APPLICATION FOR OSHPD SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY	
APPLICATION #:	OSP – 0385 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Johnson Controls Inc.

Manufacturer's Technical Representative: Timothy Wilson, New Product Development Manager

Mailing Address: 8575 Largo Lakes, Largo, FL, 33773

Telephone: (727) 547-7484 Email: timothy.wilson@jci.com

Product Information

Product Name: Blower Coils: ACB, ACR, AHI, AVI, AVM, AHM, AVD, AVDM, AHD, AHDM

Product Type: Mechanical Equipment

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

General Description: Blower coil units containing coils, fans, motors, filters, dampers, electric heat and controls. Seismic enhancements made to the test units required to address the anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Combination rigidly base and wall mounted, rigidly base mounted, or ceiling suspended

Applicant Information

Applicant Company Name: The VMC Group

Contact Person: John Giuliano

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: Joel P. Giuliano Date: 7/12/18

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-2351

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: Kelly Laplace, Quality Manager

Mailing Address: 1315 Greg Street, Suite 109, Sparks, NV, 89431

Telephone: (775) 385-5085 Email: kelly@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) = 1.44

S_{DS} (Design spectral response acceleration at short period, g) = 1.92

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) = 2.0

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachments

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

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, 2022

Signature: Date: 6/3/2019

Print Name: Ali Sumer Title: DSE

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

Condition of Approval (if applicable):

Table 1
Certified Components - Base Mounted Blower Coils, ACB and ACR Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls

Certified Product Construction: 18 gage galvanized steel cabinet construction with 1/2" thick fiberglass insulation

Mounting Description: Combination rigid base and wall mount

Product Family	JCI Model Number	Enviro-Tec Model Number	Dimensions (in)						Max. Weight (lb)	Mounting	Sds (g), z/h=1	Fp/Wp	UUT
			Base Unit Length	Additional Length w/ Inlet Damper	Width	Base Unit Height	Additional Height w/ Electric Heat	Additional Height w/ Return Plenum					
Blower Coils, ACB (Bottom Return)	ACB 08	VB 08	19	N/A	26	51	22	16	300	Combination rigid base and wall mount	1.92	1.44	UUT1
	ACB 12	VB 12	21	N/A	26	51	22	16	300 - 600				Interpolated
	ACB 16	VB 16	25	N/A	29	59	22	16					Interpolated
	ACB 20	VB 20	28	N/A	29	59	22	16					Interpolated
	ACB 25	VB 25	28	N/A	39	65	22	16					Interpolated
	ACB 30	VB 30	28	N/A	39	65	22	16					Interpolated
Blower Coils, ACR (Rear Return)	ACR 08	VR 08	23	14.5	26	47	22	N/A	300 - 600	Combination rigid base and wall mount	1.92	1.44	Interpolated
	ACR 12	VR 12	25	17.5	26	47	22	N/A					Interpolated
	ACR 16	VR 16	29	17.5	29	55	22	N/A					Interpolated
	ACR 20	VR 20	32	20.5	29	55	22	N/A					Interpolated
	ACR 25	VR 25	32	20.5	39	61	22	N/A					Interpolated
	ACR 30	VR 30	32	20.5	39	61	22	N/A	600				UUT2

Table 2
Certified Subcomponents: Base Mounted Blower Coils, ACB and ACR Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Combination rigid base and wall mount

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Coils [JCI] for VB/ACB and VB/ACR Units Notes: 1. Fin Material: Aluminum 2. Coil Casing: Galvanized Carbon Steel 3. Fin Shape: Corrugated 4. Tube diameter: 0.5" 5. Tube thickness: 0.016", 0.025" 6. Fins Per Inch: 8-14	8	18"H x 13"W, 4 row water, 1 row steam	Combination rigid base and wall mount	1.92	1.44	UUT1
	12 - 25	18"H x 13-41"W, 4-6 row water, 1-2 row steam		1.92	1.44	Interpolated
	30	18"H x 41"W, 6 row water, 2 row steam		1.92	1.44	UUT2
Fans [Revcor] For VB/ACB and VR/ACR Units Type: DWDI, Forward Curve Blade material: galvanized carbon steel Shaft material: stainless steel	8	9" wheel diameter		1.92	1.44	UUT1
	12 - 25	9" wheel diameter		1.92	1.44	Interpolated
	30	9" wheel diameter		1.92	1.44	UUT2
Motors [Weg] Belt Drive Material: powder-coated carbon steel Certified Voltage: 115/208-380 or 460	8	Tested voltage, 208V; 1 HP		1.92	1.44	UUT1
	12 - 25	Tested voltage, N/A; 1 to 1 1/2 HP		1.92	1.44	Interpolated
	30	Tested voltage, 460V; 1 1/2 HP		1.92	1.44	UUT2
Filters [AAF / Koch] Material: cotton-based fiber Type: 2" throwaway	8	Filter face area (sq.ft.): 2.2		1.92	1.44	UUT1
	12	Filter face area (sq.ft.): 2.8		1.92	1.44	Interpolated
	16	Filter face area (sq.ft.): 4.0		1.92	1.44	Interpolated
	20	Filter face area (sq.ft.): 4.0		1.92	1.44	Interpolated
	25	Filter face area (sq.ft.): 6.0		1.92	1.44	Interpolated
	30	Filter face area (sq.ft.): 6.0		1.92	1.44	UUT2

Table 2 (Continued)
Certified Subcomponents: Base Mounted Blower Coils, ACB and ACR Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Combination rigid base and wall mount

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Dampers [JCI] Material: 14 gage, galvanized carbon steel	8	6"H x 22"W	Combination rigid base and wall mount	1.92	1.44	UUT1
	12	9"H x 22"W		1.92	1.44	Interpolated
	16	9"H x 25"W		1.92	1.44	Interpolated
	20	12"H x 25"W		1.92	1.44	Interpolated
	25	12"H x 35"W		1.92	1.44	Interpolated
	30	12"H x 35"W		1.92	1.44	UUT2
Electric Heat [JCI] Certified voltage: 208 - 460 Material: stainless steel frame, galvanized steel plates, internal wiring rated at 105 degC	8	Tested voltage, 208V; 5 kW output		1.92	1.44	UUT1
	12 - 25	Tested voltage, N/A; 5-18 kW output		1.92	1.44	Interpolated
	30	Tested voltage, 460V; 18 kW output		1.92	1.44	UUT2
Subcomponent [MFR]	Model	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Disconnect Switch [ABB] Material: plastic cover	OT40	Disconnect switch, 3P 40A 600V	Combination rigid base and wall mount	1.92	1.44	UUT1, UUT2

Table 3
Certified Components - Base Mounted Blower Coils, AVI/AVM and AHI/AHM Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls

Product Construction: 18 gage galvanized steel cabinet construction; 1" thick foil faced fiberglass insulation

Mounting Description: Rigid base mount

Product Family [1]	Belt Drive		Direct Drive		Cabinet Dimensions (in)			Standard Mixing Box Dimensions (in)			Max. Weight (lb)	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
	JCI Model Number	Enviro-Tec Model Number	JCI Model Number	Enviro-Tec Model Number	Length [2]	Width	Height	Max Length	Width	Height					
Blower Coils, AVI / AVM	AVI/AVM 08	V/VM 08	AVD/AVDM 08	VDD/VDDM 08	28 1/2	30	45	19	30	22	380	Base mount	1.92	1.44	UUT3
	AVI/AVM 12	V/VM 12	AVD/AVDM 12	VDD/VDDM 12	28 1/2	36	45	19	36	22	380 - 950				Interpolated
	AVI/AVM 16	V/VM 16	AVD/AVDM 16	VDD/VDDM 16	28 1/2	44	45	19	44	22					Interpolated
	AVI/AVM 20	V/VM 20	AVD/AVDM 20	VDD/VDDM 20	34 1/2	50	51	22	50	22					Interpolated
	AVI/AVM 30	V/VM 30	AVD/AVDM 30	VDD/VDDM 30	34 1/2	59	57	22	59	31					Interpolated
	AVI/AVM 40	V/VM 40	AVD/AVDM 40	VDD/VDDM 40	34 1/2	68	60	24	68	31	950				UUT4, UUT44 [3]
Blower Coils, AHI / AHM	AHI/AHM 08	H/HM 08	N/A	N/A	52 1/2	30	21	19	30	22	390	Base mount	1.92	1.44	UUT31
	AHI/AHM 12	H/HM 12	N/A	N/A	52 1/2	36	21	19	36	22	390 - 970				Interpolated
	AHI/AHM 16	H/HM 16	N/A	N/A	52 1/2	44	21	19	44	22					Interpolated
	AHI/AHM 20	H/HM 20	N/A	N/A	52 1/2	50	21	22	50	22					Interpolated
	AHI/AHM 30	H/HM 30	N/A	N/A	58 1/2	59	30	22	59	31					Interpolated
	AHI/AHM 40	H/HM 40	N/A	N/A	58 1/2	68	30	24	68	31	970				UUT32

1. M in model number designates the presence of a mixing box
2. All units may be installed with an electric heat module, which adds 22 inches to the overall length
3. Test of UUT44 conducted with main cabinet to bookend direct drive fan/motor option.

Table 4
Certified Subcomponents: Base Mounted Blower Coils, AVI/AVM and AHI/AHM Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Rigid base mount

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Coils [JCI] For AVI/AVM and AHI/AHM Product Family Units Notes: 1. Fin Material: Aluminum 2. Coil Casing: Galvanized Carbon Steel 3. Fin Shape: Corrugated 4. Tube diameter: 0.5" 5. Tube thickness: 0.016", 0.025" 6. Fins Per Inch: 8-14	8	16"H x 30"W, 2 row max heat, 6 row max cool	Base mount	1.92	1.44	UUT3, UUT31
	12 - 30	16-25"H x 30-68"W, 2 row max heat, 6 row max cool	Base mount	1.92	1.44	Interpolated
	40	25"H x 68"W, 2 row max heat, 6 row max cool	Base mount	1.92	1.44	UUT4, UUT32, UUT44
Fans [Morrison] For AVI/AVM and AHI/AHM Product Family Units Type: Belt Drive, Double Width/Double Inlet, Forward Curve Blade material: galvanized carbon steel Shaft material: stainless steel	8	9" wheel diameter	Base mount	1.92	1.44	UUT3, UUT31
	12 - 30	9-13" wheel diameter	Base mount	1.92	1.44	Interpolated
	40	13" wheel diameter	Base mount	1.92	1.44	UUT4, UUT32
Fans [Morrison] For AHI/AHM Product Family Units Type: Direct Drive, Double Width/Double Inlet, Forward Curve Blade material: galvanized carbon steel Shaft material: N/A	8	9" wheel diameter	Base mount	1.92	1.44	UUT44
	12 - 40	9-10" wheel diameter	Base mount	1.92	1.44	Interpolated
	40	10" wheel diameter	Base mount	1.92	1.44	UUT44
Motors [Weg] Belt Drive Material: powder-coated carbon steel Certified Voltage: 115/208-380 or 460	8	Tested voltage, 208V; 3/4 HP	Base mount	1.92	1.44	UUT31
	8	Tested voltage, 208V; 1 HP	Base mount	1.92	1.44	UUT3
	12 - 30	Tested voltage, N/A; 3/4 to 5 HP	Base mount	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 5 HP	Base mount	1.92	1.44	UUT32
Motors [Broad Ocean] Direct Drive Material: painted carbon steel Certified Voltage: 460	8	Tested voltage, 460V; 1/2-1 HP	Base mount	1.92	1.44	UUT44
	12 - 40	Tested voltage, N/A; 1/2 to 1 1/2 HP	Base mount	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 1 1/2 HP	Base mount	1.92	1.44	UUT44

Table 4 (Continued)
Certified Subcomponents: Base Mounted Blower Coils, AVI/AVM and AHI/AHM Product Families

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Base mounted

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Filters [AAF / Koch] Material: cotton-based fiber Type: 2" throwaway	8	Filter face area (sq.ft.): 2.2	Base mount	1.92	1.44	UUT3, UUT31
	12	Filter face area (sq.ft.): 2.8	Base mount	1.92	1.44	Interpolated
	16	Filter face area (sq.ft.): 4.4	Base mount	1.92	1.44	Interpolated
	20	Filter face area (sq.ft.): 5.0	Base mount	1.92	1.44	Interpolated
	30	Filter face area (sq.ft.): 9.0	Base mount	1.92	1.44	Interpolated
	40	Filter face area (sq.ft.): 10.4	Base mount	1.92	1.44	UUT4, UUT32, UUT44
Dampers [JCI] Material: 14 gage, galvanized carbon steel	8	9"H x 18"W	Base mount	1.92	1.44	UUT3, UUT31
	12	9"H x 24"W	Base mount	1.92	1.44	Interpolated
	16	9"H x 30"W	Base mount	1.92	1.44	Interpolated
	20	12"H x 36"W	Base mount	1.92	1.44	Interpolated
	30	12"H x 45"W	Base mount	1.92	1.44	Interpolated
	40	15"H x 48"W	Base mount	1.92	1.44	UUT4, UUT32, UUT44
Electric Heat [JCI] Certified voltage: 208 - 460 Material: stainless steel frame, galvanized steel plates, internal wiring rated at 105 degC	8	Tested voltage, 208V; 5 kW output	Base mount	1.92	1.44	UUT3, UUT31
	12 - 30	Tested voltage, N/A; 5-26 kW output	Base mount	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 26 kW output	Base mount	1.92	1.44	UUT4, UUT32

Table 4 (Continued)
Certified Subcomponents: Base Mounted Blower Coils, AVI/AVM and AHI/AHM Product Families

Manufacturer: Johnson Controls, Inc.

Mounting: Rigid base mount

Subcomponent [MFR]	Model	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Airflow Switch [Cleveland Controls] Material: stainless steel housing	DFS-221-198	Airflow Switch	Base mount	1.92	1.44	UUT31, UUT32
Switch [Square D] Material: plastic cover	PE-01-0025	3POS, CAM 480V 10A KS46B	Base mount	1.92	1.44	UUT31, UUT32
Switch [Square D] Material: plastic cover	PE-01-0026	NONC CONTACT KA1	Base mount	1.92	1.44	UUT31, UUT32
Disconnect Switch [ABB] Material: plastic cover	OT40	Disconnect switch, 3P 40A 600V	Base mount	1.92	1.44	UUT31
Disconnect Switch [ABB] Material: plastic cover	OT80	Disconnect switch, 3P 80A 600V	Base mount	1.92	1.44	UUT4, UUT32
Starter [Sprecher & Schuh] Material: plastic cover	PE-03-3091	Starter, 9A 3POLE 24V	Base mount	1.92	1.44	UUT4, UUT32
Contactor [Hartland] Material: silver cadmium oxide contacts	PE-05-1501	Contactor, 1P 50A 24VAC 9VA 1HP	Base mount	1.92	1.44	UUT4, UUT32
Contactor [Hartland] Material: silver cadmium oxide contacts	PE-05-3351	Contactor, 3P 35A 24VAC 11VA 5HP	Base mount	1.92	1.44	UUT4, UUT32
Transformer [Hartland] Material: 130deg C Class B insulation	PE-10-6107	Transformer (208/240)/24VAC 75VA	Base mount	1.92	1.44	UUT3, UUT31
Transformer [Hartland] Material: 130deg C Class B insulation	PE-10-7107	Transformer 480/24VAC 75VA	Base mount	1.92	1.44	UUT4, UUT32
Pitot Tube [Honeywell] Material: stainess steel	PH-05-0012	2 1/2" tube	Base mount	1.92	1.44	UUT31, UUT32
Controller, ECM PWM [ICM] Material: aluminum plate / circuit board	PC-01-0142	ECM PWM Controller, Select Speed	Base mount	1.92	1.44	UUT44
	PC-01-0165	ECM PWM Controller, Sync Speed	Base mount	1.92	1.44	UUT44
3 Phase Line Reactor [MTE] Material: Copper / painted carbon steel	PE-12-0019	3 Phase Line Reactor	Base mount	1.92	1.44	UUT44

Table 5
Certified Components - Ceiling Suspended Blower Coils, AHI/AHM Product Family

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls

Certified Product Construction: 18 gage galvanized steel cabinet construction; 1" thick foil faced fiberglass insulation

Mounting Description: Ceiling suspended

Product Family [1]	Belt Drive		Direct Drive		Cabinet Dimensions (in)			Standard Mixing Box Dimensions (in)			Max. Weight (lb)	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
	JCI Model Number	Enviro-Tec Model Number	JCI Model Number	Enviro-Tec Model Number	Length [2]	Width	Height	Max Length	Width	Height					
Blower Coils, AHI / AHM	AHI/AHM 08	H/HM 08	AHD/AHDM 08	HDD/HDDM 08	52 1/2	30	21	19	30	22	390	Ceiling suspended	1.92	1.44	UUT27
	AHI/AHM 12	H/HM 12	AHD/AHDM 12	HDD/HDDM 12	52 1/2	36	21	19	36	22	390 - 970				Interpolated
	AHI/AHM 16	H/HM 16	AHD/AHDM 16	HDD/HDDM 16	52 1/2	44	21	19	44	22					Interpolated
	AHI/AHM 20	H/HM 20	AHD/AHDM 20	HDD/HDDM 20	52 1/2	50	21	22	50	22					Interpolated
	AHI/AHM 30	H/HM 30	AHD/AHDM 30	HDD/HDDM 30	58 1/2	59	30	22	59	31					Interpolated
	AHI/AHM 40	H/HM 40	AHD/AHDM 40	HDD/HDDM 40	58 1/2	68	30	24	68	31	970				UUT28, UUT45 [3]

1. M in model number designates the presence of a mixing box
2. All units may be installed with an electric heat module, which adds 22 inches to the overall length
3. Test of UUT45 conducted with main cabinet to bookend direct drive fan/motor option

Table 6
Certified Subcomponents - Ceiling Suspended Blower Coils, AHI/AHM Product Family

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Ceiling suspended

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Coils [JCI] Notes: 1. Fin Material: Aluminum 2. Coil Casing: Galvanized Carbon Steel 3. Fin Shape: Corrugated 4. Tube diameter: 0.5" 5. Tube thickness: 0.016", 0.025" 6. Fins Per Inch: 12	8	16"H x 30"W, 2 row max heat, 6 row max cool	Ceiling suspended	1.92	1.44	UUT27
	12 - 30	16-25"H x 30-68"W, 2 row max heat, 6 row max cool	Ceiling suspended	1.92	1.44	Interpolated
	40	25"H x 68"W, 2 row max heat, 6 row max cool	Ceiling suspended	1.92	1.44	UUT28, UUT45
Fans [Morrison] Type: Belt Drive, Double Width/Double Inlet, Forward Curve Blade material: galvanized carbon steel Shaft material: stainless steel	8	9" wheel diameter	Ceiling suspended	1.92	1.44	UUT27
	12 - 30	9-13" wheel diameter	Ceiling suspended	1.92	1.44	Interpolated
	40	13" wheel diameter	Ceiling suspended	1.92	1.44	UUT28
Fans [Morrison] Type: Direct Drive, Double Width/Double Inlet, Forward Curve Blade material: galvanized carbon steel Shaft material: N/A	8	9" wheel diameter	Ceiling suspended	1.92	1.44	UUT45
	12 - 40	9-10" wheel diameter	Ceiling suspended	1.92	1.44	Interpolated
	40	10" wheel diameter	Ceiling suspended	1.92	1.44	UUT45
Motors [Weg] Belt Drive Material: powder-coated carbon steel Certified Voltage: 115/208-380 or 460	8	Tested voltage, 208V; 1 HP	Ceiling suspended	1.92	1.44	UUT27
	12 - 30	Tested voltage, N/A; 3/4 to 5 HP	Ceiling suspended	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 5 HP	Ceiling suspended	1.92	1.44	UUT28
Motors [Broad Ocean] Direct Drive Material: painted carbon steel Certified Voltage: 208-230 or 460	8	Tested voltage, 460V; 1/2-1 HP	Ceiling suspended	1.92	1.44	UUT45
	12 - 40	Tested voltage, N/A; 1/2 to 1 1/2 HP	Ceiling suspended	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 1 1/2 HP	Ceiling suspended	1.92	1.44	UUT45

Table 6 (Continued)

Certified Subcomponents - Ceiling Suspended Blower Coils, AHI/AHM Product Family

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Ceiling suspended

Subcomponent [MFR]	Unit Size	Description	Mounting	Sds (g), z/h=1	Fp/wp	Unit
Filters [AAF / Koch] Material: cotton-based fiber Type: 2" throwaway	8	Filter face area (sq.ft.): 2.2	Ceiling suspended	1.92	1.44	UUT27
	12	Filter face area (sq.ft.): 2.8	Ceiling suspended	1.92	1.44	Interpolated
	16	Filter face area (sq.ft.): 4.4	Ceiling suspended	1.92	1.44	Interpolated
	20	Filter face area (sq.ft.): 5.0	Ceiling suspended	1.92	1.44	Interpolated
	30	Filter face area (sq.ft.): 9.0	Ceiling suspended	1.92	1.44	Interpolated
	40	Filter face area (sq.ft.): 10.4	Ceiling suspended	1.92	1.44	UUT28, UUT45
Dampers [JCI] Material: 14 gage, galvanized carbon steel	8	9"H x 18"W	Ceiling suspended	1.92	1.44	UUT27
	12	9"H x 24"W	Ceiling suspended	1.92	1.44	Interpolated
	16	9"H x 30"W	Ceiling suspended	1.92	1.44	Interpolated
	20	12"H x 36"W	Ceiling suspended	1.92	1.44	Interpolated
	30	12"H x 45"W	Ceiling suspended	1.92	1.44	Interpolated
	40	15"H x 48"W	Ceiling suspended	1.92	1.44	UUT28
Electric Heat [JCI] Certified voltage: 208 - 460 Material: stainless steel frame, galvanized steel plates, internal wiring rated at 105 degC	8	Tested voltage, 208V; 5 kW output	Ceiling suspended	1.92	1.44	UUT27
	12 - 30	Tested voltage, N/A; 5-26 kW output	Ceiling suspended	1.92	1.44	Interpolated
	40	Tested voltage, 460V; 26 kW output	Ceiling suspended	1.92	1.44	UUT28

Table 6 (Continued)

Certified Subcomponents - Ceiling Suspended Blower Coils, AHI/AHM Product Family

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls, Inc.

Mounting: Ceiling suspended

Subcomponent [MFR]	Model	Description	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
Disconnect Switch [ABB] Material: plastic cover	OT80	Disconnect switch, 3P 80A 600V	Ceiling suspended	1.92	1.44	UUT28
Starter [Sprecher & Schuh] Material: plastic cover	PE-03-3091	Starter, 9A 3POLE 24V	Ceiling suspended	1.92	1.44	UUT28
Contactor [Hartland] Material: silver cadmium oxide contacts	PE-05-1501	Contactor, 1P 50A 24VAC 9VA 1HP	Ceiling suspended	1.92	1.44	UUT28
Contactor [Hartland] Material: silver cadmium oxide contacts	PE-05-3351	Contactor, 3P 35A 24VAC 11VA 5HP	Ceiling suspended	1.92	1.44	UUT28
Transformer [Hartland] Material: 130deg C Class B insulation	PE-10-7107	Transformer 480/24VAC 75VA	Ceiling suspended	1.92	1.44	UUT28
Controller, ECM PWM [ICM] Material: aluminum plate / circuit board	PC-01-0165	ECM PWM Controller, Sync Speed	Ceiling suspended	1.92	1.44	UUT45
	PC-01-0141	ECM PWM Controller, Solo Speed	Ceiling suspended	1.92	1.44	UUT45
3 Phase Line Reactor [MTE] Material: Copper / painted carbon steel	PE-12-0019	3 Phase Line Reactor	Ceiling suspended	1.92	1.44	UUT45

Table 7
Tested Components - Blower Coils

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls

Product Family: Blower Coils

Tested Product Construction: 18 gage galvanized steel cabinet construction

Tested Mounting Description: ACB and ACR are combination rigid base and wall mounted; AVM/AVDM and AHM/AHDM are rigid base mounted; AHM/AHDM are also ceiling suspended

Model	Dimensions (in)									Weight (lb)	Mounting	Sds (g), z/h=1	Fp/Wp	Unit
	Main Cabinet			Electric Heat Module			Standard Mixing Box							
	Length	Width	Height	Length	Width	Height	Length	Width	Height					
ACB 08	19	26	67*	18 7/8	26	22	N/A	N/A	N/A	300	Combination rigid base and wall mount	1.93	1.45	UUT1
ACR 30	52.5*	39	61	25 5/8	39	22	N/A	N/A	N/A	600	Combination rigid base and wall mount	1.92	1.44	UUT2
AVM 08	28 1/2	30	45	22	8 7/8	11 7/8	19	30	22	380	Rigid base mount	2.50	1.88	UUT3
AVM 40	34 1/2	68	60	22	15 5/8	16 5/8	24	68	31	950	Rigid base mount	1.93	1.45	UUT4
AHM 08	52 1/2	30	21	22	8 7/8	11 7/8	19	30	22	390	Ceiling suspended	1.93	1.45	UUT27
AHM 40	58 1/2	68	30	22	15 5/8	16 5/8	24	68	31	970	Ceiling suspended	1.93	1.45	UUT28
AHM 08	52 1/2	30	21	22	8 7/8	11 7/8	19	30	22	390	Rigid base mount	2.50	1.88	UUT31
AHM 40	58 1/2	68	30	22	15 5/8	16 5/8	24	68	31	970	Rigid base mount	2.00	1.50	UUT32
AVDM 40	34 1/2	68	60	N/A	N/A	N/A	N/A	N/A	N/A	610	Rigid base mount	2.00	1.50	UUT44
AHDM 40	58 1/2	68	30	N/A	N/A	N/A	N/A	N/A	N/A	640	Ceiling suspended	2.00	1.50	UUT45

*UUT1, height includes 16" for return plenum. UUT2, length includes 20.5" for inlet damper.

UUT1 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: ACB 08

Options: Coils (4 row cold water, 1 row steam), 9" diameter fan, 208V 1HP fan motor, 2" throwaway filter, dampers, 5kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty = 2) 6"H x 22"W, 14 gauge galvanized steel

Doors: None

Seismic Test Parameters

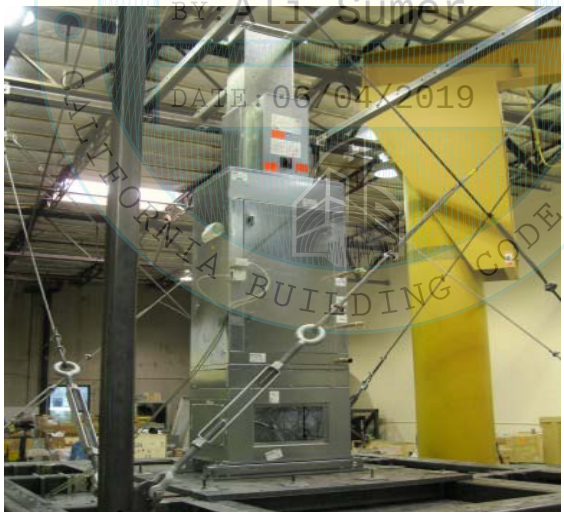
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.93	1.0	1.5	3.09	2.32	1.29	0.51
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						6.9	7.6	12.3

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	19	26	67*	300
Electric Heat Module	18 7/8	26	22	

***Height includes 16" for return plenum**

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.



The unit was attached at the base and the top of the unit, at a vertical distance of approximately 114 inches; therefore, for field installation the unit must have lateral bracing in both orthogonal directions at 114 inches. At its base, the unit was mounted to the shake table interface fixture with 1/2-inch threaded rod through the unit base rail. The rod was threaded into the shake table interface plate at each of the four corners; approximately 29 inches and 19 inches on-center in the long and short directions, respectively, with a standard 1/2-inch nut and washer at each connection to secure the rod to the bottom of the base rail. A 2-foot tall, 9-inch by 12-inch 20-gage sheet metal duct was attached to the ducted discharge on top of the electric heater with eight #10 sheet metal screws (two on each side, seven inches apart on the short side, 10-inches apart on the long side). The sheet metal duct was attached to the DCL fixture frame at the top of the UUT with four #14 sheet metal screws (two each on the front and back, spaced 1-inch from the corners).

UUT2 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: ACR 30

Options: Coils (6 row cold water, 2 row steam), 9" diameter fan, 460V 1.5HP fan motor, 2" throwaway filters, dampers, 18kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 12"H x 35"W, 14 gauge galvanized steel

Doors: None

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.92	1.0	1.5	3.07	2.30	1.28	0.51
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						8.7	8.2	17.5

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	52 1/2*	39	61	600
Electric Heat Module	25 5/8	39	22	

***Length includes 20.5" for inlet damper**

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.

The unit was attached at the base and the top of the unit, at a vertical distance of approximately 114 inches; therefore, for field installation the unit must have lateral bracing in both orthogonal directions at 114 inches. At its base, the unit was mounted to the shake table interface fixture with 1/2-inch threaded rod through the unit base rail. The rod was threaded into the shake table interface plate at each of the four corners; approximately 52 inches and 43 inches on-center in the long and short directions, respectively, with a standard 1/2-inch nut and washer at each connection to secure the rod to the bottom of the base rail. A 2-foot tall, 16-inch by 17-inch 20-gage sheet metal duct was attached to the ducted discharge on top of the electric heater with eight #10 sheet metal screws (two on each side, seven inches apart on the short side, 10-inches apart on the long side). The sheet metal duct was attached to the DCL fixture frame at the top of the UUT with four #14 sheet metal screws (two each on the front and back, spaced 1-inch from the corners).

UUT3 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AVM 08

Options: Coils (2 row heating, 6 row cooling), 9" diameter fan, 208V 1HP fan motor, 2" throwaway filter, dampers, 5kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 9"H x 18"W, 14 gauge galvanized steel

Doors: None

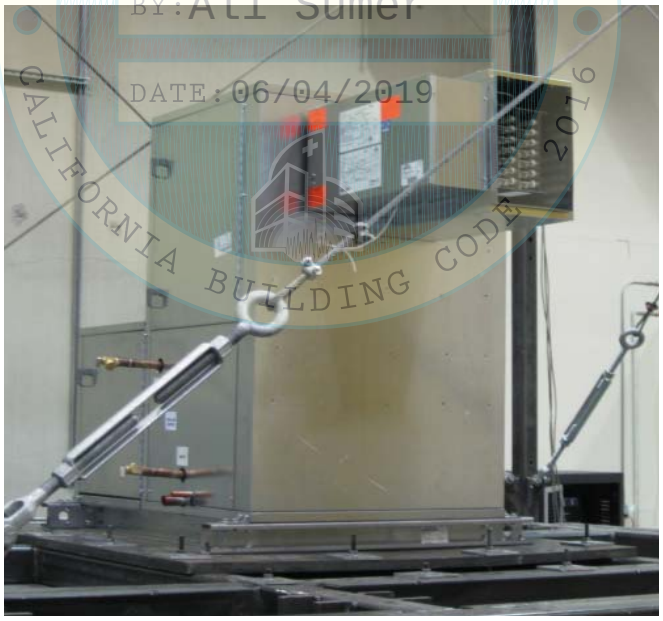
Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						10.9	11.9	16.5

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	28 1/2	30	45	380
Electric Heat Module	22	8 7/8	11 7/8	
Standard Mixing Box	19	30	22	

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.



The unit was rigidly base mounted to the shake table interface fixture with 1/2-inch threaded rod through the unit base rail. The rod was threaded into the shake table interface plate at each of the four corners; approximately 47 inches and 34 inches on-center in the long and short directions, respectively, with a standard 1/2-inch nut and washer at each connection to secure the rod to the bottom of the base rail.

UUT4 Unit Under Test Summary Sheet

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AVM 40

Options: Coils (2 row heating, 6 row cooling), 13" diameter fan, 460V 5HP fan motor, 2" throwaway filters, dampers, 26kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 15"H x 48"W, 14 gauge galvanized steel

Doors: None

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.93	1.0	1.5	3.09	2.32	1.29	0.51
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						6.1	12.1	12

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	34 1/2	68	60	950
Electric Heat Module	22	15 5/8	16 5/8	
Standard Mixing Box	24	68	31	

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.

The unit was rigidly base mounted to the shake table interface fixture with 1/2-inch threaded rod through the unit base rail. The rod was threaded into the shake table interface plate at each of the four corners; approximately 72 inches and 58 inches on-center in the long and short directions, respectively, with a standard 1/2-inch nut and washer at each connection to secure the rod to the bottom of the base rail.

UUT27 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHM 08

Options: Coils (2 row heating coils, 6 row cooling coils), 9" diameter fan, 208V 1HP fan motor, 2" throwaway filter, dampers and 5kW electric heat

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 9"H x 18"W, 14 gauge galvanized steel

Doors: None

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.93	1.0	1.5	3.09	2.32	1.29	0.51
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						N/A	N/A	N/A

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	52 1/2	30	21	390
Electric Heat Module	22	8 7/8	11 7/8	
Standard Mixing Box	19	30	22	

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.

The unit was ceiling suspended using strut screwed to the top and bottom of the unit (front and back) using #12 sheet metal screws, spaced approximatley 6-inches on center. On the top of each of the four corners, (4) 90 deg. 16 gage galvanized steel brackets were attached on the side and 4 flat 16 gage galvanized steel brackets on the top of each corner. Each flat bracket overlapped the 90 deg. bracket, and a 1/2" threaded rod was attached through each and up into the fixture frame. The threaded rod was spaced at 52 inches and 40 inches in the long and short directions, respectively. Each threaded rod was stiffened using a length of unistrut and B-line 1/2-inch clips, spaced no more than 22 inches on center. Lateral bracing was accomplished using 14 gage 45 degree brackets provided by JCI, 3/16" cable with 4 saddle clamps per cable (2 saddle clamps at each connection).

UUT28 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHM 40

Options: Coils (2 row heating, 6 row cooling), 13" diameter fan, 460V 5HP fan motor, 2" throwaway filters, dampers, 26kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 15"H x 48"W, 14 gauge galvanized steel

Doors: None

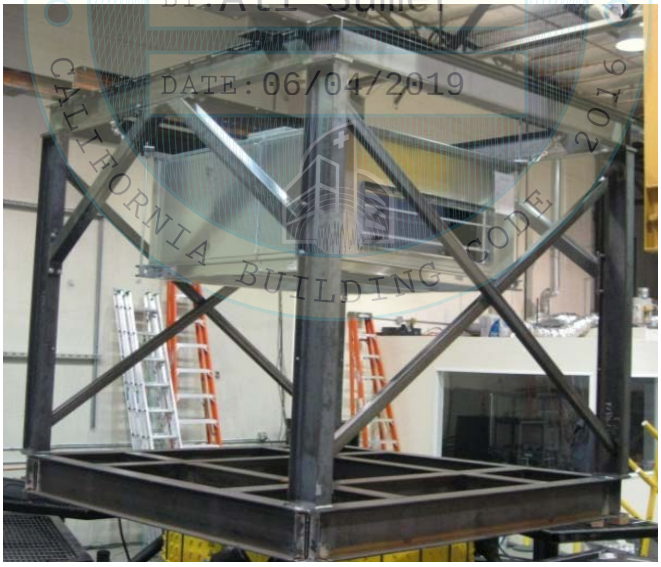
Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	1.93	1.0	1.5	3.09	2.32	1.29	0.51
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						N/A	N/A	N/A

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	58 1/2	68	30	970
Electric Heat Module	22	15 5/8	16 5/8	
Standard Mixing Box	24	68	31	

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.



(See next page for mounting description)

UUT28 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHM 40

Seismic Design Kit:

The mixing box to coil section connection was reinforced using solid 12 gage 1-5/8-inch strut bolted to each section using three 1/4" hex cap bolts per section per length of strut. Two 14-inch lengths of strut were used per top side for a total of four lengths of strut.

Mounting Description:

Unit was ceiling suspended using solid 12 gage 1-5/8-inch strut screwed to the top of the unit with #14 sheet metal screws, spaced approximatley 3-inches on center. 5/8-inch Grade 2 threaded rod was attached through the manufacturer-provided gage steel channel on the bottom of the unit and the solid strut screwed to the top of the unit (see bottom-left photo). The threaded rod was spaced at 82 inches and 76 inches, respectively, in the long and short directions of the unit. The approximate length of the threaded rod between the top of the unit and the DCL steel fixture frame was 10-1/2-inches (nut to nut) as shown in the bottom-right photo). The unit was braced using 45 degree 1/4-inch thick galvanized steel outside angle brackets for strut channel and 3/8-inch diameter general purpose cable (6 x 19 Class IWRC) with 4 saddle clips per cable (2 clips at each connection). Each bracket was attached to the DCL steel fixture frame using a 1/2-inch Grade 5 bolt. The brackets attached to the solid strut at the top of the unit were sandwiched between one 3-inch square 1/4-inch thick plate washer on the bottom and two 4-inch square 1/4-inch thick plate washers on the top as shown in the photo on the bottom-right.

UUT31 Unit Under Test Summary Sheet

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHM 08

Options: Coils (2 row heating coils, 6 row cooling coils), 9" diameter fan, 208V 1HP fan motor, 2" throwaway filter, dampers and 5kW electric heat

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 9"H x 18"W, 14 gauge galvanized steel

Doors: None

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.50	1.0	1.5	4.00	3.00	1.67	0.67
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						26.3	28.0	27.8

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	52 1/2	30	21	390
Electric Heat Module	22	8 7/8	11 7/8	
Standard Mixing Box	19	30	22	

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.

The unit was rigidly base mounted to the shake table interface fixture with four 1/2-inch Grade 5 bolts through the unit base rail. The bolts were threaded into the shake table interface plate at each of the four corners, spaced approximately 71 inches and 38 inches on-center in the long and short directions, respectively, with a standard 1/2-inch washer at each connection.

UUT32 Unit Under Test Summary Sheet

DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHM 40

Options: Coils (2 row heating, 6 row cooling), 13" diameter fan, 460V 5HP fan motor, 2" throwaway filters, dampers, 26kW electric heat, switches, transformer and pitot tube

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Dampers : (qty=2) 15"H x 48"W, 14 gauge galvanized steel

Doors: None

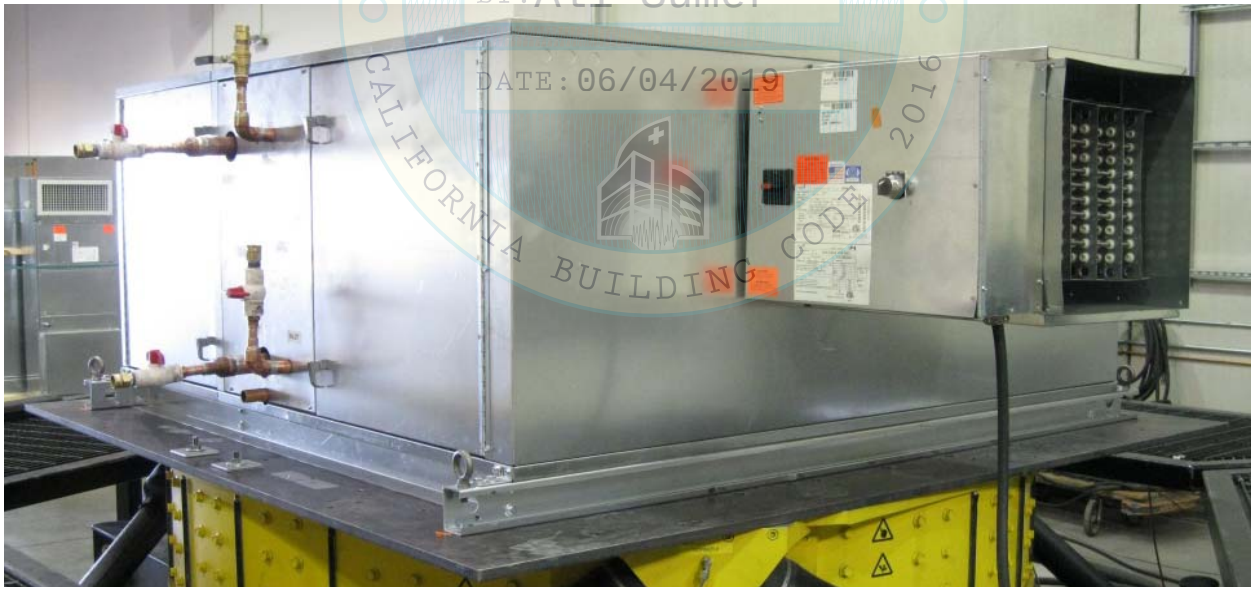
Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						12.3	18.5	15.8

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	58 1/2	68	30	970
Electric Heat Module	22	15 5/8	16 5/8	
Standard Mixing Box	24	68	31	

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.



The unit was rigidly base mounted to the shake table interface fixture with four 1/2-inch Grade 5 bolts through the unit base rail. The bolts were threaded into the shake table interface plate at each of the four corners, spaced approximately 82 inches and 76 inches on-center in the long and short directions, respectively, with a standard 1/2-inch washer at each connection.

UUT44 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AVDM 40

Options: Coils (2 row heating, 6 row cooling), Fans (9'' and 10'' diameter), 460V 1 HP and 1 1/2HP fan motors, 2" throwaway filters, select speed ECM PWM controller, 3 phase line reactor

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Doors: None

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						6.5	11.5	19.5

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	34 1/2	68	60	610

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.

The unit was rigidly base mounted to the shake table interface fixture with four 1/2-inch Grade 5 bolts through the unit base rail. The bolts were threaded into the shake table interface plate at each of the four corners, spaced approximately 82 inches and 76 inches on-center in the long and short directions, respectively, with a 2'' x 2''x 3/16'' low carbon steel plate washer at each connection.

UUT45 Unit Under Test Summary Sheet

((●)) DCL Dynamic Certification Laboratories

Manufacturer: Johnson Controls Incorporated

Product Line: Blower Coils

Model Number: AHDM 40

Options: Coils (2 row heating, 6 row cooling), Fans (9'' and 10'' diameter), 460V 1HP and 1 1/2HP fan motors, 2" throwaway filters, solo speed ECM PWM controller, 3 phase line reactor

Cabinet Construction Summary

Panel Construction: 18 Gauge Galvanized Steel (exterior), Fiberglass (interior)

Electrical Enclosure: Standard 18 gauge galvanized steel enclosure with hinged door

Doors: None

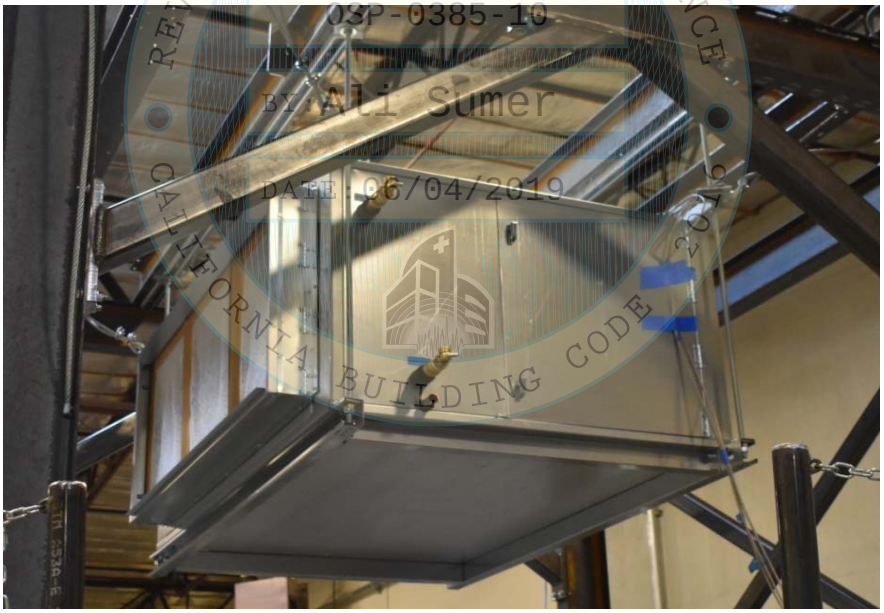
Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2016	ICC-ES AC156	2.00	1.0	1.5	3.20	2.40	1.33	0.53
Lowest Natural Frequency						F-B (Hz)	S-S (Hz)	V (Hz)
						N/A	N/A	N/A

Component Summary

Item	Length (in)	Width (in)	Height (in)	Operating Weight (lb)
Main Cabinet	58 1/2	68	30	640

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.



Two lengths of 1-5/8” 12 gage solid strut were attached to the top long-side of the unit using ¼” sheet metal screws at 3” on-center. A ¾” hole was drilled into each end of the strut to accommodate threaded rod for hanging the unit. The unit was suspended with (4) lengths of 5/8” diameter ASTM A307 Grade B threaded rod with two nuts each above and below the strut and base rail through-holes, and at the top of the rod where it attached to the shake table interface frame. The rod was spaced at 74” in the long direction of the unit, and the duct was spaced 12” from the underside of the shake table interface frame. The duct was laterally braced with 45 degree, ¼-inch thick angle brackets, 3/8” diameter steel cable, and 4 saddle clamps per cable. The brackets were provided by the manufacturer. The angle brackets attached to the strut at the top of the UUT were sandwiched between one 3”x3”x1/4” low carbon steel plate washer on the bottom, and two 4”x4”x1/4” plate washers on the top.