



**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

**APPLICATION FOR HCAI SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)**

OFFICE USE ONLY

APPLICATION #: OSP-0477

HCAI Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Armstrong International, Inc.

Manufacturer's Technical Representative: Matt Nowak

Mailing Address: 816 Maple Street, Three Rivers, MI 49093

Telephone: (269) 279-3323

Email: mnowak@armstronginternational.com

Product Information

Product Name: Air Conditioning Units

Product Type: Humidification Systems

Product Model Number: See Certified Product Table attached

General Description: Humidifier systems of different sizes, weights, and function.

Mounting Description: Rigid, Floor/Wall Mounted

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: Dynamic Certification Laboratories

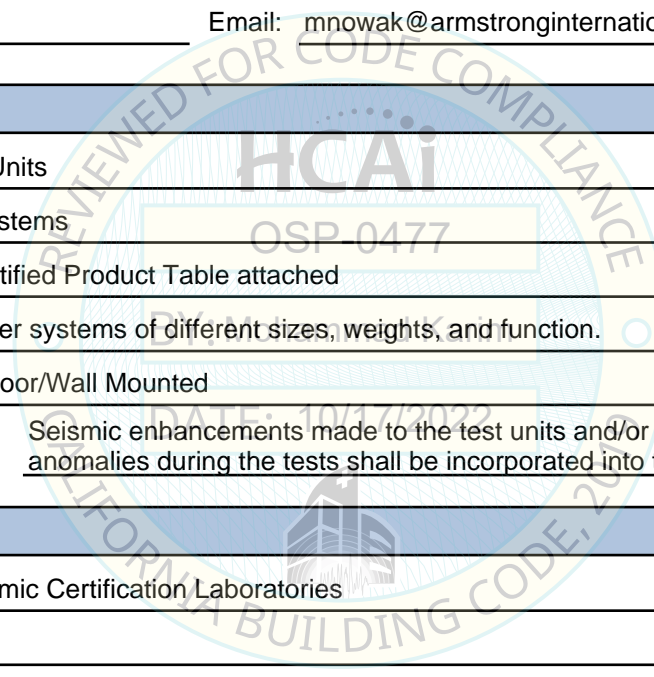
Contact Person: Kelly Laplace

Mailing Address: 1315 Greg Parkway #109, Sparks, NV 89431

Telephone: (775) 358-5085

Email: Kelly@shaketest.com

Title: Business Manager





**DEPARTMENT OF HEALTH CARE ACCESS AND INFORMATION
FACILITIES DEVELOPMENT DIVISION**

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

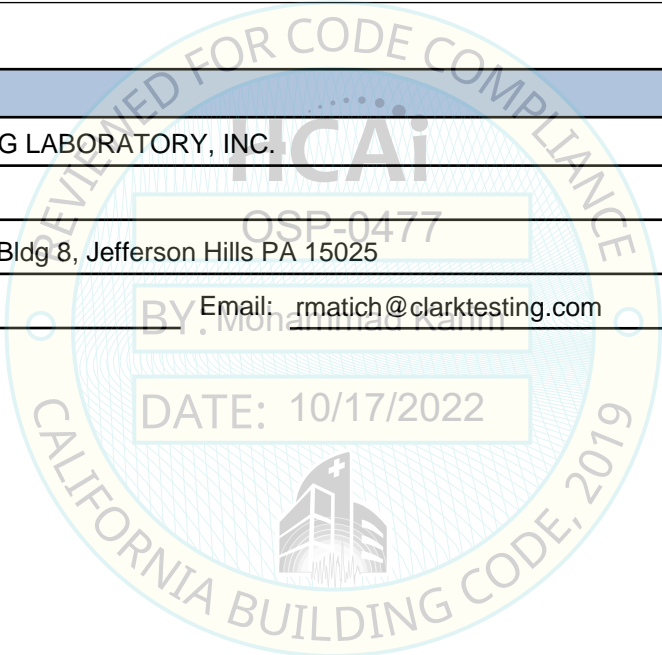
Company Name: THE VMC GROUP
Name: Kenneth Tarlow California License Number: S2851
Mailing Address: 980 9th Street, 16th Floor, Sacramento, CA 95814
Telephone: (832) 627-2214 Email: ken.tarlow@thevmcgroup.com

Certification Method

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

Testing Laboratory

Company Name: CLARK TESTING LABORATORY, INC.
Contact Person: Russell Matich
Mailing Address: 1801 Route 51, Bldg 8, Jefferson Hills PA 15025
Telephone: (412) 387-1025 Email: rmatich@clarktesting.com





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Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.5

SDS (Design spectral response acceleration at short period, g) = 2.0

a_p (Amplification factor) = 2.5

R_p (Response modification factor) = 6.0

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

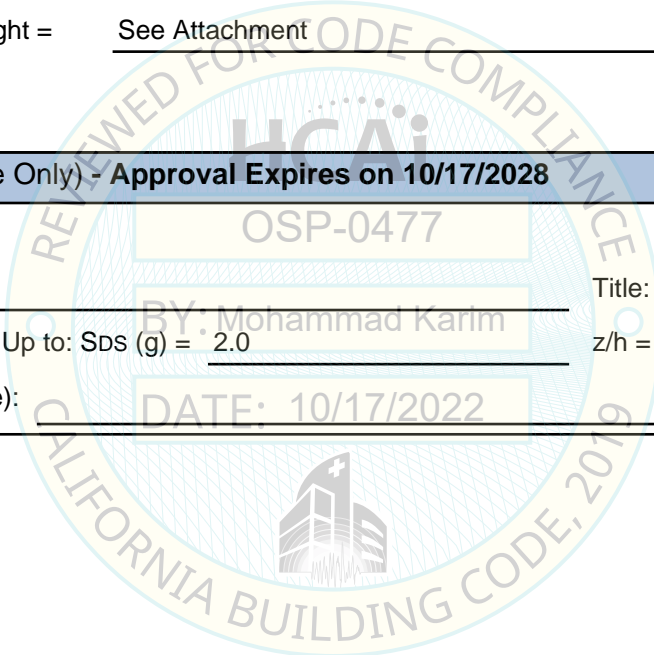
HCAI Approval (For Office Use Only) - Approval Expires on 10/17/2028

Date: 10/17/2022

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: SDS (g) = 2.0 z/h = 1

Condition of Approval (if applicable): DATE: 10/17/2022



Special Seismic Certification
Table 1 - Certified Components, HC Units (Wall Mounted)



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Wall mounted

Test Levels: $S_{05} = 2.00g, z/h = 1.0$

Model	Part Number	Power (kW)	Voltage (V)	Phase (φ)	Water Type	Dimensions (in)			Weight (lb)		Construction Material	Unit
						Width	Depth	Height	Dry	Wet		
HC 6100	D5599	3	208	1	Tap				128	230		UUT1A.1 & UUT1A.2
	D5580	3	208	3	DI							Interpolated
HC6100/HC6300	D5600	3	240	1	Tap							Interpolated
	D5601	3	240	3	Tap							Interpolated
	D78263	3	240	3	DI							Interpolated
	D11406	3	400	3	Tap							Interpolated
	D11410	3	400	3	DI							Interpolated
	D5602	3	480	3	Tap							Interpolated
	D28877	3	480	3	DI							Interpolated
	D5603	3	60	3	Tap							Interpolated
	D5379	3	208	3	Tap							Interpolated
	D11407	6	400	3	Tap							Interpolated
	D5545	9	208	1	Tap							Interpolated
	D13652	9	208	1	DI							Interpolated
	D5543	9	208	3	Tap							Interpolated
	D13732	9	208	3	DI							Interpolated
	D5604	9	240	1	Tap							Interpolated
	D5605	9	240	3	Tap							Interpolated
	D20060	9	240	3	DI							Interpolated
	D11408	9	400	3	Tap							Interpolated
	D11411	9	400	3	DI							Interpolated
	D5380	9	480	3	Tap							Interpolated
	D5581	9	480	3	DI							Interpolated
	D5381	9	600	3	Tap							Interpolated
	D5582	9	600	3	DI							Interpolated
	D5544	15	208	3	Tap							Interpolated
	D94560	15	208	3	DI	21.9	22.3	32.1	128-156	230-234	Stainless Steel	Interpolated
	D5606	15	240	3	Tap							Interpolated
	D11404	15	400	3	Tap							Interpolated
	D11409	15	400	3	DI							Interpolated
	D5382	15	480	3	Tap							Interpolated
	D5583	15	480	3	DI							Interpolated
	D5383	15	600	3	Tap							Interpolated
	D5584	15	600	3	DI							Interpolated
	D5607	18	208	3	Tap							Interpolated
	D23592	18	208	3	DI							Interpolated
	D5608	18	240	3	Tap							Interpolated
	D11412	18	400	3	Tap							Interpolated
	D11414	18	400	3	DI							Interpolated
	D5386	18	480	3	Tap							Interpolated
	D5585	18	480	3	DI							Interpolated
	D5387	18	600	3	Tap							Interpolated
	D5586	18	600	3	DI							Interpolated
	D23594	30	208	3	DI							Interpolated
	D5610	30	240	3	Tap							Interpolated
	D23593	30	240	3	DI							Interpolated
	D11413	30	400	3	Tap							Interpolated
	D11415	30	400	3	DI							Interpolated
	D5388	30	480	3	Tap							Interpolated
D5587	30	480	3	DI							Interpolated	
D5389	30	600	3	Tap							Interpolated	
D5588	30	600	3	DI							Interpolated	
HC 6300	D5609	30	208	3	Tap				156	234		UUT1B.1 & UUT1B.2

Notes: Additional components used in testing:
 S29888C - Seismic bottom mount
 S29888A - Seismic top mount

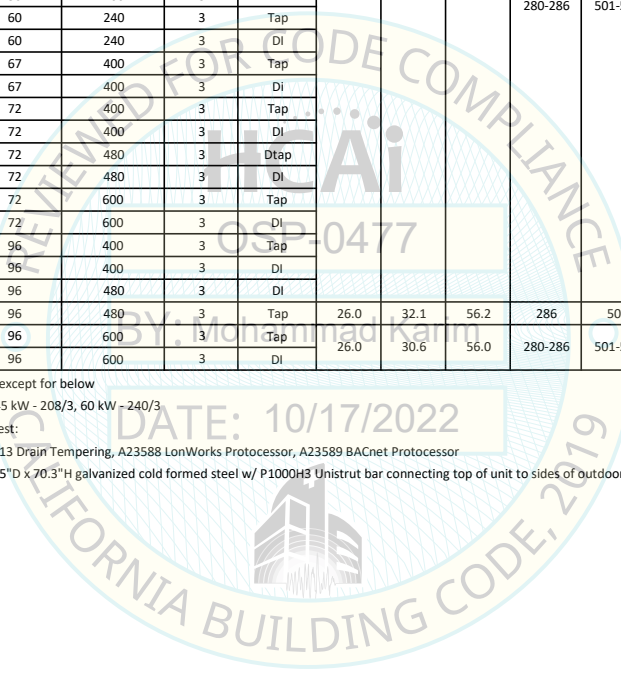
Special Seismic Certification
Table 2 - Certified Components, HC Units (Base Mounted)



DCL Project Number: 21127-2201
 Manufacturer: Armstrong International
 Product Line: Armstrong Humidifiers
 Mounting Description: Base mounted
 Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Power (kW)	Voltage (V)	Phase (φ)	Water Type	Dimensions (in)			Weight (lb)		Construction Material	Unit
						Width	Depth	Height	Dry	Wet		
HC 6500	D5611	30	208	3	Tap				280	501		UUT3B.1 & UUT3B.2
HC6500/HC6700	D11416	34	400	3	Tap							Interpolated
	D11421	34	400	3	DI							Interpolated
	D5612	40	240	3	Tap							Interpolated
	D5613	45	208	3	Tap							Interpolated
	D11417	48	400	3	Tap							Interpolated
	D11422	48	400	3	DI							Interpolated
	D5390	48	480	3	Tap							Interpolated
	D5589	48	480	3	DI							Interpolated
	D5391	48	600	3	Tap							Interpolated
	D5590	48	600	3	DI							Interpolated
	D11418	50	400	3	Tap							Interpolated
	D11423	50	400	3	DI							Interpolated
	D11423	50	400	3	DI	26.0	30.6	56.0	280-286	501-507		Interpolated
	D7059	60	240	3	Tap							Interpolated
	D23595	60	240	3	DI							Interpolated
	D11425	67	400	3	Tap							Interpolated
	D11427	67	400	3	DI							Interpolated
	D11420	72	400	3	Tap							Interpolated
	D11424	72	400	3	DI							Interpolated
	D5392	72	480	3	Dtap							Interpolated
	D5591	72	480	3	DI							Interpolated
	D5393	72	600	3	Tap							Interpolated
	D5592	72	600	3	DI							Interpolated
D11426	96	400	3	Tap							Interpolated	
D11428	96	400	3	DI							Interpolated	
D5593	96	480	3	DI							Interpolated	
HC 6700	D5401	96	480	3	Tap	26.0	32.1	56.2	286	507		UUT3A.1 & UUT3A.2
HC6500/HC6700	D5402	96	600	3	Tap	26.0	30.6	56.0	280-286	501-507		Extrapolated
	D5594	96	600	3	DI							Extrapolated

Notes:
 -Part numbers are for 480 V/3 φ except for below
 - 30 kW - 208/3, 40 kW - 240/3, 45 kW - 208/3, 60 kW - 240/3
 Additional components used in test:
 Durakool 30C40 Contactor, D83313 Drain Tempering, A23588 LonWorks Protoessor, A23589 BACnet Protoessor
 Outdoor enclosure: 34.6"W x 49.5"D x 70.3"H galvanized cold formed steel w/ P1000H3 Unistrut bar connecting top of unit to sides of outdoor enclosure.



Special Seismic Certification
Table 3 - Certified Components, EHU Units (Wall Mounted)



DCL Project Number: 21127-2201

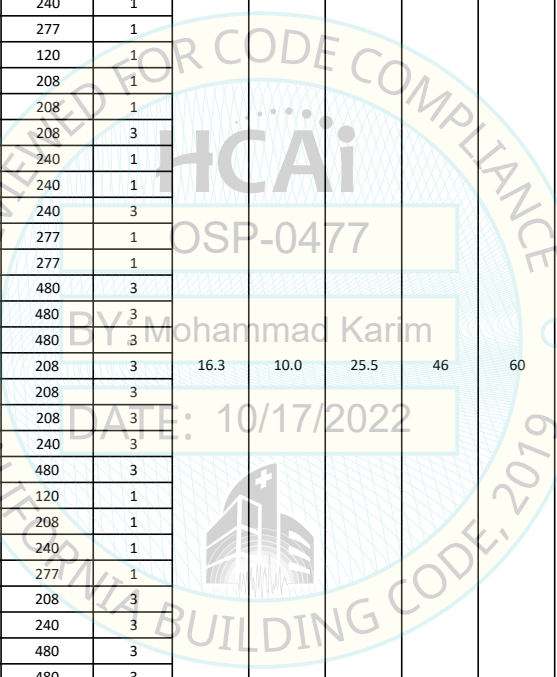
Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Wall mounted

Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Rate	Voltage (V)	Phase (φ)	Dimensions (in)			Weight (lb)		Construction Material	Unit	
					Width	Depth	Height	Dry	Wet			
EHU-801	D608662	4.40	120	1						Stainless Steel	UUT9.1 & UUT9.2	
	D608668	4.40	208	1							Interpolated	
	D608680	4.40	240	1							Interpolated	
	D608690	4.40	277	1							Interpolated	
	D608698	6.00	208	3							Interpolated	
	D608706	6.00	240	3							Interpolated	
	D615454	6.00	480	3							Interpolated	
	D606770	6.60	120	1							Interpolated	
	D606774	6.60	120	1							Interpolated	
	D604735	6.60	208	1							Interpolated	
	D608682	6.60	240	1							Interpolated	
	D608692	6.60	277	1							Interpolated	
	D603992	11.00	120	1							Interpolated	
	D603387	11.00	208	1							Interpolated	
	D612566	11.00	208	1							Interpolated	
	D603389	11.00	208	3							Interpolated	
	D604737	11.00	240	1							Interpolated	
	D610230	11.00	240	1							Interpolated	
	D608708	11.00	240	3							Interpolated	
	D605338	11.00	277	1							Interpolated	
	D608694	11.00	277	1							Interpolated	
	D607249	11.00	480	3							Interpolated	
	D607253	11.00	480	3							Interpolated	
	D610226	11.00	480	3							Interpolated	
	D606750	17.00	208	3		16.3	10.0	25.5	46		60	Interpolated
	D608700	17.00	208	3								Interpolated
	D610994	17.00	208	3								Interpolated
	D606829	17.00	240	3								Interpolated
	D608729	17.00	480	3								Interpolated
	D608666	17.60	120	1								Interpolated
	D608678	17.60	208	1								Interpolated
	D608686	17.60	240	1								Interpolated
	D608696	17.60	277	1								Interpolated
	D608702	22.00	208	3								Interpolated
	D603426	22.00	240	3								Interpolated
	D606274	22.00	480	3								Interpolated
	D609695	22.00	480	3								Interpolated
	D612694	22.00	480	3								Interpolated
	D604874	33.00	208	3								Interpolated
	D608712	33.00	240	3								Interpolated
D617063	33.00	380	3							Interpolated		
D607247	33.00	480	3							Interpolated		
D607251	33.00	480	3							Interpolated		
D609697	33.00	480	3							Interpolated		
D611003	33.00	600	3							Interpolated		
D608704	44.00	208	3							Interpolated		
D608714	44.00	240	3							Interpolated		
D608327	44.00	480	3							Interpolated		
D610232	44.00	480	3							Interpolated		



Special Seismic Certification
Table 3 - Certified Components, EHU Units (Wall Mounted)(cont.)



DCL Project Number: 21127-2201

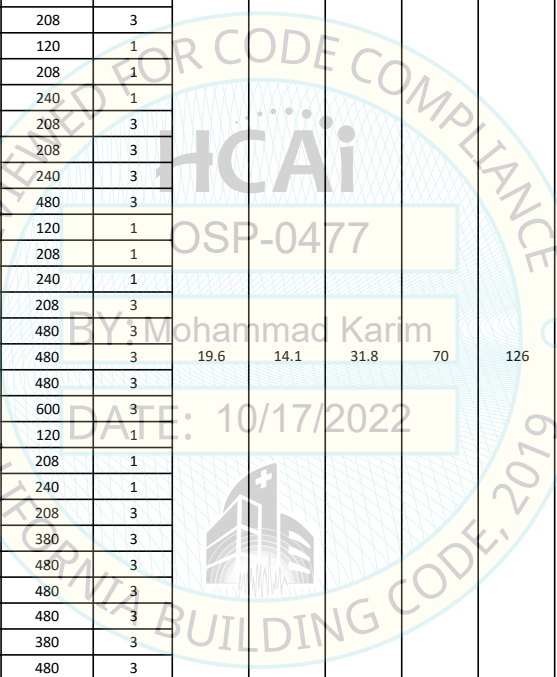
Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Wall mounted

Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Rate	Voltage (V)	Phase (ϕ)	Dimensions (in)			Weight (lb)		Construction Material	Unit	
					Width	Depth	Height	Dry	Wet			
EHU-803	D608734	11.00	120	1							Interpolated	
	D608749	11.00	208	1							Interpolated	
	D608760	11.00	240	1							Interpolated	
	D608736	17.60	120	1							Interpolated	
	D608751	17.60	208	1							Interpolated	
	D608762	17.60	240	1							Interpolated	
	D608738	22.00	120	1							Interpolated	
	D608754	22.00	208	1							Interpolated	
	D608764	22.00	240	1							Interpolated	
	D616047	22.00	480	3							Interpolated	
	D608831	33.00	208	3							Interpolated	
	D613024	33.00	208	3							Interpolated	
	D608740	33.10	120	1							Interpolated	
	D604872	33.10	208	1							Interpolated	
	D608766	33.10	240	1							Interpolated	
	D608829	44.00	208	3							Interpolated	
	D613015	44.00	208	3							Interpolated	
	D610860	44.00	240	3							Interpolated	
	D607527	44.00	480	3							Interpolated	
	D608742	44.10	120	1							Interpolated	
	D608756	44.10	208	1							Interpolated	
	D608768	44.10	240	1							Interpolated	
	D607070	55.00	208	3							Interpolated	
	D609693	55.00	480	3							Interpolated	
	D613273	55.00	480	3		19.6	14.1	31.8	70	126	Stainless Steel	Interpolated
	D625764	55.00	480	3								Interpolated
	D611969	55.00	600	3								Interpolated
	D608744	55.10	120	1								Interpolated
	D608758	55.10	208	1								Interpolated
	D608773	55.10	240	1								Interpolated
	D616034	66.00	208	3								Interpolated
	D625972	66.00	380	3								Interpolated
	D610236	66.00	480	3								Interpolated
	D622098	66.00	480	3								Interpolated
	D644767	66.00	480	3								Interpolated
	D625064	77.00	380	3								Interpolated
	D607531	77.00	480	3								Interpolated
	D610197	77.00	480	3								Interpolated
	D625768	77.00	480	3								Interpolated
	D606325	88.00	480	3								Interpolated
D610244	88.00	480	3								Interpolated	
D606321	99.00	480	3								Interpolated	
D610234	99.00	480	3								Interpolated	
D620589	99.00	480	3								Interpolated	
D639560	99.00	480	3								Interpolated	
D647788	99.00	600	3								Interpolated	
D608329	110.00	480	3								Interpolated	
D625807	110.00	480	3								Interpolated	
D611971	110.00	600	3								Interpolated	



Special Seismic Certification
Table 3 - Certified Components, EHU Units (Wall Mounted)(cont.)



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Wall mounted

Test Levels: $S_{DS} = 2.00g$, $z/h = 1.0$

Model	Part Number	Rate	Voltage (V)	Phase (ϕ)	Dimensions (in)			Weight (lb)		Construction Material	Unit
					Width	Depth	Height	Dry	Wet		
EHU-804	D665716	44.10	208	1	31.8	14.1	33.6	126	240	Stainless Steel	Interpolated
	D638684	55.00	208	3							Interpolated
	D638690	55.00	208	3							Interpolated
	D625752	55.00	480	3							Interpolated
	D666540	55.10	208	1							Interpolated
	D666553	55.10	240	1							Interpolated
	D608827	66.00	208	3							Interpolated
	D646759	66.00	208	3							Interpolated
	D666556	66.00	240	3							Interpolated
	D666541	66.10	208	1							Interpolated
	D666554	66.10	240	1							Interpolated
	D666551	66.10	277	1							Interpolated
	D638686	77.00	208	3							Interpolated
	D638694	77.00	208	3							Interpolated
	D611912	77.20	208	1							Interpolated
	D666555	77.20	240	1							Interpolated
	D666552	77.20	277	1							Interpolated
	D616133	88.00	208	3							Interpolated
	D626804	99.00	208	3							Interpolated
	D625066	99.00	380	3							Interpolated
	D606310	121.00	480	3							Interpolated
	D639565	121.00	480	3							Interpolated
	D616550	132.00	480	3							Interpolated
	D639567	132.00	480	3							Interpolated
	D609564	132.00	600	3							Interpolated
	D650585	143.00	208	3							Interpolated
	D606315	143.00	480	3							Interpolated
	D620802	154.00	480	3							Interpolated
	D625757	154.00	480	3							Interpolated
	D665286	154.00	600	3							Interpolated
	D616548	165.00	480	3							Interpolated
	D639556	165.00	480	3							Interpolated
	D620585	176.00	480	3							Interpolated
	D622224	176.00	480	3							Interpolated
	D639554	176.00	480	3							Interpolated
	D612243	187.00	480	3							Interpolated
	D620575	187.00	480	3							Interpolated
	D612250	198.00	480	3							Interpolated
	D663575	198.00	600	3							UUT10.1 & UUT10.2
	D620577	209.00	480	3							Extrapolated
D635698	209.00	480	3	Extrapolated							
D613674	220.00	480	3	Extrapolated							
D620572	231.00	480	3	Extrapolated							
D639122	231.00	480	3	Extrapolated							
D639558	231.00	480	3	Extrapolated							
D638282	242.00	208	3	Extrapolated							
D611326	242.00	480	3	Extrapolated							
D664460	242.00	600	3	Extrapolated							

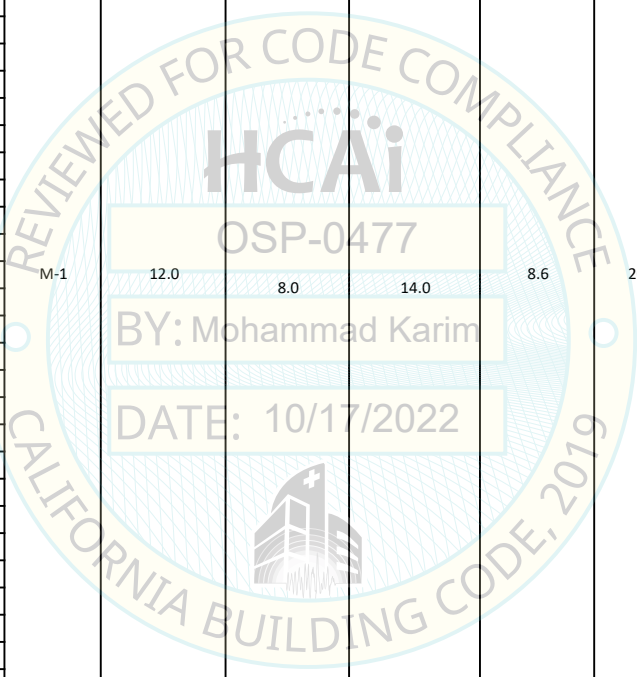
Notes: -Part numbers are based on the largest 480 V/3 ϕ unit available
 Additional components used in test:
 D83309 - 801 Drain Tempering, D83310 - 803 Drain Tempering, D83311 - 804 Drain Tempering
 D38502 - LonWorks Protonode, D80688 - BACnet Protonode, D50931 - Remote Information
 S29888B - Seismic bottom mount, S29888D - Seismic top mount

Special Seismic Certification
Table 4 - Certified Components, Direct Injection (Base Mounted)



DCL Project Number: 21127-2201
Manufacturer: Armstrong International
Product Line: Armstrong Humidifiers
Mounting Description: Rigid base mount w/ top restraint
Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Manifold	Duct Width (in)	Min. Depth (in)	Max. Depth (in)	Body Height (in)	Weight (lb)	Construction Material	Unit
1100	D666589	M-1	12.0	4.1		8.6	20	Stainless Steel	UUT5
	D666592			Interpolated					
	D666594			Interpolated					
	D666596			Interpolated					
	D662432			Interpolated					
	D666598			Interpolated					
	D666600			Interpolated					
	D666602			Interpolated					
	D666604			Interpolated					
	D666606			Interpolated					
	D666608			Interpolated					
	D666610			Interpolated					
	D666612			Interpolated					
	D506794			Interpolated					
	D666614			Interpolated					
	D666616			Interpolated					
	D666618			Interpolated					
	D666623			Interpolated					
	D666625			Interpolated					
	D666627			8.0	14.0				Interpolated
	D666629			Interpolated					
	D508418			Interpolated					
	D666631			Interpolated					
	D559160			Interpolated					
	D501890			Interpolated					
	D666633			Interpolated					
	D506791			Interpolated					
	D666636			Interpolated					
	D504771			Interpolated					
	D666638			Interpolated					
	D632001			Interpolated					
	D504769			Interpolated					
D507814	Interpolated								
D507355	Interpolated								
D508410	Interpolated								
D618869	Interpolated								
D517396	Interpolated								
D519846	Interpolated								
D508956	Interpolated								



Notes:
 -Single dispersion tube
 -Various orifice sizes, part numbers configured for smallest orifice size available
 Additional Components:
 A21505 - 1100 SS Fitting, A49675 - 1100 SS Adapter, C1360-1 through 13 - Fittings

Special Seismic Certification
Table 4 - Certified Components, Direct Injection (Base Mounted)(cont.)



DCL Project Number: 21127-2201

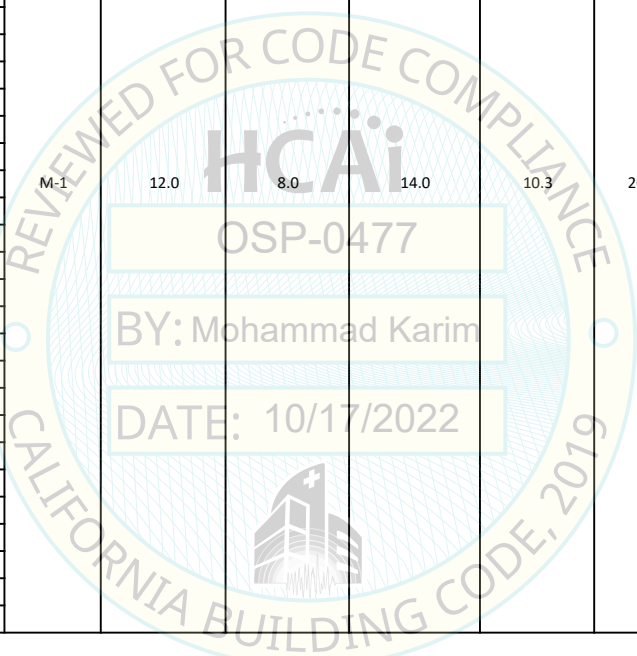
Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Rigid base mount w/ top restraint

Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Manifold	Duct Width (in)	Min. Depth (in)	Max. Depth (in)	Body Height (in)	Weight (lb)	Construction Material	Unit
1200	D666649	M-1	12.0	8.0	14.0	10.3	20	Stainless Steel	Interpolated
	D666651								Interpolated
	D586121								Interpolated
	D666654								Interpolated
	D666656								Interpolated
	D666658								Interpolated
	D666662								Interpolated
	D666664								Interpolated
	D666668								Interpolated
	D666670								Interpolated
	D666672								Interpolated
	D506796								Interpolated
	D666676								Interpolated
	D666678								Interpolated
	D590272								Interpolated
	D560246								Interpolated
	D538797								Interpolated
	D666680								Interpolated
	D520800								Interpolated
	D512172								Interpolated
	D666682								Interpolated
	D666684								Interpolated
	D506792								Interpolated
	D666690								Interpolated
	D610077								Interpolated
	D545818								Interpolated
	D666692								Interpolated
	D618841								Interpolated
	D666694								Interpolated
	D666696								Interpolated
D503051	Interpolated								
D527493	Interpolated								
D569576	Interpolated								



Notes:
 -Single dispersion tube
 -Various orifice sizes, part numbers configured for smallest orifice size available
 Additional Components:
 A9885 - 1200 SS Fitting, A4967P - 1200 SS Adapter, C924-1 through 13 - Fittings

Special Seismic Certification
Table 4 - Certified Components, Direct Injection (Base Mounted)(cont.)



DCL Project Number: 21127-2201
 Manufacturer: Armstrong International
 Product Line: Armstrong Humidifiers
 Mounting Description: Rigid base mount w/ top restraint
 Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Manifold	Duct Width (in)	Min. Depth (in)	Max. Depth (in)	Body Height (in)	Weight (lb)	Construction Material	Unit
1300	D666714	M-12	144.0	137.0	148.0	16.3	59	Stainless Steel	Interpolated
	D666718								Interpolated
	D666720								Interpolated
	D666724								Interpolated
	D582101								Interpolated
	D666726								Interpolated
	D666728								Interpolated
	D506797								Interpolated
	D666732								Interpolated
	D666734								Interpolated
	D625118								Interpolated
	D584899								Interpolated
	D610095								Interpolated
	D625100								Interpolated
	D506793								Interpolated
	D666744								Interpolated
	D666751								Interpolated
	D666753								Interpolated
D666786	Interpolated								
D666790	Interpolated								
D666792	Interpolated								

Notes: -Single dispersion tube
 -Various orifice sizes, part numbers configured for smallest orifice size available
 Additional Components:
 A11802 - 1300 SS Fitting, A4967R - 1300 SS Adapter, C1501-1 through 13 - Fittings

Special Seismic Certification
Table 4 - Certified Components, Direct Injection (Base Mounted)(cont.)



DCL Project Number: 21127-2201
 Manufacturer: Armstrong International
 Product Line: Armstrong Humidifiers
 Mounting Description: Rigid base mount w/ top restraint
 Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Part Number	Manifold	Duct Width (in)	Min. Depth (in)	Max. Depth (in)	Body Height (in)	Weight (lb)	Construction Material	Unit
1400	D506798	M-3	144.0	137.0	148.0	24.1	144	Stainless Steel	Interpolated
	D584122								Interpolated
	D625126								Interpolated
	D631288								Interpolated
	D666800								4.1
	D666806								Interpolated
	D666808			Interpolated					
	D666810			Interpolated					
	D666814			Interpolated					
	D666816			137.0	148.0				Interpolated
	D666826			Interpolated					
	D666832			Interpolated					
	D666838			Interpolated					

Notes: -Single dispersion tube
 -Various orifice sizes, part numbers configured for smallest orifice size available
 Additional Components:
 A11802 - 1400 SS Fitting, A5002C - 1400 SS Adapter, C9030-5 through 13 - Fittings

Special Seismic Certification
Table 5 - Certified Components, Humidipack (Wall Mounted)



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Mounting Description: Wall mounted

Test Levels: $S_{DS} = 2.00g, z/h = 1.0$

Model	Orientation	Width (in)	Depth (in)	Height (in)	Weight (lb)		Construction Material	Unit
					Dry	Wet		
D3450	Horizontal Header	72.0	N/A	72.0	72	122	Stainless Steel	UUT8

Special Seismic Certification
Table 6 - Tested Units



DCL Project Number: 21127-2201

Testing Lab: Clark Dynamic Testing Laboratory

Test Report Number: JID 16-00105

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model	Dimensions (in)			Weight (lb)	S _{ds} (g), z/h = 1.0	Unit
	Width	Depth	Height			
HC 6100	21.9	22.3	32.1	128	2.00	UUT1A.1
HC 6100	21.9	22.3	32.1	230	2.00	UUT1A.2
HC 6300	21.9	22.1	32.1	156	2.00	UUT1B.1
HC 6300	21.9	22.1	32.1	234	2.00	UUT1B.2
HC 6700	26.0	32.1	56.2	286	2.00	UUT3A.1
HC 6700	26.0	32.1	56.2	507	2.00	UUT3A.2
HC 6500	26.0	30.6	56.0	280	2.00	UUT3B.1
HC 6500	26.0	30.6	56.0	501	2.00	UUT3B.2
1100	12.0	4.1	8.6	20	2.00	UUT5
1400	144.0	4.1	24.1	144	2.00	UUT6
N/A	72.0	N/A	144.0	144	2.00	UUT7.1
N/A	72.0	N/A	144.0	272	2.00	UUT7.2
D3450	72.0	N/A	72.0	72	2.00	UUT8.1
D3450	72.0	N/A	72.0	122	2.00	UUT8.2
EHU-801	16.3	10.0	25.5	46	2.00	UUT9.1
EHU-801	16.3	10.0	25.5	60	2.00	UUT9.2
EHU-804	33.6	14.1	31.8	126	2.00	UUT10.1
EHU-804	33.6	14.1	31.8	240	2.00	UUT10.2
N/A	12.0	N/A	12.0	17	2.00	UUT11
N/A	12.0	N/A	12.0	12	2.00	UUT12

UUT1A.1 (Dry)(Batch 1)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6100

Product Construction Summary:
 14 ga. 304 stainless steel

Options / Component Summary:

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.

UUT Properties						
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
128	22.3	21.9	32.1	N/A	N/A	N/A

Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 31 ft-lbs



Overall view of UUT1A.1 (Dry)

UUT1A.2 (Wet)(Batch 1)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number:	21127-2201
Manufacturer:	Armstrong International
Product Line:	Armstrong Humidifiers
Model Number:	HC 6100
Product Construction Summary:	14 ga. 304 stainless steel

Options / Component Summary:

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.

UUT Properties						
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
230	22.3	21.9	32.1	N/A	N/A	N/A

Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 31 ft-lbs



Overall view of UUT1A.2 (Wet)

UUT1B.1 (Dry)(Batch 1)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6300

Product Construction Summary:
 14 ga. 304 stainless steel

Options / Component Summary:

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.

UUT Properties						
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
156	22.1	21.9	32.1	N/A	N/A	N/A

Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 31 ft-lbs in Armstrong seismic double bracket mounts S29888A & S29888C



Overall view of UUT1B.1 (Dry)

UUT1B.2 (Wet)(Batch 1)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6300

Product Construction Summary:
 14 ga. 304 stainless steel

Options / Component Summary:

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.

UUT Properties						
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
234	22.1	21.9	32.1	N/A	N/A	N/A

Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 31 ft-lbs in Armstrong seismic double bracket mounts S29888A & S29888C



Overall view of UUT1B.2 (Wet)

UUT3A.1 (Dry)(Batch 1 & 5)

Clark Test Report JID 16-00105

UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6700

Product Construction Summary:

14 ga. 304 stainless steel

Options / Component Summary:

A P1000H3 Unistrut bar was installed spanning the width inside the enclosure (side to side, above the front of the UUT) using a Unistrut angle with (2) 1/2" - 13 bolts to the side panel of the enclosure and (2) 1/2" - 13 bolts to the P1000H3 bar. The P1000H3 bar was then attached to the top of the UUT using (2) 1/2" - 13 bolts. This modification prevented water intrusion during run 9.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
286	32.1	26.0	56.2	12.79	7.17	19.86

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 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Floor mounted using:
 (4) - 3/8" - 16 bolts, one at each leg through floor of outdoor enclosure;
 (20) - 1/4" - 20 bolts at outdoor enclosure.



Overall view of UUT3A.1 (Dry)

UUT3A.2 (Wet)(Batch 1 & 5)

Clark Test Report JID 16-00105

UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6700

Product Construction Summary:

14 ga. 304 stainless steel

Options / Component Summary:

A P1000H3 Unistrut bar was installed spanning the width inside the enclosure (side to side, above the front of the UUT) using a Unistrut angle with (2) 1/2" - 13 bolts to the side panel of the enclosure and (2) 1/2" - 13 bolts to the P1000H3 bar. The P1000H3 bar was then attached to the top of the UUT using (2) 1/2" - 13 bolts. This modification prevented water intrusion during run 9.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
507	32.1	26.0	56.2	9.17	5.73	10.71

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 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Floor mounted using:
 (4) - 3/8" - 16 bolts, one at each leg through floor of outdoor enclosure;
 (20) - 1/4" - 20 bolts at outdoor enclosure.



Overall view of UUT3A.2 (Wet)

UUT3B.1 (Dry)(Batch 5)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6500

Product Construction Summary:

14 ga. 304 stainless steel

Options / Component Summary:

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
280	30.6	26.0	56.0	18.36	11.25	>33

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 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Floor mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 25 ft-lbs



Overall view of UUT3B.1 (Dry)

UUT3B.2 (Wet)(Batch 5)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: HC 6500

Product Construction Summary:

14 ga. 304 stainless steel, wet

Options / Component Summary:

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
501	30.6	26.0	56.0	13.10	8.33	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Floor mounted using: (4) - 3/8" - 16 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 25 ft-lbs



Overall view of UUT3B.2 (Wet)

UUT5 (Batch 4)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: 1100

Product Construction Summary:
 Stainless steel

Options / Component Summary:

This unit is rigidly connected at the top and bottom to the structure. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
20	4.1	12.0	8.6	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted at top and bottom using: (1) - 1/2" - 13 all thread, washers and nuts (hand tight). One P100T Unistrut strap was attached to the inlet steam pipe. The steam pipe was spot welded to the Unistrut support. One unistrut strap was attached to the condensate drain pipe. The condensate drain pipe was spot welded to the unistrut support.



Overall view of UUT5

UUT6 (Batch 3 & 6)

Clark Test Report JID 16-00105

UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: 1400

Product Construction Summary:

Stainless steel

Options / Component Summary:

This unit is rigidly connected at the top and bottom to the structure. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
144	4.1	144.0	24.1	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted to fixture using: (1) - 1/2"-13 all thread, washers and nuts at the top of the body. (1) Unistrut strap was attached to the inlet steam pipe. (1) Unistrut strap was attached to the condensate drain pipe. (1) 3/8" - 16 all thread, washers and nuts were used on the manifold. A UBPA Unistrut U-Bolt Clamp was attached to the end of the UUT.



Overall view of UUT6

UUT7.1 (Dry)(Batch 3) Clark Test Report JID 16-00105 UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: N/A

Product Construction Summary:
Stainless steel

Options / Component Summary:

This unit is rigidly connected at the top and bottom to steel framing that supports the duct. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

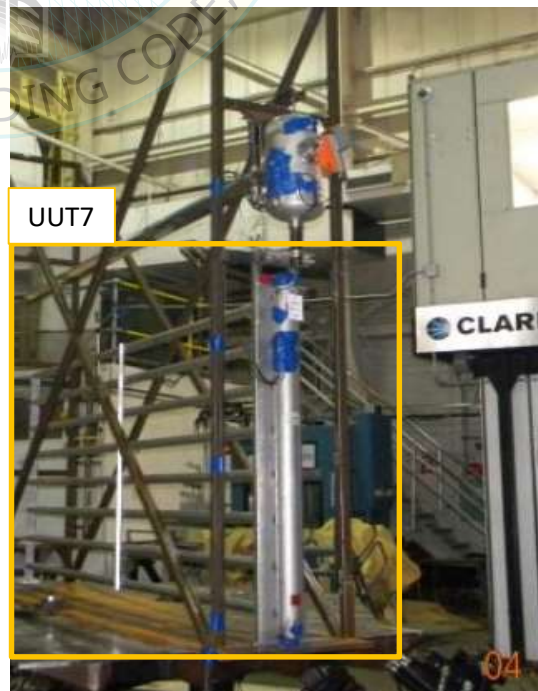
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
144	N/A	72.0	144.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted to using: (18) - 1/4" - 20 grade 5 bolts, washers, lock washers, and nuts torqued at 9 ft-lbs. The outboard header plate is connected using (2) 1/2" - 13 all thread, washers, and nuts.



Overall view of UUT7.1(Dry)

UUT7.2 (Wet)(Batch 3) Clark Test Report JID 16-00105 UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: N/A

Product Construction Summary:
Stainless steel

Options / Component Summary:

This unit is rigidly connected at the top and bottom to steel framing that supports the duct. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

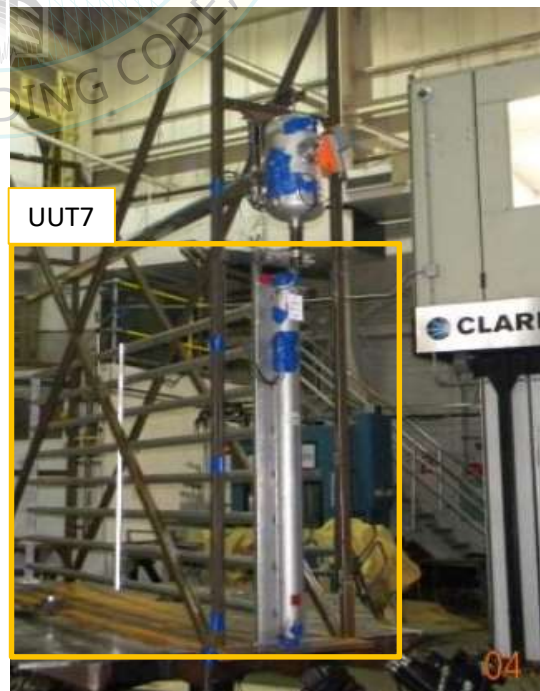
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
272	N/A	72.0	144.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted to using: (18) - 1/4" - 20 grade 5 bolts, washers, lock washers, and nuts torqued at 9 ft-lbs. The outboard header plate is connected using (2) 1/2" - 13 all thread, washers, and nuts.



Overall view of UUT7.2(Wet)

UUT8.1 (Dry)(Batch 4)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: D3450

Product Construction Summary:
Stainless steel

Options / Component Summary:
 This unit is rigidly connected at the top and bottom to steel framing that supports the duct. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
72	N/A	72.0	72.0	10.32	10.68	>33

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 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Mounted using: (18) - 1/4" - 20 grade 5 bolts, washers, lock washers, and nuts turqued at 9 ft-lbs. The top of UUT-08 is attached using (2) 1/2"-13 all thread, washers, and nuts hand tight to the wall mount fixture. Rigid compression/tension braces were installed during the test on each side of UUT-08.



Overall view of UUT8.1(Dry)

UUT8.2 (Wet)(Batch 4)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: D3450

Product Construction Summary:
Stainless steel

Options / Component Summary:
 This unit is rigidly connected at the top and bottom to steel framing that supports the duct. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
122	N/A	72.0	72.0	10.33	10.66	24.21

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 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Mounted using: (18) - 1/4" - 20 grade 5 bolts, washers, lock washers, and nuts turqued at 9 ft-lbs. The top of UUT8 is attached using (2) 1/2" - 13 all thread, washers, and nuts hand tight to the wall mount fixture. Rigid compression/tension braces were installed during the test on each side of UUT8.



Overall view of UUT8.2(Wet)

UUT9.1 (Dry)(Batch 2)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: EHU-801

Product Construction Summary:
Stainless steel

Options / Component Summary:

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.

UUT Properties								
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Depth	Width	Height	Front-Back	Side-Side	Vertical		
46	10.0	16.3	25.5	N/A	N/A	N/A		
Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: The lower mounting bracket is mounted onto the fixture using (4) 3/8" - 16 grade 5 bolts, washers, lock washers, and nuts torqued to 31 ft-lbs. The upper mounting bracket is attached to the fixture using (2) 3/8" - 16 grade 5 bolts torqued to 31 ft-lbs. UUT9 is mounted to the top bracket and attached to the lower bracket of the fixture using (2) 3/8"-16 grade 5 hex head bolts, washers, and lock washers torqued to 31 ft-lbs.



Overall view of UUT9.1(Dry)

UUT9.2 (Wet)(Batch 2)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number:	21127-2201
Manufacturer:	Armstrong International
Product Line:	Armstrong Humidifiers
Model Number:	EHU-801
Product Construction Summary:	Stainless steel

Options / Component Summary:

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.

UUT Properties								
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Depth	Width	Height	Front-Back	Side-Side	Vertical		
60	10.0	16.3	25.5	N/A	N/A	N/A		
Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: The lower mounting bracket is mounted onto the fixture using (4) 3/8" - 16 grade 5 bolts, washers, lock washers, and nuts torqued to 31 ft-lbs. The upper mounting bracket is attached to the fixture using (2) 3/8" - 16 grade 5 bolts torqued to 31 ft-lbs. UUT9 is mounted to the top bracket and attached to the lower bracket of the fixture using (2) 3/8"-16 grade 5 hex head bolts, washers, and lock washers torqued to 31 ft-lbs.



Overall view of UUT9.2(Wet)

UUT10.1 (Dry)(Batch 2)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number:	21127-2201
Manufacturer:	Armstrong International
Product Line:	Armstrong Humidifiers
Model Number:	EHU-804
Product Construction Summary:	Stainless steel

Options / Component Summary:

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.

UUT Properties								
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)				
	Depth	Width	Height	Front-Back	Side-Side	Vertical		
126	14.1	33.6	31.8	N/A	N/A	N/A		
Seismic Test Parameters								
Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:
 Wall mounted using: The lower mounting bracket was attached onto the UUT using (2) 3/8" - 16 bolts, washers, lock washers, and nuts torqued to 31 ft-lbs. The upper mounting bracket is attached to the fixture using (5) 3/8" - 16 bolts torqued to 31 ft-lbs. UUT10 is mounted to the top bracket and attached to the lower bracket of the fixture using (2) 3/8"-16 grade 5 hex head bolts, washers, and lock washers torqued to 31 ft-lbs. (2) 3/8"-16 grade 5 hex head bolts through the enclosure holes were added.



Overall view of UUT10.1(Dry)

UUT10.2 (Wet)(Batch 2)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: EHU-804

Product Construction Summary:

Stainless steel

Options / Component Summary:

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
240	14.1	33.6	31.8	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Wall mounted using: The lower mounting bracket was attached onto the UUT using (2) 3/8" - 16 bolts, washers, lock washers, and nuts torqued to 31 ft-lbs. The upper mounting bracket is attached to the fixture using (5) 3/8" - 16 bolts torqued to 31 ft-lbs. UUT10 is mounted to the top bracket and attached to the lower bracket of the fixture using (2) 3/8"-16 grade 5 hex head bolts, washers, and lock washers torqued to 31 ft-lbs. (2) 3/8"-16 grade 5 hex head bolts through the enclosure holes were added.



Overall view of UUT10.2(Wet)

UUT11 (Batch 2)

Clark Test Report JID 16-00105

UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: N/A

Product Construction Summary:
Stainless steel

Options / Component Summary:

The unit is rigidly connected at the top and bottom to the structure. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

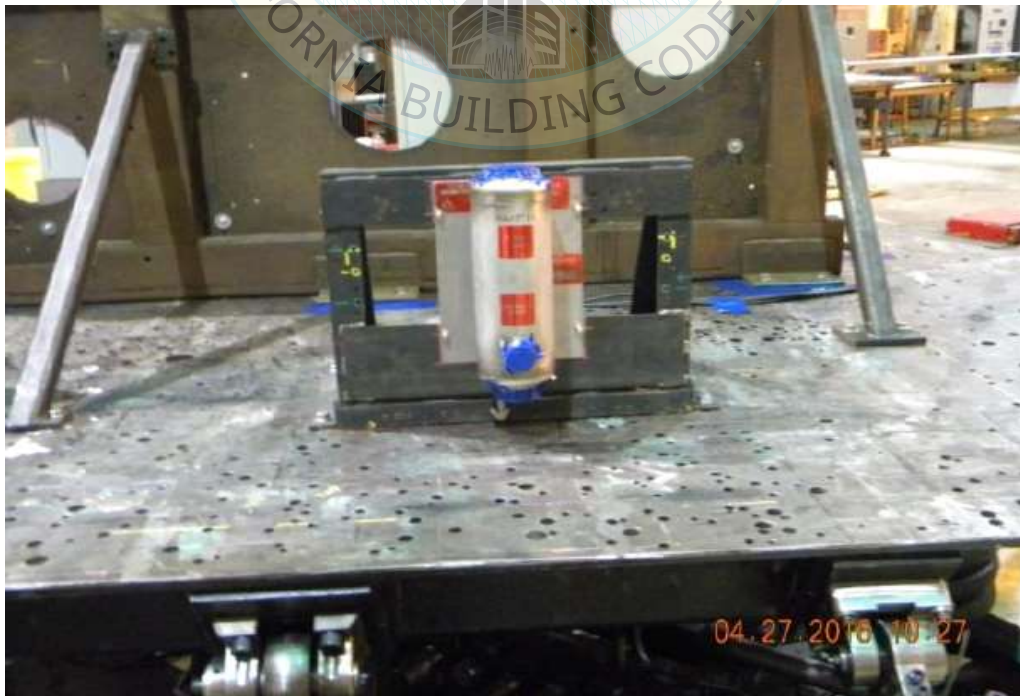
Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
17.0	N/A	12.0	12.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted using: (4) 1/2" - 20 grade 5 hex head bolts, washers and lock washers torqued to 9 ft-lbs. Also use (1) 1/2" - 13 all thread and nuts (hand tightened).



Overall view of UUT11

UUT12 (Batch 2)
Clark Test Report JID 16-00105
UNIT UNDER TEST (UUT) Summary Sheet



DCL Project Number: 21127-2201

Manufacturer: Armstrong International

Product Line: Armstrong Humidifiers

Model Number: N/A

Product Construction Summary:

Stainless steel

Options / Component Summary:

The unit is rigidly connected at the top and bottom to the structure. The UUT is not connected directly to the duct. The UUT can move independently of the duct, which has oversized holes where the UUT passes through the duct in order to work inside of the duct. See cut sheets for further details.

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.

UUT Properties

Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Depth	Width	Height	Front-Back	Side-Side	Vertical
12.0	N/A	12.0	12.0	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds (g)	z/h	Ip	Aflx-H (g)	Arig-H (g)	Aflx-V (g)	Arig-V (g)
CBC 2022	ICC-ES AC 156	2.00	1.0	1.5	3.20	2.40	1.33	0.53

Unit Mounting Description:

Mounted using: (4) 1/4"-20 grade 5 hex head bolts, washers, lock washers, and nuts torqued to 9 ft-lbs and (1) 1/2"-13 grade holes into the seismic table. The fixture was secured to the plate using (4) 1/2"-13 grade 5 hex head bolts, washers, and lock washers torqued to 75 ft-lbs.



Overall view of UUT12