



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-0360

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: ACME Engineering & Manufacturing Corporation

Manufacturer's Technical Representative: Adam Sterne Mailing

Address: 1820 North York Street, Muskogee, OK 74403

Telephone: (918) 684-0595 Email: asterne@acmefan.com

Product Information

Product Name: PDU & PNU Centrifugal Exhausters

Product Model Number(s): See Attachment

Product Category: Exhaust/Smoke Control Fans

Product Sub-Category: Exhaust/Smoke Control Fans

General Description: Direct drive and belt drive roof exhausters and wall exhausters.

Mounting Description: Base Mounted Curb Non-Isolated & Wall Mounted Rigid

Tested Seismic Enhancements: Seismic enhancements made to the test units and/or modifications required to address anomalies during the tests shall be incorporated into the production units.

Applicant Information

Applicant Company Name: Manwill Engineering LLC

Contact Person: Derek Manwill

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102 Email: derek@manwillse.com

Title: President



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: MANWILL ENGINEERING LLC

Name: Derek Manwill

California License Number: S6266

Mailing Address: PO Box 1194, Bend, OR 97709

Telephone: (541) 241-2102

Email: derek@manwillse.com

Certification Method

☐ GR-63-Core

☒ ICC-ES AC156

☐ IEEE 344

☐ IEEE 693

☐ NEBS 3

☐ Other (Please Specify): _____

Testing Laboratory

Company Name: ENVIRONMENTAL TESTING LABORATORIES, INC. (ETL)

Contact Person: Jeremy Lange

Mailing Address: 11034 Indian Trail, Dallas TX 75229-3513

Telephone: (972) 247-9657

Email: jeremy@etldallas.com

BY: Timothy J. Piland

DATE: 09/26/2025





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Seismic Parameters

Certified Response Spectral Acceleration Factors:(F_p/W_p)

Horizontal (A Flx-H), g= 4.00 (A Rig-H), g= 3.00

Vertical (A Flx-V), g= 1.68 (A Rig-V), g= 0.68

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

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

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

I_p (Importance factor) = 1.5

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

HCAI Approval (For Office Use Only) - Approval Expires on 09/26/2031

Date: 9/26/2025

Name: Timothy Piland

Title: Senior Structural Engineer

Condition of Approval (if applicable):

OSP-0360

BY: Timothy J. Piland

DATE: 09/26/2025

ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 1 - ROOF EXHAUSTERS

Mounting: Base Mounted Curb Non-Isolated.	S _{DS} (g)	H _f / R _μ	A _{flx-h}	A _{rig-h}	A _{flx-v}	A _{rig-v}	I _p
	2.50	3.5 / 1.3	4.00	3.00	1.68	0.68	1.5
	2.50	1.0 / 1.0					

Product Construction: Rolled aluminum housing. Aluminum or carbon steel (for PNU) backward curved wheel.

Options/Subcomponents: 8-24in carbon steel curb (height listed below excludes curb), inlet guard, grease trough, birdscreen, heat shield, compartment shield, stainless steel shaft, pillow block bearings, belt tensioner. Subcomponents for Roof Exhausters are listed in Table 3.

Nomenclature: See Attachment 4 for product nomenclature and available model numbers.

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
PDU Direct Drive Centrifugal Roof Exhausters						
PDU080XXSC	20.6	20.6	13.1	44		EXTRAP
PDU100XXSC	20.6	20.6	16.1	57		EXTRAP
PDU110XXSC	20.6	20.6	16.4	63		EXTRAP
PDU120XXSC	26.4	26.4	19.5	85		EXTRAP
PDU120RFHSC	26.4	26.4	19.5	85	UUT: 8in curb, aluminum wheel	UUT 5
PDU135XXSC	26.4	26.4	20.9	80		INTERP
PDU150XXSC	30.2	30.2	21.9	90		INTERP
PDU165XXSC	30.2	30.2	23.9	101		INTERP
PDU185XXSC	34.7	34.7	25.8	115		INTERP
PDU200XXSC	34.7	34.7	25.8	153		INTERP
PDU200RGSC	34.7	34.7	25.8	153	UUT: 8in curb, aluminum wheel	UUT 2
PNU Belt Drive Centrifugal Roof Exhausters						
PNU080XXSC	33.7	33.7	26.4	159		EXTRAP
PNU100XXSC	33.7	33.7	26.4	161		EXTRAP
PNU120XXSC	33.7	33.7	27.4	165		EXTRAP
PNU135SESC	33.7	33.7	27.4	158	UUT: 24in curb, carbon steel wheel	UUT 12
PNU135XXSC	33.7	33.7	27.4	194		INTERP
PNU135RGHSC	33.7	33.7	27.4	194	UUT: 24in curb, aluminum wheel	UUT 3
PNU150XXSC	38.0	38.0	25.9	224		INTERP
PNU155XXSC	38.0	38.0	25.6	247		INTERP
PNU160XXSC	38.0	38.0	25.6	249		INTERP
PNU165XXSC	38.0	38.0	25.9	255		INTERP
PNU185XXSC	39.8	39.8	31.6	297		INTERP
PNU200XXSC	39.8	39.8	31.6	331		INTERP
PNU235XXSC	44.8	44.8	35.0	422		INTERP
PNU240XXSC	44.8	44.8	35.0	425		INTERP
PNU245XXSC	44.8	44.8	38.8	435		INTERP
PNU290XXSC	55.4	55.4	40.4	556		INTERP
PNU295XXSC	55.4	55.4	40.4	559		INTERP
PNU300XXSC	55.4	55.4	42.5	573		INTERP
PNU355XXSC	66.0	66.0	44.1	725		INTERP
PNU360XXSC	66.0	66.0	44.1	729		INTERP
PNU365XXSC	66.0	66.0	46.0	748		INTERP
PNU425XXSC	79.8	79.8	53.5	919		INTERP
PNU490RGSC	79.8	79.8	58.0	860	UUT: 24in curb, aluminum wheel	UUT 11
PNU490XXSC	79.8	79.8	58.0	1,115		INTERP
PNU490SESC	79.8	79.8	58.0	1,115	UUT: 24in curb, carbon steel wheel	UUT 1

ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 2 - WALL EXHAUSTERS

Mounting: Wall Mounted Rigid.	S _{DS} (g)	H _f / R _μ	A _{flx-h}	A _{rig-h}	A _{flx-v}	A _{rig-v}	I _p
	2.50	3.5 / 1.3					
	2.50	1.0 / 1.0	4.00	3.00	1.68	0.68	1.5

Product Construction: Rolled aluminum housing. Aluminum backward curved wheel.

Options/Subcomponents: Performance baffle, grease trough, birdscreen, pillow block bearings. Subcomponents for Wall Exhausters are listed in Table 4.

Nomenclature: See Attachment 4 for product nomenclature and available model numbers.

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
PDU Direct Drive Centrifugal Wall Exhausters						
PDU080XXWSC	13.1	20.6	20.6	44		EXTRAP
PDU100XXWSC	16.1	20.6	20.6	57		EXTRAP
PDU110XXWSC	16.4	20.6	20.6	63		EXTRAP
PDU120XXWSC	19.5	26.4	26.4	70		EXTRAP
PDU120RFWSC	19.5	26.4	26.4	70	UUT: aluminum wheel	UUT 10
PDU135XXWSC	20.9	26.4	26.4	80		INTERP
PDU150XXWSC	21.9	30.2	30.2	90		INTERP
PDU165XXWSC	23.9	30.2	30.2	101		INTERP
PDU185XXWSC	25.8	34.7	34.7	115		INTERP
PDU200XXWSC	25.8	34.7	34.7	126		INTERP
PDU200RFWSC	25.8	34.7	34.7	126	UUT: aluminum wheel	UUT 7
PNU Belt Drive Centrifugal Wall Exhausters						
PNU080XXWSC	26.4	33.7	33.7	94		EXTRAP
PNU100XXWSC	26.4	33.7	33.7	96		EXTRAP
PNU120XXWSC	27.4	33.7	33.7	100		EXTRAP
PNU135XXWSC	27.4	33.7	33.7	110		EXTRAP
PNU135RFWSC	27.4	33.7	33.7	111	UUT: aluminum wheel	UUT 14
PNU150XXWSC	25.9	38.0	38.0	140		INTERP
PNU155XXWSC	25.6	38.0	38.0	163		INTERP
PNU160XXWSC	25.6	38.0	38.0	165		INTERP
PNU165XXWSC	25.9	38.0	38.0	171		INTERP
PNU185XXWSC	31.6	39.8	39.8	213		INTERP
PNU200XXWSC	31.6	39.8	39.8	247		INTERP
PNU235XXWSC	35.0	44.8	44.8	238		INTERP
PNU240XXWSC	35.0	44.8	44.8	241		INTERP
PNU245XXWSC	38.8	44.8	44.8	251		INTERP
PNU290XXWSC	40.4	55.4	55.4	340		INTERP
PNU295XXWSC	40.4	55.4	55.4	343		INTERP
PNU300XXWSC	42.5	55.4	55.4	357		INTERP
PNU300RGWSC	42.5	55.4	55.4	357	UUT: aluminum wheel	UUT 13

ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS

Mounting: Mounted within unit.	S _{DS} (g)	H _f / R _μ	A _{flx-h}	A _{rig-h}	A _{flx-v}	A _{rig-v}	I _p
	2.50	3.5 / 1.3	4.00	3.00	1.68	0.68	1.5
	2.50	1.0 / 1.0					

Construction/Options: Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.

Substitutions: Subcomponents weighing less than 10-lb and electric motors may be substituted per CBC 1705A.14.3.1 Exceptions 7 and 5, provided they meet the five listed requirements in that section.

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Aluminum Backward Curved Centrifugal Wheels - Mfr: ACME Engineering & Manufacturing Corp.						
235342	10.4	10.4	2.6	3	PDU080	EXTRAP
235118	10.4	10.4	3.4	4	PDU100	EXTRAP
235214	11.1	11.1	3.6	4	PDU110	EXTRAP
235497	12.3	12.3	0.9	3	PNU080	EXTRAP
235498	12.3	12.3	2.0	4	PNU100	EXTRAP
235249	12.3	12.3	4.1	5	PDU120	UUT 5
185272	12.3	12.3	4.1	5	PNU120	INTERP
235243	13.9	13.9	4.6	5	PDU135	INTERP
185523	13.9	13.9	4.6	5	PNU135	UUT 3
205009	15.4	15.4	5.2	7	PNU150	INTERP
235201	15.5	15.5	5.2	7	PDU150	INTERP
235488	17.0	17.0	1.3	7	PNU155	INTERP
235487	17.0	17.0	2.8	8	PNU160	INTERP
185524	17.0	17.0	5.6	8	PNU165	INTERP
235244A	17.0	17.0	6.2	8	PDU165	INTERP
235250A	19.0	19.0	6.3	9	PDU185	INTERP
185466	19.0	19.0	6.3	9	PNU185	INTERP
235246	21.0	21.0	6.1	9	PDU200	UUT 2
185525	21.0	21.0	6.1	9	PNU200	INTERP
235490	25.5	25.5	1.9	11	PNU235	INTERP
235489	25.5	25.5	3.4	12	PNU240	INTERP
205014	25.5	25.5	7.4	14	PNU245	INTERP
235492	31.0	31.0	2.3	12	PNU290	INTERP
235491	31.0	31.0	5.0	14	PNU295	INTERP
185475	31.0	31.0	9.1	18	PNU300	INTERP
235496	37.5	37.5	2.8	24	PNU355	INTERP
235495	37.5	37.5	6.1	29	PNU360	INTERP
185476	37.5	37.5	11.0	35	PNU365	INTERP
185477	43.5	43.5	12.9	55	PNU425	INTERP
185478	50.0	50.0	14.8	77	PNU490	UUT 11
Type: Carbon Steel Backward Curved Centrifugal Wheels - Mfr: ACME Engineering & Manufacturing Corp.						
785011	12.3	12.3	0.9	6	PNU080	EXTRAP
775004	12.3	12.3	2.0	7	PNU100	EXTRAP
685209	12.3	12.3	4.1	9	PNU120	EXTRAP
705393	13.9	13.9	4.6	10	PNU135	UUT 12
785005	15.4	15.4	5.2	12	PNU150	INTERP
705746	17.0	17.0	1.3	13	PNU155	INTERP

TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS continues on the next page.

ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS (continued)

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Carbon Steel Backward Curved Centrifugal Wheels - Mfr: ACME Engineering & Manufacturing Corp. (continued)						
705745	17.0	17.0	2.8	16	PNU160	INTERP
705389	17.0	17.0	5.6	18	PNU165	INTERP
705534	19.0	19.0	6.3	21	PNU185	INTERP
705402	21.0	21.0	6.1	27	PNU200	INTERP
705750	25.5	25.5	1.9	35	PNU235	INTERP
705751	25.5	25.5	3.4	39	PNU240	INTERP
685181	25.5	25.5	7.4	46	PNU245	INTERP
705741	31.0	31.0	2.3	49	PNU290	INTERP
785014	31.0	31.0	5.0	54	PNU295	INTERP
705404	31.0	31.0	9.1	63	PNU300	INTERP
785018	37.5	37.5	2.7	72	PNU355	INTERP
705743	37.5	37.5	6.1	89	PNU360	INTERP
705371	37.5	37.5	11.0	107	PNU365	INTERP
705451	43.5	43.5	12.9	165	PNU425	INTERP
705527	50.0	50.0	14.8	231	PNU490	UUT 1
Type: Belt Drive Motor - Mfr: Marathon						
0.75hp - 5K46MN4072	10.8	6.5	6.7	27		UUT 3,12
10hp - 215TTDC6026	17.9	10.5	10.3	220		UUT 1,11
Type: Direct Drive Motors - Mfr: McMillan						
0.25hp - F2216B4016	8.3	5.1	5.1	13		UUT 5
1.0hp - F2256B4436	12.0	5.1	5.1	22		UUT 2
Type: Back Draft Dampers - Mfr: ACME Engineering & Manufacturing Corp.						
AR8.75	8.8	8.8	4.3	4		EXTRAP
AR14	14.0	14.0	4.3	6		UUT 5
AR18	18.0	18.0	4.3	7		UUT 3,12
AR22	22.0	22.0	4.3	9		INTERP
AR28	28.0	28.0	4.3	15		INTERP
ARH34	34.0	34.0	4.3	21		INTERP
ARH40	40.0	40.0	4.3	26		INTERP
ARH54	54.0	54.0	4.3	37		UUT 1,11
Type: Actuator - Mfr: Multi Products						
TB2000	1.9	2.8	6.1	3		UUT 1, 11
Type: Disconnect Switch - Mfr: Square D						
2510	2.8	2.4	4.3	<1		UUT 2
Type: Disconnect Switch - Mfr: Hubbell						
13R92D	3.3	4.4	5.5	1.5		UUT 3,12

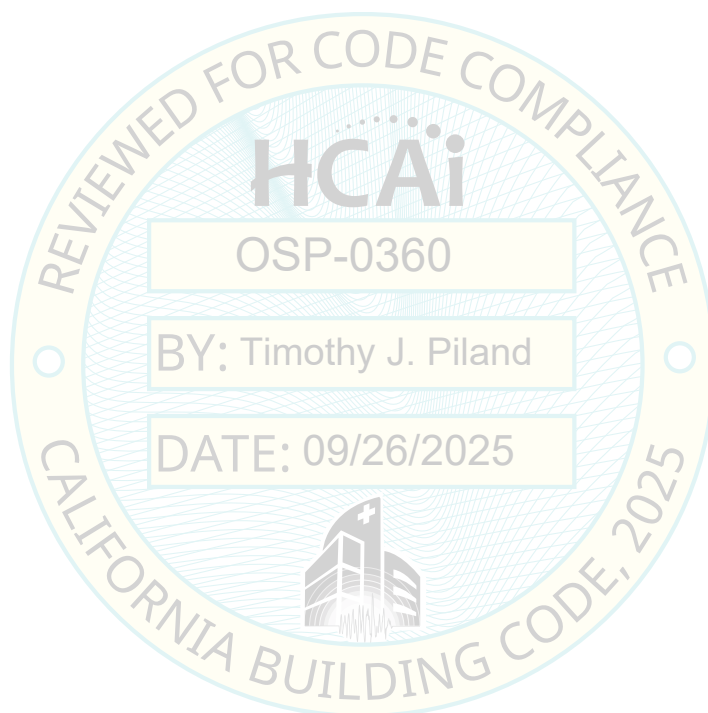
TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS continues on the next page.

ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS (continued)

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Firestats - Mfr: Honeywell						
L4029E	2.0	2.2	3.8	<1		UUT 3,12
Type: Speed Control - Mfr: KB Electronics						
KBWC-16LK	1.5	1.8	2.8	<1		UUT 5,12

End of TABLE 3 - SUBCOMPONENTS FOR ROOF EXHAUSTERS. Notes, information, and seismic parameters are shown at the beginning of the table.



ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters

TABLE 4 - SUBCOMPONENTS FOR WALL EXHAUSTERS

Mounting: Mounted within unit.	S _{DS} (g)	H _f / R _μ	A _{flx-h}	A _{rig-h}	A _{flx-v}	A _{rig-v}	I _p
	2.50	3.5 / 1.3	4.00	3.00	1.68	0.68	1.5
	2.50	1.0 / 1.0					

Construction/Options: Model number uniquely identifies manufacturer, materials, and configuration of subcomponents.

Substitutions: Subcomponents weighing less than 10-lb and electric motors may be substituted per CBC 1705A.14.3.1 Exceptions 7 and 5, provided they meet the five listed requirements in that section.

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Aluminum Backward Curved Centrifugal Wheels - Mfr: ACME Engineering & Manufacturing Corp.						
235342	10.4	10.4	2.6	3	PDU080	EXTRAP
235118	10.4	10.4	3.4	4	PDU100	EXTRAP
235214	11.1	11.1	3.6	4	PDU110	EXTRAP
235497	12.3	12.3	0.9	3	PNU080	EXTRAP
235498	12.3	12.3	2.0	4	PNU100	EXTRAP
235249	12.3	12.3	4.1	5	PDU120	UUT 10
185272	12.3	12.3	4.1	5	PNU120	INTERP
235243	13.9	13.9	4.6	5	PDU135	INTERP
185523	13.9	13.9	4.6	5	PNU135	UUT 14
205009	15.4	15.4	5.2	7	PNU150	INTERP
235201	15.5	15.5	5.2	7	PDU150	INTERP
235488	17.0	17.0	1.3	7	PNU155	INTERP
235487	17.0	17.0	2.8	8	PNU160	INTERP
185524	17.0	17.0	5.6	8	PNU165	INTERP
235244A	17.0	17.0	6.2	8	PDU165	INTERP
235250A	19.0	19.0	6.3	9	PDU185	INTERP
185466	19.0	19.0	6.3	9	PNU185	INTERP
235246	21.0	21.0	6.1	9	PDU200	UUT 7
185525	21.0	21.0	6.1	9	PNU200	INTERP
235490	25.5	25.5	1.9	11	PNU235	INTERP
235489	25.5	25.5	3.4	12	PNU240	INTERP
205014	25.5	25.5	7.4	14	PNU245	INTERP
235492	31.0	31.0	2.3	12	PNU290	INTERP
235491	31.0	31.0	5.0	14	PNU295	INTERP
185475	31.0	31.0	9.1	18	PNU300	UUT 13

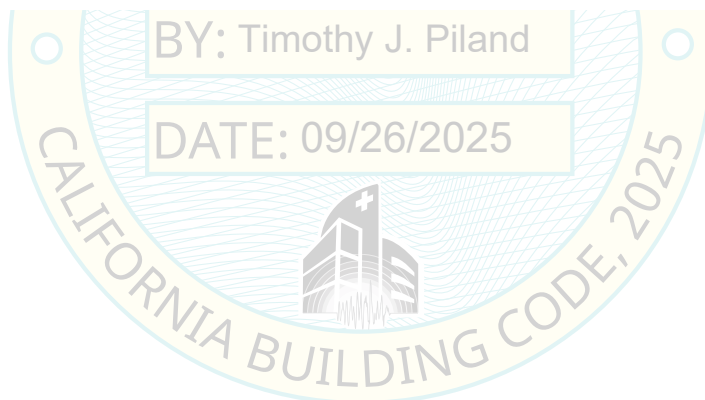
TABLE 4 - SUBCOMPONENTS FOR WALL EXHAUSTERS continues on the next page.

**ACME ENGINEERING & MANUFACTURING CORPORATION
PDU & PNU Centrifugal Exhausters**

TABLE 4 - SUBCOMPONENTS FOR WALL EXHAUSTERS (continued)

Model Number	Dimensions (in)			Max. Wt. (lb)	Description / Notes	Basis
	Depth	Width	Height			
Type: Belt Drive Motor - Mfr: Marathon						
0.75hp - 5K46MN4072	10.8	6.5	6.7	27		UUT 14
5hp - 184TTDW6031	12.8	8.5	8.7	80		UUT 13
Type: Direct Drive Motors - Mfr: McMillan						
0.25hp - F2216B4016	8.3	5.1	5.1	13		UUT 10
1.0hp - F2256B4436	12.0	5.1	5.1	22		UUT 7
Type: Disconnect Switch - Mfr: Square D						
2510	2.8	2.4	4.3	<1	NEMA 1	UUT 14
Type: Disconnect Switch - Mfr: Hubbell						
13R92D	3.3	4.4	5.5	1.5	NEMA 3R	UUT 13
Type: Firestats - Mfr: Honeywell						
L4029E	2.0	2.2	3.8	<1		UUT 7
Type: Speed Control - Mfr: KB Electronics						
KBWC-16LK	1.5	1.8	2.8	<1		UUT 10

End of TABLE 4 - SUBCOMPONENTS FOR WALL EXHAUSTERS. Notes, information, and seismic parameters are shown at the beginning of the table.



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 1

Manufacturer: ACME Engineering & Manufacturing Corporation
Model number: PNU490SESC
Unit function: Roof Exhauster
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
79.8	79.8	58.0	1,115	6.1	6.0	7.0

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 24in carbon steel curb using (40) 1/4in screws. Curb is rigid foot mounted to table with (52) 3/8in lag screws.

Construction: Rolled aluminum housing, carbon steel backward curved wheel.

Subcomponents: ACME Engineering & Manufacturing Corp. - Carbon Steel Backward Curved Centrifugal Wheels (705527), Marathon - Belt Drive Motor (10hp - 215TTDC6026), ACME Engineering & Manufacturing Corp. - Back Draft Dampers (ARH54), Multi Products - Actuator (TB2000).

Testing notes: N/A



UUT 2

Manufacturer: ACME Engineering & Manufacturing Corporation
Model number: PDU200RGSC
Unit function: Roof Exhauster
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
34.7	34.7	25.8	153	16.9	16.7	13.0

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 8in carbon steel curb using (20) 1/4in screws. Curb is rigid foot mounted to table with (24) 3/8in lag screws.

Construction: Rolled aluminum housing, aluminum backward curved wheel, grease trough.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (235246), McMillan - Direct Drive Motors (1.0hp - F2256B4436), Square D - Disconnect Switch (2510).

Testing notes: N/A



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 3

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PNU135RGHSC
 Unit function: Roof Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
33.7	33.7	27.4	194	10.0	10.5	7.1

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S _{DS} (g)	H _f / R _μ	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 24in carbon steel curb using (20) 1/4in screws. Curb is rigid foot mounted to table with (20) 3/8in lag screws.

Construction: Rolled aluminum housing, aluminum backward curved wheel, hurricane rated construction, inlet guard, heat shield, stainless steel shaft, pillow block bearings, belt tensioner.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (185523), Marathon - Belt Drive Motor (0.75hp - 5K46MN4072), ACME Engineering & Manufacturing Corp. - Back Draft Dampers (AR18), Hubbell - Disconnect Switch (13R92D), Honeywell - Firestats (L4029E).

Testing notes: N/A



UUT 5

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PDU120RFHSC
 Unit function: Roof Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
26.4	26.4	19.5	85	26.9	26.9	27.3

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S _{DS} (g)	H _f / R _μ	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 8in carbon steel curb using (16) 1/4in screws. Curb is rigid foot mounted to table with (16) 3/8in screws.

Construction: Rolled aluminum housing, aluminum backward curved wheel, hurricane rated construction, birdscreen, compartment shield.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (235249), McMillan - Direct Drive Motors (0.25hp - F2216B4016), ACME Engineering & Manufacturing Corp. - Back Draft Dampers (AR14), KB Electronics - Speed Control (KBWC-16LK).

Testing notes: N/A



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 7

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PDU200RWFWS
 Unit function: Wall Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
25.8	34.7	34.7	126	N/A	N/A	N/A

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Wall mounted rigid to ACME wall mount bracket using (20) 1/4in screws. Wall mount bracket is rigid wall mounted to fixture with (28) 3/8in Grade 5 bolts.

Construction: Rolled aluminum housing, aluminum backward curved wheel, performance baffle.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (235246), McMillan - Direct Drive Motors (1.0hp - F2256B4436), Honeywell - Firestats (L4029E).

Testing notes: N/A



UUT 10

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PDU120RWFWS
 Unit function: Wall Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
19.5	26.4	26.4	70	N/A	N/A	N/A

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 12819, Rev. 1 (dated 9-17-13), tested on 8-12-13

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Wall mounted rigid to ACME wall mount bracket using (12) 1/4in screws. Wall mount bracket is rigid wall mounted to fixture with (20) 3/8in Grade 5 bolts.

Construction: Rolled aluminum housing, aluminum backward curved wheel, birdscreen.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (235249), McMillan - Direct Drive Motors (0.25hp - F2216B4016), KB Electronics - Speed Control (KBWC-16LK).

Testing notes: N/A



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 11

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PNU490RGSC
 Unit function: Roof Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
79.8	79.8	58.0	860	6.0	5.8	13.6

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 13151, Rev. 0 (dated 6-4-14), tested on 4-30-14

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 24in carbon steel curb using (40) 1/4in screws. Curb is rigid foot mounted to table with (28) 3/8in lag screws.

Construction: Rolled aluminum housing, aluminum backward curved wheel, grease trough.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (185478), Marathon - Belt Drive Motor (10hp - 215TTDC6026), ACME Engineering & Manufacturing Corp. - Back Draft Dampers (ARH54), Multi Products - Actuator (TB2000).

Testing notes: N/A



UUT 12

Manufacturer: ACME Engineering & Manufacturing Corporation
 Model number: PNU135SESC
 Unit function: Roof Exhauster
 Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
33.7	33.7	27.4	158	12.5	12.8	25.7

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 13151, Rev. 0 (dated 6-4-14), tested on 4-30-14

S_{DS} (g)	H_f / R_{μ}	A_{FLX-H} (g)	A_{RIG-H} (g)	A_{FLX-V} (g)	A_{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, $I_p = 1.5$: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Base mounted curb (non-isolated) on 24in carbon steel curb using (20) 1/4in screws. Curb is rigid foot mounted to table with (16) 3/8in lag screws.

Construction: Rolled aluminum housing, carbon steel backward curved wheel, inlet guard, heat shield, stainless steel shaft, pillow block bearings, belt tensioner.

Subcomponents: ACME Engineering & Manufacturing Corp. - Carbon Steel Backward Curved Centrifugal Wheels (705393), Marathon - Belt Drive Motor (0.75hp - 5K46MN4072), ACME Engineering & Manufacturing Corp. - Back Draft Dampers (AR18), Hubbell - Disconnect Switch (13R92D), Honeywell - Firestats (L4029E), KB Electronics - Speed Control (KBWC-16LK).

Testing notes: N/A



ATTACHMENT 3: UNIT UNDER TEST SUMMARIES

SPECIAL SEISMIC CERTIFICATION

UUT 13

Manufacturer: ACME Engineering & Manufacturing Corporation
Model number: PNU300RGWSC
Unit function: Wall Exhauster
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
42.5	55.4	55.4	357	N/A	N/A	N/A

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 13151, Rev. 0 (dated 6-4-14), tested on 4-30-14

S _{DS} (g)	H _f / R _μ	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Wall mounted rigid to ACME wall mount bracket using (20) 1/4in screws. Wall mount bracket is rigid wall mounted to fixture with (24) 3/8in Grade 5 bolts.

Construction: Rolled aluminum housing, aluminum backward curved wheel, grease trough.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (185475), Marathon - Belt Drive Motor (5hp - 184TTDW6031), Hubbell - Disconnect Switch (13R92D).

Testing notes: N/A



UUT 14

Manufacturer: ACME Engineering & Manufacturing Corporation
Model number: PNU135RFWSC
Unit function: Wall Exhauster
Serial number: N/A

Dimensions (in)			Weight (lb)	Res. Freq. (Hz)		
Depth	Width	Height		F-B	S-S	V
27.4	33.7	33.7	111	N/A	N/A	N/A

Code & criteria: 2025 CBC, ICC-ES AC156

Test laboratory: Environmental Testing Laboratory

Report: 13151, Rev. 0 (dated 6-4-14), tested on 4-30-14

S _{DS} (g)	H _f / R _μ	A _{FLX-H} (g)	A _{RIG-H} (g)	A _{FLX-V} (g)	A _{RIG-V} (g)
2.50	3.5 / 1.3	4.00	3.00	1.68	0.68
2.50	1.0 / 1.0				

Importance Factor, I_p = 1.5: Unit was full of operating content during the shake table test. Unit maintained structural integrity and remained functional per manufacturer requirement after shake table test.

Mounting: Wall mounted rigid to ACME wall mount bracket using (12) 1/4in screws. Wall mount bracket is rigid wall mounted to fixture with (16) 3/8in Grade 5 bolts.

Construction: Rolled aluminum housing, aluminum backward curved wheel, stainless steel shaft, pillow block bearings, belt tensioner.

Subcomponents: ACME Engineering & Manufacturing Corp. - Aluminum Backward Curved Centrifugal Wheels (185523), Marathon - Belt Drive Motor (0.75hp - 5K46MN4072), Square D - Disconnect Switch (2510).

Testing notes: N/A



ATTACHMENT 4: MODEL NOMENCLATURE

SPECIAL SEISMIC CERTIFICATION

ACME ENGINEERING & MANUFACTURING CORPORATION PDU ROOF MOUNTED CENTRIFUGAL EXHAUSTERS

PDU ROOF CENTRIFUGAL EXHAUSTERS																						
Digit:	1	2	3	4	5	6	7	8	9	10	11	-	-	-	-	-	-	-	-	-	-	-
Sample:	P	D	U	1	2	0	R	F	H	S	C	-	-	-	-	-	-	-	-	-	-	-

Digit	Digit Description	Codes	Definitions
1-3	Product Family	PDU	PDU Direct Drive Centrifugal Roof Exhausters
4-6	Model Size	080	Size 080
		...	Interpolated sizes (see Table 1)
		200	Size 200
7-8	Application Type	RF	Standard exhauster (aluminum wheel)
		RG	Restaurant grease rated exhauster (aluminum wheel)
		SE	Smoke rated exhauster (carbon steel wheel)
9	Hurricane Rating <i>(optional; seismic construction starts at digit 9 if not present)</i>	[null]	No hurricane rated construction if character is not present
		H	Hurricane rated construction
10-11	Seismic Construction	SC	Seismic rated construction (always required)

PNU ROOF CENTRIFUGAL EXHAUSTERS																						
Digit:	1	2	3	4	5	6	7	8	9	10	11	-	-	-	-	-	-	-	-	-	-	-
Sample:	P	N	U	1	3	5	R	G	H	S	C	-	-	-	-	-	-	-	-	-	-	-

Digit	Digit Description	Codes	Definitions
1-3	Product Family	PNU	PNU Belt Drive Centrifugal Roof Exhausters
4-6	Model Size	080	Size 080
		...	Interpolated sizes (see Table 1)
		490	Size 490
7-8	Application Type	RF	Standard exhauster (aluminum wheel)
		RG	Restaurant grease rated exhauster (aluminum wheel)
9	Hurricane Rating <i>(optional; seismic construction starts at digit 9 if not present)</i>	[null]	No hurricane rated construction if character is not present
		H	Hurricane rated construction
10-11	Seismic Construction	SC	Seismic rated construction (always required)

**ACME ENGINEERING & MANUFACTURING CORPORATION
PDU ROOF MOUNTED CENTRIFUGAL EXHAUSTERS**

PDU WALL CENTRIFUGAL EXHAUSTERS																									
Digit:	1	2	3	4	5	6	7	8	9	10	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample:	P	D	U	1	2	0	R	F	W	S	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Digit	Digit Description	Codes	Definitions
1-3	Product Family	PDU	PDU Direct Drive Centrifugal Wall Exhausters
4-6	Model Size	080	Size 080
		...	Interpolated sizes (see Table 2)
		200	Size 200
7-8	Application Type	RF	Standard exhauster (aluminum wheel)
		RG	Restaurant grease rated exhauster (aluminum wheel)
		SE	Smoke rated exhauster (carbon steel wheel)
9	Mounting	W	Wall mounted with ACME wall mount bracket
10-11	Seismic Construction	SC	Seismic rated construction (always required)

PNU WALL CENTRIFUGAL EXHAUSTERS																									
Digit:	1	2	3	4	5	6	7	8	9	10	11	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sample:	P	N	U	1	3	5	R	F	W	S	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Digit	Digit Description	Codes	Definitions
1-3	Product Family	PNU	PNU Belt Drive Centrifugal Wall Exhausters
4-6	Model Size	080	Size 080
		...	Interpolated sizes (see Table 2)
		300	Size 300
7-8	Application Type	RF	Standard exhauster (aluminum wheel)
		RG	Restaurant grease rated exhauster (aluminum wheel)
9	Mounting	W	Wall mounted with ACME wall mount bracket
10-11	Seismic Construction	SC	Seismic rated construction (always required)