

S102 Tilting Wall Stand

Summit Industries LLC

REVISION HISTORY

REVISION	ECR	Description	Release Date
A	8899	Production Release	December, 2015
B	9279	Removed Section 1.3; Replaced Section 1.2 with Legends Table	November, 2016
C	9594	Added Intended Use, Attenuation, and Cleaning information to page 3.	June, 2017
D	10375	Removed Replacement Part Guide/Optional Accessories section, moved to stand alone document.	December, 2019
E	10828	Replaced the vertical lock magnet assembly (updated graphic for Figure 8, Figure 11, and Figure 19).	August, 2021

P/N: 07336-002

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

1. General Information

1.1 Introduction

This wall stand is designed for use in medical X-ray environments. It allows the use of a traditional film grid cabinet and can also be used with a variety of digital receptors. A magnetic lock is provided for vertical movement. A mechanical lock is provided for cabinet rotation/angulation.

Each wall stand has a model number label that provides the serial number and date of manufacture. Reference these numbers when ordering parts or requesting further information or assistance.



1.2 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.

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1.3 Specification Summary Table

Electrical Ratings	24VDC, 1A  or 24VAC, 1A																
Maximum Total Counterbalanced Load	65 lbs / 30 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
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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.																	

1.4 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.

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.

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All operators of and service personnel for 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 wallstand, a mechanical device intended to hold and position an X-ray image receptor during a radiographic procedures.

Attenuation

All included components between the patient and image receptor have been certified to comply with 21 CFR Chapter 1 Subchapter J (§1020.30). For any such components added to the system it is the responsibility of the installer to ensure compliance.

Cleaning

The manufacturer recommends disinfection of the equipment between uses for any surfaces that may come in contact with the patient during a radiographic procedure.

1.5 Unpacking

Always exercise caution when opening, unpacking, and moving equipment. Do not dispose of the cartons and crates until you have located all parts and the machine is fully assembled.

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 fill out the proper forms and sign them. Should you discover concealed damage, immediately notify the transportation agent and ask for the appropriate form(s). Carriers will not accept concealed damage claims if filed after 15 days from date of receipt of the merchandise.

1.6 Inverted Tilt Mechanism

An **optional** version of this assembly is available with an inverted tilt mechanism. The inverted tilt mechanism allows for increased forward tilt (see figure 1). For this version see the S102 technical datasheet for product travel limits in place of figure 2. Mounting and room dimensions are the same. For other details in this manual the procedures are applicable for the inverted version but appearance in the figures will vary. See images below for reference.

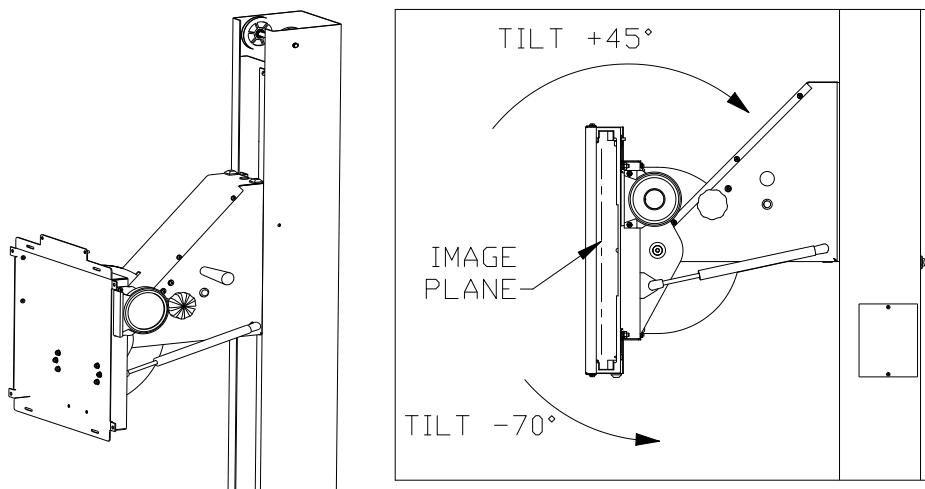


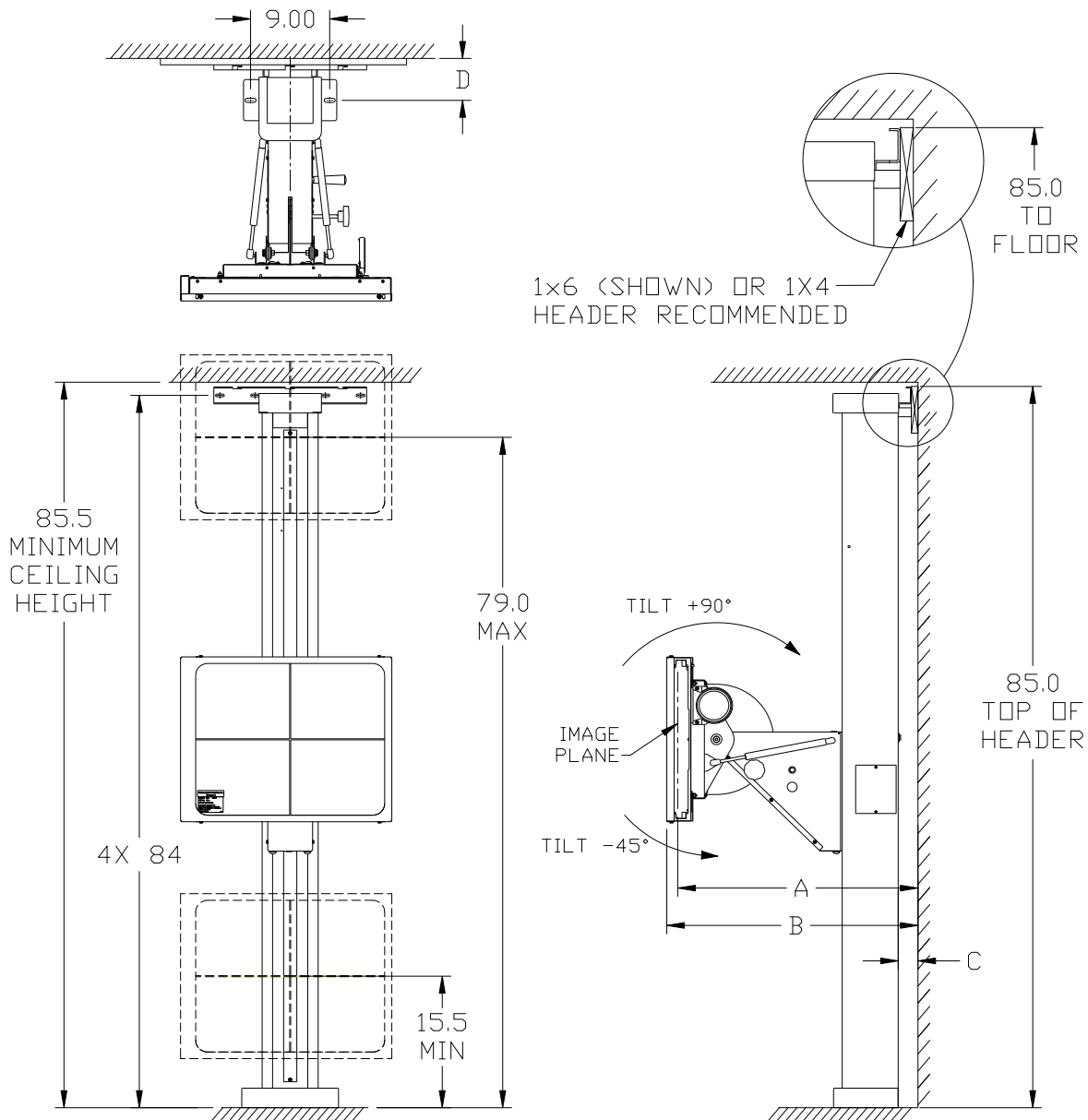
Figure 1: Inverted Tilt Mechanism (Optional)

2. Pre-installation Information

Exercise caution when unpacking and moving equipment. Prior to the steps below, x-ray/light field alignment should be performed. Tracking should be checked and adjusted if necessary. Mark the system centerline on the wall and/or floor to assist with wall stand placement.

2.1 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.



S102 shown with standard film grid cabinet
All dimensions in inches

INSTALLATION	DIMENSION			
	A	B	C	D
BRACKET ONLY	26.5	27.75	1.5	4.25
BRACKET WITH HEADER (shown)	27.25	28.5	2.25	5.0

Figure 2: S102 Mechanical Layout

2.2 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. Select appropriate hardware for the materials present at the installation site.

3. Installation

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

Remove the wood shipping brace at the top of the column and the wood counterweight brace inside the column. Do NOT remove the strap from the slide to the column.

3.1 Attach the Floor Plate

With the column horizontal, 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 3.

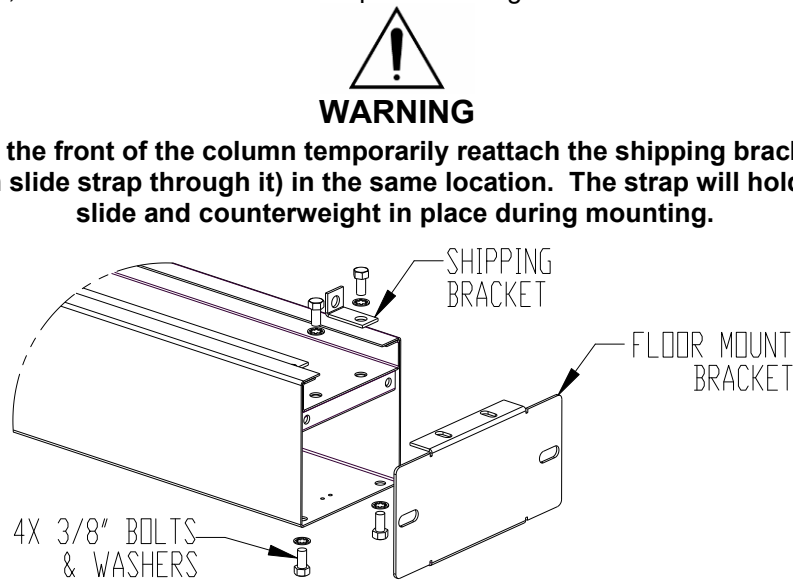


Figure 3: Installing the Floor Plate

3.2 Attach the Wall Mount Bracket

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

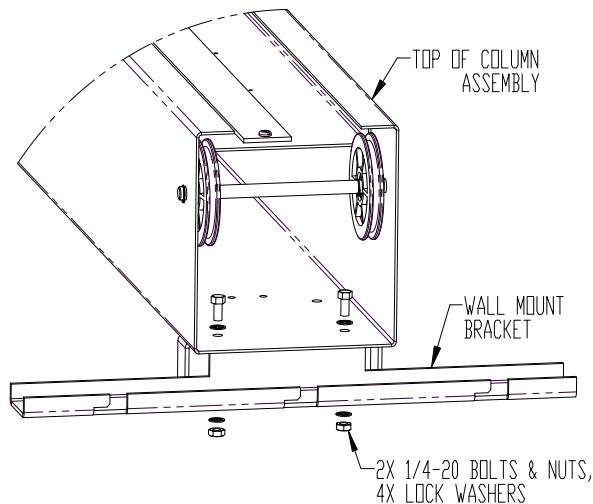


Figure 4: Installing the Wall Bracket

3.3 Mount the Column to the Wall

Stand the column up and align it to the system centerline. 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 1x6 or 1x4 wood header to span the joists.

3.4 Power the Wall Stand

Connect the cable marked "TO 24 VDC SUPPLY" to a 24VDC or 24 VAC power supply (1A minimum). A 24 VDC power supply has been included with the system. This will engage the lock and the green LED inside the switch button will light to indicate power is on. See section 6 for a PCB schematic and wiring diagram.

3.5 Install the Cabinet

For a standard grid cabinet add a 10-lb trim weight through one of the access holes in the side of the column (see figure 5). Insert the trim weight as shown, then rotate it down 90° so it rests horizontally with its three protrusions engaging the three recessed pockets on the main counterweight. If using an alternate cabinet adjustment of this initial trim weight may be necessary.

Leave the covers off at this time as a final trim will likely be necessary later.

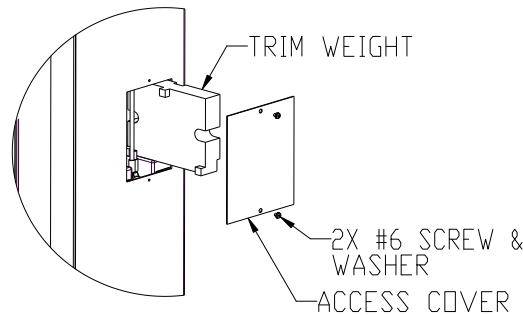


Figure 5: Addition of Trim Weight(s)

Shown below is the standard grid cabinet (see figure 6). If using an alternate adjust the method as necessary.

- Remove the frame from the cabinet after removing its four mounting screws.
- Remove the front panel by pulling it away (it is attached with hook and loop fastener material to the cabinet frame).
- If a grid has been installed remove that as well at this time (attached with hook and loop in a similar manner to the front panel).
- Remove the four cabinet mounting screws and nuts.

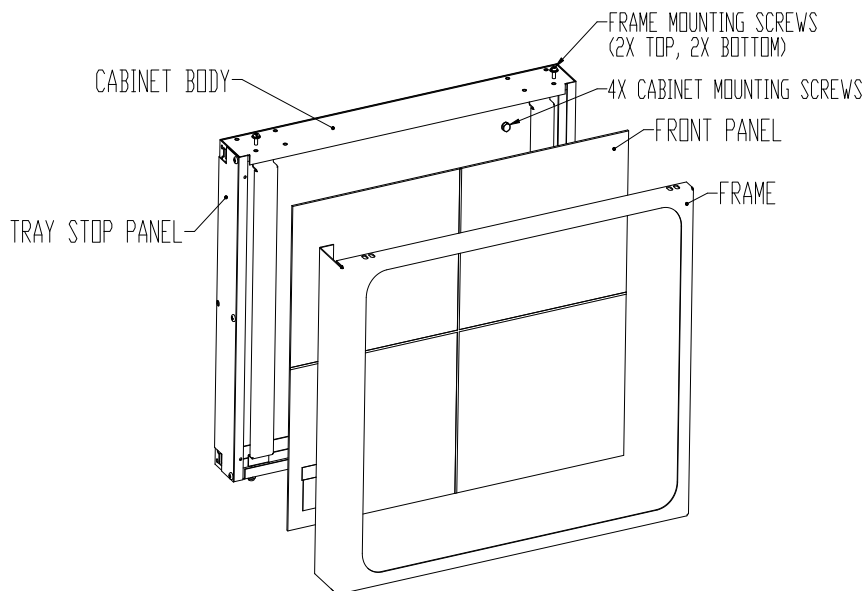


Figure 6: Cabinet Assembly

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Install the cabinet body to the adapter pan using the hardware removed earlier. If installing as a right hand load orient the cabinet with the opening on the right and the tray stop panel on the left (see figure 7). If installing as a left hand load orient the cabinet opposite (opening left, tray stop panel right). It is recommended to install the cabinet body flush to the adapter pan. Once the cabinet body is mounted, reinstall the front panel and frame. Remember to orient the frame to match the cabinet body.

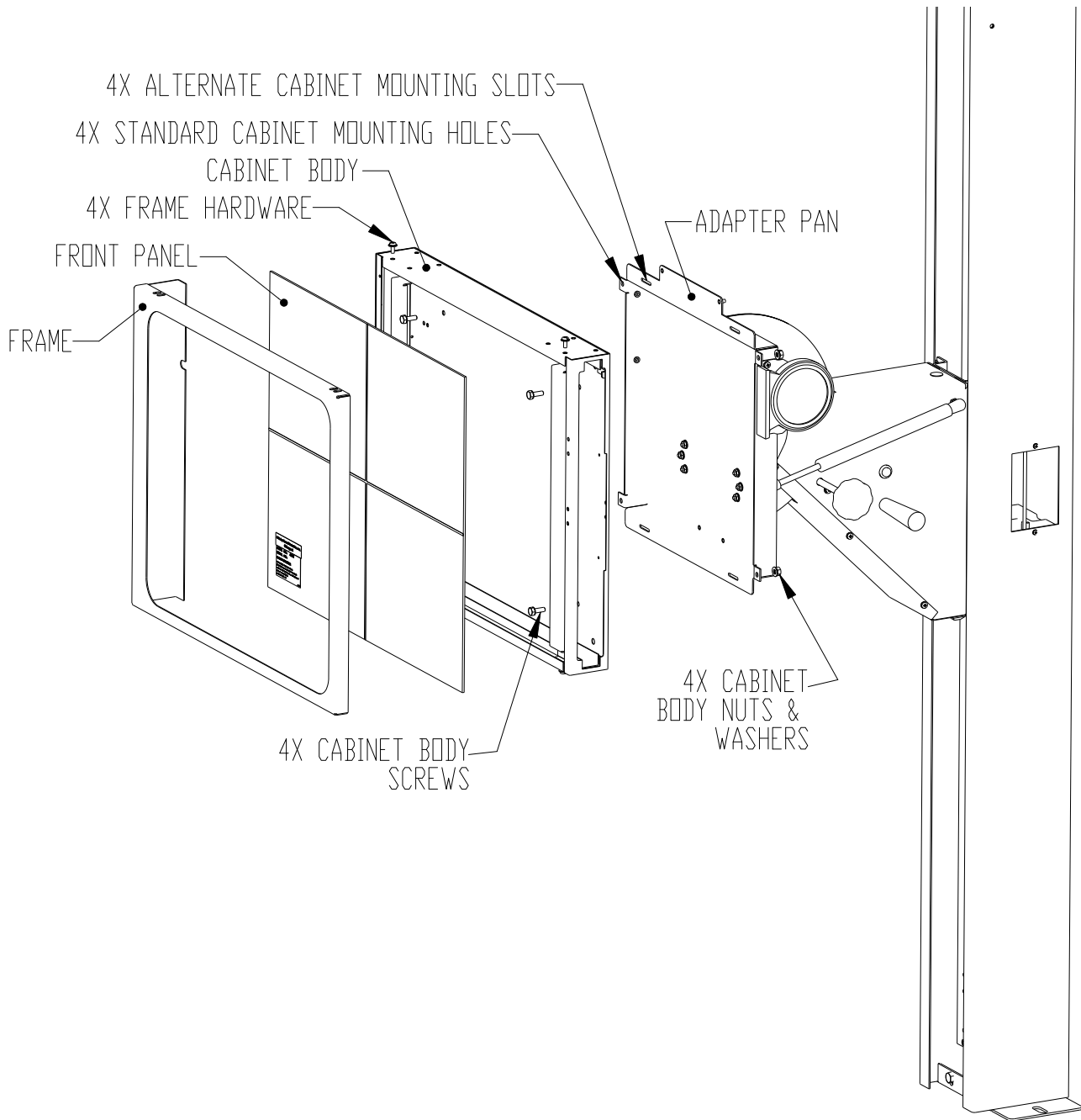


Figure 7: Cabinet Installation (Right Hand Load Shown)

3.6 Reverse the Load Side to Left (IF NECESSARY)

The column assembly has been shipped as a load right. If installing as a load left, reversal must be performed (see figure 8). If the system is right hand load, skip to 3.7.

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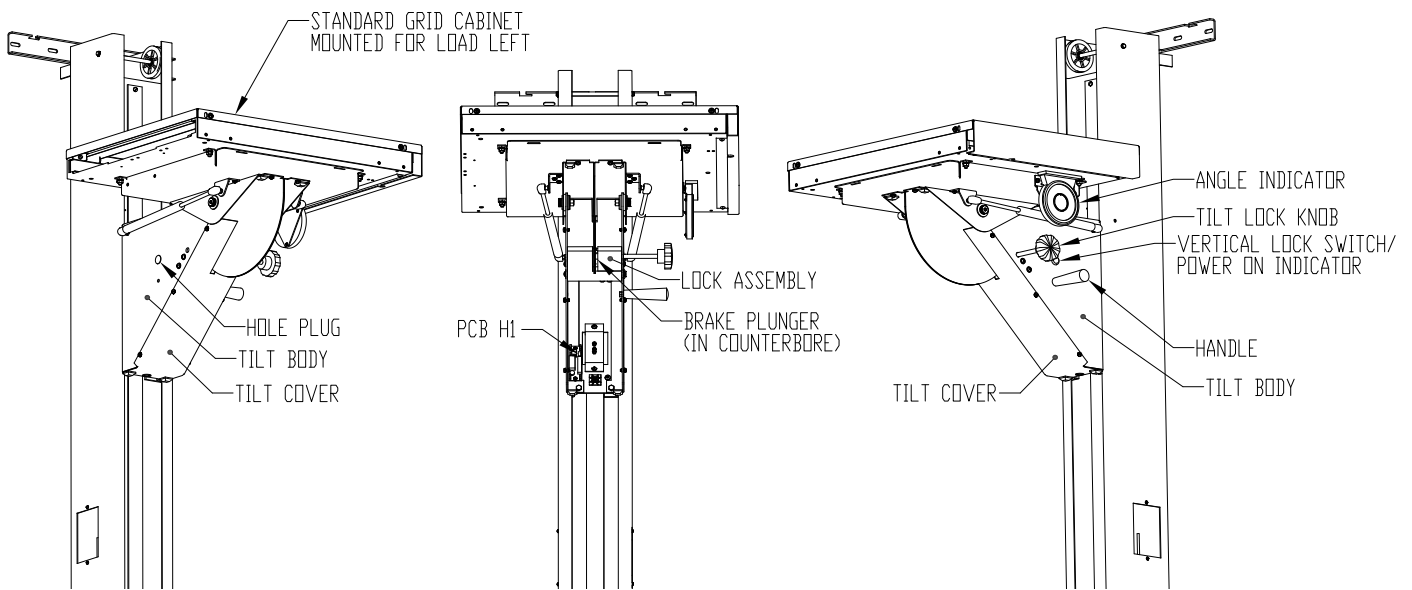


Figure 8: Reversing the Load Side to Left

- Loosen the tilt lock knob slowly and tilt the cabinet all the way up (+90°). Once set, fully remove the tilt lock knob.
- Remove the angle indicator (2 screws).
- Remove the tilt cover (6 screws).
- Remove the handle from the tilt body and reinstall it on the other side in the hole directly across.
- Remove the hole plug on the left side of the tilt body. Keep it close at hand.
- Unplug the switch cable from the PCB at location H1. Do NOT unplug the cable from the switch.
- Remove the switch from the tilt body by squeezing the snap-in features inside with a pair of pliers while pulling from the outside. Insert the cable from the outside through the left switch hole in the tilt body (where the hole plug was) and snap the switch to the sheet metal.
- Plug the switch cable back into the PCB at location H1.
- Reinsert the hole plug into the empty switch hole on the right side of the tilt body.
- Remove the lock assembly (4 screws). Be careful not to lose the brake plunger (it is loose in a counterbore inside the lock assembly).
- Rotate the lock assembly 180° (the brake plunger will now be on the left side) and reinstall in the same location reusing the same hardware.
- Reinstall the tilt lock knob into the lock assembly on the left side.
- Reinstall the angle indicator on the left side.

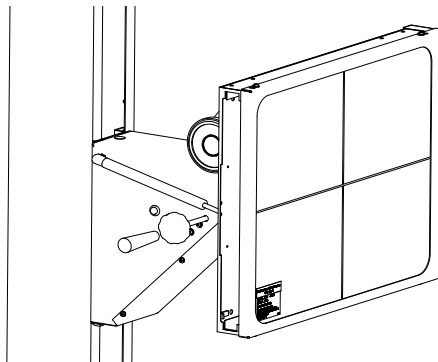


Figure 9: System Configured for Load Left

Do not reinstall the tilt cover at this time. Wait until final adjustments have been made (section 3.11).

3.7 Mount the Column to the Floor

Make a final alignment of the cabinet centerline to the system centerline, adjusting 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).

3.8 Release the Slide

Check for balance of the system by releasing the vertical lock and moving the slide. Add or remove trim weights as necessary to balance before removing the slide strap.

Remove the strap holding the slide in place and shipping bracket at the base of the column. Be sure to replace the mounting screw as it attaches the column to the floor plate.

3.9 Add Accessories and Final Trim

At this point add the remaining accessories such as the cassette tray and cassette. Balance the system by adding trim weights. When complete, install the two access covers to the sides of the column (see figure 5).

3.10 Secure the Power Cable

Form a service loop on the power cable between the vertical slide and the zip tie mount on the back of the column (see figure 10). Check that there is enough extra cable to accommodate the full range of vertical travel. Secure with a zip tie. The provided 24VDC power supply generally can fit between the column and the wall.

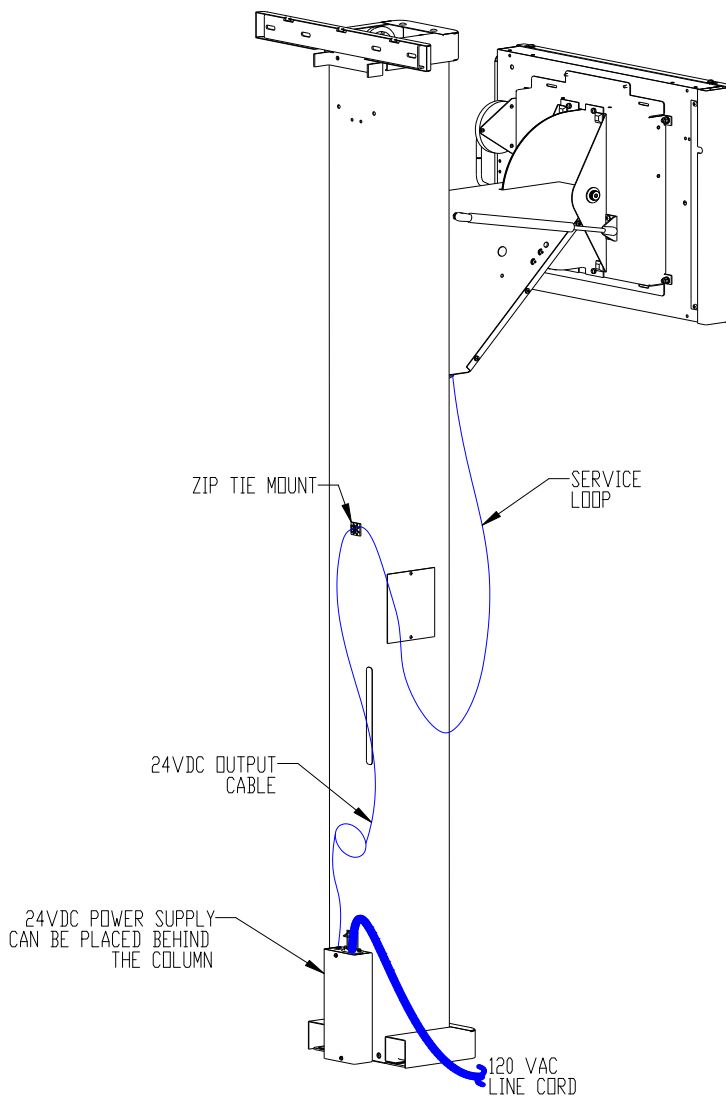


Figure 10: Securing the Power Cable

3.11 Column Adjustments

3.11.1 Vertical Lock Adjustment

The vertical lock magnet has been factory adjusted however perform a final check of operation and readjust if necessary. Remove the tilt cover (if necessary) to expose the lock assembly (see figure 11). While holding the lock button to de-energize the magnet tighten or loosen set screw to set the gap between the magnet face and the brake strip. The ideal adjustment is a minimum gap without any dragging across the entire vertical range of motion with the lock de-energized. Reinstall the slide cover.

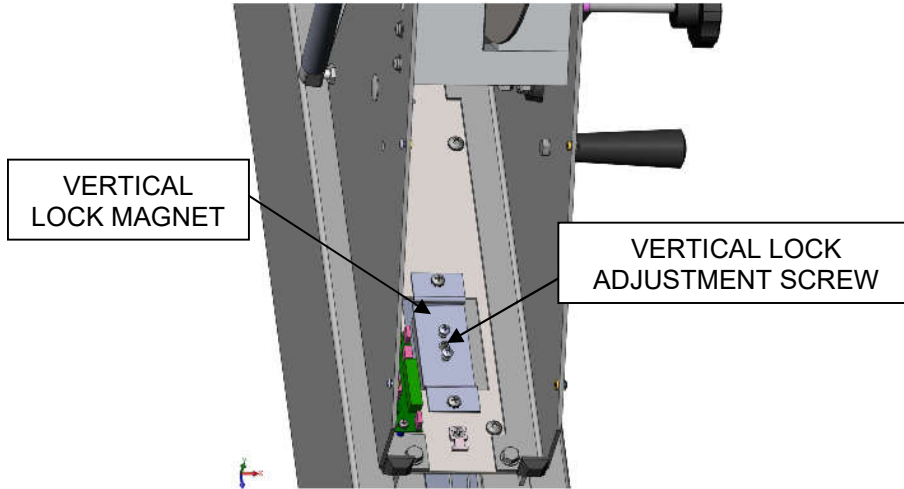


Figure 11: Vertical Lock Adjustment

3.11.2 Vertical Slide Clearance Adjustment

The vertical slide clearance has been factory adjusted however perform a final check of operation and readjust if necessary. There are two adjusters (upper and lower) accessible on the right side through a small hole on the right side of the column (see figure 12). Figure 12 shows the slide aligned with the upper adjuster screw. Insert a 5/32" hex key through the hole and tighten the screw to tighten the slide fit. Loosen the screw to loosen the slide fit. To adjust the lower clearance, move the slide up to align the lower adjuster screw with the hole in the column.

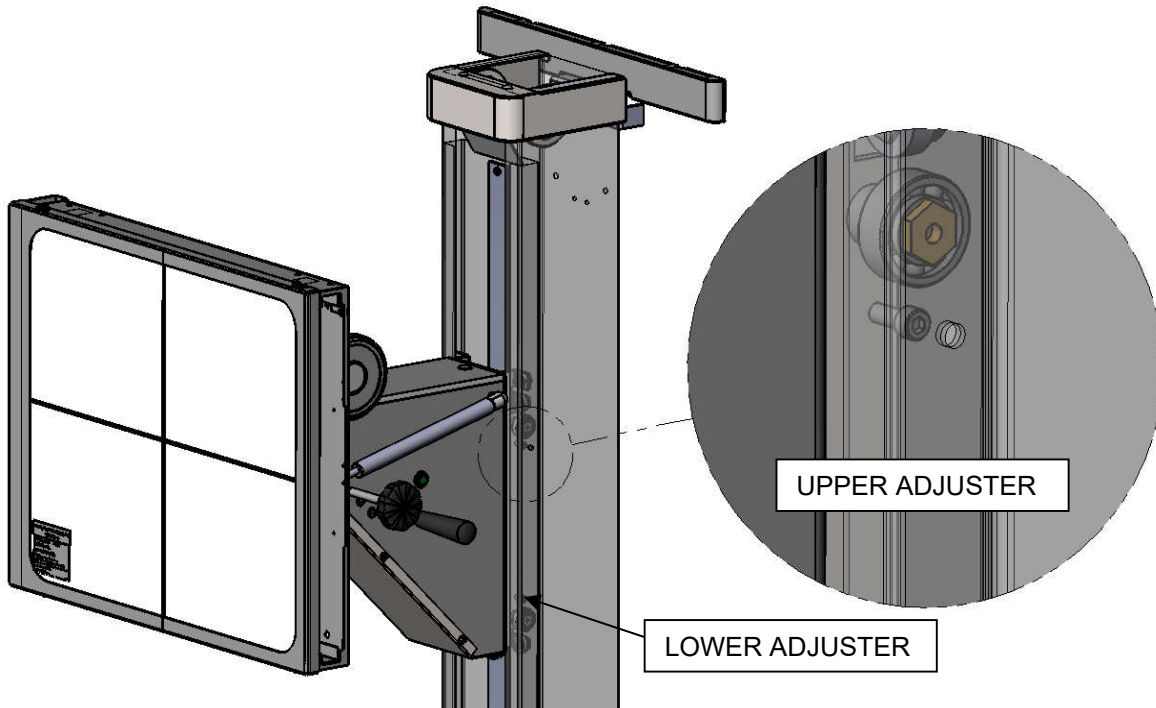


Figure 12: Vertical Slide Clearance Adjustment

3.11.3 Angle Indicator Adjustment

Using a level, release the tilt lock and position the receptor with the front panel vertical. Check the angle indicator. If it does not read 90°, loosen the mounting screws and rotate the assembly until it is correct. Retighten the screws (see figure 13).

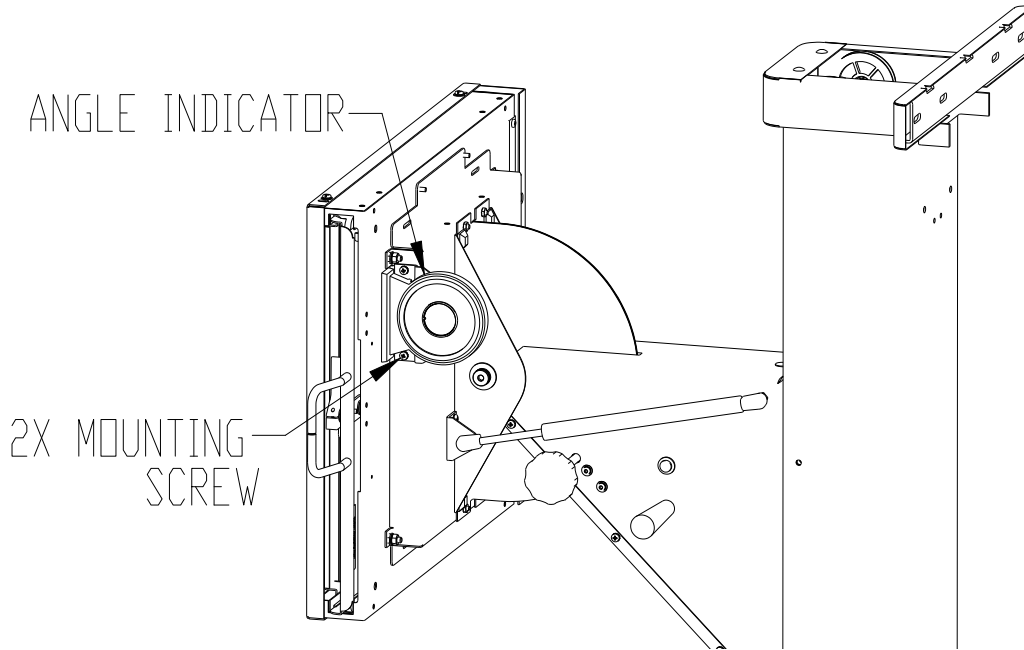


Figure 13: Angle Indicator

3.12 Covers

3.12.1 Wall Mount Bracket Cover

Attach the wall bracket cover as shown in figure 14. 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.

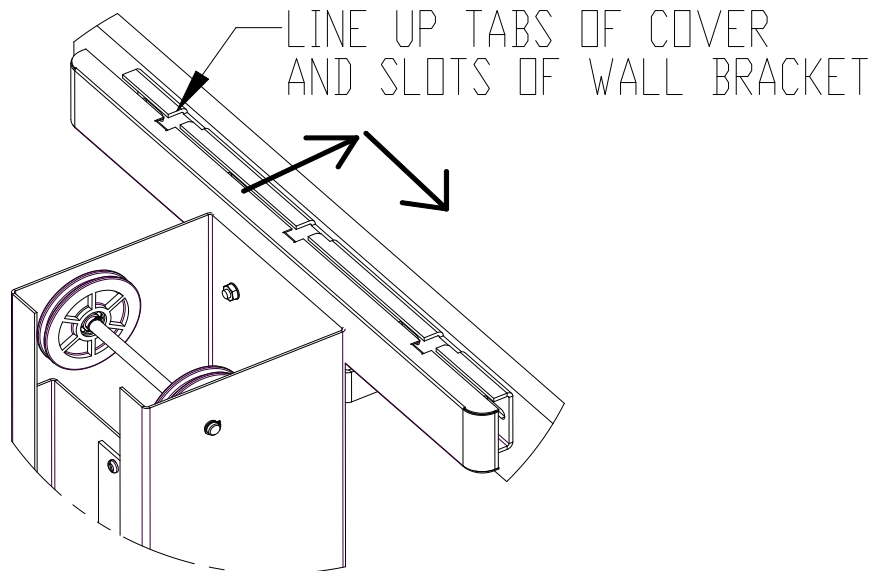


Figure 14: Wall Mount Bracket Installation

3.12.2 Base Cover

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 15).

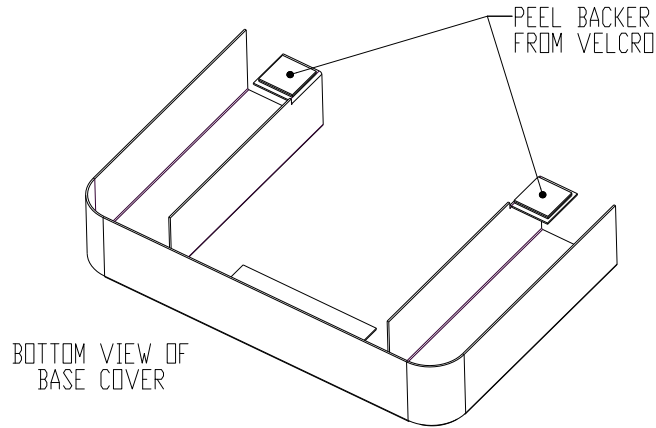


Figure 15: Base Cover

Position the cover, holding it above the floor plate (see figure 16). 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.

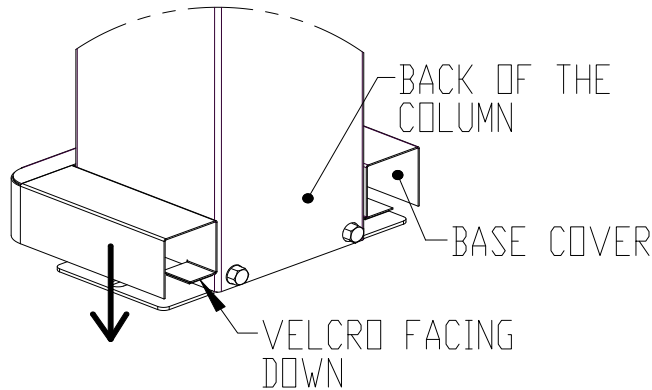


Figure 16: Base Cover Installation

3.12.3 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 17).

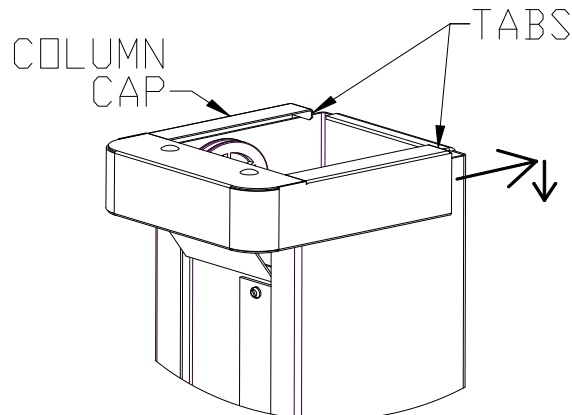


Figure 17: Column Cap Installation

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.

Maintenance Items

Clean exterior of the assembly, inspecting for damage and missing hardware.

Verify smooth vertical travel along the entire vertical range; check all bearings for proper operation.

Check all fasteners for tightness including the floor and wall mounts.

Verify proper operation of the lock release switch and handle and proper function of the locks.

Inspect all cable connections and cable strain reliefs. All connections should be tight and secure. Inspect exposed cabling for damage.

Inspect counterweight cables for fraying, damage, or wear.

Verify counterweight access covers are secure.

5. PCB Schematic & Wiring Diagram

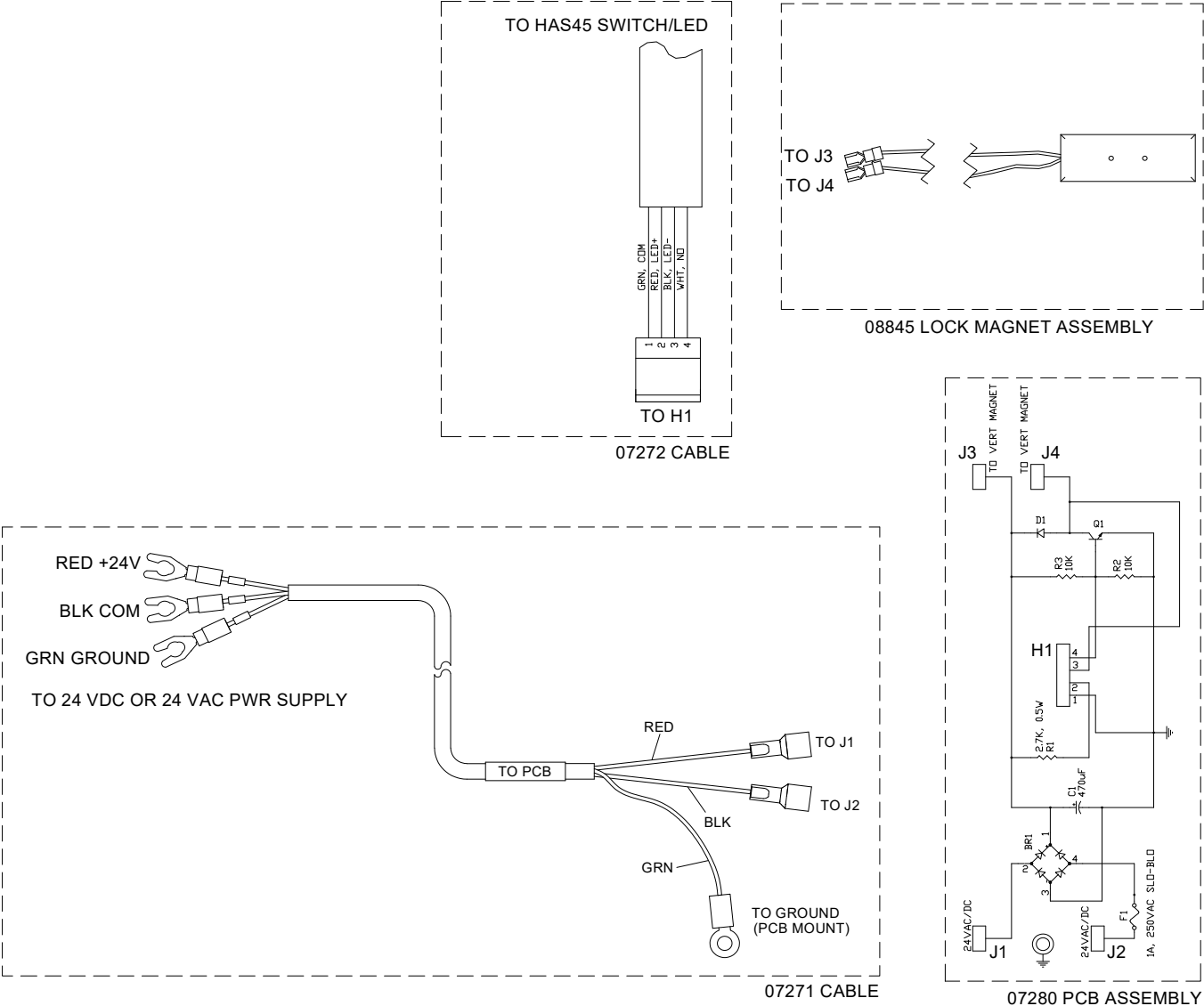


Figure 19

6. Basic Operation

Read and understand all of the instructions before operating. If the wall stand has been modified or has accessories read and understand their instructions as well.

6.1 Safety



X-ray equipment is dangerous to both patient and operator unless protective measures are strictly observed.

It is important that everyone working with X-rays be properly trained in usage of this equipment. The manufacturer assumes that all operators authorized to use this equipment are cognizant of the danger of excessive exposure to radiation, are sufficiently trained, and have the required knowledge for it. The equipment described herein is sold with the understanding that the manufacturer and its agents and representatives are not liable for injury or damage that may result from exposure to radiation. Various protective material and devices are available. The use of such materials and devices is recommended.

Below is a partial list of potentially hazardous situations to avoid:

- Do not operate the wall stand if any lock is not working properly
- Do not operate the wall stand if you see any damaged wires or cables
- Do not sit, stand, or climb onto the image receptor
- Keep all personnel and patients clear while the image receptor is being moved or rotated
- Do not allow any repair work to be performed while a patient is present in the room with the equipment
- Never leave patients unattended at any time

6.2 Operation

The tilting wall stand allows vertical motion with electric lock and allows angulation of the receptor -45° to $+90^{\circ}$ with mechanical lock (see figure 1, p. 4). For the following items reference figure 20.

The vertical lock pushbutton will be illuminated to show that power to the vertical lock is on. Any time power is on the lock will hold the receptor in position. To move the receptor press the lock pushbutton, relocate the cabinet, and release the switch to reengage the lock.

To change the angle of the receptor slowly rotate the tilt lock knob counterclockwise to unlock. Hold the receptor cabinet as depending on the starting position the air-assist cylinders may cause it to move. Use the angle indicator to set the desired angle.



Keep all body parts and clothing clear of the tilt mechanism during movement of the receptor.

For a standard grid cabinet with film tray pull the tray handle to expose the tray and load a film cassette, CR plate, or cassette-sized DR plate. A tray stop is provided to prevent the tray from pulling all the way out. Each tray has its own release mechanism to be used if full tray removal is desired.

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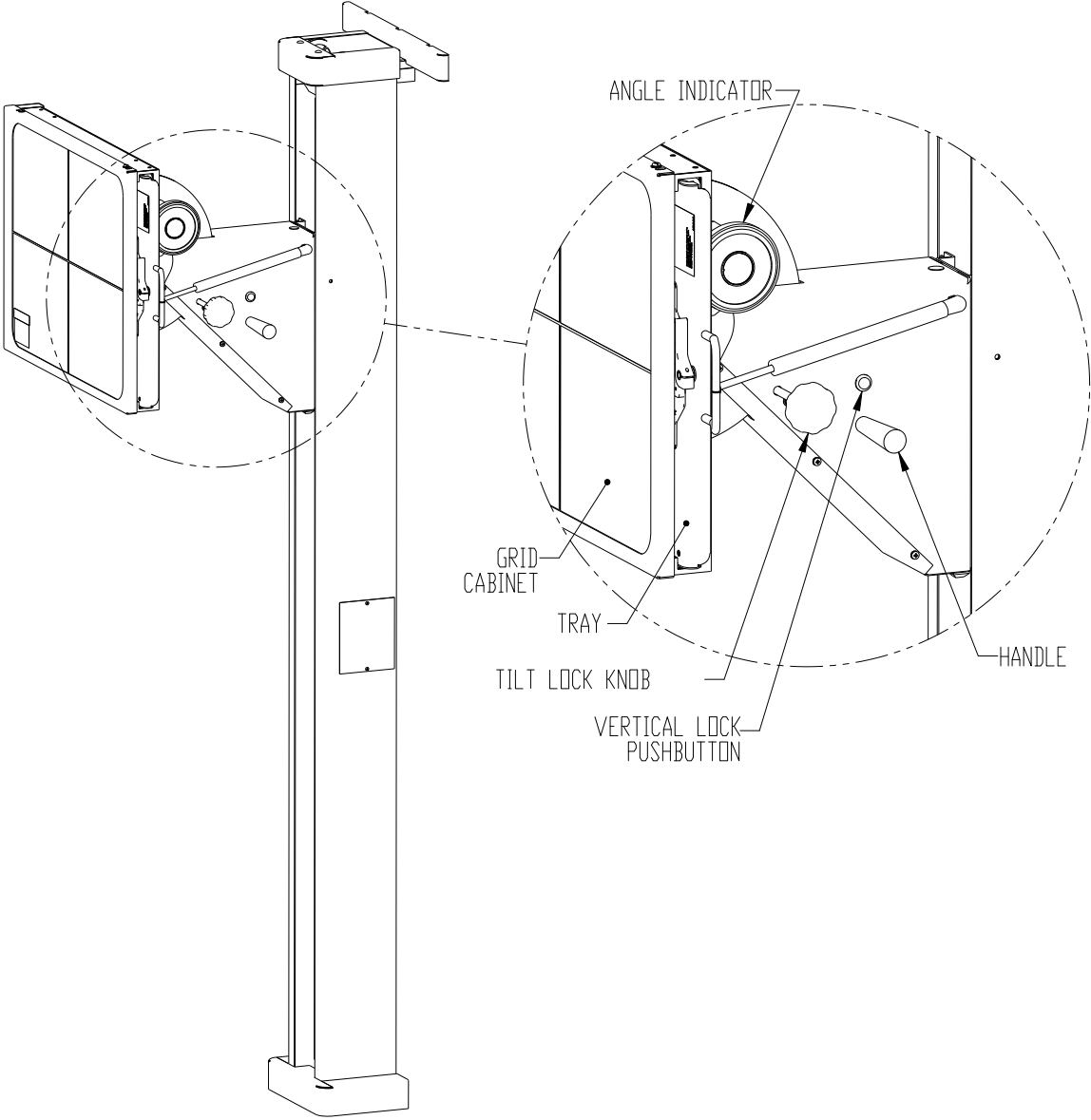


Figure 20: Wall Stand Features and Controls (load right shown with standard cabinet and film tray)