DEL MEDICAL

VS-200
Vertical Wallstand
Installation, Operation & Service Manual

P/N 8000-VS200

Revision: D, August 8, 2011

Attention: Consult Accompanying Documents - As Applicable

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Safety Information

1.1 Introduction

The policy of Del Medical, Inc. is to manufacture X-ray equipment that meets high standards of performance and reliability. We enforce strict quality control techniques to eliminate the potential for defects and hazards in our products.

This equipment provides a vertically adjustable film bucky or digital receptor carriage that positions a patient near an X-ray source to acquire X-ray images of the desired parts of a patient's anatomy. Use of this equipment in any other fashion may lead to serious personal injury.

The safety guidelines provided in this section of the manual are intended to educate the operator on all safety issues necessary to operate and maintain the wallstand in a safe manner.

1.2 Statement of Liability

To prevent excess radiation exposure to patient and operator from either primary or secondary radiation, this wallstand must be operated and serviced by trained personnel who are familiar with the safety precautions required. While this wallstand has been designed for safe operation, improper operation or carelessness may result in serious injury or damage to equipment. The manufacturer or its agents and representatives assume no responsibility for the following:

1. Injury or danger to any person from x-ray exposure.
2. Overexposure due to poor technique selection.
3. Injury or danger from improper use of the vertically adjustable carriage.
4. Problems or hazards resulting from failure to maintain the equipment as specified in the Installation chapter.
5. Equipment which has been tampered with or modified. Del Medical, Inc. is not liable for any damage or injury arising from failure to follow the instructions and procedures provided within the manuals or associated informational material, or from user failure to use caution when installing, operating, adjusting, or servicing this equipment. Del Medical, Inc. is not liable for damage or injury arising from the use of this product for any other use than that intended by the manufacturer.

1.3 Definitions

The table below defines the meaning of various symbols used on labels on the equipment.

	This warning symbol indicates a potential hazard to operators, service personnel or equipment. It indicates a requirement to refer to the accompanying documentation for details.
	This symbol indicates that there is accessible dangerous voltage.
	This symbol identifies a protective earth terminal, or ground.
	This symbol states that this product is categorized as Type B. Type B is defined as: 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 that you must dispose of the VS-200 Wallstand properly according to local laws and regulations. Because the VS-200 contains electronic components, it must be disposed of separately from household waste. When the VS-200 reaches its end of life, contact local authorities to learn about disposal and recycling options.

Table i-1: Definition of symbols found on device labels.

1.4 Safety Conventions Used in this Manual

Specific safety information is listed in this manual in the form of WARNING and CAUTION statements. Pay close attention to these statements - they contain important information on avoiding potential hazards to you or the equipment.

1.4.1 Warning Statements

- indicate hazards or unsafe practices which COULD result in severe personal injury or death.
- appear in **bold** type.
- have a triangular symbol with an exclamation point above the text.
- are preceded by the word **Warning**.
- are always found before the step or piece of information to which they refer to.
- look like the following example:

Warning

This text will describe special safety precautions to follow in order to avoid unsafe practices that COULD result in severe personal injury or death.

1.4.2 Caution Statements

- indicate hazards or unsafe practices which could result in minor personal injury or product or property damage.
- appear in **bold** type.
- have a triangular symbol with an exclamation point above the text.
- are preceded by the word **Caution.**
- are always found before the step or piece of information to which they refer
- look like the following example:

Caution

This text will describe special safety precautions to follow in order to avoid unsafe practices that could result in personal injury or product or property damage.

1.5 Equipment Safety Guidelines

The following warnings and cautions are specific to the VS-200 Wallstand. Read them carefully - some of them **are not obvious** to typical equipment use.

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

Warning

Do not operate the wallstand in an explosive atmosphere (such as anesthetic gas). Doing so can cause an explosion or fire hazard causing serious injury.

Warning

All of the movable assemblies and parts of this equipment should be operated with care and routinely inspected in accordance with the manufacturer's recommendations contained in this manual.

Only properly trained and qualified personnel should be permitted access to any internal parts. Live electrical terminals are deadly; be sure line disconnect switches are opened and other appropriate precautions are taken before opening access doors, removing enclosure panels, or attaching accessories.

Do not remove flexible high tension cables from X-ray tube housing or high-tension generator and/or access covers from X-ray generator until the main and auxiliary power supplies have been disconnected.

For all components of the equipment, protective earthing means must be provided in compliance with the national regulations.

Warning

This wallstand is intended to be used as part of a system for the intended generation of X-rays for medical diagnosis.

X-rays generate a potential risk for both patients and operators.

For this reason, the application of X-rays for a given medical purpose must aim at the minimization of radiation exposition to any persons.

Those persons responsible for the application must have the specific knowledge according to legal requirements and regulations and must establish safe exposure procedures for this kind of systems.

Those persons responsible for the planning and installation of this equipment must observe the national regulations.

1.6 Identification Labels

The VS-200 components have manufacturing and certification information affixed. The manufacturing label contains:

- The full name and address of the manufacturer of the component
- The place, month, and year of manufacture
- The model number and serial number of the component

The certification label also states that the component complies with either "21CFR, Sub chapter J", or the applicable DHHS standards under the Radiation Control for Health and Safety Act of 1968 (or its equivalent).

A label may combine both manufacturing and certification information.

1.6.1 VS-200 Label

The location of the VS-200 identification label is shown in Figure i-1.

Figure i-1. VS-200 Identification Label is located on the lower front of the wallstand.

1.7 Optical fiber components

Some of the equipment built-in into this X-ray system may use optical fiber cables and connections for signal transmission.

Caution

Fiber optic components are very delicate. Improper handling may cause costly interruptions in operation of the system.

Warning

To prevent eye damage, never look directly into a fiber optic cable connector or mating adapter. Never assume laser power is turned off or the fiber is disconnected at the other end.

Considering the fact that an optical fiber is a strand of glass about the same diameter as a human hair, fiber optic patch cords and connectors are remarkably durable. However, careful handling will ensure continued high performance and long life. Do not pull or kink patch cords, as the glass strand in the middle might become damaged or broken. Even if the fiber is not permanently damaged, a sharp bend will cause excessive signal loss.

Fiber optic cables work by bending the light signal as it travels. But, the light can only tolerate so much bending. Keep patch cord bend radius no less than an inch. ***Never use tie wraps as you would with electrical cables.***

If there is need for routing, connecting, and/or disconnecting fiber optic cables, follow the handling procedures below to minimize the time and expense associated with broken component fibers.

1.7.1 How to handle fiber optic components

- Wear finger cots or gloves. Your hands may look clean, but dirt and oils on them can damage the fiber and contaminate connectors.
- Never use the fiber pigtail to pick up or support the weight of the device. Keep both the device and the optical connector together in your hand(s)
- The fiber is made of a very pure, expensive glass. Treat it with the same care that would be used when handling expensive crystal glass.
- Do not allow kinks or knots to develop in the fiber.

- Carefully work out any tangles-patience will save time and money
- Do not pull on the fiber when kinks or knots are present. Pulling will only cause knots, kinks, and curls to tighten, increasing the risk of breakage.

- Always use the correct tools for stripping and cleaving the fiber. It will save time and reduce breakage caused by scratches.
- Follow all ESD precautions and approved fiber cleaning procedures.
- Always read and comply with the handling instructions on the shipping container.

Record of Revisions

2.1 Revision History

REV	Date	Reason for Change
A	**7-17-2006**	Original
B	**6-5-2008**	CMT SmartRAD and Canon Digital Receptors added
C	**7-15-2010**	Varian Receptor Installation Instructions Added
D	**8-8-2011**	Toshiba Receptor Installation Instructions Added

Table ii-1. Revision History

2.2 List of Affected Pages

Number	Rev Level	Number	Rev Level	Number	Rev Level
All	**A**	**All**	**B**		
All	**C**	**All**	**D**		

Table ii-2. List of Affected Pages

Introduction

1

1.1 Introduction

This manual provides installation, operation and service information for the VS-200 Wallstand equipped with casette tray or digital receptor holder.

This manual also includes a spare parts list for the wallstand. For parts lists for each alternative digital receptor, refer to the receptor documentation.

1.2 VS-200 Wallstand Description

The VS-200 Wallstand is designed for general purpose radiography and is ideally suited for modern hospitals, urgent care centers, clinics and private practices.

The VS-200 features a smoothly counterbalanced cassette tray holder (bucky) or digital receptor holder that can be easily moved and locked into place manually. The VS-200 offers a full range of motion - from standing knee exposures to standing head and neck exposures on the tallest of patients.

The VS-200 also offers the following options:

VS-200 Wallstand with regular bucky, 110-5010G1

- Super Speed Bucky
- Trayless Auto-Load Bucky
- Del Medical 17″ X 17″ (43 cm X 43 cm) Grid
- Automatic Exposure Control
- Positive Beam Limitation (Auto Cassette Size Sensing)
- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

VS-200 Wallstand with digital receptor CMT, 110-5010G4

- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

VS-200 Wallstand with digital receptor Canon 40EG, 110-5010G5

- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

VS-200 Wallstand with digital receptor Canon 50G, 110-5010G6

- Automatic Exposure Control
- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

VS-200 Wallstand with digital receptor Varian Paxscan 4343R

- Automatic Exposure Control
- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

VS-200 Wallstand with digital receptor Toshiba FDX 4343R

- Automatic Exposure Control
- Patient Hand Grip (Overhead Lateral)
- Full Line of High Quality Grids
- Floor Mount Kit.

1.3 VS-200 Wallstand Overview

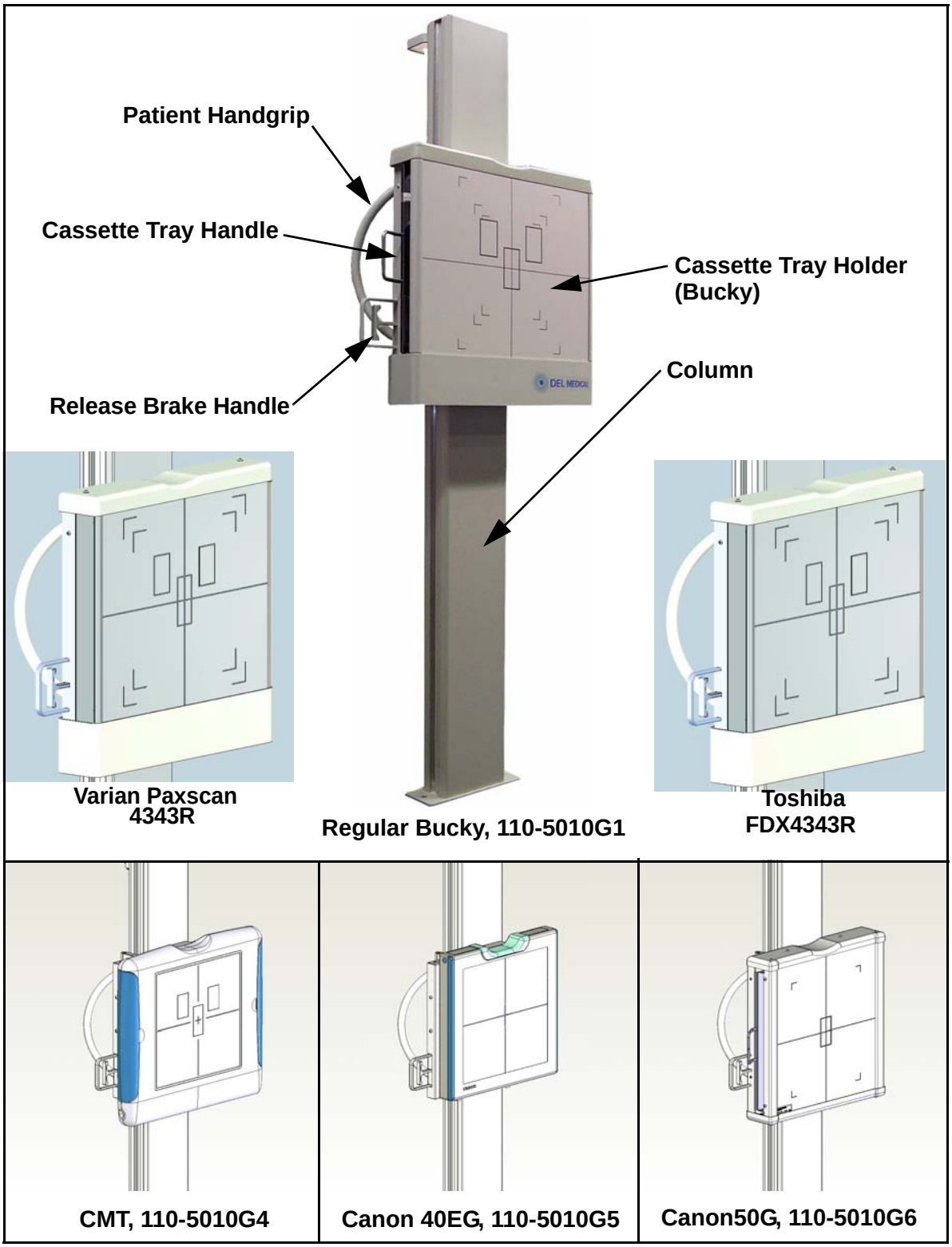


Figure 1-1. VS-200 Wallstand

1.4 Dimensions

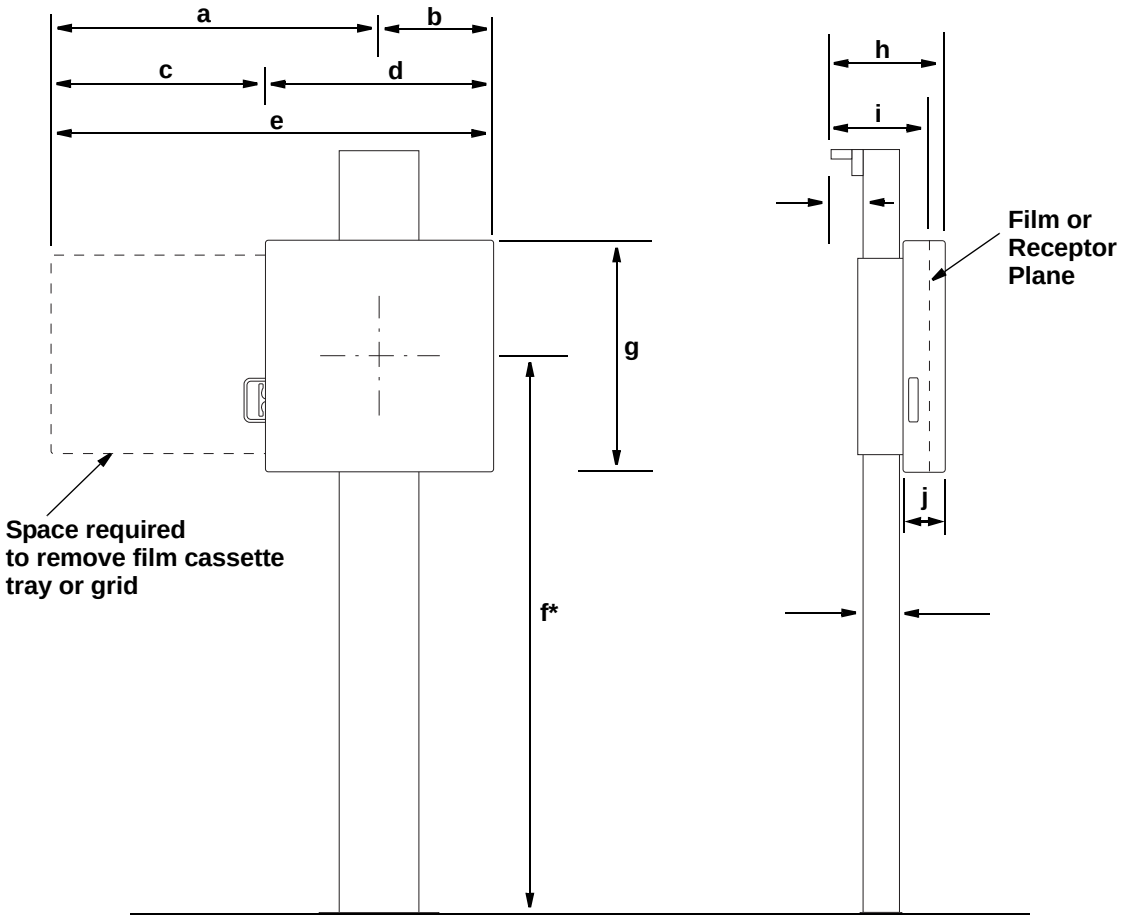


Figure 1-2. Film bucky/Digital receptor Space Requirements

Measure	Film bucky	CMT	Canon 40	Canon 50
a	40” (1020 mm)	41” (1042 mm)	46 1/4” (1175 mm)	38” (966 mm)
b	12 3/16” (310 mm)	14” (366 mm)	11 1/2” (292 mm)	11 5/8” (296 mm)
c	27 1/2” (699 mm)	24” (610 mm)	24 3/5” (625 mm)	26” (661 mm)
d	24 3/8” (619 mm)	28” (712 mm)	23” (584 mm)	23 1/4” (591 mm)
e	52” (1321 mm)	52” (1321 mm)	57 3/4” (1467 mm)	49 1/2” (1274 mm)
f *) see next page	15 7/8”-73 1/2” (403-1868 mm)	15 1/2” - 69 3/4” (394-1772 mm)	16 1/2” - 74” (420-1880 mm)	14” - 71 1/2” (356-1816 mm)
g	25 1/8” (638 mm)	25 1/8” (639 mm)	21 2/3” (550 mm)	24 1/2” (622 mm)
h	12 5/16” (313 mm)	13 9/16” (331 mm)	12” (305 mm)	12 3/8” (314 mm)
i	11 2/5” (290 mm)	11 3/8” (289 mm)	10 11/16” (271 mm)	10 13/16” (275 mm)
j	5” (127 mm)	6 1/5” (153 mm)	4 9/16” (116 mm)	5 1/5” (127 mm)

Measure	Varian Paxscan 4343R	Toshiba FDX 4343R
a	44” (1118mm)	44” (1118mm)
b	12 9/16” (319mm)	12 9/16” (319mm)
c	31 3/4” (806mm)	31 3/4” (806mm)
d	25 1/8” (638mm)	25 1/8” (638mm)
e	56 1/4” (1429mm)	56 1/4” (1429mm)
f *) see next page	15 1/2” (394 mm) 73 3/8” (1864 mm)	15 1/2” (394 mm) 73 3/8” (1864 mm)
g	25” (635 mm)	25” (635 mm)
h	12 3/8” (314 mm)	12 3/8” (314 mm)
i	11” (279 mm)	11” (279 mm)
j	5” (127 mm)	5” (127 mm)

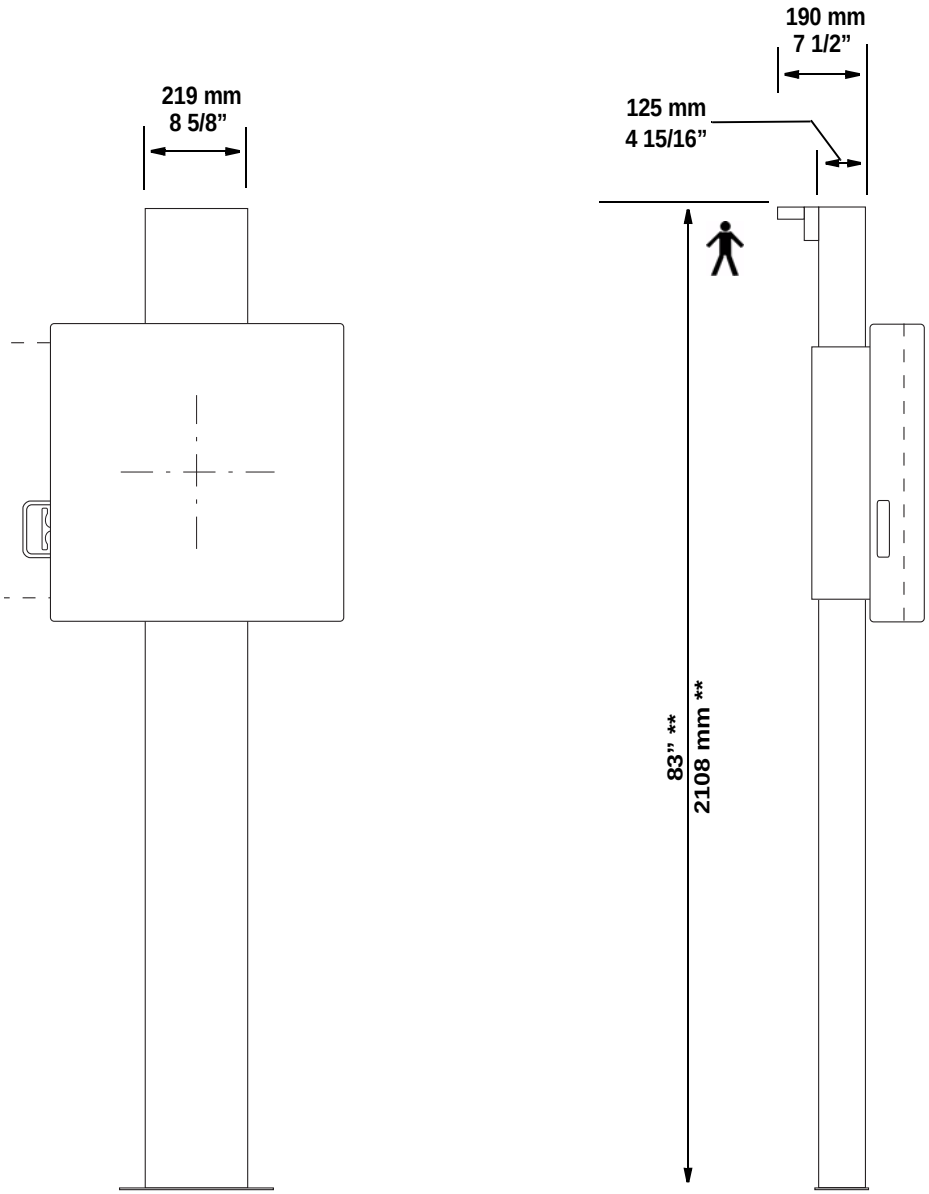


Figure 1-3. Wallstand Dimensions

** The optional overhead hand grip will increase the lowest position with the same measure as the thickness of the additional counterweights needed to compensate for the extra weight of the hand grip assembly.*

*** The optional overhead hand grip will increase the required height of the room. With the handle in it's uppermost position the required free height will be 101” (2566 mm).*

1.5 Mounting Dimensions

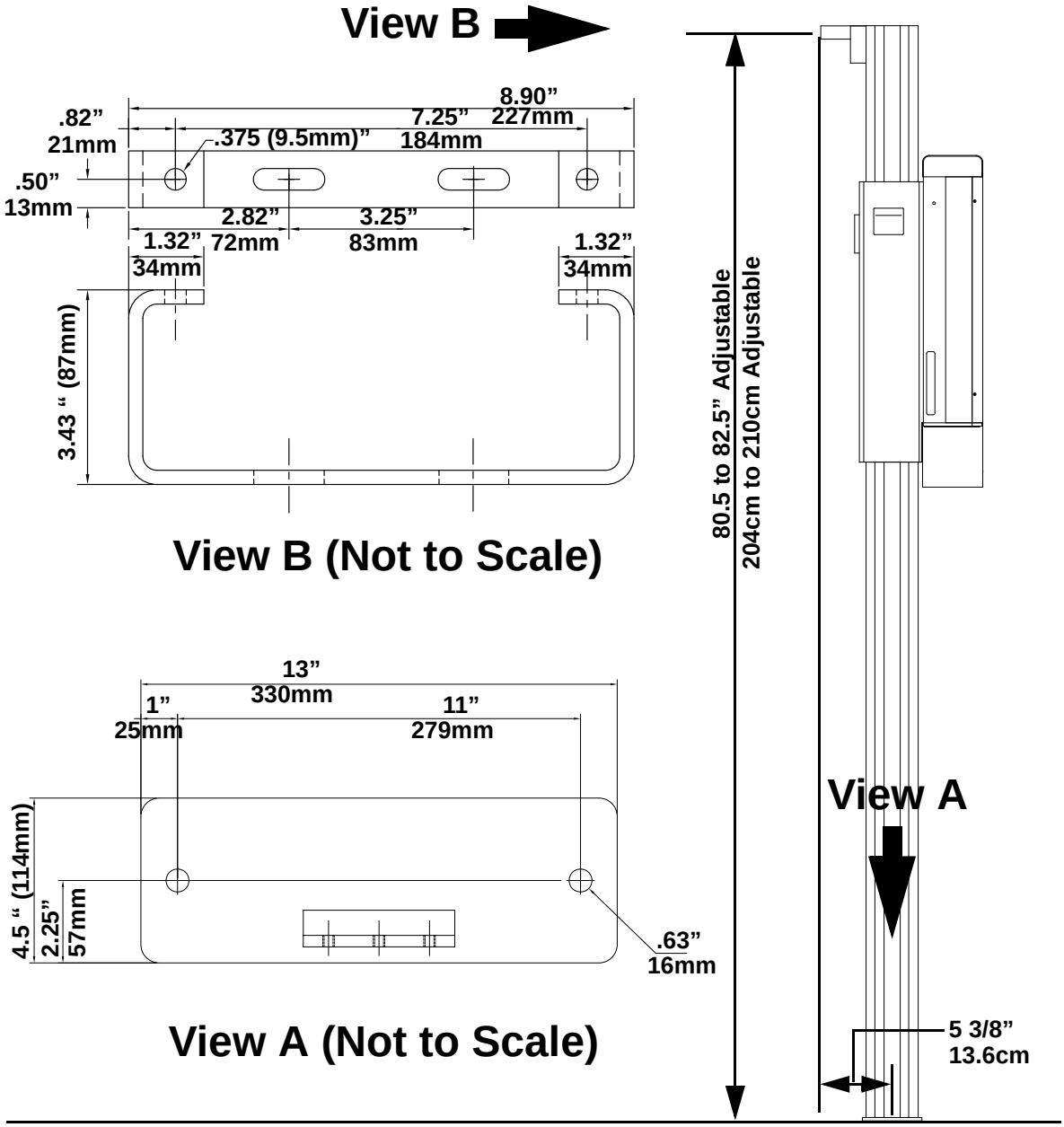


Figure 1-4. Mounting Dimensions

1.6 Specifications

Specifications*	
Compatibility	The VS-200 wallstand is compatible with a wide variety of generators and tubestands. It is intended to be used in a stationary diagnostic x-ray configuration.
External Heat Generation	None
Classification	Class 1 Type B
Aluminum Equivalent	Beam Attenuation of the wallstands front panel is 0.7 mm Aluminum Equivalent or Less
Temperature Limits	Transit/Storage Operating – 40° F to +158° F +50° F to +95° F – 40° C to +70° C +10° C to +35° C
Relative Humidity Limits	Transit/Storage 10% to 100% Operating 10%-80% Non-Condensing
Atmospheric Limits	14.5 inHg to 30.74 inHg 500 hPa to 1060 hPA
Weight (wallstand with regular bucky)	200 lbs (91 Kg)
Degree of protection against the ingress of water:	Ordinary
Certifications:	  Classified To UL 60601-1,IEC60601-1, EN60601-1, IEC 60601-2-32, EN60601-2-32, IEC60601-1-3, EN60601-1-3, EN60601-1-2:2000. Certified To CAN/CSA C22.2 NO. 601.1.
Equipment not suitable for use in the presence of flammable anesthetic mixtures with air, oxygen or nitrous oxide.	
No user serviceable parts	

Table 1-1: Specifications

* Refer to the Digital Image Receptor Documentation for specifications on that portion of the VS-200 Wallstand System.

1.7 Seismic Anchoring Specifications

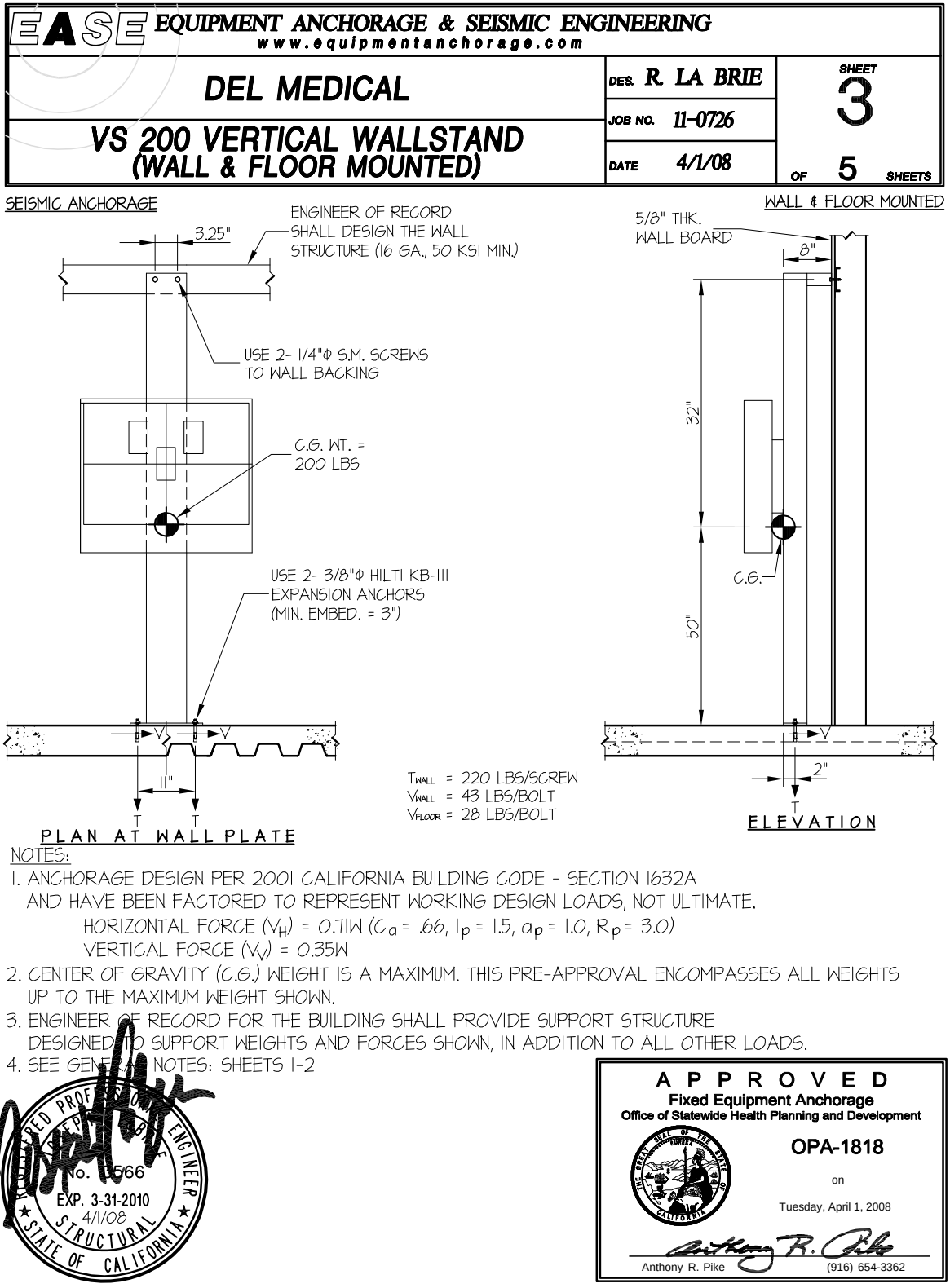


Figure 1-5. Wall and Floor Mounted

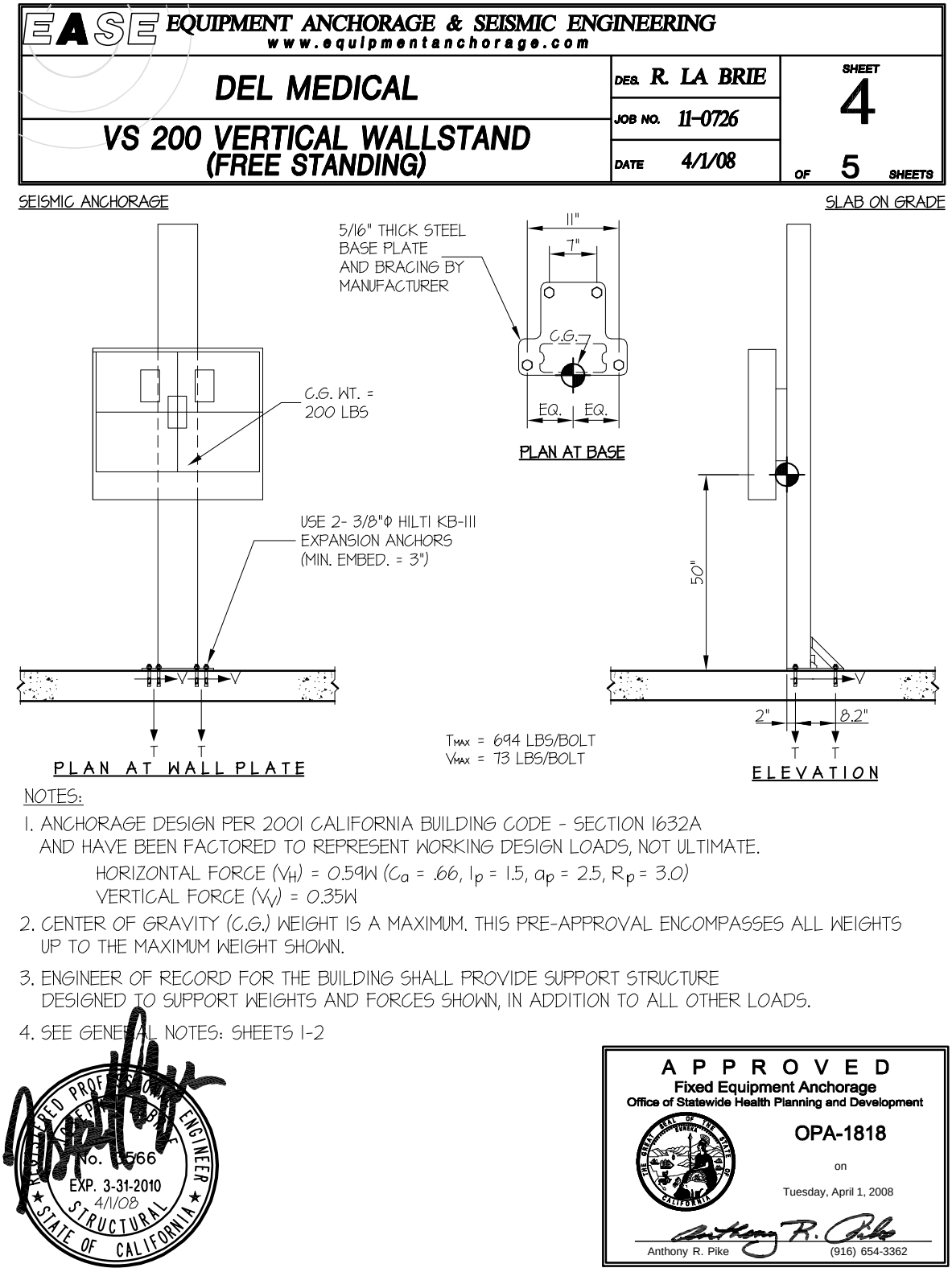


Figure 1-6. Free Standing Expansion Anchors

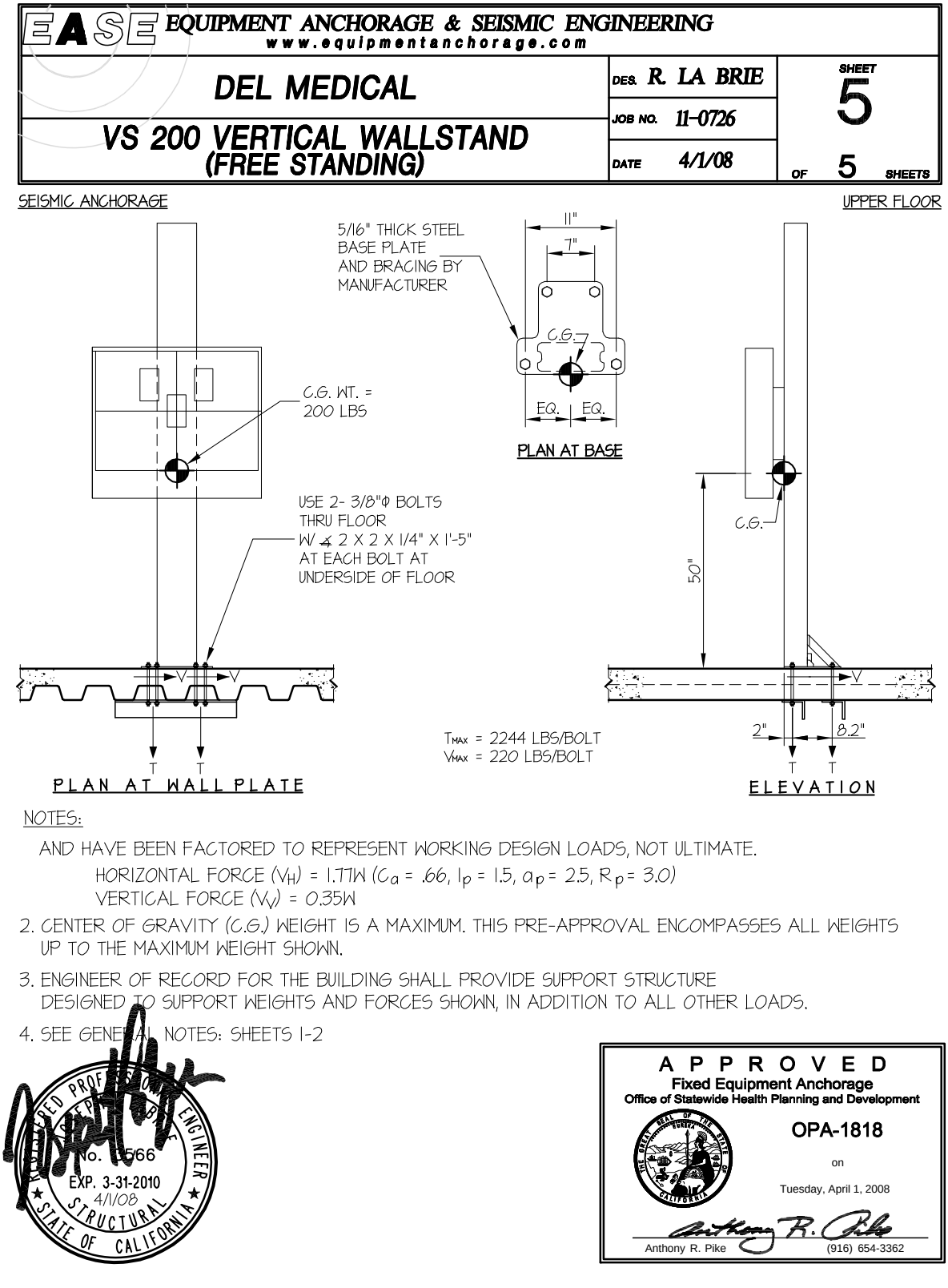


Figure 1-7. Free Standing Bolts Through Floor

1.8 Abbreviations

%	Percent
AWG	American Wire Gauge
Btu	British Thermal Unit
° C	Degree Celsius
CE	Communautés Européennes
cm	Centimeter
C.R.S.	Cold Rolled Steel
° F	Degree Fahrenheit
ga	Gauge
hPa	Hecto Pascal
inHg	Inches Mercury
Kg	Kilogram
Lb	Pound
M	Meter
max.	Maximum
min.	Minimum
mm	Millimeter
PBL	Positive Beam Limitation
Sq/Ft	Square Foot
Sq/M	Square Meter
UL	Underwriters Laboratories

1.9 Overhead Lateral Hand Grip Option

Figure 1-8. Overhead Lateral Hand Grip Option

Note
The optional overhead lateral hand grip option will reduce the vertical travel length. With the handle in it's uppermost position it will also increases the minimum required floor-to-ceiling dimension, see "Dimensions" on page 1-5 for details.

1.10 Installation of Optional Kits

Optional kits are shipped with separate installation instructions. Incorporate these installation instructions into this manual for future reference. Chapter 9, “Illustrated Parts List” lists the part numbers for the kit installation instructions should you need a copy.

Installation

2

2.1 Pre-installation/ Pre-planning

2.1.1 Tools required

Installation of digital imaging receptors may require electronic equipment and tools not listed here. See the digital receptor documentation for additional list of tools.

- diagonal cutters (side cutters)
- four anchor inserts and bolts (for mounting base to floor) (size determined by installer)
- medium phillips screwdriver
- pencil
- power drill and masonry bit (size determined by installer)
- set of hex wrenches
- set of open-end wrenches
- small flat square or rectangular mirror
- small flat-tip screwdriver

Note
Two people are required to perform wallstand installation procedures. This procedure assumes that your overhead crane or tubestand is already installed and its collimator can be turned on.

2.1.2 X-ray Room Pre-planning

Consult with the client and/or client physical plant superintendant prior to beginning installation to verify that the site has sufficient power and utility, Local Area Network, infrastructure.

Use shipping order and any statement of work, job orders, or any client room drawings, special written or unwritten requirements before beginning installation, to determine site-specific requirements and client requests, or room workflow considerations that will need to be accommodated in the installation.

2.1.3 Planning / Orienting Release Brake Handle, Grid Door, and Imaging Cable

X-ray room operators should be able to use the wallstand release brake handle and grid / receptor door from the same side, and there should always be sufficient space for the grid door / removable digital imaging receptor to be easily removed during normal room operation.

The left-right orientation of all the above should be appropriate for room workflow, consistent with the following planning considerations:

- Plan direction of power and signal cable, so that during normal workflow movements, persons or equipment in the room do not obstruct, impinge, kink or crush cable.
- Avoid possible cable interference with wallstand movements.
- Provide sufficient cable slack to allow wallstand vertical movement.

2.1.4 Digital Imaging Receptor Door and Grid Positioning

Do not locate a wallstand near a corner, where a wall or other obstructions would prevent an X-ray room operator from fully removing a grid or removable digital receptor.

When the uncrating procedure has been completed, examine the shipped wallstand and digital receptor parts to determine if the wallstand release brake handle, grid door opening, and any removable digital receptors are directionally-oriented appropriate for the room workflow. If any of their orientation needs to be changed, see the manufacturer's specifications and installation manuals regarding whether left-right re-orientation changes can be made.

The VS-200 wallstand Vertical Carriage and Frame assembly rear panels are designed symmetrically-mirrored, to allow reversal of left-right orientation. See Section "Converting Left-Right/Right-Left Configurations" on page 5-4.

From room plans, client requests, or order specifications, determine the left-right functional orientation requirements of the Wallstand release brake handle and digital receptor grid door opening. The release brake handle and grid door opening should be on the same side, for the convenience of the operator.

If the received parts are oriented differently, change their orientation to achieve optimum room workflow efficiency, or ask permission from the client to move the wallstand mounting location.

Refer to the digital image receptor documentation for instructions on how to reverse receptor door and grid positions (if possible).

2.1.5 Uncrating / Shipment Checking

1 Use diagonal cutters to cut steel straps (1 in Figure 2-1). Remove straps and top cover (2).

Figure 2-1. Steel Shipping Straps

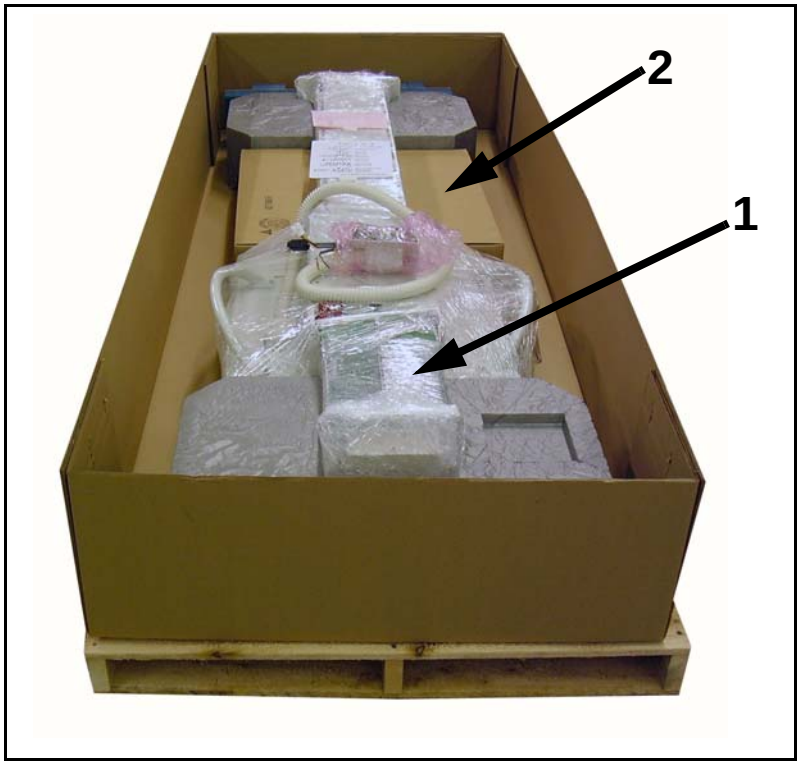


Figure 2-2. Unpacking Crate

2.2 Installation

1 Move wallstand pallet to approximate position where wallstand will be installed.

Caution

Wallstand is heavy (200 lbs)[91 kg.] Two people are required to lift wallstand.

2 Lift wallstand (1 in Figure 2-2) out of crate and lean it a against the wall where you intend to install it.

3 Remove shrink wrap plastic from wallstand.

Note
If this wallstand is being installed as a free standing wallstand (installing with no support from a back wall), proceed with the installation instruction enclosed with the "VS200 Floor Mount Kit" before continuing.

4 Remove accessories box (2 in Figure 2-2) from crate. The crate contains the manuals and the bucky cable (for film-based systems). The digital receptor system is packaged separately.

Note
If you are installing a digital receptor to the wallstand, see the addendum corresponding to your digital receptor before proceeding. The addendums, listed in Table 2-1, are to be found at the end of this chapter.

Digital Receptor	Refer to Addendum
CMT SmartRAD	Addendum A, CMT Image Receptor Installation
Canon CXDI-40EG	Addendum B, CXDI-40E Image Receptor Installation
Canon CXDI-50G	Addendum C, CXDI-50G Image Receptor Installation
Varian Paxscan 4343R	Addendum D, Varian Paxscan 4343R Image Receptor Installation

Table 2-1: Addendums for digital receptors

Note
If this wallstand is being equipped with the VS200 Auto Tracking Kit, proceed with the installation instruction enclosed with the "VS200 Auto Tracking Kit" before continuing.

5 Move the wallstand to its final installation location. Have a second person hold the tubestand while final alignment steps are being made.

6 Point the collimator towards the wallstand and turn the collimator's light on.

7 Move the crane or tubestand so that the collimator's cross hairs of light align with the centerline axis of the wallstand and the crane or tubestand is approximately at its in-out mid point from the wallstand. Then release the positioning buttons to lock the crane in place. The collimator light will automatically shut off after 30 seconds - turn it back on as required.

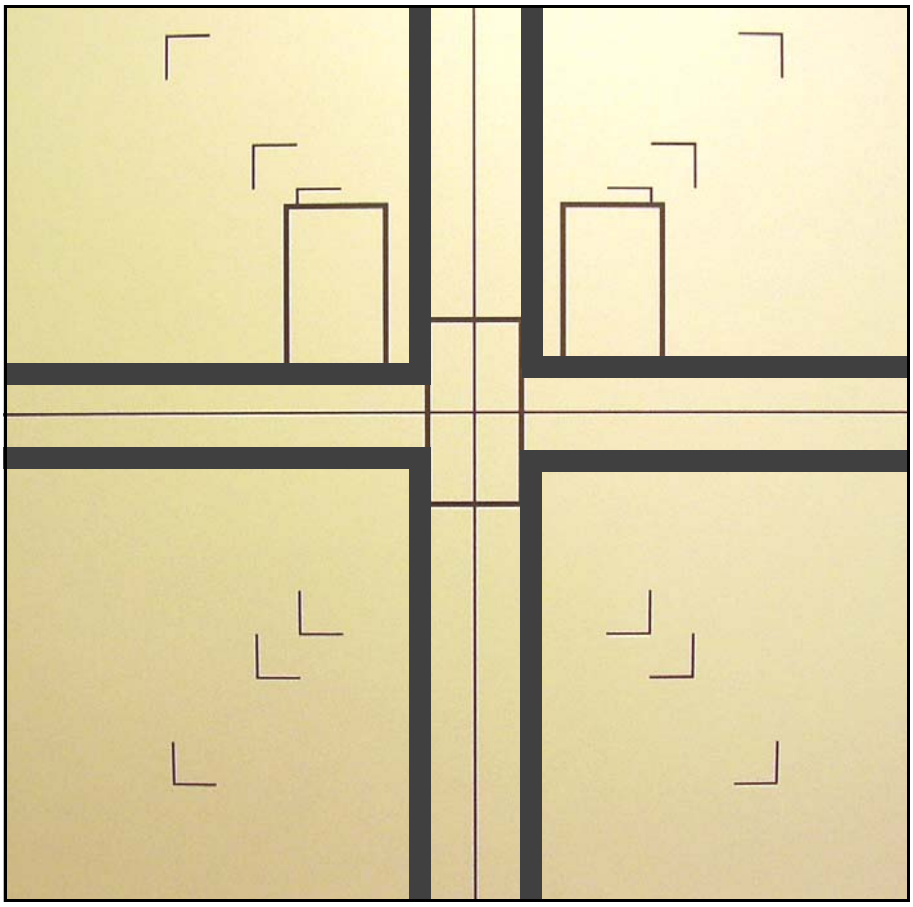


Figure 2-3. Typical Wallstand Alignment

8 If the pattern is tilted as shown below, add shims to the bottom of the wallstand until correct.

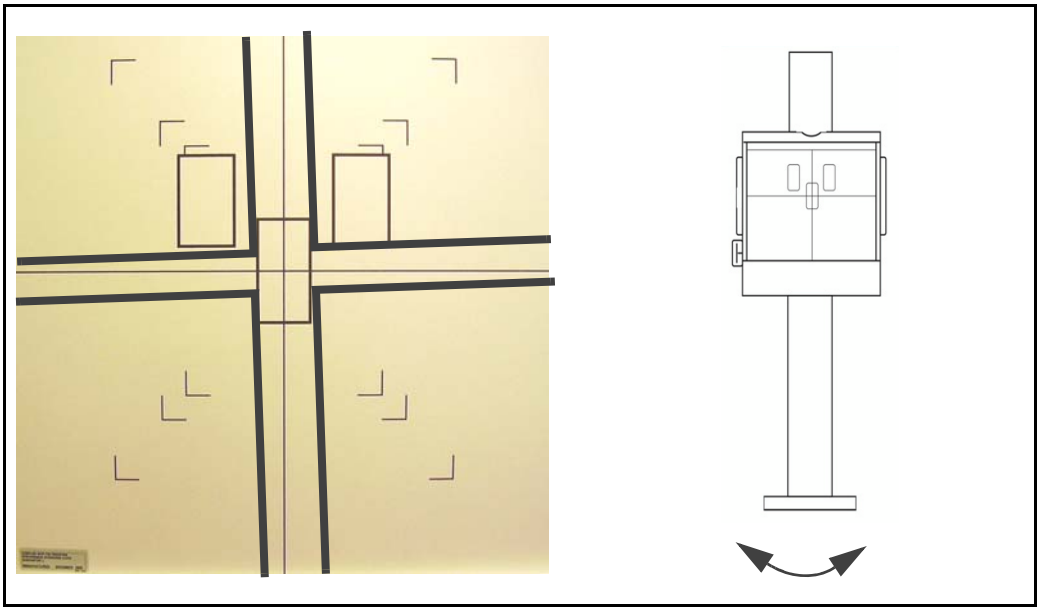


Figure 2-4. Tilted Pattern

9 With the collimator still pointed towards the wallstand, move the crane through its full in-out range of motion. If the collimator pattern shifts up and down as shown below, adjust the angle of the wallstand until this effect goes away.

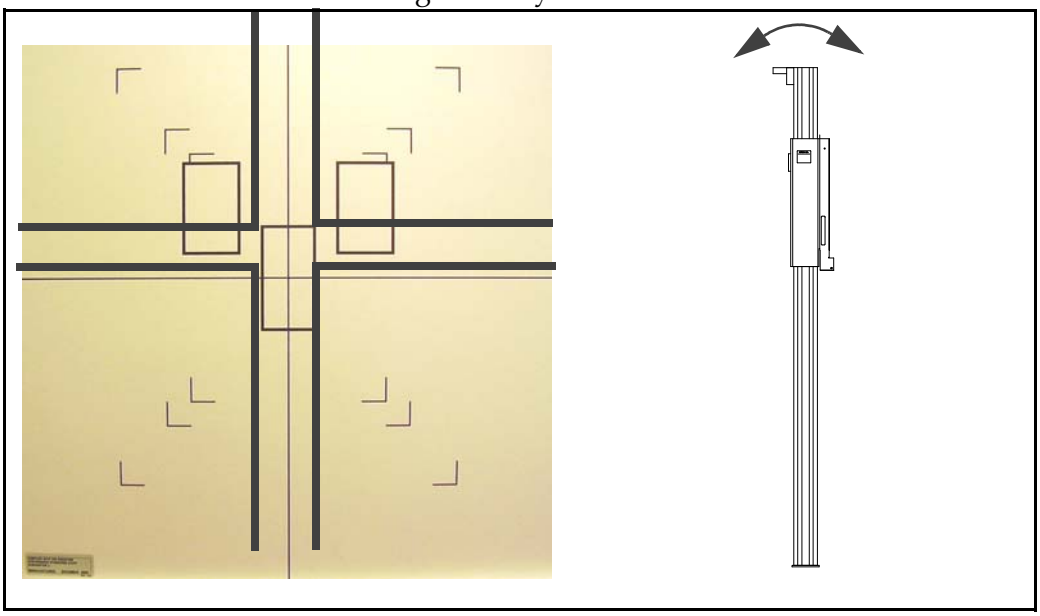


Figure 2-5. Up-Down Adjustment

Caution

It is very important that you do the following steps thoroughly and accurately or the grid in the wallstand will not work correctly. If the wallstand is not properly rotationally aligned with the x-ray tube, dark bands will appear on the film after exposure as shown below.

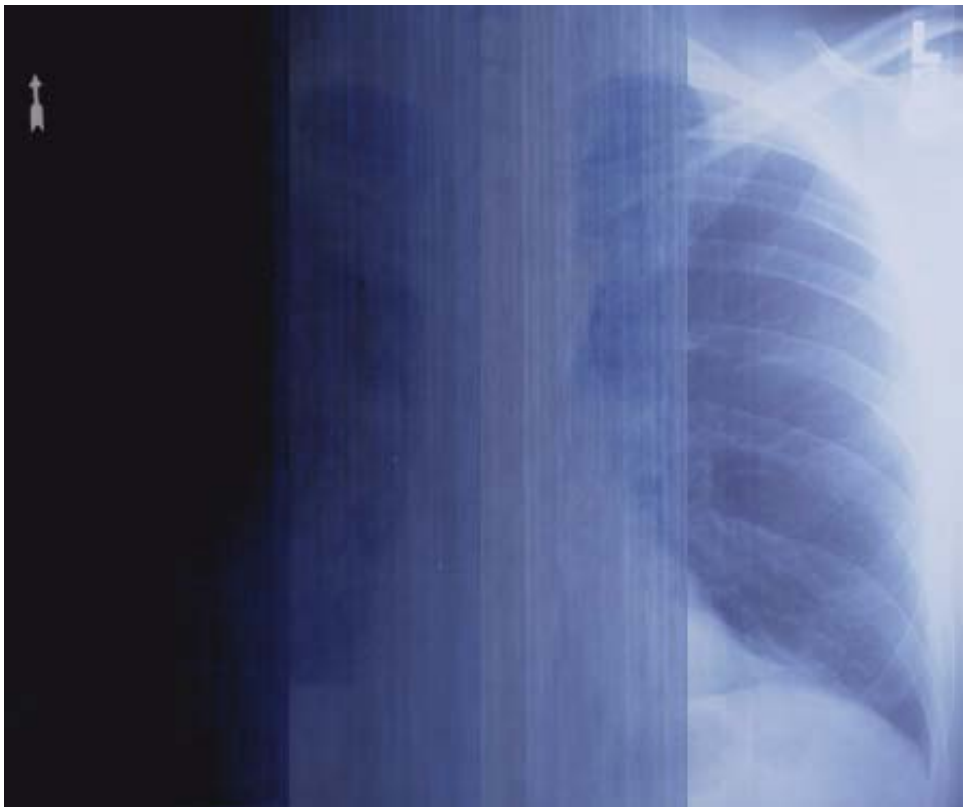


Figure 2-6. Effects of Improperly Aligned Wallstand

Read steps 11-15 before doing them.

10 Turn off room lights.

11 Turn on collimator light. Make sure collimator pattern is centered on wallstand

12 Place a mirror on the face of the wallstand just above it's centerline as shown in Figure 2-7. Make sure that the bottom of the mirror is parallel with the centerline and not crooked as shown in Figure 2-8.

Figure 2-7. Mirror Placement

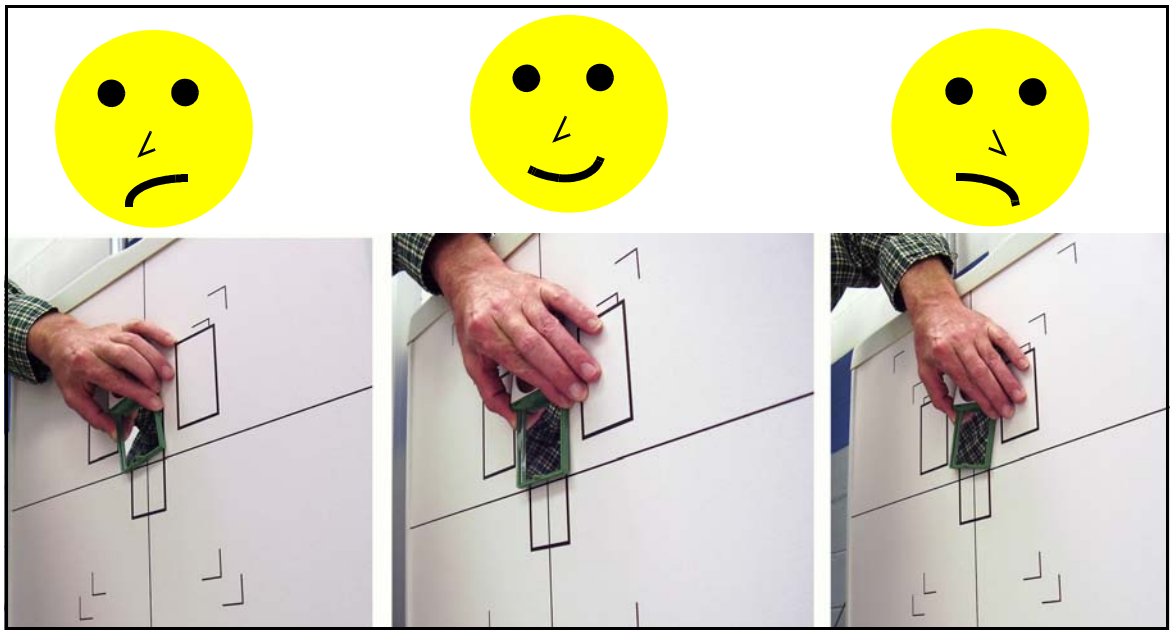


Figure 2-8. Proper Mirror Alignment

Note

The Canon50 does not have the rectangular boxes, as shown in Figure 2-8, above. See the Canon 50 manual for alignment procedures.

13 Observe the pattern reflection on face of collimator as shown in Figure 2-9. Adjust rotational position of wall stand until pattern is centered right- -to-left on collimator.

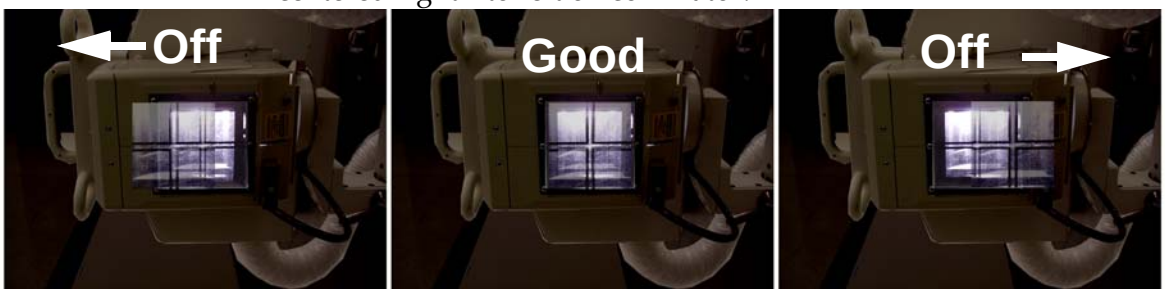


Figure 2-9. Pattern reflection

14 Adjust rotational position of wall stand until pattern is centered right- -to-left on collimator.

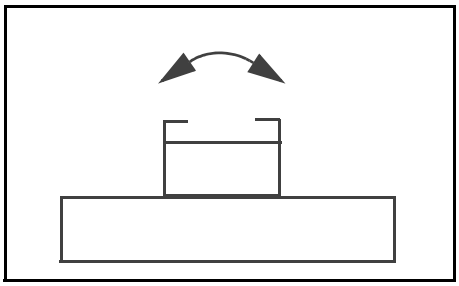


Figure 2-10. Rotational Adjustment

15 With the wallstand aligned in all of its axes, mark mounting hole positions with pencil.

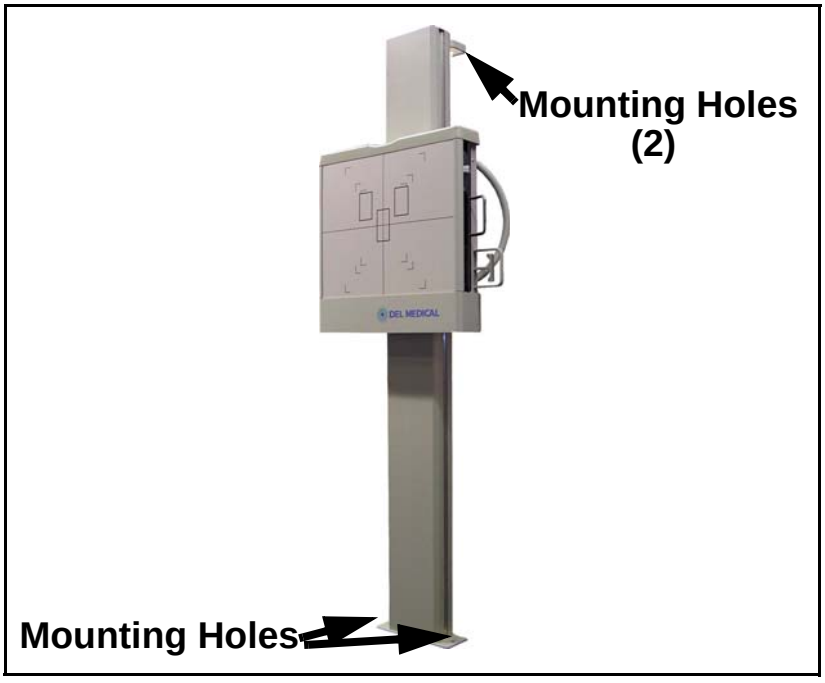


Figure 2-11. Mounting Holes

Caution

It is up to the installer and the customer to determine the best method for mounting the wallstand to the floor and wall. Before mounting wallstand, consult with building maintenance supervisor about drilling holes in floor and wall. Make sure that there are no hazards under the floor or behind the wall such as pipes, conduits or structural cables that can be damaged by drilling holes in floor or wall.

16 Move wallstand out of the way.

Note
If this wallstand is being installed as a free standing wallstand (mounted with no support from a back wall), refer to the enclosed "VS200 Floor Mount Kit" Installation Instructions.

17 Drill mounting holes and fit anchors into place.

18 Move wallstand back into position.

19 Loosely install mounting bolts.

20 Redo steps 7-15 and then securely tighten mounting bolts.

21 Remove shipping bolt (1 in Figure 2-12).

Figure 2-12. Shipping Bolt

22 Unscrew bracket screw (1 in Figure 2-13) and remove washer (2) and shipping bracket (3).

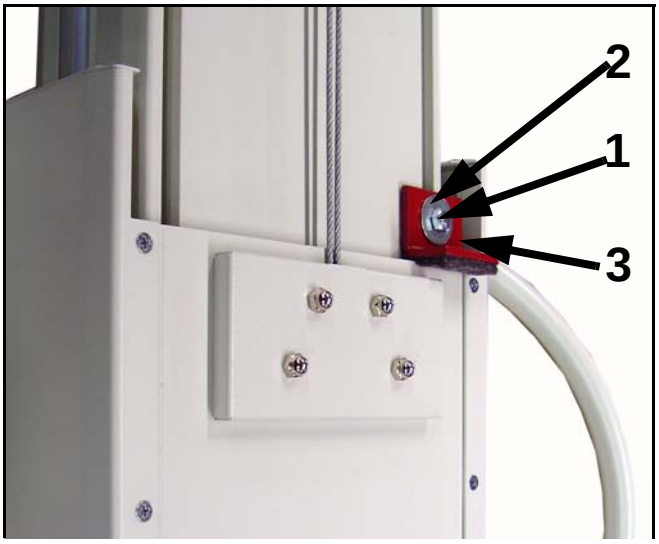


Figure 2-13. Vertical carriage locking bolt/bracket

23 If your wallstand does not have any options (no bucky, automatic exposure control, casette size sensing or overhead lateral handgrip), then you are done. If your wallstand does have the mentioned options/ Digital Receptors Used on Wallstand, refer to Table 2-1 for guidance.

Option/ Digital Receptor	Refer to Section/Addendum:
Bucky	"Bucky Installation Instructions(G1-G3)" on page 2-13
Automatic Exposure Control	"Automatic Exposure Control Installation Instructions" on page 2-17
Automatic Cassette Size Sensing	"Automatic Cassette Size Sensing Installation Instructions" on page 2-20
CMT SmartRAD	See Addendum A[1]
Canon CXDI-40EG	See Addendum B[1]
Canon CXDI-50G	See Addendum C[1]
Varian Paxscan 4343R	See Addendum D[1]
Toshiba FDX 4343R	See Addendum E[1]

Table 2-2: Options/ Digital Receptors Used on Wallstand

1) The addendums are to be found at the end of this chapter.

2.3 Bucky Installation Instructions(G1-G3)

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Connect wallstand bucky cable (1 in Figure 2-14) to system bucky cable (2).

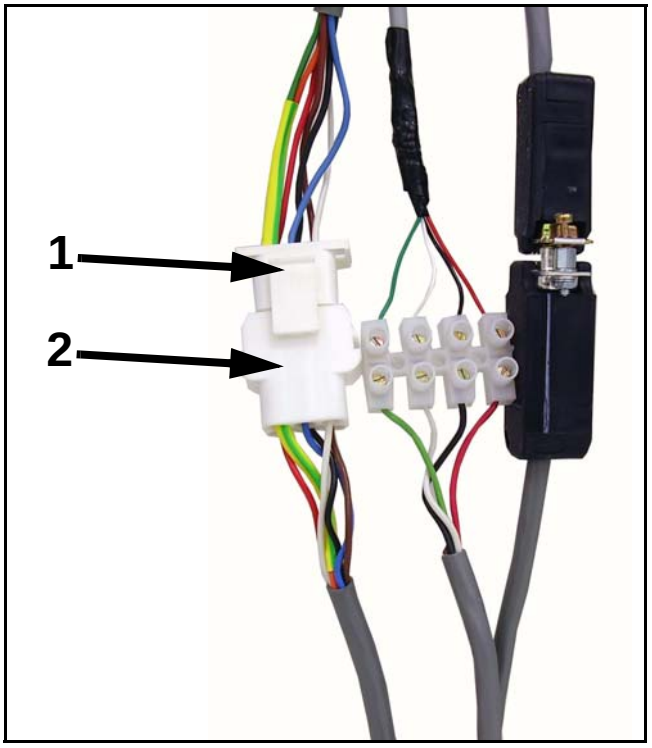


Figure 2-14. Bucky Cables

2 Connect other end of bucky cable to generator according to Table 2-2 below.

		Generator Terminal Connections			
Origin	**Color**	**APX 525 MPX525 ATC 525 ATC725 See Figure 2-15 on page 2-14**	**Anthem See Figure 2-16 on page 2-15**	**CPI CMP See Figure 2-17 on page 2-15**	***CPI Indico See Figure 2-18 on page 2-16**
1	Brown	TB4-4	TB4-4	J4-5	TB2-4
2	Black	TB4-2	TB4-2	J4-6	TB2-5
3	Red	TB4-1	TB4-1	J4-1	TB3-12
N	White	TB4-5	TB4-5	J4-4	TB7-2
B6 (Ground)	Yellow w/ Green Stripe (Wires in Tubing are Green & Orange)	Ground	Ground	J4-3	Ground
B8 (L)	Blue	TB4-3	TB4-3	J4-2	TB2-1
*For CPI Indico generators, place a jumper between TB9-3 and TB11-2. Also, place the jumper plug on JW3 between terminals 4 and 6.					

Table 2-3: Bucky - Generator Connections

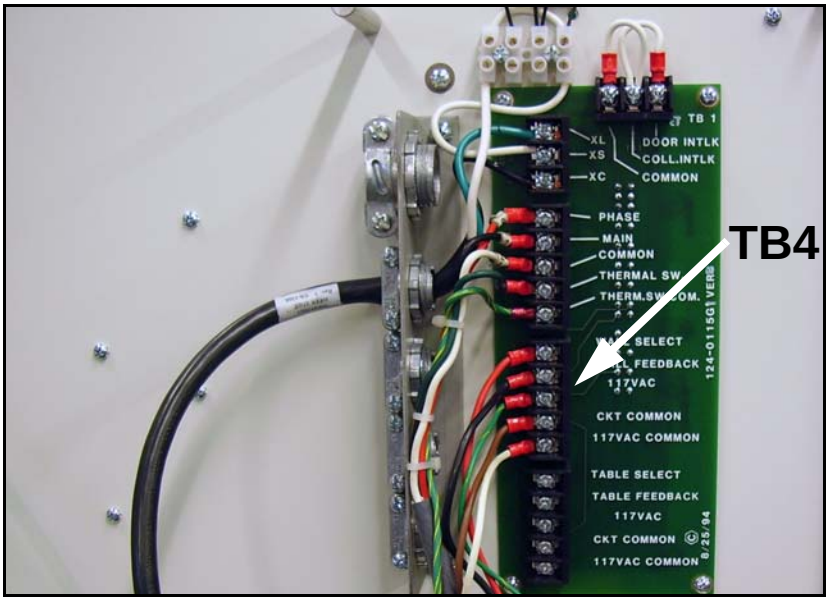


Figure 2-15. APX, MPX, ATC Terminals

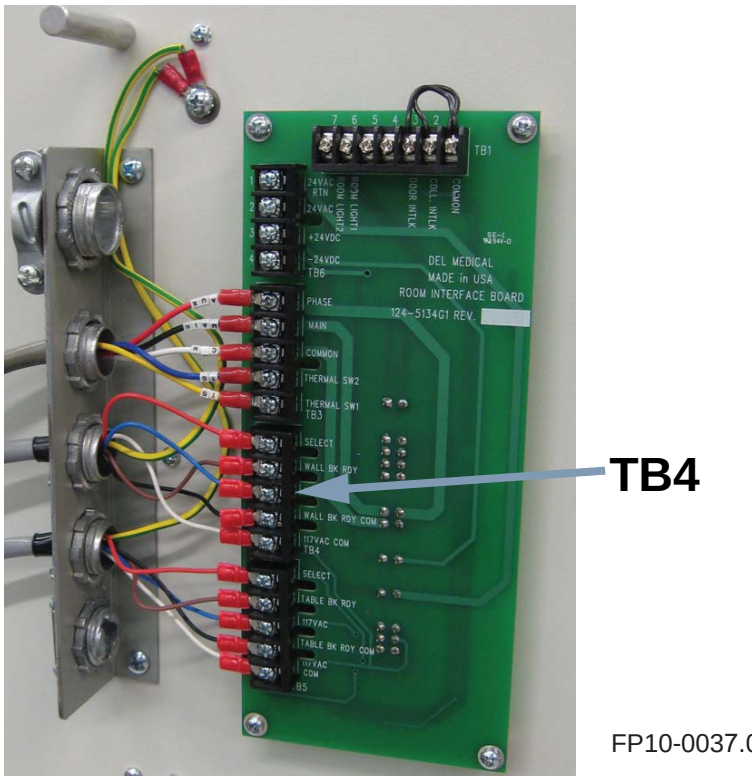


Figure 2-16. Anthem Terminals

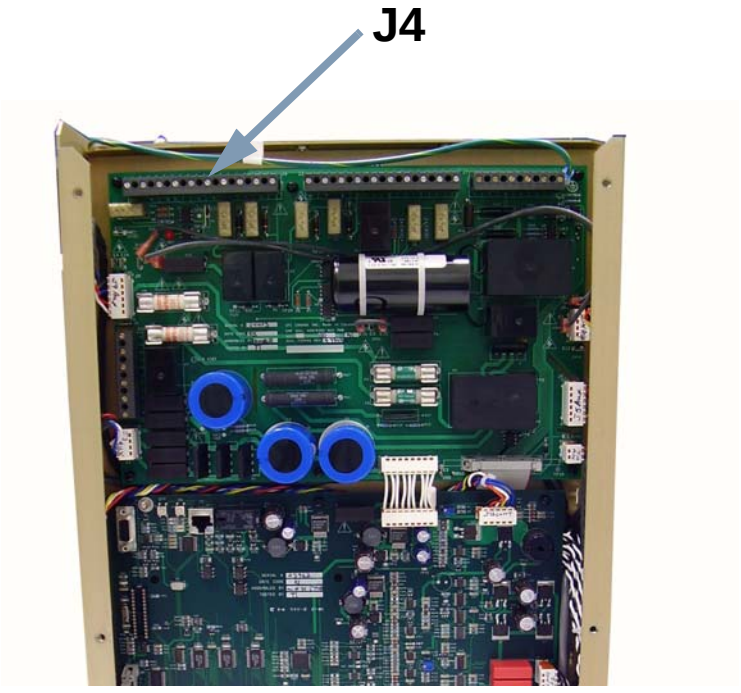
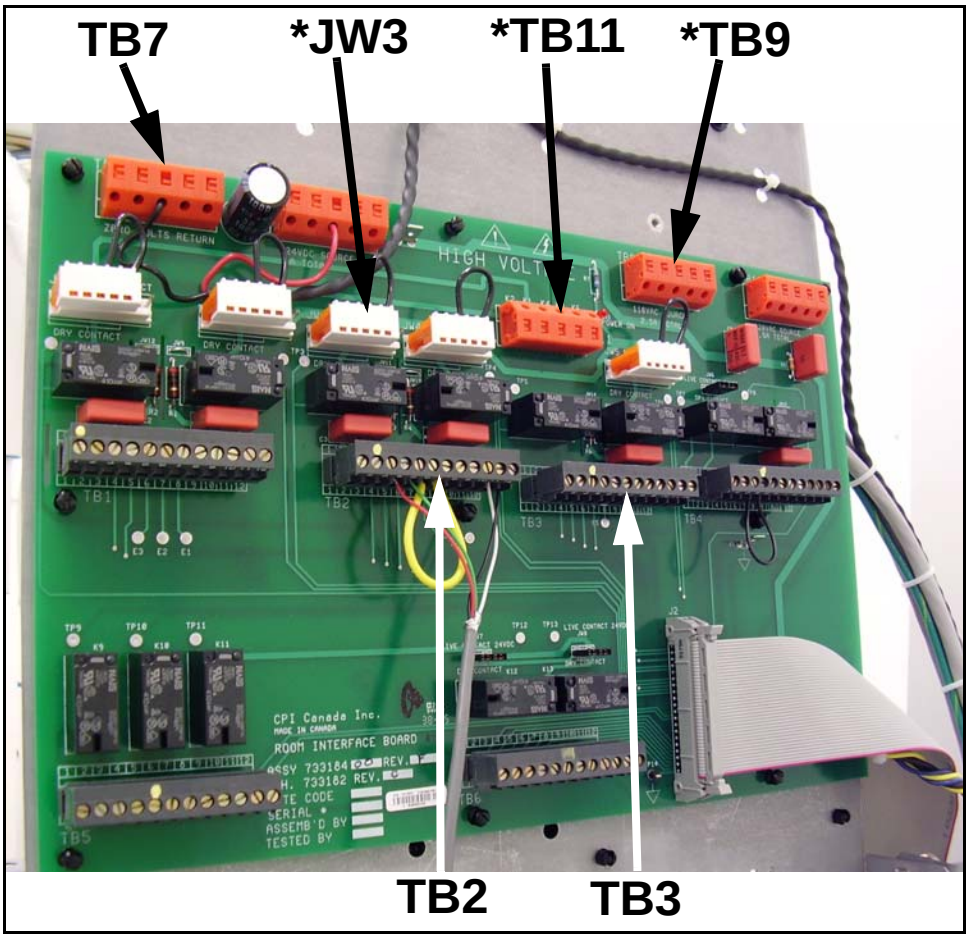


Figure 2-17. CPI CMP Terminals



*For CPI Indico generators, place a jumper between TB9-3 and TB11-2. Also, place the jumper plug on JW3 between terminals 4 and 6.

Figure 2-18. CPI Indico Terminals

2.4 Automatic Exposure Control Installation Instructions

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Connect AEC cable (1 in Figure 2-19) to system AEC cable (2).

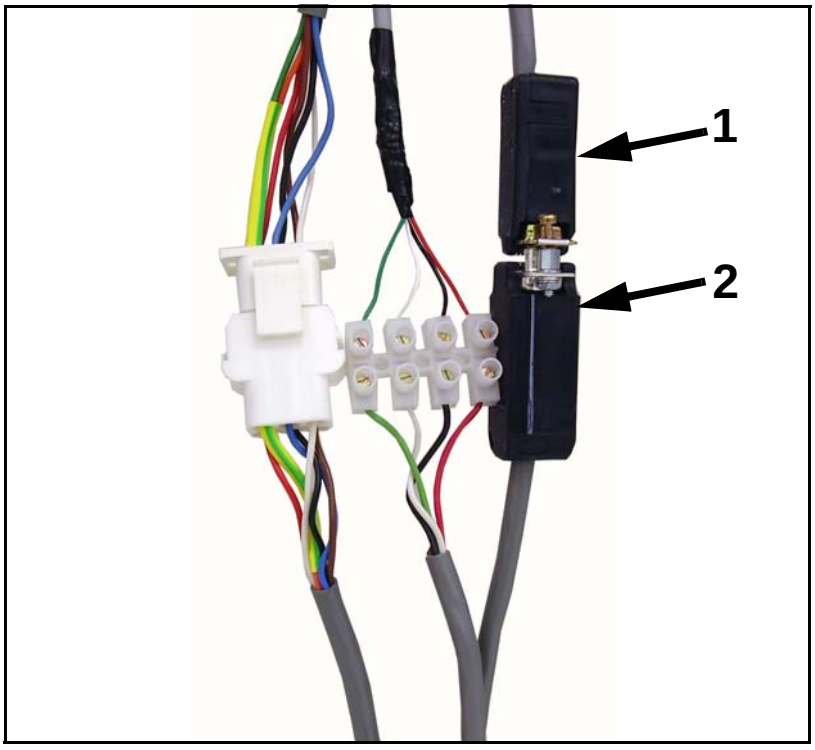


Figure 2-19. AEC Cable

2 Connect other end of AEC cable to J2 of generator in locations shown in Figure 2-21 through Figure 2-23.

3 After installing any remaining options, calibrate the ION chamber according to the ION chamber manual included in Chapter 8 of this manual and according to the generator manual.

Note

The A-B-C configuration for the ION chamber shown below is for right hand loaded wallstands. Left hand loads are the opposite.

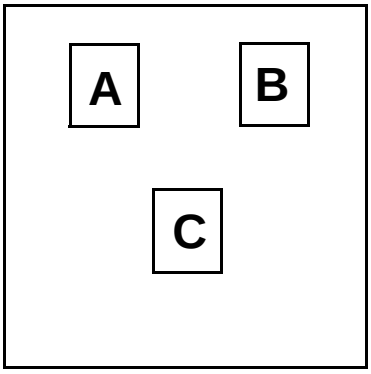


Figure 2-20. AEC Field Layout (Right Hand Load)

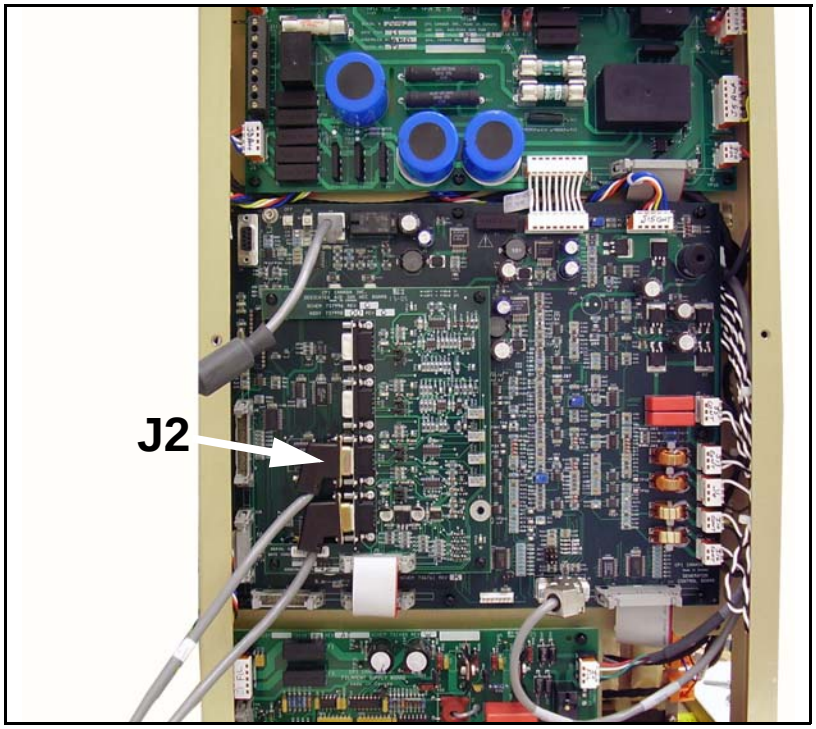


Figure 2-21. CPI CMP AEC Cable Hookup Point

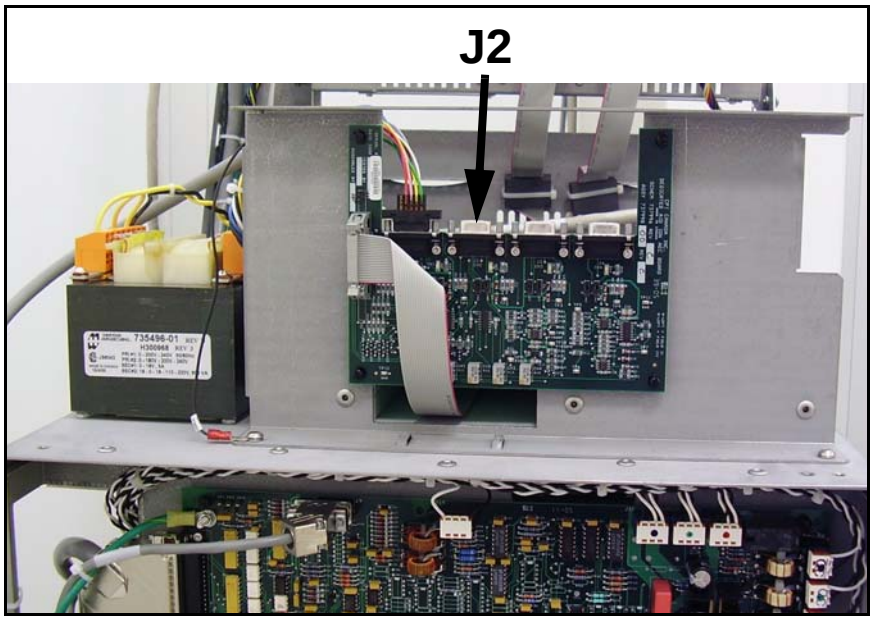


Figure 2-22. CPI Indico AEC Cable Hookup Point

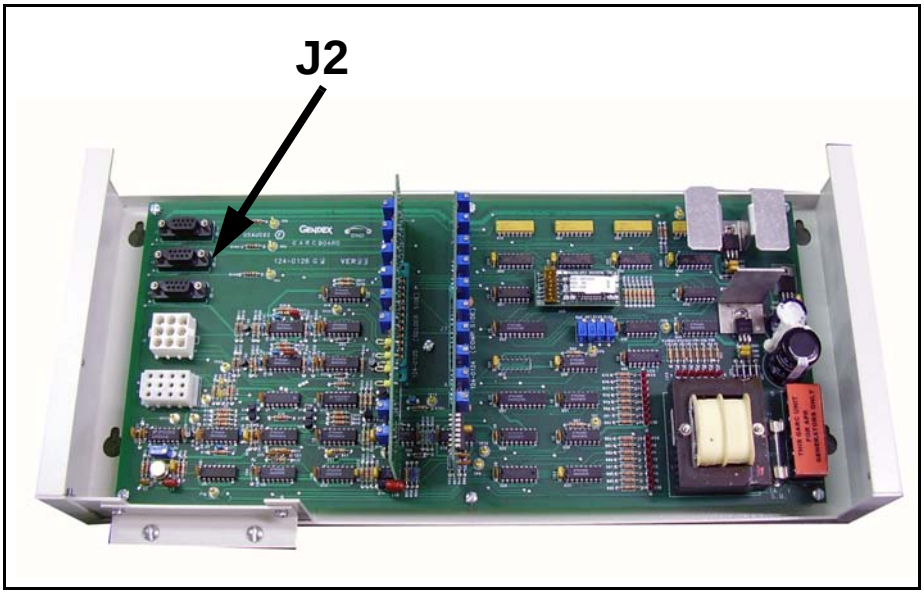


Figure 2-23. APX/MPX/AEC Cable Hookup Point

2.5 Automatic Cassette Size Sensing Installation Instructions

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Connect wallstand PBL cable (1 in Figure 2-24) to system PBL cable (2). Green wire goes to green wire, white to white, etc. The figure shows a terminal block (3) connecting the two cables. This terminal block is not provided with the wallstand.

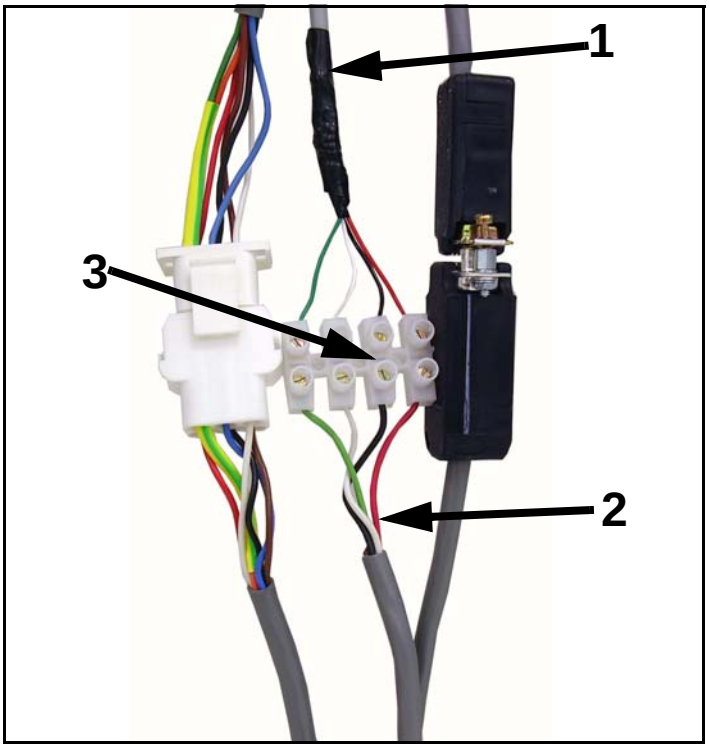


Figure 2-24. PBL Cable

2 Connect other end of bucky cable to generator according to Table 2-2 below.

Collimator Power Supply Connections		
Wire Color	**Linear II** **See Figure 2-25 on page 2-21**	**Linear IV** **See Figure 2-26 on page 2-22**
White	TS2-20	TS4-6
Green	TS2-21	TS4-8
Black	TS2-19	TS4-9
Red	TS2-22	TS4-7
Jumper(s)	TS2-1 to TS2-4 TS-2 to TS-3 to TS2-6 TS2-5 to TS2-10	TS6-12 to TS6-13

Table 2-4: Bucky - Generator Connections

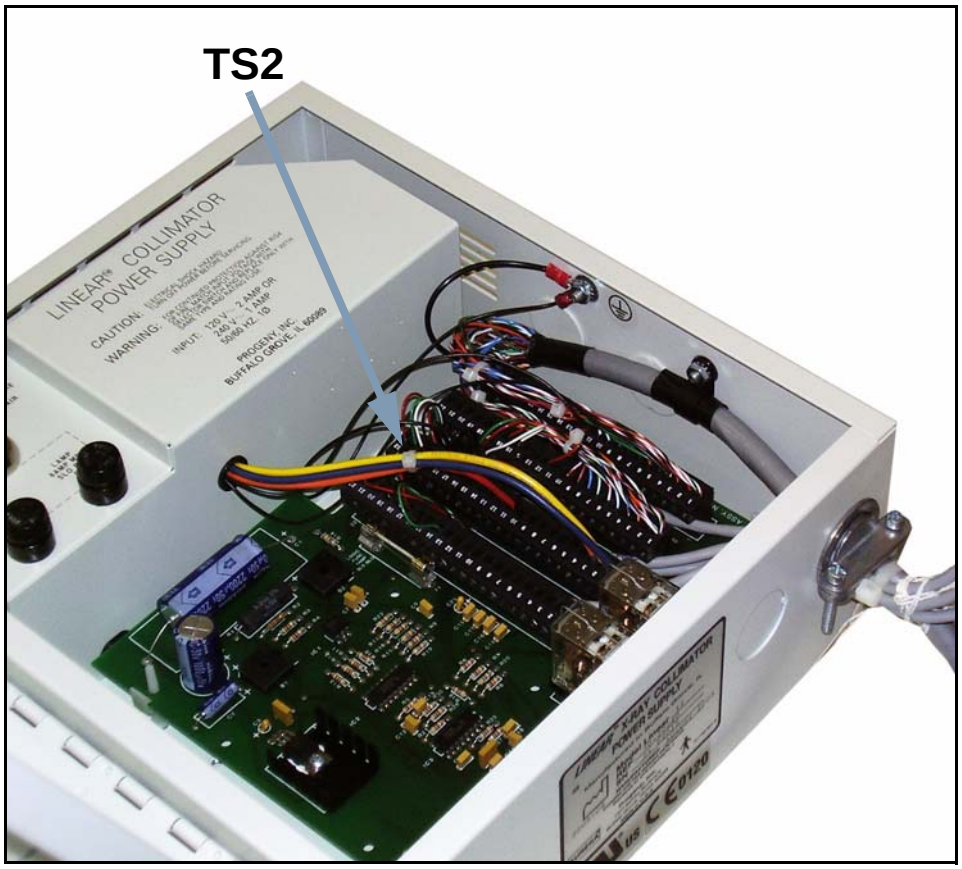


Figure 2-25. Linear II

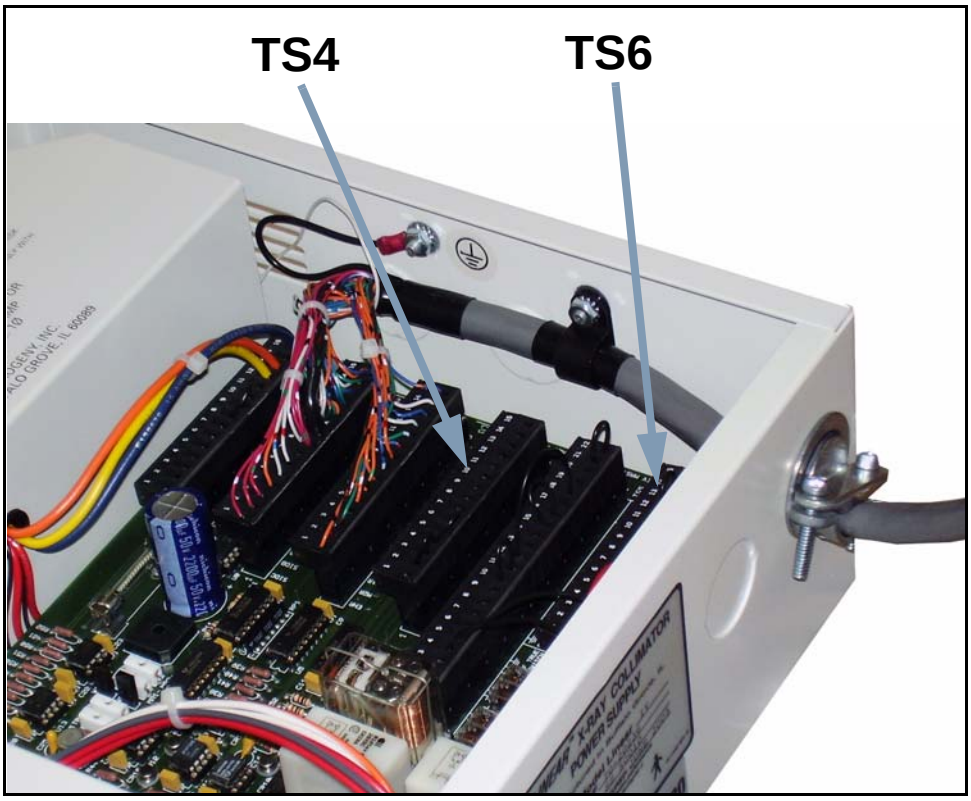


Figure 2-26. Linear IV

Addendum

Image Receptor Installation

A

CMT Image Receptor Installation

This Addendum describes the CMT SmartRAD Digital Imaging Receptor installation on the VS-200 Wallstand.

When this manual or the CMT SmartRAD manual refer to the bucky, both manuals intend those references to refer to the digital imaging receptor in its housing. The CMT manual uses the term “Flat Panel Display” to refer to digital imaging receptor components in the CMT receptor housing. Our terminology for digital imaging receptors is “digital receptor”, with the associated digital receptor housing.

It is suggested that you perform the following CMT digital imaging receptor installation procedure while all parts remain horizontal on the floor or workbench.

An exploded view of a VS-200 Wallstand Vertical Carriage assembly is shown below.

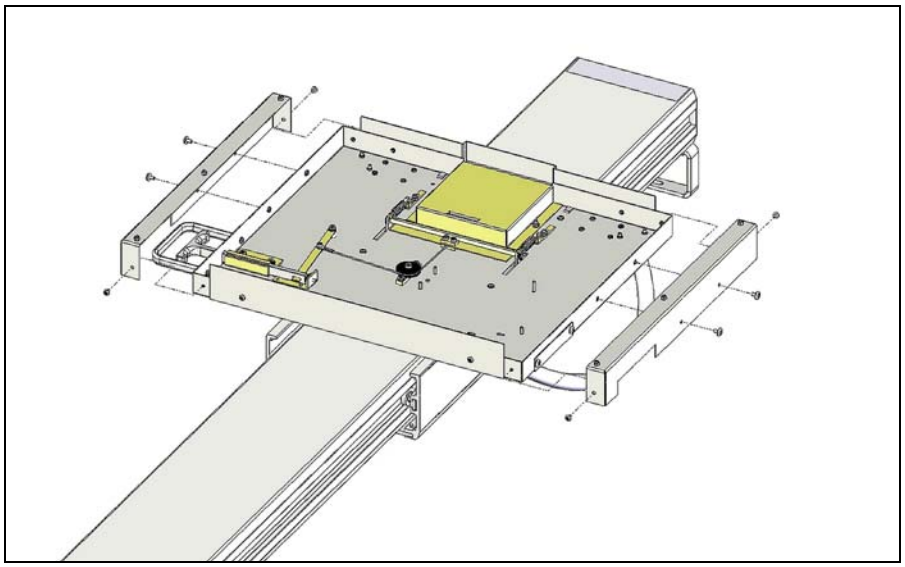


Figure Addendum 2A-1. Exploded view of the VS-200 Wallstand Vertical Carriage.

Mounting digital receptor to wallstand

1. Refer to the SmartRAD manual, "*Main Cable Connection*" for mounting positions, access to the receptor housing, and how to install power, and signal wiring.
2. Remove and retain left and right cover brackets from the Vertical Carriage assembly. They will later be used to mount the CMT receptor housing on the Vertical Carriage Assembly.
3. Preassemble the CMT digital receptor and its housing with all internal wiring connected, and install all covers. See the CMT SmartRAD manual to connect and route internal wiring.
4. Using six M5 Allen screws, assemble the left and right cover brackets to the CMT housing rear panel, keeping the appropriate left-right bracket orientation, as planned. Figure Addendum 2A-2 shows the CMT receptor mounting, using six M5 Allen screws.

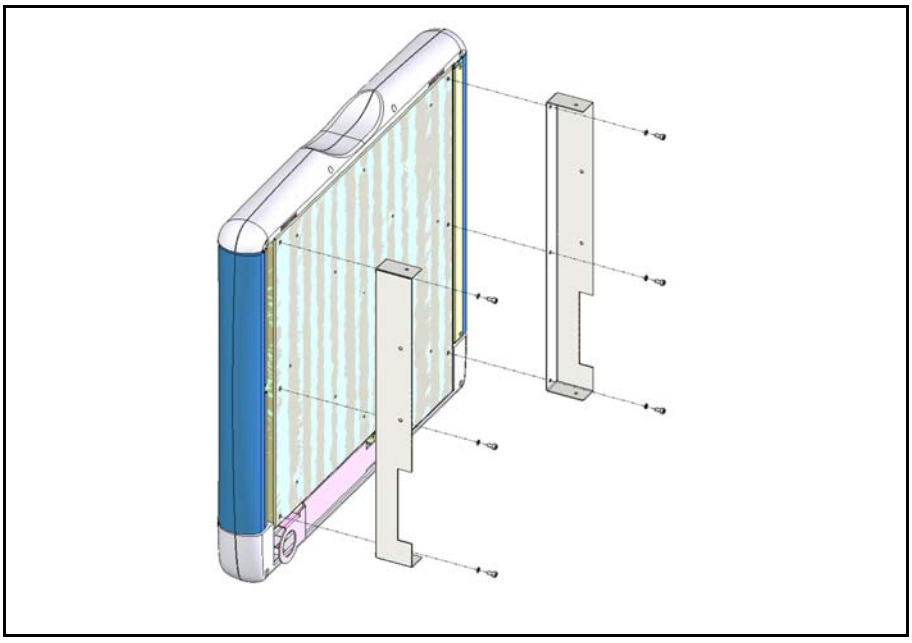


Figure Addendum 2A-2. CMT Left-Right Corner Bracket Mounting

5. Slide the corner brackets and CMT receptor assembly onto the Carriage temporarily, to check direction of wallstand brake handle and grid door orientation, and Main Cable exit path.

The left-right orientation of all should be appropriate for room workflow, consistent with the following planning considerations:

- Plan direction of power and signal cable, so that during normal workflow movements, persons or equipment in the room do not obstruct, impinge, kink or crush cable. Provide sufficient cable slack to allow movement during the X-ray patient setup process.
- If necessary, see the CMT manual to reverse the digital imaging receptor door and grid panel position. The receptor has a label that explains its orientation, as shipped. Example: a receptor labeled column left, will open left.
- From room plans or order requirements, determine the left-right functional orientation requirements of the Wallstand brake handle and digital receptor grid door opening. The brake handle and grid door opening should be on the same side, for the convenience of the operator. If needed change the orientation of the brake handle according to Chapter 5, section 5. 4 of this manual.

6 Place the CMT receptor on a sturdy workplace to install internal wiring.

7 Orient the direction of the wiring by selecting two mounting ring screw holes that will orient the elbow and Main Cable, as planned. Mount the Main Cable Mounting elbow to the Mounting Ring Plate (as shown below), using the two mounting screws.

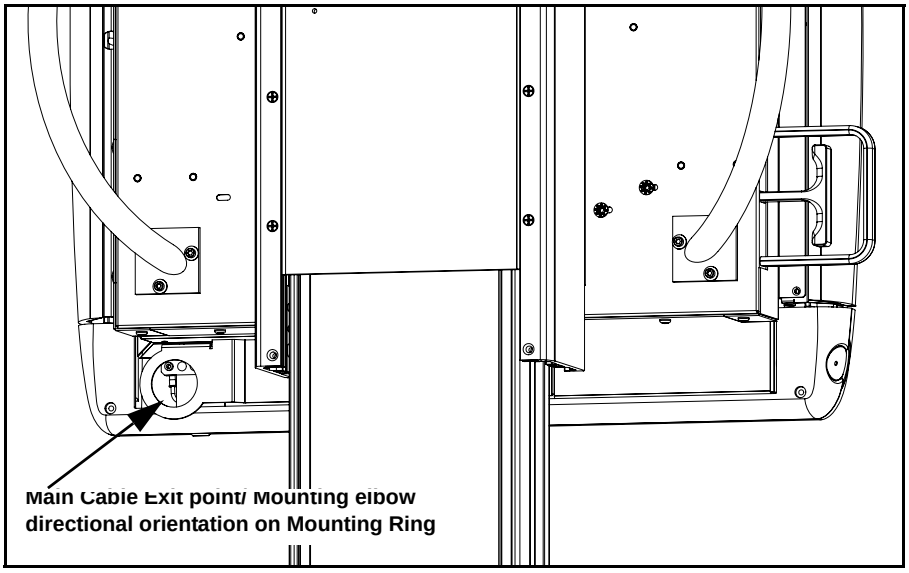


Figure Addendum 2A-3. CMT Main Cable Exit point / Mounting Elbow direction choices.

8 Be sure all CMT housing covers are installed. Slide CMT receptor and cover bracket assembly onto Carriage and secure permanently.

Note
If this wallstand is being installed as a free standing wallstand (installing with no support from a back wall), proceed with the installation instruction enclosed with the "VS200 Floor Mount Kit", step 4 on page 1-5 before continuing.

Note
If this wallstand is being equipped with the VS200 Auto Tracking Kit, proceed with the installation instruction enclosed with the "VS200 Auto Tracking Kit" before continuing.

9 When all parts are assembled on the wallstand, raise the entire wallstand, receptor and main cable to the vertical mounting position to allow balancing. Lifting the combined, assembled unit requires two people.

Wallstand Receptor Balancing

The VS-200 wallstand CMT configuration is shipped with ten steel plate weights installed in a pocket on the carriage. When the CMT receptor, grid and Main Cable is fully installed, make any adjustments needed in the number of weights to achieve smooth movement of the fully-loaded, complete digital imaging receptor carriage assembly.

1. Snugly install a cable tie on release brake handle to hold it in the released position to allow easy movement.
2. Remove and retain two screws (1 in Figure Addendum 2A-4) holding the Vertical Carriage and Frame Assembly Weight Cover (2) to gain access to the weight holding pocket (3).

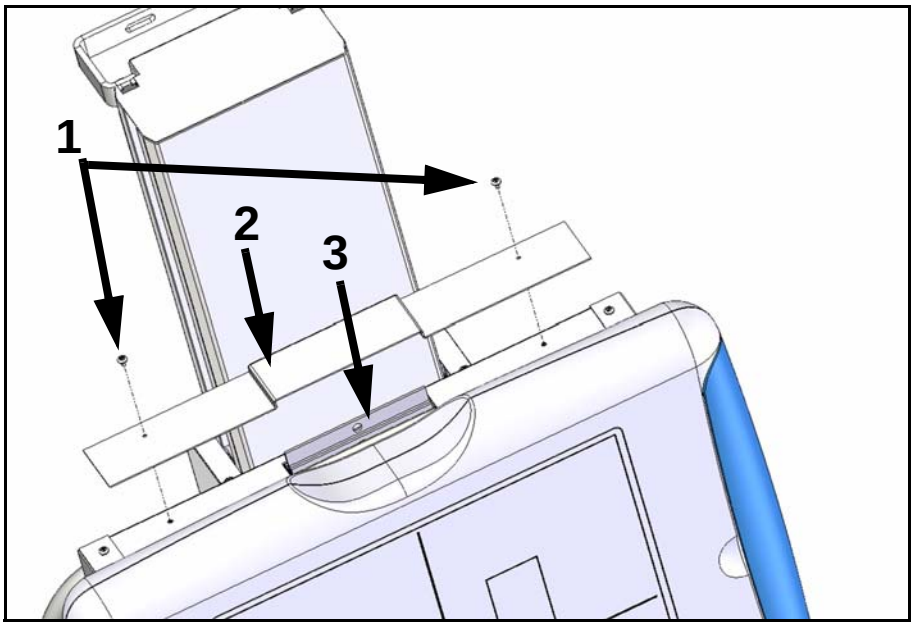


Figure Addendum 2A-4. Carriage and Frame Assembly top cover

3. Add or remove counterweights to achieve smooth movement.
4. Re-install Carriage and Frame Assembly top cover with two screws removed in step two.
5. Remove the cable tie from the release brake handle.
6. Re-check for smooth movement and proper brake operation when all covers and the Main Cable are installed.
7. Proceed with alignment of the wallstand and receptor per Installation Instructions step 5, Chapter 2, page 2-5.

Addendum

Image Receptor Installation

B

Canon 40EG Image Receptor Installation

This Addendum describes the Canon CXDI-40EG Digital Imaging Receptor installation on the VS-200 Wallstand. An exploded view of the VS-200 wallstand vertical carriage is shown below.

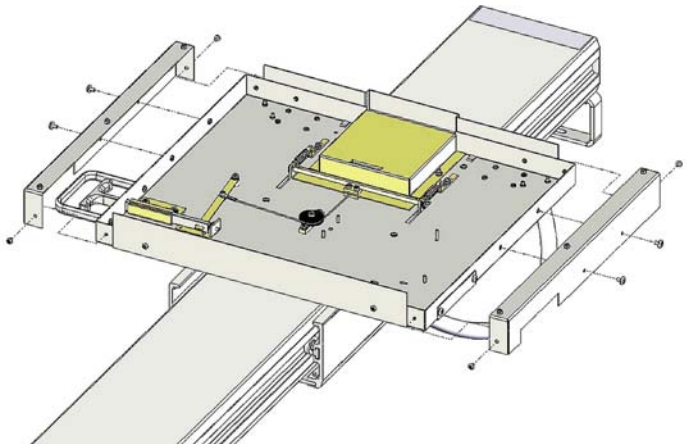


Figure Addendum 2B-1. Exploded view of the VS-200 Wallstand Vertical Carriage.

It is suggested that you perform all of the following steps in the Canon 40EG Installation procedure while all parts remain horizontal on the floor or workbench. Lifting the combined, assembled unit requires two people.

The following procedure makes numerous references to the *Canon CXDI-40EG Installation and Maintenance Manual* and this VS-200 Wallstand manual. You may want to have both manuals available.

Canon calls the digital receptor a CXDI-40EG Imaging Unit, or "sensor". Our terminology for digital imaging receptors is "digital receptor" and these digital receptors usually have a housing with them.

The left-right orientation of all of the following should be the same:

- Canon 40EG grid door release push button.
- Vertical Carriage release brake handle

Mounting digital receptor to wallstand

1. Refer to the Canon CXDI-40EG manual for information on how to access the receptor housing to install power, image signal wiring, and for cable routing path and mounting positions. See the CXDI-40EG manual, “Universal Type” “Cable Connection Procedure” for information on how to access the receptor housing to install power, image signal wiring, and mounting positions. Remove the Stand Type Cable cover. Chapter Four of Canon System Installation Procedure, Unit Connections, Universal Type, and Section 4.4, Universal Type, and “Connecting the Cables”, show the exit route of the CXDI-40EG Universal Imaging cable.
2. The “Connecting the Cables” section describes a Sensor cable that comes down the rear panel of the sensor unit to the Connector Clamping Plate and then through the Stand Type cable cover. Re-route the cable in a direction that will allow unobstructed wallstand digital receptor movement by reversing the orientation of the Sensor cable within the Connector Clamping plate and Stand Type cable cover.
3. Connect the Ready Lamp cable, and Photo timer cable in the same orientation. The Imaging Unit internal wiring exits through the Stand Type Cable cover. Orient the “Connector Connection base” to make wiring exit direction of the Imaging Unit Sensor cable, Ready Lamp, and Photo timer cable appropriate for the workflow. Mount the auxiliary base and connector clamping plate with wiring, oriented appropriate for the room workflow.
4. Be sure that the Main Sensor cable and the Ready Light insulation are locked to the Imaging Unit Anchoring Plate with the sensor relay cable; all of which must be secured with the connector clamping plate. All wiring must be secured to the auxiliary base along with the optional photo timer cable, and then routed through the Stand Cable Cover.
5. Use cable tie(s) to secure all internal and external wiring (Sensor cable, Ready Lamp cable, and Photo timer cable) where these wires / cables would be separated.

6 See Figure Addendum 2B-2 for wiring routing orientation for a wallstand installation.

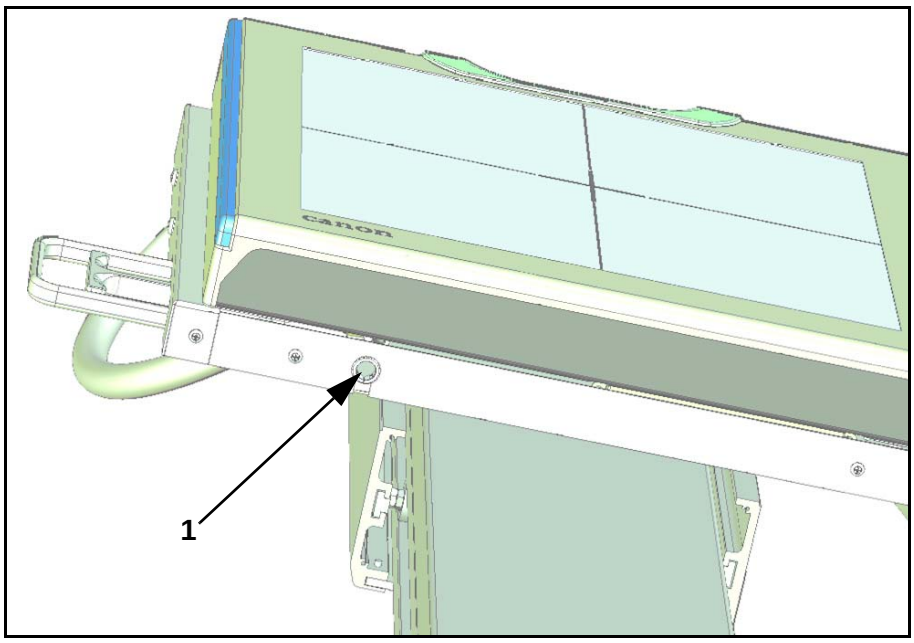


Figure Addendum 2B-2. Universal Imaging cable exit point

7 Remove and retain Vertical Carriage's Left and Right side cover brackets.

8 Using the four M6 Allen screws, screw the Vertical Carriage's Left and Right side cover brackets (1 in Figure Addendum 2B-3) to the back of the Canon housing (2) in the grid door and brake orientation that you have planned.

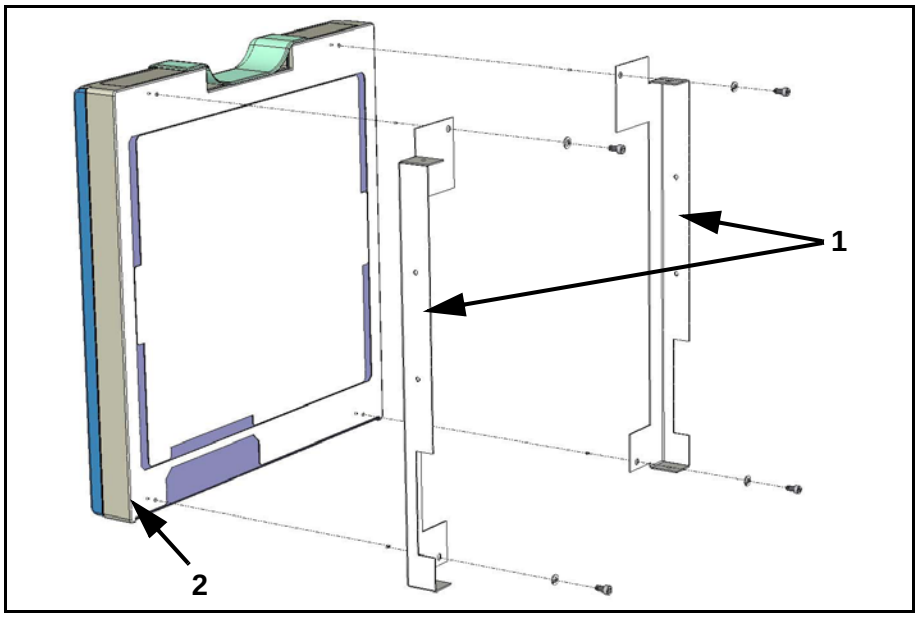


Figure Addendum 2B-3. Canon 40 Left and Right Corner Bracket Mounting

9 Slide the Left and Right brackets and Canon 40 onto the Carriage assembly. Secure with screws removed previously.

Note
If this wallstand is being installed as a free standing wallstand (installing with no support from a back wall), proceed with the installation instruction enclosed with the "VS200 Floor Mount Kit", step 4 on page 1-5 before continuing.

Note
If this wallstand is being equipped with the VS200 Auto Tracking Kit, proceed with the installation instruction enclosed with the "VS200 Auto Tracking Kit" before continuing.

10 When all parts are assembled on the wallstand, raise the entire wallstand, receptor and main cable to the vertical mounting position to allow balancing. Lifting the combined, assembled unit requires two people.

Wallstand Receptor Balancing

The VS-200 wallstand Canon 40EG configuration is shipped with ten steel plate weights installed in a pocket on the carriage. When the grid and CXDI-40EG digital receptor and its housing is fully installed, adjustments may be needed in the number of weights to achieve smooth movements.

1. Snugly install a cable tie on release brake handle to hold it in the released position to allow easy movement.
2. Remove and retain two screws (1 in Figure Addendum 2B-4) holding the Vertical Carriage and Frame top cover (2) to access the weight holding pocket (3). See Figure Addendum 2B-4.

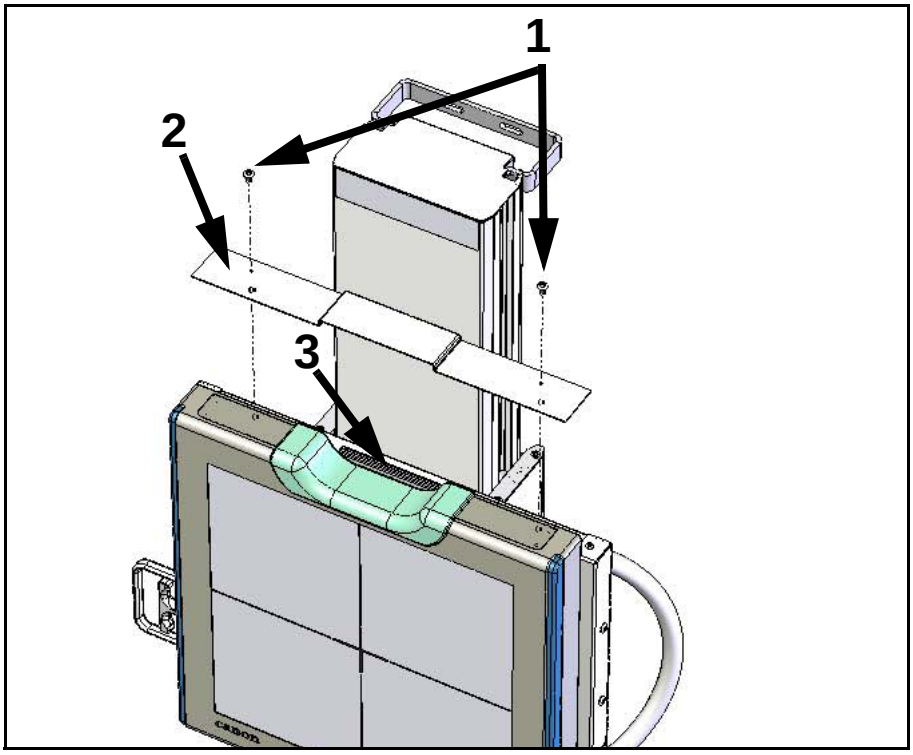


Figure Addendum 2B-4. Vertical Carriage Assembly, Showing Weight cover.

3. Add or remove counterweights to achieve smooth movement.
4. Re-install Carriage and Frame Assembly top cover with two screws removed in step two.
5. Remove the cable tie from the release brake handle.
6. Re-check for proper brake operation when all covers and the CXDI-40EG X-ray Digital Camera System are installed.
7. Proceed with alignment of the wallstand and receptor per Installation Instructions step 5 Chapter 2, page 2-5.

Addendum

Image Receptor Installation

C

Canon 50G Image Receptor Wallstand Installation

The ships with the Canon CXDI-50G installed to the wallstand. Although no additional installation or adjustments are needed for the digital receptor you need to take the following into consideration when installing the VS200 Canon CXDI-50G configuration:

- When this manual or the Canon manual refer to the bucky, both manuals intend to refer to the digital imaging receptor in its housing. The Canon 50G manual uses the term “digital imaging unit” or “sensor unit” to refer to digital imaging receptor components in the Canon receptor and its housing. Our terminology for a digital imaging receptor is “digital receptor”.
- The Canon CXDI-50G has a movable digital receptor and grid, and most X-ray rooms need only one receptor since operators move it from wallstand to table. The digital receptor main cable power and signal wiring are permanently attached to the receptor. The receptor housing holds the receptor on the wallstand vertical carriage and frame assembly.
- Since the movable receptor can be used in the wallstand as well as in tables in X-ray rooms, it is necessary to plan for sufficient cable slack to allow the operator to move the receptor from wallstand to table and make wallstand vertical adjustments. The cable should be unobstructed, have no “kinking”, and have sufficient cable length to accomplish efficient use of the movable receptor in the wallstand.

When all parts are assembled on the wallstand, the entire wallstand and CXDI-50 receptor housing may be raised to the vertical mounting position to allow alignment and balancing.

Caution

Lifting the combined, assembled unit requires two people.

When the wallstand is installed, aligned and balanced, proceed with Canon CXDI-50 room installation, as instructed in the Canon CXDI-50 Installation manual.

Wallstand Receptor Balancing

The VS-200 wallstand Canon configuration is shipped with ten steel plate weights installed in a pocket on the carriage. When the grid and CXDI-50 digital receptor and its housing is fully installed, adjustments may be needed in the number of weights to achieve smooth movements.

1. Snugly install a cable tie on release brake handle to hold it in the released position to allow easy movement.
2. Remove and retain four screws (1 in Figure Addendum 2C-1) holding the Vertical Carriage and Frame top cover (2) to access the weight holding pocket (3).

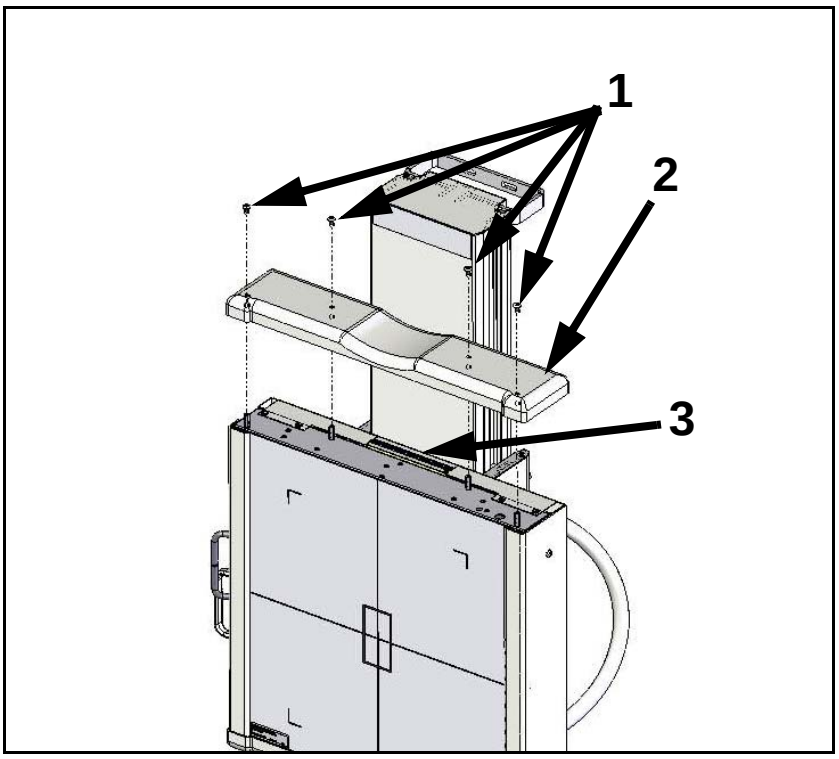


Figure Addendum 2C-1. Vertical Carriage Assembly, Showing Weight cover.

3. Add or remove counterweights to achieve smooth movement.
4. Re-install Carriage and Frame Assembly top cover with two screws removed in step two.
5. Remove the cable tie that from the release brake Handle.
6. Re-check for proper brake operation when all covers and the CXDI-50 X-ray Digital Camera System are installed.
7. Proceed with alignment of the wallstand and receptor per Installation Instructions step 5 Chapter 2, page 2-5.

Addendum

Image Receptor Installation

D

Varian Paxscan 4343R Image Receptor Installation

This Addendum describes the Varian Paxscan 4343R Digital Imaging Receptor installation on the VS-200 Wallstand.

Tools Required:

- 11/32″ Nut Driver
- Diagonal (Side) Cutters
- Medium Phillips Tip Screwdriver
- Metric Hex Wrench Set
- Miniature Flat Tip Screwdriver

1 Unscrew top cover screws (1 in Figure Addendum D-1.) and remove top cover (2).

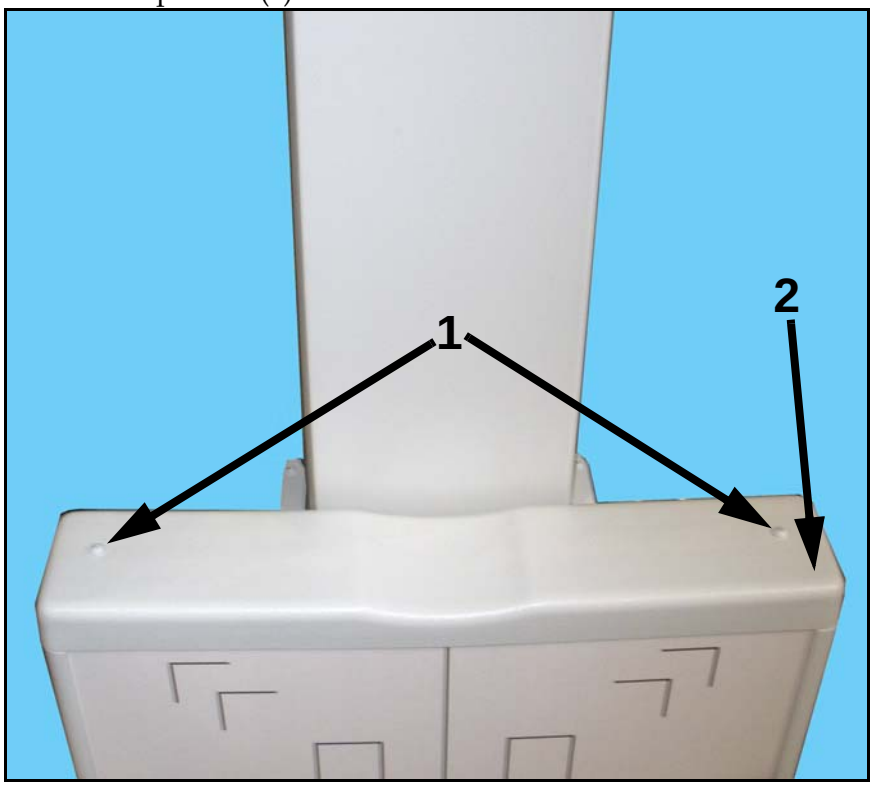


Figure Addendum D-1. Top Cover Removal

2 Slide front cover (1 in Figure Addendum D-2.) up and off wallstand.

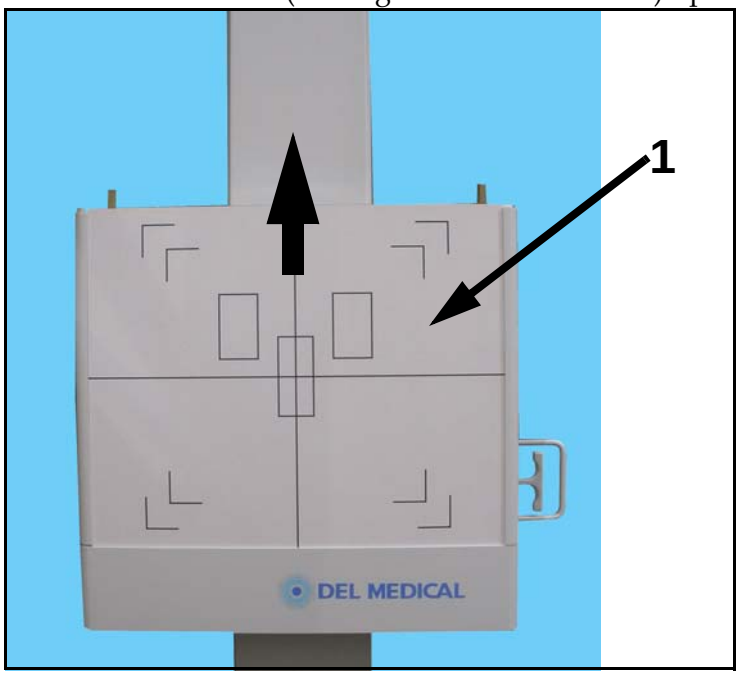


Figure Addendum D-2. Front Cover Removal

Only do steps 3-7- if your wallstand has an optional ION chamber (automatic exposure control).

3 Unscrew four cover screws (1 in Figure Addendum D-3) and remove ION cover (2).

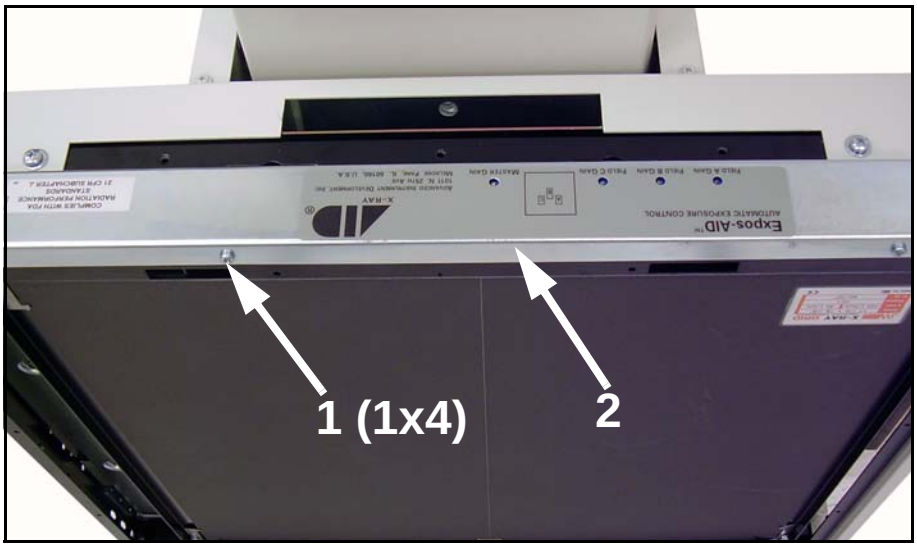


Figure Addendum D-3. ION Chamber Cover Screws

4 Unscrew cable clamp nuts (1 in Figure Addendum D-4) and remove clamp (2).

5 Unscrew two connector screws (3) and unplug connector (4).

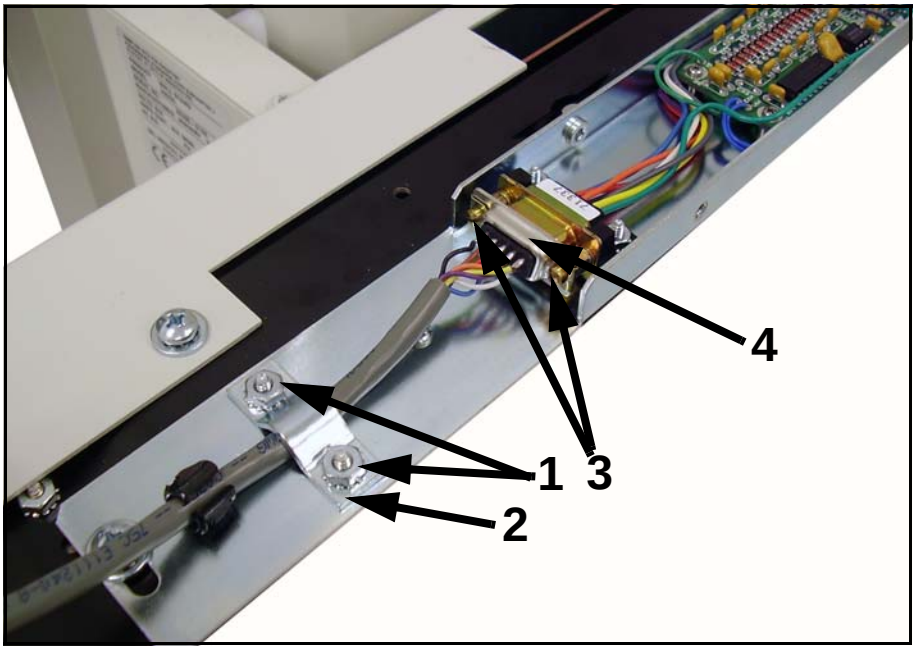


Figure Addendum D-4. ION Chamber Screws

6 Unscrew ion chamber mounting screws (1 in Figure Addendum D-5).

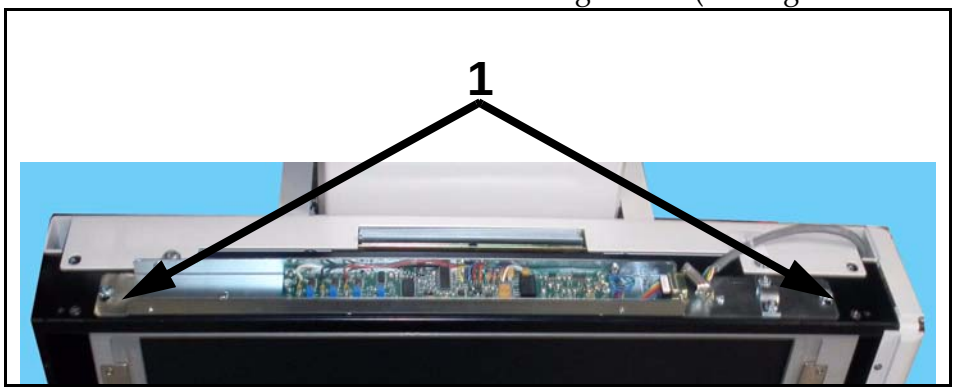


Figure Addendum D-5. Ion Chamber Mounting Screws

7 Slide ion chamber out as shown below.

Figure Addendum D-6. Ion Chamber Removal

8 Remove grid tray (1 in Figure Addendum D-7.).

Figure Addendum D-7. Grid Removal

9 Remove and save bag (1 in Figure Addendum D-8.).

10 Unscrew nuts (2) and remove handles (3). Save nuts and handles.

11 The clamp handle (4) can be mounted on the left or right side of the wall stand. If it is mounted in the desired position, go to step 35. If it is not mounted in the desired position for your application, go to the next step.

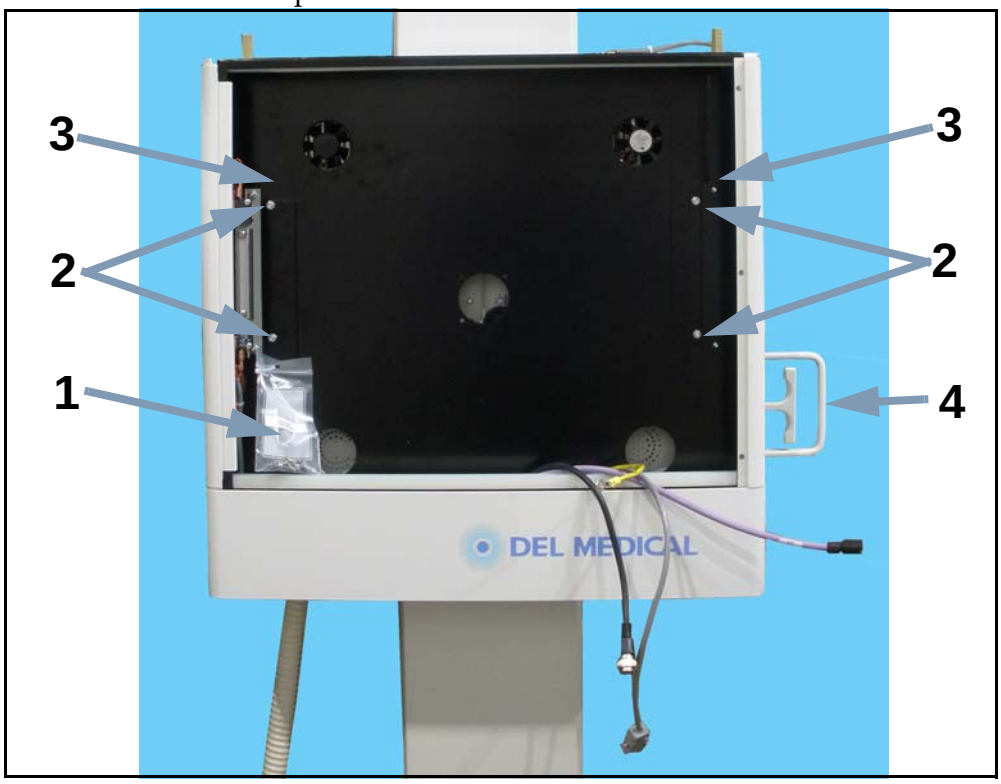


Figure Addendum D-8. Handle Removal

12 Cut all cable ties (1 in Figure Addendum D-9.) on sensor cable.

13 Remove screws (2). .

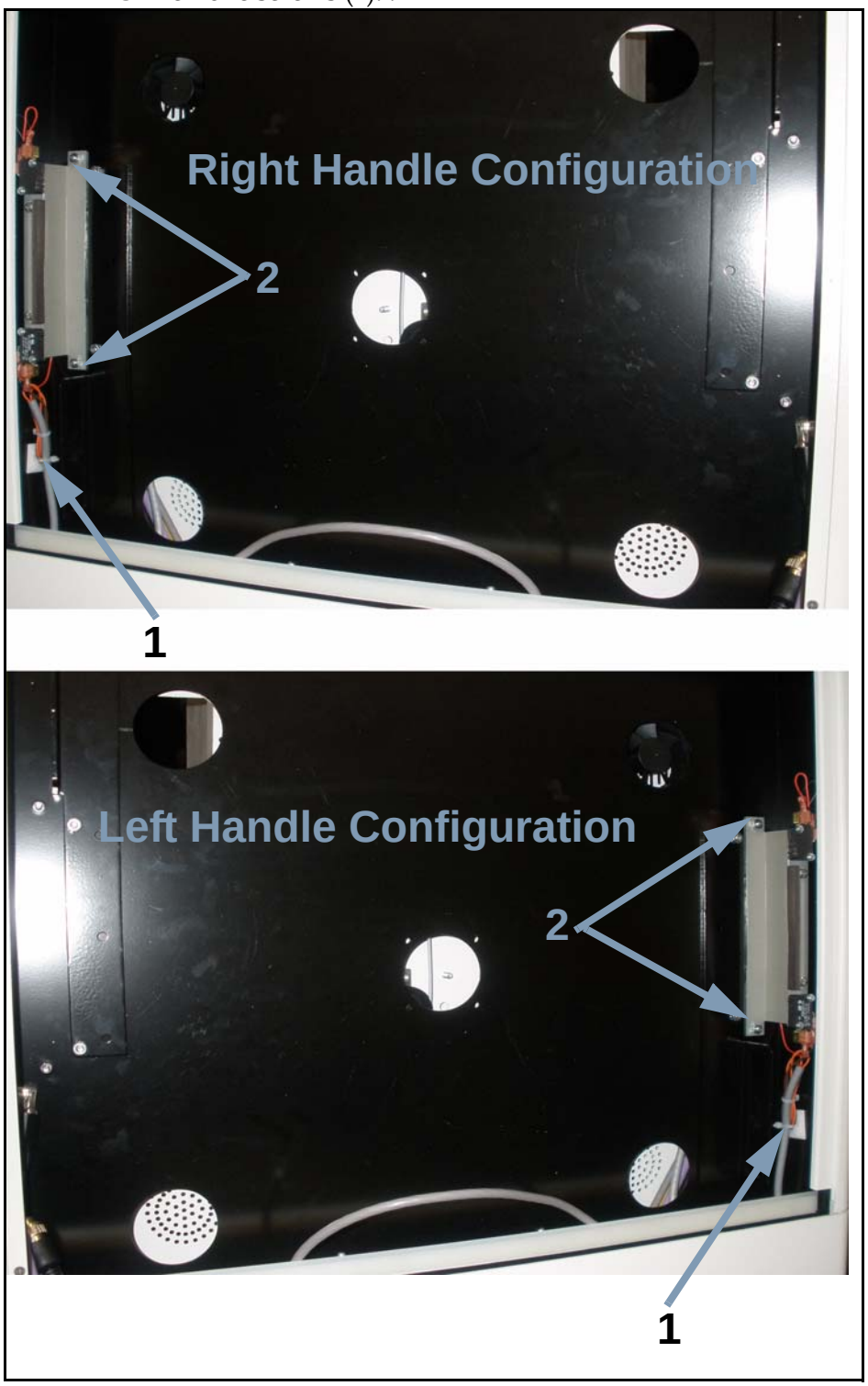


Figure Addendum D-9. Grid Sensor

14 Remove screws (1 in Figure Addendum D-10.) and remove cover (2). .

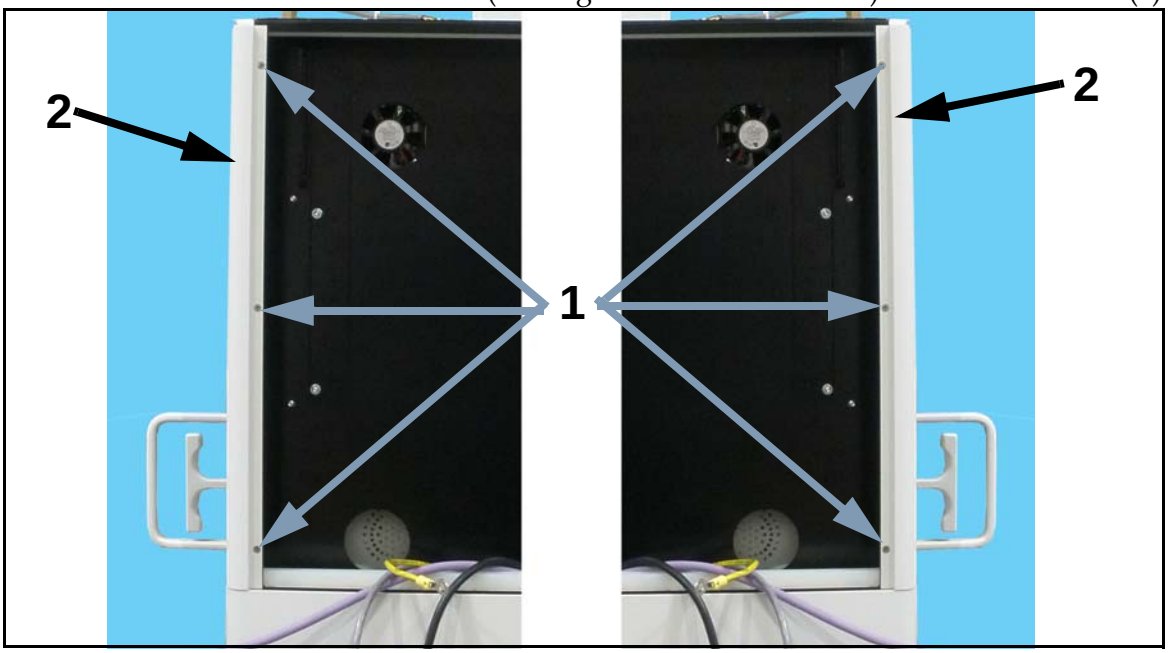


Figure Addendum D-10. Handle Front Cover Removal

15 Remove screws (1 in Figure Addendum D-11.) and remove cover (2). .

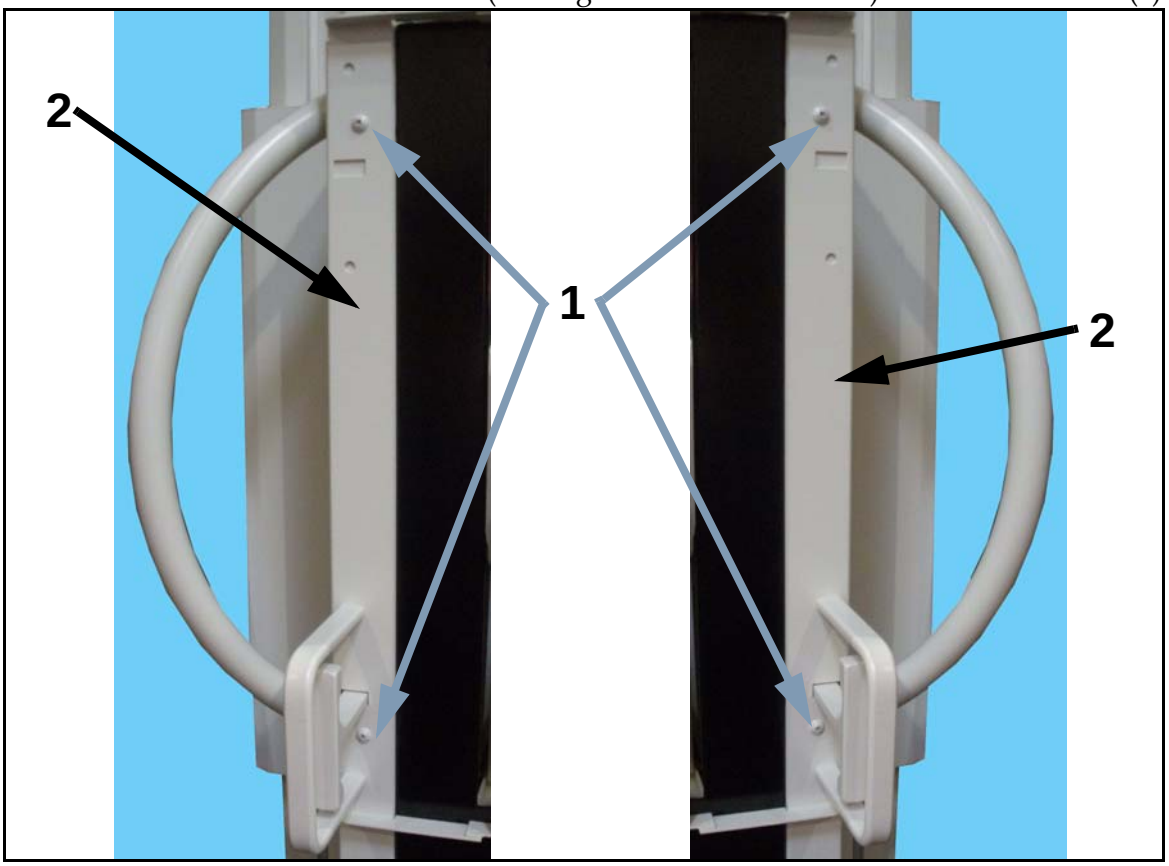


Figure Addendum D-11. Handle Side Cover Removal

16 Remove screws (1 in Figure Addendum D-12.) and remove cover (2). .

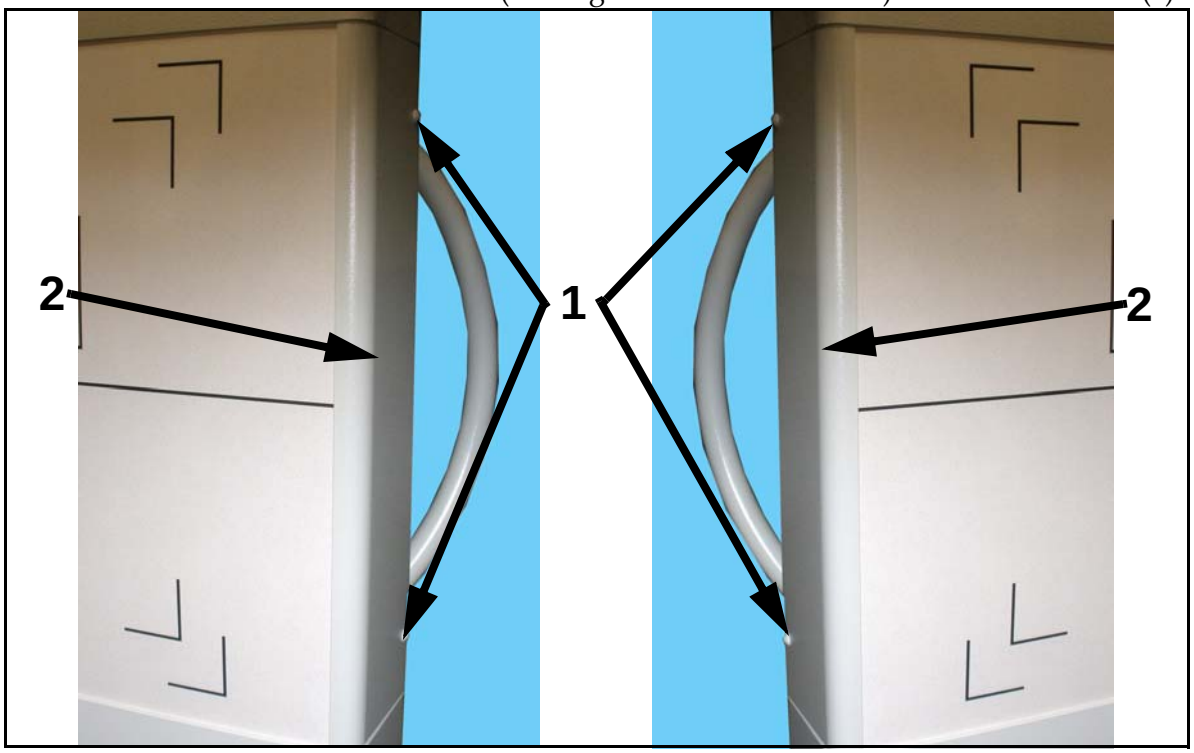


Figure Addendum D-12. Side Cover Removal

17 Remove standoffs (1 in Figure Addendum D-13.). .

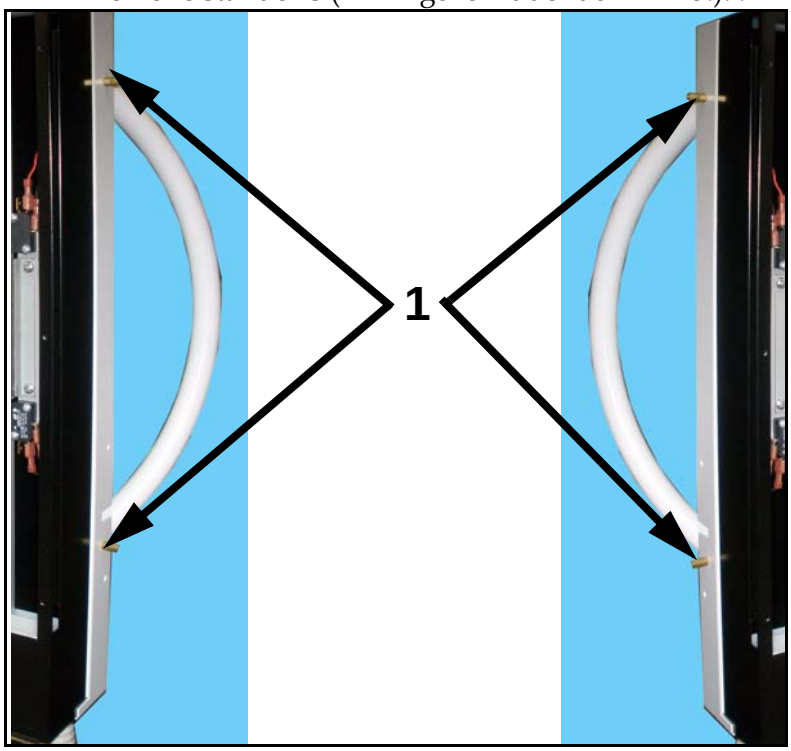


Figure Addendum D-13. Standoff Removal

18 Unscrew four bottom cover screws (1 in Figure Addendum D-14) and remove bottom cover (2).

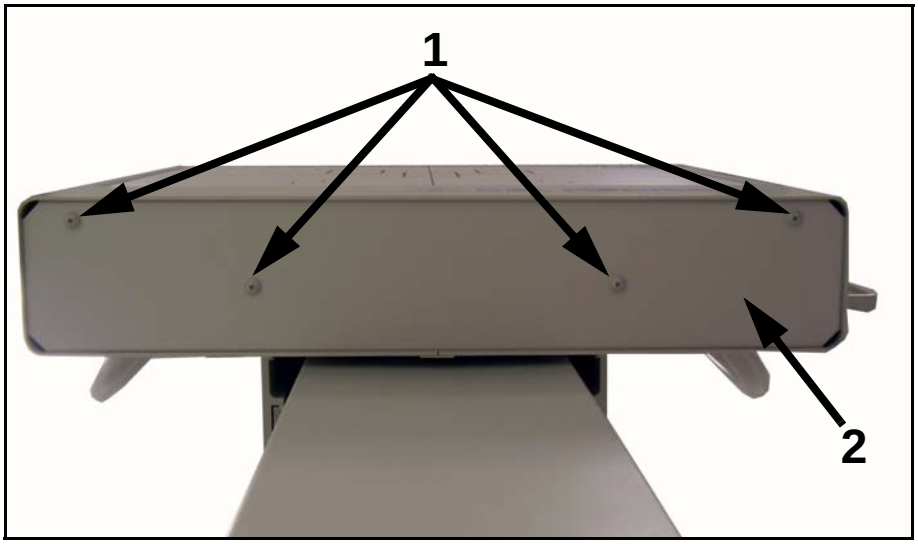


Figure Addendum D-14. Bottom Cover Screws

19 Remove screws (1 in Figure Addendum D-15.) and frame (2). .

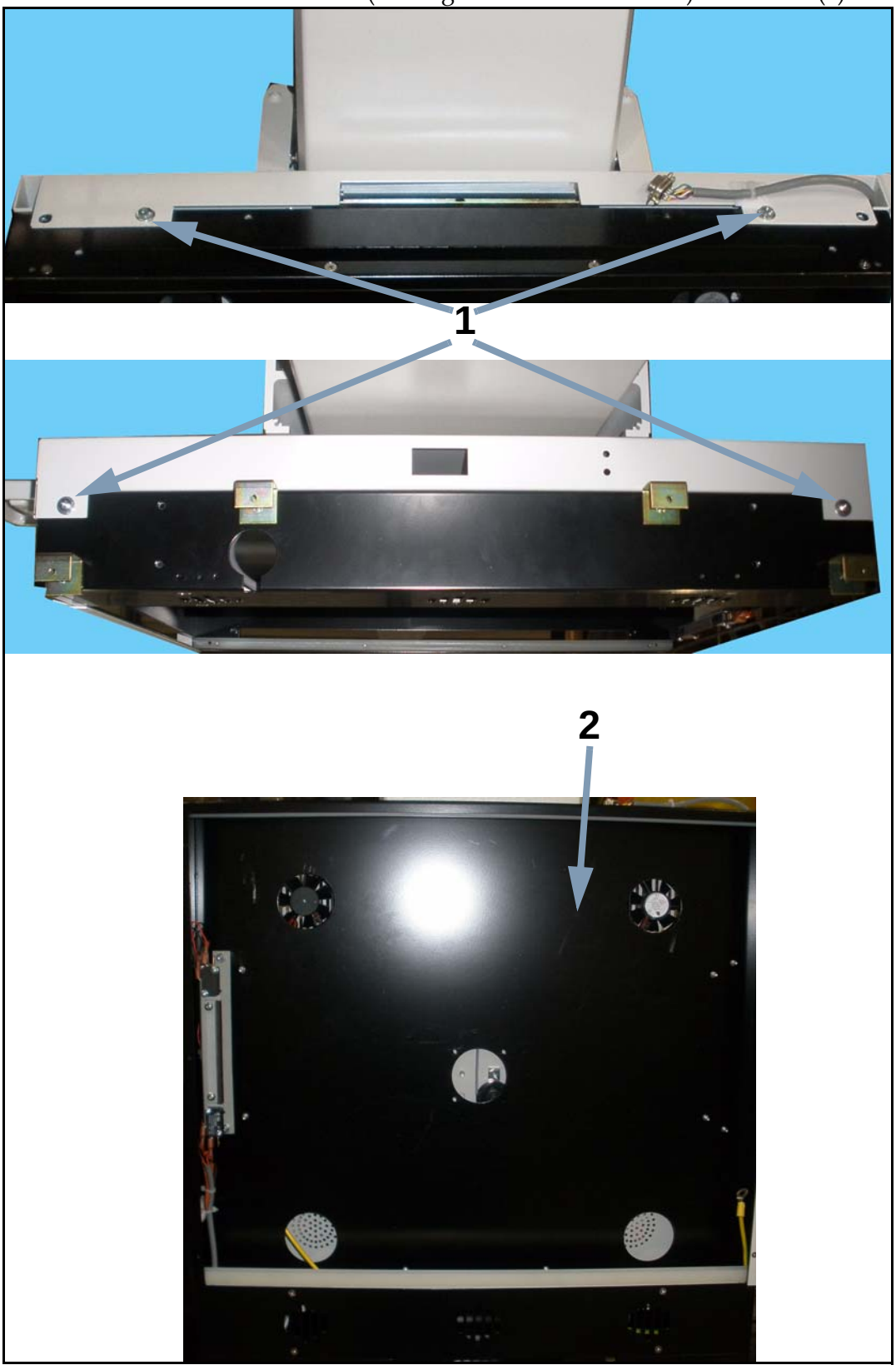


Figure Addendum D-15. Frame Removal

20 Unscrew lever nut (1 in Figure Addendum D-16) and lift lever (2) and spacer (3) off of mounting stud.

21 Unscrew two inside bracket screws (4) and remove bracket (5), handle guard (6) and handle (7).

22 Remove pulley assembly (8) and place in new position.

23 Remove bumper assembly (9) and place in new position.

24 Remove handle guide (10) and place in new position.

25 Slide handle (7) into bracket (5).

26 Install bracket (5) and secure in place with screws (4) and handle guard (6).

27 Mount lever (2) in new position with spacer (3) & nut (1).

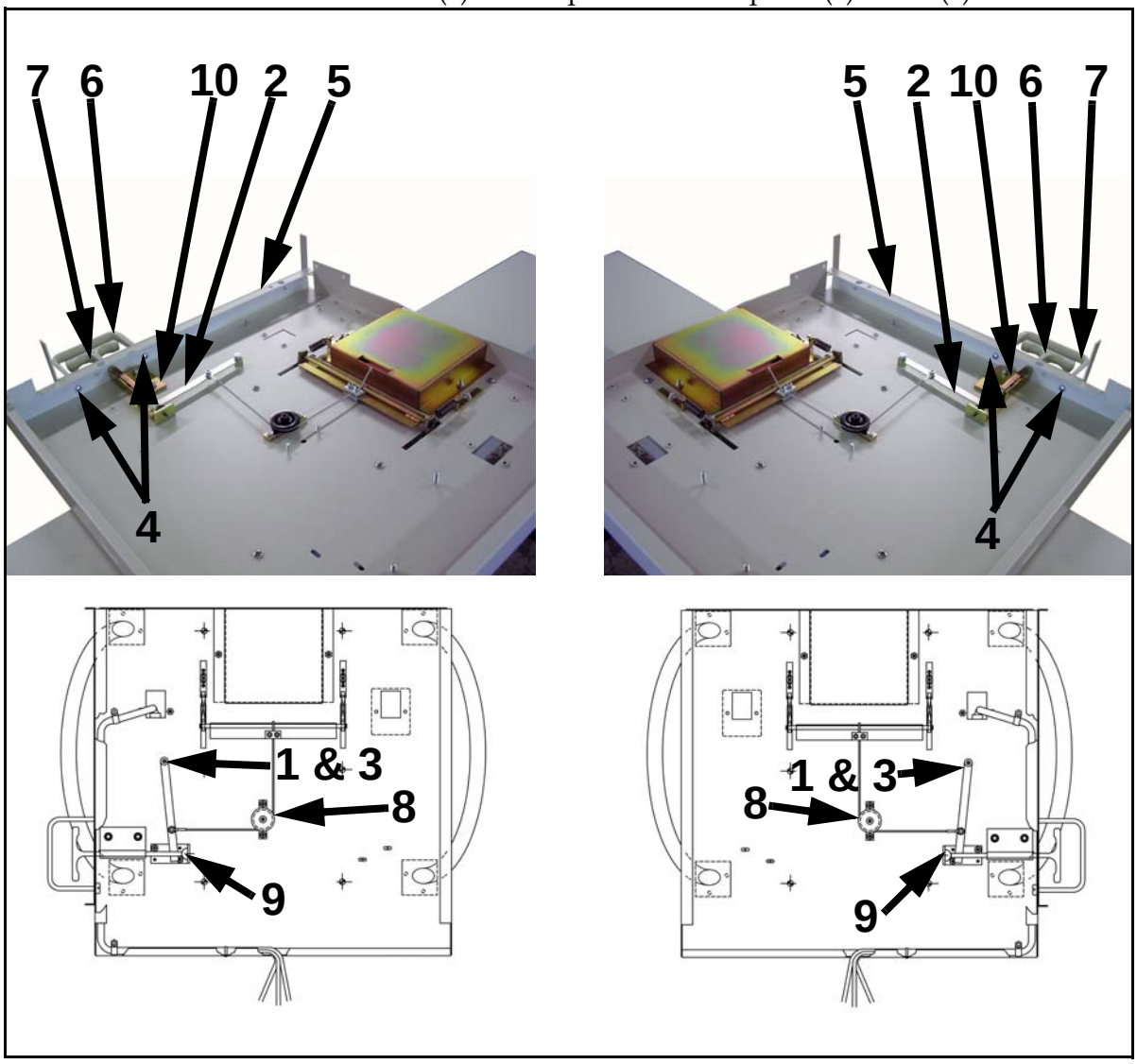


Figure Addendum D-16. Lock Mechanism Assembly (Left & Right Shown)

28 Reinstall frame (1 in Figure Addendum D-17.) with mounting screws (2).

Figure Addendum D-17. Frame Installation

29 Reinstall bottom cover (1 in Figure Addendum D-18) with mounting screws (2).

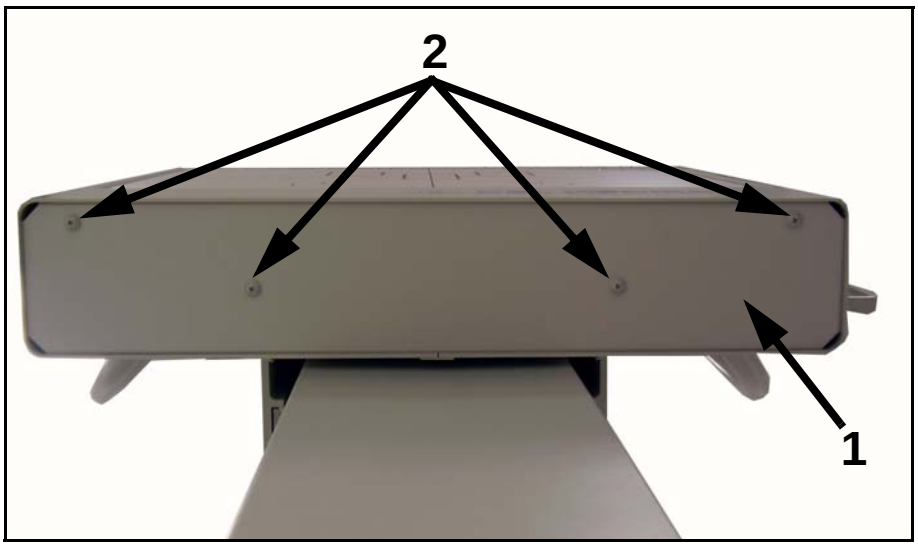


Figure Addendum D-18. Bottom Cover Screws

30 Install standoffs (1 in Figure Addendum D-19.). .

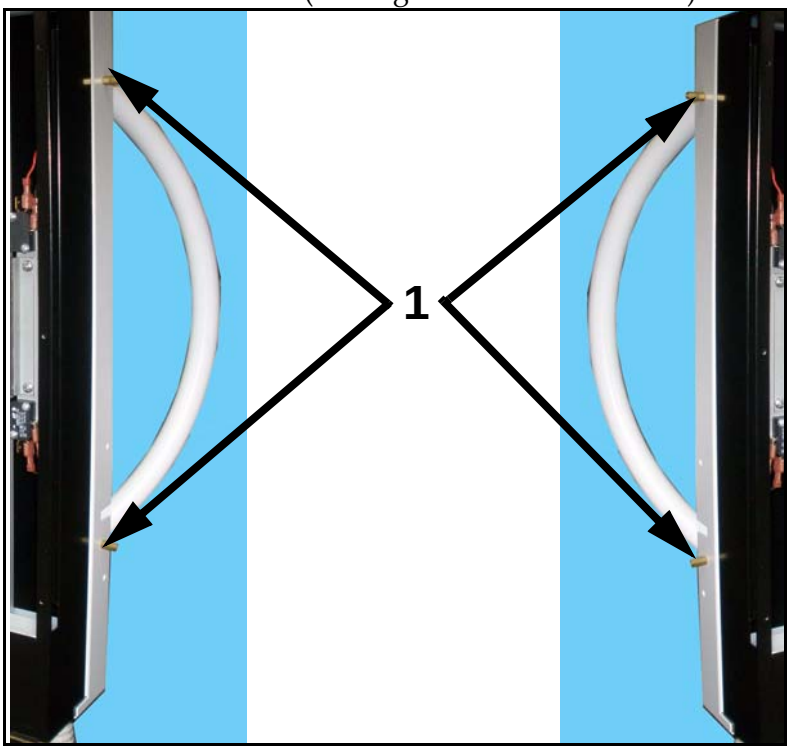


Figure Addendum D-19. Standoff Installation

31 Reinstall covers (1 in Figure Addendum D-20.). .

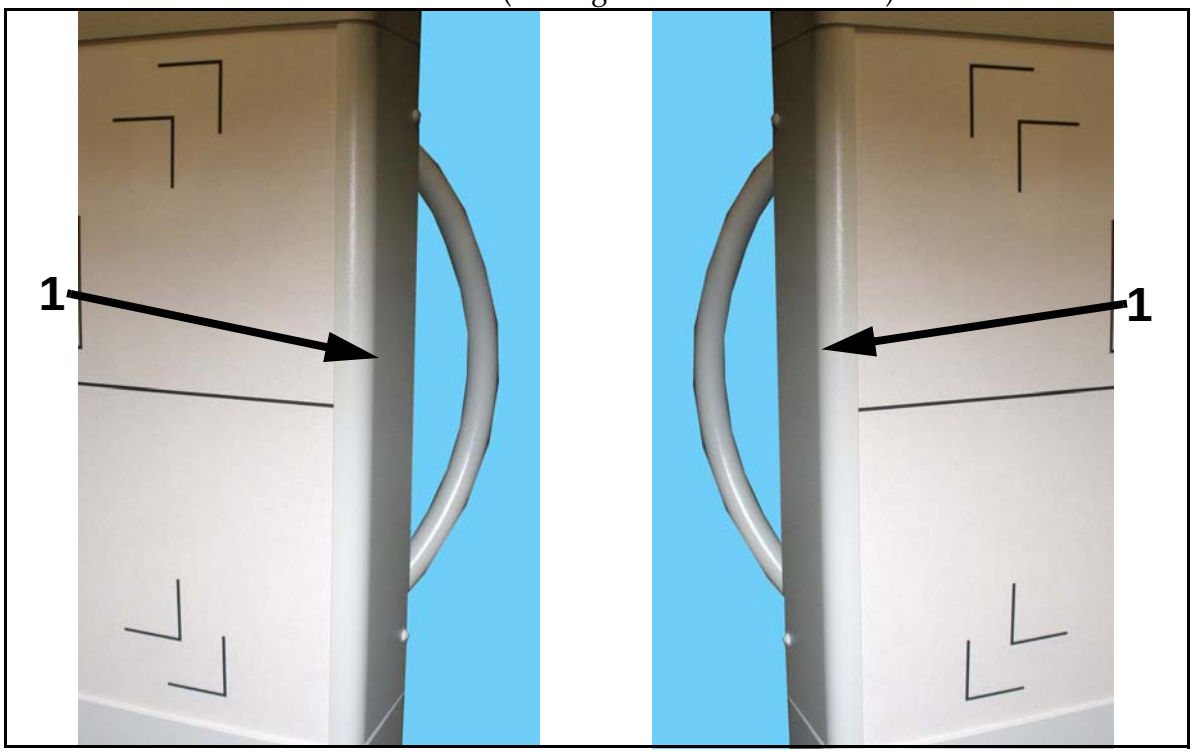


Figure Addendum D-20. Side Cover Installation

32 Install cover (1 in Figure Addendum D-21.) .

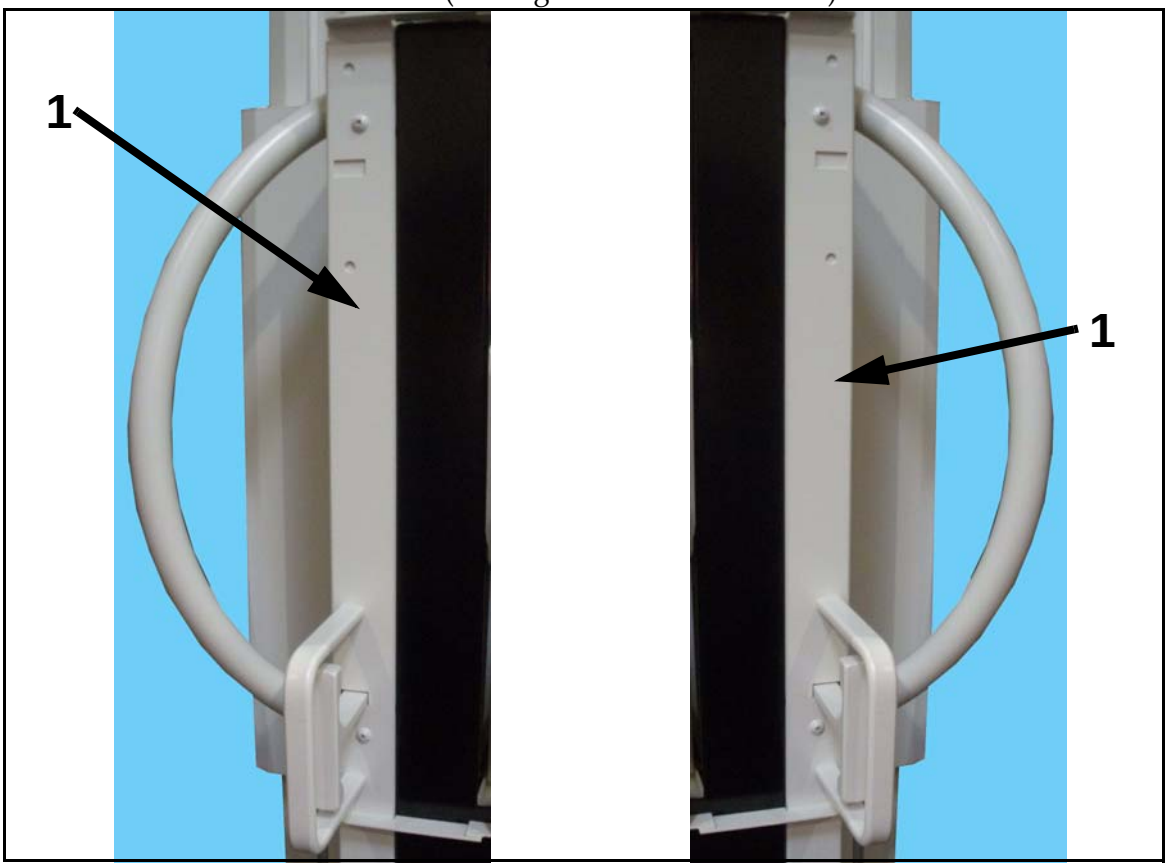


Figure Addendum D-21. Handle Side Cover Installation

33 Install cover (1 in Figure Addendum D-22.). .

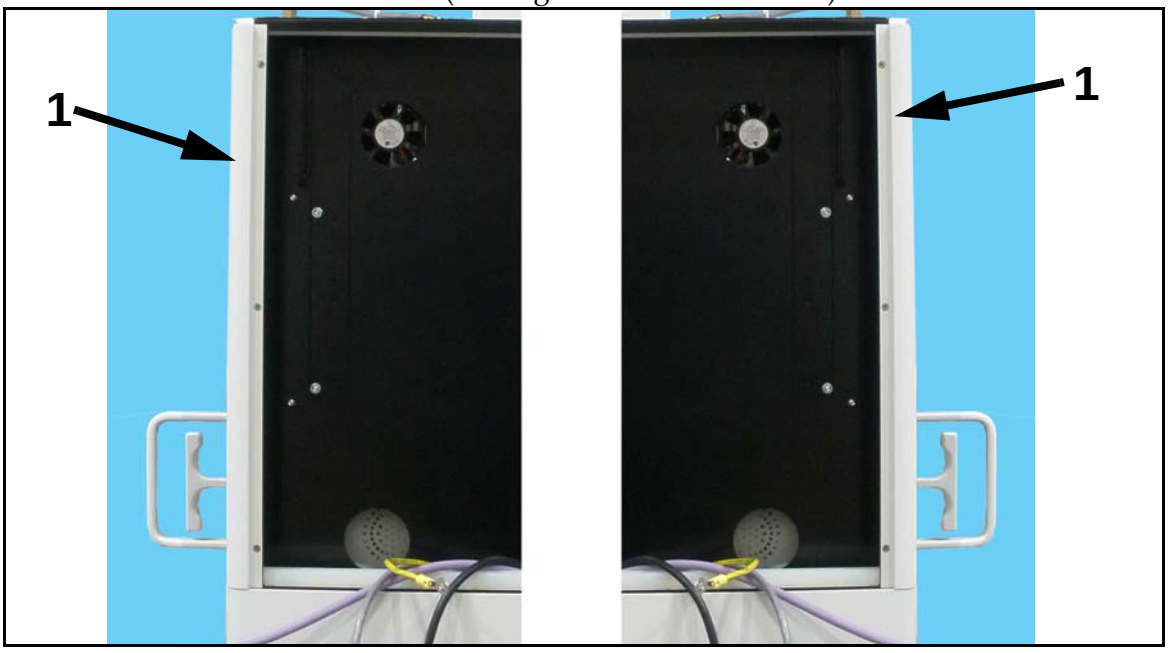


Figure Addendum D-22. Handle Front Cover Installation

34 Reinstall grid sensor. (1 in Figure Addendum D-23.). .

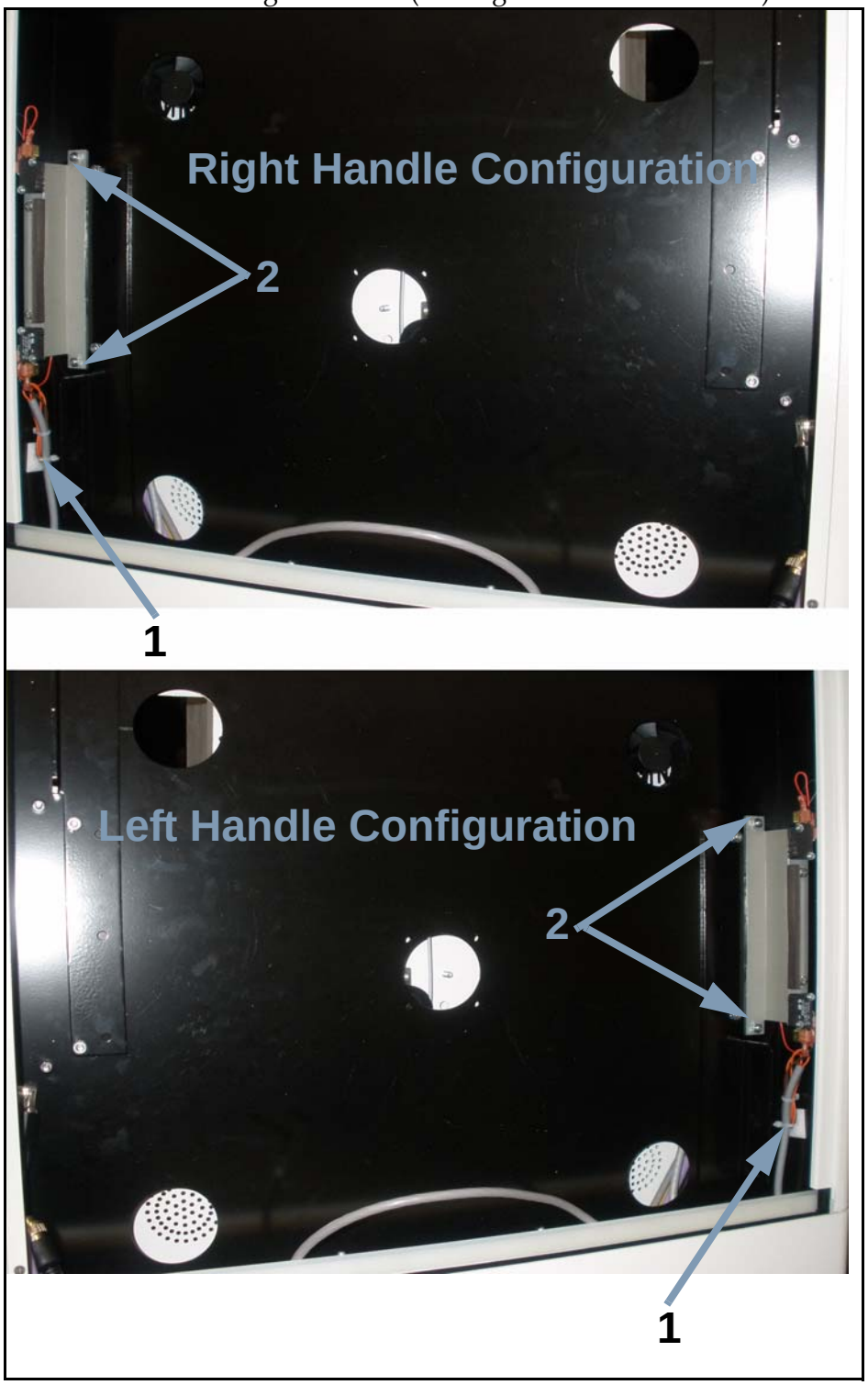


Figure Addendum D-23. Grid Sensor

Caution

Handle receptor with great care in the following steps. It is very fragile and very expensive.

35 Mount handles (1 in Figure Addendum D-24.) on receptor (2) with screws (3) from bag removed in step 9.

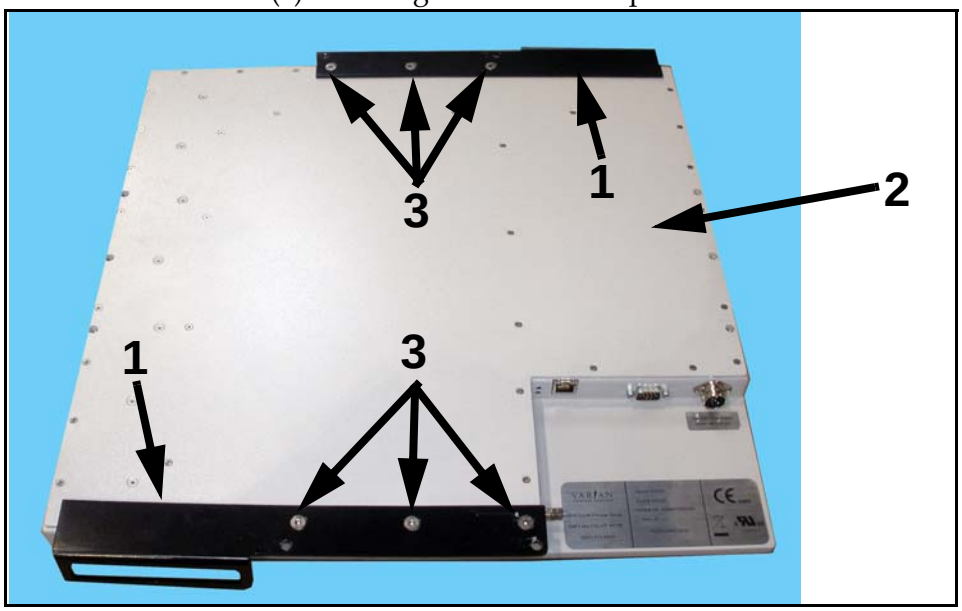


Figure Addendum D-24. Mounting Handles on Receptor

36 Place receptor on cart or stand in front of wallstand exactly as shown below.

Figure Addendum D-25. Receptor in Front of Wallstand

37 Connect cables from wallstand to receptor as shown below.

Figure Addendum D-26. Receptor Cable Connections

38 Very carefully lift receptor by handles and place it on studs on wallstand. Secure in place with nuts (1 in Figure Addendum D-27.) removed in step 10.

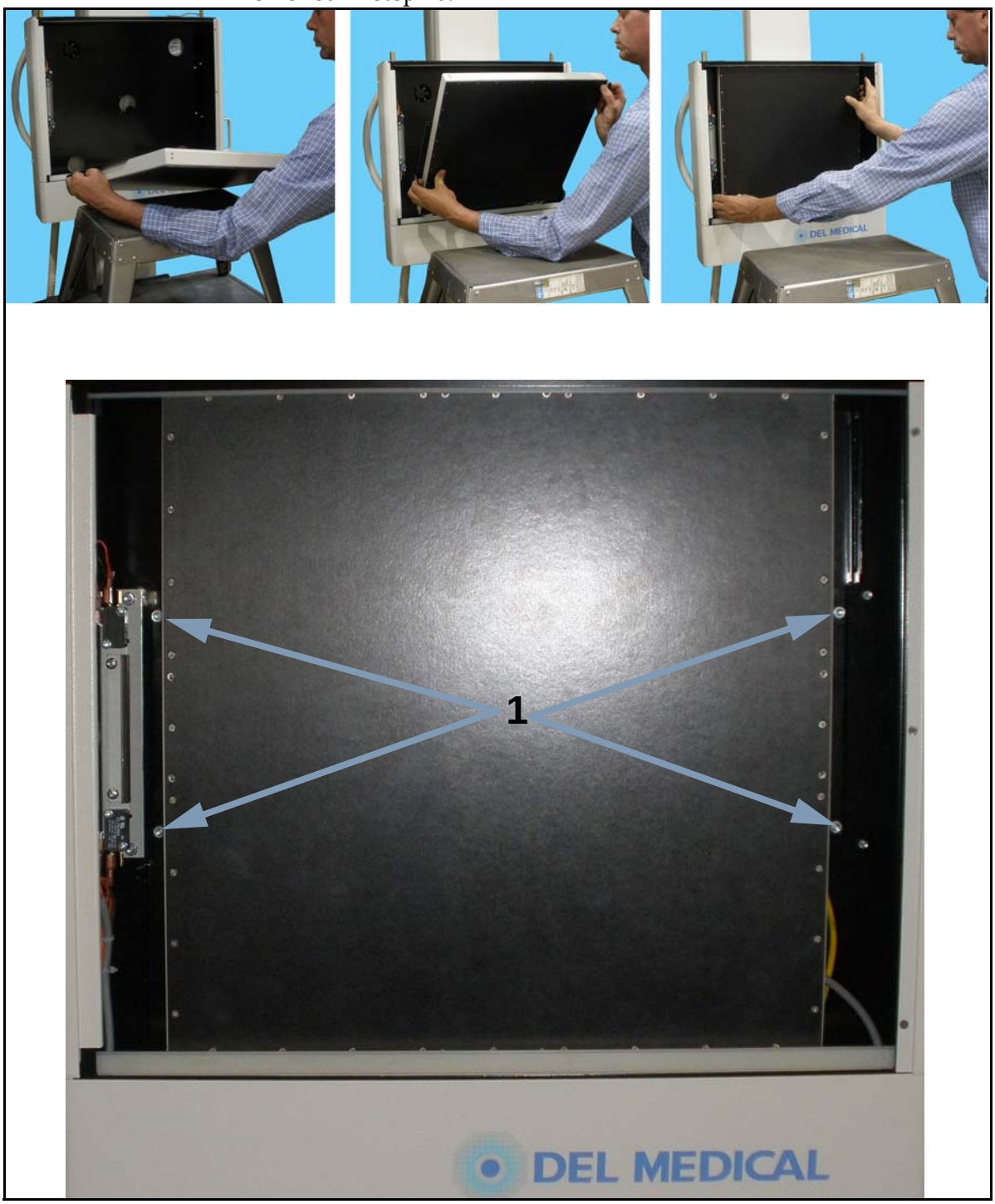


Figure Addendum D-27. Receptor Mounting

39 If optional ion chamber was removed, reinstall it as shown below.

Figure Addendum D-28. Ion Chamber Installation

40 For optional ion chamber, secure chamber in place with mounting screws (1 in Figure Addendum D-29).

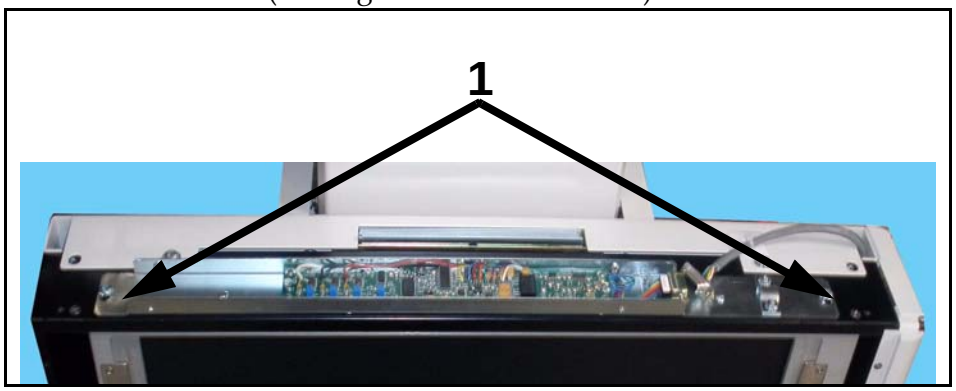


Figure Addendum D-29. Ion Chamber Mounting Screws

41 For optional ion chamber, reconnect cable and hardware as shown below.

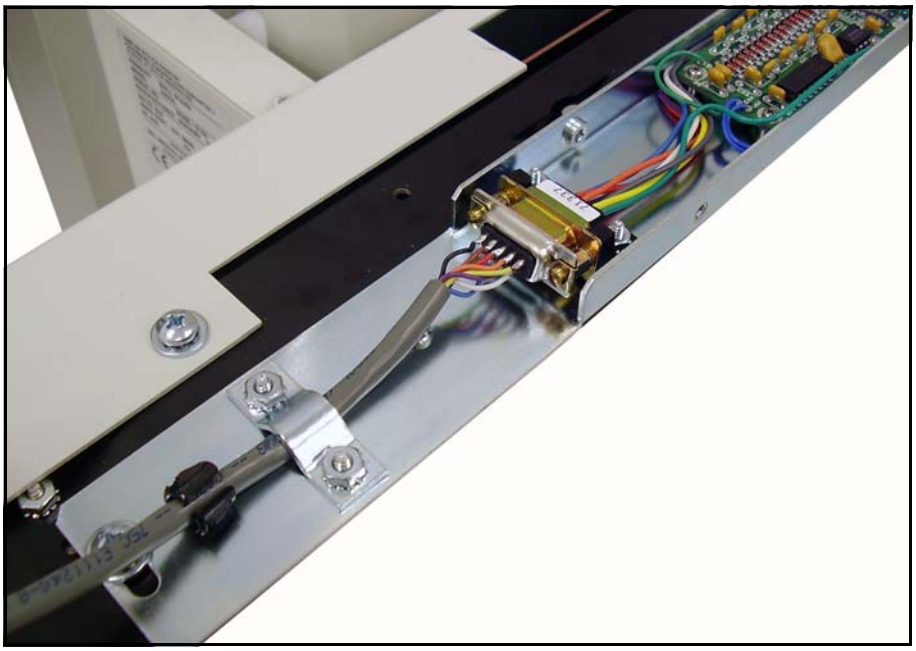


Figure Addendum D-30. ION Chamber Screws

42 For optional ion chamber, reinstall cover (1 in Figure Addendum D-31) with screws (2).

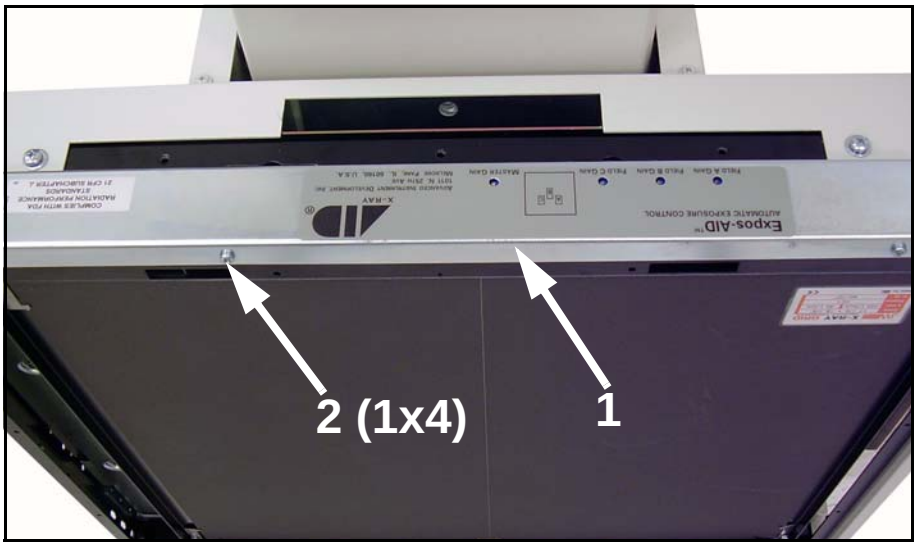


Figure Addendum D-31. ION Chamber Cover Screws

43 Reinstall grid tray(1 in Figure Addendum D-32.).

Figure Addendum D-32. Grid Installation

44 Reinstall front cover (1 in Figure Addendum D-33.).

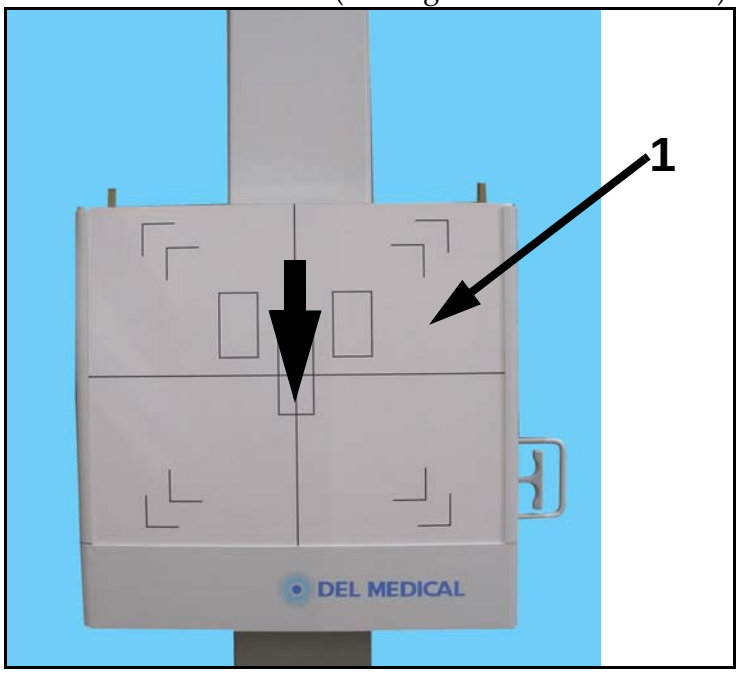


Figure Addendum D-33. Front Cover Installation

45 Add counterweights (1 in Figure Addendum D-34.) to balance wall stand movement.

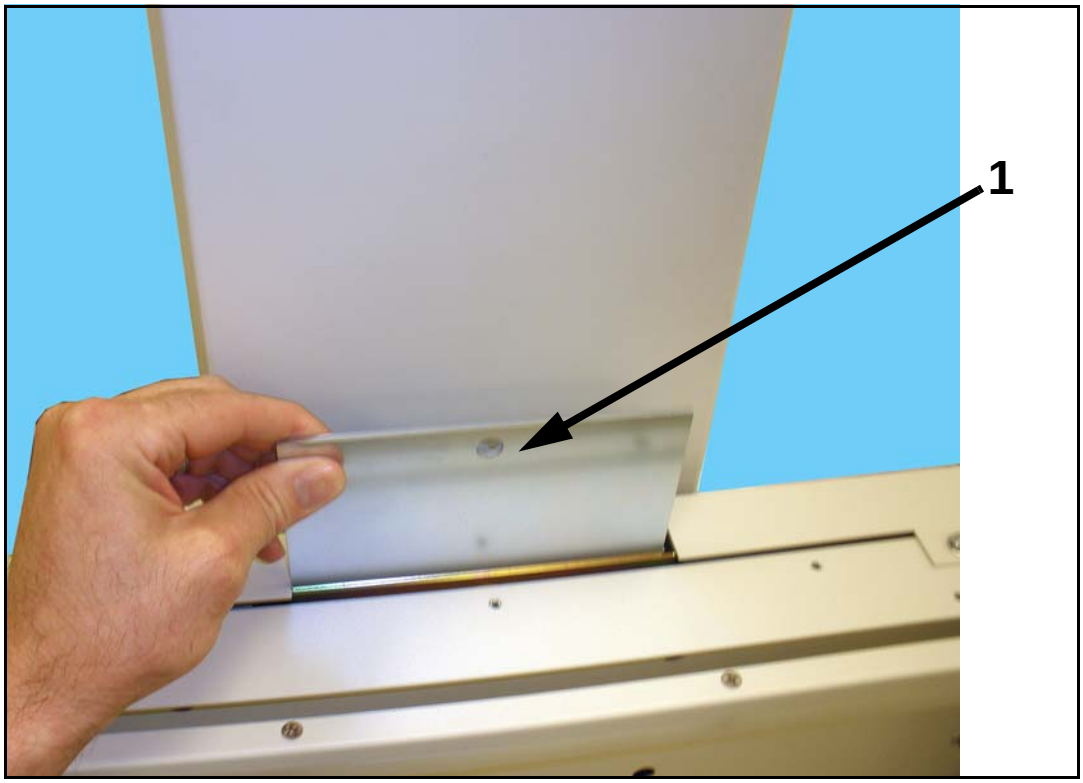


Figure Addendum D-34. Counterweights

46 Reinstall top cover (1 in Figure Addendum D-35.)

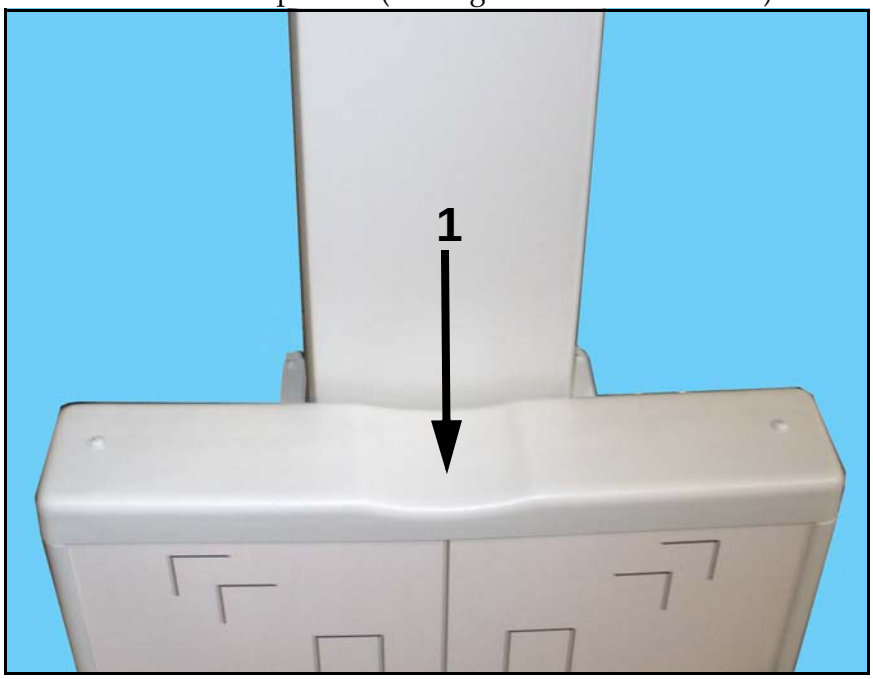


Figure Addendum D-35. Top Cover Installation

47 Remove junction box cover (1 in Figure Addendum D-36.).

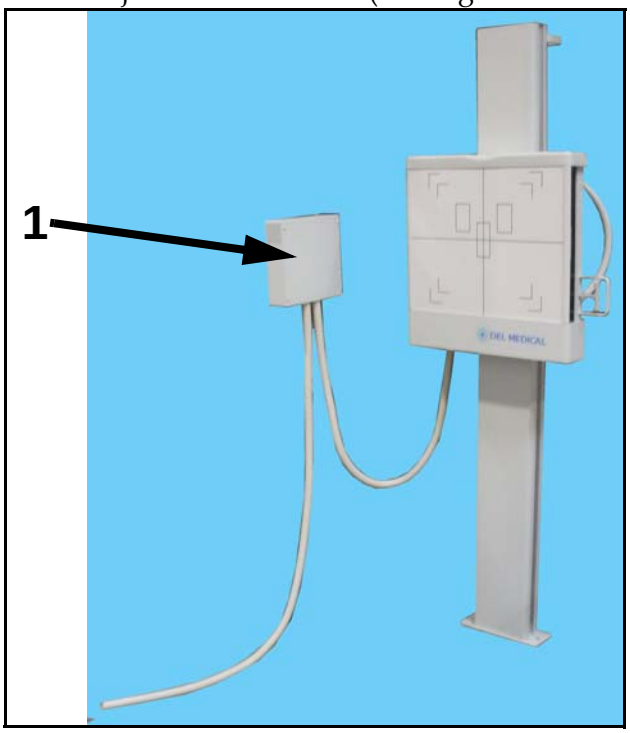


Figure Addendum D-36. Junction Box Cover

Note

All cables can be routed either through wall conduit port (1 in Figure Addendum D-37.) or conduit tubing (2).

48 Connect power cable (3) to power supply (4).

49 If applicable, connect optional ion chamber cable from generator to ion chamber cable (5).

50 Connect Varian detector cable from Varian control unit to Varian detector cable (6).

51 Route comm cable (7) through conduit to Varian control unit.

52 Connect ground cable from generator to ground terminal (8).

Figure Addendum D-37. Junction Box Connections

53 Connect cooling fan cable wires (1 in Figure Addendum D-38.) to terminals on TB1 (2). The red wire connects to 24VDC on TB1. The black wire connects to 24VDC COM

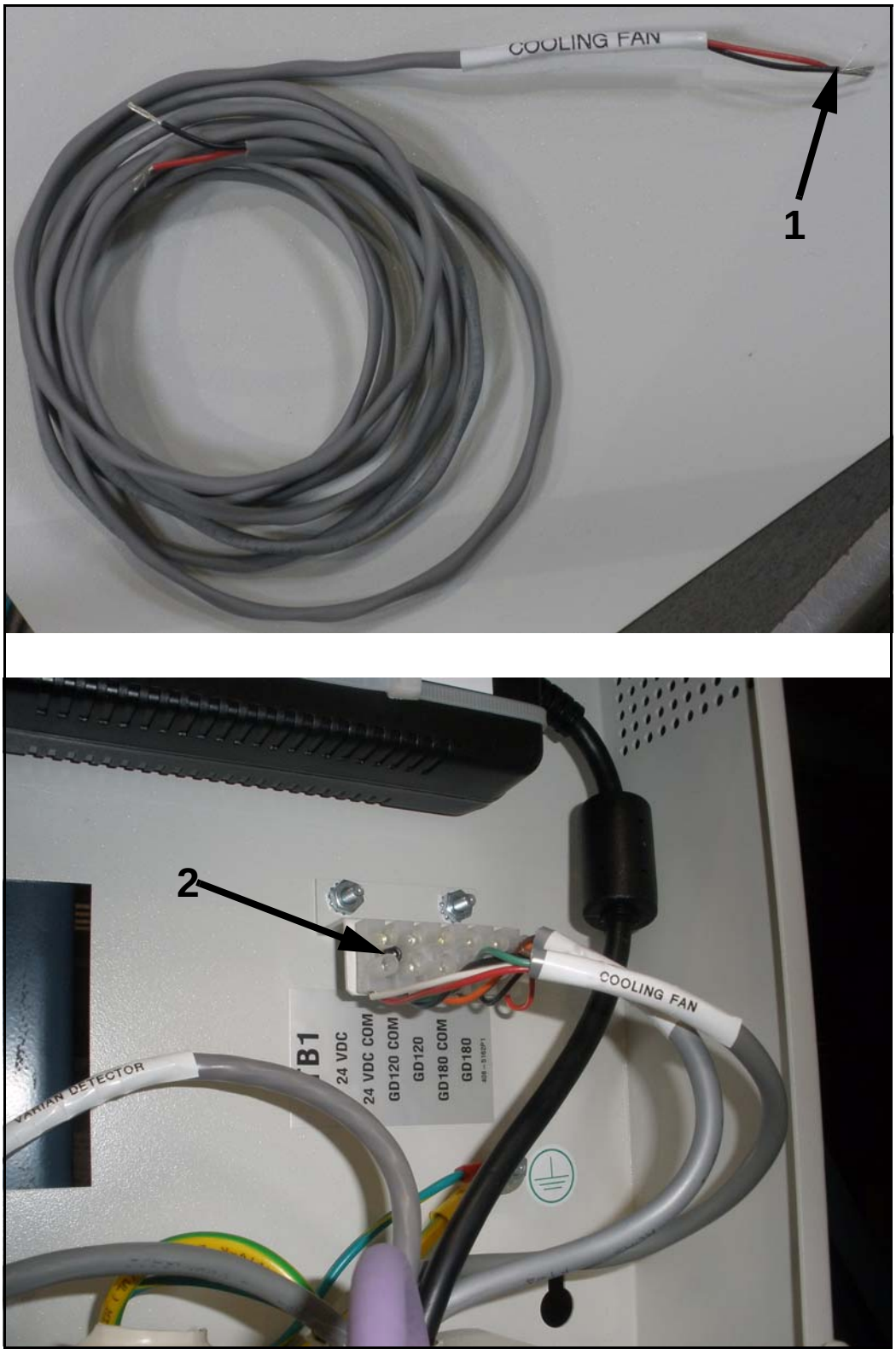


Figure Addendum D-38. Cooling Fan Cable Hookup

54 Connect sensor cable wires (1 in Figure Addendum D-39.) to terminals on TB1 (2). Each wire is tagged with corresponding terminal connection.

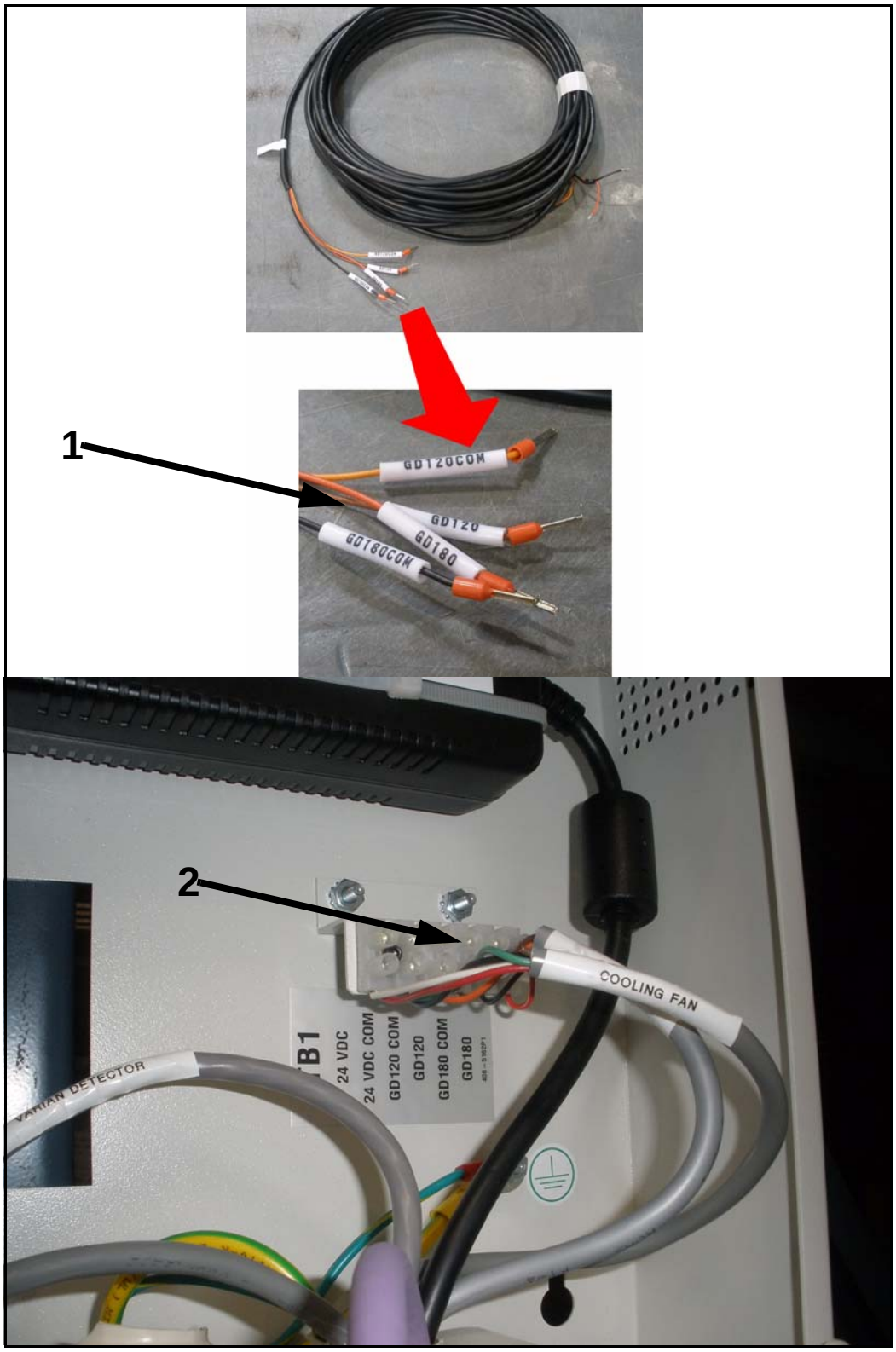


Figure Addendum D-39. Sensor Cable Hookup

55 Reattach junction box cover (1 in Figure Addendum D-40.)

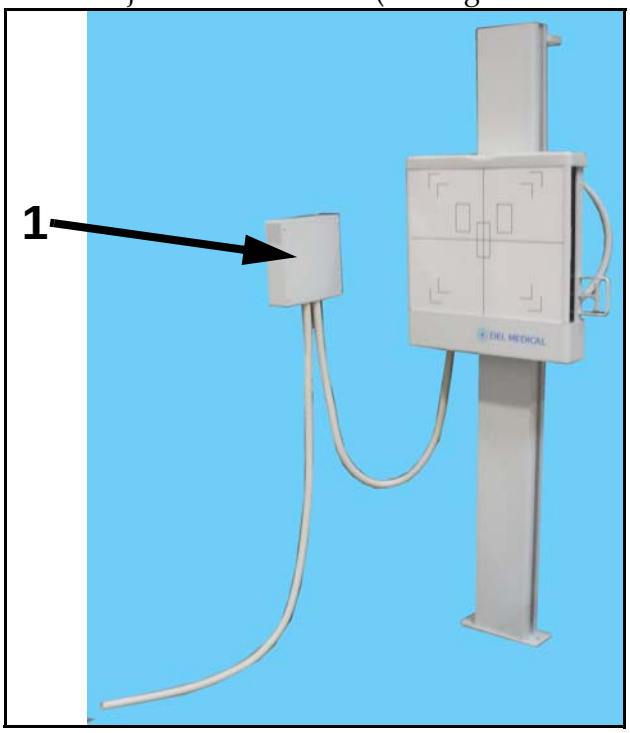


Figure Addendum D-40. Junction Box Cover

56 Proceed with alignment of the wallstand and receptor per Installation Instructions step 5 Chapter 2, page 2-5.

Addendum

Image Receptor Installation

E

Toshiba FDX4343R Image Receptor Installation

This Addendum describes the Toshiba FDX4343R Digital Imaging Receptor installation on the VS-200 Wallstand.

Tools Required:

- 3/16″ Nut Driver
- 11/32″ Nut Driver
- Diagonal (Side) Cutters
- Medium Phillips Tip Screwdriver
- Metric Hex Wrench Set

1 Unscrew top cover screws (1 in Figure Addendum E-1.) and remove top cover (2).

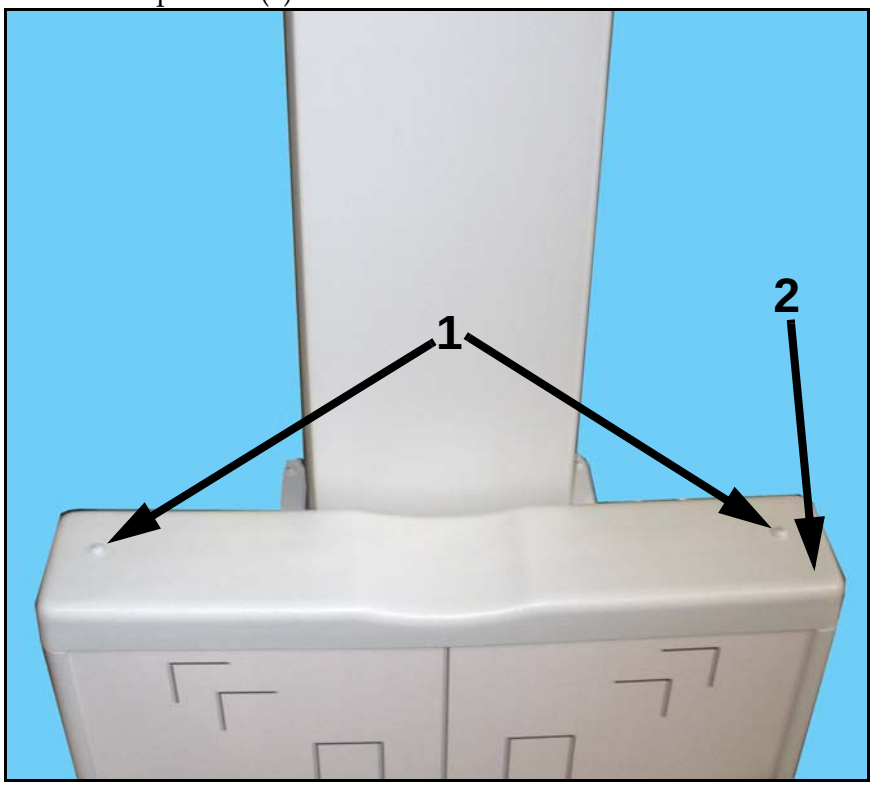


Figure Addendum E-1. Top Cover Removal

2 Slide front cover (1 in Figure Addendum E-2.) up and off wallstand.

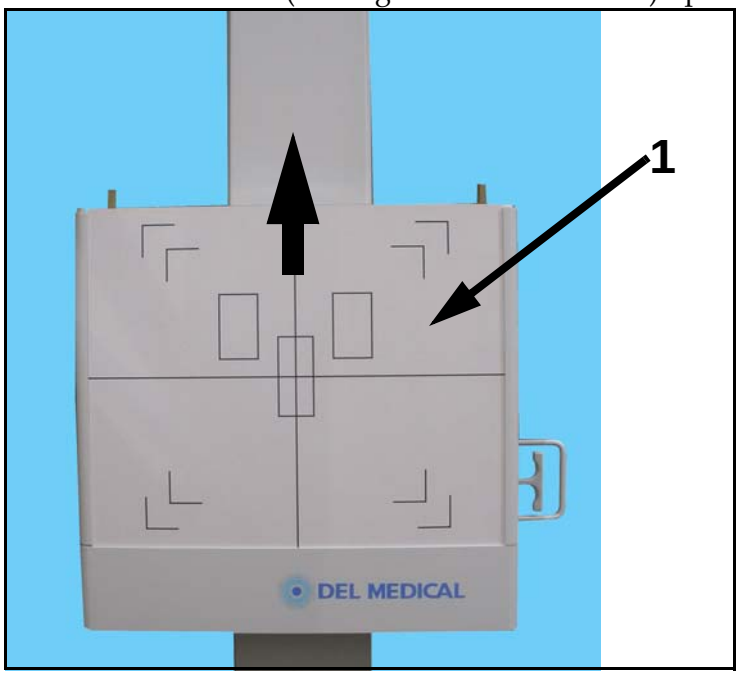


Figure Addendum E-2. Front Cover Removal

3 Unscrew four bottom cover screws (1 in Figure Addendum E-3) and remove bottom cover (2).

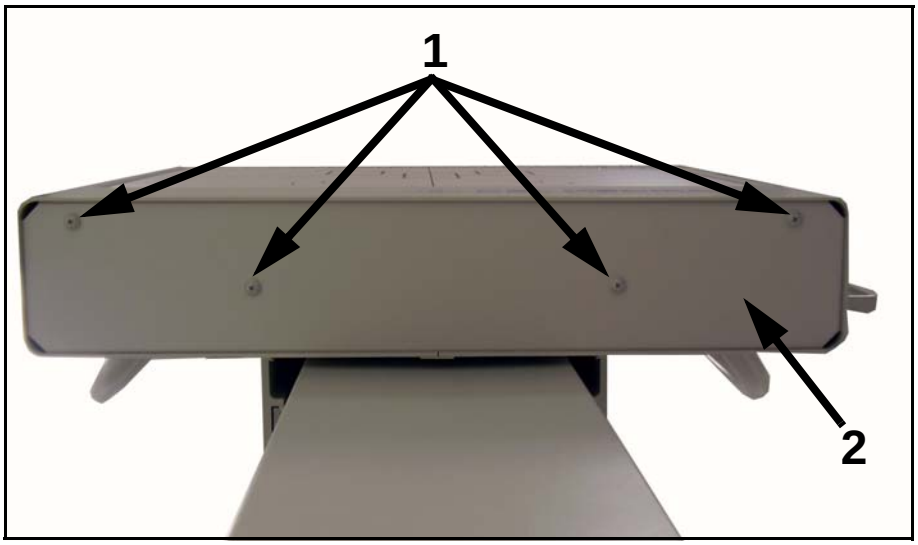


Figure Addendum E-3. Bottom Cover Screws

4 Unscrew four lower cover screws (1 in Figure Addendum E-4) and remove lower cover (2).

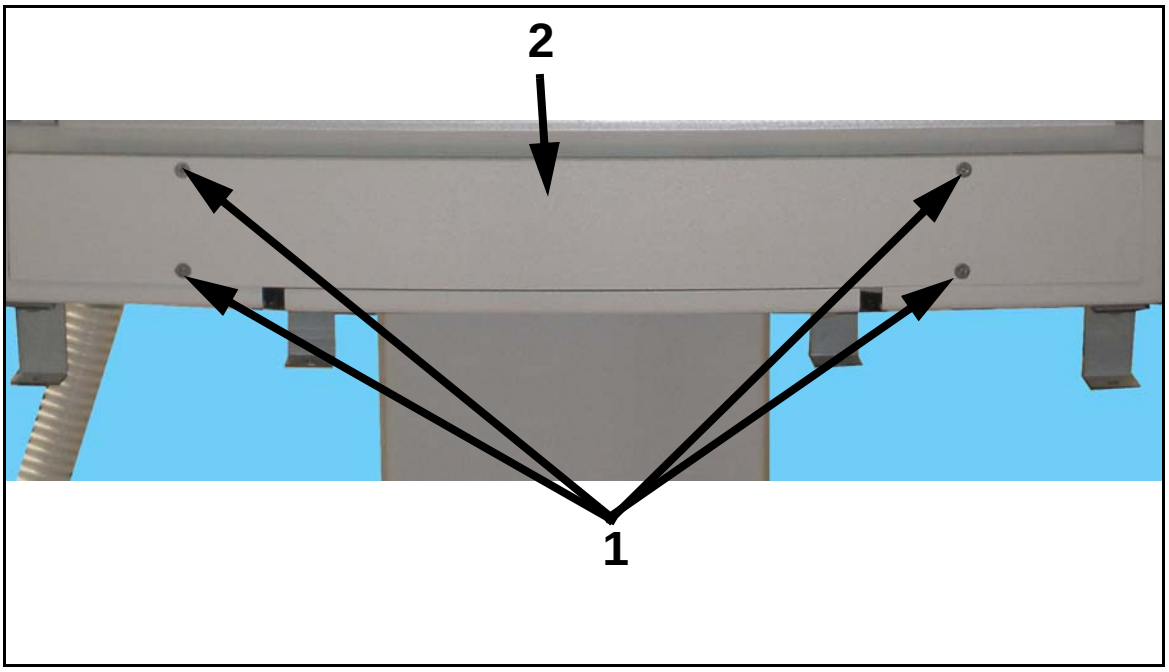


Figure Addendum E-4. Lower Cover Screws

5 If installed, remove grid tray (1 in Figure Addendum E-5.).

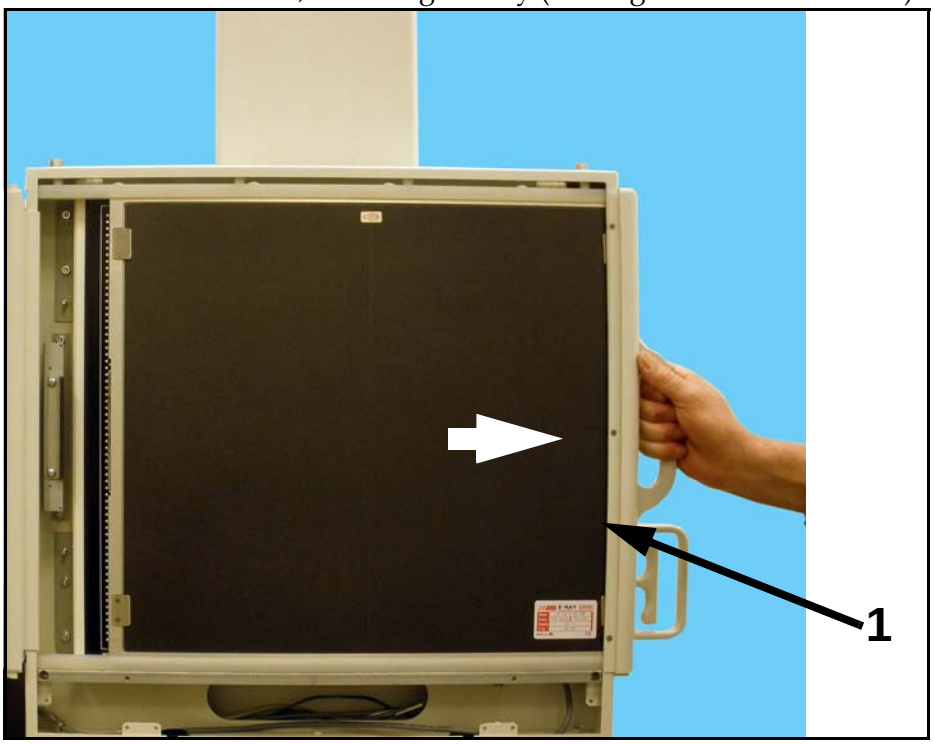


Figure Addendum E-5. Grid Removal

6 Remove and save bag (1 in Figure Addendum E-6.).

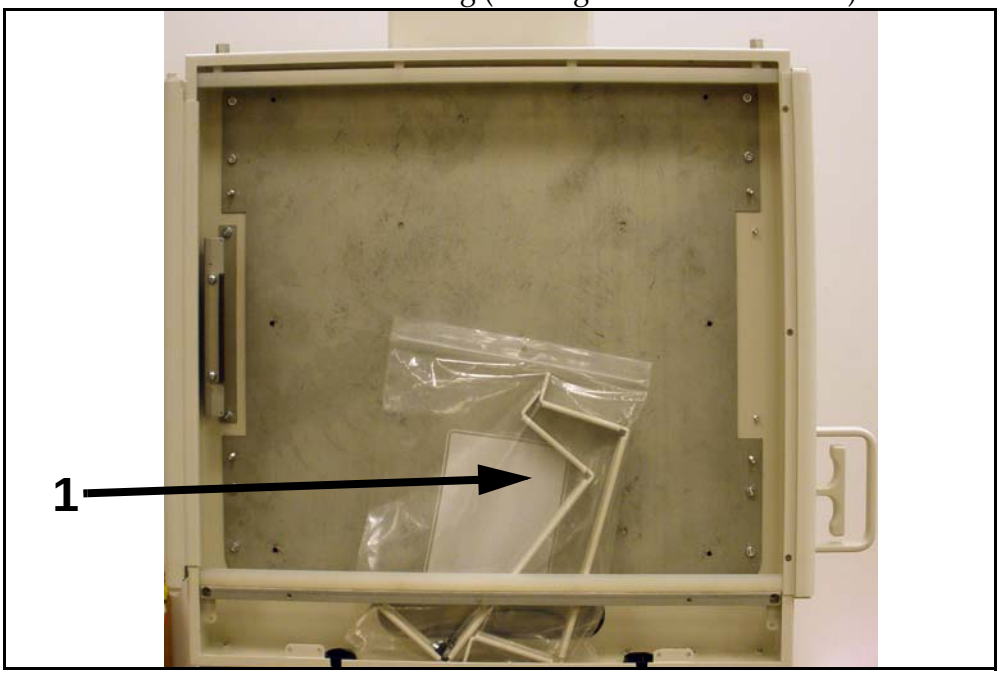


Figure Addendum E-6. Bag Removal

7 Unscrew eight base plate mounting nuts (1 in Figure Addendum E-7.) and remove base plate (2).

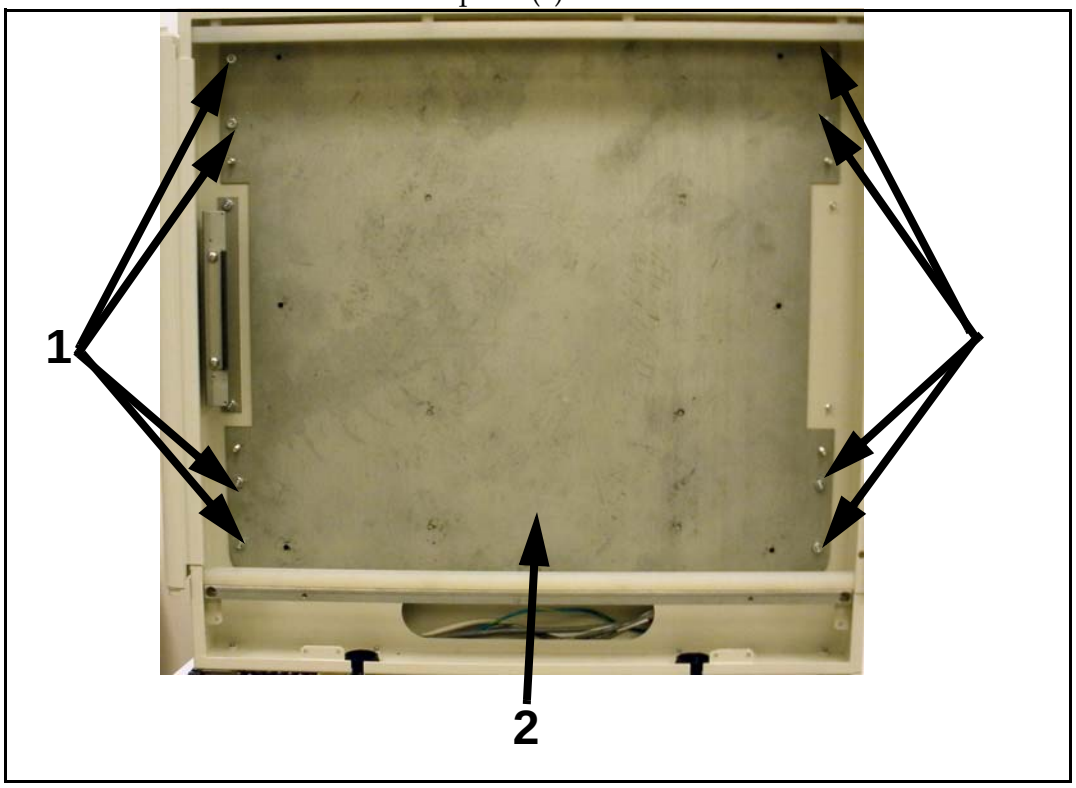


Figure Addendum E-7. Base Plate Mounting Nuts

8 The clamp handle (1 in Figure Addendum E-8.) can be mounted on the left or right side of the wall stand. If it is mounted in the desired position, go to step 35. If it is not mounted in the desired position for your application, go to the next step.

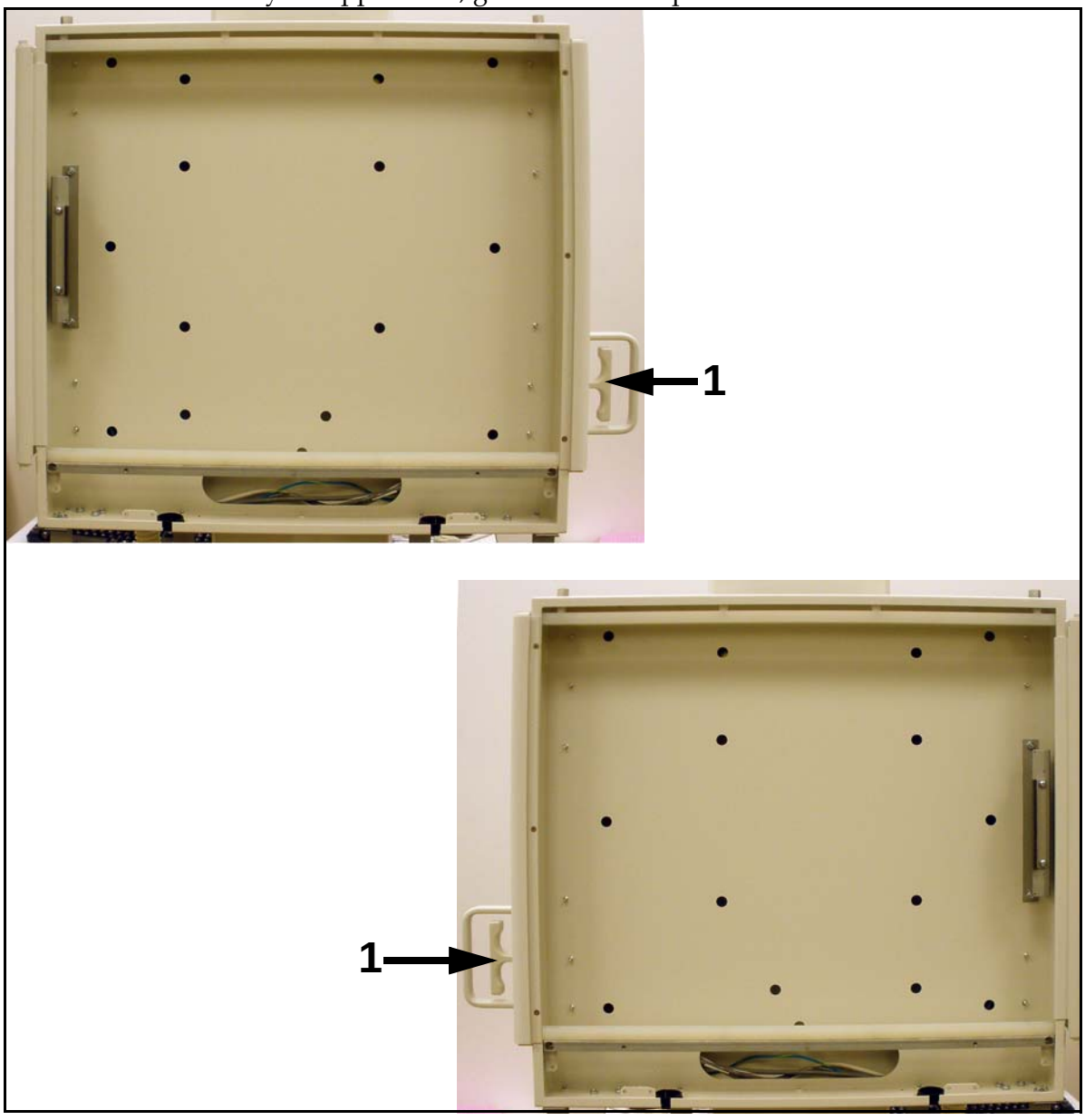


Figure Addendum E-8. Clamp Handle Mounting

9 Remove nuts (1 in Figure Addendum E-9.) and bracket. Remount bracket on opposite side (2).

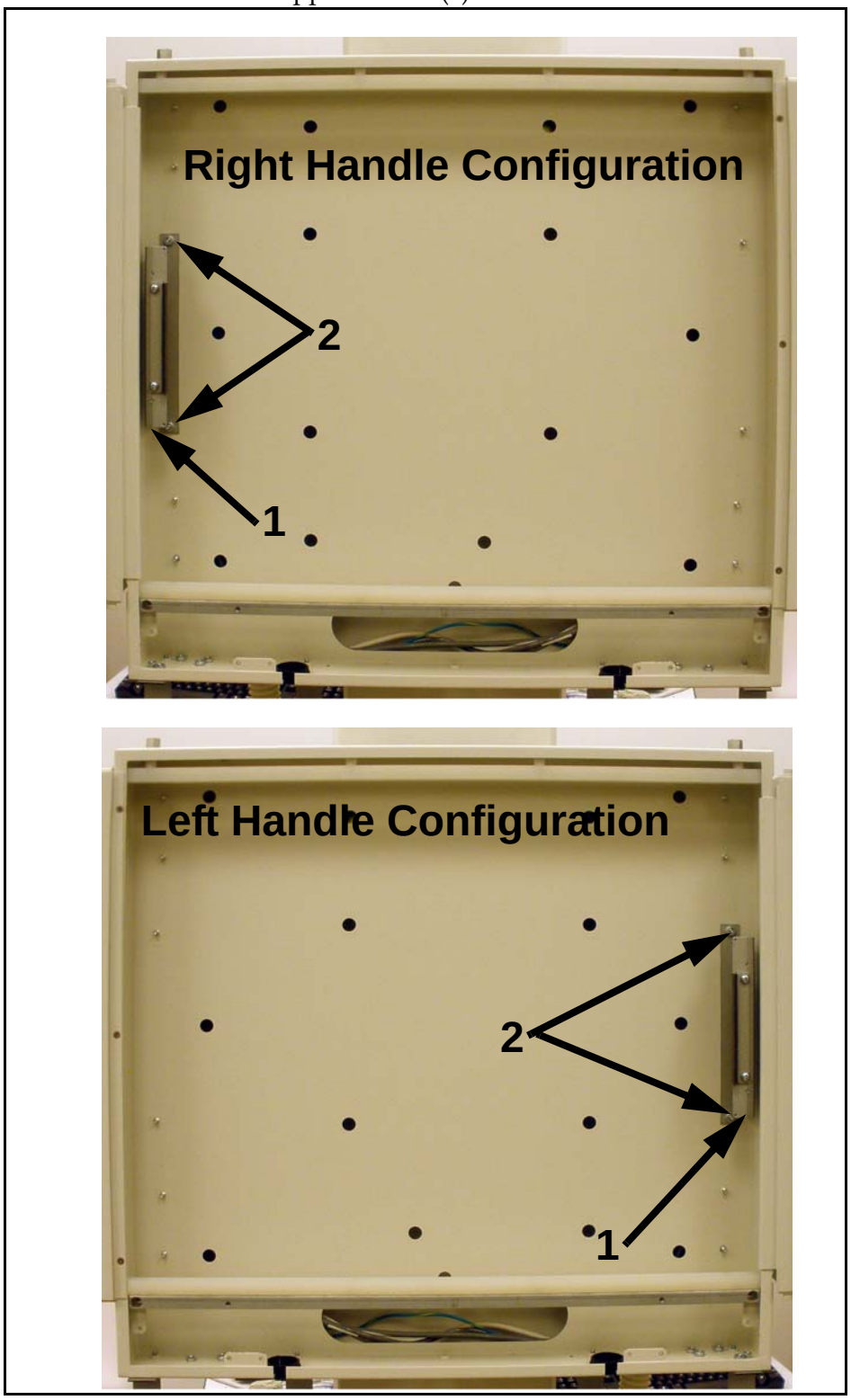


Figure Addendum E-9. Grid Bracket

10 Remove screws (1 in Figure Addendum E-10.) and remove cover (2).

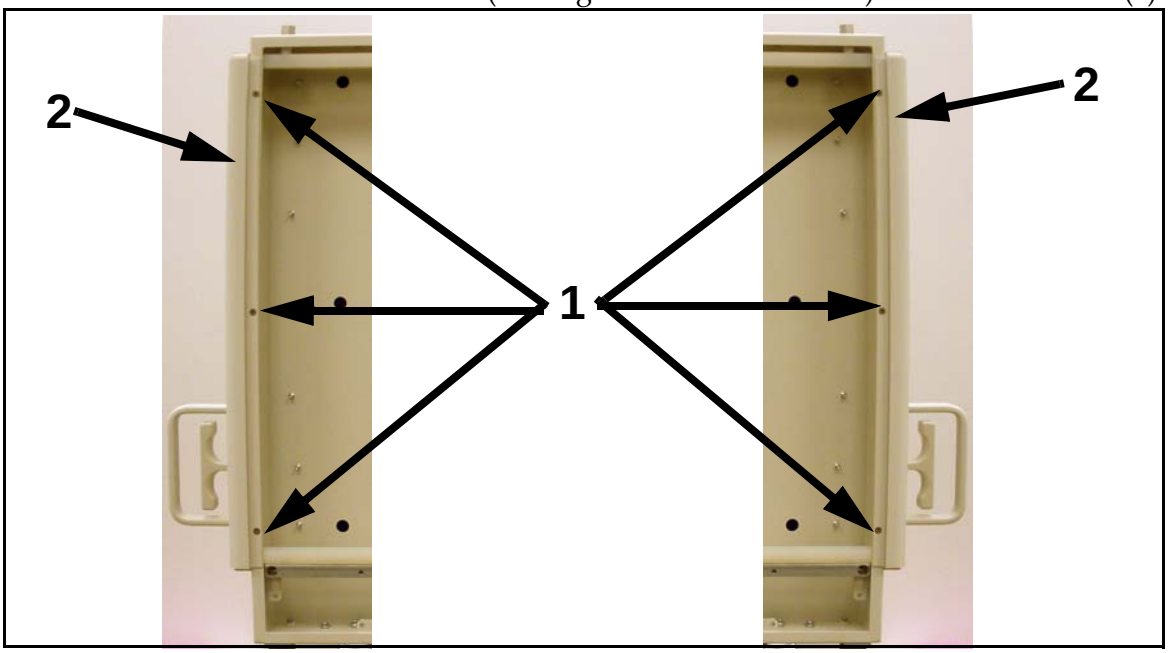


Figure Addendum E-10. Handle Front Cover Removal

11 Remove screws (1 in Figure Addendum E-11.) and remove cover (2).

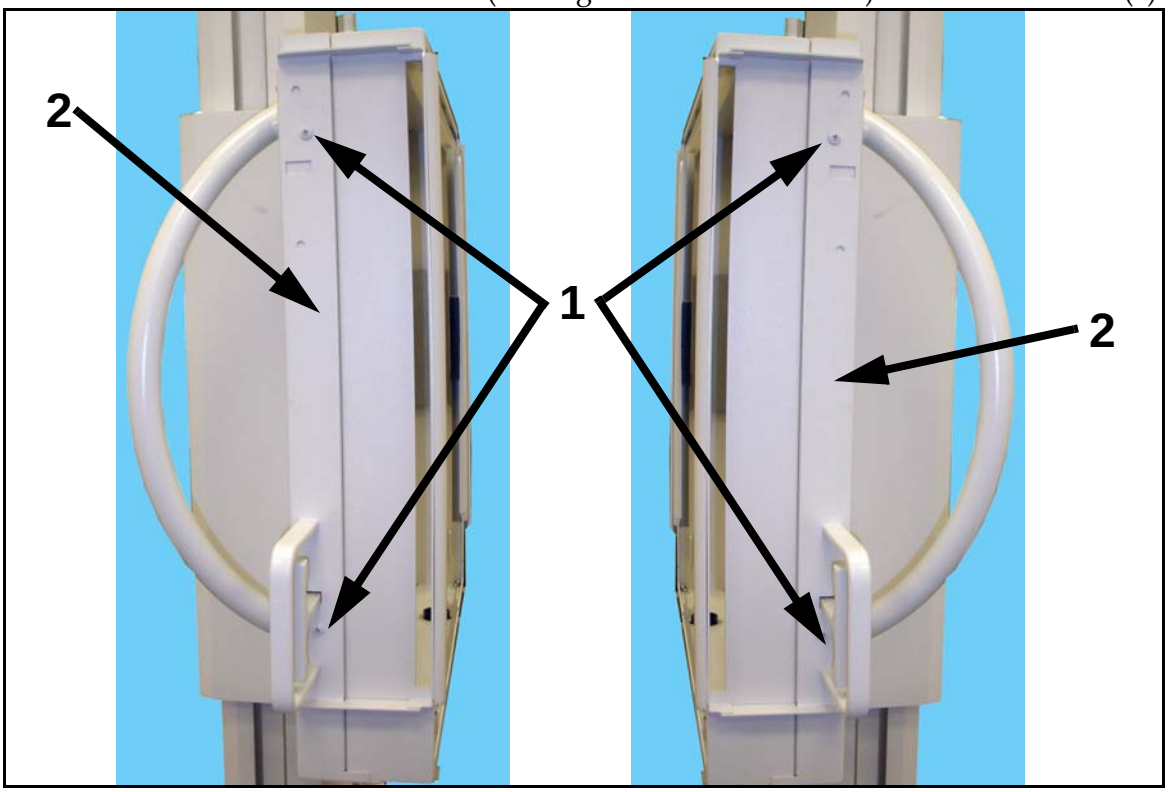


Figure Addendum E-11. Handle Side Cover Removal

12 Remove screws (1 in Figure Addendum E-12.) and remove cover (2).

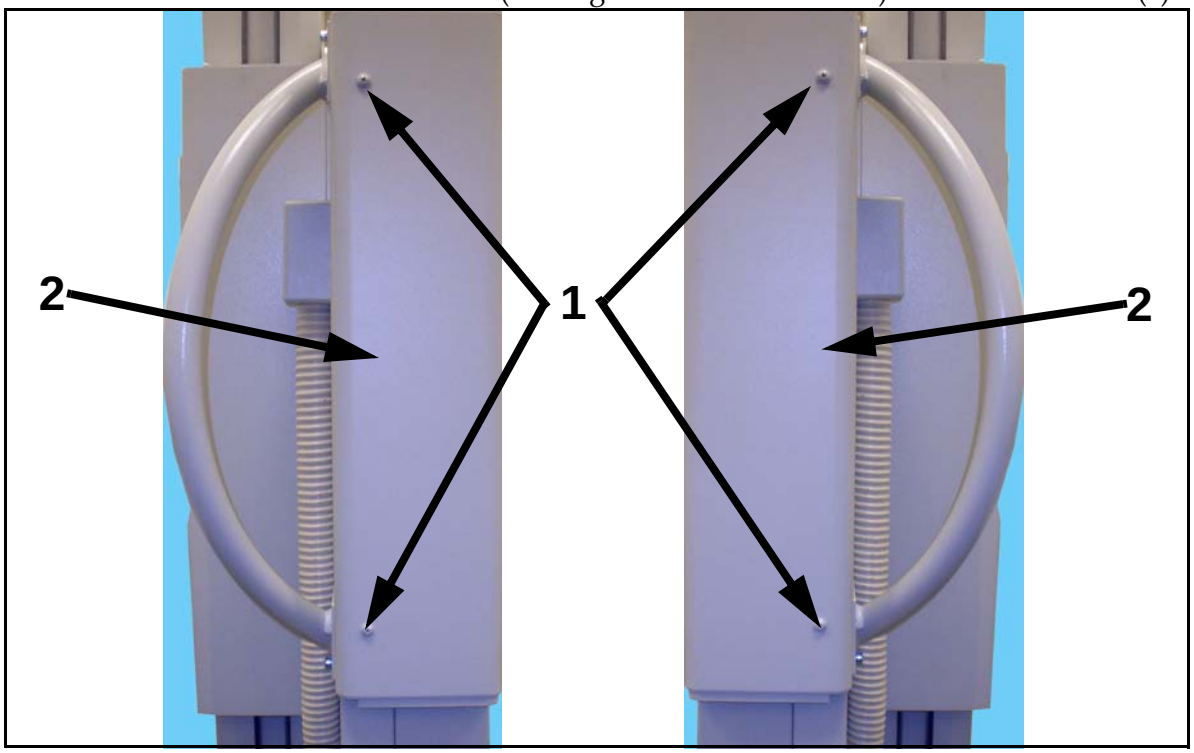


Figure Addendum E-12. Side Cover Removal

13 Remove standoffs (1 in Figure Addendum E-13.).

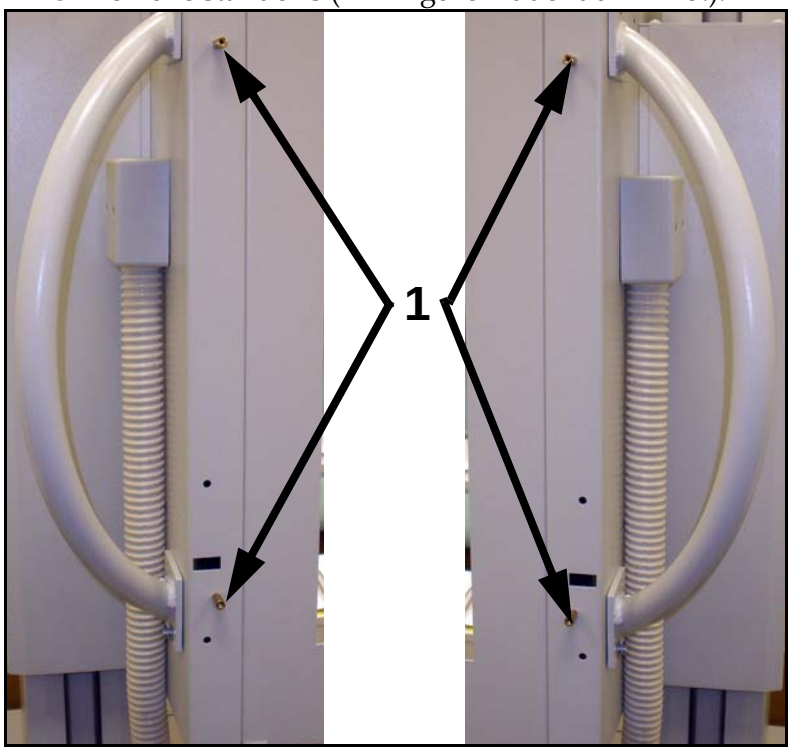


Figure Addendum E-13. Standoff Removal

14 Remove screws (1 in Figure Addendum E-14.) and frame (2).

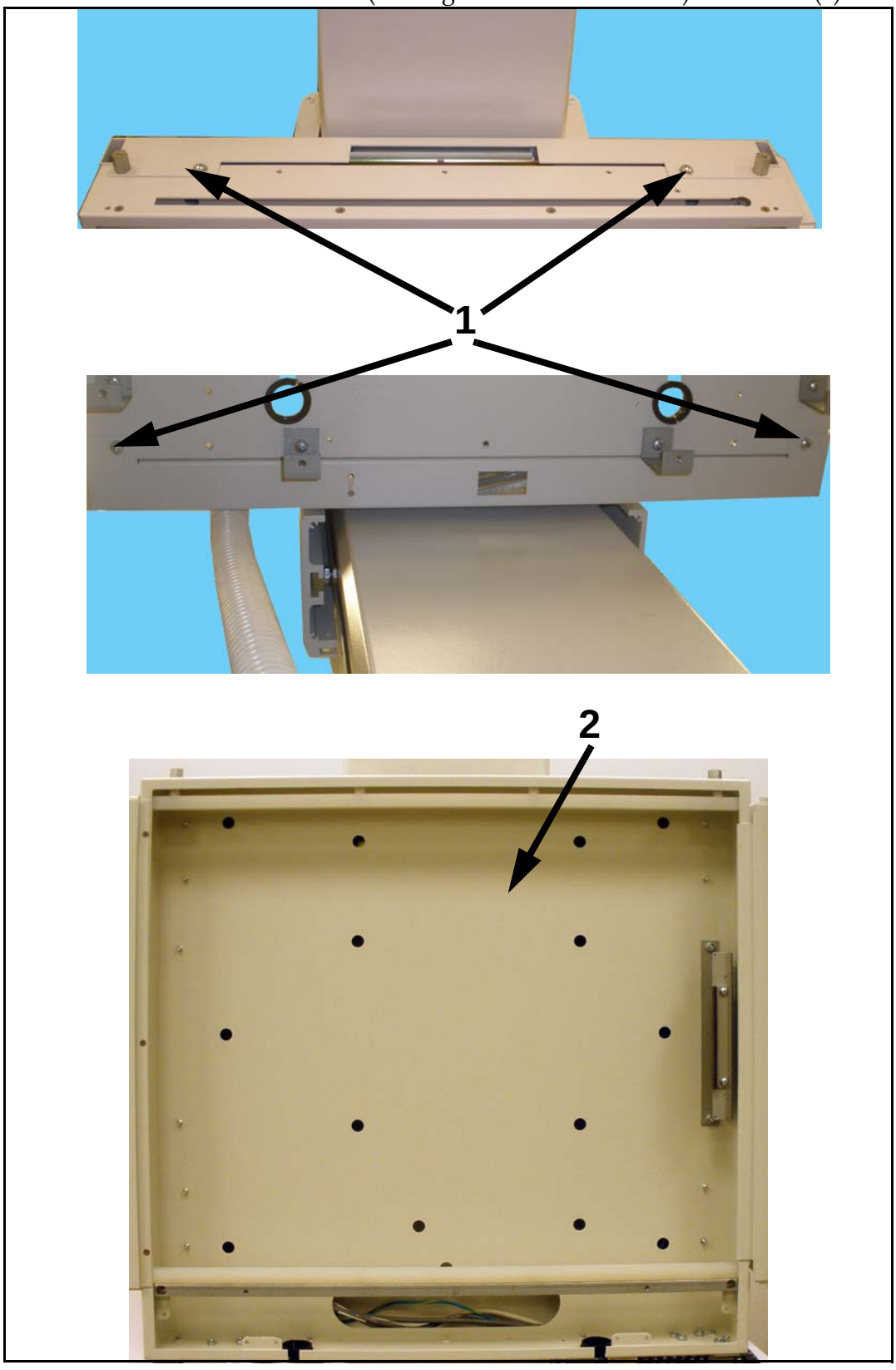


Figure Addendum E-14. Frame Removal

15 Unscrew lever nut (1 in Figure Addendum E-15) and lift lever (2) and spacer (3) off of mounting stud.

16 Unscrew two inside bracket screws (4) and remove bracket (5), handle guard (6) and handle (7).

17 Remove pulley assembly (8) and place in new position.

18 Remove bumper assembly (9) and place in new position.

19 Remove handle guide (10) and place in new position.

20 Slide handle (7) into bracket (5).

21 Install bracket (5) and secure in place with screws (4) and handle guard (6).

22 Mount lever (2) in new position with spacer (3) & nut (1).

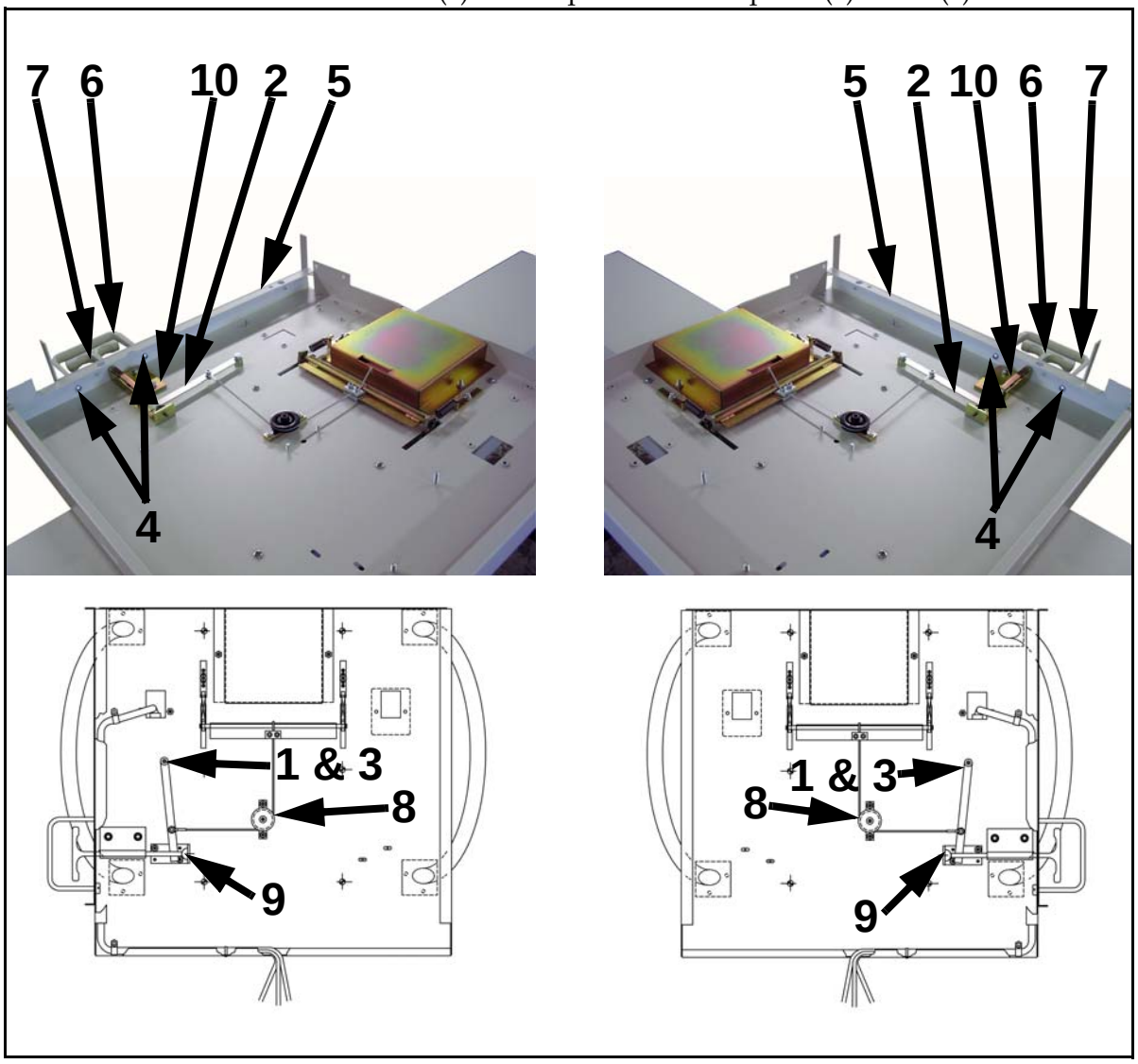


Figure Addendum E-15. Lock Mechanism Assembly (Left & Right Shown)

23 Reinstall frame (1 in Figure Addendum E-16.) with mounting screws (2).

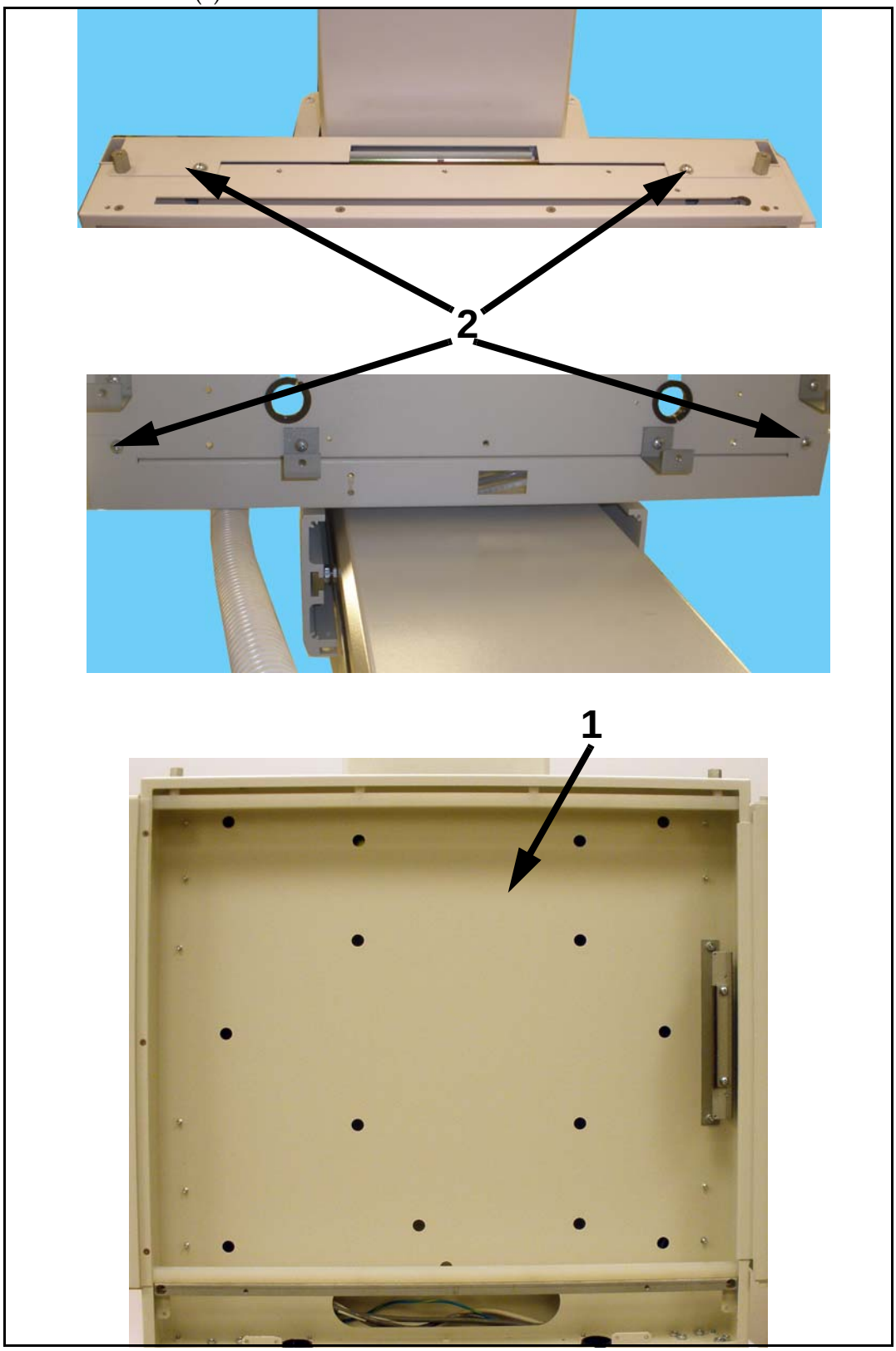


Figure Addendum E-16. Frame Installation

24 Install standoffs (1 in Figure Addendum E-17.).

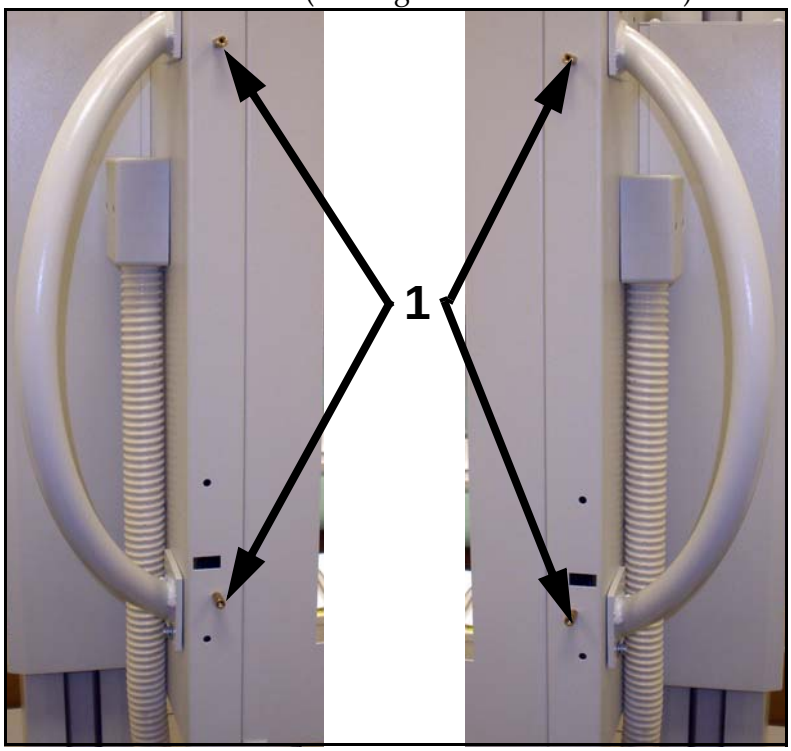


Figure Addendum E-17. Standoff Installation

25 Reinstall covers (1 in Figure Addendum E-18.).

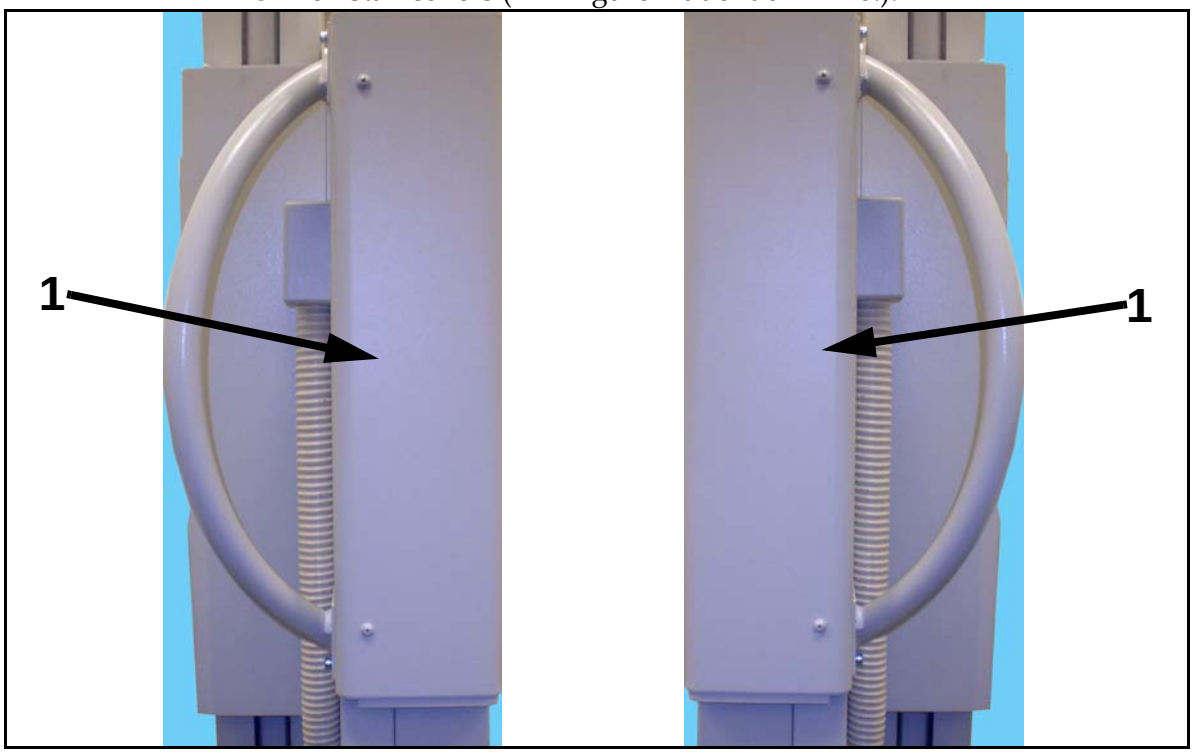


Figure Addendum E-18. Side Cover Installation

26 Install cover (1 in Figure Addendum E-19.).

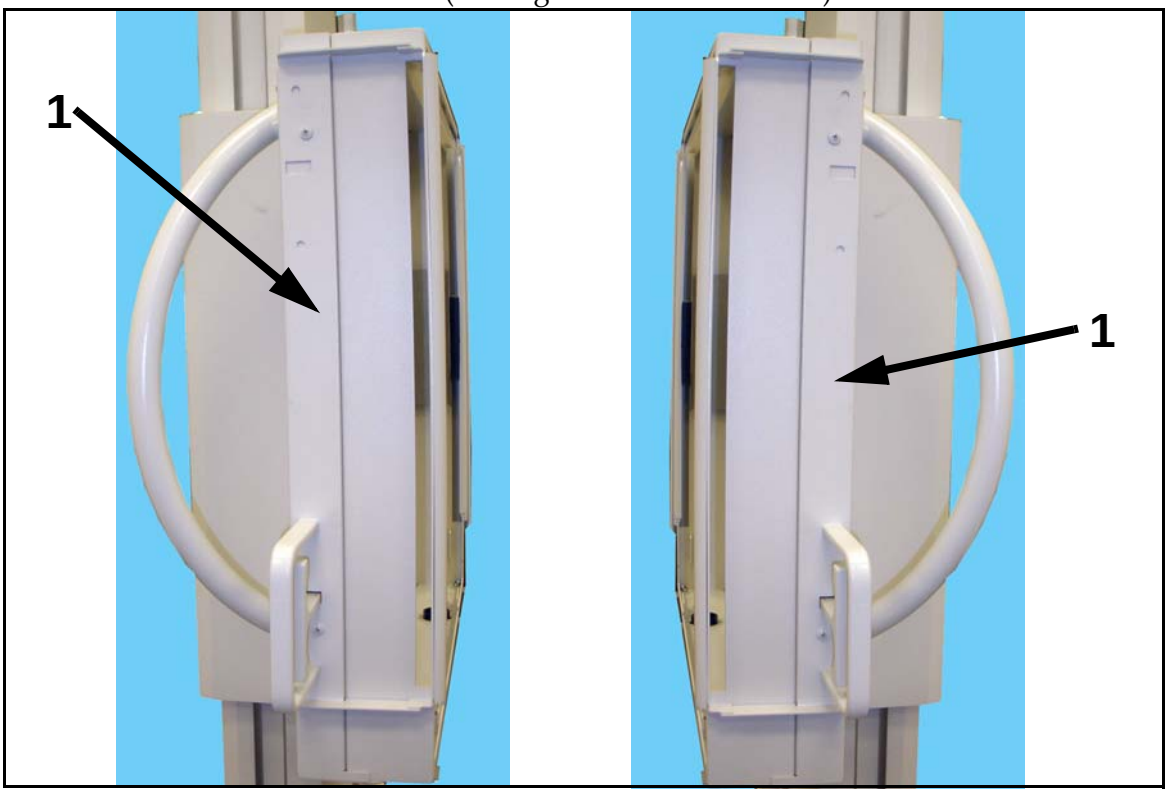


Figure Addendum E-19. Handle Side Cover Installation

27 Install covers (1 in Figure Addendum E-20.) and secure with screws (2).

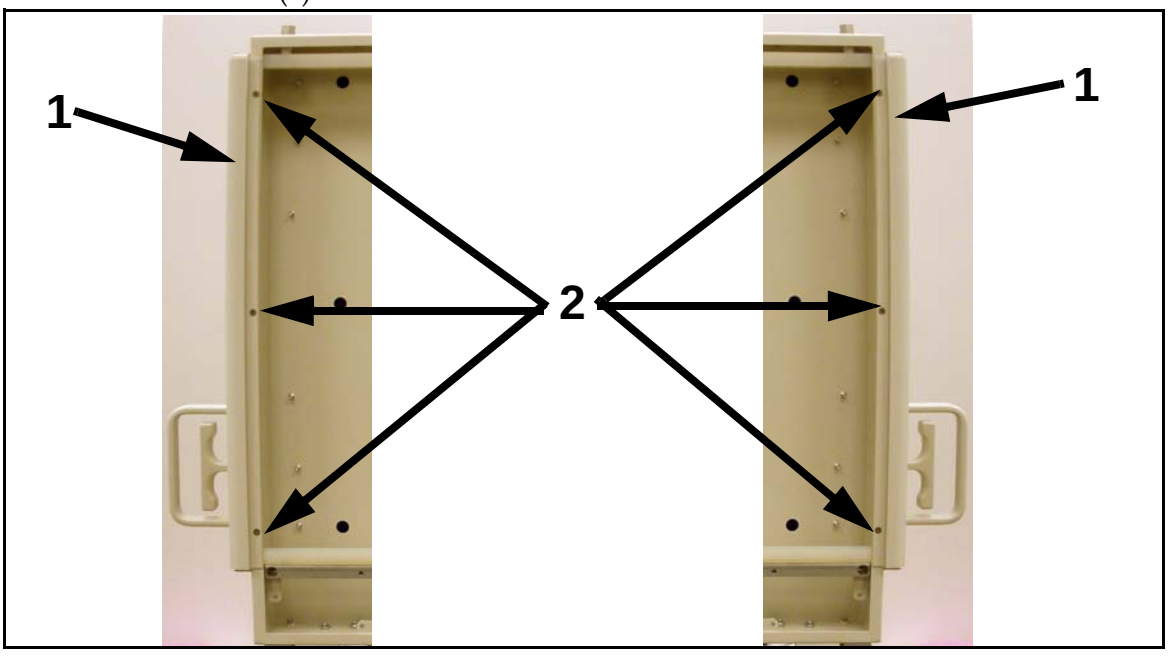


Figure Addendum E-20. Handle Front Cover Installation

Caution

Handle receptor with great care in the following steps. It is very fragile and very expensive.

28 Mount plate (1 in Figure Addendum E-21.) on receptor (2) with screws (3).

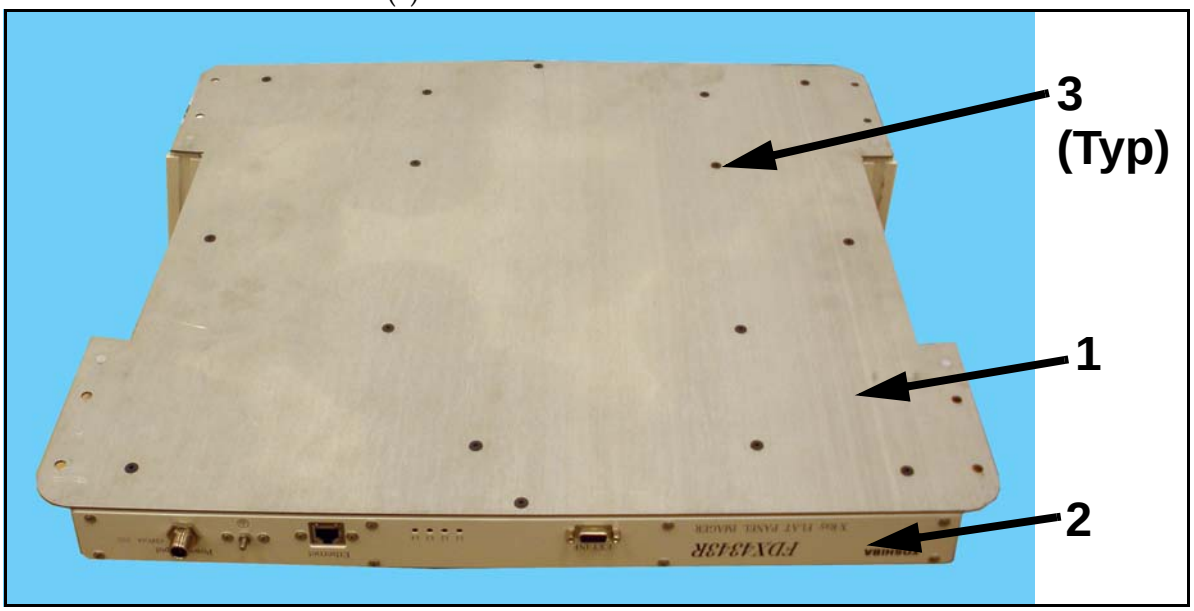


Figure Addendum E-21. Mounting Handles on Receptor

29 Mount handles (1 in Figure Addendum E-22.) on plate (2) with screws and nuts (3).

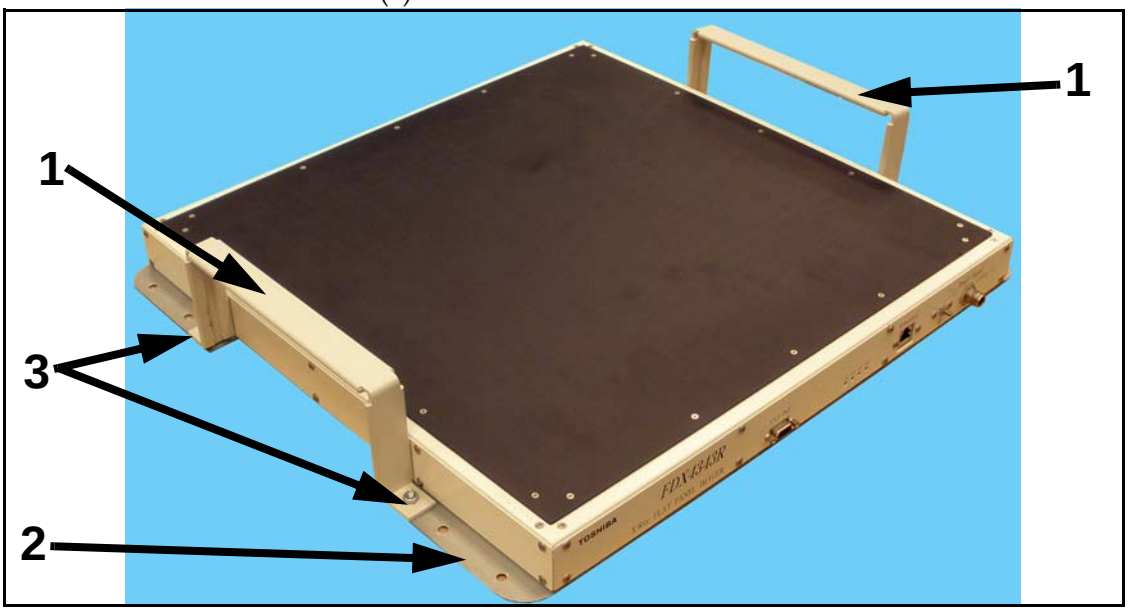


Figure Addendum E-22. Mounting Handles on Receptor

30 Unscrew screws (1 in Figure Addendum E-23.) and remove bar (2).

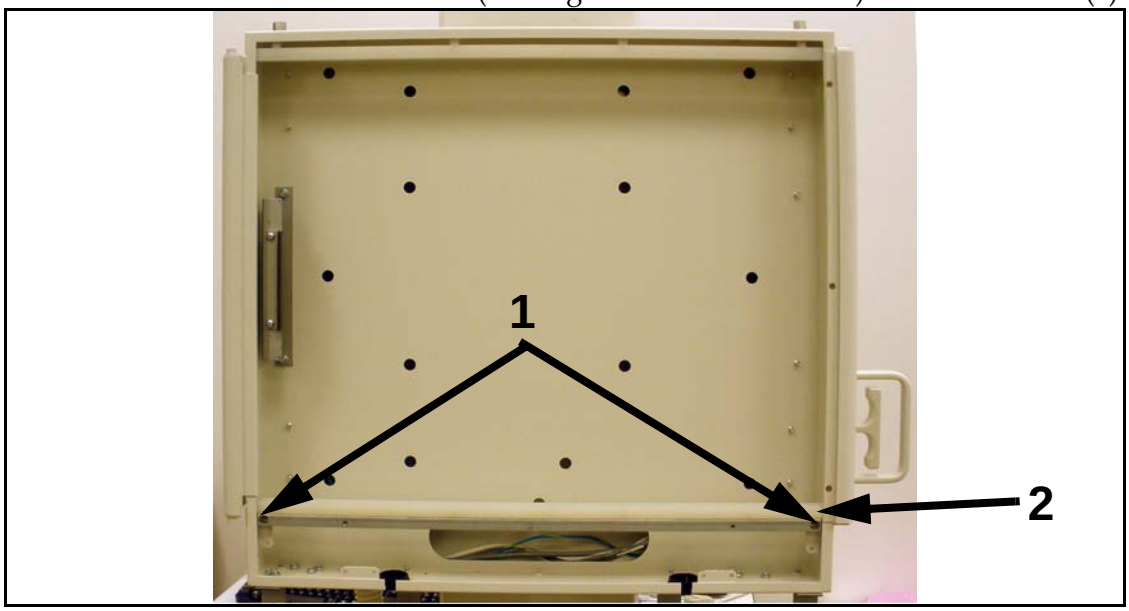


Figure Addendum E-23. Bar Removal

31 Very carefully lift receptor by handles and place it on studs on wallstand. Secure in place with eight nuts (1 in Figure Addendum E-24.)

32 Remove handles (2).

33 Reattached grid bar (3).

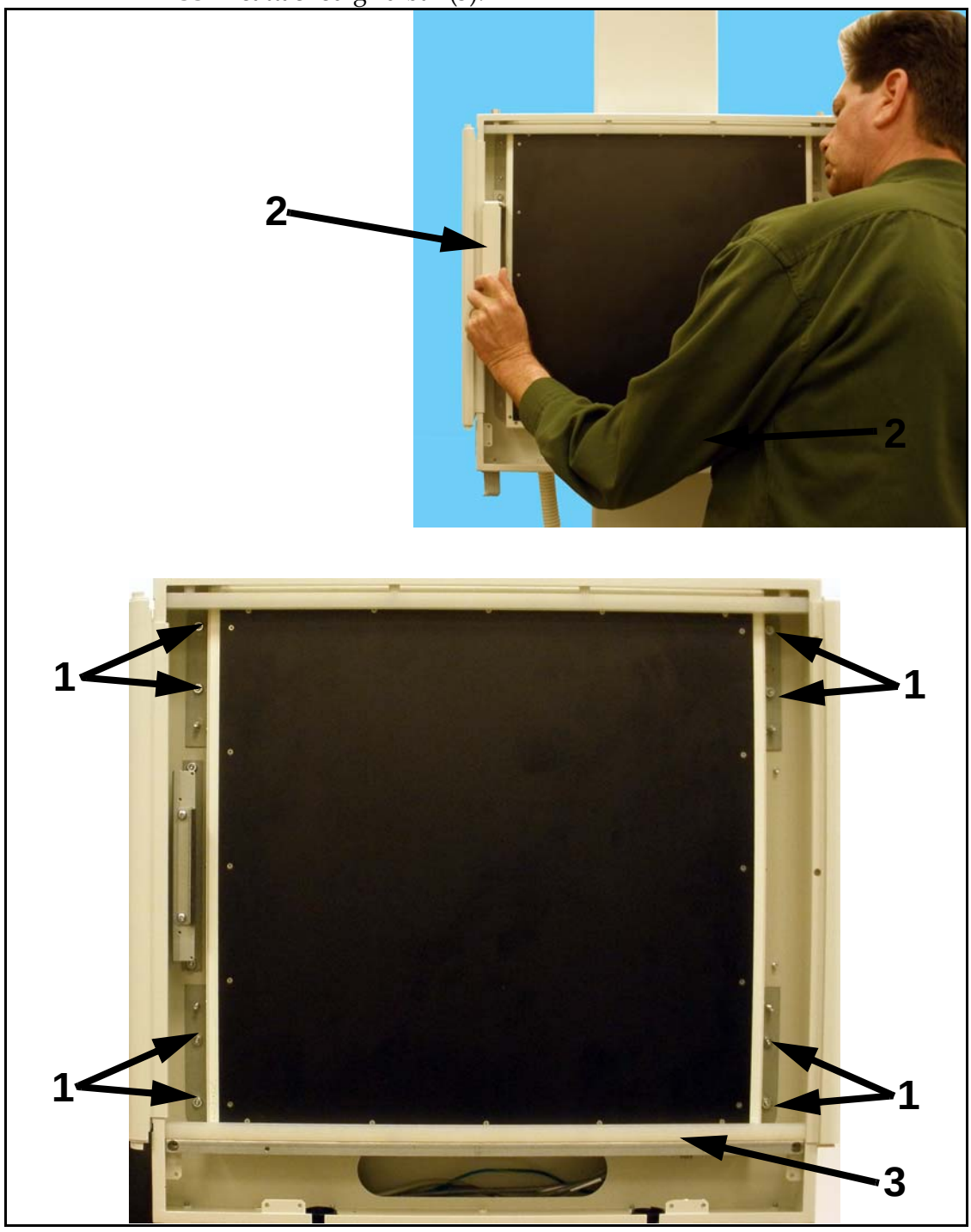


Figure Addendum E-24. Receptor Mounting

34 For optional ion chamber, install it as shown below.

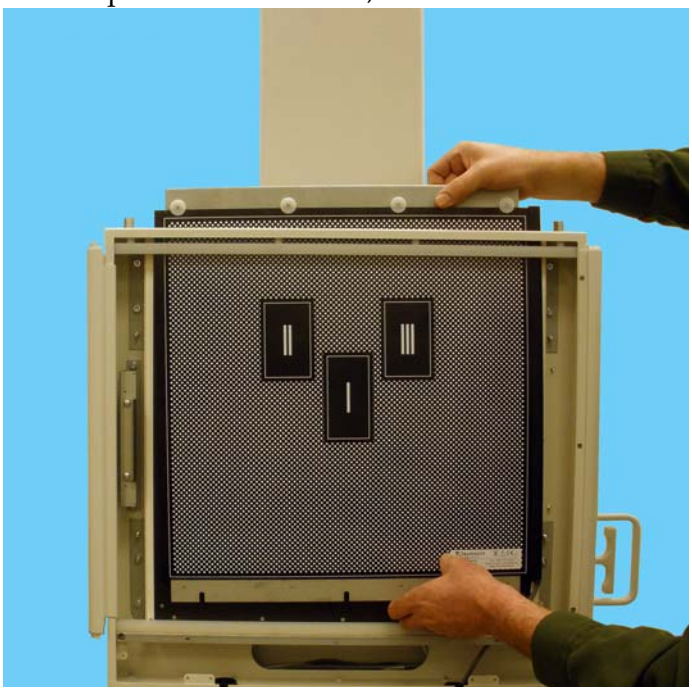


Figure Addendum E-25. Ion Chamber Installation

35 For optional ion chamber, secure chamber in place with mounting screws (1 in Figure Addendum E-26).

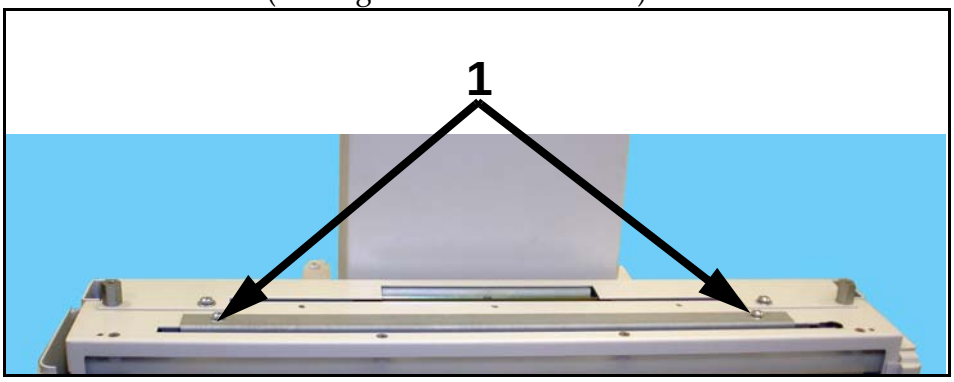


Figure Addendum E-26. Ion Chamber Mounting Screws

36 For optional ion chamber, mount pre-amp (1 in Figure Addendum E-27.) with screws (2).

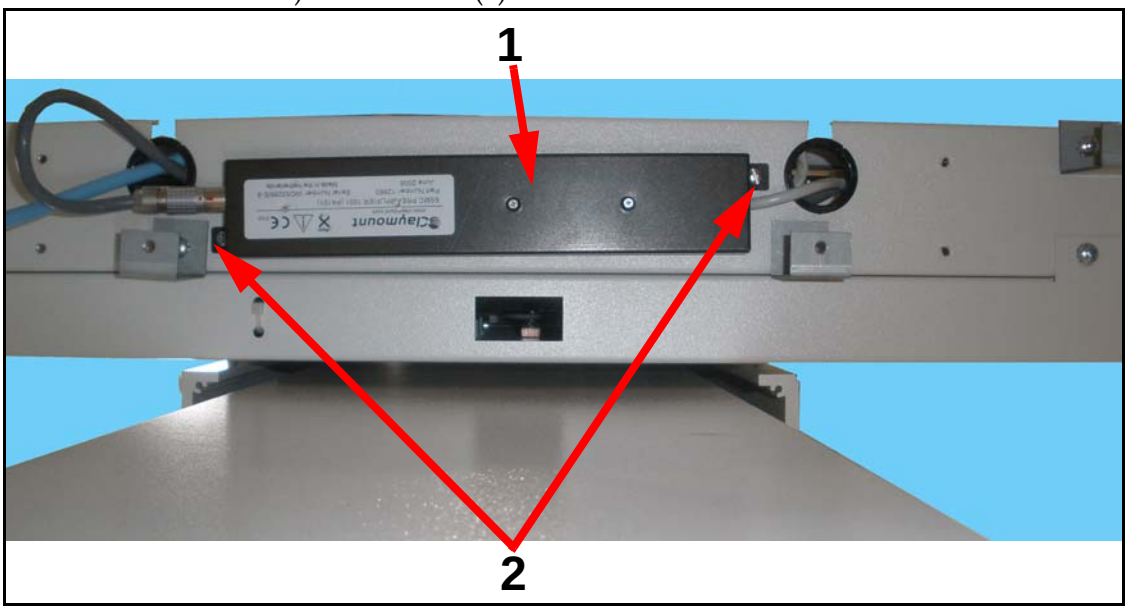


Figure Addendum E-27. Pre-Amp Mounting

37 Connect cables (1 - 6 in Figure Addendum E-28.) from wallstand to receptor as shown below.

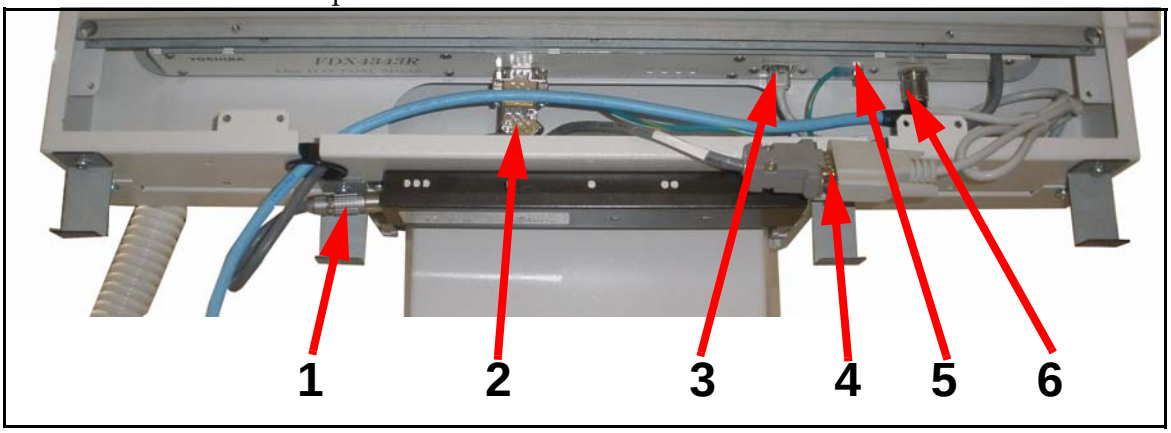


Figure Addendum E-28. Receptor Cable Connections

38 Install grid tray(1 in Figure Addendum E-29.).

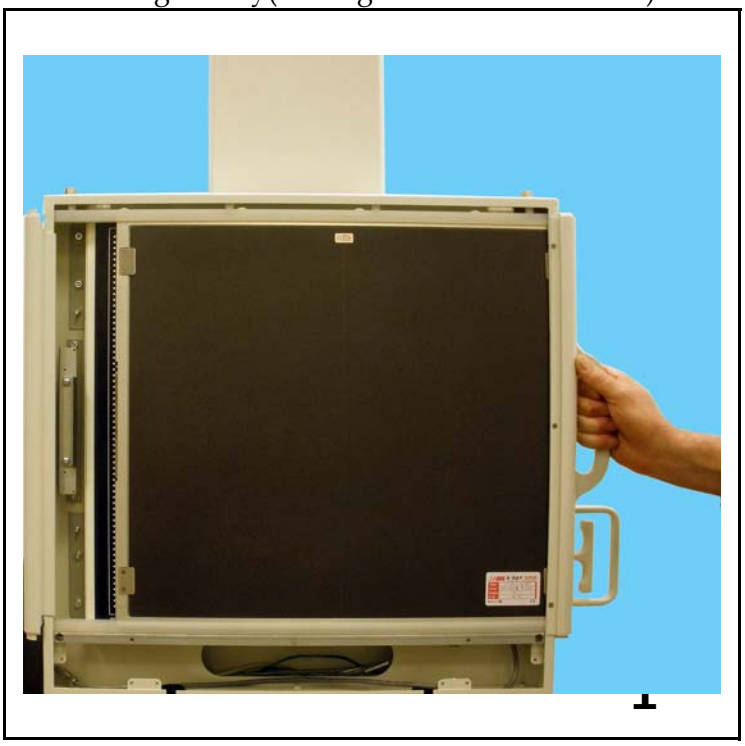


Figure Addendum E-29. Grid Installation

39 Reinstall lower cover (1 in Figure Addendum E-30) and secure in place with screws (2).

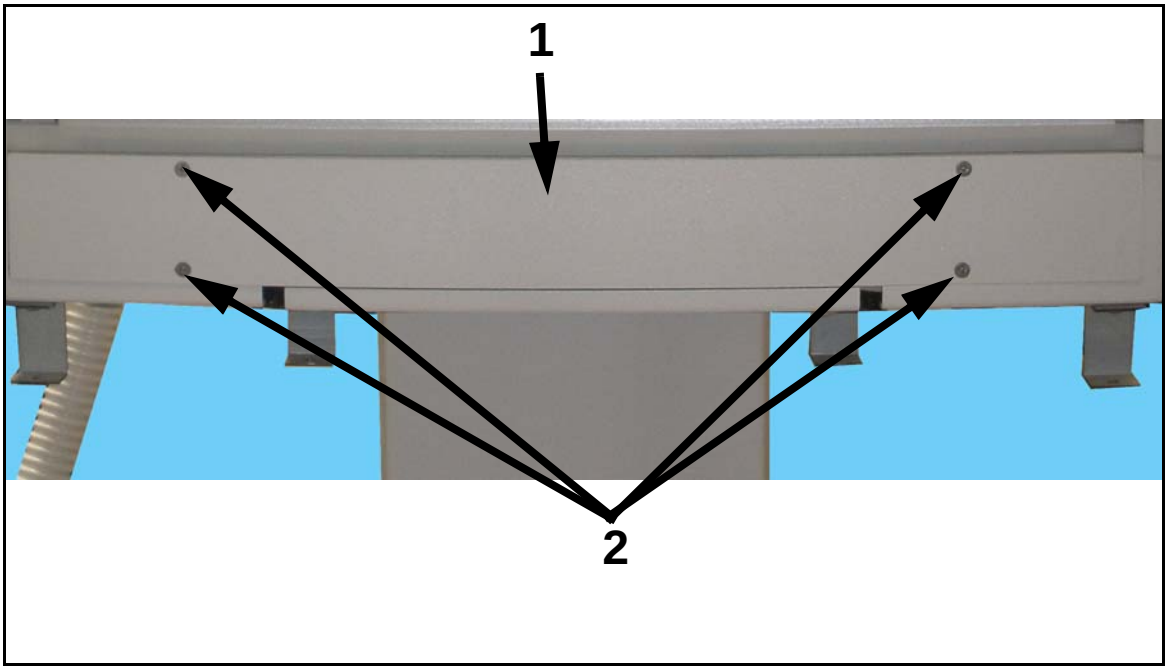


Figure Addendum E-30. Lower Cover Screws

40 Reinstall bottom cover (1 in Figure Addendum E-31) with mounting screws (2).

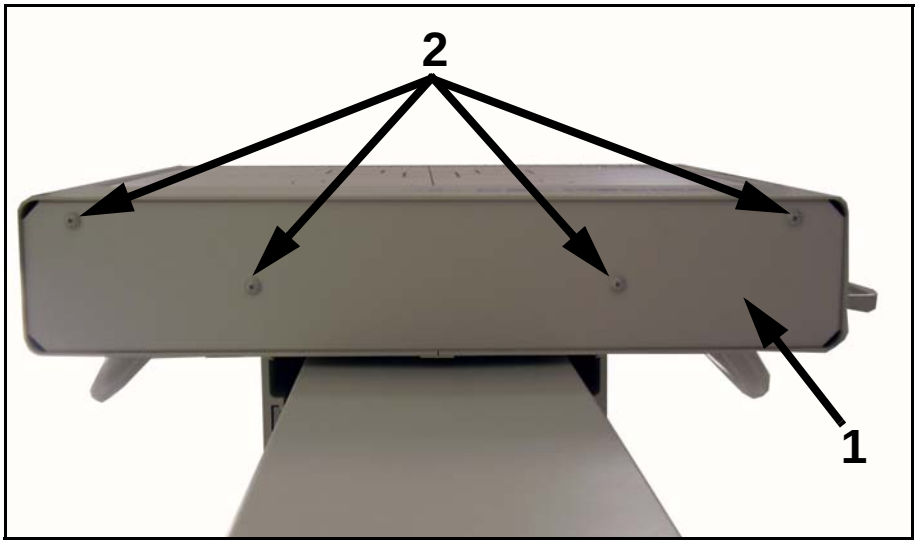


Figure Addendum E-31. Bottom Cover Screws

41 Reinstall front cover (1 in Figure Addendum E-32.).

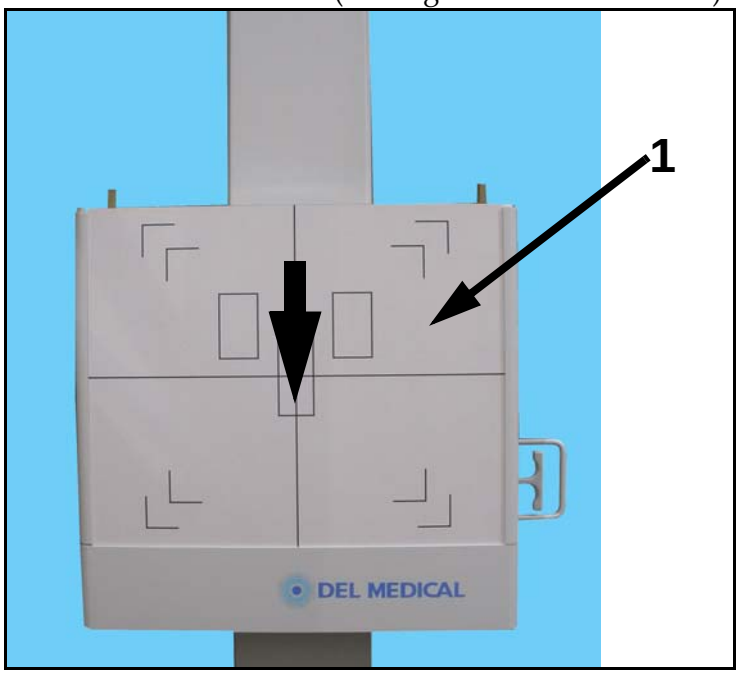


Figure Addendum E-32. Front Cover Installation

42 Add counterweights (1 in Figure Addendum E-33.) to balance wall stand movement.

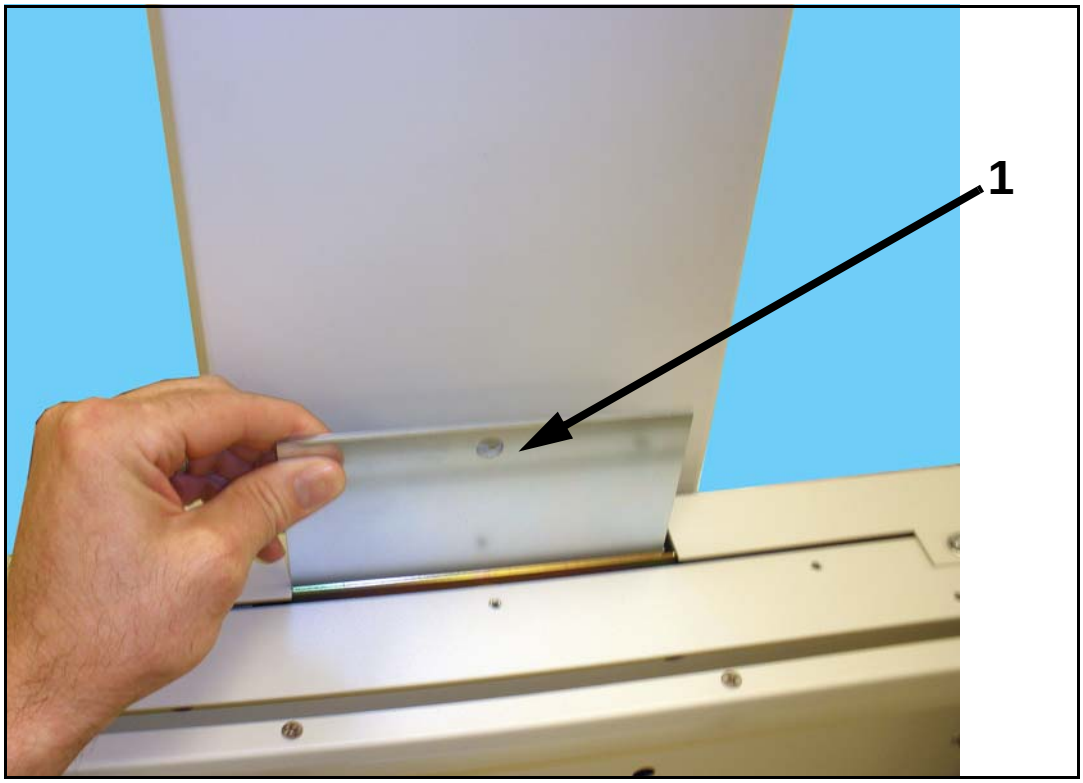


Figure Addendum E-33. Counterweights

43 Reinstall top cover (1 in Figure Addendum E-34.)

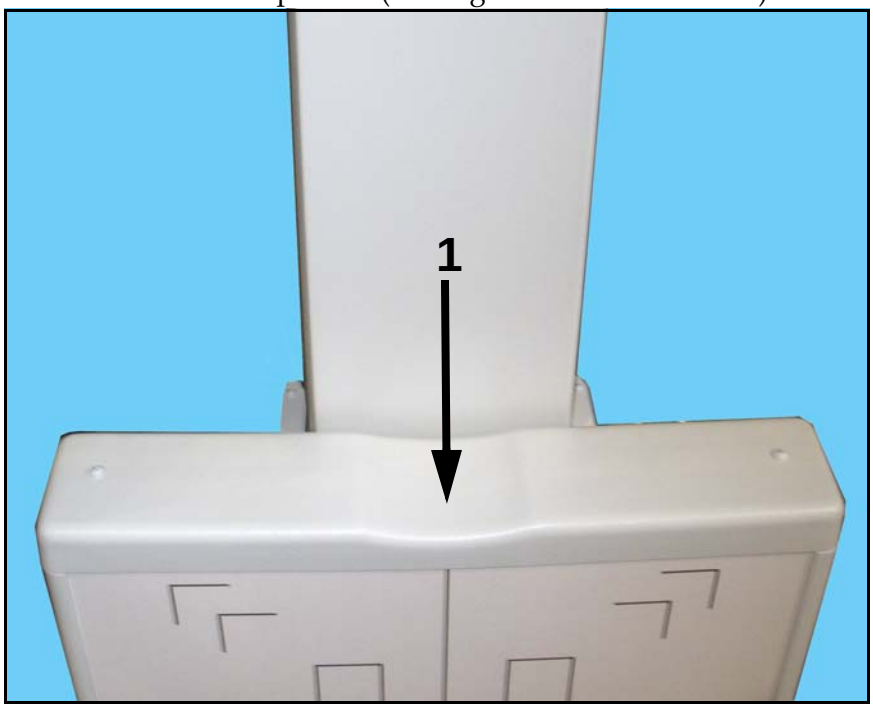


Figure Addendum E-34. Top Cover Installation

44 Remove junction box cover (1 in Figure Addendum E-35.).

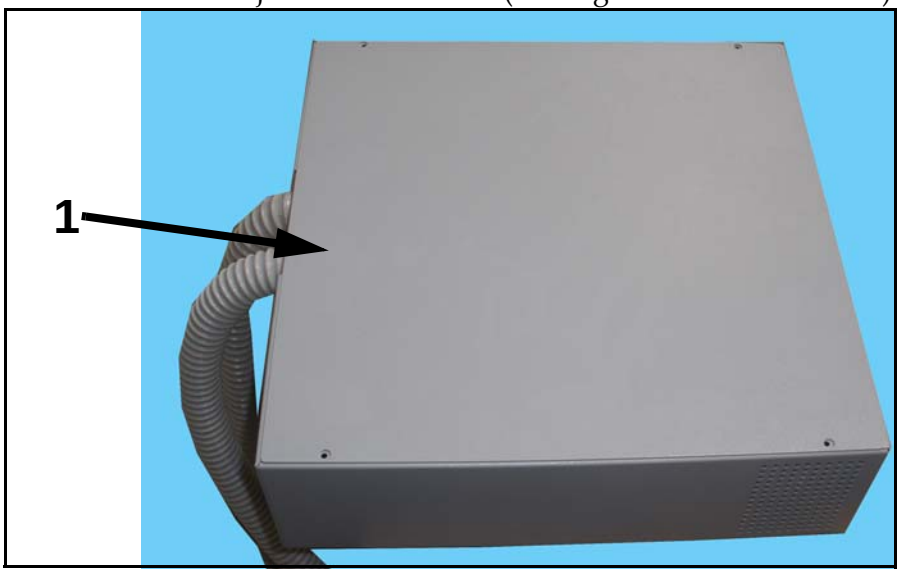


Figure Addendum E-35. Junction Box Cover

Note

All cables can be routed either through wall conduit port (1 in Figure Addendum E-36.) or conduit tubing (2).

45 Connect power cable (3) to power supply (4).

46 If applicable, connect AEC cable from generator to ion chamber cable (5).

47 Connect detector cable from control unit to detector cable (6).

48 Route comm cable (7) through conduit to control unit.

49 Connect ground cable from generator to ground terminal (8).

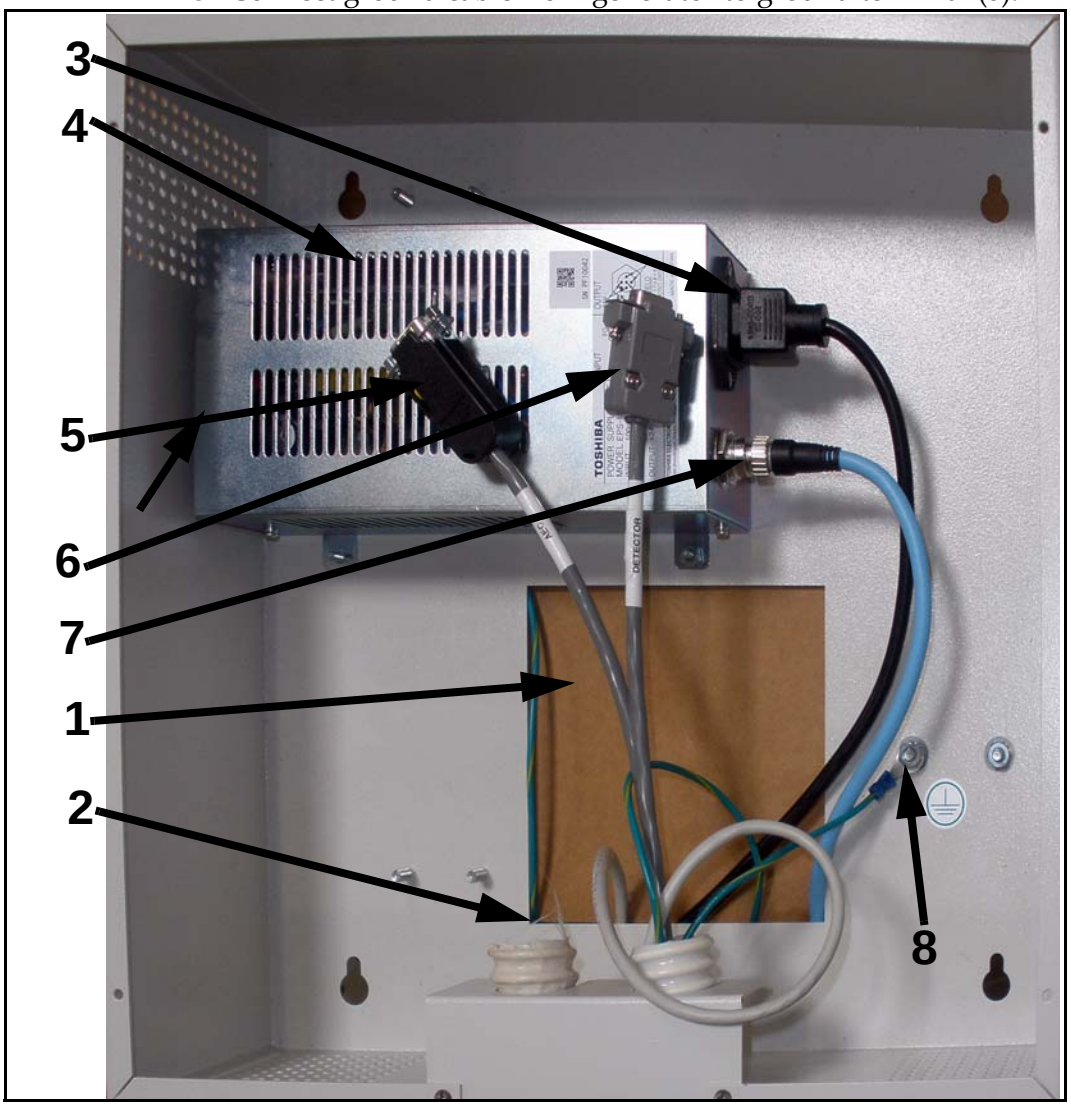


Figure Addendum E-36. Junction Box Connections

50 (Optional, for future use) Mount detector handles (1 in Figure Addendum E-37.) in junction box as shown below.

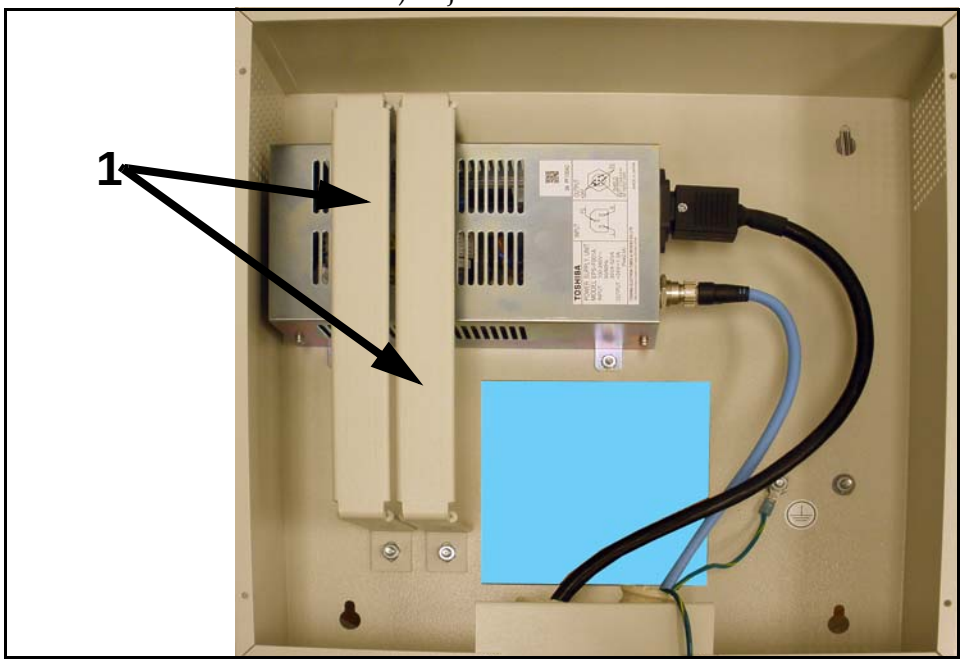


Figure Addendum E-37. Detector Handle Storage

51 Reattach junction box cover (1 in Figure Addendum E-38.)

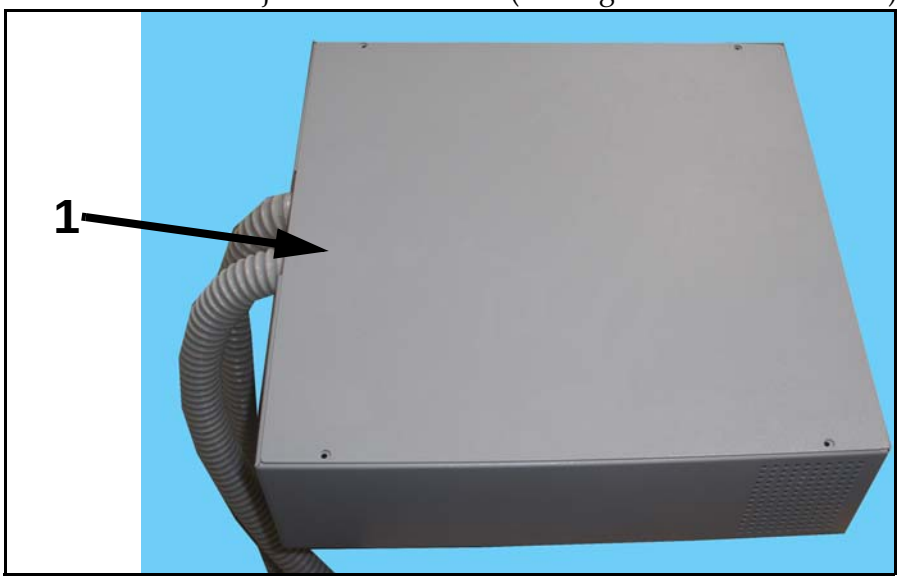


Figure Addendum E-38. Junction Box Cover

52 Proceed with alignment of the wallstand and receptor per Installation Instructions step 5 Chapter 2, page 2-5.

Operation

3

3.1 Safety Precautions

Warning

No foreign objects which can attenuate or scatter the X-ray beam are allowed between x-ray tube and wallstand during exposure. Failure to follow this may result in serious injury.

Warning

This wallstand is intended to be used as part of a system for the intended generation of X-rays for medical diagnosis.

X-rays generate a potential risk for both patients and operators.

For this reason, the application of X-rays for a given medical purpose must aim at the minimization of radiation exposure to any persons.

Those persons responsible for the application must have the specific knowledge according to legal requirements and regulations and must establish safe exposure procedures for this kind of system.

Those persons responsible for the planning and installation of this equipment must observe the national regulations.

Note
If the wallstand is equipped with one of the optional digital receptors, refer to the corresponding documentation for controls and operation information on that part of the system.

3.2 Specifications

Specifications*	
Compatibility	The VS-200 wallstand is compatible with a wide variety of generators and tubestands. It is intended to be used in a stationary diagnostic x-ray configuration.
External Heat Generation	None
Classification	Class 1 Type B 
Aluminum Equivalent	Beam Attenuation of the wallstands front panel is 0.7 mm Aluminum Equivalent or Less
Temperature Limits	Transit/Storage Operating – 40° F to +158° F +50° F to +95° F – 40° C to +70° C +10° C to +35° C
Relative Humidity Limits	Transit/Storage 10% to 100% Operating 10%-80% Non-Condensing
Atmospheric Limits	14.5 inHg to 30.74 inHg 500 hPa to 1060 hPA
Weight	200 lbs (91 Kg)
Degree of protection against the ingress of water:	Ordinary
Certifications:	  Classified To UL 60601-1,IEC60601-1, EN60601-1, IEC 60601-2-32, EN60601-2-32, IEC60601-1-3, EN60601-1-3, EN60601-1-2:2000. Certified To CAN/CSA C22.2 NO. 601.1.
Equipment not suitable for use in the presence of flammable anesthetic mixtures with air, oxygen or nitrous oxide.	
No user serviceable parts	

Table 3-1: Specifications

* Refer to the Digital Image Receptor Documentation for specifications on that portion of the VS-200 Wallstand System.

3.3 Controls

This section describes the controls of the wallstand with regular bucky. Figure 3-1 below shows the controls of the wallstand.

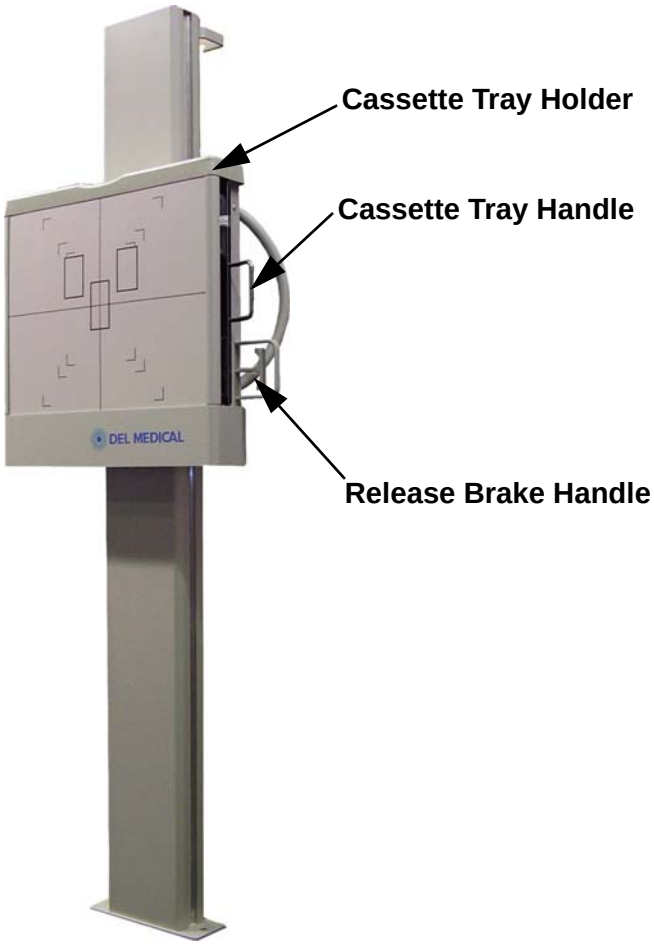


Figure 3-1. Wallstand Controls

3.3.1 Cassette Tray Handle (regular bucky)

Pull the cassette tray handle to pull the film cassette tray out of its holder. For safety reasons, the cassette tray will not come completely out. The cassette tray can be completely removed according to Section "Completely Removing the Cassette Tray" on page 3-9.

3.3.2 Release Brake Handle (digital receptors and regular bucky)

Squeeze the release brake handle to release the brake. This will allow you to move the cassette tray holder to the desired position.

3.4 Operating Instructions (regular bucky)

Operate the Wallstand as follows:

1. Manually pull cassette tray (1 in Figure 3-2) out as far as it will go.

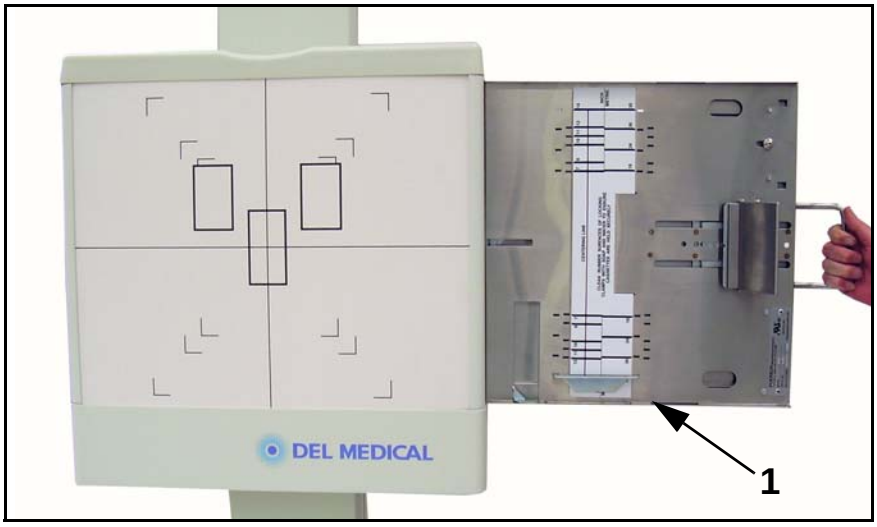


Figure 3-2. Cassette Tray

2. Lift clamp (1 in Figure 3-3) up.
3. If necessary, move bracket (2) to the position that matches the size of your cassette.

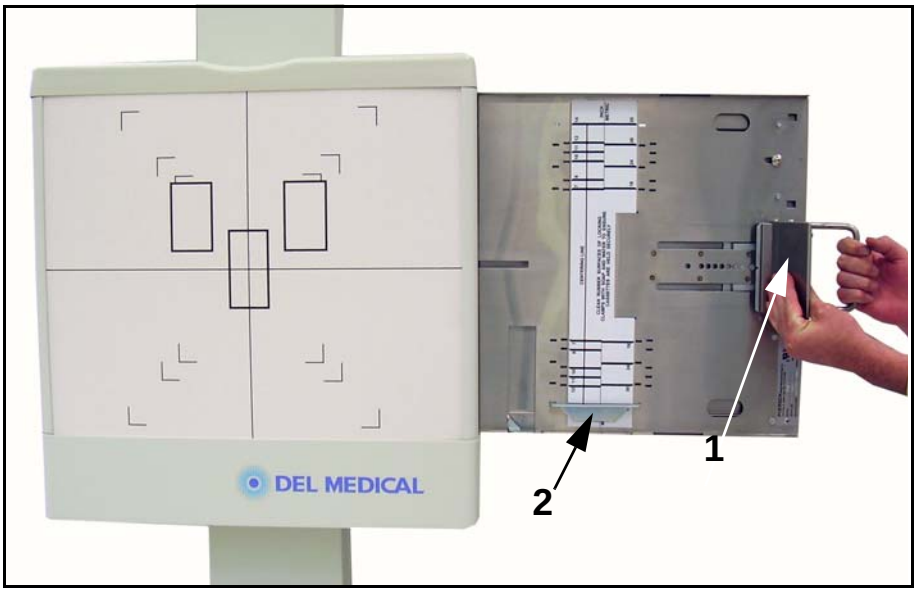


Figure 3-3. Clamp & Bracket

4 Insert cassette (1 in Figure 3-4) into tray.

5 Slide clamp (2) up to cassette and close clamp.

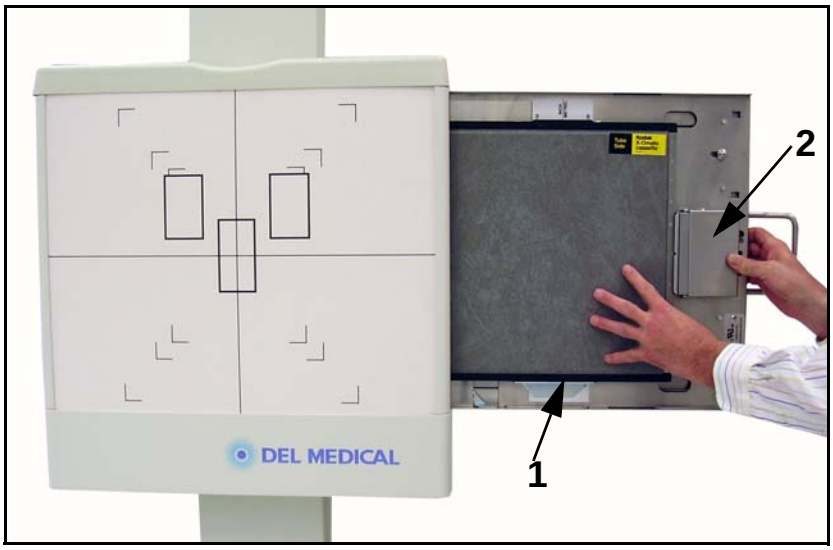


Figure 3-4. Cassette & Clamp

6 Push cassette tray all the way in.

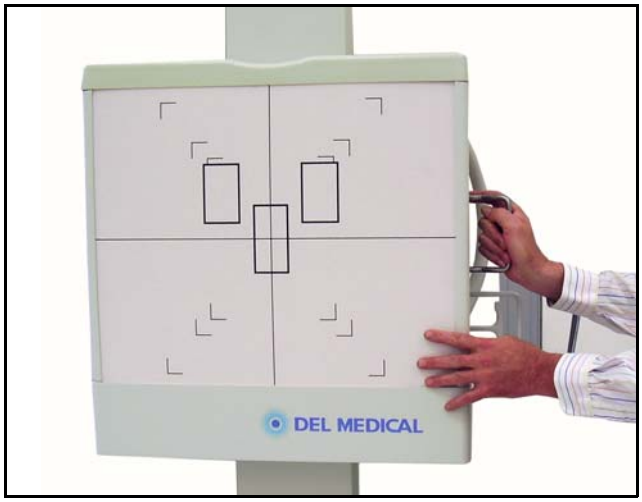


Figure 3-5. Cassette Tray In

7 Squeeze and hold release brake handle (1 in Figure 3-6).

8 Move cassette holder to desired position and let go of the release brake handle.

9 Make exposure and remove cassette.

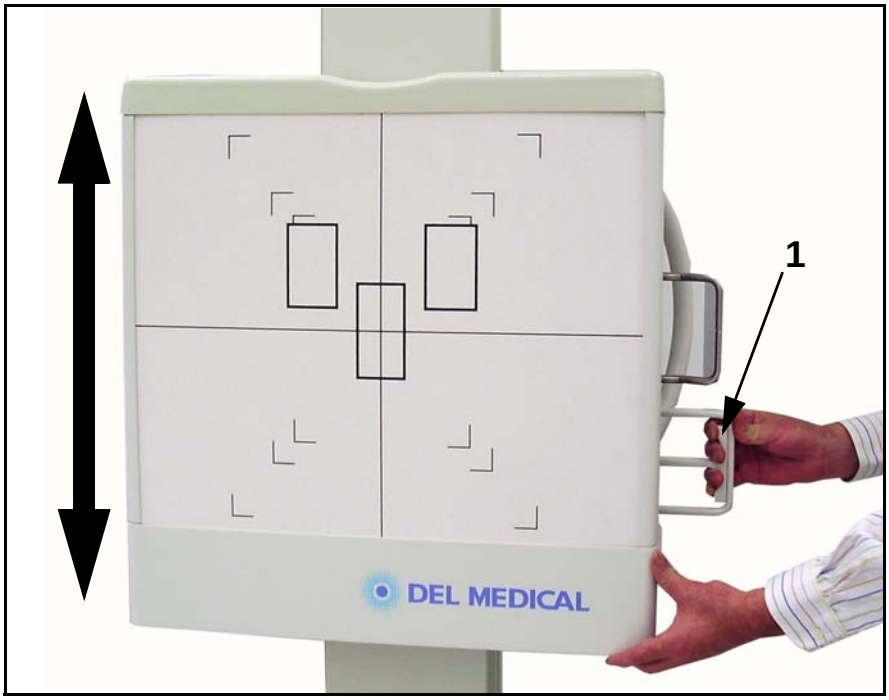


Figure 3-6. Release Brake Handle

3.5 Using Overhead Lateral Handgrip Option

The overhead lateral handgrip provides patients with extra support. Use this option as follows:

1. Insert the handgrip post (1 in Figure 3-8) into the socket (2) on the back of the wallstand. There are two sockets available - either can be used.

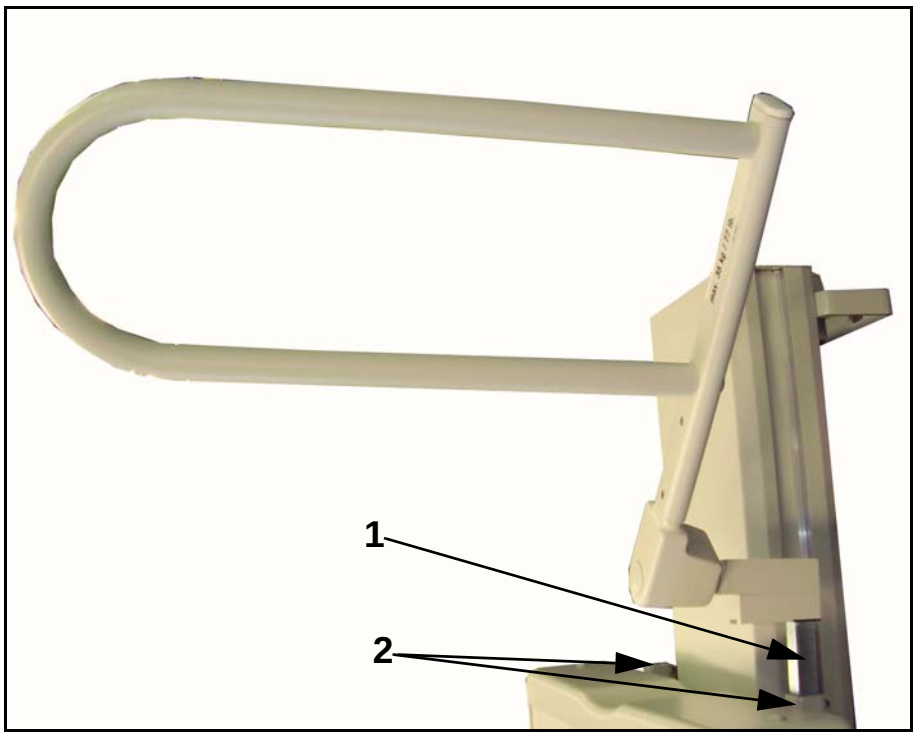


Figure 3-7. Handgrip Insertion

2 Pull the handle (1 in Figure 3-8) slightly out and then adjust its angle to the desired poistion and release handle.

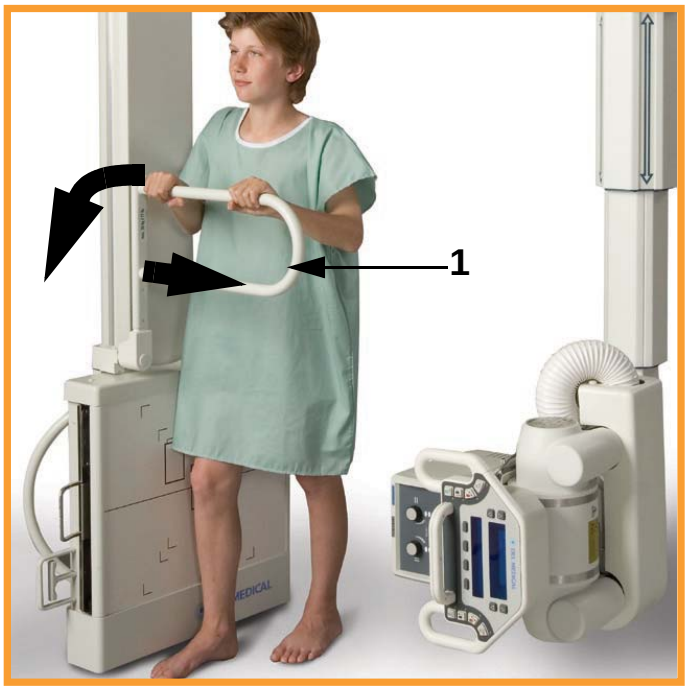


Figure 3-8. Overhead Lateral Handgrip Option

3.6 Completely Removing the Cassette Tray

To completely remove cassette tray, do the following:

1 Manually pull cassette tray out as far as it will go.

Caution

Cassette tray is heavier than it looks (15 lbs)[7 kg]. Use care when removing it.

2 While firmly pressing the cassette tray release latch (1 in Figure 3-9), pull the cassette tray completely out of the bucky.

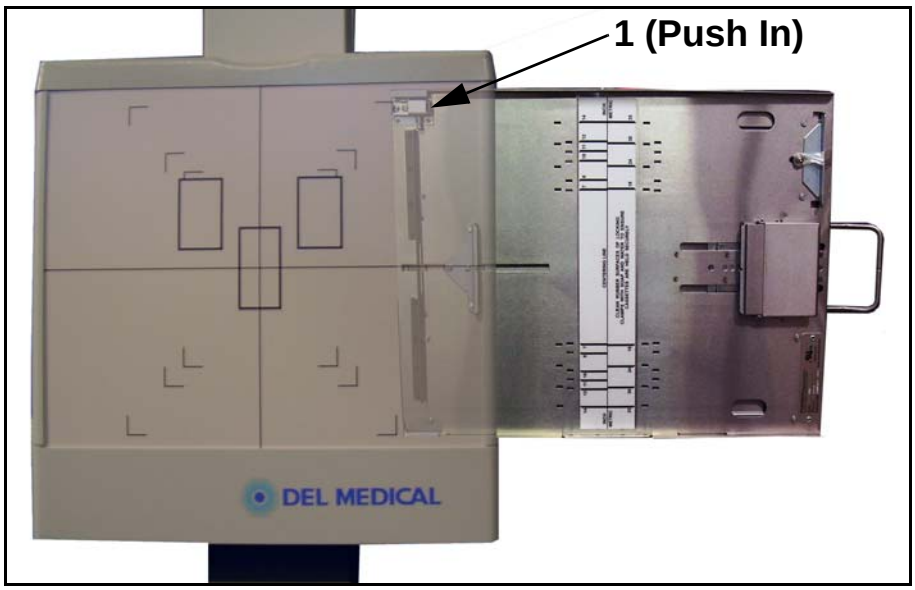


Figure 3-9. Cassette Tray Removal

Periodic Maintenance

4

4.1 Periodic Maintenance Schedule

Refer to the schedule below for information on when to perform periodic maintenance on the wallstand. If the wallstand is equipped with one of the optional digital receptors, also refer to the corresponding documentation for maintenance information on that part of the system.

Note:
Due to varying operating conditions, the procedures listed below may have to be performed at greater or lesser intervals. You may have to adjust intervals according to your wallstand's performance.

What to Do	When to Do It	Refer to Section
Clean External Surfaces	Every Week or as Required	"Cleaning External Surfaces" on page 4-2
Inspect Counterweight Cable	Every 6 Months	"Checking Counterweight Cables" on page 4-3
Check Brake Function	Every 6 Months	"Checking Brake Performance" on page 4-4
Check Fasteners for Tightness	Every 6 Months	"Checking Fasteners for Tightness" on page 4-5

Table 4-1: Periodic Maintenance Schedule

4.2 Cleaning External Surfaces

Tools Required

- cleaning wipes
- non-abrasive, hospital-grade cleaner

Warning

If the wallstand is equipped with a bucky, AEC, PBL or digital receptor make sure that power source to these components is locked out and tagged "Wallstand Being Serviced" before servicing wallstand. You could get seriously injured if you do not.

Use cleaning wipes and non-abrasive, hospital-grade cleaner to clean external surfaces of wallstand.

4.3 Checking Counterweight Cables

Tools Required

- cotton balls

1 Move the cassette tray holder (1 in Figure 4-1) to its lowest position.

Warning

If the wallstand is equipped with a bucky, AEC, PBL or digital receptor make sure that power source to these components is locked out and tagged "Wallstand Being Serviced" before servicing wallstand. You could get seriously injured if you do not.

2 Run a cotton ball up and down the length of the two counterweight cables (2).

3 If the cable is frayed or damaged, fibers from the cotton ball with stick to the damaged part of the cable. If you see any presence of fibers on the cable, replace the affected cable according to Section "Replacing Counterweight Cable" on page 6-4.

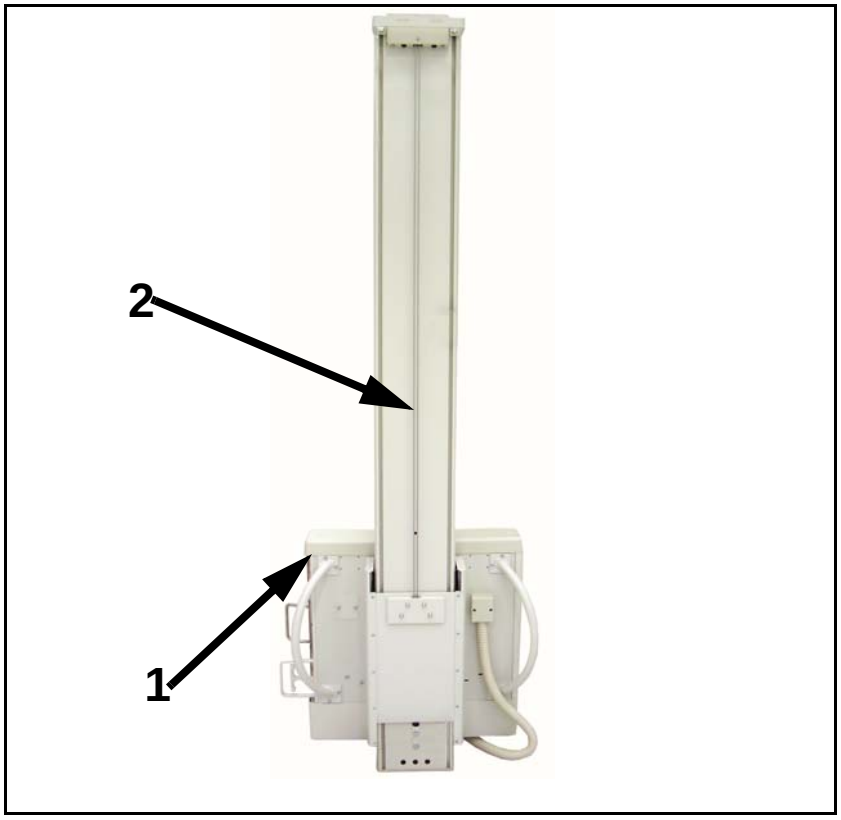


Figure 4-1. Upper and Lower Panel Screws

4.4 Checking Brake Performance

Tools Required:

- None

1 Repeatedly squeeze and release brake handle (1 in Figure 4-2) while moving casette tray holder through full range of motion. If brake shows any sign of weakness, adjust it according to Section "Adjusting Brake Cams" on page 5-3.

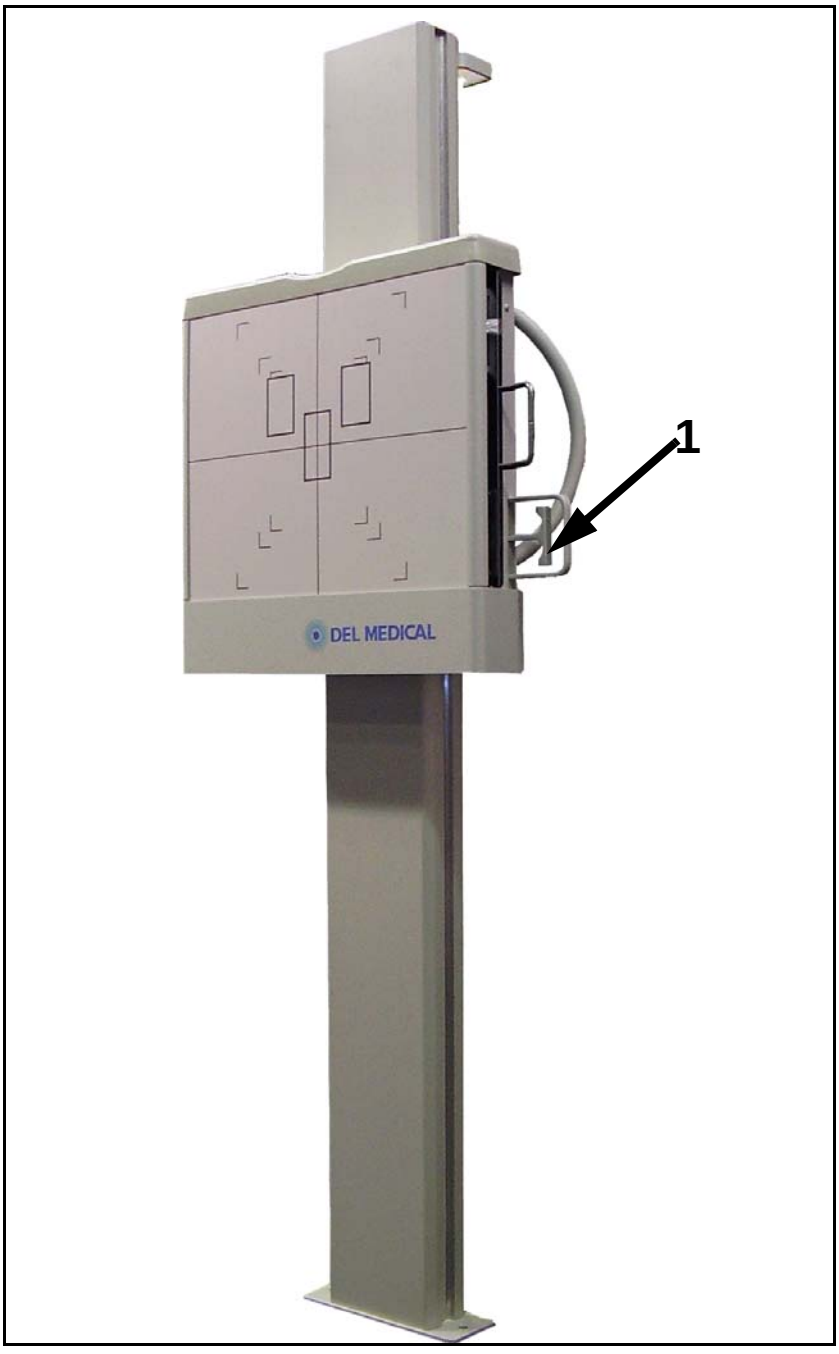


Figure 4-2. Release Brake Handle

4.5 Checking Fasteners for Tightness

Tools Required

- phillips screw driver
- set of open end-wrenches

1 Check each exposed fastener for tightness and tighten accordingly.

Calibration & Adjustment

5

5.1 Introduction

This chapter provides maintenance and adjustment procedures for the wallstand.

5.2 Calibration

Calibration not applicable for this product.

For calibration of the Digital Imaging System, refer to the Digital Imaging Receptor documentation.

5.3 Adjusting Brake Cams

If needed the brake cams holding the vertical carriage can be reinforced by adjusting them as described below.

Tools Required:

- medium phillips head screwdriver

Caution

Do not loosen the brake screws more than one turn or they may fall out - which would require major disassembly of the wallstand to repair.

1. Loosen the two brake assembly screws (1 in Figure 5-1) one full turn.
2. Push release brake handle (2) no more than 1/8". This will tighten the brake cams.
3. Retighten screws (1).
4. Recheck brake function. If brake or motion of cassette holder is too tight when pressing the release brake handle, reloosen the two screws. Insert screwdriver in one screw and use the screwdriver to push the brake screw assembly back out slightly. Then retighten the screws.

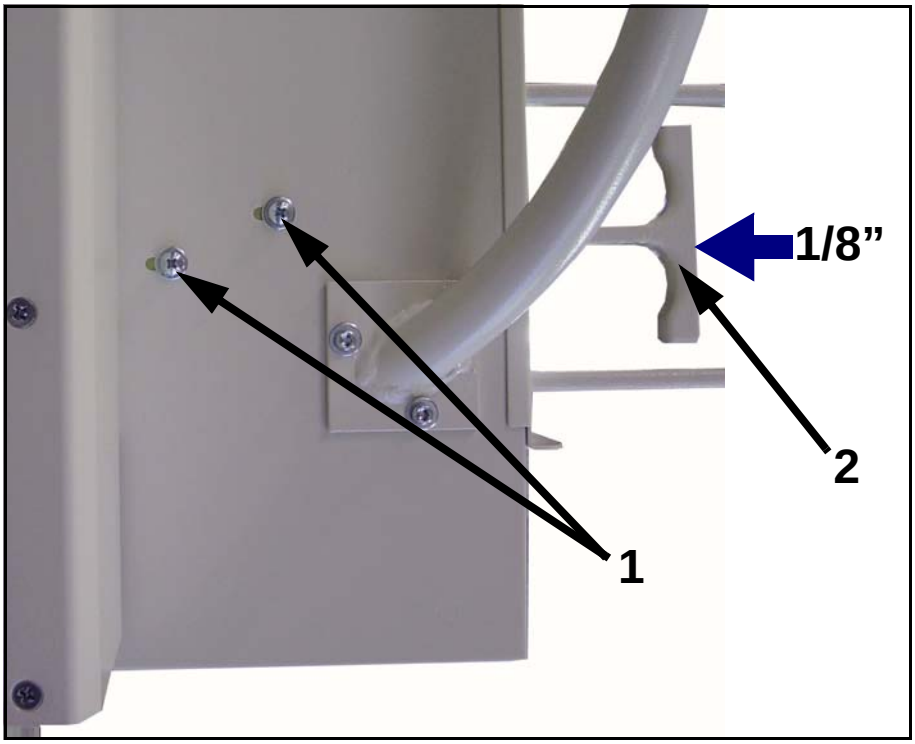


Figure 5-1. Brake Assembly Adjustment Screws

5.4 Converting Left-Right/Right-Left Configurations

The VS-200 wallstand Vertical Carriage and Frame assembly rear panels are designed symmetrically-mirrored, to allow reversal of left-right orientation of the brake handle.

The brake handle and grid door opening should be on the same side, for the convenience of the operator.

For wallstands with digital receptor, refer to the manufacturer's specifications and installation manuals for instructions on how to reverse receptor door and grid positions (if possible).

Tools Required:

- 3/8" nut driver
- diagonal cutters
- medium phillips head screwdriver
- rug or soft surface to lay wallstand down on
- set of hex wrenches
- small flat-tip screwdriver

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Manually pull cassette tray out as far as it will go.

2 While firmly pressing on limit button (1 in Figure 5-2), pull the cassette tray completely out of the bucky.

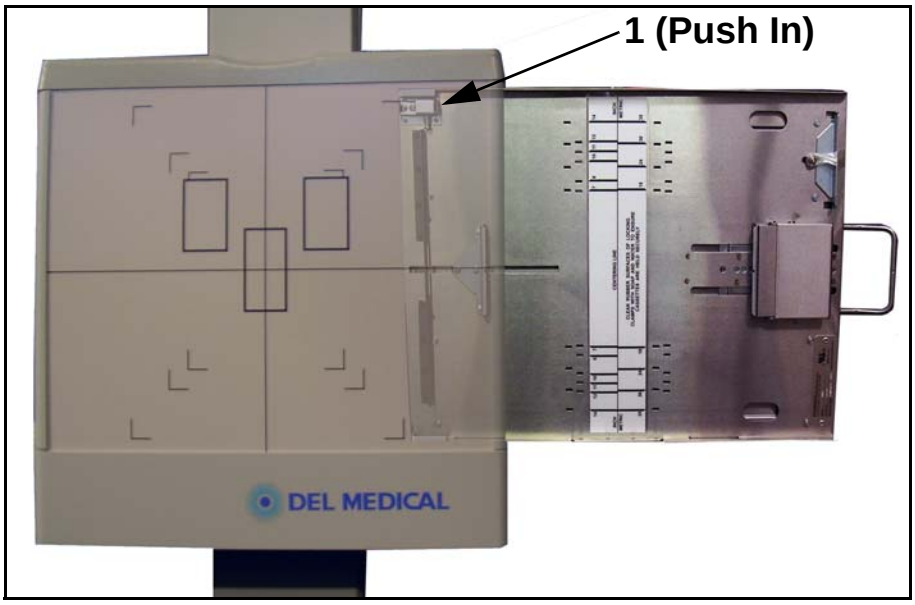


Figure 5-2. Cassette Tray Removal

3 Remove the wallstand's wall and floor mounting screws.

4 Carefully lay wallstand down on a soft rug or other soft surface with the receptor plane facing up.

5 Unscrew two top cover screws (1 in Figure 5-3) and remove top cover (2).

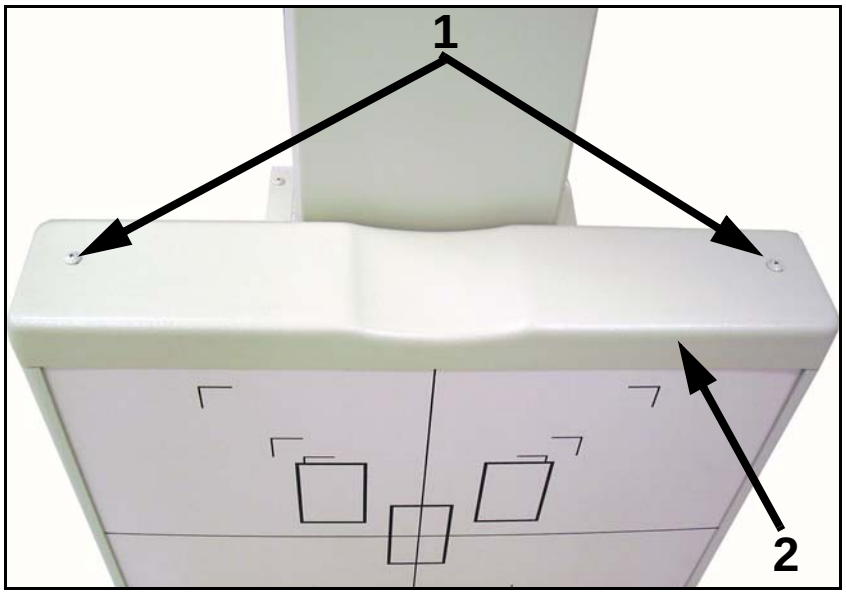


Figure 5-3. Top Cover Screws

6 Unscrew four bottom cover screws (1 in Figure 5-4) and remove bottom cover (2).

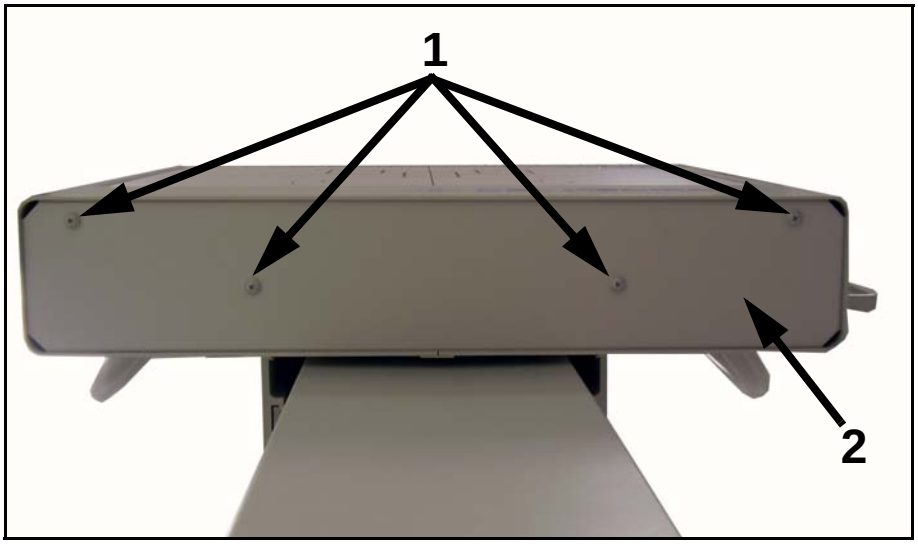


Figure 5-4. Bottom Cover Screws

7 Slide front panel (1 in Figure 5-5) straight up and off the wallstand.

8 Unscrew two side cover screws (2) and remove side cover (3).

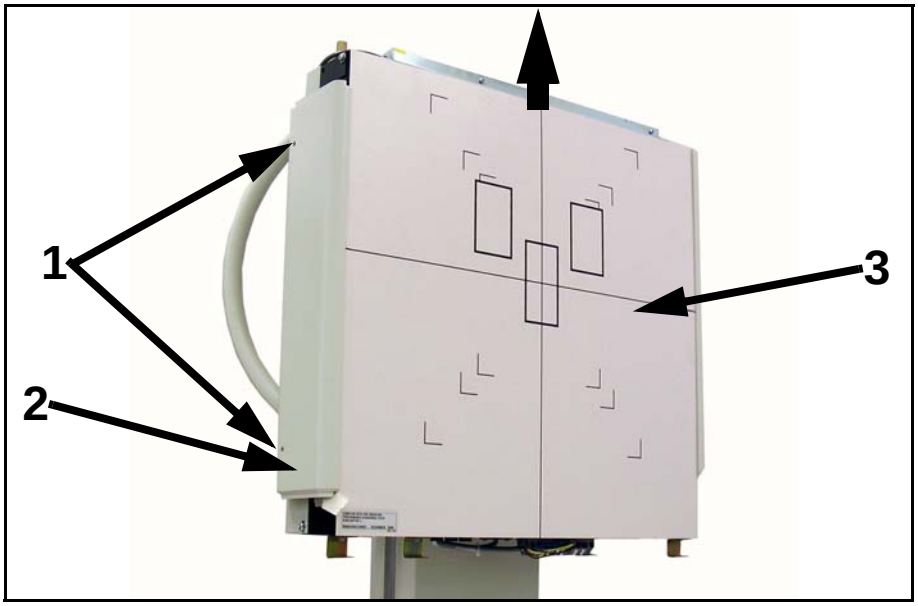


Figure 5-5. Side Panel & Front Panel

Only do steps 9 & 10 if your wallstand has an optional PBL (cassette size sensing kit).

9 Cut cable ties (1 in Figure 5-6).

10 Disconnect wires (2) from terminal (3).

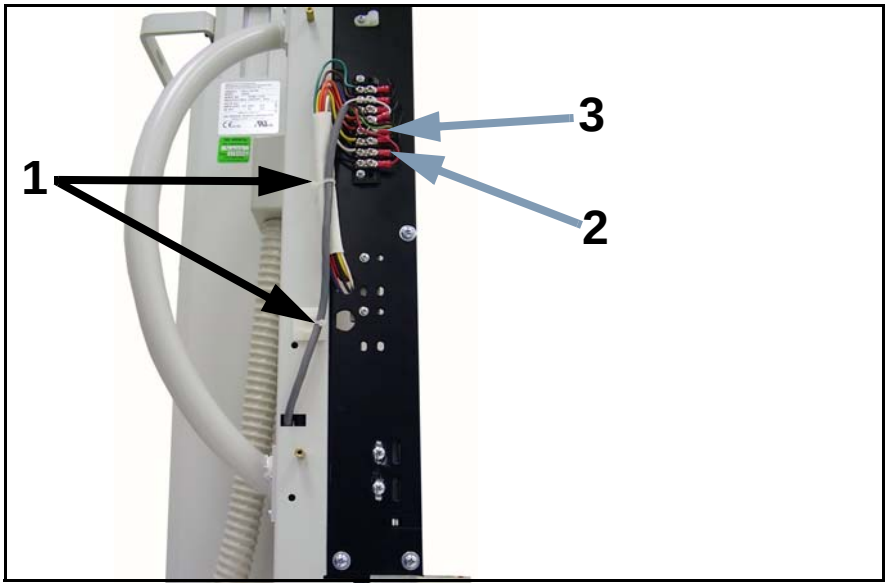


Figure 5-6. PBL Bracket Screws

Only do steps 11-15 if your wallstand has an optional ION chamber (automatic exposure control).

11 Unscrew four cover screws (1 in Figure 5-7) and remove ION cover (2).

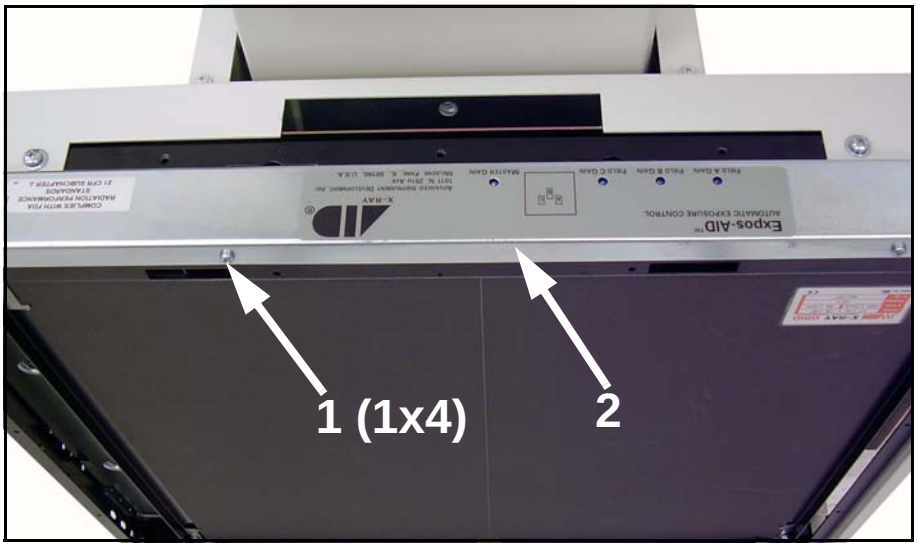


Figure 5-7. ION Chamber Cover Screws

12 Unscrew cable clamp nuts (1 in Figure 5-8) and remove clamp (2).

13 Unscrew two connector screws (3) and unplug connector (4).

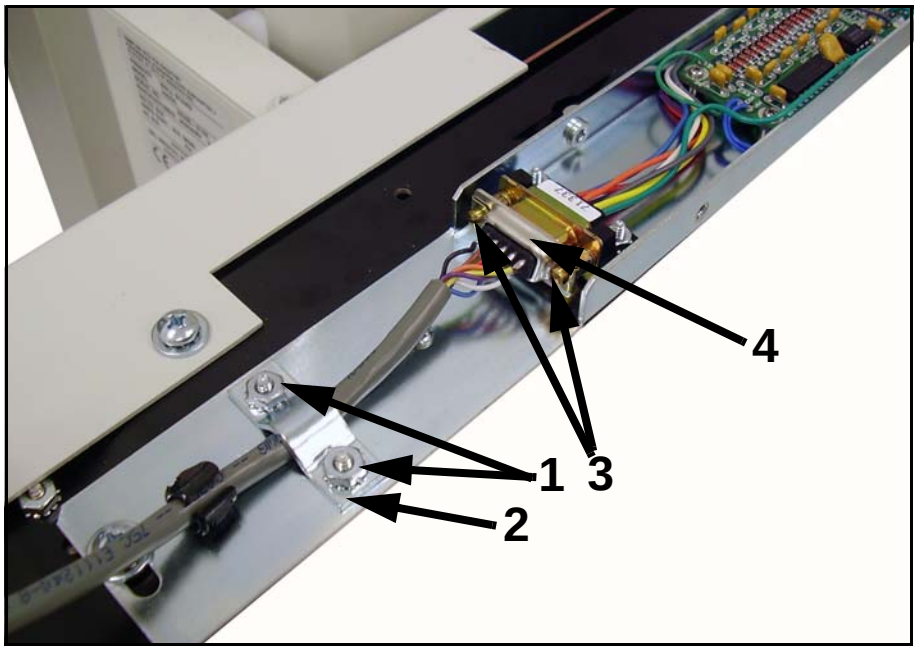


Figure 5-8. ION Chamber Screws

14 Unscrew ion chamber mounting screws (1 in Figure 5-9).

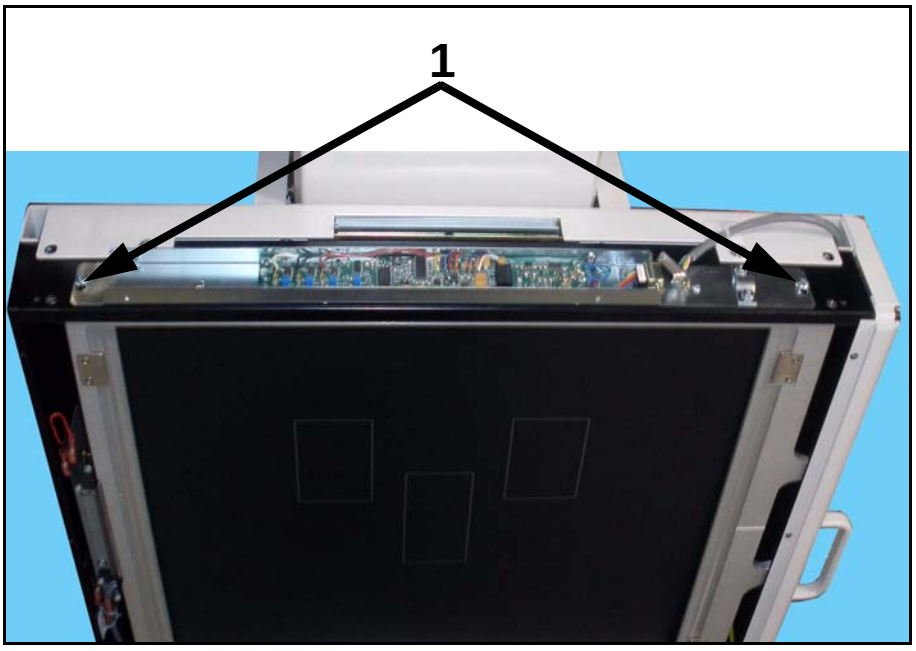


Figure 5-9. Ion Chamber Mounting Screws

15 Slide ion chamber out as shown below.

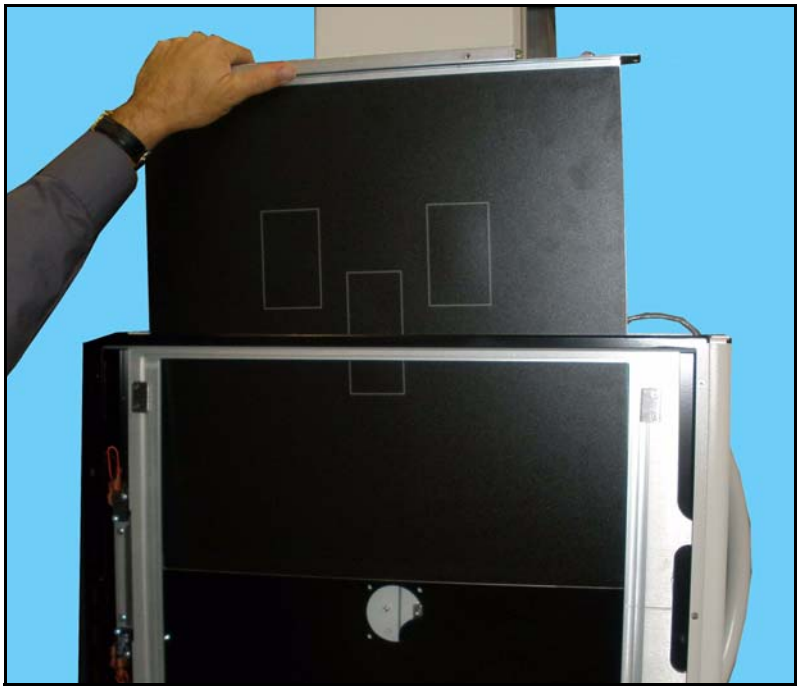


Figure 5-10. Ion Chamber Removal

Only do steps 14-18 if your wallstand has an optional bucky.

16 Cut cable ties (1 in Figure 5-11).

17 Disconnect wires from bucky terminal (2).

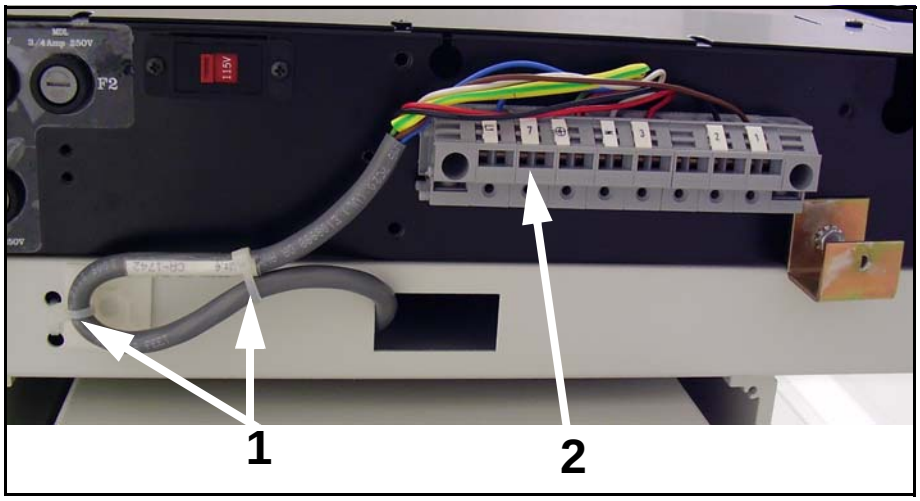


Figure 5-11. Bucky Terminal Connection

18 Unscrew bucky right side screw (1 in Figure 5-12).

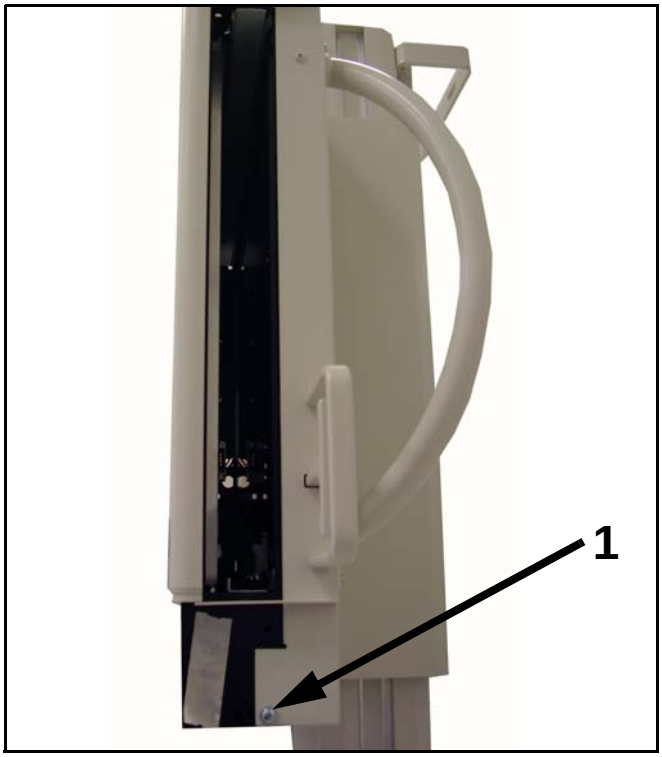


Figure 5-12. Bucky Right Side Screw

19 Unscrew bucky left side screw (1 in Figure 5-13).

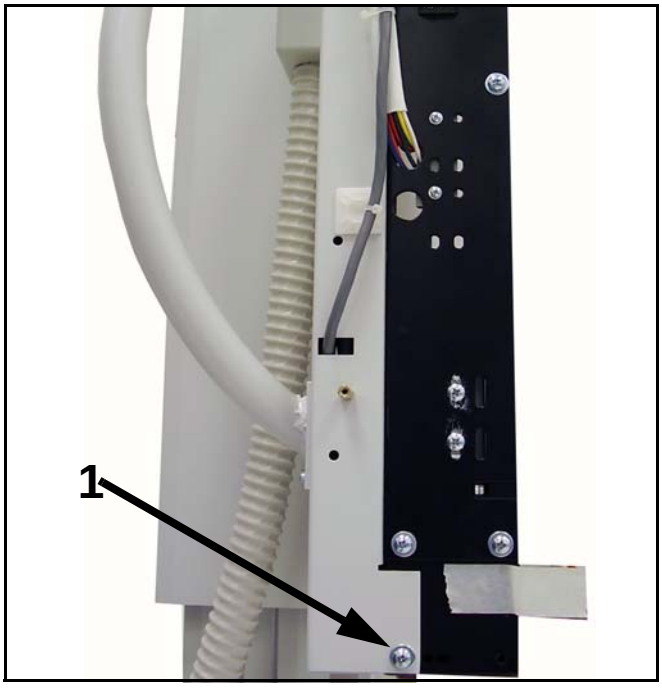


Figure 5-13. Bucky Left Side Screw

20 Unscrew bucky top screws (1 in Figure 5-14)) and remove bucky (2).

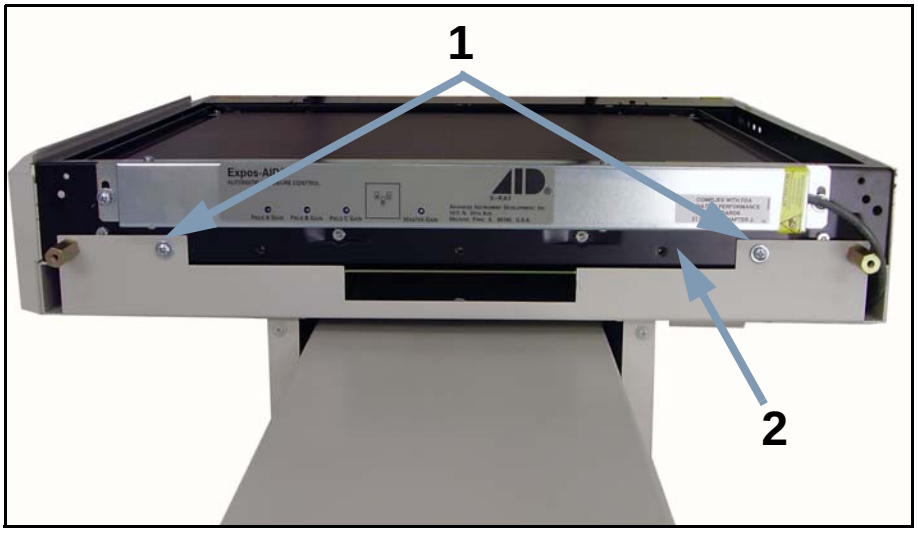


Figure 5-14. Bucky Top Screws

21 Unscrew ground screw (1 in Figure 5-15) and remove ground wire (2).

22 Screw ground screw back in.

23 Unscrew conduit box screws (3).

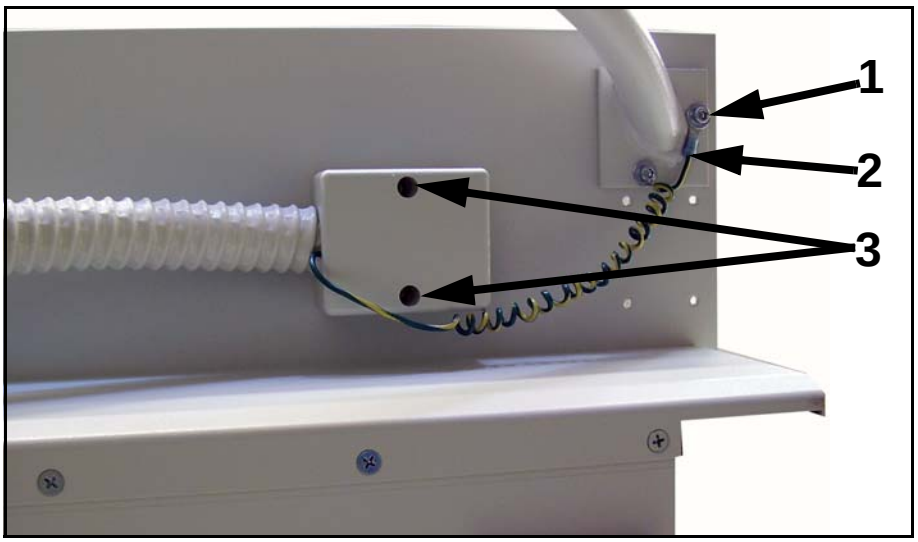


Figure 5-15. Conduit Box

24 Cut cable ties (1 in Figure 5-16).

25 Remove nuts (2) and P-clamps (3).

26 Pull wire harness (4) out of wallstand.

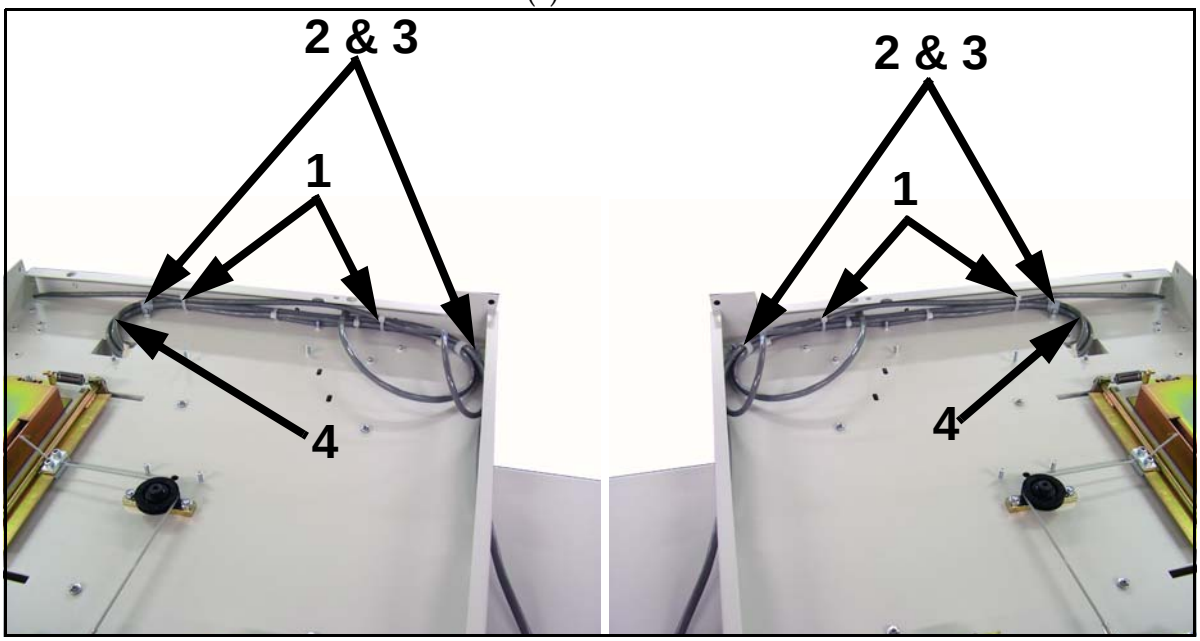


Figure 5-16. Harness Ties & Clamps (Left & Right Configurations Shown)

27 Unscrew cover screws (1 in Figure 5-17) and remove cover (2).

28 Reinstall cover where conduit box was removed.

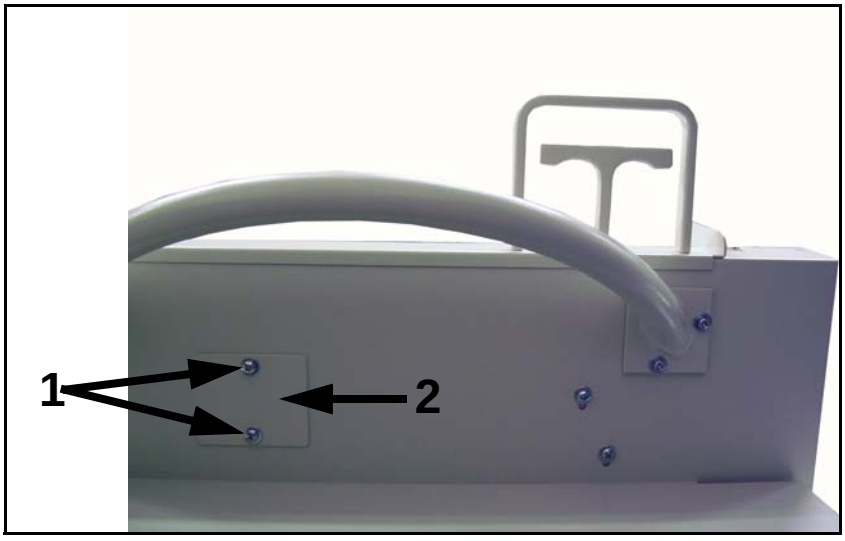


Figure 5-17. Cover Screws

29 Unscrew bracket screw (1 in Figure 5-18).

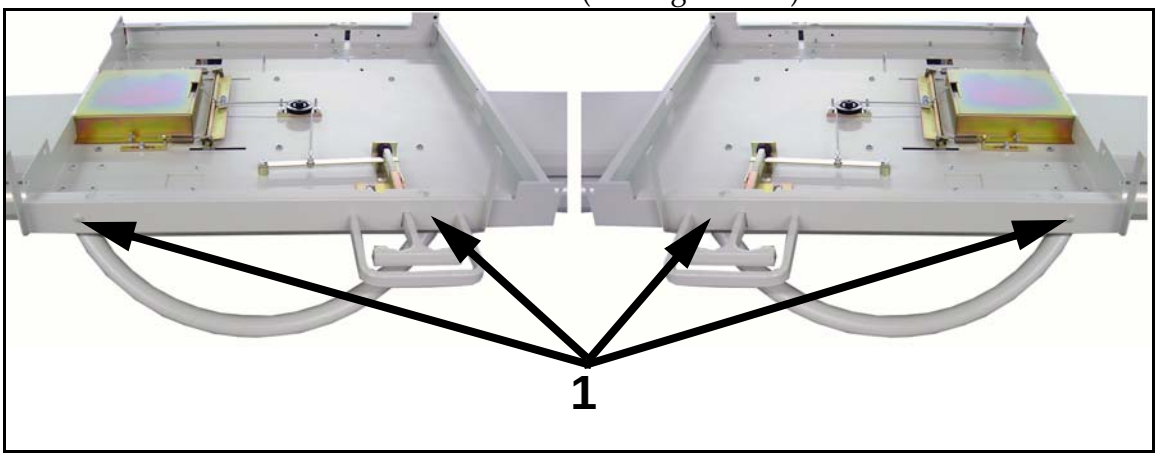


Figure 5-18. Bracket Screw (Left & Right Configurations Shown)

30 Unscrew lever nut (1 in Figure 5-19) and lift lever (2) and spacer (3) off of mounting stud.

31 Unscrew two inside bracket screws (4) and remove bracket* (5), handle guard (6) and handle (7).

32 Remove pulley assembly (8) and place in new position.

33 Remove bumper assembly (9) and place in new position.

34 Remove handle guide (10) and place in new position.

35 Slide handle (7) into bracket (5).

36 Install bracket (5) and secure in place with screws (4) and handle guard (6).

***Note: If your wallstand was manufactured before 2008, you may need to order a new bracket. Contact Del Medical Technical support for more information.**

37 Mount lever (2) in new position with spacer (3) & nut (1).

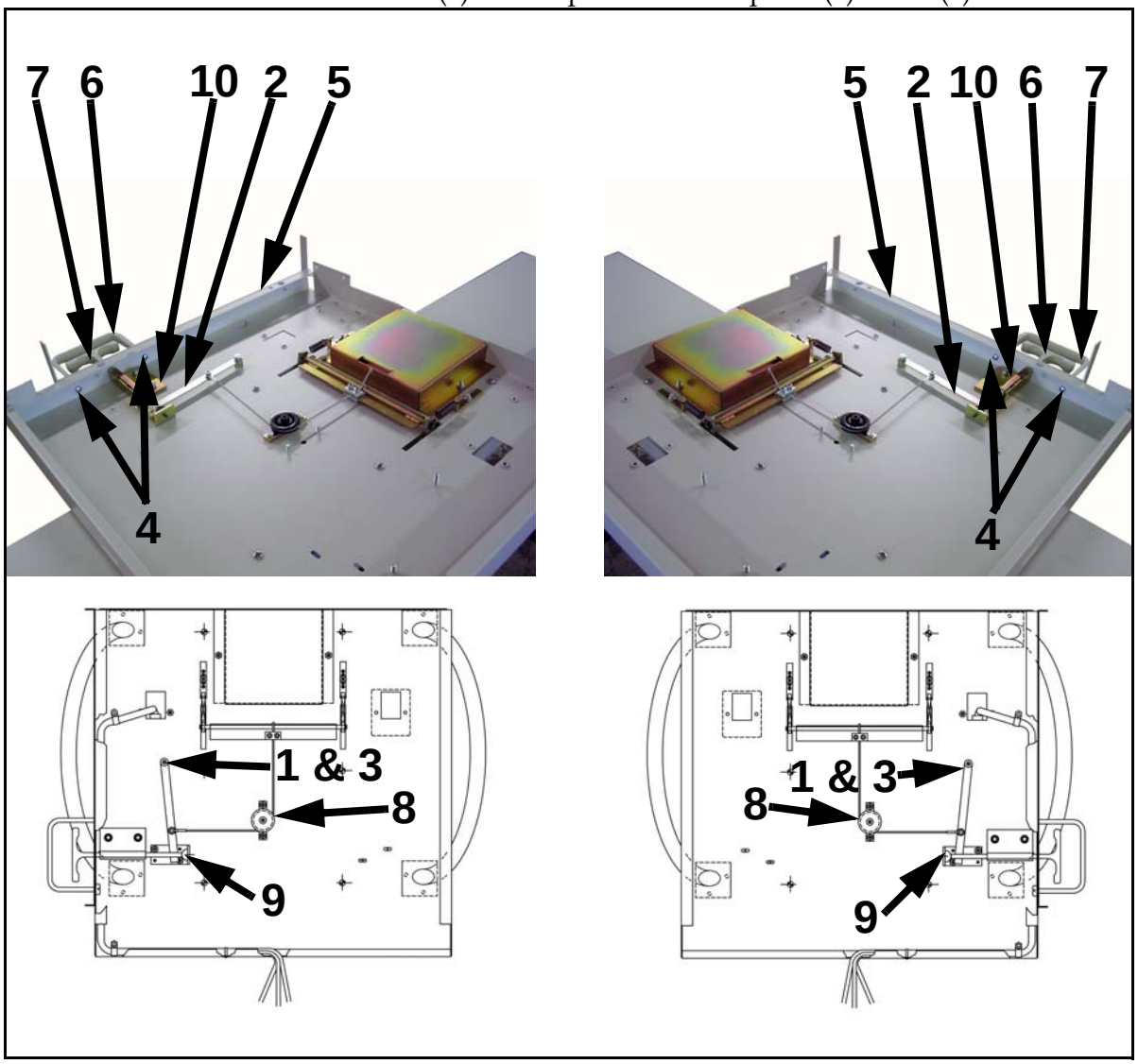


Figure 5-19. Lock Mechanism Assembly (Left & Right Shown)

Only do steps 36-44 if your wallstand is equipped with an optional PBL (cassette size sensing kit).

38 Unscrew four PBL bracket screws (1) and separate bracket (2) from bucky.

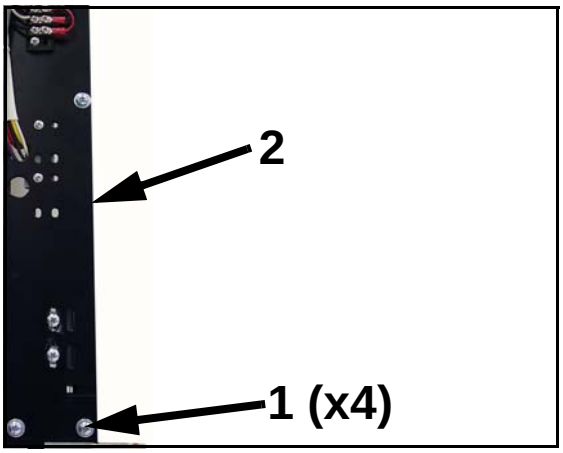


Figure 5-20. PBL Bracket Screws

39 Disconnect all wires from terminal (1 in Figure 5-21).

40 Unscrew connector screws (2).

41 Pull connector and harness (3) out through hole (4).

42 Feed harness through hole (5).

43 Mount connector in new position with screws (6).

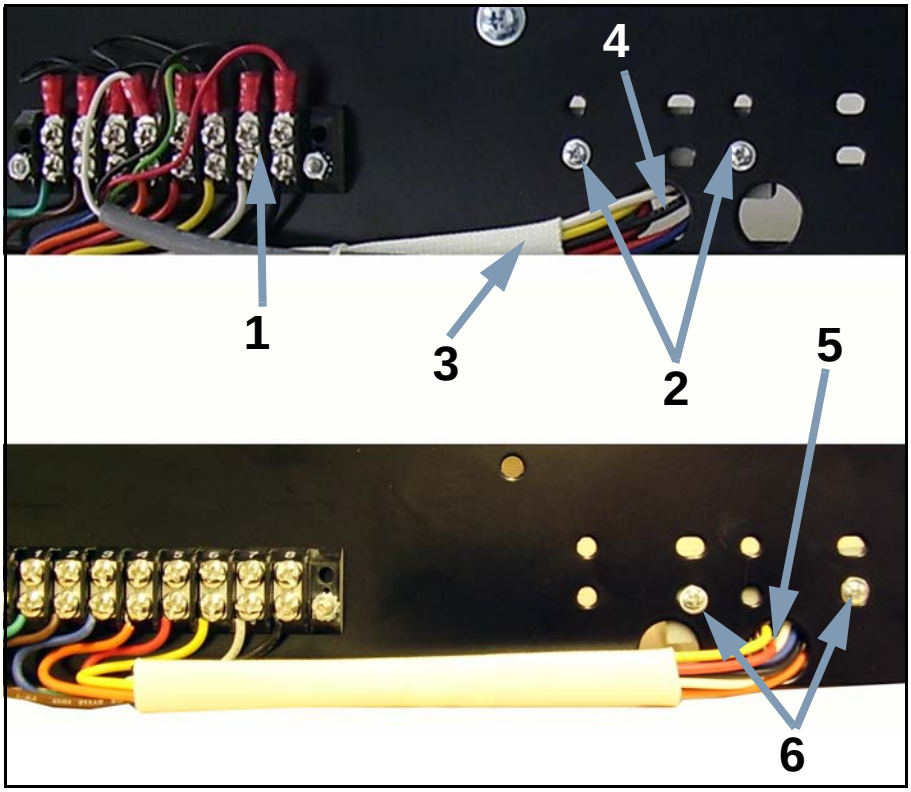


Figure 5-21. Repositioning PBL Connector

44 Rewire terminal as shown in Figure 5-22.

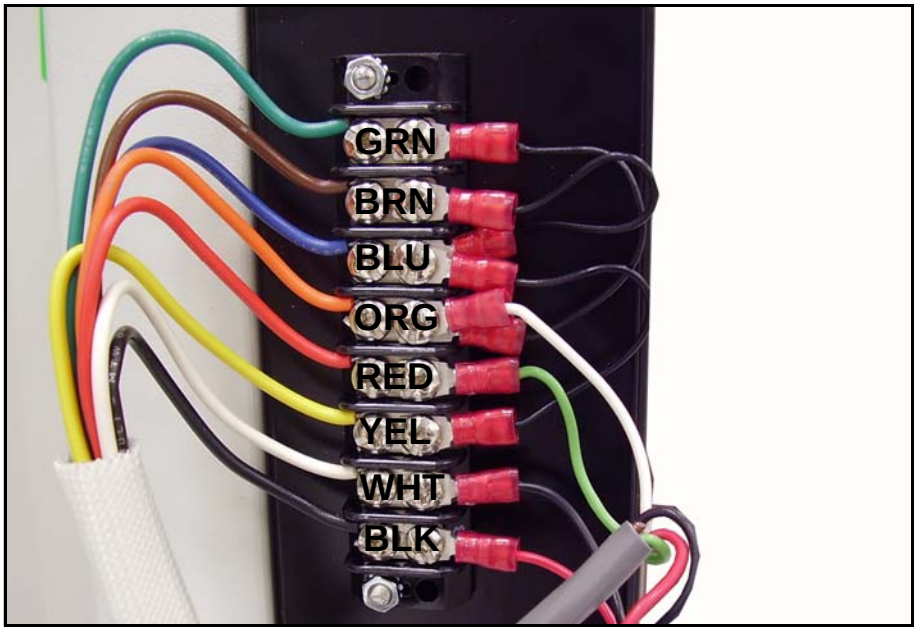


Figure 5-22. Wiring Diagram

45 Remount bucky on wallstand.

46 Mount PBL bracket on right side of bucky as shown below.

Figure 5-23. PBL Bracket

47 Reverse steps to reassemble. See Figure 5-24 & Figure 5-25 for wiring information for PBL and bucky. Be sure to recheck alignment according to Chapter 2 when setting wallstand back up.

48 Adjust brake according to Section "Adjusting Brake Cams" on page 5-3.

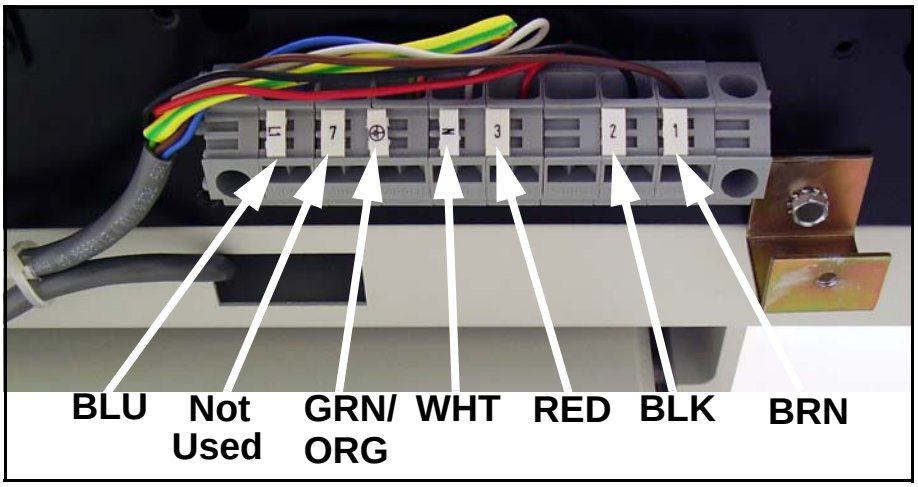


Figure 5-24. Bucky Wiring Diagram

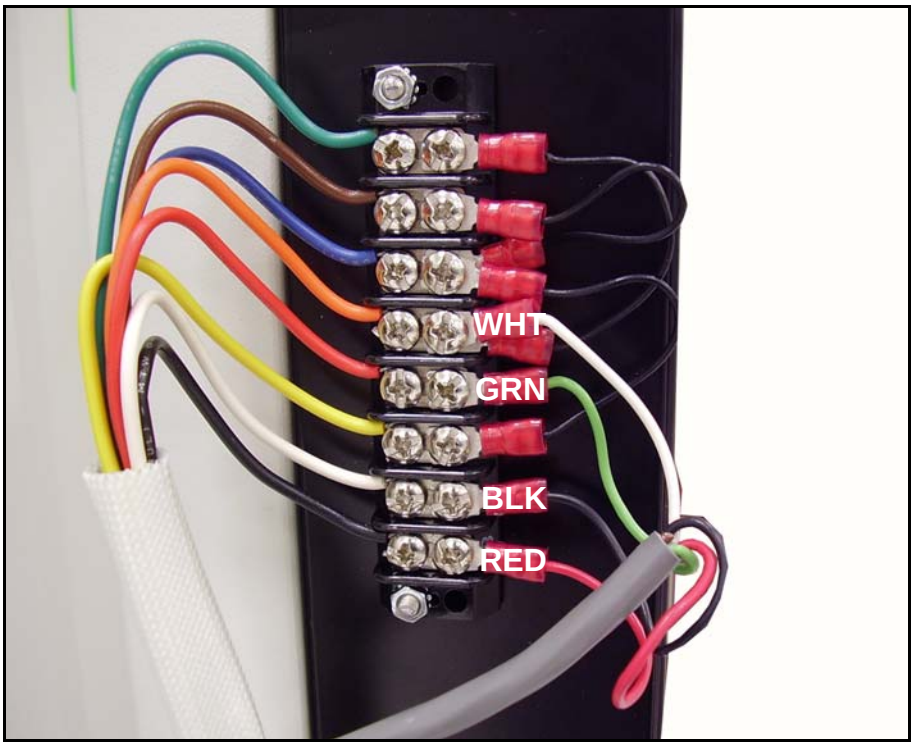


Figure 5-25. PBL Wiring Diagram

Component Replacement

6

6.1 Introduction

This chapter provides instructions for replacing components on the wallstand.

6.2 Replacing Fuses

This procedure describes how to replace bucky fuses. For digital receptor fuses, refer to the digital receptor documentation.

Tools Required

- medium phillips head screwdriver
- small flat-tip screwdriver

Fuses - Progeny Bucky

- F1 - 1A, 250V, MDL
- F2 - 3/4A, 250V, MDL
- F3 - 1A, 250V, MDL

Fuses - Potter (Villa) Bucky

- F1 - 0.3A, 250V, T
- F2 - 0.2A, 250V, T
- F3- 1.6A, 250V, T

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Unscrew four bottom cover screws (1 in Figure 6-1) and remove bottom cover (2).

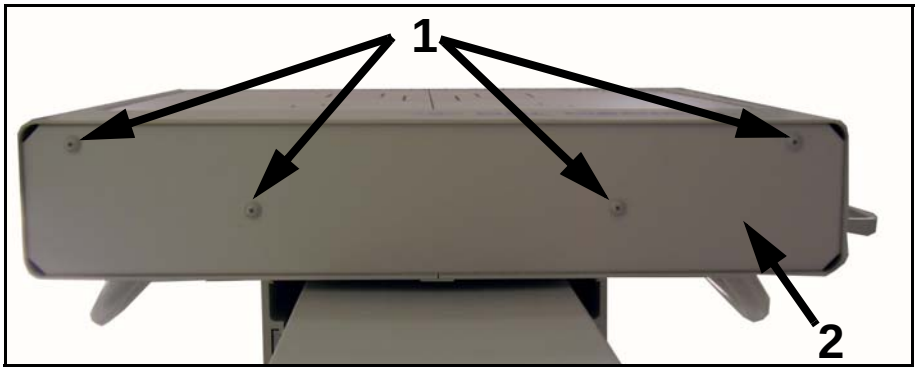


Figure 6-1. Bottom Cover Screws

2 Remove bucky fuse caps (1 in Figure 6-2 or Figure 6-3) and check fuses. Replace as necessary.

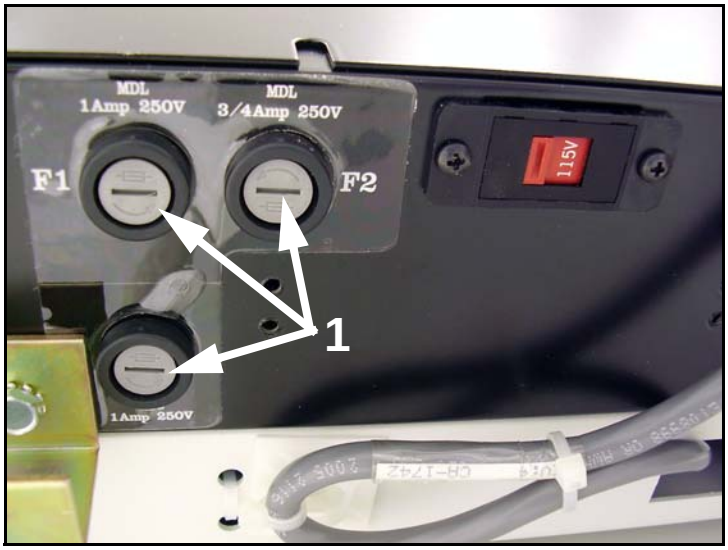


Figure 6-2. Progeny Bucky Fuse Caps.

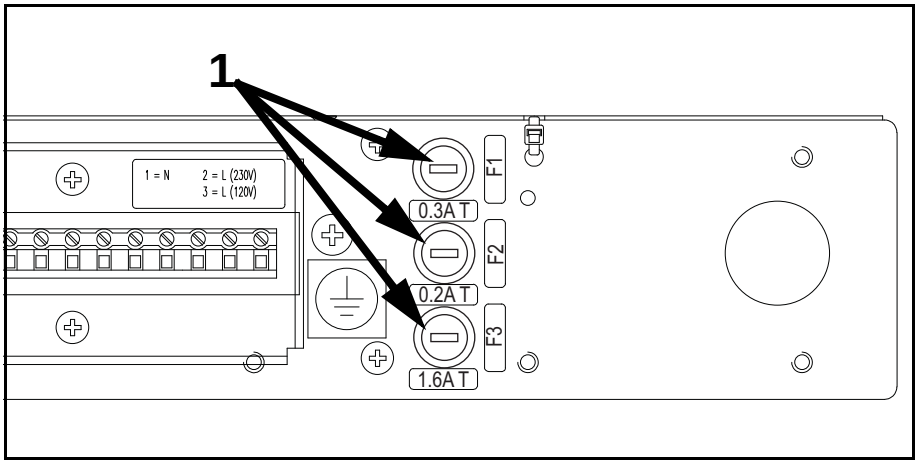


Figure 6-3. Potter (Villa) Bucky Fuse Caps

3 Reverse steps to reassemble.

6.3 Replacing Counterweight Cable

Tools Required

- broom stick (min 4', [1.5 M])
- medium phillips head screwdriver
- retaining ring pliers
- rug or soft surface to lay wallstand down on
- set of nut drivers
- set of open-end wrenches
- work gloves

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1. Remove the wallstand's wall and floor mounting screws.
2. Carefully lay wallstand face down on a soft rug or other soft surface.
3. Unscrew four back cover nuts (1 in Figure 6-4) and remove back cover (2).

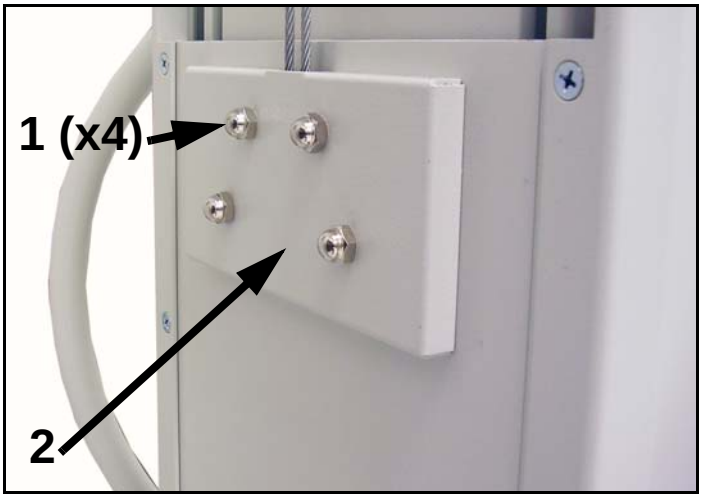


Figure 6-4. Back Cover

4 Unwrap cable (1 in Figure 6-5) from around disks (2).

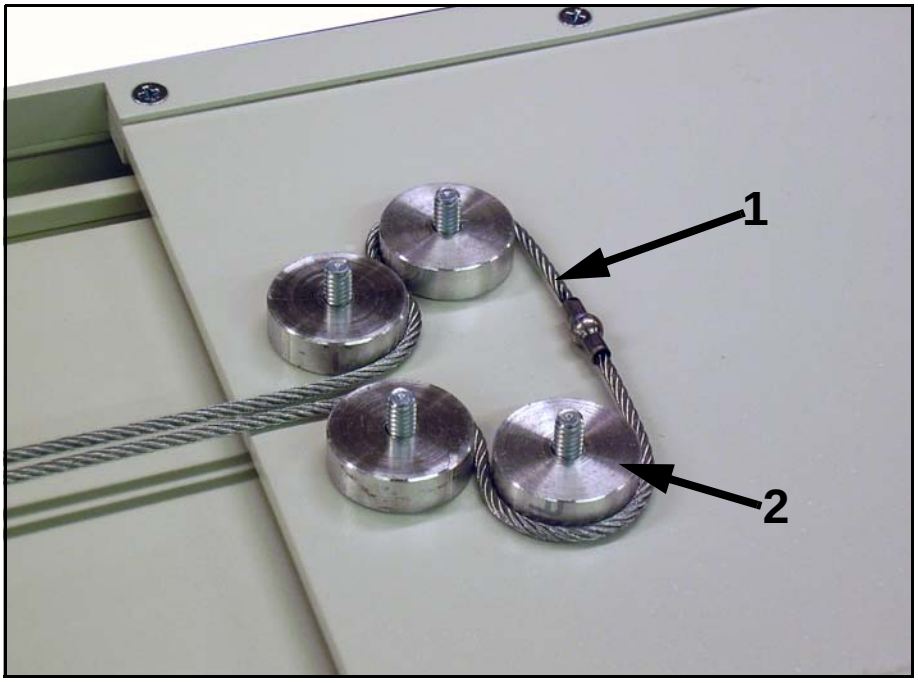


Figure 6-5. Cable End Disks

5 Unscrew top cover screws (1 in Figure 6-6) and remove top cover (2).

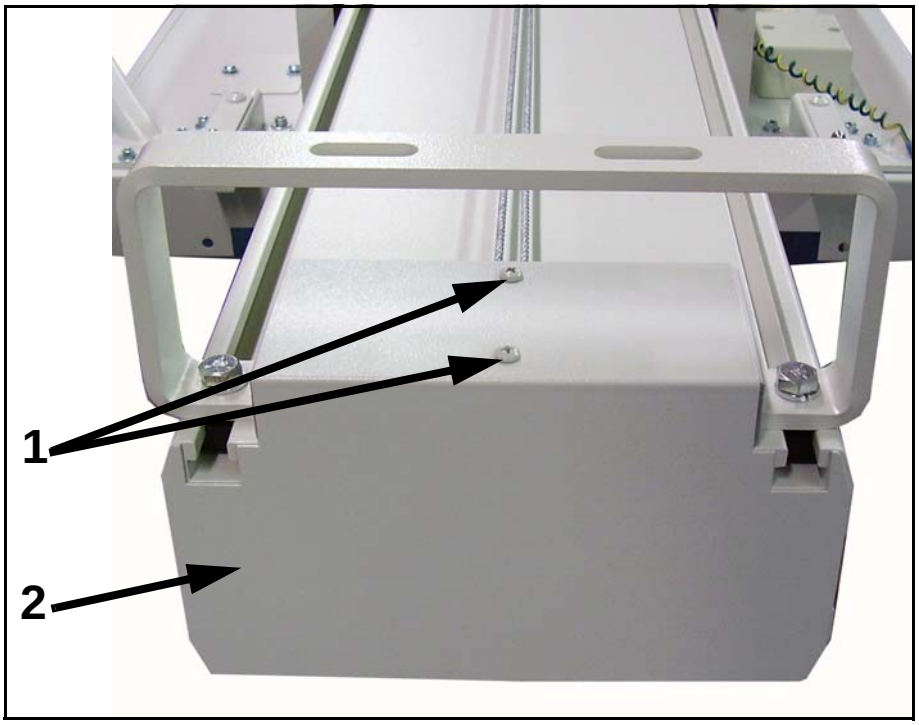


Figure 6-6. Top Cover

6 Remove retaining ring (1 in Figure 6-7), shaft (2) and pulley (3).

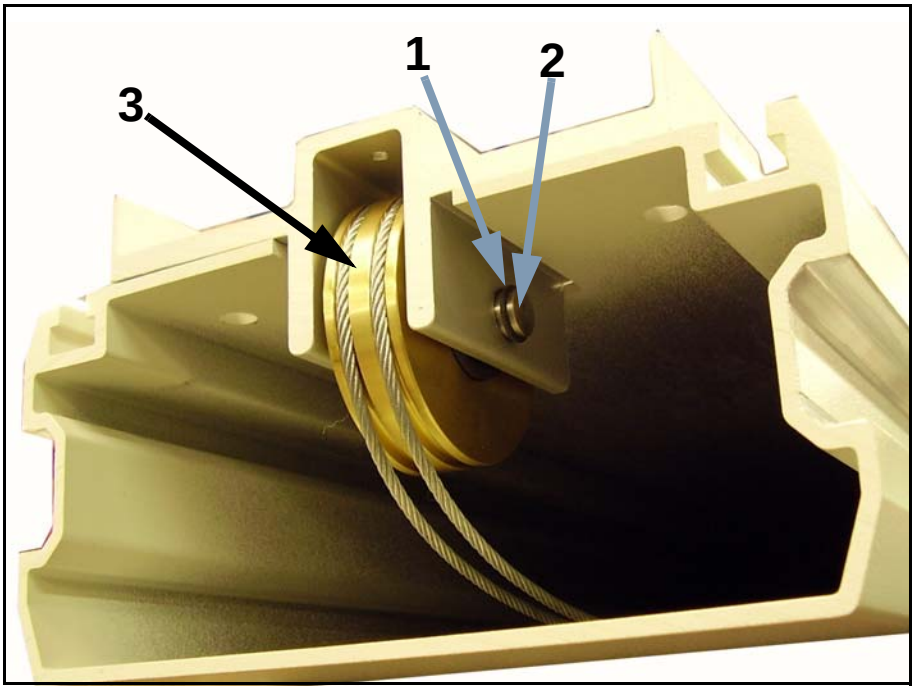


Figure 6-7. Shaft & Pulley

7 Unscrew two nuts (1 in Figure 6-8) and remove bracket (2).

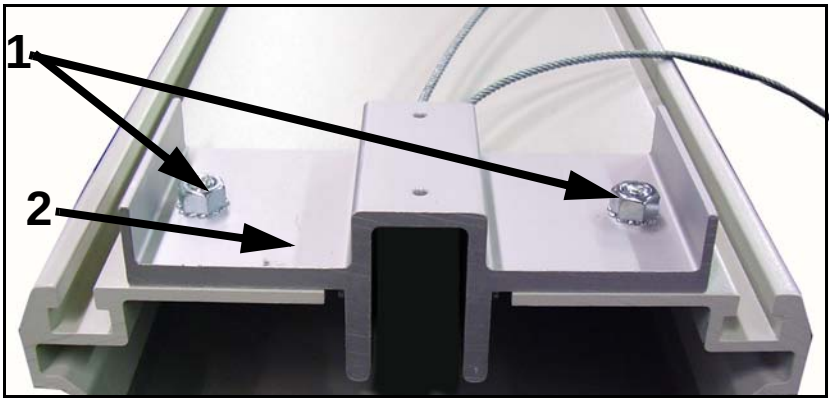


Figure 6-8. Pulley Bracket

8 Put on work gloves.

Caution

Wear work gloves when pulling cable. You may injure your hands on a frayed cable if you do not.

9 Pull on cable (1 in Figure 6-9) to drag the counterweight (2) to top of column as shown below.

10 Unscrew two nuts (3) and remove screw (4).

11 Discard old cable.

12 Connect new cable to counterweight.

13 Push counterweight about 3’ (1000 mm) back into column with a broom stick or similar tool.

14 Reverse steps to reassemble. Make sure that cable stays uncrossed and aligned with pulley. Also, make sure you insert cable between pulley and bracket *before* reinstalling pulley. There is not enough clearance to insert the cable when the pulley is installed. Be sure to check alignment to x-ray source according to Chapter 2 when setting wallstand back up.

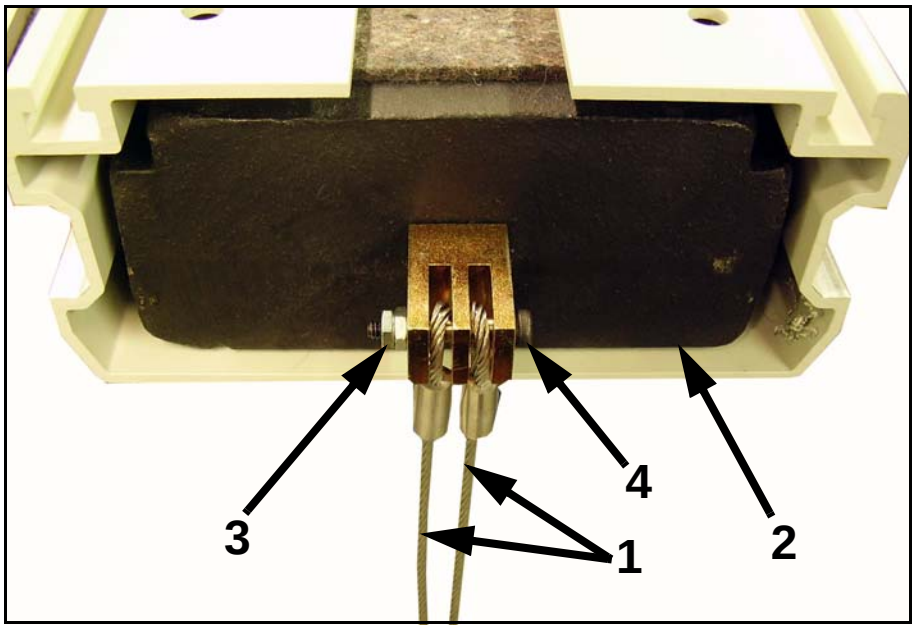


Figure 6-9. Counterweight Positioning

6.4 Replacing Grid

Refer to the following instructions for information on how to replace the grid for the regular bucky. If the wallstand is equipped with one of the optional digital receptors with grid, refer to the corresponding documentation for instructions on how to replace the grid (if applicable).

Tools Required

- 11/32" nut driver
- medium phillips head screwdriver

Replacing of grid for digital imaging receptors may require tools not listed here. See the digital receptor documentation for tools and materials not listed here.

Warning

Turn off all electrical power to wallstand and all its peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Unscrew two top cover screws (1 in Figure 6-10) and remove top cover (2).

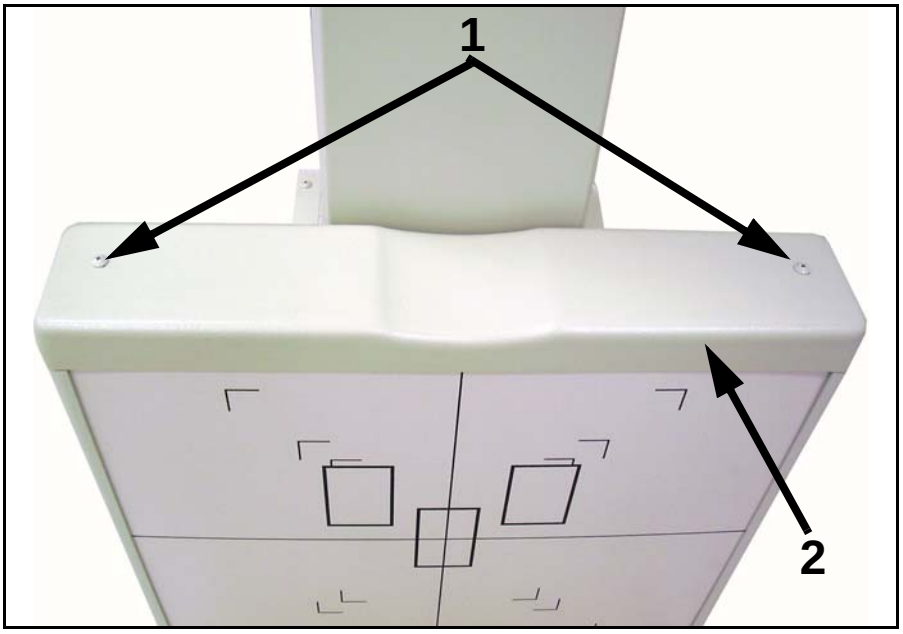


Figure 6-10. Top Cover Screws

2 Unscrew four bottom cover screws (1 in Figure 6-11) and remove bottom cover (2).

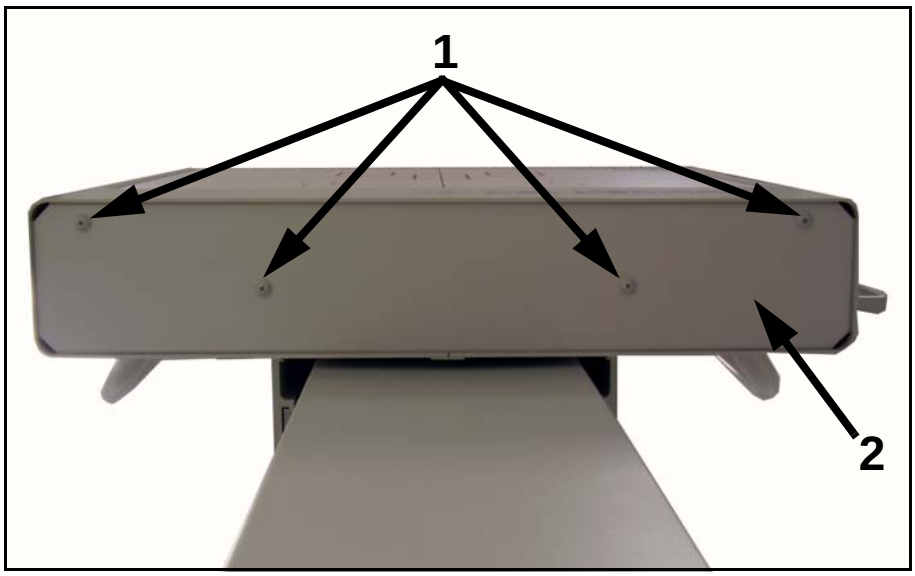


Figure 6-11. Bottom Cover Screws

3 Slide the front panel (1 in Figure 6-12) straight up and off wallstand.

4 Unscrew two side cover screws (2) and remove side cover (3).

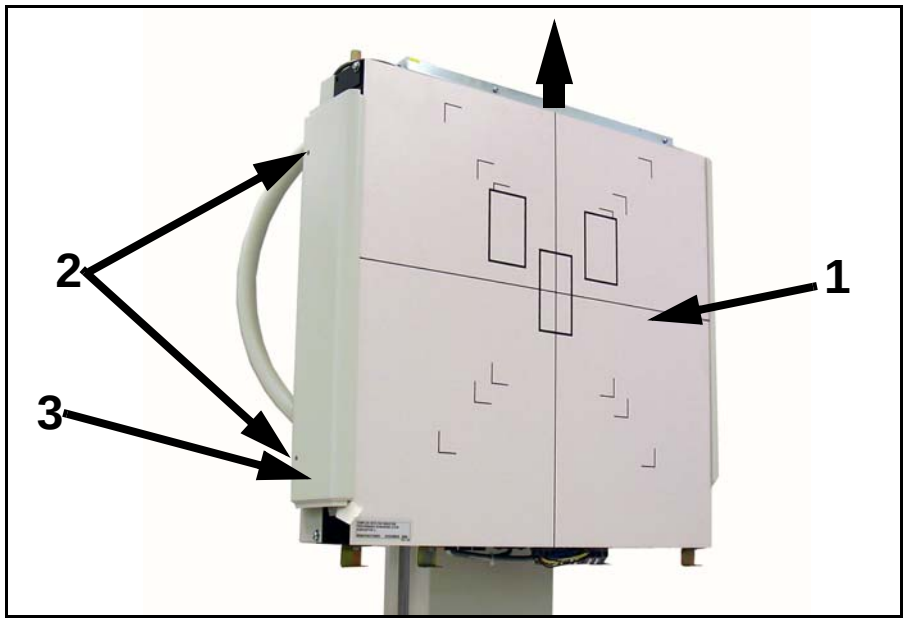


Figure 6-12. Side Panel & Front Panel

5 Unscrew grid clamp screws (1 in Figure 6-13) and remove clamps (2) and grid (3).

6 Reverse steps to reassemble. Be sure to orient new grid so that etched center line is vertical.

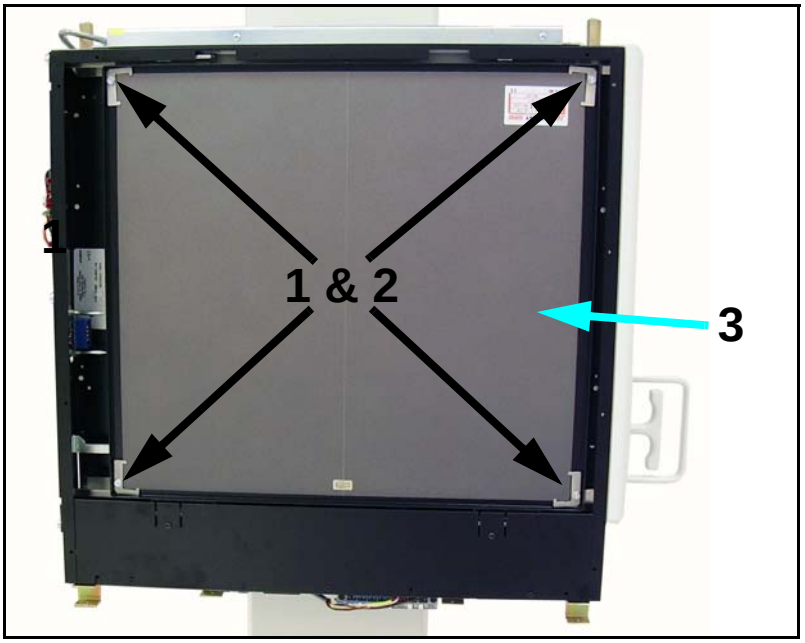


Figure 6-13. Grid

6.5 Replacing ION Chamber

For wallstands with digital receptor, refer to the manufacturer's specifications and installation manuals for instructions on how to replace ION chamber (if applicable).

Tools Required

- 5/16" nut driver
- medium phillips head screwdriver
- small flat tip screwdriver

Warning

Turn off all electrical power to wallstand and all it's peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources other outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1 Unscrew two top cover screws (1 in Figure 6-14) and remove top cover (2).

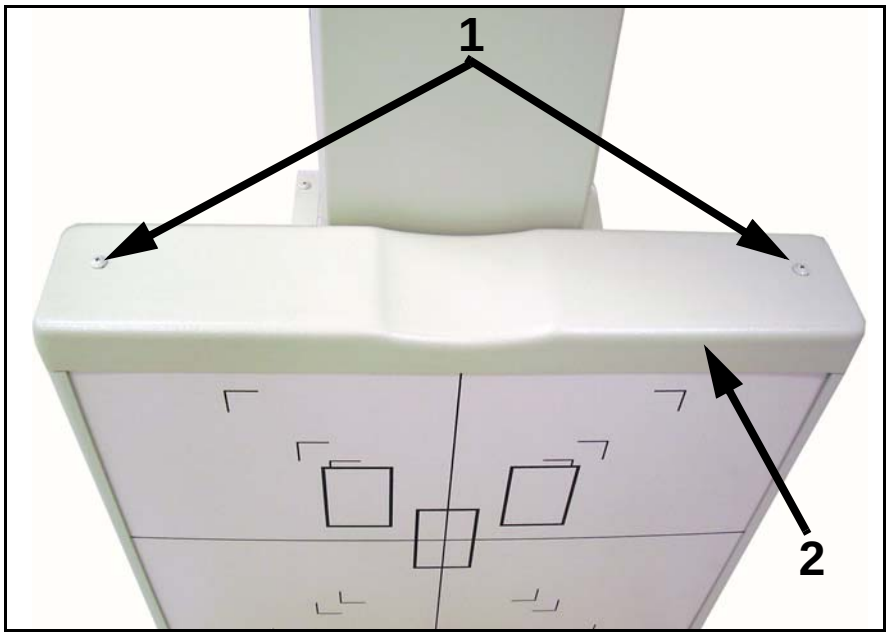


Figure 6-14. Top Cover Screws

2 Unscrew four cover screws (1 in Figure 6-11) and remove ION cover (2).

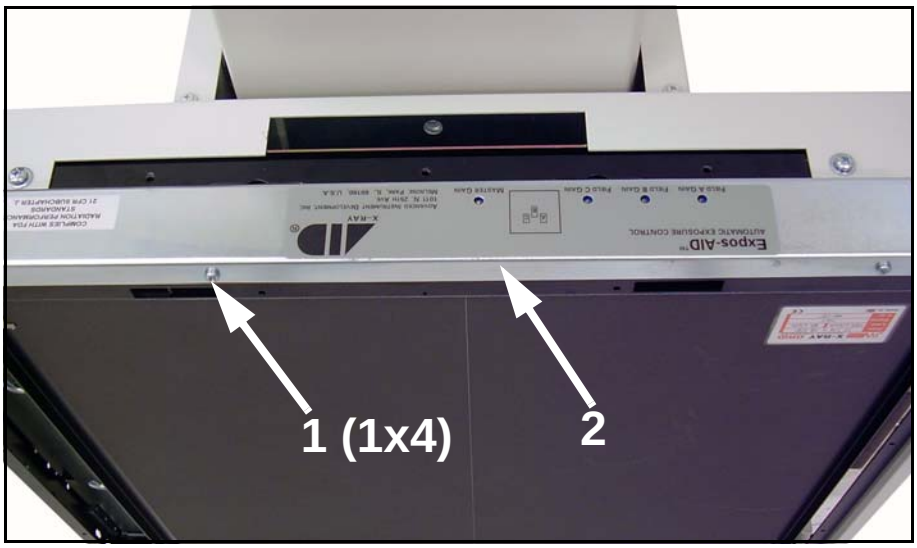


Figure 6-15. ION Chamber Cover Screws

3 Unscrew cable clamp nuts (1 in Figure 6-16) and remove clamp (2).

4 Unscrew two connector screws (3) and unplug connector (4).

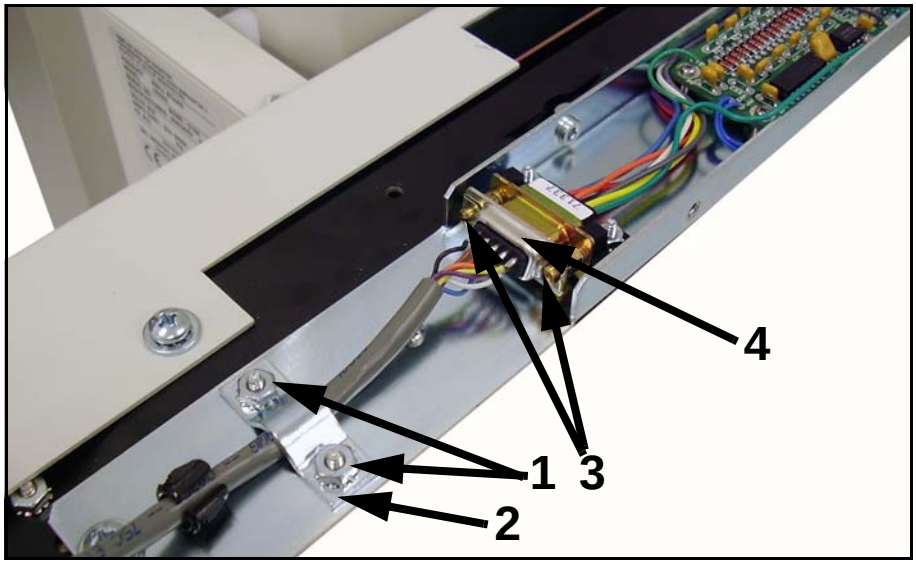


Figure 6-16. ION Chamber Screws

5 Unscrew ION chamber mounting screws (1 in Figure 6-17) and lift ION chamber (2) out of cabinet.

6 Reverse steps to reassemble.

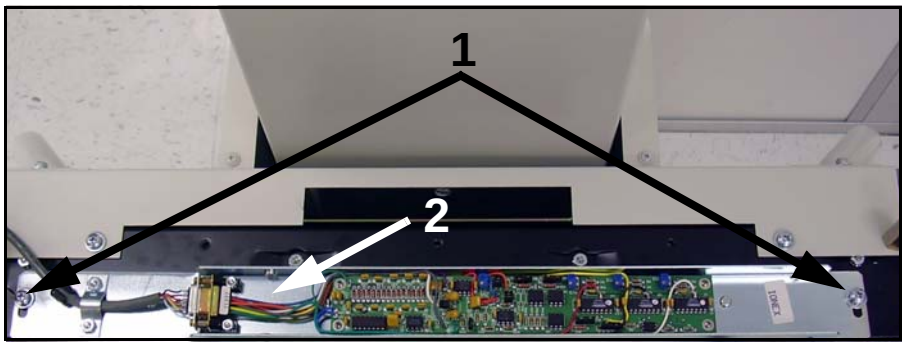


Figure 6-17. ION Chamber Mounting Screws

6.6 Replacing PBL Connector

Tools Required

- 11/32" nut driver
- diagonal cutters
- medium phillips head screwdriver
- small flat-tip screwdriver

Warning

Turn off all electrical power to wallstand and all it's peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources other outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1. Manually pull cassette tray out as far as it will go.
2. While firmly pressing on limit button (1 in Figure 6-18), pull the cassette tray completely out of the bucky.

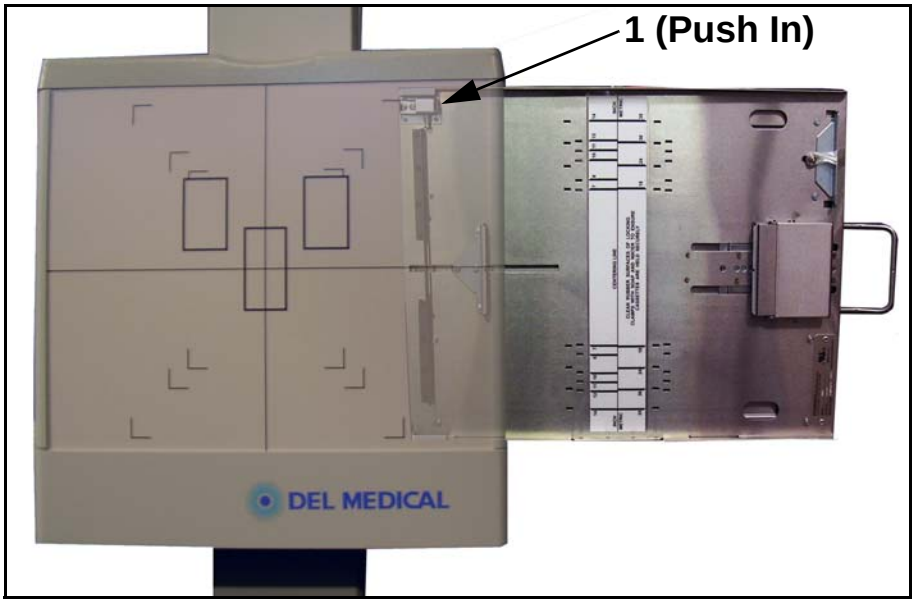


Figure 6-18. Cassette Tray Removal

3 Unscrew two top cover screws (1 in Figure 6-19) and remove top cover (2).

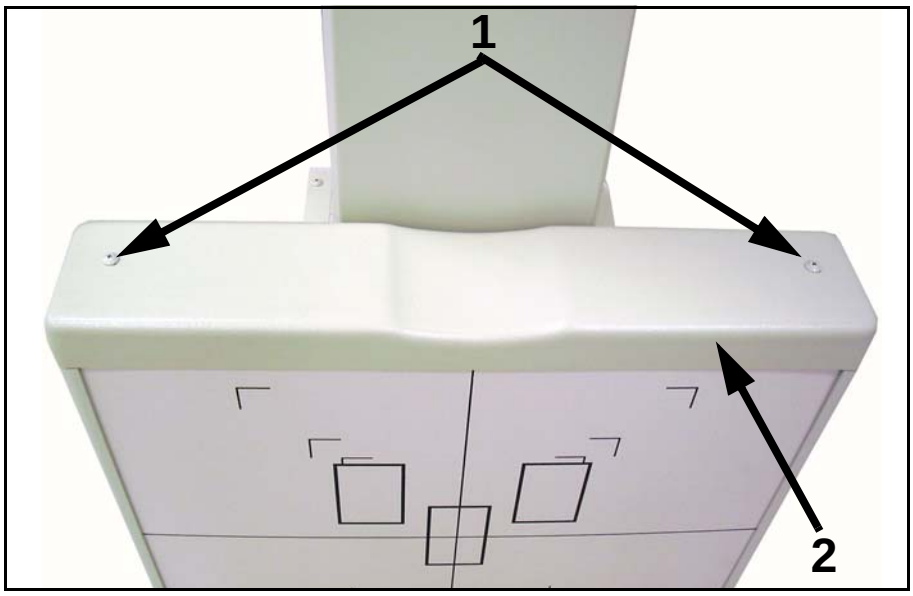


Figure 6-19. Top Cover Screws

4 Unscrew four bottom cover screws (1 in Figure 6-20) and remove bottom cover (2).

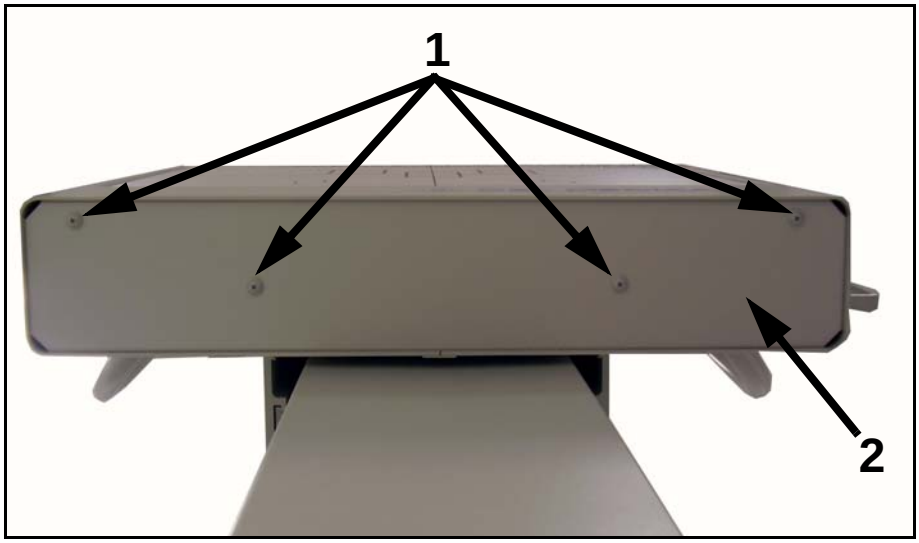


Figure 6-20. Bottom Cover Screws

5 Slide the front panel (1 in Figure 6-21) straight up and off wallstand.

6 Unscrew two side cover screws (2) and remove side cover (3).

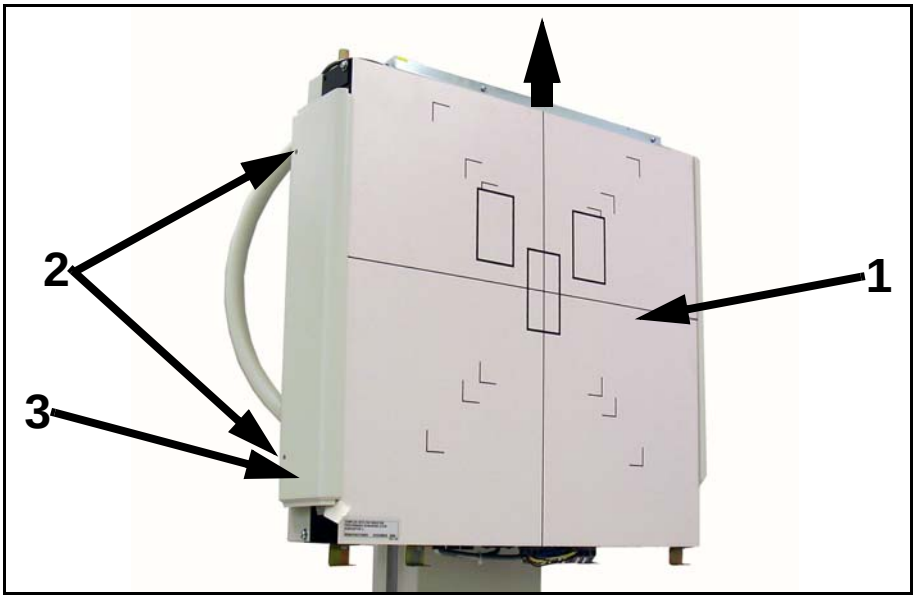


Figure 6-21. Side Panel & Front Panel

7 Cut cable tie (1 in Figure 6-22).

8 Disconnect wires (2) from terminal (3).

9 Unscrew connector screws (4)

10 Unscrew four PBL bracket screws (5) and separate bracket (6) from cassette holder.

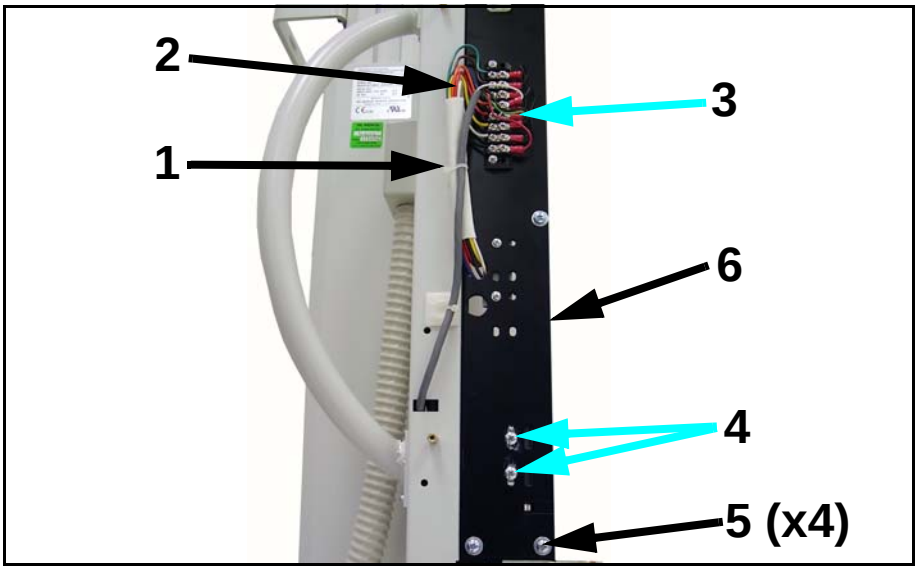


Figure 6-22. PBL Bracket Screws

11 Pull connector and harness (1 in Figure 6-23) out of bracket (2).

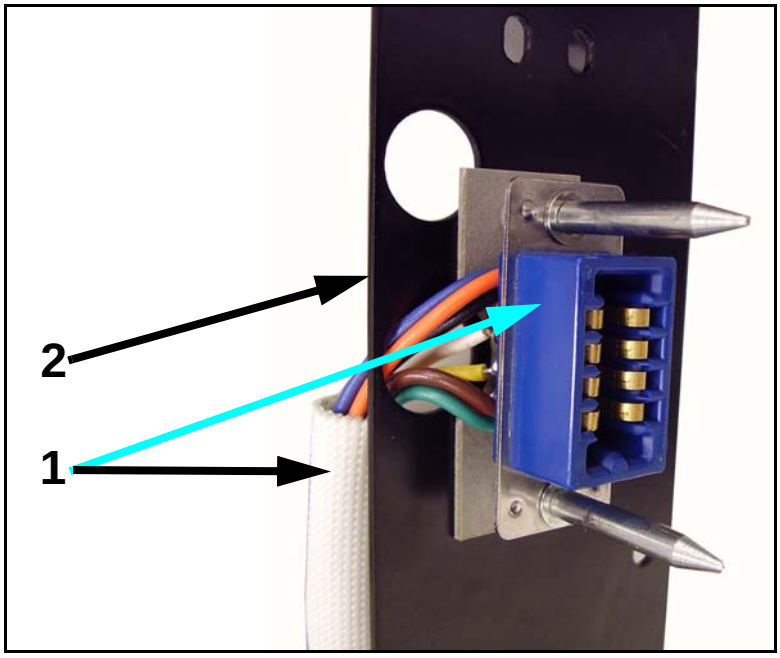


Figure 6-23. PBL Connector

12 Reverse steps to reassemble. Use Figure 6-24 as a wiring guide.

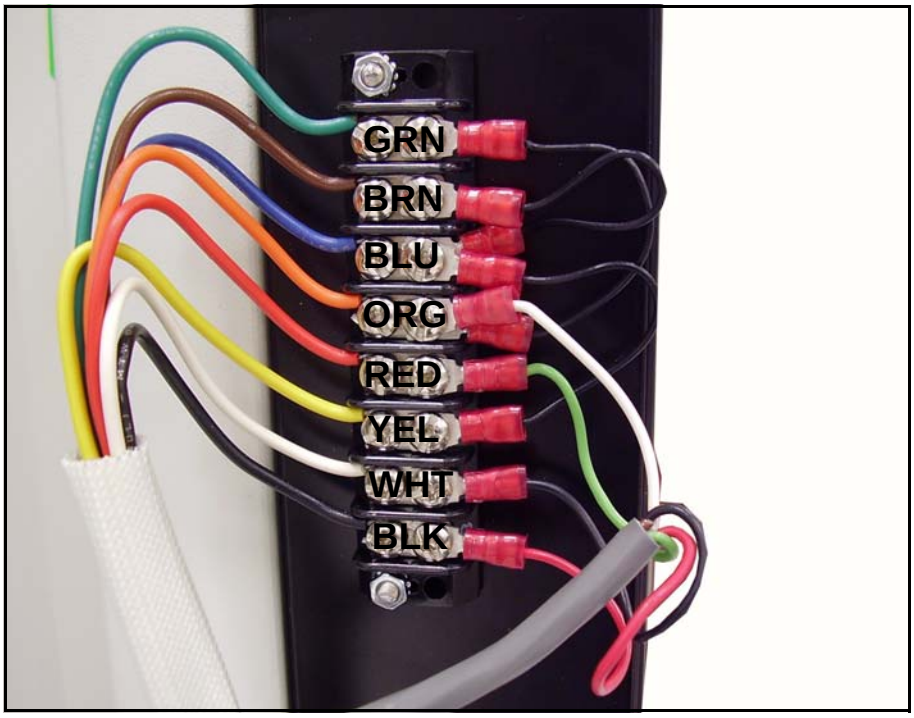


Figure 6-24. PBL Wiring Diagram

6.7 Replacing Brake Cams

Tools Required

- cable tie
- medium phillips head screwdriver
- rug or soft surface to lay wallstand down on
- set of hex wrench

Warning

Turn off all electrical power to wallstand and all it's peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources other outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1. Remove the wallstand's wall and floor mounting screws.
2. Carefully lay wallstand face down on a soft rug or other soft surface.
3. Unscrew top cover screws (1 in Figure 6-25) and remove top cover (2).
4. Loosen two bracket bolts (3) and slide bracket (4) off of top of column (5).

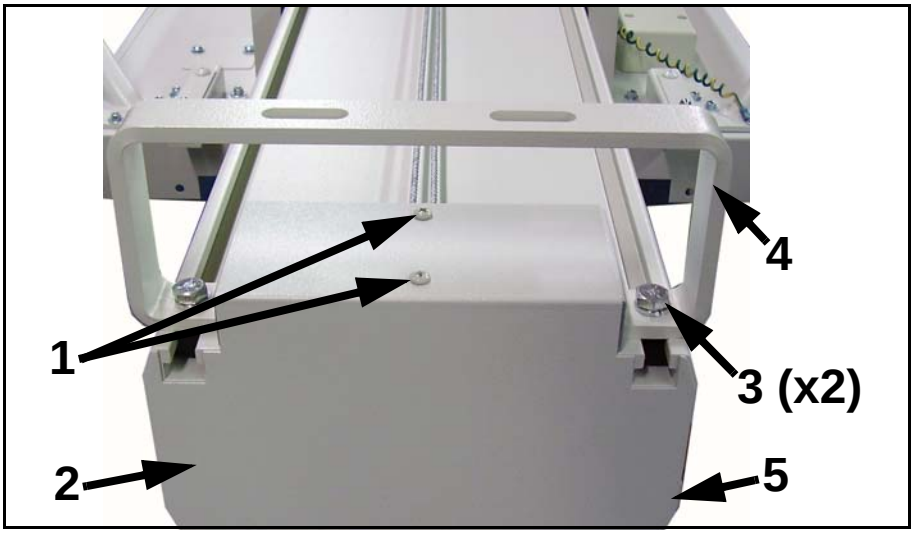


Figure 6-25. Top Cover & Bracket

5 Pull brake handle open and secure it open with a cable tie (1 in Figure 6-26).

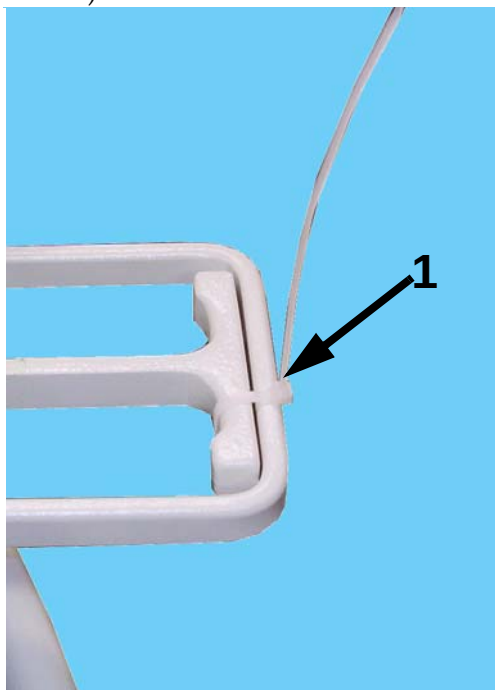


Figure 6-26. Brake Handle Tied Open

6 Slide top of column (1 in Figure 6-27) about halfway through cassette holder sleeve (2) until cams (3) are exposed.

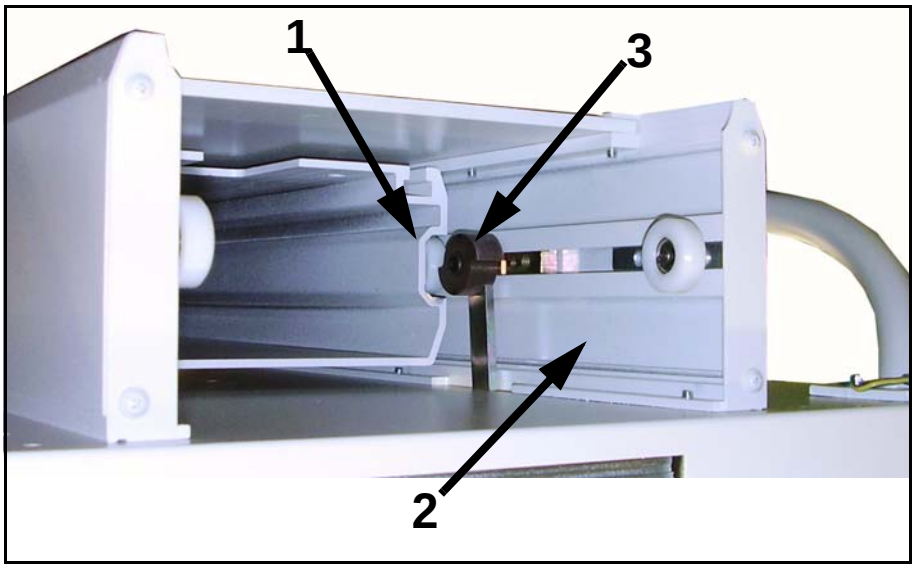


Figure 6-27. Cams Exposed

7 Unscrew cam mounting screw (1 in Figure 6-28) and remove cam (2).

8 Place new cam into position and secure with mounting screw. Be sure to orient the cam in the same position as the old one.

9 Reverse steps to reassemble. Be sure to recheck alignment according to Chapter 2.

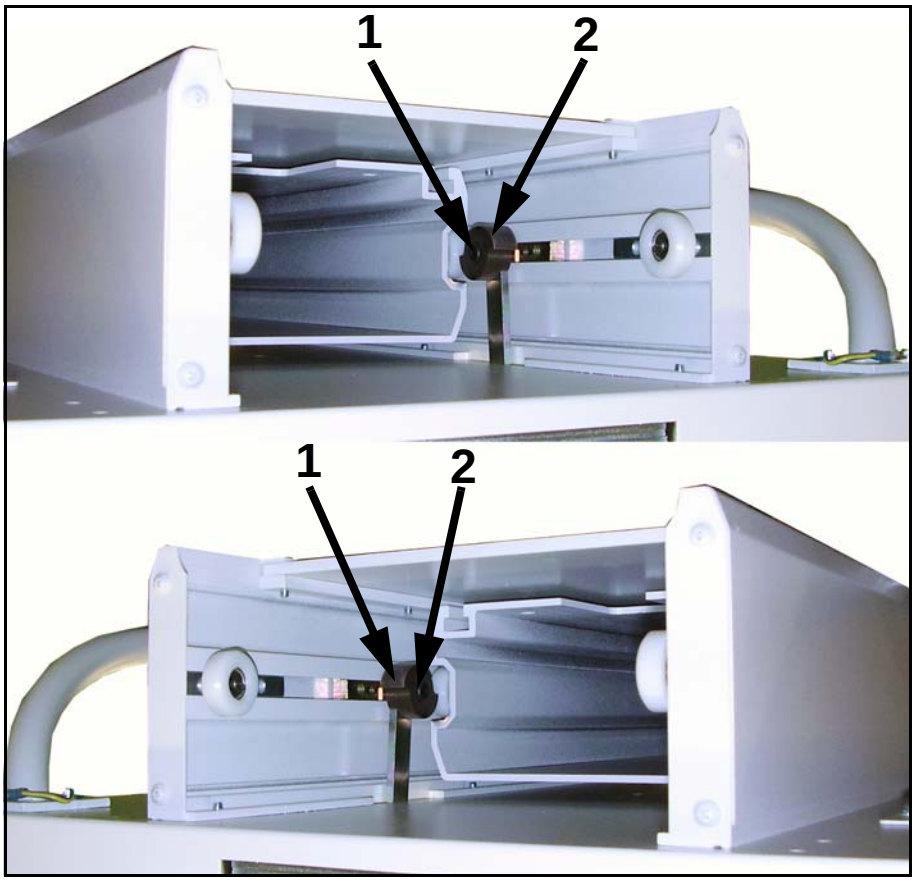


Figure 6-28. Cam Removal

6.8 Replacing Cooling Fan

Tools Required

- Medium Flat Tip Screw Driver
- Set of Nut Drivers

Warning

Turn off all electrical power to wallstand and all it's peripheral equipment (generator, tubestand, etc.) at power sources before servicing wallstand. Also, make sure that power sources are locked out and tagged "Equipment Being Serviced" before servicing wallstand. The components inside of wallstand have power sources other outside the wallstand. That's why all peripheral equipment must be turned off. You could get seriously injured if you do not.

1. Unscrew mounting screws (1 in Figure 6-29).
2. Pull fan out of housing.

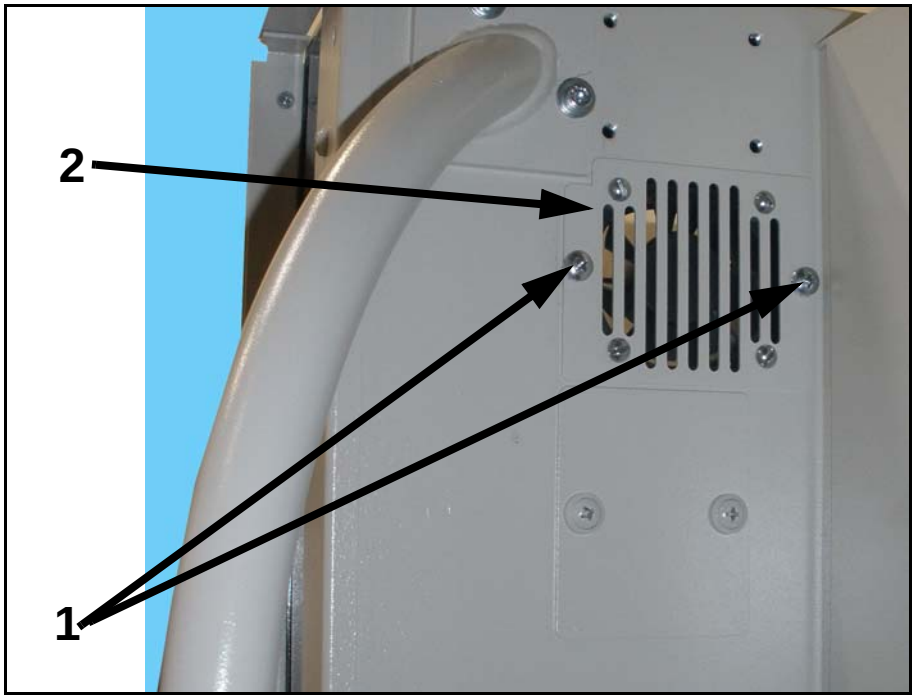


Figure 6-29. Fan Mounting Screws

3 Unscrew mounting screws (1 in Figure 6-30).

4 Disconnect connector (2).

5 Reverse steps to reassemble.

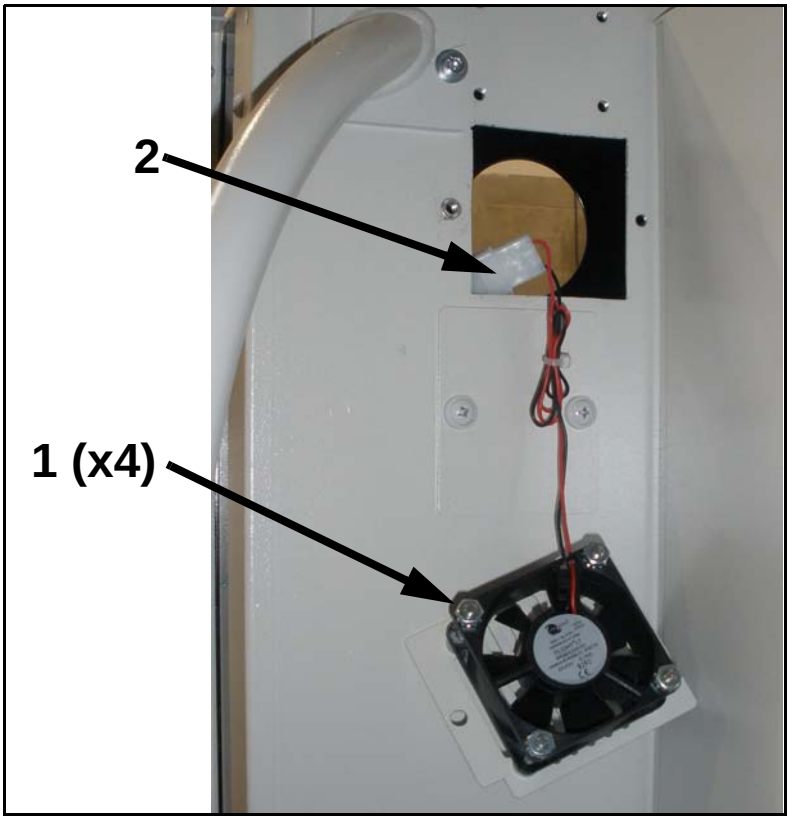


Figure 6-30. Fan Removal

Troubleshooting

7

7.1 Introduction

This chapter is divided into two sections.

The first section is a group of troubleshooting charts that will guide you through most of the problems that may occur with the wallstand.

The second section is made up of an overall schematic of the wallstand and a group of illustrations and photos that show the actual parts depicted on the schematic and their location on the wallstand.

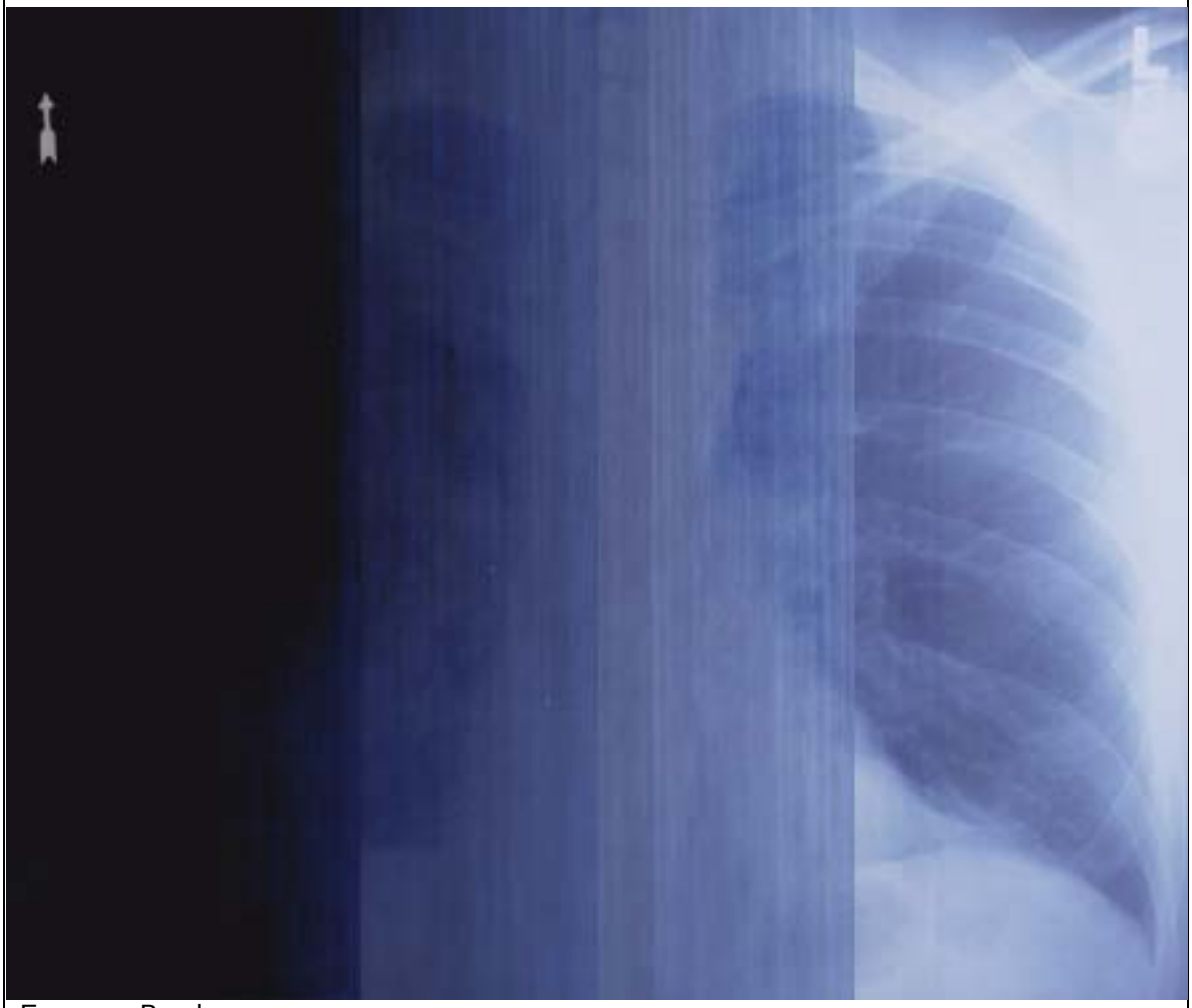
7.2 Troubleshooting Index & Charts

Use the following troubleshooting index and troubleshooting charts as an aid in solving your wallstand's malfunction.

For troubleshooting on optional digital receptor, refer to troubleshooting section in the digital receptor documentation.

Problem	Possible Cause	Remedy
Brake does not hold well or at all.	Brake needs adjustment.	Adjust brake according to Section "Adjusting Brake Cams" on page 5-3.
	Brake cams are worn out or broken.	Replace brake cams according to Section "Replacing Brake Cams" on page 6-18.
Up and down movement of cassette hold is difficult.	Bearing tracks on sides of column are dirty or blocked by obstruction.	Inspect and clean tracks.
	Counterweight cable is frayed.	Inspect cable according to Section "Checking Counterweight Cables" on page 4-3. If necessary, replace cable according to Section "Replacing Counterweight Cable" on page 6-4.
Cannot fully remove cassette.	Cassette restricted by safety latch.	Completely remove cassette according to Section "Completely Removing the Cassette Tray" on page 3-9.

Problem	Possible Cause	Remedy
Darks bands on film after exposure. See Figure .	Wallstand is not aligned perpendicularly to x-ray source.	Make sure that wallstand is aligned properly according to Chapter 2 - Installation Instructions.
	Grid is bad.	Replace grid according to Section “Replacing Grid” on page 6-8.



Exposure Bands

Problem	Possible Cause	Remedy
Bucky does not work.	Bucky fuse is blown.	Check and, if necessary, replace fuse according to Section “Replacing Fuses” on page 6-2.
	Bucky cable is bad or not connected securely.	Make sure that bucky cable is securely connected to wallstand and generator. Check for voltage presence at bucky terminals and ground. Refer to Figure 7-3 on page 7-8. If necessary, replace cable.
	Other	Consult bucky manual for further troubleshooting instructions. The schematics for the bucky are included in Chapter 8 of **THIS** manual.
Cassette size sensing does not work.	Cassette is not fully inserted into holder.	Make sure cassette is fully inserted.
	Collimator not properly calibrated.	Make sure that collimator is calibrated according to its manual.
	PBL cable is bad or not connected securely.	Make sure that PBL cable is securely connected to wallstand and generator.
	PBL connector is bad.	Make sure that cassette is fully inserted into wallstand. Then, disconnect PBL cable from wall stand. Then on PBL cable to wallstand, test for and open circuit across the following wires: BLK - WHT RED - WHT GRN - WHT If an open circuit is found, replace connector on PBL bracket according to Section “Replacing PBL Connector” on page 6-14.
	Cassette is bad.	Replace cassette. Refer to Section “Completely Removing the Cassette Tray” on page 3-9.

Problem	Possible Cause	Remedy
Exposure very light, very dark or intermittently poor.	Technique not set up correctly.	Make sure that technique is setup correctly and that proper AEC field is selected.
	ION chamber cable is not connected securely.	Make sure that Ion chamber cable is securely connected to wallstand and generator.
	Ion chamber not properly adjusted.	Check for proper voltages at the ION chamber. Refer to the Ion chamber manual. This manual is included in Chapter 8 of **this** manual. Also make sure that field selection on control panel matches field actuation on chamber. If it doesn't, reconfigure the switches on the Ion chamber board according to the Ion Chamber manual. If voltage is absent, check the cables between the generator and the ION chamber for continuity. The pin numbers on each end of each cable match. Jump two pins on the female end of each cable and test corresponding pins on the other end to check continuity.
	AEC control on generator is bad.	Troubleshoot according to generator manual. Instructions for replacing the ION chamber are in Section "Replacing ION Chamber" on page 6-11.

7.3 Schematic Troubleshooting

The schematic diagram below can be used to troubleshoot electrical problems with the wallstand. The schematic covers all of the electrical components in the wallstand. Figures 7-2 thru 7-4 show actual diagrams and photos of the components listed on the schematic. This allows you to identify the location of the components and translate the fault isolation logic of the schematic into actual testing of components for failure.

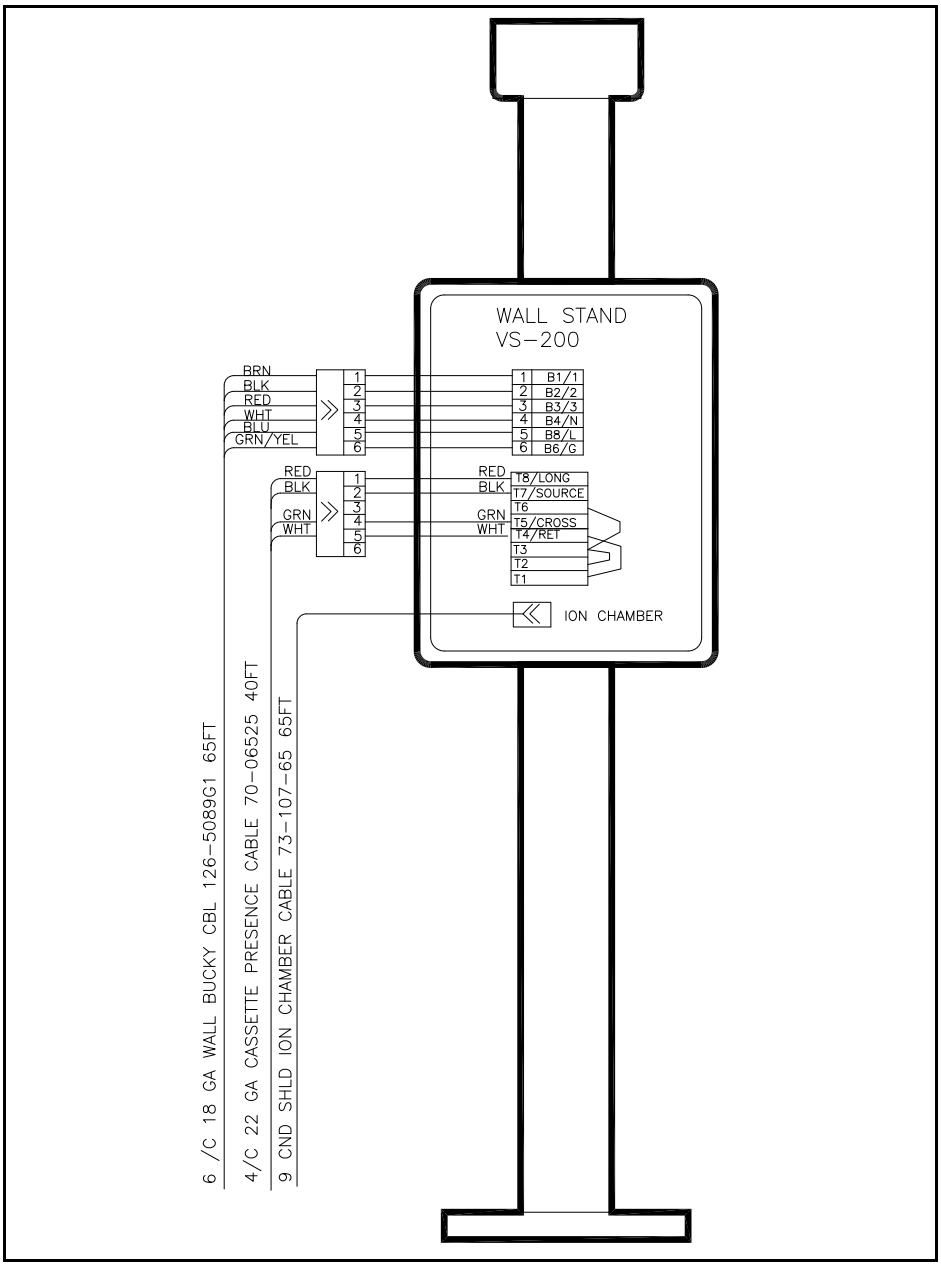


Figure 7-1. Overall Wiring Diagram

7.3.1 Ion Chamber Connections

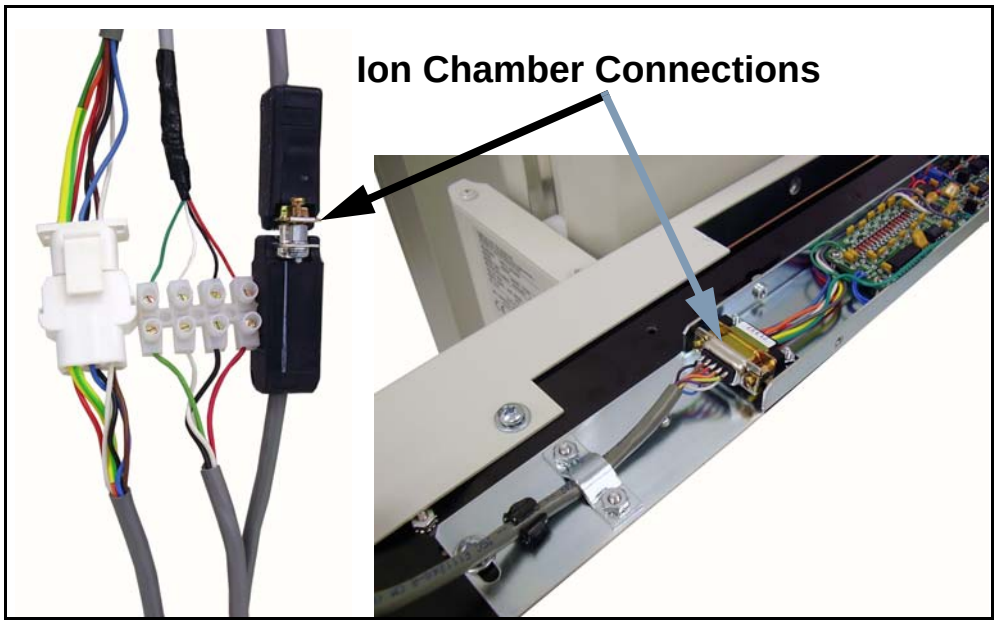


Figure 7-2. Ion Chamber Connections

Pin #	Color	Function
1	BLK	None
2	BRN	Field 2 Select
3	RED	Field 1 Select
4	ORG	Reset
5	YEL	Output
6	GRN	Field 3 Select
7	BLU	Negative Supply
8	VIO	Positive Supply
9	WHT	Ground

Table 7-1: Pin Definitions

7.3.2 Bucky Connections

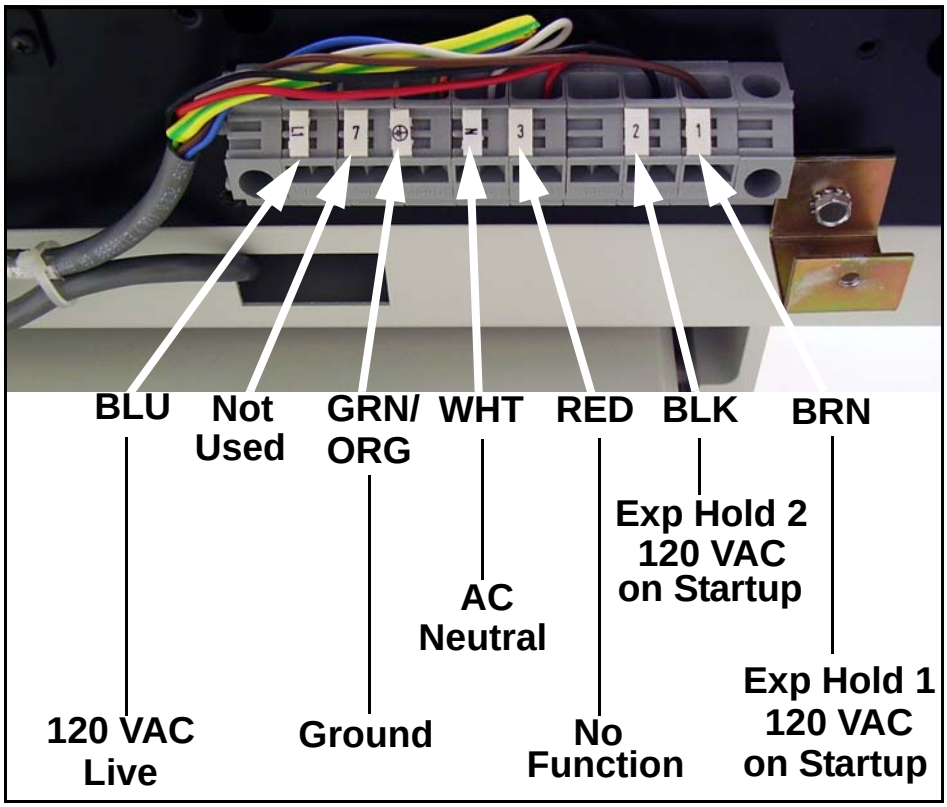


Figure 7-3. Bucky Connections

7.3.3 Cassette Size Sensing Circuit

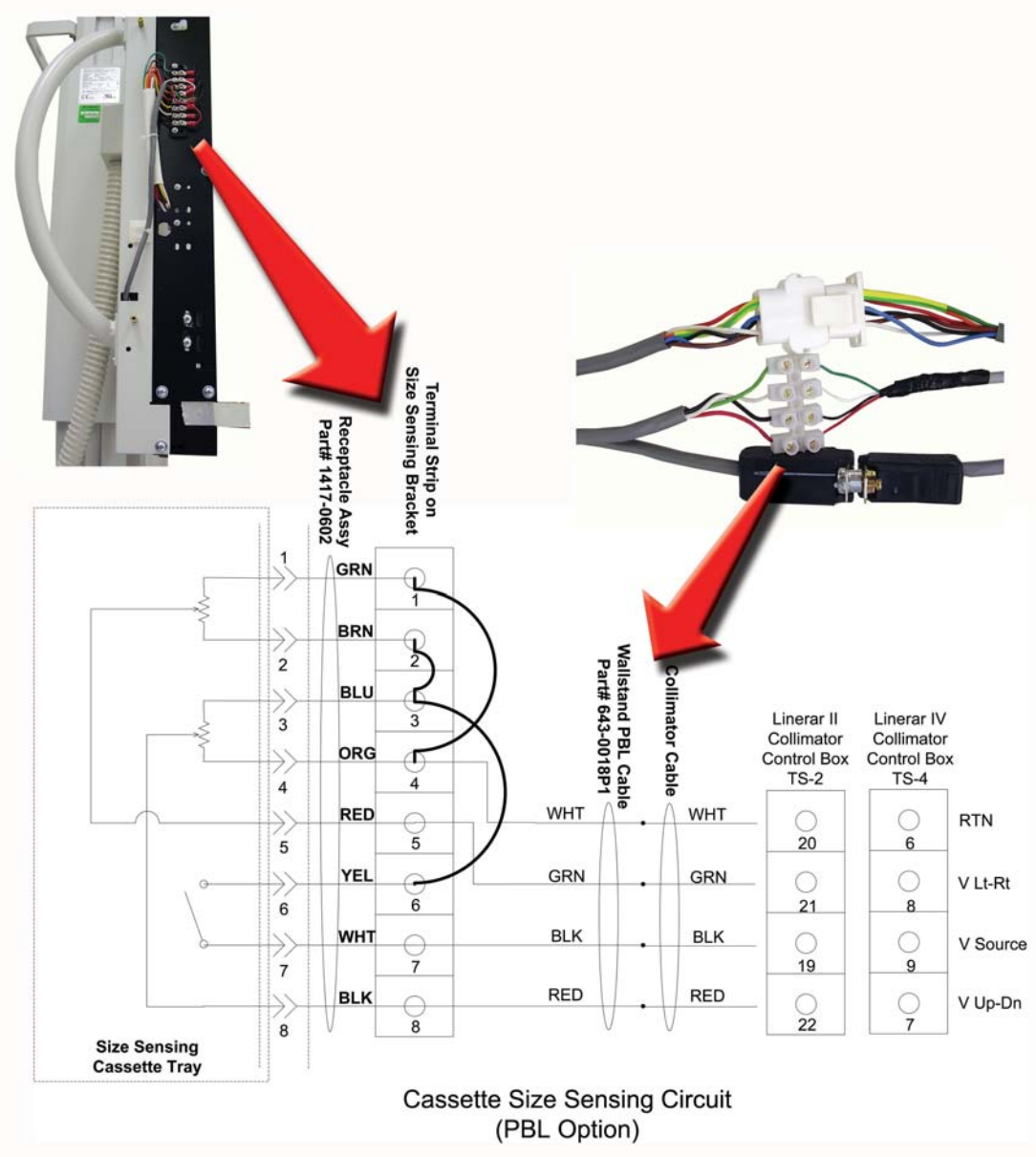


Figure 7-4. Cassette Size Sensing Circuit

Diagrams & Electrical Schematics

8

8.1 Electrical Schematics

This chapter contains the electrical diagrams and schematics for the wallstand.

Drawing Number	Drawing Description	# Sheets	Current Rev. Level
-	VS-200 Wallstand Wiring Diagram	-	See Figure 8-1 on page 8-2
-	Casette Size Sensing Circuit	-	See Figure 8-2 on page 8-3
034-5076 & 034-5077	Interconnect Diagrams for the VS-200 Wallstand and various tables and tubestands.	5 & 12	See Table 8-2 on page 8-4
-	Progeny Bucky Connection Diagram 120/240 V Models	1	B
10-108000	Progeny Bucky Control Assy. Drawing	2	F
61154A	AID 3-field Isolated Pre-Amp Calculation Gain Range 1.0 to 21 Top-Turn Pots	1	02
-	AID Three-field Ionization Chamber Calibration Procedure for The 61154 Pre-Amplifier Board Assemblies (Calibration Instructions P/N 69329)	7	- -

Table 8-1: List of Diagrams and Schematics

The figure below shows the wiring diagram for a VS-200 wallstand equipped with an optional bucky, ion chamber and cassette sensing system.

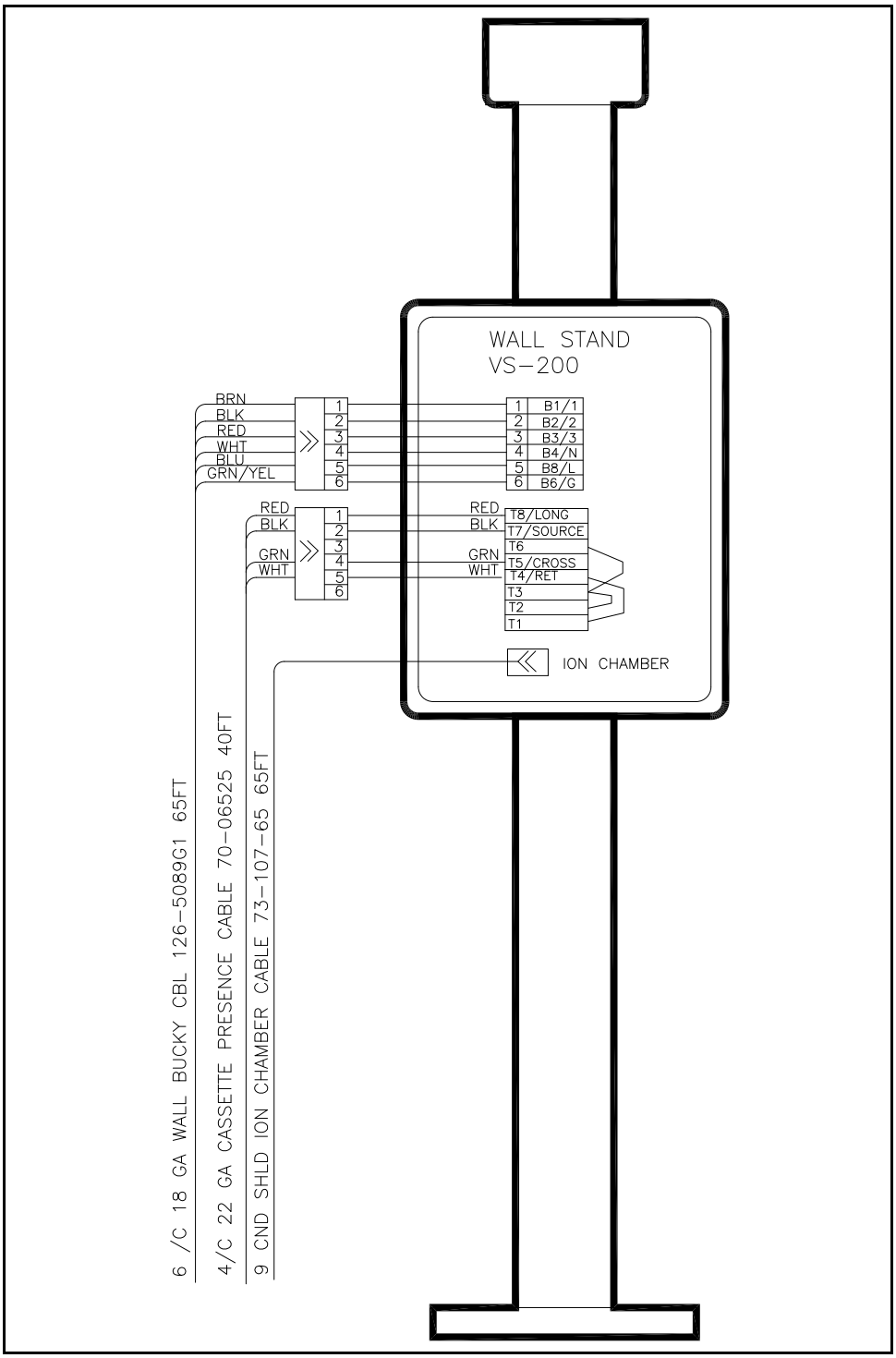


Figure 8-1. VS-200 Wallstand Wiring Diagram

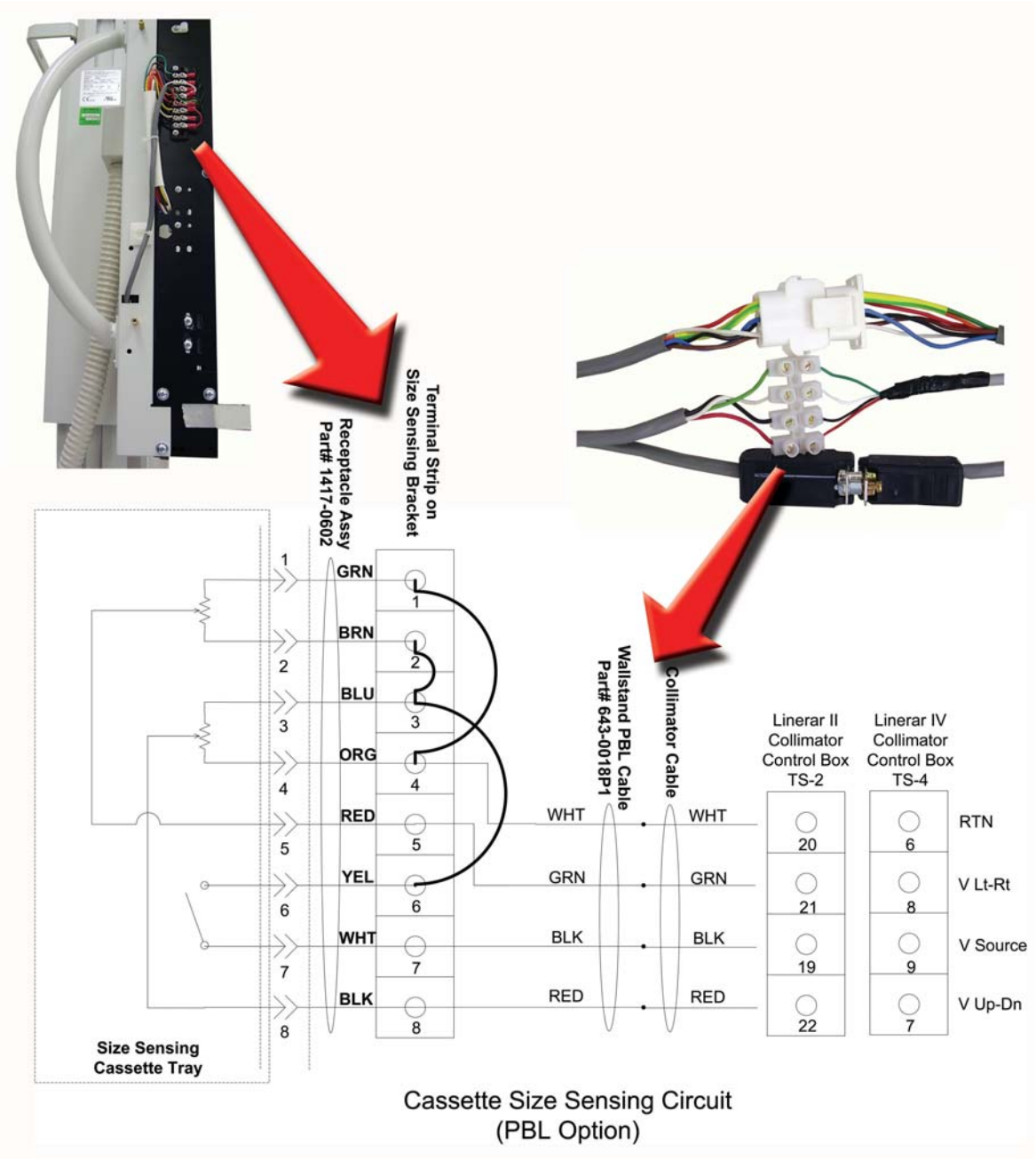
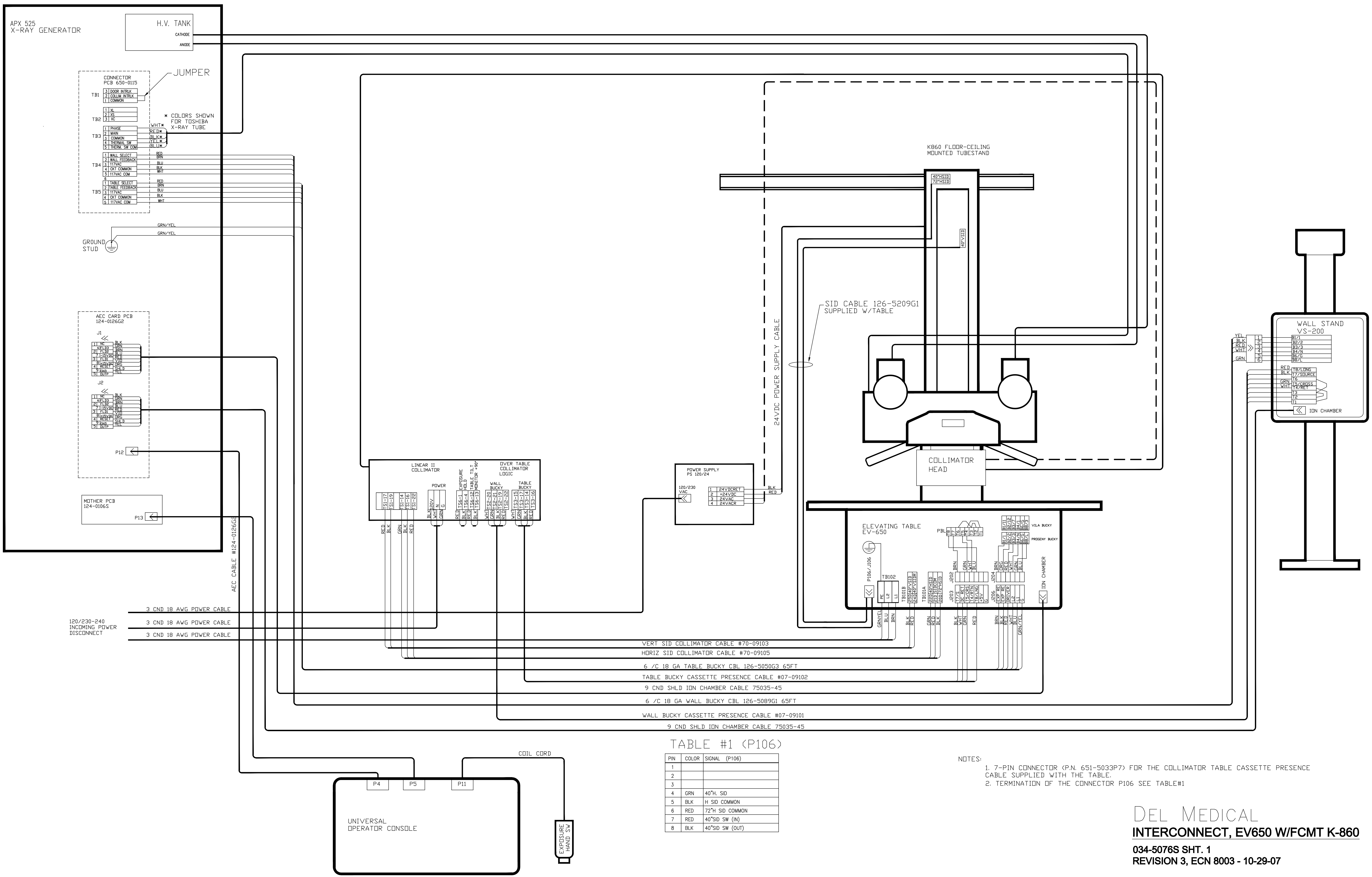


Figure 8-2. Cassette Size Sensing Circuit

8.2 Configuration - Schematic Match Table

Generator Model	Tube Stand/ Crane Model	Collimator Model	Wall Stand Model	Refer to Drawing #	Current Rev. Level
APX 525/625 & DXR-30	K860 Floor-Ceiling Mounted Tubestand	Eureka Linear II	VS200	034-5076S1	3
CMP 200	DCTM Tubestand/ DFMT Tubestand	Eureka Linear IV	VS200	034-5076S2	3
APX 525/625 & DXR-30	DCTM Crane/ DFTS Tubestand	Eureka MC 150	VS200	034-5076S3	3
Sedecal	K860 Floor-Ceiling Mounted Tubestand	MC series	VS200	034-5076S8	1
CPI-CMP	FMTS Tubestand	Eureka Linear II	VS200	034-5076S9	1
CMP 200	OTC-3 Crane	Eureka MC 150	VS200	034-5077S1	4
CMP 200	OTC-3 Crane	Eureka Linear II	VS200	034-5077S3	4
CMP 200	OTC-3 Crane	Eureka Linear IV	VS200	034-5077S4	3
Indico 100	OTC-3 Crane	Eureka MC 150	VS200	034-5077S8	4
Indico 100	OTC-3 Crane	Eureka Linear IV	VS200	034-5077S10	4
Indico 100	3D Top CTM	Siemens	VS200	034-5077S14	3
APX 525/625 & DXR30	OTC-3 Crane	Eureka MC 150	VS200	034-5077S15	2
Indico 100	OTC-3 Crane	Eureka Linear II	VS-200	034-5077S17	3
CMP 200	OTC-3 Crane	Eureka Linear II	RT100/ VS200	034-5077S18	3
CMP 200	FMTS Tubestand	Eureka Linear IV	VS200	034-5076S19	2
Indico 100	OTC-3 Crane	Eureka Linear IV	VS200	034-5077S25	0
CPI Indico 100	OTC-3 Crane	Eureka Linear II	VS200/ Apollo	034-5077S26	0

Table 8-2: Configuration - Schematic Match Table



APX 525
X-RAY GENERATOR
H.V. TANK
CATHODE
ANODE
JUMPER
CONNECTOR
PCB 650-0115
TB1
TB2
TB3
TB4
TB5
* COLORS SHOWN
FOR TOSHIBA
X-RAY TUBE
GROUND
STUD
GRN/YEL
AEC CARD PCB
124-0126G2
J1
J2
P12
MOTHER PCB
124-0106S
P13
AEC CABLE #124-0126G2
120/230-240
INCOMING POWER
DISCONNECT
3 CND 18 AWG POWER CABLE
3 CND 18 AWG POWER CABLE
3 CND 18 AWG POWER CABLE
LINEAR II
COLLIMATOR
OVER TABLE
COLLIMATOR
LOGIC
POWER
EXPOSURE
HOLD
WALL
BUCKY
TABLE
BUCKY
POWER SUPPLY
PS 120/24
120/230
VAC
24VDCRET
+24VDC
24VAC
24VACR
24VDC POWER SUPPLY CABLE
SID CABLE 126-5209G1
SUPPLIED W/TABLE
K860 FLOOR-CEILING
MOUNTED TUBESTAND
40"HSID
72"HSID
40"VSID
COLLIMATOR
HEAD
ELEVATING TABLE
EV-650
P106/J106
TB102
TB101B
TB101A
J202
J203
J204
J206
ION CHAMBER
VILA BUCKY
PROGENY BUCKY
WALL STAND
VS-200
ION CHAMBER
VERT SID COLLIMATOR CABLE #70-09103
HORIZ SID COLLIMATOR CABLE #70-09105
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
TABLE BUCKY CASSETTE PRESENCE CABLE #07-09102
9 CND SHLD ION CHAMBER CABLE 75035-45
6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
WALL BUCKY CASSETTE PRESENCE CABLE #07-09101
9 CND SHLD ION CHAMBER CABLE 75035-45
COIL CORD
P4
P5
P11
UNIVERSAL
OPERATOR CONSOLE
EXPOSURE
HAND SW

TABLE #1 (P106)

PIN	COLOR	SIGNAL (P106)
1		
2		
3		
4	GRN	40"H. SID
5	BLK	H SID COMMON
6	RED	72"H SID COMMON
7	RED	40"SID SW (IN)
8	BLK	40"SID SW (OUT)

NOTES:
1. 7-PIN CONNECTOR (P.N. 651-5033P7) FOR THE COLLIMATOR TABLE CASSETTE PRESENCE CABLE SUPPLIED WITH THE TABLE.
2. TERMINATION OF THE CONNECTOR P106 SEE TABLE#1

DEL MEDICAL

INTERCONNECT, EV650 W/FCMT K-860

034-5076S SHT. 1
REVISION 3, ECN 8003 - 10-29-07

CPI CMP 200 SERIES
40kW 208-230VAC 3-PH

H.V. TANK
CATHODE
ANODE

H.V. CABLE K3375-XX
H.V. CABLE K3375-XX
4 CND 16 AWG SHLD ROTOR CABLE 052206 60FT
CABLE 643-0040 60FT
40 /C 22 GA SH (FOR AUTO COLIM)

ROOM INTERFACE PCB

J7
6 SHIFT — RED
5 PHASE — BLK
4 COM — WHT
3 GND — GRN
2 THERMSW — BRN/ORG
1 THERMSW — ORG/BLK

IN LINE CONNECTOR
BLK — BRN
RED — BLK

J2
10 BKY1 RET — WHT
9 BKY1 GND — BLU
8 BKY1 OUT — RED
7 BKY1 STRT — WHT
6 BKY1 RDY — RED
5 BKY1 RDY
4 INT1
3 INT1R — RED
2 INT2 — BLK
1 INT2R

J4
10 DOOR INT — BRN
9 DOOR INT — BLK
8
7
6 BKY2 RDY — BLK
5 BKY2 RDY — WHT
4 BKY2 RET
3 BKY2 GND — BLU
2 BKY2 OUT — RED
1 BKY2 STRT

GRN/YEL
GRN/YEL
GROUND STUD

AEC PCB
737992

J1
11 NC — BLK
10 EFLD — GRN
9 FLDRET — BRN
8 I-SYNC — BLU
7 I-SYNC — BLU
6 FLD — VIO
5 FLD/SYNC — ORG
4 RESET — SHLD
3 GND — YEL
2 DUTP — YEL

J2
11 NC — BLK
10 EFLD — GRN
9 FLDRET — BRN
8 I-SYNC — BLU
7 I-SYNC — BLU
6 FLD — VIO
5 FLD/SYNC — ORG
4 RESET — SHLD
3 GND — YEL
2 DUTP — YEL

6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
3 CND 22 AWG COLLIM EXP HOLD CABLE 45FT

CONTROL PCB
J3

INTERFACE CABLE #73780700

CONTROL CONSOLE
J8
GENERATOR INTERFACEW

LINEAR IV COLLIMATOR LOGIC
POWER
120V H
N
GRN G
TS5-12
TS5-18
TS5-20
TS6-1 EXPOSURE HOLD
TS6-4
TS6-11
TS4-2
TS4-3
TS4-4
TS4-5

OVER TABLE COLLIMATOR LOGIC
WALL BUCKY
TS4-9
TS4-6
TS4-7
TS4-8
TABLE BUCKY
TS4-15
TS4-12
TS4-13
TS4-14

120VAC POWER

TUBE CRANE DIFFER. SID CABLE 126-5161 60FT

120 VAC POWER

POWER SUPPLY & INTERFACE PCB 124-5029
J5029G J5029F J5029E J5029B
J5029K 1 24VAC
2 24VAC RET

CB1
BRN
BLU
5A, 240VAC
GRN/YEL
GND STUD

COLLIM CONTIN
SID POT

DCTM TUBE CRANE

COLLIMATOR HEAD

ELEVATING TABLE
EV-650

OPTIONAL
TUBECRANE DIF SID POT #122-5042G1
COLLIM DIFF SID POT #122-5076G1

TB101B
TB101A
J202
J203
J204
J206
PBL
VILA BUCKY
PROGENY BUCKY
TB102
ION CHAMBER

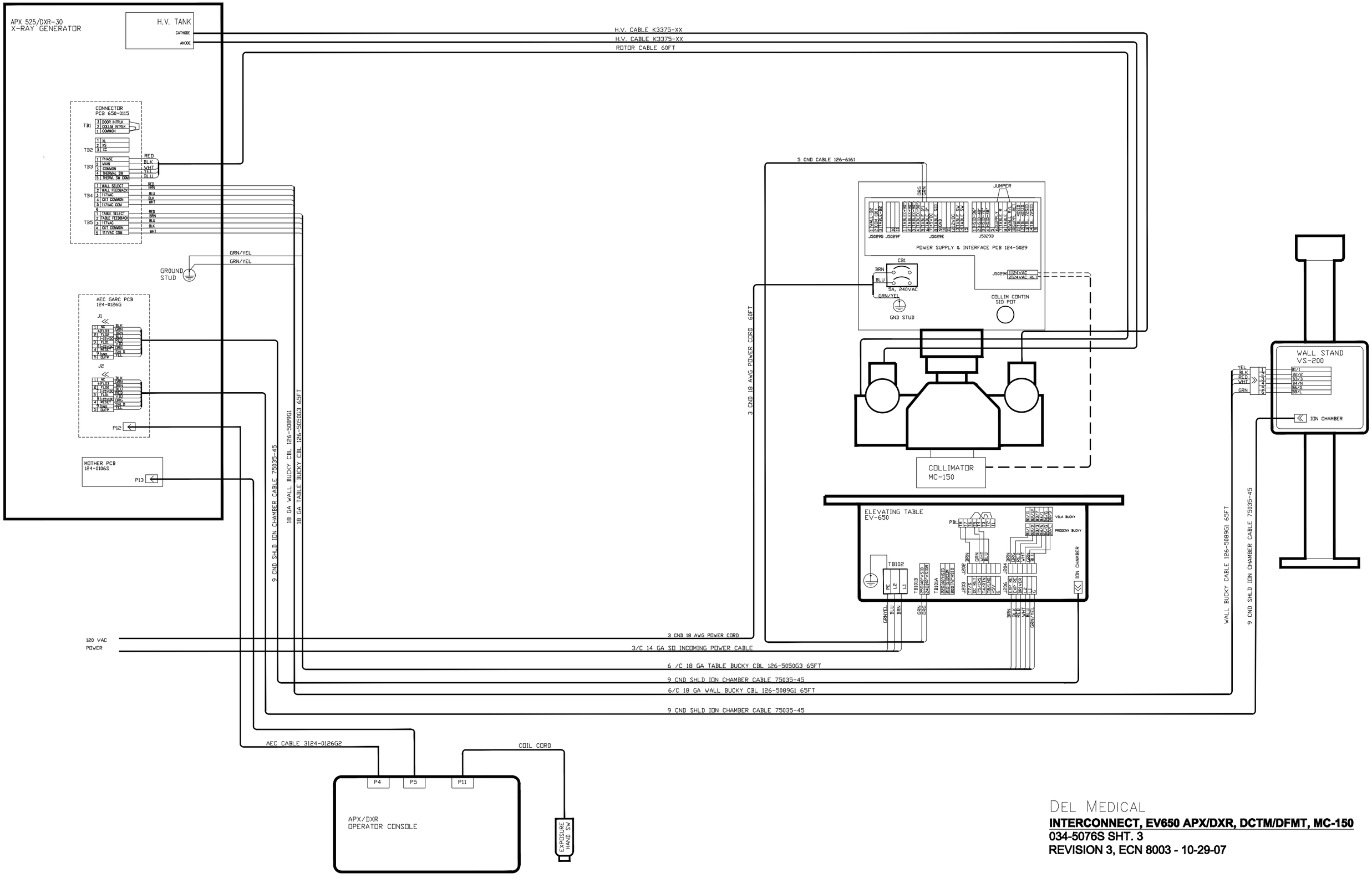
CABLE 126-5161 60FT
2/C 22 AWG COLLIM DIFFERENTIAL SID CABLE 126-5211 60FT
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
4/C 22 GA CASSETTE PRESENCE CABLE #07-09102
9 CND SHLD ION CHAMBER CABLE #75035-45 45FT
6 /C 18 GA WALL BUCKY CBL #126-5089G1 65FT
4/C 22 GA CASSETTE SENSE CABLE #07-09101 65FT
9 CND SHLD ION CHAMBER CABLE #75035-45 45FT

120 VAC POWER

6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
4/C 22 GA CASSETTE SENSE CABLE 07-09101 65FT
9 CND SHLD ION CHAMBER CABLE 75035-45 45FT

WALL STAND
VS-200
BRN
BLK
RED
WHT
BLU
GRN/YEL
B1/1
B2/2
B3/3
B4/N
B8/L
B6/G
RED
BLK
GRN
WHT
T8/LONG
T7/SOURCE
T6
T5/CROSS
T4/RET
T3
T2
T1
ION CHAMBER

DEL MEDICAL
INTERCONNECT, EV650 CPI(CMP), DCTM, LINEAR IV
034-5076S SHT. 2
REV. 3, ECN8003 - 10-29-07



DEL MEDICAL

INTERCONNECT, EV650 APX/DXR, DCTM/DFMT, MC-150

034-5076S SHT. 3

REVISION 3, ECN 8003 - 10-29-07

SEDECAL GENERATOR
SHF410-PSU

H.V. TANK
CATHODE
ANODE

24VAC POWER SUPPLY CABLE (SUPPLIED W/ COLLIMATOR)

MODULE-4

REFER TO INSTALLATION MANUAL MANUAL FOR CONNECTING ROTOR CABLE OF DUAL TUBE OR FLUOROSCOPY/SPOT FILM.
* TS2 CAN BE MARKED AS 4TS2, 10TS2 OR 11TS2 DEPENDING ON GENERATOR MODEL.

TS2*
1 MAIN
2 SHIFTAUX
3 COM
4 THERMSW
5 THERMSW

LOCK BOARD
TB7
3 24VAC — WHT
4 24VAC — BLK
5 24VDC — RED
6 24VDC RET — BLK
7 24VDC
8 24VDC RET — GRN

INTERFACE PANEL

* REFER TO I/F -001 ON THE SEDECAL MANUAL FOR CONFIGURATION JUMPERS AND ADD ON CIRCUITRIES FOR DIFFERENCE BUCKY TYPE.

TS1 OR 3TS1
1 115/220V VAC — WHT
2 *
3 0 VAC — BLU
4 BUCKY 1 DR — RED
5 BUCKY 1 MOTION — BRN
6 BUCKY 1 MOTION RTN — BLK

* REFER TO I/F -002 ON THE SEDECAL MANUAL FOR CONFIGURATION JUMPERS AND ADD ON CIRCUITRIES FOR DIFFERENCE BUCKY TYPE.

TS1 OR 3TS1
8 115/220V VAC — WHT
9 *
10 0 VAC — BLU
11 BUCKY 2 DR — RED
12 BUCKY 2 MOTION — BRN
13 BUCKY 2 MOTION RTN — BLK

GROUND STUD — GRN/YEL — GRN/YEL

AEC BOARD
A3263-03

NOTE:
DEPENDING ON THE ION CHAMBER, MAKE JUMPER CONFIGURATION AND INTERFACE AS SPECIFIED ON SCHEMATIC IM-014, OR IM-015, OR IM-018, OR IM-019, IM-081 IN SEDECAL MANUAL.

J1
J2
J4

K860 FLOOR-CEILING MOUNTED TUBESTAND

40"HSID
72"HSID
40"VSID

24VDC POWER SUPPLY CABLE

SID CABLE 126-XXXXG1
(NOT USED FOR MANUAL COLLIMATOR)

COLLIMATOR HEAD

ELEVATING TABLE
EV-650

P106/J106
TB102
TB101B
TB101A
J202
J203
J204
J206
PBL
VILA BUCKY
PROGENY BUCKY
ION CHAMBER

WALL STAND
VS-200

YEL
BLK
RED
WHT
GRN
B1/1
B2/2
B3/3
B4/N
B6/G
B87L
ION CHAMBER

TO INCOMING POWER DISCONNECT OR SEDECAL GENERATOR.
3 CND 18 AWG POWER CABLE
9 CND SHLD ION CHAMBER CABLE 75035-45
6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
9 CND SHLD ION CHAMBER CABLE 75035-45

OPTIONAL AEC CABLE (FACTORY SUPPLIED)

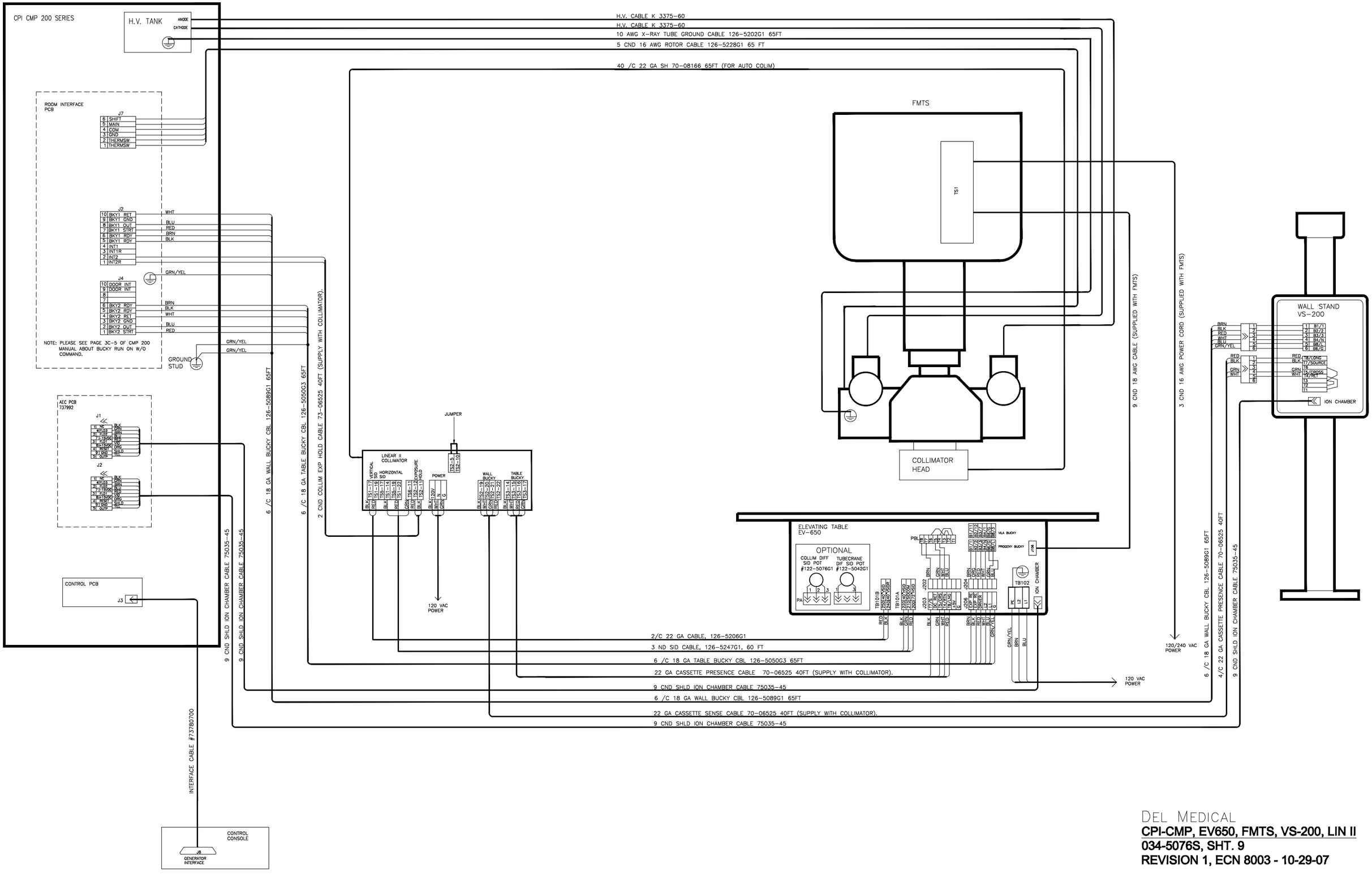
J3 — COMMUNICATION CABLE (FACTORY SUPPLIED) — J3
J2 — POWER CABLE (FACTORY SUPPLIED) — J1

J5
J15
ATP BOARD

EXPOSURE HAND SW (OPTIONAL)

SEDECAL OPERATOR CONSOLE

DEL MEDICAL
SEDECAL, EV650, K860, VS200, MC150
034-5076S, SHT. 8
REVISION 1, ECN 8003 - 10-29-07

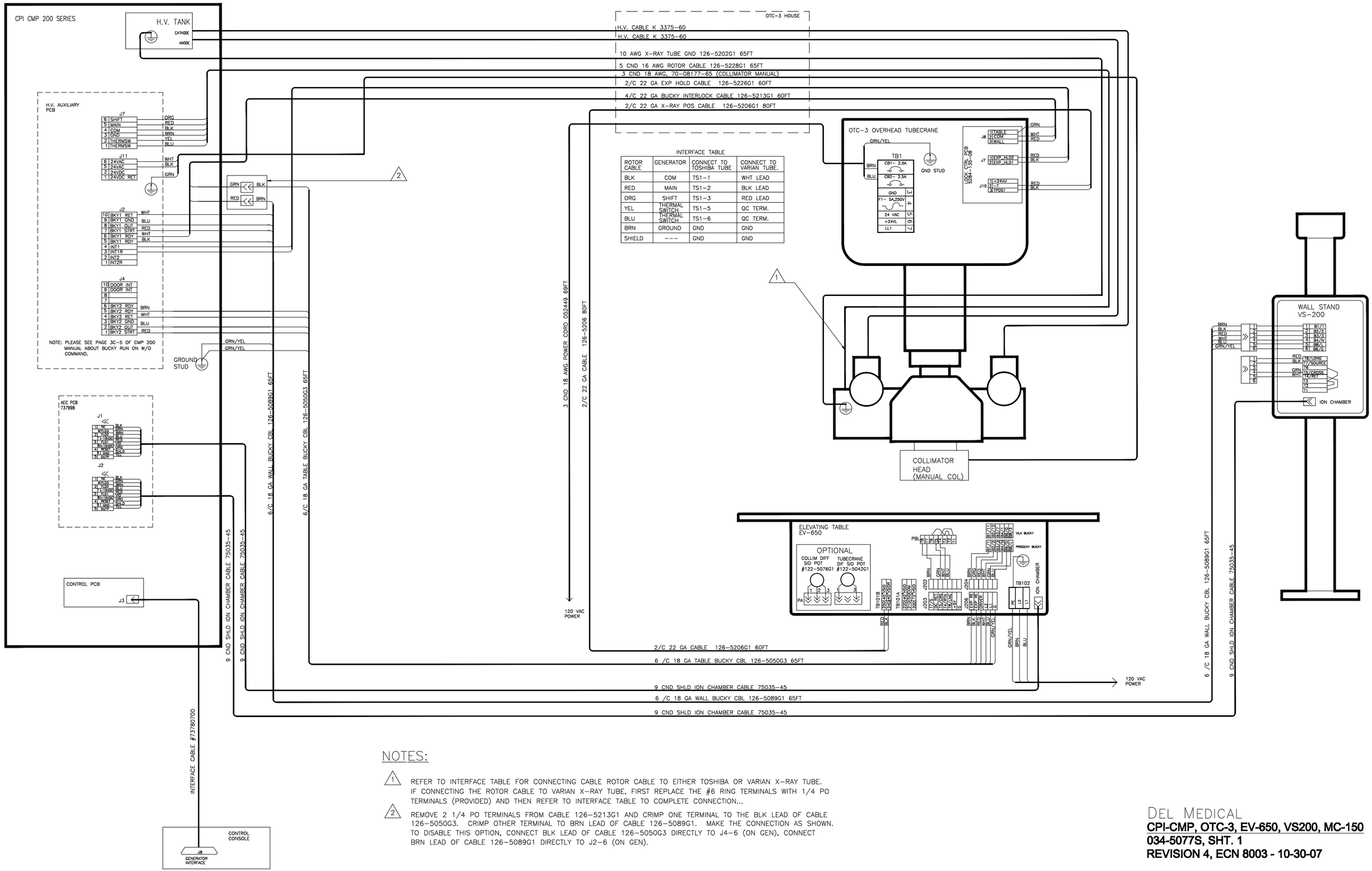


DEL MEDICAL

CPI-CMP, EV650, FMTS, VS-200, LIN II

034-5076S, SHT. 9

REVISION 1, ECN 8003 - 10-29-07



NOTES:

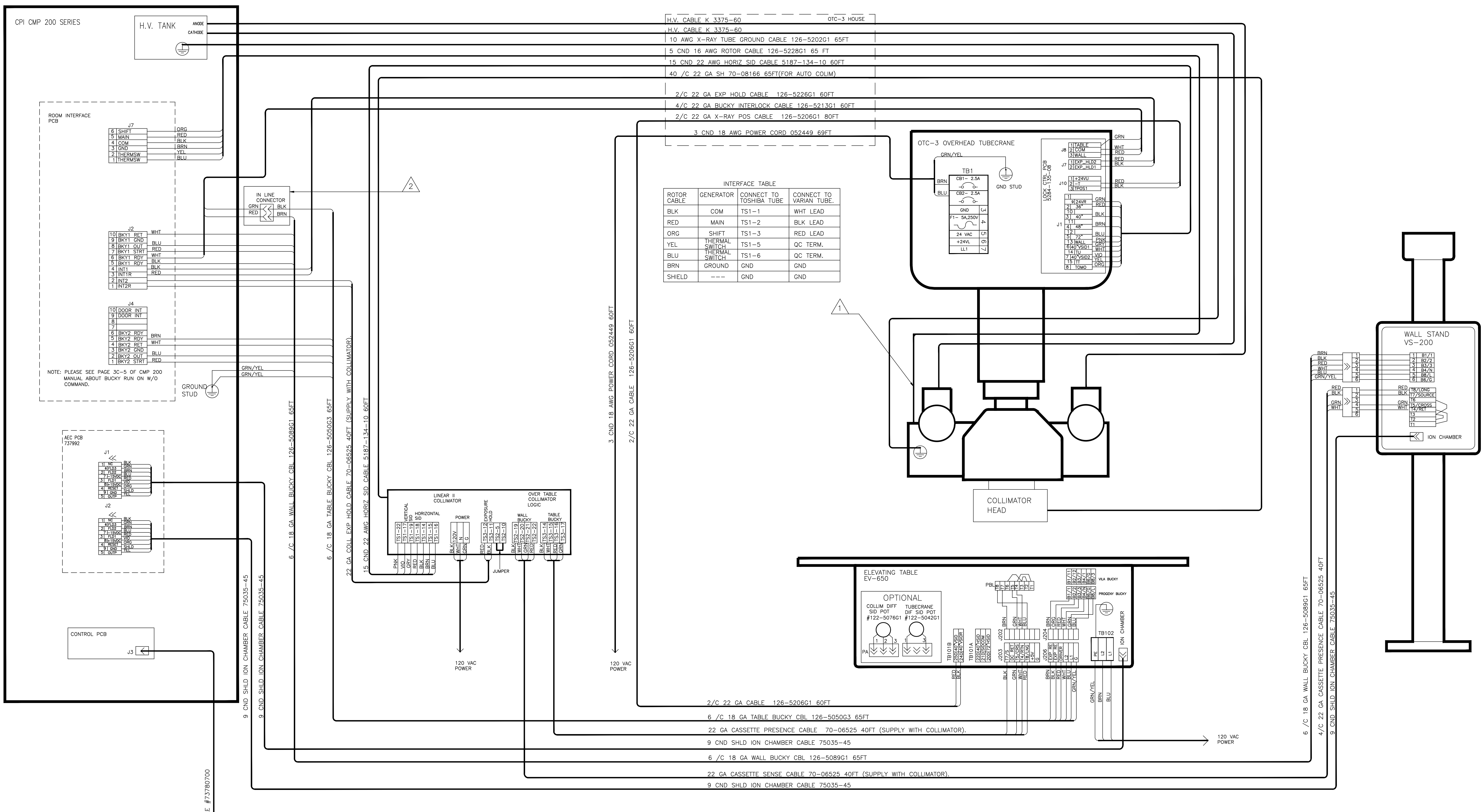
1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...
2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126-5213G1 AND CRIMP ONE TERMINAL TO THE BLK LEAD OF CABLE 126-5050G3. CRIMP OTHER TERMINAL TO BRN LEAD OF CABLE 126-5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT BLK LEAD OF CABLE 126-5050G3 DIRECTLY TO J4-6 (ON GEN), CONNECT BRN LEAD OF CABLE 126-5089G1 DIRECTLY TO J2-6 (ON GEN).

DEL MEDICAL

CPI-CMP, OTC-3, EV-650, VS200, MC-150

034-5077S, SHT. 1

REVISION 4, ECN 8003 - 10-30-07



INTERFACE TABLE

ROTOR CABLE	GENERATOR	CONNECT TO TOSHIBA TUBE	CONNECT TO VARIAN TUBE.
BLK	COM	TS1-1	WHT LEAD
RED	MAIN	TS1-2	BLK LEAD
ORG	SHIFT	TS1-3	RED LEAD
YEL	THERMAL SWITCH	TS1-5	QC TERM.
BLU	THERMAL SWITCH	TS1-6	QC TERM.
BRN	GROUND	GND	GND
SHIELD	---	GND	GND

NOTES:

1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...

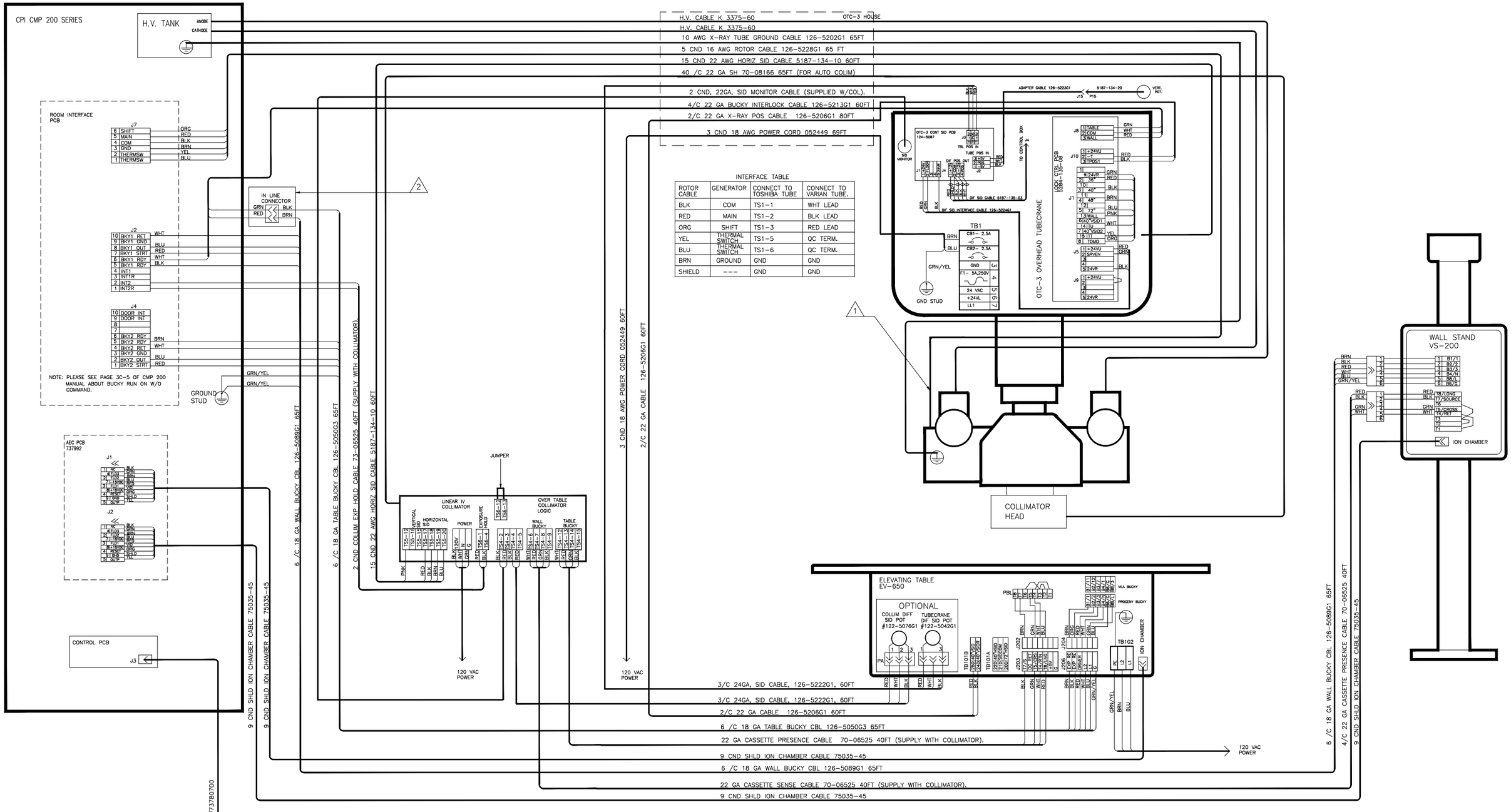
2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126-5213G1 AND CRIMP ONE TERMINAL TO THE BLK LEAD OF CABLE 126-5050G3. CRIMP OTHER TERMINAL TO BRN LEAD OF CABLE 126-5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT BLK LEAD OF CABLE 126-5050G3 DIRECTLY TO J4-6 (ON GEN), CONNECT BRN LEAD OF CABLE 126-5089G1 DIRECTLY TO J2-6 (ON GEN).

DEL MEDICAL

CPI, CMP200, OTC-3, EV-650, VS200, LIN II

034-5077S, SHT. 3

REVISION 4, ECN 8003 - 10-30-07



NOTES:

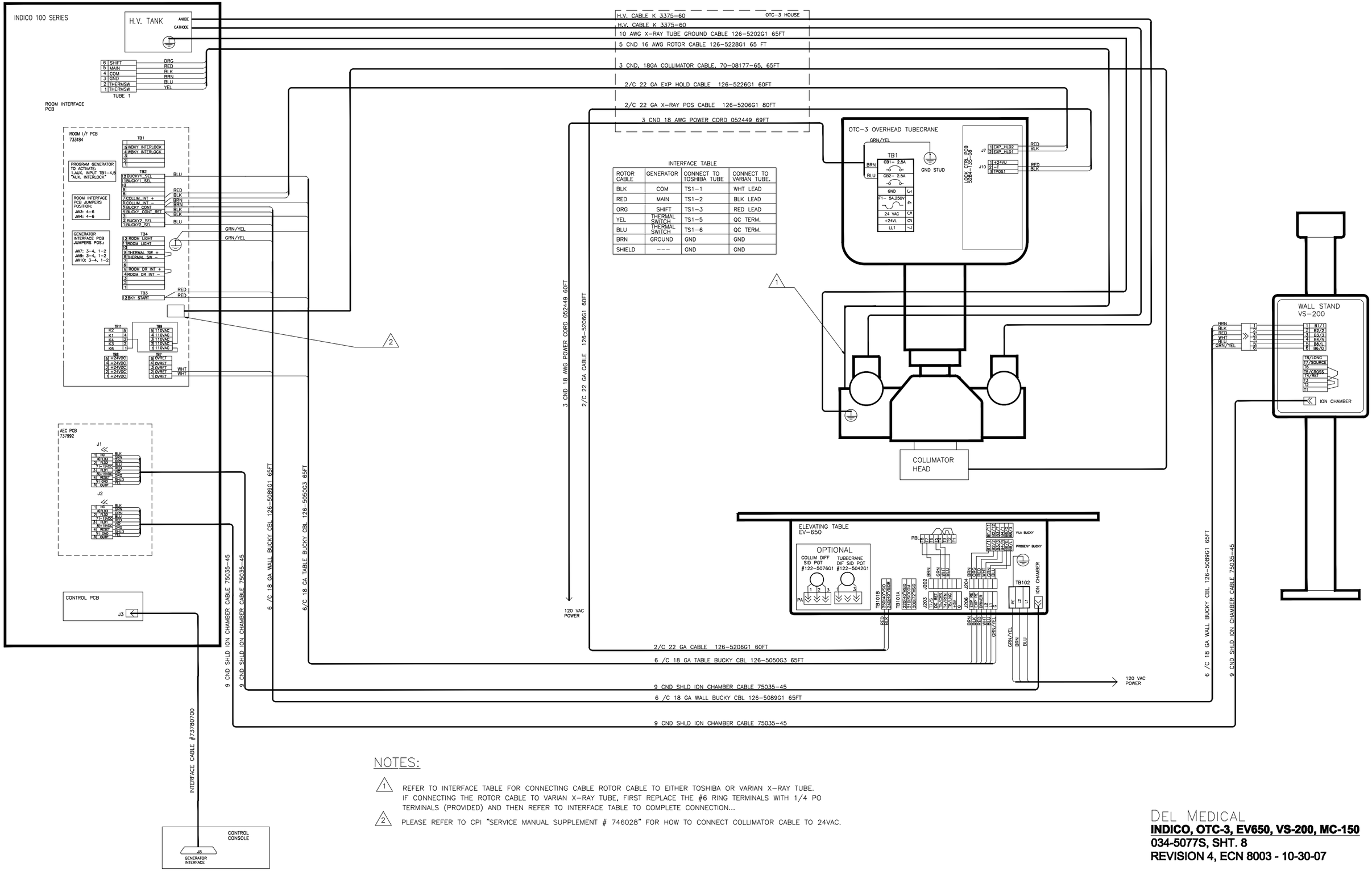
1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...
2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126-5213G1 AND CRIMP ONE TERMINAL TO THE BLK LEAD OF CABLE 126-5050G3. CRIMP OTHER TERMINAL TO BRN LEAD OF CABLE 126-5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT BLK LEAD OF CABLE 126-5050G3 DIRECTLY TO J4-6(ON GEN). CONNECT BRN LEAD OF CABLE 126-5089G1 DIRECTLY TO J2-6 (ON GEN).

DEL MEDICAL

CPI, CMP200, OTC-3, EV-650, VS200, LIN IV

034-5077S, SHT. 4

REVISION 3, ECN 8003 - 10-30-07



NOTES:

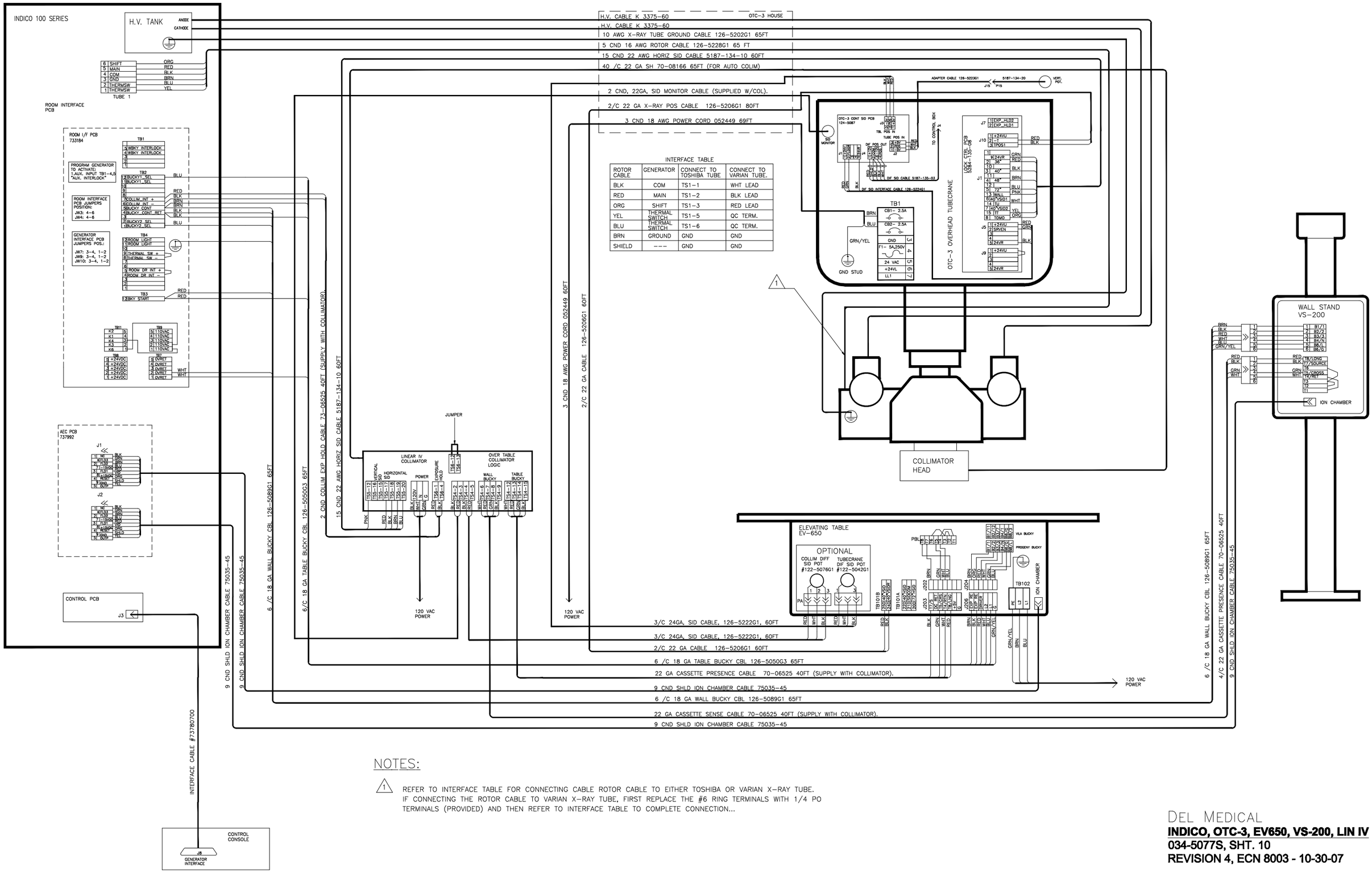
1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...
2. PLEASE REFER TO CPI "SERVICE MANUAL SUPPLEMENT # 746028" FOR HOW TO CONNECT COLLIMATOR CABLE TO 24VAC.

DEL MEDICAL

INDICO, OTC-3, EV650, VS-200, MC-150

034-5077S, SHT. 8

REVISION 4, ECN 8003 - 10-30-07



NOTES:

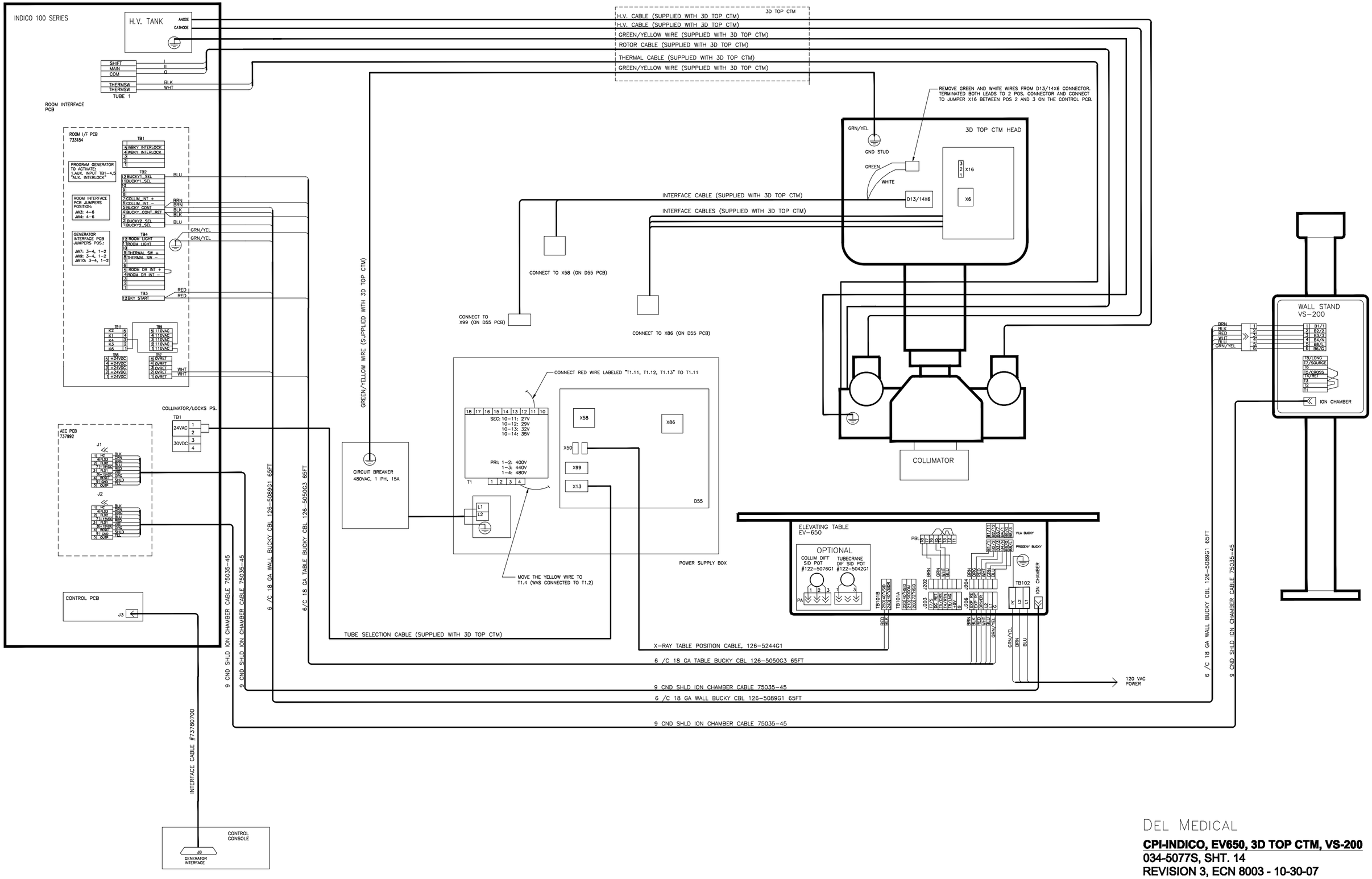
1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...

DEL MEDICAL

INDICO, OTC-3, EV650, VS-200, LIN IV

034-5077S, SHT. 10

REVISION 4, ECN 8003 - 10-30-07

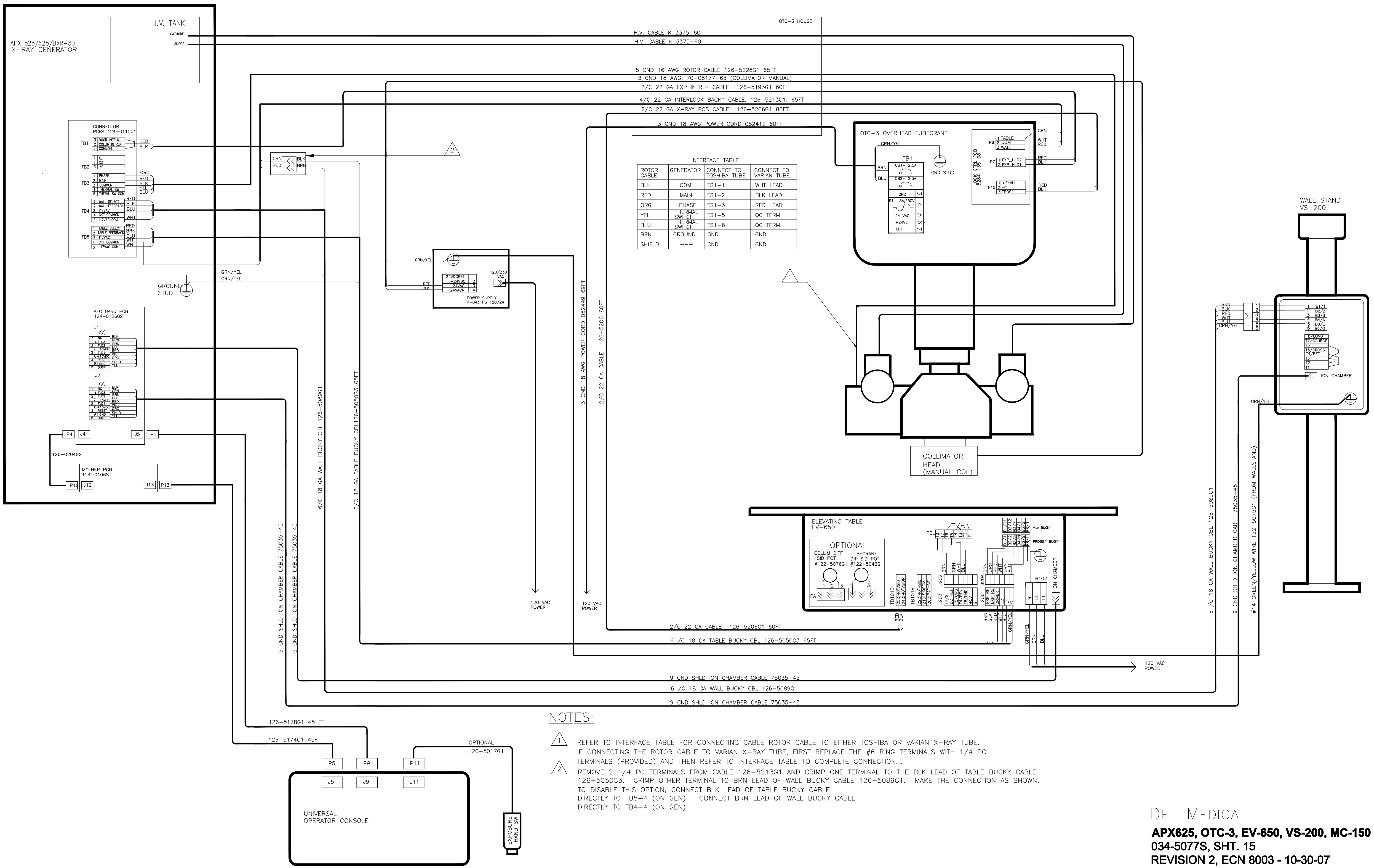


DEL MEDICAL

CPI-INDICO, EV650, 3D TOP CTM, VS-200

034-5077S, SHT. 14

REVISION 3, ECN 8003 - 10-30-07



INTERFACE TABLE

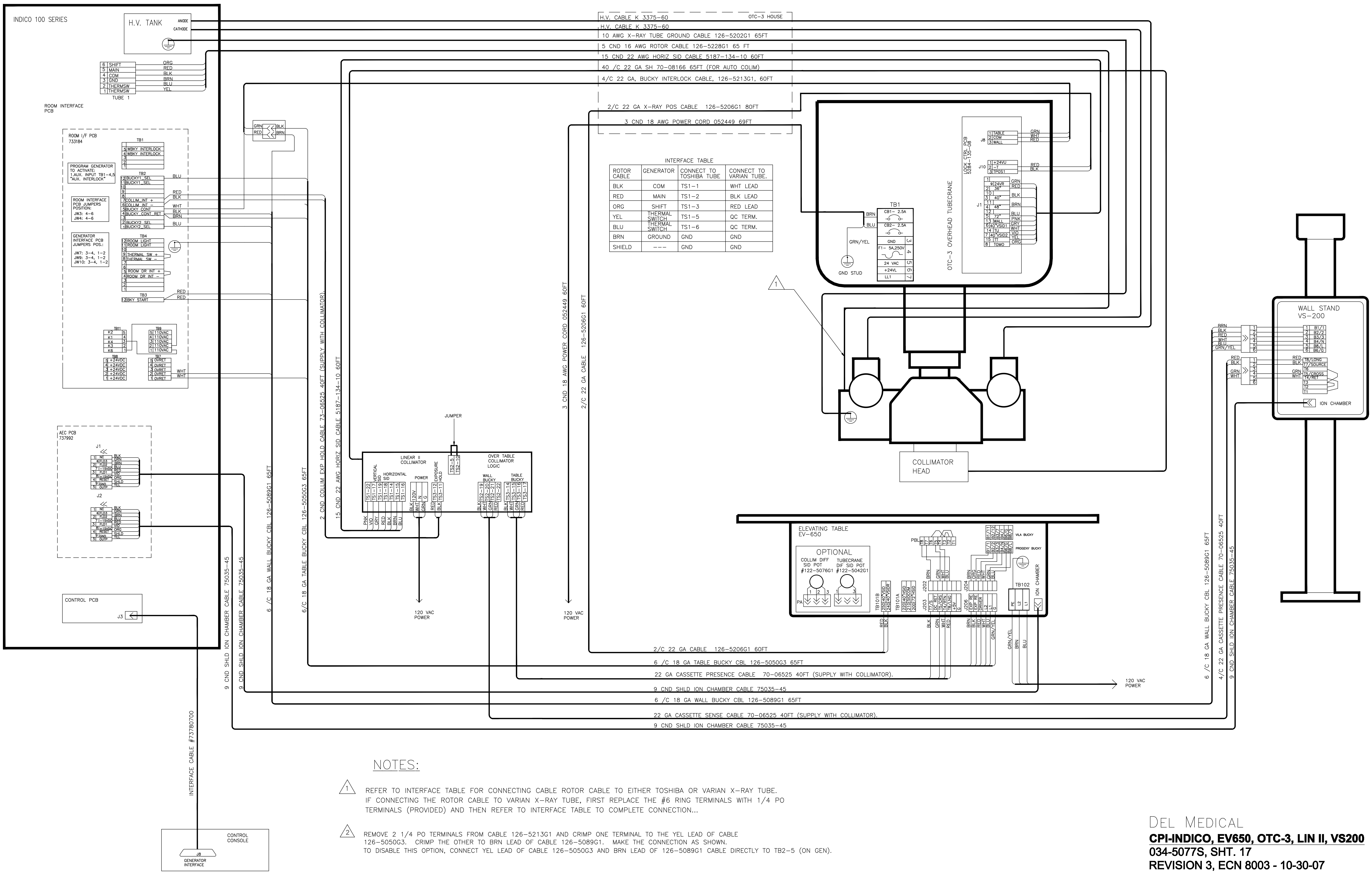
ROTOR CABLE	GENERATOR	CONNECT TO TOSHIBA TUBE	CONNECT TO VARIAN TUBE.
BLK	COM	TS1-1	WHT LEAD
RED	MAIN	TS1-2	BLK LEAD
ORG	PHASE	TS1-3	RED LEAD
YEL	THERMAL SWITCH	TS1-5	QC TERM.
BLU	THERMAL SWITCH	TS1-6	QC TERM.
BRN	GROUND	GND	GND
SHIELD	---	GND	GND

NOTES:

1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...
2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126-5213G1 AND CRIMP ONE TERMINAL TO THE BLK LEAD OF TABLE BUCKY CABLE 126-5050G3. CRIMP OTHER TERMINAL TO BRN LEAD OF WALL BUCKY CABLE 126-5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT BLK LEAD OF TABLE BUCKY CABLE DIRECTLY TO TB5-4 (ON GEN).. CONNECT BRN LEAD OF WALL BUCKY CABLE DIRECTLY TO TB4-4 (ON GEN).

DEL MEDICAL

APX625, OTC-3, EV-650, VS-200, MC-150
034-5077S, SHT. 15
REVISION 2, ECN 8003 - 10-30-07



INTERFACE TABLE

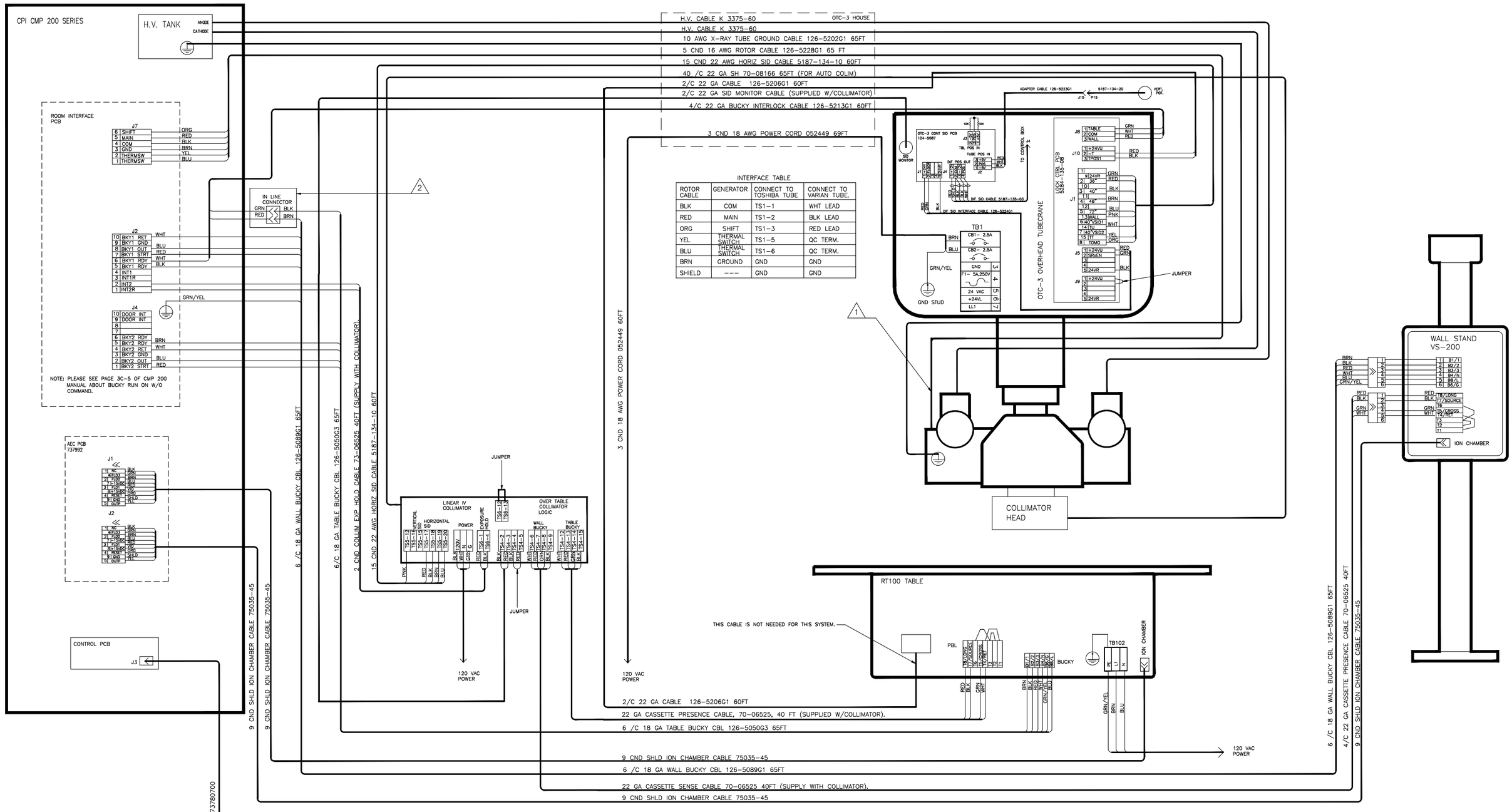
ROTOR CABLE	GENERATOR	CONNECT TO TOSHIBA TUBE	CONNECT TO VARIAN TUBE.
BLK	COM	TS1–1	WHT LEAD
RED	MAIN	TS1–2	BLK LEAD
ORG	SHIFT	TS1–3	RED LEAD
YEL	THERMAL SWITCH	TS1–5	QC TERM.
BLU	THERMAL SWITCH	TS1–6	QC TERM.
BRN	GROUND	GND	GND
SHIELD	---	GND	GND

NOTES:

1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X–RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X–RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...

2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126–5213G1 AND CRIMP ONE TERMINAL TO THE YEL LEAD OF CABLE 126–5050G3. CRIMP THE OTHER TO BRN LEAD OF CABLE 126–5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT YEL LEAD OF CABLE 126–5050G3 AND BRN LEAD OF 126–5089G1 CABLE DIRECTLY TO TB2–5 (ON GEN).

DEL MEDICAL
CPI-INDICO, EV650, OTC-3, LIN II, VS200
034-5077S, SHT. 17
REVISION 3, ECN 8003 - 10-30-07



NOTES:

1. REFER TO INTERFACE TABLE FOR CONNECTING CABLE ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X-RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X-RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...
2. REMOVE 2 1/4 PO TERMINALS FROM CABLE 126-5213G1 AND CRIMP ONE TERMINAL TO THE BLK LEAD OF CABLE 126-5050G3. CRIMP OTHER TERMINAL TO BRN LEAD OF CABLE 126-5089G1. MAKE THE CONNECTION AS SHOWN. TO DISABLE THIS OPTION, CONNECT BLK LEAD OF CABLE 126-5050G3 DIRECTLY TO J4-6(ON GEN). CONNECT BRN LEAD OF CABLE 126-5089G1 DIRECTLY TO J2-6 (ON GEN).

DEL MEDICAL

CPI-CMP200, OTC-3, RT100, LIN II, VS200
034-5077S, SHT. 18
REVISION 3, ECN 8003 - 10-30-07

CPI CMP 200 SERIES

H.V. TANK
ANODE
CATHODE

H.V. CABLE K 3375-60
H.V. CABLE K 3375-60
10 AWG X-RAY TUBE GROUND CABLE 126-5202G1 65FT
5 CND 16 AWG ROTOR CABLE 126-5228G1 65 FT

40 /C 22 GA SH 70-08166 65FT (FOR AUTO COLIM)

2 CND, 22GA, SID MONITOR CABLE (SUPPLIED W/COL).

ROOM INTERFACE PCB

J7
6 SHIFT
5 MAIN
4 COM
3 GND
2 THERMSW
1 THERMSW

J2
10 BKY1 RET — WHT
9 BKY1 GND — BLU
8 BKY1 OUT — RED
7 BKY1 STRT — BRN
6 BKY1 RDY — BLK
5 BKY1 RDY
4 INT1
3 INT1R
2 INT2
1 INT2R — GRN/YEL
GRN/YEL

J4
10 DOOR INT
9 DOOR INT
8
7
6 BKY2 RDY — BRN
5 BKY2 RDY — BLK
4 BKY2 RET — WHT
3 BKY2 GND
2 BKY2 OUT — BLU
1 BKY2 STRT — RED

NOTE: PLEASE SEE PAGE 3C-5 OF CMP 200 MANUAL ABOUT BUCKY RUN ON W/O COMMAND.

AEC PCB 737992

J1
11 NC — BLK
10 J1/J3 — GRN
9 J1/J2 — BRN
8 J1/J8 — RED
7 J1/J1 — VIO
6 J1/J5 — ORG
5 J1/J6 — SHLD
4 J1/J9 — YEL
3 J1/J7
2 J1/J10
1 J1/P

J2
11 NC — BLK
10 J2/J3 — GRN
9 J2/J2 — BRN
8 J2/J8 — RED
7 J2/J5 — VIO
6 J2/J1 — ORG
5 J2/J6 — SHLD
4 J2/J9 — YEL
3 J2/J7
2 J2/J10
1 J2/P

CONTROL PCB
J3

INTERFACE CABLE #73780700

CONTROL CONSOLE
J8
GENERATOR INTERFACE

9 CND SHLD ION CHAMBER CABLE 75035-45
9 CND SHLD ION CHAMBER CABLE 75035-45
6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
2 CND COLLIM EXP HOLD CABLE 73-06525 40FT (SUPPLY WITH COLLIMATOR).

JUMPER

LINEAR IV COLLIMATOR
VERTICAL SID — TS5-10 BLK, TS5-15 RED
HORIZONTAL SID — TS5-17 BLK, TS5-19 RED, TS5-20 GRN
EXPOSURE HOLD — TS6-11 BLK, TS6-1 BLK, TS6-4 BLK

POWER — BLK 120V, WHT N, GRN G

OVER TABLE COLLIMATOR LOGIC
TS6-13 BLK, TS6-14 BLK

WALL BUCKY — WHT TS4-6, GRN TS4-7, RED TS4-8, BLK TS4-9
TABLE BUCKY — WHT TS4-1, RED TS4-2, BLK TS4-3, RED TS4-5
BLK TS4-2, RED TS4-3, BLK TS4-4, RED TS4-5
WHT TS4-14, RED TS4-15, GRN TS4-17, BLK TS4-19

120 VAC POWER

FMTS
SID MONITOR
TS1

COLLIMATOR HEAD

ELEVATING TABLE EV-650

OPTIONAL
COLLIM DIFF SID POT #122-5076G1
TUBECRANE DIF SID POT #122-5042G1
PA

TB101B
250/240 VSEC
230/220 VSEC
115/100/0

TB101A
230/220/200
115/100/0
100/77 VSEC

PBL
J202 — BRN, WHT, GRN, BLU
J203 — 12V PS, 5V CXRS, 5V FLUORO, 5V LNG, GND
J204 — BRN, ORG, RED, WHT, GRN, BLU
J206 — BRN, BLK, RED, WHT, BLU, GRN/YEL
VLA BUCKY — B1/1, B2/2, B3/3, B4/N, B8/L, B6/G
PROGENY BUCKY — J408
TB102 — PE, L2, L1
ION CHAMBER

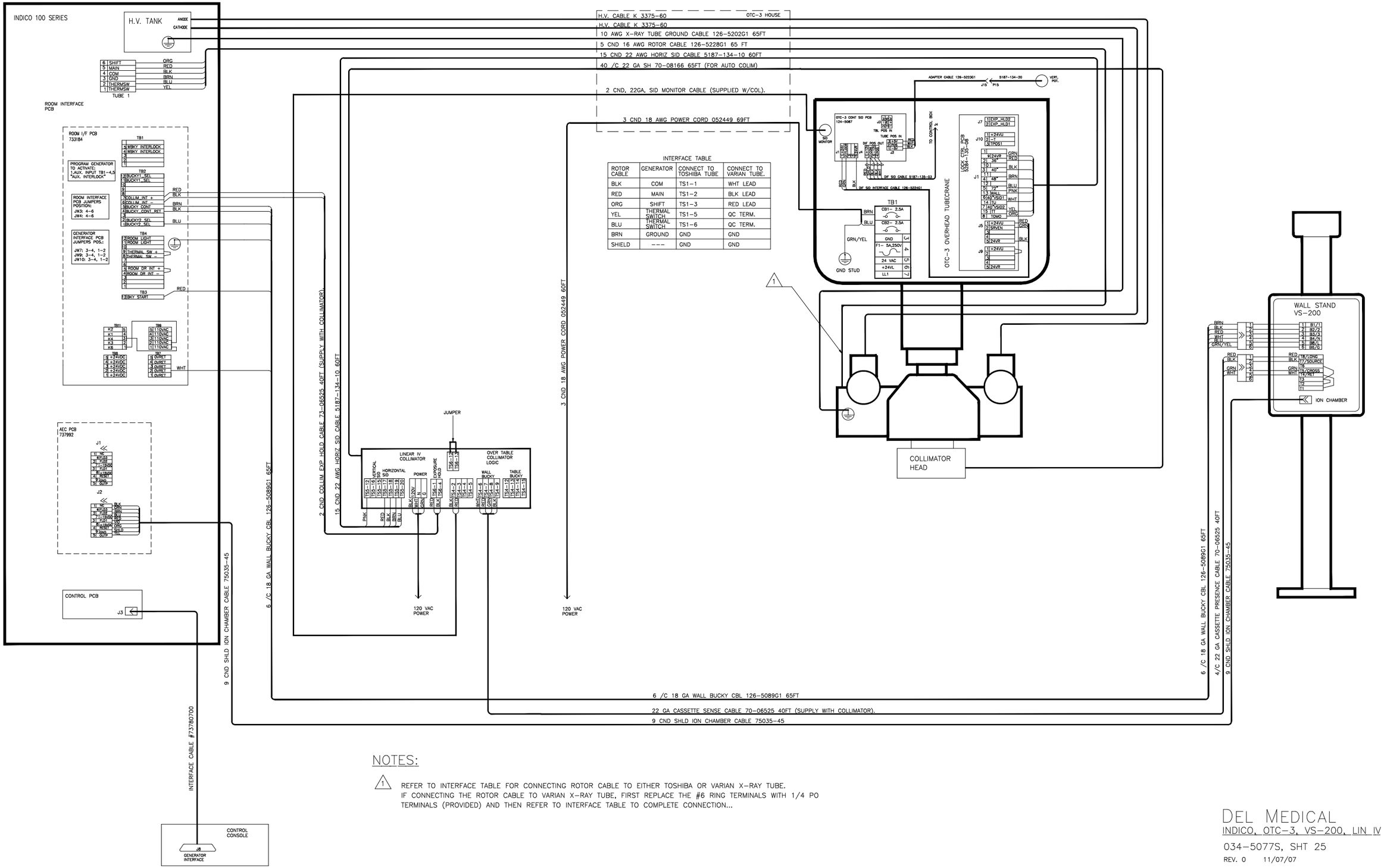
3/C 24GA, SID CABLE, 126-5222G1, 60FT
3 ND SID CABLE, 126-5247G1, 60 FT
6 /C 18 GA TABLE BUCKY CBL 126-5050G3 65FT
22 GA CASSETTE PRESENCE CABLE 70-06525 40FT (SUPPLY WITH COLLIMATOR).
9 CND SHLD ION CHAMBER CABLE 75035-45
6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
22 GA CASSETTE SENSE CABLE 70-06525 40FT (SUPPLY WITH COLLIMATOR).
9 CND SHLD ION CHAMBER CABLE 75035-45

120 VAC POWER

9 CND 18 AWG CABLE (SUPPLIED WITH FMTS)
3 CND 16 AWG POWER CORD (SUPPLIED WITH FMTS)
120/240 VAC POWER
6 /C 18 GA WALL BUCKY CBL 126-5089G1 65FT
4/C 22 GA CASSETTE PRESENCE CABLE 70-06525 40FT
9 CND SHLD ION CHAMBER CABLE 75035-45

WALL STAND VS-200
B1/1, B2/2, B3/3, B4/N, B8/L, B6/G
T8/LONG, T7/SOURCE, 16, T5/CROSS, T4/RET, T3, T2, T1
ION CHAMBER

DEL MEDICAL
CPI-CMP, EV650, FMTS, VS-200, LIN IV
034-5077S, SHT. 19
REVISION 2, ECN 8003 - 10-30-07



NOTES:

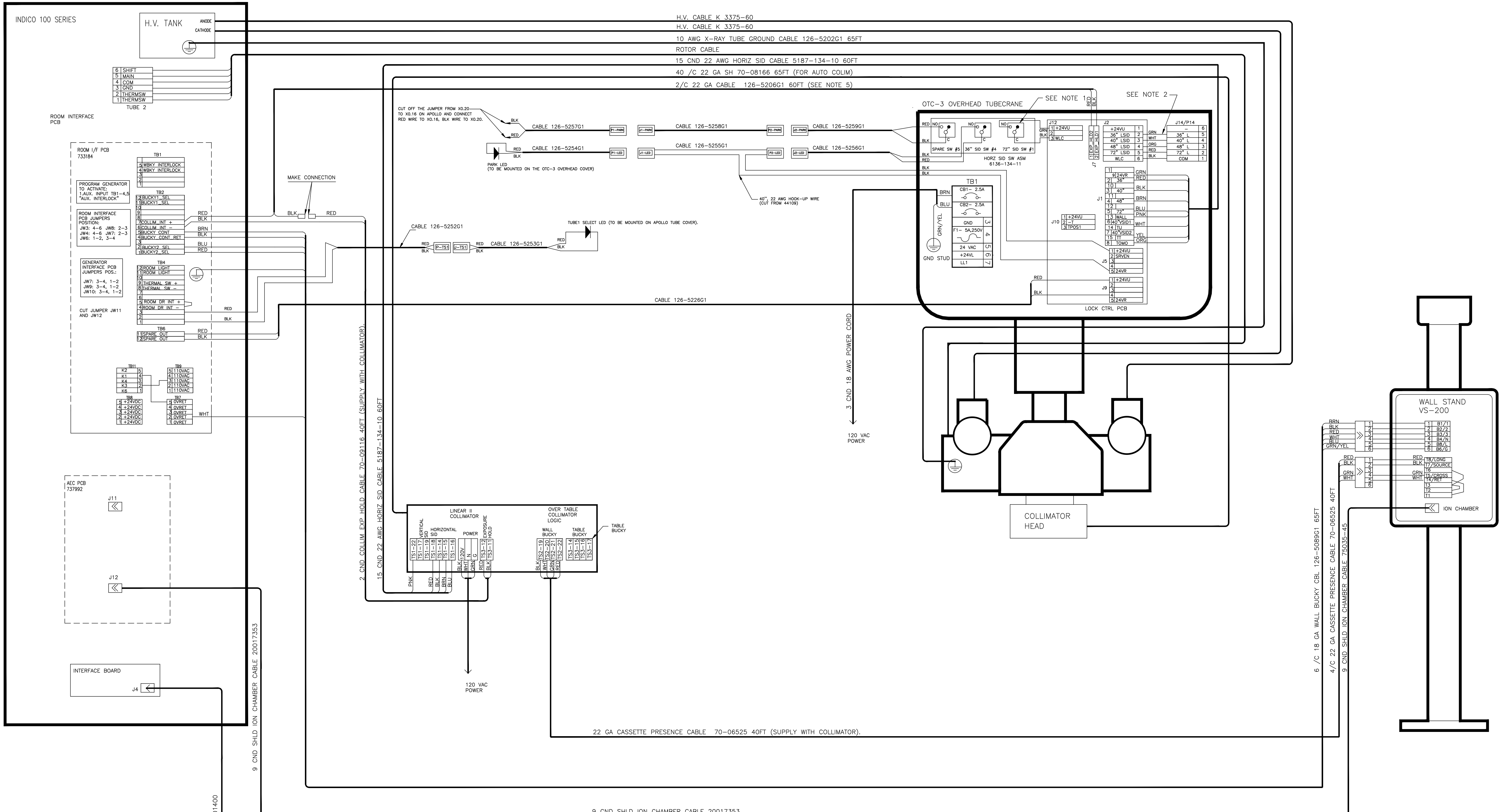
1. REFER TO INTERFACE TABLE FOR CONNECTING ROTOR CABLE TO EITHER TOSHIBA OR VARIAN X–RAY TUBE. IF CONNECTING THE ROTOR CABLE TO VARIAN X–RAY TUBE, FIRST REPLACE THE #6 RING TERMINALS WITH 1/4 PO TERMINALS (PROVIDED) AND THEN REFER TO INTERFACE TABLE TO COMPLETE CONNECTION...

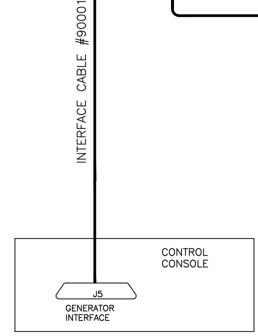
DEL MEDICAL

INDICO, OTC–3, VS–200, LIN IV

034–5077S, SHT 25

REV. 0 11/07/07





NOTES:

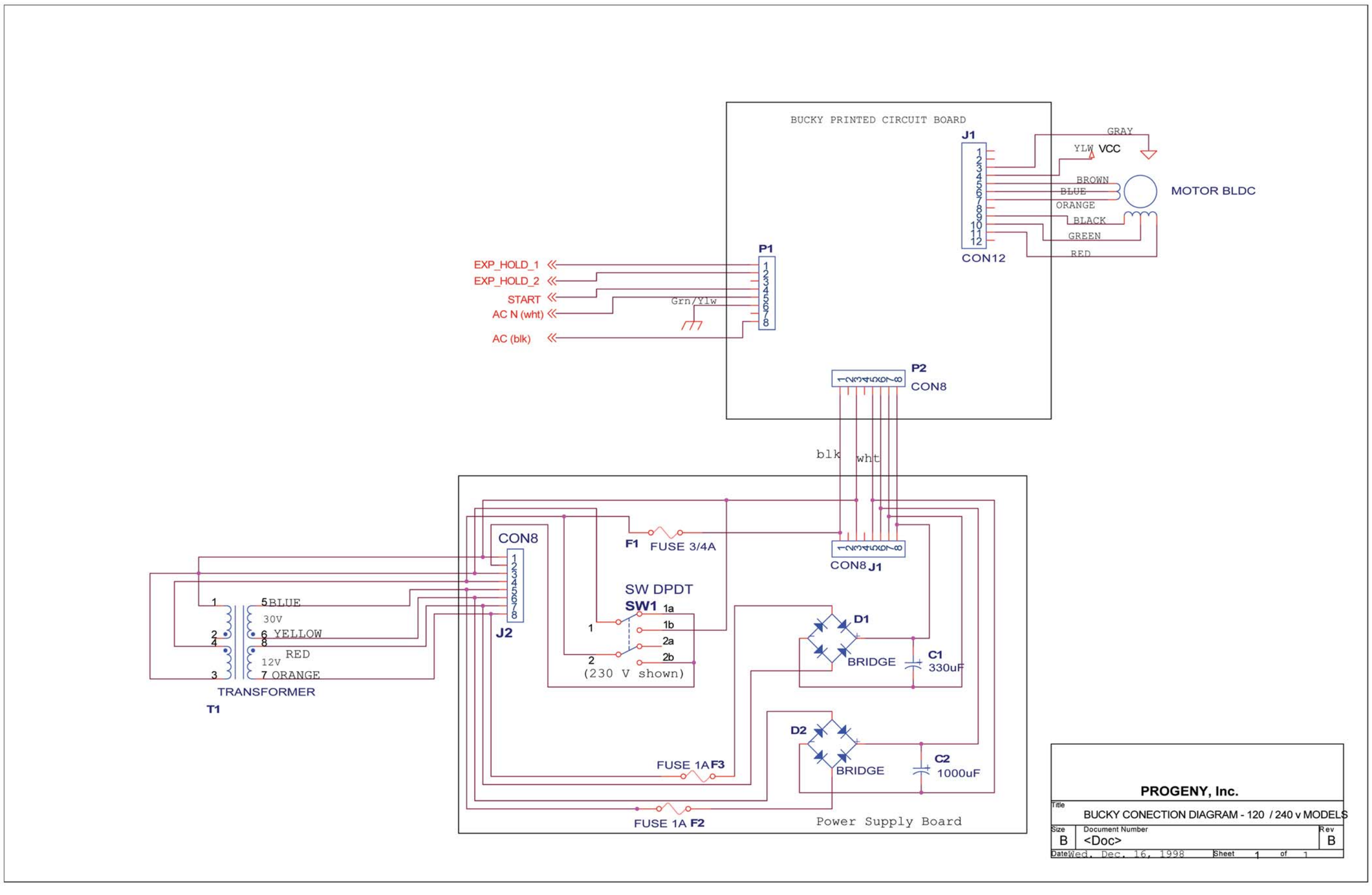
1. DISCONNECT AND ISOLATE TERMINAL FROM RAIL SWITCH ASSEMBLY 5136-134-11.
   DISCONNECT WIRES 126-5205 FROM J2 CONNECTOR OF LOCK CONTROL PCB. CONNECT GREEN AND BLACK WIRES TO J12 PIN 1 AND 3 AS SHOWN. ISOLATE WHITE ORANGE AND RED WIRES.
2. REMOVE CABLE 126-5191 CONNECTED TO J12; CONNECT THIS CABLE TO J2 AS SHOWN.

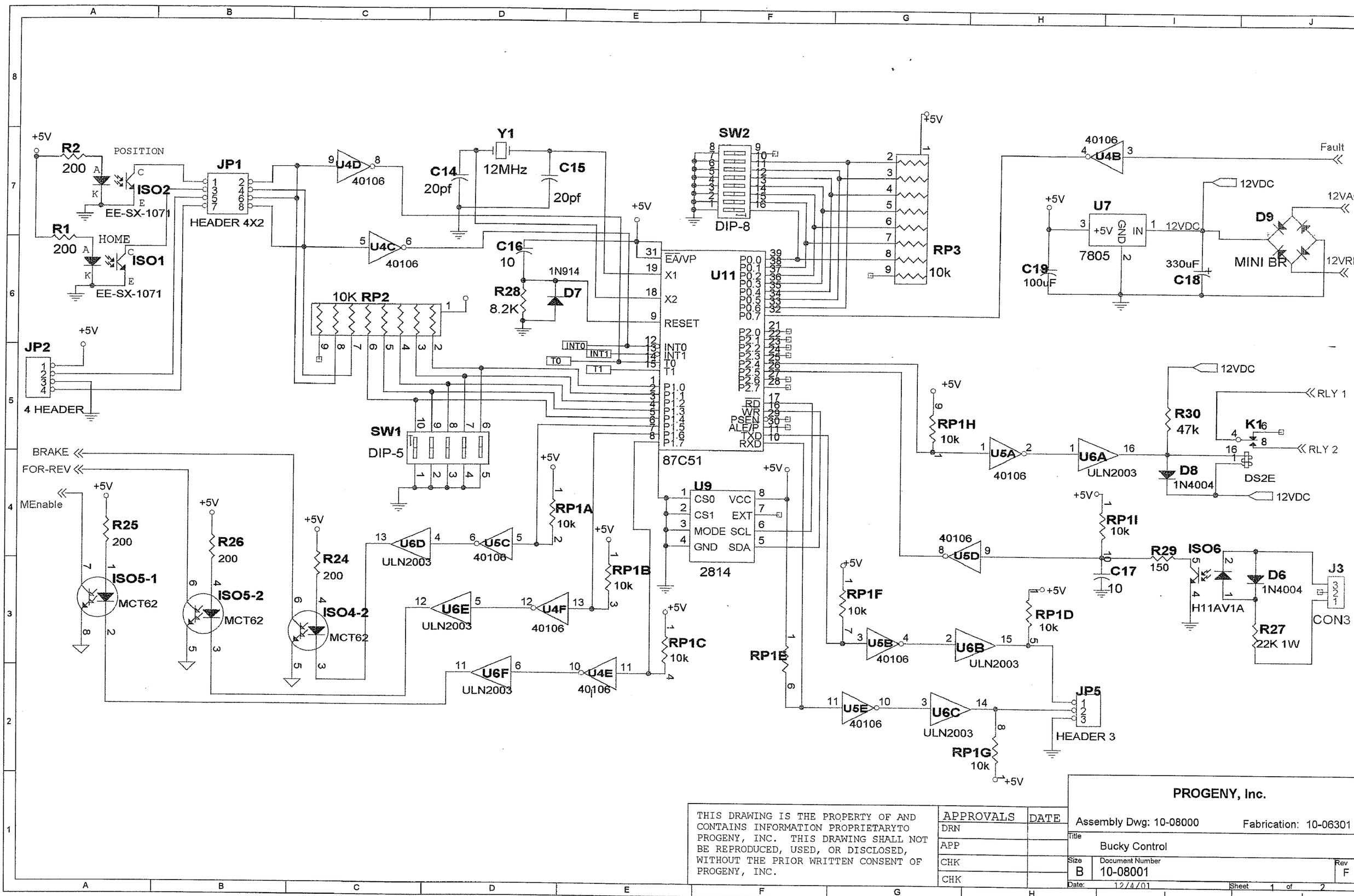
DEL MEDICAL

CPI-INDICO, APOLLO, OTC-3, LIN II, VS200

034-50077S, SHT 26

REVISION: 0 - ECN 8003, 11-07-07


BUCKY PRINTED CIRCUIT BOARD
J1
GRAY
YLW VCC
BROWN
BLUE
ORANGE
BLACK
GREEN
RED
MOTOR BLDC
CON12
P1
EXP_HOLD_1
EXP_HOLD_2
START
AC N (wht)
AC (blk)
Grn/Ylw
P2
CON8
blk
wht
CON8
F1 FUSE 3/4A
CON8 J1
SW DPDT
SW1 1a
1b
2a
2b
(230 V shown)
D1
BRIDGE
C1
330uF
5BLUE
30V
6 YELLOW
8
RED
12V
7 ORANGE
TRANSFORMER
T1
J2
D2
BRIDGE
C2
1000uF
FUSE 1A F3
FUSE 1A F2
Power Supply Board
PROGENY, Inc.
Title
BUCKY CONECTION DIAGRAM - 120 / 240 v MODELS
Size
B
Document Number
<Doc>
Rev
B
Date Wed. Dec. 16, 1998
Sheet 1 of 1



APPROVALS	DATE
DRN	
APP	
CHK	
CHK	

PROGENY, Inc.

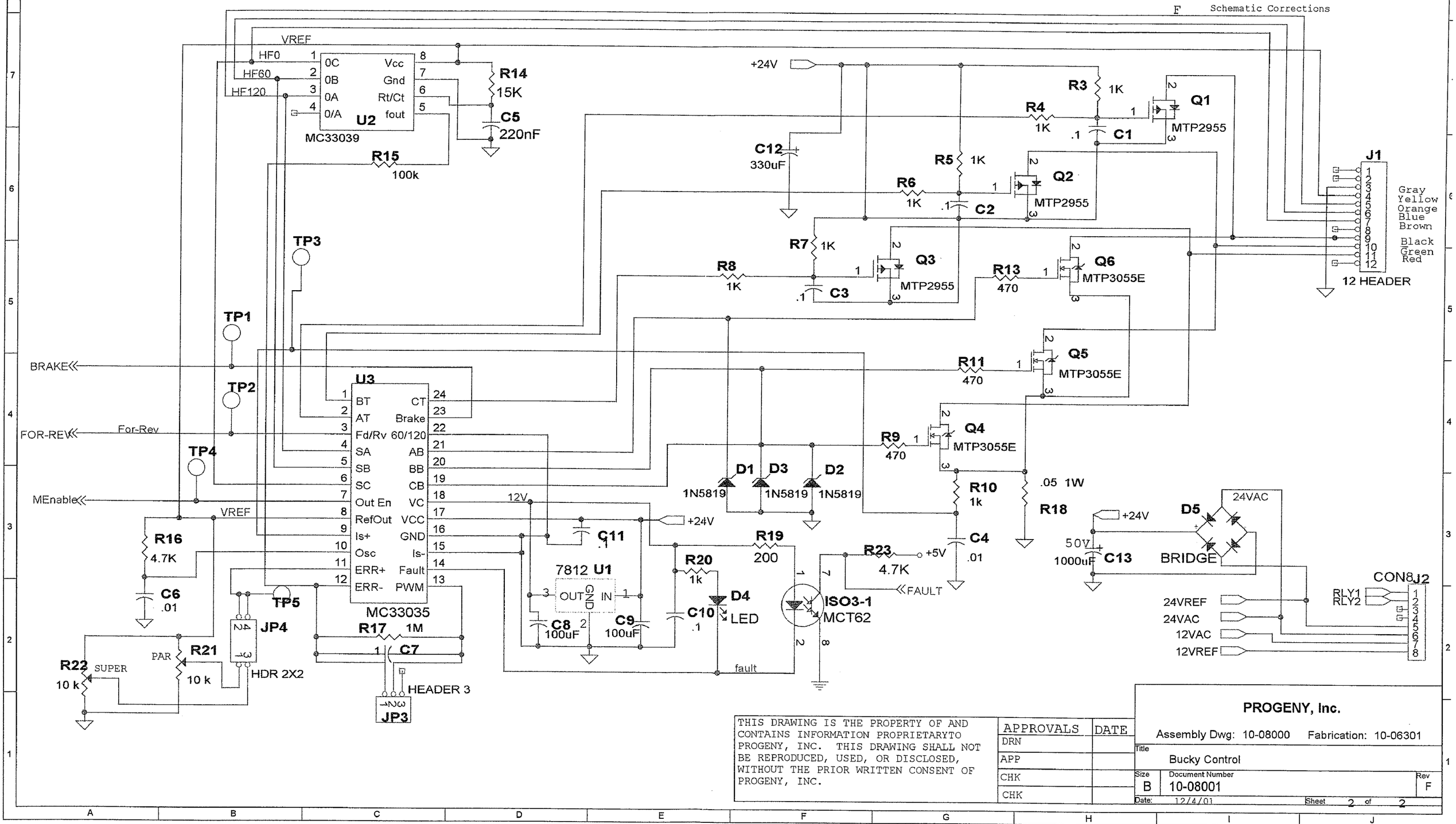
Assembly Dwg: 10-08000 Fabrication: 10-06301

Title: Bucky Control

Size: B Document Number: 10-08001 Rev: F

Date: 12/4/01 Sheet 1 of 2

REVISIONS			
REV	DESCRIPTION	DATE	APP'D
B	Production Release		
C	BOM Change		
D	BOM Change		
E	Remove R12		
F	Schematic Corrections		



APPROVALS	DATE
DRN	
APP	
CHK	
CHK	

PROGENY, Inc.

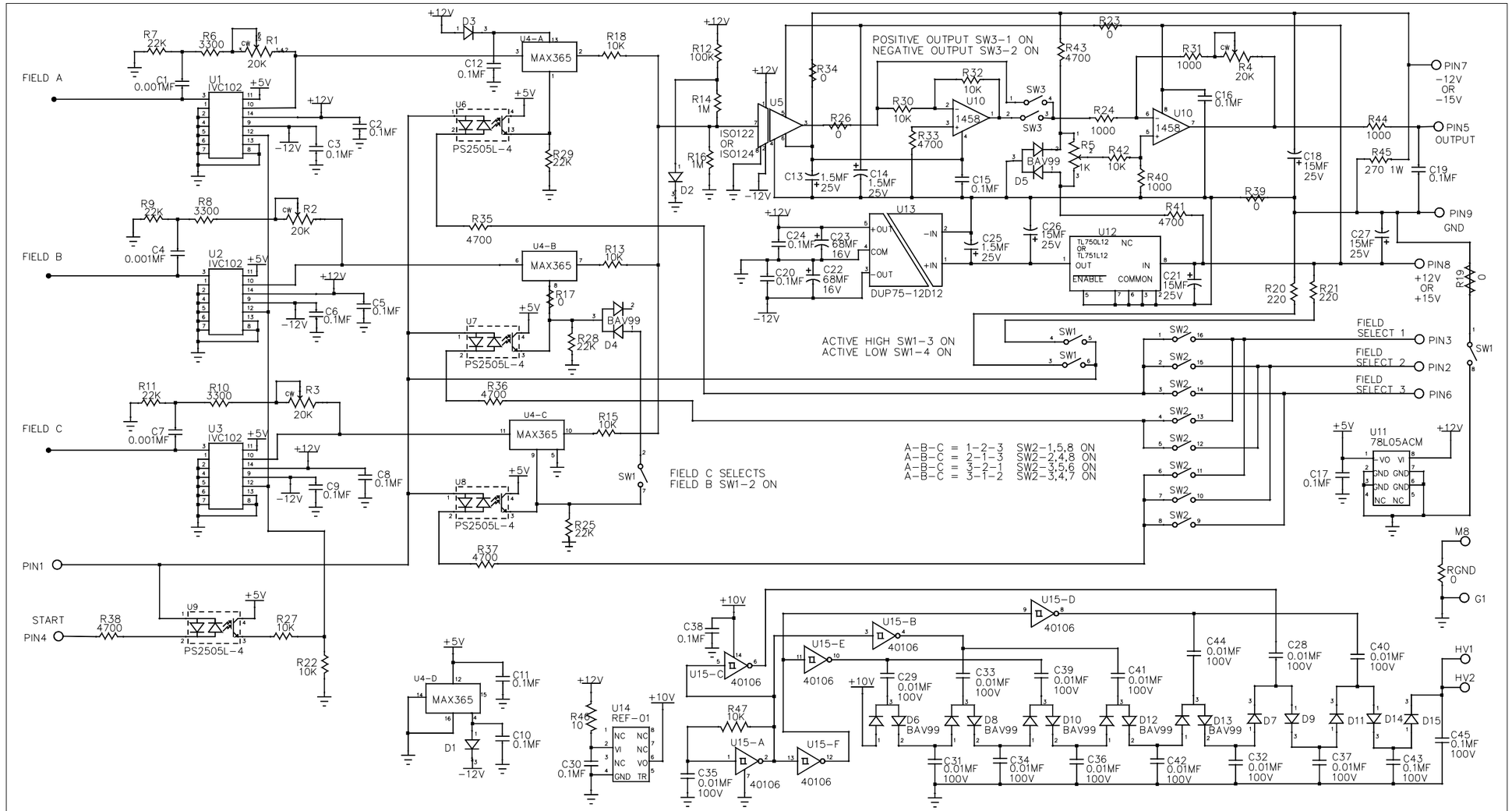
Assembly Dwg: 10-08000 Fabrication: 10-06301

Title: Bucky Control

Size: B | Document Number: 10-08001 | Rev: F

Date: 12/4/01 | Sheet 2 of 2

ORIGINAL



NOTES:
1. * MANUFACTURER MAY USE ALTERNATE COMPONENTS UNLESS NOTED OTHERWISE.
2. ALL SWITCHES OFF UNLESS OTHERWISE NOTED.
3. U6,U7,U8, AND U9 MAY BE (4) SINGLE OR (1) QUAD DEVICE.

REV.	ECN NO.	DATE	REVISIONS	BY
02	2261	10MAR05	COPPER DATE 03MAR05	BRP
			ADDED R5, R41, R42, R43 & D5	
01	2238	17DEC04	COPPER DATE 13DEC04	BRP
			ADD RGND, R37, R38, D18 & U15	
00	2045	01MAY02	SAME AS 61154A EXCEPT:	BRP
			R23=1800, R34=1500, R35=1000	

DO NOT SCALE

UNLESS SPECIFIED OTHERWISE; DIMENSIONS ARE IN INCHES.
FRACTIONS ±1/64 DECIMALS ±0.010 ANGLES ±1°

SCALE NONE	DRAWN BY TRW	DATE 01MAY02
MATERIAL NONE	CHECKED BY	
FINISH NONE	APPROVED BY	

ADVANCED INSTRUMENT DEVELOPMENT, INC.
1011 N. 25TH AVE.
MELROSE PARK, IL. 60160
X-RAY

3-FIELD ISOLATED PRE-AMP CALCULATED GAIN RANGE 1.0 TO 21 TOP-TURN POTS

USED ON	NEXT ASSY.	DRAWING NO.	REV.
ICX SERIES		61154A	02

Advanced Instrument Development, Inc.
1011 N. 25th Ave.
Melrose Park, IL 60160 U.S.A.

Phone: (708) 343-7777 www.aidxray.com Fax: (708) 343-7795

Three-field Ionization Chamber Calibration Procedure for The 61154 Pre-Amplifier Board Assemblies

The following adjustments apply to the calibration of a 61154A pre-amplifier board for a stationary 3-field ion chamber, e.g. for chest or table use. (Also valid for 61154C, 61154G, 61154J, 61154L and 61154N)

Pre-amp Assembly	Description	Difference from 61154A
61154A	Calculated Gain Range = 1.0 to 21.0	None
61154C	Calculated Gain Range = 1.47 to 34.8	R24 = 1500 ohm R31 = 2200 ohm R4 = 50K ohm
61154G	Calculated Gain Range = 1.22 to 29.0	R1, R2, R3, R4 = 50K ohm R24 = 1800 ohm R31 = 2200 ohm
61154J	Calculated Gain Range = 1.47 to 34.8	R24 = 1500 ohm R31 = 2200 ohm R4 = 50K ohm Side-Turn Pots
61154L	Calculated Gain Range = 0.83 to 11.94	R24 = 1800 ohm R31 = 1500 ohm Side-Turn Pots
61154N	Calculated Gain Range = 2.2 to 52.2	R31 = 2200 ohm R4 = 50K ohm

WARNING:

- Do not attempt to service the equipment unless this service manual has been consulted and is understood.
- Failure to heed this warning may result in injury to the service provider, operator or patient from electric shock and mechanical or other hazards.

Note: When working with the pre-amplifier assembly it is important that electrostatic discharge (ESD) prevention techniques be observed. Before touching the pre-amp assembly, attach an ESD wrist strap to yourself. Be sure to ground yourself and the ion chamber frame to dissipate static charges.

Note: The pre-amp assembly is a very delicate and sensitive device. It is important to keep it as clean as possible. Wash and dry your hands thoroughly before working with it and, when possible, use unpowdered latex or cotton gloves. Take care to touch the pre-amp board as little as possible. Take extra care to avoid touching the three air-mounted field inputs. Oils from your fingers on the air-mounts or their components can cause performance degradation.

The 61154A pre-amplifier board can be configured to operate with several different AEC systems. If specified at the time of purchase, the ion chamber will be delivered with the pre-amplifier board already configured for a particular application. To reconfigure an ion chamber for a different configuration, see the section on Ion Chamber Inputs and Output and the section on Specific Configurations at the end of this document.

The procedure assumes that the installation of the Automatic Exposure Control (AEC) is complete and that the AEC and x-ray generator are in proper working condition. After making the necessary interconnections between the ion chamber and the AEC, power up the system.

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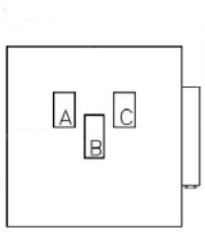
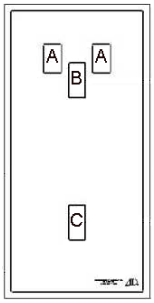
This document describes the calibration of standard "V" or "Y" pattern ion chambers commonly used in medical radiographic equipment, with sensing fields located at the lung and center (spine) positions. The operator selects the field(s) desired, and positions the anatomy of interest in front of the selected field(s). Note that for "Y" pattern ion chambers the two lung fields act together as field "A".



"V"

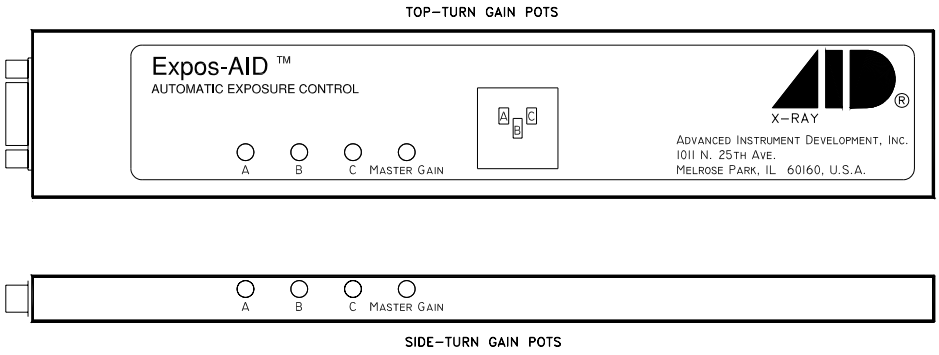


"Y"

Calibration/Test Set Up:

Select the center field of the ion chamber. Set the generator for 100 kVp and maximum backup time. For 100 kVp use 8 to 10 inches (20 to 25 cm) of water or plastic for a phantom. Metals such as copper, aluminum or lead are not suitable for use as phantoms. Make sure the phantom is homogeneous and completely covers all fields equally. Center the x-ray beam on the center field. Collimate the x-ray beam so that it completely covers all three fields but does not extend beyond the limits of the phantom.

Adjustment Potentiometers:



All necessary adjustment potentiometers are accessible through the pre-amp chassis cover. There is no need to open the pre-amp cover during normal calibration procedures.

Master Gain Adjustment:

Typically, the master gain adjustment is the only adjustment needed when installing ICX series ion chambers. Use the master gain adjustment to match the overall chamber sensitivity to that of the other stationary chambers connected to the system. Note that the master gain adjustment is a multi-turn potentiometer. A clockwise adjustment to the master gain potentiometer will increase the sensitivity of the chamber, causing the length of the exposure (mAs) to decrease.

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Make exposures and process the films. Adjust the master gain for the desired optical density. Make the master gain adjustment for each stationary chamber being installed.

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Field Balance Check:

Using the AEC post-exposure mAs display or other calibrated mAs meter check the individual fields to see that they are balanced, that is, that they produce the same mAs reading. If mAs readings are not stable from exposure to exposure for an individual field, then it will be necessary to expose films and make these adjustments based upon optical density.

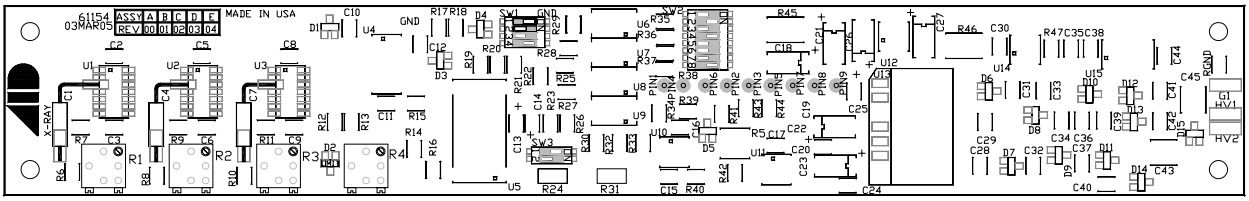
If necessary, adjust the individual gain potentiometers to balance the outputs to give the same mAs reading for each field selected individually. Note that individual gain adjustments are multi-turn potentiometers. A clockwise adjustment to a field gain potentiometer will increase the sensitivity of that field, causing the length of the exposure (mAs) to decrease.

Ionization Chamber Pin-outs:

61154A Pre-amp Board Pin-out	Function	9-Pin Sub-D Pin-Out
1	NONE	1
2	FIELD 2 SELECT	2
3	FIELD 1 SELECT	3
4	RESET	4
5	OUTPUT	5
6	FIELD 3 SELECT	6
7	NEGATIVE SUPPLY	7
8	POSITIVE SUPPLY	8
9	GROUND	9

Acceptable Power Supply Ranges for 61154A Pre-amp:

Supply Voltage	Measurement Point	Acceptable Range
External +12VDC	61154A pin 8 (referenced to 61154A pin 9)	+11.4VDC to +15.8VDC
External -12VDC	61154A pin 7 (referenced to 61154A pin 9)	-11.4VDC to -15.8VDC
Internal +12VDC	Measure across 61154A C23	+10.8VDC to +12.5VDC
Internal -12VDC	Measure across 61154A C22	-10.8VDC to -12.5VDC
Internal +5VDC	Measure across 61154A C17	+4.7VDC to +5.3VDC
Internal +75VDC	Measure across 61154A C45 (HV1 to G1)	+65VDC to +85.0VDC



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Ionization Chamber Inputs and Output:

Signal	Switch	Comments
Positive Supply +12VDC	None	+11.4VDC to +15.75VDC less than 85 mA.
Negative Supply -12VDC	None	-11.4VDC to -15.75VDC less than 15 mA.
Low-Active Commands Reset & Field Selects	SW1-3 OFF SW1-4 ON	Pulling the Reset line to ground (≤6VDC) beginning at exposure start and lasting for the entire duration of the exposure allows the integrator to operate. Pulling the field select lines to ground (≤6VDC) will select the field.
High-Active Commands Reset & Field Selects	SW1-3 ON SW1-4 OFF	Driving the Reset line high (≥8VDC) beginning at exposure start and lasting for the entire duration of the exposure allows the integrator to operate. Driving the field select lines high (≥8VDC) will select the field.
Field Configuration A=1, B=2, C=3	SW2-1,5 & 8: ON SW2-2,3,4, 6 & 7: OFF	Field selects 1, 2 and 3 select left (A), center (B) and right (C), respectively, as viewed from the x-ray tube-side of the ion chamber.
Field Configuration A=2, B=1, C=3	SW2-2,4 & 8: ON SW2-1,3,5, 6 & 7: OFF	Field selects 2, 1 and 3 select left (A), center (B) and right (C), respectively, as viewed from the x-ray tube-side of the ion chamber.
Field Configuration A=3, B=1, C=2	SW2-3,4 & 7: ON SW2-1,2,5, 6 & 8: OFF	Field selects 3, 1 and 2 select left (A), center (B) and right (C), respectively, as viewed from the x-ray tube-side of the ion chamber.
Field Configuration A=3, B=2, C=1	SW2-3,5 & 6: ON SW2-1,2,4, 7 & 8: OFF	Field selects 3, 2 and 1 select left (A), center (B) and right (C), respectively, as viewed from the x-ray tube-side of the ion chamber.
Positive Output	SW3-1 ON SW3-2 OFF	Time integrated signal ramping from 0VDC to a maximum of at least 80% of the supply voltage (+9.6VDC for +12VDC supply). The slope of this signal is directly proportional to the amount of x-ray flux received.
Negative Output	SW3-1 OFF SW3-2 ON	Time integrated signal ramping from 0VDC to a maximum of at least 80% of the supply voltage (-9.6VDC for -12VDC supply). The slope of this signal is directly proportional to the amount of x-ray flux received.

Power Supply Isolation:

Signal	Switch	Comments
Power Supply Isolation Defeated	SW1-1 ON	Connects external (61154A Pin-9) to pre-amp chassis and ion chamber frame. Default Setting.
Power Supply Isolation Enabled	SW1-1 OFF	Separates external (61154A Pin-9) from pre-amp chassis and ion chamber frame to prevent ground loop.

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Specific Configurations:

Unless specified otherwise, ICX ion chambers are delivered with an AID compatible jumper configuration. AID compatible means that the input and output signals will interface with Advanced Instrument Development, Inc's Expos-AID™ Automatic Exposure Control. This same configuration will also interface with Acoma, Control-X, CPI, Del Medical (Gendex), Electromed (EMD, Triton), OEC, Quantum Medical Imaging, Sedecal (Innerscan), Summit Industries, etc.

AID Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
Low-Active Commands: Start Integrate & Field Selects	SW1-3 OFF SW1-4 ON
Field Configuration: A=2, B=1, C=3	SW2-2,4 & 8 ON SW2-1,3,5, 6 & 7 OFF
Positive Output	SW3-1 ON SW3-2 OFF

Alternate configurations are listed below.

GE, Fischer, Varian Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
High-Active Commands: Start Integrate & Field Selects	SW1-3 ON SW1-4 OFF
Field Configuration: A=1, B=2, C=3	SW2-1,5 & 8 ON SW2-2,3,4, 6 & 7 OFF
Positive Output	SW3-1 ON SW3-2 OFF

GTR Labs Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
Low-Active Commands: Start Integrate & Field Selects	SW1-3 OFF SW1-4 ON
Field Configuration A=3, B=1, C=2 (= GTR Labs fields 1-2-3)	SW2-3,4 & 7 ON SW2-1,2,5, 6 & 8 OFF
Positive Output	SW3-1 ON SW3-2 OFF

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Trex Medical - Continental, Keithley, Ratheon, Xonics Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
Low-Active Commands: Start Integrate & Field Selects	SW1-3 OFF SW1-4 ON
Field Configuration: A=1, B=2, C=3	SW2-1,5 & 8 ON SW2-2,3,4, 6 & 7 OFF
Positive Output	SW3-1 ON SW3-2 OFF

Trex Medical - Bennett, Health Care Manufacturing Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
Low-Active Commands: Start Integrate & Field Selects	SW1-3 OFF SW1-4 ON
Field Configuration: A=1, B=2, C=3	SW2-1,5 & 8 ON SW2-2,3,4, 6 & 7 OFF
Negative Output	SW3-1 OFF SW3-2 ON

Picker Compatible jumper configuration:

Function	Switch Setting
Defeat: Power Supply Isolation	SW1-1 ON
Enable: Alternate Field Selection	SW1-2 OFF
Low-Active Commands: Start Integrate & Field Selects	SW1-3 OFF SW1-4 ON
Field Configuration: A=2, B=1, C=3	SW2-2,4 & 8 ON SW2-1,3,5, 6 & 7 OFF
Negative Output	SW3-1 OFF SW3-2 ON

Illustrated Parts List

9

9.1 Ordering Parts

For your convenience, replacement parts and accessories can be ordered from Del Medical Systems by fax 24 hours a day. Please have the following information available to ensure quick, easy, and accurate service.

- Your name and telephone number
- Your P.O. (Purchase Order) number
- Your preferred method of delivery
- The part number and quantity of all items required

9.1.1 To Order by Fax

Fax your order to Del Medical Systems at 1-800-288-7011. Fax orders can be sent 24 hours a day, 7 days a week.

If you need additional assistance, please call Del Medical Systems at 1-800-800-6006 and speak to one our Customer Service Representatives. Telephone hours are 8:00 a.m. to 5:00 p.m., Monday through Friday (Central Standard or Daylight Time).

Note
Refer to the Bucky manual for information on Bucky parts.
Refer to the digital receptor documentation for information on digital receptor parts.

9.2 How to Use This Parts List

9.2.1 General Part Numbers

This chapter contains all part numbers necessary to order wallstand replacement parts and assemblies.

This illustrated parts breakdown is presented in disassembled order. Detail parts are shown below their respective upper level assemblies whenever possible.

The parts lists follow the illustration for a particular assembly and represent components of that assembly. The number listed in the quantity column is the number of the specific part required to complete the assembly and may not reflect the quantity needed for the entire system.

The lists are divided into four columns. The item/index numbers refer to the identification number located on the drawing. The part number is the Del Medical part number, used to identify the part for ordering. The part description column lists each part name, and the quantity column lists the quantity of that part used in that particular assembly.

Illustrations are shown before the parts list for each assembly. Some assembly illustrations require more than one page.

9.3 Commonly Ordered Parts

Part Description	Part number
VS-200 Wallstand Installation, Operation & Maintenance Manual	8000-VS200NM
Brake Cam, RH	250-5006P1
Brake Cam, LH	250-5006P2
Counterweight Cable	403-5003P1
PBL Connector Receptacle	1417-0602
Wallstand Cable Assembly (Internal)	126-5088G1
Wallstand Cable Assembly (External)	126-5089G1
Loose Parts Kit - Consisting of: • Middle Cover • Bottom Cover • Top Cover • Trim Bar Spacer • Trim Bar • Front Panel • Wallstand Cable Assembly (External) • Cover Mounting Bracket • Top Cover Spacer • Screw, Trim 10-32 X 3/8” • Screw, Trim 6-32 X 1/2” • Screw, HHMS 10-32 X 1/4” • Screw, SHSSCP 10-32 X 3/8” • Screw, PPNHMS SEMS 6-32 • Screw, PPNHMS, 10-32 X 5/16 • Standoff, 6-32 9/16 LG M-F • Decal, Del Medical Logo	112-5188G1 210-5013P1 210-5015P1 214-5012P1 210-5008P1 240-5009P1 5500-0494P2 126-5089G1 202-5003P1 232-5001P2 100012P3 100012P7 751-02-19102511 757-41-19103810 760-22-14205011 760-22-19103111 642-0018P10 408-5099P2
Floor Mount Kit Installation Instructions	8000-VS200-FMK
Auto Tracking Kit Installation Instructions	8000-VS200-ATK

Table 9-1: Commonly Ordered Parts

9.4 Overall VS200 Wallstand Assembly (110-5010G1)

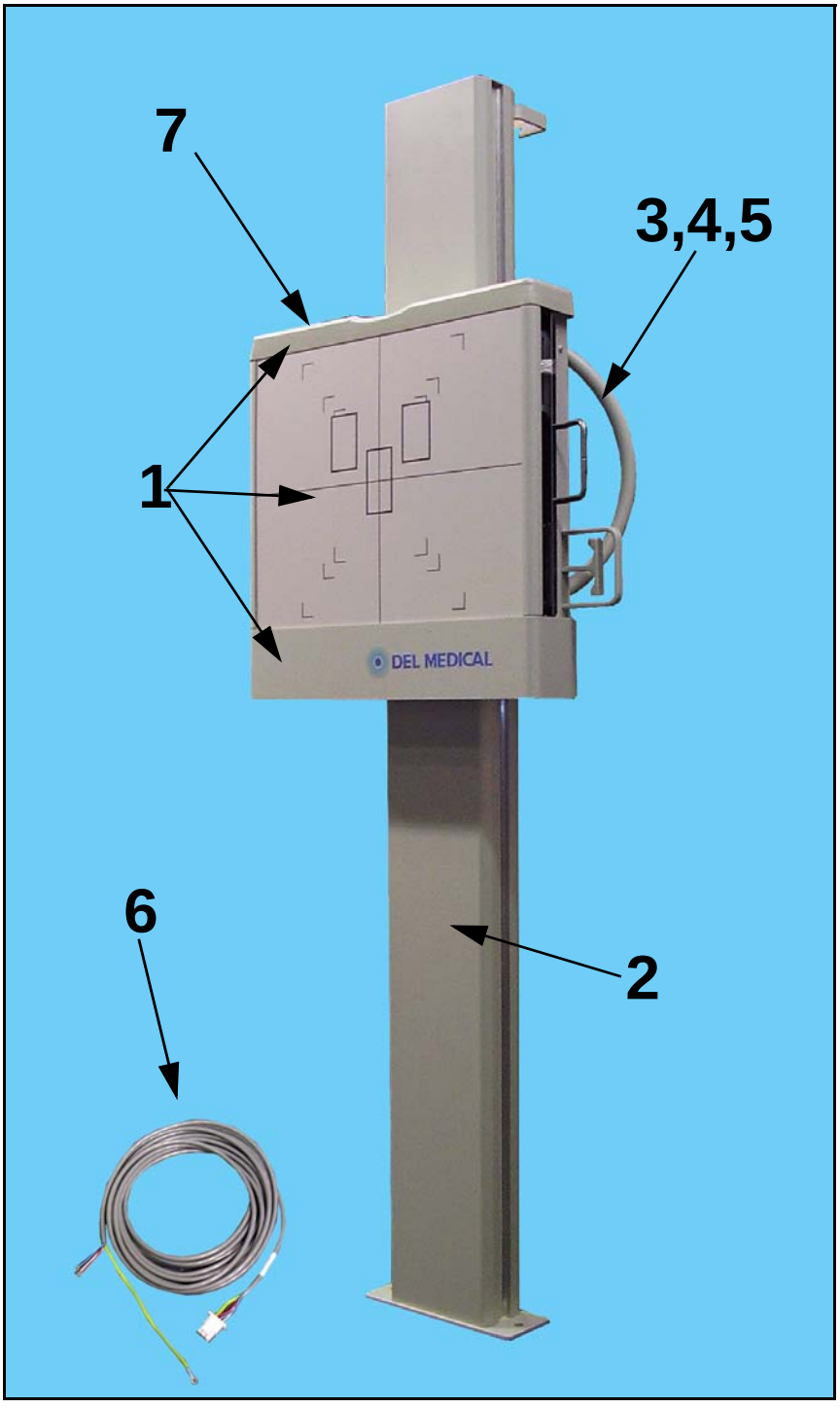

Figure 9-1. Overall VS200 Wallstand Assembly

Fig ref.	Part number	Description	Qty
1	112-5188G1	Final Trim Kit (See Section 9.5 for Breakdown of Kit)	1
2	112-5018G1	Column Assembly (See Section 9.6 for Breakdown of Assembly)	1
3	114-5021P1	Handrail, Med. Wht	2
4	753-40-19106210	Screw, SHCS, 10-32 X 5/8”	8
5	785-11-19000011	Washer, Flat #10 Narrow	8
6	126-5089G1	Cable, Wallstand, Bucky	1
7	112-5402G1	Mounting Frame for CMT Digital Receptor (See 9.12 for Breakdown of Assembly)	1
	112-5403G1	Mounting Frame for Canon 40 Digital Receptor (See 9.13 for Breakdown of Assembly)	1
	112-5404G1	Mounting Frame for Canon 50 Digital Receptor (See 9.14 for Breakdown of Assembly)	1
	112-5504G1	Mounting Frame forVarian 4343R Digital Receptor (See 9.15 for Breakdown of Assembly)	1
	112-5526G1	Mounting Frame for Toshiba FDX4343R Digital Receptor (See 9.20 for Breakdown of Assembly)	1

Table 9-2: Overall FCTS Tubestand Sheet

9.5 Final Trim Kit (112-5188G1)

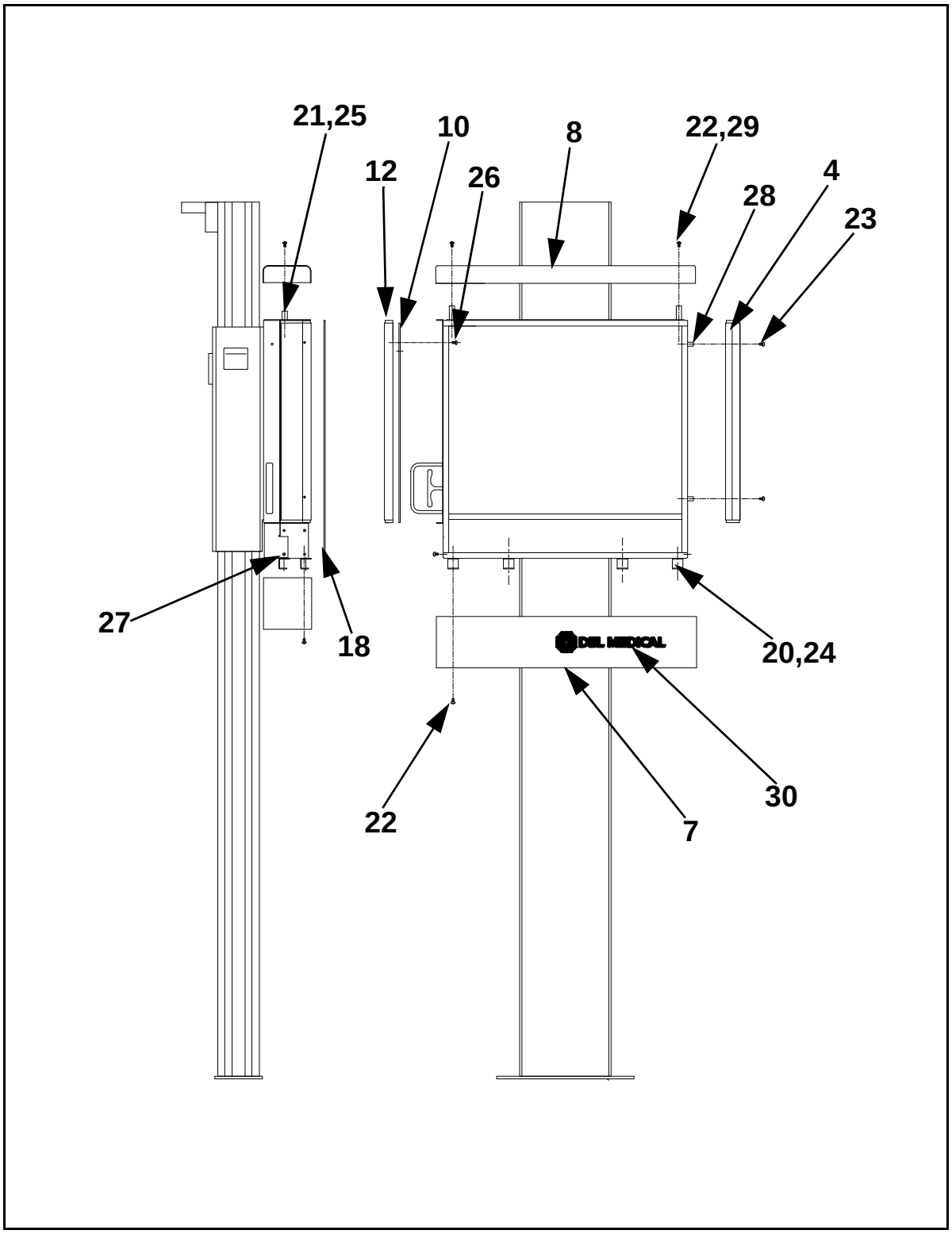

Figure 9-2. Final Trim Kit

Fig ref.	Part number	Description	Qty
4	210-5013P1	Middle Cover	1
7	210-5015P1	Bottom Cover	1
8	214-5012P1	Top Cover	1
10	210-5008P2	Trim Bar Spacer	1
12	240-5009P1	Bar Trim	1
18	5500-0494P2	Panel, Front, Bucky (Silk Screened)	1
20	202-5003P1	Bracket, Cover Mounting	4
21	232-5001P2	Spacer, Top Cover	2
22	100012P3	Screw, Trim 10-32 X 3/8”	6
23	100012P7	Screw, Trim 6-32 X 1/2”	2
24	751-02-19102511	Screw, HHMS, 10-32 X 1/4”	4
25	757-41-19103310	Screw, SHSSCP, 10-32 X 3/8”	2
26	760-22-14205011	Screw, PPNHMS SEMS 6-32 X 1/2”	2
27	760-22-19103111	Screw, PPNHMS, 10-32 X 5/16”	6
28	642-0018P10	Standoff, 6-32 X 9/16”	2
30	408-5099P2	Label, Del Med Logo	1

Table 9-3: Final Trim Kit

9.6 Column Assembly (112-5018G1)

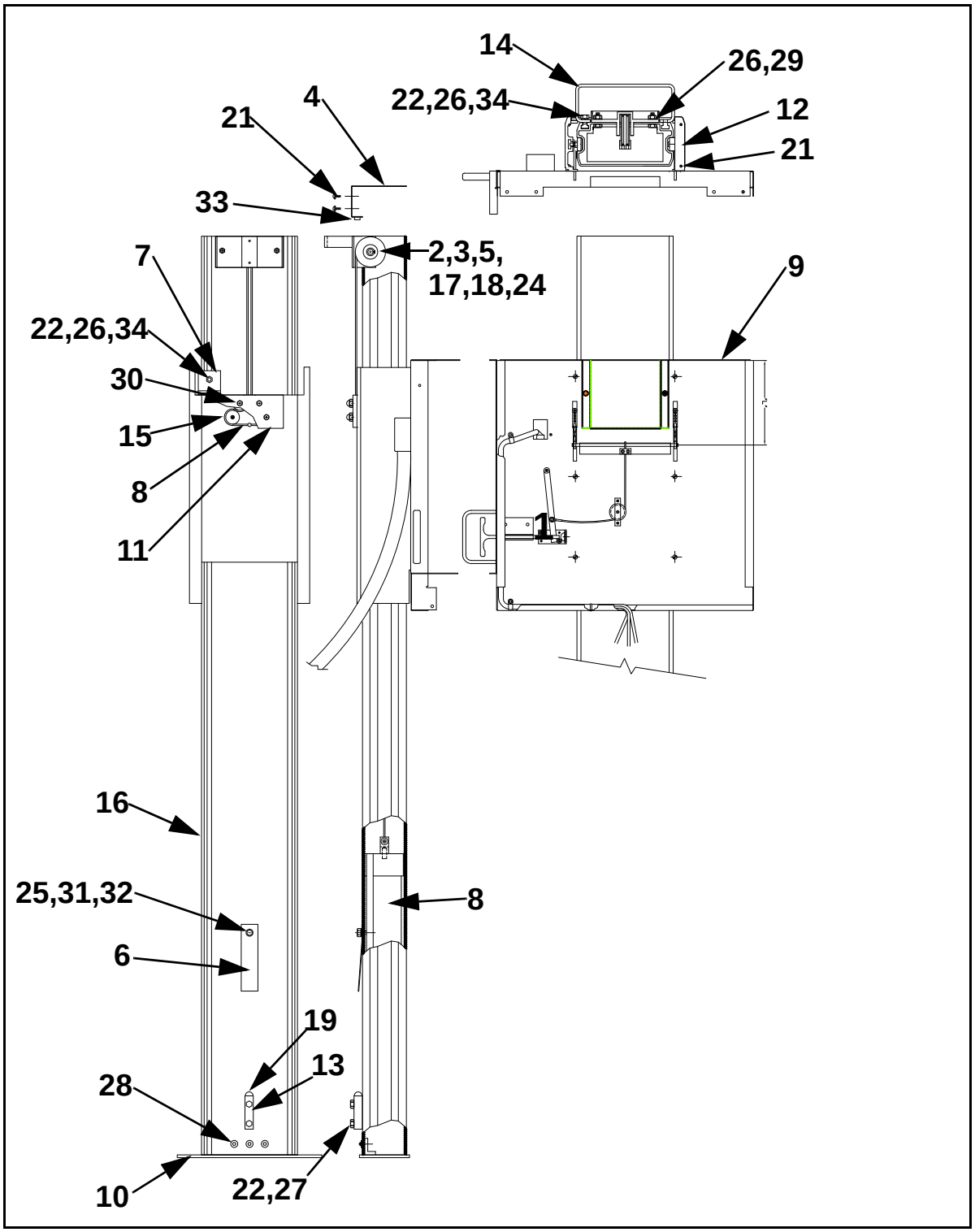

Figure 9-3. Column Assembly

Fig ref.	Part number	Description	Qty
2	6100310	Axle, Column Top	1
3	6202010	Double Diff. Wheel	1
4	6504310	Top Cover	1
5	6800199	Thrust Washer	2
6	031-5001P1	Shipping Tag	1
7	112-0756G1	Shipping Bracket Assembly	1
8	112-5016G1	Counterweight Assembly (Refer to Section 9.7 for Breakdown of Assembly)	1
9	112-5017G1	Vertical Carriage and Frame Assembly (Refer to Sections 9.8 & 9.9) for Breakdown of Assembly)	1
10	114-5011P1	Column Base	1
11	203-5006P1	Cover, Vertical Carriage	1
12	210-5011P1	Side Cover	2
13	234-5001P1	Bar, Vertical Carriage Stop	1
14	236-5012P1	Wall Bracket, Med Wht	1
15	240-5005P1	Spacer, Cover	4
16	301-5003P1	Column, Wall Stand	1
17	301-5001P1	Support Pulley Mounting	1
18	400-0021P1	Bearing, Ball	2
19	400-5001P1	Bumper	1
21	422-5001P2	Screw, Metric, M4 X 8mm	6
22	422-5003P1	T-Slot Nut, 5/16”-18	5
24	731-10-01200000	Retaining Ring, External, 12mm Dia	2
25	751-00-25207511	Screw, HHMS 1/4”-20 X 3/4”	1
26	751-0031207511	Screw, HHMS 5/16”-18 X 3/4”	5
27	751-00-31213811	Screw, HHMS 5/16”-18 X 1”	2
28	756-40-31210010	Screw, FSHMS 5/16” -18 X 1”	3
29	784-12-31200011	Nut, Hex KEPS 5/16”-18	2

Table 9-4: Column Assembly

Fig ref.	Part number	Description	Qty
30	784-50-25200016	Nut, Acorn HI 1/4”-20	4
32	786-50-25000011	Washer, Split Lock Standard 1/4”	1
33	46-220183P1	Bumper, 3M SJ-5523 Black	2
34	46-220181P8	Washer, Split Lock, 5/16”	5

Table 9-4: Column Assembly

9.7 Counterweight Assembly (112-5016G1)

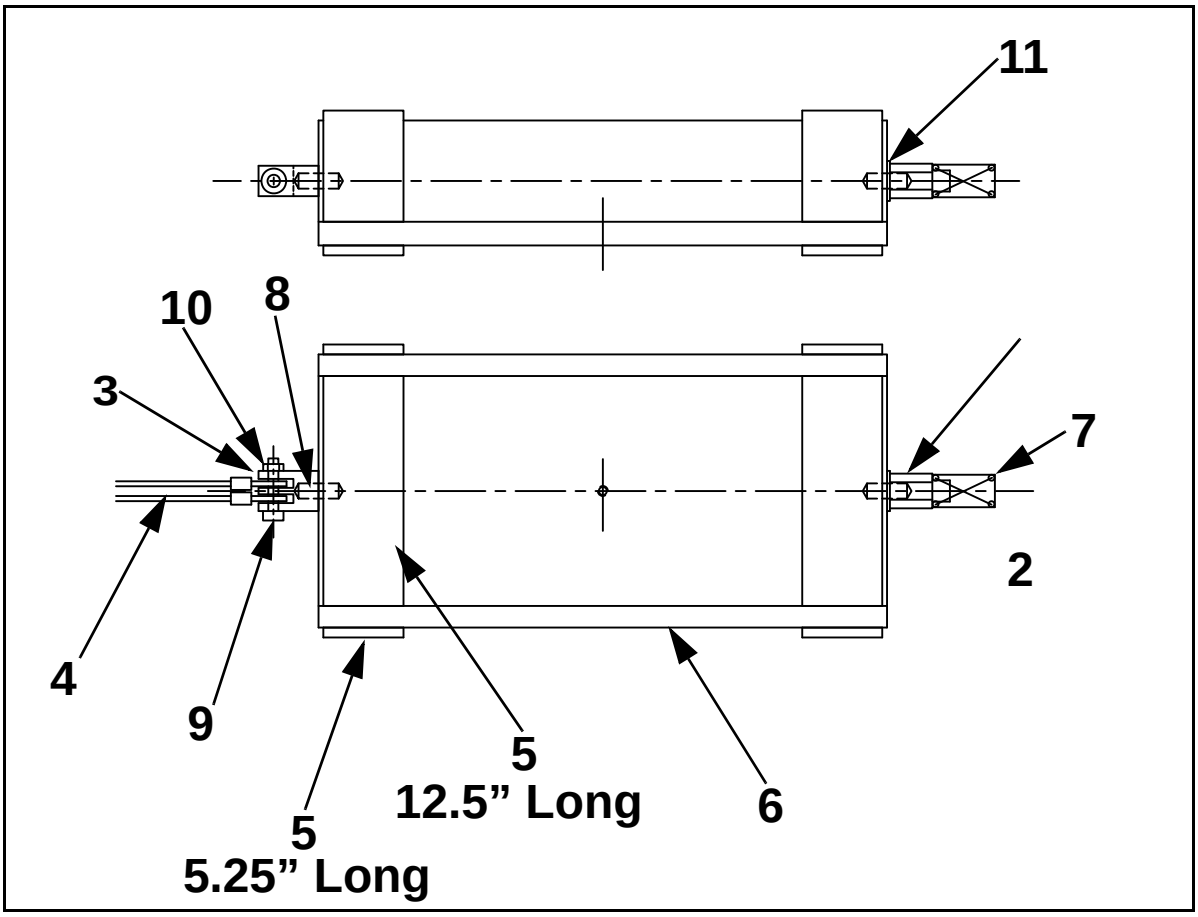

Figure 9-4. Counterweight Assembly

Fig ref.	Part number	Description	Qty
2	230-5004P1	Spacer, Spring Mounting	1
3	236-5011P1	Block, Counterweight Anchor	1
4	403-5003P1	Counterweight Cable	1
5	412-0007P2	Felt Strip .12 Thick	.06”
6	436-5004P1	Counter Weight, 94.5 #	1
7	67-292	Bumper Spring	1
8	757-41-38212510	Screw, SHSSCP 3/8”-16 X1”	2
9	758-40-25210010	Screw, Shoulder 1/4” X 1.00	1
10	784-10-19200011	Nut, Hex 10-24	1
11	785-13-31000011	Washer, Flat 5/16 Wide	1

Table 9-5: Counterweight Cable Assembly

9.8 Vertical Frame & Carriage Assembly (112-5017G1)(Sheet 1 of 2)

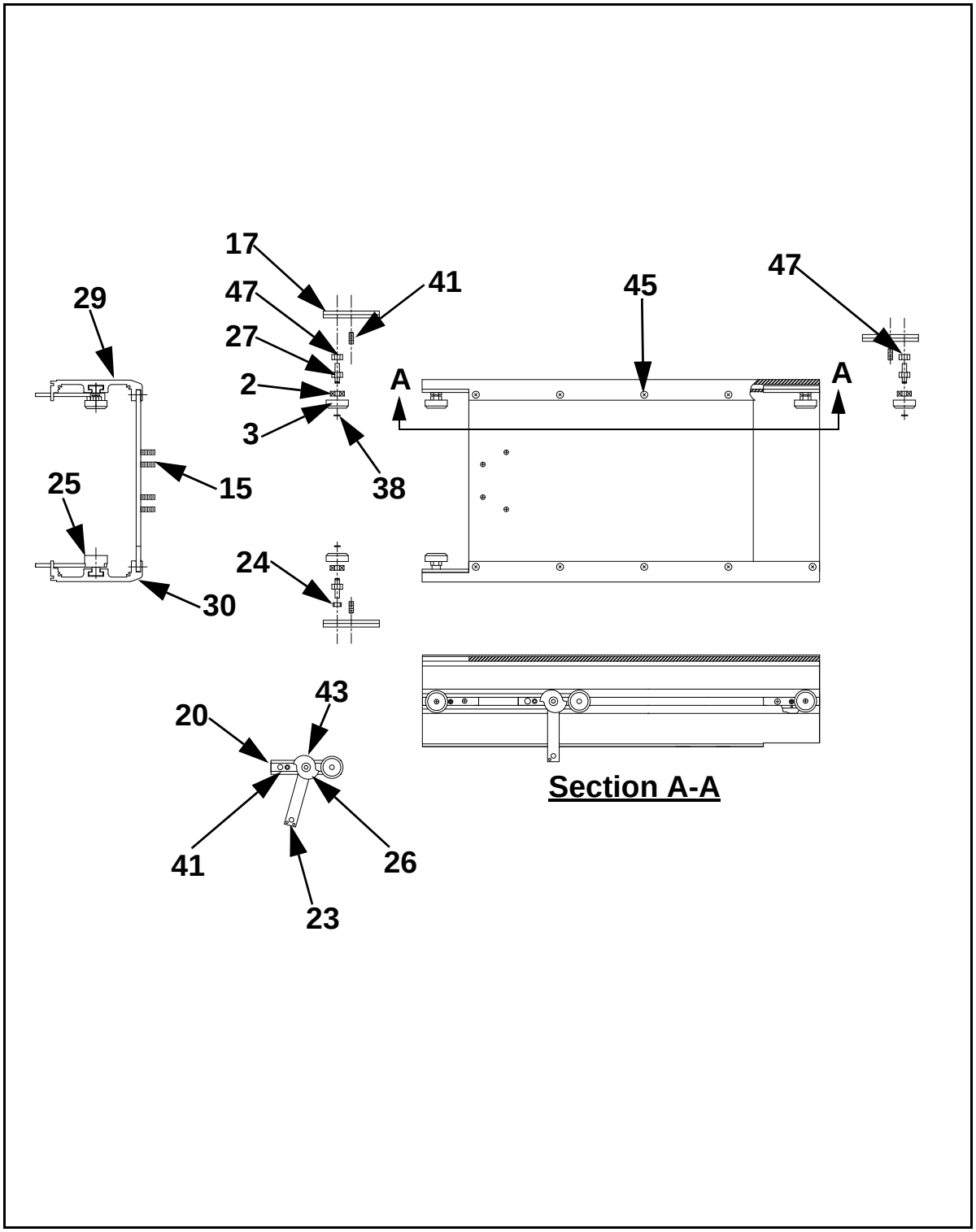

Figure 9-5. Vertical Carriage & Frame Assembly (Sheet 1 of 2)

Fig ref.	Part number	Description	Qty
2	5400004	Bearing	6
3	6800230	Z-Carriage bearing Wheel	6
15	222-5017P1	Carriage Back Plate	1
17	236-5010P1	Block, Bearing Mounting	4
20	236-5015P1	Block, Lever Mounting	2
23	236-5018P1	Arm, Cam Lever	2
24	240-5007P1	Bushing, Bearing Spacer	4
25	250-5006P1	Cam, Vertical Lock, RH	1
26	250-5006P2	Cam, Vertical Lock, LH	1
27	254-5001P1	Stud, Bearing Mounting	6
29	301-5001P1	Carriage Side, LH, Machined	1
30	301-5002P1	Carriage Side, RH, Machined	1
38	731-10-00600000	Retaining Ring, Ext. 6mm Dia	6
41	757-41-25203810	Screw, SHSSCP, 1/4”-20 X 3/8”	6
43	758-40-31205010	Screw, Shoulder 5/16”-18 X 1/2”	2
45	762-20-19107511	Screw, PFHMS 10-32 X 3/4”	10
47	784-20-31200011	Nut, Hex Jam 5/16”-18	2

Table 9-6: Vertical Carriage & Frame Assembly (Sheet 1 of 2)

9.9 Vertical Frame & Carriage Assembly (112-5017G1)(Sheet 2 of 2)

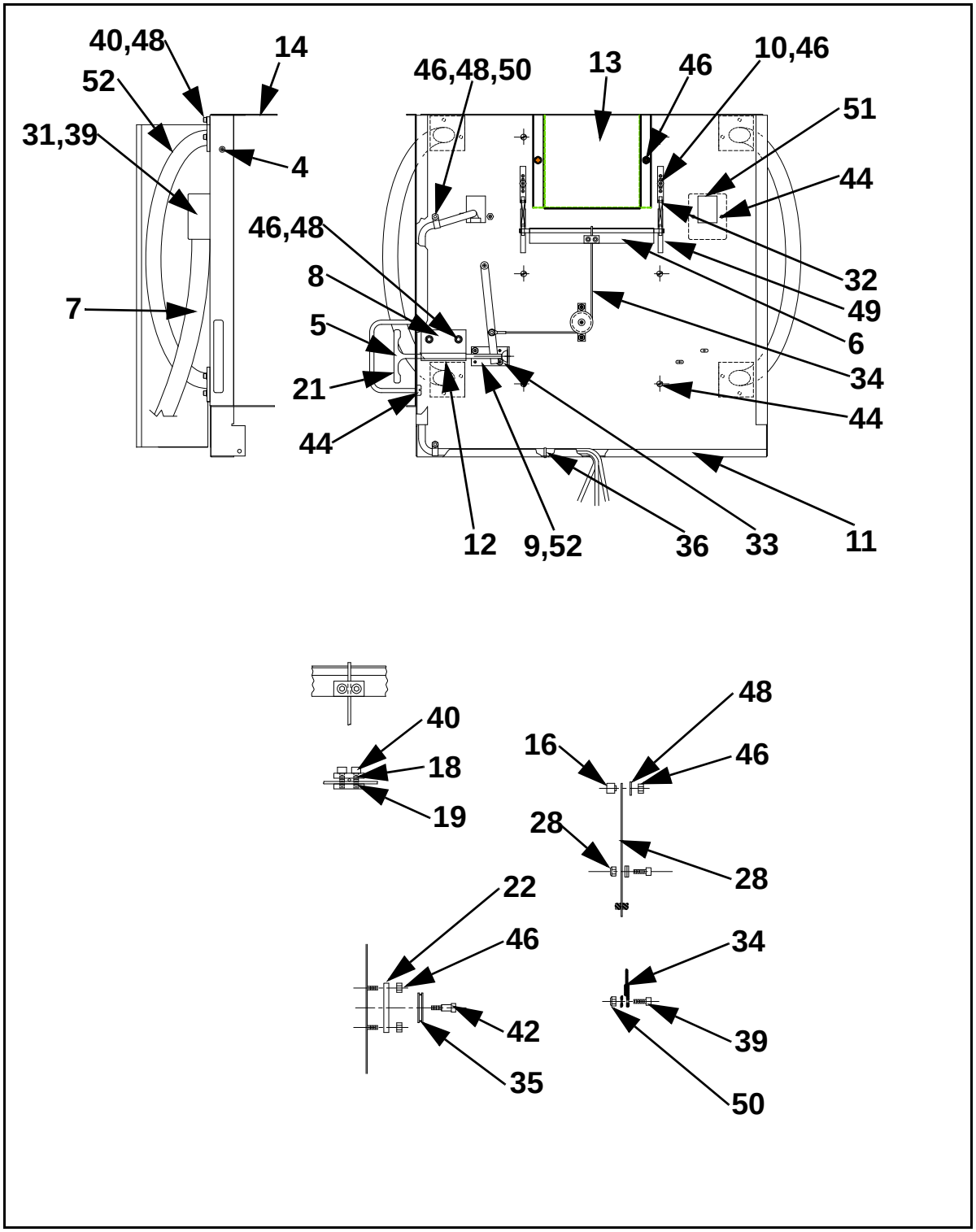

Figure 9-6. Vertical Carriage & Frame Assembly (Sheet 2 of 2)

Fig ref.	Part number	Description	Qty
4	100012P6	Screw, Trim 6-32 X 5/16”	1
5	300-5005P1	Handle, Lock Release	1
6	114-5013P1	Tie Link	1
7	126-5088G1	Input Cable Assembly	1
8	201-5006P1	Mounting Angle	1
9	201-5096P1	Bumper Bracket	1
10	201-5008P1	Spring Anchor Bracket	2
11	203-5004P1	Frame	1
12	203-5005P1	Lever Guide	1
13	203-5011P1	Trim Weight Cover	1
14	210-5007P1	Mid Cover	1
16	230-5003P1	Bushing, Lever Pivot	1
17	236-5010P1	Block, Bearing Mounting	1
18	236-5014P1	Plate, LK Cable Clamp	1
19	236-5014P2	Plate, LK Cable Clamp, THRD	1
21	236-5050P1	Handle Stationary	1
22	236-5017P1	Bar, Pulley Mounting	1
28	280-5001P1	Lever	1
31	303-0011P2	Cable Clamp, Painted	1
32	405-5001P1	Spring, Extension	2
33	401-0005P1	Bumper	1
34	403-5001P1	Cable Assembly, LK Release	1
35	425-5002P1	Pulley, Delrin	1
39	753-40-19103810	Screw, SHCS 10-32 X 3/8”	3
40	753-40-19106210	Screw, SHCS 10-32 X 5/8”	2
42	758-40-31203810	Screw, Shoulder 5/16”-18 X 3/8”	1
44	760-22-19103811	Screw, PPNHMS 10-32 X 3/8” SEMS	11
46	784-12-19100011	Nut, KEPS 10-32	13
48	785-11-19000011	Washer, Flat #10 Narrow	3

Table 9-7: Vertical Carriage & Frame Assembly (Sheet 2 of 2)

Fig ref.	Part number	Description	Qty
50	423-0007P1	Nut, Seld-Locking, 10-32	1
51	203-5049P1	Cover Plate	1
52	100012P3	Screw, Trim, 10-32 X 3/8”	2

Table 9-7: Vertical Carriage & Frame Assembly (Sheet 2 of 2)

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9.10 Grid Cabinet Assembly (112-0597G1)

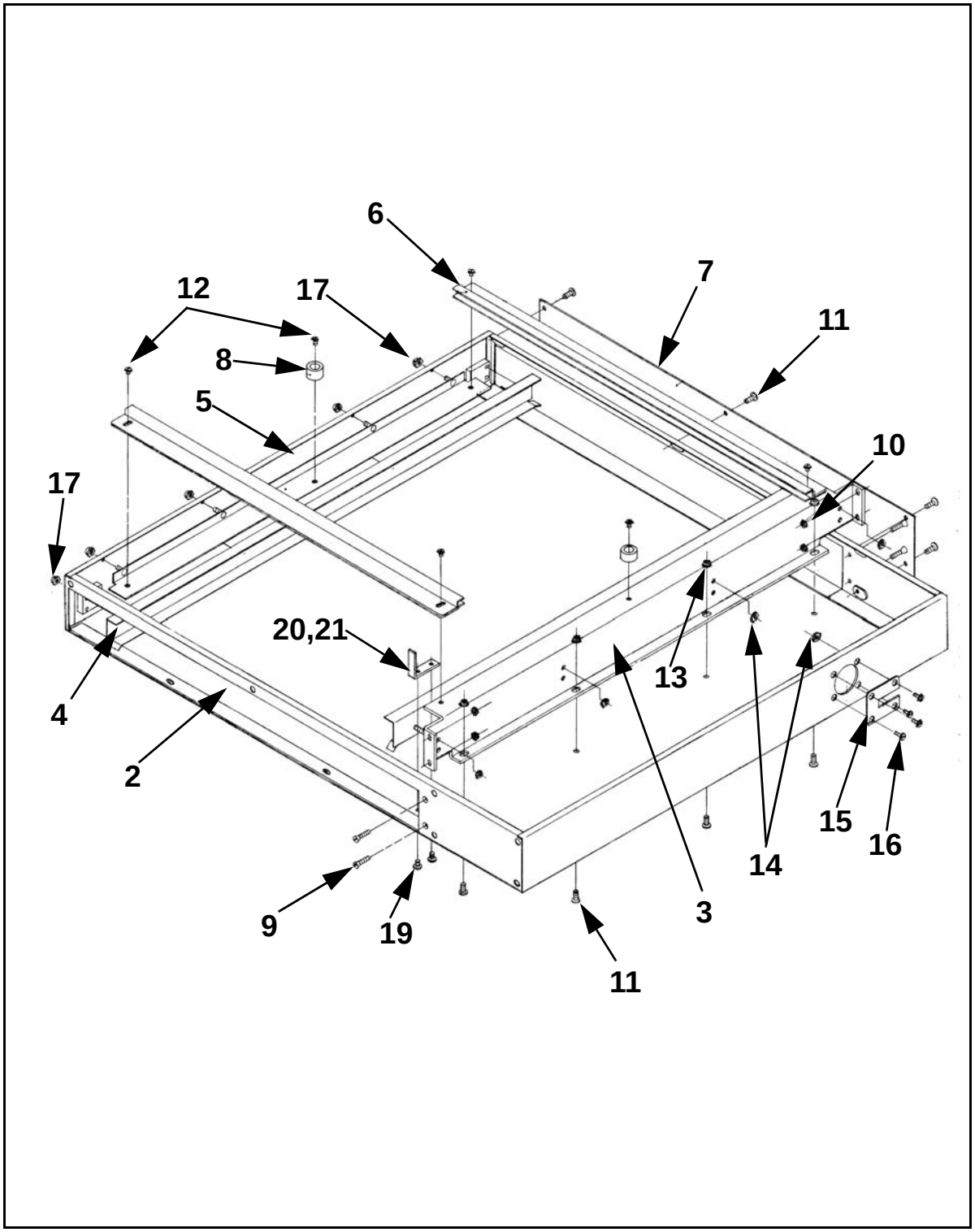

Figure 9-7. Grid Cabinet Assembly

Fig ref.	Part number	Description	Qty
2	114-0344G2	Weldment, Grid Cabinet	1
3	202-0186P2	Inside Framework	1
4	112-0594G1	Channel Assembly	2
5	112-0595G2	Mounting Bracket Assembly	1
6	1417-0117-1	Guide Assembly	2
7	203-0258P2	Rear End Cap	1
8	3920-0295	Plastic Bumper	2
9	46-208908P33	Screw, SFHMS 8-32 X 3/8”	4
10	46-170012P37	Nut, Hex KEPS 8-32 X 5/32”	6
11	46-170015P16	Screw, BHMS 10-32 X 3/8”	8
12	46-170015P8	Screw, BHMS 8-32 X 1/4”	6
13	46-170012P39	Nut, Hex KEPS 10-32 X 5/32”	4
14	46-170012P35	Nut, Hex KEPS 6-32 X 1/4	8
15	203-0263P2	Framework Plate	1
16	46-170015P19	Screw, BHMS 6-32 X 3/8”	4
17	407-0112P1	Nut, Hex Acorn 6-32	8
18	407-0184P1	Grommet	1
19	46-170015P17	Screw, BHMS SEMS 10-32 X 1/4”	2
20	5500-3554-2	Bracket, Stop	1
21	5500-3554	Bracket, Stop	1
22	46-170015P14	Screw, BHMS 8-32 X 3/8	2
23	46-220360P1	Cable Clamp CLN-1/8” Dia	2

Table 9-8: Grid Cabinet Assembly

9.11 PBL Tray Bracket Assembly (5500-2855)

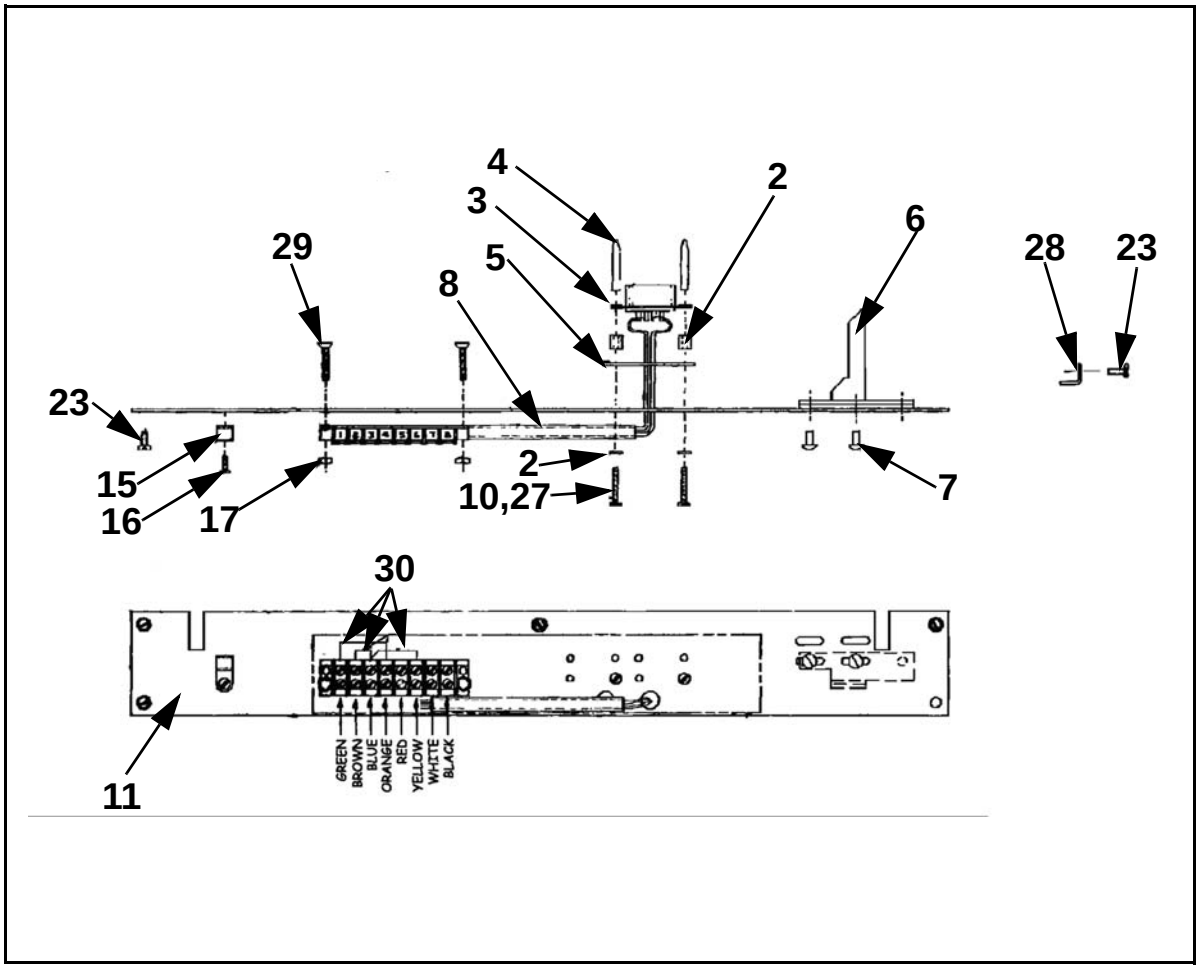

Figure 9-8. PBL Tray Bracket Assembly

Fig ref.	Part number	Description	Qty
2	1417-0604	Spacer-Receptacle	2
3	1417-0602	Amphenol Receptacle Assembly	1
4	1417-0464	Self Centering Stud	2
5	1417-0603	Insulator, Receptacle	1
6	202-5056P1	Tray Bracket	1
7	760-22-19102511	Screw, PPNHM 10-32 X 1/4	2
8	4455-0300	3/8 Sleeving	0.33
9	785-11-11000011	Washer, Flat #4 X 9/32	2
10	4450-0252	Screw, PBHMS 4-40 X 7/8	2
11	5500-2835	Plate	1
12	762-20-14208811	Screw, PFHMS 6-32 X 7/8”	2
14	1417-0468	8 Terminal Strip PBL II	1
15	46-220360P3	Cable Clamp, 1/4” Dia	1
16	4450-0154	Screw, PPHMS Type B #6 X 3/8”	1
17	46-170012P35	Nut, HEX KEPS 6-32 X 1/4”	2
23	46-170015P16	Screw, BHMS SEMS 10-32 X 3/8”	5
25	4463-0100	Lubriplate Auto-Lube	-
26	4455-0123	Terminal, AMP #52949, #6 Spade	12
27	46-170686P2	Sealant, Loctite 242	-
28	203-0305P2	Retainer	1
29	762-20-14206211	Screw, PFHMS 6-32 X 5/8	2
30	126-0005G1	Jumper	3

Table 9-9: PBL Tray Bracket Assembly

9.12 Mounting Frame CMT Digital Receptor (112-5402G1)

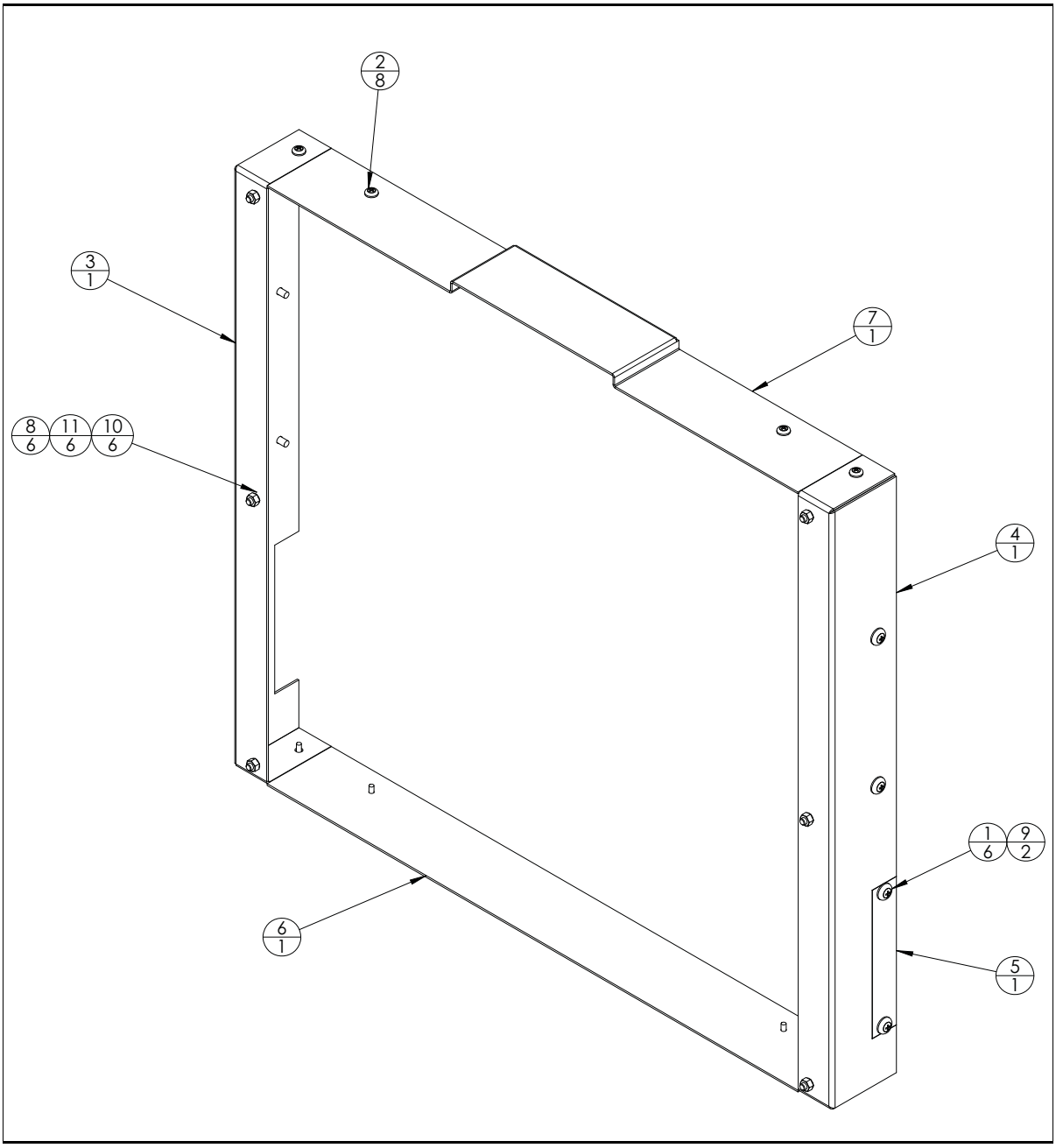

Figure 9-9. Mounting Frame CMT Digital Receptor

Fig ref.	Part number	Description	Qty
1	100012P3	Trim Screw 10-32x3/8	6
2	100012P6	Trim Screw 6-32x5/16	8
3	203-5150P1	Left Bracket	1
4	203-5150P2_MNL	Right Bracket	1
5	203-5151P1	Side Plate	1
6	203-5152P1	Bottom Plate	1
7	203-5153P1	Top Cover	1
8	703-00-05001000_MNL	Screw, SHCS M5x10	6
9	784-12-19100011_MNL	Nut, Hex Keps 10-32	2
10	786-50-19000011	Washer, SPLITLK-STD #10	6
11	720-00-05000001_MNL	Nut, Hex M5	6

Table 9-10: Mounting Frame CMT Digital Receptor

9.13 Mounting Frame Canon 40 Digital Receptor (112-5403G1)

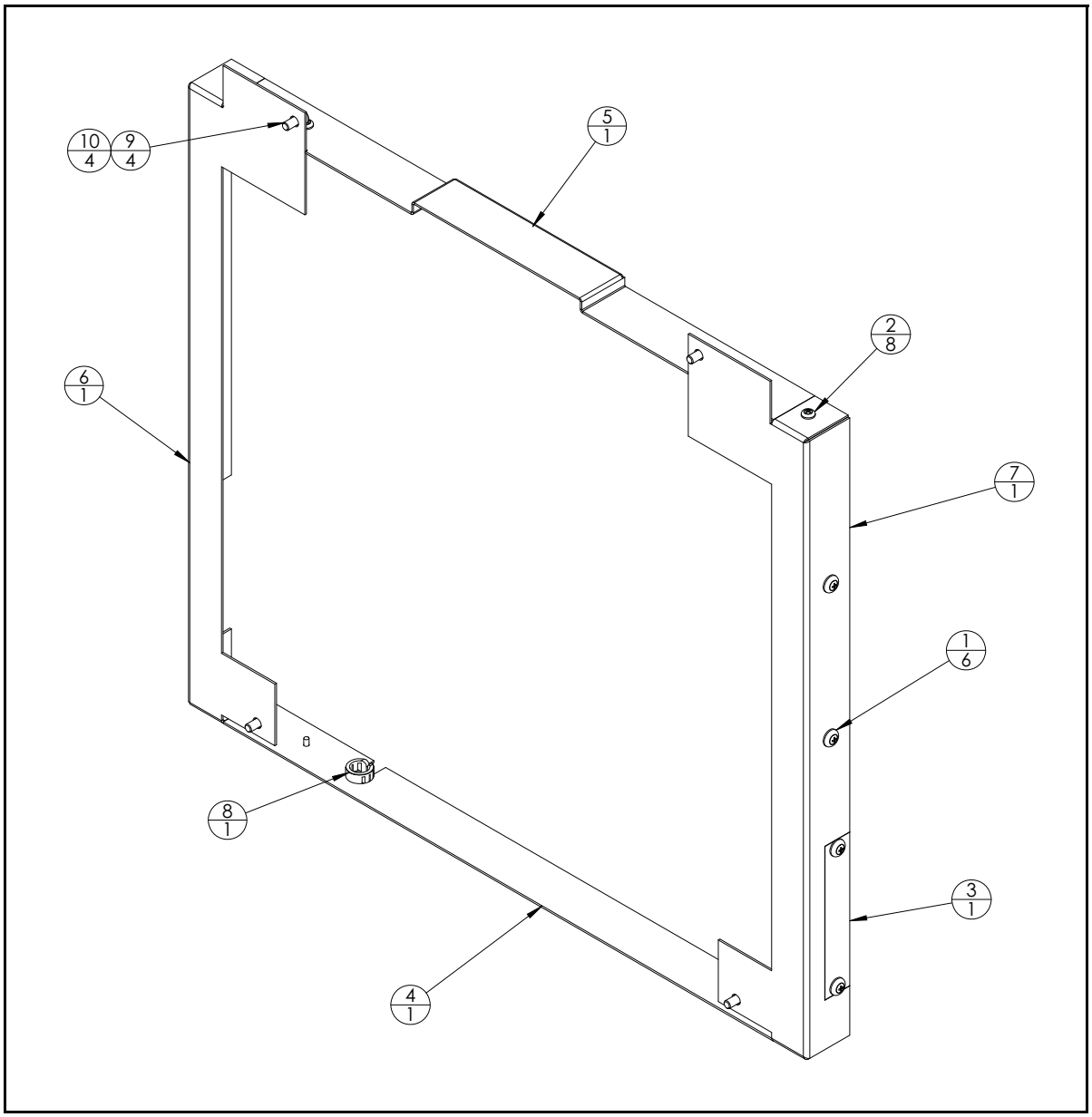

Figure 9-10. Mounting Frame Canon 40 Digital Receptor

Fig ref.	Part number	Description	Qty
1	100012P3	Trim Screw 10-32x3/8	6
2	100012P6	Trim Screw 6-32x5/16	8
3	203-5151P1	Side Plate	1
4	203-5152P2	Bottom Plate	1
5	203-5153P2	Top Cover	1
6	203-5155P1	Bracket, VS-200/Canon 40	1
7	203-5155P2_MNL	Bracket, VS-200/Canon 40	1
8	407-5036P1	Open/Closed Bushing	1
9	703-00-06001201_MNL	Screw, SHCS M6x12	4
10	786-50-25000011_MNL	Washer, SPLITLK-STD 1/4	4

Table 9-11: Mounting Frame Canon 40 Digital Receptor

9.14 Mounting Frame Canon 50 Digital Receptor (112-5404G1)

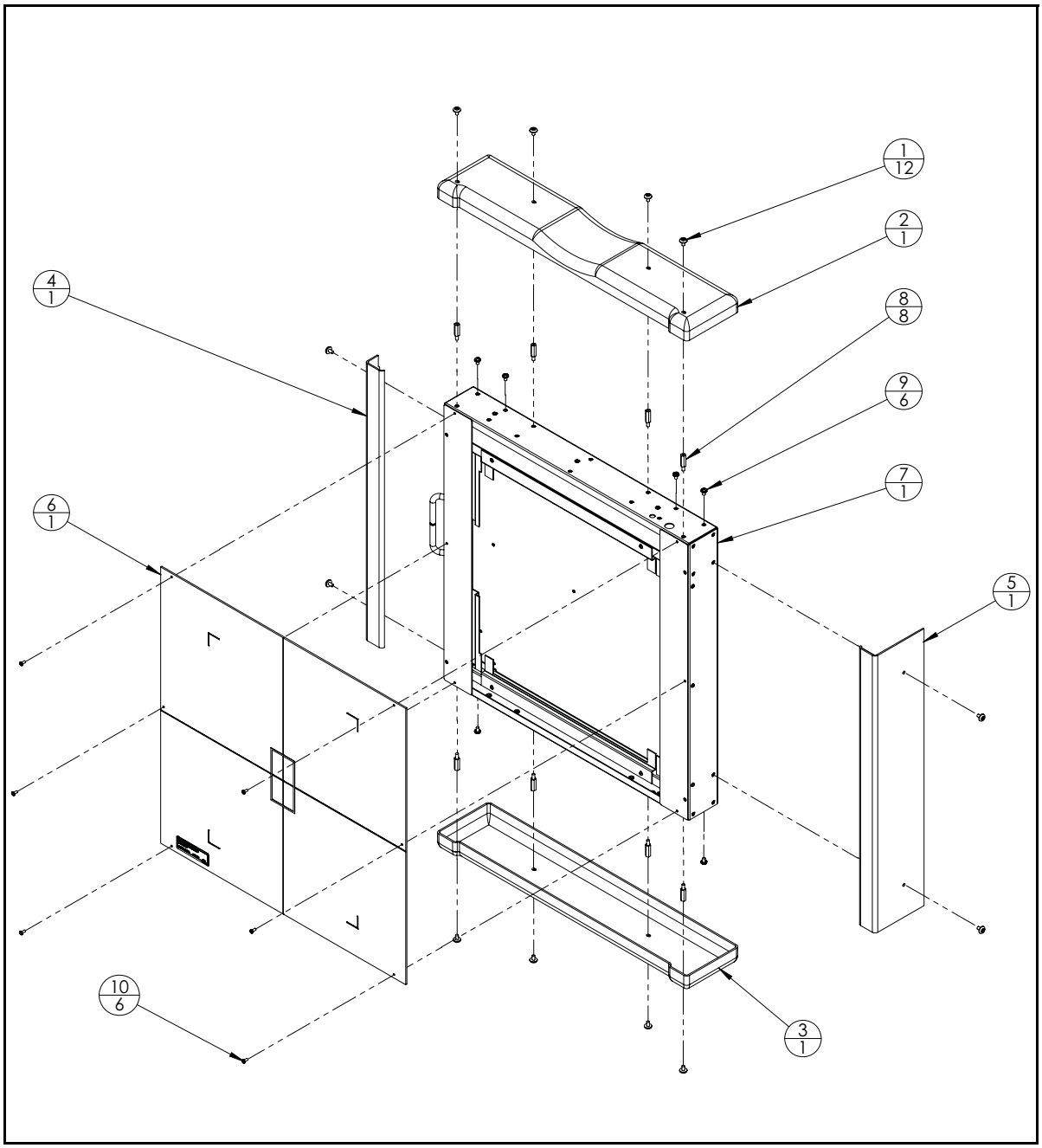

Figure 9-11. Mounting Frame Canon 50 Digital Receptor

Fig ref.	Part number	Description	Qty
1	100012P3	Trim Screw 10-32x3/8	12
2	214-5016P1	Top Cover, VS-200/Canon 50	1
3	214-5017_MNL	Bottom Cover, VS-200/Canon 50	1
4	214-5018P2MNL	Short Side Cover, VS-200/Canon 50	1
5	214-5018P1_MNL	Long Side Cover, VS-200/Canon 50	1
6	306-5011P2	Front Panel, Canon 50 Bucky	1
7	500-5081_MNL	Canon 50 Bucky	1
8	642-0018P17	Standoff M-F, 10-32x7/8, Zink Plt.	8
9	760-22-19103111_MNL	Screw, PPNHMS SEMS 10-32x5/16	6
10	760-20-14203111_MNL	Screw, PPNHMS 6-32x5/16	6

Table 9-12: Mounting Frame Canon 50 Digital Receptor

9.15 Varian Panel Cabinet Assembly (112-5504G1)

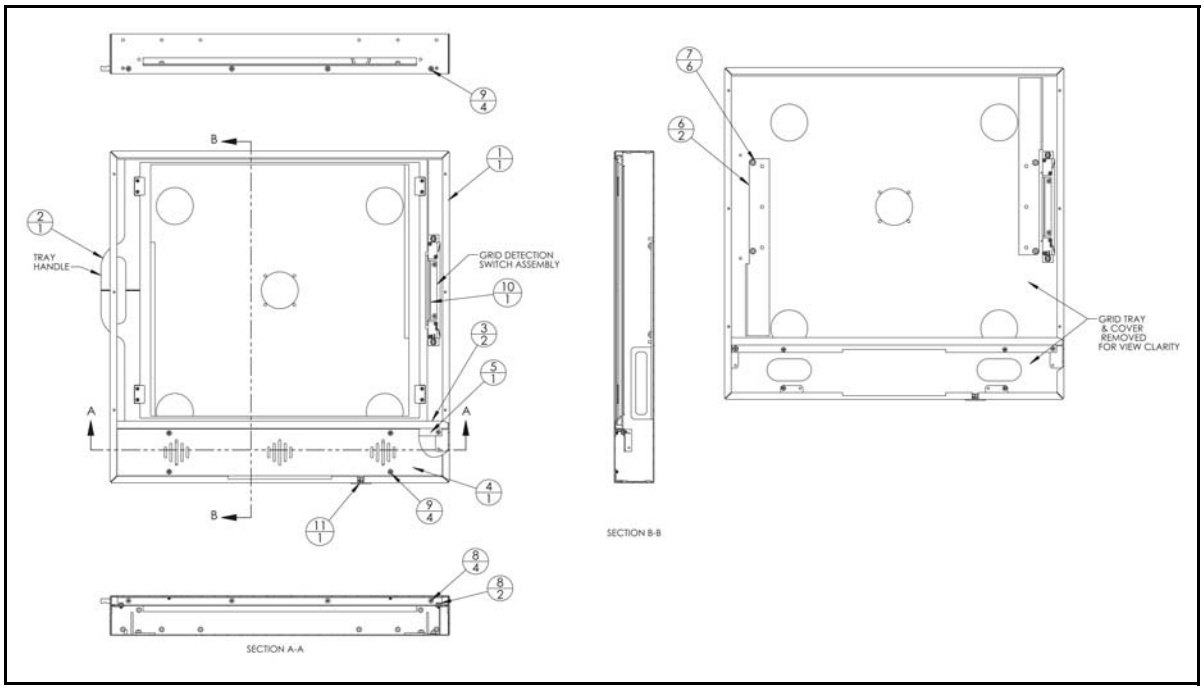

Figure 9-12. Varian Panel Cabinet Assembly (112-5504G1)

Fig ref.	Part number	Description	Qty
1	114-5174P1	Weldment, Cabinet, Varian	1
2	112-5501G1	Varian Cabinet Grid Tray Assembly (Refer to Section 9.16) for Break-down of Assembly)	1
3	214-5035P1	Channel, Tray	2
4	203-5218P1	Cover	1
5	203-5219P1	Bracket, Track Support	1
6	210-5089P1	Spacer, Receptor	2
7	784-12-16200011	Nut, Hex KEPS 8-32	6
8	760-22-16202511	Screw, PPNMS SEMS 8-32 X 1/4”	6
9	736-20-16202511	Screw, UPFHMS #8-32 X 1/4”	8
10	112-5503G1	Grid Detection Switch Assembly (Refer to Section 9.17) for Break-down of Assembly)	1
11	407-5003P39	Bushing, Snap	1

Table 9-13: Varian Panel Cabinet Assembly

9.16 Varian Cabinet Grid Tray Assembly (112-5501)

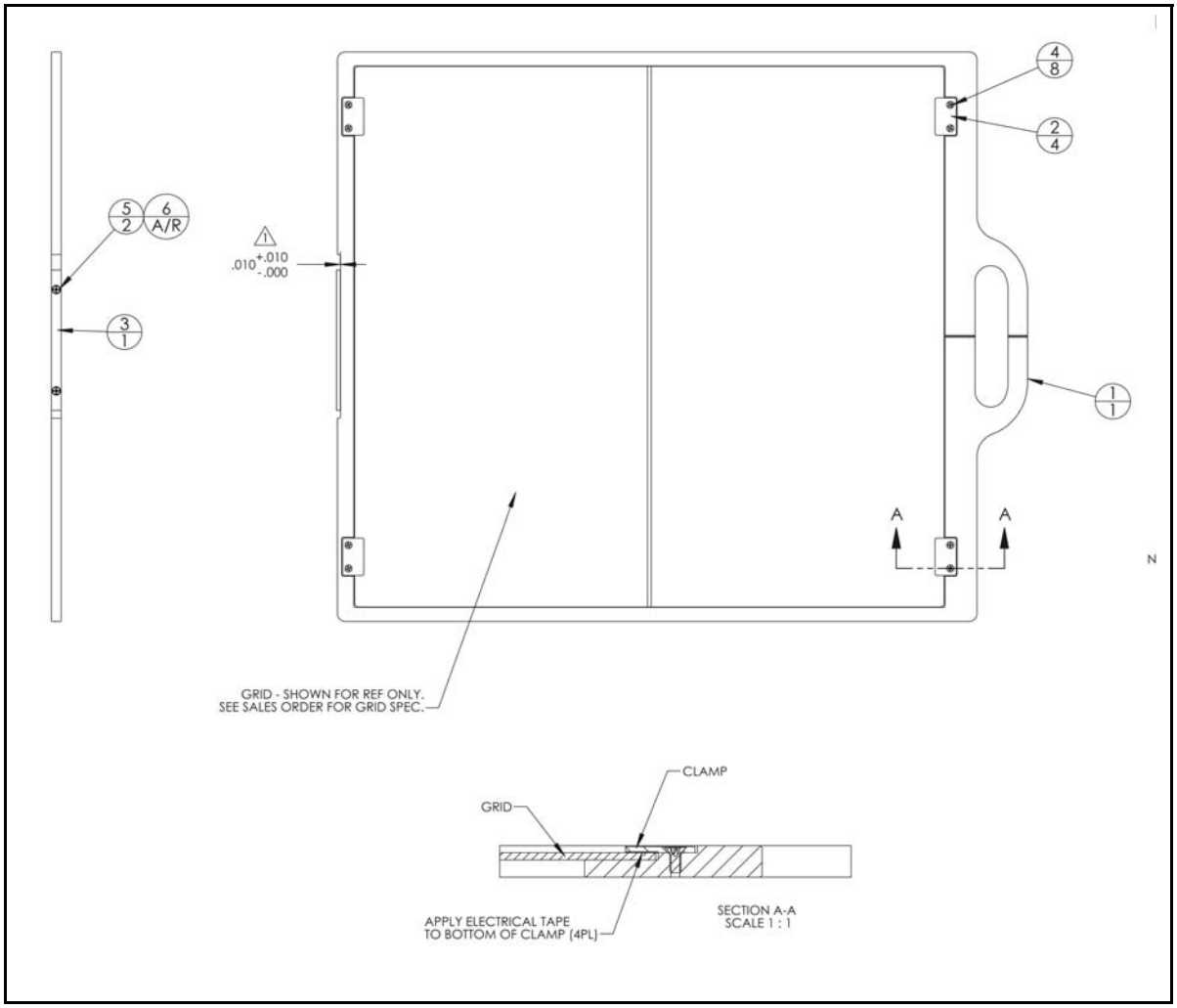

Figure 9-13. Varian Cabinet Grid Tray Assembly

Fig ref.	Part number	Description	Qty
1	210-5088P1	Tray, Grid	1
2	203-5212P1	Clamp, Grid	4
3	201-5168P1	Stop, Tray	1
4	763-20-11202511	Screw, PFHMSUC, 4-40 X 1/4”	8
5	762-20-14210011	Screw, PFHMS 6-32 X 3/8”	2
6	410-5005P1	Threadlocker, #242 Blue	1

Table 9-14: Varian Cabinet Grid Tray Assembly

9.17 Grid Detection Switch Assembly (112-5503)

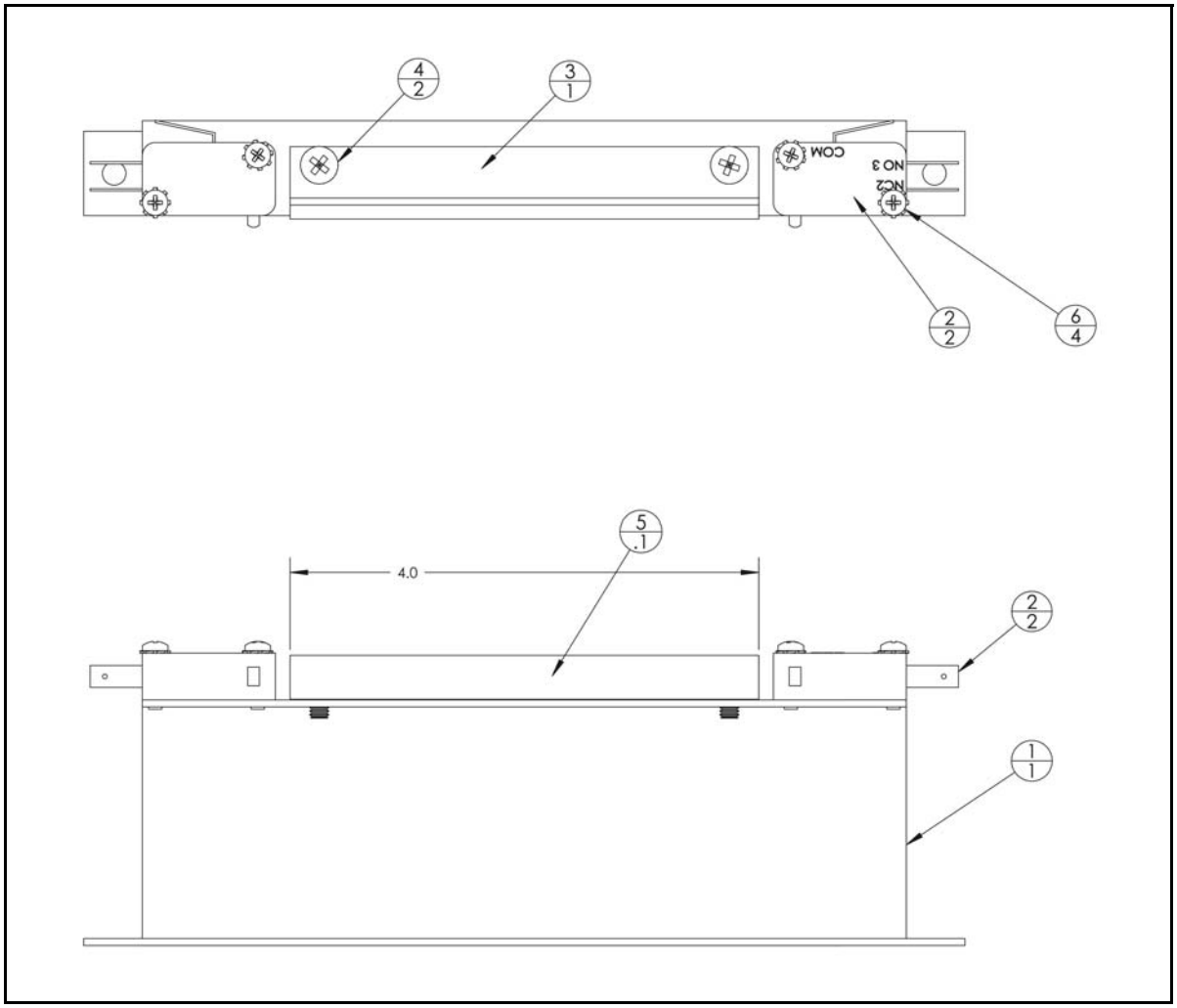

Figure 9-14. Grid Detection Switch Assembly

Fig ref.	Part number	Description	Qty
1	203-5215P1	Bracker, Switch, Mounting	1
2	632-0013P1	Switch, Limit	2
3	203-5216P1	Bracket, Tray Stop	1
4	760-22-1620511	Screw, PPNHMS SEMS 8-32 X 1/4”	2
5	412-5005P1	Magnetic Strip, 3” X 1/8”	1
6	760-22-11205011	Screw, PPNHMS SEMS 4-40 X 1/2”	4

Table 9-15: Grid Detection Switch Assembly

9.18 Varian Cabinet Loose Parts Kit (112-5504)

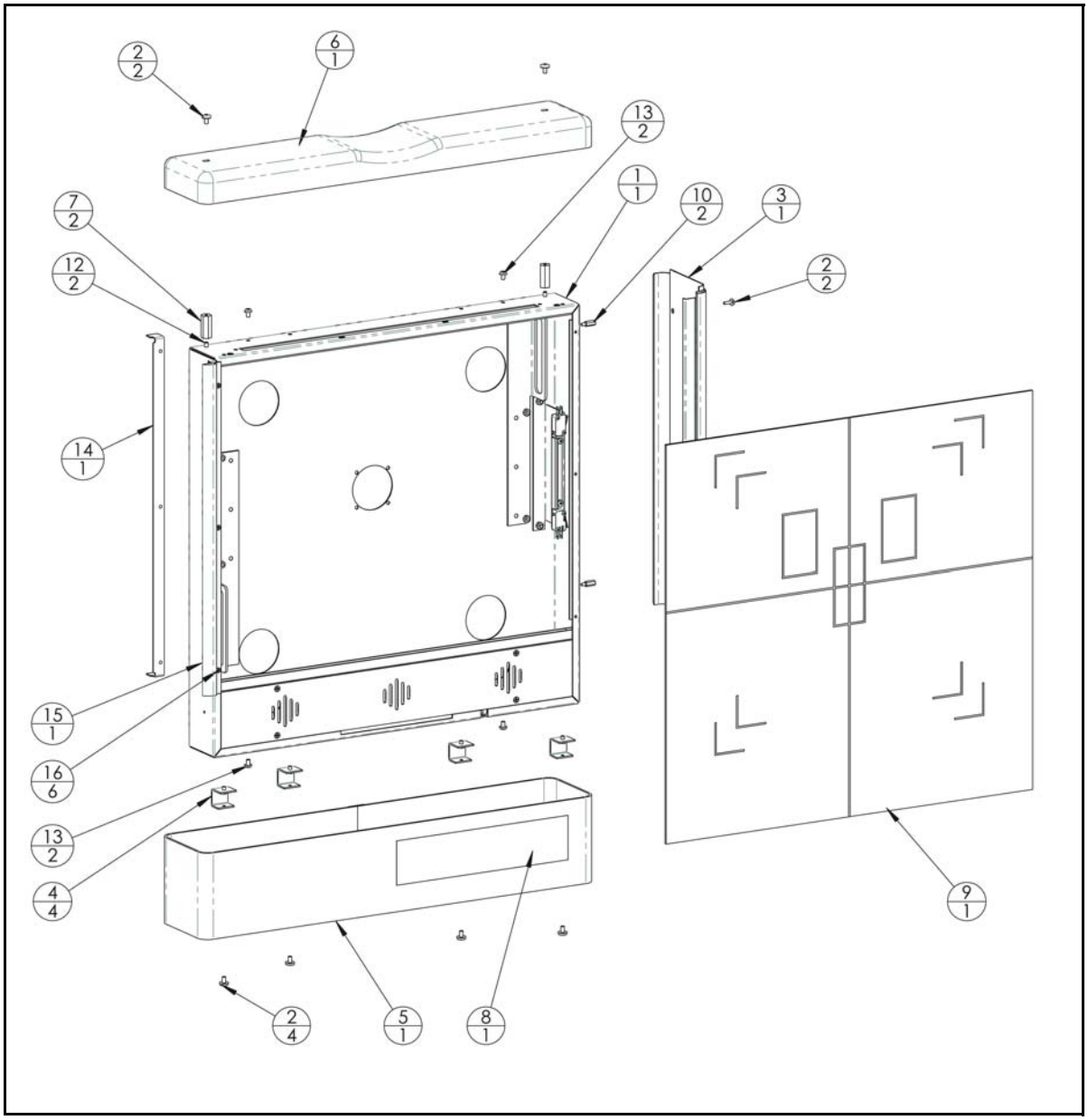

Figure 9-15. Varian Cabinet Loose Parts Kit

Fig ref.	Part number	Description	Qty
1	112-5500G1	Varian Panel Cabinet Assembly	1
2	100012P7	Screw, Trim 6-32 X 1/2”	8
3	210-5013P1	Middle Cover (Medical White)	1
4	202-5003P1	Bracket, Cover, Mounting	4
5	210-5015P1	Bottom Cover (Medical White)	1
6	214-5012P1	Top Cover (Medical White)	1
7	232-5001P2	Spacer, Top Cover	2
8	408-5099P2	Label, Del Med, Logo Blue	1
9	306-5014P2	Front Panel, Varian W/Certification Label	1
10	642-0018P10	Standoff, M-F 6-32 X 9/16” Brass	2
11	751-02-19102511	Screw, HHMS 10-32 X 1/4” SEMS	4
12	757-41-19103810	Screw, SHSSCP 10-32 X 3/8”	2
13	760-22-19103111	Screw, PPNHMS SEMS 10-32 X 5/16’	4
14	203-5220P1	Cover, Handle Side	1
15	210-5090P1	Trim Bar	1
16	769-20-14201911	Screw, PFHMSUC, 6-32 X 3/16”	6

Table 9-16: Varian Cabinet Loose Parts Kit

9.19 Cooling Fan Assembly (112-5505)

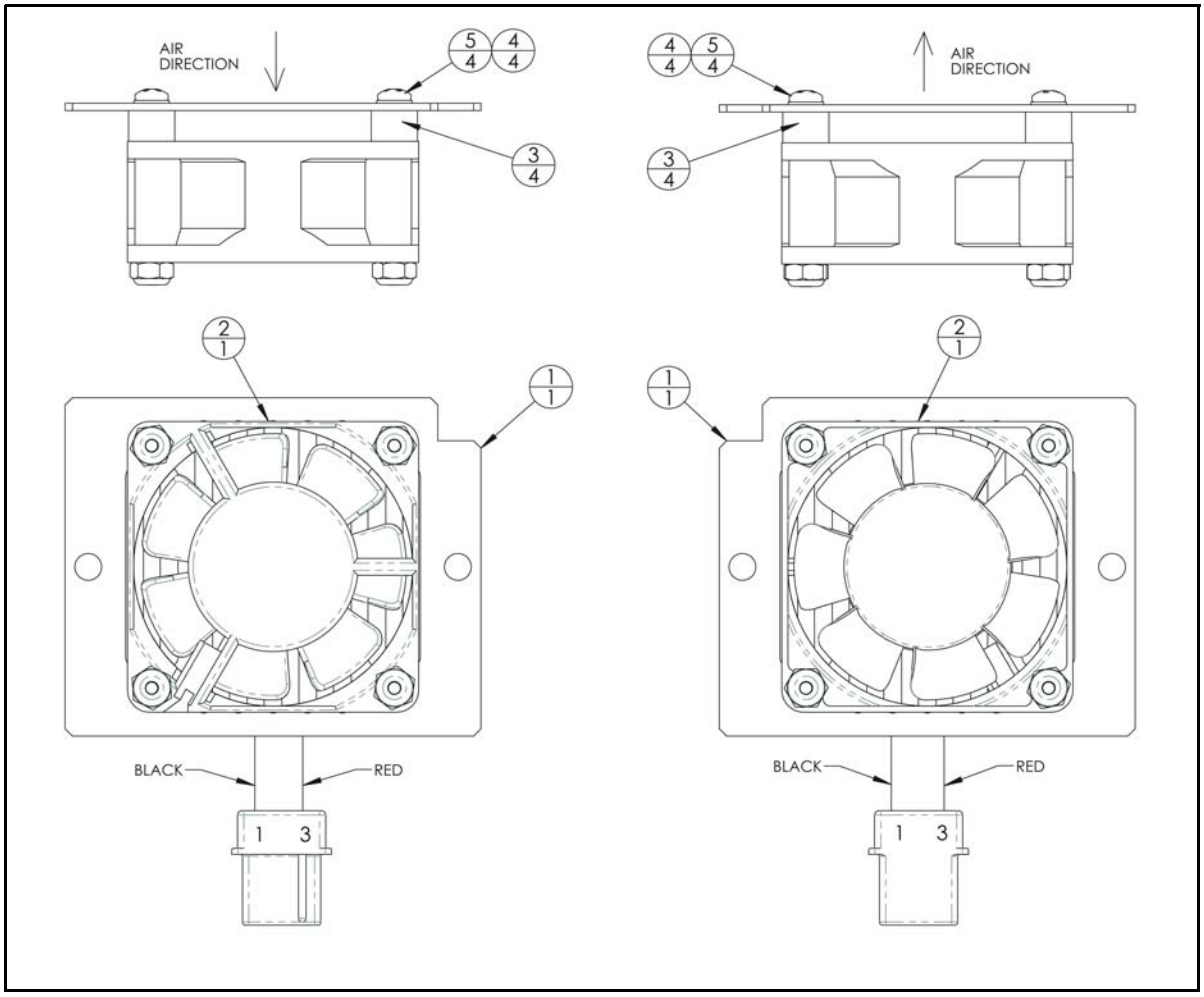

Figure 9-16. Cooling Fan Assembly

Fig ref.	Part number	Description	Qty
1	203-5223P1	Cover, Fan	1
2	652-5012	Fan, Cooling 24VDC	1
3	273-5001P1	Bushing, .38OD, .194 ID .25Lg Nylon	4
4	786-2014000011	Washer, Lock Int. #6	4
5	760-20-14215011	Screw, PPNHMS 6-32 X 1 1/2”	4
6	784-43-14200011	Nut, Hex, Nylock 6-32	4
7	46-170451P6	Connectro Amp 1-480305-0	1
8	511A590P 152	Terminal, Amp 61116-4 TIN	2

Table 9-17: Cooling Fan Assembly

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9.20 Toshiba Panel Cabinet Assembly (112-5526G1)

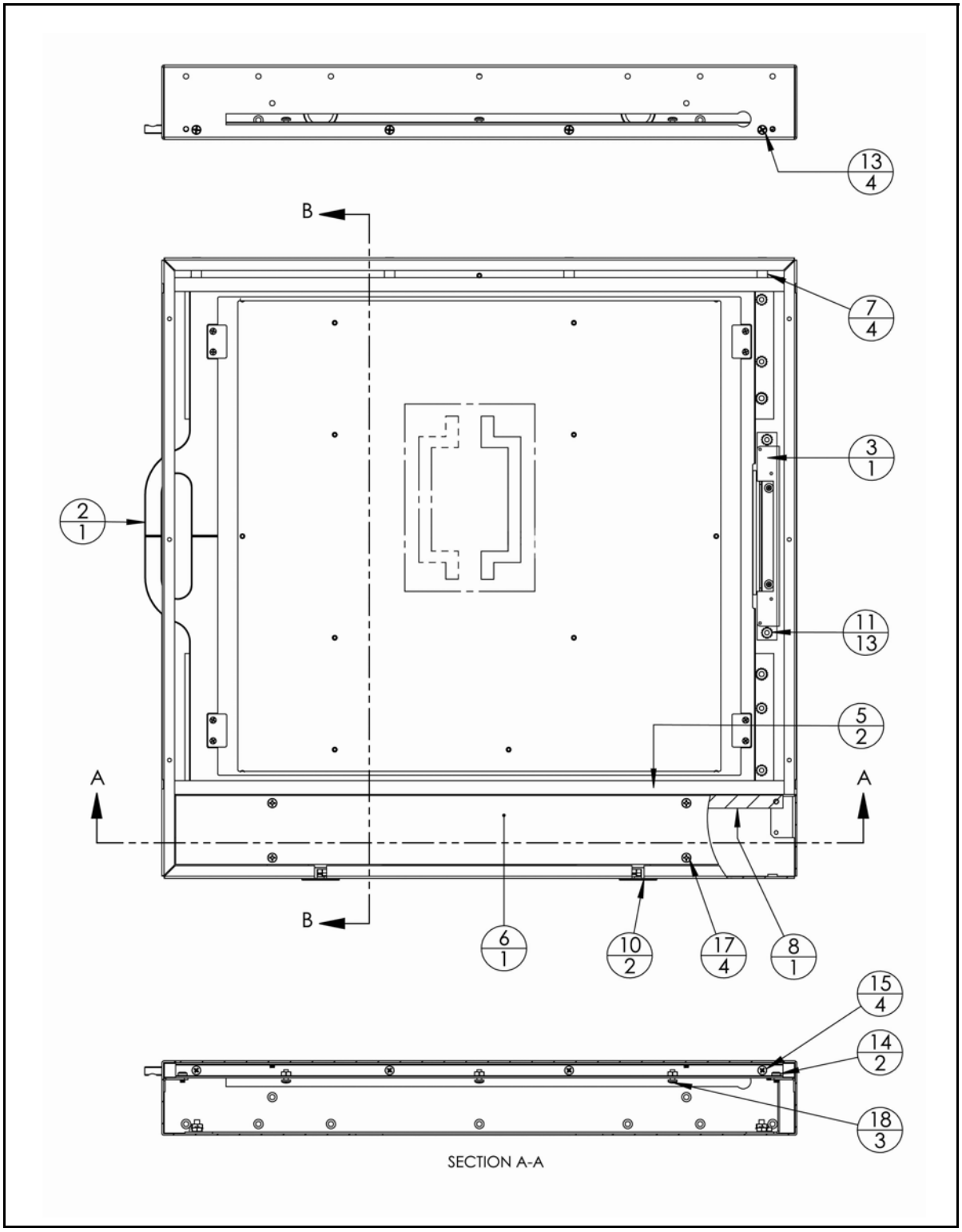

Figure 9-17. Toshiba Panel Cabinet Assembly (112-5526G1) Part A

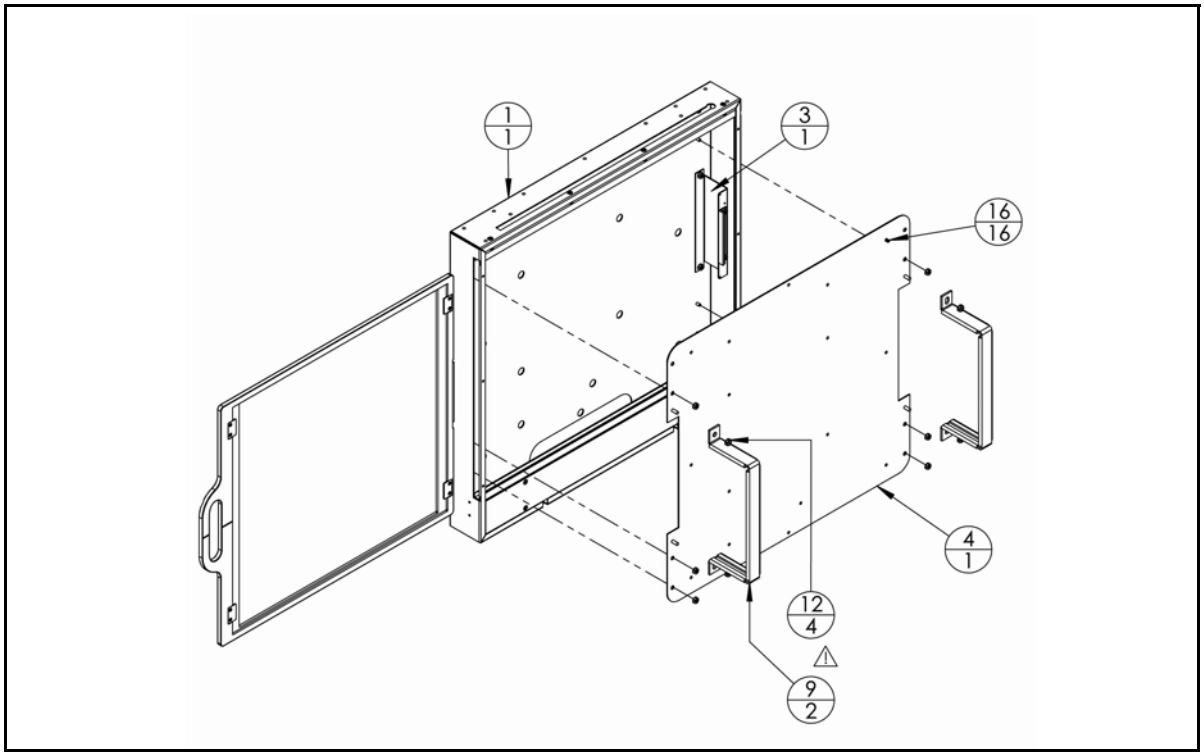

Figure 9-18. Toshiba Panel Cabinet Assembly (112-5526G1) Part B

Fig ref.	Part number	Description	Qty
1	114-5182P1	Weldment, Cabinet, Toshiba FDX4343R	1
2	112-5501G1	Assy, Grid Tray, Varian Cab.	1
3	112-5503G2	Assy, Stop, Grid Tray	1
4	203-5228P1	Adapter Plate	2
5	214-5035P1	Channel, Tray	1
6	203-5226P1	Cover	1
7	250-5030P1	Spacer	4
8	2035219P1	Brkt, Track Support	1
9	201-5177P1	Handle	2
10	407-5003P39	Bushing	2
11	784-12-16200011	Nut, Hex KEPS 8-32	13
12	784-12-19100011	Nut, Hex, KEPS 10-32	4
13	762-20-16208811	Screw, PFHMS 8-32 X 7/8”	4
14	760-22-16202511	Screw,PPNHMS SEMS 8-32 X 1/4”	2
15	760-22-16203111	Screw, PPNHMS SEMS 8-32 X .312	4
16	705-00-04000800	Screw, FSHMS M$ X 8	16
17	763-20-16202511	Screw, UPFHMS 8-32 X 1/4”	4
18	760-20-16203811	Screw, PPNHMS 8-32 X 3/8”	3

Table 9-18: Toshiba Panel Cabinet Assembly

9.21 Toshiba Panel Cabinet Loose Parts Kit (112-5527G1)

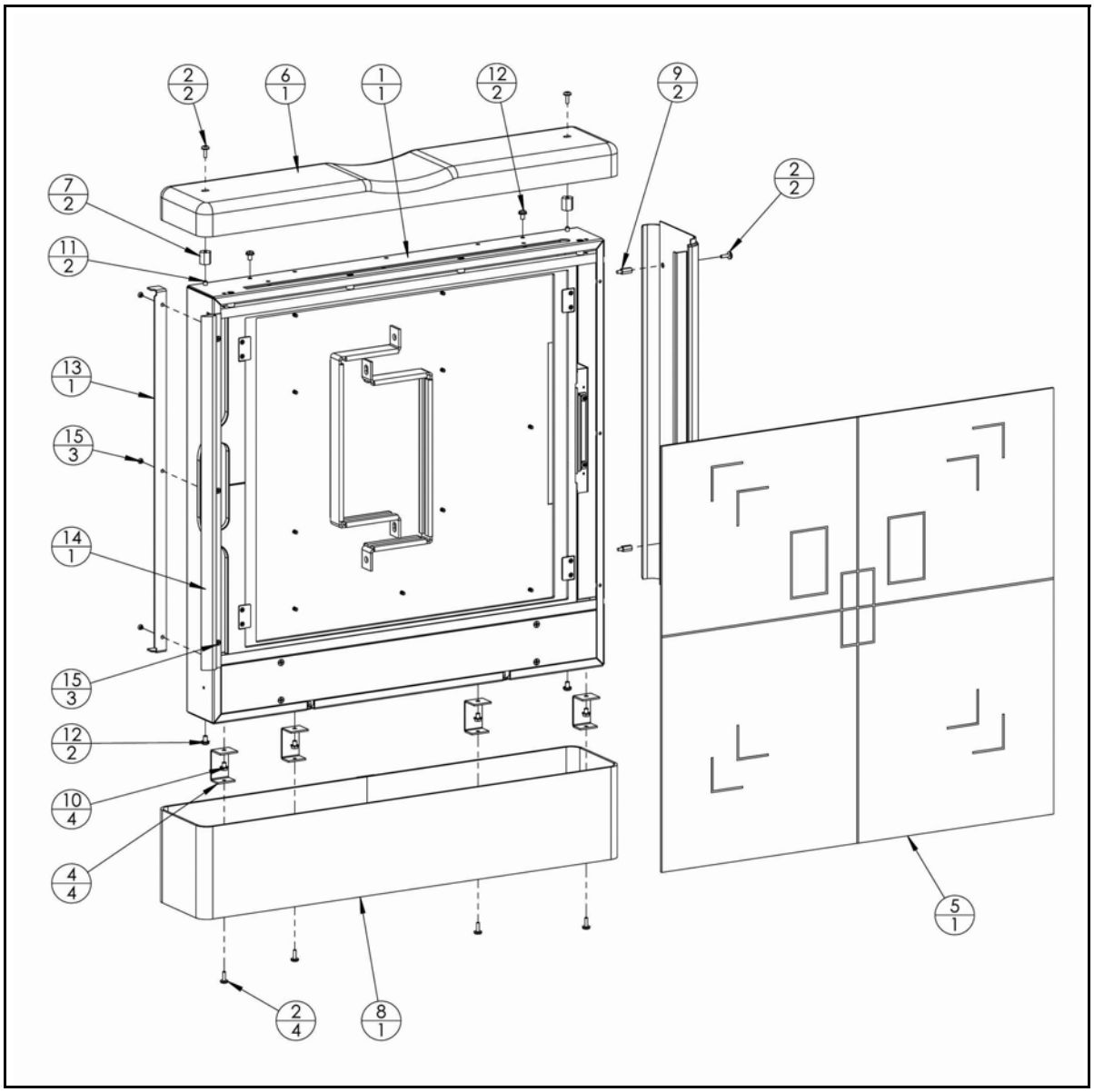

Figure 9-19. Toshiba Panel Loose Parts Kit (112-5527G1)

Fig ref.	Part number	Description	Qty
1	112-5526G1	Assembly, Cabinet, Toshiba FDX4343R	1
2	1000112P7	Screw, Trim 6-32 X 1/2”	8
3	210-5013P1	Middle Cover (Medical White)	1
4	203-5229	Bracket, Cover Mounting	4
5	306-5015P2	Front Panel, Varian w/certification Label	1
6	214-5012P1	Top Cover, Medical White	1
7	232-5004	Spacer, Cover	2
8	210-5015P1	Bottom Cover (Medical White)	1
9	642-0018P10	Standoff M-F 6-32 X 9/16” Brass	2
10	751-02-19102511	Screw, HHMS 10-32 X 1/4” SEMS	4
11	757-41-1910-3810	Screw, SHSSCP 10-32 X 3/8”	2
12	760-22-19103111	Screw, PPNHMS SEMS 10-32 X 5/16”	4
13	203-5220P1	Cover, Handle Side	1
14	210-5090P1	Trim Bar	1
15	736-20-14201911	Screw, PFHMSUC 6-32 X 3/16”	

Table 9-19: Toshiba Panel Loose Parts Kit

9.22 Toshiba Panel Junction Box (112-5528G1)

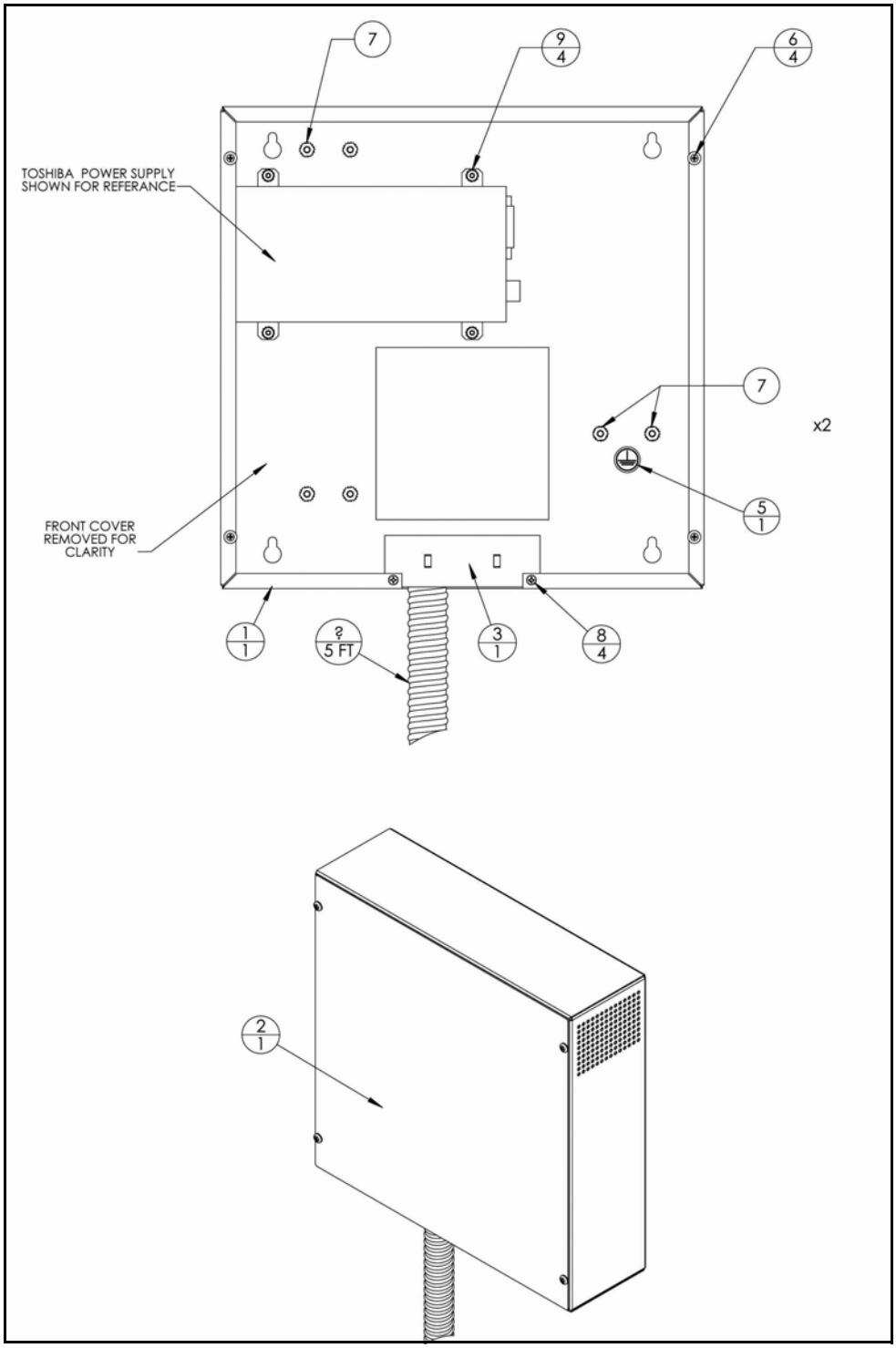

Figure 9-20. Toshiba Panel Junction Box (112-5528G1)

Fig ref.	Part number	Description	Qty
1	204-5059P1	Enclosure, Power Supply	1
2	204-5060P1	Cover, Enclosure	1
3	204-5056P1	Bracket, Cable Entrance	1
4	643-5002P1	Hose 1” ID Mushroom	5’
5	408-5039P1	Label, Earth Ground	1
6	100012PB	Screw, Trim 8-32 X 3/8”	4
7	784-12-19100011	Nut, KEPS 10-32	8
8	763-20-14201911	Screw, PFHMSUC 6-32 X 3/16”	4
9	784-12-14200011	Nut, Hex, KEPDS 6-32	4

Table 9-20: Toshiba Panel Junction Box

9.23 VS200 Wallstand Accessories

Part Number	Description	Qty
103101L18	10:1 103 Line Grid Replaces 8:1 103 Line Grid	1
103121L18	12:1 103 Line Grid Replaces 8:1 103 Line Grid	1
500-0008P2	ION Chamber ICX 159	1
110-5022G1	Patient Hand Grips - Overhead Lateral	1
B1051	Touch Up Paint -Bottle (Medical White)	1
8000-VS200NM	VS-200 Wallstand Installation, Operation & Maintenance Manual	1
8000-VS200-FMK	Floor Mount Kit Installation Instructions	1
8000-VS200-ATK	Auto Tracking Kit Installation Instructions	1

Table 9-21: Wallstand Accessories

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