



OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION

APPLICATION FOR OSHPD SPECIAL SEISMIC
CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP – 0368 – 10

OSHPD Special Seismic Certification Preapproval (OSP)

Type: New Renewal

Manufacturer Information

Manufacturer: Baltimore Aircoil Company, Inc.

Manufacturer's Technical Representative: Panos G. Papavizas, P.E.

Mailing Address: 7600 Dorsey Run Road, Jessup, MD 20794

Telephone: 410-799-6438

Email: ppapavizas@baltimoreaircoil.com

Product Information

Product Name: Series 3000E

Product Type: Open Cooling Tower

Product Model Number: See Attachment

(List all unique product identification numbers and/or part numbers)

General Description: Series 3000E Open Cooling Tower product line used in evaporative cooling applications.

Certification covers: upgraded structure option (identified with a suffix "/S" in the model nomenclature); single and multiple cells; galvanized and stainless steel materials of construction; belt and gear drive; standard and low sound fans. Seismic enhancements made to the test units and modifications required to address anomalies observed during the tests shall be incorporated into the production units.

Mounting Description: Rigid mounting and vibration isolated on restrained spring mounts

Applicant Information

Applicant Company Name: Baltimore Aircoil Company, Inc.

Contact Person: Panos G. Papavizas, P.E.

Mailing Address: 7600 Dorsey Run Road, Jessup, MD 20794

Telephone: 410-799-6438

Email: ppapavizas@baltimoreaircoil.com

I hereby agree to reimburse the Office of Statewide Health Planning and Development review fees in accordance with the California Administrative Code, 2013.

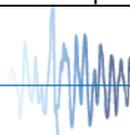
Signature of Applicant: 

Date: November 20, 2013

Title: Chief Engineer

Company Name: Baltimore Aircoil Company, Inc.

"Access to Safe, Quality Healthcare Environments that Meet California's Diverse and Dynamic Needs"



osHPD



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: MakeitRight, Inc.

Name: Joseph La Brie, S. E. California License Number: S3566

Mailing Address: 55 E. Huntington Drive, Suite 277, Arcadia, CA 91006

Telephone: 626-445-0366 Email: labrie@makeitright.net

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): _____

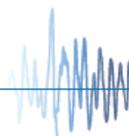
Testing Laboratory

Company Name: Structural Engineering & Earthquake Simulation Laboratory (SEESL)

Contact Name: Mark Pitman

Mailing Address: Department of Civil, Structural, and Environmental Engineering, University at Buffalo, The State
University of New York, 212 Ketter Hall, North Campus, Buffalo, NY 14260

Telephone: 716-645-4377 Email: mpitman@buffalo.edu





OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT FACILITIES DEVELOPMENT DIVISION

Seismic Parameters

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

Design Basis of Equipment or Components (F_p/W_p) = 4.36 Vibration Isolated; 2.91 Rigid

S_{DS} (Design spectral response acceleration at short period, g) = 1.94

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

R_p (Equipment or component response modification factor) = 2.0 Vibration Isolated; 3.0 Rigid

Ω_0 (System overstrength factor) = 2.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component Natural Frequencies (Hz) = See Attachment

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

Equipment or Components @ grade designed in accordance with ASCE 7-10 Chapter 15: Yes No

Design Basis of Equipment or Components (V/W) = _____

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

S_{D1} (Design spectral response acceleration at 1 second period, g) = _____

R (Response modification coefficient) = _____

Ω_0 (System overstrength factor) = _____

C_d (Deflection amplification factor) = _____

I_p (Importance factor) = 1.5

Height to Center of Gravity above base = _____

Equipment or Component Natural Frequencies (Hz) = _____

Overall dimensions and weight (or range thereof) = _____

Tank(s) designed in accordance with ASME BPVC, 2010: Yes No

List of Attachments Supporting Special Seismic Certification

Test Report(s) Drawings Calculations Manufacturer's Catalog

Other(s) (Please Specify): Group-1 Attachment

OSHPD Approval (For Office Use Only) – Approval Expires on December 31, 2019

Signature: _____

Date: May 30, 2014

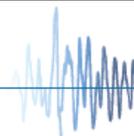
Print Name: Timothy J. Piland

Title: SSE

Special Seismic Certification Valid Up to : S_{DS} (g) = 1.94

z/h = 1

Condition of Approval (if applicable): _____





**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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Table 1: Certified Seismic Parameters

| Building Codes | Test Criteria | S_{DS} (g) | z/h | I_p | a_p | R_p (Rigid) | R_p (Vibration Isolated) | F_p/W_p (Rigid) | F_p/W_p (Vibration Isolated) |
|----------------|---------------|--------------|-------|-------|-------|---------------|----------------------------|-------------------|--------------------------------|
| CBC 2013 | ICC-ES AC156 | 1.94 | 1 | 1.5 | 2.5 | 3.0 | 2.0 | 2.91 | 4.36 |

Table 2: Certified Models – Summary List

| Base Model No. ^{1,2,3,4,8} | Nominal Box Size ⁵ | Motor HP | Fan Diam. (in) | Shipping Weight ⁶ (lbs) | Operating Weight ^{6,7} (lbs) | Unit Width (in) | Unit Length (in) | Height to Fan Deck (in) | Certification Basis |
|-------------------------------------|-------------------------------|----------|----------------|------------------------------------|---------------------------------------|-----------------|------------------|-------------------------|---------------------|
| XES3E-8518-05K/S | 18X8.5X80 | 10 | 90 | 8670 | 15810 | 216.5 | 101.75 | 104 | Interpolated |
| XES3E-8518-05G/S | 18X8.5X80 | 3 | 90 | 8620 | 15760 | 216.5 | 101.75 | 104 | |
| XES3E-8518-05H/S | 18X8.5X80 | 5 | 90 | 8630 | 15770 | 216.5 | 101.75 | 104 | |
| XES3E-8518-05J/S | 18X8.5X80 | 7.5 | 90 | 8660 | 15800 | 216.5 | 101.75 | 104 | |
| S3E-8518-05L/S | 18X8.5X80 | 15 | 90 | 8800 | 15940 | 216.5 | 101.75 | 104 | |
| S3E-8518-05M/S | 18X8.5X80 | 20 | 90 | 8870 | 16010 | 216.5 | 101.75 | 104 | |
| S3E-8518-06M/S | 18X8.5X96 | 20 | 90 | 9190 | 16860 | 216.5 | 101.75 | 120 | |
| XES3E-8518-06G/S | 18X8.5X96 | 3 | 90 | 9030 | 16700 | 216.5 | 101.75 | 120 | |
| XES3E-8518-06H/S | 18X8.5X96 | 5 | 90 | 9040 | 16710 | 216.5 | 101.75 | 120 | |
| XES3E-8518-06J/S | 18X8.5X96 | 7.5 | 90 | 9080 | 16750 | 216.5 | 101.75 | 120 | |
| XES3E-8518-06K/S | 18X8.5X96 | 10 | 90 | 9090 | 16760 | 216.5 | 101.75 | 120 | |
| S3E-8518-06L/S | 18X8.5X96 | 15 | 90 | 9160 | 16830 | 216.5 | 101.75 | 120 | |
| S3E-8518-06N/S | 18X8.5X96 | 25 | 90 | 9220 | 16890 | 216.5 | 101.75 | 120 | |
| S3E-8518-07N/S | 18X8.5X112 | 25 | 90 | 9640 | 19210 | 216.5 | 101.75 | 136 | |
| XES3E-8518-07G/S | 18X8.5X112 | 3 | 90 | 9450 | 19020 | 216.5 | 101.75 | 136 | |
| XES3E-8518-07H/S | 18X8.5X112 | 5 | 90 | 9460 | 19030 | 216.5 | 101.75 | 136 | |
| XES3E-8518-07J/S | 18X8.5X112 | 7.5 | 90 | 9490 | 19060 | 216.5 | 101.75 | 136 | |
| XES3E-8518-07K/S | 18X8.5X112 | 10 | 90 | 9500 | 19070 | 216.5 | 101.75 | 136 | |
| XES3E-8518-07L/S | 18X8.5X112 | 15 | 90 | 9580 | 19150 | 216.5 | 101.75 | 136 | |
| S3E-8518-07M/S | 18X8.5X112 | 20 | 90 | 9600 | 19170 | 216.5 | 101.75 | 136 | |
| S3E-8518-06O/S | 18X8.5X96 | 30 | 90 | 9270 | 16940 | 216.5 | 101.75 | 120 | |
| S3E-8518-07O/S | 18X8.5X112 | 30 | 90 | 9690 | 19260 | 216.5 | 101.75 | 136 | |
| S3E-1020-06N/S | 20X10X96 | 25 | 108 | 10620 | 20220 | 240.5 | 117.25 | 120 | |
| XES3E-1020-06G/S | 20X10X96 | 3 | 108 | 10330 | 19930 | 240.5 | 117.25 | 120 | |
| XES3E-1020-06H/S | 20X10X96 | 5 | 108 | 10340 | 19940 | 240.5 | 117.25 | 120 | |
| XES3E-1020-06J/S | 20X10X96 | 7.5 | 108 | 10360 | 19960 | 240.5 | 117.25 | 120 | |
| XES3E-1020-06K/S | 20X10X96 | 10 | 108 | 10370 | 19970 | 240.5 | 117.25 | 120 | |
| XES3E-1020-06L/S | 20X10X96 | 15 | 108 | 10440 | 20040 | 240.5 | 117.25 | 120 | |



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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| Base Model No. ^{1,2,3,4,8} | Nominal Box Size ⁵ | Motor HP | Fan Diam. (in) | Shipping Weight ⁶ (lbs) | Operating Weight ^{6,7} (lbs) | Unit Width (in) | Unit Length (in) | Height to Fan Deck (in) | Certification Basis |
|-------------------------------------|-------------------------------|----------|----------------|------------------------------------|---------------------------------------|-----------------|------------------|-------------------------|---------------------|
| S3E-1020-06M/S | 20X10X96 | 20 | 108 | 10470 | 20070 | 240.5 | 117.25 | 120 | |
| S3E-8518-07P/S | 18X8.5X112 | 40 | 90 | 9870 | 19440 | 216.5 | 101.75 | 136 | |
| S3E-1020-06O/S | 20X10X96 | 30 | 108 | 10670 | 20270 | 240.5 | 117.25 | 120 | |
| S3E-1020-07N/S | 20X10X112 | 25 | 108 | 11000 | 21290 | 240.5 | 117.25 | 136 | |
| XES3E-1020-07G/S | 20X10X112 | 3 | 108 | 10690 | 20980 | 240.5 | 117.25 | 136 | |
| XES3E-1020-07H/S | 20X10X112 | 5 | 108 | 10700 | 20990 | 240.5 | 117.25 | 136 | |
| XES3E-1020-07J/S | 20X10X112 | 7.5 | 108 | 10740 | 21030 | 240.5 | 117.25 | 136 | |
| XES3E-1020-07K/S | 20X10X112 | 10 | 108 | 10750 | 21040 | 240.5 | 117.25 | 136 | |
| XES3E-1020-07L/S | 20X10X112 | 15 | 108 | 10830 | 21120 | 240.5 | 117.25 | 136 | |
| S3E-1020-07M/S | 20X10X112 | 20 | 108 | 10850 | 21140 | 240.5 | 117.25 | 136 | |
| S3E-1222-06N/S | 21.5X12X96 | 25 | 120 | 12610 | 24890 | 258.5 | 141.75 | 120 | |
| XES3E-1222-06H/S | 21.5X12X96 | 5 | 120 | 12310 | 24590 | 258.5 | 141.75 | 120 | |
| XES3E-1222-06J/S | 21.5X12X96 | 7.5 | 120 | 12350 | 24630 | 258.5 | 141.75 | 120 | |
| XES3E-1222-06K/S | 21.5X12X96 | 10 | 120 | 12360 | 24640 | 258.5 | 141.75 | 120 | |
| XES3E-1222-06L/S | 21.5X12X96 | 15 | 120 | 12430 | 24710 | 258.5 | 141.75 | 120 | |
| S3E-1222-06M/S | 21.5X12X96 | 20 | 120 | 12460 | 24740 | 258.5 | 141.75 | 120 | |
| S3E-1020-07O/S | 20X10X112 | 30 | 108 | 11060 | 21350 | 240.5 | 117.25 | 136 | |
| S3E-1222-06O/S | 21.5X12X96 | 30 | 120 | 12670 | 24950 | 258.5 | 141.75 | 120 | |
| S3E-1020-07P/S | 20X10X112 | 40 | 108 | 11230 | 21520 | 240.5 | 117.25 | 136 | |
| S3E-1222-07O/S | 21.5X12X112 | 30 | 120 | 13320 | 26350 | 258.5 | 141.75 | 136 | |
| XES3E-1222-07J/S | 21.5X12X112 | 7.5 | 120 | 13000 | 26030 | 258.5 | 141.75 | 136 | |
| XES3E-1222-07K/S | 21.5X12X112 | 10 | 120 | 13010 | 26040 | 258.5 | 141.75 | 136 | |
| XES3E-1222-07L/S | 21.5X12X112 | 15 | 120 | 13090 | 26120 | 258.5 | 141.75 | 136 | |
| XES3E-1222-07M/S | 21.5X12X112 | 20 | 120 | 13110 | 26140 | 258.5 | 141.75 | 136 | |
| S3E-1222-07N/S | 21.5X12X112 | 25 | 120 | 13270 | 26300 | 258.5 | 141.75 | 136 | |
| XES3E-1424-07N/S | 24X14X112 | 25 | 132 | 17980 | 36020 | 288.5 | 167.125 | 136 | |
| XES3E-1424-07J/S | 24X14X112 | 7.5 | 132 | 17710 | 35750 | 288.5 | 167.125 | 136 | |
| XES3E-1424-07K/S | 24X14X112 | 10 | 132 | 17720 | 35760 | 288.5 | 167.125 | 136 | |
| XES3E-1424-07L/S | 24X14X112 | 15 | 132 | 17800 | 35840 | 288.5 | 167.125 | 136 | |
| XES3E-1424-07M/S | 24X14X112 | 20 | 132 | 17820 | 35860 | 288.5 | 167.125 | 136 | |
| S3E-1222-07P/S | 21.5X12X112 | 40 | 120 | 13500 | 26530 | 258.5 | 141.75 | 136 | |
| S3E-1424-07O/S | 24X14X112 | 30 | 132 | 18030 | 36070 | 288.5 | 167.125 | 136 | |
| S3E-1222-07Q/S | 21.5X12X112 | 50 | 120 | 13510 | 26540 | 258.5 | 141.75 | 136 | |
| S3E-1222-07R/S | 21.5X12X112 | 60 | 120 | 14340 | 27370 | 258.5 | 141.75 | 136 | UUT B |
| S3E-1424-07P/S | 24X14X112 | 40 | 132 | 18210 | 36250 | 288.5 | 167.125 | 136 | Interpolated |
| S3E-1424-07R/S | 24X14X112 | 60 | 132 | 18230 | 36270 | 288.5 | 167.125 | 136 | |
| S3E-1424-07Q/S | 24X14X112 | 50 | 132 | 18220 | 36260 | 288.5 | 167.125 | 136 | |
| S3E-1222-10P/S | 21.5X12X160 | 40 | 132 | 16770 | 34950 | 258.5 | 141.75 | 186 | |
| XES3E-1222-10K/S | 21.5X12X160 | 10 | 132 | 16310 | 34490 | 258.5 | 141.75 | 186 | |
| XES3E-1222-10L/S | 21.5X12X160 | 15 | 132 | 16390 | 34570 | 258.5 | 141.75 | 186 | |
| XES3E-1222-10M/S | 21.5X12X160 | 20 | 132 | 16410 | 34590 | 258.5 | 141.75 | 186 | |



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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| Base Model No. ^{1,2,3,4,8} | Nominal Box Size ⁵ | Motor HP | Fan Diam. (in) | Shipping Weight ⁶ (lbs) | Operating Weight ^{6,7} (lbs) | Unit Width (in) | Unit Length (in) | Height to Fan Deck (in) | Certification Basis |
|-------------------------------------|-------------------------------|----------|----------------|------------------------------------|---------------------------------------|-----------------|------------------|-------------------------|---------------------|
| XES3E-1222-10N/S | 21.5X12X160 | 25 | 132 | 16560 | 34740 | 258.5 | 141.75 | 186 | |
| XES3E-1222-10O/S | 21.5X12X160 | 30 | 132 | 16620 | 34800 | 258.5 | 141.75 | 186 | |
| S3E-1222-10Q/S | 21.5X12X160 | 50 | 132 | 16950 | 35130 | 258.5 | 141.75 | 186 | |
| S3E-1222-10R/S | 21.5X12X160 | 60 | 132 | 16960 | 35140 | 258.5 | 141.75 | 186 | |
| S3E-1222-10S/S | 21.5X12X160 | 75 | 132 | 18020 | 36200 | 258.5 | 141.75 | 186 | |
| S3E-1222-12Q/S | 21.5X12X192 | 50 | 132 | 17860 | 37850 | 258.5 | 141.75 | 218 | |
| XES3E-1222-12K/S | 21.5X12X192 | 10 | 132 | 17330 | 37320 | 258.5 | 141.75 | 218 | |
| XES3E-1222-12L/S | 21.5X12X192 | 15 | 132 | 17410 | 37400 | 258.5 | 141.75 | 218 | |
| XES3E-1222-12M/S | 21.5X12X192 | 20 | 132 | 17430 | 37420 | 258.5 | 141.75 | 218 | |
| XES3E-1222-12N/S | 21.5X12X192 | 25 | 132 | 17590 | 37580 | 258.5 | 141.75 | 218 | |
| XES3E-1222-12O/S | 21.5X12X192 | 30 | 132 | 17640 | 37630 | 258.5 | 141.75 | 218 | |
| S3E-1222-12P/S | 21.5X12X192 | 40 | 132 | 17790 | 37780 | 258.5 | 141.75 | 218 | |
| S3E-1222-13R/S | 21.5X12X208 | 60 | 132 | 18590 | 39040 | 258.5 | 141.75 | 234 | |
| XES3E-1222-13K/S | 21.5X12X208 | 10 | 132 | 17830 | 38280 | 258.5 | 141.75 | 234 | |
| XES3E-1222-13L/S | 21.5X12X208 | 15 | 132 | 17910 | 38360 | 258.5 | 141.75 | 234 | |
| XES3E-1222-13M/S | 21.5X12X208 | 20 | 132 | 17930 | 38380 | 258.5 | 141.75 | 234 | |
| XES3E-1222-13N/S | 21.5X12X208 | 25 | 132 | 18090 | 38540 | 258.5 | 141.75 | 234 | |
| XES3E-1222-13O/S | 21.5X12X208 | 30 | 132 | 18140 | 38590 | 258.5 | 141.75 | 234 | |
| S3E-1222-13P/S | 21.5X12X208 | 40 | 132 | 18290 | 38740 | 258.5 | 141.75 | 234 | |
| S3E-1222-13Q/S | 21.5X12X208 | 50 | 132 | 18360 | 38810 | 258.5 | 141.75 | 234 | |
| S3E-1222-12R/S | 21.5X12X192 | 60 | 132 | 18090 | 38080 | 258.5 | 141.75 | 218 | |
| S3E-1222-12S/S | 21.5X12X192 | 75 | 132 | 19150 | 39140 | 258.5 | 141.75 | 218 | |
| S3E-1222-13S/S | 21.5X12X208 | 75 | 132 | 18680 | 39130 | 258.5 | 141.75 | 234 | |
| S3E-1222-14R/S | 21.5X12X224 | 60 | 132 | 19010 | 39450 | 258.5 | 141.75 | 250 | |
| XES3E-1222-14L/S | 21.5X12X224 | 15 | 132 | 18380 | 38820 | 258.5 | 141.75 | 250 | |
| XES3E-1222-14M/S | 21.5X12X224 | 20 | 132 | 18410 | 38850 | 258.5 | 141.75 | 250 | |
| XES3E-1222-14N/S | 21.5X12X224 | 25 | 132 | 18560 | 39000 | 258.5 | 141.75 | 250 | |
| XES3E-1222-14O/S | 21.5X12X224 | 30 | 132 | 18620 | 39060 | 258.5 | 141.75 | 250 | |
| S3E-1222-14P/S | 21.5X12X224 | 40 | 132 | 18770 | 39210 | 258.5 | 141.75 | 250 | |
| S3E-1222-14Q/S | 21.5X12X224 | 50 | 132 | 18840 | 39280 | 258.5 | 141.75 | 250 | |
| S3E-1222-14S/S | 21.5X12X224 | 75 | 132 | 19100 | 39540 | 258.5 | 141.75 | 250 | |
| S3E-1424-13S/S | 24X14X208 | 75 | 156 | 24360 | 48190 | 288.5 | 167.125 | 234 | |
| XES3E-1424-13L/S | 24X14X208 | 15 | 156 | 23680 | 47510 | 288.5 | 167.125 | 234 | |
| XES3E-1424-13M/S | 24X14X208 | 20 | 156 | 23700 | 47530 | 288.5 | 167.125 | 234 | |
| XES3E-1424-13N/S | 24X14X208 | 25 | 156 | 23860 | 47690 | 288.5 | 167.125 | 234 | |
| XES3E-1424-13O/S | 24X14X208 | 30 | 156 | 23910 | 47740 | 288.5 | 167.125 | 234 | |
| XES3E-1424-13P/S | 24X14X208 | 40 | 156 | 24070 | 47900 | 288.5 | 167.125 | 234 | |
| S3E-1424-13Q/S | 24X14X208 | 50 | 156 | 24130 | 47960 | 288.5 | 167.125 | 234 | |
| S3E-1424-13R/S | 24X14X208 | 60 | 156 | 24310 | 48140 | 288.5 | 167.125 | 234 | |
| S3E-1424-12S/S | 24X14X192 | 75 | 156 | 23930 | 46770 | 288.5 | 167.125 | 218 | |
| XES3E-1424-12L/S | 24X14X192 | 15 | 156 | 23250 | 46090 | 288.5 | 167.125 | 218 | |



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| Base Model No. ^{1,2,3,4,8} | Nominal Box Size ⁵ | Motor HP | Fan Diam. (in) | Shipping Weight ⁶ (lbs) | Operating Weight ^{6,7} (lbs) | Unit Width (in) | Unit Length (in) | Height to Fan Deck (in) | Certification Basis |
|-------------------------------------|-------------------------------|----------|----------------|------------------------------------|---------------------------------------|-----------------|------------------|-------------------------|---------------------|
| XES3E-1424-12M/S | 24X14X192 | 20 | 156 | 23270 | 46110 | 288.5 | 167.125 | 218 | |
| XES3E-1424-12N/S | 24X14X192 | 25 | 156 | 23430 | 46270 | 288.5 | 167.125 | 218 | |
| XES3E-1424-12O/S | 24X14X192 | 30 | 156 | 23480 | 46320 | 288.5 | 167.125 | 218 | |
| XES3E-1424-12P/S | 24X14X192 | 40 | 156 | 23640 | 46480 | 288.5 | 167.125 | 218 | |
| S3E-1424-12Q/S | 24X14X192 | 50 | 156 | 23700 | 46540 | 288.5 | 167.125 | 218 | |
| S3E-1424-12R/S | 24X14X192 | 60 | 156 | 23880 | 46720 | 288.5 | 167.125 | 218 | |
| S3E-1222-14T/S | 21.5X12X224 | 100 | 132 | 21210 | 41650 | 258.5 | 141.75 | 250 | |
| S3E-1424-12T/S | 24X14X192 | 100 | 156 | 25960 | 48800 | 288.5 | 167.125 | 218 | |
| S3E-1424-13T/S | 24X14X208 | 100 | 156 | 26390 | 50220 | 288.5 | 167.125 | 234 | |
| S3E-1424-14S/S | 24X14X224 | 75 | 156 | 24820 | 49840 | 288.5 | 167.125 | 250 | |
| XES3E-1424-14M/S | 24X14X224 | 20 | 156 | 24160 | 49180 | 288.5 | 167.125 | 250 | |
| XES3E-1424-14N/S | 24X14X224 | 25 | 156 | 24320 | 49340 | 288.5 | 167.125 | 250 | |
| XES3E-1424-14O/S | 24X14X224 | 30 | 156 | 24370 | 49390 | 288.5 | 167.125 | 250 | |
| XES3E-1424-14P/S | 24X14X224 | 40 | 156 | 24530 | 49550 | 288.5 | 167.125 | 250 | |
| S3E-1424-14Q/S | 24X14X224 | 50 | 156 | 24590 | 49610 | 288.5 | 167.125 | 250 | |
| S3E-1424-14R/S | 24X14X224 | 60 | 156 | 24770 | 49790 | 288.5 | 167.125 | 250 | |
| S3E-1424-14T/S | 24X14X224 | 100 | 156 | 26850 | 51870 | 288.5 | 167.125 | 250 | UUT C |

Notes:

1. Base models listed are for standard fan option. Actual unit model number may include a suffix "L" designating low sound fan option (e.g., S3E-1222-10P/LS or XES3E-1212-10K/LS).
2. Actual unit model number may include a suffix "E" designating two sets of drift eliminators (e.g., S3E-1212-10P/SE or XES3E-1212-10K/SE).
3. Actual unit model number may include a suffix "-2", "-3", or "-4" designating number of cells per unit (e.g., S3E-1212-10P-3/S or XES3E-1212-10K-3/S for a three cell unit). Each cell of multi-cell units is a structurally independent cooling tower. All tabulated values are provided per cell.
4. Actual unit model number may include a suffix "X" designating non-CTI certified (e.g., S3E-1212-10P/SX or XES3E-1212-10K/SX).
5. Nominal Box Size nomenclature: nominal width in feet X nominal length in feet X total fill height in inches
6. Weights are base unit weights. Actual weights may include accessory weight adds.
7. Operating weights at overflow water level. UUT test weight at operating water level. UUT B tested at shipping weight.
8. Cooling tower material of construction options (i.e., structural frame, enclosure, and basins) are listed in Table 3.



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Table 3: Certified Materials of Construction (MOC)

| Structural Frame and Basin MOC Option^{1,2,3} | MOC of Structural Elements | Certification Basis |
|--|--------------------------------------|----------------------------|
| Galvanized Steel | All Galvanized Steel | UUT A |
| Galvanized Steel with Stainless Steel Cold Water Basin | Galvanized Steel and Stainless Steel | Interpolated |
| Galvanized Steel with TriArmor® Cold Water Basin | Galvanized Steel | |
| Galvanized Steel with Stainless Steel Hot & Cold Water | Galvanized Steel and Stainless Steel | |
| BALTIBOND® Corrosion Protection System with | Galvanized Steel | |
| BALTIBOND® Corrosion Protection System with Stainless | Galvanized Steel and Stainless Steel | |
| BALTIBOND® Corrosion Protection System with Stainless | Galvanized Steel and Stainless Steel | |
| EVERTOUGH™ Construction | Galvanized Steel and Stainless Steel | |
| JE PREMIER SERIES® Construction | All Stainless Steel | UUT C |
| Enclosure and Air Inlet Louver MOC Option | MOC of Casing/Louvers | Certification Basis |
| FRP Casing Panels and Louvers | FRP/FRP | UUT A |
| Fire Retardant FRP Casing Panels and Louvers | FRP/FRP | Interpolated |
| FRP Casing Panels and Combined Air Inlet Shields | FRP/PVC | |
| Fire Retardant FRP Casing Panels and Combined Air Inlet | FRP/PVC | |
| Steel Casing Panels and FRP Louvers | Steel/FRP | |
| Steel Casing Panels and Combined Air Inlet Shields | Steel/PVC | UUT C |
| Steel Casing Panels and Louvers | Steel/Steel | UUT C |

Notes:

1. BALTIBOND® and TriArmor® are coating systems. Base material is Galvanized Steel.
2. EVERTOUGH™ Construction includes FRP hot water basins.
3. Structural frames and basins are manufactured by Baltimore Aircoil Company.



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Table 4: Certified Water Inlet/Outlet Configurations

| Water Inlet and Outlet Connection Option ^{1,2} | Inlet Location | Outlet Location | Internal Piping | Certification Basis |
|---|----------------|-----------------|-----------------|---------------------|
| Top Inlet - Bottom Outlet - Pump Suction | Top | Bottom | No | UUT C |
| Top Inlet - End Outlet - Pump Suction | Top | End | No | Interpolated |
| Top Inlet - Bottom Outlet - Remote Sump | Top | Bottom | No | |
| End Inlet EASY CONNECT® - Bottom Outlet - Pump Suction | End | Bottom | Yes | |
| End Inlet EASY CONNECT® - Bottom Outlet - Remote Sump | End | Bottom | Yes | |
| Bottom Inlet EASY CONNECT® - Bottom Outlet - Pump Suction | Bottom | Bottom | Yes | |
| Bottom Inlet EASY CONNECT® - Bottom Outlet - Remote Sump | Bottom | Bottom | Yes | UUT A |
| End Inlet EASY CONNECT® - End Outlet - Pump Suction | End | End | Yes | |

Notes:

1. Water inlet and outlet connection material of construction matches the MOC of the structural frame or basin to which it is attached.
2. Water inlet and outlet connections are manufactured by Baltimore Aircoil Company.

Table 5: Certified Equalizer/Bypass Configurations

| Equalizer and Bypass Connection Option ^{1,2} | Connection Location | Certification Basis |
|---|---------------------|---------------------|
| End Equalizer | End | UUT C |
| End Bypass | End | Interpolated |
| Bottom Equalizer | Bottom | |
| Bottom Bypass | Bottom | UUT A |

Notes:

1. Equalizer and bypass material of construction matches the MOC of the cold water basin.
2. Equalizer and bypass connections are manufactured by Baltimore Aircoil Company.



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Table 6: Certified Fan Motors

| Component | Manufacturer | Material of Construction | Drive Type | Horsepower | Voltage ¹ | Approximate Weight (lbs) | Certification Basis | |
|-----------|--------------|--------------------------|------------|------------|--|--------------------------|-------------------------------|--------------|
| Motor | Nidec | Cast Iron | Belt | 3 | 200, 230, 380, 415, 230/460, 460, or 575 | 60 | Extrapolated | |
| Motor | Nidec | Cast Iron | Belt | 5 | | 70 | UUT G _{a,b} | |
| Motor | Nidec | Cast Iron | Belt | 7.5 | | 100 | Interpolated | |
| Motor | Nidec | Cast Iron | Belt | 10 | | 110 | | |
| Motor | Nidec | Cast Iron | Belt | 15 | | 180 | UUT F _{a,b} | |
| Motor | Nidec | Cast Iron | Belt | 20 | | 200 | | |
| Motor | Nidec | Cast Iron | Belt | 25 | | 340 | Interpolated | |
| Motor | Nidec | Cast Iron | Belt | 30 | | 390 | | |
| Motor | Nidec | Cast Iron | Belt | 40 | | 530 | | |
| Motor | Nidec | Cast Iron | Belt | 50 | | 590 | | |
| Motor | Nidec | Cast Iron | Belt | 60 | | 750 | UUT B ; UUT H1 _{a,b} | |
| Motor | Nidec | Cast Iron | Belt | 75 | | 800 | Extrapolated | |
| Motor | Nidec | Cast Iron | Gear | 7.5 | | 100 | Extrapolated | |
| Motor | Nidec | Cast Iron | Gear | 10 | | 110 | UUT A | |
| Motor | Nidec | Cast Iron | Gear | 15 | | 180 | Interpolated | |
| Motor | Nidec | Cast Iron | Gear | 20 | | 200 | | |
| Motor | Nidec | Cast Iron | Gear | 25 | | 340 | | |
| Motor | Nidec | Cast Iron | Gear | 30 | | 390 | | |
| Motor | Nidec | Cast Iron | Gear | 40 | | 530 | | |
| Motor | Nidec | Cast Iron | Gear | 50 | | 590 | | |
| Motor | Nidec | Cast Iron | Gear | 60 | | 750 | | |
| Motor | Nidec | Cast Iron | Gear | 75 | | 800 | | |
| Motor | Nidec | Cast Iron | Gear | 100 | | 1200 | | UUT C |
| Motor | WEG | Cast Iron | Belt | 3 | | 60 | | Extrapolated |
| Motor | WEG | Cast Iron | Belt | 5 | | 70 | UUT G _{a,b} | |
| Motor | WEG | Cast Iron | Belt | 7.5 | | 100 | Interpolated | |
| Motor | WEG | Cast Iron | Belt | 10 | | 110 | | |
| Motor | WEG | Cast Iron | Belt | 15 | | 180 | | |
| Motor | WEG | Cast Iron | Belt | 20 | | 200 | | |
| Motor | WEG | Cast Iron | Belt | 25 | | 340 | | |
| Motor | WEG | Cast Iron | Belt | 30 | 390 | | | |
| Motor | WEG | Cast Iron | Belt | 35 | 530 | UUT F _{a,b} | | |
| Motor | WEG | Cast Iron | Belt | 40 | 530 | Interpolated | | |
| Motor | WEG | Cast Iron | Belt | 50 | 590 | UUT H2 _{a,b} | | |
| Motor | WEG | Cast Iron | Belt | 60 | 750 | | | |
| Motor | WEG | Cast Iron | Belt | 75 | 800 | Extrapolated | | |
| Motor | WEG | Cast Iron | Gear | 7.5 | 100 | Extrapolated | | |
| Motor | WEG | Cast Iron | Gear | 10 | 110 | UUT A | | |
| Motor | WEG | Cast Iron | Gear | 15 | 180 | | | |



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| Component | Manufacturer | Material of Construction | Drive Type | Horsepower | Voltage ¹ | Approximate Weight (lbs) | Certification Basis |
|-----------|--------------|--------------------------|------------|------------|----------------------|--------------------------|---------------------|
| Motor | WEG | Cast Iron | Gear | 20 | | 200 | Interpolated |
| Motor | WEG | Cast Iron | Gear | 25 | | 340 | |
| Motor | WEG | Cast Iron | Gear | 30 | | 390 | |
| Motor | WEG | Cast Iron | Gear | 40 | | 530 | |
| Motor | WEG | Cast Iron | Gear | 50 | | 590 | |
| Motor | WEG | Cast Iron | Gear | 60 | | 750 | |
| Motor | WEG | Cast Iron | Gear | 75 | | 800 | |
| Motor | WEG | Cast Iron | Gear | 100 | | 1200 | UUT C |

Notes:

1. UUT C tested with 460 V motors. All other UUT's tested with 230/460 dual voltage motors.



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Table 7: Certified Gears

| Component | Manufacturer | Material of Construction | Model | Approximate Weight (lbs) | Certification Basis |
|-----------|--------------|--------------------------|-------|--------------------------|---------------------|
| Gear | Amarillo | Cast Iron | A-65 | 100 | UUT A |
| Gear | Amarillo | Cast Iron | A-85 | 215 | Interpolated |
| Gear | Amarillo | Cast Iron | A-110 | 350 | |
| Gear | Amarillo | Cast Iron | A-135 | 530 | |
| Gear | Amarillo | Cast Iron | A-155 | 705 | |
| Gear | Amarillo | Cast Iron | A-175 | 855 | UUT C |



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Table 8: Certified Fans

| Component | Manufacturer | Material of Construction ¹ | Diameter (in) | No. of Blades | Approximate Weight (lbs) | Certification Basis | |
|---------------|--------------|---------------------------------------|---------------|---------------|--------------------------|----------------------|--------------|
| Standard Fan | Multi-Wing | GFRP | 42 | 5 | 13 | UUT D _{a,b} | |
| Standard Fan | Multi-Wing | GFRP | 90 | 5 | 111 | Interpolated | |
| Standard Fan | Multi-Wing | GFRP | 90 | 6 | 131 | | |
| Standard Fan | Multi-Wing | GFRP | 92 | 8 | 150 | UUT G _{a,b} | |
| Standard Fan | Cofimco | Aluminum | 90 | 4 | 123 | UUT A | |
| Standard Fan | Cofimco | Aluminum | 90 | 5 | 146 | Interpolated | |
| Standard Fan | Cofimco | Aluminum | 108 | 4 | 198 | | |
| Standard Fan | Cofimco | Aluminum | 108 | 5 | 126 | | |
| Standard Fan | Cofimco | Aluminum | 108 | 5 | 238 | | |
| Standard Fan | Cofimco | Aluminum | 108 | 6 | 278 | | |
| Standard Fan | Cofimco | Aluminum | 120 | 4 | 205 | | |
| Standard Fan | Cofimco | Aluminum | 120 | 5 | 132 | | |
| Standard Fan | Cofimco | Aluminum | 120 | 5 | 247 | | |
| Standard Fan | Cofimco | Aluminum | 120 | 6 | 287 | | UUT B |
| Standard Fan | Cofimco | Aluminum | 132 | 5 | 254 | | Interpolated |
| Standard Fan | Cofimco | Aluminum | 132 | 5 | 333 | | |
| Standard Fan | Cofimco | Aluminum | 132 | 6 | 390 | | |
| Standard Fan | Cofimco | Aluminum | 156 | 5 | 419 | | |
| Standard Fan | Cofimco | Aluminum | 156 | 6 | 642 | | |
| Standard Fan | Cofimco | Aluminum | 156 | 7 | 730 | UUT C | |
| Low Sound Fan | Cofimco | Aluminum | 90 | 7 | 172 | UUT A | |
| Low Sound Fan | Cofimco | Aluminum | 90 | 8 | 311 | Interpolated | |
| Low Sound Fan | Cofimco | Aluminum | 108 | 6 | 375 | | |
| Low Sound Fan | Cofimco | Aluminum | 120 | 6 | 419 | | |
| Low Sound Fan | Cofimco | Aluminum | 132 | 5 | 333 | | |
| Low Sound Fan | Cofimco | Aluminum | 132 | 7 | 589 | | |
| Low Sound Fan | Cofimco | Aluminum | 156 | 7 | 646 | UUT C | |

Notes:

1. GFRP = Glass Fiber Reinforced Plastic



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Table 9: Certified Options and Accessories

| Option or Accessory | Certification Basis |
|---|---------------------|
| Internal Walkway | UUT C |
| Internal Platform and Ladder | UUT C |
| Fan Deck Handrails | UUT C |
| Aluminum Ladder(s) to Fan Deck | UUT C |
| Ladder Safety Cages | UUT C |
| Ladder Safety Gates | UUT C |
| Mechanical Makeup | UUT C |
| Stainless Steel Trash Screen | UUT C |
| 1'- 9" Fan Cylinder Extension | UUT C |
| 10 1/2" Fan Cylinder Extension | UUT A |
| Stainless Steel Outlet Strainer | UUT A |
| Stainless Steel Fan Guard | UUT A |
| Full Air Intake Screens | UUT A |
| Hot Water Basin Weir Dams | UUT A |
| Motor Shaft Grounding Ring | UUT A |
| Basin Heaters and Standard Heater Controls | UUT A |
| Penn F63 Float Switches | UUT A |
| Vibration Cutout Switches | UUT A |
| Electric Water Level Control (EWLC) with Solenoid Valve | UUT A |
| External Gear Oil Fill Line | UUT A |
| External Gear Oil Level Sight Glass | UUT A |
| No Minimum Speed Gear Option | UUT A |



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
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TEST UNIT DATA

| Test Unit Identification | | |
|--|---|--------------------|
| Unit Under Test (UUT) | UUT A | |
| Unit Configuration | | |
| Product Line | Series 3000 Open Cooling Tower | |
| Model(s) | 3240C/S and 3240C/QS | |
| Nominal Box Size | 18X8.5X80 | |
| No. of Sections | 1 | |
| Unit Length (in) | 101.25 | |
| Unit Width (in) | 216.5 | |
| Height to Top of Fan Deck (in) | 103.75 | |
| Overall Height (in) | 122.125 | |
| Shipping Weight (lbs) | 8,370 | |
| Operating Weight (lbs) | 15,960 | |
| Test Weight (lbs) | 14,881 | |
| Structure MOC | Galvanized steel | |
| Casing and Louver MOC | FRP | |
| Component Configuration | | |
| Drive Type | Gear | |
| Motor Horsepower | 10 | |
| Motor Manufacturer(s) | Nidec and WEG | |
| Gear Model | A-65 | |
| Fan Type(s) | Standard and Low Sound | |
| Fan Diameter (in) | 90 | |
| No. of Fan Blades | 4 (Standard); 7 (Low Sound) | |
| Mounting Configuration | | |
| Support Type | Rigid and Vibration Isolated | |
| Support Configuration | Plan A – 2 Beam | |
| Attachment Hardware | (8) ¾” diameter bolts, SAE J429 Grade 5, 150 ft-lbs | |
| Vibration Isolator Model(s) | (4) SLFADA600, each with (2) SLF-110 | |
| Vibration Isolator Manufacturer | Mason Industries, Inc. | |
| Highest Seismic Test Parameters | | |
| Building Code(s) | 2013 CBC | |
| Test Criteria | ICC-ES AC156 (February 2012) | |
| | Rigid | Vibration Isolated |
| S_{DS} (g) | 2.19 | 2.00 |
| z/h | 1.0 | 1.0 |
| I_p | 1.5 | 1.5 |
| A_{FLX-H} (g) | 3.50 | 3.20 |
| A_{RIG-H} (g) | 2.62 | 2.40 |
| A_{FLX-V} (g) | 1.45 | 1.33 |
| A_{RIG-V} (g) | 0.58 | 0.53 |
| Lowest Resonance Frequency | | |
| | Rigid | Vibration Isolated |
| Front-to-Back (Hz) | 6.3 | 1.4 |
| Side-to-Side (Hz) | 7.8 | 1.7 |



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| | | |
|---|------|-----|
| Vertical (Hz) | 32.0 | 3.3 |
| Test Notes | | |
| The tested models (3240C/S and 3240C/QS), which are pre-approved under OSP-0224-10, are similar to models XES3E-8518-05K/S and XES3E-8518-05/K/LS. | | |
| The UUT operating contents were simulated as follows: <ol style="list-style-type: none">1. Water in the hot water and cold water basins simulated with sand bags.2. Water in internal piping simulated by sealing the piping and filling with water.3. Water in the fill simulated by adding extra fill sheets. | | |
| The UUT maintained structural and functional integrity in accordance with the requirements of ICC-ES AC156. | | |



UUT A Test Setup (Rigid)





UUT A Test Setup (Vibration Isolated)





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| Test Unit Identification | |
|---|---|
| Unit Under Test (UUT) | UUT B |
| Unit Configuration | |
| Product Line | Series 3000 Open Cooling Tower |
| Model(s) | 3672C |
| Nominal Box Size | 21.5X12X112 |
| No. of Sections | 1 |
| Unit Length (in) | 141.75 |
| Unit Width (in) | 258.5 |
| Height to Top of Fan Deck (in) | 135.75 |
| Overall Height (in) | 156.625 |
| Shipping Weight (lbs) | 13,684 |
| Operating Weight (lbs) | 27,320 |
| Test Weight (lbs) | 13,684 |
| Structure MOC | Galvanized steel |
| Casing and Louver MOC | FRP |
| Component Configuration | |
| Drive Type | Belt |
| Motor Horsepower | 60 |
| Motor Manufacturer(s) | Nidec |
| Fan Type(s) | Standard |
| Fan Diameter (in) | 120 |
| No. of Fan Blades | 6 |
| Mounting Configuration | |
| Support Type | Rigid |
| Support Configuration | Plan A – 2 Beam |
| Attachment Hardware | (8) ¾” diameter bolts, SAE J429 Grade 5, 250 ft-lbs |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (February 2012) |
| S_{DS} (g) | 2.19 |
| z/h | 1.0 |
| I_p | 1.5 |
| A_{FLX-H} (g) | 3.50 |
| A_{RIG-H} (g) | 2.63 |
| A_{FLX-V} (g) | 2.33 |
| A_{RIG-V} (g) | 1.75 |
| Lowest Resonance Frequency | |
| Front-to-Back (Hz) | 5.8 |
| Side-to-Side (Hz) | 7.7 |
| Vertical (Hz) | 9.1 |
| Test Notes | |
| The tested model (3672C), which is pre-approved under OSP-0224-10, is similar to model S3E-1212-07R/S. | |
| The UUT operating contents were not simulated. | |
| The UUT maintained structural and functional integrity in accordance with the requirements of ICC-ES AC156. | |



UUT B Test Setup





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| Test Unit Identification | | |
|--|---|---------------------------|
| Unit Under Test (UUT) | UUT C | |
| Unit Configuration | | |
| Product Line | Series 3000 Open Cooling Tower | |
| Model(s) | 31301C/S and 31301C/QS | |
| Nominal Box Size | 24X14X224 | |
| No. of Sections | 2 | |
| Unit Length (in) | 167.125 | |
| Unit Width (in) | 288.5 | |
| Height to Top of Fan Deck (in) | 249.75 | |
| Overall Height (in) | 293.25 | |
| Shipping Weight (lbs) | 29,840 | |
| Operating Weight (lbs) | 54,070 | |
| Test Weight (lbs) | 45,731 | |
| Structure MOC | Stainless steel | |
| Casing and Louver MOC | Stainless steel casing; Stainless steel and PVC louvers | |
| Component Configuration | | |
| Drive Type | Gear | |
| Motor Horsepower | 100 | |
| Motor Manufacturer(s) | Nidec and WEG | |
| Gear Model | A-175 | |
| Fan Type(s) | Standard and Low Sound | |
| Fan Diameter (in) | 156 | |
| No. of Fan Blades | 7 (Standard and Low Sound) | |
| Mounting Configuration | | |
| Support Type | Rigid and Vibration Isolated | |
| Support Configuration | Plan A – 4 Beam | |
| Attachment Hardware | (16) 7/8" diameter bolts, SAE J429 Grade 5, 200 ft-lbs | |
| Vibration Isolator Model(s) | (4) SLFADA600, each with (2) SLF-110 | |
| Vibration Isolator Manufacturer | Mason Industries, Inc. | |
| Highest Seismic Test Parameters | | |
| Building Code(s) | 2013 CBC | |
| Test Criteria | ICC-ES AC156 (February 2012) | |
| | Rigid | Vibration Isolated |
| S_{DS} (g) | 1.94 | 1.94 |
| z/h | 1.0 | 1.0 |
| I_p | 1.5 | 1.5 |
| A_{FLX-H} (g) | 3.10 | 3.10 |
| A_{RIG-H} (g) | 2.33 | 2.33 |
| A_{FLX-V} (g) | 1.29 | 1.29 |
| A_{RIG-V} (g) | 0.52 | 0.52 |
| Lowest Resonance Frequency | | |
| | Rigid | Vibration Isolated |
| Front-to-Back (Hz) | 4.0 | 0.8 |
| Side-to-Side (Hz) | 6.7 | 1.4 |



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| | | |
|---|-----|-----|
| Vertical (Hz) | 9.1 | 2.8 |
| Test Notes | | |
| The tested models (31301C/S and 31301C/QS), which are pre-approved under OSP-0224-10, are similar to model S3E-1424-14T/S and S3E-1424-14T/LSE. | | |
| The UUT operating contents were simulated as follows: <ol style="list-style-type: none">1. Water in the hot water and cold water basins simulated with sand bags.2. Water in the fill simulated by adding extra fill sheets. | | |
| The UUT maintained structural and functional integrity in accordance with the requirements of ICC-ES AC156. | | |



UUT C Test Setup (Rigid)





UUT C Test Setup (Vibration Isolated)





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| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | D _a |
| Unit Configuration | |
| Product Line | PC2 Evaporative Condenser |
| Model(s) | PC2-50-0406-7.5/S |
| Nominal Box Size | 04X06X6R |
| No. of Sections | 1 |
| Unit Length (in) | 48 |
| Unit Width (in) | 71.75 |
| Height to Top of Fan Deck (in) | 116 |
| Overall Height (in) | 118.875 |
| Shipping Weight (lbs) | 2,693 |
| Operating Weight (lbs) | 4,199 |
| Test Weight (lbs) | 4,199 |
| Structure MOC | Galvanized steel |
| Louver MOC | PVC |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Direct Drive |
| Motor HP / Freq / V | 7.5HP, 60 Hz, 230/460 V |
| Motor Manufacturer(s) | Nidec |
| Fan Manufacturer / Construction | Multi-Wing (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 42 |
| No. of Fan Blades | 5 |
| Mounting Configuration | |
| Support Type | Rigid Base |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (4) ¾" diameter bolts, SAE J429 Grade 5, 150 ft-lbs |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Rigid |
| S_{DS} (g) | 2.34 3.75 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.75 |
| A_{RIG-H} (g) | 2.81 |
| A_{FLX-V} (g) | 2.50 |
| A_{RIG-V} (g) | 1.88 |
| Lowest Resonance Frequency | |
| | Rigid |
| Front-to-Back (Hz) | 8.13 |
| Side-to-Side (Hz) | 12.63 |
| Vertical (Hz) | 26.88 |



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UUT D_a Test Setup (Rigid)



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.



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| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | D _b |
| Unit Configuration | |
| Product Line | PC2 Evaporative Condenser |
| Model(s) | PC2-50-0406-7.5/S |
| Nominal Box Size | 04X06X6R |
| No. of Sections | 1 |
| Unit Length (in) | 48 |
| Unit Width (in) | 71.75 |
| Height to Top of Fan Deck (in) | 116 |
| Overall Height (in) | 118.875 |
| Shipping Weight (lbs) | 2,693 |
| Operating Weight (lbs) | 4,199 |
| Test Weight (lbs) | 4,199 |
| Structure MOC | Galvanized steel |
| Louver MOC | PVC |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Direct Drive |
| Motor HP / Freq / V | 7.5HP, 60 Hz, 230/460 V |
| Motor Manufacturer(s) | Nidec |
| Fan Manufacturer / Construction | Multi-Wing (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 42 |
| No. of Fan Blades | 5 |
| Mounting Configuration | |
| Support Type | Vibration Isolated |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (4) ¾" diameter bolts, SAE J429 Grade 5, 150 ft-lbs |
| Vibration Isolator Model(s) | (4) SLFADA200, each with (2) SLF-C2 |
| Vibration Isolator Manufacturer | Mason Industries, Inc. |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Vibration Isolated |
| S_{DS} (g) | 1.94 3.10 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.10 |
| A_{RIG-H} (g) | 2.33 |
| A_{FLX-V} (g) | 2.07 |
| A_{RIG-V} (g) | 1.38 |
| Lowest Resonance Frequency | |
| | Vibration Isolated |
| Front-to-Back (Hz) | 1.13 |
| Side-to-Side (Hz) | 1.88 |
| Vertical (Hz) | 5.63 |



UUT D_b Test Setup (Flexible)



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.



**OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT
FACILITIES DEVELOPMENT DIVISION**

| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | F _a |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | PT2-1218A-3S1/WQS |
| Nominal Box Size | 12x18X3L |
| No. of Sections | 2 |
| Unit Length (in) | 215.75 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | 211.125 |
| Overall Height (in) | 251.5 |
| Shipping Weight (lbs) | 15,140 |
| Operating Weight (lbs) | 23,630 |
| Test Weight (lbs) | 22,173 |
| Structure MOC | Stainless Steel |
| Louver MOC | PVC |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 20HP/60Hz/230/460V and (1) 35HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec and WEG |
| Fan Manufacturer / Construction | Howden (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 84 and 92 |
| No. of Fan Blades | 3 |
| Mounting Configuration | |
| Support Type | Rigid Base |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (8) ¾" diameter bolts, SAE J429 Grade 5, 150 ft-lbs |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Rigid |
| S_{DS} (g) | 2.00 3.20 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 2.14 |
| A_{RIG-V} (g) | 0.86 |
| Lowest Resonance Frequency | |
| | Rigid |
| Front-to-Back (Hz) | 6.30 |
| Side-to-Side (Hz) | 3.50 |
| Vertical (Hz) | 8.50 |



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UUT F_a Test Setup (Rigid)



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.



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| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | F _b |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | PT2-1218A-3S1/WQS |
| Nominal Box Size | 12x18X3L |
| No. of Sections | 2 |
| Unit Length (in) | 215.75 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | 211.125 |
| Overall Height (in) | 251.5 |
| Shipping Weight (lbs) | 15,140 |
| Operating Weight (lbs) | 23,630 |
| Test Weight (lbs) | 22,173 |
| Structure MOC | Stainless Steel |
| Louver MOC | PVC |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 20HP/60Hz/230/460V and (1) 35HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec and WEG |
| Fan Manufacturer / Construction | Howden (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 84 and 92 |
| No. of Fan Blades | 3 |
| Mounting Configuration | |
| Support Type | Vibration Isolated |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (8) ¾" diameter bolts, SAE J429 Grade 5, 150 ft-lbs |
| Vibration Isolator Model(s) | (8) SLFADA350, each with (2) SLF-109 |
| Vibration Isolator Manufacturer | Mason Industries, Inc. |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Vibration Isolated |
| S_{DS} (g) | 2.00 |
| z/h | 1.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 1.34 |
| A_{RIG-V} (g) | 0.54 |
| Lowest Resonance Frequency | |
| | Vibration Isolated |
| Front-to-Back (Hz) | 2.00 |
| Side-to-Side (Hz) | 1.80 |
| Vertical (Hz) | 3.80 |



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UUT F_b Test Setup (Flexible)



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.



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| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | G _a |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,400 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (2) 5HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec and WEG |
| Fan Manufacturer / Construction | Cofimco (aluminum), and Multi-Wing (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 84 and 92 |
| No. of Fan Blades | 6 |
| Mounting Configuration | |
| Support Type | Rigid Base |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Rigid |
| S_{DS} (g) | 2.00 3.20 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 2.14 |
| A_{RIG-V} (g) | 0.86 |
| Lowest Resonance Frequency | |
| | Rigid |
| Front-to-Back (Hz) | 9.30 |
| Side-to-Side (Hz) | 15.50 |
| Vertical (Hz) | 12.00 |



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UUT G_a Test Setup (Rigid)



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.



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| Test Unit Identification | |
|--|---|
| Unit Under Test (UUT) | G _b |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,400 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (2) 5HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec and WEG |
| Fan Manufacturer / Construction | Cofimco (aluminum), and Multi-Wing (glass-fiber reinforced plastic) |
| Fan Diameter (in) | 84 and 92 |
| No. of Fan Blades | 6 |
| Mounting Configuration | |
| Support Type | Vibration Isolated |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Vibration Isolator Model(s) | (4) SLFADA350-104, (2) SLFADA350-106 |
| Vibration Isolator Manufacturer | Mason Industries, Inc. |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Vibration Isolated |
| S_{DS} (g) | 2.00 |
| z/h | 1.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 1.34 |
| A_{RIG-V} (g) | 0.54 |
| Lowest Resonance Frequency | |
| | Vibration Isolated |
| Front-to-Back (Hz) | 4.00 |
| Side-to-Side (Hz) | 4.50 |
| Vertical (Hz) | 11.00 |



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UUT G_b Test Setup (Flexible)



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.



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| Test Unit Identification | |
|--|--|
| Unit Under Test (UUT) | H1 _a |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,520 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 60HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec |
| Fan Manufacturer / Construction | Cofimco (aluminum) |
| Fan Diameter (in) | 132 |
| No. of Fan Blades | 7 |
| Mounting Configuration | |
| Support Type | Rigid Base |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Rigid |
| S_{DS} (g) | 2.00 3.20 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 2.14 |
| A_{RIG-V} (g) | 0.86 |
| Lowest Resonance Frequency | |
| | Rigid |
| Front-to-Back (Hz) | 20.30 |
| Side-to-Side (Hz) | 12.80 |
| Vertical (Hz) | 19.30 |



UUT H1_a Test Setup (Rigid)



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.



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| Test Unit Identification | |
|--|--|
| Unit Under Test (UUT) | H1 _b |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,520 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 60HP/60Hz/230/460V |
| Motor Manufacturer(s) | Nidec |
| Fan Manufacturer / Construction | Cofimco (aluminum) |
| Fan Diameter (in) | 132 |
| No. of Fan Blades | 7 |
| Mounting Configuration | |
| Support Type | Vibration Isolated |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Vibration Isolator Model(s) | (4) SLFADA350-104, (2) SLFADA350-106 |
| Vibration Isolator Manufacturer | Mason Industries, Inc. |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Vibration Isolated |
| S_{DS} (g) | 2.00 |
| z/h | 1.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 1.34 |
| A_{RIG-V} (g) | 0.54 |
| Lowest Resonance Frequency | |
| | Vibration Isolated |
| Front-to-Back (Hz) | 3.80 |
| Side-to-Side (Hz) | 4.80 |
| Vertical (Hz) | 6.80 |



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UUT H1_b Test Setup (Flexible)



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.



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| Test Unit Identification | |
|--|--|
| Unit Under Test (UUT) | H2 _a |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,520 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 60HP/60Hz/230/460V |
| Motor Manufacturer(s) | WEG |
| Fan Manufacturer / Construction | Cofimco (aluminum) |
| Fan Diameter (in) | 132 |
| No. of Fan Blades | 7 |
| Mounting Configuration | |
| Support Type | Rigid Base |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Rigid |
| S_{DS} (g) | 2.00 3.20 |
| z/h | 1.00 0.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 2.14 |
| A_{RIG-V} (g) | 0.86 |
| Lowest Resonance Frequency | |
| | Rigid |
| Front-to-Back (Hz) | 20.00 |
| Side-to-Side (Hz) | 13.30 |
| Vertical (Hz) | 10.80 |



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UUT H₂a Test Setup (Rigid)



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.



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| Test Unit Identification | |
|--|--|
| Unit Under Test (UUT) | H2 _b |
| Unit Configuration | |
| Product Line | PT2 Open Cooling Tower |
| Model(s) | N/A |
| Nominal Box Size | N/A |
| No. of Sections | N/A |
| Unit Length (in) | 215.5 |
| Unit Width (in) | 142 |
| Height to Top of Fan Deck (in) | N/A |
| Overall Height (in) | 60 |
| Shipping Weight (lbs) | N/A |
| Operating Weight (lbs) | N/A |
| Test Weight (lbs) | 3,520 |
| Structure MOC | Galvanized Steel |
| Louver MOC | N/A |
| Listing of Major Subassemblies and Subcomponents | |
| Drive Type | Belt |
| Motor HP / Freq / V | (1) 60HP/60Hz/230/460V |
| Motor Manufacturer(s) | WEG |
| Fan Manufacturer / Construction | Cofimco (aluminum) |
| Fan Diameter (in) | 132 |
| No. of Fan Blades | 7 |
| Mounting Configuration | |
| Support Type | Vibration Isolated |
| Support Configuration | Perimeter Support |
| Attachment Hardware | (116) 5/16" & (8) 3/8" diameter SAE J429 Grade 2 bolts |
| Vibration Isolator Model(s) | (4) SLFADA350-104, (2) SLFADA350-106 |
| Vibration Isolator Manufacturer | Mason Industries, Inc. |
| Highest Seismic Test Parameters | |
| Building Code(s) | 2013 CBC |
| Test Criteria | ICC-ES AC156 (2012) |
| | Vibration Isolated |
| S_{DS} (g) | 2.00 |
| z/h | 1.00 |
| I_p | 1.50 |
| A_{FLX-H} (g) | 3.20 |
| A_{RIG-H} (g) | 2.40 |
| A_{FLX-V} (g) | 1.34 |
| A_{RIG-V} (g) | 0.54 |
| Lowest Resonance Frequency | |
| | Vibration Isolated |
| Front-to-Back (Hz) | 3.50 |
| Side-to-Side (Hz) | 5.80 |
| Vertical (Hz) | 7.30 |



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UUT H2_b Test Setup (Flexible)



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.