



APPLICATION FOR PREAPPROVAL SPECIAL SEISMIC CERTIFICATION OF EQUIPMENT AND COMPONENTS

For Office Use Only

APPLICATION NO. OSP-0241-10
--

Check whether application is: NEW RENEWAL

1.0	Maquet, Incorporated <i>Manufacturer</i>	Aaron Griswold, Engineering Supervisor <i>Manufacturer's Technical Representative</i>
	45 Barbour Pond Road	Wayne, NJ 07470
	<i>Mailing Address</i>	

	(973) 709-7926 <i>Telephone</i>	Aaron.griswold@maquet-inc.com <i>E-mail Address</i>
--	------------------------------------	--

2.0	Medical Equipment, Lights and Booms <i>Product Name</i>	Mechanical Equipment <i>Product Type</i>
------------	--	---

See attached OSP Product Summary.

Product model No (List all unique product identification numbers and/or serial numbers)

General Description: The approved units include various lights and booms from the Maquet medical equipment product line, including the Lucea, Satellite and Modutec models.

3.0	DYNAMIC CERTIFICATION LABORATORIES, LLC <i>Applicant Company Name</i>	JOSEPH LA BRIE, S.E. <i>Contact Person</i>
	1315 GREG STREET, SUITE 109	SPARKS, NV 89431

Mailing Address

	(775) 358-5085 <i>Telephone</i>	LaBrie@makeitright.net <i>E-mail Address</i>
--	------------------------------------	---

I hereby agree to reimburse the Office of Statewide Health Planning and Development for the actual costs incurred by the department for review.

12/14/11

Signature of Applicant

Date

Managing Partner
Title

Dynamic Certification Laboratories, LLC
Company Name



Registered Design Professional Preparing the Report

4.0 DYNAMIC CERTIFICATION LABORATORIES, LLC
Company Name

JOSEPH LA BRIE, S.E. SE-3566
Contact Name *California License Number*

1315 GREG STREET, SUITE 109, SPARKS, NV 89431
Mailing Address

(626) 445-0366 LaBrie@MakeltRight.net
Telephone *E-mail Address*

California Licensed Structural Engineer Review and Acceptance of the Report

5.0 DYNAMIC CERTIFICATION LABORATORIES, LLC
Company Name

DR. AHMAD ITANI, SE SE-5220
Contact Name *California License Number*

1315 GREG STREET, SUITE 109, SPARKS, NV 89431
Mailing Address

(775) 358-5085 Itani@shaketest.com
Telephone *E-mail Address*

Anchorage Pre-Approval

- 6.0 Anchorage is pre-approved under OPA-
 (Separate application for anchorage pre-approval is required)
- Anchorage is not Pre-approved

Certification Method

70. Testing in accordance with: ICC-ES AC-156 Other (Please Specify):
-
- Analysis
- Experience data
- Combination of Testing, Analysis, and/or Experience Data (Please Specify): Testing

Testing Laboratory (if applicable)

8.0 DYNAMIC CERTIFICATION LABORATORIES, LLC KELLY LAPLACE, PROJECT ENGINEER
Company Name *Contact Name*

1315 GREG STREET, STE 109 SPARKS, NV 89431
Mailing Address

(775) 358-5085 Kelly@shaketest.com
Telephone *E-mail:*



Approval Parameters

9.0

Design in accordance with ASCE 7-05 Chapter 13: Yes No

Design Basis of Equipment or Components (F_p/W_p) = 2.71 (for $S_{DS} = 2.26 g$); 3.00 (for $S_{DS} = 2.50 g$)

S_{DS} (Spectral response acceleration at short period) = 2.26g (PWRLD lights and power supply); 2.50g all others

a_p (In-structure equipment or component amplification factor) = 1.0

R_p (Equipment or component response modification factor) = 1.5

I_p (Importance factor) = 1.5

z/h (Height factor ratio) = 1.0

Equipment or Component fundamental period(s) = SEE ATTACHMENT

Building period limits (if any) = NONE

Overall dimensions and weight (or range thereof) = SEE ATTACHMENT

Equipment or Components @ grade designed in accordance with ASCE 7-05 Chapter 15: Yes No

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

S_{DS} (Spectral response acceleration at short period) =

S_1 (Spectral response acceleration at 1 second period) =

R (Response modification coefficient) = 1.0

Ω_0 (System overstrength factor) = 1.0

C_d (Deflection amplification factor) = 1.0

I_p (Importance factor) = 1.5

Height to Center of Gravity above base =

Equipment or Component fundamental period(s) = Sec

Overall dimensions and weight (or range thereof) =

Tank(s) designed in accordance with ASME BPVC, 2007: Yes No

List of attachments supporting the special seismic certification of equipment or components:

- Test Report
- Drawings
- Manufacturer's Catalog
- Calculations
- Others (Please Specify):

11.0 OSHPD Approval (For Office Use Only)



10/10/2012

December 31, 2016

Signature & Date

Approval Expiration Date

M. R. Karim, SHFR

S_{DS} (g) = **See Section 9.0** $z/h = 1.0$

Name & Title

Special Seismic Certification Valid Up to

Condition of Approval (if any):

**Special Seismic Certification
Tested Units**



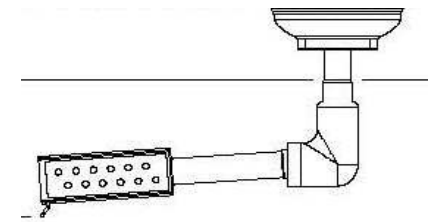
Manufacturer: Maquet

Product Line: Lights and Booms

System	Description	Total Operating Weight (lb)	Maximum Dimensions (Inches)		Mounting	Sds Level Tested	Unit
			Height	Length			
Modutec PLG Ceiling Supply Unit Arm System	PLG 12-0 Spring Arm	207	25	51	Rigid Ceiling Mount	2.5	UUT2
Surgical Light Arm System	Dual PowerLED configuration (single fork, PWD 73)	170	54	202	Rigid Ceiling Mount	2.26	UUT1
	Single PowerLED configuration (double fork, PWD 70)	91	78	90	Rigid Ceiling Mount	2.5	UUT7
SAT XD System	SAT XD	225	62	120	Rigid Ceiling Mount	2.26	UUT1
Examination Light System	LUCEA Examination Light, Lucea 40 TUB 260mm	73	53	73	Rigid Ceiling Mount	2.5	UUT3a
	LUCEA 40 Examination Light, Lucea 40 Wall	20	50	73	Rigid Wall Mount	2.5	UUT3b

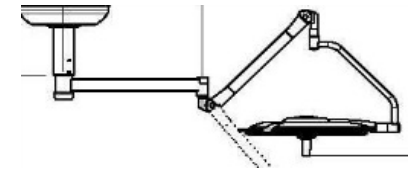
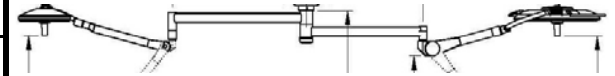
APPROVED COMPONENT LIST - Modutec

Modutec PLG Ceiling Supply Unit Arm Systems						
Arm System	Max. Dimensions, Height x Length (inches)	Empty Weight (lbs)	Max. Permitted Loaded Weight (lbs)	Mounting	Unit	Highest Sds Level Certified
PLG 12-0 Spring Arm	25 x 51	207	207	Rigid mount, using Satellite Center Point Ceiling Mount System	UUT2	2.5



APPROVED COMPONENT LIST - LIGHTS

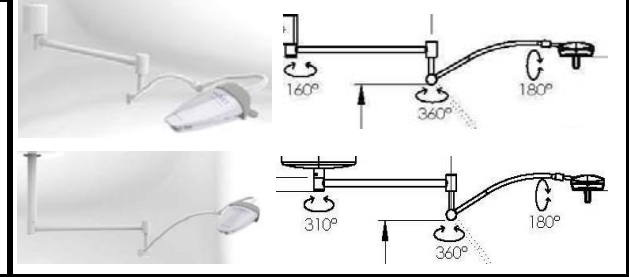
Surgical Light Arm Systems						
Model Number	Description	Max. Dimensions, Height x Length (inches)	Weight (lb)	Mounting	Unit	Highest Sds Level Certified
PWD 73	Dual PowerLED 700 and 300, single fork	54 x 202	170	Rigid mount, using Satellite Center Point Ceiling Mount System	UUT1	2.26
PWD 75	Dual PowerLED 700 and 500, single fork	54 x 202	170 max.	Rigid mount, using Satellite Center Point Ceiling Mount System	Interpolated	2.26
PWD 77	Dual PowerLED 700 and 700, single fork				Interpolated	
PWD 53	Dual PowerLED 500 and 300, single fork				Interpolated	
PWD 33	Dual PowerLED 300 and 300, single fork				Interpolated	
PWD 30	Single PowerLED 300, double fork	78 x 90	91 max.	Rigid mount, using Satellite Center Point Ceiling Mount System	Interpolated	2.26
PWD 50	Single PowerLED 500, double fork				Interpolated	
PWD 70	Single PowerLED 700, double fork	78 x 90	91	Rigid mount, using Satellite Center Point Ceiling Mount System	UUT7	2.5



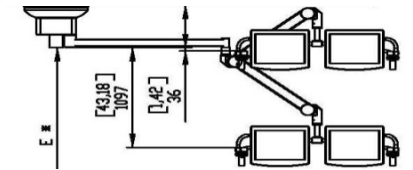
Note: Light heads on the above surgical light systems may be PowerLED 300, 500 or 700.

APPROVED COMPONENT LIST - LIGHTS (Continued)

Examination Light Systems						
Model Number	Component Name	Max. Dimensions, Height x Length (inches)	Weight (lb)	Mounting	Unit	Highest Sds Level Certified
LUCEA 40 Wall	Wall-Mount Lucea 40	50 x 73	20	Rigid wall mount	UUT3b	2.5
LUCEA 40 TUB 260mm	Ceiling-Mount Lucea 40	53 x 73	73	Rigid ceiling mount	UUT3a	



SAT XD System						
Model Number	Component Name	Max. Dimensions, Height x Length (inches)	Weight (lb)	Mounting	Unit	Highest Sds Level Certified
ALM515031660C	SAT XD	62 x 120	225	Rigid mount, using Satellite Center Point Ceiling Mount System	UUT1	2.26



UUT1 Unit Under Test Summary Sheet

Manufacturer: Maquet
Product Line: Lights and Booms
System: Surgical Light Arm System, SAT XD System
Description: Dual PowerLED configuration (single fork, PWD 73), SAT XD
Product Construction Summary: Powder-coated carbon steel.
Options / Component Summary: 120VAC. Installed support condition is rigid ceiling mounted (Maquet Satellite Center Point Ceiling Mounted).

UUT Properties

Total Operating Weight (lb)	Maximum Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Description	Height	Length	Front-Back (Y)	Side-Side (X)	Vertical (Z)
170	Dual PowerLED Config., single fork	54	202	N/A	N/A	N/A
225	SAT XD	62	120			

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2010	2010 ICC-ES AC156	2.26	1.0	1.5	3.62	2.71	1.51	0.60

Unit Mounting Description:

Note: The units were tested with full operating weight. No structural failure occurred that would cause a threat to life or limb. The structural integrity of the anchorage and force-resisting system was maintained. The units passed post-shake functionality with equivalent results to pre-shake functionality. The units were fully operational after the shake test.



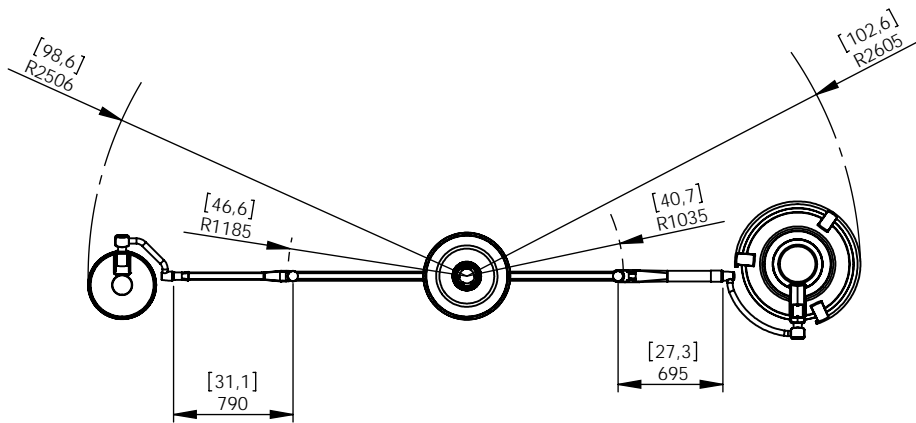
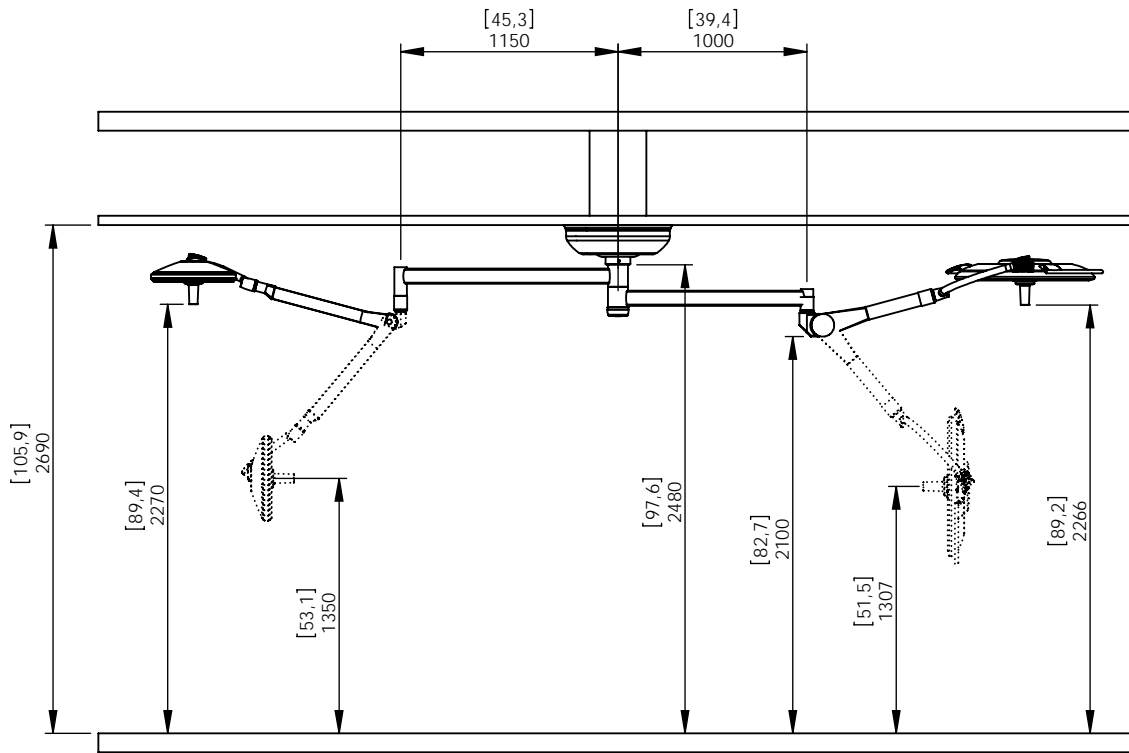
UUT1, mounted to test frame, instrumented and ready for test.



Close-up of mounting plate used for UUT1.

UUT1 was rigid ceiling mounted to the DCL shake table interface frame using the manufacturer-provided mounting plate as shown in the above photograph. Six 5/8-inch diameter Grade 8 bolts were used to attach the unit to the manufacturer-provided mounting plate. The mounting plate was attached to the DCL shake table interface frame with four 7/8-inch diameter Grade 8 bolts.

UUT1



PWD 73 SF
 PWD 73 SFV
 PWD 73 SFR

PWD 73 SF.DXF
 20-11-08 L.Comte

1:40

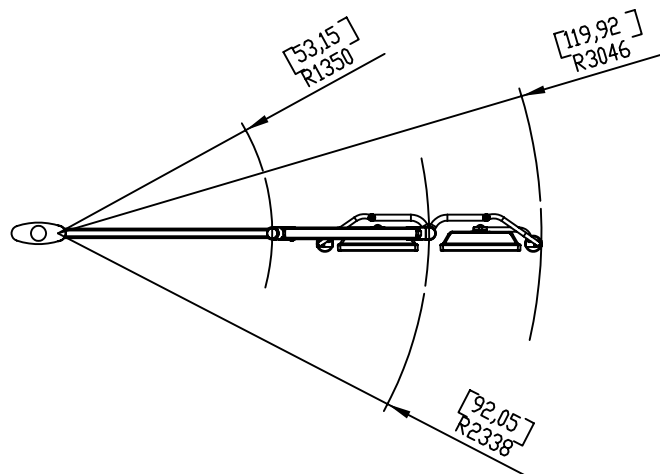
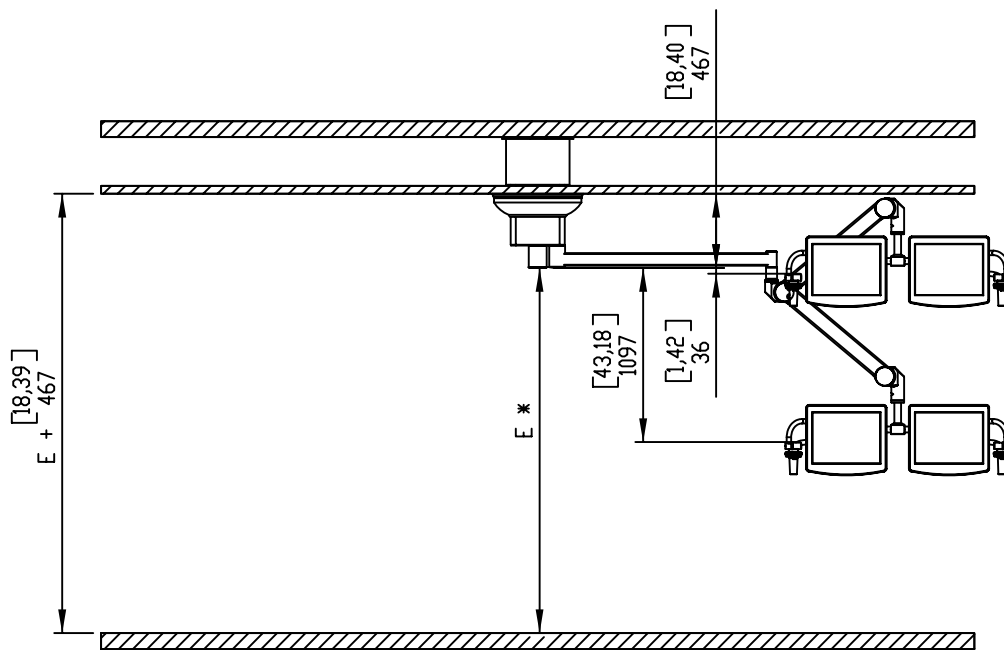


170 lb

948 N.m [699 lb.ft]

UUT1

MAQUET



225 lb



1211 N.m [893 Ft.Lbf]

SAT XD XXXX

SAT XD XXXX.DXF
22/06/05 VO

UUT2 Unit Under Test Summary Sheet

Manufacturer: Maquet
Product Line: Lights and Booms
System: Modutec PLG Ceiling Supply Unit Arm System
Description: PLG 12-0 Spring Arm
Product Construction Summary:
 Powder-coated carbon steel.
Options / Component Summary:
 120VAC. Installed support condition is rigid ceiling mounted (Maquet Satellite Center Point Ceiling Mounted).

UUT Properties

Total Operating Weight (lb)	Maximum Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Description	Height	Length	Front-Back (Y)	Side-Side (X)	Vertical (Z)
207	PLG 12.0	25	51	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2010	2010 ICC-ES AC156	2.5	1.0	1.5	4	3	1.67	0.67

Unit Mounting Description:

Note: The unit was tested with full operating weight. No structural failure occurred that would cause a threat to life or limb. The structural integrity of the anchorage and force-resisting system was maintained. The unit passed post-shake functionality with equivalent results to pre-shake functionality. The unit was fully operational after the shake test.

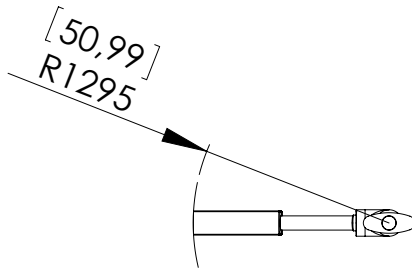
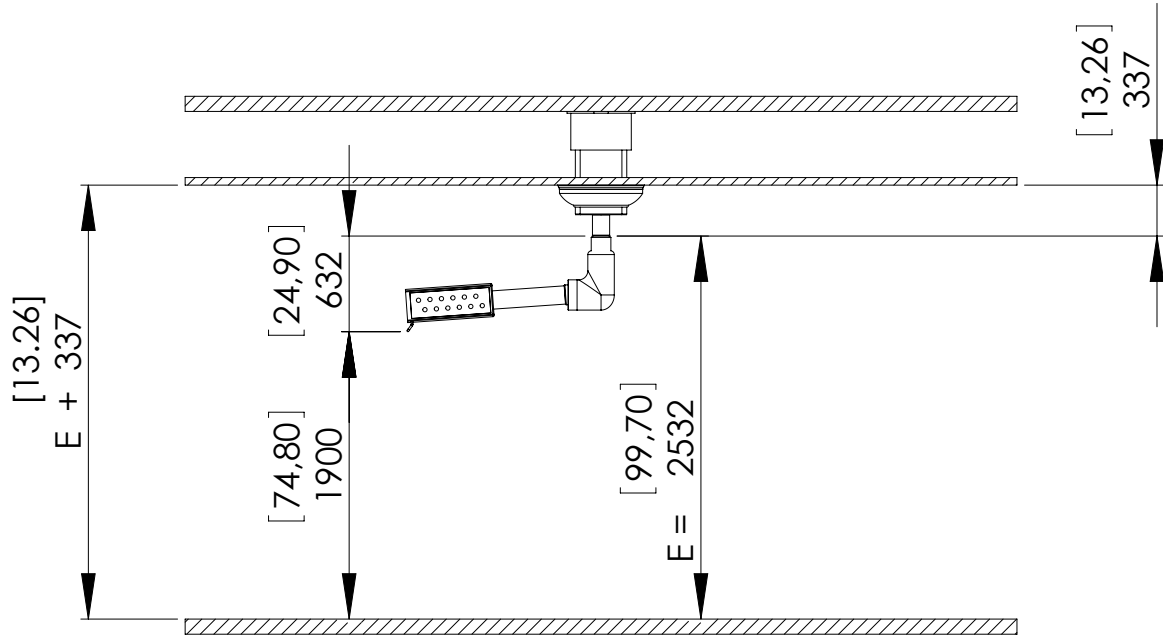


UUT2, mounted to test frame, instrumented and ready for test.

UUT2 was mounted to the DCL shake table interface frame using the manufacturer-provided mounting plate as shown in the above photograph. Six 5/8-inch diameter Grade 8 bolts were used to attach the unit to the manufacturer-provided mounting plate. The mounting plate was attached to the DCL shake table interface frame with four 7/8-inch diameter Grade 8 bolts.

UUT2

MAQUET



207 lb

730 N.m [538 lb.ft]

PLG 12-0

PLG 12-0.DXF
15/05/08 HC

1:50

UUT3a Unit Under Test Summary Sheet

Manufacturer: Maquet
Product Line: Lights and Booms
System: Examination Light System
Description: LUCEA Examination Light, Lucea 40 TUB 260mm
Product Construction Summary: Powder-coated carbon steel.
Options / Component Summary: 120VAC. Installed support condition is rigid ceiling mounted.

UUT Properties

Total Operating Weight (lb)	Maximum Dimensions (inches)			Lowest Natural Frequency (Hz)		
				Front-Back (Y)	Side-Side (X)	Vertical (Z)
73	Description	Height	Length	N/A	N/A	N/A
	Ceiling-Mount Lucea 40					

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2010	2010 ICC-ES AC156	2.5	1.0	1.5	4	3	1.67	0.67

Unit Mounting Description:

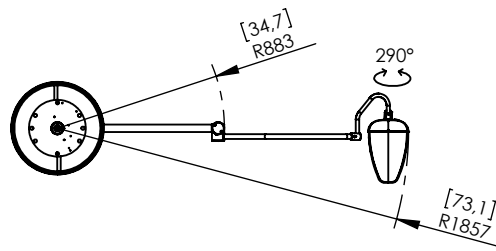
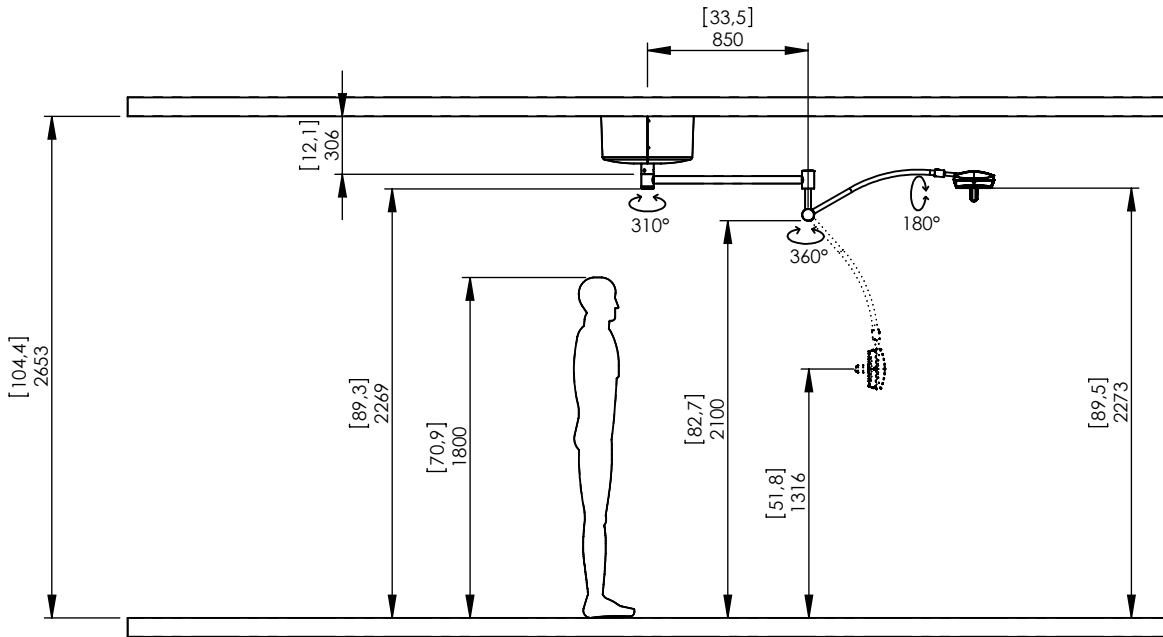
Note: The unit was tested with full operating weight. No structural failure occurred that would cause a threat to life or limb. The structural integrity of the anchorage and force-resisting system was maintained. The unit passed post-shake functionality with equivalent results to pre-shake functionality. The unit was fully operational after the shake test.



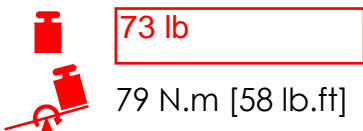
UUT3a, mounted to test frame, instrumented and ready for test.

UUT3a was ceiling-mounted to the DCL shake table interface frame using the manufacturer-provided mounting plate as shown in the above photograph. Six 5/8-inch diameter Grade 8 bolts were used to attach the unit to the manufacturer-provided mounting plate. The mounting plate was attached to the DCL shake table interface frame with four 7/8-inch diameter Grade 8 bolts.

UUT3a



Lucea 40 TUB 260



Lucea 40 TUB 260.DXF
25/11/09 G. Raveloson 1:40

UUT3b Unit Under Test Summary Sheet

Manufacturer: Maquet
Product Line: Lights and Booms
System: Examination Light System
Description: LUCEA 40 Examination Light, Lucea 40 Wall
Product Construction Summary:
 Powder-coated carbon steel.
Options / Component Summary:
 120VAC. Installed support condition is rigid wall mounted.

UUT Properties

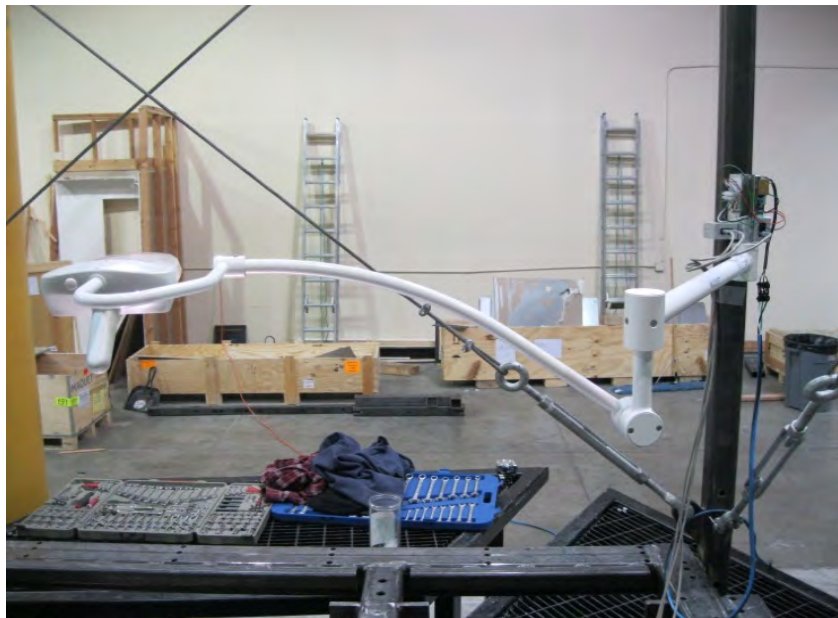
Total Operating Weight (lb)	Maximum Dimensions (inches)			Lowest Natural Frequency (Hz)		
				Front-Back (Y)	Side-Side (X)	Vertical (Z)
20	Description	Height	Length	N/A	N/A	N/A
	Wall-Mount Lucea 40					
		50	73			

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2010	2010 ICC-ES AC156	2.5	1.0	1.5	4	3	1.67	0.67

Unit Mounting Description:

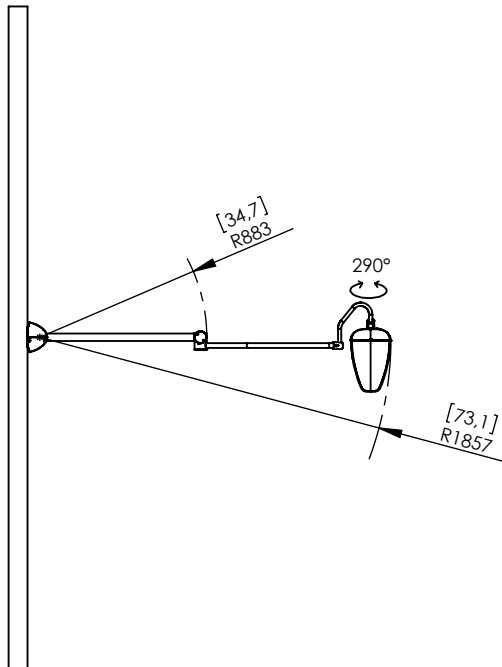
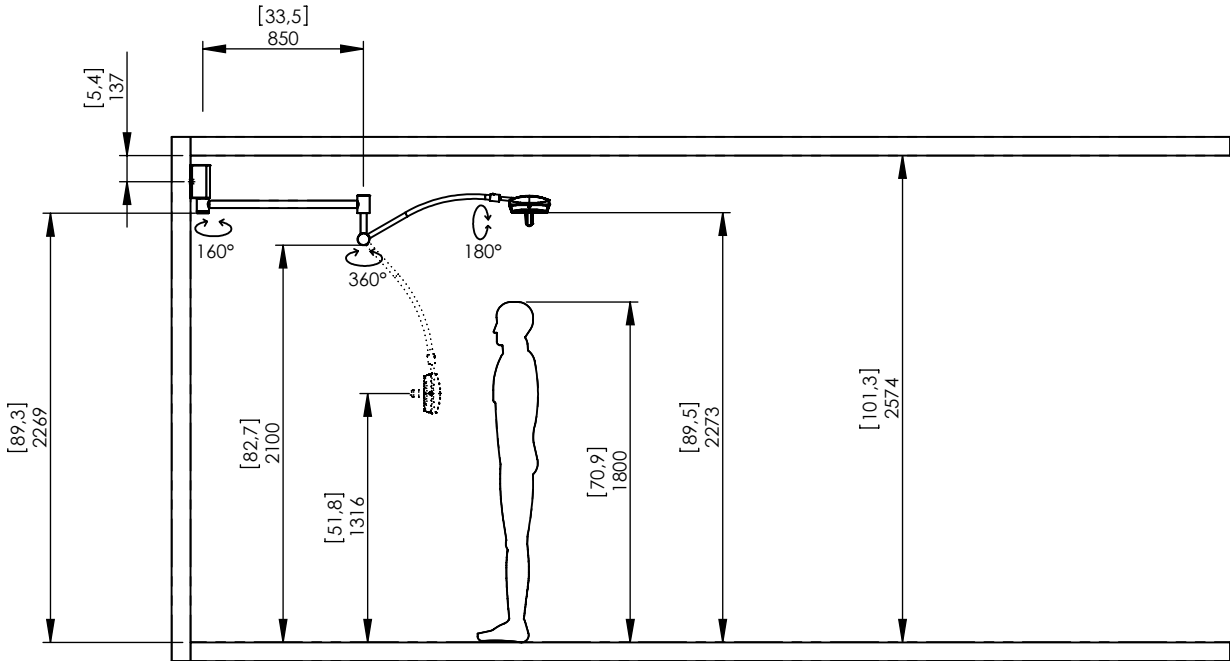
Note: The unit was tested with full operating weight. No structural failure occurred that would cause a threat to life or limb. The structural integrity of the anchorage and force-resisting system was maintained. The unit passed post-shake functionality with equivalent results to pre-shake functionality. The unit was fully operational after the shake test.





UUT3b, wall mount, mounted to test frame, instrumented and ready for test.

UUT3b was wall-mounted to the DCL shake table interface frame using its manufacturer-provided mounting bracket and two 5/8-inch Grade 2 bolts.

UUT3b



→ Lucea 40 Wall

 20 lb
 82 N.m [60 lb.ft]

Lucea 40 Wall.DXF
 25/11/09 G. Raveloson 1:40

Alterations in technology and design reserved. Änderungen in Technik und Design vorbehalten.

UUT7 Unit Under Test Summary Sheet



Manufacturer: Maquet
Product Line: Lights and Booms
System: Surgical Light Arm System
Description: Single PowerLED configuration (double fork, PWD 70)
Product Construction Summary:
 Powder-coated carbon steel.
Options / Component Summary:
 120VAC. Installed support condition is rigid ceiling mounted.

UUT Properties

Total Operating Weight (lb)	Dimensions (inches)			Lowest Natural Frequency (Hz)		
	Description	Height	Length	Front-Back (Y)	Side-Side (X)	Vertical (Z)
91	Single PowerLED Config., double fork	78	90	N/A	N/A	N/A

Seismic Test Parameters

Building Code	Test Criteria	Sds	z/h	Ip	Aflx-H	Arig-H	Aflx-V	Arig-V
CBC 2010	2010 ICC-ES AC156	2.5	1.0	1.5	4.00	3.00	1.67	0.67

Unit Mounting Description:

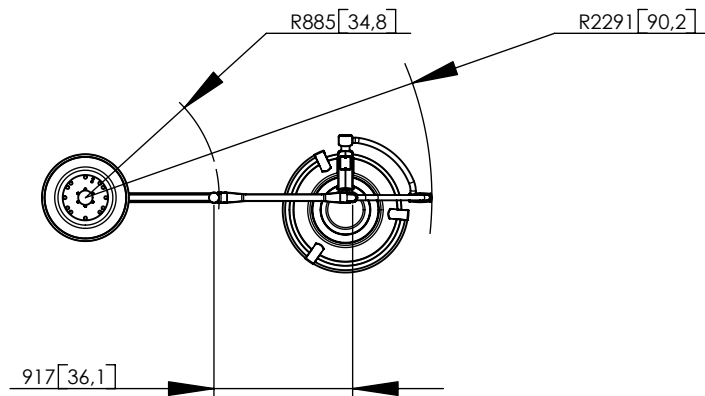
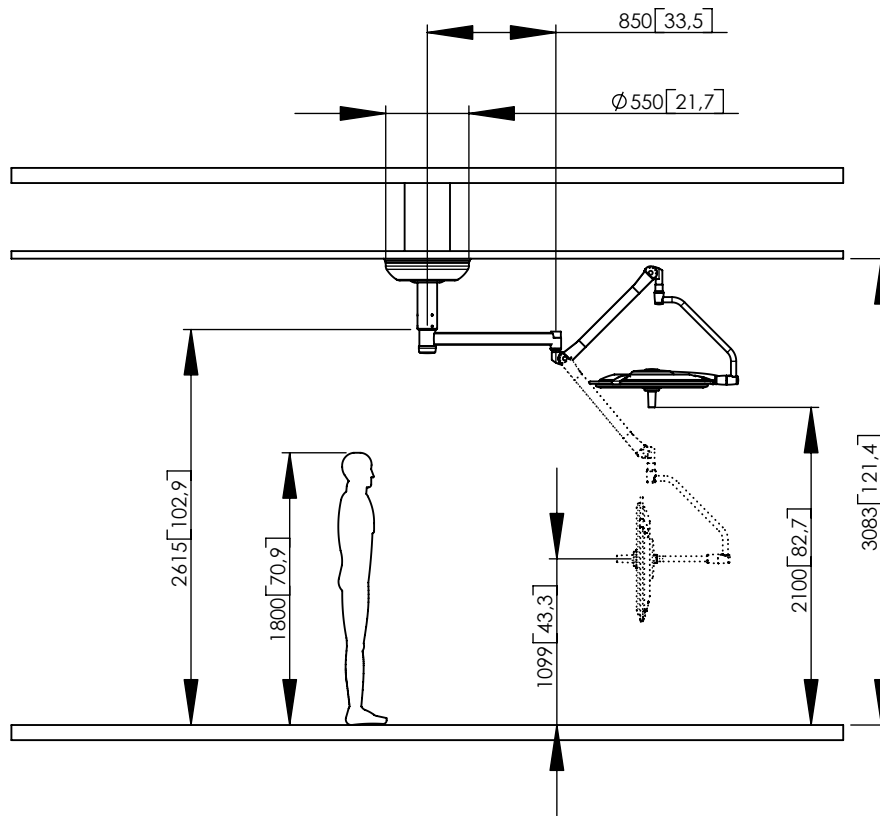
Note: The unit was tested with full operating weight. No structural failure occurred that would cause a threat to life or limb. The structural integrity of the anchorage and force-resisting system was maintained. The unit passed post-shake functionality with equivalent results to pre-shake functionality. The unit was fully operational after the shake test.





UUT7, mounted to test frame, instrumented and ready for test.

UUT7 was mounted to the DCL shake table interface frame using the manufacturer-provided mounting plate as shown in the above photograph. The PWD light arm was attached to the manufacturer-provided mounting plate with six 5/8-inch Grade 8 bolts. The interface plate was attached to the DCL-provided steel shake table interface frame using six 7/8-inch Grade 8 bolts.

UUT7



PWD 70 DF
PWD 70 DF V

 41 Kg [91 lb]
 464 N.m [342 lb.ft]

PWD 70 DF.DXF
04-01-07 LC 1:50