

S113 Heavy Duty Floor to Wall/Ceiling Tubestand

Installation Manual

06911 Rev C

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TEXT REVISION HISTORY

REVISION	ECR	Description	Release Date
A	8380	Production Release	June, 2014
B	9290	Removed 1.2; Replaced items in 1.1 with Symbol Table; Updated 1.3 Specification Summary Table, Maximum Total Counterbalanced Load changed from "100 lbs / 45.5 kg" to "75 lbs / 34 kg"	November, 2016
C	9600	Updated address to Niles, IL; Added "Intended Use" statement to sheet 3	June, 2017

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

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Section 1 General Information

1.1 Definition of Symbols Used on the Equipment

Symbol Legends	
Symbol	Definition
	Date of manufacture
	Manufacturer
	Serial Number
	Reference Number (Model/Part Number)
	Keep Dry
	NOTE This symbol represents Information that assists the user of the manual in the performance of a task. It may provide the user with better methods of conducting the task, or it may point out conditions that could cause the system to fail to operate properly.
 CAUTION	Points out special procedures, or precautions, that personnel must follow to avoid equipment damage.
 WARNING	Identifies situations or actions that may affect patient or user safety. Disregarding a warning could result in patient or user injury.
	TYPE B APPLIED PART This symbol indicates equipment providing a particular degree of protection against electric shock, particularly regarding allowable leakage currents and reliability of the protective earth connection (if present).
	This symbol indicates an Electro Sensitive Device is present which must be carefully handled to prevent damage to the device.
	ELECTRIC SHOCK HAZARD WARNING This symbol indicates an electric shock hazard.
	DANGER VOLTAGE This symbol indicates hazards arising from dangerous voltages.
	DIRECT CURRENT This symbol indicates a direct current source.
	PROTECTIVE EARTH TERMINATIONS This symbol indicates protective earth terminations in device.

1.2 Specification Summary Table

SPECIFICATION SUMMARY TABLE																	
Electrical Ratings	24VDC, 1A 																
Maximum Total Counterbalanced Load	100 lbs / 45.5 kg																
Environmental Conditions	<p>Temperature range for:</p> <table border="0"> <tr> <td>Transport and Storage</td> <td>Use</td> </tr> <tr> <td>-40° F to +158° F</td> <td>+50° F to +104° F</td> </tr> <tr> <td>-40° C to +70° C</td> <td>+10° C to +40° C</td> </tr> </table> <p>Relative Humidity Limits for:</p> <table border="0"> <tr> <td>Transport and Storage</td> <td>Use</td> </tr> <tr> <td>10% to 100%</td> <td>30% to 75%</td> </tr> </table> <p>Atmospheric pressure range for:</p> <table border="0"> <tr> <td>Transport and Storage</td> <td>Use</td> </tr> <tr> <td>14.67 inHg to 31.30 inHg</td> <td>20.67 inHg to 31.30 inHg</td> </tr> <tr> <td>500 hPa to 1060 hPa</td> <td>700 hPa to 1060 hPa</td> </tr> </table>	Transport and Storage	Use	-40° F to +158° F	+50° F to +104° F	-40° C to +70° C	+10° C to +40° C	Transport and Storage	Use	10% to 100%	30% to 75%	Transport and Storage	Use	14.67 inHg to 31.30 inHg	20.67 inHg to 31.30 inHg	500 hPa to 1060 hPa	700 hPa to 1060 hPa
Transport and Storage	Use																
-40° F to +158° F	+50° F to +104° F																
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Transport and Storage	Use																
14.67 inHg to 31.30 inHg	20.67 inHg to 31.30 inHg																
500 hPa to 1060 hPa	700 hPa to 1060 hPa																
Information regarding potential EMC interference and advice for avoidance	<ul style="list-style-type: none"> • Main power quality should be that of a typical commercial or hospital environment • Power frequency magnetic fields should be at levels characteristic of a typical location in a commercial or hospital environment 																
Degree of protection against harmful ingress of water	IPXO/Ordinary																
Degree of protection against electric shock	Class I, Type B Applied Parts 																
Equipment not suitable for use with flammable anesthetic mixture with air or with oxygen or nitrous oxide.																	

1.3 Notices



NOTE

This manual contains information for assemblers and users. This manual is to be delivered to the assembler of the product, who upon completion of installation, is to transfer it to the product user. Any person responsible for failure to comply with these instructions may be liable for resultant damages in accordance with the law.

Careful attention to all the details and instructions enclosed herein is necessary for proper installation. Should there be any questions, problems, or suggestions with either these instructions or the equipment supplied, please feel free to contact Summit Industries (see the address and telephone numbers on the cover sheet). Applicable comments or suggestions are welcome.

The equipment supplied and described in this manual will perform reliably when operated, maintained, and repaired in accordance with these instructions. Check it periodically and repair when necessary to ensure reliable operation. Replace broken, missing, worn, inaccurate or non-functioning parts. The equipment or its components should not be modified.

S113 Heavy Duty Tubestand

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Neither the seller nor the manufacturer can assume responsibility for any malfunction of this equipment resulting from improper operation, maintenance or repair, or if any of its components are damaged or modified.

All operators of this x-ray equipment must know and understand the dangers of excessive radiation exposure. This equipment is sold with the understanding that, since its proper use and application is in the control of the operator and beyond the control of the manufacturer or its agents, the seller disclaims all responsibility for any injury resulting from improper use and application of this equipment.

Intended Use

This is an x-ray Tubestand, a mechanical device intended to support and position an x-ray tube and collimator as required for radiographic procedures.

1.4 Unpacking

Exercise caution when unpacking and moving equipment.

The manufacturer is relieved of any responsibility for damages during shipment after it is in the possession of the carrier. Examine all cartons carefully at the time of delivery. If damage is apparent, have the delivering driver write a “bad order” note on all copies of the freight bill and sign it. Should you discover concealed damage, immediately notify the transportation agent and ask for an “Inspection Report for Damage”. Carriers will not accept concealed damage claims if filed after 15 days from date of receipt of the merchandise.

Open the crates and cartons carefully. Do not dispose of them until you have located all parts and the machine is fully assembled.

1.5 List of Standard Items

S113 Rail Mount		
PN	Description	Qty
06892-001	Column Assembly	1
06973	Ceiling Extension Kit	1
02267*	Rail Kit (5, 8, or 10 ft)	1
06863	Column Cap	1
06908-001	Trim Weight, 5 LB	1
06908-002	Trim Weight, 10 LB	3
A657	Cover, Counterweight Access	2
06860	Floor Car Assembly	1
06883	Angulation Box Assembly	1
06928-001	Kit, Cable Management	1
06904	Kit, SID Labeling	1
06974	Kit, Installation and User Manuals	1
06879*	Tubearm Assembly (8, 17, or 21")	1
06978*	Arm Cover Assy (8, 17, or 21")	1
	Label Kit	1

S113 Stationary		
PN	Description	Qty
06892-002	Column assembly	1
06863	Column Cap	1
06908-001	Trim Weight, 5 LB	1
06908-002	Trim Weight, 10 LB	3
06907	Kit, Column Wall Mout	1
01274-000	Plate Assembly, Floor Mount	1
06909	Cover, Base	1
A657	Cover, Counterweight Access	2
06919	Counterweight Travel Stop Assy	1
06883	Angulation Box Assembly	1
06928-001	Kit, Cable Management	1
06904	Kit, SID Labeling	1
06974	Kit, Installation and User Manuals	1
06879*	Tubearm Assembly (8, 17, or 21")	1
06978*	Arm Cover Assy (8, 17, or 21")	1
	Label Kit	1

Section 2 Pre-installation Information

Exercise caution when unpacking and moving equipment.

2.1 Installation Hardware

Most required fasteners will be found attached to the part they are used on. Fasteners are NOT provided for anchoring to the wall, ceiling, or floor (rail and stationary versions). Select appropriate hardware for the materials present at the installation site.

2.2 Mechanical Layout

Plan the room layout before starting installation. The site must comply with federal regulations and local codes as well as the dimensional and power requirements of this and other equipment.

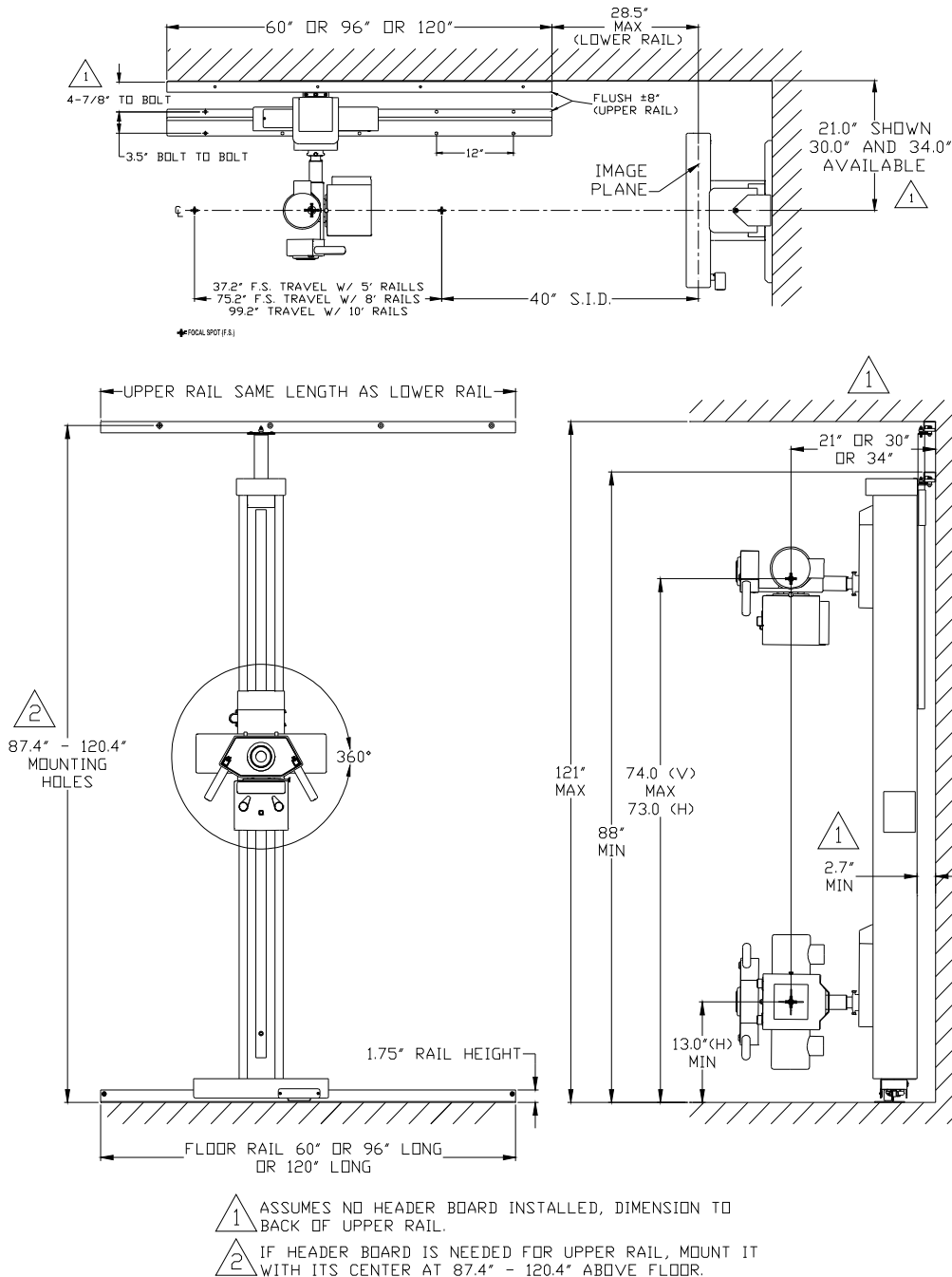


Figure 1: S113 Rail Mount

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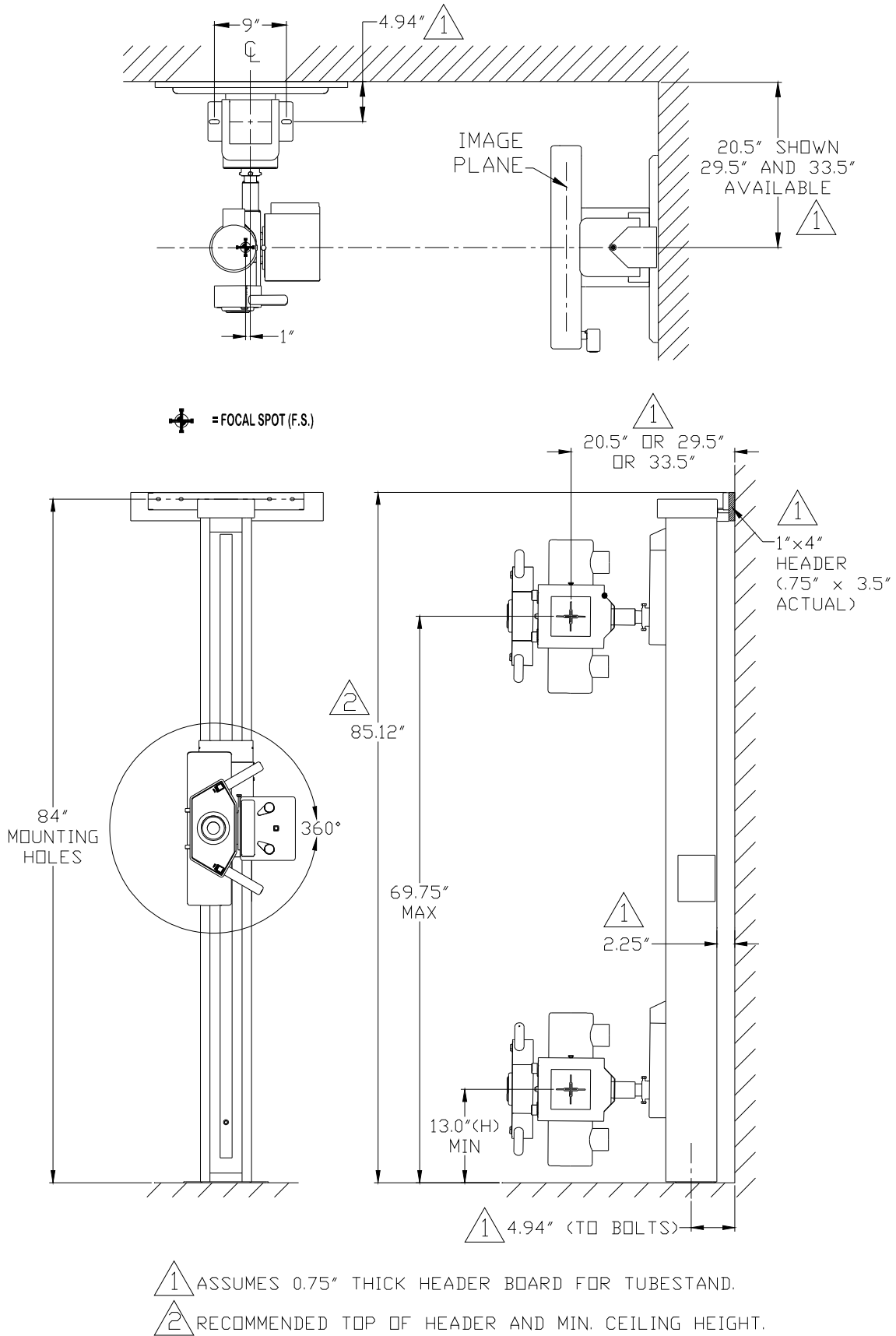


Figure 2: S113 Stationary

Section 3 Installation

If the floor, wall, or ceiling conditions are not suitable for level, secure rail installation corrective action must be taken before proceeding.

3.1 Rail and Column Installation (S113 RAIL MOUNT)

3.1.1 Upper Rail Installation



WARNING

Vertically align the ends of the upper and lower rail. The horizontal travel stops are on the lower rail. Proper alignment ensures that the upper bearing assembly stays engaged to the rail at all times.

Place the floor rail close to its final location, but do not attach permanently yet. See *Figure 3* below.

Secure the upper rail to the wall or ceiling using appropriate fasteners (not included).



NOTE

For proper operation of the upper bearing assembly in the rail, do not use washers larger than 0.5 inch outside diameter. See assembly detail figure 7.

It is important that the front surface is vertical, the rail is not twisted, and that it is level and square in all directions. Shimming may be necessary.

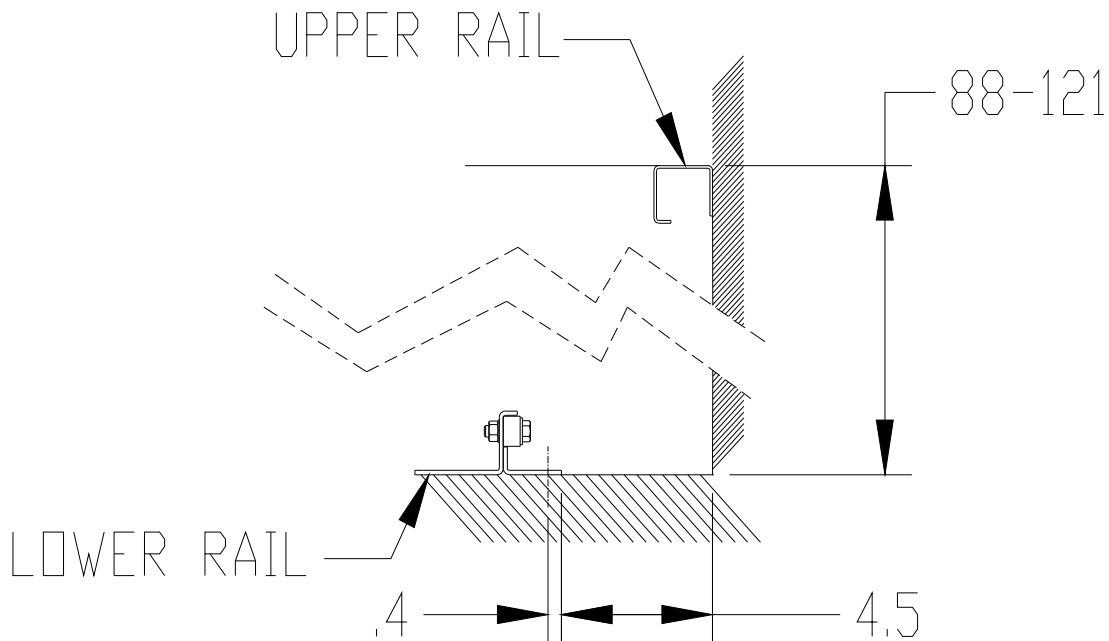


Figure 3: Rail Layout



NOTE

For best performance of the system do not install the lower rail on a compressible surface/material such as carpet with padding.

3.1.2 Column Preparation (RAIL MOUNT)

Remove the column assembly from its carton and place it horizontally for access to the rear and bottom. Assembly will be facilitated by having two floor dollies or 2x4 boards available to place the column on.

Attach the upper clamp (shipped with the accessories) to the column assembly, leaving the screws loose enough to slide the upper bearing assembly under the clamp (note the spacer at the bottom on the surface facing the column) from the top and allow it to move all the way down. Tighten the clamp mounting screws to reduce the clearance but still allow the upper assembly to slide through the clamp. See *figure 4*.

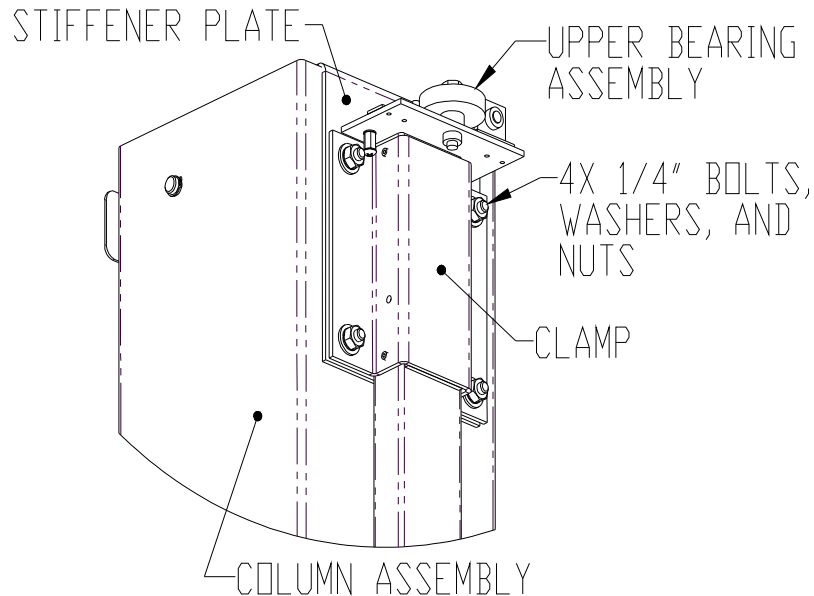


Figure 4: Clamp and Upper Bearing Assembly

Install the floor car. Locate the 2X 5/16-18x3.25 bolts and washers taped to the top of the floor car. Remove the 2X 3/8-16x0.75 bolts and washers from the back of the floor car. Place the floor car into the bottom of the column and secure as shown. See *Figure 5*. Plastic plugs are included with the floor car to insert into the unused tapped holes on the front of the column at the bottom.

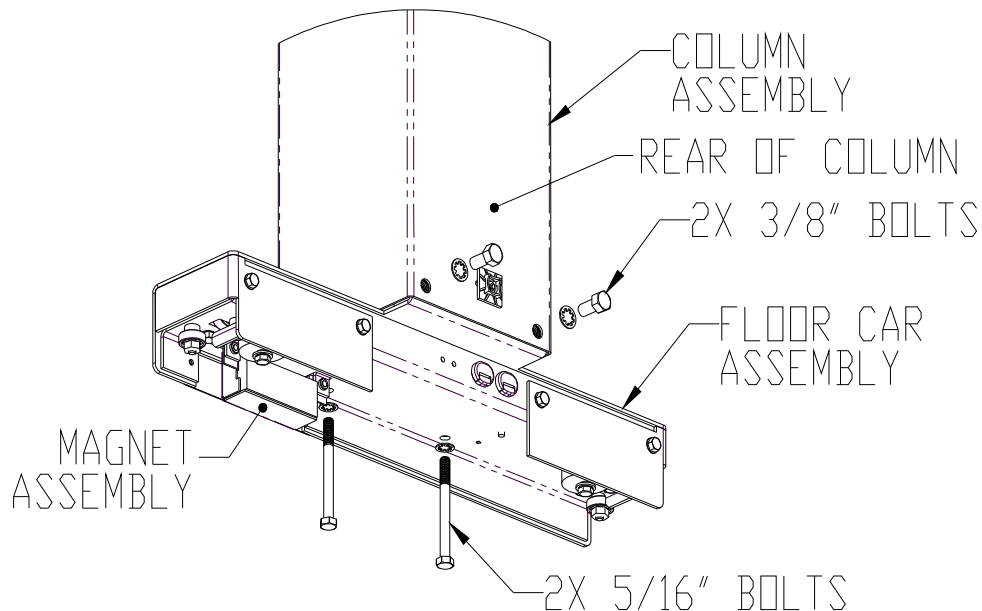


Figure 5: Installing the Floor Car



Torque the 5/16-18 bolts to 144-170 lb-in (12-14 lb-ft or 16.3-19.2 N-m). Do not over-torque.

Remove the front cover from the floor car and detach the magnet assembly from the floor car, leaving the cable connected. Use masking tape to temporarily hold the magnet to the top of the floor car. See *figure 6*.

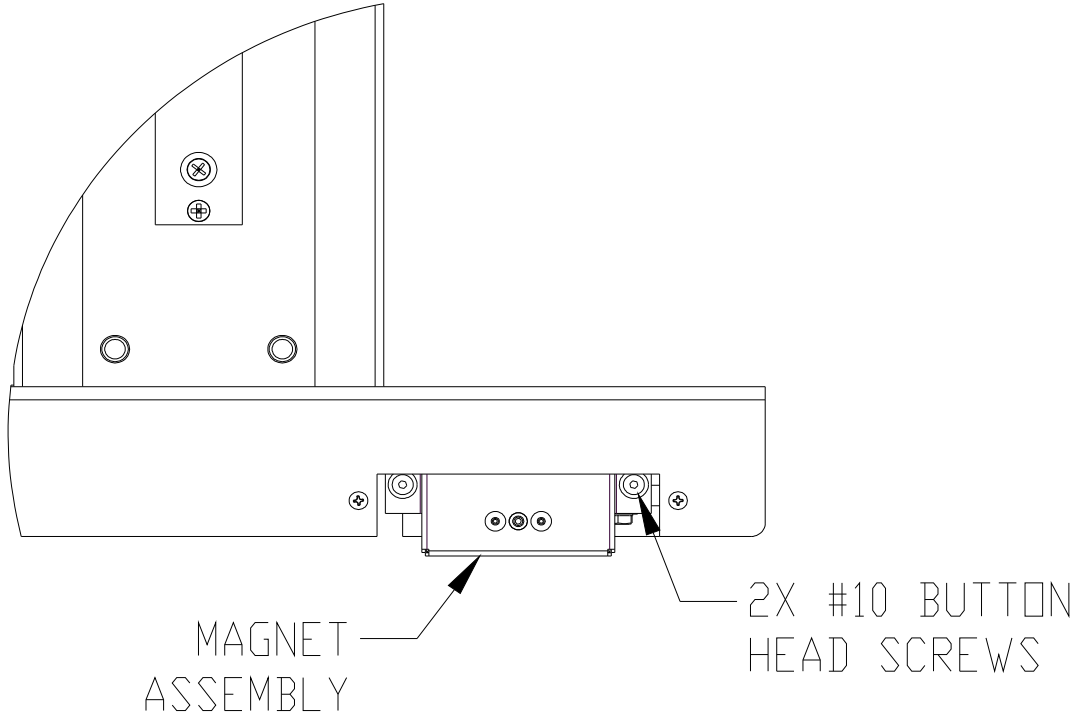


Figure 6: Detaching the Magnet



Failure to detach the magnet assembly could result in damage to the magnet assembly or floor when maneuvering the column to install on the floor rail.

3.1.3 Column Installation on the Rails

Remove the travel stop from the lower rail on the installation side. Stand the column up and move into position as shown in *Figure 7*. Check that the upper bearing assembly is free to move up and down. Lift the column on the rail side and shift to engage the lower bearing assembly. Continue moving the column toward center until the upper bearing assembly is close to the end of the upper rail. At this time lift the upper assembly to the proper height and engage it to the upper rail. Lift again to engage the lower bearings on the outside and roll the column toward rail center.



NOTE

A piece of plywood 21" x 6" x 5/8" thick will facilitate engaging the floor car to the lower rail. Place the column on the plywood in the figure 7 position and it will be very close to the proper height to minimize lifting.

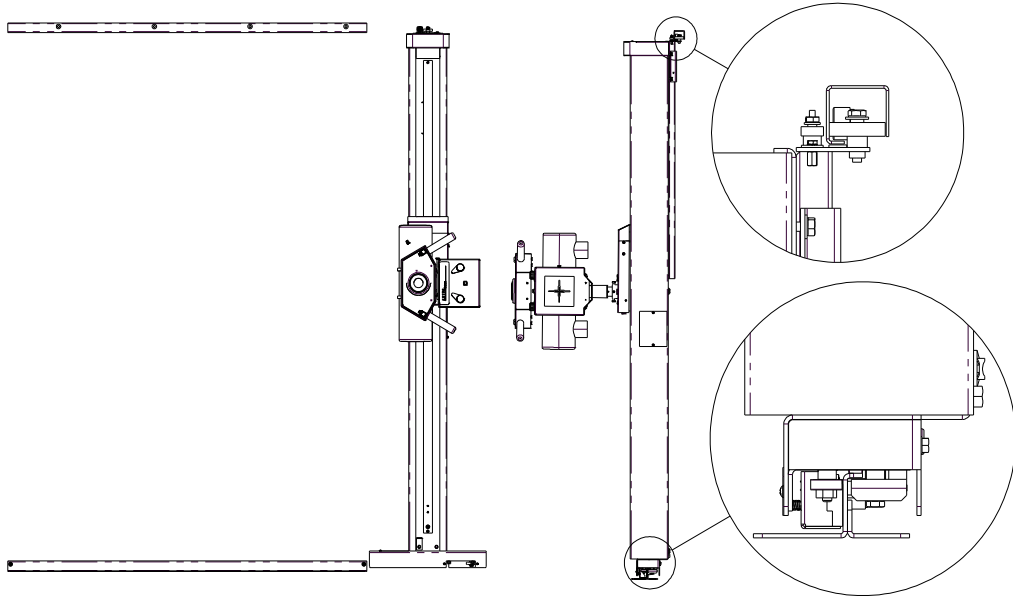


Figure 7: Bearing Assembly Engagement

Replace the travel stop on the lower rail.



Failure to reinstall the travel stop could result in the column disengaging from the rails and falling.

Set the height of the upper bearing assembly by inserting a 12" zip tie (~.050 thick) between the upper rail and both plastic strips on the upper bearing assembly (see Figure 8). Push the upper assembly up against the zip tie to set the spacing and tighten the clamp mounting bolts. Remove the 12" zip tie.

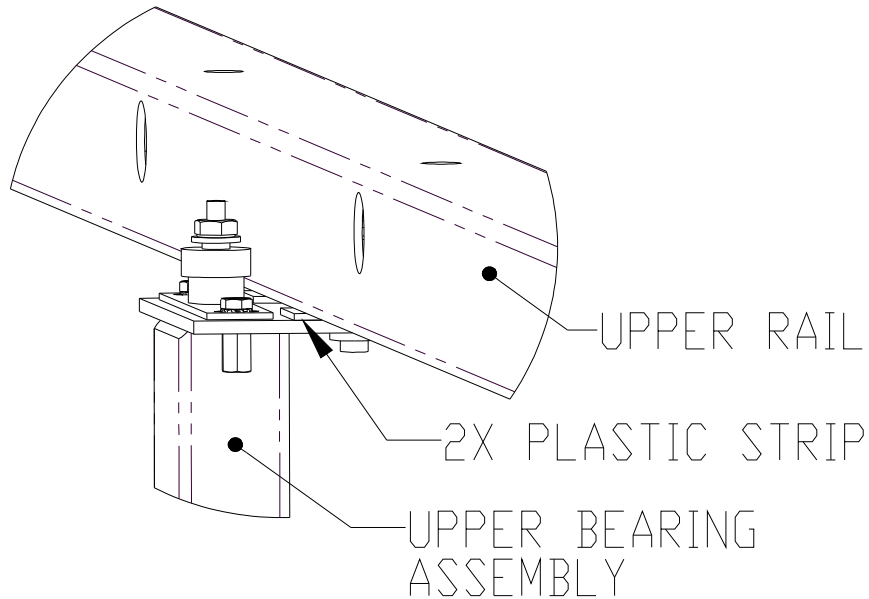


Figure 8: Upper Bearing Assembly

Reinstall the horizontal magnet assembly (see figure 5), making sure the cable & wires are pushed back up into the floor car and remain clear of the floor rail during operation.

3.1.4 Lower Rail Installation

The floor rail position is critical; adjust it to achieve the following:

- a) The column must be vertical in both directions across its entire travel.
- b) The top bearing surface of the rail must be level--shim under the rail if necessary.
- c) Free-rolling travel across the entire column range of motion.
- d) Upper bearing does not come within 3" of the end of the upper rail *on either side* when the column is at its end of horizontal travel.

When all of the above are met, secure the rail permanently to the floor using appropriate anchors and fasteners (not included). Check the clearance of the hardware used to the front flange of the floor car. Remove or substitute hardware if it is too close.

3.1.5 Upper Bearing Assembly Leveling

On each side of the upper bearing assembly clamp drive the leveling set screws against the tube, keeping it in the center (see *Figure 9*). Do not fully tighten. Place a level on the side of the upper bearing assembly bar. If it is not level, adjust one set of set screws (one side out, one side in) to shift the bar and make it vertical. After the bar is level fully tighten all four set screws to lock in place.

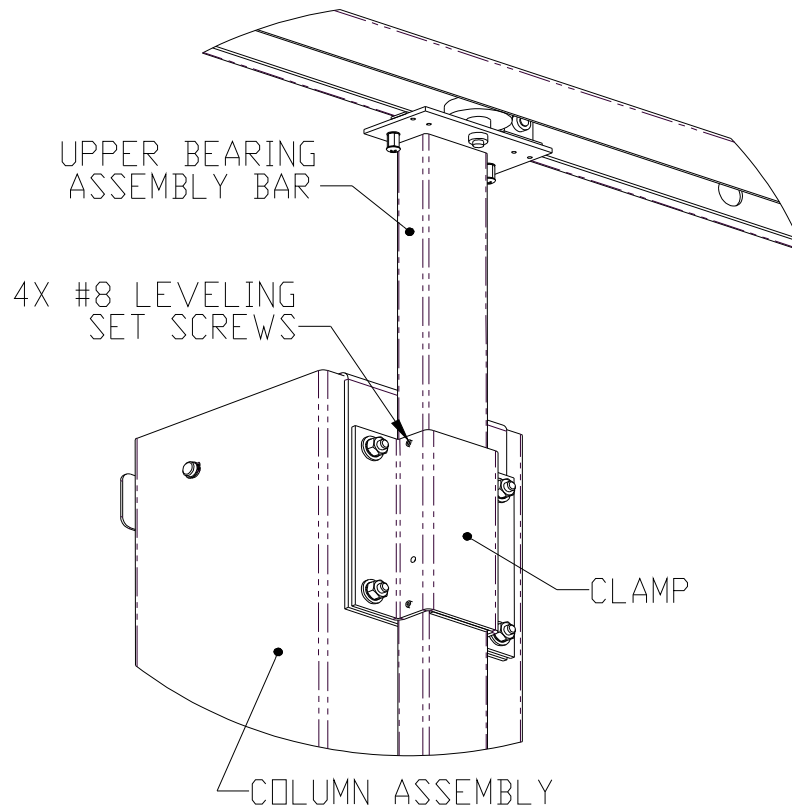


Figure 9: Leveling the Upper Bearing Assembly

Remove the shipping bracket and strap holding the slide in place.

3.2 Column Installation (S113 STATIONARY)

3.2.1 Column Preparation

Remove the column assembly from its carton and place it horizontally for access to the front, rear, and bottom.

Attach the counterweight bumper to the floor plate by peeling the tape backing paper and placing as shown below (*figure 10*).

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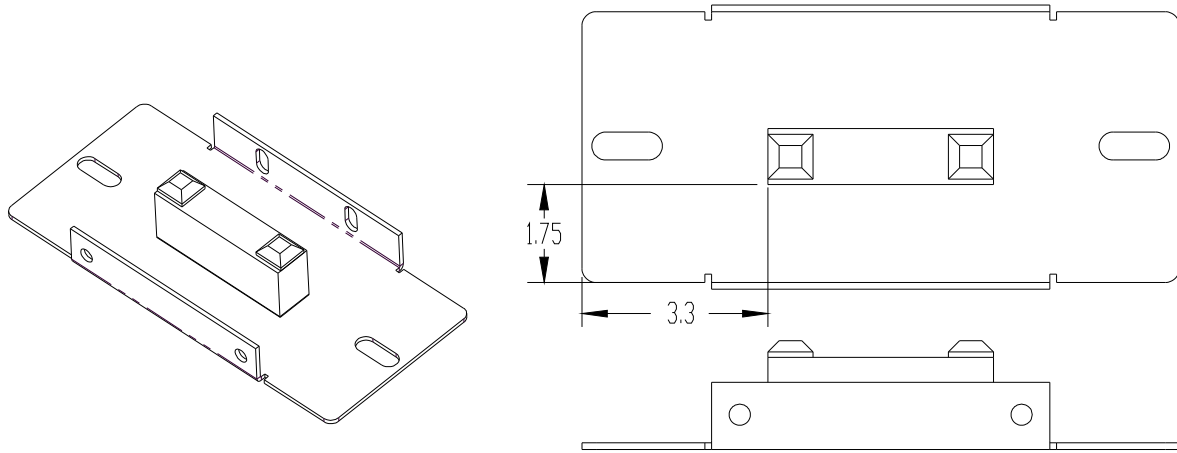


Figure 10: Attaching the Counterweight Bumper

Attach the floor mounting plate using 4X 3/8-16x0.75 bolts. The front bolts ship installed in the column, the rear installed in the floor plate. See figure 11.

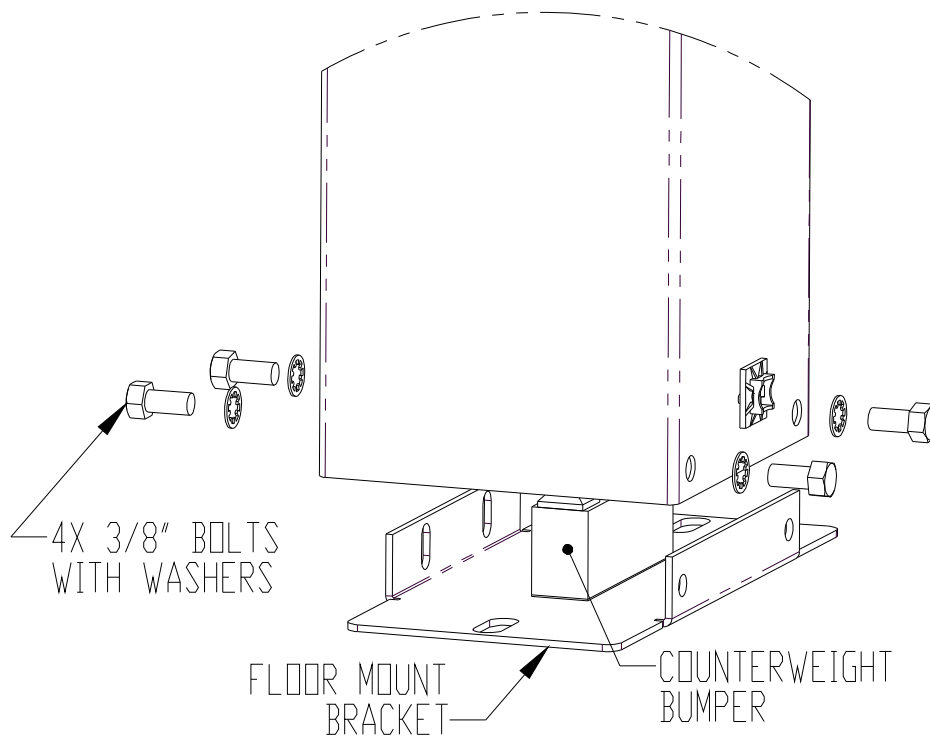


Figure 11: Installing the Floor Plate

Locate the wall attach kit. Remove the cover from the bracket and retain for later. Attach the wall mount bracket to the column using the 2X 1/4--20 bolts, 4X washers, and 2X nuts (shipped attached to the bracket). See figure 12.

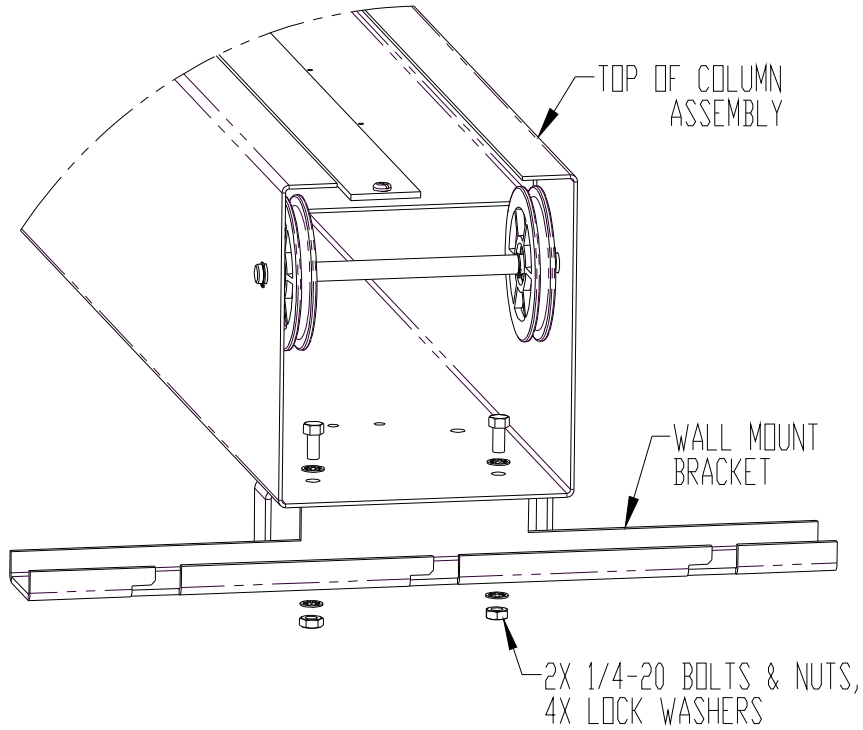


Figure 12: Installing the Wall Bracket

3.2.2 Column Installation (STATIONARY)

Stand the column up and mount it to the wall using appropriate fasteners (not included). The wall bracket must be mounted across two wall joists. It is recommended to use a 1x4 wood header to span the joists. Adjust the base position to make the column vertical in both directions. When set, secure the base plate permanently to the floor using appropriate anchors and fasteners (not included).

Remove the shipping bracket and strap holding the slide in place.

3.3 Tube Arm Assembly (FOR S113 RAIL MOUNT & STATIONARY)

Prepare by removing the angulation lock handle and quick release pin from the tube arm assembly. See figure 13.

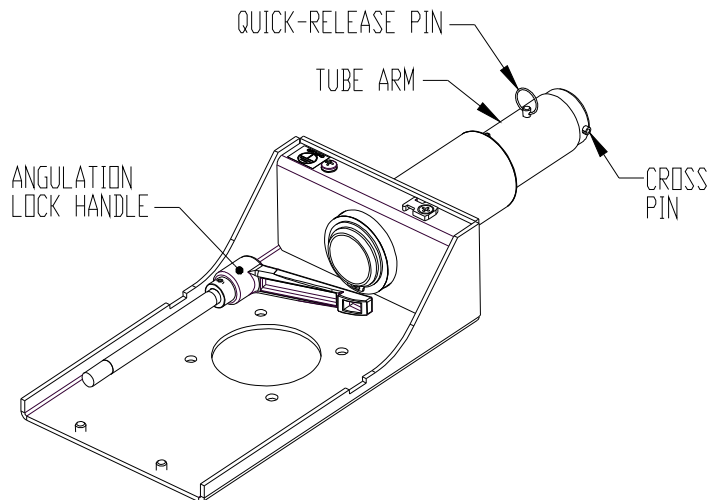


Figure 13: Tube Arm Assembly

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Check that the four adjusting screws are loose on the collar of the vertical side. To install, rotate the tube arm so that the cross pin is vertical. Insert the tube arm through the vertical slide collar and through the back flange, with the cross pin passing through the matching slots in the back flange of the vertical slide. See *Figure 14*.

When the cross pin is all the way through, rotate the tube arm 90°, ensuring that the pin stays behind the rear flange of the vertical slide. Reinstall the quick release pin through the vertical slide collar AND through the hole in the tube arm. See *Figure 15*. Tighten all four adjusting screws, keeping the tube arm approximately level and perpendicular to the front of the column.

Install the angulation lock handle into the open tapped hole on the tube mount. See *Figure 15*.

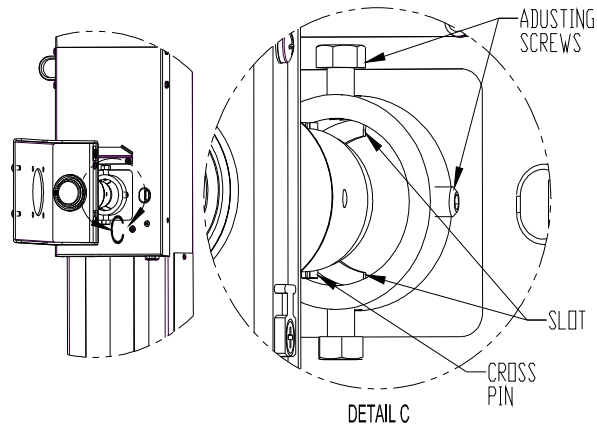


Figure 14

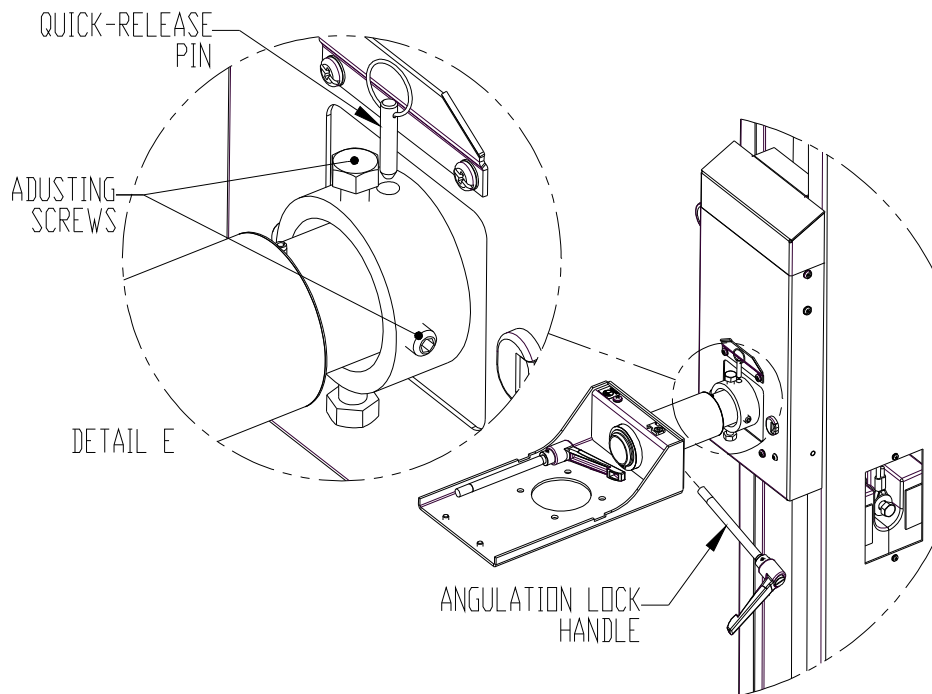


Figure 15

3.4 Tube and Collimator Installation

Install the X-ray tube and collimator per the manufacturer's recommendations.

3.5 Angulation Box

Install the angulation box (see *Figure 16*).

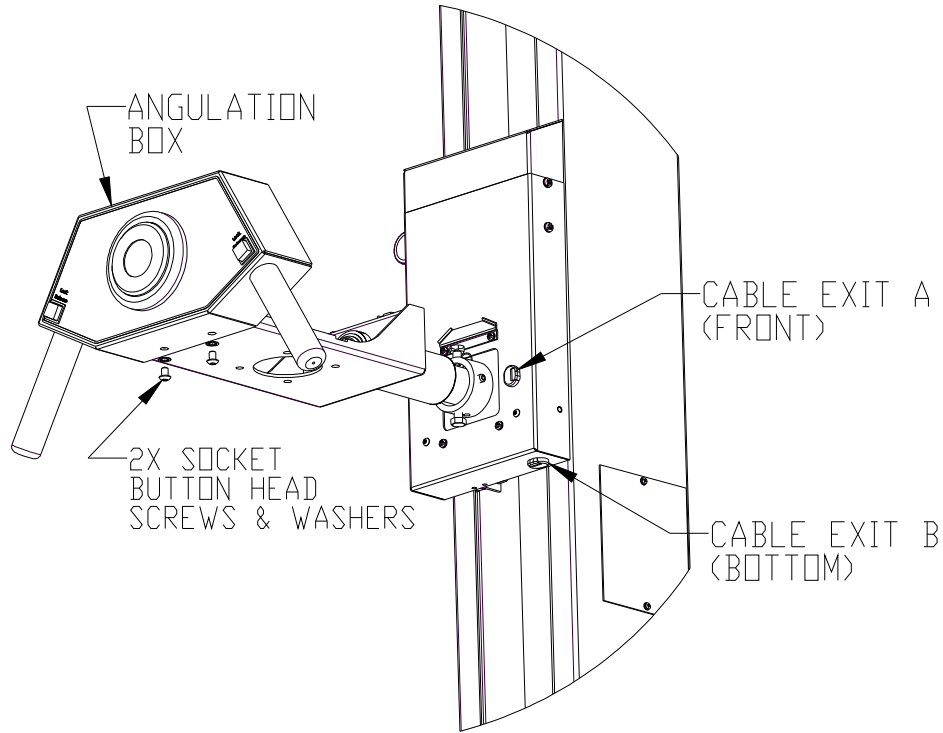


Figure 16: Angulation Box Installation

The angle indicator is factory-zeroed to the angulation box within 1°. If it is necessary to adjust for the installation, remove the back cover of the angulation box and loosen the mounting screws (see *Figure 17*) to allow the indicator to rotate. Lock the angulation handle with the box level and rotate the indicator to show zero. Retighten the indicator mounting screws and reinstall the back cover.

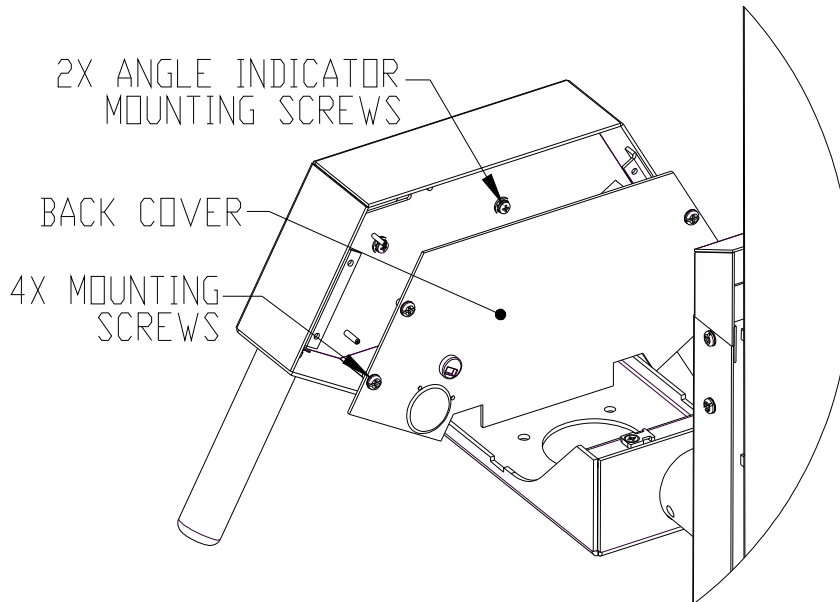


Figure 17: Angle Indicator Adjustment

3.6 Column Wiring (S113 RAIL MOUNT)

Connect the cable from exit A (marked "TO ANG. BOX") to the angulation box (see *figure 16*).

The electrical junction box is integrated into the floor car of the tubestand. Remove the junction box cover for access (see *Figure 18*). Remove the bushing at exit C (the factory-connected 24 VDC power cable will occupy exit D). Locate the free ends labeled "TO TB1" of the two cables exiting the front cover at location B. They will be secured to the lower column cable tie mount. Fish both cables through the exit C opening and toward the terminal strip.

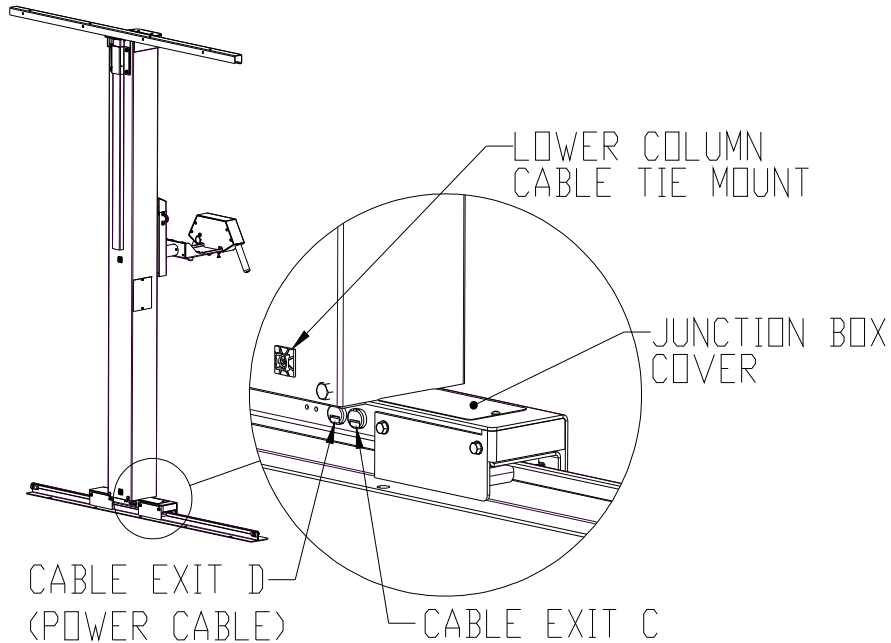


Figure 18: Back of the Floor Car

Hook up the wires to the back side (closer to the wall) of the terminal strip according to their markings and reinstall the strain relief bushing. The front side of the terminal strip is factory-connected (see *Figure 19*). See *Figure 35* for full wiring diagram.

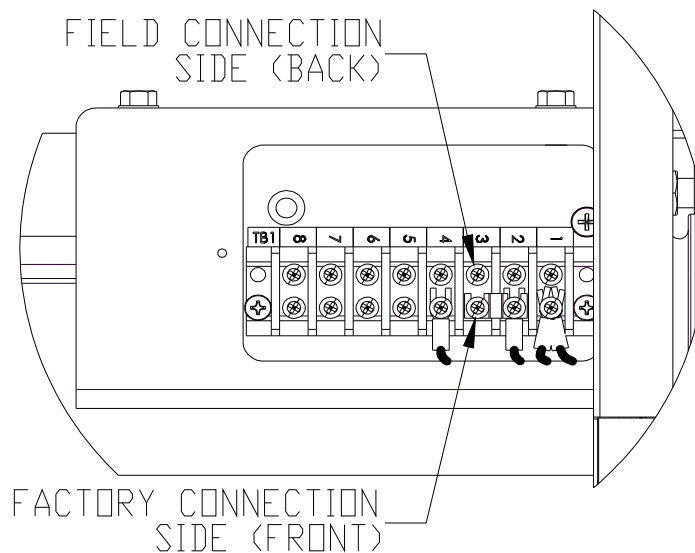


Figure 19: Junction Box Integrated into Floor Car

Connect the cable marked "TO 24 VDC SUPPLY" to a 24V power supply (1A minimum) and test the locks.

3.7 Column Wiring (S113 STATIONARY)

Connect the cable from exit A (marked "TO ANG. BOX") to the angulation box. No further column wiring is necessary. Connect the cable marked "TO 24 VDC SUPPLY" to a 24V power supply (1A minimum) and test the lock. See *Figure 36* for full wiring diagram.

3.8 Trim Weights

Pre-trim the counterweight by adding trim weights through one of the access holes in the side of the column. See *Figure 20*.

When using a D800 collimator or one with similar weight (~20 lbs), use two 10-lb trim weights.

For a lighter collimator (~10 lbs), use one 10-lb and one 5-lb trim weight.

Leave the covers off at this time in case a final trim is required later.

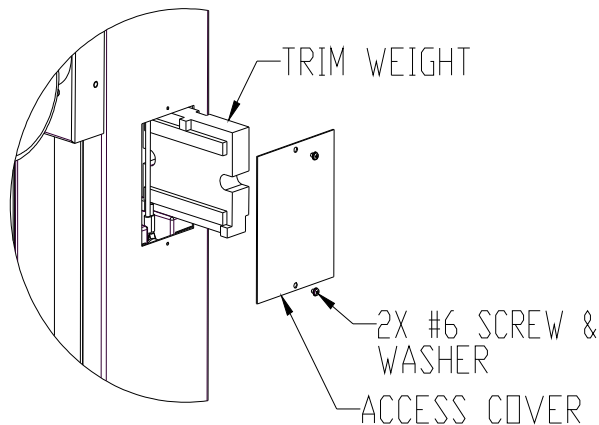


Figure 20: Addition of Trim Weights

3.9 Release the Main Counterweight

Remove the two hex shipping bolts at the rear of the column to allow the main counterweight to move vertically. Apply the label strip (held nearby with masking tape) to cover the two holes in the column. See *Figure 21*.

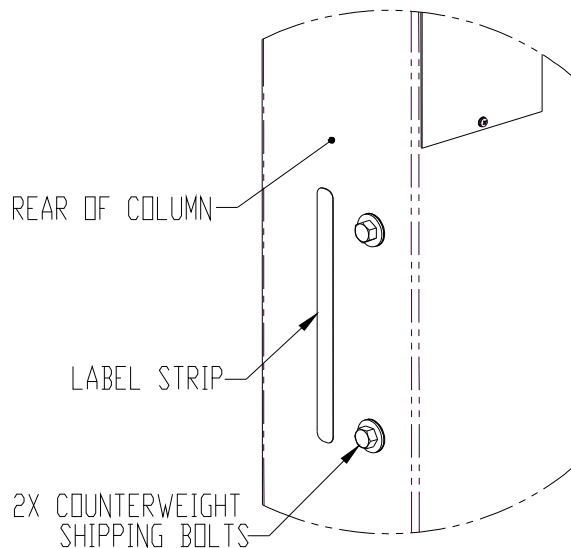


Figure 21: Counterweight Shipping Bolts

3.10 Column Adjustments

3.10.1 Level the Arm

Level the tube arm using the adjusting screws (see *Figure 14*) to make it perpendicular to the column and its travel.

3.10.2 Vertical Lock Adjustment

Check operation of the vertical lock magnet and adjust if necessary. Remove the upper slide cover to expose the lock assembly. See *Figure 22*. With the vertical lock magnet de-energized, tighten or loosen the lock adjustment screw to set the gap between the magnet face and the brake strip. Ideal adjustment is a minimum gap without any dragging across the entire vertical range of motion with the lock de-energized. Reassemble the upper slide cover.

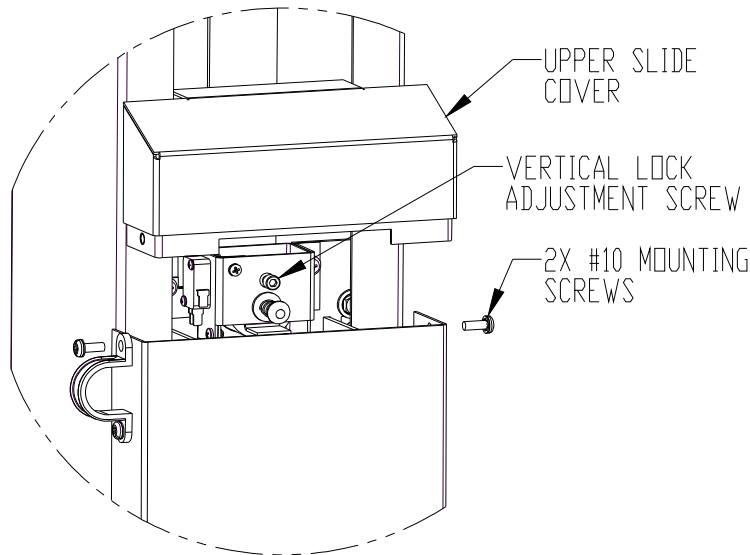


Figure 22: Vertical Lock Adjustment

3.10.3 Horizontal Lock Adjustment (RAIL ONLY)

Check operation of the horizontal lock magnet and adjust if necessary. Remove the two screws and horizontal lock cover if required. With the horizontal lock magnet de-energized, tighten or loosen the lock adjustment screw (See *Figure 23*) to set the gap between the magnet face and the brake strip. Ideal adjustment is a minimum gap without any dragging across the entire range of motion with the lock de-energized. Reassemble the lock cover.

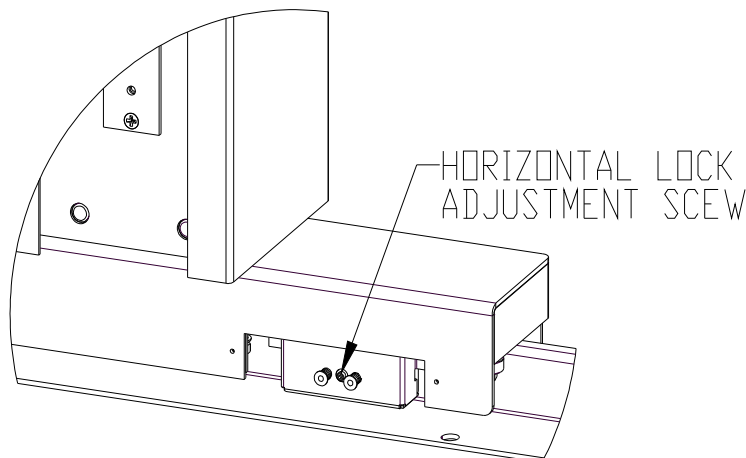


Figure 23: Horizontal Lock Adjustment (RAIL ONLY)

3.10.4 Upper Roller Adjustment (RAIL ONLY)

Adjustment is provided for the clearance between the main roller (inside the rail) and the pinch roller (outside the rail in the front). Check the clearance by holding the angulation box handles and pushing the column toward the wall. Rearward movement of the column should be minimal. Also there should be no drag from this roller across the longitudinal travel (drag indicates that it is too tight).

To adjust, loosen the 2X #6 hex head roller adjustment bracket screws (use a 1/4" socket or box-end wrench). If they are hard to loosen, first loosen the 2X hex cover standoffs mounted on the screws below the plate. Push the bracket and roller toward the rail to decrease the clearance or away to increase. Retighten the screws to secure in place. Exercise care in tightening to avoid over-torquing and damage to the screws or base plate. Be sure to tighten the 2X hex cover standoffs after the pinch roller has been adjusted. See *Figure 24*.

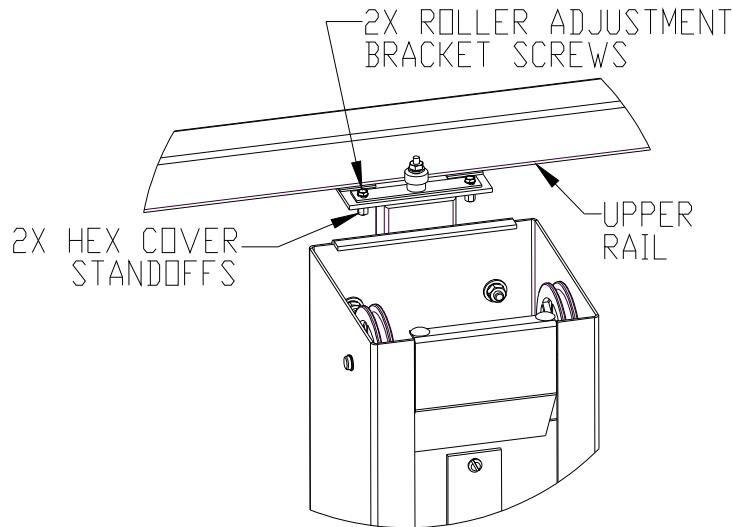


Figure 24: Upper Front Roller Adjustment

3.10.5 Lower Bearing Adjustment (RAIL ONLY)

Adjustment is provided on the floor car for the clearance between the main horizontal roller (one each side, back side of the rail) and the pinch bearings (one each side, front side of the rail). If adjustment is necessary, rotate the eccentric mount to change the clearance (see *Figure 25*). Tighten securely once appropriately set.

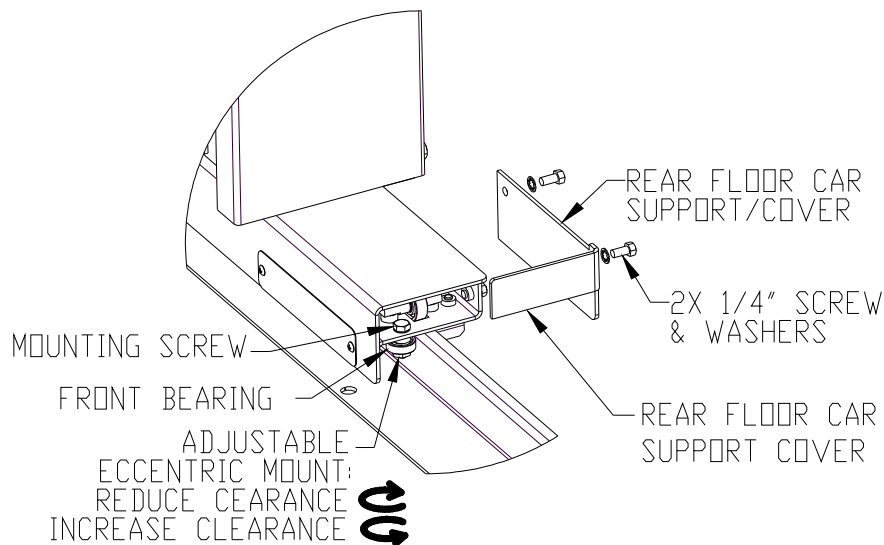


Figure 25: Lower Front Bearing Adjustment

3.10.6 Final Level and Alignment Check

For a rail system only--final check the lower and upper rails to confirm that they are parallel and level. Final check the horizontal motions of the column. Make adjustments if necessary to positions and/or shimming. For all systems--final check the beam alignment and travel. Adjust the arm, floor car, and/or rails if necessary.

3.11 Covers

3.11.1 Column Cap

Slide the column cap over the top of the column (front to back), allowing the tabs on the back of the cover to drop down behind the column housing. See *Figure 26*.

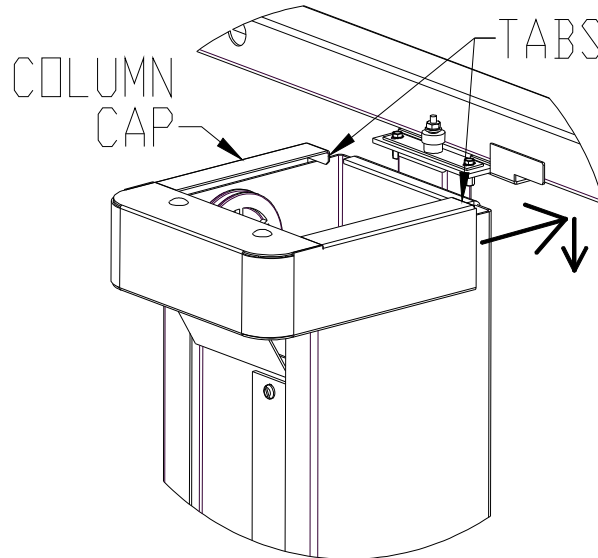


Figure 26: Column Cap Installation

3.11.2 Upper Bearing Cover (RAIL ONLY)

If the dimension Z shown in *Figure 27* (the distance between the bottom of the upper bearing plate and the top of the clamp) is 2.06 or larger, attach the upper bearing cover using the 2X #6 button head screws included there (see *Figure 28*). If Z is between zero and 2.06, omit the upper cover.

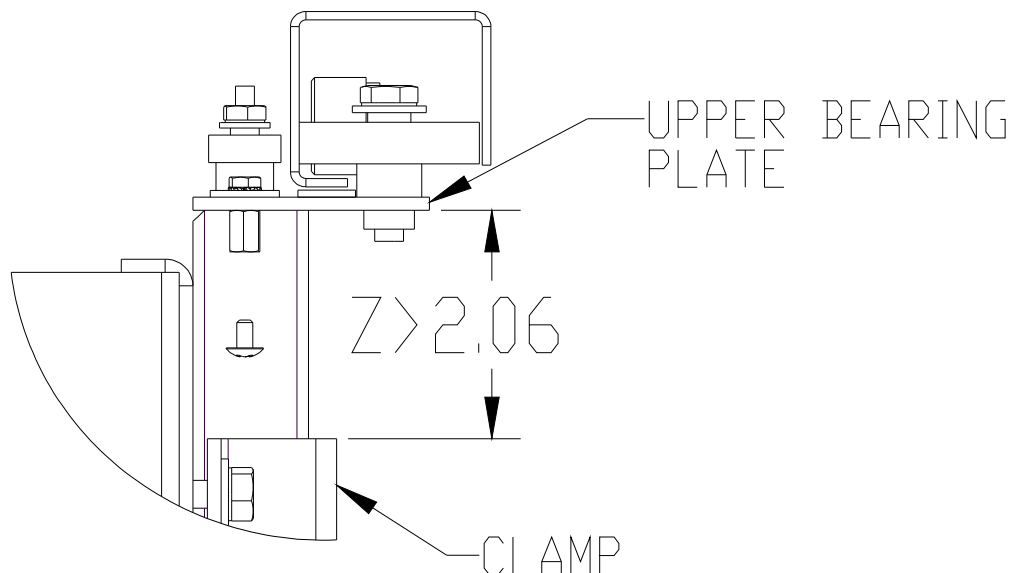


Figure 27: When to Attach the Upper Bearing Cover

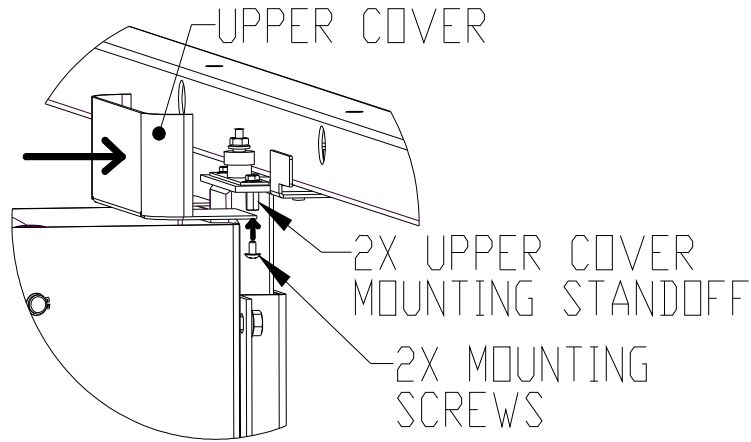


Figure 28: Upper Bearing Cover Installation

3.11.3 Wall Mount Bracket and Base Covers (STATIONARY ONLY)

Attach the wall bracket cover as shown in *Figure 29*. Align the three tabs on the cover with the slots on the wall bracket. Push the cover toward the wall so the tabs enter the slots and the cover edges contact the header board or wall. Then push the cover to the right until it stops to engage the tabs.

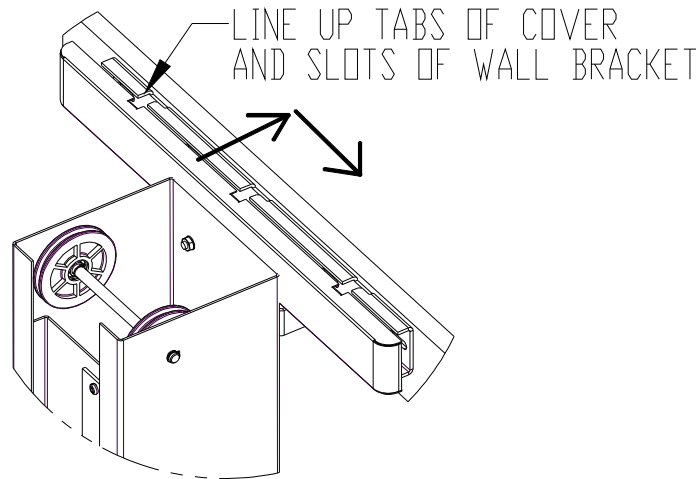


Figure 29: Wall Mount Bracket Installation

Attach the base cover to the floor bracket with the self-adhesive Velcro provided. Peel the backer from two pieces of Velcro on the bottom side of the cover (see *Figure 30*).

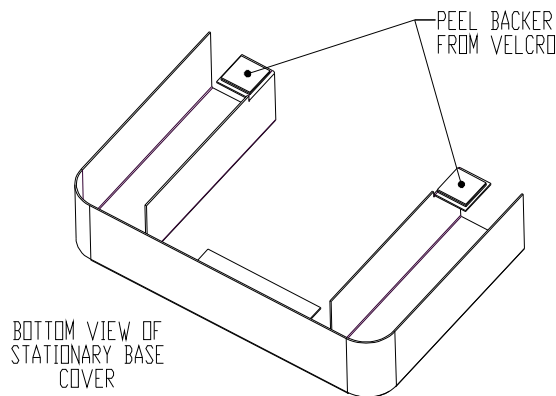


Figure 30: Base Cover

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Position the cover, holding it above the floor plate (see *Figure 31*). Allow it to drop down and contact, sticking the Velcro to the floor plate. Press to obtain good adhesion. The cover will be held in place and easily removable with the Velcro.

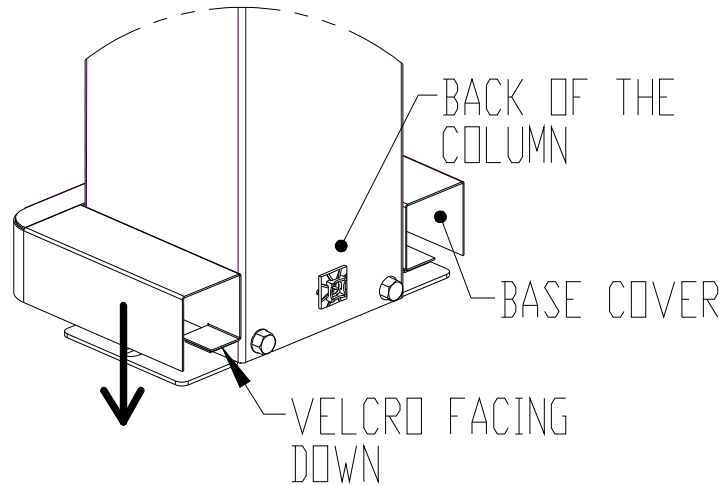


Figure 31: Base Cover Installation

3.11.4 Arm Covers

Remove the 2X button head screws from the arm cover assembly to separate the lower and upper arm covers. Retain the screws for reuse.

Loosen the 2X #6 button head screws on the front of the slide indicated in *Figure 32*. Bring the lower arm cover into position, slipping the two tabs behind the loosened screw heads. Leave the screws loose.

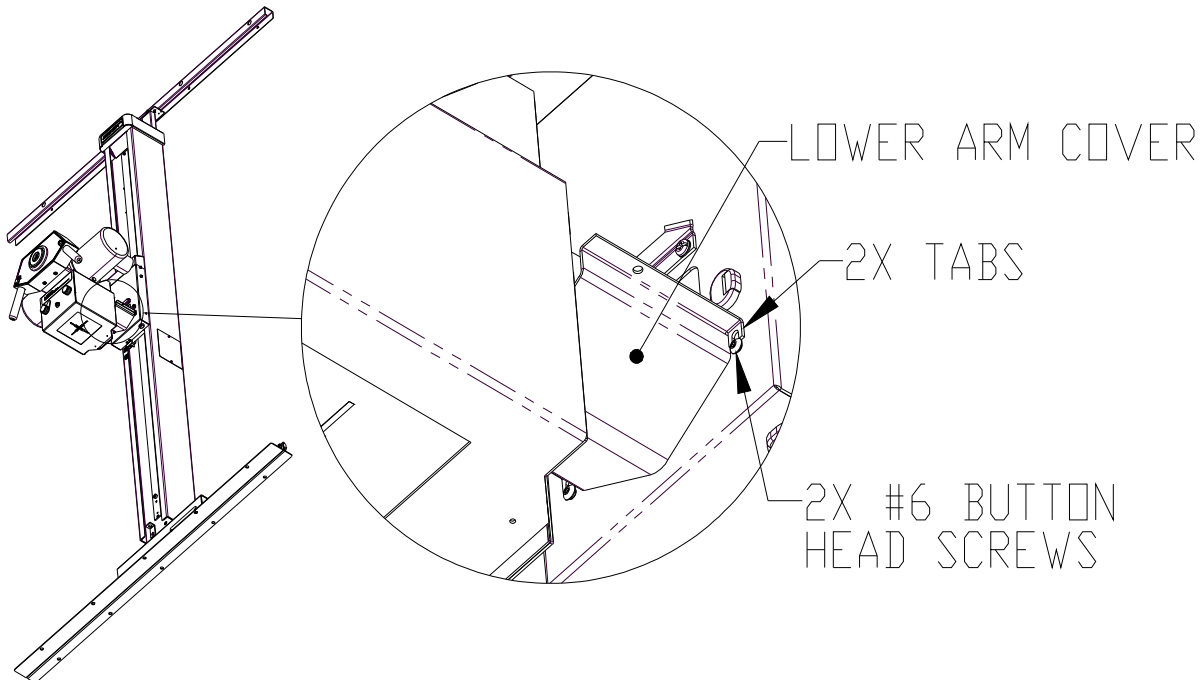


Figure 32: Lower Arm Cover

Bring the upper arm cover into position. Temporarily unplug the angulation box cable and pull the free end back toward the front cable exit on the slide. Push the connector end through the cable bushing of the upper cover from inside (slide) to out (angulation box). Center the cover and hook the tabs over the hook bracket of the vertical slide (see *Figure 33*). Pull cable out of the cover and fish it back to the angulation box then remake

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the connection. Secure the cable to the back of the angulation box using a cable tie and mount from the cable management kit provided.

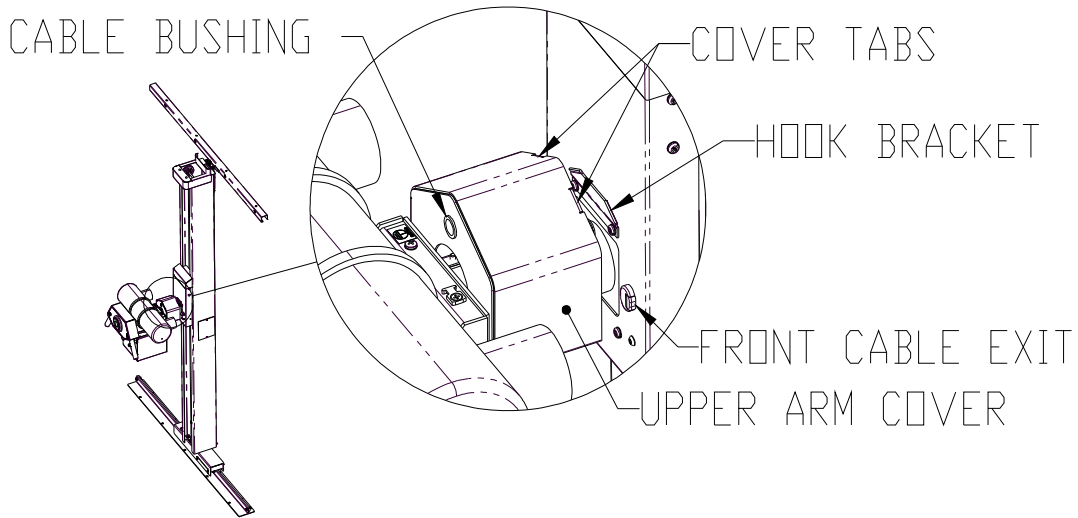


Figure 33: Upper Arm Cover

Use the 2X #6 button head screws (previously removed) to attach the lower cover to the upper cover (see Figure 34). Tighten the lower cover screws to the slide (see Figure 32, Figure 34).

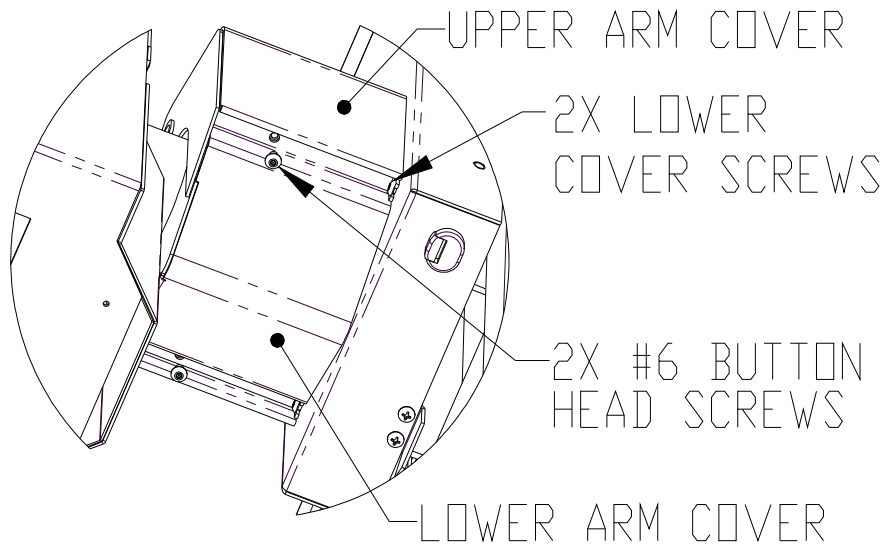


Figure 34: Lower and Upper Arm Covers

3.11.5 Floor Car Covers (RAIL ONLY)

If not done previously, replace the junction box and horizontal magnet covers on the floor car.

3.12 High Voltage Cables and Cable Management

Install the high voltage cables per the manufacturer's recommendations.

A hardware kit for cable management is provided, see instructions included there. Secure the cables, leaving service loops to accommodate full vertical and horizontal travel as well as desired angulation.

3.13 Final Trim

At this point check the balance of the system and add or remove trim weight if necessary (see *Figure 20*). Install the two access covers to the sides of the column.

3.14 SID (Source to Image Distance) labeling

An SID labeling kit is provided, see instructions included there. Horizontal and vertical are provided however vertical SID labeling is only required when a table is present and horizontal SID labeling is only required when a wallstand is present.

Section 4 Basic Maintenance

The following schedule of maintenance is required for safety of operation, continued ease of use, and continued long life of the product.

The maintenance program should be performed only by qualified and authorized service personnel. Frequency of the service should be 30 days after installation and annually thereafter unless indicated otherwise by local codes and regulations.

4.1 Tubestand

Check alignment (x-ray beam to film or receptor).

Inspect counterweight cables for fraying, damage, or wear.

Inspect all tubestand movements for binding or interference, check all bearings for proper operation.

Check all fasteners for tightness including the floor rail fasteners, wall/ceiling rail fasteners, and tubearm screws.

Verify the travel stops are in good functional condition.

Verify the locks are working properly.

Check the SID markers as required.

Inspect cabling for damage.

4.2 Collimator

Verify accuracy of field size.

Verify accuracy of light field to x-ray field alignment.

Check lamp on-off switch for proper operation.

Inspect collimator cable for fraying or damage.

4.3 X-Ray Tube

Inspect the housing for possible oil leakage.

Assure that the housing is tightly fastened to the tube mount and collimator.

Inspect stator cable for fraying or damage.

Inspect high voltage cable ends for carbon tracking. Clean and re-grease HV Cable ends annually.

Section 5 Wiring Diagrams
5.1 Rail Mount System Diagram

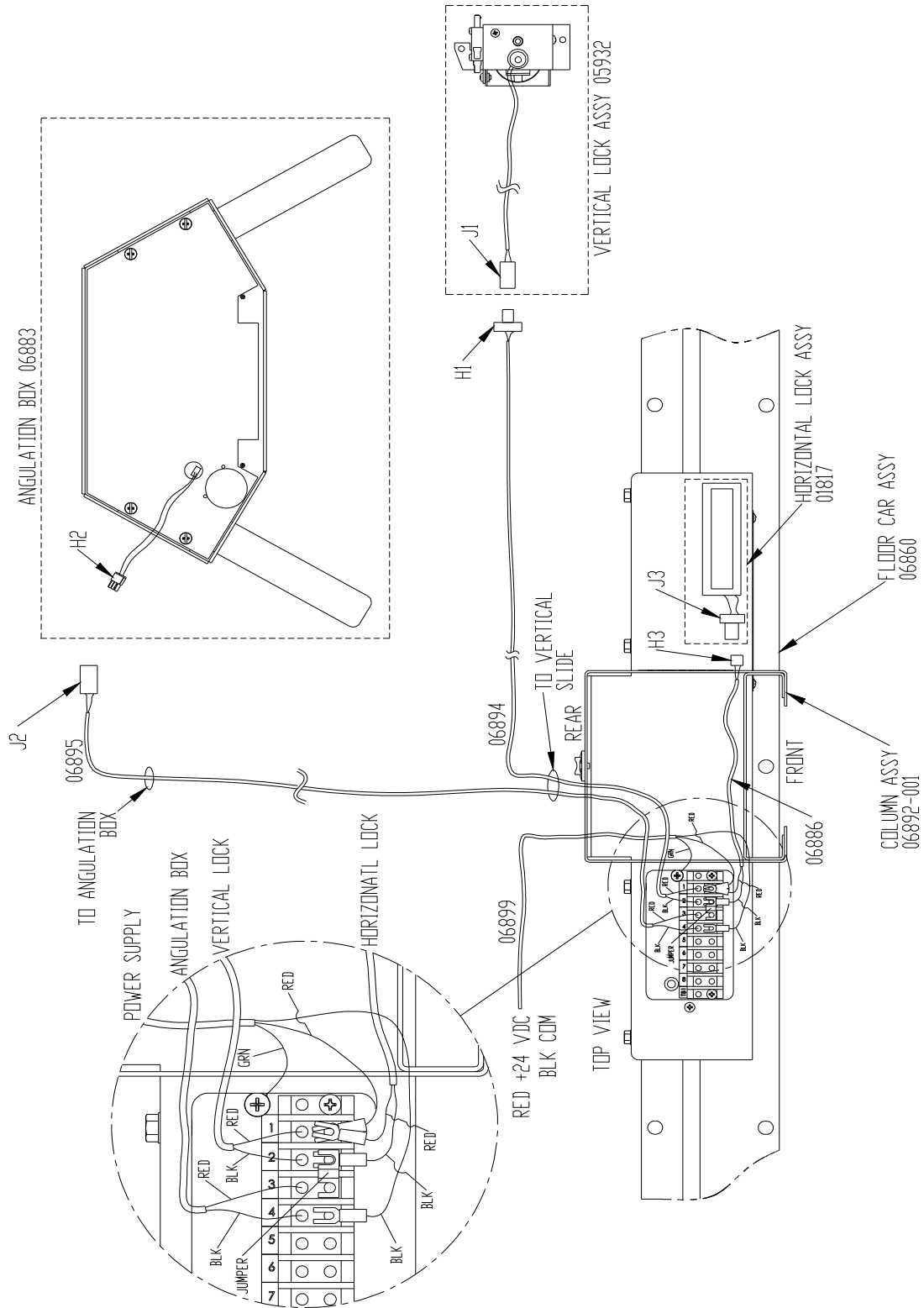


Figure 35: Rail Mount Wiring Diagram

5.2 Stationary System Diagram

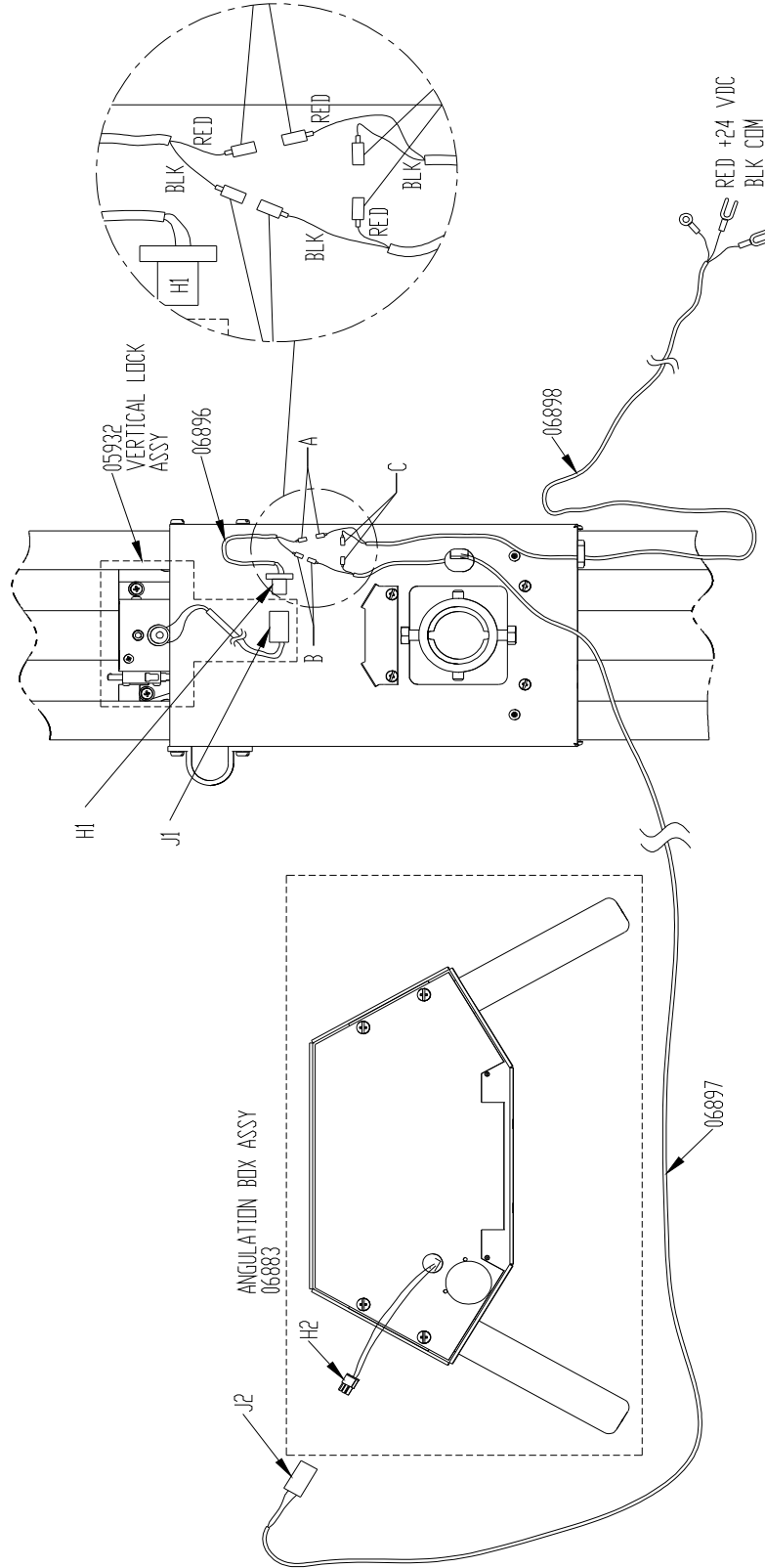


Figure 36: Stationary Wiring Diagram