MODULAR
SERVICES COMPANY®

INSTALLATION MANUAL

STRATUS®

MODEL 5830

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OVERVIEW

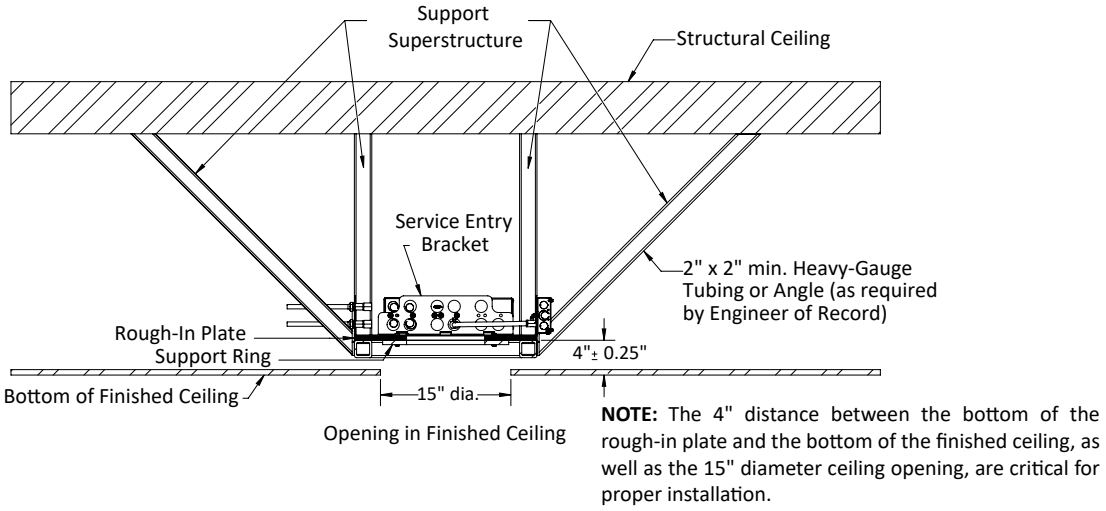
Stratus® is a UL-listed, ceiling-mounted medical services assembly with a double-articulated rotating arm. Stratus® is designed to provide flexible and convenient service for medical gas, standard and emergency power, communications, etc. Stratus® has a maximum head load capability of 400 pounds and a 350° range of motion at each joint.

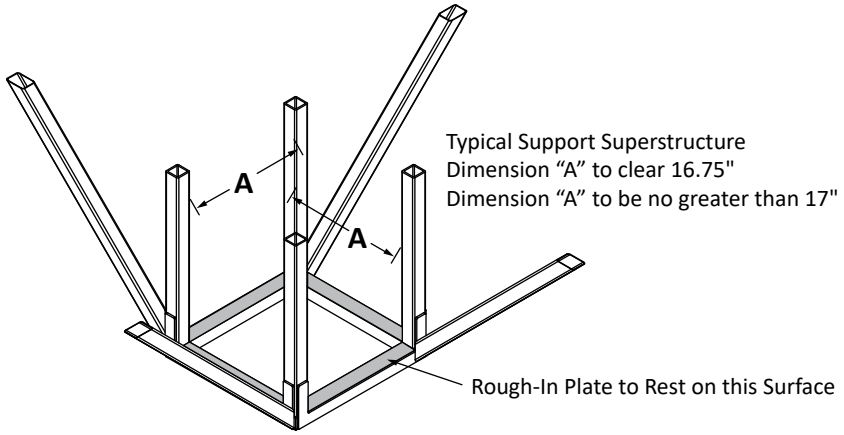
PREPARATION: SUPERSTRUCTURE

A support superstructure (purchased separately or provided by others) is to be constructed above the finished ceiling and firmly attached to the structural ceiling (see Figure 1 for suggested means of support for both single and dual units).

IMPORTANT: The 4" distance between the bottom of the rough-in plate and the bottom of the finished ceiling, as well as the 15" diameter ceiling opening, are critical for proper installation. If installing on a hard ceiling, an access panel (minimum 24" square) is needed in close proximity to the electrical junction boxes.

Figure 1.

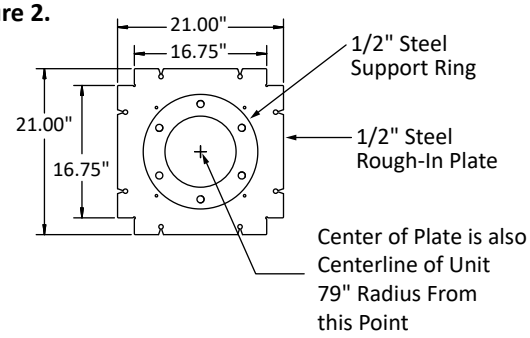




PREPARATION: ROUGH-IN PLATE

The Stratus® includes a 1/2" steel rough-in plate which must be firmly attached to the superstructure, either by welding it in place or attaching it with bolts. The square rough-in plate is supplied with an attached 1/2" steel support ring, and is to be installed with the support ring facing downward. The rough-in plate must be level to within 1/4" in order for the Stratus® to rotate properly.

Figure 2.



MAXIMUM LOAD 1000 LBS.
MAX. BENDING MOMENT 4010 FT-LBS

MAXIMUM DEFLECTION OF SUPPORT STRUCTURE = 0.05"/ft (0.25°)

Modular Services Company offers a pre-manufactured superstructure that has been approved for these loading and deflection specifications, along with worst-case seismic conditions. Contact your sales representative for more information.

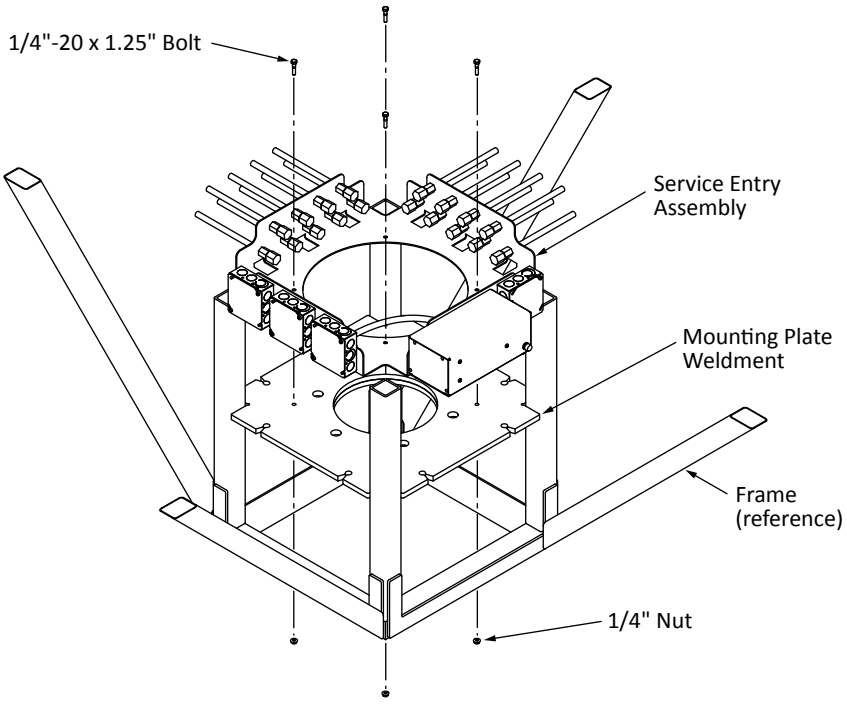
1. All design, fabrication and materials other than the rough-in plate assembly are the responsibility of the engineer of record.
2. Rough-in plate is to be welded or bolted to support superstructure by customer/contractor, subject to engineer of record's approval and must be level within 1/4".

NOTE: Rough-in plate is mounted on top of structural supports with support ring facing downward, as shown above.

PREPARATION: SERVICE ENTRY BRACKET

Also included with the Stratus® is a service entry bracket containing bulkheads to facilitate connection of medical gas and electrical services to supply lines. After installation of the rough-in plate, the service entry bracket is bolted to the top of the rough-in plate.

Figure 3.



UNPACKING & INSPECTION

1. Upon receipt of Stratus® booms and prior to unpacking, inspect shipping containers for damage. Document any damage found and notify the carrier and Modular Services Company.
2. Locate the carton for the unit you wish to install. Labels at each end of the carton identify the unit type and general description of contents, as well as the room number or area of installation (if applicable).
3. Carefully open the top of each carton. Leave unit in crate to protect from damage. Crate is also used to lift unit into place.
4. Inspect units for defects in materials or workmanship prior to installation. It is the responsibility of the customer to report any damage or deficiencies to Modular Services immediately upon discovery.
5. Review final approved submittal drawings. These documents will provide you with technical details specific to your installation, such as:
   - Wiring diagrams
   - Equipment types and quantities
   - Room numbers and location in the building (if applicable)
   - Optional lighting requirements

TOOLS REQUIRED / PARTS LIST

Genie® Superlift Contractor® SLC-12	Brake Release and Convenience Handle(s)
Magnetic Level	End Caps
7/16" Socket & Wrench (or two wrenches)	Bearing Covers
(2) 1-5/16" Wrenches	Top Shroud(s)
Phillips Screwdriver	AIM LED Light Mounting Bracket (for AIM LED option only)
(6) 7/8"- 9 x 10" Studs	Down Tube (for AIM LED option only)
(24) 7/8"- 9 Hex Nuts (27 Required for AIM LED option)	Locking Ring (for AIM LED option only)

IMPORTANT SAFETY INSTRUCTIONS

Please note that installation of this product must be carried out by a trained installation/service technician. At some points of the installation, assistance from an additional person will be required.

- Please make sure to follow these instructions when installing. **DO NOT** modify any parts before, during, or after assembly.
- If problems are encountered when installing, please contact Modular Services Company. The contact information can be found on the last page of this manual.

CAUTION: Failure to properly follow installation and preventive maintenance instructions may result in mechanical failure.

WARNING: Before undertaking any work, ensure that the main power is off and secured from accidentally being switched on again.

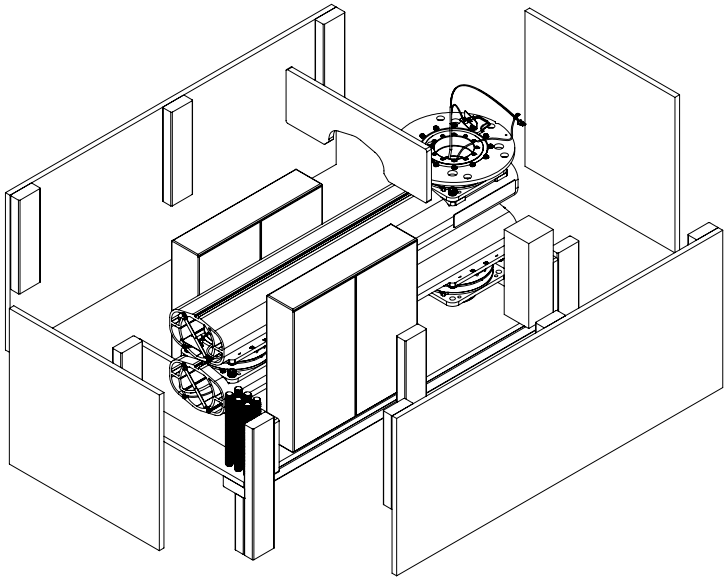
NOTE: The optional *AIM LED Procedure Light* should only be installed by a qualified electrical contractor.

ARM INSTALLATION: CRATE PREPARATION

The crate for the Stratus® unit is designed to protect the arm while installing. To prepare crate for arm installation:

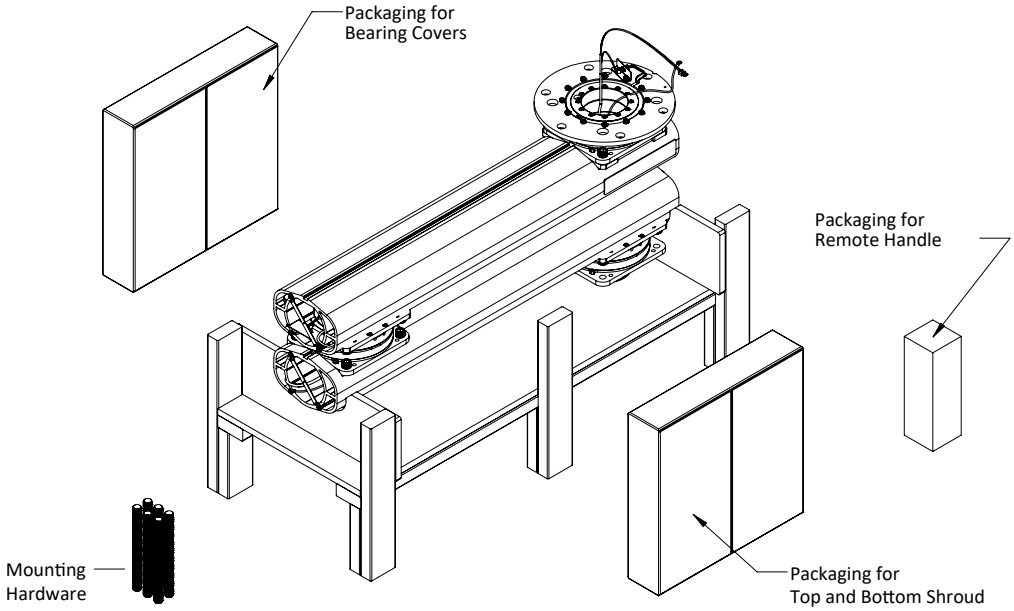
1. Remove top, cradle, ends and sides of crate, leaving only the base with legs (Figure 4).

Figure 4.



2. Remove all packaging and mounting hardware from base (Figure 5).

Figure 5.



ARM INSTALLATION: MAIN BEARING

1. Place mounting bolts on the main head assembly (Figure 6a), leaving no more than 1/8" protruding below the nut on the bottom side (Do not tighten yet).

   NOTE: If the Stratus® includes the *AIM LED Procedure Light* option, install the AIM light mounting plate above the first set of nuts on the main head assembly (Figure 6b).

Figure 6a.

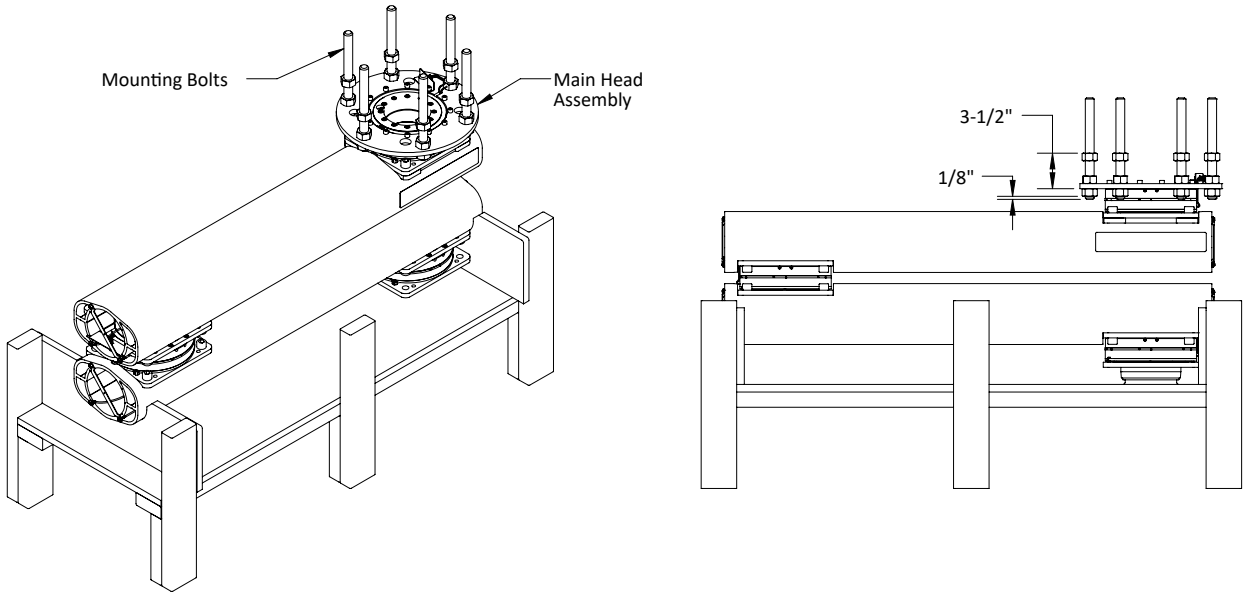
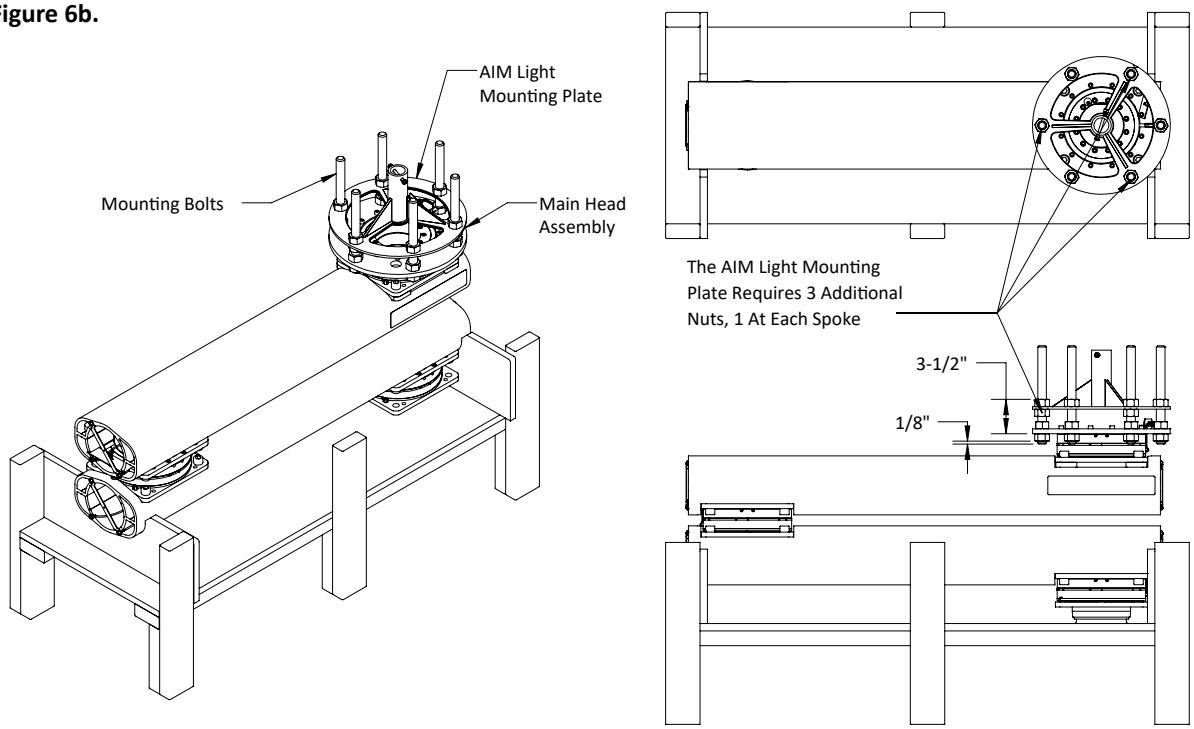
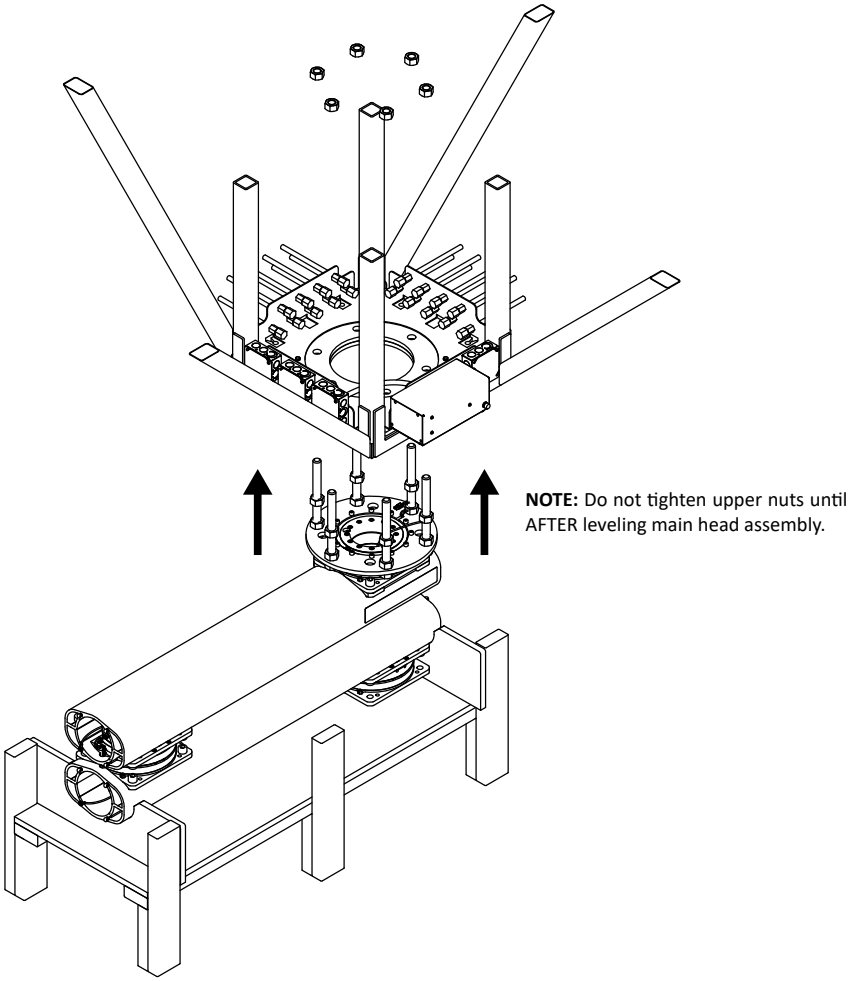


Figure 6b.



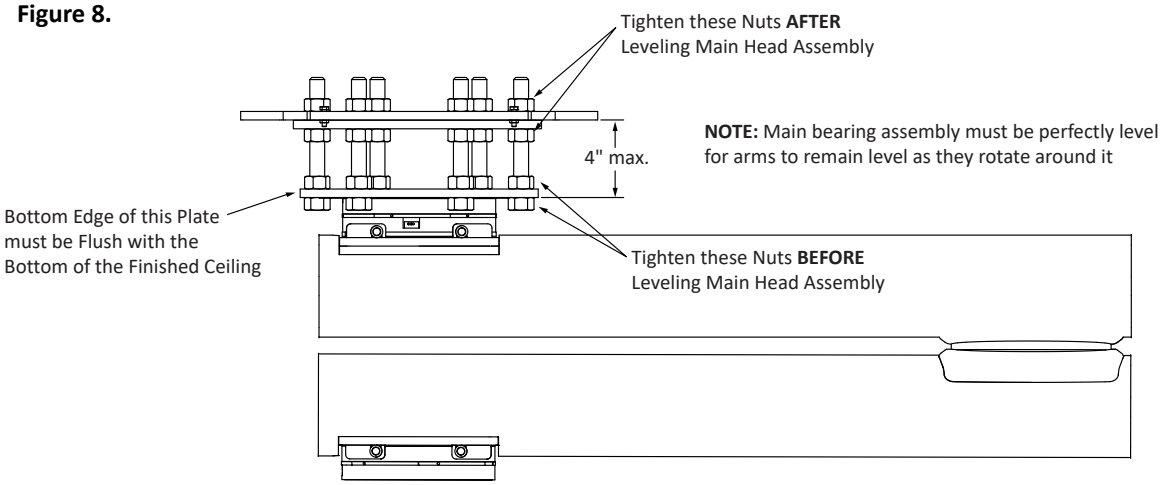
2. Raise the arm and crate into place using the specified lift and position so that the bottom face of the bearing plate is flush with the bottom of the finished ceiling (Figure 7) to ensure proper fit and finish of trim pieces.

Figure 7.



3. Level arm and tighten all nuts to at least 150 ft-lbs (Figure 8).

Figure 8.



4. When arm is secured to the mounting plate, remove the crate.

DOWN TUBE INSTALLATION: OPTIONAL AIM LED PROCEDURE LIGHT

NOTE: This step is only for Stratus® that include the optional *AIM LED Procedure Light.* Please refer to the approved submittal drawings to see if booms include this option.

NOTE: The down tube is pre-cut and pre-drilled at the factory and will suit rooms with a ceiling height of 8-10 ft. Be certain to remove the Burton trim and locking ring and install those provided by Modular Services Company.

First, move the lower arm to the side to provide clear access to the down tube clearance hole. Then, assemble the down tube by sliding it up the center hole in the upper Stratus® arm (Figure 9a). Position the tube so that the upper hole (A) in the down tube is matching the upper hole (B) in the AIM Light Mounting Bracket, then slide the provided 1/4" bolt through the hole and attach the nylock nut (Figure 9b and Detail A).

Figure 9a.

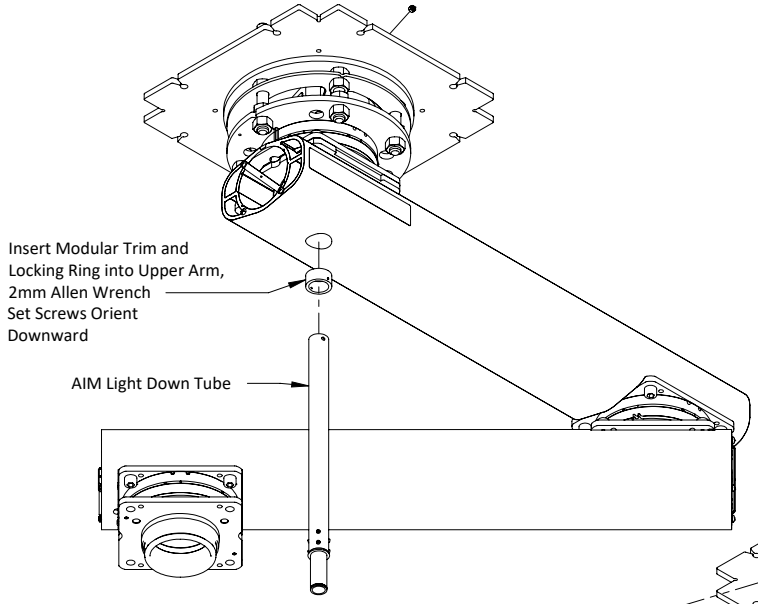
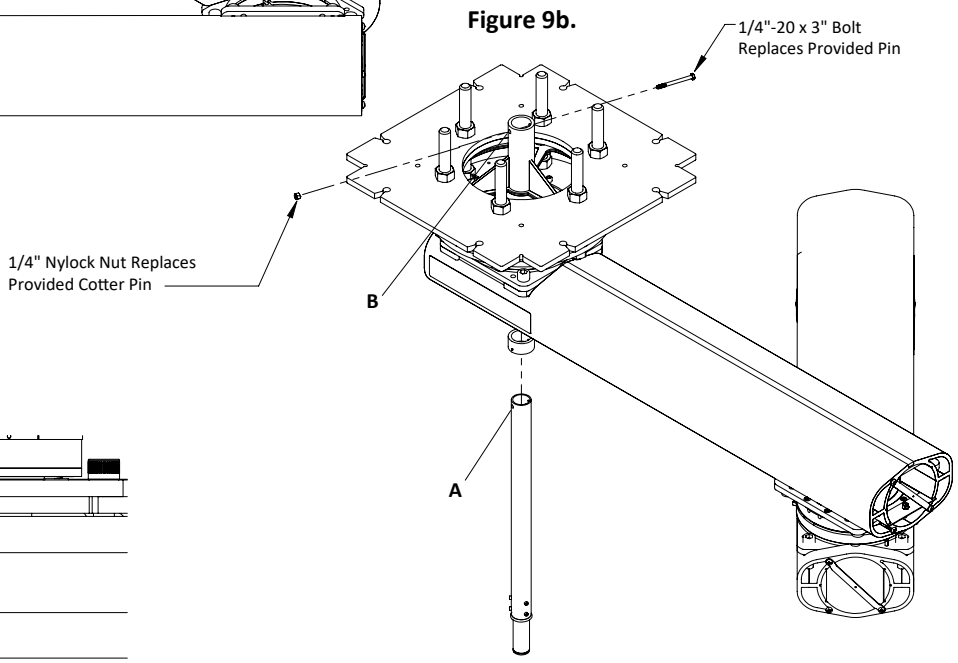
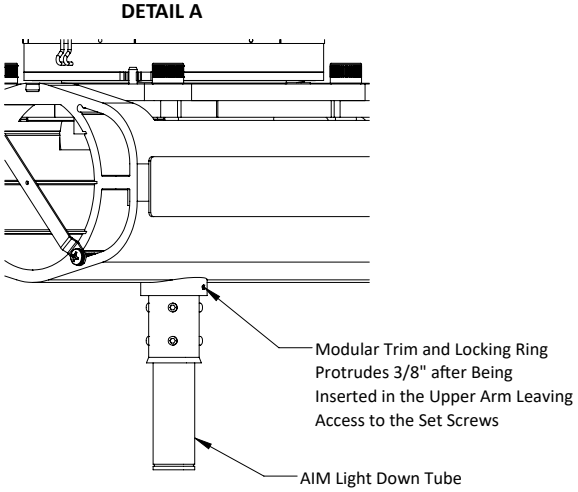


Figure 9b.



DETAIL A



COLUMN INSTALLATION: ROUTING GAS & ELECTRICAL

1. Position the Stratus® column below the lower arm. Temporarily secure the column in position to prevent the unit from tipping over.
2. Route gas hoses and electrical cables through arms (Figure 10). If installing a Stratus® that includes an *AIM LED Procedure Light*, evenly distribute gas hoses and AC cables between two of the openings in the AIM Light Mounting Plate, then route the low voltage MC cable in the third opening (Figure 11).

Figure 10.

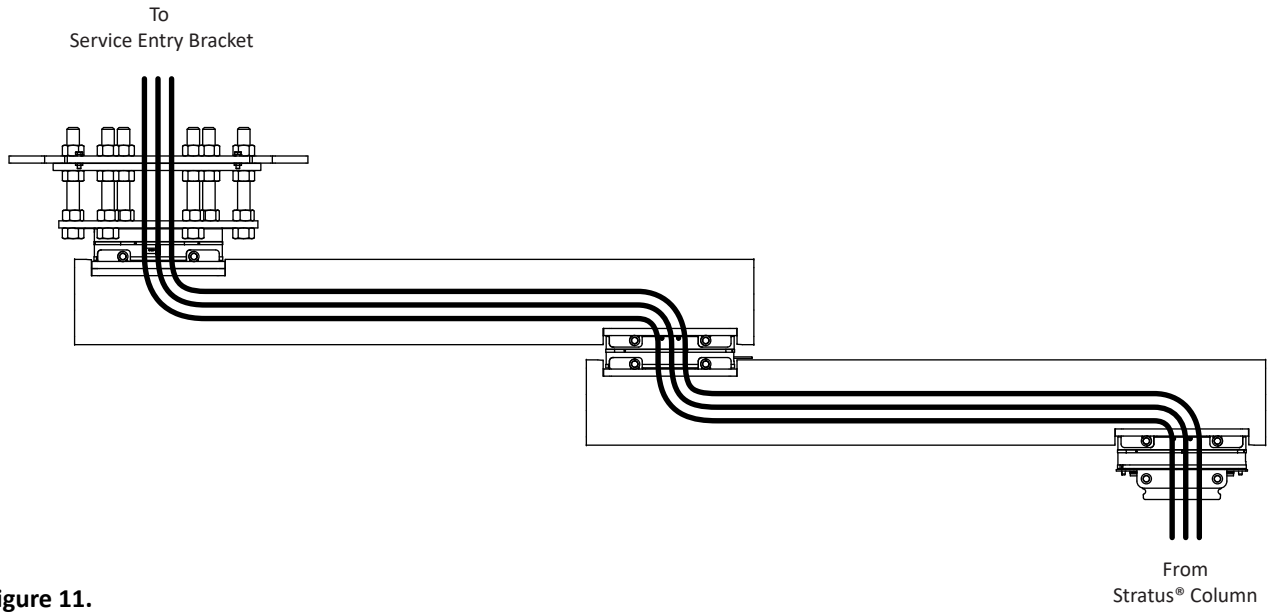
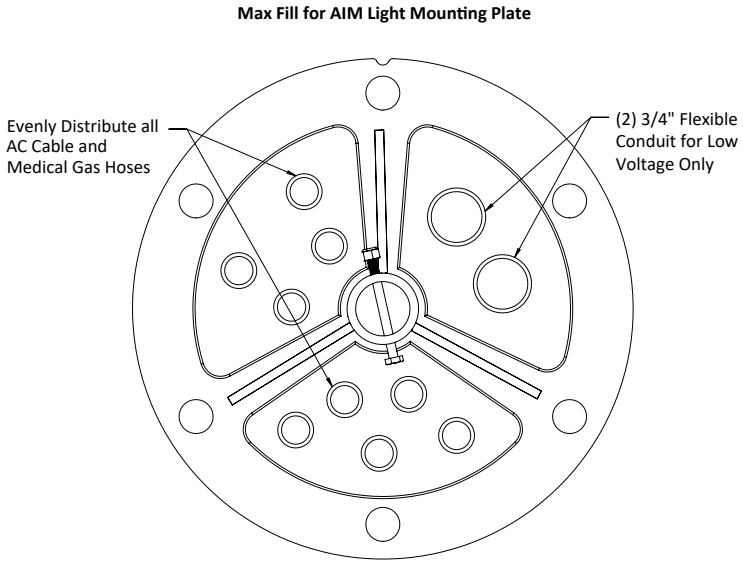


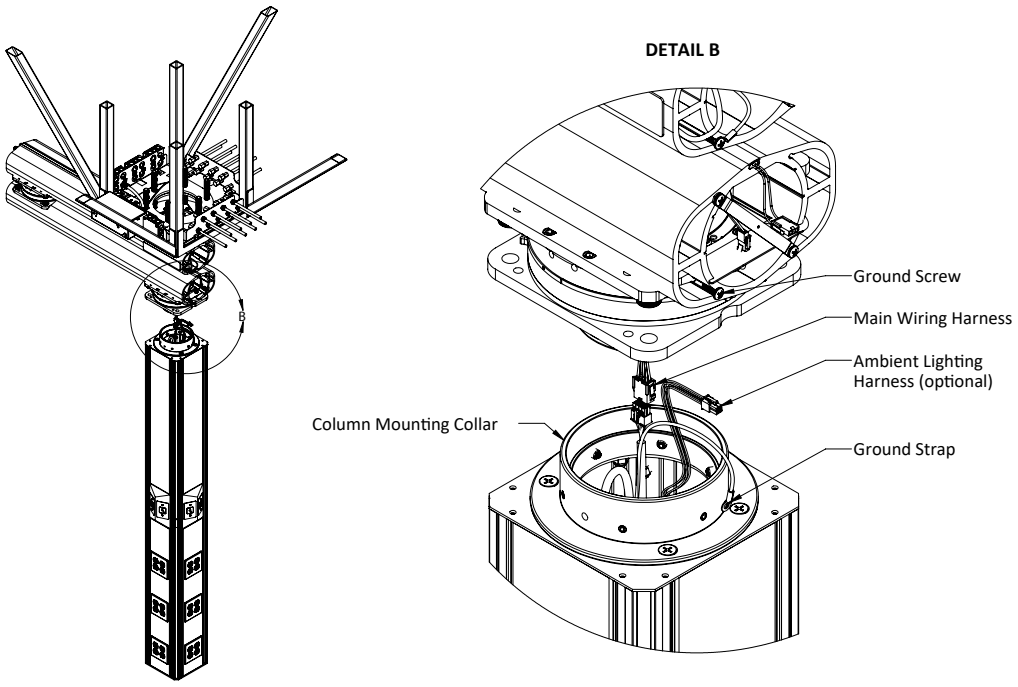
Figure 11.



COLUMN INSTALLATION: CONNECTIONS & ENGAGING COLUMN

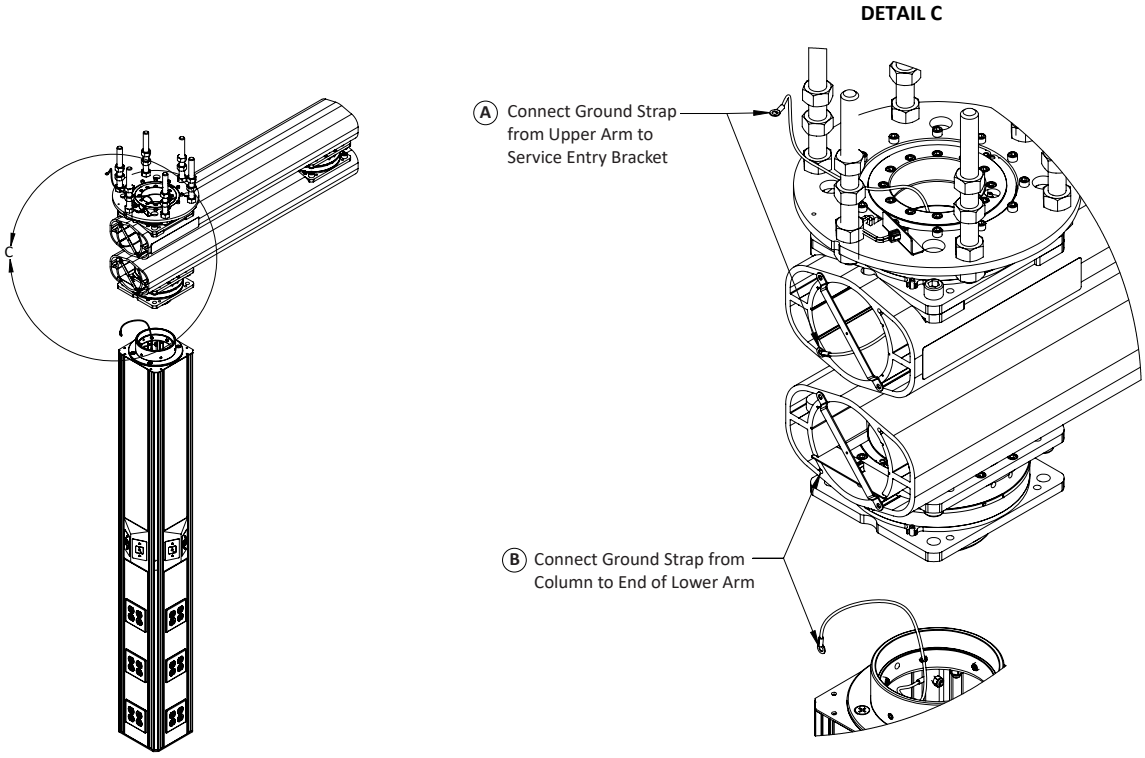
1. Connect the main wiring harness in the upper arm to the main wiring harness in the column, then check approved submittal drawings to determine if the ambient lighting option is included. If included, connect the ambient lighting harness in the column to the ambient lighting harness in the arm. See Figure 12, Detail B.

Figure 12.



2. Connect the green ground strap from the column to the end of the lower arm (Figure 13, A), then connect the green ground strap from the upper arm to either the rough-in plate or the service entry bracket (Figure 13, B).

Figure 13.

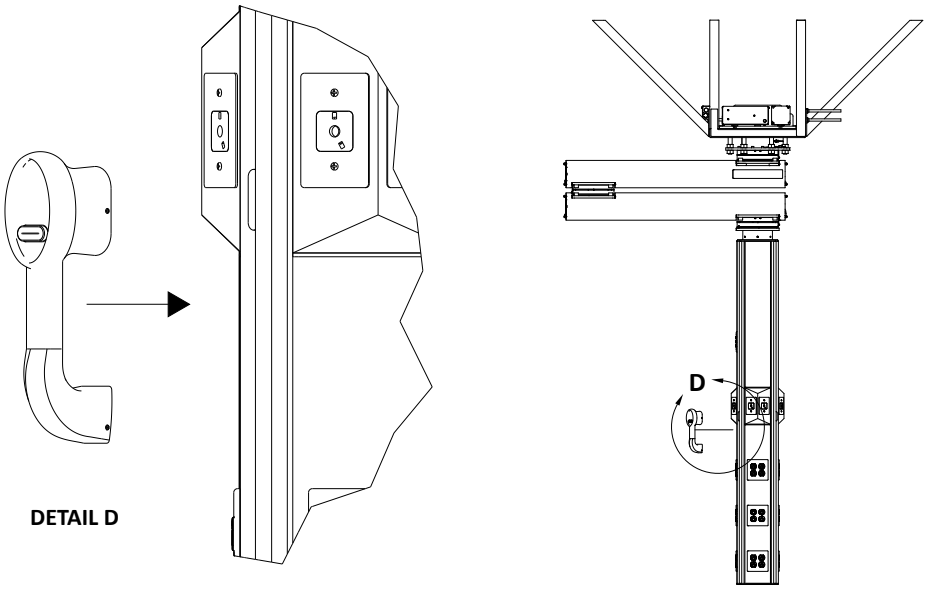


3. Raise the Stratus® column to the mounting plate at the bottom of the lower arm bearing assembly, taking care to not pinch or otherwise damage the medical gas hoses or electrical cables. Then, tighten set screws around collar (6 places). **NOTE:** Proper positioning of the column can be verified by looking into the sight hole of the column mounting collar located between the set screws. An orange reflective stripe should be visible filling at least half of the sight hole. If the orange stripe is not visible, the column mounting collar has not been fully engaged and should be adjusted.

BRAKE RELEASE HANDLE INSTALLATION

1. Plug handle into wire harness protruding from the corner of the column and attach handle to track (Figure 14).
2. Tighten set screws on the side of the handle.

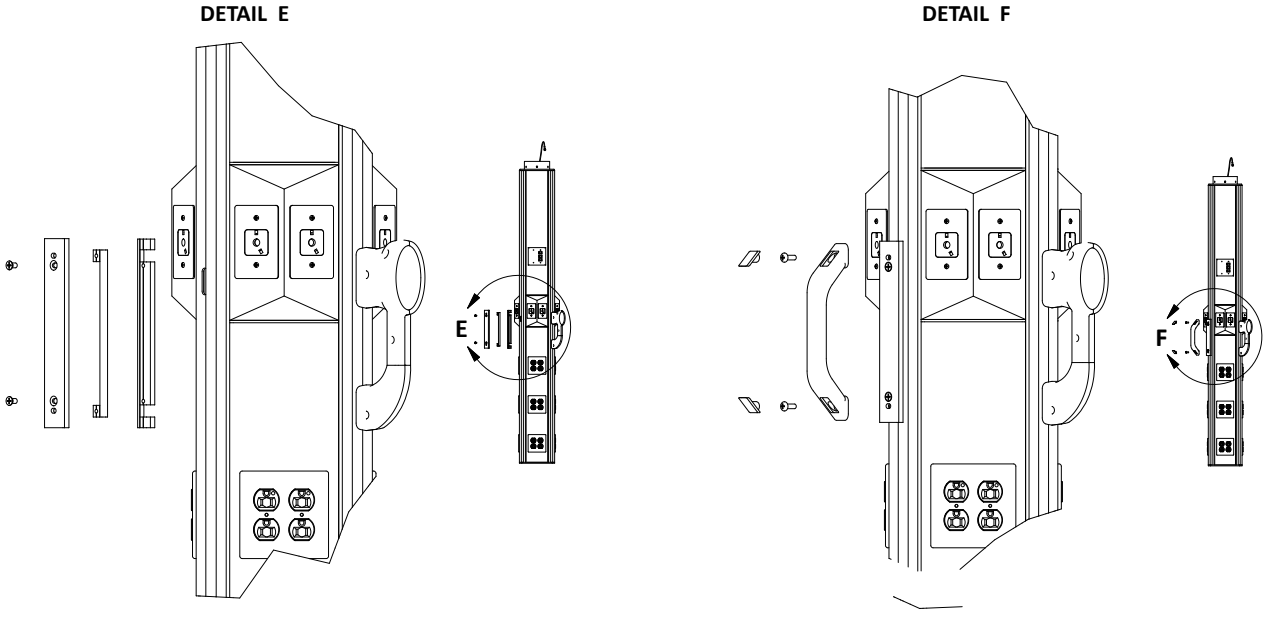
Figure 14.



CONVENIENCE HANDLE INSTALLATION

1. Attach the convenience handle track anchor to the vertical track adjacent to the brake release handle (Figure 15, Detail E).
2. Attach the convenience handle to the anchor and press the screw covers into the handle (Figure 15, Detail F).

Figure 15.



MEDICAL GAS SERVICE CONNECTIONS

1. Use extreme care in making the medical gas service connections.
2. Each connection has been provided with a color-coded medical gas label.
3. Do not connect the medical gas hoses from the column below to the DISS checks on the service entry bracket until all brazed connections and testing of medical gas piping systems have been completed.

Per NFPA 99 section 5.1.14.4.3.1(A), medical gas hose assemblies are to be tested for leaks every 18 months or at a duration as determined by a risk assessment. Furthermore, section 5.1.6.10(4) requires the hoses to be labeled with a recommended or required replacement date based on the manufacture date of the hose material. Modular Services labels hose assemblies with a date that replacement should be considered which is based on the life expectancy of the hose material being at least 30 years. Hose assemblies should be replaced if found to be leaking or signs of physical damage/excessive wear are present. Modular Services also recommends increasing the frequency of inspection/testing required by 5.1.14.4.3.1(A) beyond the labeled date.

Medical gas systems provided by Modular Services Company have been cleaned, purged, brazed, blown down, labeled, and tested for cross connections and leaks in accordance with the most recent edition of NFPA 99. They are certified to be compliant to all of these requirements and to be leak free. The medical gas system installer is responsible for connecting this manufactured assembly to the pipeline in compliance with all applicable sections of the latest edition of NFPA 99.

During the process of connection to the pipeline there are multiple potential sources of contamination or damage to seals which could result in leaks. First, although Modular Services Company takes care to protect the ends of our piping system and the openings of station inlets/outlets to avoid contamination, it is at this point that these contamination prevention measures must be removed which exposes the system to the construction environment. Secondly, instrumentation must be inserted into the station inlets/outlets to properly purge the system while it is being brazed in accordance with the requirements of NFPA 99. To avoid damage, heat must be conducted away from the gas outlet seals when brazing by orienting the flow of purge gas away from the outlet/inlet rough-in assemblies. Lastly, station inlet/outlet front body assemblies (if product is shipped with them installed), which are only rated to a maximum of 100 PSI, must be removed to conduct the initial pressure test which is required to be conducted at a minimum of 150 PSI. After this test is complete the front bodies must be reinstalled to conduct the standing pressure test.

In accordance with NFPA 99 section 5.1.12.2, the installer is required to test the distribution piping in its entirety, which includes the medical gas manifolds provided by Modular even though they have been pretested at the factory. Because of the multiple potential sources of contamination or damage to seals listed above, the installer is to be held responsible for repairing or replacing any seals which have been contaminated or damaged as a result of the process of connecting to the pipeline. The installer shall also be responsible for protecting the station inlets/outlets against contamination after the factory protection has been removed.

Modular Services Company warrants all defects in piping materials, brazed joints, and workmanship but cannot warrant leaking seals once the factory provided contamination prevention materials are removed from either the end of the piping or the station inlet/outlet.

ELECTRICAL SERVICE CONNECTIONS

1. Ensure that all electrical power circuits are locked off prior to hook-up.
2. Review the wiring diagram or shop drawings.
3. All connections are labeled on the unit at the point of connection.

4. Connect conduits and wiring from the column below to the electrical junction boxes on the service entry bracket and make connections inside the boxes, as required. Make connections on the brake control harness on both the column end of the unit and to the brake power supply enclosure.

   NOTE: The power supply for the brake circuit has an auto-sensing input of 100-120VAC/200-240VAC, 50/60Hz.

5. Test electrical connections in accordance with state and local codes.

ELECTRICAL SERVICE CONNECTIONS: OPTIONAL AIM LED PROCEDURE LIGHT

Please refer to the **Connecting Power** for Ceiling Mount models section in the standard *AIM LED Procedure Light* installation manual.

NOTE: The terminal block and power supply must be removed from the AIM ceiling casting and installed in the AIM Power Supply box on the service entry bracket with provided hardware.

LOW-VOLTAGE PROVISIONS

1. Install each low-voltage device in accordance with manufacturer's installation instructions.
2. Test equipment in accordance with state or local codes.

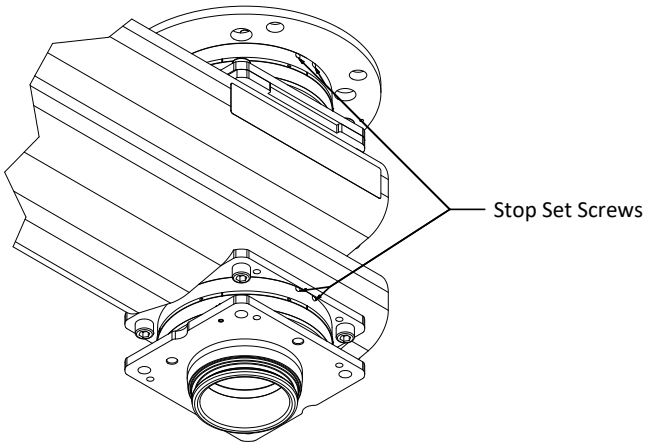
ADJUSTING STOPS

Stratus® booms have one stop at each joint. The stops on the middle and lower joint are set at the factory. The stop for the upper joint must be set after the unit is installed to work within the unique space. The following is the procedure to set the upper stop or adjust the other stops if necessary:

1. Rotate the joint requiring adjustment until it engages the stop.
2. Loosen the set screws (Figure 16) – two on each side of the unit, four total at each joint.
3. Push the stop to the desire location by rotating the joint.
4. Re-tighten the four set screws.

NOTE: Stops can only be pushed. If the stop needs to be moved back, rotate the joint in the other direction and repeat steps 1–4 above.

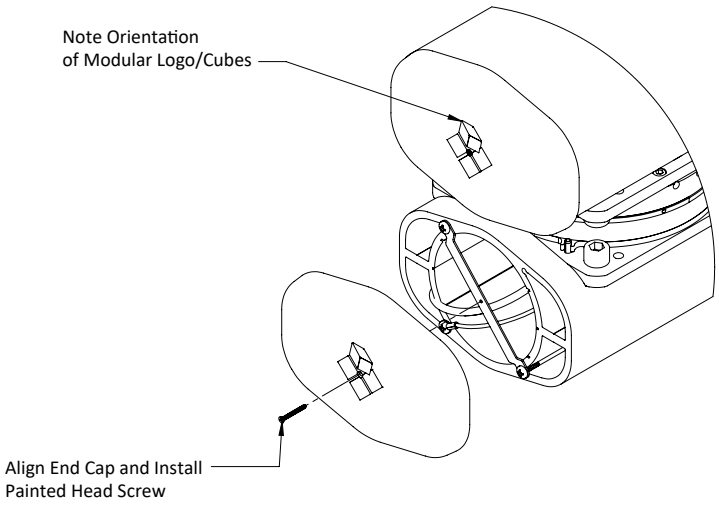
Figure 16.



FINAL ASSEMBLY: END CAPS

1. Verify that all medical gas and electrical connections have been completed and successfully tested prior to installing access end caps.
2. Align end caps with Modular Services Company logo/cubes in the proper orientation, and fasten with provided hardware (Figure 17).

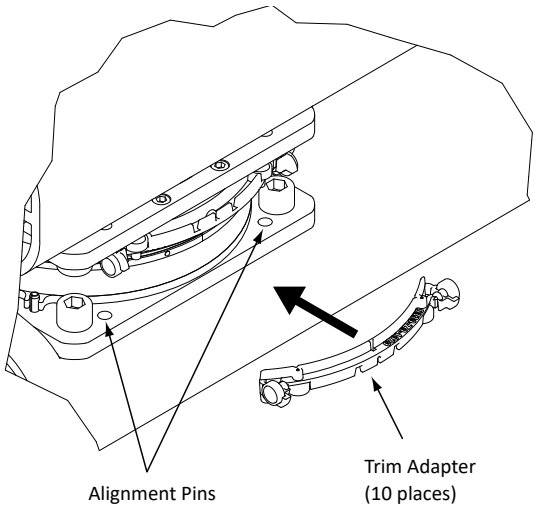
Figure 17.



FINAL ASSEMBLY: BEARING COVERS

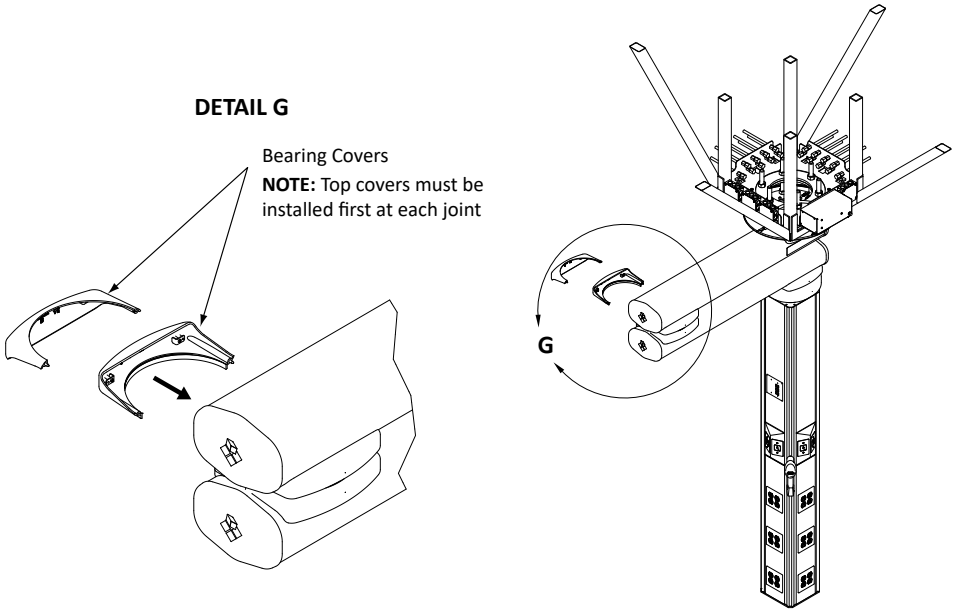
1. Verify that all medical gas and electrical connections have been completed and successfully tested prior to installing bearing covers.
2. Install magnetic trim adapters (Figure 18) by inserting alignment pins on adapters into holes on bearing plates (10 places).

Figure 18.



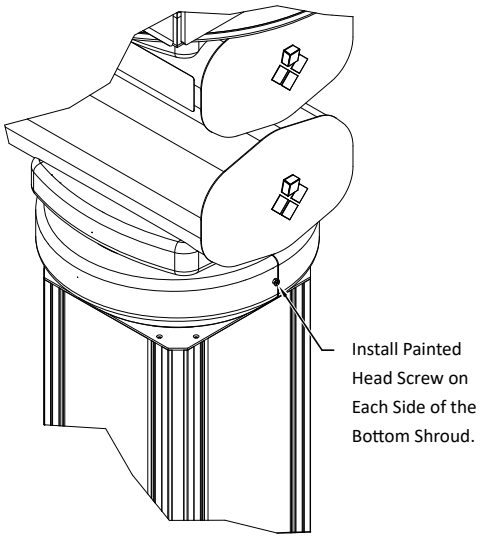
3. Install bearing covers, using alignment pins to help covers mate together horizontally (Figure 19). **NOTE: Top covers must be installed first at each joint.**

Figure 19.



4. After bottom cover is assembled onto the unit at the top of the column, insert two painted head screws (provided). See Figure 20.

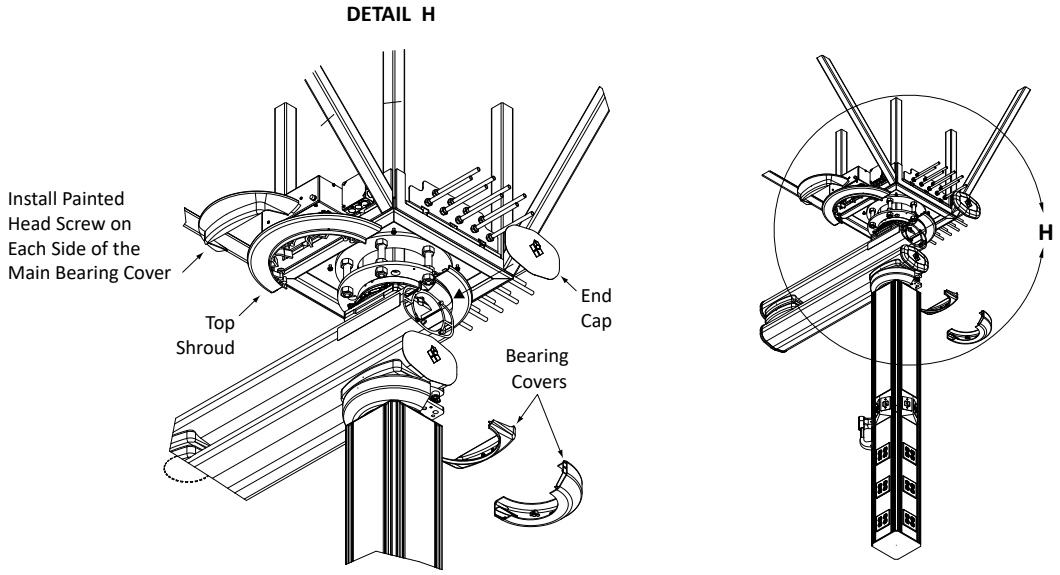
Figure 20.



FINAL ASSEMBLY: TOP SHROUD

1. Verify that all medical gas and electrical connections have been completed and successfully tested prior to installing top shroud.
2. Top shroud attaches directly to the main mounting plate with magnets. Alignment slots surround the 7/8" nuts for proper placement (Figure 21).

Figure 21.



FINAL ASSEMBLY:
EXTENSION/SPRING ARM FOR OPTIONAL AIM LED PROCEDURE LIGHT

NOTE: This step is only for Stratus® that include the optional *AIM LED Procedure Light.* Please refer to the approved submittal drawings to see if booms include this option.

Please refer to the **Extension/Spring Arm** for Ceiling Mount models section in the standard *AIM LED Procedure Light* installation manual to complete final installation steps for the AIM light.

CARE AND MAINTENANCE

1. Clean with mild detergent and warm water. **Do not use lubricants or oils on unit.**
2. Avoid excessive moisture build-up, as it can damage mechanisms in the unit.
3. Disinfect as required with disinfectant approved by the Environmental Protection Agency.
4. To remove difficult spots or stains, use standard household cleansers and a soft-bristled brush.
5. For parts or repairs, contact your sales representative.

INSTALLATION TERMS & CONDITIONS

Each Modular Services unit, or unit section, shall be completely pre-wired for normal, emergency and low voltage according to the approved submittal. Communication devices and wiring shall be supplied by others. These devices include nurse call, television, code blue, telephone, monitor jacks, etc.

The customer shall be responsible for all incoming electrical conduits, wiring hook-up of electrical services, and if applicable, interconnect wiring between sections. All hardware light fixtures shall be installed, connected and lamped by contractor. After installation is complete, the customer shall test equipment functions, as well as electrical receptacles and ground, in accordance with the National Electrical Code.

Medical gas contractor shall be responsible for incoming piping and hook-up of all medical gas services. The medical gas contractor shall be responsible for purging, pressure testing, gas identification, and system certification in accordance with NFPA 99.

Modular Services Company shall have no responsibility or liability for delays, however caused. Owner shall hold Modular Services harmless from damages or injury related to any failure or neglect of owner, its employees, agents or licensees. Modular Services shall not be liable for consequential damages; makes no warranties, expressed or implied; and assumes no obligation other than those expressly contained herein.

WARRANTY

Modular Services Company warrants that all equipment assemblies shall be free from defects in material and workmanship for a period of 12 months from date of the owner's acceptance to the installing contractor or the date the equipment is put into service, whichever comes first. The appended Stratus® Warranty Checklist must be submitted to Modular Services Company within 30 days of installation for your factory warranty to be activated. Warranty excludes electric lamps and/or any material not furnished by Modular Services. Warranty does not cover damage due to improper storage, installation and/or abuse.

It is the responsibility of the customer to report any noted product deficiencies to Modular Services immediately upon discovery. It is the responsibility of Modular Services to expediently resolve the discrepancy. Any modification made to the product without the written authorization from Modular Services will void this warranty.

Also, in the event product modifications or repairs are made without the written consent of Modular Services, Modular Services shall not be held liable for any cost associated with the modification or repair.

There are no warranties of fitness which extend beyond the description on the face hereof.

500 E. Britton Rd. • Oklahoma City, OK 73114
Tel: 800.687.0938 • Fax: 405.528.0368
www.modularservices.com
info@modularservices.com

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MODULAR SERVICES COMPANY

Stratus® Warranty Checklist

Facility Name: _____ **City:** _____ **State:** _____

Please verify correct room/side location for each unit and initial all of the items below that apply. Any steps that are not correctly completed could void your product warranty. The Stratus® Warranty Checklist must be submitted to Modular Services Company within 30 days of installation for your factory warranty to be activated. The completed forms may be mailed to:

Modular Services Company
Attention Customer Service
500 E. Britton Rd.
Oklahoma City, OK 73114

or

E-mail to:
info@modularservices.com

or

Call with your questions:
Customer Service
1-800-687-0938

Verifications

Record Unit Serial Number (On Top Plate) Verify Room/Side correct per unit label	Mounting Structure installed per Fig 1	Components unpacked and verified per Figs 4 & 5	Main Bearing Assy level, and nuts torqued per Fig 8	Hoses and cables routed and Service Column mounted per Figs 9 & 10	Ground straps connected per Fig 13	Medical gas connections and testing per NFPA 99	Electrical connections and testing per state and local codes	Brake stops set at proper locations per Fig 16	All covers, end caps, and shrouds installed and proper fit	Unit power, gases, low voltage devices, and range of motion are fully functional

Verified By (Please print): _____ **Signature:** _____ **Date:** _____

Title: _____ **Company:** _____