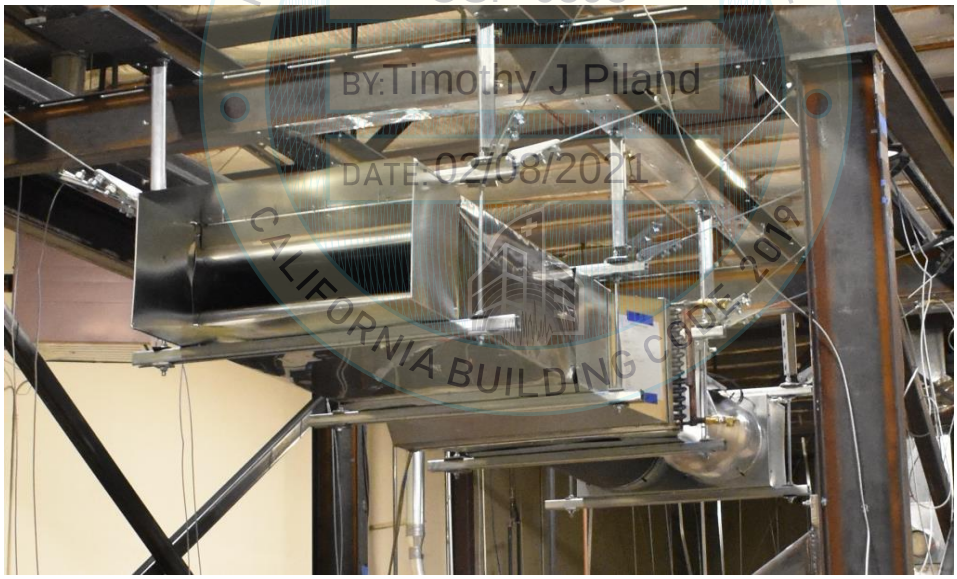
UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
56.2	UUT2a total valve	38.5	31.5	16.0	N/A	N/A	N/A
228.0	UUT2a complete assembly	164.0	40.0	20.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 2a was ceiling suspended from the DCL interface fixture with (8) 1/2” diameter Grade B8 Class 2 drop rod of 29” length. The drop rod was located at the valve-to-accessory attachment point and at the duct 12'' from the edge of the unit. Each drop rod was stiffened with a 15” length of 12 gage strut and (3) Cooper Industries SC228 1/2” rod stiffener. The drop rod was attached to the unit via a horizontally oriented piece of 32” strut. The unit is clamped above and below by the 12 gage unistrut and is attached to the unistrut via (4) #14 self-tapping screws spaced approximately 6” on center. The unit was braced laterally by (2) Mason industries SCB -2 cable sway bracing kits at each drop rod. The sway bracing kits were placed at the top clamping strut between the top of the strut and a 3”x3”x3/16” low carbon steel plate washer. The sway bracing kit was secured by (2) 1/2” diameter nuts and round washers on top and (1) 1/2" diameter nut, round washer, and plate washer on the bottom. The bottom strut had (1) 1/2" diameter nut, round washer, and plate washer on top and (2) 1/2” nuts, (1) washer, and (1) plate washer at the bottom. Cable sway bracing was oriented at 45 degrees outward and upward from the strut. The valve, reheat coil, and silencer were attached together with (12) #14 self-tapping screws at each point.

UUT2b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AAVV214MxAIOEC11 / AVC214LxASOECZZ

Product Construction Summary: Spun aluminum valve bodies with slip connection to duct

Options / Component Summary: Dual valve body in vertical in-line duct configuration, downflow

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
56.2	UUT2b total valve	16.0	31.5	38.5	N/A	N/A	N/A
70.0	UUT2b complete assembly	16.0	31.5	59.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 2b was vertically in-line duct mounted in the down-flow orientation to (2) pieces of rectangle duct, 12'' in length. The valve attached to each duct piece with (10) #14 self-tapping screws, spaced 1'' from each corner and a single #14 self-tapping screw in the center of the long direction. Each duct piece was attached to (2) sections of 12ga strut spaced 12'' from the edge of the valve. Each strut piece attached to the valve with (4) #14 self-tapping screws spaced at 2'' on center. The strut pieces attached to the DCL wall fixture via a single 3-3/4'' x 3-7/8'' x 1/4'' carbon steel, zinc-plated angle bracket (Fastenal part number 48691) and (2) 3/8'' diameter, grade 5 bolts.

UUT2c

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AAVV214MxAIOEC11 / AVC214LxASOECZZ

Product Construction Summary: Spun aluminum valve bodies with slip connection to duct

Options / Component Summary: Dual valve body in vertical in-line duct configuration, upflow

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
56.2	UUT2c total valve	16.0	31.5	38.5	N/A	N/A	N/A
70.0	UUT2c complete assembly	16.0	31.5	59.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 2c was vertically in-line duct mounted in the up-flow orientation to (2) pieces of rectangle duct, 12'' in length. The valve attached to each duct piece with (10) #14 self-tapping screws spaced 1'' from each corner and a single #14 self-tapping screw in the center of the long direction. Each duct piece was attached to (2) sections of 12ga strut spaced 12'' from the edge of the valve. Each strut piece attached to the valve with (4) #14 self-tapping screws spaced at 2'' on center. The strut pieces attached to the DCL wall fixture via a single 3-3/4'' x 3-7/8'' x 1/4'' carbon steel, zinc-plated angle bracket (Fastenal part number 48691) and (2) 3/8'' diameter, grade 5 bolts.

UUT3a

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP

Product Construction Summary: Spun aluminum valve bodies with flange connection to duct

Options / Component Summary: Triple valve body with reheat coil and silencer in horizontal configuration

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
85.0	UUT3a total valve	35.5	39.3	19.0	N/A	N/A	N/A
275.0	UUT3a complete assembly	145.0	40.0	18.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 3a was ceiling suspended from the DCL interface fixture with (8) 1/2” diameter Grade B8 Class 2 drop rod of 29” length. The drop rod was located at the valve-to-accessory attachment location and at the duct 12'' from the edge of the unit. Each drop rod was stiffened with a 15” length of 12 gage strut and (3) Cooper Industries SC228 1/2” rod stiffener. The Drop rod was attached to the unit with a approximately (2) 52” lengths of 12gage strut. The unit is clamped above and below by the 12 gage unistrut and the unit is attached to the unistrut via (4) #14 self-tapping screws spaced approximately 6” on center. The unit was braced laterally by (2) Mason industries SCB -2 cable sway bracing kits at each drop rod. The sway bracing kits were placed at the top clamping strut between the top of the strut and a 3”x3”x3/16” low carbon steel plate washer. The sway bracing kit was secured by (2) 1/2” diameter nuts and round washers on top and (1) 1/2" diameter nut, round washer, and plate washer on the bottom. The bottom strut had (1) 1/2" diameter nut, round washer, and plate washer on top and (2) 1/2” nuts, (1) washer, and (1) plate washer at the bottom. Cable sway bracing was oriented at 45 degrees outward and upward from the strut. The valve, reheat coil, and silencer were attached together with via flanges at each end. Each connection point had (10) 1/4” diameter, grade 5, bolts with a nut and washer.

UUT3b

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP

Product Construction Summary: Spun aluminum valve bodies with flange connection to duct

Options / Component Summary: Triple valve body in vertical in-line duct configuration, downflow

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

UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
85.0	UUT3b total valve	19.0	39.3	35.5	N/A	N/A	N/A
97.0	UUT3b complete assembly	19.0	39.3	56.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

UUT 3b was vertically in-line duct mounted in the down-flow orientation to (2) pieces of rectangle duct, 12'' in length. The valve attached to each duct piece with (10) 1/4" grade 5 bolts spaced 1'' from each corner and a single #14 self-tapping screw in the center of the long direction. Each duct piece was attached to (2) sections of 12ga strut spaced 12'' from the edge of the valve. Each strut piece attached to the valve with (4) #14 self-tapping screws spaced at 2'' on center. The strut pieces attached to the DCL wall fixture via a single 3-3/4'' x 3-7/8'' x 1/4'' carbon steel, zinc- plated angle bracket (Fastenal part number 48691) and (2) 3/8'' diameter, grade 5, bolts.

UUT3c

UNIT UNDER TEST (UUT) Summary Sheet

Manufacturer: Siemens Industry

Product Line: Venturi Airflow Valves

Model Number: AVV312MxHJOMO11 / AVZ312MxHJOMO11 / AVC312LxHJOCLDP

Product Construction Summary: Spun aluminum valve bodies with flange connection to duct

Options / Component Summary: Triple valve body in vertical in-line duct configuration, upflow

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

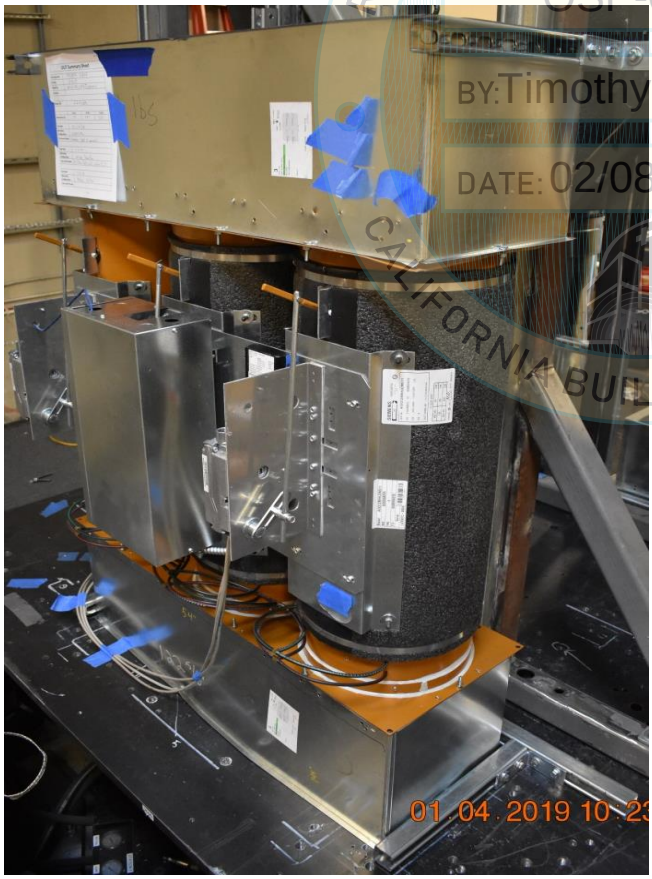
UUT Properties

Operating Weight (lb)	Dimensions (in)				Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
85.0	UUT3c total valve	19.0	39.3	35.5	N/A	N/A	N/A
97.0	UUT3c complete assembly	19.0	39.3	56.0			

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 2019	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:



UUT 3c was vertically in-line duct mounted in the up-flow orientation to (2) pieces of rectangle duct, 12'' in length. The valve attached to each duct piece with (10) 1/4" grade 5 bolts spaced 1'' from each corner and a single #14 self-tapping screw in the center of the long direction. Each duct piece was attached to (2) sections of 12ga strut spaced 12'' from the edge of the valve. Each strut piece attached to the valve with (4) #14 self-tapping screws spaced at 2'' on center. The strut pieces attached to the DCL wall fixture via a single 3-3/4'' x 3-7/8'' x 1/4'' carbon steel, zinc- plated angle bracket (Fastenal part number 48691) and (2) 3/8'' diameter, grade 5, bolts.