

burton

Luxo Medical Products



AIM-100™

INSTALLATION MANUAL
DOUBLE CEILING VERSION

PERFORMANCE RELIABILITY VALUE

The Right Light

MINOR SURGERY

| The following models are covered in this manual: | | |
|--|----------|------------------------------|
| A100 DC | AIM-100™ | Double Ceiling Version 120 V |
| A101 DC | AIM-100™ | Double Ceiling Version 100 V |
| A102 DC | AIM-100™ | Double Ceiling Version 240 V |

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This manual contains detailed information on the above, but responsibility for effective installation ultimately rests with skilled and qualified contractors. Products should at all times be handled by qualified staff; it is the responsibility of the user to ensure this is the case.

Introduction

Congratulations on your purchase of the AIM-100™ Minor Surgery Light!

The installation manual gives instructions on how to install the AIM-100™ Minor Surgery Light, Double Ceiling Version. For instructions on operation, maintenance and further description of the product please refer to the Operation & Maintenance manual furnished with the product.

Please read these installation instructions very carefully and follow the safety instructions and requirements.

This product was designed and manufactured in the U.S.A. by:
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Symbols Used in This Manual

| | |
|--|--|
|  WARNING | Disregarding this instruction can present the risk of a serious or fatal injury. |
|  CAUTION | Disregarding this instruction can result in injury and damage to property. |
|  IMPORTANT | Provides usage tips and useful information. |





Transportation and Storage

The following storage conditions apply:

- Temperature: 0° - 70° C (32° - 158° F)
- Relative humidity: 10 - 75 % (no condensation)
- Air pressure: 500 - 1060 hPa

Store all packaged product in closed or covered spaces. Thereafter, the values of the operating conditions in the Operations and Maintenance manual apply.

Safety Precautions

| | |
|--|---|
|  WARNING | Failure to properly follow installation and preventive maintenance instructions may result in mechanical failure. |
|  CAUTION | Before undertaking any work, ensure that the main power is off and secured from accidentally being switched on again |
|  NOTE | This light should only be installed by a qualified electrical contractor. |
|  NOTE | It is the responsibility of the customer and the certified installation contractor to make sure the supporting wall / ceiling and the anchoring is safe, adequately strong and in compliance with all applicable building codes. (See: Static inspection on page 16 and the section Support and Anchorage below.) |

Assembly Preparations

Tools and Accessories Required:

- Drill
- Hacksaw
- Level
- 9/16" (14,3 mm) open-end wrench (or adjustable wrench)
- Wire cutter/stripper
- Allen key (3/32 in / 2,4 mm), 3/16 Hex
- Screwdriver, small flat-blade
- Wire nuts and wiring for supply connections

Support and Anchorage

To prevent sway and provide proper support of the light, the ceiling mount must be attached to a structurally-sound ceiling. Most ceilings will require additional reinforcing to hold the light. It is the responsibility of the customer and the installing contractor to provide the safe reinforcement needed to meet local and state building codes of each installation. A typical reinforcement consists of a 1/4" steel plate, the bottom surface of which is flush with the inside surface of the finished ceiling (e.g., acoustical tile) and connected firmly to the structural ceiling. Sway braces (e.g., made of angle iron) are recommended when there is more than 12" between the structural and finished ceilings. Make certain the installed plate is level, or the arm(s) may "drift". Equipment anchorage diagrams are supplied with these instructions to help with the installation (see page 18). The diagrams were prepared by a California-licensed Structural Engineer. If the lights are installed accordingly, the systems will meet requirements of the State Seismic Codes.

Mounting Height

The proper height of the light should be set by the end user. This depends on the ceiling height, the height of the examination tables, types of procedures and the user's preferences. (See Figure 1 on page 6.) Due to the large vertical range of the light head (Approx. 41 in / 1040 mm), the standard 16 in down tube will fit most normal ceiling heights. The following table gives some recommendations and shows the range of the light with the different length down tubes.

| Ceiling height | Down tube | Pivot point ¹ | Lower limit Light head | Higher limit Light head |
|----------------------------|-----------------------------|--------------------------|------------------------|-------------------------|
| 8.0 ft (96 in) 2438 mm | Standard 12 in ² | 5 ft-8 in 1633 mm | 3 ft-6 in 975 mm | 7 ft-0 in 2030 mm |
| 8.5 ft (102 in) 2591 mm | Standard 16 in | 5 ft-10 in 1786 mm | 3 ft-8 in 1128 mm | 7 ft-2 in 2183 mm |
| 9.0 ft (108in) 2743 mm | Standard 16 in | 6 ft-4 in 1938 mm | 4 ft-2 in 1280 mm | 7 ft-8 in 2335 mm |
| 10.0 ft (120in) 3048 mm | Standard 16 in | 7 ft-4 in 2243 mm | 5 ft-2 in 1585 mm | 8 ft-8 in 2640 mm |
| | 20 in ³ | 7 ft-0 in 2141 mm | 4 ft-10 in 1483 mm | 8 ft-4 in 2538 mm |
| 11.0 ft (132in) 3353 mm | 42 in ³ | 6 ft-2 in 1887 mm | 4 ft-0 in 1229 mm | 7 ft-6 in 2284 mm |
| 12.0 ft (144in) 3658 mm | 42 in ³ | 7 ft-2 in 2192 mm | 5 ft-0 in 1534 mm | 8 ft-6 in 2589 mm |

¹ Distance from the floor to the pivot point of the spring arm.

² Cut the standard down tube (from the top) and drill three new holes. See instructions on page 16

³ Contact Burton to obtain a 20" or a 42" Down Tube.

Ranges of Motion

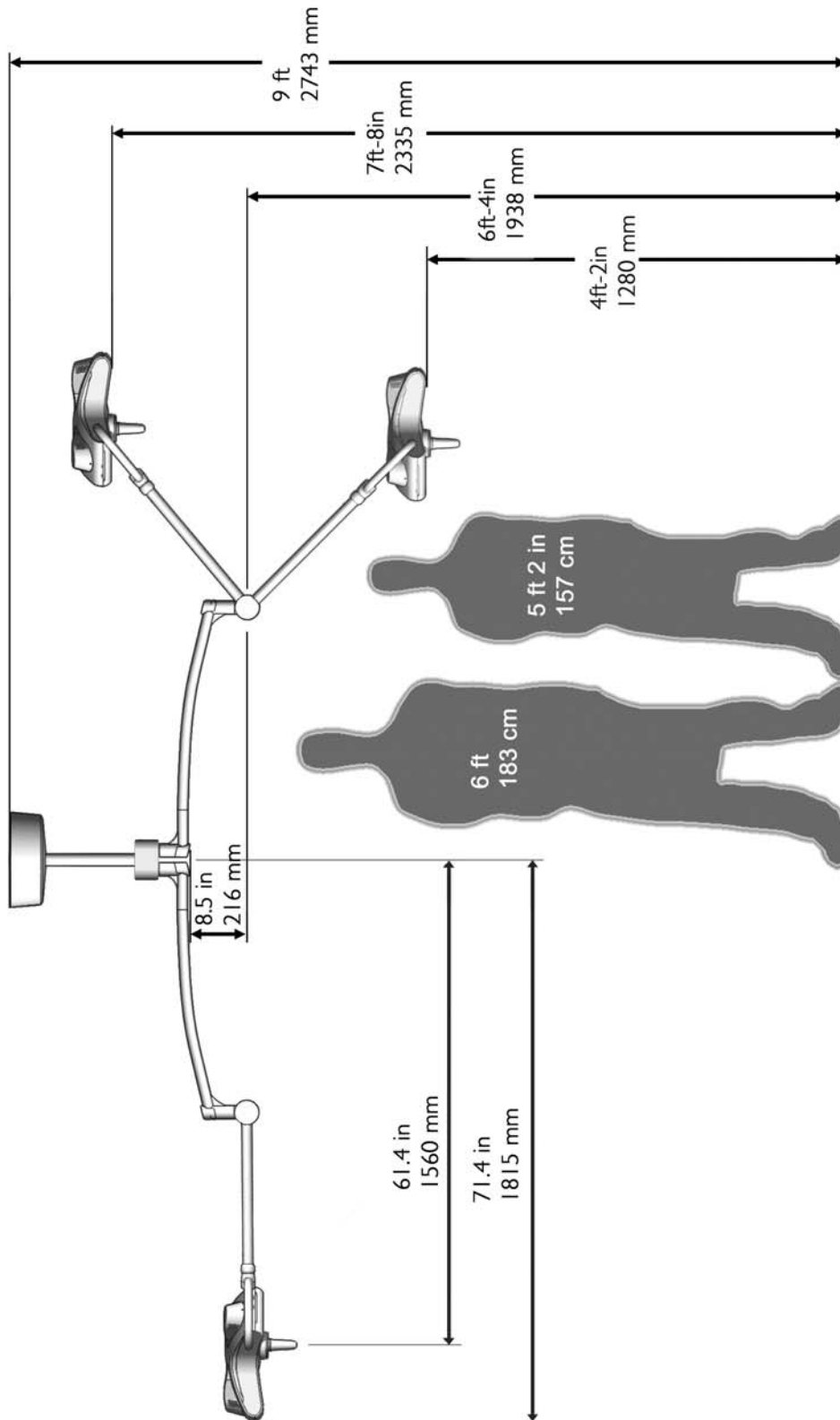


Figure 1: Range of motion shown for 9 ft ceiling and 16 inch down tube.

Unpacking and Inspection

Carefully unpack the cartons and match the parts received with the parts list enclosed.

Before Reporting Shortages:

1. Be sure you have received the correct number of boxes, cartons, etc., as shown on the bill of lading.
2. Check the entire shipment against the enclosed packing slip.
3. Items indicated in the column headed "Back Order" are not included in the shipment and will follow later.
4. Be sure that nothing has been removed from the cartons before they are checked by the individual in charge.
5. Empty all boxes completely, open all inside containers, and examine all packing material to ensure small articles are not overlooked.

If a Shortage or Damage Occurs:

1. You, the receiver, not Burton, are responsible for filing any claim(s) with the delivering carrier within five (5) days after receipt of the shipment.
2. If damage or shortage occurs in transit, the delivering carrier is required by law to make notation of a shortage or damage. This notation is to be made on the bill of lading.
3. If, in your opinion, there may be concealed damage, an agent from the delivering carrier is obligated to make an inspection after the goods are unpacked.
4. Do not destroy packing material until after the agent has made out his report.
5. All claims must be made to the carrier, not Burton.
6. Written authorization must be obtained from Burton before merchandise can be returned.

Double Ceiling Version Installation

Ceiling Support Structure

The engineer of record for the building shall provide a support structure designed to support weights and forces shown on the Equipment Anchorage Diagrams on page 18. When the support structure is in place the static inspection sheet on page 17 should be filled out and stored for future reference.

Installing the Junction Box

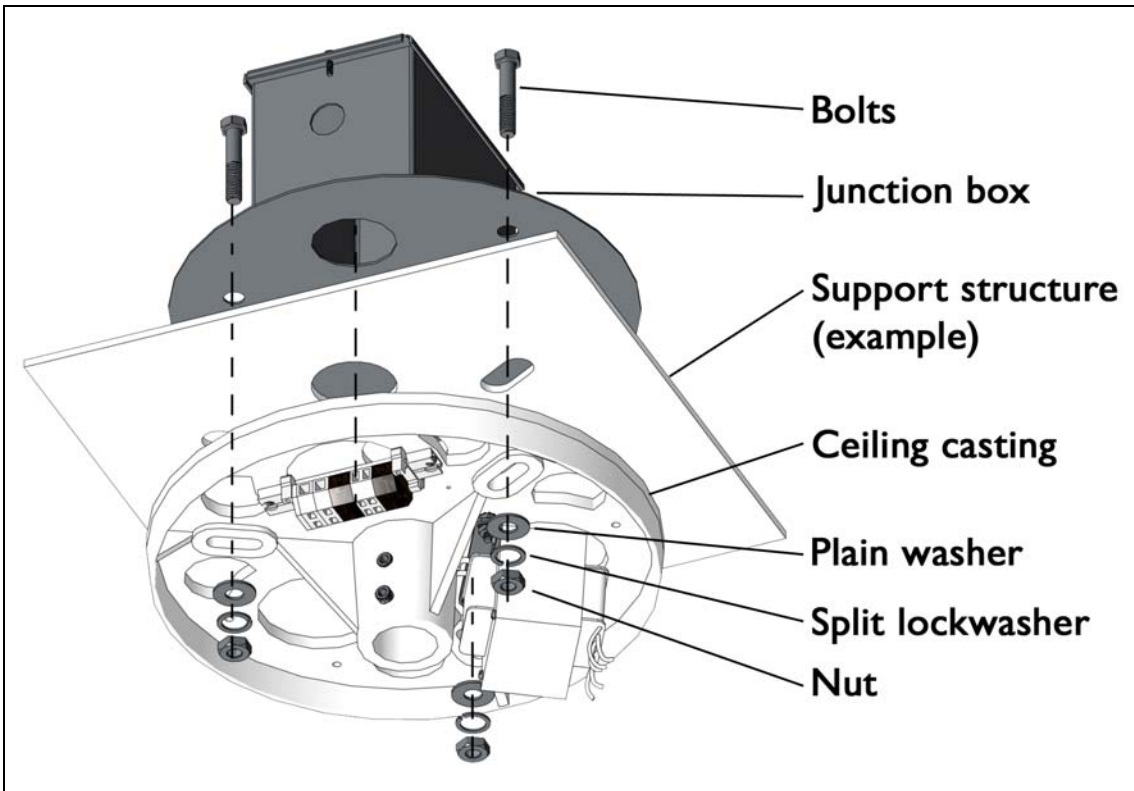
The junction box should normally be placed on top of the support structure. Make sure the screw holes on the junction box plate correspond to the holes in the ceiling casting. When the ceiling plate is installed, the bolts will also hold the junction box.

If there isn't space for the junction box on top of the support structure, another suitable location in the ceiling can be used. It is also possible to use a different junction box if that is more convenient.

See wiring diagram on page 11:

Switch wiring (contractor-supplied) must be four-conductor AWG 16 (1,5mm²) or AWG 14 (2,5mm²) from the terminal block to the switch. (Larger gage wires will not fit into the terminal block.) Both neutral and line connections must be wired to meet UL standards. Wiring to the junction box must be minimum AWG 14 (2,5mm²). Wiring and conduit must meet local and national fire protection codes.

Installing the Ceiling Casting

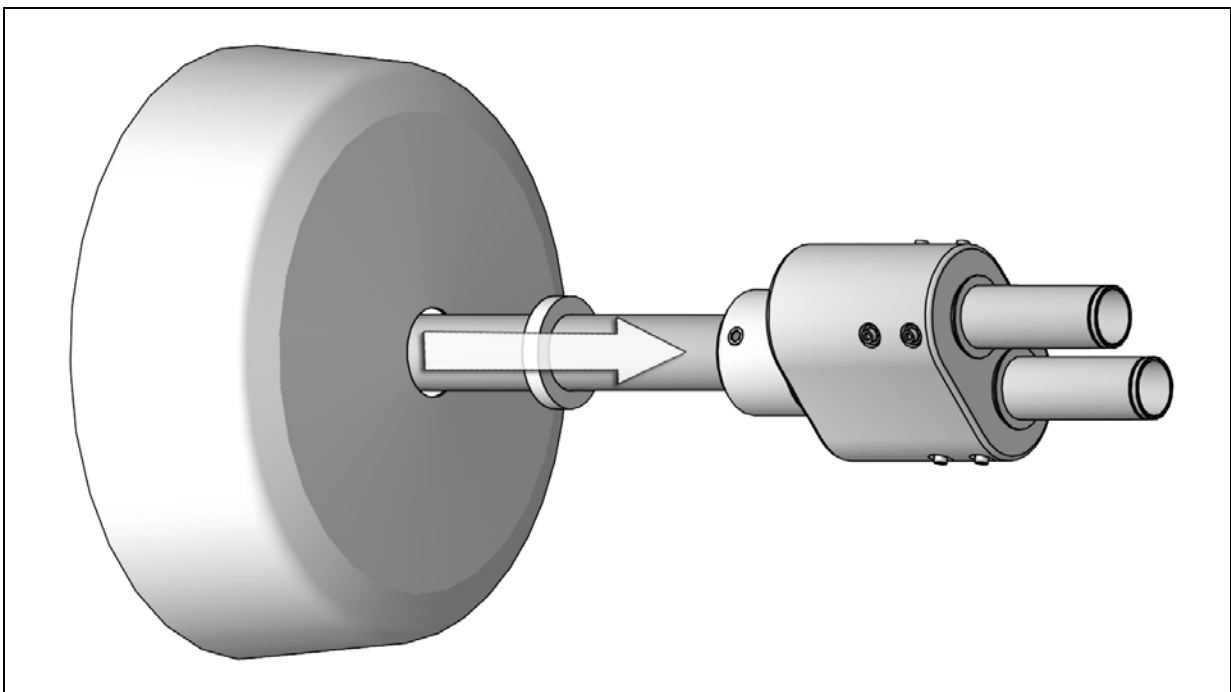


Note: Illustration is for single ceiling version, so only one transformer and a smaller terminal block is shown.

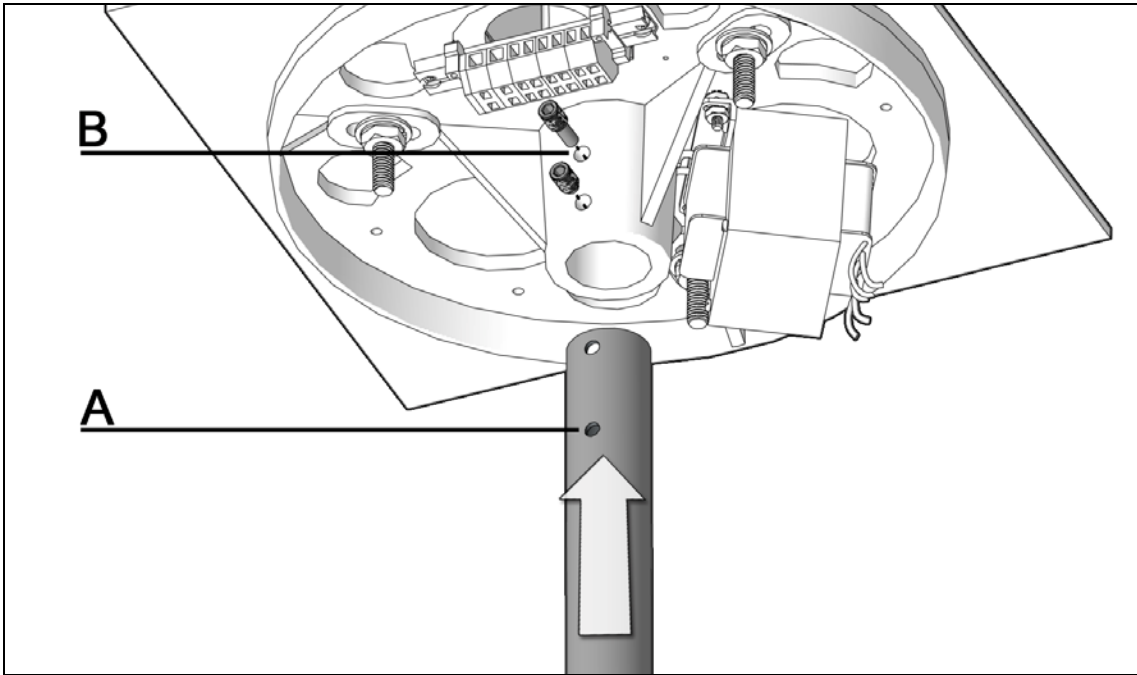
1. The static inspection sheet on page 17 has to be filled out and signed by a certified engineer or Construction Authority before mounting the ceiling casting.
2. Mount the ceiling casting to the support structure. Make sure the hole in the ceiling casting above the terminal block aligns with the hole in the junction box. Use three (3) 3/8" bolts, plain washers, split lockwashers, and nuts in a triangular pattern. See Equipment Anchorage Diagrams on page 18 for details.

Installing the Down Tube

| | | |
|---|------|---|
| ⓘ | NOTE | The down tube is pre-cut and pre-drilled at the factory and will suit most exam rooms with a ceiling height of 8-10 ft. See the section "Mounting Height" on page 5 for further advice. |
| ⓘ | NOTE | Be certain to slide the bell housing and locking ring on the down tube before inserting the down tube into the ceiling casting. |

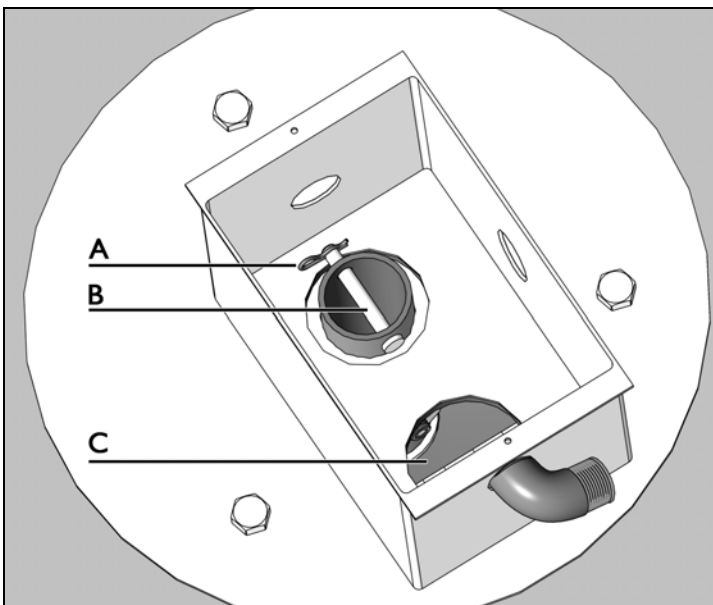


- I. Slide the locking ring and the bell housing onto the down tube.



Note: Illustration is for single ceiling version, so only one transformer and a smaller terminal block is shown.

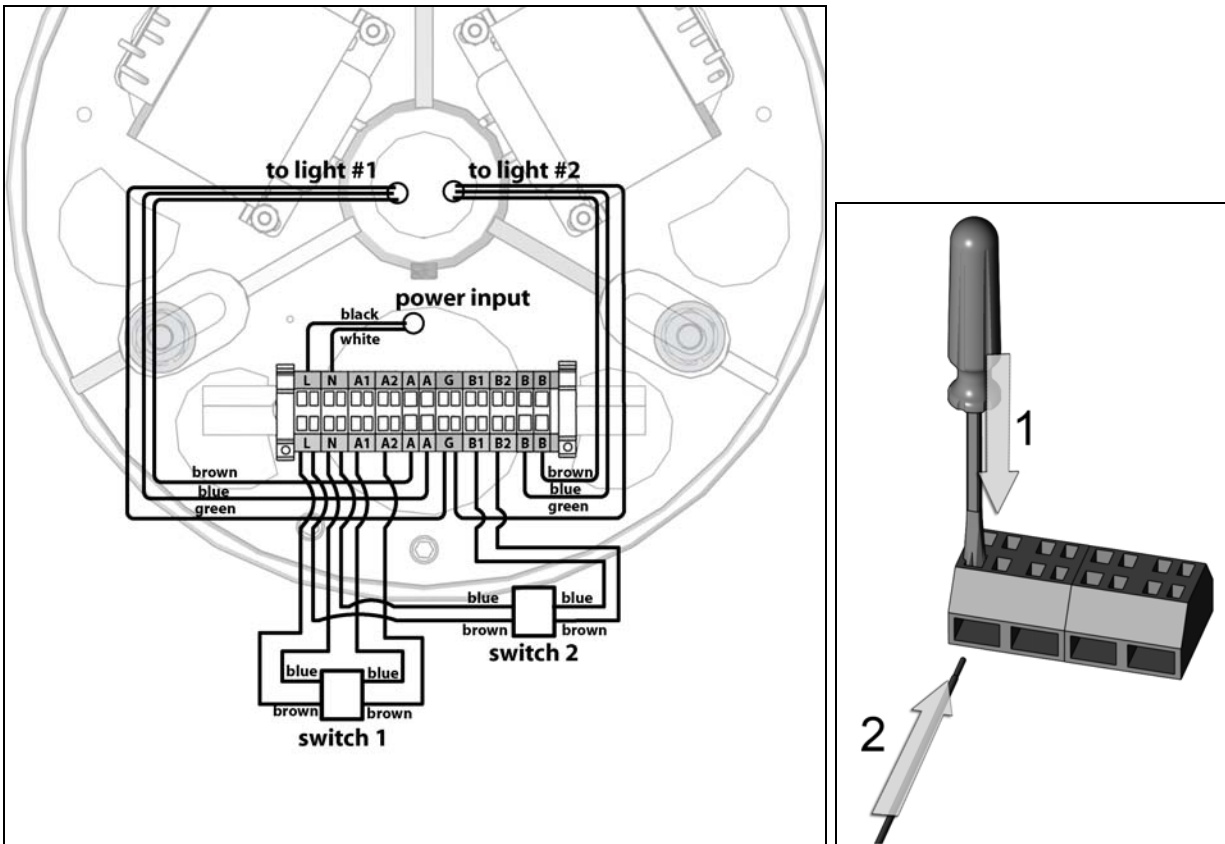
2. Assemble the down tube by sliding it up the center hole in the ceiling casting. Position the tube so that the lower hole (A) in the down tube is matching to the upper hole (B) in the ceiling casting. First fasten the upper set-screw, which is a dog-point screw. (Make sure it fully engages the matching hole in the down tube.) Then fasten the lower setscrew. Use Loctite® Threadlocker or similar adhesive on the screws to prevent them from becoming loose.



3. Approximately 1 inch of the down tube should be showing above the ceiling plate. A hole through the down tube will be accessible. Put the clevis pin (B) into the hole. Secure the clevis pin with the hairpin (A).
4. Feed the wires coming up out of the down tube back down through the hole in the ceiling casting (C). The wires from the wall switch should also go through this hole.

Connecting Power

1. Now connect the input power, switches, and lights to the terminal block assembly, which is pre-mounted on the ceiling casting. To connect the wires to the terminal block, use the technique shown in the illustration below.



2. Wire the ceiling light as shown in the illustration above.

Notes:

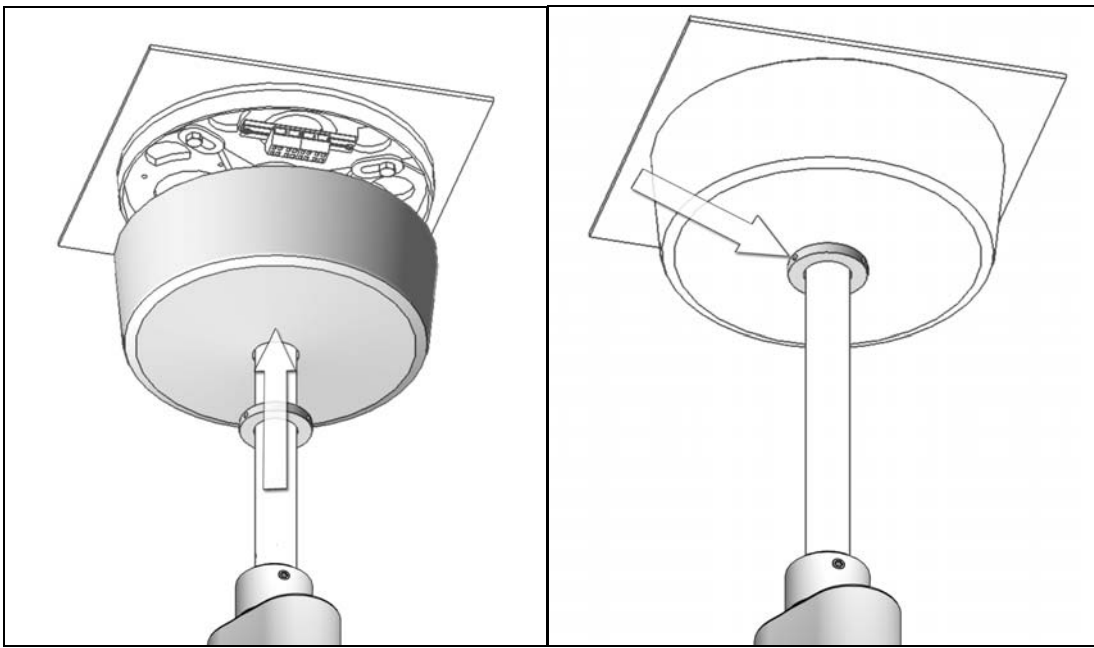
- The above illustration shows the view looking up toward the ceiling casting.
- Only installation connections are shown. For a complete wiring diagram, please refer to the Operation & Maintenance manual.
- The switches are shown out of place for clarity. In reality, the wires to/from the switches will be coming from the junction box where the power input is shown.

The terminal block is marked with letters and numbers as follows:

- a. Wires from down tube (to lights):

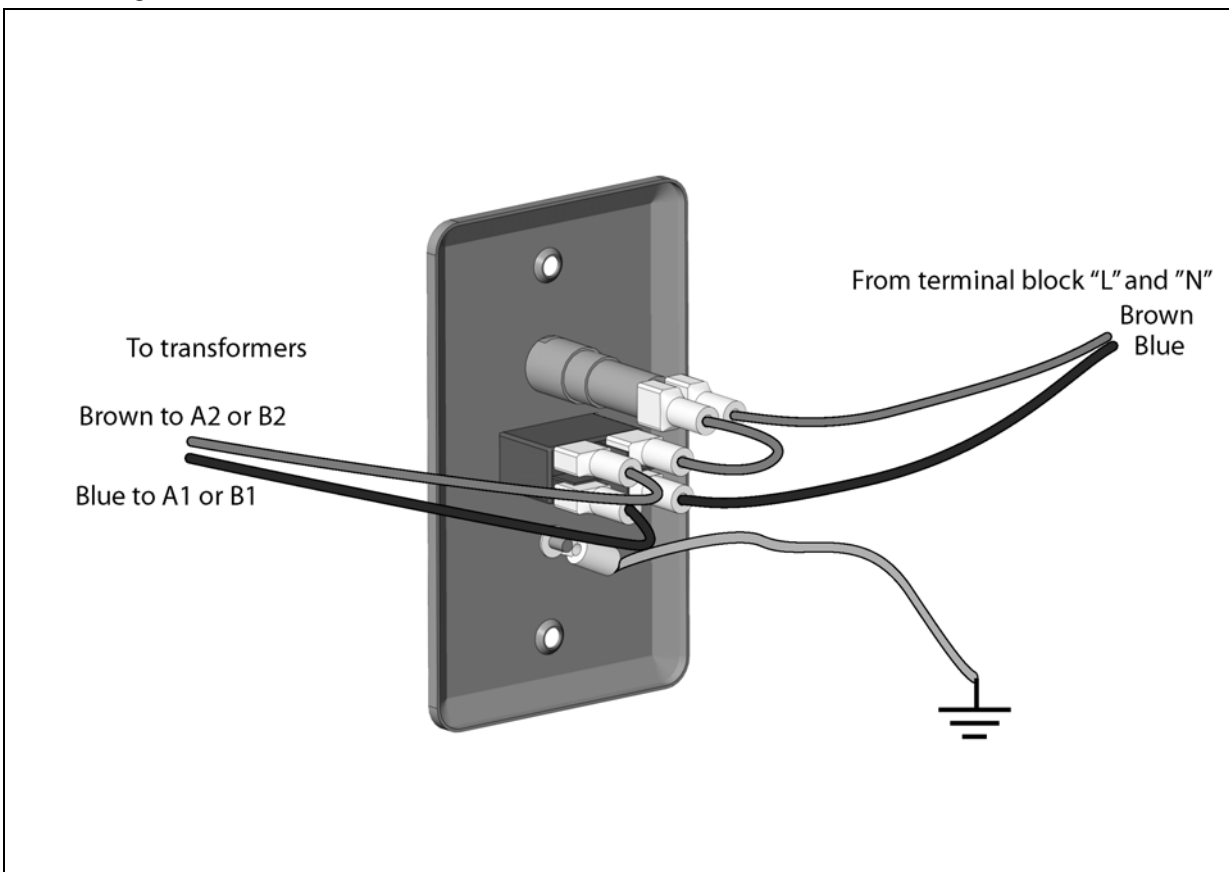
- Connect the green ground wire to the green terminal block.
- Connect the two wires from light one to terminals marked "A".
- Connect the two wires from light two to terminals marked "B".

- b. Switches: (see also “Installing Wall Switch” on page 13)
- Use 4-conductor cable minimum AWG 16 (1,5mm²) for each switch.
 - Connect one wire to line and one to neutral on the terminal block and run cable to switch.
 - Connect the remaining two conductors from neutral to “A1” and from line to “A2”.
 - Repeat wiring of second switch, except connect neutral and line to “B1” and “B2” respectively.
- c. Input Power:
- Connect the input power neutral wire (normally white) to the terminal block marked “N”.
 - Connect the input power line wire (normally black) to the terminal block marked “L”.



3. Push the bell housing and the lock ring up until it covers the ceiling casting. Tighten the two set-screws on the lock ring using an Allen key (3/32 in / 2,4 mm).

Installing Wall Switch





Note: There is one wall switch for each light head.

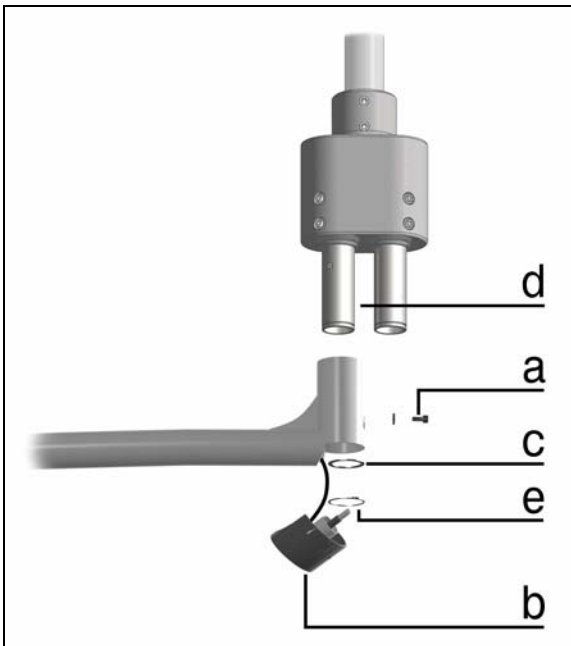
120 V version: Install the wall switch that is furnished with the product to a standard junction box per local codes. The wires that go to the light fixture are labeled “to light fixture”.

100V / 240V versions: Install the wall switch per local codes. Wall switch is not furnished with the product.

1. Two four conductor cables are to be routed to the switches. One 4-conductor cable per switch. Use appropriate conduit from the ceiling junction box to the switch junction box.
2. Connect all four conductors to switch.
3. Connect ground wire from face plate to ground.


Installing the Extender Arms With Spring Arm

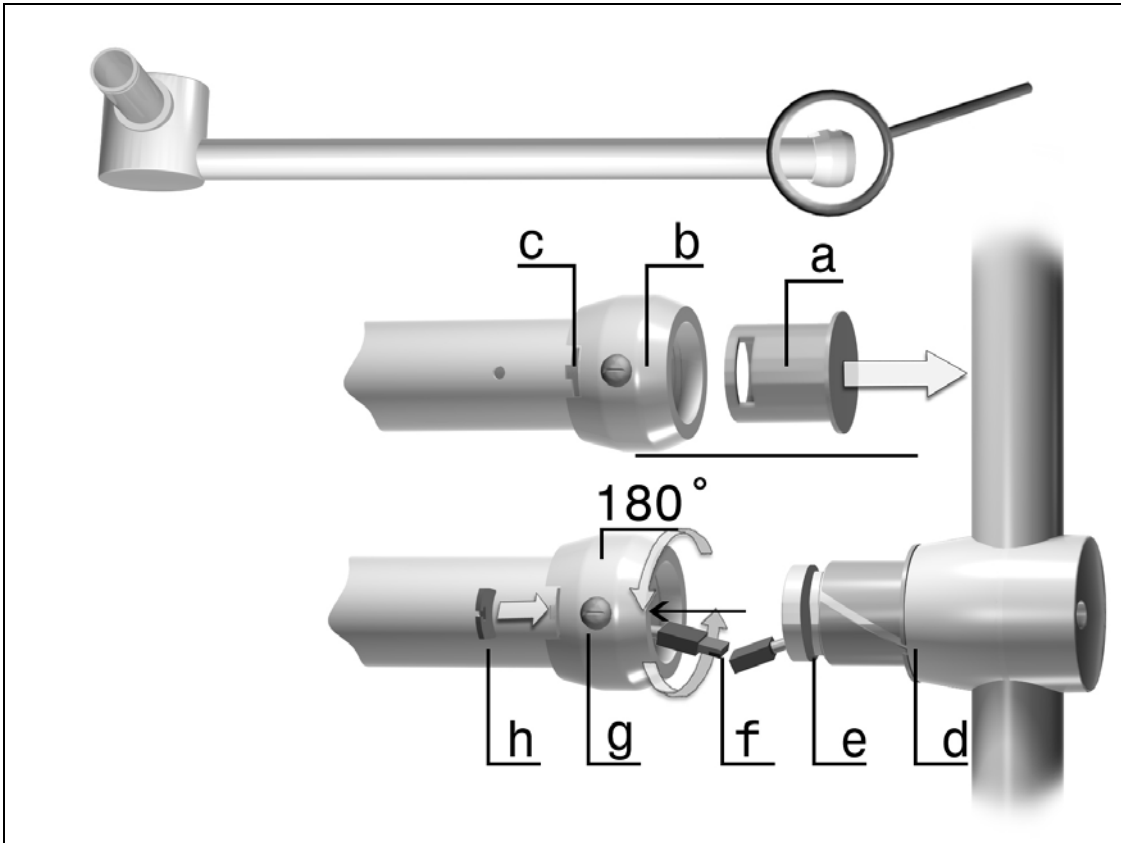
| | | |
|---|--------------------------------------|---|
|  | WARNING Danger of injury | If the washer is not installed, the retaining ring can loosen over time. The light fixture can then fall and cause serious injury. Always install the washer with the retaining ring. |
|  | WARNING - Electrical shock | The entire support system can become electrified if the power cables are damaged at the plug. The voltage can pose a danger to life. Install the plug carefully. |



1. Unscrew the cross-slotted (Phillips) screw (a).
2. Remove the plug cap (b) from one arm.
3. Slide the arm onto the shaft of the double transition (d).
4. Place the washer (c) on the shaft and install the retaining ring (e).
5. Check the retaining ring (e) is seated into groove on (d).
6. Make sure the arm assembly is seated firmly on the shaft.
7. Insert the plug cap (b) into the shaft until it locks into position.
8. Refasten the cross slotted (Phillips) screw (a) to secure the plug cap(b).
9. Repeat steps 3.-7. for the second arm.

Mounting the Light Heads

| | | |
|---|------------------------------------|---|
|  | WARNING Danger of injury | The spring arm, when forced down, can spring upwards and result in injuries. During the installation of the light head, no one should be within swiveling range of the spring arm. |
|---|------------------------------------|---|



1. Remove the brake screw (g) and the protective cover (a).
2. Rotate the collar (b) 180° so that the slot in the collar uncovers the slot (c) in the spring arm.
3. Mate the connectors (f).
4. Make sure the plastic bearing is on the yoke (d).
5. Push the yoke into the spring arm.
6. Put the key (h) completely into the slot (c), so that the key is engaging in the yoke groove (e).
7. Rotate the collar (b) 180 degrees, so that the key is covered.
8. Replace and tighten the brake screw (g) until the yoke has the desired friction.
9. Check the secure seating of the yoke by pulling and turning it.

Final Testing

Turn the individual wall switches on to check proper operation.

The arm system should swing easily within the range of motion as illustrated on page 6.

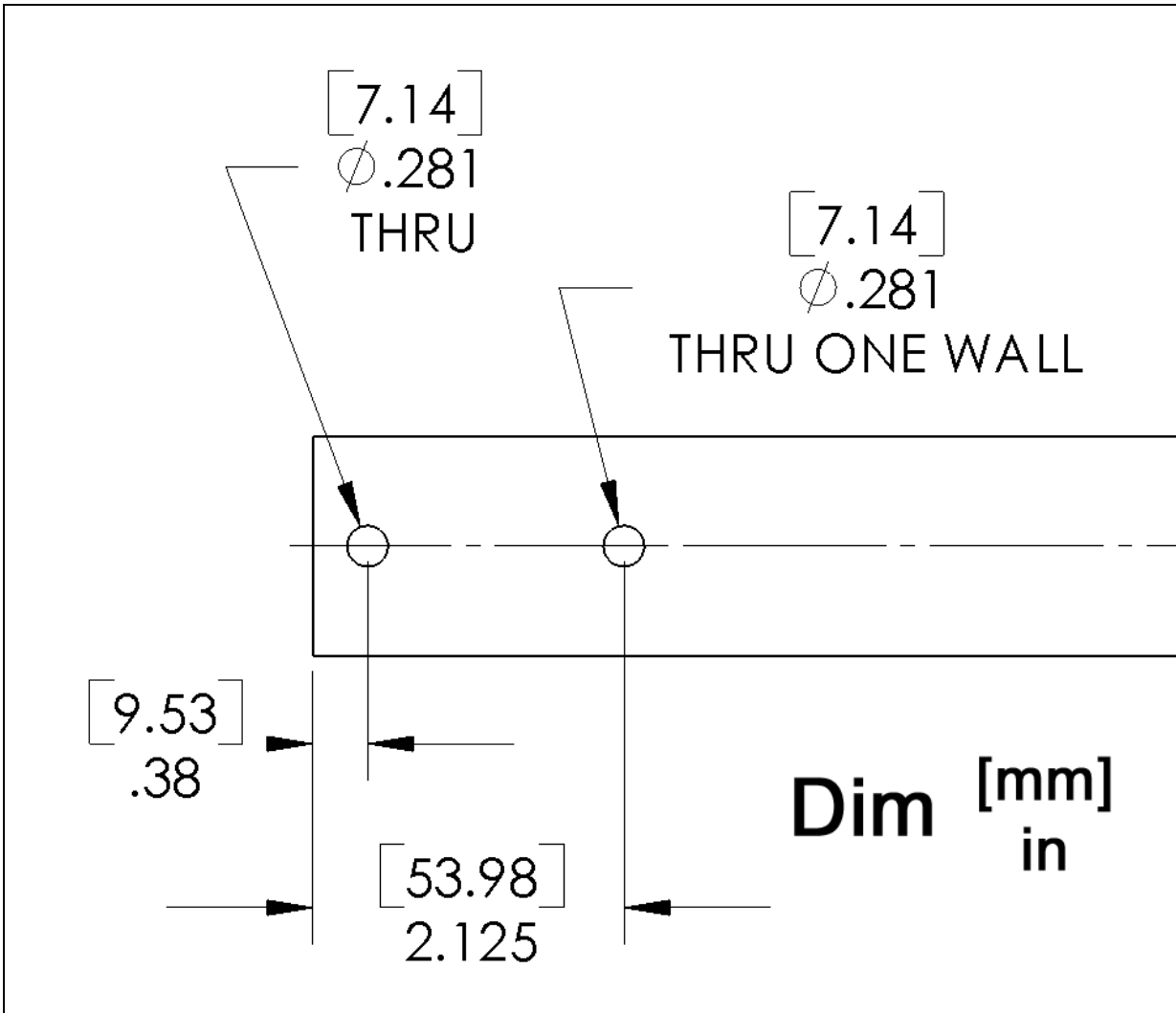
Adjusting Arm Tension

The spring inside the arm is pre-adjusted at the factory. If, however, the light head drifts up or down, please refer to the Operation & Maintenance manual for guidance on how to adjust it.

Cutting the Down Tube

If shortening the down tube is required, the following procedure applies:

1. Cut the down tube **from the top** to the appropriate length (the top of the down tube has 3 holes, the bottom has 6 holes).
2. Drill new holes on the top of the down tube according to the drawing below.



Static Inspection

① NOTE: The static (structural) inspection must be carried out before installing the wall mount or ceiling casting.

- The strength of the construction must be designed, checked and certified by a structural engineer.
- The respective regional construction regulations that apply must be followed.
- If an erroneous hole is drilled by mistake (e.g. drilling of a reinforcement rod) the structural engineer who is responsible for the installation must be contacted, since adequate static load distribution in the ceiling may have been jeopardized.

Declaration of Acceptance:

I hereby certify that the supporting wall/ceiling and the anchoring of the AIM-100™ suspension system is safe and adequately strong.

Project: _____

Anchoring (please check the one that is applicable):

- with counter-plate
- other

Location: _____

Signature/Stamp (Structural Engineer / Construction Authority)

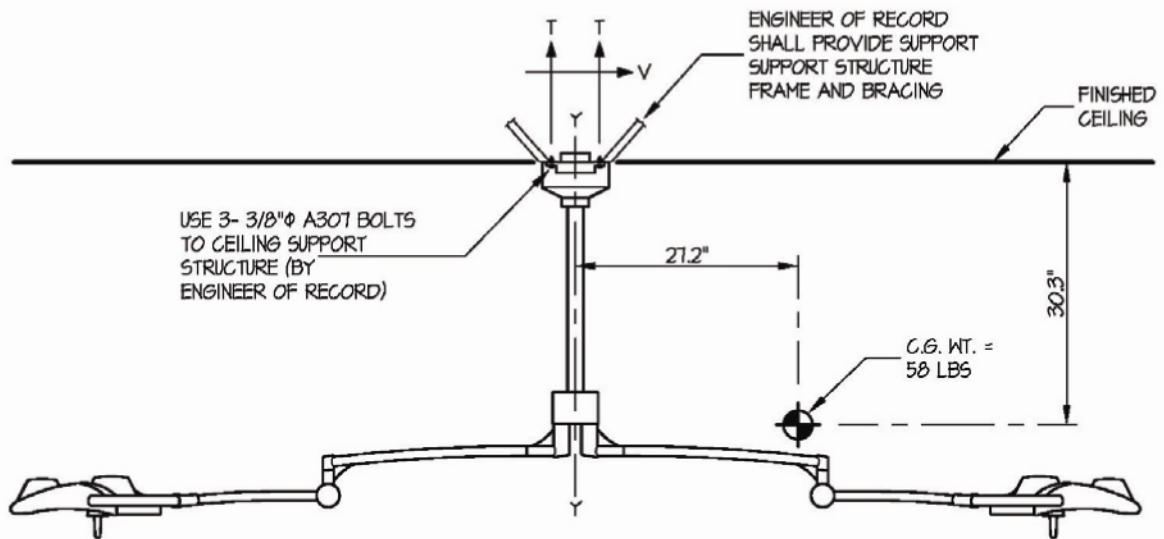
Equipment Anchorage Diagrams

Double Ceiling Version - Overview

| | | |
|---|------------------------|--------------------|
|  EASE EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING www.equipmentanchorage.com | DES. R. LA BRIE | SHEET 1 |
| | JOB NO. 11-0477 | OF 2 SHEETS |
| | DATE 11/9/04 | |

SEISMIC ANCHORAGE

CEILING SUSPENDED

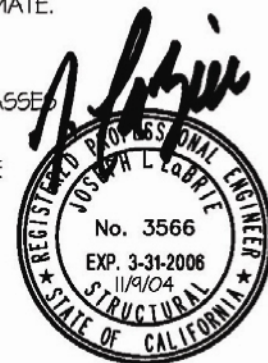


ELEVATION

$T_{max} = 648 \text{ LBS/BOLT}$
 $V_{max} = 143 \text{ LBS/BOLT}$

NOTES:

- FORCES ARE DETERMINED PER 2001 CALIFORNIA BUILDING CODE - SECTION 1632A AND HAVE BEEN FACTORED TO REPRESENT WORKING DESIGN LOADS, NOT ULTIMATE.
 HORIZONTAL FORCE (V_H) = $0.94W - (C_a = .66, a_p = 1.0, I_p = 1.5, R_p = 3.0)$
 VERTICAL FORCE (V_V) = $0.33(V_H)$
- CENTER OF GRAVITY (C.G.) WEIGHT IS A MAXIMUM. THIS CALCULATION ENCOMPASSED ALL WEIGHTS UP TO THE MAXIMUM WEIGHT SHOWN.
- ENGINEER OF RECORD FOR THE BUILDING SHALL PROVIDE SUPPORT STRUCTURE DESIGNED TO SUPPORT WEIGHTS AND FORCES SHOWN.

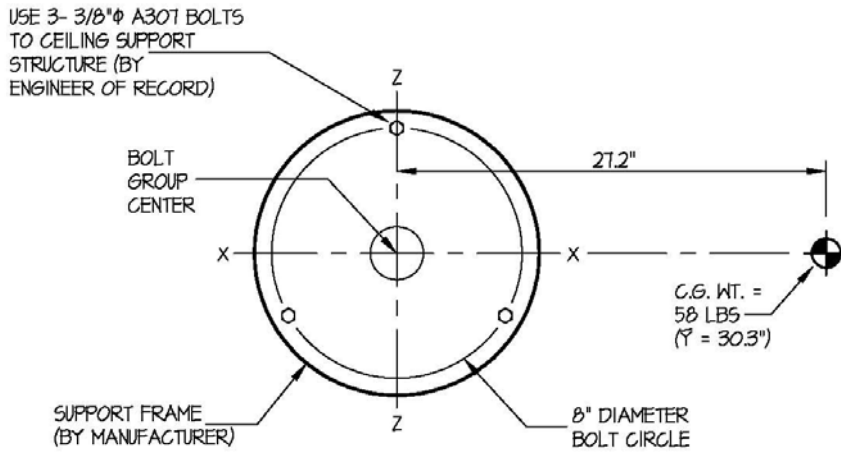


Double Ceiling Version – Plan Ceiling

| | | | |
|---|---------------------------------|-----------------|-------------------|
|  EASE EQUIPMENT ANCHORAGE & SEISMIC ENGINEERING www.equipmentanchorage.com | BURTON MEDICAL | DES. R. LA BRIE | SHEET 2 |
| | AIM-100 DOUBLE ARM LIGHT | JOB NO. 11-0477 | DATE 11/9/04 |

SEISMIC ANCHORAGE

CEILING SUSPENDED



PLAN AT CEILING

LOADS:

WEIGHT = 58 LBS
 HORIZONTAL FORCE (V_H) = 55 LBS
 VERTICAL FORCE (V_V) = 18 LBS

BOLT GROUP PROPERTIES:

$I_{X-X} = 24 \text{ in.}^4$
 $I_{Z-Z} = 24 \text{ in.}^4$
 $I_{Y-Y} = 48 \text{ in.}^4$

MOMENTS:

$M_{XX} = 55\#(30.3") + (58\# + 18\#)27.2" = 3,734\#"$
 $M_{ZZ} = 55\#(30.3") + (58\# + 18\#)27.2" = 3,734\#"$
 $M_{YY} = 55\#(27.2") = 1,496\#"$

BOLT FORCES:

TENSION (T)

$$T = \frac{3734\#(4")}{24} + \frac{58\# + 18\#}{3} = 648 \text{ LBS/BOLT (MAX)}$$

SHEAR (V)

$$V = \frac{55\#}{3} + \frac{1496\#(4")}{48} = 143 \text{ LBS/BOLT (MAX)}$$



Luxo Medical Products

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