



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0593

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Siemens Industry, Inc.

Manufacturer's Technical Representative: Mike Schuler

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 Model Number(s): See attached

Product Category: Air Conditioning Units

Product Sub-Category: Variable Air Volume Units

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

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

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: Dynamic Certification Laboratories

Contact Person: Rachel Wolfe

Mailing Address: 1315 Greg Street, Sparks, NV 89431

Telephone: (775) 358-5085

Email: rachel.wolfe@shaketest.com

Title: Seismic Test Engineer



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT**

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: THE VMC GROUP

Name: Kenneth Tarlow California License Number: S2851

Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814

Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3
☐ Other (Please Specify): _____

Testing Laboratory

Company Name: DYNAMIC CERTIFICATION LABORATORY (DCL)

Contact Person: Josh Sailer

Mailing Address: 1315 Greg St., Ste 109, Sparks NV 89431

Telephone: (775) 358-5085 Email: Josh@shaketest.com

BY: Mohammad Karim

DATE: 12/29/2025



DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT

Seismic Parameters

Certified Response Spectral Acceleration Factors: (F_p/W_p)

Horizontal (A Flx-H), $g =$ 4.00 (A Rig-H), $g =$ 2.69

Vertical (A Flx-V), $g =$ 1.67 (A Rig-V), $g =$ 0.67

SDS (Design spectral response acceleration at short period, g) = 2.5 at $z/h=1$ and 0

H_f (Force amplification height factor) = 3.5 at $z/h = 1$; 1 at $z/h = 0$

R_u (Structure ductility reduction factor) = 1.3 at $z/h = 1$; 1 at $z/h = 0$

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 0 and 1

HCAI Approval (For Office Use Only) - Approval Expires on 12/29/2031

Date: 12/29/2025

Name: Mohammad Karim

Title: Supervisor, Health Facilities

Condition of Approval (if applicable): _____

OSP-0593

BY: Mohammad Karim

DATE: 12/29/2025

Special Seismic Certification

Table 1 - Certified Components: Venturi Airflow Control Valves



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

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

Certified Product Construction: Valve body 14 ga. spun aluminum; cone 18 ga. spun aluminum with 316 stainless steel cone rod, Teflon-coated (AVC/AVV/AVZ); galvanized steel blade Teflon-seal (AVD); 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/enclosure), accessory reheat coils, and silencers.

Mounting Description: Horizontal in-line duct mounted (ceiling suspended) or vertical in-line duct mounted, using no-flange, no-flange with 2" minimum drawband clamps, square flange, or welded flange mount.

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Family	Model Number (AVabbcxyzzzz) ^{1,2}	Valve Size (in)	Mounting Options (Horizontal, Vertical Upflow, Vertical Downflow) ³	Dimensions (in) ³			Venturi Weight ⁴ (lb)	Control Package Weight ⁵ (lb)	Total Valve Weight (lb)	Horizontal In-Line Mounting ⁶					Vertical In- Line Mounting Max. Vertical Duct Support Spacing	Maximum Weight (lb) ⁷	Unit ⁸
				Length	Width	Height				Reheat Coil Weight (lb)	Reheat Coil Length (in)	Silencer Weight (lb)	Silencer Length (in)	Max. Hanger Rod Spacing			
Single Body	AVa106cxyzzzz	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 attachment	Within 12" of duct-to-valve connection	82.0	Extrapolated
	AVa108cxyzzzz	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			92.0	Extrapolated
	AVa110cxyzzzz	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			99.0	Extrapolated
	AVa112cxyzzzz	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			109.0	Extrapolated
	AVD114ASOEX23	14	H, U, D standard	35.5	22.5	14.0	14.6	15.0	29.6	N/A	N/A	N/A	N/A			46.6	UUT5
	AVV114MxAlOMXBm	14	H, U, D	35.5	13.9	14.0	15.3	16.3	31.6	14.0	18.8	13.0	18.0			91.0	UUT1a, 1b, 1c
	AVa114cxyzzzz	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			122.0	Interpolated
Dual Body	AVa210cxyzzzz	10	H, U, D	27.0	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	Within 12" of duct-to-valve connection and at the connection point of accessory-to- valve attachment	Within 12" of duct-to-valve connection	211.0	Interpolated
	AVa212cxyzzzz	12	H, U, D	32.3	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			228.0	Interpolated
	AVV214MxAlOEC11 / 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			228.0	UUT2a, 2b, 2c
	AVa214cxyzzzz	14	H, U, D	35.5	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			251.0	Interpolated
Triple Body	AVa312cxyzzzz	12	H, U, D	32.3	39.3	13.3	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	Within 12" of duct-to-valve connection and at the connection point of accessory-to- valve attachment	Within 12" of duct-to-valve connection	97.0	Interpolated
	AVV312MxHJOmO11 / AVZ312MxHJOmO11 / AVC312LxHJOCLDP	12	H, U, D	35.5	39.3	14.0	51.1	33.9	85.0	40.0	27.0	36.0	36.0			275.0	UUT3a, 3b, 3c
	AVa314cxyzzzz	14	H, U, D	35.5	47.3	16.0	47.2	30.9	78.1	N/A	N/A	N/A	N/A			78.1	Interpolated
	AVD314HJOMC21 / AVD314HJOEO21 / AVD314HJOMK21	14	H, U, D standard	35.5	47.3	22.0	63.7	30.9	94.6	N/A	N/A	N/A	N/A			136.0	UUT4

Notes:

1. AVD Models Mounting Options H, U, D is standard (x not used in Model Number) and may be installed in any Horizontal, Vertical Upflow or Vertical Downflow Orientation. Pressure Range Option (c not used) is not applicable.
2. For UUT1a, 1b, 1c, UUT2a, 2b, 2c and UUT3a, 3b, 3c the listed model number has a 'x' place holder for the mounting configuration. 'x' can be either H,U, or D.
3. For single valve body units, the flange adds 3" to the overall dimensions. For multi-body units the flange is included in width and height. Listed dimensions do not include the Calibration Lock or Control Enclosure. The Calibration Lock adds 5" to the height and the Control Enclosure adds 8" to the height.
4. Valve Weight Range includes Valve Body and Coatings, Cone/Rod Assembly (AVC/AVV/AVZ) or Damper/Shaft (AVD), Multi-Body Connecting Plate, Flanges or Slip Rings, Actuator Bracket (AVV/AVZ) or Calibration Lock (AVC).
5. Optional control package weight range includes control enclosure with bracket and variations of certified options such as actuator, pressure sensor, and controller.
6. Reheat Coils and Silencer Certified Option available for Horizontal Orientation only.
7. Tested units reflect the total weight and interpolated/extrapolated units reflect an estimated total weight.
8. 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 upflow orientation, and UUT 1c, 2c, 3c are tested in the vertical downflow orientation. Horizontal accessories are removed for both vertical orientations.

Special Seismic Certification

Table 2 - Certified Options for Venturi Airflow Control Valves



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Venturi Air Valves Model Number: AVabbbckxyyyzzzz

Character	Category	Allowable Value	Description			Tested/Certified Valve Orientation ¹	Unit
AV	Branding	AV	Venturi Airflow Control Valves			Varies	UUT1(a,b,c), UUT2(a,b,c), UUT3(a,b,c), UUT4, UUT5
a	Volumetric Control Application ²	C	Constant air volume			H, U, D	UUT2(a,b,c), UUT3(a,b,c)
		D	Variable air volume with Damper			H, U, D	UUT4, UUT5
		V	Variable air volume			H, U, D	UUT1(a,b,c), UUT2(a,b,c), UUT3(a,b,c)
		Z	Variable air volume - shut off			H, U, D	UUT3(a,b,c)
bbb	Valve Body Number and Size	106	Single Valve Body 6" Diameter			H, U, D	Extrapolated
		108	Single Valve Body 8" Diameter			H, U, D	Extrapolated
		110	Single Valve Body 10" Diameter			H, U, D	Extrapolated
		112	Single Valve Body 12" Diameter			H, U, D	Extrapolated
		114	Single Valve Body 14" Diameter (Not available on AVZ)			H, U, D	UUT1(a,b,c), UUT5
		210	Dual Valve Body 10" Diameter			H, U, D	Interpolated
		212	Dual Valve Body 12" Diameter			H, U, D	Interpolated
		214	Dual Valve Body 14" Diameter (Not available on AVZ)			H, U, D	UUT2(a,b,c)
		312	Triple Valve Body 12" Diameter			H, U, D	UUT3(a,b,c)
		314	Triple Valve Body 14" Diameter			H, U, D	UUT4
c	Pressure Range (1" Calibration Only)	Blank	(Blank) Not applicable on AVD option character c not used			H, U, D	UUT4, UUT5
		M	Medium			H, U, D	UUT1(a,b,c), UUT2(a,b,c), UUT3(a,b,c)
		L	Low			H, U, D	UUT2(a,b,c), UUT3(a,b,c)
x	Mounting Option	Blank	(Blank) Horizontal or Vertical Upflow or Vertical Downflow AVD all orientations standard, option character x not used			H	UUT4, UUT5
						U, D	Interpolated
		H	Horizontal			H	UUT1,2,3(a)
		U	Vertical Upflow			U	UUT1,2,3(b)
		D	Vertical Downflow			D	UUT1,2,3(c)
Character	Category	Allowable Value	Coating	Insulated	Ends	Tested/Certified Valve Orientation	Unit
yyy	Construction Code (Coatings are for Corrosion; PVDF weight is between None and Heresite)	ASO	None	No	Slip	H, U, D	UUT1(a,b,c), UUT5
		AIO	None	Yes	Slip	H, U, D	Interpolated
		AFO	None	No	Flange	H, U, D	Interpolated
		AJO	None	Yes	Flange	H, U, D	Interpolated
		VSO	Polyvinylidene Fluoride	No	Slip	H, U, D	UUT2(a,b,c)
		VIO	Polyvinylidene Fluoride	Yes	Slip	H, U, D	Interpolated
		VFO	Polyvinylidene Fluoride	No	Flange	H, U, D	Interpolated
		VJO	Polyvinylidene Fluoride	Yes	Flange	H, U, D	Interpolated
		HSO	Heresite (Epoxy Phenolic)	No	Slip	H, U, D	Interpolated
		HIO	Heresite (Epoxy Phenolic)	Yes	Slip	H, U, D	Interpolated
		HFO	Heresite (Epoxy Phenolic)	No	Flange	H, U, D	Interpolated
		HJO	Heresite (Epoxy Phenolic)	Yes	Flange	H, U, D	UUT3(a,b,c), UUT4

1. Orientation Option (H, U, D) is used in the Model Numbers for AVC/AVV/AVZ. AVD units may be installed in any Horizontal, Vertical Upflow or Vertical Downflow Orientation, therefore Orientation Option Character is not used.

2. Multiple Volumetric Control Applications were tested on UUT3(a,b,c).

Continued on Next Page

Special Seismic Certification
Table 2 - Certified Options for Venturi Airflow Control Valves (continued)



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

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

Note:

1. Multiple Control Packages were tested on UUT2(a,b,c), UUT3(a,b,c), and UUT4.

Continued on Next Page

Special Seismic Certification

Table 2 - Certified Options for Venturi Airflow Control Valves (continued)



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Venturi Air Valves Model Number: Avabbbcxxyyzzzz					
Character	Category	Allowable Value	Description	Tested/Certified Valve Orientation ¹	Unit
zzzz	Control Packages ¹	EC13	Lab DXR (MSTP - 30 Data Point) High speed with APS 1" - Normally Closed	H, U, D	UUT2(a,b,c)
		EC14	Lab DXR (MSTP - 60 Data Point) High speed with APS 1" - Normally Closed	H, U, D	Interpolated
		EO10	APS 1" - High Speed Normally Open	H, U, D	Interpolated
		EO11	Lab DXR (IP - 30 Data Point) High speed with APS 1" - Normally Open	H, U, D	Interpolated
		EO12	Lab DXR (IP - 60 Data Point) High speed with APS 1" - Normally Open	H, U, D	Interpolated
		EO13	Lab DXR (MSTP - 30 Data Point) High speed with APS 1" - Normally Open	H, U, D	Interpolated
		EO14	Lab DXR (MSTP - 60 Data Point) High speed with APS 1" - Normally Open	H, U, D	Interpolated
		MC21	Lab DXR (IP - 30 Data Point) Standard speed with APS 2" - Normally Closed	H, U, D	UUT4
		MC20	Standard speed Modulating with Airflow Pressure Sensor 2" - Normally Closed	H, U, D	Interpolated
		MC22	Lab DXR (IP - 60 Data Point) Standard speed with APS 2" - Normally Closed	H, U, D	Interpolated
		MC23	Lab DXR (MSTP - 30 Data Point) Standard speed with APS 2" - Normally Closed	H, U, D	Interpolated
		MC24	Lab DXR (MSTP - 60 Data Point) Standard speed with APS 2" - Normally Closed	H, U, D	Interpolated
		MO20	Standard speed Modulating with Airflow Pressure Sensor 2" - Normally Open	H, U, D	Interpolated
		MO21	Lab DXR (IP - 30 Data Point) Standard speed with APS 2" - Normally Open	H, U, D	Interpolated
		MO22	Lab DXR (IP - 60 Data Point) Standard speed with APS 2" - Normally Open	H, U, D	Interpolated
		MO23	Lab DXR (MSTP - 30 Data Point) Standard speed with APS 2" - Normally Open	H, U, D	Interpolated
		MO24	Lab DXR (MSTP - 60 Data Point) Standard speed with APS 2" - Normally Open	H, U, D	Interpolated
		MX20	Standard speed Modulating with Airflow Pressure Sensor 2" - Fail-in place	H, U, D	Interpolated
		MX21	Lab DXR (IP - 30 Data Point) Standard speed with APS 2" - Fail-in place	H, U, D	UUT4
		MX22	Lab DXR (IP - 60 Data Point) Standard speed with APS 2" - Fail-in place	H, U, D	Interpolated
		MX23	Lab DXR (MSTP - 30 Data Point) Standard speed with APS 2" - Fail-in place	H, U, D	Interpolated
		MX24	Lab DXR (MSTP - 60 Data Point) Standard speed with APS 2" - Fail-in place	H, U, D	Interpolated
		EC20	High Speed Modulating with Airflow Pressure Sensor 2" - Normally Closed	H, U, D	Interpolated
		EC21	Lab DXR (IP - 30 Data Point) High speed with APS 2" - Normally Closed	H, U, D	Interpolated
		EC22	Lab DXR (IP - 60 Data Point) High speed with APS 2" - Normally Closed	H, U, D	Interpolated
		EC23	Lab DXR (MSTP - 30 Data Point) High speed with APS 2" - Normally Closed	H, U, D	Interpolated
		EC24	Lab DXR (MSTP - 60 Data Point) High speed with APS 2" - Normally Closed	H, U, D	Interpolated
		EO20	High Speed Modulating with Airflow Pressure Sensor 2" - Normally Open	H, U, D	Interpolated
		EO21	Lab DXR (IP - 30 Data Point) High speed with APS 2" - Normally Open	H, U, D	UUT4
		EO22	Lab DXR (IP - 60 Data Point) High speed with APS 2" - Normally Open	H, U, D	Interpolated
		EO23	Lab DXR (MSTP - 30 Data Point) High speed with APS 2" - Normally Open	H, U, D	Interpolated
		EO24	Lab DXR (MSTP - 60 Data Point) High speed with APS 2" - Normally Open	H, U, D	Interpolated
		EX20	High Speed Modulating with Airflow Pressure Sensor 2" - Fail-in Place	H, U, D	Interpolated
		EX21	Lab DXR (IP - 30 Data Point) High speed with APS 2" - Fail-in place	H, U, D	Interpolated
		EX22	Lab DXR (IP - 60 Data Point) High speed with APS 2" - Fail-in place	H, U, D	Interpolated
		EX24	Lab DXR (MSTP - 60 Data Point) High speed with APS 2" - Fail-in place	H, U, D	Interpolated
		EX23	Lab DXR (MSTP - 30 Data Point) High speed with APS 2" - Fail-in place	H, U, D	UUT5
		OOZE	No Control Package - empty enclosure	H, U, D	Extrapolated

Note:

1. Multiple Control Packages were tested on UUT2a, 2b, 2c, UUT3a, 3b, 3c, and UUT4.

Special Seismic Certification

Table 3 - Certified Subcomponents for Venturi Airflow Control Valves



DCL Project Number: 59102-2501

Product Line: Venturi Airflow Valves in Single, Dual and Triple Body with Volumetric Control

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Actuators					
Model Number	Manufacturer	Description	Material	Tested/Certified Orientation ¹	Unit
GMA151.1P	Siemens	Standard Speed Spring Return (Selectable Normally Closed or Open)	Die Cast Aluminum, Polycarbonate	H, U, D	UUT3(a,b,c), UUT4
GAP191.1P		High Speed Non-Spring Return (Fail In Place)		H, U, D	UUT5
GNP191.1P		High Speed Spring Return (Selectable Normally Closed or Open)		H, U, D	UUT2(a,b,c), UUT4
GLB161.1P		Standard Speed Non-Spring Return (Fail In Place)	Plastic, Polycarbonate	H, U, D	UUT1(a,b,c), UUT4
Pressure Sensors					
590-78x	Siemens	DP Transmitter, 4-20mA	Plastic	H, U, D	Extrapolated
590-782		DP Transmitter, 4-20mA		H, U, D	UUT3(a,b,c)
550-819B		Off-Board Air Module	Plastic	H, U, D	UUT1(a,b,c)
DXA.S04P1		Lab DXR Airflow Pressure Sensor 1"	Plastic	H, U, D	UUT2(a,b,c), UUT5 UUT3(a,b,c), UUT4
DXA.S04P2		Lab DXR Airflow Pressure Sensor 2"		H, U, D	UUT2(a,b,c)
Controllers					
DXR2.E17C-103B	Siemens	BACnet IP DXR2 30 data points	Plastic, Polycarbonate	H, U, D	UUT3(a,b,c), UUT4
DXR2.E17CX-103B		BACnet IP DXR2 60 data points		H, U, D	Interpolated
DXR2.M17C-103B		BACnet MSTP DXR2 30 data points		H, U, D	UUT2(a,b,c), UUT5
DXR2.M17CX-103B		BACnet MSTP DXR2 60 data points		H, U, D	Interpolated
570-00700N		P1 TEC Fume Hood High-speed Modulating		H, U, D	Interpolated
550-767CN		P1 TEC High-speed Modulating		H, U, D	Interpolated
550-767DN		P1 TEC Standard-speed Modulating		H, U, D	Interpolated
570-00701PA		BACnet TEC Fume Hood High-speed Modulating		H, U, D	Interpolated
570-804PA		BACnet TEC High-speed Modulating		H, U, D	Interpolated
570-802PA		BACnet TEC Standard-speed Modulating		H, U, D	UUT1(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	UUT1(a,b,c), UUT2(a,b,c)
SSC81U		Electronic Non-Spring Return Valve Actuator 44 LBF		H, U, D	Interpolated
SSC61.5U		Electronic Spring Return Valve Actuator 67 LBF		H, U, D	Interpolated
SSC61U		Electronic Non-Spring Return Valve Actuator 67 LBF		H, U, D	UUT3(a,b,c)

1. Orientation Option (x) H, U, D is used in Model Numbers for AVC/AVV/AVZ. Model Numbers AVD may be installed in any Horizontal, Vertical Upflow or Vertical Downflow Orientation.

Special Seismic Certification

Table 4 - Certified Subcomponent Accessories - Reheat Coils and Silencers



DCL Project Number: 59102-2501

Product Line: Venturi Air Valves

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Venturi Accessory Reheat Coils - Added to UUT for Certification in Horizontal Orientation, Not Certified for Vertical Orientation					
Model Number	Manufacturer	Description Fits Valve Type, L x W x H, Weight/Range	Material	Tested/ Certified Orientation ¹	Unit
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	H	Extrapolated
AVA108RHCxxxx		Single 8", 28-3/4 x 12 x 10 in, 6.5 to 13.0 lb	Aluminum sine wave fins (thickness 0.0045")	H	Extrapolated
AVA110RHCxxxx		Single 10", 28-3/4 x 14 x 12-1/2 in, 8.5 to 15.0 lb		H	Extrapolated
AVA112RHCxxxx		Single 12", 28-3/4 x 16 x 15 in, 11.0 to 19.0 lb		H	Extrapolated
AVA114RHCxxxx		Single 14", 28-3/4 x 20 x 17-1/2 in, 14.0 to 25.0 lb	Copper tubes, 0.016" wall	H	Extrapolated
AVA114RHC1RAC		Single 14", 28-3/4 x 20 x 17-1/2 in, 14 lb (1 Row)		H	UUT1a
AVA210RHCxxxx		Dual 10", 38 x 22 x 17-1/2 in, 14.0 to 25.0 lb	Duct Casing, Inlet Collar and opt. Outlet Adapter Collar 22 ga. Galvanized steel	H	Interpolated
AVA212RHCxxxx		Dual 12", 38 x 26 x 18 in, 16.0 to 29.0 lb		H	Interpolated
AVA214RHCxxxx		Dual 14", 38 x 30 x 18 in, 21.0 to 38.0 lb		H	Interpolated
AVA214RHC2RAC		Dual 14", 38 x 30 x 18 in, 38 lb (2 Rows, Adapter Collar)	Insulation Foam 3/4" thick closed-cell fiber-free	H	UUT2a
AVA312RHCxxxx		Triple 12", 38 x 39 x 18 in, 21.0 to 40.0 lb		H	Interpolated
AVA312RHC2RAC		Triple 12", 38 x 39 x 18 in, 21.0 to 40.0 lb		Slip Ends	H
Venturi Accessory Silencers - Added to UUT for Certification in Horizontal Orientation, Not Certified for Vertical Orientation					
LGAXxxxx06RDx	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	H	Extrapolated
LGAXxxxx08RDx		Single 8", 14/18/36 x 16 x O.D. in, 5.0 to 19.8 lb		H	Extrapolated
LGAXxxxx10RDx		Single 10", 14/18/36 x 18 x O.D. in, 5.9 to 23.1 lb		H	Extrapolated
LGAXxxxx12RDx		Single 12", 14/18/36 x 20 x O.D. in, 6.4 to 25.3 lb	Single Body Round Dual & Triple Body Rectangular	H	Extrapolated
LGAXxxxx14RDx		Single 14", 14/18/36 x 22 x O.D. in, 9.3 to 28.6 lb		H	Extrapolated
LGAACX18S14RDGP		Single 14", 18 x 22 x O.D. in, 13 lb (Absorptive, Slip, Galv.)		H	UUT1a
LGAXxxxx1021x		Dual 10", 14/18/36 x 22 x 11 in, 6.4 to 25.3 lb	Packless solid metal casing with perforated metal liner. Absorptive solid metal casing with acoustic fiberglass and Tedlar film liner.	H	Interpolated
LGAXxxxx1225x		Dual 12", 14/18/36 x 26 x 13 in, 9.7 to 29.7 lb		H	Interpolated
LGAXxxxx1429x		Dual 14", 14/18/36 x 30 x 13 in, 11.1 to 34.1 lb		H	Interpolated
LGAPRX36S14296		Dual 14", 36 x 30 x 13 in, 24.4 lb (Packless, Slip, 316 SS)	22 ga. Galvanized steel, 24 ga. 304 Stainless steel, or 24 ga. 316 Stainless steel with Slip or Flanged Ends	H	UUT2a
LGAXxxxx1238x		Triple 12", 14/18/36 x 39 x 13 in, 12.9 to 36.0 lb		H	Interpolated
LGAARX36F1238GP		Triple 12", 36 x 39 x 13 in, 36.0 lb (Absorptive, Flange, Galv.)		H	UUT3a

1. Reheat Coils and Silencer Certified Option available for Horizontal Orientation only.

a. (AVC/AVV/AVC) Model Options (x) H, U, D available for Horizontal, Vertical Upflow and Vertical Downflow Installation Orientation

b. (AVD) Models may be installed in any Horizontal, Vertical Upflow or Vertical Downflow Installation Orientation so option character (x) is not used in Model Number.

Special Seismic Certification

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



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Air Valves

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Venturi Reheat Coil - Accessory Model Number: AVAaaaRCHnndd					
Character	Category	Allowable Value	Description	Tested/Certified Valve Orientation ¹	Unit
AVA	Branding	AVA	Venturi Reheat Coil	H	UUT1a, UUT2a, UUT3a
aaa	Inlet Types	106	Round Inlet w/ 6" Diameter	H	Extrapolated
		108	Round Inlet w/ 8" Diameter	H	Extrapolated
		110	Round Inlet w/ 10" Diameter	H	Extrapolated
		112	Round Inlet w/ 12" Diameter	H	Extrapolated
		114	Round Inlet w/ 14" Diameter	H	UUT1a
		210	Rectangular Inlet 2 x 10"	H	Interpolated
		212	Rectangular Inlet 2 x 12"	H	Interpolated
		214	Rectangular Inlet 2 x 14"	H	UUT2a
		312	Rectangular Inlet 3 x 12"	H	UUT3a
RHC	Placeholder	RHC	Venturi Reheat Coil	H	UUT1a, UUT2a, UUT3a
nn	Number Rows	1R	1 Row	H	UUT1a
		2R	2 Rows	H	UUT2,3a
dd	Adapter Collar	—	Inlet Adapter Collar Only	H	Extrapolated
		AC	Inlet Adapter Collar And Outlet Adapter Collar	H	UUT1,2,3a
Venturi Silencer - Accessory Model Number: LGAppbbccxxxzyz					
Character	Category	Allowable Value	Description	Tested/Certified Valve Orientation ¹	Unit
LGA	Branding	LGA	Venturi Silencer	H	UUT1a, UUT2a, UUT3a
ppp	Packing Type	ACX	Absorptive, Circular	H	UUT1a
		PCX	Packless, Circular	H	Interpolated
		ARX	Absorptive, Rectangular	H	UUT3a
		PRX	Packless, Rectangular	H	UUT2a
bb	Length	14	14" (Packless Only)	H	Extrapolated
		18	18" (Absorptive Only)	H	UUT1a
		36	36" (Absorptive and Packless)	H	UUT2,3a
c	End Type	F	Flanged	H	UUT3a
		S	Slip	H	UUT1,2a
xxxx	Size	06RD	6" Diameter, Circular	H	Extrapolated
		08RD	8" Diameter, Circular	H	Extrapolated
		10RD	10" Diameter, Circular	H	Extrapolated
		12RD	12" Diameter, Circular	H	Extrapolated
		14RD	14" Diameter, Circular	H	UUT1a
		1021	10" x 21", Rectangular, 10" Dual	H	Interpolated
		1225	12" x 25", Rectangular, 12" Dual	H	Interpolated
		1429	14" x 29", Rectangular, 14" Dual	H	UUT2a
		1238	12" x 38", Rectangular, 12" Triple	H	UUT3a
y	Material Type	G	Galvanized Steel, 22 ga.	H	UUT1,3a
		4	Stainless Steel, Grade 304, 24 ga.	H	Interpolated
		6	Stainless Steel, Grade 316, 24 ga.	H	UUT2a
z	Coating Type	N/A	Uncoated	H	UUT2a
		P	Tedlar® Polymer Film (Absorptive Only)	H	UUT1,3a

1. Reheat Coils and Silencer Certified Option available for Horizontal Orientation only.

- (AVC/AVV/AVC) Model Options (x) H, U, D available for Horizontal, Vertical Upflow and Vertical Downflow Installation Orientation
- (AVD) Models may be installed in any Horizontal, Vertical Upflow or Vertical Downflow Installation Orientation so option character (x) is not used in Model Number.

Special Seismic Certification

Table 6 - Tested Units



DCL Project Number: 59102-2501

Manufacturer: Siemens Industry, Inc.

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

Certified Product Construction: Valve body 14 ga. spun aluminum; cone 18 ga. spun aluminum with 316 stainless steel cone rod, Teflon-coated (AVC/AVV/AVZ); galvanized steel blade Teflon-seal (AVD); 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/enclosure), accessory reheat coils, and accessory silencers.

Mounting Description: Horizontal in-line duct mounted (ceiling suspended) or vertical in-line duct mounted, using no-flange with 2" drawband clamps, square flange, or welded flange mount.

Certified Seismic Levels: Sds 2.5g at z/h=1.0 and z/h=0

Family	Model Number ¹	Valve Size	Tested Mounting Configuration (Horizontal, Vertical Upflow, Vertical Downflow) ¹	Tested Dimensions (in)			Horizontal In-Line Mounting	Vertical In-Line Mounting	Tested Weight (lb)	Unit
				Length	Width	Height	Hanger Rod Spacing from Edge of Unit (in)	Vertical Support Spacing from Edge of Unit (in)		
Single Body	AVV114MHAIOXBM	14"	H	146.0	20.0	22.0	12	N/A	91.0	UUT 1a
	AVV114MDAIOXBM	14"	D	23.0	14.0	96.0	N/A	12	34.0	UUT 1b
	AVV114MUAIOXBM	14"	U	23.0	14.0	96.0	N/A	12	34.0	UUT 1c
Dual Body	AVV214MHAIOEC11 / AVC214LHASOECZZ	14"	H	16.0	31.5	59.0	12	N/A	228.0	UUT 2a
	AVV214MDAIOEC11 / AVC214LDASOECZZ	14"	D	16.0	31.5	59.0	N/A	12	70.0	UUT 2b
	AVV214MUAIOEC11 / AVC214LUASOECZZ	14"	U	16.0	31.5	59.0	N/A	12	70.0	UUT 2c
Triple Body	AVV312MHHJOMO11 / AVZ312MHHJOMO11 / AVC312LHHJOCLDP	12"	H	145.0	40.0	18.0	12	N/A	275.0	UUT 3a
	AVV312MDHJOMO11 / AVZ312MDHJOMO11 / AVC312LDHJOCLDP	12"	D	19.0	39.0	56.0	N/A	12	97.0	UUT 3b
	AVV312MUHJOMO11 / AVZ312MUHJOMO11 / AVC312LUHJOCLDP	12"	U	19.0	39.0	56.0	N/A	12	97.0	UUT 3c
Triple Body	AVD314HJOMC21 / AVD314HJOE021 / AVD314HJOMX21	14"	H	67.5	47.3	22.0	12	N/A	136.0	UUT4
Single Body	AVD114ASOEX23	14"	H	93.1	22.5	14.0	12	N/A	46.6	UUT5

Notes:

1. Units Under Test AVC/AVV/AVZ Models with three Airflow Option orientations Horizontal, Vertical UP, and Vertical Down, irrespective of UUT as built spring.

AVD Models operate in all orientations on standard product so do Not use option character (x) or pressure range option character (c) in Model Number.

a. UUT1a, UUT2a and UUT3a are tested in the horizontal orientation with Horizontal Accessories.

b. UUT1b, UUT2b, UUT3b are tested in vertical up orientation without Horizontal Accessories.

c. UUT1c, UUT2c, UUT3c are tested in the vertical down orientation without Horizontal Accessories.

d. UUT4 is tested in the horizontal orientation without impacting Horizontal Accessories and vertical orientation is interpolated.

e. UUT5 is tested in the horizontal orientation without impacting Horizontal Accessories and vertical orientation is interpolated.

UNIT UNDER TEST (UUT) Summary Sheet



UUT1a

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV114MHA10MXBM

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

Options / Component Summary: Single valve body in a horizontal configuration. Siemens Plastic & Polycarbonate actuator (GLB161.1P), Plastic pressure sensor (550-819B), Plastic & Polycarbonate controller (570-802PA), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U). Price Industries reheat coil (AVA114RHC1RAC) and silencer (LGAACX18S14RDGP) in multiplule materials.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

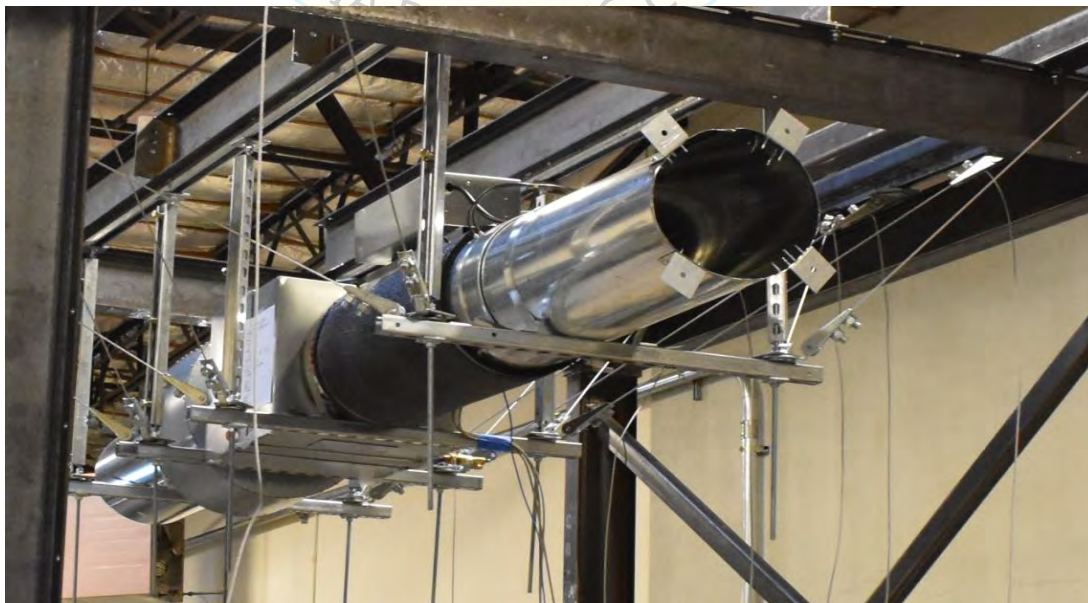
Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	31.6	35.5	13.9	14.0	N/A	N/A	N/A
Complete Assembly	91.0	146.0	20.0	22.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _r	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 valve to accessory attachment 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 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 total 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.



Overall veiw of UUT1a.

UNIT UNDER TEST (UUT) Summary Sheet



UUT1b

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV114MDAIOMXBM

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

Options / Component Summary: Single valve body in a vertical in-line duct configuration, downflow. Siemens Plastic & Polycarbonate actuator (GLB161.1P), Plastic pressure sensor (550-819B), Plastic & Polycarbonate controller (570-802PA), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	31.6	14.0	13.9	35.5	N/A	N/A	N/A
Complete Assembly	34.0	23.0	14.0	96.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 the 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. Bands attached to the DCL wall fixture with (2) 1/4" diameter, Grade 5 bolt and washer with the 1.5"x1.5"x3/16" low carbon steel plate washer.



Overall veiw of UUT1b.

UNIT UNDER TEST (UUT) Summary Sheet



UUT1c

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV114MUA10MXBM

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

Options / Component Summary: Single valve body in a vertical in-line duct configuration, upflow. Siemens Plastic & Polycarbonate actuator (GLB161.1P), Plastic pressure sensor (550-819B), Plastic & Polycarbonate controller (570-802PA), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	31.6	14.0	13.9	35.5	N/A	N/A	N/A
Complete Assembly	34.0	23.0	14.0	96.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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" length. The valve attached to the 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. Bands attached to the DCL wall fixture with (2) 1/4" diameter, Grade 5 bolt and washer with the 1.5"x1.5"x3/16" low carbon steel plate washer.



Overall veiw of UUT1c.

UNIT UNDER TEST (UUT) Summary Sheet



UUT2a

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV214MHAIOEC11 / AVC214LHASOECZZ

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

Options / Component Summary: Dual valve body in a horizontal configuration. Siemens Die Cast Aluminum & Polycarbonate actuator (GNP191.1P), Plastic pressure sensor (DXA.S04P1), Plastic & Polycarbonate controller (DXR2.M17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U). Price Industries reheat coil (AVA312RHC2RAC) and silencer (LGAARX36F1238GP) in multiple materials.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	56.2	38.5	31.5	16.0	N/A	N/A	N/A
Complete Assembly	228.0	164.0	40.0	20.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _r	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 valve to accessory attachment 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 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 which was placed at the top clamping strut 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. The bottom strut had a 1/2" diameter nut, 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.



Overall view of UUT2a.

UNIT UNDER TEST (UUT) Summary Sheet



UUT2b

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV214MDAIOEC11 / AVC214LDASOECZZ

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

Options / Component Summary: Dual valve body in a vertical in-line duct configuration, downflow. Siemens Die Cast Aluminum & Polycarbonate actuator (GNP191.1P), Plastic pressure sensor (DXA.S04P1), Plastic & Polycarbonate controller (DXR2.M17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	56.2	16.0	31.5	38.5	N/A	N/A	N/A
Complete Assembly	70.0	16.0	31.5	59.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 the 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.



Overall view of UUT2b.

UNIT UNDER TEST (UUT) Summary Sheet



UUT2c

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV214MUAIOEC11 / AVC214LUASOECZZ

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

Options / Component Summary: Dual valve body in a vertical in-line duct configuration, upflow. Siemens Die Cast Aluminum & Polycarbonate actuator (GNP191.1P), Plastic pressure sensor (DXA.S04P1), Plastic & Polycarbonate controller (DXR2.M17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC81.5U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	56.2	16.0	31.5	38.5	N/A	N/A	N/A
Complete Assembly	70.0	16.0	31.5	59.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _r	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 the 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.



Overall view of UUT2c.

UNIT UNDER TEST (UUT) Summary Sheet



UUT3a

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV312MHHJOMO11 / AVZ312MHHJOMO11 / AVC312LHHJOCLDP

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

Options / Component Summary: Triple valve body in a horizontal configuration. Siemens Die Cast Aluminum & Polycarbonate actuator (GMA151.1P), Plastic pressure sensor (590-782 and DXA.S04P1), Plastic & Polycarbonate controller (DXR2.E17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC61U). Price Industries reheat coil (AVA312RHC2RAC) and silencer (LGAARX36F1238GP) in multiple materials.

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	85.0	35.5	39.3	14.0	N/A	N/A	N/A
Complete Assembly	275.0	145.0	40.0	18.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _r	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 valve to accessory attachment 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 an (2) approximately 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 which was placed at the top clamping strut 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. The bottom strut has a 1/2" diameter nut, 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.



Overall view of UUT3a.

UNIT UNDER TEST (UUT) Summary Sheet



UUT3b

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV312MDHJOMO11 / AVZ312MDHJOMO11 / AVC312LDHJOCLDP

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

Options / Component Summary: Triple valve body in a vertical in-line duct configuration, downflow. Siemens Die Cast Aluminum & Polycarbonate actuator (GMA151.1P), Plastic pressure sensor (590-782 and DXA.S04P1), Plastic & Polycarbonate controller (DXR2.E17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC61U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	85.0	14.0	39.3	35.5	N/A	N/A	N/A
Complete Assembly	97.0	19.0	39.3	56.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 the each duct piece with (10) ¼" 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.



Overall view of UUT3b.

UNIT UNDER TEST (UUT) Summary Sheet



UUT3c

DCL Repot Number: 93005-1801

Test Dates: 11/28/2018 - 11/30/2018 and 1/3/2019 - 1/4/2019

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVV312MUHJOMO11 / AVZ312MUHJOMO11 / AVC312LUHJOCLDP

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

Options / Component Summary: Triple valve body in a vertical in-line duct configuration, upflow. Siemens Die Cast Aluminum & Polycarbonate actuator (GMA151.1P), Plastic pressure sensor (590-782 and DXA.S04P1), Plastic & Polycarbonate controller (DXR2.E17C-103B), and Plastic & Polycarbonate accessory valve actuator (SSC61U).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	85.0	14.0	39.3	35.5	N/A	N/A	N/A
Complete Assembly	97.0	19.0	39.3	56.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	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 the each duct piece with (10) ¼" 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.



Overall view of UUT3c.

UNIT UNDER TEST (UUT) Summary Sheet



UUT4

DCL Repot Number: 59102-2501

Test Dates: 10/22/25 – 10/23/25

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVD314HJOMC21 / AVD314HJOEO21 / AVD314HJOMX21

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

Options / Component Summary: Triple valve body in a horizontal in-line duct configuration. Siemens Die Cast Aluminum & Polycarbonate actuators (GMA151.1P, GNP191.1P), Plastic & Polycarbonate actuators (GLB161.1P), Plastic pressure sensor (DXA.S04P1), and Plastic & Polycarbonate controller (DXR2.E17C-103B).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	94.6	35.5	47.3	22.0	N/A	N/A	N/A
Complete Assembly	136.0	67.5	47.3	22.0			

Seismic Test Parameters

Building Code	Test Criteria	S _{ds} (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
	AC156-24	2.5	0.00	1.0	1.0		N/A	N/A	1.67	0.67

Unit Mounting Description:

Each unit was tested in a ceiling suspended configuration. For all the tests four Grade 5 ½" threaded hanger rods were used to support the units under test. All hardware was ½" unless stated. The threaded rods for all units were braced with P-1000 Unistrut with rod stiffeners, which were ½" made by XYSTRUT out of stainless steel. UUT4 used three rod stiffeners spaced approximately 4" apart, measured on-center in the z-direction and a 9 5/8" long piece of Unistrut. The rods for UUT4 were spaced 50" apart on-center in the side-side direction and 49 ¼" apart on-center in the front-back direction. The unit was connected to two sections of duct with (12) ¼" Grade 5 bolts, flat washers and nuts. The ¼" bolts were spaced 7 ¾" apart in the x-direction measured on-center. The threaded rods were attached to each section of duct via two horizontally oriented pieces of strut. The duct attached to each piece of Unistrut with (16) #14 self-tapping screws. For UUT4 each threaded rod was mounted to the ceiling fixture with a channel nut, 3"x3"x ¼" plate washer, a flat washer and two nuts. Each rod used three nuts, two flat washers, and a 2"x2"x ¼" square washer to secure two VMC SB-125 seismic cable brackets to the top Unistrut. This seismic cable bracket connected, via 3/16" galvanized cable, to another seismic cable bracket that was attached to the ceiling fixture. To fasten the bottom Unistrut to the rod two flat washers, four nuts, and two 2"x2"x ¼" square washer were used.



Overall view of UUT4.

UNIT UNDER TEST (UUT) Summary Sheet



UUT5

DCL Repot Number: 59102-2501

Test Dates: 10/22/25 – 10/23/25

Manufacturer: Siemens Industry, Inc.

Product Line: Venturi Airflow Valves

Model Number: AVD114ASOEX23

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

Options / Component Summary: Single valve body in a horizontal configuration. Siemens Die Cast Aluminum & Polycarbonate actuators (GAP191.1P), Plastic pressure sensor (DXA.S04P1), and Plastic & Polycarbonate controller (DXR2.M17C-103B).

Note: The UUT was operational before and after shaking and was full of operating content during the tests. The structural integrity of the component attachment system and force-resisting systems was maintained before and after the AC 156 test.

UUT Properties

Configuration	Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
		Length	Width	Height	Front-Back	Side-Side	Vertical
Total Valve	29.6	35.5	22.5	14.0	N/A	N/A	N/A
Complete Assembly	46.6	93.1	22.5	14.0			

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	H _f	R _μ	I _p	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2025	ICC-ES AC156-24	2.5	1.00	3.5	1.3	1.5	4.00	2.69	N/A	N/A
		2.5	0.00	1.0	1.0		N/A	N/A	1.67	0.67

Unit Mounting Description:

Each unit was tested in a ceiling suspended configuration. For all the tests four Grade 5 ½" threaded hanger rods were used to support the units under test. All hardware was ½" unless stated. The threaded rods for all units were braced with P-1000 Unistrut with rod stiffeners, which were ½" made by XYSTRUT out of stainless steel. UUT5 used three rod stiffeners spaced approximately 10 7/8" apart, measured on-center in the z-direction and a 24" long piece of Unistrut. The rods for UUT5 were spaced 17 5/8" apart on-center in the side-side direction and 5 7/8" apart on-center in the front-back direction. The unit was connected to two sections of duct with (4) #14 self-tapping screws per duct. The threaded rods were attached to each section of duct via a horizontally oriented piece of strut. The unit attached to the strut via 26 gage, 1 ½" wide band with (2) 5/16" Grade 5 bolts, flat washer, 1"x1" x¼" plate washer and channel nut. The bands attached to the duct with (2) #14 self-tapping screws and the unit had two bands. For UUT5 each threaded rod was mounted to the ceiling fixture with a channel nut, 3"x3"x ¼" plate washer, a flat washer and two nuts. Each rod used three nuts, two flat washers, a 2"x2"x ¼" square washer and a 1 7/8"x1 7/8" x¼" plate washers to secure two VMC SB-125 seismic cable brackets to the Unistrut. This seismic cable bracket connected, via 3/16" galvanized cable, to another seismic cable bracket that was attached to the ceiling fixture.



Overall view of UUT5.