INTEGRATED TABLE/TUBESTAND

MODEL No. S204

USER AND ASSEMBLER MANUAL

L835
REV. J

SUMMIT INDUSTRIES, LLC
7555 N. Caldwell Ave.
Niles, IL. 60714
773-588-2444 PHONE
773-588-3424 FAX
www.SummitIndustries.com

TABLE OF CONTENTS

INSTALLATION AND SERVICE MANUAL REVISIONS HISTORY

Revision	Pages Affected/Revision Description	Release Date	ECR #
A	INITIAL RELEASE	DEC. 2000	2098
B	ADDED NOTES FOR “ON” TABLE W/ AEC	JULY 2001	2292
C	REVISED	SEPT. 2001	2344
D	REVISED	NOV. 2003	3580
E	UPDATED TUBEARM & SLIDE DESIGN	MAY, 2012	7559
F	PG 19-ADDED ADJUSTMENT INSTRUCTIONS FOR ELECTRIC LOCK	JUNE, 2012	8389
G	ADDED SYMBOL LEGENDS TABLE	NOV, 2016	9266
H	Updated address to Niles, IL; Added generic warning statements to page 4.	JUNE, 2017	9584
J	Changed Cable Drape Bracket orientation in Figure 6, sheet 14.	FEB, 2018	9841

I. GENERAL INFORMATION

A. INTRODUCTION

WARNING

X-ray equipment may be dangerous to both patient and operator unless proper safety measures are observed.

Before operation, persons qualified and authorized to operate this equipment should be familiar with all appropriate safety procedures regarding radiation safety.

Only qualified personnel should install, maintain and operate this equipment.

Only qualified service personnel should remove electrical covers.

The equipment described in this manual will perform reliably when installed, maintained and operated in accordance with the instructions of this manual by qualified personnel. This equipment is sold with the understanding that the user assumes sole responsibility for radiation safety and that the manufacturer does not accept any responsibility for the following:

- Equipment improperly installed.
- Equipment improperly operated.
- Equipment improperly maintained or repaired.
- Equipment, which has been modified without written factory authorization.
- Injury or damage resulting from any of the above causes.

The equipment, which is described in this manual, will perform reliably when operated, installed, and maintained in accordance with the instructions in this manual.
This equipment is sold with the understanding that the user assumes sole responsibility for radiation safety and that the manufacturer does not accept any responsibility for the following:

1. Equipment improperly installed.
2. Equipment improperly operated.
3. Equipment improperly maintained or repaired.
4. Equipment, which has been modified or altered in any way.
5. Injury or damage to patient or other personnel for any of the above causes.

Intended Use

This is an x-ray table, a mechanical device intended to support a patient during a radiographic procedure.

Attenuation

All included components between the patient and image receptor have been certified to comply with 21 CFR Chapter 1 Subchapter J (§1020.30).

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.

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.

II. USER INFORMATION

A. GENERAL DESCRIPTION

The integrated table/tubestand is a conventional fixed top radiographic table which has the tubestand connected directly to the table. An extended tubestand rail option is available for applications where off-table radiography is required. The film cabinet can be supplied in any of the configurations listed below.

6) Grid cabinet.
6) Bucky cabinet.
6) Grid cabinet with AEC.
6) Bucky cabinet with AEC.

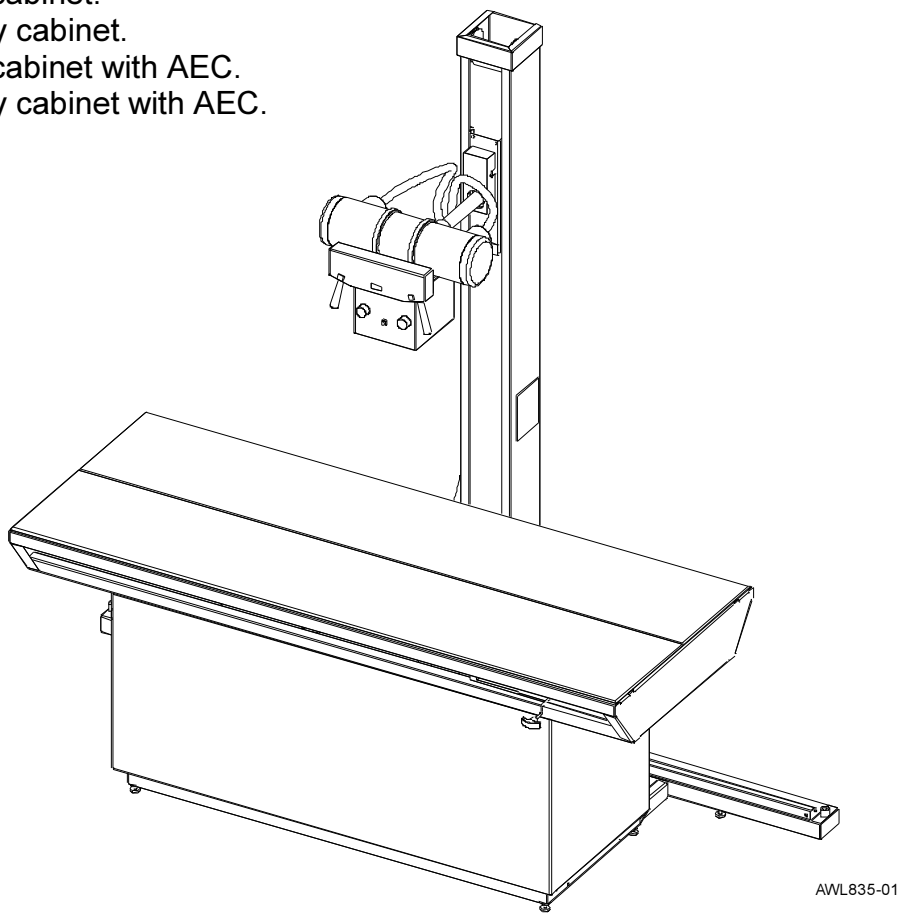


FIGURE 1
ITT TABLE

B. EQUIPMENT SPECIFICATIONS

Height x Width x Length (Inches)

Crated:

Table top	10 x 34 x79
Pedestal	29 ½ x 29 ¼ x 58
Floor rail	5 x 5 x 112
Tubestand	9 x 9 x 87
All other parts (accessory carton)	15 x 27 x 33

Assembled

On table version	89 x 35 ½ x 90
Off table version	89 x 35 ½ x 100

Weight (lbs.)

Crated:

Table base	210
Floor rail	60
Tubestand	140
All other parts (accessory parts)	60

Assembled:

On table version	335
Off table version	345

Power consumption maximum (watts) 24 VDC/.5 AMPS		12
Film cabinet travel (inches)		61 ½”
Film plane to table top distance (inches)	(non-AEC)	3 ½”
	(AEC)	4”

C. SPARE PARTS LIST

Below is a list of parts that may have a finite life. Spare parts other than those listed below are available. Please contact the dealer for details.

Description	Qty/Table	Part No.
Switch, Pushbutton	2	HE02
Magnet, Holding	2	HA01
Bearing, Roller Stl.	10	HA32
Roller, Nylon	4	A658

D. MAINTENANCE SCHEDULE AND INSPECTION

Safe performance of the integrated table/tubestand requires daily inspection by the user and scheduled service by specifically trained x-ray apparatus service personnel. It is the user's responsibility to select qualified service personnel or to consult with the factory in the event recommendations are required.

DAILY INSPECTION (USER)

1. Check to see that the tubestand vertical and horizontal electric locks operate smoothly.
2. Check to see that the film cabinet moves freely and does not bind.
3. Inspect the table anchoring to ensure that the table is properly secured to the floor.

In the event service is required, contact a qualified service person.

SCHEDULED MAINTENANCE (SERVICE PERSONNEL)

In order to comply with applicable federal and state regulations, the following maintenance schedule must be adhered to:

1. First servicing – 30 days after equipment installation.
2. Subsequent servicing – every 6 months.

Scheduled maintenance should include but not be limited to the following checks:

1. Proper equipment grounding.
2. Proper tightness of all mechanical fasteners.
3. Inspection of all electrical connections for proper connection and absence of corrosion.
4. Proper anchoring of table to floor.
5. Proper operation of the table top and film cabinet.
6. Inspection of all electric locks for proper operation.

III. ASSEMBLER INFORMATION

A. GENERAL INSTALLATION

To facilitate shipment of the integrated table/tubestand, it is necessary to partially disassemble the table prior to shipment. The table is packed by our shipping department in separate cartons that must be inspected before beginning installation. If the table was purchased on an "FOB shipping point" or "Freight collect" basis, it is the dealer's responsibility to check the shipment for completeness against the bill of lading. In the even of shortage or damage, immediately file a claim with the carrier.

WARNING

Always wear protective glasses when servicing the table. Always disconnect electrical power when working on the table electrical system.

B. EQUIPMENT COMPATIBILITY

The radiographic table is certified to be compatible with all certified tube housing assemblies, x-ray controls, x-ray high voltage generators, cassette holders, and beam limiting devices, and will not affect the compliance of these components when these components are installed, connected, and adjusted in accordance with the applicable manufacturer's instructions and specifications.

NOTE:

1. The assembler must verify that an angulation indicator means is provided to assure perpendicularity between the film and the x-ray beam.
2. The assembler must verify that an angulation indicator for vertical SID is provided in the system.
3. It is the assembler's responsibility to verify compatibility of all components assembled as parts of the x-ray system. Refer to compatibility statement published by the component manufacturer for specific information.

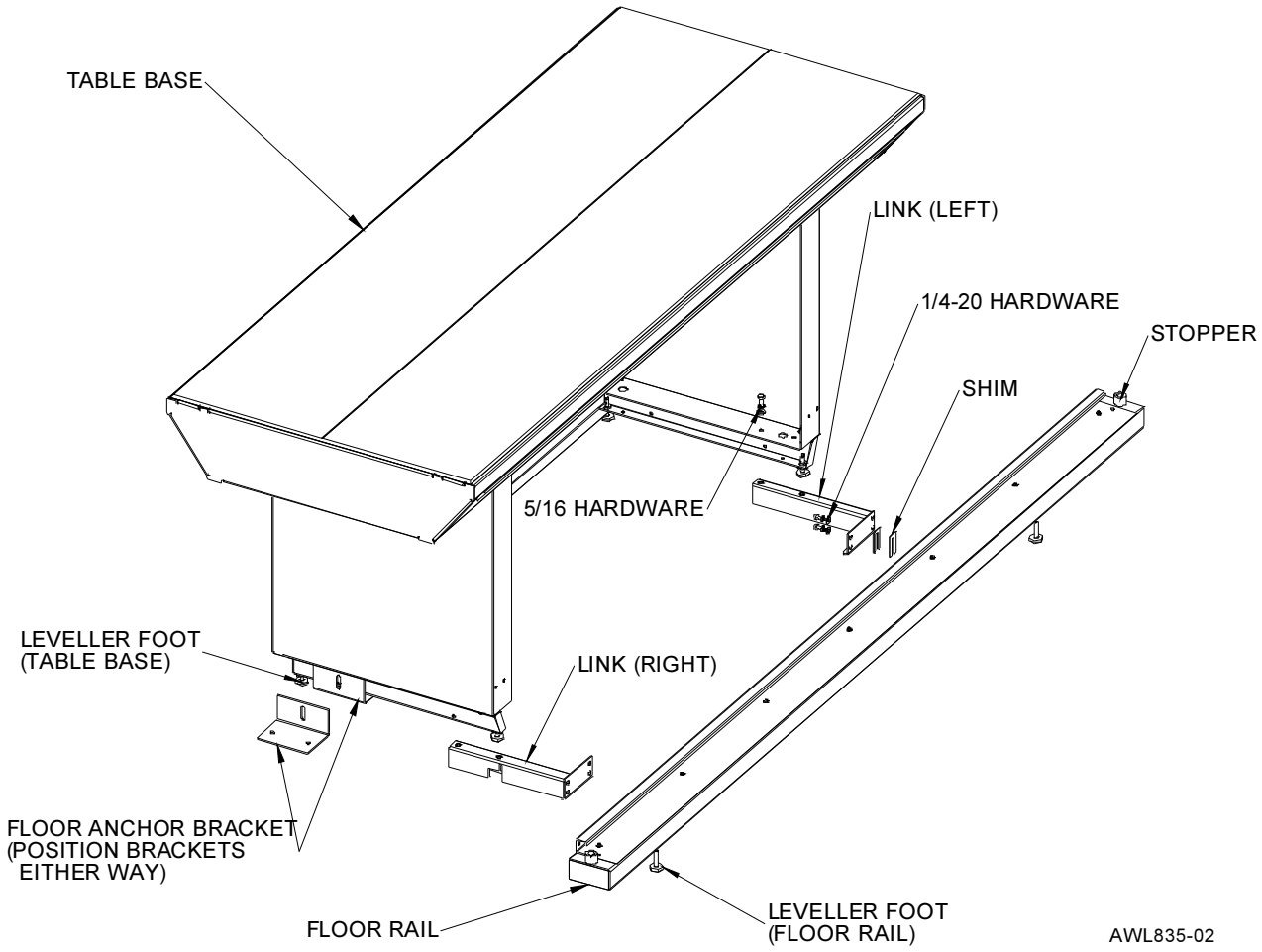


FIGURE 2
BASE SET UP

C. MECHANICAL INSTALLATION AND ADJUSTMENTS

1) BASE SET UP

   1. Attach four (4) leveler feet to base. See Figure 2.

   2. Attach two (2) links to base, one link at each end. Use 5/16 – 18 x ¾ long hex bolts, 5/16 flat washers, and 5/16 star washers. See Figure 2.

   3. Attach two (2) floor anchor brackets to base. Use ¼ - 20 x ¾" long hex bolts, ¼ flat washers, ¼ star washers, and ¼ - 20 hex nuts. See Figure 2.

2) FLOOR RAIL SET UP – "ON" TABLE

   1. Attach two (2) leveler feet to floor rail. See Figure 2.

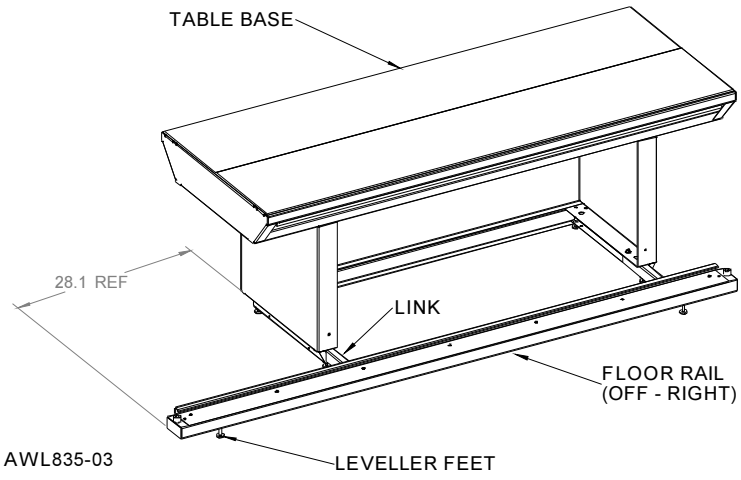
   2. Attach floor rail to links, insert two shims between link and rail at each point. Use ¼ - 20 x ¾" long hex bolts, ¼ flat washers, and ¼ star washers. See Figure 2.

3) FLOOR RAIL SET UP – "OFF" TABLE

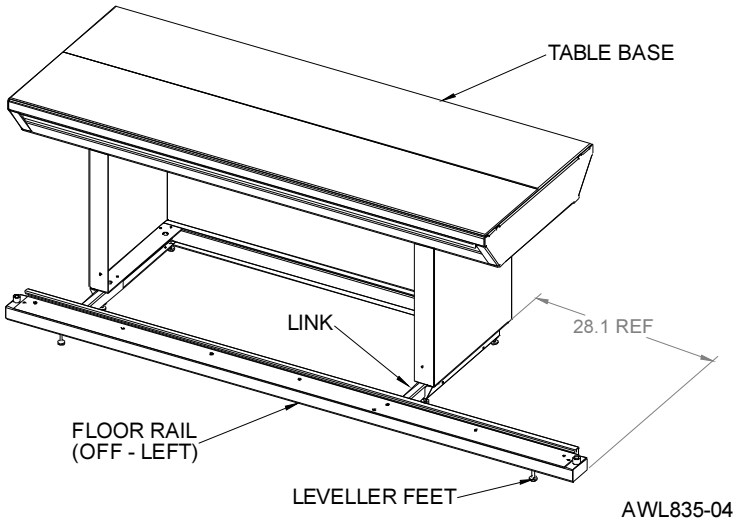
   1. Attach two (2) leveler feet to floor rail. See Figure 3.

   2. Attach floor rail links; insert two shims between link and rail at each point. Use ¼ - 20 x ¾" long hex bolts, ¼ flat washer, ¼ star washer. See Figure 3.

FIGURE 3—FLOOR RAIL SET UP



"OFF"—RIGHT



"OFF"—LEFT

4) INITIAL LEVELLING

1. Level table in directions A, B, and C. See Figure 4.

2. Level floor rail in directions E and F. See Figure 4.

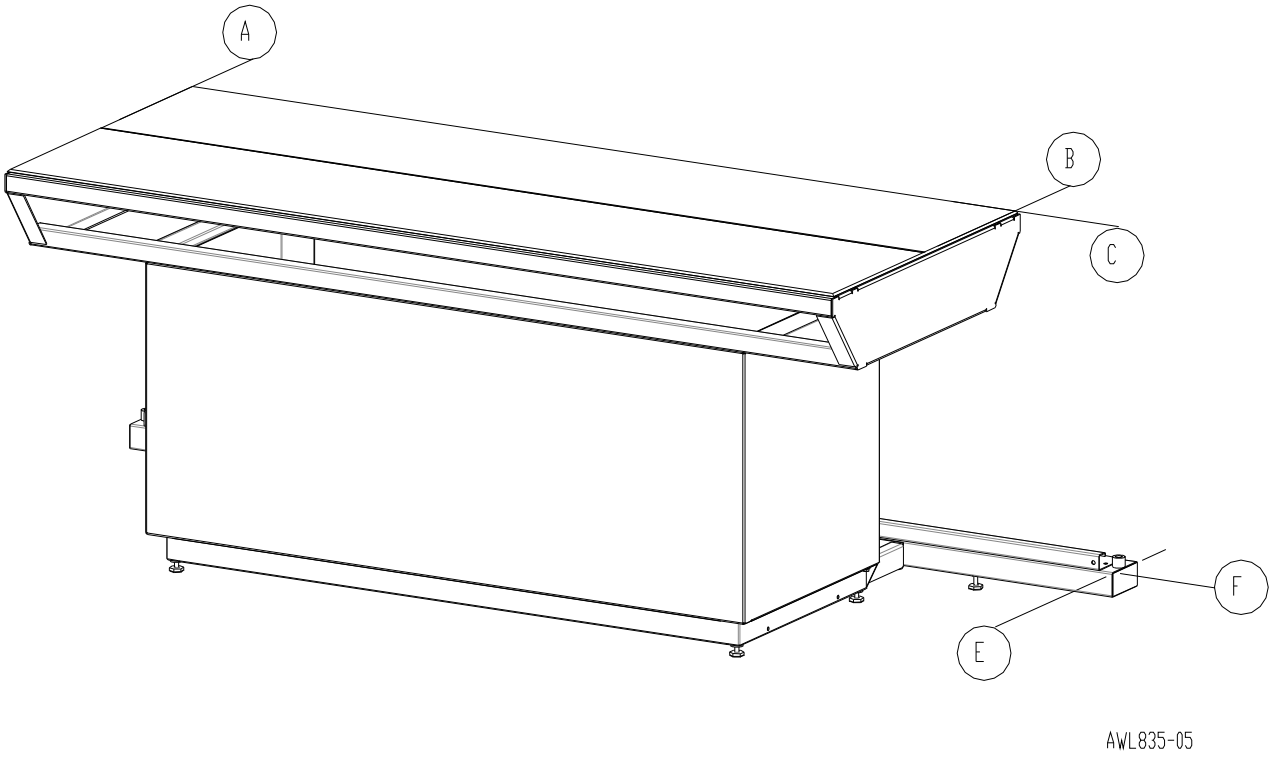


FIGURE 4
TABLE LEVELLING

5) TUBESTAND ASSEMBLY

1. Attach floor car to tubestand column. Use 5/16 – 18 x 3 long hex bolts, 3/8 – 16 x ¾ hex head bolts, and 3/8 star washers. See Figure 5.

2. Attach counterweight cables to front side of vertical slide. Use ¼ - 20 x 5/8 long hex head bolts, ¼ flat washers, and ¼ hex nuts. See Figure 6.

3. Attach horizontal SID switch assembly to tubestand column. Use 3/8 – 16 x ¾ long hex head bolts, and 3/8 star washers. See Figure 5.

4. Move snap rings and pulleys inward. See Figure 8.

5. Insert slide into column.

6. Spread cables and reinstall snap rings into grooves on pulley shaft. See Figure 7.

7. Install tubestand cap. See Figure 5.

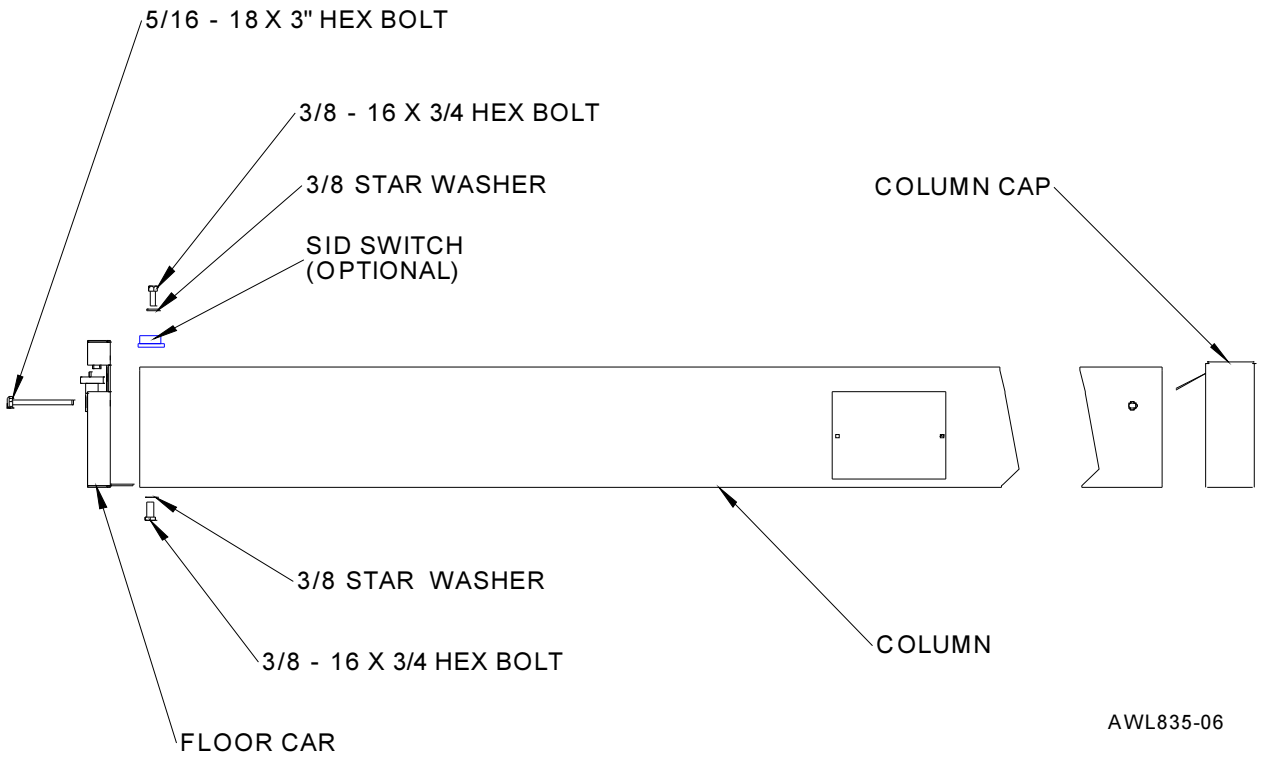


FIGURE 5
COLUMN ASSEMBLY

6) CABLE DRAPE BRACKET - Move the cable drape bracket (mounted on the vertical slide assembly in the column) from its shipping location to its operating location by removing the 2X 1/4”-20 mounting screws, rotating the bracket assembly, and reinstalling the mounting screws.

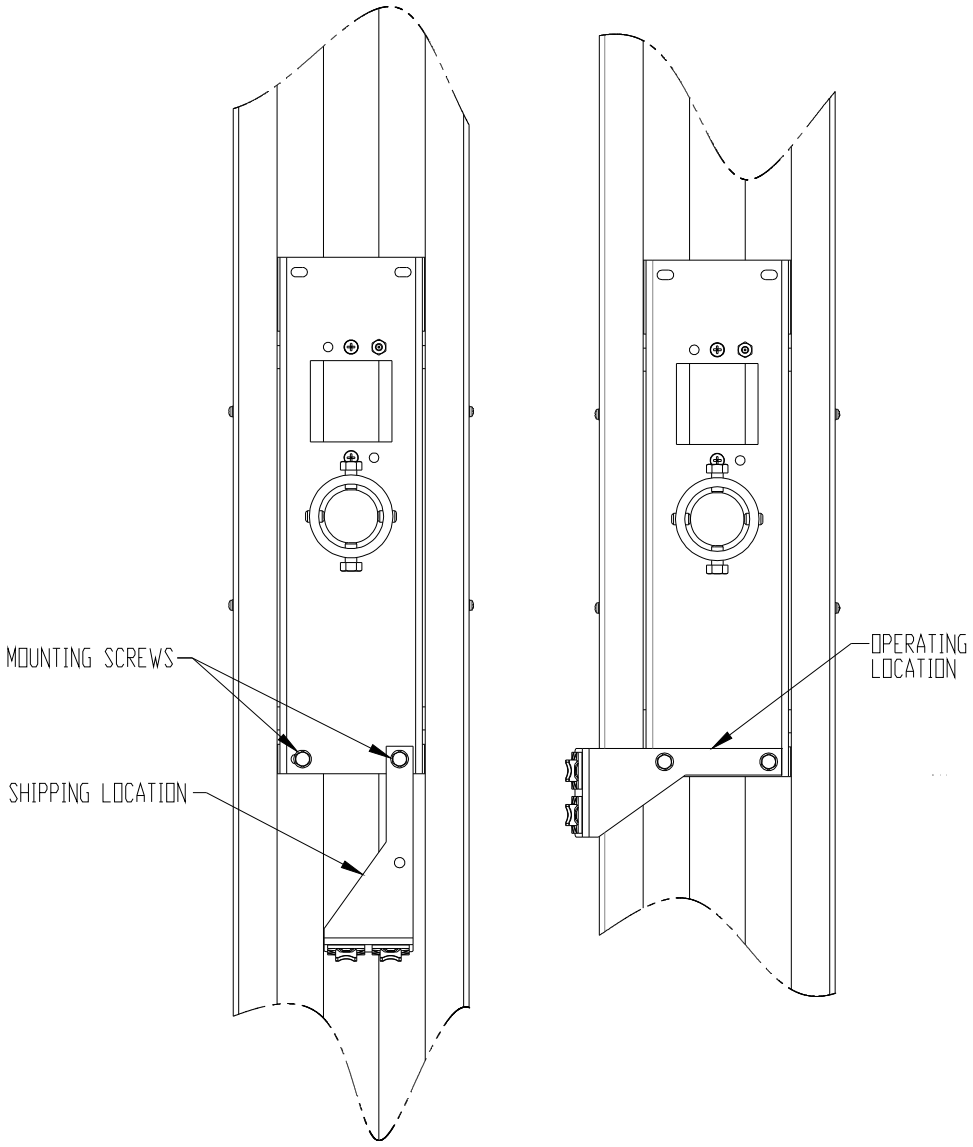
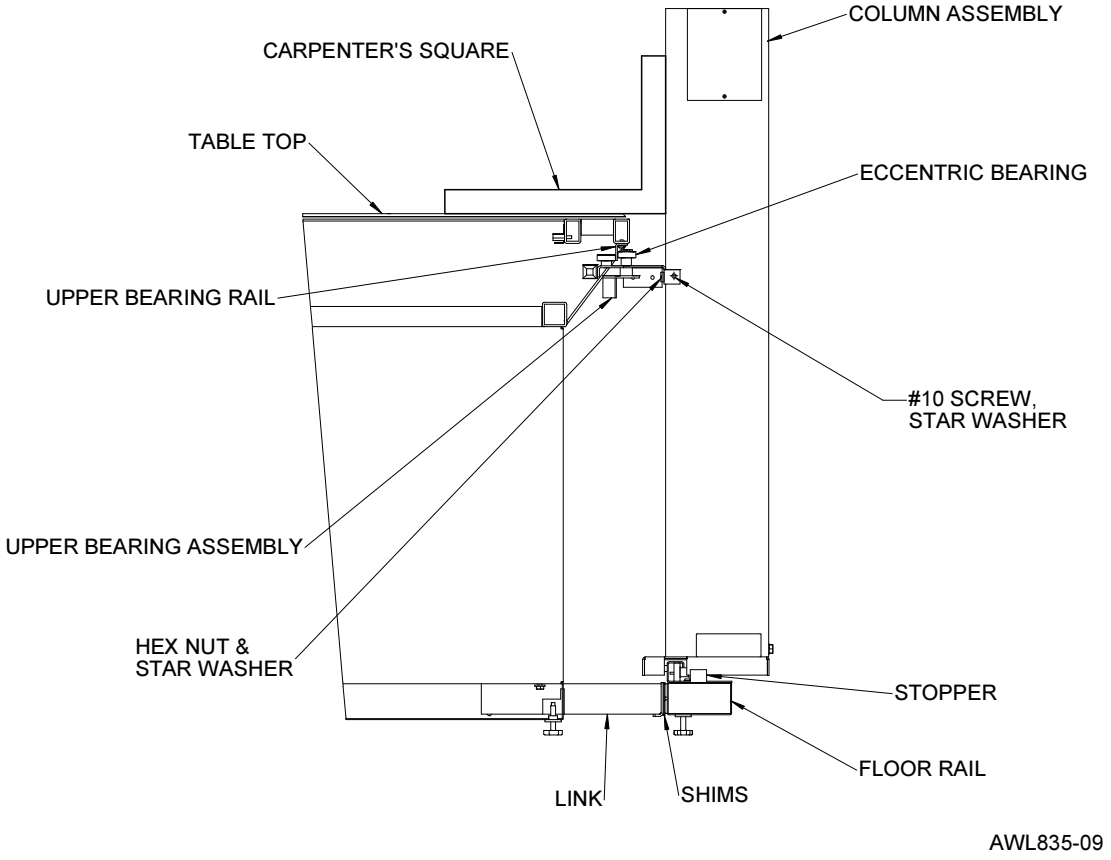


FIGURE 6

7) TUBESTAND ATTACHMENT – "ON" TABLE (See Figure 7)

1. Position the inner bearing bracket inside the channel on the tubestand. **NOTE**: *FOR TUBESTAND ATTACHMENT – "ON" TABLE W/ AEC SEE FIGURE 8.*

FIGURE 7-TUBESTAND ATTACHMENT – "ON" TABLE



2. Attach the upper bearing assembly to the inner bearing bracket. Use ¼ - 20 hex nuts and ¼ star washers.
3. Remove one (1) stopper from the floor rail.
4. Install the tubestand column assembly onto the floor rail.
5. Engage the upper bearing assembly and the upper bearing rail. Adjust the eccentric bearing as required.
6. Replace stopper in floor rail.
7. Use holes in upper bearing assembly to find the #10-32 tapped holes in the tubestand column. Secure upper bearing assembly to tubestand column. Use 10-32 x 3/8" long screws.

8) TUBESTAND ATTACHMENT – “OFF” TABLE AND “ON” TABLE W/ AEC (See Figure 8)

1. Remove stopper from rail.

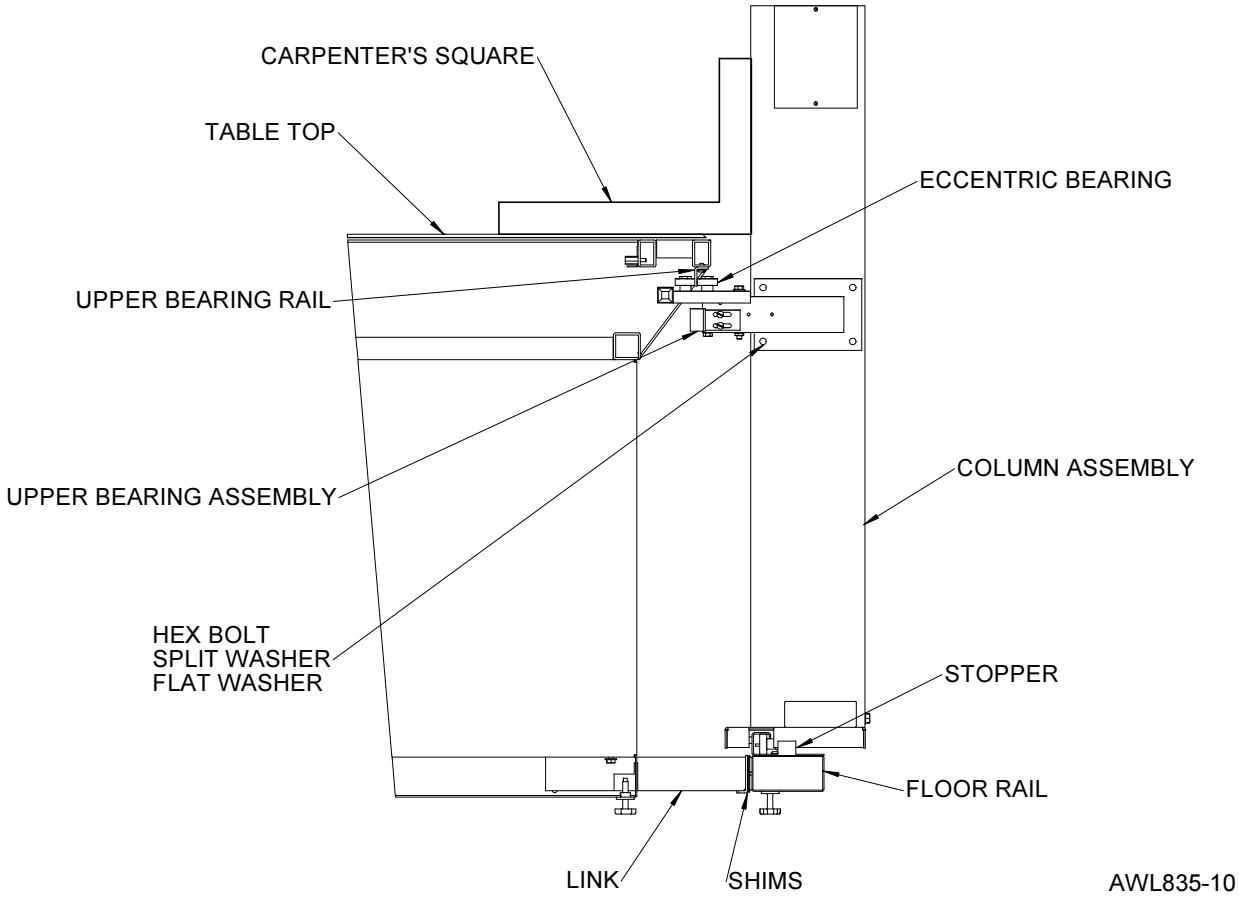
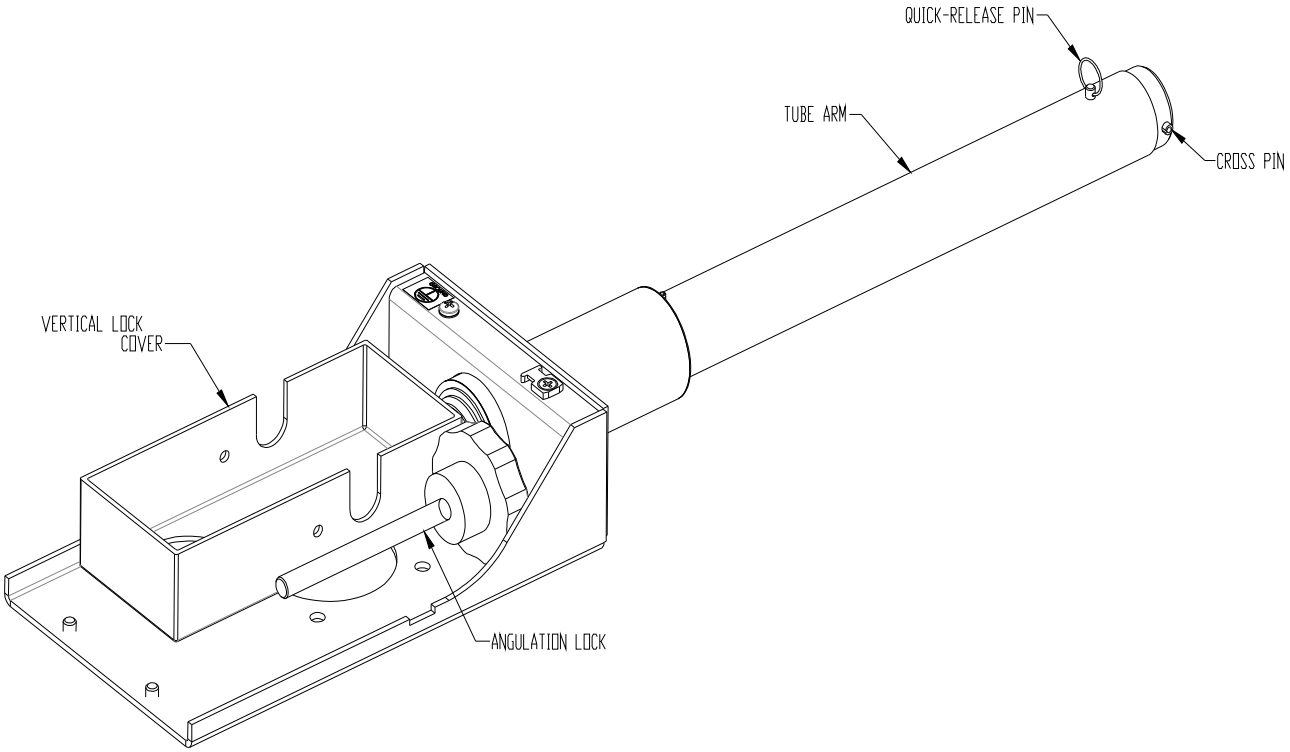


FIGURE 8
TUBESTAND ATTACHMENT – “OFF” TABLE

2. Install the tubestand column assembly onto the floor rail.
3. Attach the upper bearing assembly to the column. Use ¼ - 20 x ½” long hex head bolts; ¼ split washers, and ¼ lock washers.
4. Shim upper bearing assembly and adjust eccentric bearing as required.
5. Replace stopper on rail.

9) INTALL THE TUBE ARM ASSEMBLY

Prepare by removing the vertical lock cover, the angulation lock, and the quick-release pin from the tube arm assembly.



Check that the four adjusting screws are loose on the collar of the vertical side. Relocate the vertical lock cover onto the tube arm. 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 9.

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 10. Tighten all four adjusting screws, keeping the tube arm approximately level and perpendicular to the front of the column.

Install the angulation lock into the open tapped hole on the tube mount. See Figure 10.

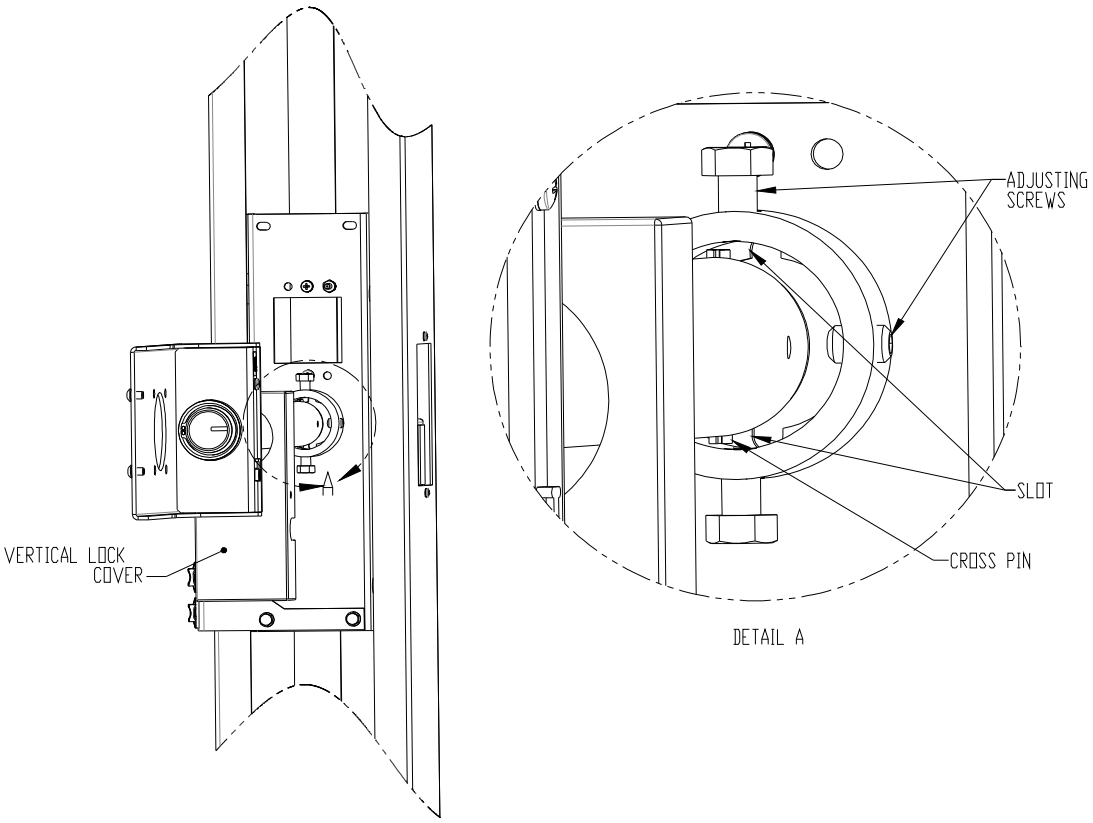


Figure 9

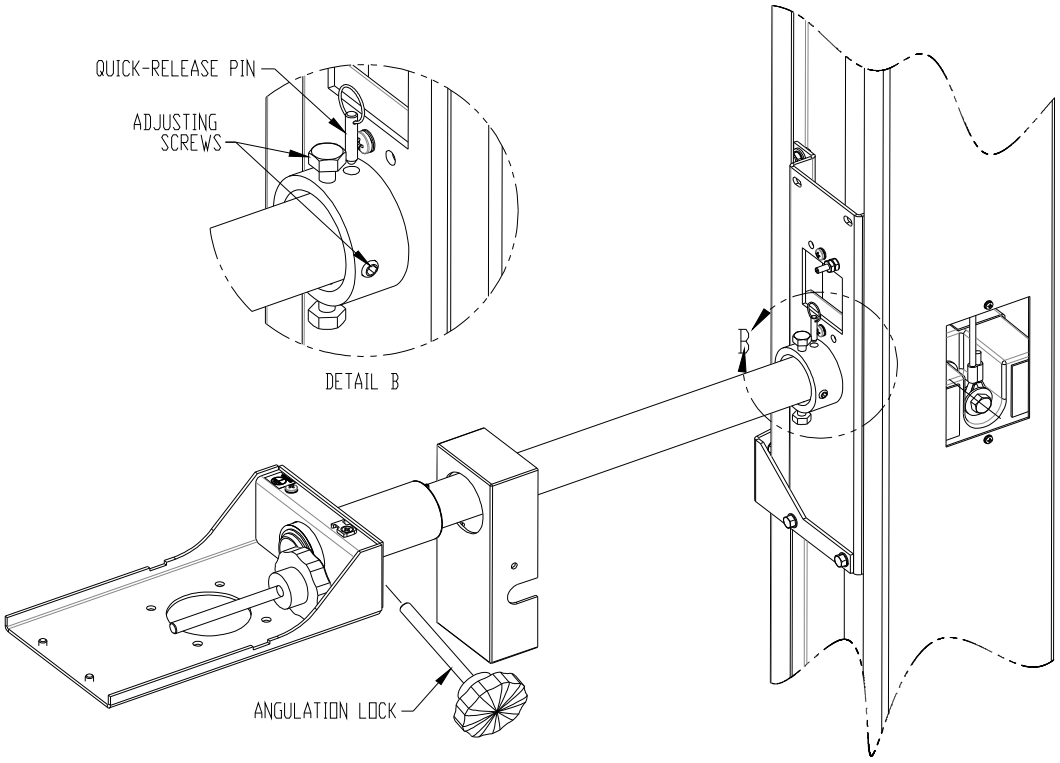


Figure 10

10) FINAL SQUARE AND LEVEL ADJUSTMENTS

1. Add or remove shims between links and floor rail until face of tubestand column and table top are square. See Figure 7 or 8.
2. Check level of table top in directions A, B, and C. See Figure 4.
3. Check level of floor rail in directions E and F. See Figure 4.

11) TUBE/COLLIMATOR INSTALLATION

1. Install tube and collimator per manufacturer's instructions.
   NOTE: *TUBE MOUNT PLATE IS 1/8" THICK. THIS SHOULD BE CONSIDERED WHEN CHECKINGFOCAL SPOT TO COLLIMATOR DIMENSION. SEE TUBE AND COLLIMATOR INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.*
2. Check counter balance of slide and trimmer weight if necessary.
3. Attach access covers to tubestand column.

12) ELECTRIC LOCK ASSEMBLY (See Figure 11)

1. Attach horizontal electric lock to floor car. Use #10 – 32 x 3/8" long screws and #10 flat washers.
2. Install vertical electric lock to vertical slide. Use #10 – 32 x 3/8" long screws and #10 flat washers.
3. Attach angulation box to tube mount. Use ¼ - 20 x ¾" long binder head screws.
4. Connect leads to 24-volt DC power supply (1 AMP required). Refer to electrical schematic for further information.

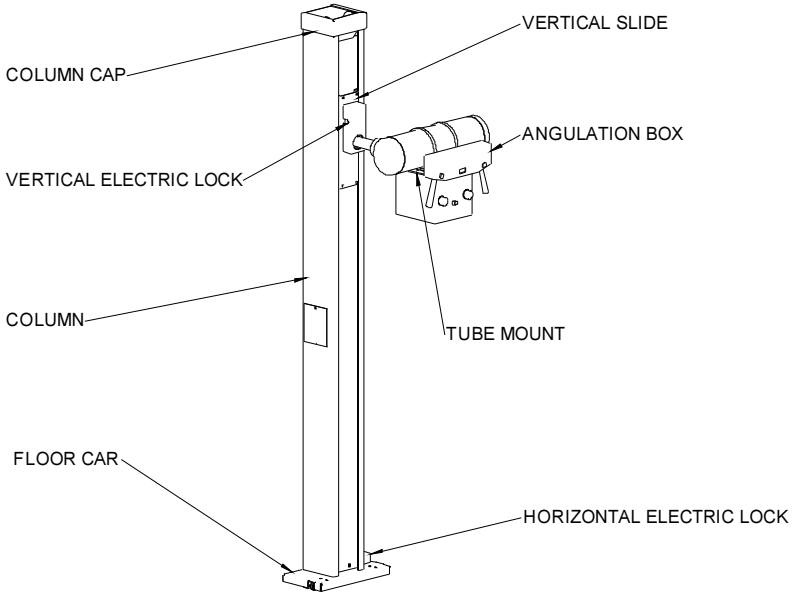


FIGURE 11—ELECTRIC LOCK ASSEMBLY

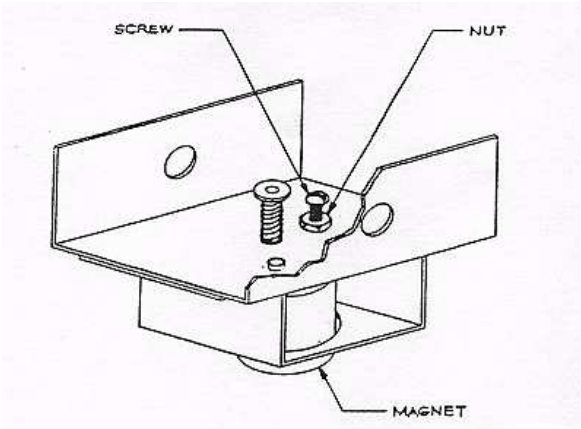


FIGURE 12: ELECTRIC BRAKE ADJUSTMENT

ADJUSTMENT OF VERTICAL ELECTRIC LOCK: Loosen the nut indicated in Figure 12. Turn the indicated screw clockwise to move the magnet closer to, or counter clockwise to move away from, brake strip of tubestand and tighten nut.

The magnet should be adjusted so that it is as close as possible to the brake strip without dragging (approximately 1/32" gap - about the thickness of a credit card).

ADJUSTMENT OF HORIZONTAL ELECTRIC LOCK: Loosen the nut shown in Figure 12. Turn the indicated screw clockwise to move the magnet closer to, or counter clockwise to move away from, brake strip of floor rail and tighten nut. Magnet should be adjusted so that there is a gap of approximately 1/32" between the magnet and the brake strip (about the thickness of a credit card).

13) FILM CABINET INSTALLATION

1. Install film cabinet by removing the stop on either end of rear roller track. Position cabinet under the table from front. Place front guides in front track. Lift up back end of cabinet and guide rear roller on the rear track. Replace stop. See Figure 13.
2. Engage interlock rod on film cabinet with ramp on upper bearing assembly. Adjust ramp inwards or outwards as necessary.

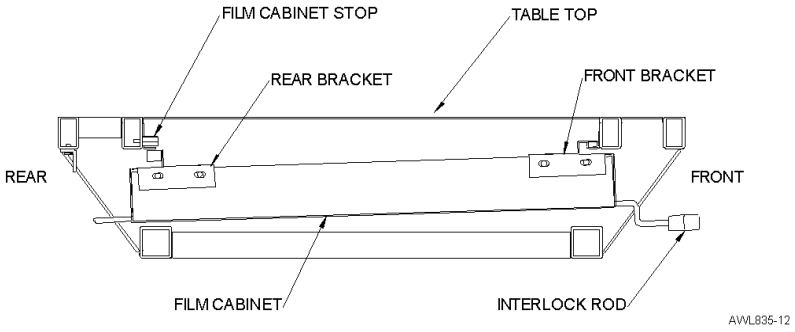


FIGURE 13
FILM CABINET INSTALLATION

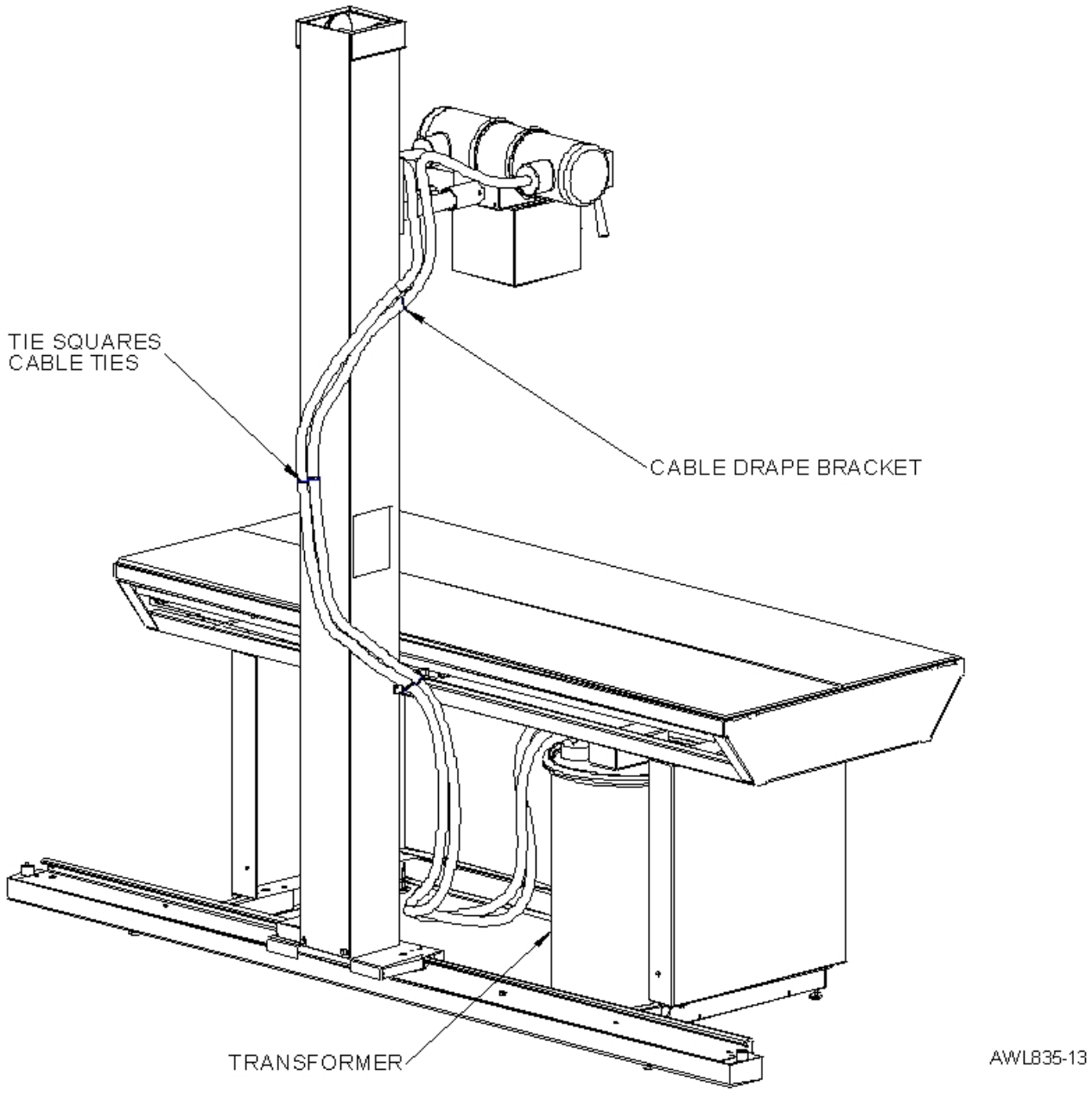


FIGURE 14
CABLE DRAPE AND TRANSFORMER LOCATION

14) TRANSFORMER INSTALLATION

1. Slide high voltage transformer into position. See Figure 14.

15) CABLE DRAPING

1. Attach cable drape bracket to vertical slide. Use ¼ - 20 x 5.8" long hex head bolts, ¼" star washers, ¼" flat washers, and ¼ - 20 hex nuts.
2. Attach cable tie mounts to cable drape bracket, tubestand column, and upper bearing assembly. Use #10 – 32 x ¼" long flat head screws for column. Use #10 –32 x ½" long flat head screws for cable drape bracket and upper bearing assembly. See Figure 13.
3. Drape cables as shown in Figure 14.

16) ANCHORING

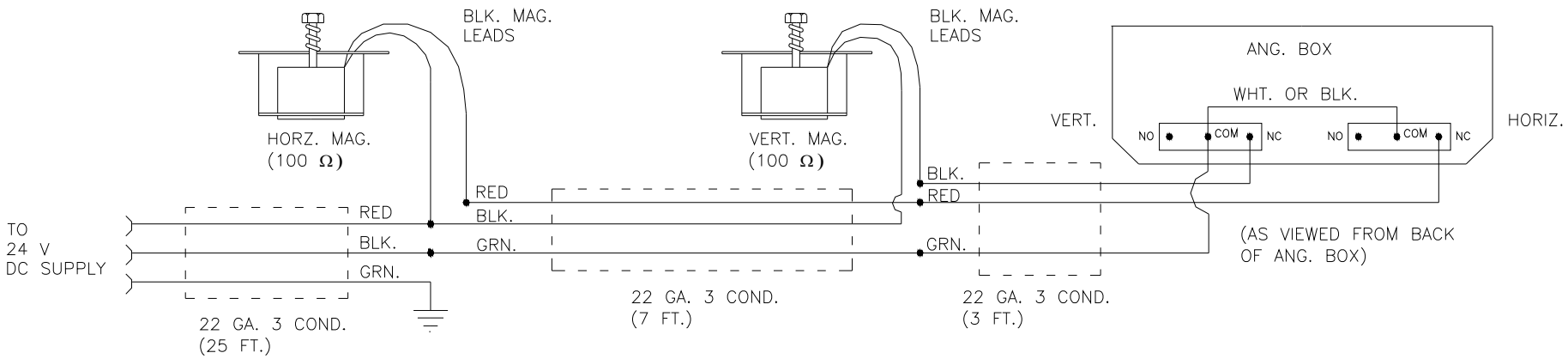
1. Anchor table to floor using floor anchor brackets and fasteners suitable for anchoring table securely to floor.

NOTE: ANCHORING SHOULD BE DONE AFTER X-RAY FIELD AND LIGHT FIELD HAVE BEEN ALIGNED.

17) SID INDICATOR ASSEMBLIES

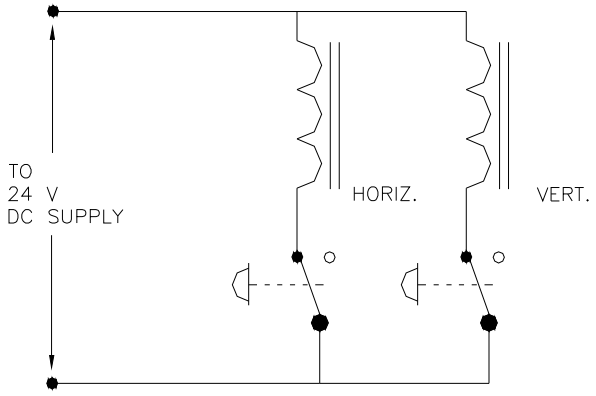
1. Attach vertical SID bracket to slide. Use instructions B533 and B532 for further information.
2. Attach horizontal SID bracket to tubestand column. Use instructions B473 for further information.
3. Locate and affix SID scales to tubestand column.
4. Locate and affix "Cassette" and "Tabletop" labels to vertical slide.

ELECTRICAL SCHEMATIC



PHYSICAL CONFIGURATION

E178



SCHEMATIC