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**NOTE**

Refer to specific seismic calculations for projects requiring seismic compliance.

Although current at the time of publication, SKYTRON’S policy of continuous development makes this manual subject to change without notice.
ELECTRICAL REQUIREMENTS

This fixture requires that electrical connections are made by a licensed electrician in accordance with state, local and national electrical codes using UL (Underwriters Laboratory) recognized materials.

Do not turn on main power to fixture until all lightheads are installed, connections are complete and the fixture has been reviewed by a SKYTRON representative.

ELECTRICAL HAZARDS EXIST!
Exercise caution when working on this fixture, the installation of this fixture must be made only by qualified and authorized personnel familiar with the essential knowledge and techniques.

CONNECTION MEANS

Connection of the fixture wires must be made using crimp connectors. Main terminal devices shall be so located or shielded that, should a wire of a stranded conductor escape when the conductors are fitted, there is no risk of accidental contact between live parts and accessible parts. Acceptable shielding methods include UL approved shrink tubing and electrical tape.

NATIONAL ELECTRICAL CODE, NFPA & ANSI REQUIREMENTS

The installation of connecting cords between equipment parts shall meet the requirements of the National Electrical Code, ANSI/NFPA70 as applicable.

BENDING REQUIREMENTS

Connection leads shall be constructed in such a manner that moveable leads in normal use are not bent around a radius of less than five times the outer diameter of the lead concerned. Avoid conditions employing severe bends to ensure the integrity of conductors.
CONDUIT REQUIREMENTS

This fixture requires 2 dedicated conduit raceways at the wall control to separate the 120VAC supply lines from the supply lines to the lighting fixture. Failure to observe this requirement will allow the migration of Electrical Magnetic Interference and will disrupt the operation of the lights.

Use of approved metal conduit shall be employed throughout the fixture’s wiring circuit where applicable.

PROTECTIVE MEANS

This fixture requires a properly circuit protected, dedicated, 120VAC, 20 amp circuit. An isolated power supply circuit must be protected by a 20amp, double pole, single throw circuit breaker.

Proper performance and safety of this fixture can only be achieved by an adequate grounding system. Fixture ground must be a dedicated ground point ultimately bonded to the facilities grounding system to prevent the migration of electrical interference generated by other devices.
EQUIPMENT LABELS AND SPECIFICATIONS

5A
FUSE TYPE 5 Amp, FAST ACTING

WARNING
- MULTIPLE CIRCUITS -
DISCONNECT ALL CIRCUITS
PRIOR TO SERVICING

CLASS I, TYPE B EQUIPMENT

DANGEROUS VOLTAGE, 120 V, 60 Hz

AVERTISSEMENT
- CIRCUITS MULTIPLES -
DÉBRANCHEZ TOUS LES CIRCUITS
AVANT D'EFFETUER DU SERVICE
SUR LES ÉQUIPEMENTS

CLASS I, TYPE B EQUIPMENT

PROTECTIVE EARTH GROUND SUPPLIED

CONNECTION FOR NEUTRAL CONDUCTOR SUPPLIED

UNIT TO BE USED ONLY IN SPECIFIED ENVIRONMENTAL CONDITIONS
TEMPERATURE: 15° - 30° C (60° - 85° F)
HUMIDITY: 30% - 60% RELATIVE HUMIDITY, NON CONDENSING

CLASS I, IPX0 RATED, CONTINUOUS OPERATION

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120 VAC, 60 Hz, 1 Ph

BOOM / LFS INSTALL • REVO
Pre-Installation Requirements

The Mounting Structure must meet the requirements of the SKYTRON "Mounting Structure Pre-Installation Guide for Ergon Skybooms" and all applicable requirements and testing must be performed prior to installation.

Painting and flooring must be completed before the product can be installed.

Applicable requirements to include:

- Mounting Structure Test Jig, Test Report
- Medical Gas Piping installation, testing and certification
- Electrical services provided and certified
- Light Fixture Wall Control and wiring (if applicable)

Lighting fixtures require a wall mounted control box. Single and Dual Lighthead models 8" x 10", for Triple 10" x 13-1/2". 3/4" conduit and minimum 12 AWG wire is required between wall control and fixture. 10 AWG wire is recommended for installations requiring wires between control box and fixture that are longer than 25'.

---

Recommended Tool List For Skyboom Installation

- Cordless drill w/ #2 Phillips bit
- Magnet, telescoping
- Spirit level
- Digital level
- Large crescent wrench for 1-1/4" nuts
- White lithium grease
- Set of Phillips screwdrivers
- Set of flat blade screwdrivers
- Metric, L-type Allen wrench set 1.5-12mm
- Wire puller (fish tape)
- 12mm open end wrench
- Plastic Faced Hammer
- Utility knife
- True RMS digital multimeter
- Spanner wrench, SKYTRON P/N H9-200-04
- 1-7/8" heavy duty offset striking wrench
- 1-7/8" - 3/4" drive impact socket, deep
- 3/4" drive 10" extension
- 3/4" drive ratchet
- Lift capable of supporting up to 800 lbs.
- Dead blow hammer
- Blue Loctite® 242
- Electrical tape
- Hook and pick set
- Wire strippers
- Wire crimpers
- Torque wrench (multiplier) 660 ft.-Lbs.
- 1-7/8" Torque socket, 1" drive

All tools and devices employed during the installation of this fixture must be calibrated to original manufacturers specifications.

The hardware and all components for installation of the SKYTRON Skyboom are located in the main fixture crate.

---

Recommended Hardware List
Provided By Others

- Pump enclosure mounting hardware
- Ceiling cover attachment hardware
**SPECIAL USER ATTENTION**

**IMPORTANT NOTES**

- Should any damage to the fixture be noted while uncrating, further unpacking should be stopped and the container with all the wrappings held for inspection. The transportation company should be notified immediately so an inspector can be sent. Consult the Damaged Shipment Claim Procedure sheet for further details.

- Skyboom configurations will vary depending on the number and type of options selected. Review all installation procedures as described, prior to starting installation of the fixture. Orientation of the product is critical for installation and operation. Refer to your layout drawings for the proper orientation.

- Personnel uncrating SKYTRON surgical lights should be aware that they are delicate medical equipment and special care in handling should prevail throughout installation.

- Refer to the drawing package included with the fixture to ensure that the proper gas connections, electrical services and communications services have been provided and properly installed on mounting plate.

- Store Skyboom components out of the elements and dust, debris and moisture. Failure to protect product could result in damage preventing proper installation and performance.

- Avoid opening cartons before they are delivered to the installation site. SKYTRON is not responsible for lost or damaged items caused by improper handling procedures.

- Use extreme caution when removing the contents from the crates to prevent damage to the lights. Leave the lightheads in their crates until ready to install.

- If the lighthead must be set down after it is removed from the crate, lay it on the foam shipping block. Do not lay it on the front face.

To help assure the highest degree of operating safety for user and patient, SKYTRON has provided precautionary instructions throughout this manual.

As with the operation of any surgical equipment, all hospital personnel should be aware that a certain amount of care must be exercised to maintain patient safety and to keep your SKYTRON Skyboom fixture performing at peak efficiency.

In order to ensure safety and proper operation of this fixture, it should only be installed by SKYTRON trained and qualified personnel. Failure to observe these installation and service requirements may result in poor fixture performance and create hazards to clinical users.

The following is a summary of the important precautionary instructions:

- **WARNING**
  - Indicates a possibility of personal injury.

- **CAUTION**
  - Indicates a possibility of damage to equipment.

- **NOTE**
  - Indicates important facts or helpful hints.
NOTE

Make sure that the Electrical Junction Box and Riser Plate Assemblies if applicable have been installed on the Mounting Plate. All facility medical gas piping connections to the Riser Plate connections and all testing and certification should be completed prior to the installation of the fixture.

NOTE

If any obstruction will not allow the upper arm to rotate a full 360°, it is recommended to remove the Stop Bolt and Stop Balls from the arm prior to installing the Hub and upper arm assembly.

CAUTION

The fixture’s 1-1/4” mounting nuts require 660 ft.lbs. of torque. Failure to apply the proper torque setting results in gradual loosening of the mounting fasteners which will eventually lead to drifting of the fixture or a potential hazardous situation.

NOTE

Align Clamp Ring so the split is 90° to the centerline of the arm and tighten the bolts alternately to make the split on each side equal.

CAUTION

Do not rotate Radial Arms more than 360° without setting the stops. Damage to the equipment could occur.

NOTE

The System can support and balance a monitor weight up to 18 lbs. Exceeding the weight will result in poor balance and performance.

NOTE

• Radial Arm wires are tagged for proper connection to the Wall Control (top arm #1, next arm #2).

• Observe wire tags and color codes and connect the electrical wires from the wall control to the radial arm junction box wires.

NOTE

Connection of the fixture wires using Crimp Connectors is required due to the low voltage/high amperage electrical requirements.

NOTE

Determine correct placement for each Balance Mechanism(BOM)/Vertical Support Tube(VST) on the radial arm assembly. The longest VST goes into the top radial arm.

WARNING

Apply Blue Loctite® to all of the 6mm mounting screws and use a 4mm allen wrench to tighten the screws.

CAUTION

The 6mm mounting screws for attaching the VST to the radial arm may be different lengths. Observe any color code markings and make sure the proper screws are installed in the proper holes to avoid any damage to the electrical components.
WARNING
DO NOT remove lighthead when support arm is in down position; The balance mechanism will be severely damaged and may result in bodily injury.

NOTE
• 3/4" conduit and minimum 12AWG wire (3 wires per lighthead) is required between Wall Control and Fixture.
• All wiring to be in accordance with local electrical codes.

NOTE
Control Box wires are tagged for proper connection to the fixture.

IMPORTANT
120 VAC isolated power supply requires double pole, single throw 20 amp (maximum) breaker.

CAUTION
TO AVOID BLOWING FUSES, DO NOT TURN MAIN POWER TO FIXTURE "ON" UNTIL ALL LIGHTHEADS ARE INSTALLED AND ALL WIRING CONNECTIONS ARE COMPLETED.

IMPORTANT
The internal circuitry used in the Stellar system requires the use of a true RMS type digital voltmeter to accurately set the bulb voltage. Premature bulb failure will result from incorrect voltage.

NOTE
SKYTRON does not provide pump enclosure mounting hardware. Construction variances do not permit SKYTRON to furnish specific hardware for each application. Consult with the General Contractor.

NOTE
Final pressure and dropping speed adjustments should be done after all equipment is placed on the carrier.

NOTE
Failure to install the Radial Arm Covers properly and secure the fasteners could result in the inadvertent release of the covers.

NOTE
The ceiling cover is attached to the upper arm and rotates with the arm. Make sure adequate clearance is available throughout the range of movement.

CAUTION
Leave adequate amount of slack in all hoses and cables to prevent damage as the arm is rotated. Trim excessive conduit wire and cable as needed.

NOTE
All medical gas lines must be cleaned & tested to NFPA guidelines prior to making final tie-in connection.
Figure 1. Typical Fixture Installation

- MOUNTING PLATE
- HUB AND UPPER RADIAL ARM ASSEMBLY
- LFS UPPER RADIAL ARM
- LFS LOWER RADIAL ARM
- FLATSCREEN MOUNT
- LOWER RADIAL ARM
- CARRIER/UTILITIES BOX/VST ASSEMBLIES
INSTALLATION PROCEDURE

The fixture should be installed in the following Main Component sequence: Refer to figure 1.

1. Hub and Upper Radial Arm Assembly
2. Lower Radial Arm(s)
3. Carrier/Utilities Box/VST Assemblies
4. Flatscreen Arm and Mount
5. Lighting fixture and Wall Control
6. Final Assembly and Adjustments

The Mounting Plate should be located 10 inches above the finished ceiling and securely welded to the mounting structure in accordance with SKYTRON’s Pre-Installation Guide. Failure to comply to these specifications will result in improper function of ceiling cover and improper clearances.

Install (6) 1-1/4” x 10” All Thread Rod (provided with the fixture) into Mounting Plate and secure with (12) 1-1/4” nuts. Using the Torque Multiplier, torque nuts to 660 ft.lbs. See figure 2. Install (6) 1-1/4” nuts (one on each rod) approximately 2” below the Mounting Plate.

NOTE

Make sure that the Electrical Junction Box and Riser Plate Assemblies if applicable have been installed on the Mounting Plate. All facility medical gas piping connections to the Riser Plate connections and all testing and certification should be completed prior to the installation of the fixture.

1. Hub and Upper Radial Arm Assembly

NOTE

If any obstruction will not allow the upper arm to rotate a full 360°, it is recommended to remove the Stop Bolt and Stop Balls from the arm prior to installing the Hub and upper arm assembly. Refer to figure 7.

Install the Hub and Radial Arm Assembly on the mounting structure threaded rods and secure with (6) 1-1/4” nuts. Refer to figure 3. Bottom of the mounting hub must be 6-5/8” (±1/8”) above the finished ceiling. Check the tube of the mounting hub with a level. Adjust Jam Nuts on hub as needed to make sure the tube is plumb. Using the Torque Multiplier, torque nuts to 660 ft.lbs.

Figure 2. Torque Multiplier

NOTE

The fixture's 1-1/4" mounting nuts require 660 ft.lbs. of torque. Failure to apply the proper torque setting results in gradual loosening of the mounting fasteners which will eventually lead to drifting of the fixture or a potential hazardous situation.

Figure 3. Mounting Dimensions
2. Lower Radial Arm Assembly

The Ergon Skyboom System may incorporate a variety of arms, utilities boxes and/or carriers. Refer to the drawings included in the drawing package for the proper configuration. All of the following procedures may not apply for the fixture you are installing.

a. Lower Fixed Height Arm Installation

Use the following procedure to install the Lower Fixed Height Radial Arm Assembly. Refer to figure 4.

![Figure 4](image)

1. Align the radial arm collar to line up with the upper radial arm bearing.

2. Install the Clamp Ring Assembly and secure with the (4) allen bolts and washers.

NOTE

Align Clamp Ring so the split is 90° to the centerline of the fixed arm and tighten the bolts alternately to make the split on each side equal.

b. Lower Height Adjustable Arm

The installation procedure for the Height Adjustable Arms is identical except for the hydraulic line on the powered arm. For Powered Height Adjustable Arm, install hydraulic line through upper arm and hub assembly prior to attaching arm. Use care not to "kink" or bend the hydraulic hose as it will damage.

1. Align the bearing assembly of the Height Adjustable Arm to the receptacle on the Upper Radial arm assembly as shown in figure 5. The Stop Key notch should be pointed toward the end of the arm.

2. Align the (3) set screw holes on the bearing with the set screws on the radial arm receptacle and lock the bearing into position by tightening the set screws.

3. Install the Threaded Collar and tighten using spanner wrench SKYTRON P.N. H9-200-04.
c. Bearing Stop Assembly

The bearings contain an adjustable stop mechanism and a friction brake. The stop mechanism allows the radial arm Degree of Rotation to be set between 15° and 330° in 15° increments.

All bearings are set for 330° of rotation unless noted otherwise on the bearing tag.

After the mounting hub and radial arm is installed, the precise positioning of the stops can be adjusted in relation to the room. Refer to figure 6.

⚠️ CAUTION ⚠️

Do not rotate Radial Arms more than 360° without setting the stops. Damage to the equipment could occur.

The bearings use two Stop Balls and a Stop Bolt to set the rotation adjustment.

The Stop Bolt is located on the hub end of the radial arm as shown in figure 7.

Use figures 6 and 7 to determine the degree of rotation desired and the rotation position in relation to the radial arm.

If an adjustment is required, the Stop Bolt and one or both of the Stop Balls will have to be removed from the bearing.

1. Rotate the arm to the first desired stop location and insert one of the Stop Balls.

2. Rotate the arm in the opposite direction to the second stop location and insert the second Stop Ball.

3. Rotate the arm back toward the first Stop Ball, install and tighten the Stop Bolt.
3. Carrier/Utilities Box/VST Assemblies

a. VST Assembly

Refer to the drawing package provided with the Ergon Skyboom to determine proper placement of Vertical Support Tubes (VST). Normally, the longest VST attaches to the upper arm on a dual arm fixture.

Vertical Support Tubes supplied with the fixture may vary in both length and diameter. Large diameter tubes are provided for Utilities dispensing heads, smaller diameter tubes are supplied for flatscreen monitor mounts and fixtures that combine lighting fixtures have a third type for the light fixture. The light fixture tubes are packed in a separate box.

1. Align the Vertical Support Tube (VST) if applicable with the radial arm bearing. Refer to figure 8.

![Figure 8](image)

2. Install the Clamp Ring Assembly and secure with the (4) allen bolts and washers.

NOTE

Align Clamp Ring so the split is 90° to the centerline of the arm and tighten the bolts alternately to make the split on each side equal.

b. Utilities Dispensing Assembly

The Utilities Dispensing System may be an equipment carrier (P-1 through P5), utility box head (UB) or a vertical utility box (VB). Each of these attaches to the arm assembly in the same manner.

1. Position the Utility Dispensing System under the arm and install hoses and cables through VST and arm. Hoses should be installed with care to avoid tangling and twisting. Avoid pulling and taping together as one bundle to prevent restriction to hoses. Avoid pulling the hoses by the D.I.S.S. gas connectors. Failure to do so could result in leaks. Allow a fair amount of slack at each bend to prevent collapse and stretching.

2. Align the carrier collar with the VST. Refer to figure 9.

3. Install the Clamp Ring Assembly and secure with the (4) allen bolts and washers.

NOTE

Align Clamp Ring so the split is 90° to the centerline of the carrier top beam and tighten the bolts alternately to make the split on each side equal.

![Figure 9](image)
4. Flatscreen Arm and Mount

a. Height Adjustable Arm

1. Install the Upper VST (longest) in the Flatscreen Radial Arm and secure with the (6) M6 x 10 screws.

2. Rotate mounting stub of Height Adjustable Arm clockwise until it contacts the stop.

3. Align Height Adjustable Arm in line with upper radial arm as shown in figure 10.

4. Install the Height Adjustable Arm in the Upper VST and secure with (6) M6 x 8 screws. See figure 11.

b. Flatscreen Mount

1. Route all cabling or pullstring through arm assembly and install the Lower VST on the Height Adjustable Arm and secure with (4) M6 x 8 screws.

2. Install the Flatscreen Mount into the Lower VST and secure with (4) M6 x 8 screws. See figure 12.

3. Install the (2) sterilizable positioning handles.

4. Install the flatscreen monitor according to manufacturer's instructions and connect all video and power cables.
5. Check the vertical tension adjustment of the Height Adjustable Arm for its capacity to support the flatscreen monitor throughout its range of motion. The monitor should move freely yet maintain its selected position without drifting. If an adjustment is necessary, refer to figure 13 and proceed as follows:

**NOTE**

The System can support and balance a monitor weight up to 18 lbs. Exceeding the weight will result in poor balance and performance.

6. Remove the cover plate on the top of the Height Adjustable Arm for access to the tension adjustment nut. Insert a 1/8" pin punch into a hole in the adjustment and turn the nut as required to achieve proper tension - clockwise to increase tension, counterclockwise to decrease tension. Replace access cover when adjustment is complete.

---

7. Check the adjustment for the flatscreen monitor pitch axis. The monitor should move freely yet maintain its selected position without drifting. If an adjustment is necessary, refer to figure 14 and proceed as follows:

---

8. Loosen set screw on trunnion nut, insert a 1/8" pin punch into hole opposite set screw location and adjust trunnion nut as required - clockwise to increase tension, counter clockwise to decrease tension. Tighten set screw when adjustment is complete.

9. For fine adjustment, rotate the monitor downward until the adjustment nut is visible on the tension spring assembly. Using a pin punch, turn the adjustment nut until proper tension is achieved.
c. Upper Flatscreen Radial Arm Stop Adjustment

The Flatscreen Radial Arm has a ball stop mechanism that allows $340^\circ$ of rotation in $30^\circ$ increments. Use the following procedure to set the stop locations.

1. Determine the degree of stop rotation and the location for the stops based on the room layout. The recommended stop location is over the head end of the table, this will allow the most flexibility for positioning the monitor. Refer to figure 15.

   3. Rotate the upper radial arm until the stop is contacted.

   4. Remove the 2 screws securing the stop plate, remove the stop plate and stop ball.

   5. Rotate the arm to the desired stop position, install the stop ball, install the stop plate and secure with the 2 screws.

2. To alter the stop position, refer to figure 16 and use the following procedures:

   340°

   HEAD END

   STOP POSITION

   340° ROTATION

   STOP PLATE

   SCREW (2)

   STOP BALL

   Figure 15.

   Figure 16.
5. Lighting Fixture and Wall Control

a. Vertical Support Tubes/Balance Mechanism

NOTE

• Radial Arm wires are tagged for proper connection to the Wall Control (top arm #1, next arm #2).

• Observe wire tags and color codes and connect the electrical wires from the wall control to the radial arm junction box wires.

NOTE

Connection of the fixture wires using Crimp Connectors is required due to the low voltage/high amperage electrical requirements.

NOTE

Determine correct placement for each Balance Mechanism (BOM)/Vertical Support Tube (VST) on the radial arm assembly. The longest VST goes into the top radial arm.

WARNING

Apply Blue Loctite® to all of the 6mm mounting screws and use a 4mm allen wrench to tighten the screws.

1. Install the VST on the BOM, apply Blue Loctite® to screw threads and secure VST with the allen screws provided. See figure 17.

2. Observe the wire colors and connect the wires from the radial arm to the corresponding BOM/VST wires using crimp connectors. See figure 18.

3. Insert the vertical support tube into the radial arm receptacle. Observe any screw color codes, apply Blue Loctite® to screw threads, and secure the BOM/VST assembly with the 6mm mounting screws. Repeat procedure for any remaining BOM/VST assemblies.
b. Lightheads

Model 29 Lighthead

1. To make it easier to install the lighthead, locate the support arm of the balance mechanism so that it points inward toward the ceiling cover. This will prevent the radial arm from moving when installing the lighthead. See figure 19.

4. Pull the lighthead down and remove the Above Horizontal Limit Stops from the BOM. See figure 21.

WARNING

DO NOT remove lighthead when support arm is in down position; The balance mechanism will be severely damaged and may result in bodily injury.

2. Remove the four (4) screws from the lighthead mounting stub.

3. Install the lighthead mounting collar onto the support arm and secure with the screws previously removed. See figure 20.

Figure 19.

Figure 20. Model 29 Lighthead Installation

Figure 21. Above Horizontal Limit Stops
Model 23 or 19 Lighthead

1. To make it easier to install the lighthead, locate the support arm of the balance mechanism so that it points inward toward the ceiling cover. This will prevent the radial arm from moving when installing the lighthead. See figure 19.

2. Remove the four (4) screws from the lighthead mounting stub.

3. Install the lighthead mounting stub into the support arm and secure with the screws previously removed. See figure 22.

4. Pull the lighthead down and remove the Above Horizontal Limit Stops from the BOM. See figure 21.

WARNING

DO NOT remove lighthead when support arm is in down position; The balance mechanism will be severely damaged and may result in bodily injury.

Figure 22. Model 23 or 19 Lighthead Installation (ST23 Lighthead shown)
c. Wall Control

NOTE

• 3/4" conduit and minimum 12AWG wire (3 wires per lighthead) is required between Wall Control and Fixture.

• All wiring to be in accordance with local electrical codes.

1. Install wall mounted control box using the following procedures.

2. Remove the transformer tray assembly from the wall control box for ease in wire connection. See figure 23.

3. Install the wall control box as desired (surface or recessed mount) as shown in the wall control illustration, figure 24.

NOTE

Control Box wires are tagged for proper connection to the fixture.

4. Observe wire tags and color codes and connect output leads to appropriate lighthead wires using crimp connectors. See figure 23.

Figure 23. Wall Control
Figure 24. Wall Control Installation

NOTE:
FRONT EDGE OF "BACK-BOX"
MUST BE FLUSH WITH FINISHED WALL SURFACE

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<th>DIMENSIONS</th>
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<td>A</td>
<td>8&quot;</td>
<td>10&quot;</td>
</tr>
<tr>
<td>B</td>
<td>4&quot;</td>
<td>4&quot;</td>
</tr>
<tr>
<td>C</td>
<td>10&quot;</td>
<td>13-1/2&quot;</td>
</tr>
<tr>
<td>D</td>
<td>6-7/8&quot;</td>
<td>8-5/8&quot;</td>
</tr>
<tr>
<td>E</td>
<td>7-5/8&quot;</td>
<td>11&quot;</td>
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<tr>
<td>F</td>
<td>5-7/8&quot;</td>
<td>6-3/8&quot;</td>
</tr>
</tbody>
</table>

RECESS MOUNT FLANGE
11-3/4"W x 14"H 13-3/4"W x 17-1/4"H
**IMPORTANT**

120 VAC isolated power supply requires double pole, single throw 20 amp (maximum) breaker.

5. Connect 120 VAC power supply to input wires and ground fixture properly.

**CAUTION**

TO AVOID BLOWING FUSES, DO NOT TURN MAIN POWER TO FIXTURE "ON" UNTIL ALL LIGHTHEADS ARE INSTALLED AND ALL WIRING CONNECTIONS ARE COMPLETED.

d. Output Voltage Adjustment

1. Remove top cover from VST and test bulb voltage at the wire connections. Turn main power "ON" and set the Dimmer Control for the lighthead being tested to maximum intensity for the test. Output voltage (at the connectors) should be 20V ± 0.2V. See figure 25.

2. Adjust the voltage to the lighthead by turning the adjuster on the back of the appropriate dimmer control in the wall control. See figure 26.

3. Turn the adjuster clockwise to increase the output voltage, counterclockwise to decrease the voltage.

**IMPORTANT**

The internal circuitry used in the Stellar system requires the use of a true RMS type digital voltmeter to accurately set the bulb voltage. Premature bulb failure will result from incorrect voltage.

**Figure 25. Bulb Voltage Test**

**Figure 26. Voltage Adjustment**
6. Final Assembly and Adjustments

a. Hydraulic Pump Installation

Power Height Adjustable Arms require the installation of a hydraulic pump assembly. The hydraulic pump, control circuit board, terminal strips and associated wiring are mounted in a Hoffman, nema 4 enclosure. Use the following procedure for installation.

Installation Notes:

• Pump must be mounted near an access door for future service access.
• Pump must be mounted within 3 feet of the fixture mounting hub.
• Enclosure measures 18" L x 6" W x 12" H, weighs 30.25 lbs. and is constructed of painted steel.

NOTE

SKYTRON does not provide pump enclosure mounting hardware. Construction variances do not permit SKYTRON to furnish specific hardware for each application. Consult with the General Contractor.

1. Remove the four screws securing the enclosure cover and remove the cover. Remove shipping material from pump reservoir.

2. Install beam clamps to back of enclosures.

3. Install hydraulic pump and enclosure above the finished ceiling. Refer to figure 27.

4. Remove the yellow shipping cap from the pump reservoir and replace it with the black vented cap.

5. Remove plug from hydraulic line, remove grommet from pump enclosure, insert hydraulic line through grommet into pump enclosure and replace grommet in pump enclosure.

6. Remove shipping cap from pump and connect the hydraulic line to the pump with the plumbing bolt and two seal washers. See figure 28.

7. Connect the electrical service and the conduit from radial arm to the pump enclosure.

8. Connect the 120VAC facility supply line to the circuit breaker. Connect fixture wiring to facility supply lines. Refer to wiring diagram provided with fixture. Connect low voltage (24V) connector to lead from fixture.
b. Pump Adjustments

NOTE

Final pressure and dropping speed adjustments should be done after all equipment is placed on the carrier.

1. Test the operation of the hydraulic pump and Height Adjustable Arm using the up/down buttons or the pendant switch control. It may take several seconds for the arm to move upward when first operated.

2. The down movement of the arm is controlled by a dropping valve. When the valve is activated a return port to the reservoir is opened. The weight of the arm and carrier forces the hydraulic fluid from the cylinder back to the reservoir allowing the arm to descend.

3. The dropping speed of the radial arm can be adjusted at the hydraulic pump. To adjust the dropping speed of the arm, remove the plastic cover on the top of the pump assembly and use a 2.5 mm Allen wrench to turn the adjustment screw until the desired speed is achieved. Refer to figure 29. The dropping speed should equal the elevation speed.

4. If needed, the hydraulic pump pressure can be adjusted to lift heavier equipment loads (contact SKYTRON service representative for maximum equipment load). To adjust the pressure, turn the pressure relief valve adjustment screw with an Allen wrench clockwise to increase the pressure. See figure 30. Do not tighten adjustment screw all the way. A bypass route must be provided. To adjust for maximum pressure, turn the screw clockwise until it stops, then turn it back ½ turn.

c. Height Adjustable Arm Adjustments

The Height Adjustable radial arm will move to approximately 30° above horizontal. To restrict the upward movement of the arm, adjust the limit switch located in the hydraulic radial arm. See figure 30.

Figure 30. Limit Switch

Raise the arm to the desired height, loosen the two nuts securing the switch actuator plate to the arm, adjust the plate to activate the switch at the desired stopping point and tighten the nuts.

Figure 29. Hydraulic Pump Adjustments
d. Plumb Adjustment

The lower vertical support tube and carrier should be perpendicular to the floor. This adjustment should be made once the equipment has been set in place. The carrier/utilities dispensing end of the height adjustable radial arm has a cam adjuster for setting the plumb of the lower VST. Use the following procedure to set the plumb of the VST. Refer to figure 31.

![Figure 31. Plumb Adjustment](image)

1. Place the arm in the full down position.
2. Using a spirit level, check the plumb of the VST with the level positioned under the radial arm.
3. If an adjustment is necessary, remove the end cap from the end of the arm and loosen the Allen Bolt and turn the Set Screw as needed to obtain proper alignment. Tighten the Allen Bolt securely once the adjustment is complete.

e. Radial Arm Cover Installation

The center Trim Strips are used to hold the Radial Arm covers in place. Use the following procedures to install the radial arm covers.

1. The mounting screws for the Trim Strips are in a bag fastened to the end of the radial arm. Center the Trim Strips to the Standoffs on the radial arm and secure with the screws provided. See figure 32.

![Figure 32. Radial Arm Covers](image)

2. Install the top cover pieces making sure that the covers are between the Trim Strip and the mounting blocks.
3. Install the lower cover pieces and tighten the screws in the trim strip to secure the covers.
4. Install the End Caps on each arm and secure with the two screws provided.
5. Install the trim and fit to size.

⚠️ CAUTION ⚠️

Failure to install the Radial Arm Covers properly and secure the fasteners could result in the inadvertent release of the covers.
f. Ceiling Cover Installation

Use the following procedure to install the Ceiling Cover. See figure 33.

1. Install the Inner Moving Rings on to the Upper Arm to determine alignment for the Outer Stationary Cover.

NOTE

The ceiling cover is attached to the upper arm and rotates with the arm. Make sure adequate clearance is available throughout the range of movement.

2. Install the Outer Stationary Cover as shown and secure with the two screws provided. Use the appropriate fasteners to attach to the ceiling.

3. Install the Inner Moving Ring pieces as shown and secure with the two screws provided.

4. Center Outer Stationary Cover, and rotate upper arm to ensure proper function. Fasten to the finished ceiling utilizing appropriate fasteners. **Each application may vary, therefore fasteners are to be supplied by installer.**

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g. Shelf Installation-Carrier Models

The shelf hardware is packaged in individual packages for each shelf and packed in a separate box within the carrier shipping crate. Refer to figure 34 and use the following procedure to install the shelves.

1. Insert the Threaded Mounting Blocks into shelf tracks on carrier main support.

2. Attach Shelf Support Block to the Threaded Mounting Blocks with two M6x25 allen bolts.

3. Insert one Spring Nut in each side channel.

4. Install the shelf and secure it to the Shelf Support Block with two M6x12 allen bolts and star washers. Install nylon washers between shelf and side channels and secure shelf to Spring Nuts with M8x12 Button Head bolts.

5. Position shelf height as required and tighten all fasteners securely.

6. Cut trim to proper lengths and insert in the side channels.

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Figure 33.

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Figure 34.
h. Accessories
Install all accessories included with the fixture. Refer to the drawing package provided with the fixture for accessory placement.

i. Final Connections

CAUTION
Leave adequate amount of slack in all hoses and cables to prevent damage as the arm is rotated. Trim excessive conduit wire and cable as needed.

Refer to figure 35 for hose/cable routing recommendation prior to making final connections.

j. Electrical Connections
Make all electrical connections at the junction box on the mounting plate. Refer to the drawing package provided with the fixture for wiring details. All connections must be in accordance with all local, state and federal code requirements.

k. Medical Gas Hose Connections

NOTE
All medical gas lines must be cleaned & tested to NFPA guidelines prior to making final tie-in connection.

Connect Medical Gas hoses to riser plate fittings. Refer to the drawing package provided with the fixture. Hoses and fittings are labeled and all connections are D.I.S.S. fittings to ensure proper connection. Do not overtighten as damage could result to copper medical gas lines.

Figure 35. Hose/Cable Routing
INSTALLATION CHECK LIST

Above Ceiling:
- Hub plumb, bolts torqued 645 ft.lbs.
- Cables, Hoses, Data, Voice routed
- Electricity connected
- Gas connection by __________
- Hydraulic pump mounted
- Ceiling Cover installed
- Bearing Stops and Brakes set
- Temporary connection
- To be made by others
- Connected
- Checked for Leaks

Flatscreen Arms:
- VST length correct _____”
- Covers and Trim
- Monitor installed
- Head room clearance _____” w/ arm @ 90° to bottom of Flatscreen
- Brakes and Stops set
- Cables routed
- Spring Arm tension set
- Spring Arm tension set

Elevato Arms:
- Leak check
- Pressure set w/load
- Limit Switch
- Spring Arm tension
- Dropping Valve set
- Pressure set w/load
- Spring Arm tension

Anesthesia:
- VST length correct _____”
- IV Poles
- Brake and Stops set
- Grab handles
- Covers and Trim
- Equipment rails
- Cables routed
- Vac. Slides
- Tether bracket
- VST length correct
- and tested

Carriers:
- Inches from floor to bottom of Carrier:_____”
- VST length correct _____” _____”
- Brake and Stops set
- Covers, Caps, Trim
- Shelving set and level
- Cables routed
- SkyVac connection
- SkyVac tested
- Back Covers
- Inspected for paint chips
- Inspect Nitrogen system
- Pressure _____ PSIG

Accessories:
- GCX Bracket
- IV Pole
- Equipment Rails
- Baskets
- Vac. Slides

Wall Control:
- Surface mount
- Recess mount
- Wire connection 12awg
- Wire crimped
- Cover screws
- Input voltage checked
- VAC
- Intensity knob set screw tight

Lights:
- Mounting Stub screws installed
- Power ON, all bulbs illuminated
- Bulb voltage set
- VST length correct
- Bulbs remain illuminated throughout:
  - RAA Rotation
  - BOM Rotation
  - Vertical Travel
  - Pitch Axis
  - Roll Axis
  - Focus correct
  - Center focus handle mounted
  - Camera installed
  - and tested
  - Diffuser clean
  - Headroom clearance: _____” _____” _____”
  - VST Length: _____” _____” _____”

All Equipment Clean
THE FOLLOWING QUESTIONS MUST BE ANSWERED BY THE INSTALLER:

1. All manuals furnished to customer?  Yes  No  N/A
   Operators Manual  ☐  ☐  ☐
   Parts Catalog  ☐  ☐  ☐
   Maint. & Adjust.  ☐  ☐  ☐
   CD  ☐  ☐  ☐
   Other  ☐  ☐  ☐

2. When installed did the device function as per specification?
   ☐ yes  ☐ no  If no, please explain:

3. Did the device pass all required functional testing?
   ☐ yes  ☐ no  ☐ N/A  If no, please explain:

4. Did the device pass all required diagnostic tests?
   ☐ yes  ☐ no  ☐ N/A  If no, please explain:

5. Who attended the installation of the device (names and titles)?
TYPICAL SKYBOOM WIRING DIAGRAM

TYPICAL PUMP WIRING DIAGRAM POWERED HEIGHT ADJUSTABLE ARM

PUMP ENCLOSURE (18"L x 12"H x 6"D) (REMOTE MOUNTED)

3/4" CONDUIT AND MINIMUM 12 AWG WIRE SIZE (2 WIRES PER LIGHTHEAD PLUS FIXTURE GROUND WIRE) REQUIRED BETWEEN FIXTURE JUNCTION BOX AND SKYTRON SUPPLIED WALL CONTROL. PLEASE REFER TO SPECIFIC MODEL LIGHT WIRING DIAGRAM PROVIDED.

SURGICAL LIGHTS JUNCTION BOX (4"L x 4"W X 2-1/4"D) (FIXTURE MOUNTED)

FACILITY INCOMING POWER SUPPLY LINES MUST BE PROPERLY CIRCUIT PROTECTED AND IN COMPLIANCE WITH FEDERAL, STATE, AND LOCAL CODES.
TYPICAL LIGHT FIXTURE WIRING DIAGRAM

- CRIMP CONNECTORS
- BRUSH BLOCK
- SLIP RING
- TRANSFORMER
- BULB

TS
SA
RAA
VST

TERMINAL STRIP
SUPPORT ARM
RADIAL ARM ASSEMBLY
VERTICAL SUPPORT TUBE

VSTSA RAA

L1
L2
L3
L4
L5
L6
L7
TS

DIMMER CONTROL
FUSE SB5A
DIMMER CONTROL
FUSE SB3A
MAIN SWITCH

TRANSFORMER T1 390W
TRANSFORMER T2 270W

INPUT 120VAC

TRANSFORMER T-2 270W
TRANSFORMER T-1 390W

LIGHTHEAD
29
LIGHTHEAD
23

BOOM / LFS INSTALL • REV0

MODEL ST2923

SKYTRON
Whenever a shipment suffers damage while in the custody of the transportation company, the responsibility lies with the transportation company and the value of the damages can be collected from the transportation company if the proper procedures are followed.

When a shipment is received in a damaged condition and due to the appearance of the containers such as a broken crate, torn wrapping, or smashed carton, the contents may have been damaged. That fact should be noted on the Bill of Lading offered by the transportation company. An example of an applicable statement would be; "Received in good order except as noted" or "Crate damaged, possibility of concealed damage." The addition of these types of statements on the shipping documents will automatically give grounds for starting a claim.

If damage cannot be identified on the exterior of the container, but is found when the container is opened, further unpacking should be stopped immediately and the container with all wrapping or packing materials should be held. The transportation company should be notified so an inspector can be sent. Failure to follow either of these two procedures may result in an inability to file a claim and collect for damage done. Returning the container to the sender without such an inspection may prevent filing a claim, because it will divide the responsibility for damage and in many cases the transportation company will return the shipment to the sender without charge after the inspection.

The claim itself may be filed by either the shipper or consignee, but the consignee must notify the transportation company and the shipper that the damage has occurred. Remember that refusal of the shipment or failure to note the possibility of damage on the shipping documents may jeopardize the claim. Also, acceptance of a damaged shipment which has been processed properly to allow for filing a claim, will not jeopardize the position of the consignee. In any case, SKYTRON will see that damage which is not the fault of the consignee or his agents is corrected, if the transportation company does not honor the claim, as long as SKYTRON receives the full cooperation of the consignee in filing the claim.

Some of the papers needed for filing a claim are in the hands of the consignee after the shipment has been received. If SKYTRON must file a claim, we will request these papers by name from the consignee at such time as the claim is under discussion. We will require the originals of these papers and not copies.

Knowledge of the procedures outlined above and your cooperation in submitting damaged shipment claims will help both you, our customer, and SKYTRON by assuring the integrity of our products from manufacturing to installation.