

**Rad Room
Service Manual**

Technical Publication
SM-0520R9_EN_NLG

Service Manual

RAD ROOM

Technical Publication
SM-0520R9_EN_NLG

Service Manual

RAD Room

The information comprised in this manual applies to the following equipments
La información contenida en este manual se aplica a los siguientes equipos
L'information contenue dans ce manuel est appliquée aux équipements suivants

Radiographic System MILLENNIUM
MILLENNIUM (Proteus XR/i) composed of:
Tube Stand MILLENNIUM: MILL-FMFS or
Tube Stand AD MILLENNIUM: MILL-FMFSAD
Fixed Height Table MILLENNIUM: MILL-FWFTT-B or
Elevating Table MILLENNIUM: MILL-EL-B
Wall Stand MILLENNIUM: MILL-WBS
Power Supply: BRAKE BOX

Manufactured by:
Fabricado por:
Fabriqué par:

SEDECAL

Sociedad Española de Electromedicina y Calidad S.A.
Pelaya, 9 - 13. Polígono Industrial "Río de Janeiro"
28110 Algete, Madrid - España (Spain)

Phone: +34 916 280 544 Fax: +34 902 190 385 www.sedecal.com

REVISION HISTORY

REVISION	DATE	REASON FOR CHANGE
2	Nov 27, 2003	Ground Connection Note
3	Jan 27, 2005	Automatic Collimator Schematics
4	Mar 7, 2005	New Illustrations and Photos
5	Dec 28, 2006	New Renewal parts Illustrations and Photos
6	May 25, 2010	Improved Renewal Parts
7	Jul 22, 2011	Table Brakes
8	Jan 24, 2013	IEC Standards Update
9	APR 30, 2015	Renewal Parts Update and New Inverter

This Document is the english original version, edited and supplied by the manufacturer.

The Revision state of this Document is indicated in the code number shown at the bottom of this page.

ADVISORY SYMBOLS

The following advisory symbols will be used throughout this manual. Their application and meaning are described below.



DANGERS ADVISE OF CONDITIONS OR SITUATIONS THAT IF NOT HEHEDED OR AVOIDED WILL CAUSE SERIOUS PERSONAL INJURY OR DEATH.



ADVISE OF CONDITIONS OR SITUATIONS THAT IF NOT HEHEDED OR AVOIDED COULD CAUSE SERIOUS PERSONAL INJURY, OR CATASTROPHIC DAMAGE OF EQUIPMENT OR DATA.



Advise of conditions or situations that if not heeded or avoided could cause personal injury or damage to equipment or data.








Note 










Alert readers to pertinent facts and conditions. Notes represent information that is important to know but which do not necessarily relate to possible injury or damage to equipment.



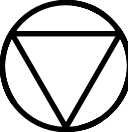


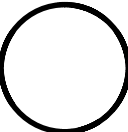
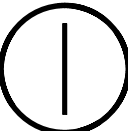



SAFETY SYMBOLS

The following safety symbols may appear in the equipment.

Their meaning are described below.

	Caution. Consult accompanying documents.
	Safety Symbol. Follow instructions for use, especially those instructions identified with Advisory Symbols to avoid any risk for the Patient or Operator. <i>(Only applies to IEC 60601-1 Standard - Third edition)</i>
	General Mandatory action.
	Type B applied part.
IPX0	Protection against harmful ingress of water or particulate matter. IP Classification: Ordinary.
	Ionizing radiation.
	Non-ionizing electromagnetic radiation.
	Radiation of Laser apparatus. Do not stare into beam. <i>(Only applicable to equipment with Laser Pointer)</i>

	<p>Dangerous voltage.</p>
	<p>General warning, caution, risk of danger.</p>
	<p>Warning: Ionizing radiation.</p>
	<p>Warning: Non-ionizing radiation.</p>
	<p>Warning: Laser beam.</p>
	<p>Warning: Dangerous voltage.</p>
	<p>Warning: Do not place fingers between mobile and fixed parts of the equipment, it may cause serious injuries to patient or operator. As well, make sure the patient extremities are correctly positioned into limit areas during operation, movement of parts may cause serious damages to patient.</p>
	<p>Electrostatic sensitive devices.</p>
	<p>No pushing.</p>

	<p>No sitting.</p>
	<p>No stepping on surface.</p>
	<p>Stop (of action).</p>
	<p>Emergency stop.</p>
	<p>“ON” power.</p>
	<p>“OFF” power.</p>
	<p>“ON” / “OFF” (push-push). <i>Each position, “ON” or “OFF”, is a stable position.</i></p>
	<p>Alternating current.</p>
	<p>Three-phase alternating current.</p>
	<p>Three-phase alternating current with neutral conductor.</p>

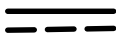






N	Connection point for the neutral conductor on Permanently Installed equipment.
	Direct current.
	Both direct and alternating current.
	Protective Earth (Ground).
	Earth (Ground).
	This symbol according to the European Directive indicates that the Waste of Electrical and Electronic Equipment (WEEE) must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer or an authorized waste management company for information concerning the decommissioning of your equipment.
	This separate collection symbol is affixed to a battery or its packing, to advise that the battery must be recycled or disposed of in accordance with local or country laws. The letters below the symbol indicate whether certain elements (Li=Lithium, PB=Lead, CD=Cadmium, Hg=Mercury) are contained in the battery. All batteries removed from the equipment must be properly recycled or disposed. Please contact an authorized representative of the manufacturer or an authorized waste management company for information concerning the decommissioning of your equipment.
	Pollution Control. <i>(Only applicable to People's Republic of China (PRC)).</i> This symbol indicates the product contains hazardous materials in excess of the limits established by the Chinese Standards. It must not be disposed of as unsorted municipal waste and must be collected separately. Please contact an authorized representative of the manufacturer or an authorized waste management company for information concerning the decommissioning of your equipment.

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Objective and Scope of this Manual	1
1.2	Tools and Test Equipment	1
1.3	Pre-installation Checks	2
1.3.1	Cable Access	10
2	TECHNICAL SPECIFICATIONS	11
3	SYSTEM INSTALLATION GUIDE	21
4	UNPACKING	29
5	INSTALLATION	31
5.1	Tools	31
5.2	Floor Mounted Tube Stand	32
5.3	Installation of the Radiographic Table	47
5.3.1	Elevating Table	47
5.3.2	Four Way Floating-top Table	54
5.3.2.1	Installation of the Adhesive Scales for Sid Reference	56
5.3.3	Installation Example of a Digital Detector In The Rad Table	57
5.4	Wall Stand	65
5.4.1	Installation Example of a Digital Detector in the Wall Stand	71
5.4.2	General View of the Assembly for Fixed Digital Detector	76
5.4.3	General View of the Assembly for Portable Digital Detector	77
5.5	Cable Routing	78
5.6	Final Installation and Checks	78
6	ADJUSTMENTS	79
6.1	Adjustment Tools	79

Section	Page
6.2 Alignment of X-ray Beam	79
6.2.1 Alignment of X-ray Beam with Radiographic Table	79
6.2.2 Alignment of Light Field with X-ray Field	82
6.2.3 Perpendicularity Adjustment of X-ray Beam with Image Receptor ...	85
6.2.4 Centering of X-ray Field and Image Receptor	87
6.3 Alignment of x-Ray Beam with Wall Stand	88
6.4 SID Indicator Test	89
6.5 Field Size Indicator Test	92
6.6 Collimator Lamp Brightness Test	94
6.6.1 Collimator Light Field Intensity	94
6.6.2 Collimator Light Field Contrast Ratio	96
7 CONFIGURATION AND CALIBRATION OF THE TUBE STAND	99
7.1 Take a Few Minutes to Learn How to Use the Digital Control Panel	99
7.2 Configuration Process	101
7.3 Calibration of Tube Stand	105
8 TROUBLESHOOTING	111
8.1 Adjustment of Potentiometers	111
8.1.1 Adjustment of Potentiometer at Arm	111
8.1.2 Adjustment of Potentiometer at Column Top	112
8.1.3 Adjustment of Potentiometer at Elevating Table	112
8.2 Replacement of the X-ray Tube or Collimator	113
8.2.1 Adding or Removing Counterweight Plates in Column	113
8.3 Adjustment of Table-Top Brakes Height	114
8.4 Replacement of Motor Inverter	114
8.5 Error Codes	118

Section	Page
8.6 Initializing Eeprom Memory in the Column Control Panel	119
8.7 Elevating Table Switch Locations	119
8.8 Covers Disassembling with Elevating Table Down	120
8.9 Restoring Vertical Movement for the Rad Elevating Table Due to “down Safety” (Sw8) Microswitch Activation	122
9 PERIODIC MAINTENANCE	127
9.1 Maintenance Activities Description	127
9.2 Checking the Floor Mounted Tube Stand	128
9.3 Checking the Radiographic Table	128
9.4 Checking the Wall Stand	129
9.5 Check Off Maintenance Revision Table	129
10 RENEWAL PARTS OF THE RAD ROOM	131
11 SYSTEM INTERCONNECTION MAPS	197

SECTION 1 INTRODUCTION

1.1 OBJECTIVE AND SCOPE OF THIS MANUAL

This Service Manual is intended to describe the installation, adjustments, configuration, calibration, troubleshooting and periodic maintenance of the Radiographic Room.



OPERATOR AND SERVICE MANUALS SHOULD BE CAREFULLY READ AND UNDERSTOOD BY SERVICE PERSONNEL BEFORE USING AND SERVICING THE EQUIPMENT, ESPECIALLY THE INSTRUCTIONS CONCERNING SAFETY, REGULATORY, DOSAGE AND RADIATION PROTECTION. KEEP THE MANUALS WITH THE EQUIPMENT AT ALL TIMES AND PERIODICALLY REVIEW THE OPERATING AND SAFETY INSTRUCTIONS.



SERVICE PERSONNEL MUST HAVE SUFFICIENT KNOWLEDGE TO COMPETENTLY PERFORM THE SERVICE TASKS RELATED TO X-RAY DEVICES AND PARTICULARLY TO THE EQUIPMENT DESCRIBED IN THIS MANUAL. THIS KNOWLEDGE IS ACQUIRED THROUGH A VARIETY OF EDUCATIONAL METHODS FOR TECHNICIANS IN ACCORDANCE WITH LOCAL LAWS OR REGULATIONS, INCLUDING SPECIFIC TRAINING ON THIS EQUIPMENT.

1.2 TOOLS AND TEST EQUIPMENT

The following tools and test equipment are required for the installation:

- Standard service engineers tool kit.
- Standard and extended levels (1 meter for Column Base).
- Electric drill motor and assorted bits.

The following special Tools are commonly used for adjustment of the Rad Room (these tools are **not included** with the System. Use the suggested tools or equivalent):

- Collimator Test Tool (Model RMI 161B9).
- Beam Alignment Test Tool (Model RMI 162A).
- SID Test Stand Tool (Inside Case: RMI Model 175).
- Light Meter (Standard).

1.3 PRE-INSTALLATION CHECKS

This section provides product information and illustrations showing physical dimensions, weight, mounting holes and access areas for cabling.

- Floor, wall and raceways for equipment installation.
- It is recommended to install a wood block 600 mm x 25 mm approx. inside all non brick walls for a safe Wall Stand installation.
- A plan distribution is strongly recommended prior equipment installation. Take into account dimensions, travels, operation and passing through areas. Minimum room space required to allow installation and travels of the equipments:
 - Surface: 4 x 2 meters (13 x 6.5 ft).
 - Height: 2.6 meters (8.5 ft).
- Operator / Patient audio and Video Controls must be considered in the room layout.

The following illustrations show a typical Room Layout, dimensions of the equipments and anchoring holes in the Rad Room.

Illustration 1-1
Typical Room Layout

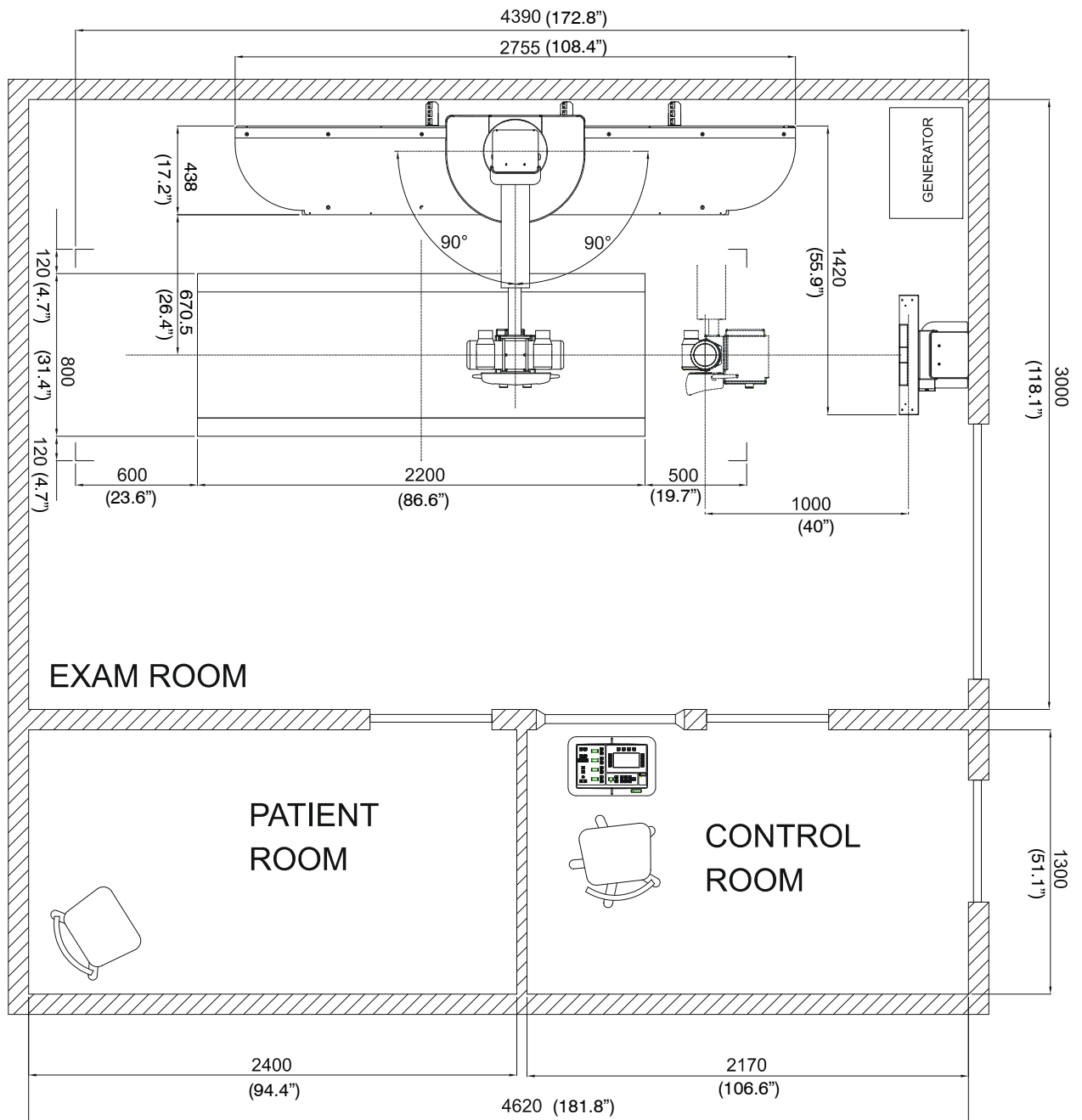
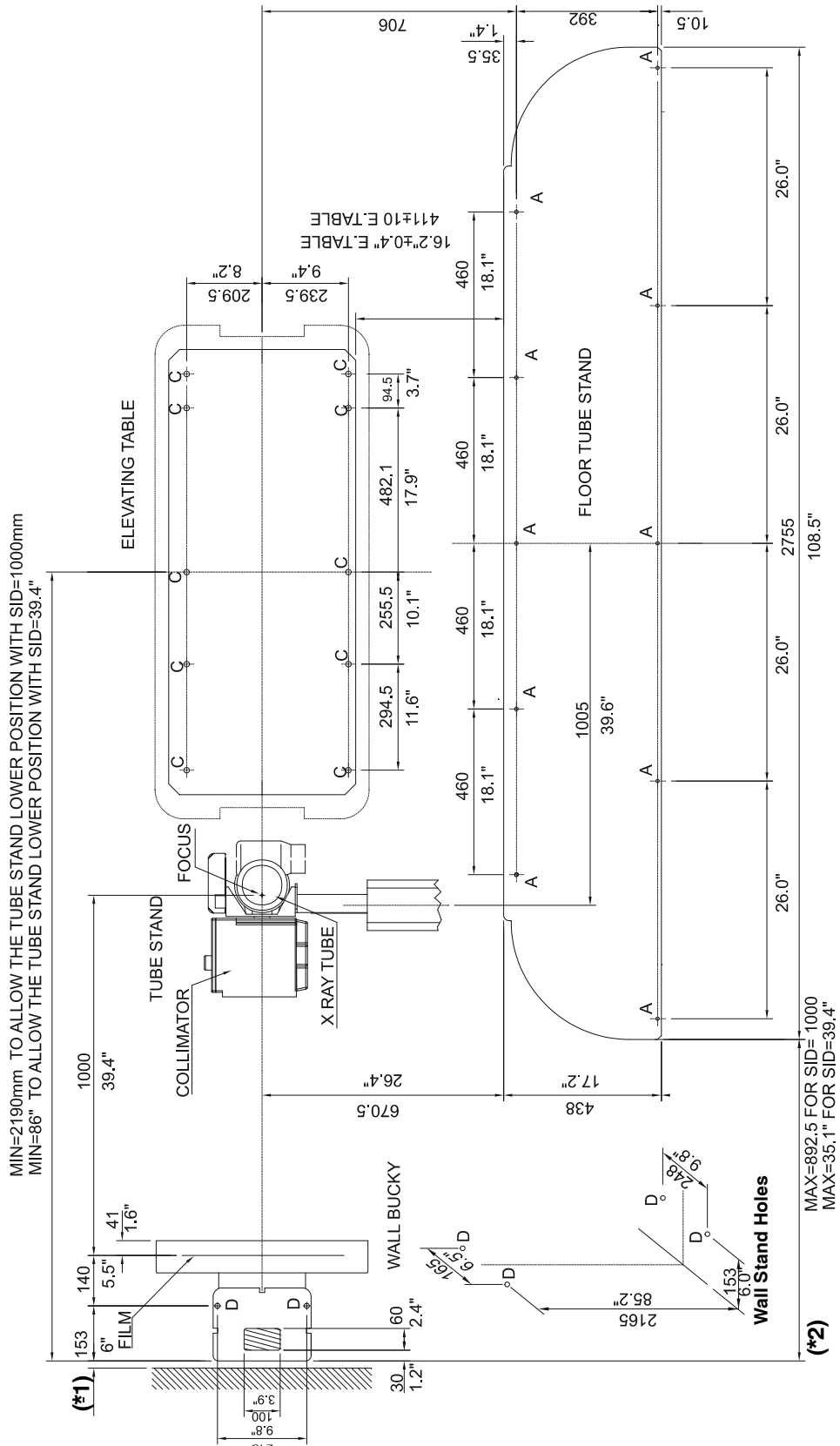


Illustration 1-2
Anchoring Holes in the Radiographic Room (Elevating Table)

- (*1) Depends on Spacer: 50 mm (without spacer installed)
 From 75 mm to 120 mm with Spacers.
- (*2) Standard Wall Stand (non tilting)



(All holes for anchoring purposes are at least Ø 12 mm)

**Illustration 1-3
Anchoring Holes and cable entrances in the Radiographic Room (Fixed Height Table)**

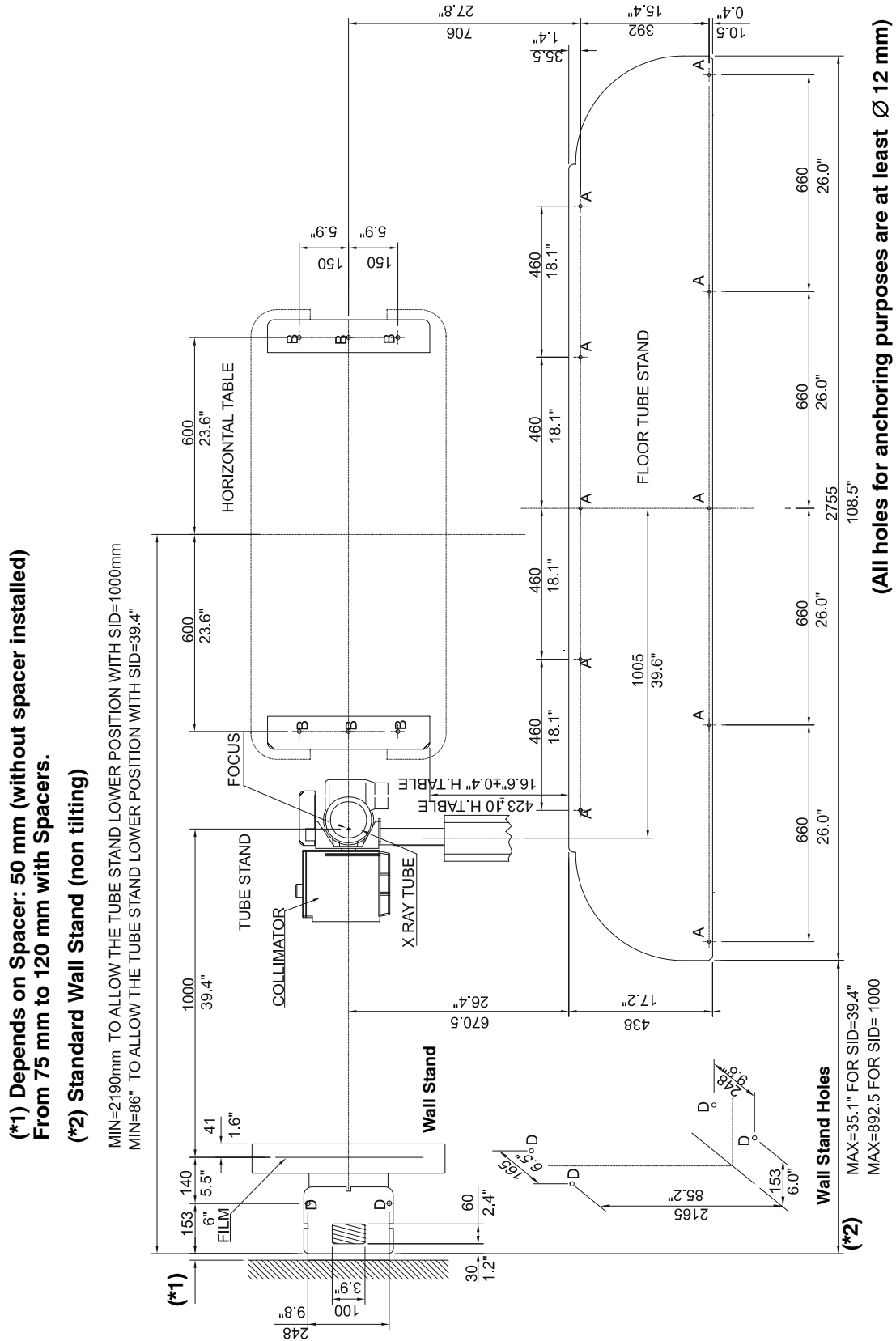
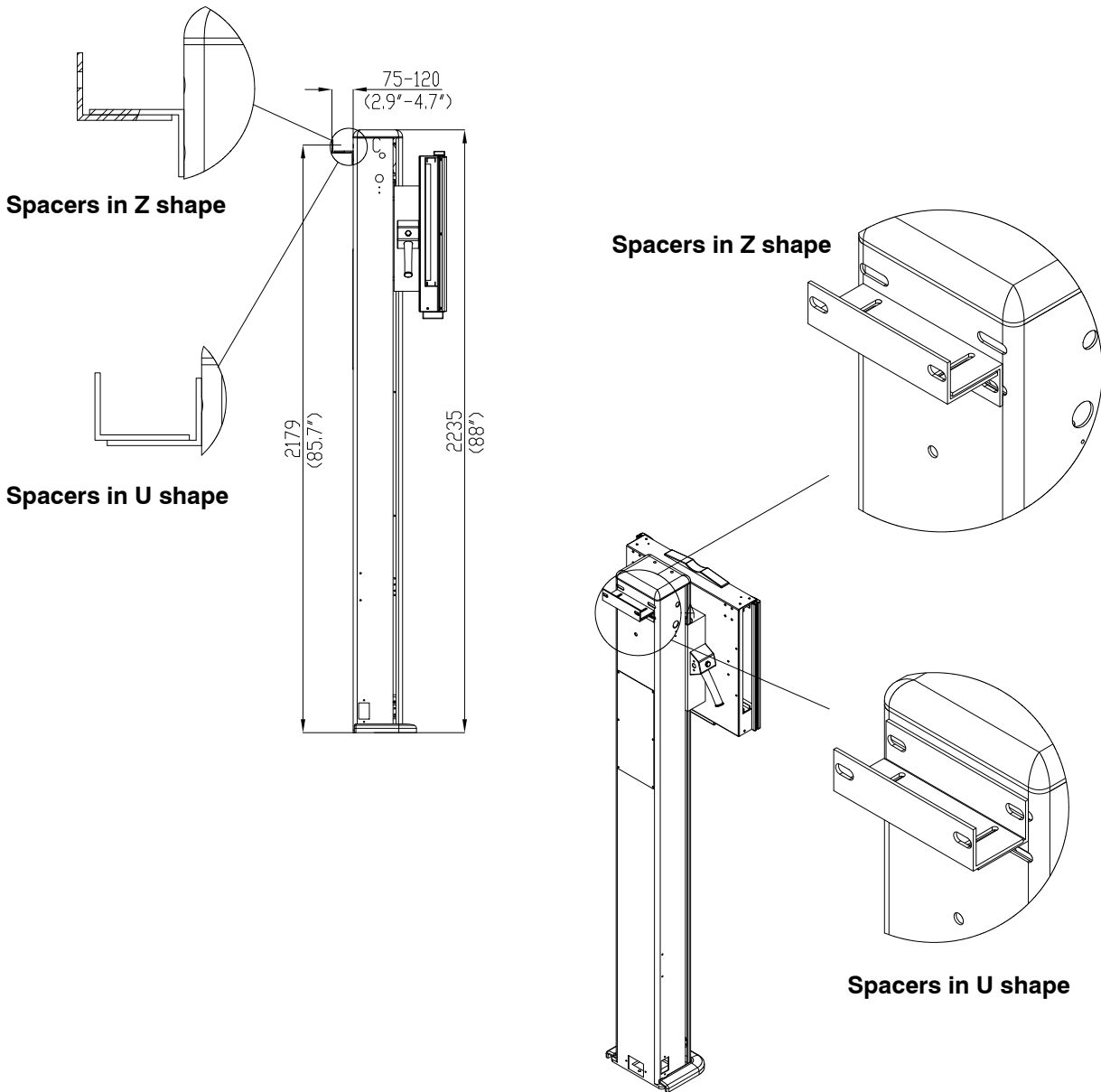
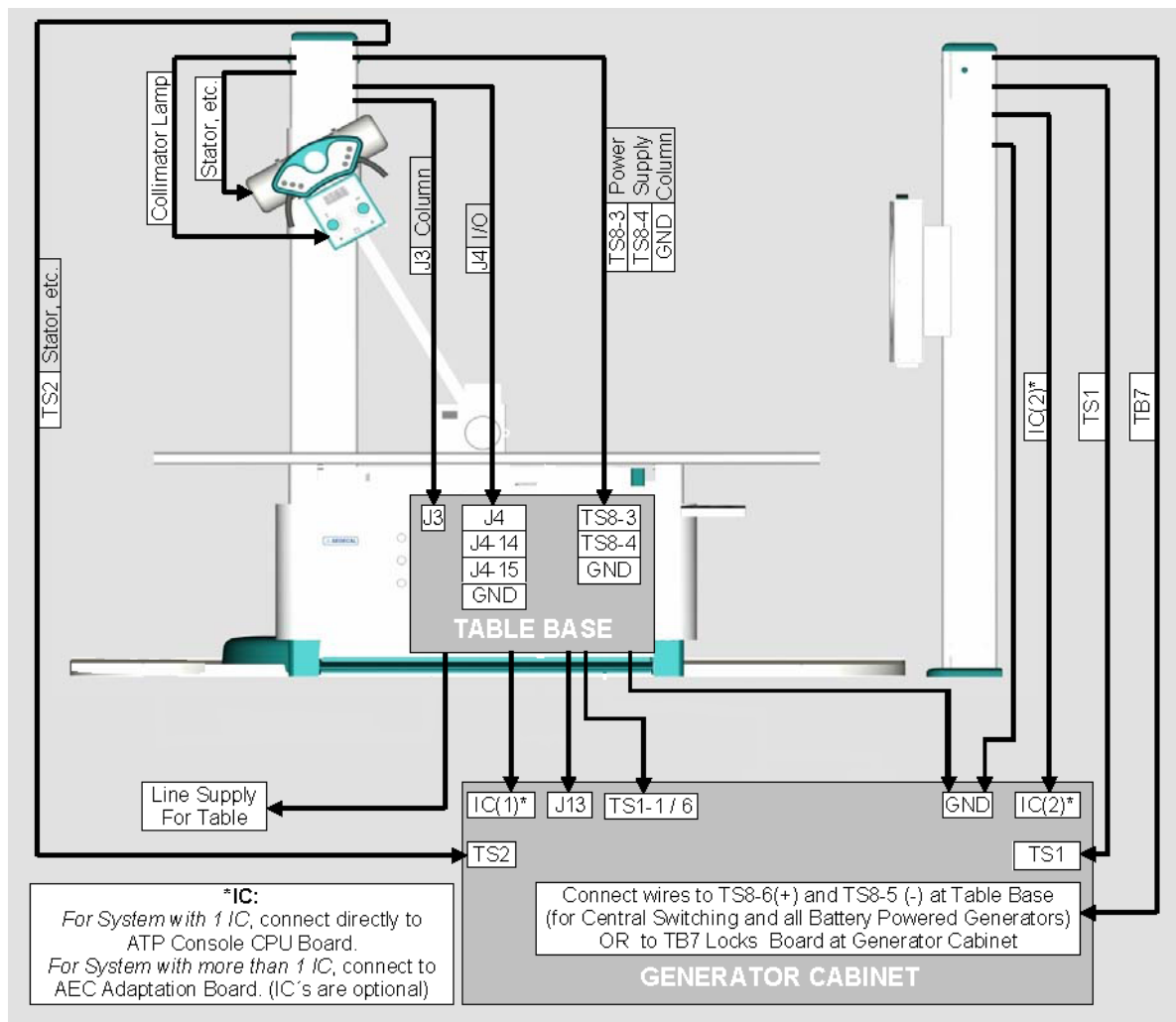


Illustration 1-4
Wall Stand - Spacers



The following illustrations show the room cabling connections to be performed during installation in the Column, Table, Wall Stand and Generator. Also refer to Section 5.5. Optional Digital Detector Cables are not included, refer to Schematics Section in this Service Manual or to the Digital Detector documentation.

**Illustration 1-5
Room Cabling**



**Illustration 1-6
Room Cabling (cont.)**

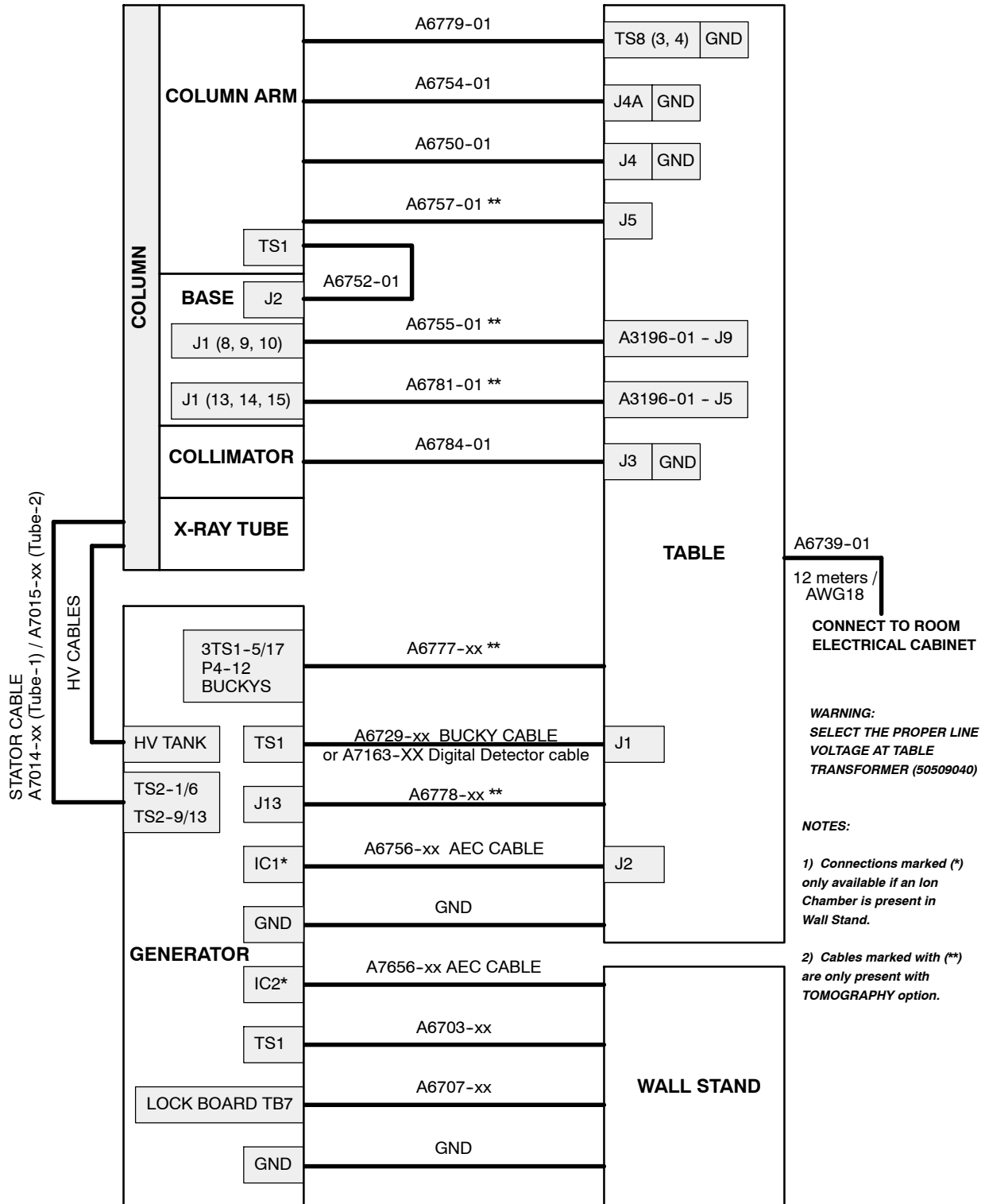
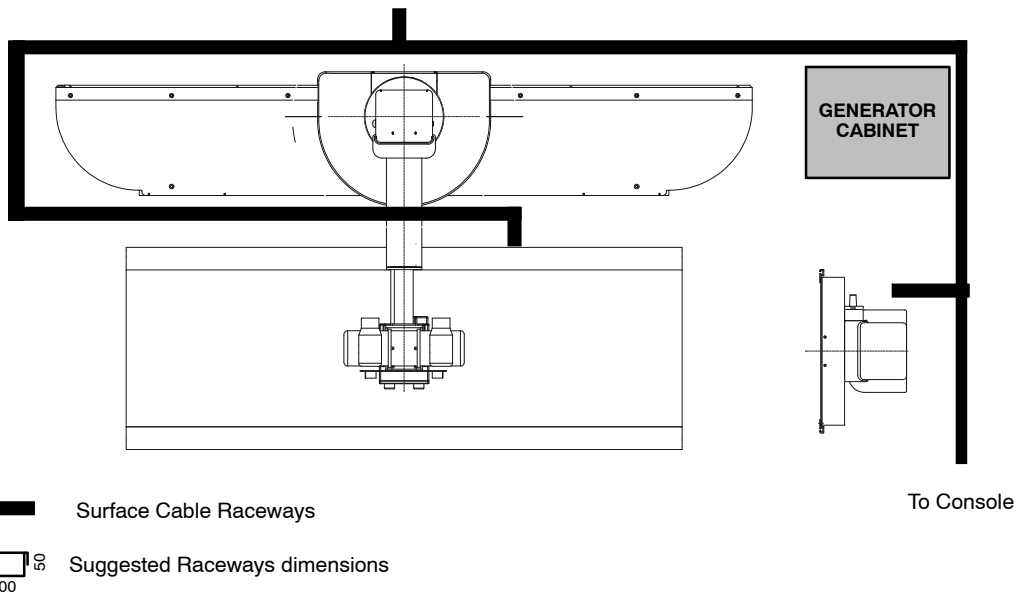
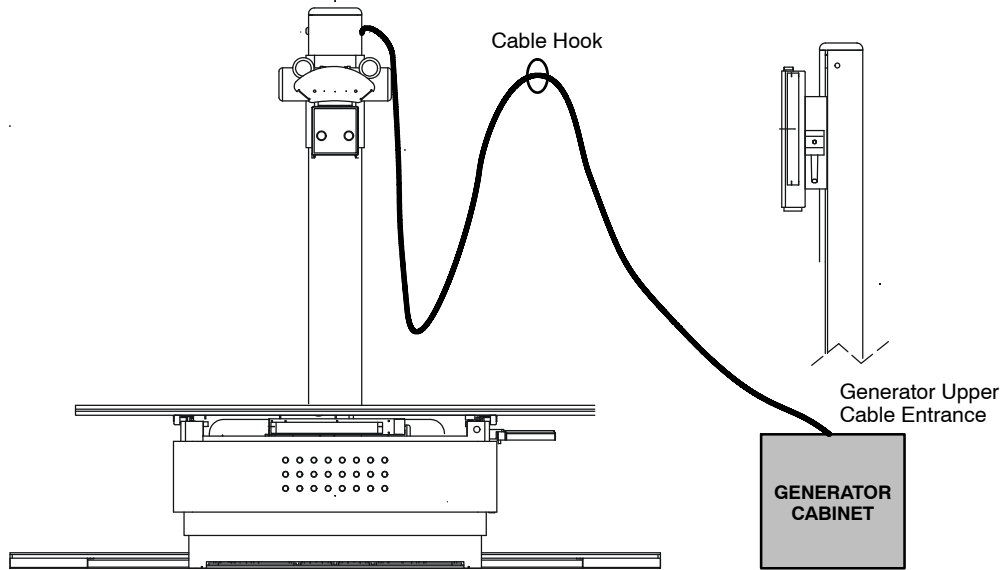


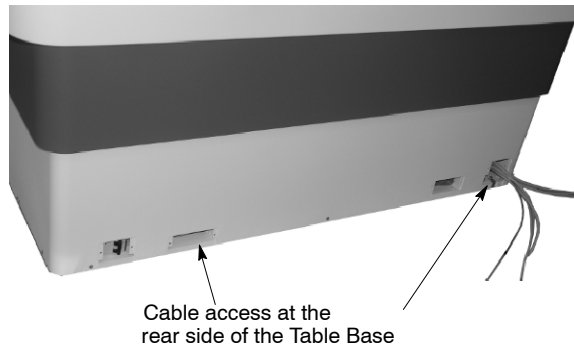
Illustration 1-6
Cabling and Room Raceways suggestions

For 9 m High Voltage Cables, install a cable hook of the wall and position the generator as close as possible to the Column base

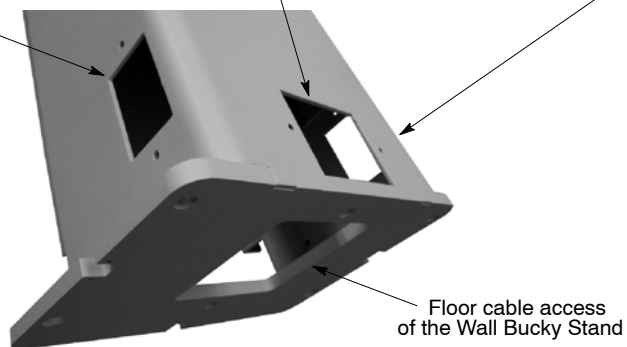


1.3.1 CABLE ACCESS

ELEVATING TABLE



WALL STAND



SECTION 2 TECHNICAL SPECIFICATIONS

POWER LINE REQUIREMENTS

Elevating Table	Single Phase
	110 - 230 V~, 50 / 60 Hz
Minimum input power required	0.6 KVA
Power Output	0.18 kW
Four Way Floating-Top Table	Single Phase
	110- 230 V~, 50 / 60 Hz
Minimum input power required	0.4 KVA
Power Output	0.18 kW
Wall Stand	
Power Line Supplied from Generator	Single Phase
	110 - 230 V~, 50 / 60 Hz
Minimum input power required	0.5 KVA
Brake Power Supply	24 VDC, 2A



ACCORDING TO MDD93/42/CEE, THIS UNIT IS EQUIPPED WITH EMC FILTERS. THE LACK OF THE PROPER GROUNDING MAY PRODUCE ELECTRICAL SHOCK TO THE USER.

OPERATING ENVIRONMENTAL CONDITIONS

Operating temperature range	10°C to 40°C
Relative humidity (no condensing) range ..	30% to 75%
Atmospheric Pressure range	700 hPa to 1060 hPa

STORAGE / TRANSPORT ENVIRONMENTAL CONDITIONS

Temperature range	-40°C to 70°C
Relative Humidity range (non-condensing) .	10% to 100%
Atmospheric Pressure range	500 hPa to 1060 hPa

Note

These environmental conditions do not include the Digital Detector. Refer to the Digital Detector Documentation if applicable.

FLOOR MOUNTED TUBE STAND

Dimensions	
Height	2370 mm (93.3")
Width	2755 mm (108.4")
Length	1267 mm (50")
Weight	345 kg (760 lb)
Maximum Height of X-ray Tube focus (vertical position)	2020 mm (79.5")
SID from horizontal axis of X-Ray Tube facing the Four-Way Floating-Top Table (maximum)	1355 mm (53.3")
SID from horizontal axis of X-Ray Tube facing the Elevating Table (maximum)	1605 mm (63.1")
Distances from vertical axis of X-Ray tube facing the Wall Stand	
Minimum height	400 mm (15.7")
Maximum height	1900 mm (74.8")
SID from Horizontal axis of X-Ray Tube facing the Wall Stand	
Minimum SID	874 mm (34.4")
Maximum SID	2884 mm (113.5")
Maximum SID (with 4 m rail)	3884 mm (153")
Column longitudinal motion	2010 m (79.1")
(optional longitudinal travel with 3755 mm base)	(3010 mm)
Rotation of Column with respect to its vertical axis (<i>Rotation may be limited by cables</i>)	±180°
Rotation of Tube-Collimator Assembly with respect to its transverse axis (<i>Rotation may be limited by cables</i>)	±150°

FOUR-WAY FLOATING-TOP TABLE

Dimensions	
Height	750 mm (29.5")
Width	2200 mm (86.6")
Length	800 mm (31.4")
Weight	190 kg (419 lb)
Dimensions of Floating Table-Top	2200 x 800 mm (86.6" x 31.4")

Table-Top / Film distance	85 mm (3.3")
Table-Top Attenuation	<1.0 mm Al eq.
Longitudinal motion of Table-Top	1100 mm (43.3")
Transverse motion of Table-Top	250 mm (9.8")
Longitudinal motion of Receptor	510 mm (20")
Grid (standard)	40 lines/cm-12:1
Grid Attenuation (standard)	<0.8 mm Al eq.
Receptor sizes	max. 43 x 43 cm (17 x 17")

ELEVATING TABLE

Dimensions	
Maximum Height	900 mm (35.4")
Minimum Height	500 mm (19.6")
Width	2200 mm (86.6")
Length	800 mm (31.4")
Weight	280 kg (617.2 lb)
Dimensions of Floating Table-Top	2200 x 800 mm (86.6" x 31.4")
Table-Top / Film distance	85 mm (3.3")
Table-Top Attenuation	<1.0 mm Al eq.
Longitudinal travel of Table-Top	1100 mm (43.3")
Transverse travel of Table-Top	250 mm (9.8")
Grid (standard)	40 lines/cm-12:1
Grid Attenuation (standard)	<0.8 mm Al eq.
DReceptor sizes	max. 43 x 43 cm (17 x 17")

WALL STAND FOR FILM / CR

Height	2235 mm (88")
Width	657 mm (25.8")
Length	381 mm (15")
Weight	145 kg (319 lb)
Table-Top Dimensions	559 x 485 mm (22" x 19")
Table-Top / Detector distance	46.5 mm (± 2) (1.83" (± 0.07 "))
Table-Top Attenuation	<0.85 mm Al eq.
Height from horizontal axis of receptor	
Minimum height	400 mm (14.17")
Maximum height	1900 mm (73.2")
Table-Top Vertical Travel	1500 mm (59")
Detector sizes	max. 43 x 43 cm (17 x 17")

WALL STAND FOR DIGITAL DETECTOR (FIXED OR PORTABLE)

Height	2235 mm (88")
Width	677 mm (26.6")
Length	381 mm (15")
Weight	145 kg (319.6 lb)
Table-Top Dimensions	559 x 556 mm (22" x 21.8")
Table-Top / Detector distance	62.5 mm (± 3) (2.46" (± 0.11 "))
Table-Top Attenuation	<0.85 mm Al eq.
Height from horizontal axis of receptor	
Maximum height Portable Detector .	1900 mm (74.8")
Maximum height-Fixed Detector	1860 mm (74.8")
Minimum height-Portable Detector ..	400 mm (14.17")
Minimum height-Fixed Detector	360 mm (14.1")
Table-Top Vertical Travel	1500 mm (59")
Receptor sizes	max. 43 x 43 cm (17 x 17")

Illustration 2-1

Dimensions of the Equipments in the Radiographic Room (Elevating Table).

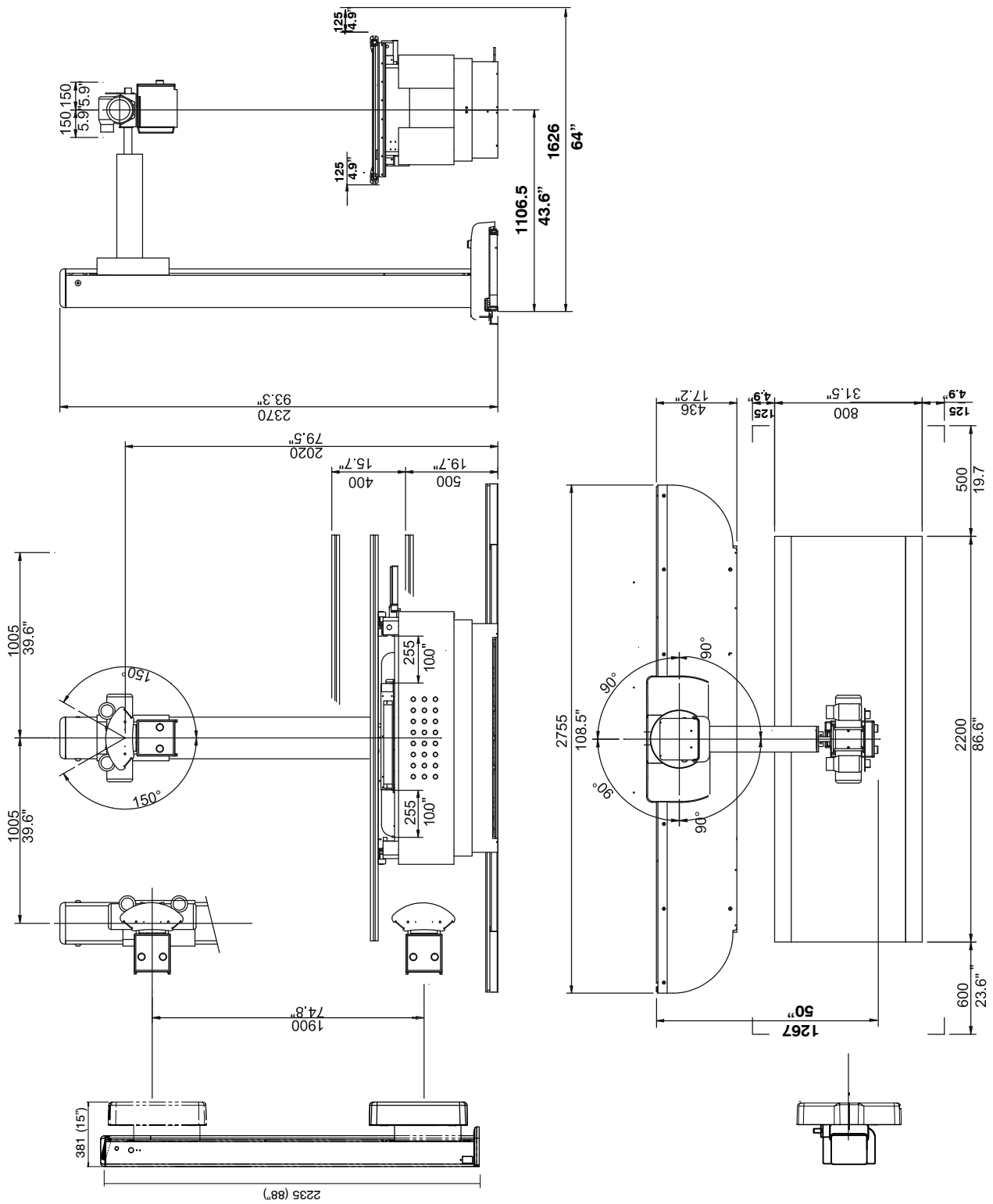


Illustration 2-2
Dimensions of the Equipments in the Radiographic Room (Fixed Height Table).

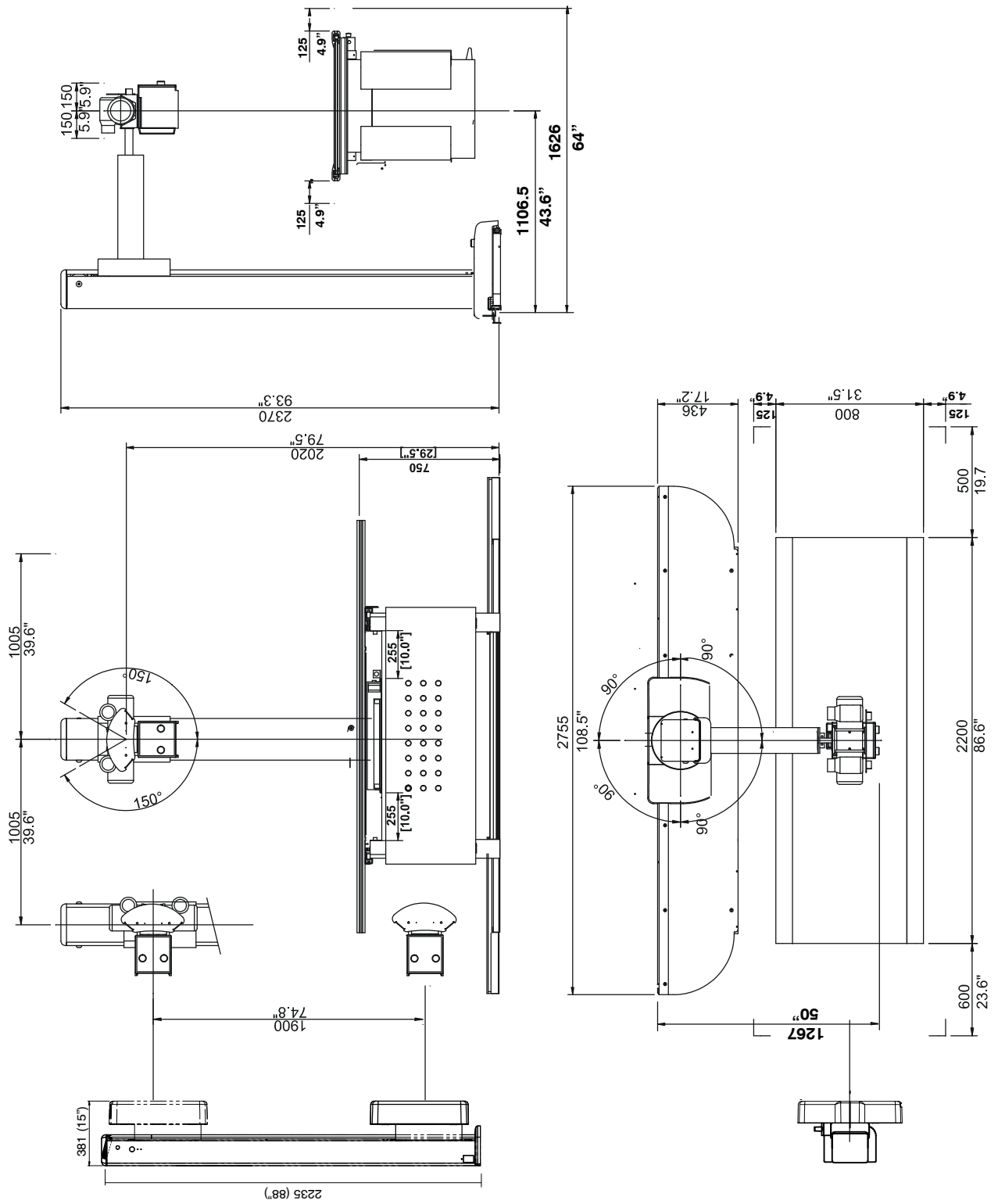


Illustration 2-3
Dimensions of the Wall Stand for Film / CR

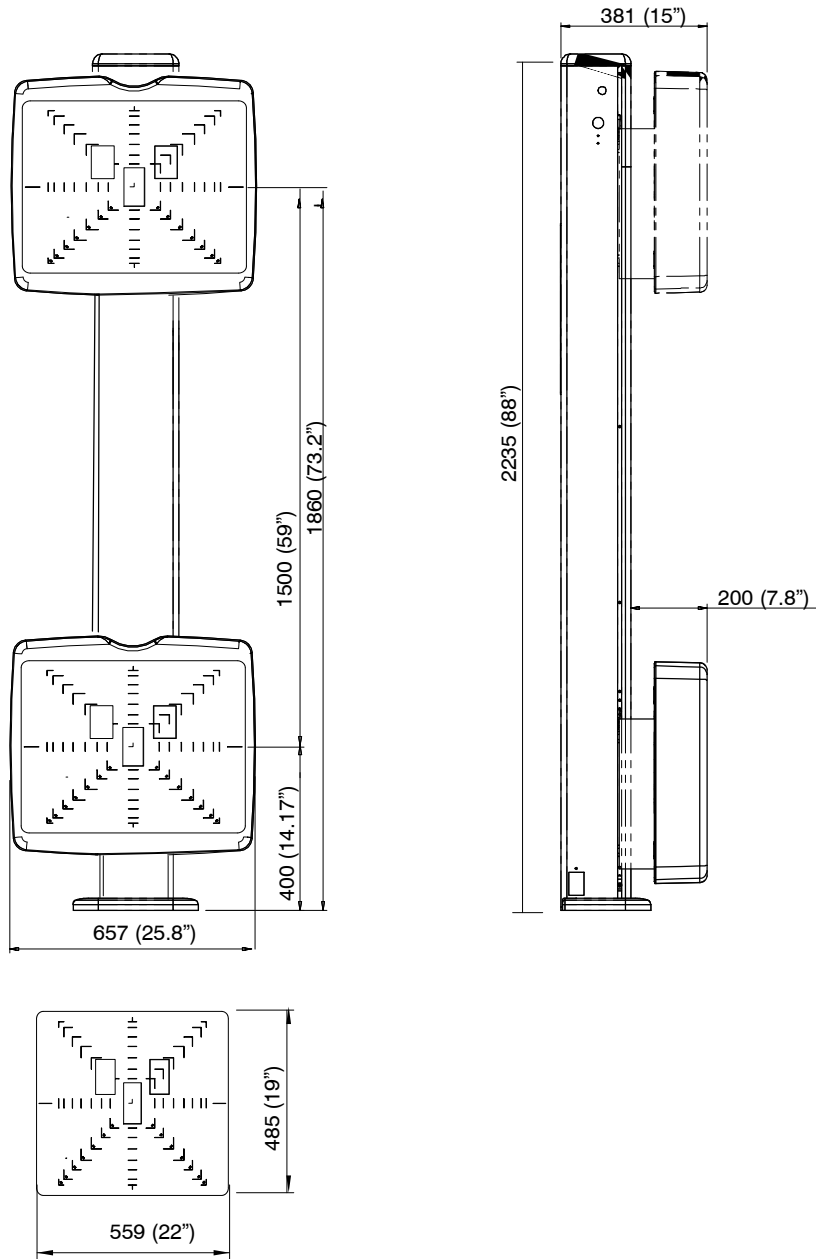


Illustration 2-4
Dimensions of the Wall Stand for Fixed Digital Detector

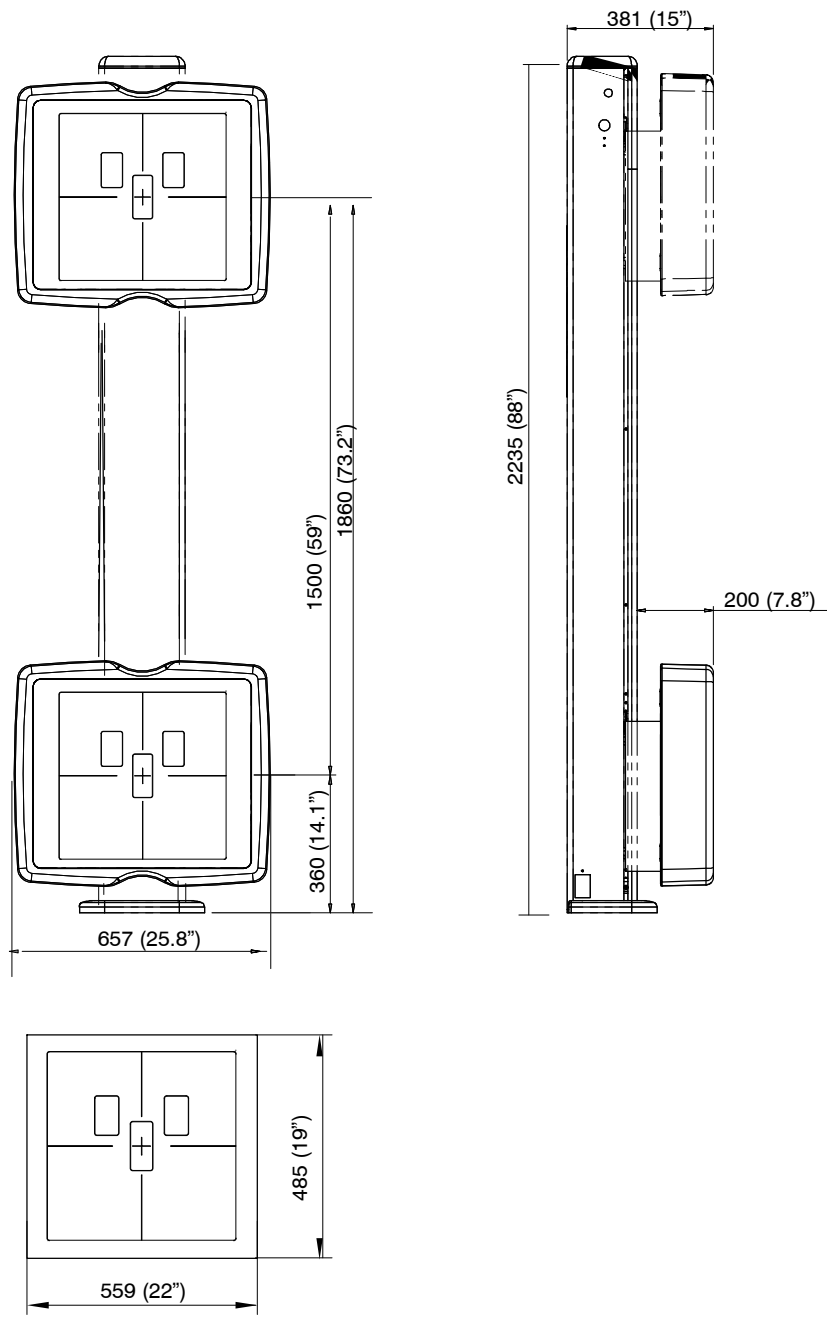
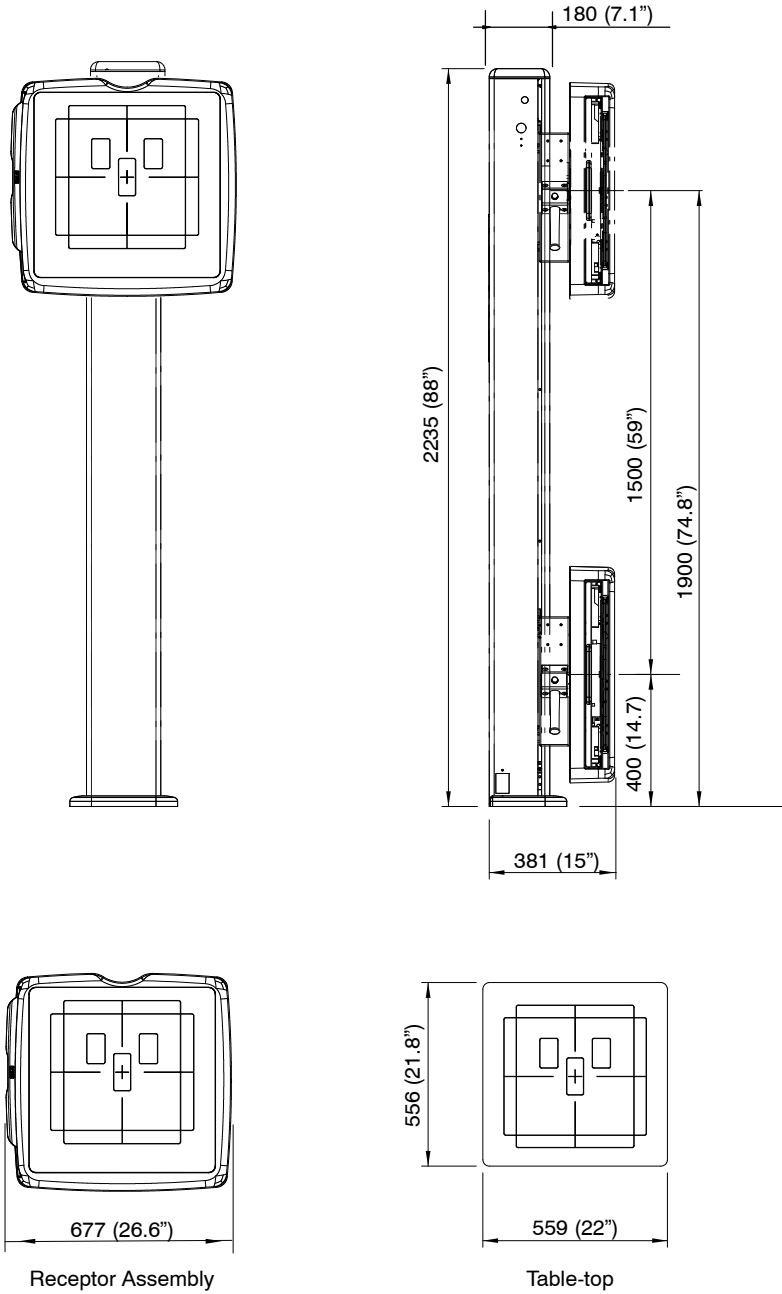


Illustration 2-5
Dimensions of the Wall Stand for Portable Digital Detector

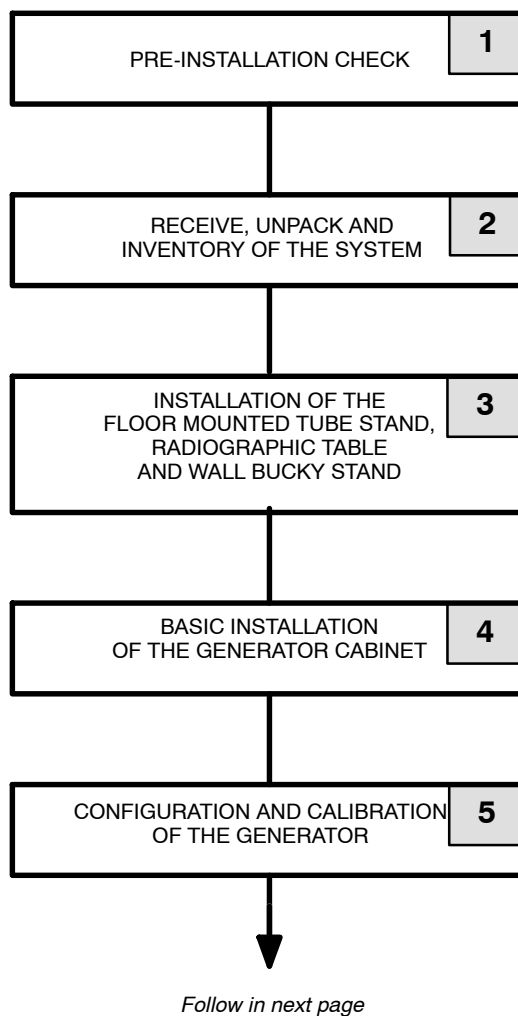


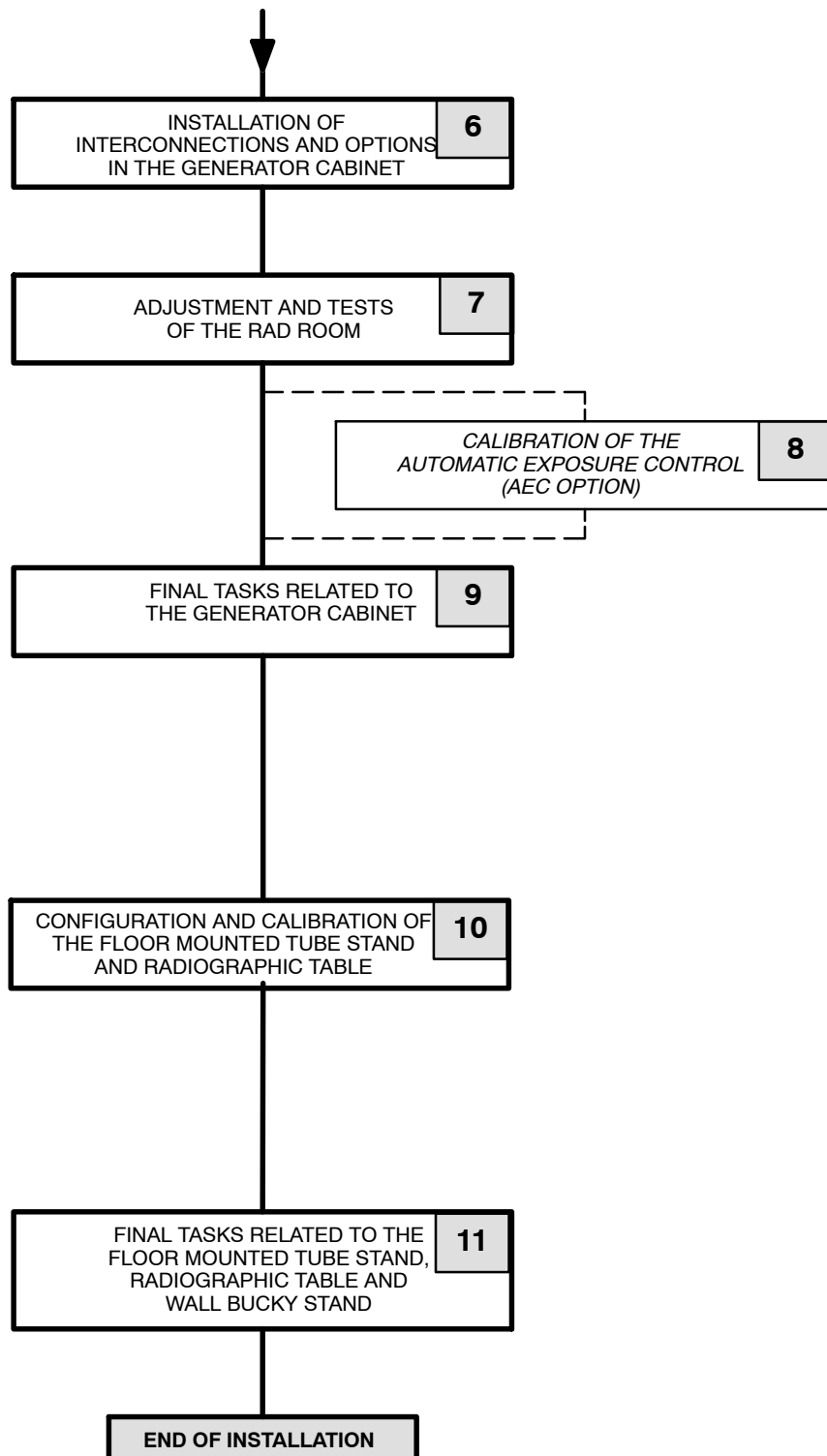
SECTION 3 SYSTEM INSTALLATION GUIDE

This System Installation Guide applies to the RAD Room. The tasks must be performed in the order listed in this document. Perform only the procedures required to install, configure and calibrate the present RAD Room taking into account the different options (AEC, etc.).

Note 

The System Installation can be performed by two field engineers in two days.





1 PRE-INSTALLATION CHECK		DONE	
1.1	Does X-ray Room meet the Pre-Installation requirements? Check the following points:		<input type="checkbox"/>
	Complete room floor, ceiling and wall finish. <i>(It is recommended to install a wood block 600 mm x 25 mm approx. inside all non brick walls for a safe Wall Bucky Stand installation)</i>	<input type="checkbox"/>	
	Installation of conduits, ducts, raceways and junction boxes with covers. <i>(For 9 m High Voltage Cables, install a cable hook on the wall and position the Generator as close as possible to the Column Base)</i>	<input type="checkbox"/>	
	Environmental requirements.	<input type="checkbox"/>	
	Electrical requirements. Installation of line power with proper voltage output and adequate kVA rating. Installation of all safety devices according to Pre-Installation document and Local Codes.	<input type="checkbox"/>	

2 RECEIVE, UNPACK AND INVENTORY OF THE SYSTEM		DONE	
<i>(Also refer to the - RAD Generator Service Manual)</i>			
2.1	Upon receipt of the equipments, inspect all shipping crates for signs of damage. If damage is found, notify carrier or his agent immediately.	<input type="checkbox"/>	
2.2	Place crates close to its final location at room and unpack the equipment. WARNING: AT LEAST TWO/THREE PEOPLE ARE REQUIRED TO REMOVE ALL HEAVY COMPONENTS FROM THE SHIPPING PALLET.	<input type="checkbox"/>	
2.3	Check the packing list, part numbers and serial numbers of each component. Verify that all items on the customer order are present.	<input type="checkbox"/>	

3 INSTALLATION OF THE FLOOR MOUNTED TUBE STAND, RADIOGRAPHIC TABLE AND WALL BUCKY STAND		DONE	
3.1	Installation of the Floor Mounted Tube Stand:		
	- Position the Column Base, level and anchor it to the floor.	<input type="checkbox"/>	
	- Insert the Column in the Base.	<input type="checkbox"/>	
	WARNING: AT LEAST TWO/THREE PEOPLE ARE REQUIRED TO INSERT THE COLUMN IN THE BASE.	<input type="checkbox"/>	
	- Install the Microswitch Contact Plates, Drilled Guide and Magnet Plate on the Column Base.	<input type="checkbox"/>	
	- Move the Column Arm to the central position (vertically) and level the Column.	<input type="checkbox"/>	
	- Install the Tube-Collimator Support.	<input type="checkbox"/>	
	- Mount the Control Panel.	<input type="checkbox"/>	
	- Mount the X-ray Tube and Collimator. Connect the Stator and Collimator cables.	<input type="checkbox"/>	
	- Connect the High Voltage cables to the X-ray Tube.	<input type="checkbox"/>	
	- Route the above mentioned cables to the Generator position. These cables will be later connected to the Generator.	<input type="checkbox"/>	
	- Remove the Shipping Safety screws of the Column.	<input type="checkbox"/>	
- Check leveling and check/readjust the foot bearings of the Column.	<input type="checkbox"/>		
Installation of the Elevating Table:		<input type="checkbox"/>	
3.2	- Remove the Table from the pallet and place it on its final position.		<input type="checkbox"/>
	WARNING: AT LEAST TWO PEOPLE ARE REQUIRED REMOVE THE TABLE FROM THE PALLET.		<input type="checkbox"/>
	- Connect the Power Supply cable of the Table and step on the "UP" pedal to raise the Table-top.		<input type="checkbox"/>
	- Remove Telescopic Covers.		<input type="checkbox"/>
	- Remove Jumper J4 and Jumper at relay of the Table Base.		<input type="checkbox"/>
	- Switch ON the Collimator Lamp and align the Table respect to Floor Mounted Tube Stand.		<input type="checkbox"/>
	- Anchor and level the Table in its final position.		<input type="checkbox"/>
	- Perform and check the cable connections at the rear side of the Table Base. Route these cables.	<input type="checkbox"/>	
- Install the Table-Top.	<input type="checkbox"/>		

3 INSTALLATION OF THE FLOOR MOUNTED TUBE STAND, RADIOGRAPHIC TABLE AND WALL BUCKY STAND			DONE
3.3	Installation of the Wall Bucky Stand:		<input type="checkbox"/>
	- Place the Wall Bucky Stand in vertical position and remove the Shipping Safety screws.	<input type="checkbox"/>	
	- Switch ON the Collimator Lamp and align the Wall Bucky Stand respect to the X-ray Tube.	<input type="checkbox"/>	
	- Anchor and level the Wall Bucky Stand in its final position. Install the covers.	<input type="checkbox"/>	
3.4	Final Installation and Checks:		<input type="checkbox"/>
	- Check that J4 and bridge at Relay have been removed at Elevating Table.	<input type="checkbox"/>	
	- Check all Room cable connections and connectors.	<input type="checkbox"/>	

4 BASIC INSTALLATION OF THE GENERATOR CABINET			DONE
4.1	If the Generator is a Line Powered Generator follow the next steps:		<input type="checkbox"/>
	- Place the Generator in its final position and anchor it to the floor / wall if it is required.	<input type="checkbox"/>	
	- Route and install the Power Line cables between the Room Electrical Cabinet and the Generator.	<input type="checkbox"/>	
4.2	If applicable, place the Console in its final position and anchor it to the Pedestal / floor / wall,	<input type="checkbox"/>	
4.3	Previous to cable connections inside the Generator Cabinet, check that all the cables are first connected to the each Device (Table, Bucky, etc.) and routed through the raceways.	<input type="checkbox"/>	<input type="checkbox"/>
4.4	Connect the following cables: Line Power, High Voltage, Stator, Console Cables. Install the High Voltage white Sleeves and cable Hook on the wall / roof, if applicable. <i>Note: The following cables will be connected after performing Configuration and Calibration procedures of the Generator: Warning Light, Collimator Lamp, System Locks, Bucky, Ion Chambers, Radiation Measuring System.</i>	<input type="checkbox"/>	<input type="checkbox"/>

5 CONFIGURATION AND CALIBRATION OF THE GENERATOR CABINET AND CONTROL CONSOLE		DONE	
<p><u>IMPORTANT NOTE:</u></p> <p>THE GENERATOR HAS BEEN CONFIGURED, CALIBRATED AND TESTED BY THE MANUFACTURER, EXCEPT FOR AEC PROCEDURES.</p> <p>IF APPLICABLE, CONFIGURE AND CALIBRATE THE AEC AS INDICATED IN THE GENERATOR SERVICE MANUAL</p>			
5.1	Configuration of:		<input type="checkbox"/>
	- Switches and jumpers on the boards.	<input type="checkbox"/>	
	- Touch Screen Settings, if the Console is a Touch Screen Console.	<input type="checkbox"/>	
	- Workstations.	<input type="checkbox"/>	
	- Enter the data in the respective Extended Memory Location for the Limit of Maximum RAD kV, Limit of Maximum kW, X-ray Tube Power Limit.	<input type="checkbox"/>	
	- X-ray Tube selection (Anode, Starter, Focal Spot change). If the Starter is a High Speed Starter, configure the respective switches on the LV-DRAC boards.	<input type="checkbox"/>	
5.2	Calibration of:		<input type="checkbox"/>
	- Exposure Time adjustment.	<input type="checkbox"/>	
	- kV Loop.	<input type="checkbox"/>	
	- Digital mA Loop Closed	<input type="checkbox"/>	
	- Digital mA Loop Open (X-ray Tube calibration)	<input type="checkbox"/>	

6 INSTALLATION OF INTERCONNECTIONS AND OPTIONS IN THE GENERATOR CABINET		DONE
6.1	Connect the following cables: Warning Light, Collimator Lamp, System Locks, Bucky, Ion Chambers, Radiation Measuring System.	<input type="checkbox"/>

7 ADJUSTMENTS AND TESTS OF THE RAD ROOM		DONE	
7.1	Alignment of the X-ray Beam with the Radiographic Table:		<input type="checkbox"/>
	- Align the X-ray Beam with the Radiographic Table.	<input type="checkbox"/>	
	- Align the Collimator Light Field with the X-ray Field.	<input type="checkbox"/>	
	- Adjust the Perpendicularity of the X-ray Beam with the Image Receptor	<input type="checkbox"/>	
	- Center the X-ray Field and the Image Receptor	<input type="checkbox"/>	
7.2	Alignment of the X-ray Beam with the Wall Bucky Stand.	<input type="checkbox"/>	
7.3	SID Indicator Test.	<input type="checkbox"/>	
7.4	Field Size Indicator Test.	<input type="checkbox"/>	
7.5	Collimator Lamp Brightness Test:		<input type="checkbox"/>
	- Test of the Collimator Light Field Intensity.	<input type="checkbox"/>	
	- Test of the Collimator Light Field Contrast Ratio.	<input type="checkbox"/>	

8 CALIBRATION OF THE AUTOMATIC EXPOSURE CONTROL		DONE
8.1	Calibration of AEC (Optical Density, kV Compensation, Density Scale)	<input type="checkbox"/>

9 FINAL TASKS RELATED TO THE GENERATOR CABINET AND CONTROL CONSOLE		DONE
9.1	Check all routing and cable connections.	<input type="checkbox"/>
9.2	Install the Generator covers	<input type="checkbox"/>
9.3	Final Configuration and Calibration checks. Write down values in the Data Book.	<input type="checkbox"/>

10 CONFIGURATION AND CALIBRATION OF THE FLOOR MOUNTED TUBE STAND AND RADIOGRAPHIC TABLE		DONE
10.1	Set / check on the Column Control Panel the Configuration parameters related to the Floor Mounted Tube Stand and Radiographic Table.	<input type="checkbox"/>
10.2	Set / check on the Column Control Panel the Calibration parameters related to the Floor Mounted Tube Stand and Radiographic Table.	<input type="checkbox"/>

12 FINAL TASKS RELATED TO THE FLOOR MOUNTED TUBE STAND, RADIOGRAPHIC TABLE AND WALL BUCKY STAND		DONE
13.1	Check all routing and cable connections.	<input type="checkbox"/>
13.2	Install the all the covers (Tube Stand, Table and Bucky).	<input type="checkbox"/>

SECTION 4 UNPACKING

The system is shipped in different crates to facilitate transport and installation. Upon receipt of the equipments, inspect all shipping crates for signs of damage. If damage is found, notify carrier or his agent immediately.

1. Place crates close to its final location at room and remove each wood package part. Do not discard any packing material (envelopes, boxes, bags) until all parts are identified and listed in the packing list.



AT LEAST TWO/THREE PEOPLE ARE REQUIRED TO REMOVE ALL HEAVY COMPONENTS FROM THE SHIPPING PALLET.

2. When the equipment is unpacked, check part numbers and serial numbers of each component in the identification labels. Inspect all pieces for visible damages. If any damaged part is found, repair it or order a replacement to prevent unnecessary delay in installation.
3. Verify that all items on the customer order are present.
4. Leave a free working area around equipment until installation is complete.

This page intentionally left blank.

SECTION 5 INSTALLATION

Note 

Follow Installation sequence process as described. At least two or three people are required for the following tasks.

Note 

For cabling connection during installation process, refer to Pre-Installation Section of this Manual , where a general cabling map of the RAD Room is included.

5.1 TOOLS

Tools required for Installation:

- Standard service engineers tool kit.
- Standard and extended levels (1 meter for Column Base).
- Electric drill motor and assorted bits.

5.2 FLOOR MOUNTED TUBE STAND



DO NOT REMOVE THE COUNTERWEIGHT SAFETY BAR INSTALLED AT THE UPPER SIDE OF THE COLUMN OR THE SAFETY SCREWS OF THE VERTICAL CARRIAGE LOCATED IN THE LATERAL RAILS OF THE COLUMN BEFORE SPECIFICALLY INSTRUCTED IN THIS DOCUMENT.

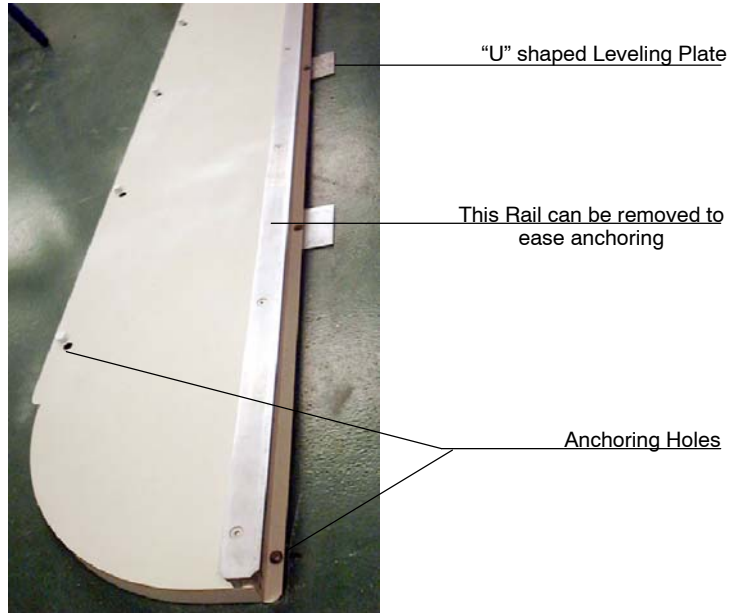
1. Place the Base of the column perpendicular to the wall where the Wall Stand will be installed. Leave a minimum 305 mm (12") from the rear of the base to the wall, this will allow servicing.
2. Place the Wall Stand as close as possible to its final position in the room in order to set the references for maximum distance from the wall where the Wall Stand is to be installed (892.5 mm - 35.14") to the Base of the Column. (Refer to Section 1).
3. Mark on the floor the position of the ten anchoring holes of the Base.
4. Remove the rail from the base before drilling.

Note 

In some cases, depending on the room size it may be necessary to mount the Tube Stand on the base prior to securing and leveling the Base.

5. Move the Base, drill the anchoring holes, clean the area and insert the anchors.

6. Attach the Base to the floor but DO NOT tighten bolts. Use the “U” shaped leveling plates provided to raise and level the Base.



Note 

Use an extended level (1 meter - 4ft) or several standard levels placed in different points to level the Base.

7. Secure the Base, tighten the bolts and put the white caps in the front holes.
8. Remove the Rail Stop from one end of the Base.

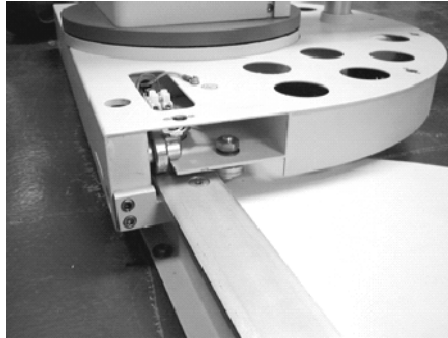


9. Lift the Column to its vertical position



AT LEAST THREE PEOPLE ARE REQUIRED TO LIFT AND INSTALL THE COLUMN ON THE BASE.

10. Place the Column at one side of the Base. Tilt the Column slightly to the opposite side of the Base and align the bearings to the rear rolling track and insert the Column.



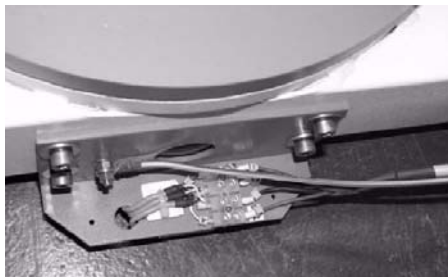
11. Proceed to insert the back set of bearings.
12. Remove the retaining nut of both Brakes of the Column Foot and install them in place.



Do not remove the Counterweight Safety Bar neither the two Shipping Safety Screws close to the Vertical Carriage until specifically instructed in this document.

Make sure that the iron cables are properly routed around the pulleys before standing up the Column.

13. Re-install the Rail Stop in the lateral of the Base and the Column Foot Brakes.
14. Install and connect the microswitches contact plate at the Column back.

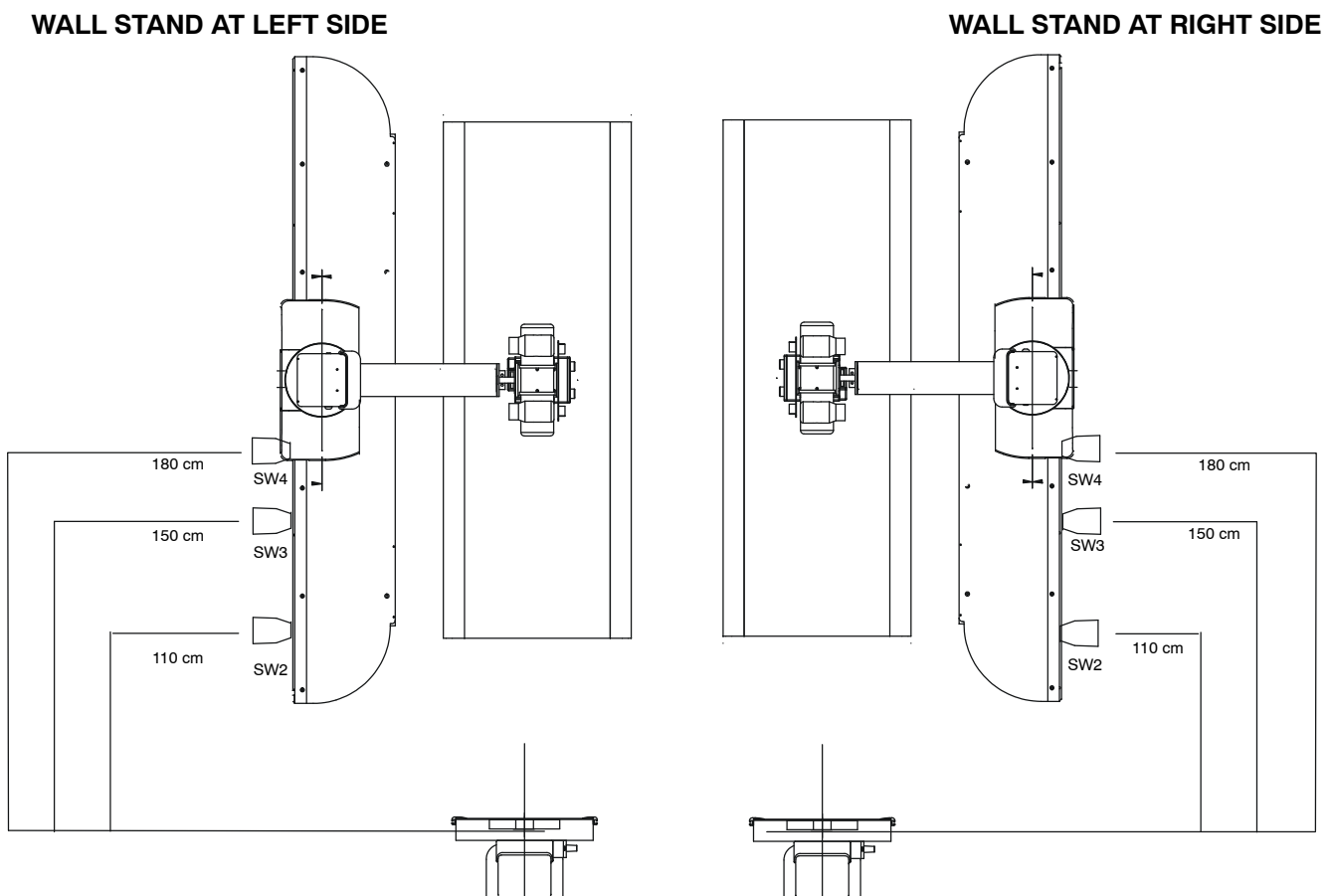


15. Install the Drilled Guide at left or right on the Column Base. This depends on the position of the Wall Stand, install the Drilled guide close to the Wall Stand side.

16. Install the provided magnet plates for SID distance with respect to the Wall Stand (2 for the Column with Basic Control Panel and 3 for the Column with Digital Control Panel) at the Drilled Guide. The Magnets must be located at exact SID Position from the Wall Stand (Image distance) (for Systems with Digital Control Panel, the Calibration of SID Points must coincide with the closed position of the Magnets).



Illustration 5-1
Magnet Plates installation



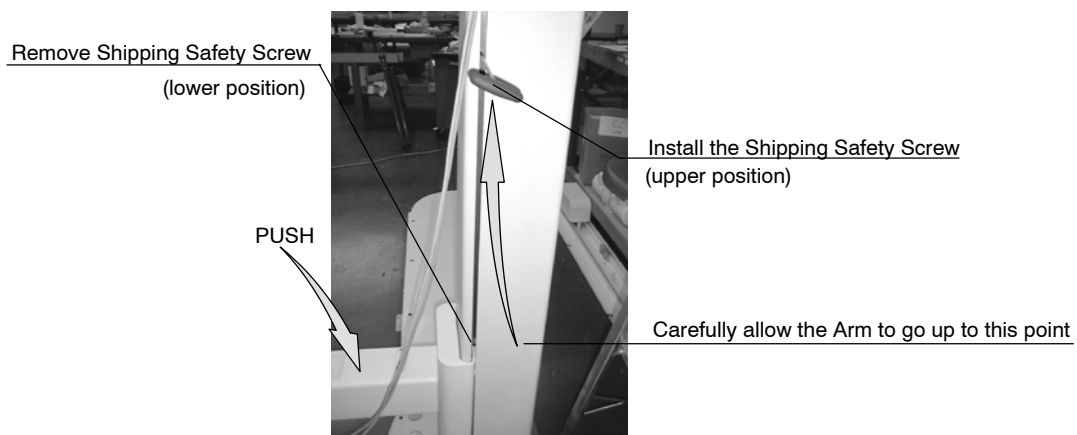


REMOVING THE COUNTERWEIGHT SAFETY BAR AND SHIPPING SAFETY SCREWS WILL CAUSE THE CARRIAGE TO TEND TO RAISE UP RAPIDLY, IT IS ADVISABLE THAT ONE PERSON HOLDS THE CARRIAGE IN PLACE UNTIL SHIPPING SAFETY SCREWS ARE REMOVED FROM THE LOWER HOLES OF THE COLUMN AND INSTALLED IN THE CENTRAL HOLES OF THE COLUMN.

- 17. Remove the Counterweight Safety Bar and the lower Carriage Rail screws of the Column in order to carefully raise the Arm to the central position at Column. For this operation it is advisable that a person pushes the Arm downwards so that the Shipping Safety Screws can be easily removed and re-installed in the upper position of the carriage guide.

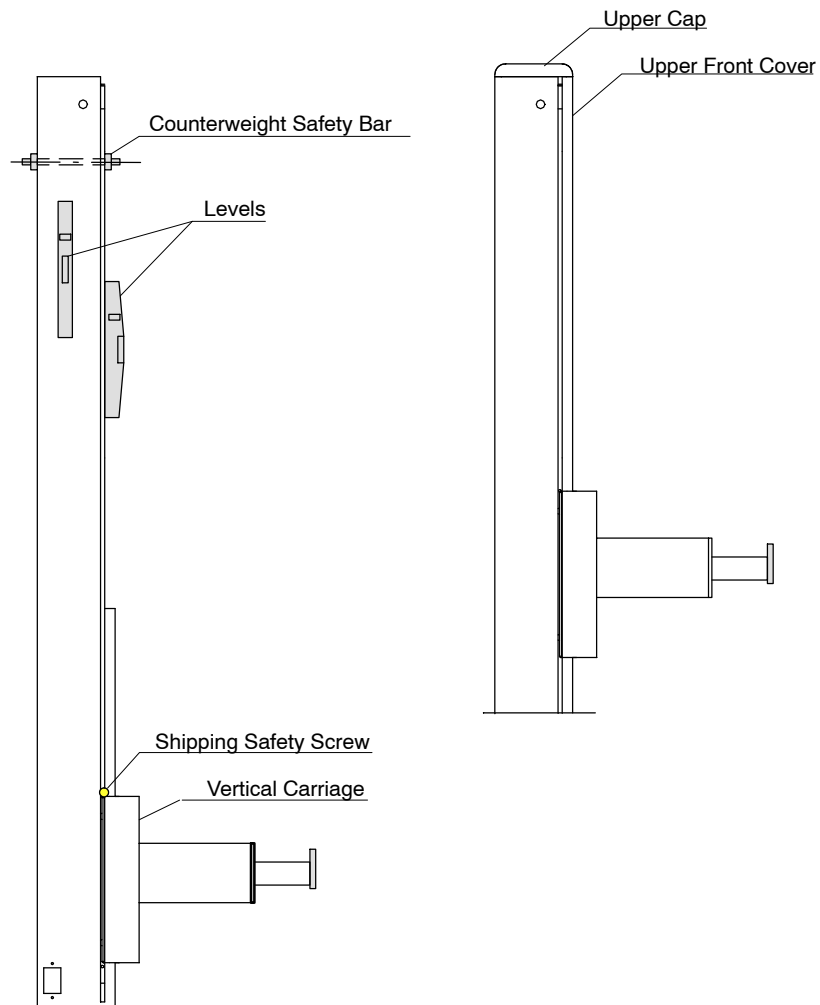


- 18. After the Shipping Safety Screws have been re-installed at the upper point, allow the carriage to raise to this point.



19. Level the Column vertically on both laterals and front side. Adjust it by means of the leveling plates in the Column Base. Anchor tightly the Base to the floor.

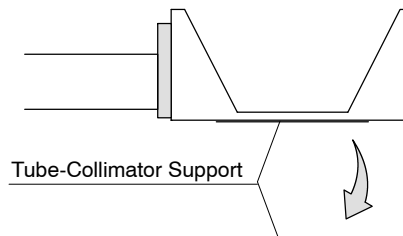
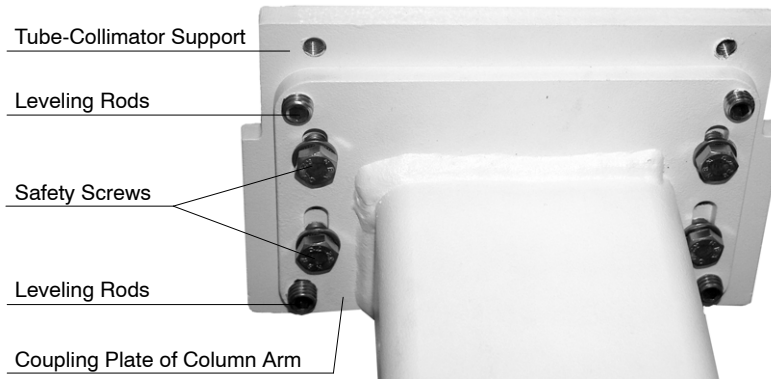
Illustration 5-2
Column Base



20. Install the Tube-Collimator Support to the Coupling Plate of the Column Arm by using the four safety screws mounted at the rear side of the Coupling Plate (upper and lower slots). The four rods will be used to level the Support when all the components are assembled. Also, the balance of the Tube-Collimator Assembly (in any position) can be adjusted according to the position of the Tube-Collimator Support with reference to the Coupling Plate.

Illustration 5-3

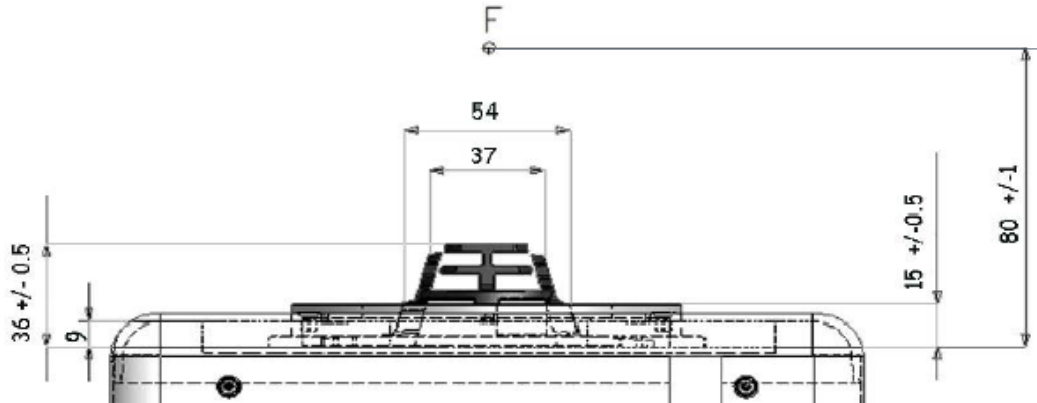
Assemble of Tube-Collimator Support to Column Arm - Rear View



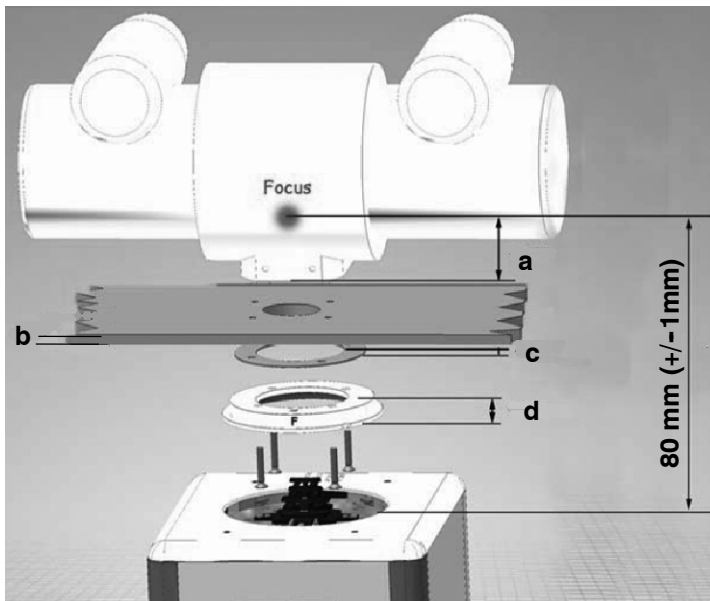
21. Mount the Control Panel (if not installed yet).

22. RALCO MANUAL COLLIMATOR R225/R225 DHHS

- a. Before installing the collimator, unscrew the four mounting and centering adjustment Allen screws until the four tabs are withdrawn from the Collimator top opening.
- b. The distance between the X-Ray tube focus and the Adaptation Ring mounting plane (collimator upper plate) must be: 80 mm (3.14"), tolerance ± 1 mm (0.04").



Use the X-Ray tube housing literature to determine the distance from the focal spot to the tube port face. Subtract the resulting distance from 80 mm (3.14") and determine the number of 1.5mm (0,06") spacers that, combined with the thickness of the Adaptation Ring (15 mm) and the thickness of the Tube-Collimator Support (6.5 mm), will make up the difference. Allowable tolerance is 1 mm. (0.04").



a = Tube Focal Distance, depends on the Tube specifications.

For example:

a = 53 mm in X-Ray Tubes E7884X or E7252X.

a = 56mm in X-Ray Tubes E7254X or E7869XX.

b = Tube Support (arm), always 6.5 mm.

c = Spacer 1.5 mm, the number of spacers installed depends on the tube model.

d = Collimator Adaptation Ring (Mounting Flange), always 15 mm.

a + b + c + d = 80 ± 1 mm. for Ralco 225 Collimator

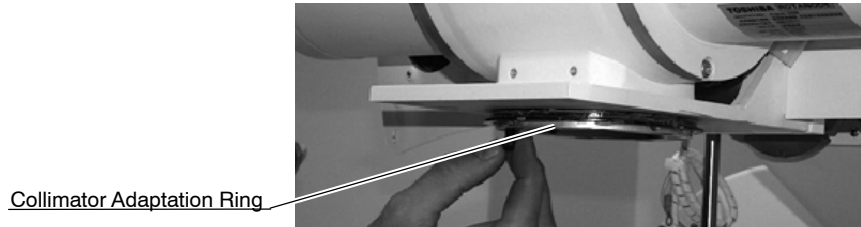
Number of spacers to be installed:

X-Ray Tubes with a = 53 mm, for example the E7884X or the E7252X, require 4 spacers of 1.5 mm to get a total distance of 80.5 mm.

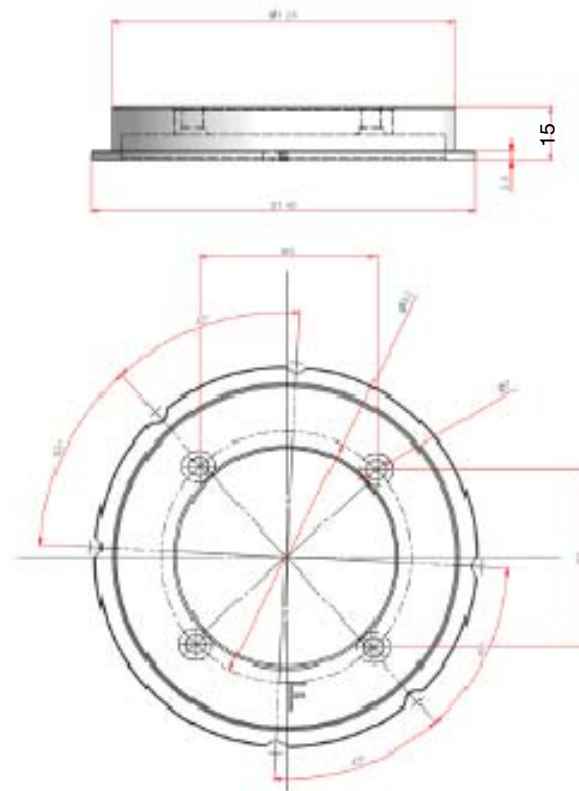
X-Ray Tubes with a = 56 mm, for example the E7254X or the E7869XX, require 2 spacer of 1.5 mm to get a total distance of 80.5 mm.

For other tubes calculate the distance as explained above.

- c. Mount the Collimator Adaptation Ring and spacers to the tube port with 4 Flathead screws M6 that must be long enough to be driven into the tube port face for at least 5 threads.



The 6 incisions on the Adaptation Ring edge indicate the collimator positioning to the X-Ray tube (\emptyset and $\pm 45^\circ$). (Also, refer to *Collimator Manual*).



Note the position of the Collimator Adaptation Ring

- d. Manually adjust the collimator shutters to their widest setting.
- e. Carefully couple the collimator with the tube: make sure that the primary shutters have enough clearance to move in the port opening and in the Adaptation Ring.

- f. For the collimator to rotate to position "Ø", adjust and tighten the four Allen screws as follows:

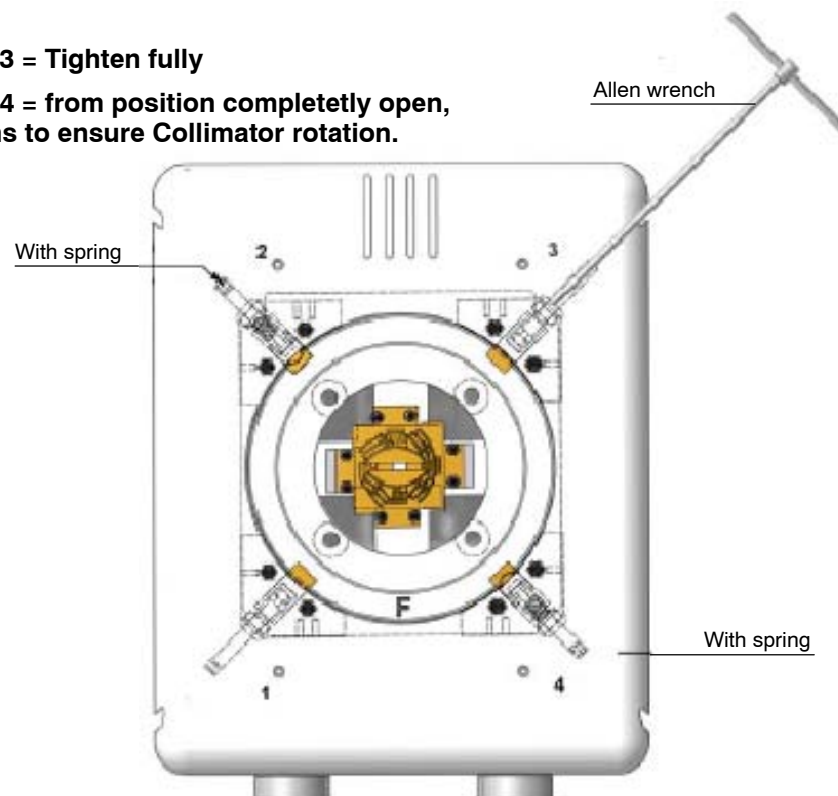
screws 1 and 3 = 7 turns (fully)

screws 2 and 4 = 5 ¹/₂ turns;

Illustration 5-4
Collimator Adaptation Ring position

Positions 1 and 3 = Tighten fully

Positions 2 and 4 = from position completely open, tighten 5 ¹/₂ turns to ensure Collimator rotation.



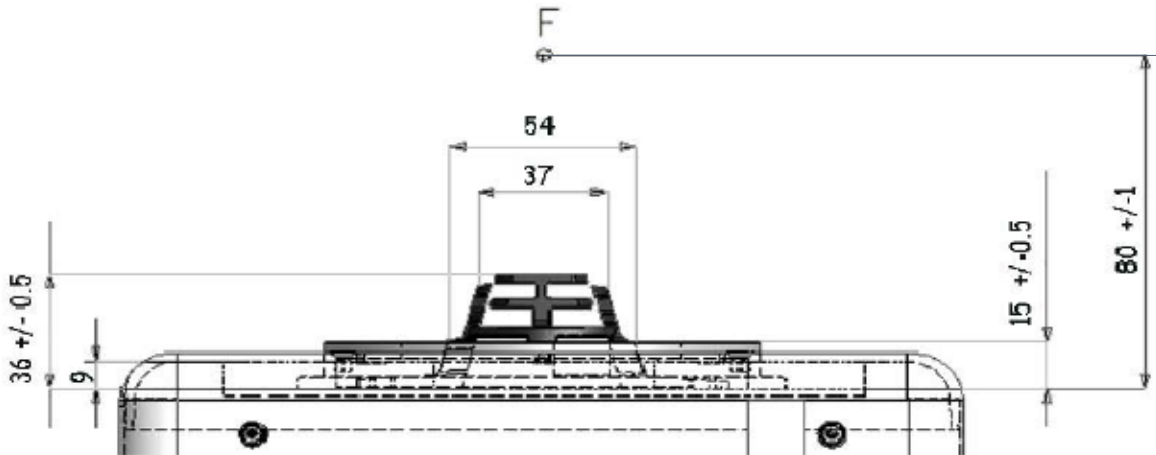
- g. Check that the distance between the collimator housing and the mounting flange is equal in all directions and, that the collimator face is parallel to the table axis. Loosen the screws and adjust if required.
- h. Route the Collimator Cables and connect as explained in the Schematics Section of this Service Manual.



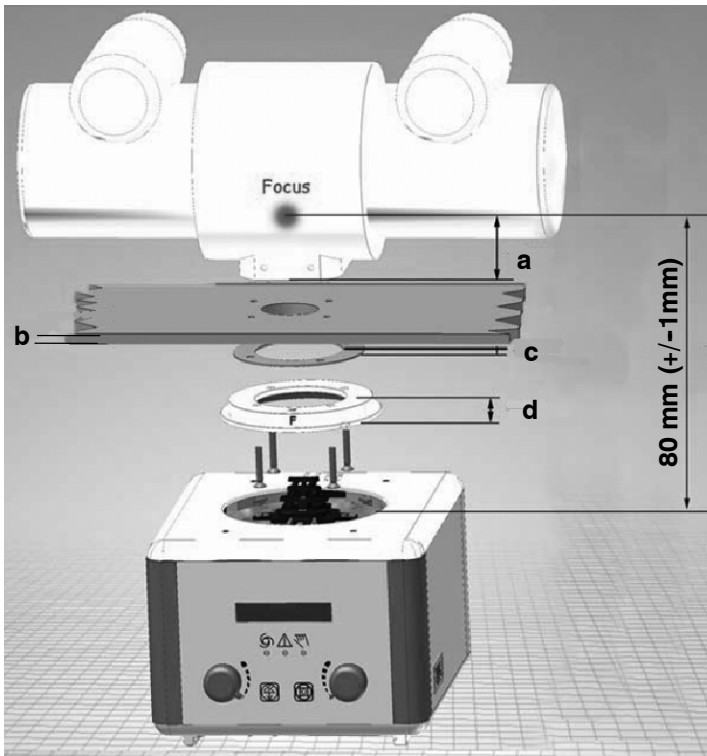
Make sure that the Collimator is well positioned by turning it to both sides and pulling it down to ensure that it is safely and properly mounted.

23. RALCO AUTOMATIC COLLIMATOR R225 ACS

- a. The distance between the X-ray tube focus and the flange mounting plane (collimator upper plate) must be: 80 mm (3.14”), tolerance $\pm 1\text{mm}$ (0.04”).



Use the X-Ray tube housing literature to determine the distance from the focal spot to the tube port face. Subtract the resulting distance from 80 mm (3.14”) and determine the number of 1.5mm (0,06”) spacers that, combined with the thickness of the Adaptation Ring (15 mm) and the thickness of the Tube-Collimator Support (6.5 mm), will make up the difference. Allowable tolerance is 1 mm. (0.04”).



a = Tube Focal Distance, depends on the Tube specifications.

For example:

$a = 53 \text{ mm}$ in X-Ray Tubes E7884X or E7252X.

$a = 56 \text{ mm}$ in X-Ray Tubes E7254X or E7869XX.

b = Tube Support (arm), always 6.5 mm.

c = Spacer 1.5 mm, the number of spacers installed depends on the tube model.

d = Collimator Adaptation Ring (Mounting Flange), always 15 mm.

$a + b + c + d = 80 \pm 1 \text{ mm}$, for Ralco 225 Collimator

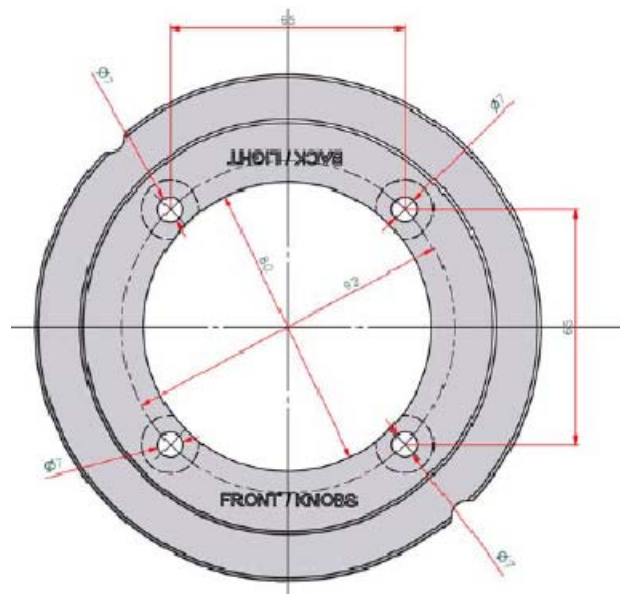
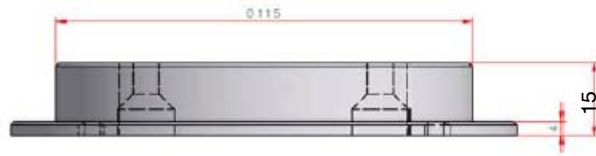
Number of spacers to be installed:

X-Ray Tubes with $a = 53 \text{ mm}$, for example the E7884X or the E7252X, require 3 spacers of 1.5 mm to get a total distance of 80.5 mm.

X-Ray Tubes with $a = 56 \text{ mm}$, for example the E7254X or the E7869XX, require 1 spacer of 1.5 mm to get a total distance of 80.5 mm.

For other tubes calculate the distance as explained above.

- b. The Collimator Adaptation Ring shows a label “front/knob”. Place the Collimator Adaptation Ring with the label turned towards the X-ray tube front.



- c. Mount the Collimator Adaptation Ring and spacers to the tube port with 4 Flathead screws M6 that must be long enough to be driven into the tube port face for at least 5 threads. *Refer to Illustration 5-5.*
- d. Unscrew the four mounting and centering adjustment Allen screws until the four tabs are withdrawn from the Collimator top opening.
- e. Manually adjust the collimator shutters to their widest setting.
- f. Carefully couple the collimator with the tube: make sure that the primary shutters have enough clearance to move in the port opening and in the Adaptation Ring.
- g. To allow the collimator to rotate to position "Ø", two of the four tabs retract to allow collimator rotation, Tighten the four Allen screws as follows:

screws 2 and 4 = 4 1/2 turns

screws 1 and 3 = 6 1/2 turns

Note 

If Allen screws "2" and "4" are tightened more than 5 1/2 turns, the collimator will not rotate.

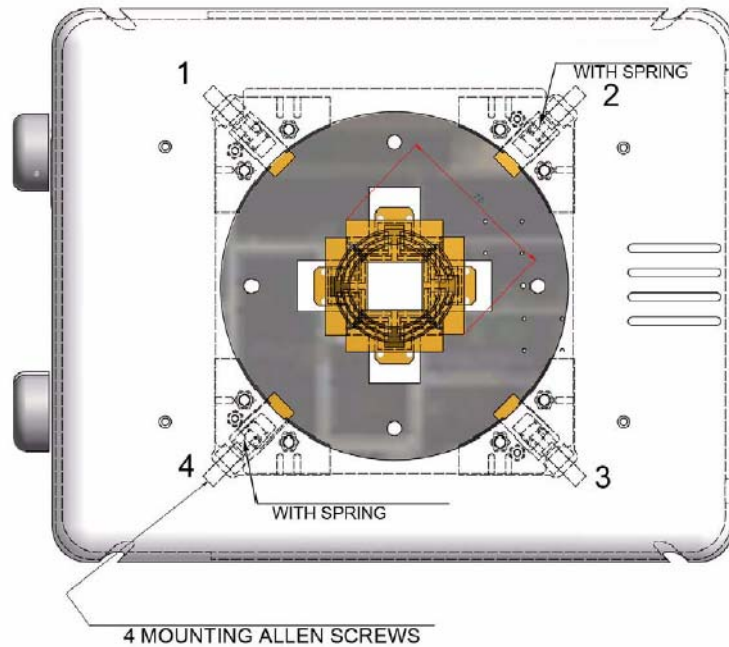
- h. Check that the distance between the collimator housing and the mounting flange is equal in all directions and, that the collimator face is parallel to the table axis. Loosen the screws and adjust if required. *(Also, refer to Collimator Manual).*

Illustration 5-5

Collimator Adaptation Ring position

Positions 2 and 4 = 4 1/2 turns

Positions 1 and 3 = 6 1/2 turns

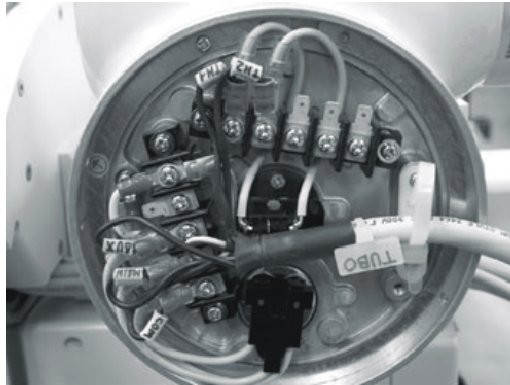


- i. These Systems require the installation of a Collimator External Interface Unit ASR003, pre-installed at the Table Base. Refer to the Schematic 54303033 in the Schematic Section of this Service Manual and also refer to Collimator Manual for further Information.

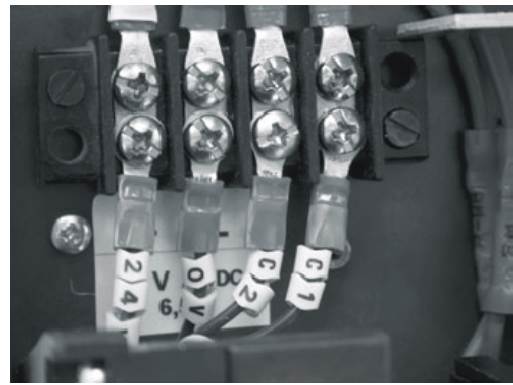


Make sure that the Collimator is well positioned by turning it to both sides and pulling it down to ensure that it is safely and properly mounted.

24. Remove the X-ray Tube and Collimator covers and connect the stator and Collimator cables as per identification Tags.



X-Ray Tube Cabling



Collimator cabling

25. Connect High Voltage Cables of the X-ray Tube.



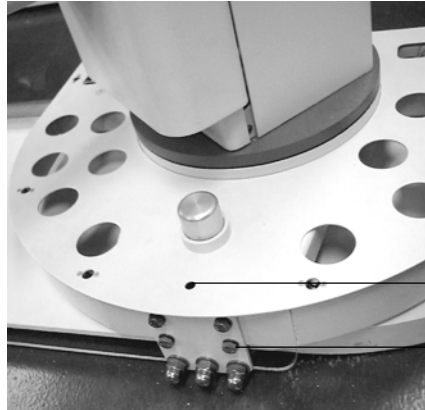
Terminal Pins of HV Cables are extremely delicate and they are easily damaged. Take particular care to handle them carefully. Make sure that all pins remain straight and that the splits in the pins are open (parallel to sides).

Prepare the High Voltage terminals that will be installed in the X-ray Tube receptacles according to the manufacturer's instructions. Apply Silicone Paste that comes with the Tube, over the entire surface of the Plug including the Pins.

Carefully connect cables to their corresponding receptacles on the Tube. Make sure that the high tension socket locking rings are secure and fix their brackets tightly.

26. Route all the cables from the Column and secure them using the Fastener on the upper side of the Arm and the Cables Support on the upper side of the Column. This Support can be placed at left or right side of the Column depending on the room layout. Leave a proper cable length to allow the Column movements.
27. Route the cables along the room to the generator for their later connection.
28. Remove the two Shipping Safety Screws from the Carriage Rail of the Column to allow vertical movement of the carriage.

29. Check the Column leveling. Place a level on both Collimator Base and on the Arm of the Column.



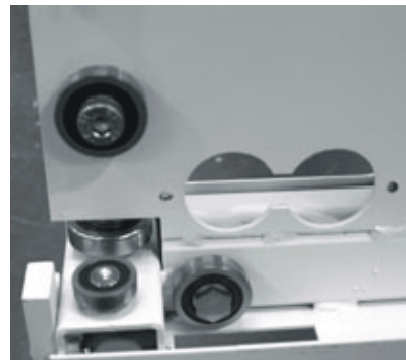
Foot Leveling screw

Mounting screws on bearing plate

Note 

The Foot leveling Screw is for leveling only and should be backed off once the leveling procedure is complete.

30. If it is necessary a leveling adjustment of the Column, turn the Foot Leveling Screw down (clockwise) till it makes contact with the Base Plate.
31. Loosen the four mounting screws on the bearing plate and adjust the Foot Leveling Screw until proper leveling is achieved.
32. Tighten the four screws on bearing plate and turn the foot leveling (counterclockwise) until it no longer touches the base of the plate.
33. Check and readjust the foot bearings if necessary. USE THE WRENCH INCLUDED IN PACKAGE.



Note 

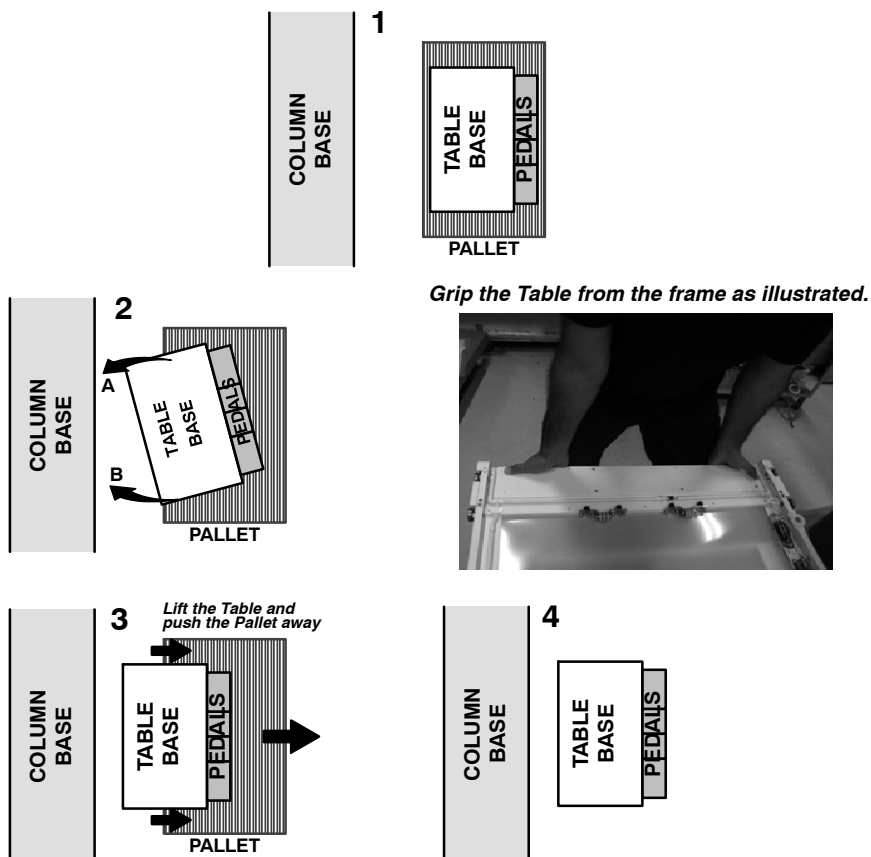
Level the Tube Collimator with the arm extended 20 cm (7.9") from the arm extension to the back of the Tube Mounting Bracket. Place a level on bottom of Collimator.

5.3 INSTALLATION OF THE RADIOGRAPHIC TABLE

Follow the installation of the Radiographic Table Section 5.3.1 for Elevating Table or Section 5.3.2 for Four Way Floating -Top Table.

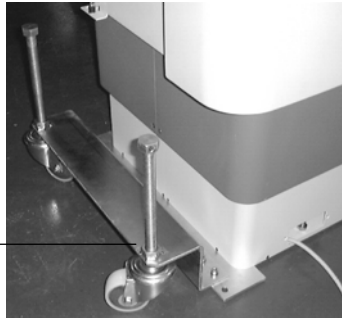
5.3.1 ELEVATING TABLE

1. Remove the shipping screws that secure the Table Base to the Pallet.
2. The Table can be handled in two ways, by hand or with the optional Transport Wheels. This procedure describes the installation with the optional Transport Wheels, follow point a) below if no Transport wheels are installed.
 - a. By hand (two people are needed for this task): Place the Table on the pallet as close as possible to its final position in the room, lift and push the table from one side to the edge of the pallet, then lift and push the Table from the other side until it is parallel again, then lift the table, push the pallet away and let it rest on the floor.



3. Assemble the transport accessories (optional transport wheels) to both laterals of the Table Base using the plates and screws provided.

Transport Wheels



4. Raise the Table using the wheels threaded rod. Move carefully the Table to its final position in the room.



Do not remove transport accessories before indicated in this document. Transport accessories are useful to move the Table after marking anchoring holes on the floor.

5. Check that the Table Circuit Breaker located at the back of the Table is OFF, connect the Power Supply cable from the Table (factory connected to TS1) to the Room Electrical Cabinet.

Note 

The Table Transformer is factory configured according to the Mains voltage specified in the customer order. Refer to Schematic 54301061.

6. Turn ON the Circuit Breaker located at the backside of the Table and turn ON the Red Emergency Switch located at the front of the Table.
7. Raise the Table to the top stepping on the “Up” Pedal.

8. Remove all the Telescopic Covers from the Table Base as indicated below:

- a. **Upper Front Cover:** Remove two screws located at right and left sides of the lower side of the cover.



- b. Then raise the Upper Front Cover with both hands and remove it from the Table. Disconnect ground cable (GND) if applicable.

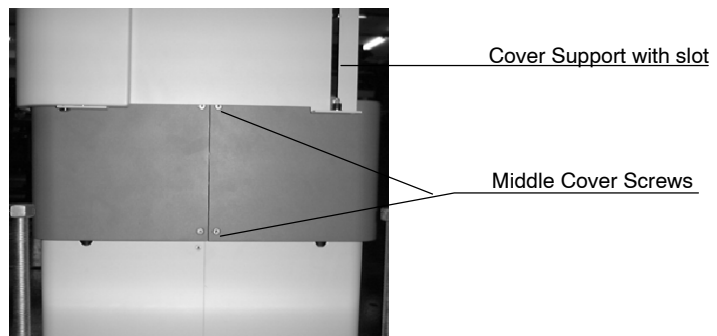


- c. **Upper Rear Cover:** Disassembly both nuts and washers located at upper side of the cover attached to the table chassis (inside the table).

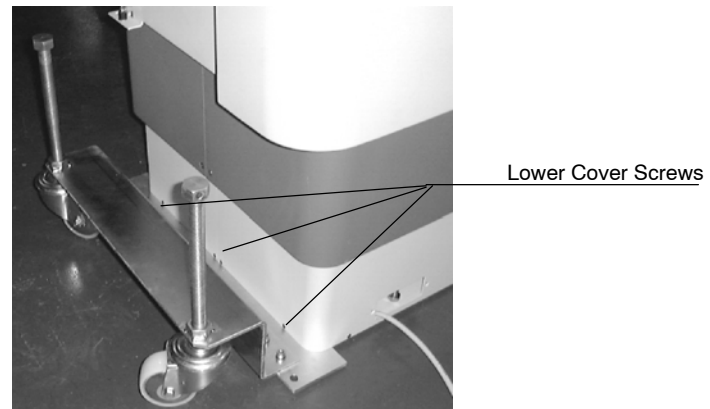


- d. Then, remove two screws located at right and left sides of the lower side of the cover (the same ones as step a) and take the cover away from the Table structure. Disconnect ground cable (GND).

- e. **Middle Covers:** remove the two screws located at the lateral side of cover and remove this cover moving the guide pins away from their slots. Remove ground wire (GND). Repeat procedure for the second middle cover.



- f. **Lower Covers:** remove all the external screws that fix this cover. Remove ground wire (GND).



9. Remove the Safety Screw and the Warning Label installed for transport.

"SAFETY SCREW" FOR TRANSPORT



10. Remove Jumper connector at J4 (this Jumper allows elevating the table without Generator connection).
11. Remove the Jumper located the at Table Base relay just before connecting the Table to the Generator. This Jumper allows general ON/OFF of the Room from the Generator Console.

Remove Connector J4



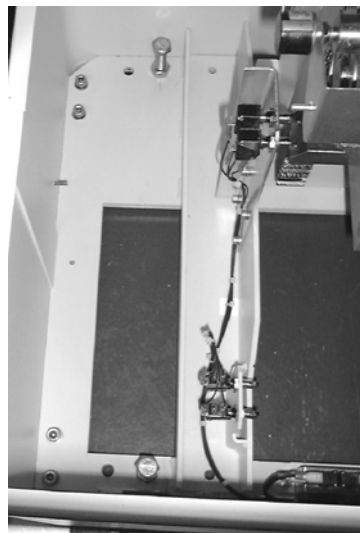
Remove Jumper at relay

12. Verify that transformer of Table Power Module correspond to correct power input line. If necessary, change transformer TR1 wiring connection marked "*" at Power Module as per schematics 54301061.
13. Lower Table close to the floor using the wheels threaded rod.
14. Place the Table Base in parallel and centered with reference to the Column Base of the so the longitudinal axes of the X-ray Tube meets the longitudinal axes of the Table Base (use the mark at Cassette Tray Holder as reference for centering). *Refer to illustration of dimensions of the equipments.*

Note 

The Collimator Lamp can be switched ON by pressing its button on the Collimator Panel or stepping on one of the Table-Top motion pedals (whenever Collimator signals are connected to J3 of the Table Base).

15. Switch ON the Collimator Lamp and align perfectly the Horizontal Receptor axes with the Collimator light beam. During the Receptor alignment place the Receptor and the Floor Mounted Tube Stand in different positions to check that it is correctly aligned.
16. Mark on the floor the four anchoring holes of the Table Base.



17. Move away the Table Base and prepare its anchors.
18. Position the Table Base at its final place and raise it by means of the leveling screws. Remove the transport accessories (plates and wheels).

19. Anchor Table Base to the floor. Check that it is properly leveled placing levels in different points of the Upper Frame. Use the four leveling screws (located close to each corner of the Base) to raise and level the Base, before securing definitively the Table.

Note 

Use an extended level (1 meter) or several standard levels placed in different points for leveling the Table Base.

20. Perform and check the following cable connections at the rear side of the Table Base:
 - a. Connect the following Column cables to the connector at the Table Base: J4 (not used in Basic Control Panel), J3, TS8-3/TS8-4 and GND. Column Cables marked TS2 (Stator Cables) will be connected later to the Generator).
 - b. Once these connections are performed, leave cables marked as: IC, Ground and TS1 on the floor for later connection to the Generator.
21. Route the cables through the rear cables outlet along the room for their later connection.

Note 

If the Digital Detector is not already installed, refer to Section 5.3.3.

22. Remove one of the Stop-Bars under one of the Table-Top ends.
23. With Table power ON, keep pressed one of the Table-Top brake pedals to allow motion. Install the Table-Top from one of the Table sides (right or left) inserting the Bearings inside of their Rails. At least two people are required for this operation.



24. Re-install the Stop-Bar under the Table-Top.

5.3.2 FOUR WAY FLOATING-TOP TABLE

1. Remove Table Front and Back covers.
2. Remove Jumper connector at J4 and the Jumper located the at Table relay just before connecting the Table to the Generator. This Jumper allows general ON/OFF of the Room from the Generator Console.



3. Place the Table Base in parallel and centered with reference to the Column Base of the so the longitudinal axes of the X-ray Tube meets the longitudinal axes of the Table Base.

Check with the Collimator Lamp ON and align perfectly the Horizontal Receptor axes with the Collimator light beam. During the Receptor alignment place the Receptor and the Floor Mounted Tube Stand in different positions to check that it is correctly aligned.

Note 

The Collimator Lamp can be switched ON by pressing its button on the Collimator Panel or stepping on one of the Table-Top motion pedals (whenever Collimator signals are connected to J3 of the Table Base).

4. Mark on the floor the six anchoring holes of the Table Base.
5. Move away the Table Base and prepare its anchors.
6. Position the Table Base at its final place
7. Anchor Table Base to the floor. Check that it is properly leveled placing levels in different points of the Upper Frame. Use the four leveling screws (located close to each corner of the Base) to raise and level the Base, before securing definitively the Table.

Note 

Use an extended level (1 meter) or several standard levels placed in different points for leveling the Table Base.

8. Check that the Table Circuit Breaker located at the back of the Table is OFF, then pick up the Power Supply cable from the Table (factory connected to TS1) and connect it to a wall socket (adapt a connector in the Power cable if necessary) in the Room or in the Room Electrical Cabinet.

Verify that transformer and fuses of Table Power Module correspond to correct power input line. If necessary, change transformer TR1 wiring connection marked "*" at Power Module as per schematics 54301063.

9. Perform and check the following cable connections at the rear side of the Table Base:
 - a. Connect the following Column cables to the connector at the Table Base: J4 (not used in Basic Control Panel), J3, TS8-3 / TS8-4 and GND. Column Cables marked TS2 (Stator Cables) will be connected later to the Generator).
If a Radax Docking Station is to be used, connect TS1-1 /2 /3 and leave 4/5/6 as they are not used.
 - b. Once these connections are performed, leave cables marked as: IC, Ground and TS1 on the floor for later connection to the Generator.
10. Route the cables through the rear cables outlet along the room for their later connection.
11. Install now the Table-Top, for that remove one of the Stop-Bars under one of the Table-Top ends.
12. With Table power ON, press and hold the Table-Top brake pedal to allow motion. Install the Table-Top from one of the Table sides (right or left) inserting the Bearings inside of their Rails. At least two people are required for this operation.



13. Re-install the Stop-Bar under the Table-Top.

5.3.2.1 INSTALLATION OF THE ADHESIVE SCALES FOR SID REFERENCE

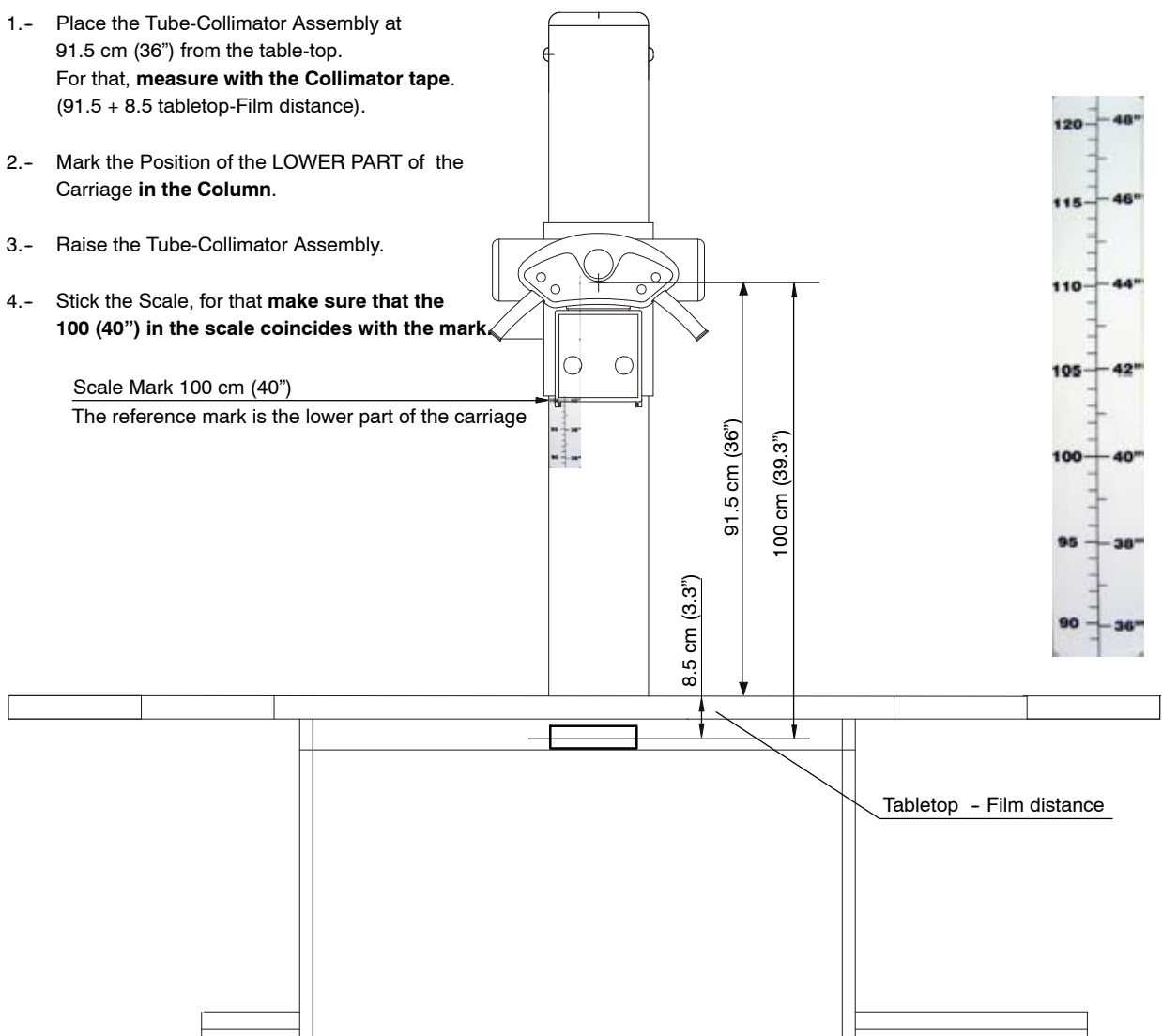
The System includes 2 autoadhesive scales for operator easy reference. The scale for the Wall Stand SID reference is stuck on the Column Base and the Scale for the Table SID reference is stuck on the Tube-Support Column.

The following illustrations show the recommended placing of the scales although it is the operator convenience what the installer should meet.

**Illustration 5-6
Installation of Vertical SID Scale in the Column**

- 1.- Place the Tube-Collimator Assembly at 91.5 cm (36") from the table-top. For that, **measure with the Collimator tape.** (91.5 + 8.5 tabletop-Film distance).
- 2.- Mark the Position of the LOWER PART of the Carriage **in the Column.**
- 3.- Raise the Tube-Collimator Assembly.
- 4.- Stick the Scale, for that **make sure that the 100 (40") in the scale coincides with the mark**

Scale Mark 100 cm (40")
The reference mark is the lower part of the carriage



5.3.3 INSTALLATION EXAMPLE OF A DIGITAL DETECTOR IN THE RAD TABLE

Note 

Perform this procedure before installing the Tabletop. In case the Tabletop has been already installed, remove it as explained in this Service Manual.

1. Remove the two screws that attach the Frame Stop with one hand while holding the Frame Stop under the Table-Top Frame with the other hand.



Keep the Frame Stop from falling to prevent any damage inside the table.

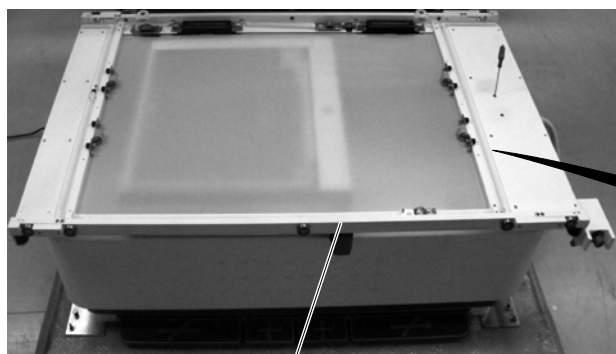
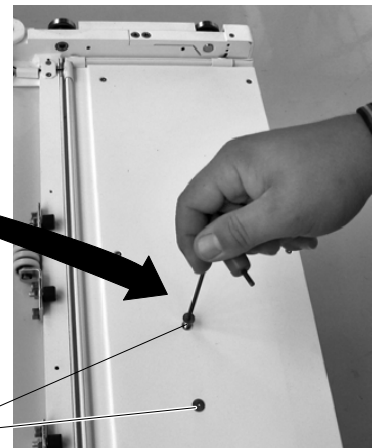


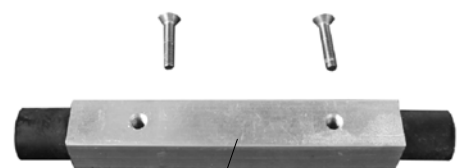
TABLE-TOP FRAME



FRAME STOP SCREWS



FRAME STOP



2. Disconnect the GND wire of the Table-Top (faston terminal). Disconnect the Harness plugged into J10 Connector (unscrew the round terminal and pull it).



GND WIRE

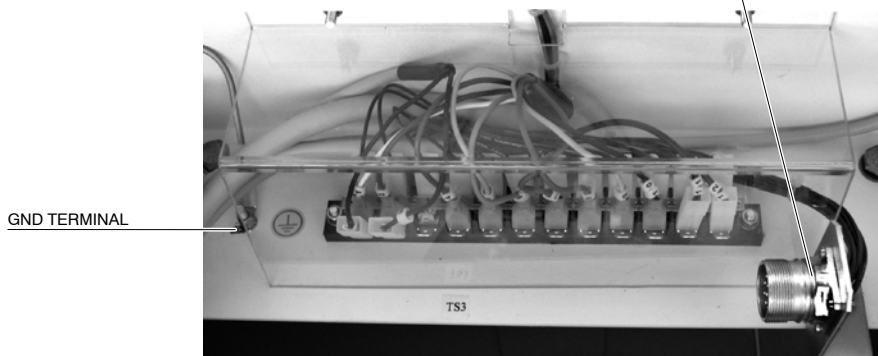
HARNESS TO J10 CONNECTOR



J10 CONNECTOR

HARNESS TERMINAL TO J10

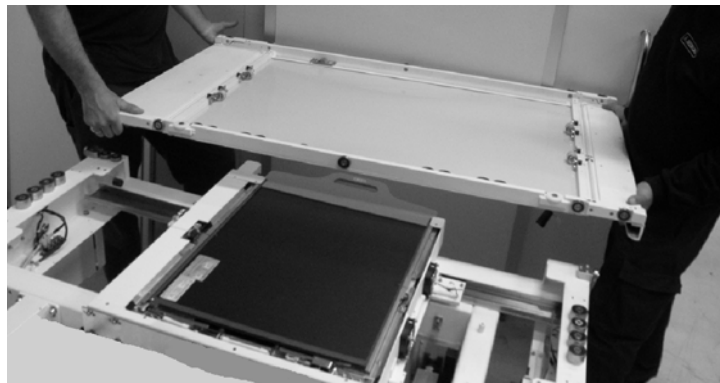
GND WIRE TERMINAL



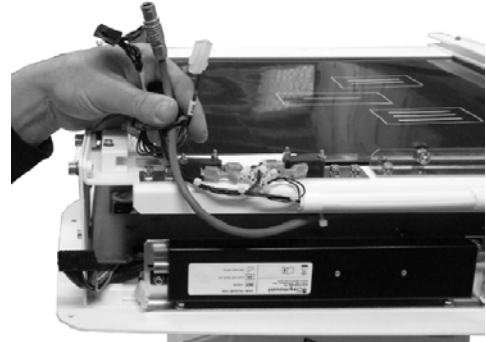
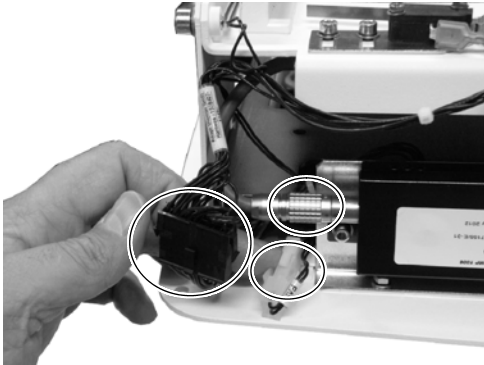
GND TERMINAL

3. Carefully take out the Table-Top Frame from the Table Base by sliding it towards the back side of the Table. Take care not to snare the disconnected GND wire or Harness in the Table Base, or to scratch the Digital Detector Housing.

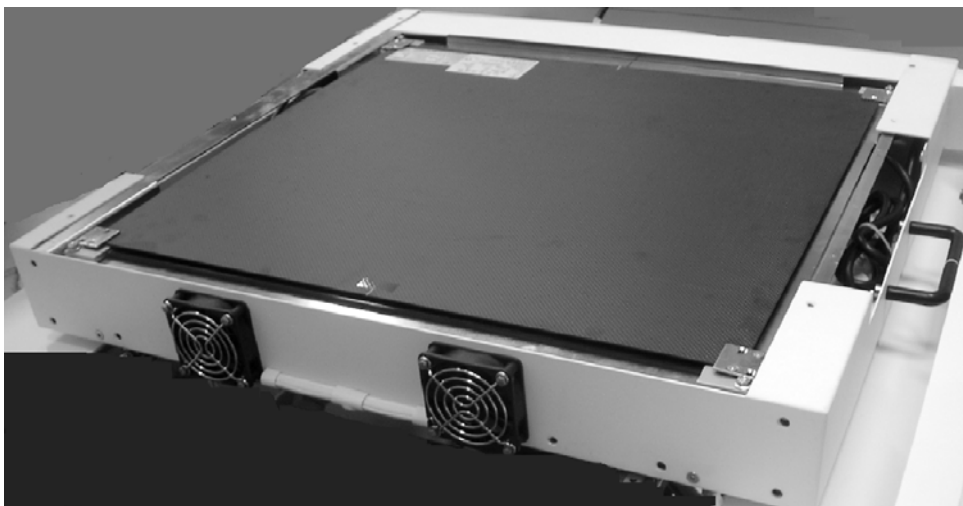
Two people are required to take out the Table-Top Frame



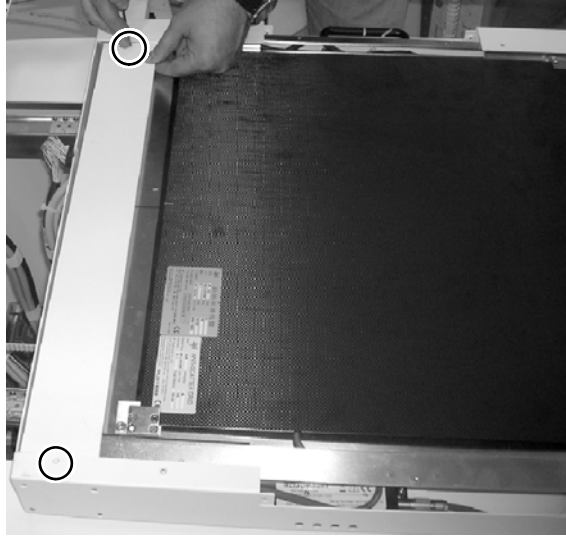
4. Disconnect the Fan connector, the Ion Chamber Molex and the Supply of the Ion Chamber Connector.



5. Remove the front and back upper metal sheets by unscrewing them from the Digital Detector box.



6. Also remove the long metal sheet from the right side. Hold it while unscrewing so it does not fall down.

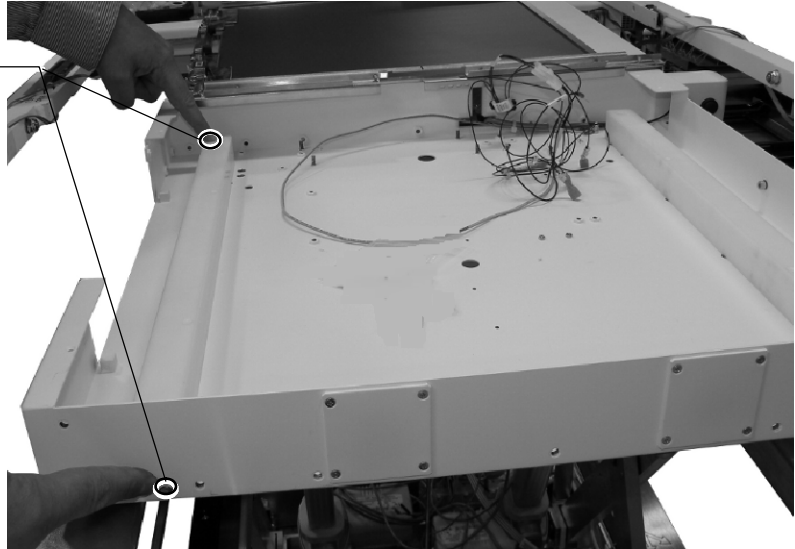


7. Unscrew the Ion Chamber Support Screws located at each corner of the Support.
8. Lift the Ion Chamber and Grid assembly and put it aside.

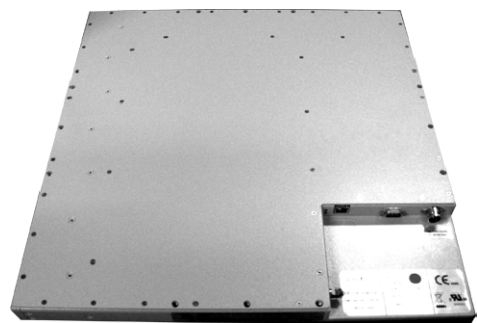
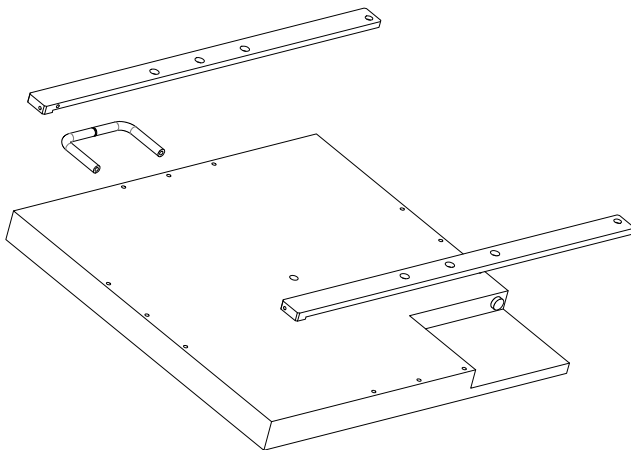


9. Disassembly both Nylon Blocks from the Digital Detector Back Support.

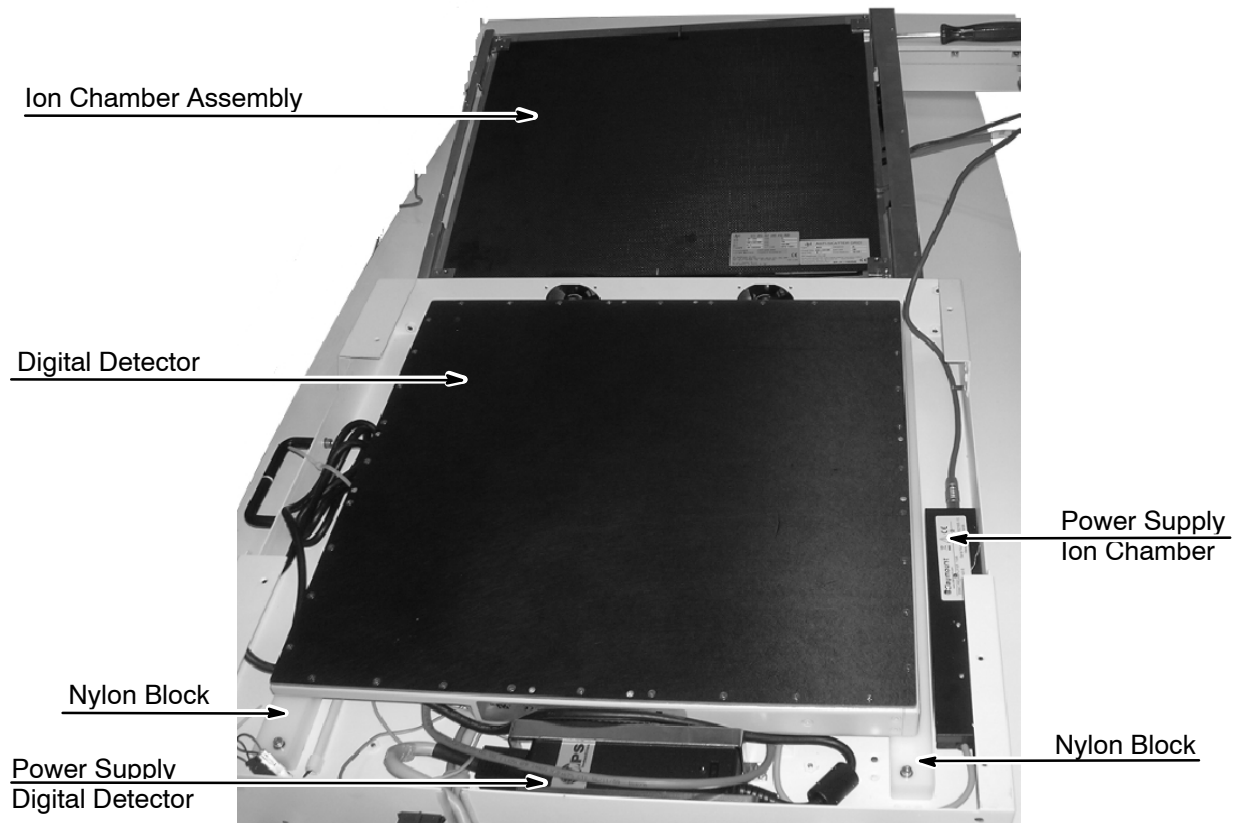
Screws attaching the Nylon Block



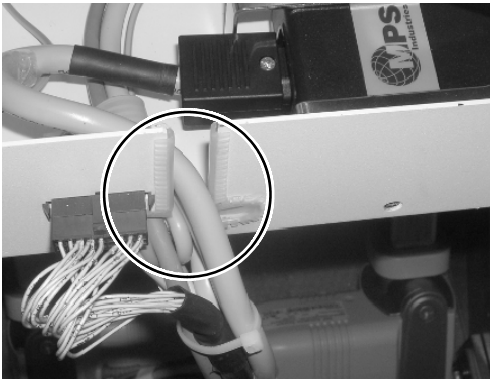
10. Carry the Digital Detector and the Nylon Blocks to a safe Flat surface.
11. Turn the Digital Detector Up side down and install both Nylon Blocks in the Digital Detector with the Screws included in the Digital Detector package.



12. Place the Digital Detector with the Nylon blocks already fixed in the Digital Detector Assembly and fix the assembly to the Digital Detector Assembly (two screws on the left side and two mounting screws through the top of the right side of the spacers).



13. Pass the Digital Detector Cables through the cable slot located on the right side of the Box and guide/ connect them as shown in the pictures below.



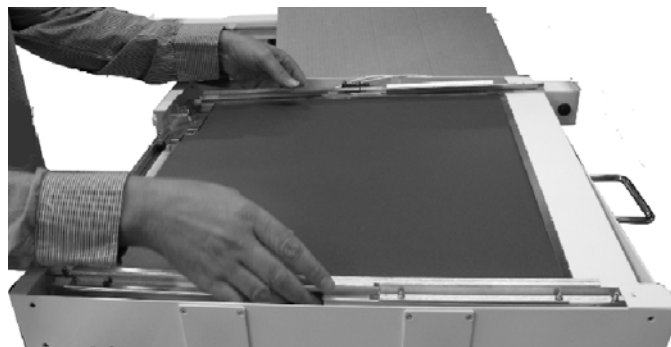
Note 

The Digital Detector may differ from the one showed in the illustrations. This is just a guiding example.

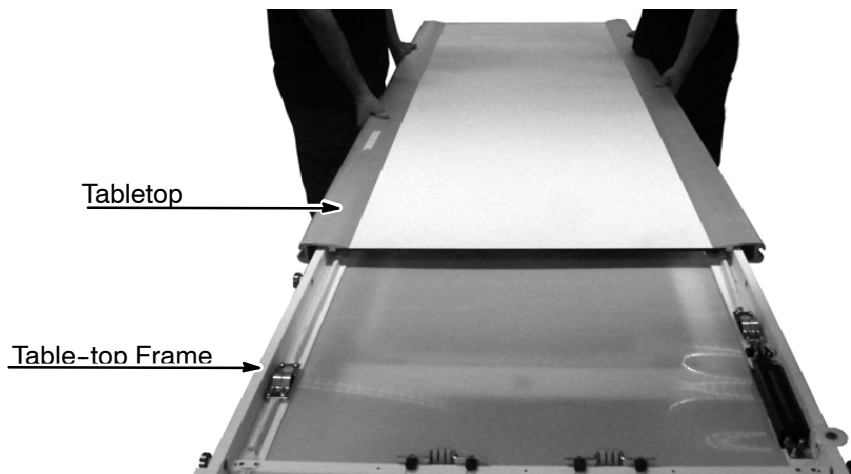
14. Reconnect the cables previously disconnected (Fans, Ion Chamber, Ion Chamber Supply.)



15. Replace the Tie wraps previously removed.
16. Reinstall the Ion Chamber assembly.



17. Reinstall the Tabletop Frame and reconnect J10 and GND.
18. Install the Table Top and install the Tabletop Stop Bar.



5.4 WALL STAND

Note 

If the Digital Detector is not installed, refer to Section 5.4.1.

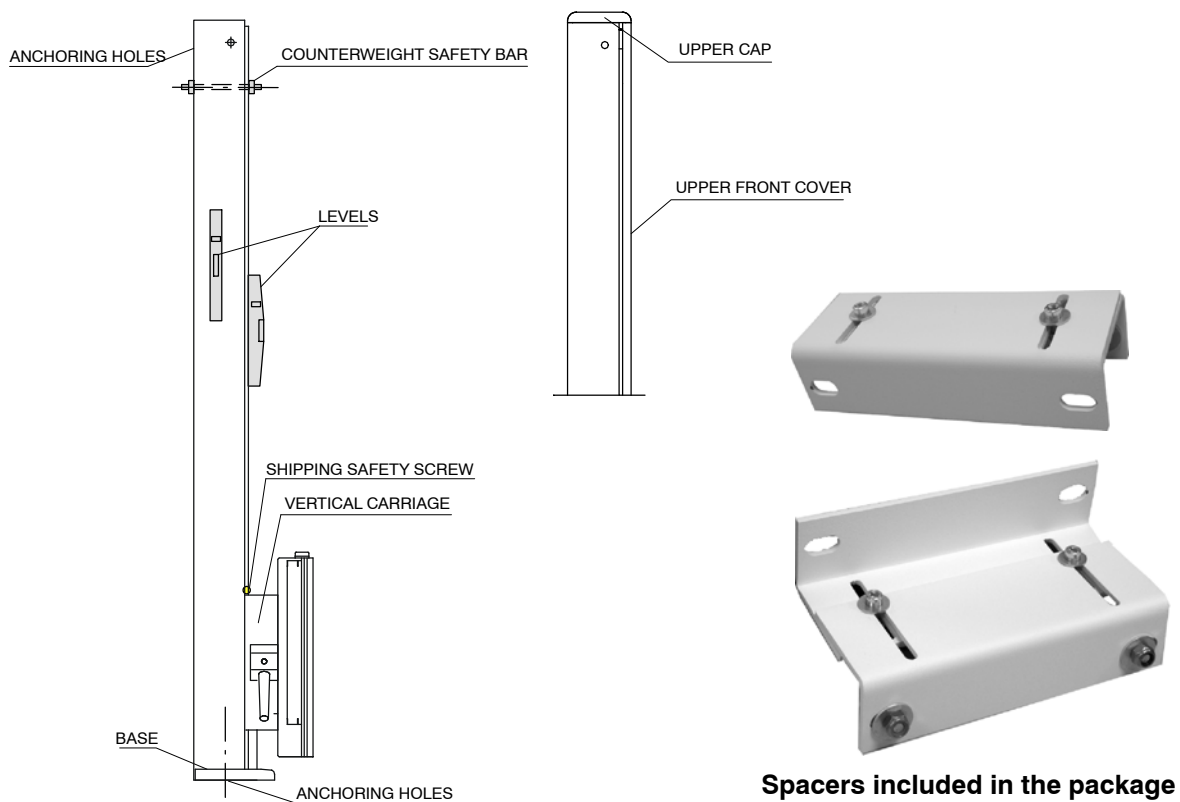


The Shipping Safety Screws used to block carriage movement as well as the Counterweight Safety Bar are used to prevent not only damage during shipment but also unwanted weight imbalance in the column during installation. The counterweights are factory adjusted.

There are various options to fix the assembly to the wall and floor: A) Spacers anchored to the wall (included in the package); B) Column anchored directly to the wall and floor (no support between the Wall Stand and the wall). C) Column Base anchored to the floor and column (optional-not included)

1. Place the Wall Stand in Vertical position.

Illustration 5-7
Wall Stand



2. Remove the Upper Cap and Upper Front Cover. The two lower screws shown in the photo below are used to secure the Upper Front Cover to the Column. The tool below is an Allen Type Screwdriver.



3. Remove the Counterweight Safety Bar (behind the Front Cover).
4. Remove the Shipping Safety Screws from the Carriage Rails. For this operation, it is advisable to have a person pushing the Bucky Assembly downwards to ease the removal (Mechanical Brake should be released).



5. Decide whether installing the wall anchors with the supplied Small Spacers, or nothing to separate the Wall Bucky Stand from the wall.
6. Place the Column at its final position in the room so that the longitudinal axis of the X-ray Tube meets the vertical axis of the Bucky.
7. Power ON the Collimator Lamp and correctly align the Wall Bucky axes with the Collimator light beam. During alignment, place the Tube-Collimator Assembly and the Vertical Carriage at different heights to check that it is correctly aligned.

8. **If using a Spacer:** Separate the Column from the wall and assemble the Spacer at the upper part of the Column before marking the anchoring holes in the wall.

If the Column is to be anchored directly to the wall: Mark two of the upper anchoring holes of the Column on the wall as well as the two anchoring holes on the floor.

If the Column base (optional) is to be anchored directly to the floor: Mark the anchoring holes of the Column base on the floor and then fix the Column to the Column base as showed in the Illustration 5-9 below.

9. Move the Column aside and prepare their anchors.

Illustration 5-8
Wall Stand - Anchoring Holes and Dimensions

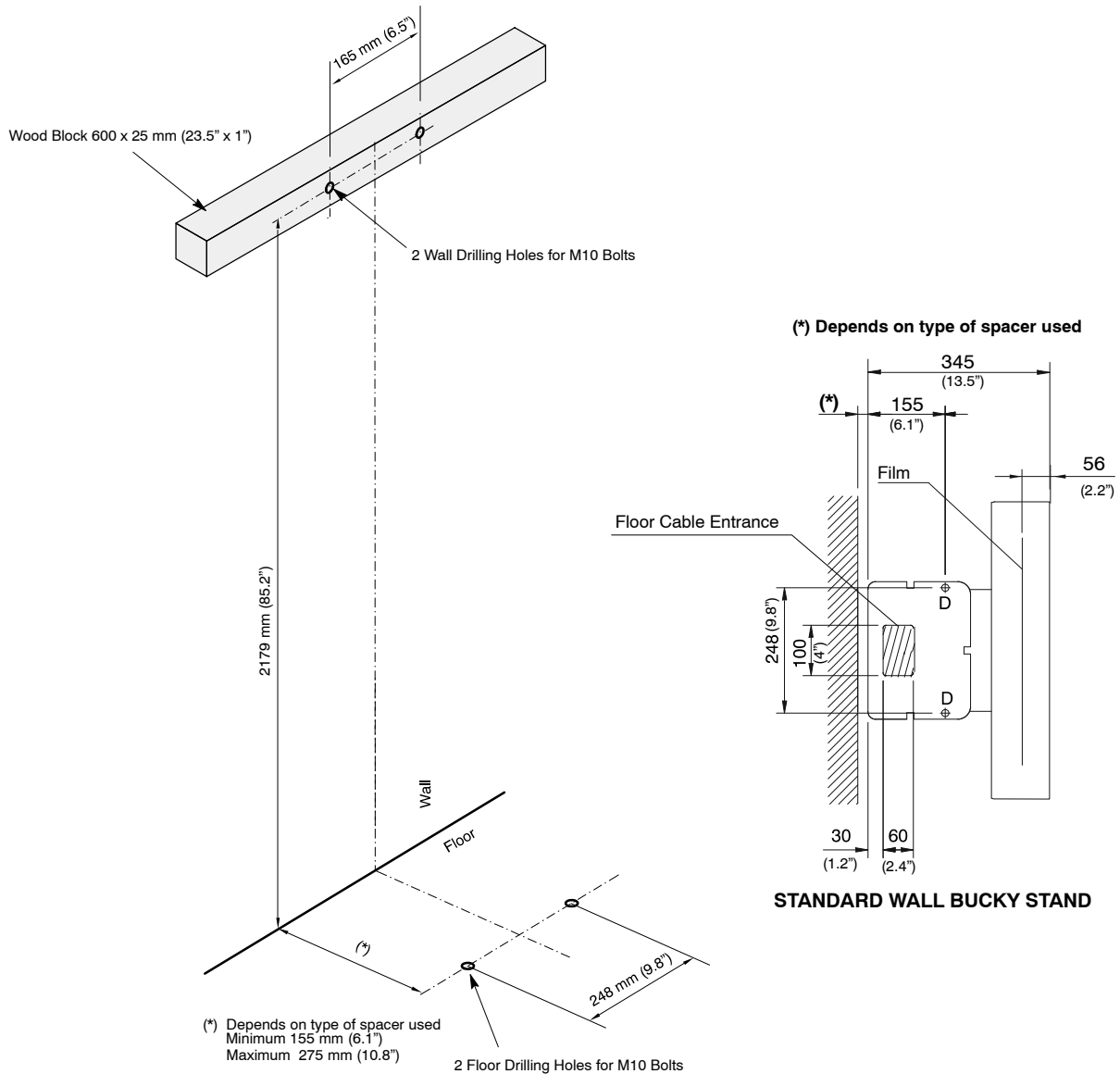


Illustration 5-9
Wall Stand - Spacers

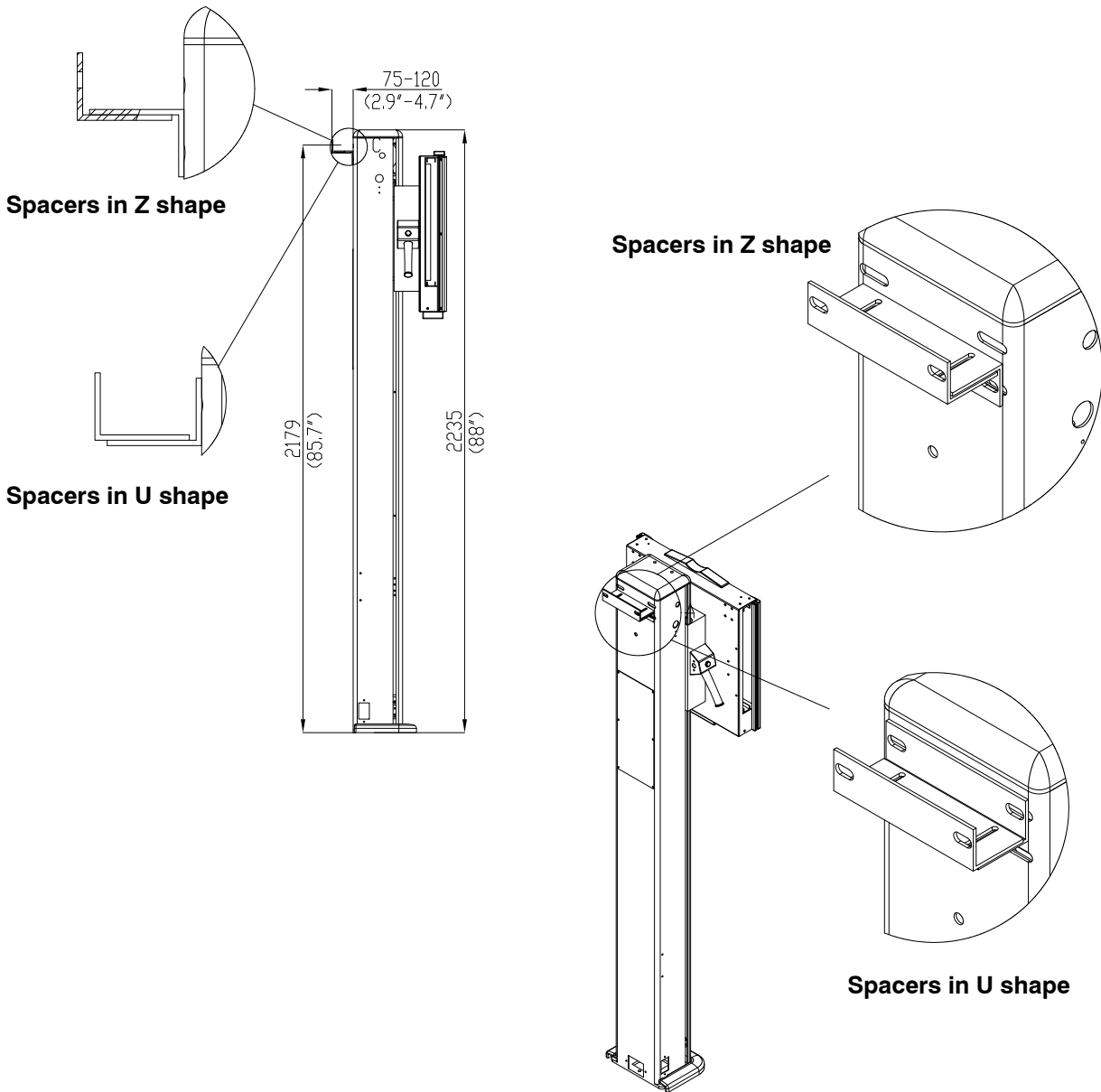
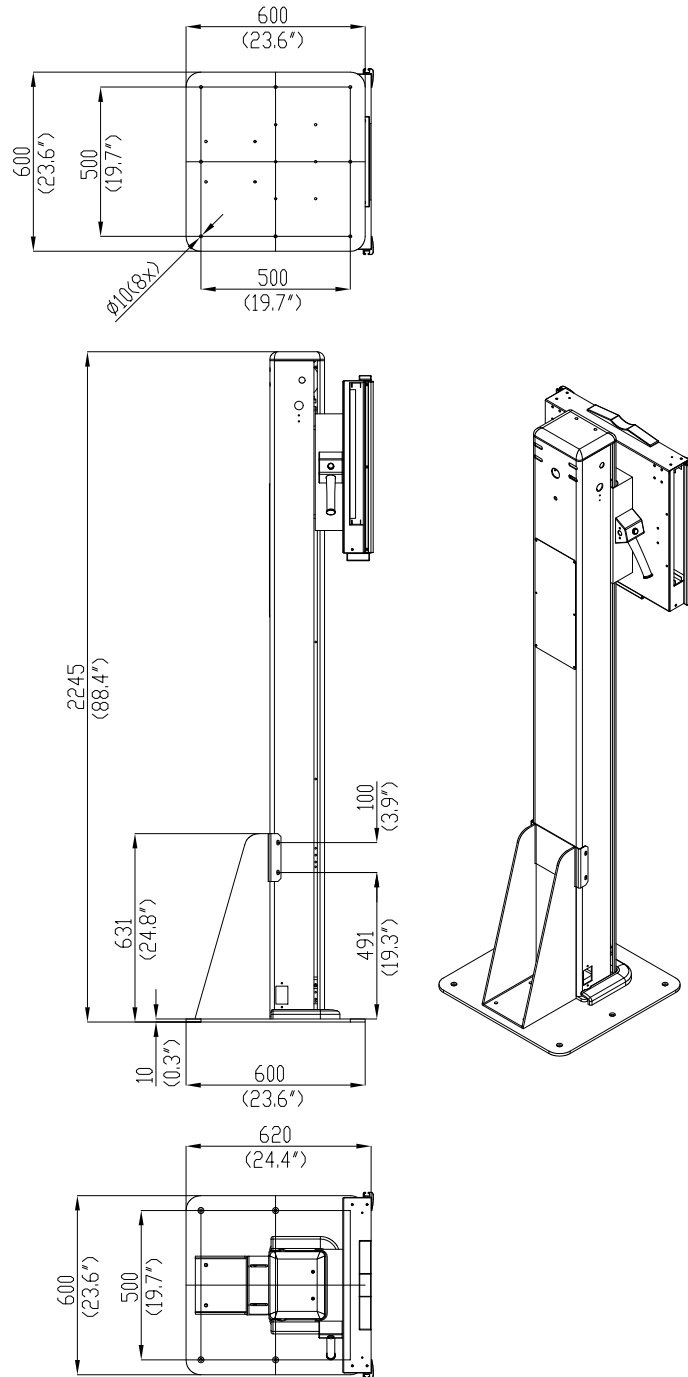


Illustration 5-10
Wall Stand - Column Base (optional)



10. Position the Column and fix it to the floor and wall. Check that it is properly leveled in both laterals and front side. Use the leveling plates provided to raise and level the Column previous to secure it definitively. *(Refer to Illustration 5-7).*
11. Install the Upper Front Cover and then the Upper Cap (both are secured with two screws). Install the Foot Cover of the Column pushing it.
12. Route the cables along the room to the Generator for their later connection.
13. If the Wall Stand has electrical Locks, connect the Power Supply cable for Locks from the Wall Stand to TB7 of the Lock Board in the Generator, and connect the GND cable from the Table Base to the GND Stud in the Generator *(refer to schematics 54301068).*
14. If applicable, connect the Wall Stand Bucky Cable directly to the Terminal Block 3TS1 in the Generator, and the Wall Stand Ion Chamber Cable to the Generator *(refer to schematics 54301068).*

Note 

Refer to the Generator Service Manual for further information.

5.4.1 INSTALLATION EXAMPLE OF A DIGITAL DETECTOR IN THE WALL STAND

The Detector Assembly of the Wall Stand is factory prepared to install the Digital Detector on both Nylon blocks located inside the Assembly.

The following instructions and illustrations show the recommended disassembly of the Cover, Ion Chamber Assembly and installation of the Digital Detector.



THIS INSTRUCTION DEPICTS THE INSTALLATION OF THE DIGITAL DETECTOR WITH THE WALL STAND IN HORIZONTAL POSITION ALTHOUGH THIS PROCEDURE CAN BE PERFORMED WITH THE WALL STAND IN VERTICAL POSITION.

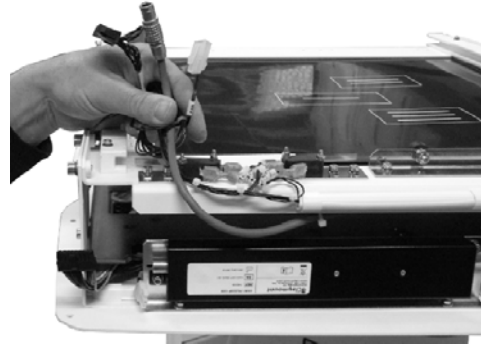
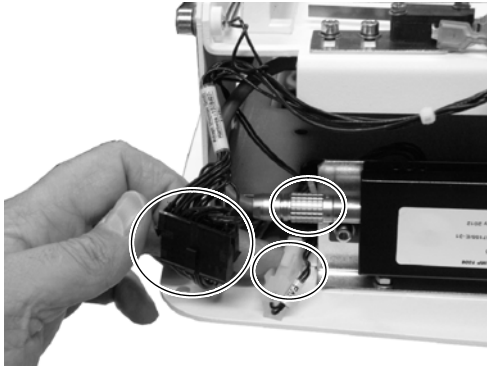
EXAMPLE OF WALL STAND IN HORIZONTAL POSITION



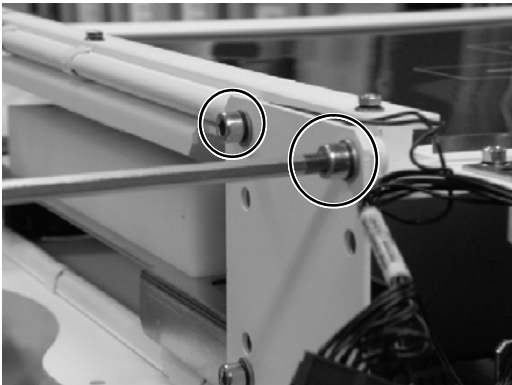
1. Remove the fixing allen screws (x8) of the Digital Detector Assembly cover and lift the cover away.



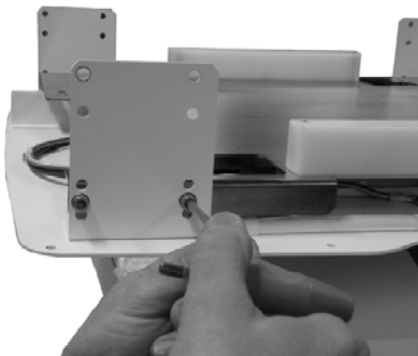
2. Disconnect the Fan connector, the Ion Chamber Molex and the Supply of the Ion Chamber Connector.



3. Unscrew the Ion Chamber Support Allen Screws (mark the holes for reinstallation reference).
4. Remove the Ion Chamber Assembly.



5. Disassembly the Digital Detector Back Support. For that, unscrew the 8 allen screws from the chassis and carefully remove the Digital Detector Back Support.



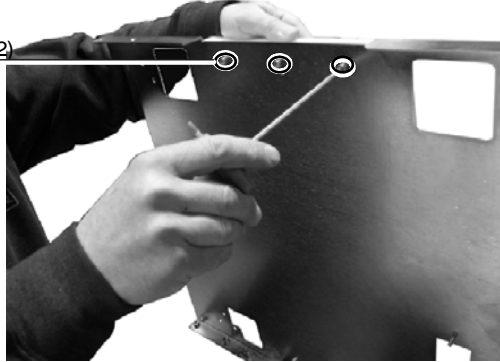
Digital Detector Back Support

Chassis

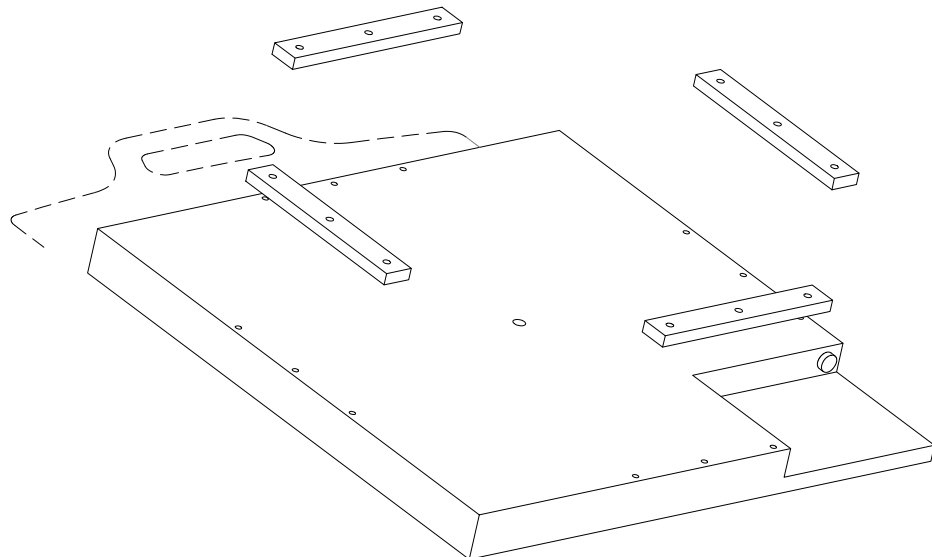


6. Disassembly the Nylon Blocks (x4) from the Digital Detector Back Support.

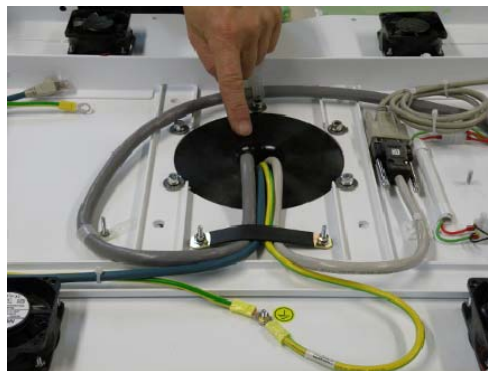
Screws attaching the Nylon Block (x12)



7. Turn the Digital Detector Up side down and install the Nylon Blocks in the Digital Detector.

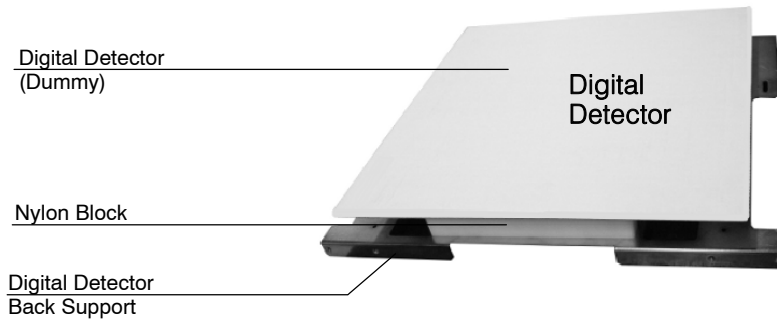


8. Route the cables of the Digital Detector through the Central hole of the Digital Detector Assembly and guide them outside.

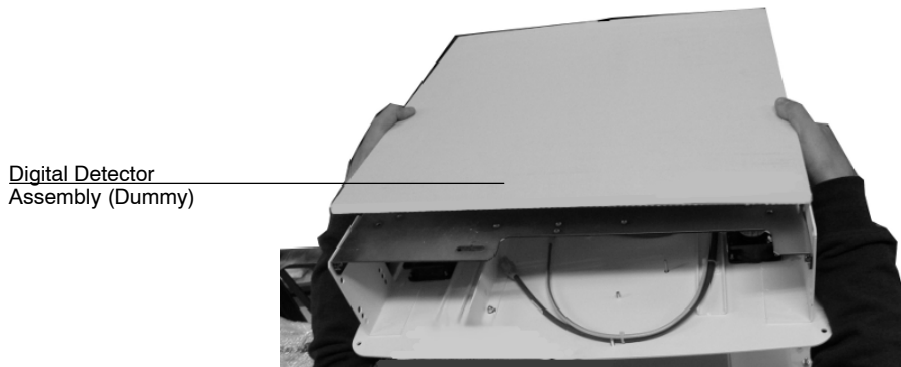


Do not forget the cable slack for movements!!!

9. Place the Digital Detector on the Digital Detector Back Support in its final position, so that the Nylon block is fixed between the Digital Detector and the Digital Detector Back Support (with the screws supplied in the Digital Detector Assembly).



10. Reinstall the Digital Detector Back Support with the Digital Detector on the Digital Detector Assembly.



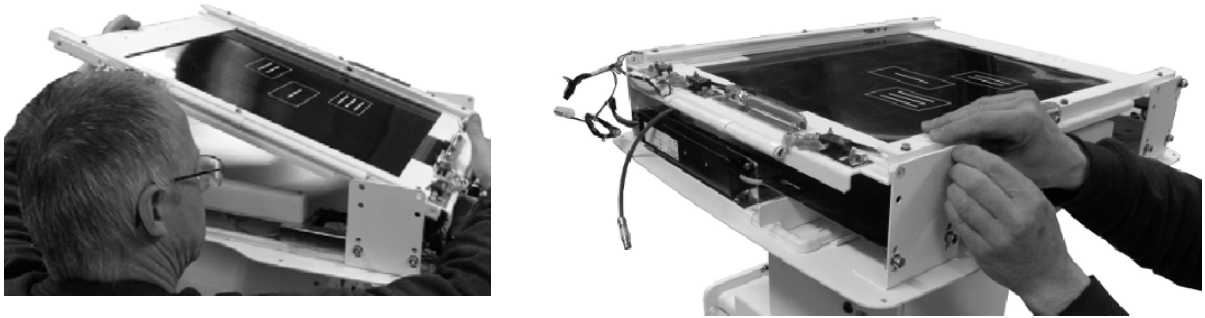
11. Connect the Detector Cables in the Digital Detector Connectors



Note 

The Digital Detector may differ from the one showed in the illustrations. This is just a guiding example.

12. Reinstall the Ion Chamber assembly in the Chassis Support Plates using the same holes.



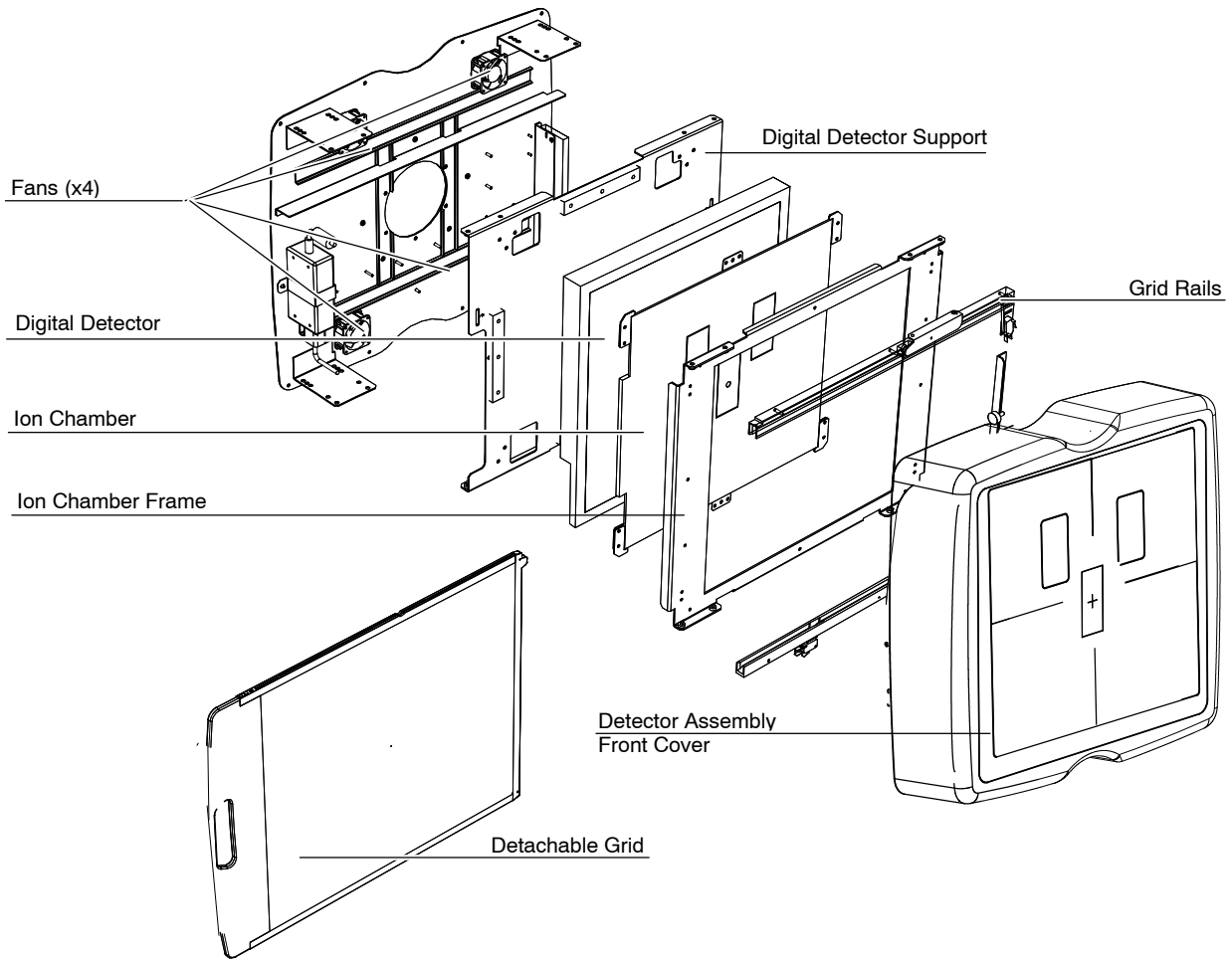
13. Reconnect the cables previously disconnected (Fans, Ion Chamber and Ion Chamber Supply).



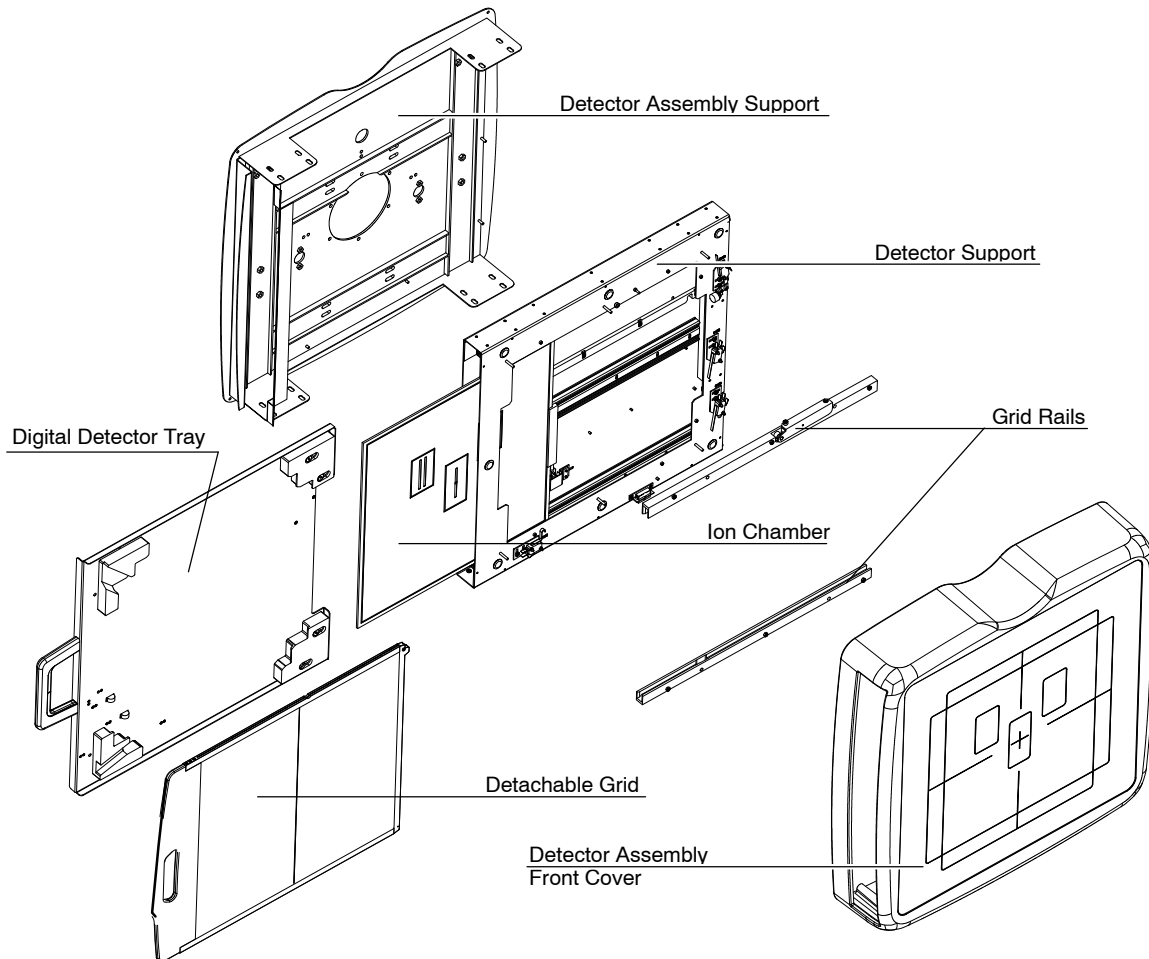
14. Reinstall the Digital Detector Assembly Cover.



5.4.2 GENERAL VIEW OF THE ASSEMBLY FOR FIXED DIGITAL DETECTOR



5.4.3 GENERAL VIEW OF THE ASSEMBLY FOR PORTABLE DIGITAL DETECTOR



5.5 CABLE ROUTING

Verify that the following cables are properly routed and connected.

CABLE NUMBER	FROM	TO	REMARKS
A6779-01	Tube Stand	Table Base TS8	230 VAC P.S. Control handle
A6754-01	Tube Stand	Table Base J4A	
A6750-01	Tube Stand	Table Base J4	
A6784-01	Tube Stand - Collimator	Table Base J3	Collimator
HV Cables	Tube Stand	Generator Cabinet - HV Transf.	HV Cables
A7014/15-xx	Tube Stand - X-Ray Tube	Generator Cabinet - TS2	Stator
A6739-01	Table Base TS1	Mains	Check VAC factory set
A6729-xx or A7163-XX	Table Base J1	Generator Cabinet 3TS1	A6729-xx for Bucky or A7163-XX for Digital Detector
A6756-xx	Table Base J2	Generator Cabinet IC1	Ion Chamber (optional)
GND	Table Base GND	Generator Cabinet GND	GND
A6703-xx	Wall Stand	Generator Cabinet 3TS1	
A6707-xx	Wall Stand	Generator Cabinet - Lock Board	Locks
A7656-xx	Wall Stand	Generator Cabinet IC2	Ion Chamber (optional)
GND	Wall Stand GND	Generator Cabinet GND	GND

5.6 FINAL INSTALLATION AND CHECKS

1. Check that J4 and bridge at Relay have been removed at Elevating Table.
2. Check all Room cable connections and connectors.
3. Perform Section 6 "*Adjustments*".
4. Perform Configuration and Calibration processes before installing all covers (Table, Column and Wall Stand).
5. Install the High Voltage Cable Hook if applicable.
6. Install all High Voltage white sleeves.

SECTION 6 ADJUSTMENTS



**DO NOT MODIFY THIS EQUIPMENT WITHOUT
AUTHORIZATION OF THE MANUFACTURER.**

6.1 ADJUSTMENT TOOLS

The procedures explained in this Section use Cassette Film. For Digital Radiography or CR cassettes, measure distances in the images as if they were made in a traditional film.

The following special Tools are commonly used for adjustment of the Rad Room (these tools are **not included** with the System. Use the suggested tools or equivalent):

- Collimator Test Tool (Model RMI 161B9).
- Beam Alignment Test Tool (Model RMI 162A).
- SID Test Stand Tool (Inside Case: RMI Model 175).
- Light Meter (Standard).

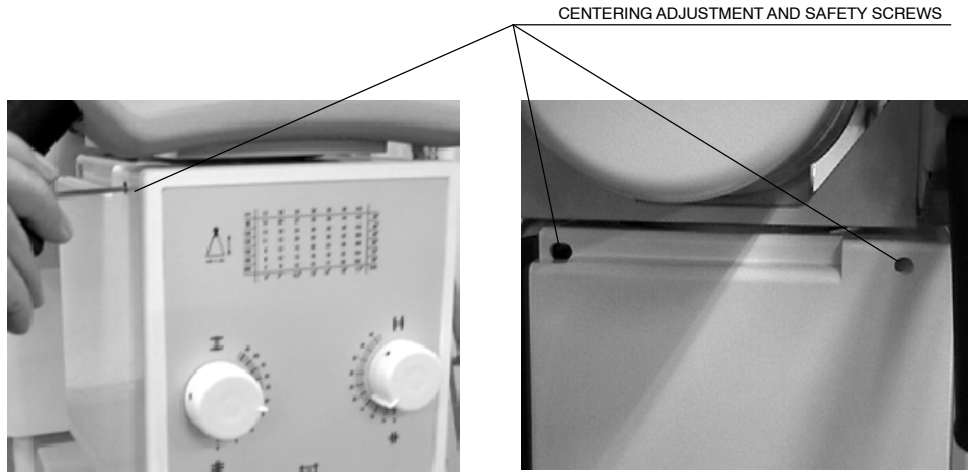
6.2 ALIGNMENT OF X-RAY BEAM

6.2.1 ALIGNMENT OF X-RAY BEAM WITH RADIOGRAPHIC TABLE

1. Place the Tube-Collimator Assembly at 1 meter SID of the Horizontal Receptor. Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Turn on Collimator light and center the Collimator in relation to the Table-Top. Horizontal and transverse position of the light axes projected by the Collimator Lamp must be in line with the axes of the horizontal Receptor.

If needed, modify Collimator position by carefully unscrewing and screwing the four Centering Adjustment and Safety Screws (Allen) of Collimator.

**Illustration 6-1
Collimator Screws**

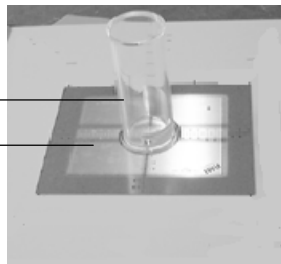


3. Position the Collimator Test Tool (RMI model 161B) on the Table-Top.
4. Turn on Collimator light and center the Collimator with Horizontal Receptor (use the mark at Cassette Tray Holder as reference for centering). Then, center the Collimator Test Tool with the light axes projected by the Collimator Lamp.
5. Adjust the Light Field of the Collimator Lamp to the rectangle drawn inside the Collimator Test Tool.
6. Place centered the Beam Alignment Test Tool (RMI model 162A) on the Collimator Test Tool .

**Illustration 6-2
Alignment Test Tools**

BEAM ALIGNMENT TEST TOOL - RMA MODEL 162A

COLLIMATOR TEST TOOL - RMA MODEL 161B



7. Load Cassette film Tray with cassette film 24x30 and insert it.
8. Make an exposure at 60 kVp / 5 mAs.

9. Process film and:

- a. Check that the X-ray Field falls just within the image of the inner rectangle of the Collimator Test Tool.

If an edge of the X-ray Field falls out of the inner rectangle means a misalignment of the Light Field respect to the X-ray Field. The maximum misalignment allowed is 2 % of SID (for SID 1m = 2 cm tolerance).

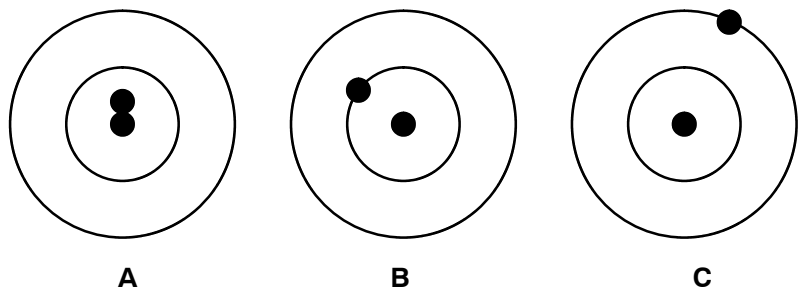
Refer to Section 6.2.2 for alignment of Light Field with X-ray Field.

- b. Check that the X-ray Beam is perpendicular to the plane of the Image Receptor. If the Image receptor is parallel to the Table-Top, the perpendicularity of the X-ray Beam can be checked using the Beam Alignment Test Tool with the Collimator Test Tool.

Based on next illustration, the criteria for SID at 1 meter is:

- If the image of the two balls overlap (A) the X-ray Beam is perpendicular to within 0.5° .
- If the image of the top ball (larger shadow) intercepts the first circle (B), the X-ray Beam is about 1.5° away from the perpendicular.
- If the image of the top ball (larger shadow) intercepts the second circle (C), the X-ray Beam is about 3° away from the perpendicular. In cases (A) and (B) perpendicularity is within tolerance for SID at 1 meter (top ball is within or intercepting the first circle). The third case (C) needs readjustment.

Refer to Section 6.2.3 for perpendicularity adjustment.



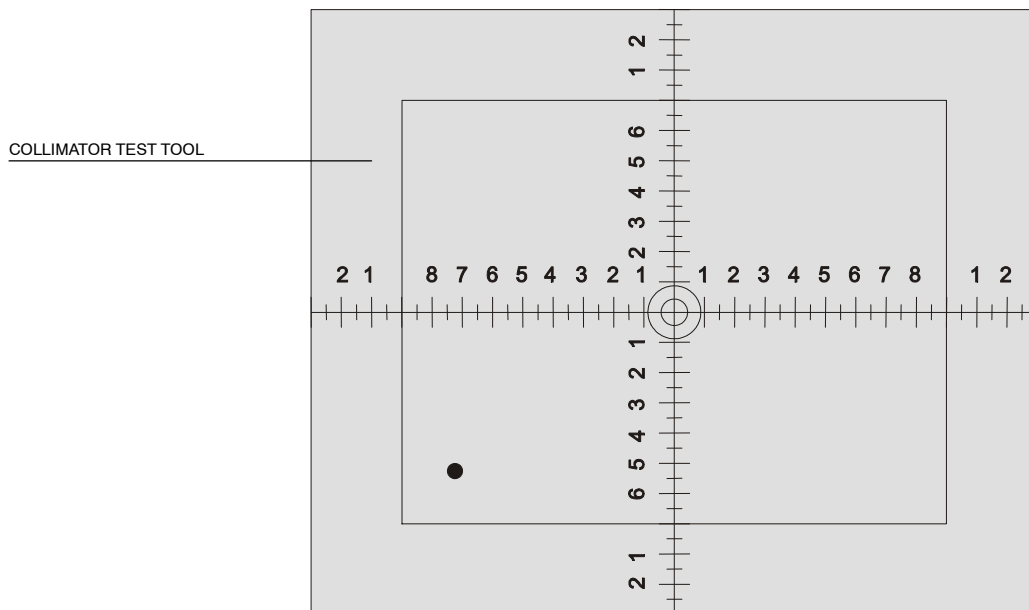
- c. Check that the X-ray Beam is properly centered with the Image Receptor. To determine the center of the Image Receptor, draw diagonal lines from corner to corner of the X-ray Film. (Alternately, the film can be folded in half and creased at the center). The two lines will cross in the center of the Image Receptor (film). Then draw diagonal lines from the corners of the imaged X-ray Field.

If the center of the X-ray Field and Image Receptor is the same, the diagonals of both sets of lines should cross at the same point. The maximum misalignment allowed is 2 % of SID (for SID 1m = 2 cm tolerance).

Refer to Section 6.2.4 for centering of X-ray Field and Image Receptor.

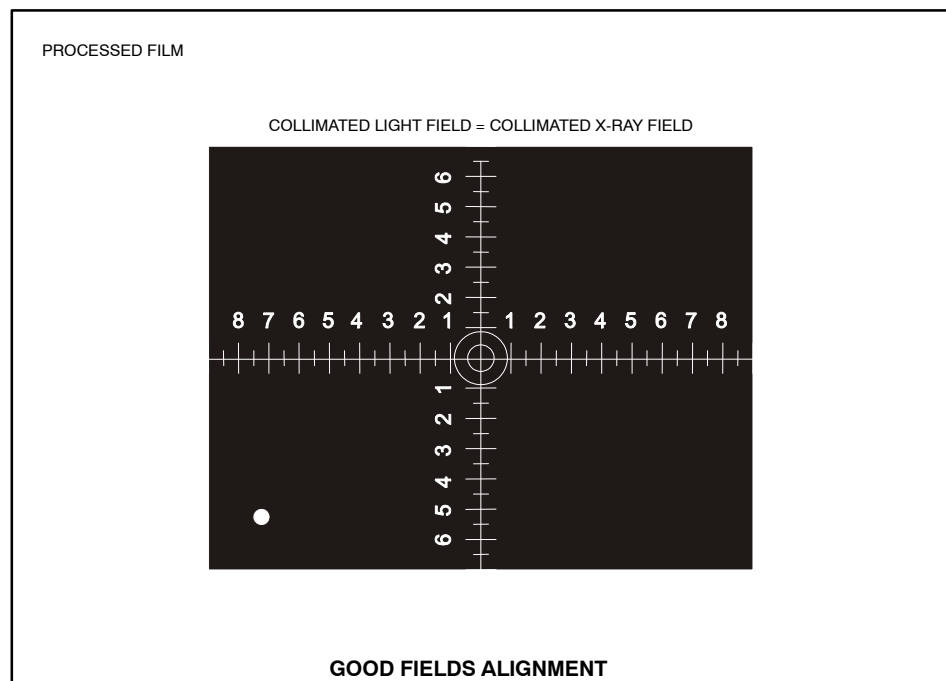
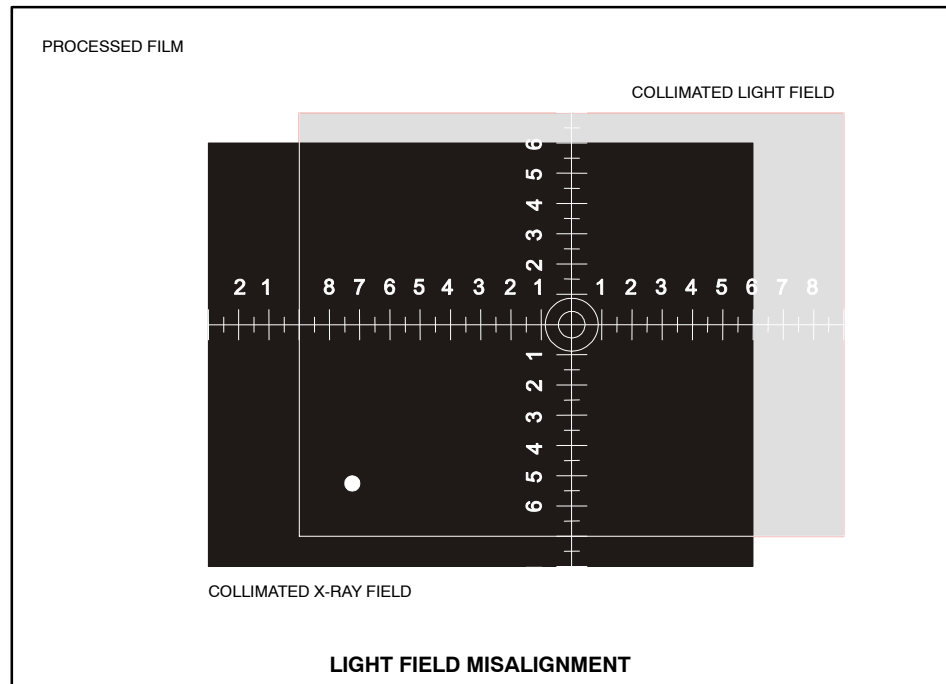
6.2.2 ALIGNMENT OF LIGHT FIELD WITH X-RAY FIELD

1. Turn on Collimator light and place the Tube-Collimator Assembly perfectly centered with the Horizontal Receptor (use the mark at Bucky Tray Handle as reference for centering). Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Place SID at 1 meter.
3. Center the Collimator Test Tool (RMI model 161B) on the Table-Top with the light axes projected by the Collimator Lamp.



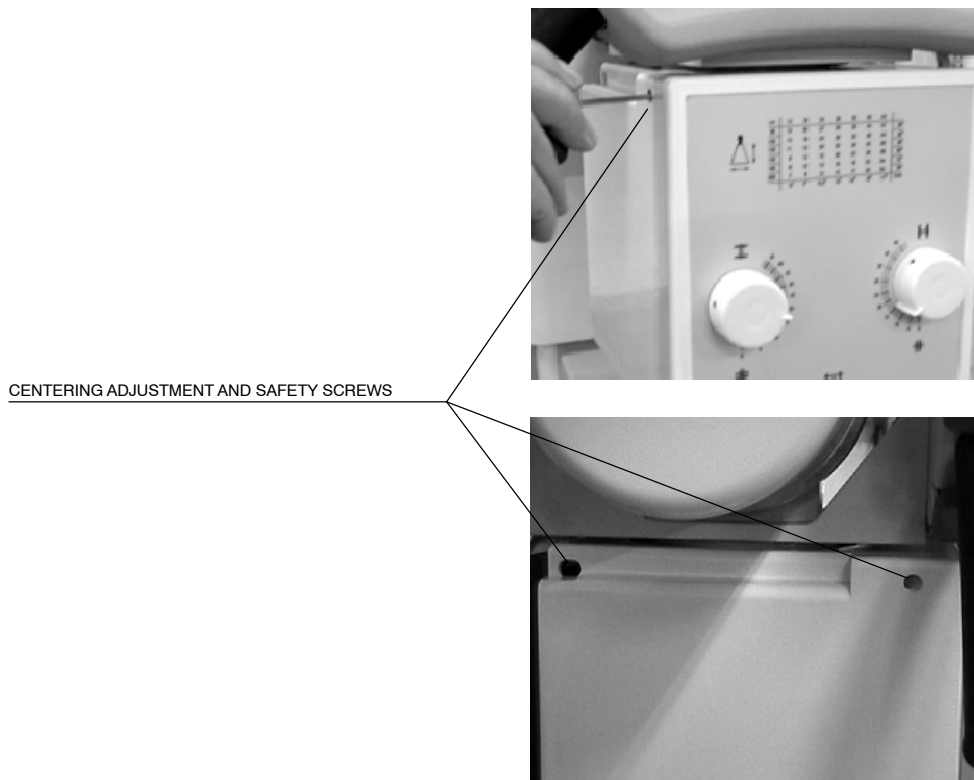
4. Adjust the Light Field of the Collimator Lamp to the rectangle drawn inside the Collimator Test Tool.

5. Check on the processed film the adjustment required to meet the Light Field with the X-ray Field. Identify the deviation on the axes imaged on the film.



6. Do not remove the Collimator Test Tool from its original position and adjust the Light Field by moving the Collimator Unit and/or the Collimator Lamp.
 - a. Collimator Lamp must be ON during Light Field adjustment.
 - b. Modify Collimator position by carefully unscrewing and screwing the four Centering Adjustment and Safety Screws (Allen) until the Light Field coincides with the axes reference imaged (numbers and dots) on the processed film.

**Illustration 6-3
Collimator Screws**



- c. If adjustment is still necessary, modify position of Collimator Lamp (*refer to Collimator Manual*).
7. Repeat exposure and procedure until the result is satisfactory. The maximum misalignment allowed is 2 % of SID (for SID 1m = 2 cm of tolerance).

6.2.3 PERPENDICULARITY ADJUSTMENT OF X-RAY BEAM WITH IMAGE RECEPTOR

In case that perpendicularity is out of tolerance (top ball is out of first circle), adjust perpendicularity as follows:

1. Place the Tube-Collimator Assembly perfectly centered with the Horizontal Receptor (use the mark at Bucky Tray Handle as reference for centering). Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Place SID at 1 meter.
3. Position the Collimator Test Tool (RMI model 161B) on the Table-Top.
4. Turn on Collimator light and by means of the Collimator Control Knobs, center the Collimator Test Tool with the light axes projected by the Collimator Lamp.
5. Place centered the Beam Alignment Test Tool (RMI model 162A) on the Collimator Test Tool (fix the Test Tool with adhesive or another product). Turn on Collimator light and observe if shadow of the Beam Alignment Test Tool is projected in equal proportion around it.
6. Check on the processed film the adjustment required to center the top ball mark. Shadow around the Beam Alignment Test Tool can also help to make a first correction.

7. Loosen slightly the four Safety Screws (M6) at the rear side of the Coupling Plate of the Column Arm (at rear side of the Tube-Collimator Assembly). Then loosen or tighten the four (Allen M5) to adjust horizontally the Tube-Collimator Assembly with reference to the Horizontal Receptor. (*Refer to Illustration 6-4*).

Vertical adjustment is not required because the Tube-Collimator Assembly can be placed at any vertical position.

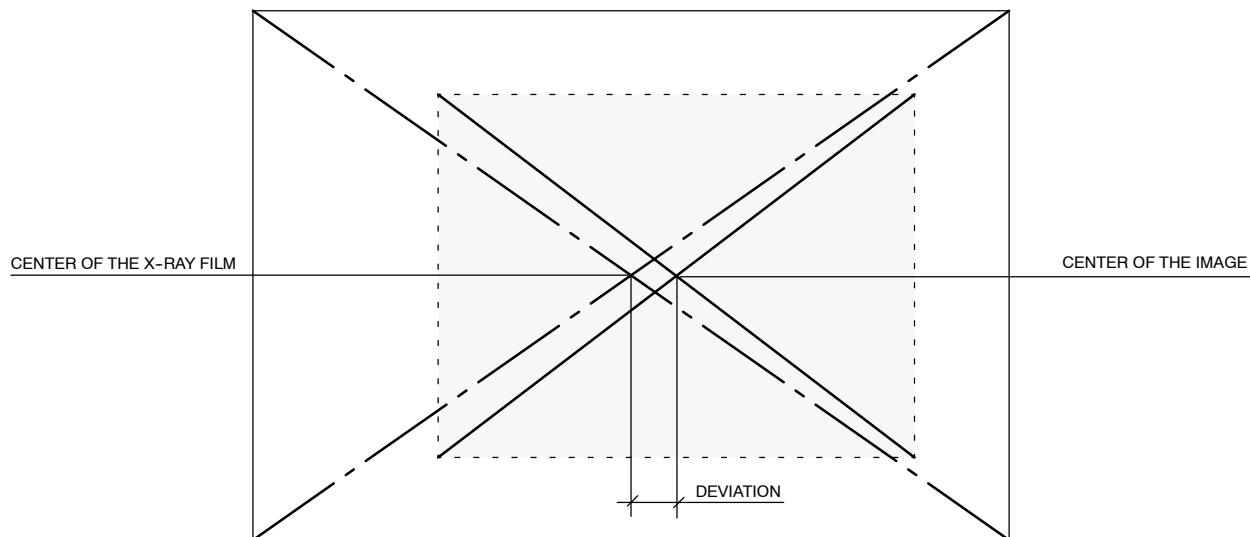
Illustration 6-4
Safety Screws and Rods for Perpendicularity Adjustment



8. Repeat exposure and procedure until the result is satisfactory (top ball must be inside of the first circle).

6.2.4 CENTERING OF X-RAY FIELD AND IMAGE RECEPTOR

The error between centers of the X-ray Field and the Image Receptor should not be greater than 2% of the SID. (for SID 1 m = 2 cm tolerance).



If the deviation is greater than 2% of SID, perform the following procedure:

1. Check on the processed film the correction required for centering the X-ray Field with the Image Receptor. Adjustments will be performed as the same way described for Perpendicularity correction, so only re-adjust it if really is necessary.



Centering adjustments may affect to perpendicularity corrections.

2. Repeat exposure and check centering until the result is satisfactory (centers position are within tolerance).

6.3 ALIGNMENT OF X-RAY BEAM WITH WALL STAND

1. Wall Stand has to be properly positioned and aligned respect to the Tube-Collimator Assembly in its central position.
2. Place the Tube-Collimator Assembly at 1 meter SID centered in front of the Vertical Receptor. Check with a level correct vertical position of Tube-Collimator Assembly and Receptor Table-Top.
3. Turn on Collimator light and center the Collimator in relation to the Receptor Table-Top. Horizontal and transverse position of the light axes projected by the Collimator Lamp must be in line with the axes or film sizes marked on the Table-Top. Horizontal and vertical position of the light axes projected by the Collimator Lamp must be in line with the horizontal and vertical axes of the Table-Top. (Alignment can also be performed by placing a mirror in the center of the Table-Top and checking the Collimator light reflection). If needed, readjust position of the Wall Stand.
4. Load Cassette film Tray with cassette film 24x30 and insert it.
5. Make an exposure at 60 kVp / 5 mAs.
6. Process film and check that the X-ray Beam is properly centered with the Image Receptor. To determine the center of the Image Receptor, draw diagonal lines from corner to corner of the X-ray film. (Alternately, the film can be folded in half and creased at the center). The two lines will cross in the center of the Image Receptor (film). Then draw diagonal lines from the corners of the imaged X-ray Field. If the center of the X-ray Field and Image Receptor is the same, the diagonals of both sets of lines should cross at the same point. The maximum misalignment allowed is 2 % of SID (for SID 1m = 2 cm tolerance).
7. If the deviation is greater than 2 % of SID, correct position of the Wall Stand adjusting its anchors at the wall and floor.
8. Repeat exposure and check centering until the result is satisfactory (centers position are within tolerance).

6.4 SID INDICATOR TEST

Note 

Before starting with the SID Indicator Test, the Alignment of X-Ray Beam Test and the Alignment of Light Field with X-Ray Field Test should be performed.

1. Place the Tube-Collimator in vertical position. The Tube-Collimator Assembly has to be perfectly aligned with the Receptor Assembly. Check with a level correct horizontal position of both assemblies.

Illustration 6-5
SID Test Stand Tool

SID TEST STAND TOOL



2. Position SID at 1 meter (use the SID scale of the Column).
3. Place the SID Test Stand Tool on the Receptor Table-Top. (*Refer to Illustration 6-5*).
4. Turn on the Collimator Light and by means of Collimator Control Knobs, center the SID Test Stand Tool with the light axes projected by the Collimator Lamp.
5. Adjust the Light Field to cover the window (circle) on the top SID Stand Test Tool. (*Refer to Illustration 6-6*).

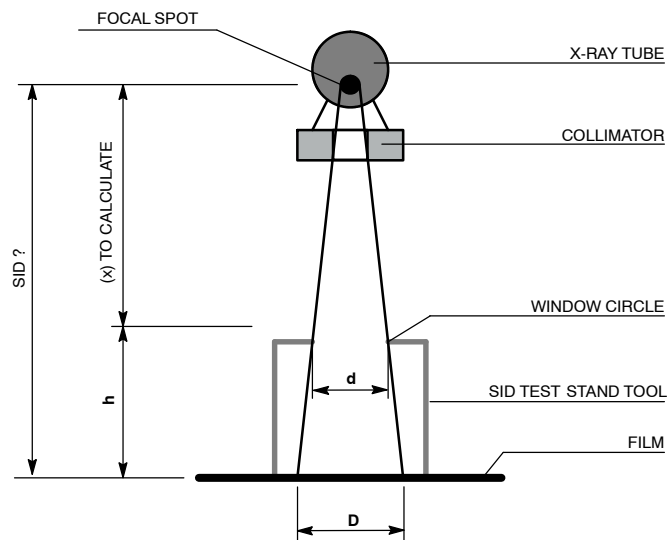
6. Place the Small Tool included in the SID Stand Test Tool with two straight narrow wires crossed on the center of circle at top SID Stand Test Tool. Place a small signal on the circle in order to mark the position.

Illustration 6-6
Light Field over SID Test Stand Tool



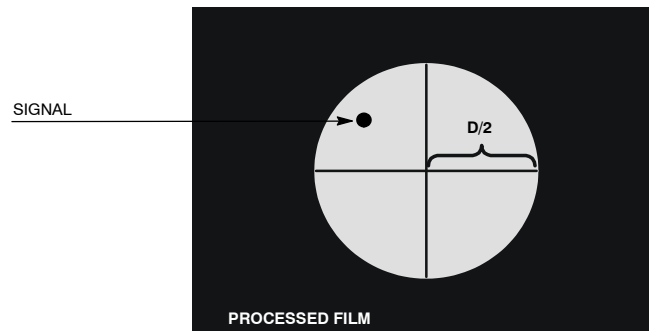
7. Load on the cassette film Tray with a cassette film of 24 x 30 cm centered and insert it.
8. Make an exposure at 60 kVp, 1 mAs.
9. Process film and check the following measurements known (*Refer to Illustration 6-7*):
 - a. Measure the height of the SID Test Stand Tool (Identified as h).
 - b. Measure the radius of window ($d/2$) on the SID Test Stand Tool.

Illustration 6-7
SID Calculation

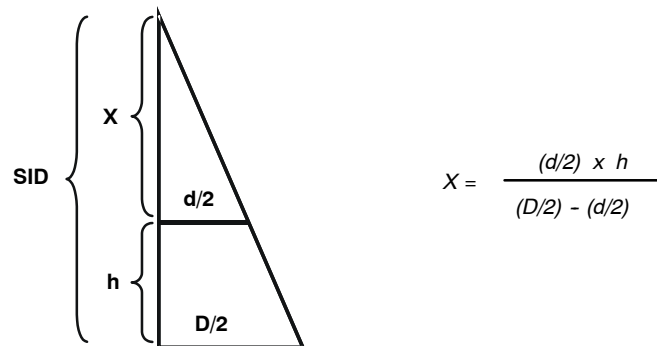


- c. Measure the radius of the circle (**D/2**) obtained on the Processed Film (refer to *Illustration 6-8*).

Illustration 6-8
Radius in Processed Film



10. With the measurements obtained on the step-9., calculate the “X” value, where:



11. The SID value to calculate will be: $SID = X + h$
12. The difference between the indicated SID and the calculated SID may not exceed 1.8 % (rejection limit) of indicated SID. Therefore the deviation of SID calculated should be not higher than 18 mm for SID at 1 meter.
13. If the SID value calculated is out acceptance limits, it will be necessary to readjust the SID potentiometer of the Radiographic X-Ray Room. (Refer to Section 8.1.1 Adjustment of Potentiometer at Column Arm).

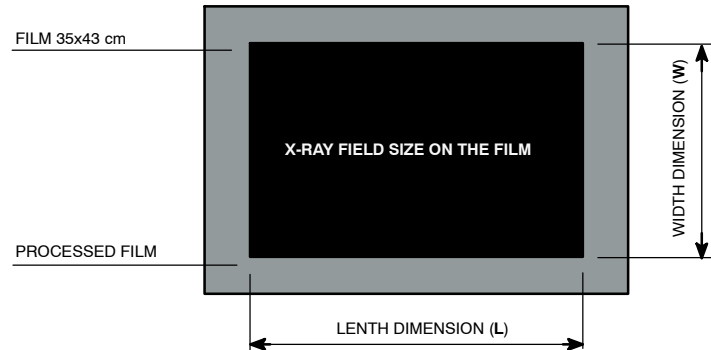
6.5 FIELD SIZE INDICATOR TEST

Note 

Before starting with the Field Size Indicator Test, the Alignment of X-Ray Beam Test and the Alignment of Light Field with X-Ray Field Test should be performed.

1. Place the Tube-Collimator Assembly perfectly centered with the Horizontal Receptor (use the mark at Bucky Tray Handle as reference for centering). Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Position SID at 1 meter (use the SID Display on the Column Control Panel if available).
3. Open the Collimator blades to set a Field Size of 24 x 30 cm for SID 1 m.
4. Turn on the Collimator Light and center the Collimator in relation to the Horizontal Receptor. Horizontal and Transferral position of the light axes projected by the Collimator Lamp must be in line with the axes of the Horizontal Receptor.
5. Load on the Cassette Film Tray with a Cassette Film of 35 x 43 cm centered and insert it.
6. Make an exposure at 60 kVp, 1 mAs.
7. Process film and check the following measurements known (*refer to Illustration 6-9*):
 - a. Measure the length of the X-ray Field on the Processed Film (identified as **L**)
 - b. Measure the width of the X-ray Field on the Processed Film (Identified as **W**)

Illustration 6-9
X-ray Field Size



8. With the measurements obtained and according to the field size indication selected, the results should be:
 - Length dimension (**L**) = 300 mm
 - Width dimension (**W**) = 240 mm
9. The difference between the indicated Field Size and the obtained Field Size may not exceed 1.5 % (rejection limit) of the SID in either direction. Therefore the deviation in any direction should not be higher than 15 mm (rejection limit) for SID at 1 meter.
10. If the deviation of Field Size Indication is out acceptance limits, it is necessary to readjust the index of Collimator Blades Control Knobs. For that, loosen each Collimator Control Knob and position it according to deviation. Repeat the complete tests until the X-Ray Field Size selected (24 x 30 cm) is obtained.

6.6 COLLIMATOR LAMP BRIGHTNESS TEST

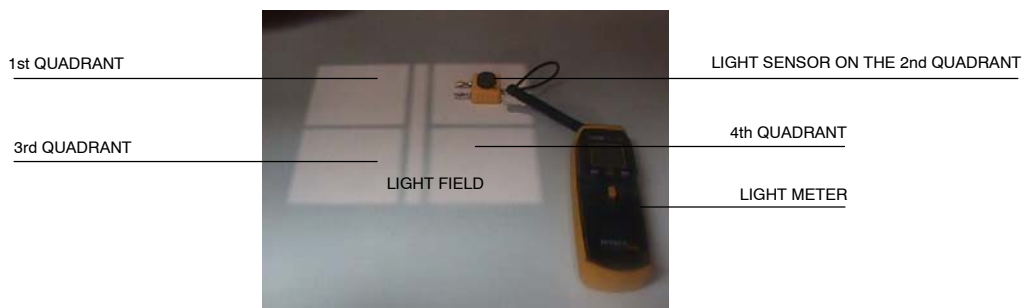
Note 

Before starting with the Collimator Lamp Brightness Test, the SID Indicator Test should be performed.

6.6.1 COLLIMATOR LIGHT FIELD INTENSITY

1. Place the Tube-Collimator Assembly perfectly centered with the Horizontal Receptor (use the mark at Bucky Tray Handle as reference for centering). Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Position SID at 1 meter.
3. Open the Collimator Blades by means of Collimator Control Knobs and set a Field Size of 25 x 25 cm for SID 1m.
4. Turn on the Collimator Light and center the Collimator in relation to the Horizontal Receptor. Horizontal and transverse position of the light axes projected by the Collimator Lamp must be in line with the axes of Horizontal Receptor.
5. Place the Light Meter on the Table-Top with sensor directed toward the Light Source.
6. Place the Light Meter in the center of one quadrant of the light field (*refer to Illustration 6-10*).

Illustration 6-10
Light Meter on Table-Top

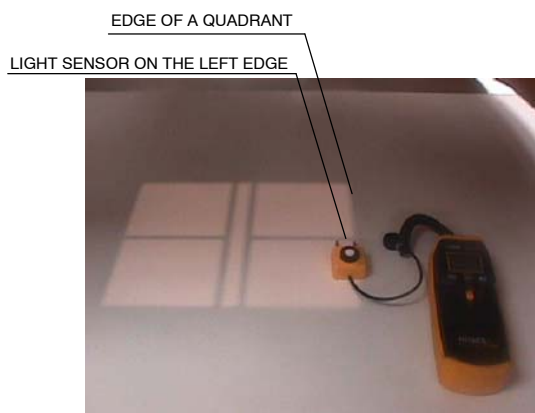


7. With Collimator Lamp OFF, measure and keep record of the ambient light level.
8. Do not move the Light Meter. With the Collimator Lamp ON, measure and keep record of light level of that quadrant.
9. Determine the light intensity of that quadrant by subtracting the ambient light level from the corresponding light level.
10. Repeat measurements at the approximate center of remaining three quadrants of light field.
11. With the measurements obtained on the step-10., the results of Light Field Intensity in all quadrants should be higher of 170 lux (16 foot-candles) and among all the quadrants the intensity light field shall not differ more than 10%.
12. The average illumination at a distance of 1 meter from the focal spot shall not be less than 160 lux (15 foot-candles). Rejection limit is 170 lux (16 foot-candles).
13. If the deviation of Light Field Intensity is out acceptance limits, it is necessary to take into account the following:
 - a. If the difference of Light Field Intensity among all quadrants is higher than 10%, we need to readjust the Collimator Lamp socket. Refer to Collimator Manual.
 - b. If the light level in all quadrants is less than 170 lux, it is necessary to check the following:
 - The lamp voltage level when it is ON shall not be lower of 24VAC. (Measure on the Bulb socket contact).
 - Check that the Collimator Lamp, the Mirror and the Mylar window are not dirty or discolored.
 - Check the correct position of the Mirror (*Refer to Collimator Manual*).
 - c. If the light level is still low:
 - Replace the Collimator Bulb.
 - Replace the Collimator Bulb socket.

6.6.2 COLLIMATOR LIGHT FIELD CONTRAST RATIO

1. Place the Tube-Collimator Assembly perfectly centered with the Horizontal Receptor (use the mark at Bucky Tray Handle as reference for centering). Check with a level correct horizontal position of Tube-Collimator Assembly and Table-Top.
2. Position SID at 1 meter.
3. Open the Collimator Blades to set a Field Size of 25 x 25 cm for SID 1m.
4. Turn ON the Collimator Light and center the Collimator in relation to the Horizontal Receptor. Horizontal and transverse position of the light axes projected by the Collimator Lamp must be in line with the axes of Horizontal Receptor.
5. Place the Light Meter on the Table-Top with sensor directed toward Light Source.
6. Place the Light Meter in the center of one quadrant of the light field. (*Refer to Illustration 6-11*).
7. Minimize the room lighting. With the Collimator Lamp OFF, measure and record the ambient light level.
8. Turn ON the Collimator Light. Measure the maximum illumination; this should occur near the field center. Slide the light sensor along the Table-Top and locate the point where the illumination drops to a 75% of the maximum. This point is defined by BRH as lying on the edge of the Light Field (*refer to Illustration 6-11*). All subsequent measurements will be referenced to this point and to this definition of “edge”.

**Illustration 6-11
Light Contrast Calculation**



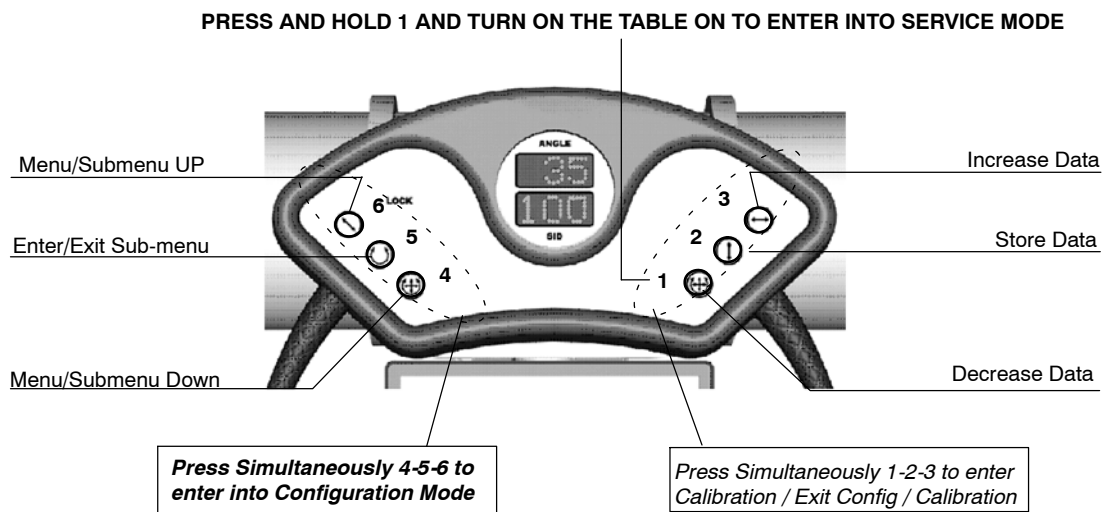
9. Measure the illumination at a point 3 mm from the edge of the field toward the center of the field (Light sensor on the left of edge). (*Refer to Illustration 6-11*). Record this as I_1 .
10. Measure the illumination at a point 3 mm from the edge of the field away from the center of the field (Light sensor on the right of edge). (*Refer to Illustration 6-11*). Record this as I_2 .
11. Correct the values of I_1 and I_2 by subtracting from each value the ambient light level measured in step-7. Now divide the corrected value of I_1 by I_2 . This ratio should be 4 or more.
12. Repeat the process from step-8. for all quadrants of Light Field.
13. If the deviation of Light Field Contrast Ratio is out acceptance limits, it is necessary check the following:
 - Check that the Collimator Lamp, the Mirror and the Mylar window are not dirty or discolored.
 - The Light Field Intensity level shall be higher of 170 lux.
 - The ambient light level shall be low as it affects the accuracy of the measurements.

This page intentionally left blank.

SECTION 7 CONFIGURATION AND CALIBRATION OF THE TUBE STAND

Note 

Only for Rad Rooms with Digital Control Panel Rad. Perform the Configuration and Calibration Process as described in this Section. As every installation has its own features, all Configuration and Calibration points must be checked.



7.1 TAKE A FEW MINUTES TO LEARN HOW TO USE THE DIGITAL CONTROL PANEL

If this is the first time that you are going to perform a Configuration and Calibration of the Column device, follow the Steps below to familiarize yourself with the front panel and its functions during the configuration and calibration process.

Configuration

1. With the System OFF, press and hold button “1” while turning On the System until “CAL” appears on the “Angle Display”, which means that the Unit is Service Mode.
2. Press simultaneously buttons “4 + 5 + 6” to enter in Configuration Main Menu until “CON” appears on the “Angle Display”. After releasing these buttons “C01” appears on the “Angle Display” (and nothing in “SID Display”).
3. Press “5”. You will see “C1.1” and “1”. You will be in Configuration Sub-Menu.

4. Press "1" to raise number or "3" to lower number within Sub Menu. (These numbers appear in SID display.)
Set "1" for Fixed height Table or "2" if you have an Elevating Table.
5. Press "2". The display shows OK and the number configured at the Angle display. ATTENTION: You have just set the type of Table, please Complete the Configuration and Calibration process of the Column as indicated in this Section and the following.
6. Press "5" and then press simultaneously "1 + 2 + 3". Now you have exited Configuration Mode. Turn off the system.

Calibration

1. If the Configuration process have just been set (the System is ON), press simultaneously buttons "1 + 2 + 3" to enter in Calibration Main Menu until "CAL" appears on the "Angle Display". After releasing these buttons, "P01" appears on the "Angle Display" (and nothing in "SID Display").
2. Press "6" two times. You will see "P03".
3. Press "5". You will see "P3.1" and "110" (the number Factory Set for SID with respect to a Vertical Bucky).
4. Press "2". The display shows OK and a number at the Angle display (the potentiometer readout). ATTENTION: You have just set the SID distance with respect to a Vertical Bucky. Please Complete the Configuration and Calibration process of the Column as indicated in this Section and the following.
5. Press "5" and then press simultaneously "1 + 2 + 3". Now you have exited Calibration Mode. You will see regular parameters. Turn off the system.

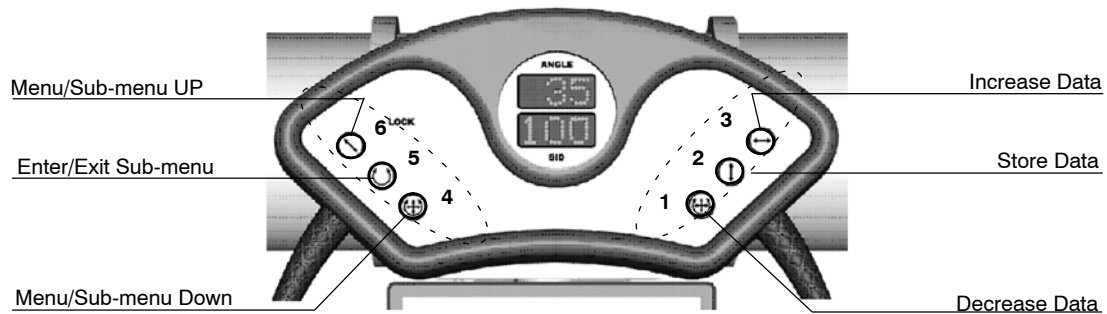
Note

Before starting and in order to ease the process, take out the Tomographic Bar (if applicable), position the column at one side of the rail, measure with metric tape the maximum and minimum height of the Elevating Table from Table-top to floor (discount 85 mm. of the Tabletop-Film distance) (for Fixed Height Table measure the height of the Table in the same way and discount 85mm.) and also measure the minimum and maximum height of the Tube-Collimator Assembly to the floor with the Collimator metric Tape. (Write the data in the configuration Tables).

Note

Once a calibration point is memorized, "OK" and the potentiometer readout appear on display, if the readout is the same in different points, check the potentiometer.

7.2 CONFIGURATION PROCESS



1. With the System OFF, press and hold button “1” while turning On the System until “CAL” appears on the “*Angle Display*”, which means that the Unit is Service Mode.
2. Press simultaneously buttons “4 + 5 + 6” to enter in Configuration Main Menu until “CON” appears on the “*Angle Display*”. After releasing these buttons “C01” appears on the “*Angle Display*” (and nothing in “*SID Display*”).

Note 

After selecting a Sub-menu, its indication is shown in the “Angle Display” and the variable value is shown in the “SID Display”.

3. Follow the configuration steps described in the Table 7-1. Write down the configured values in the right column of the Table 7-1.

**Table 7-1
Configuration Parameters**

MENU	SUB-MENU	PARAMETER TO BE CONFIGURED	OPTIONS	PRESET VALUE	STORED VALUE
C01	C1.1	Type of Table. (Fixed Height Table / Elevating Height Table).	1/2	1	
		STEP 1: Press 5 to select C1.1.			
		STEP 2: Press 1 or 3 to select "1" Fixed Height Table or "2" Elevating Height Table.			
		STEP 3: Press 2 to store the value.			
	C1.2	SID measure unit. (Centimeters / Inches).	CM / INC	CM	
		Step 1: Press 6 to select C1.2.			
		Step 2: Press 1 or 3 to select CM or INC.			
		Step 3: Press 2 to store the value			
	C1.3	Type of Column. Without Tomography (MSW) or with Tomography (POT).	MSW / POT	MSW	
		Step 1: Press 6 to select C1.3.			
		Step 2: Press 1 or 3 to select MSW or POT.			
		Step 3: Press 2 to store the value.			
	C1.4	Height of Fixed Table. <i>C1.4 is only for Fixed Height Table, if it is not needed, skip this point and go to C1.5.</i> (if not done before) Measure from the floor to the Tabletop surface and discount 85 mm of Tabletop-Film distance. (Enter this data also in C2.1 and C2.2).	Measured at site	70 cm	
		Step 1: Press 6 to select C1.4.			
		Step 2: Press 1 or 3 to select the value measured.			
Step 3: Press 2 to store the value.					
C1.5	Detent for Elevating Table. <i>C1.5 is only for Elevating Table, if it is not needed, skip this point and go to C1.6.</i> This detent will stop the travel of the Elevating Table at the height specified by user and does not require calibration.	Measured at site	70 cm		
	Step 1: Press 6 to select C1.5.				
	Step 2: Press 1 or 3 to adjust the desired value.				
	Step 3: Press 2 to store the value.				
Press 5 to exit from Sub-menu level C1.5.					

Table 7-1 (cont.)
Configuration Parameters

MENU	SUBMENU	PARAMETER TO BE CONFIGURED	OPTIONS	PRESET VALUE	STORED VALUE
C02	Press 6 to select Menu C02				
	C2.1	Minimum height of Elevating Table. (if not done before) Position Table at minimum height and measure from floor to Tabletop surface. Discount 85 mm of Tabletop-Film distance.	Measured at site	50 cm	
		Step 1: Press 5 to select C2.1.			
		Step 2: Press 1 or 3 to display the value measured.			
		Step 3: Press 2 to store the value.			
	C2.2	Maximum height of Elevating Table. (if not done before) Position Table at maximum height and measure from floor to Tabletop surface. Discount 85 mm of Tabletop-Film distance.	Measured at site	90 cm	
		Step 1: Press 6 to select C2.2.			
		Step 2: Press 1 or 3 to display the value measured.			
		Step 3: Press 2 to store the value.			
	Press 5 to exit from Sub-menu level C2.2				
C03	Press 6 to select Menu C03				
	C3.1	Minimum height of Tube. (if not done before) Position Tube at minimum height and measure with the Collimator Metric Tape to the floor.	Measured at site	40 cm	
		Step 1: Press 5 to select C3.1.			
		Step 2: Press 1 or 3 to display the value measured.			
		Step 3: Press 2 to store the value.			
	C3.2	Maximum height of Tube. (if not done before) Position Tube at maximum height and measure with the Collimator Metric Tape to the floor.	Measured at site	200 cm	
		Step 1: Press 6 to select C3.2.			
		Step 2: Press 1 or 3 to display the value measured.			
		Step 3: Press 2 to store the value.			
	Press 5 to exit from Sub-menu level C3.2				

**Table 7-1 (cont.)
Configuration Parameters**

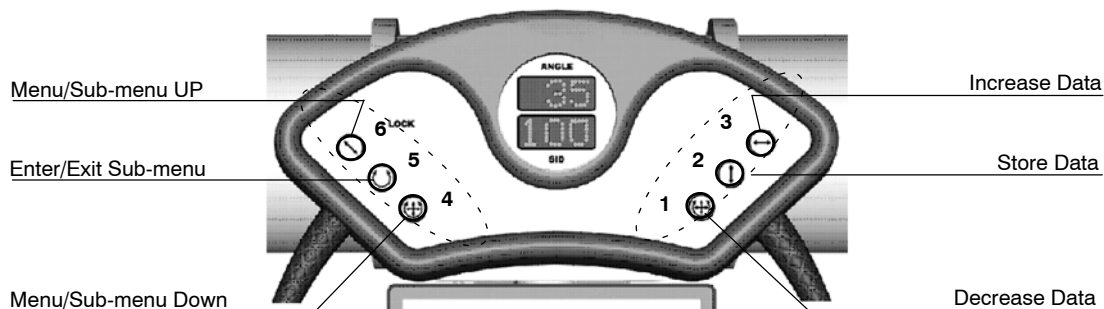
MENU	SUBMENU	PARAMETER TO BE CONFIGURED	OPTIONS	PRESET VALUE	STORED VALUE	
C04	Press 6 to select Menu C04					
	Wall Stand SID reference points.					
	These values are set during installation by Service Engineer depending on the SID distances from the Wall Stand.					
	For Systems without Tomography, the microswitches should be placed at distances specified in site. The distances should correspond to the configuration and calibration points: SW2 for first distance, SW3 for second distance and SW4 for third distance.					
	C4.1 C4.2 C4.3	Step 1: Press 5 to select C4.1. Step 2: Press 1 or 3 to select the corresponding data. Step 3: Press 2 to store the value. Step 4: Press 6 to select C4.2, then repeat steps 2 - 3 Step 5: Press 6 to select C4.3, then repeat steps 2 - 3	Wall Stand at right side: 110-150-180 Wall Stand at left side: 180-150-110	110 (C4.1) 150 (C4.2) 180 (C4.3)		
	Press 5 to exit from Sub-menu level C4.3					
C05	Press 6 to select Menu C05					
	Tube Angle.					
	<i>C05 is factory set. Do not modify values for C5.1, C5.2 and C5.3. Skip this menu and go to C06 by pressing 5.</i>					
	C5.1 C5.2 C5.3	Step 1: Press 5 to select C5.1. Step 2: Press 1 or 3 to select the corresponding data for C5.1 (-90°) Step 3: Press 2 to store the value. Step 4: Press 5 to select C5.2. Step 5: Press 1 or 3 to select the corresponding data for C5.2 (0°) Step 6: Press 2 to store the value. Step 7: Press 5 to select C5.3. Step 8: Press 1 or 3 to select the corresponding data for C5.3 (+90°) Step 9: Press 2 to store the value.	Do not change	-90° (C5.1) 0° (C5.2) +90° (C5.3)		
	Press 5 to exit from Sub-menu level C5.3					
	C06	Press 6 to select Menu C06				
		C6.1	Type of Braking: Negative / Positive (Negative Brakes are used in ships)	NEG POS	NEG	
			Step 1: Press 5 to select C6.1.			
			Step 2: Press 1 or 3 to select NEG or POS.			
		Step 3: Press 2 to store the value.				
Press 5 to exit from Sub-menu level C6.1						

4. Press simultaneously buttons “1 + 2 + 3” to exit from Configuration Main Menu. “Angle” and “SID” display the normal operation values.
5. To follow with calibration process go directly to Section 7.3.

In case that calibration process is not needed, exit from Service Mode by turning OFF the System.

7.3 CALIBRATION OF TUBE STAND

Before starting and in order to facilitate the process position the column at one side of the rail. Calibrate and store the corresponding Calibration data according to Table 7-2. The values of the submenus must be entered in the order specified in the table.



1. If the Configuration process have just been set (the System is ON), press simultaneously buttons “1 + 2 + 3” to enter in Calibration Main Menu until “CAL” appears on the “Angle Display”. After releasing these buttons, “P01” appears on the “Angle Display” (and nothing in “SID Display”).

If the System is OFF, press and hold button “1” while turning On the System until “CAL” appears on the “Angle Display”, which means that the Unit is Service Mode. Press simultaneously buttons “1 + 2 + 3” to enter in Calibration Main Menu until “CAL” appears on the “Angle Display”. After releasing these buttons, “P01” appears on the “Angle Display” (and nothing in “SID Display”).

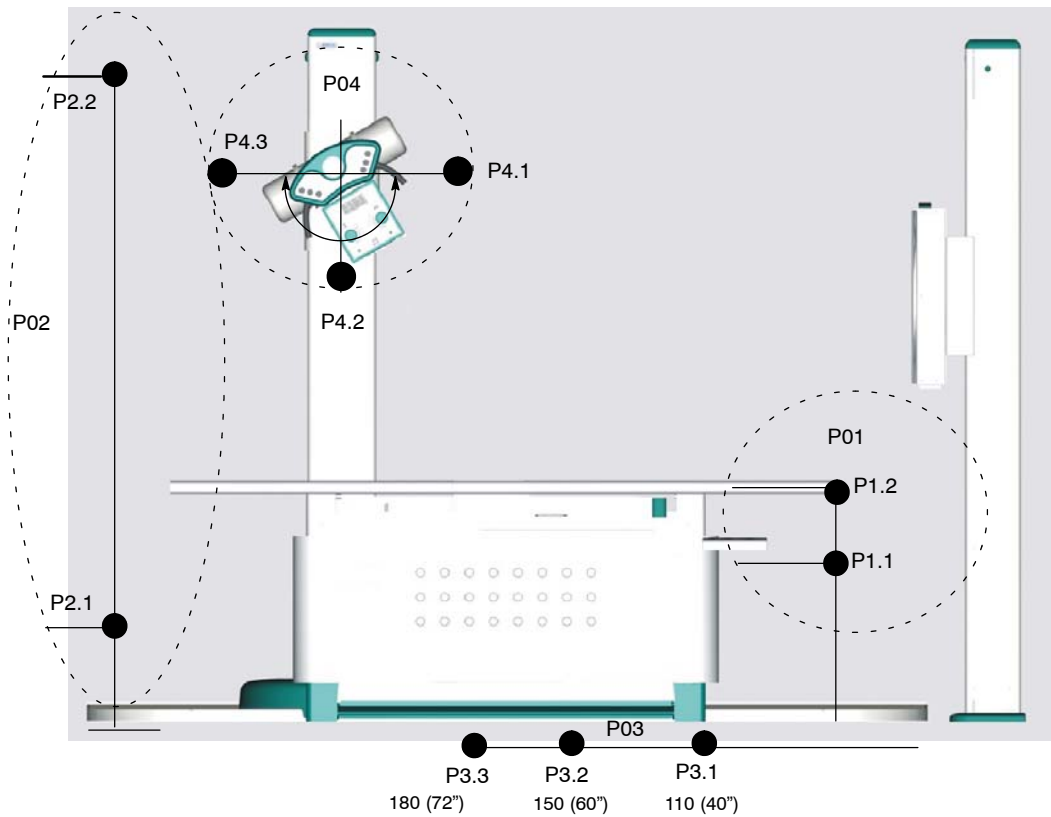
Note

After selecting a Sub-menu, its indication is shown in the “Angle Display” and the stored Configuration value is shown in the “SID Display”.

Once a calibration point is memorized, “OK” is shown in the “SID Display” and the potentiometer readout is shown in the “Angle Display” for two seconds. If the readouts are the same in different Calibration points of the same Menu, check the corresponding potentiometer.

2. The following illustration shows the calibration points to be set during the calibration process.

**Illustration 7-1
Calibration Points**



3. Follow the calibration steps described in the Table 7-2 in the order specified. Write down the potentiometer readouts in the right column of the Table 7-2.

Table 7-2
Calibration Parameters

MENU	SUB-MENU	PARAMETER TO BE CALIBRATED	STORED VALUE	POT VALUE
P01	P1.1	Minimum height of Table. <i>P1.1 is only for Elevating Table, if it is not needed, skip, this point and go to P2.1.</i>	50 cm	
		STEP 1: Press 5 to select P1.1. P1.1 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		
		STEP 2: Press the Table down pedal and position the Table at the minimum height (value configured in C2.1)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
	P1.2	Maximum height of Table. <i>P1.2 is only for Elevating Table, if it is not needed, skip this point and go to P2.1.</i>	90 cm	
		STEP 1: Press 6 to select P1.2. P1.2 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		
		STEP 2: Press the Table up pedal and position the Table at the maximum height (value configured in C2.2)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
Press 5 to exit from Sub-menu level P1.2				
P02	Press 6 to select Menu P02			
	P2.1	Minimum height of Tube.	40 cm	
		STEP 1: Press 5 to select P2.1. P2.1 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		
		STEP 2: Press 1 and with the Tube at 0°, position the Tube at the minimum height (value configured in C3.1)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
	P2.2	Maximum height of Tube.	197 cm	
		STEP 1: Press 6 to select P2.2. P2.2 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		
		STEP 2: Press 1 and with the Tube at 0°, position the Tube at the maximum height (value configured in C3.2)		
STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".				
Press 5 to exit from Sub-menu level P2.2				

**Table 7-2 (cont.)
Calibration Parameters**

MENU	SUB-MENU	PARAMETER TO BE CALIBRATED	STORED VALUE	POT VALUE
		Press 6 to select Menu P03		
		Wall Stand SID reference Points.		
		<p>These values are set during installation by Service Engineer depending on the SID distances from the Wall Stand. For Systems without Tomography, the microswitches should be placed at distances specified in site. The distances should correspond to the configuration and calibration points: SW2 for first distance, SW3 for second distance and SW4 for third distance.</p> <p>Turn the Tube respect to the Wall Stand; position the Column at configured distances from the Wall Stand. Measure SID with the Collimator Metric Tape (keep in mind the Tabletop-Receptor distance). Once these points have been calibrated, the Column will stop the motion when arriving to each point. Standard distances have been factory set but they can be modified.</p>		
P03	P3.1	STEP 1: Press 5 to select P3.1. P3.1 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".	Wall Stand at right side: 110 cm	
		STEP 2: With the Tube facing the Wall Stand, press 1 and position the Tube at the required SID to set the first point (value configured in C4.1)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
	P3.2	STEP 1: Press 6 to select P3.2. P3.2 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".	150 cm	
		STEP 2: With the Tube facing the Wall Stand, press 1 and position the Tube at the required SID to set the second point (value configured in C4.2)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
	P3.3	STEP 1: Press 6 to select P3.3. P3.3 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".	Wall Stand at right side: 180 cm	Wall Stand at left side: 110 cm
		STEP 2: With the Tube facing the Wall Stand, press 1 and position the Tube at the required SID to set the third point (value configured in C4.3)		
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".		
		Press 5 to exit from Sub-menu level P3.3		

Table 7-2 (cont.)
Calibration Parameters

MENU	SUB-MENU	PARAMETER TO BE CALIBRATED	STORED VALUE	POT VALUE	
P04	Press 6 to select Menu P04				
	Tube Angle reference Points.				
	These values are factory set. Recalibrate only in case of detecting wrong reading in the Tube Angle.				
	P4.1	STEP 1: Press 5 to select P4.1. P4.1 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		-90°	
		STEP 2: Press 1 and turn the Tube -90° Counterclockwise. Use the mechanical detent and check with a level to obtain the correct calibration point (value configured in C5.1).			
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".			
	P4.2	STEP 1: Press 6 to select P4.2. P4.2 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		0°	
		STEP 2: Press 1 and turn the Tube to 0° (pointing the Table). Use the mechanical detent and check with a level to obtain the correct calibration point (value configured in C5.2).			
		STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".			
	P4.3	STEP 1: Press 6 to select P4.3. P4.3 is shown in the "Angle Display" and the stored Configuration value is shown in the "SID Display".		+90°	
	STEP 2: Press 1 and turn the Tube +90° Clockwise. Use the mechanical detent and check with a level to obtain the correct calibration point (value configured in C5.3).				
	STEP 3: Press 2 to store the value. For two seconds, the "Angle Display" shows the potentiometer readout and the "SID Display" shows "OK".				
Press 5 to exit from Sub-menu level P4.3					

4. Press simultaneously buttons "1 + 2 + 3" to exit from Calibration Main Menu. "Angle" and "SID" display the normal operation values.
5. Exit from Service Mode by turning OFF the System.

This page intentionally left blank.

SECTION 8 TROUBLESHOOTING

8.1 ADJUSTMENT OF POTENTIOMETERS



All potentiometers in the Rad Room are factory adjusted. Apply this section only if a Potentiometer is malfunctioning or replaced.



CONTACTS OF THE POTENTIOMETER

8.1.1 ADJUSTMENT OF POTENTIOMETER AT ARM



1. Take out the Cover of the Arm.
2. Turn On the System and position Arm at exact center of the travel.
3. Check that the potentiometer voltage is 2.5V.
4. If necessary, disassemble the potentiometer and adjust it at 2.5V.
5. Assemble the Potentiometer.
6. Turn the System Off and Assemble the Cover.

8.1.2 ADJUSTMENT OF POTENTIOMETER AT COLUMN TOP



1. Take out upper cover and back upper cover of the Column.
2. Turn On the System and position the Tube-Collimator Assembly at exact center of the travel.
3. Check that the potentiometer voltage is 2.5V.
4. If necessary, disassemble the potentiometer and adjust it at 2.5V.
5. Assemble the Potentiometer.
6. Turn the System Off and Assemble the Covers.

8.1.3 ADJUSTMENT OF POTENTIOMETER AT ELEVATING TABLE



1. Take out Elevating Table covers. (Refer to Installation of Elevating Table Section).
2. Turn On the System.
3. Position Table at exact center of the travel.
4. Check that the potentiometer voltage is 2.5V.
5. If necessary, disassemble the potentiometer and adjust it at 2.5V.
6. Assemble the Potentiometer.
7. Turn the System Off and Assemble the Covers.

8.2 REPLACEMENT OF THE X-RAY TUBE OR COLLIMATOR

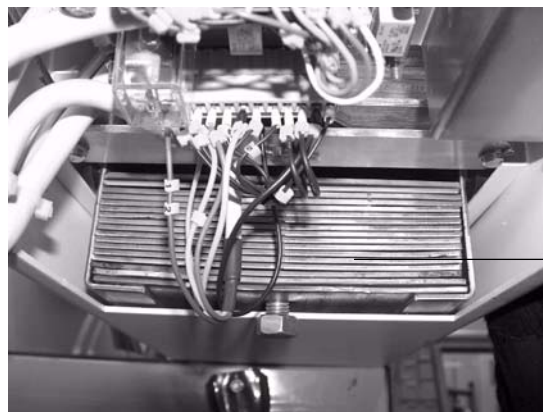
Note 

This section only applies to systems where the X-ray Tube or the Collimator have to be replaced by a new X-ray Tube or Collimator different to the one already installed (different weight).

1. Lower the Tube-Collimator Assembly to its minimum height and install the security screws at both Carriage Rails of the Column. This way the Counterweights will be at the heighest position.
2. Turn the System off.
3. Disconnect High Voltage Cables, stator cables and Collimator Cables.
4. Disassemble Collimator or Tube to be replaced. (Refer to Installation Section).
5. Install the new X-ray Tube or Collimator (connect all the cables).
6. Remove the security screws from both Carriage Rails of the Column.
7. Check balance of the unit and if necessary, add or remove counterweight plates inside the Column in order to counterbalance the Column with the Tube-Collimator Assembly.

8.2.1 ADDING OR REMOVING COUNTERWEIGHT PLATES IN COLUMN

1. Lower the Tube-Collimator Assembly to its minimum height and install the security screws at both Carriage Rails of the Column. This way the Counterweights will be at the heighest position.
2. Turn the System off.
3. Remove the upper cover of the column.
4. Add or remove counterweight plates as required.

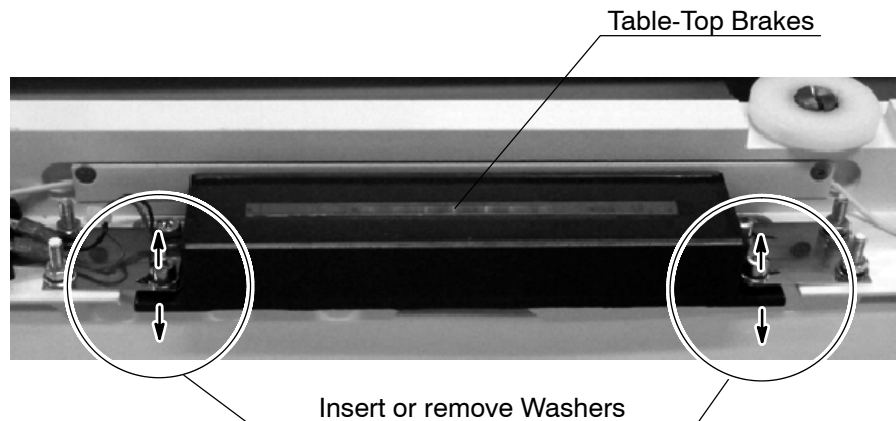


UPPER VIEW

COUNTERWEIGHT PLATES

8.3 ADJUSTMENT OF TABLE-TOP BRAKES HEIGHT

In case the Table-top bumps the Table-Top Brakes during the Table-Top installation, or in case the Table-Top does not completely brake when releasing the pedal, adjust the height of the Brakes by inserting or removing washers between the Brakes and their Brake Plates.



8.4 REPLACEMENT OF MOTOR INVERTER

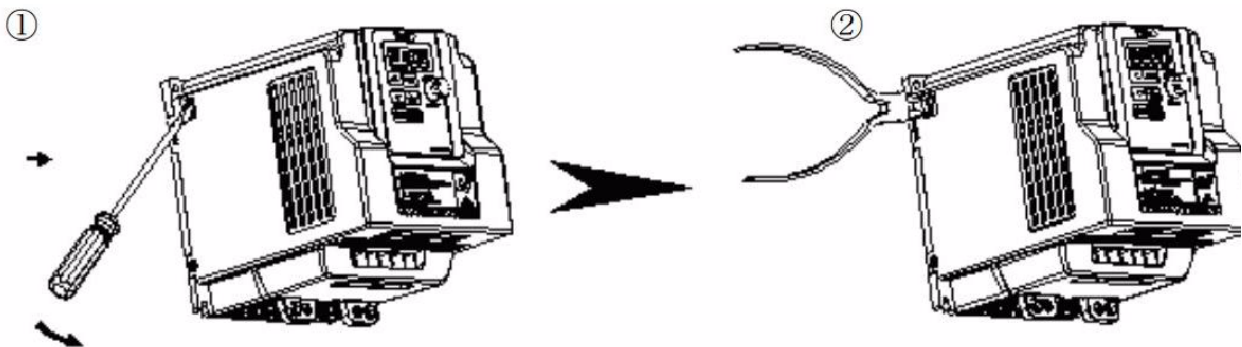
Note 

This section only applies to Elevating Tables where the Motor Inverter has to be replaced by a new one.



1. Turn Off the Table.
2. Remove Telescopic Covers. (Refer to Installation of Elevating Table).
3. Disconnect the cables attached to the old inverter.
4. Remove the old inverter from the table base.

5. Remove the Protective Filter to avoid overpassing the allowed leakage current (IEC60601-1), for that, break the plastic cover of the filter with a flat screwdriver and remove the filter.



6. Install the new inverter, the base plate is to be attached to the Table base using the holes of the former inverter.
7. Connect the cables to the new Inverter as follows:
 - I1 -7 to L1 // I2 -7 to L3 // I3 -7 to +24V// I4 -7 to S1 // I5 -7 to S2
 - U, V, W from motor to T1, T2, T3 respectively.




8. Turn the Table On.
9. Configure the Inverter as indicated in Illustration 8-1 (*refer also to the Inverter Manual*):



Type	Item	Function
Digital display & Leds	Main Digital Displays	Frequency Display, Parameter, voltage, Current, Temperature, Fault messages.
	LED Status	Hz/RPM: ON when the frequency or line speed is displayed. OFF when the parameters are displayed. FWD: ON while the inverter is running forward. Flashes while stopped. REV: ON while the inverter is running reverse. Flashes while stopped. FUN: ON when the parameters are displayed. OFF when the frequency is displayed.
Variable Resistor	FREQ SET	Used to Set the frequency
Keys On Keypad	RUN	RUN: Run at the set frequency.
	STOP/RESET (Dual function keys)	STOP: Decelerate or Coast to Stop. RESET: Use to Reset alarms or resettable faults.
	Arrow UP	Increment parameter number and preset values.
	Arrow Down	Decrement parameter number and preset values.
	MODE	Switch between available displays
	</ENTER (Dual function keys, a short press for left shift function, a long press for ENTER function)	"<" Left Shift: Used while changing the parameters or parameter values ENTER: Used to display the preset value of parameters and for saving the changed parameter values.

Illustration 8-1
Configuration Settings for the Elevating Table

Note  *Configure only the values indicated in the below table.*

	Description	value	Comments
00-02	Main Run Source Selection	1	Ext Run/Stop Control
00-03	Alternative Run Source	1	Ext Run/Stop Control
00-04	Ext. term. operation mode	0	Fw/Stop-Rev/Stop
00-12	Freq. Upper limit	60	
00-13	Freq. Lower Limit	0	
01-00	V/Hz Pattern	5	60Hz, high start torque
01-10	Torque Boost	10	10% enhancement
02-01	Motor Rated Current	0.78	Amperes
02-03	Motor Rated Speed (Rpm)	1650	
03-00	Multifunct Input Term.S1	0	Forward/Stop Command
03-01	Multifunct Input Term.S2	1	Reverse/Stop Command
07-02	Number of Auto Restart Attempts	0	No attempts
07-04	Direct Running After Power On	0	Enable
07-06	DC Injection Brake Start Freq.	1.5	Hertz
07-07	DC Injection Brake Level (%)	10	
07-08	DC Injection Brake Time	0.1	Seconds
07-09	Stop method	0	Decc to stop
11-01	Carrier Frequency (KHz)	16	

8.5 ERROR CODES

Error codes indicate the potential cause of a system failure. They appear on the Control Panel Display at Column and will enable the service personnel to identify and fix the problem.

**Table 8-1
Control Panel Error Codes**

WARNING	DESCRIPTION	SUGGESTION
"E06"	"Exposure" or/and "Preparation" orders are activated during power-up.	Turn the generator OFF, check the proper external Handswitch cable connections and then turn the generator ON. If the error remains disconnect the signal "Prep" at generator, a) if error disappears check Handswitch cable and "prep" signal in generator, b) if error remains, replace PCB A3507-01
"E10"	Failure in memory Integrated Circuit.	Check distance between potentiometer read-outs, they must be 20% away one from each other. Calibrate again the corresponding menu and check potentiometer connection and potentiometer status.
"rAN Err"	Failure in memory Integrated Circuit.	Turn the System OFF / ON. If the error remains, initialize the EE-prom and calibrate again. If the error remains, replace the PCB A3507-01.

8.6 INITIALIZING EEPROM MEMORY IN THE COLUMN CONTROL PANEL

The EEPROM memory that contains the Column Configuration and Calibration Data can be initialized due to a Data corruption.

Re-start the system and press lower right button (to enter in Service Mode).

As soon as "CAL" appears on display, press and hold at the same time Upper and Lower buttons at both sides of the Control panel. The message "INI EEPR" confirms the EEPROM initialization. Release all buttons, now the EEPROM has been initialized. this way the preconfigured data are loaded but they are not valid for real operation.

Once an EEPROM initialization is performed it is necessary to carry out the Column Configuration and Calibration processes.

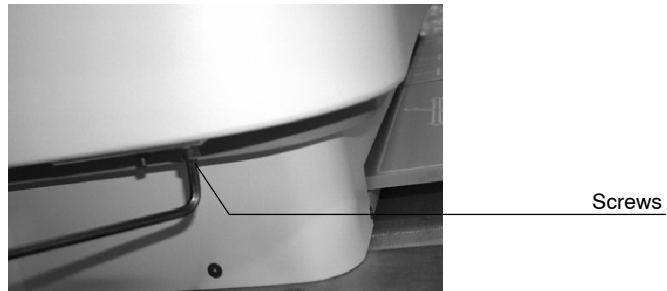
8.7 ELEVATING TABLE SWITCH LOCATIONS

SWITCH	LOCATION	FUNCTION
SW1	BEHIND LEFT TABLE TOP RELEASE PEDAL.	TABLE TOP LOCK RELEASE
SW2	BEHIND LEFT TABLE TOP RELEASE PEDAL	COLLIMATOR LAMP ENABLE
SW3	BEHIND TABLE DOWN PEDAL	TABLE DOWN
SW4	BEHIND TABLE UP PEDAL	TABLE UP
SW5	BEHIND RIGHT TABLE TOP RELEASE PEDAL	TABLE TOP LOCK RELEASE
SW6	BEHIND RIGHT TABLE TOP RELEASE PEDAL	COLLIMATOR LAMP ENABLE
SW7	LOWER LEFT FRONT OF TABLE BASE	DOWN LIMIT
SW8	LOWER LEFT FRONT OF TABLE BASE	DOWN SAFETY-INVERTER POWER SHUTOFF
SW9	LEFT SIDE BASE-NEAR GEAR RACK	UP LIMIT
SW10	LEFT SIDE BASE-NEAR GEAR RACK	UP SAFETY - INVERTER POWER SHUTOFF
SW11	RT FRONT TOP BEARING	"A" LIMIT DOWN COLLISION
SW12	LT FRONT TOP BEARING	"B" LIMIT DOWN COLLISION
SW13	LT REAR TOP BEARING	"C" LIMIT DOWN COLLISION
SW14	RT REAR TOP BEARING	"D" LIMIT DOWN COLLISION
SW15	HANDLE OF BUCKY	BUCKY LOCK RELEASE
SW16	EMERGENCY SW HOUSING	LOCKS INTERLOCK-REMOVE TOP LOCK POWER
SW17	TOP LEFT REAR	TABLE TOP CENTERED

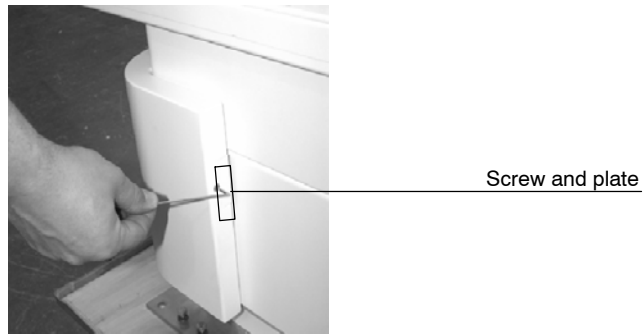
8.8 COVERS DISASSEMBLING WITH ELEVATING TABLE DOWN

This procedure is intended to explain the cover disassembling when an electrical or mechanical problem does not allow the Elevating Table to move up.

- a. **Upper Front Cover:** Remove two screws located at right and left sides of the lower side of the cover.



- b. Remove the side screw attached to a plate. The plate will fall down inside the table, pick it up later. Repeat the process for the other side of the cover.



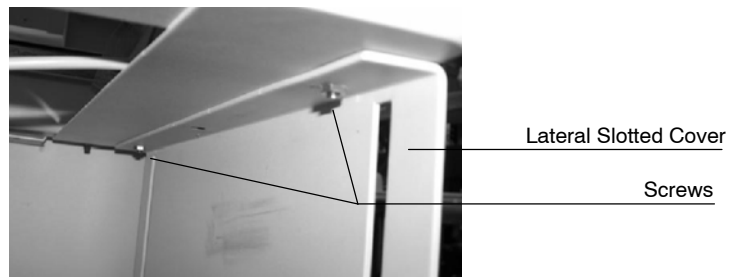
- c. Then raise the Upper Front Cover with both hands and remove it from the Table. If the Upper cover is made of Fibre (not metal), it is recommended to bend slightly the cover on right side first and then on the left to release the Upper Cover from the Stud attached to the middle covers. Disconnect ground cable (GND) if applicable.



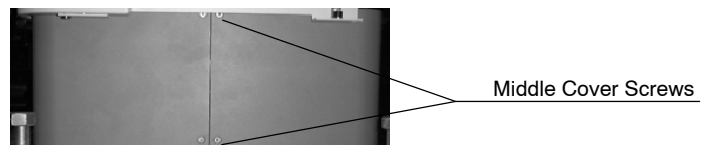
- d. **Upper Rear Cover:** Remove both nuts and washers located at upper side of the cover attached to the table chassis (inside the table) .



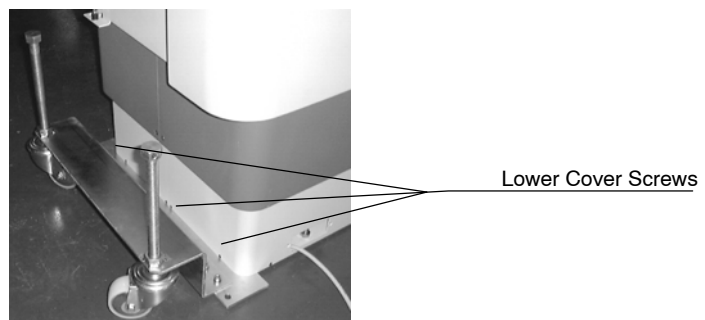
- e. Then, remove two screws located at right and left sides of the lower side of the cover (the same ones as step a) and take the cover away from the Table structure. Disconnect ground cable (GND).
- f. **Cover Support with Slot:** remove the Cover Support with Slot that are attached to the Table chassis with two screws at each side.



- g. **Middle Covers:** remove the two screws located at the lateral side of cover and take it away. Remove ground wire (GND). Repeat procedure for the second cover.



- h. **Lower Covers:** remove all the external screws that fix this cover. Remove ground wire (GND).



8.9 RESTORING VERTICAL MOVEMENT FOR THE RAD ELEVATING TABLE DUE TO “DOWN SAFETY” (SW8) MICROSWITCH ACTIVATION

The object of this troubleshooting is to deactivate (close) the “Down Safety” (SW8) Microswitch allowing the Table to be raised.

1. Remove the Table-top.
2. While holding the Frame Stop with a hand, carefully remove the two screws and then the Frame Stop under the Table-Top Frame.



Keep the Frame Stop from falling to prevent any damage inside the table.

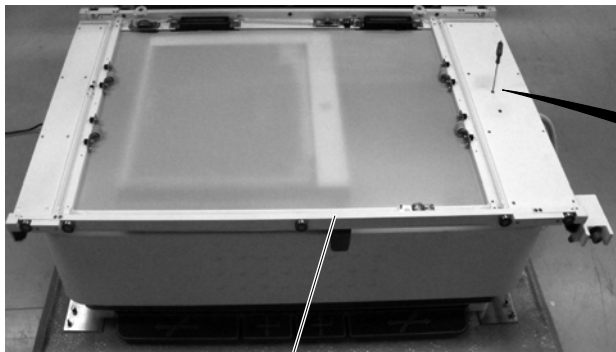
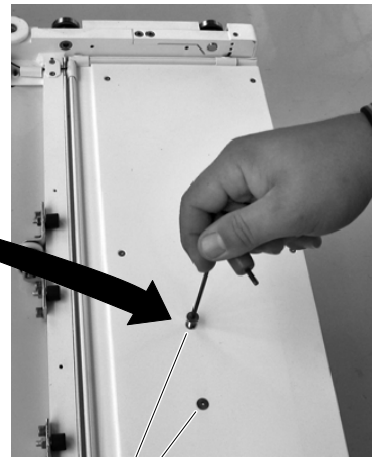


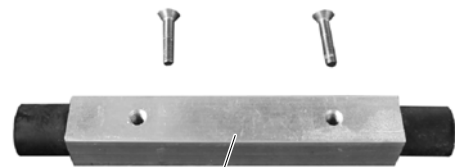
TABLE-TOP FRAME



FRAME STOP SCREWS



FRAME STOP



3. Disconnect the GND wire of the Table-Top (faston terminal). Disconnect the Harness plugged into J10 Connector (unscrew the round terminal and pull it).



GND WIRE

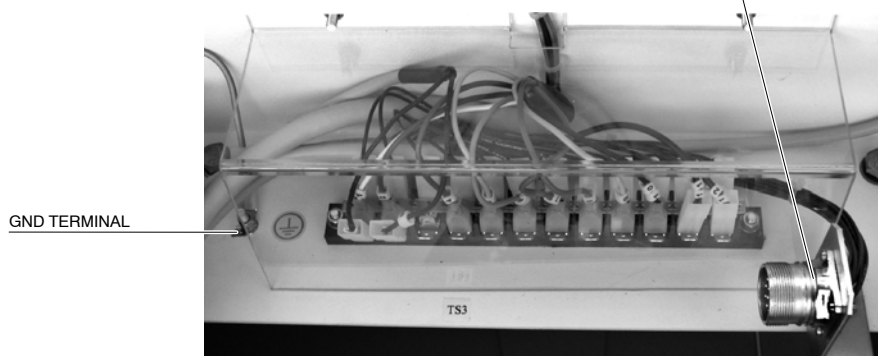
HARNESS TO J10 CONNECTOR



HARNESS TERMINAL TO J10

J10 CONNECTOR

GND WIRE TERMINAL



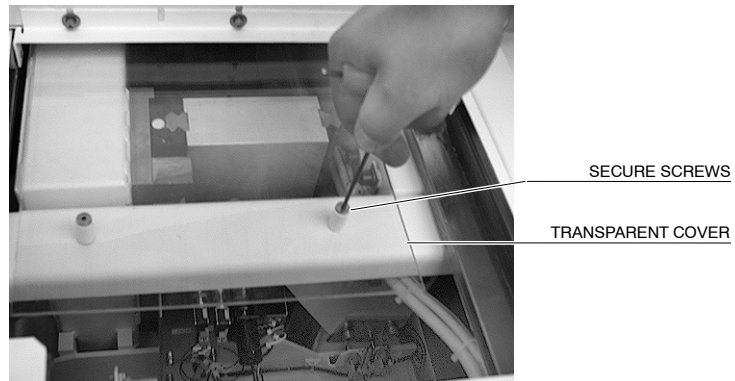
GND TERMINAL

4. Carefully take out the Table-Top Frame from the Table Base by sliding it towards the back side of the Table. Take care not to snare the disconnected GND wire or Harness in the Table Base, or to scratch the Bucky Carriage.



Two people are required to take out the Table-Top Frame.

5. Remove the four screws which secure the Transparent Cover under the Table-Top Frame. Move the cover towards the right side to facilitate the access to the “Down Safety” (SW8) Microswitch.



6. Remove both wires from the terminals of the “Down Safety” (SW8) Microswitch and Install a jumper between both wires.



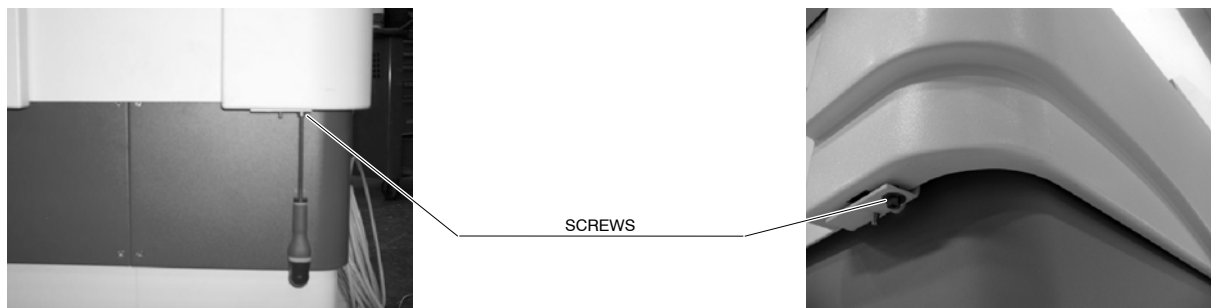
7. Re-install the Transparent Cover.
8. Carefully slide the Table-Top Frame onto the Table Base from the backside of the Table. Connect the GND wire and Harness to J10 of the Table Base.
9. Assemble the Frame Stop under the Table-Top Frame.

10. Check that the Table Circuit Breaker located at the back of the Table is OFF, connect the Power Supply cable from the Table (factory connected to TS1) to the Room Electrical Cabinet.

Note 

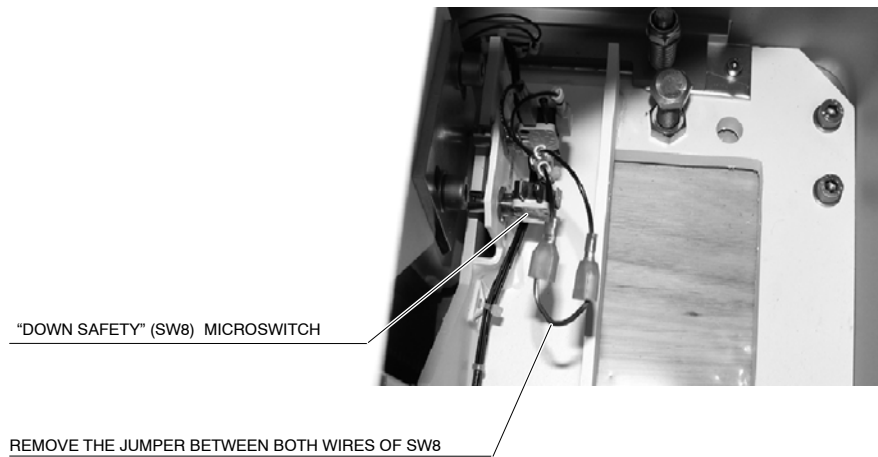
The Table Transformer is factory configured according to the Mains voltage specified in the customer order.

11. Turn ON the Circuit Breaker located at the backside of the Table and turn ON the Red Emergency Switch located at the front of the Table.
12. Raise the Table to the top stepping on the “Up” Pedal.
13. Remove the Upper Front Cover from the Table Base by removing the two screws located at the right and left sides of the lower side of the cover. Then raise the Upper Front Cover with both hands and remove it from the Table. Disconnect the ground cable (GND) if applicable.

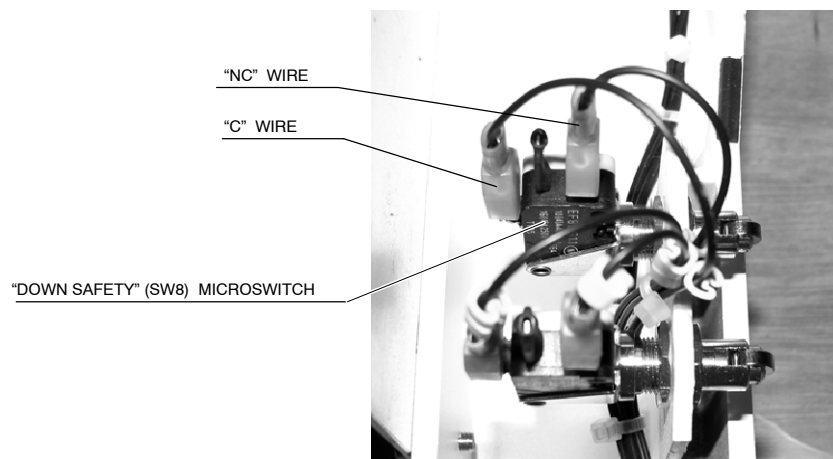


14. Raise the Table to the top by stepping on the “Up” Pedal.
15. Lower the Table to a comfortable position (by stepping on the “Down” Pedal) which thus allows access to the “Down Safety” (SW8) Microswitch.
16. Turn OFF the Red Emergency Switch located at the front of the Table and turn OFF the Circuit Breaker located at the back of the Table.

17. Remove the Jumper that short-circuited both wires of the “Down Safety” (SW8) Microswitch.



18. Connect both wires in the respective terminals of the “Down Safety” (SW8) Microswitch.



19. Reinstall the Upper Front Cover and the Table-top.

SECTION 9 PERIODIC MAINTENANCE

The first maintenance service is to be performed before the end of twelve months after the installation. The rest of maintenance services will be performed according to the following table.

Table 9-1
Periodic Maintenance

Maintenance	Floor Mounted Tube Stand	Radiographic Table	Wall Stand
Electrical cables and connections	Yearly	Yearly	Yearly
Mechanical cables	Yearly	N/A	Yearly
Brakes, locks and detents	Yearly	Yearly	Yearly
Functional Check	Yearly	Yearly	Yearly
Adjustment and calibration	Yearly	Yearly	N/A
Lubrication	Yearly	Yearly	Yearly
Cleaning	Yearly	Yearly	Yearly

9.1 MAINTENANCE ACTIVITIES DESCRIPTION

Electrical cables and connections: Visually check for electrical cables proper isolation and proper connection inside and outside the unit.

Mechanical cables: Visually check for possible frayed cable and replace if necessary.

Brakes, locks and detents: Perform a functional check of all the locks, brakes and detents of the Room equipment. Adjust or replace as needed.

Functional Check: Perform a functional check of all Room equipment, motion of Vertical Bucky, Table-top, Column travel, brakes, keys of consoles, lamps and indicators, Collimator etc.

Adjustments and calibrations: Perform adjustments and Calibration of Table, Column and Vertical Bucky as explained in the Adjustments Section of this manual.

Lubrication: Lubricate mobile components such as chains, guides, bearings etc as specifies in the Adjustments Section.

Cleaning: Clean from dust or moist inner components as Electronic Racks, grids, filters, bearings and rails.

9.2 CHECKING THE FLOOR MOUNTED TUBE STAND

1. Turn OFF the system and mains. Check that there is not voltage at Tube-Stand.
2. Disassemble Front covers and check steel cable and brakes.
3. Check anchoring screws, they should be strongly tighten.
4. Turn ON the system and check that the Column and Tube-Collimator Assembly is blocked in all motions.
5. Check motion of Column: horizontal and rotation.
6. Check motion of Tube-Collimator Assembly: vertical, Telescopic Arm motion and rotation. Detents configured should be checked too.
7. Place the Tube at 0° on the Table-Top and check that X-ray indicator lamp and the chassis centering indicator are aligned and they turn off after 30 seconds.
8. Check in the Collimator that light beam is centered with the X-ray beam and the tolerance is not above 1% from focus-film distance.

9.3 CHECKING THE RADIOGRAPHIC TABLE

1. Turn OFF the system and mains. Check that there is not voltage at Table.
2. Disassemble Front Table cover.
3. Check anchoring screws of the Table, they should be strongly tighten.
4. Turn On the system and press the mushroom shaped switch. Verify that table is disconnected and the Table travels are blocked.
5. Release the mushroom shaped switch.
6. Connect Table power and check Table-Top brakes and correct motion by pressing the Table Pedal.
7. Assemble the Front Table cover.
8. Release the horizontal Bucky brakes and check correct traveling.
9. Take out the Cassette film tray and check correct functioning.

9.4 CHECKING THE WALL STAND

1. Disassemble Front covers of Wall Stand and clean steel cable and brakes.
2. Check anchoring screws, they should be strongly tighten.
3. Check the vertical lock.
4. Loose the carriage lock and verify that vertical motion is released and counterweighted at any point.
5. Take out the Cassette film tray and check correct functioning.

9.5 CHECK OFF MAINTENANCE REVISION TABLE

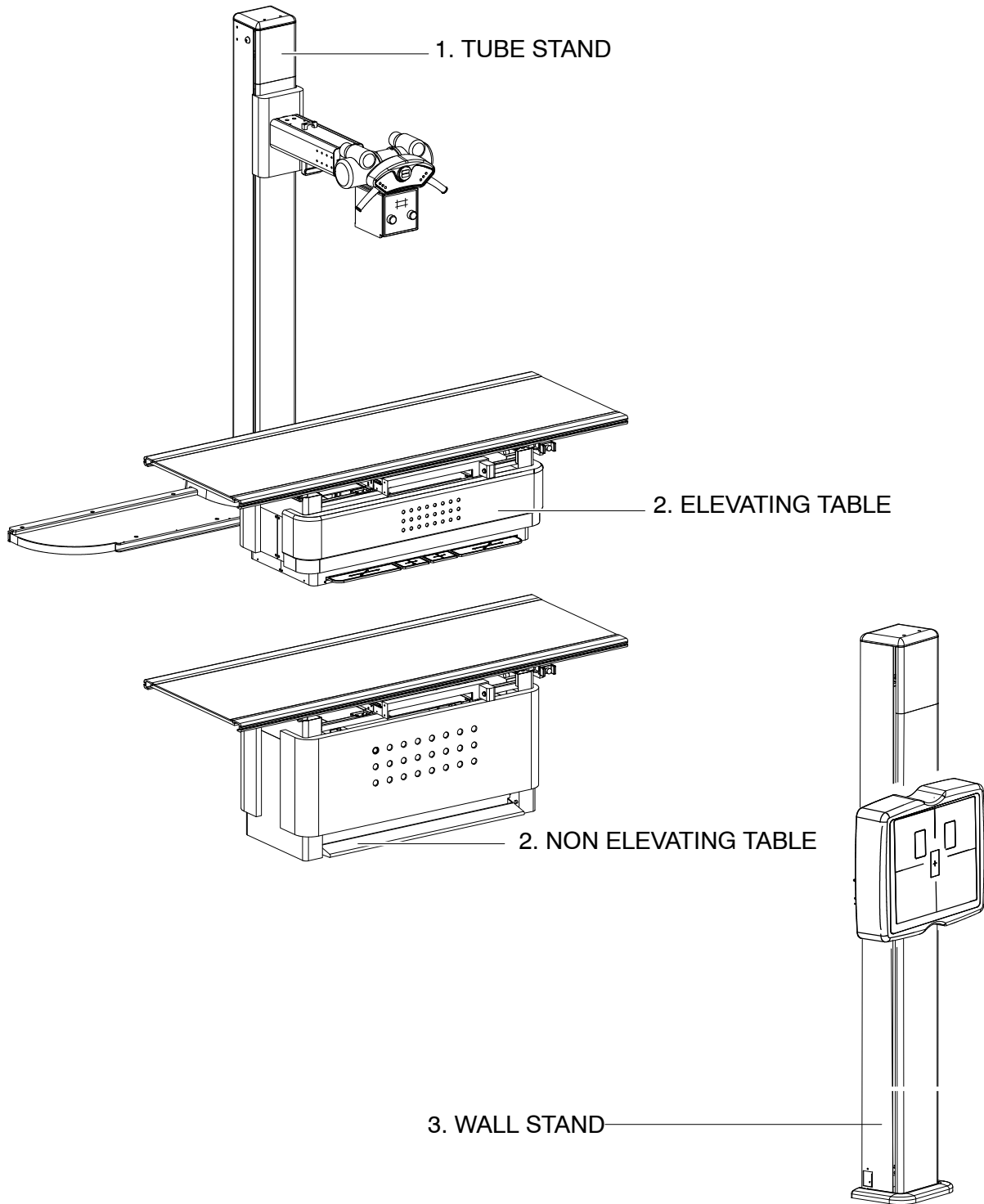
Hospital name:		Date:
System Name:	System Number ID:	
Customer:	Field Engineer Name:	

Floor Mounted Tube Stand		
Maintenance activity		Comments
Electrical cables and connections	<input type="checkbox"/>	
Mechanical cables	<input type="checkbox"/>	
Brakes, locks and detents	<input type="checkbox"/>	
Functional Check	<input type="checkbox"/>	
Adjustment and calibration	<input type="checkbox"/>	
Replacement	<input type="checkbox"/>	
Lubrication	<input type="checkbox"/>	
Cleaning	<input type="checkbox"/>	

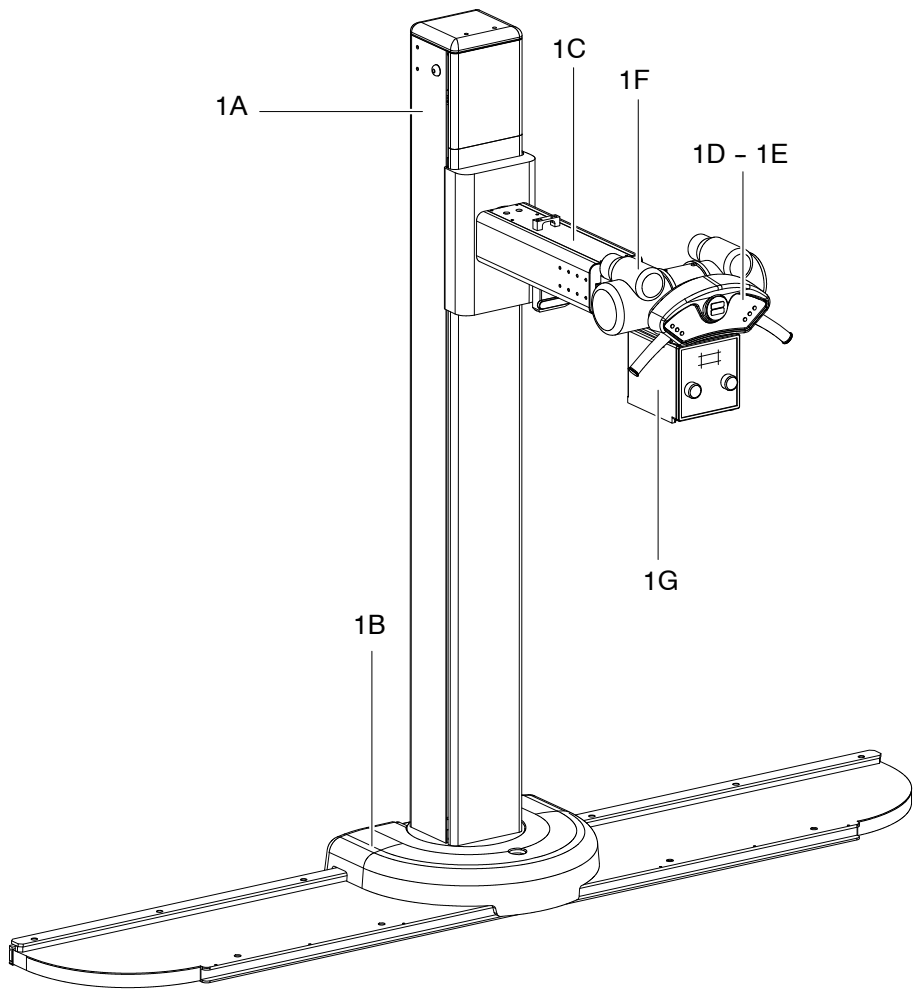
Radiographic Table		
Maintenance activity		Comments
Electrical cables and connections	<input type="checkbox"/>	
Brakes, locks and detents	<input type="checkbox"/>	
Functional Check	<input type="checkbox"/>	
Adjustment and calibration	<input type="checkbox"/>	
Replacement	<input type="checkbox"/>	
Lubrication	<input type="checkbox"/>	
Cleaning	<input type="checkbox"/>	

Wall Stand		
Maintenance activity		Comments
Electrical cables and connections	<input type="checkbox"/>	
Mechanical cables	<input type="checkbox"/>	
Brakes, locks and detents	<input type="checkbox"/>	
Functional Check	<input type="checkbox"/>	
Adjustment and calibration	<input type="checkbox"/>	
Replacement	<input type="checkbox"/>	
Lubrication	<input type="checkbox"/>	
Cleaning	<input type="checkbox"/>	

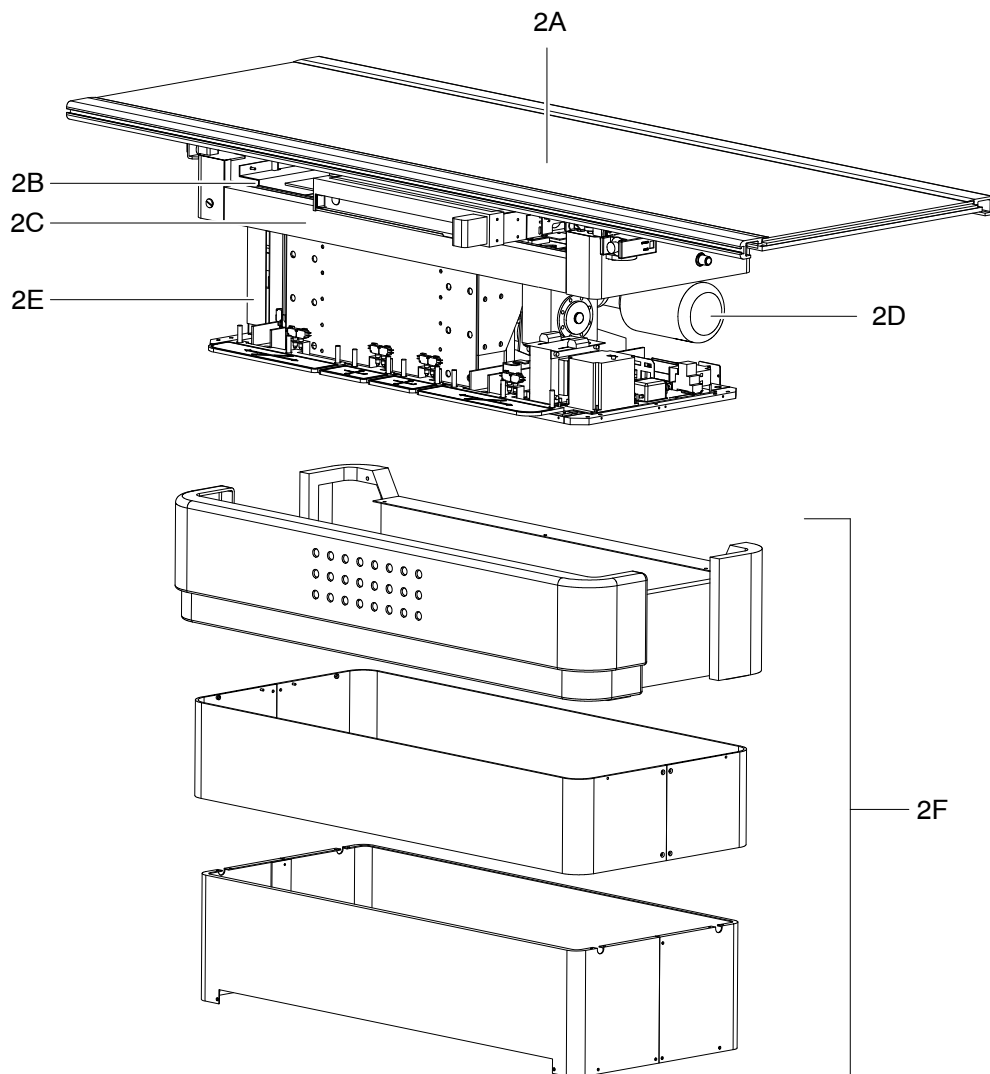
SECTION 10 RENEWAL PARTS OF THE RAD ROOM



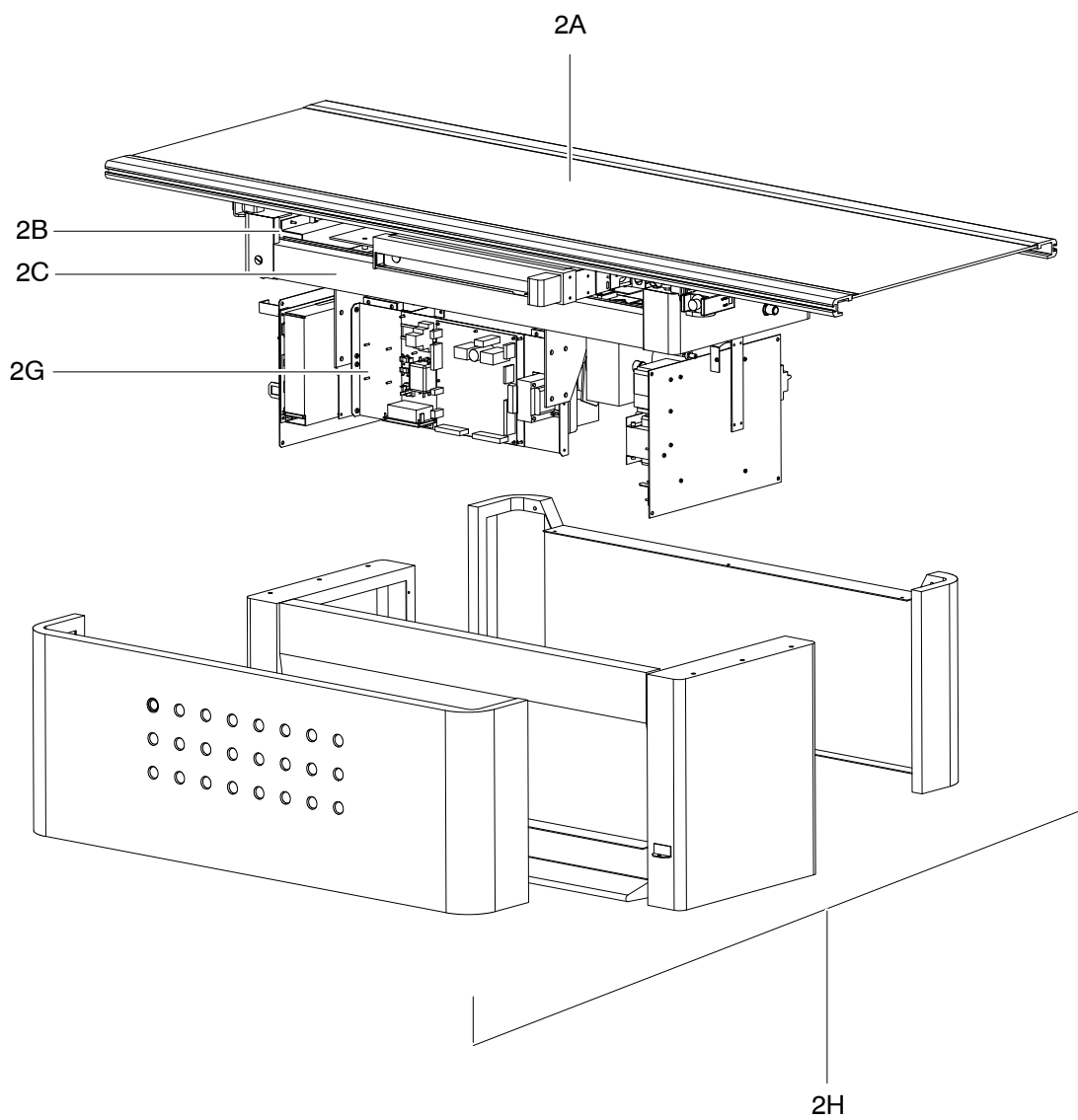
1. TUBE STAND



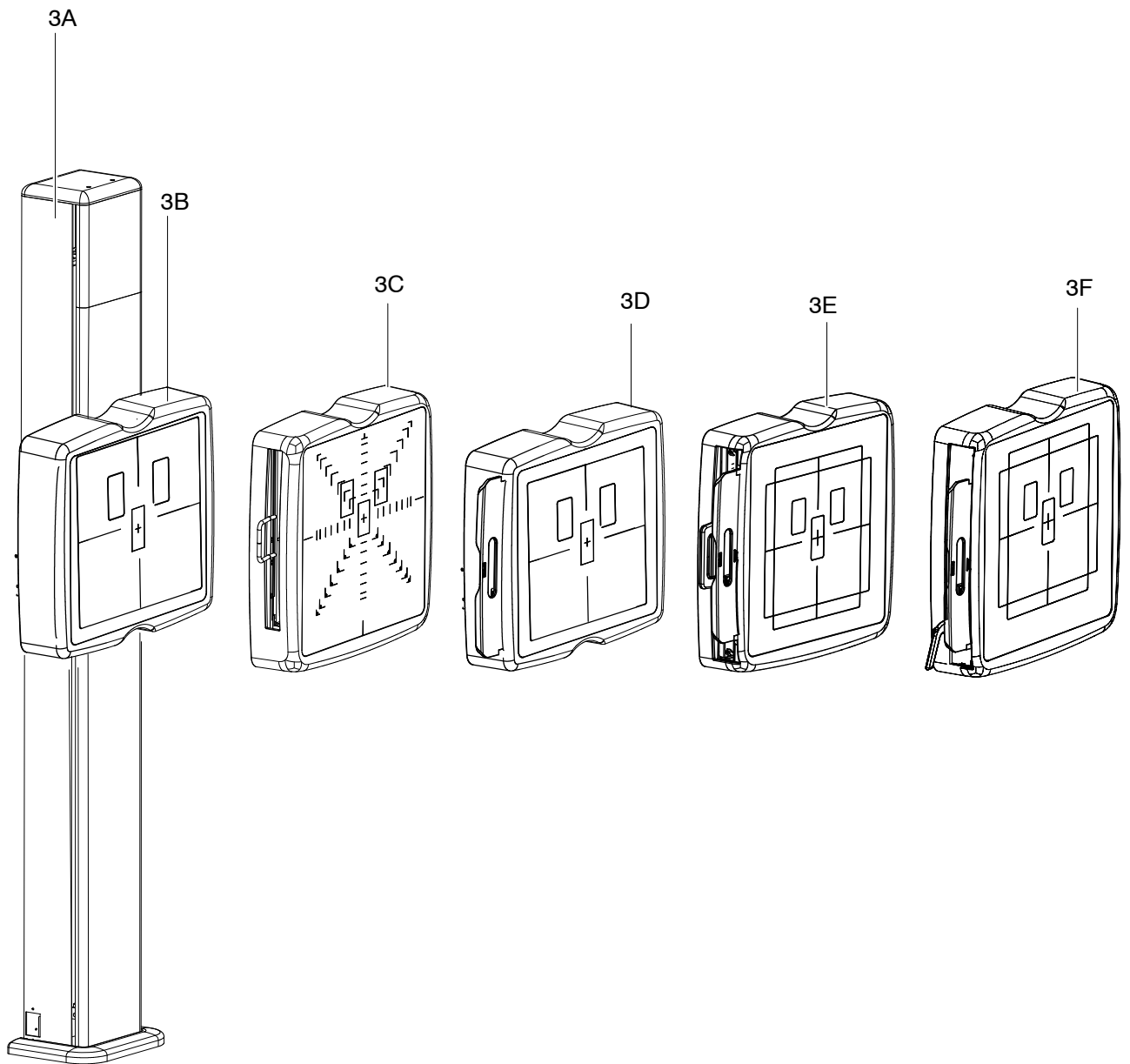
2. ELEVATING TABLE



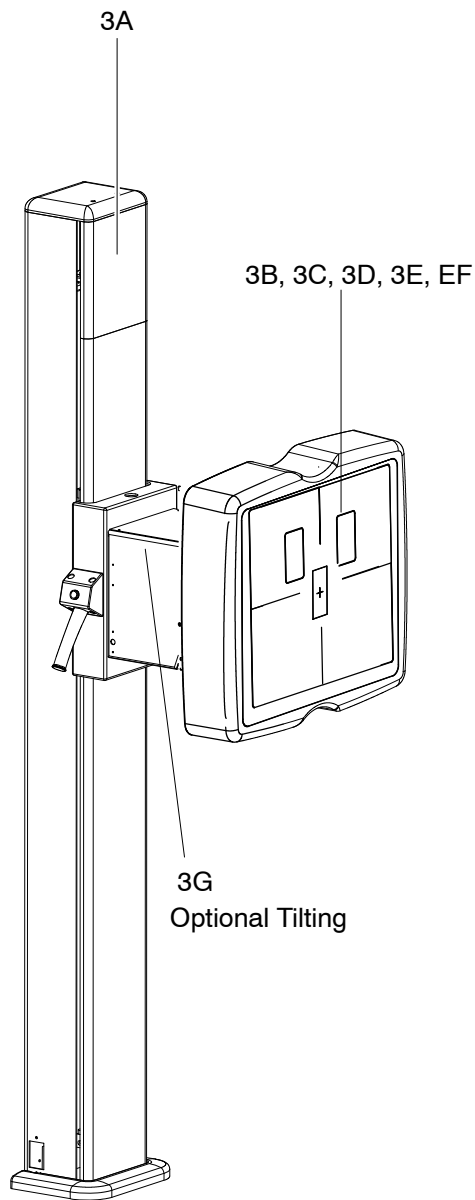
2. NON ELEVATING TABLE



3. WALL STAND



3. WALL STAND

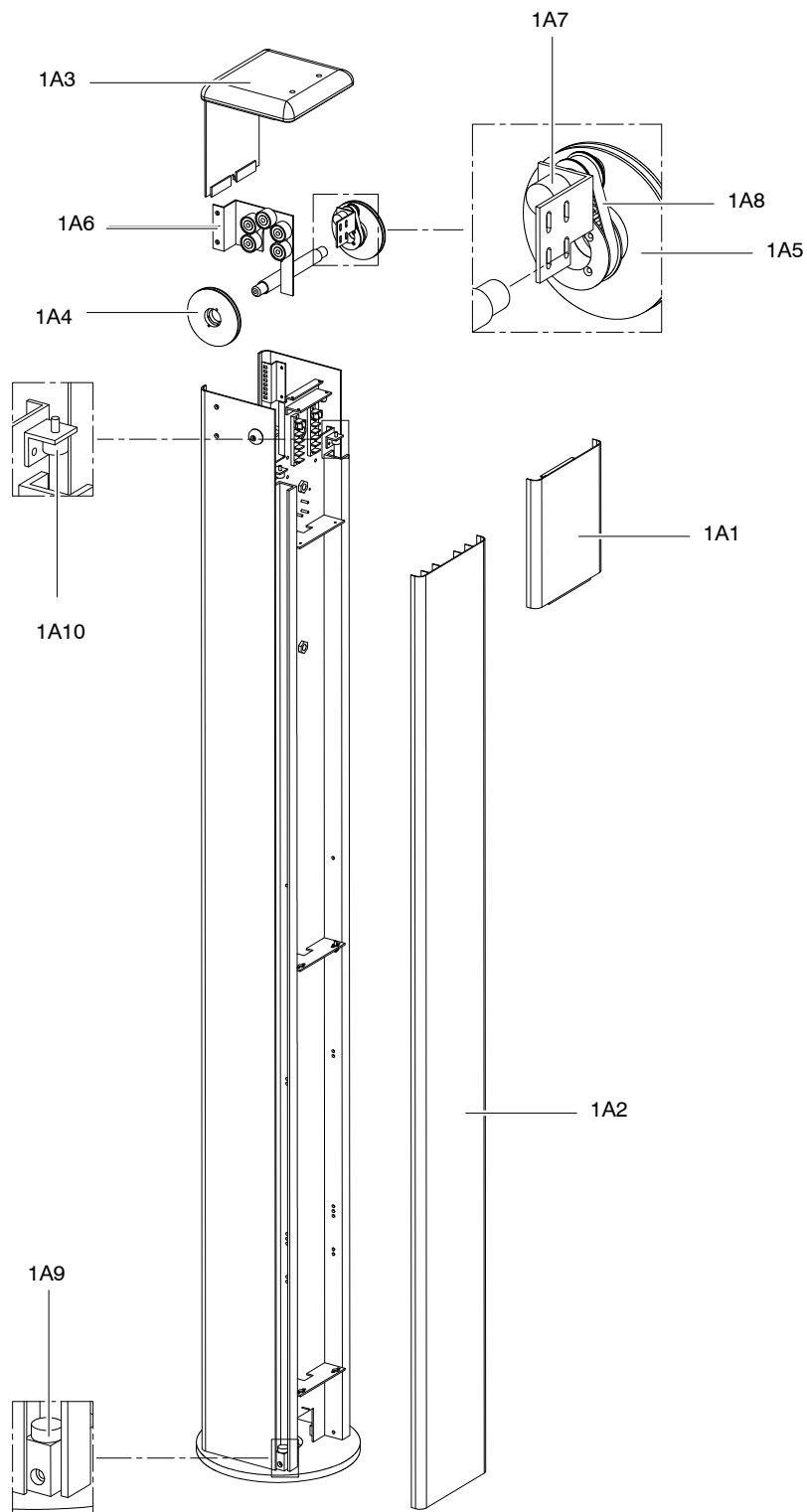


This page intentionally left blank.

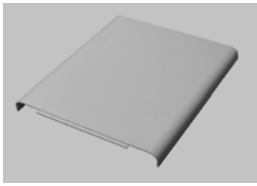
RAD Room

Service Manual

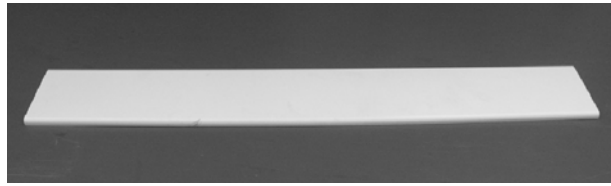
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1A0	COLUMN			
1A1	Upper Front Cover	1	SAT-17226-xx	
1A2	Front Cover	1	SAT-7805-01	
1A3	Upper Cap	1	SAT-17232-xx	
1A4	Right Pulley Kit	1	SAT-A9805-01	
1A5	Left Pulley Kit	1	A520043-01	
1A6	Column Brake Kit	1	A520044-01	
1A7	Column Kit Potentiometer	1	A520045-01	
1A8	Tooth Belt Potentiometer	1	SAT-53940104	
1A9	Lower Limit Kit	2	SAT-A9807-01	
1A10	Upper Limit Kit	2	SAT-A9804-01	



1A1



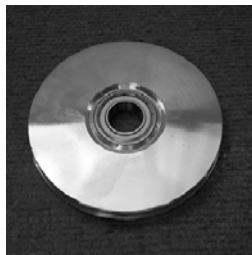
1A2



1A3



1A4



1A5



1A6



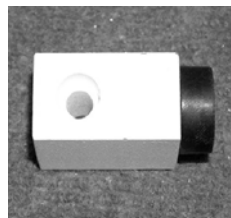
1A7



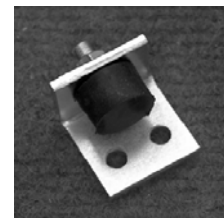
1A8



1A9



1A10

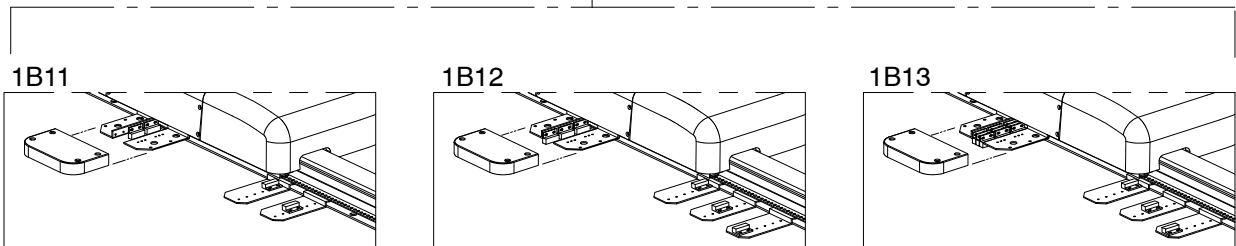
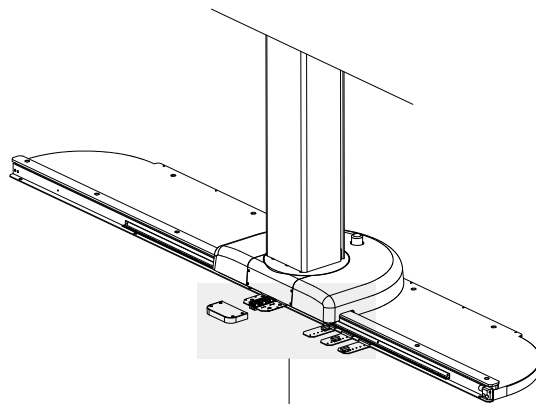
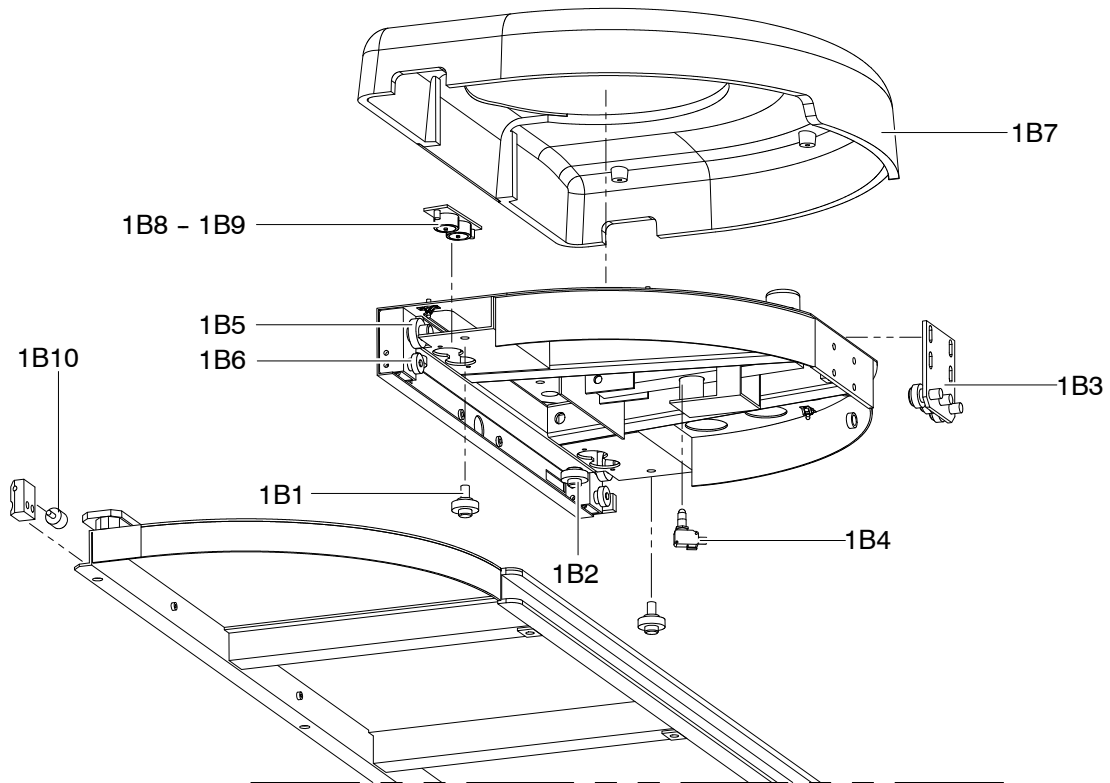


This page intentionally left blank.

RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1B0	COLUMN BASE			
1B1	Axial Concentric Bearing Kit	2	A520036-01	
1B2	Axial Eccentric Bearing Kit	2	A520037-01	
1B3	Front Bearing Kit	1	A520038-01	
1B4	Microswitch	1	SAT-50605015	
1B5	Longitudinal Concentric Bearing Kit	2	A520034-01	
1B6	Longitudinal Eccentric Bearing Kit	2	A520035-01	
1B7	Column Base Cover Kit	1	A520304-xx	
1B8	Base Column Brake Kit	2	A520041-01	For Advanced Column
1B9	Base Column Brake Kit	2	A520072-01	For Basic Column
1B10	Bumper	2	SAT-53830102	
1B11	SID Detent Kit for Basic Column	1	A520073-01	
1B12	SID Detent Kit for Advanced Column	1	A520042-01	
1B13	SID Detent Kit for Automatic Collimation	1	A520067-01	



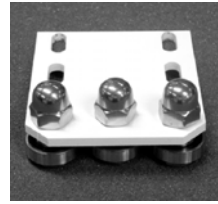
1B1



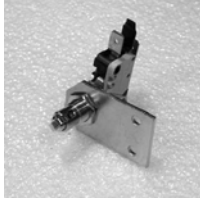
1B2



1B3



1B4



1B5



1B6



1B7



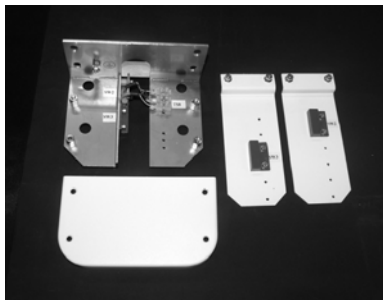
1B8 - 1B9



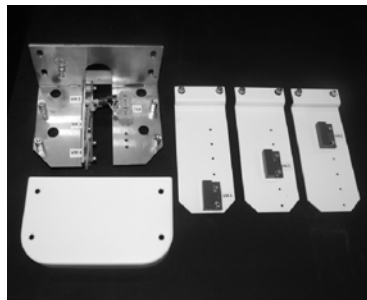
1B10



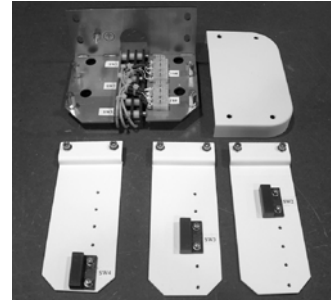
1B11



1B12



1B13

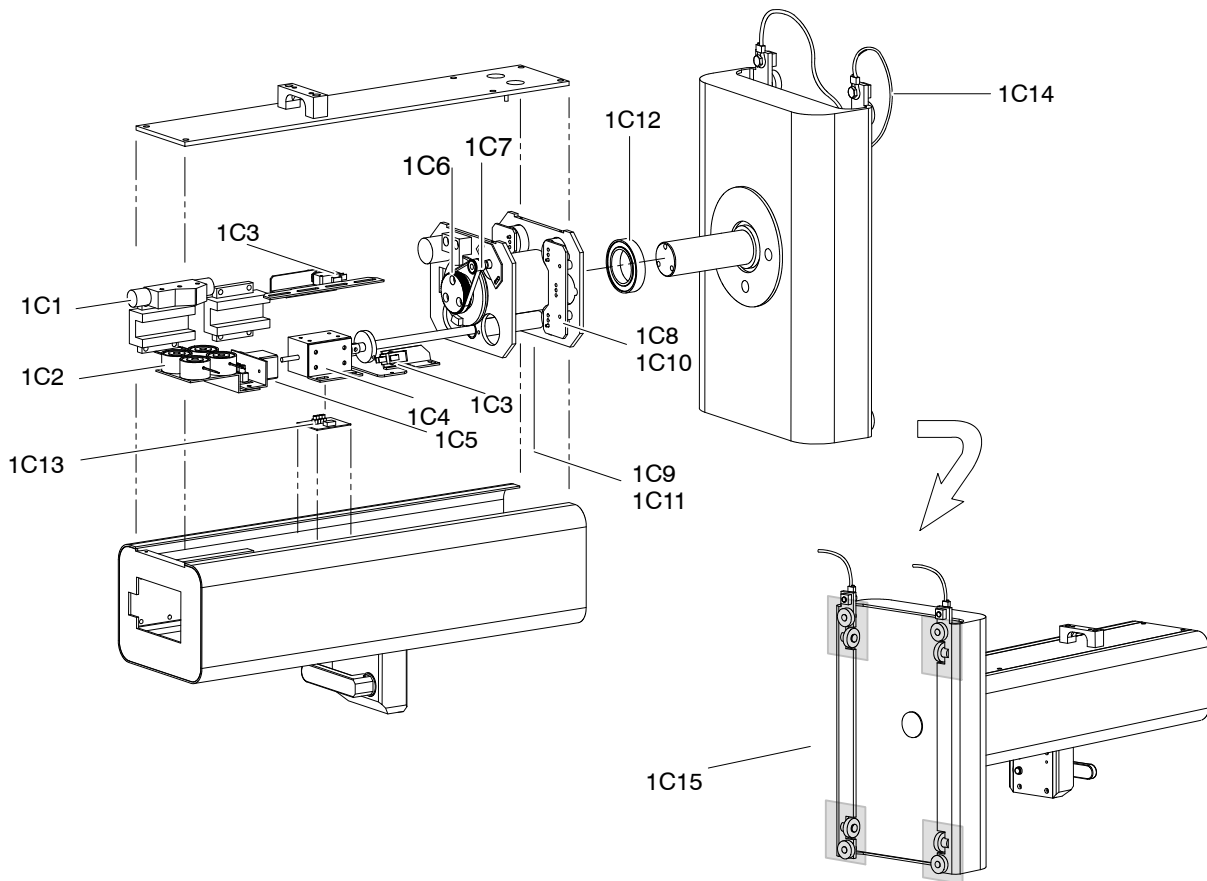


This page intentionally left blank.

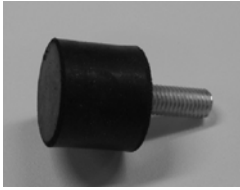
RAD Room

Service Manual

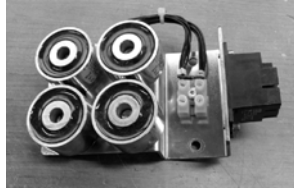
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1C0	ARM			
1C1	Bumper	2	SAT-53830102	
1C2	Brake Kit	1	SAT-A10407-01	
1C3	Microswitch	2	SAT-50605015	
1C4	Positioner 0° +90 -90 Kit	1	SAT-A10408-01	
1C5	Relay Kit	1	A520033-01	Only Advanced Column
1C6	Belt	1	SAT-53940203	
1C7	Potentiometer Kit	1	A520030-01	
1C8	Right Brake Kit (Rotational)	1	A520028-01	Only Advanced Column
1C9	Left Brake Kit (Rotational)	1	A520029-01	Only Advanced Column
1C10	Right Brake Kit (Rotational)	1 </td <td>A520069-01</td> <td>Only Basic Column</td>	A520069-01	Only Basic Column
1C11	Left Brake Kit (Rotational)	1	A520070-01	Only Basic Column
1C12	Bearing	2	SAT-51501021	
1C13	PCB Arm Switch	1	SAT-A3581-01	Only Advanced Column
1C14	Steel Cable Kit	1	A520040-01	
1C15	Carriage Bearing Kit	1	A520046-01	



1C1



1C2



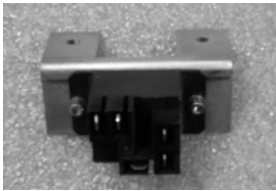
1C3



1C4



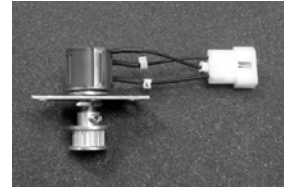
1C5



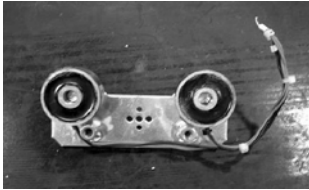
1C6



1C7



1C8 - 1C10



1C9 - 1C11



1C12



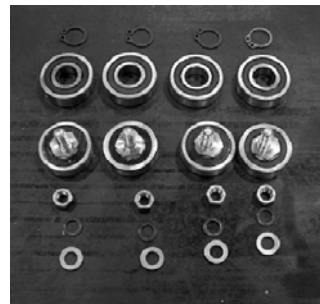
1C13



1C14



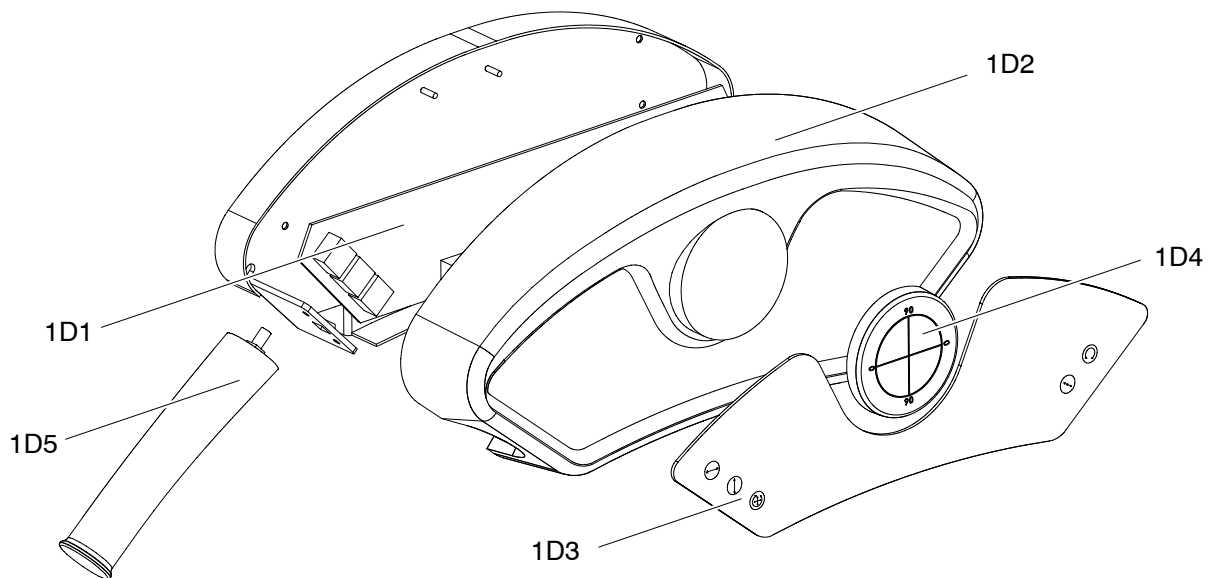
1C15



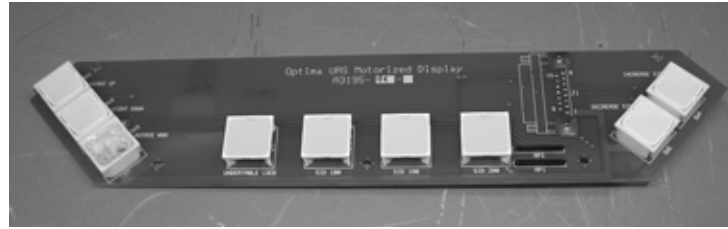
RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1D0	CONTROL PANEL			
1D1	Optima URS Motorized Display	1	SAT-A3195-01	
1D2	Console Cover	1	SAT-8961-xx	
1D3	Display Column	1	SAT-55801393	
1D4	Inclinometer	1	SAT-S02.10.001	
1D5	Handle	2	SAT-S02.05.012	



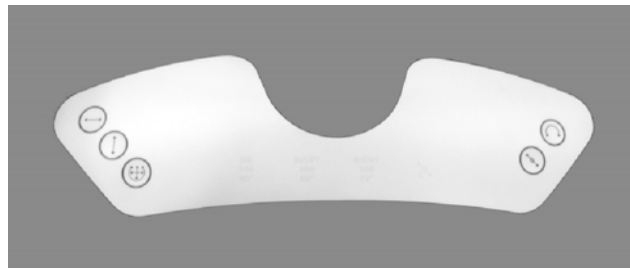
1D1



1D2



1D3



1D4



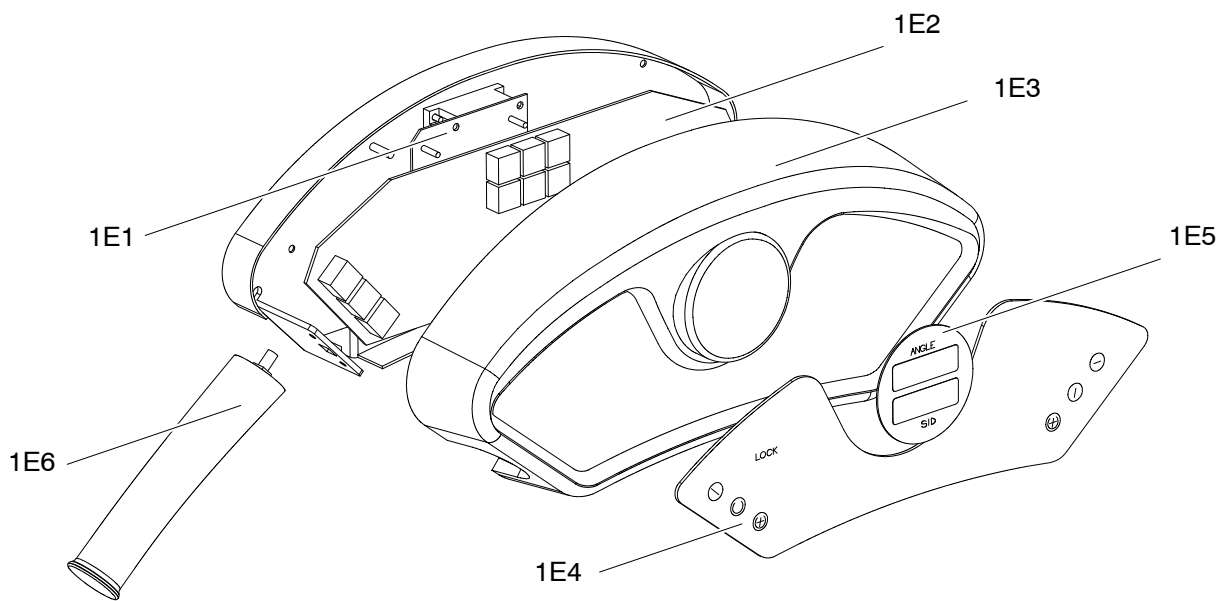
1D5



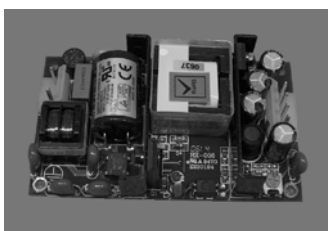
RAD Room

Service Manual

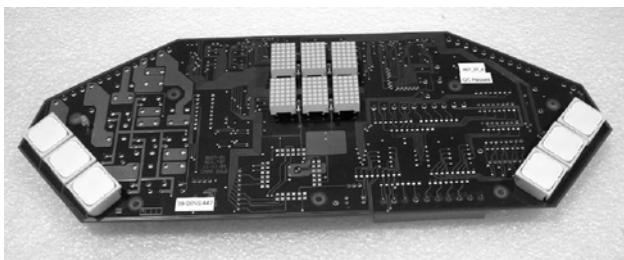
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1E0	CONTROL PANEL ADVANCED			
1E1	Power Supply	1	SAT-53418014	
1E2	Column Control PCB	1	SAT-A3507-01	
1E3	Console Cover	1	SAT-8961-01	
1E4	Overlay Display Column	1	SAT-55801389	
1E5	Overlay Column	1	SAT-55801390	
1E6	Handle	2	SAT-S02.05.012	



1E1



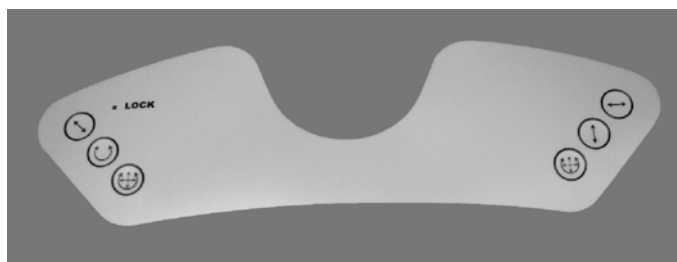
1E2



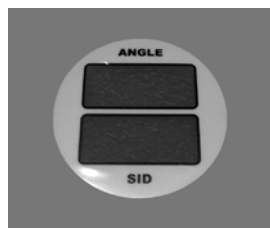
1E3



1E4



1E5



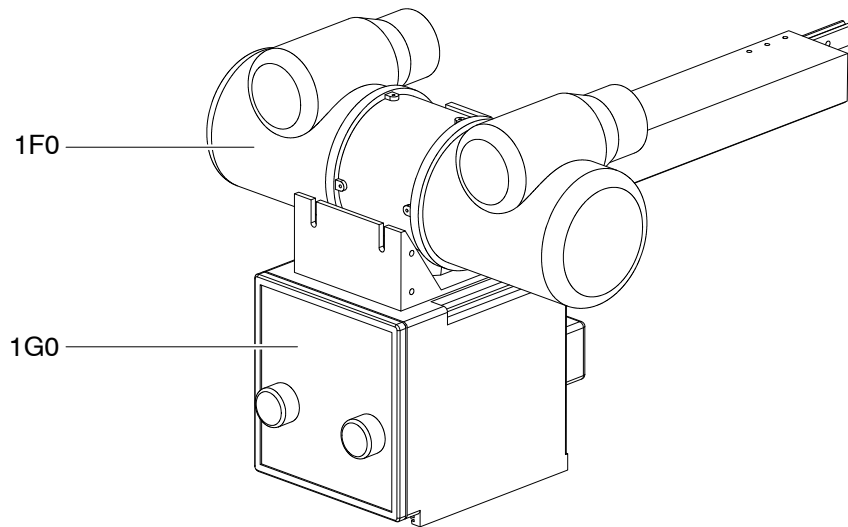
1E6



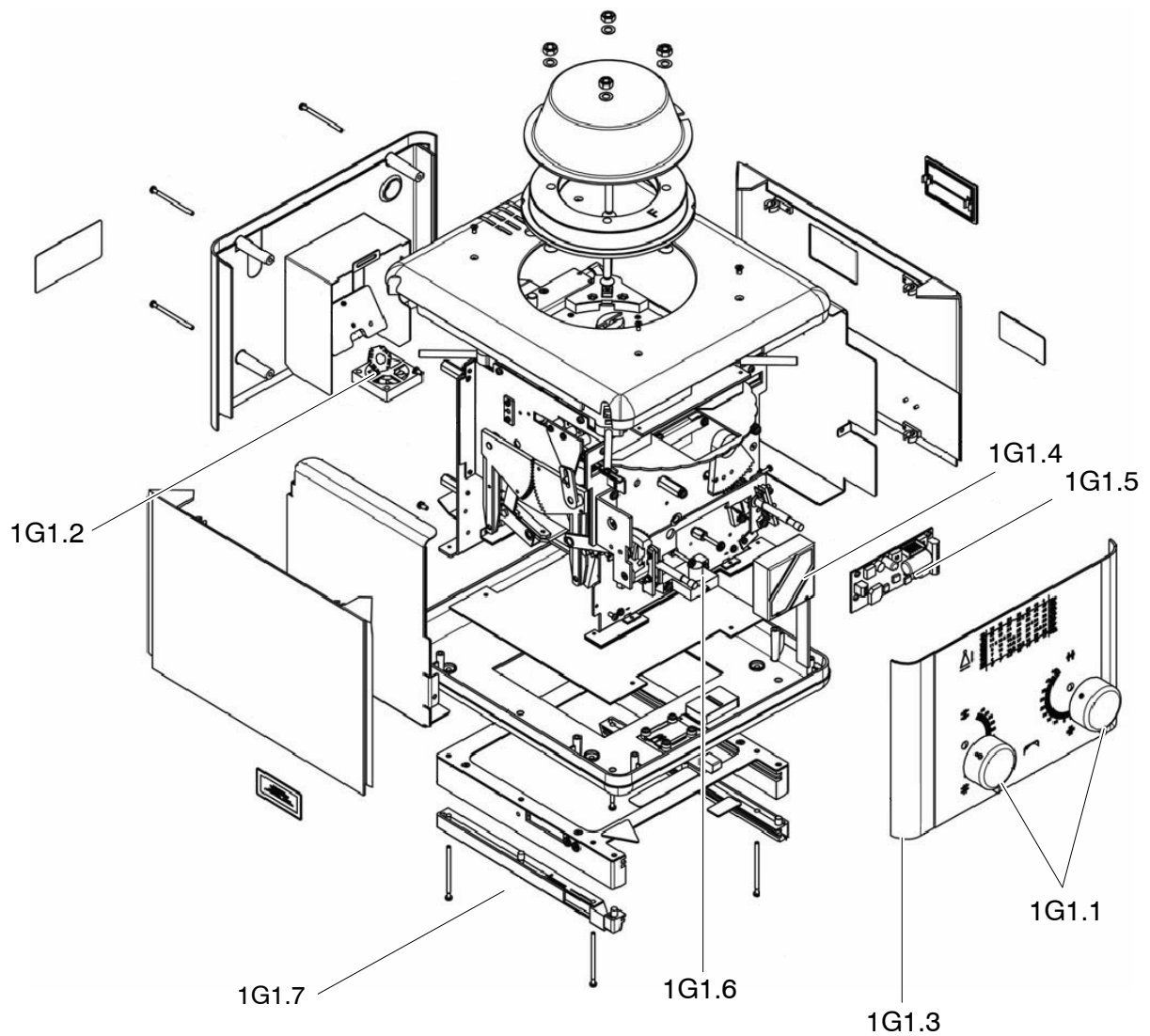
RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1F0	TUBE	1		TBD
1G0	COLLIMATOR	1	A6693-XX	



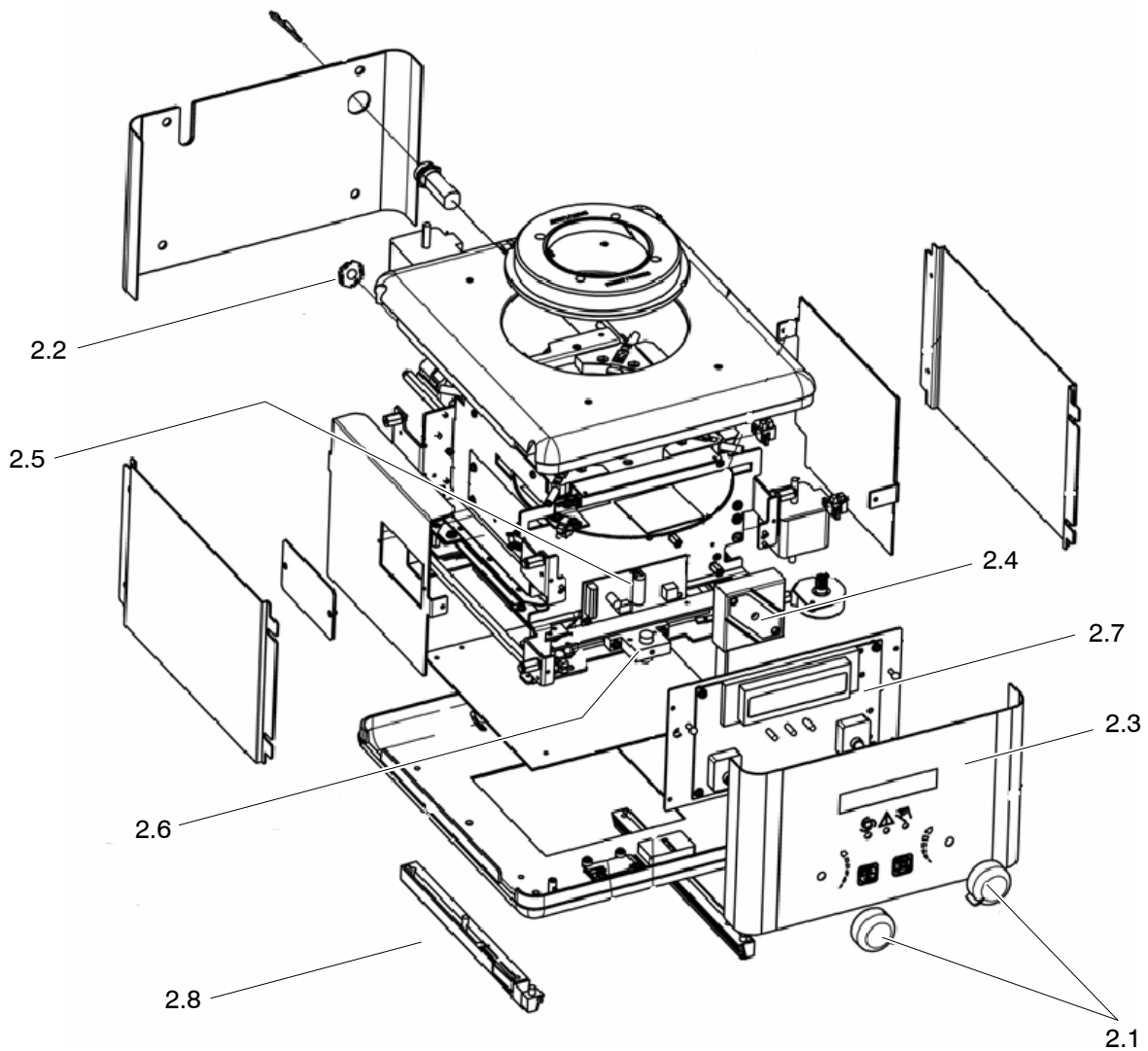
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1G1	MANUAL COLLIMATOR	1	SAT-6693-XX	XX= 04L with LED XX= 04LUSA with LED (FDA) XX= 09LFUSA with Setting Filter and Laser (FDA) XX= 09LUSA with Laser
1G1.1	KNOB	1	A525358-01	
1G1.2	POWER LED	1	A525343-01	
1G1.3	FRONT PANEL	1	A525322-01	
1G1.4	RETRACTABLE TAPE	1	A525320-01	
1G1.5	TIMER	1	A525344-01	
1G1.6	LASER	1	A525147-01	
1G1.7	DAP ION CHAMBER	1	6695-55	OPTIONAL



RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
1G2	AUTOMATIC COLLIMATOR	1	SAT-6693-XX	XX= 35 with DAP XX= 41 laser and Bus Can XX= 42 with laser, Bus Can and Filter XX= 43 with DAP and motorized Filter
1G2.1	KNOB	1	A525358-01	
1G2.2	POWER LED	1	A525343-01	
1G2.3	FRONT PANEL	1	A525364-01	
1G2.4	RETRACTABLE TAPE	1	A525150-01	
1G2.5	TIMER	1	A525344-01	
1G2.6	LASER	1	A525147-01	
1G2.7	RSR 008 PCB	1	A525145-01	
1G2.8	DAP ION CHAMBER	1	6695-55	OPTIONAL
N.A	ASR 003 PCB OUTSIDE COLLIMATOR	1	A525326-01	Option for Ralco 225 ACS Automatic Collimator -Specify Collimator serial number

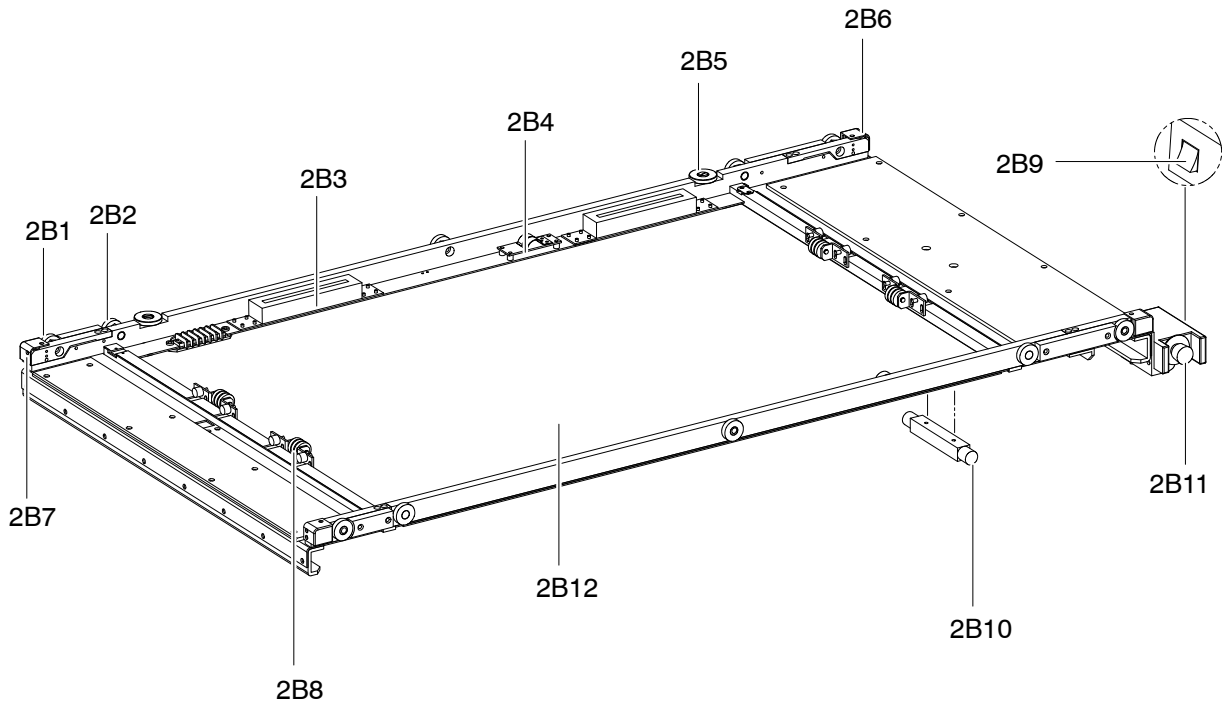


This page intentionally left blank.

RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2A0	TABLE-TOP	1	SAT-A6561-01	
2B0	CARRIAGE TABLE-TOP ELEVATING			
2B1	Concentric bearing Kit	4	A520019-01	
2B2	Eccentric Bearing Kit	6	A520018-01	
2B3	Longitudinal Brake Kit	2	A524002-01	
2B4	Ground Plate Table-Top	2	A520020-01	
2B5	Crazy Wheel Kit	2	A520025-01	
2B6	Anticollision Microswitch Left	2	A520022-01	
2B7	Anticollision Microswitch Right	2	A520023-01	
2B8	Nylon Wheel Kit	4	A520024-01	
2B9	Table-Top Lock Switch	1	SAT-50613018	
2B10	Bumper	2	SAT-53830102	
2B11	Emergency OFF Switch Kit	1	SAT-A9830-01	
2B12	Mylar	1	SAT-7723-01	



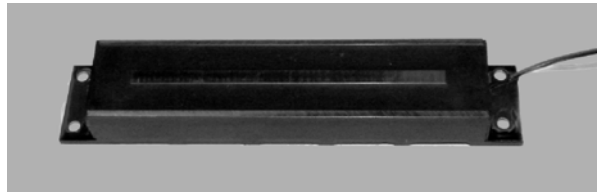
2B1



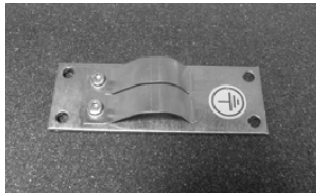
2B2



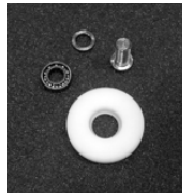
2B3



2B4



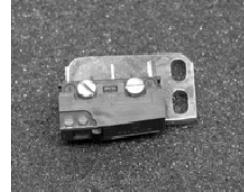
2B5



2B6



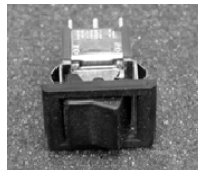
2B7



2B8



2B9



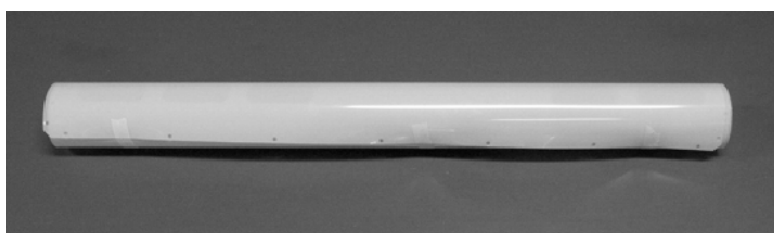
2B10



2B11



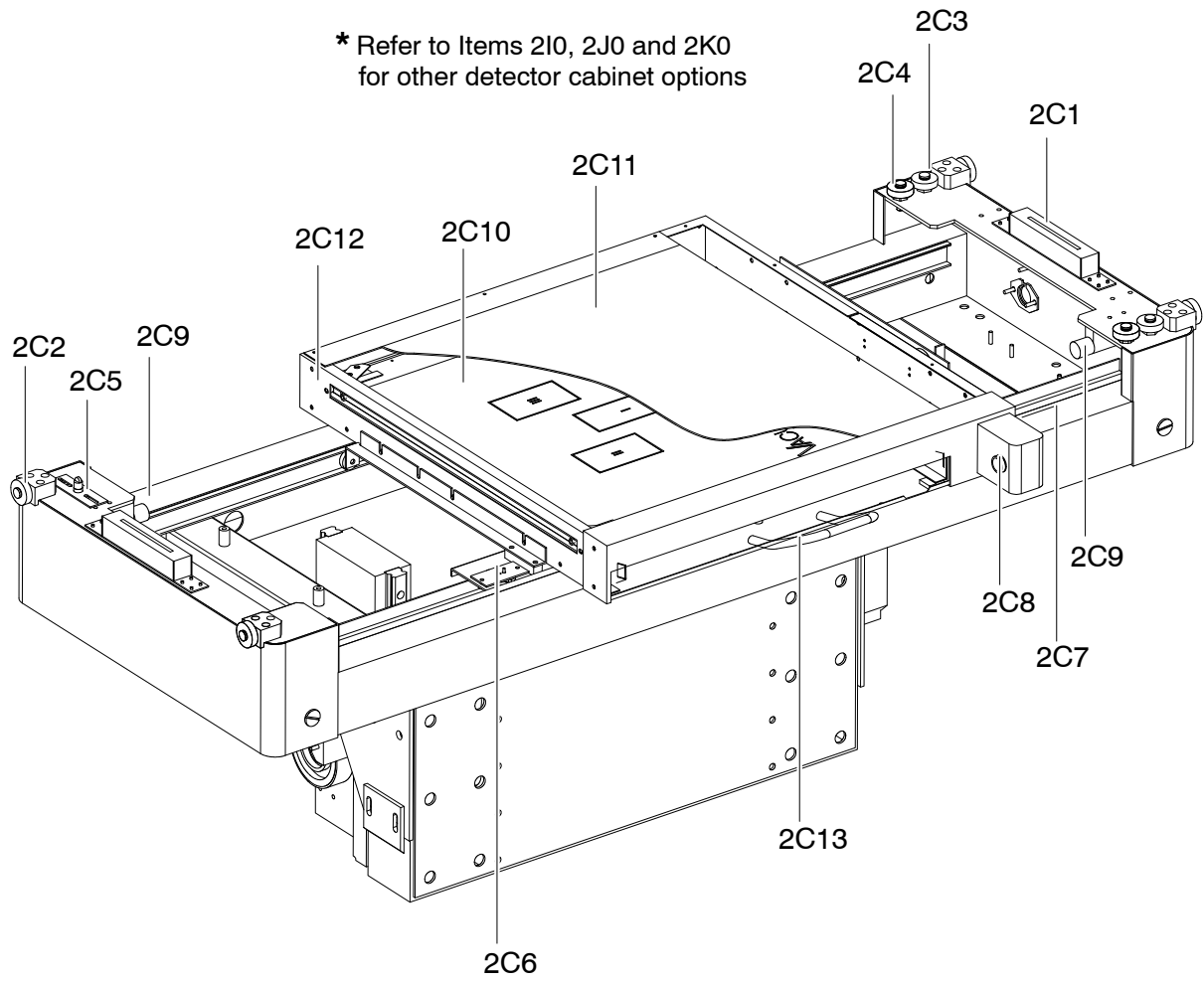
2B12



RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2C0	TABLE FRAME			
2C1	Transversal Brake Kit	2	A524001-01	
2C2	Side Bearing Kit	4	A520012-01	
2C3	Side Concentric Bearing Kit	2	A520013-01	
2C4	Side Eccentric Bearing Kit	2	A520014-01	
2C5	Switch 17 Kit	1	A520015-01	
2C6	Bucky Left Brake Kit	1	A520017-01	
2C7	Bucky Right Brake Kit	1	A520016-01	
2C8	Bucky Handle Pushbutton	1	SAT-50613014	
2C9	Bumper	2	SAT-53830102	
2C10	Vacutec Ion Chamber	1	SAT-6695-21	
	AID Ion Chamber	1	SAT-6695-10	
	Medys Ion Chamber	1	SAT-6695-66	
	Comet Ion Chamber	1	SAT-6695-61	
2C11	Grid	1	SAT-6697-02	
2C12	Bucky USX-Ray	1	SAT-6685-11	
2C13	Sensing Tray	1	SAT-6694-05	
	Manual Tray	1	SAT-A8894-01	
2C14	Vertical SID Label	1	SAT-55801275	



2C1



2C2



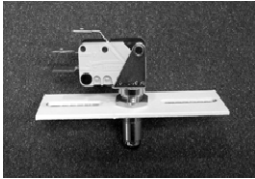
2C3



2C4



2C5



2C6 - 2C7



2C8



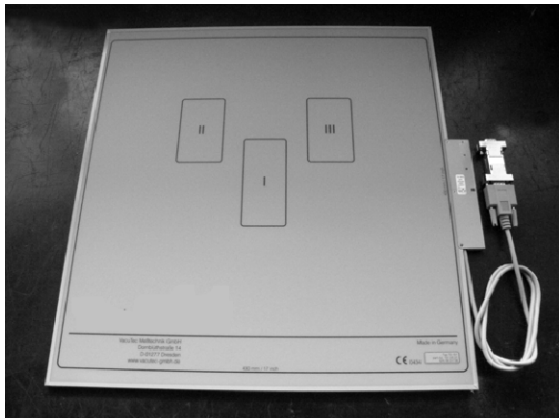
2C9



2C14



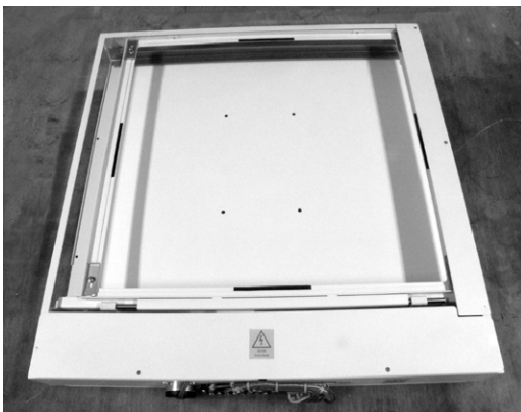
2C10



2C11



2C12



2C13

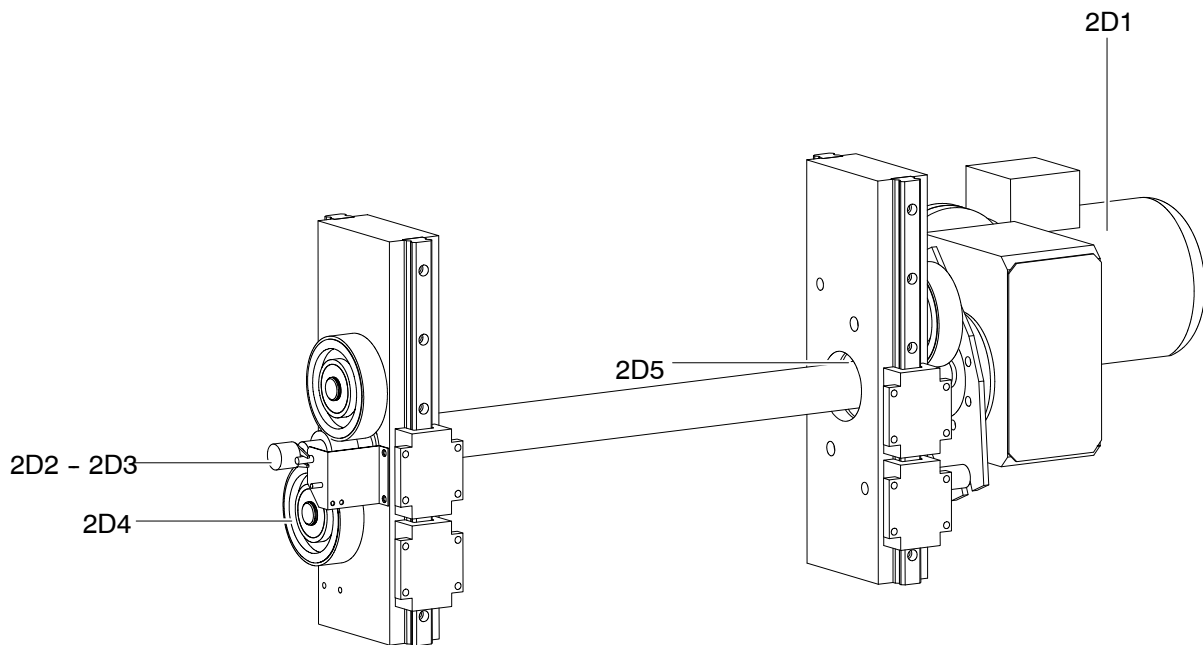


This page intentionally left blank.

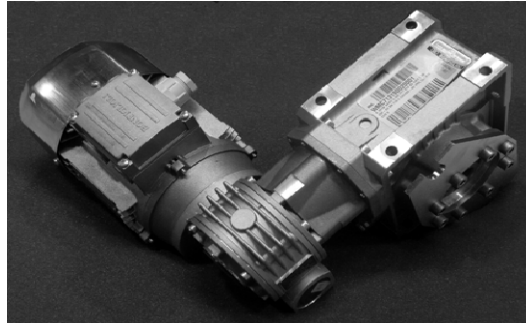
RAD Room

Service Manual

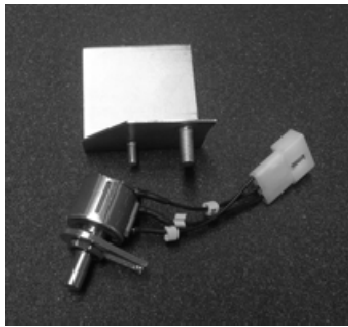
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2D0	MOTOR ASSEMBLY			
2D1	Motor Reducer Kit	1	A520009-01	
2D2	Potentiometer Kit	1	A520008-01	
2D3	Potentiometer Kit	1	A520068-01	Only Automatic Collimation
2D4	Bearing Pulley	8	SAT-51501011	
2D5	Shaft Bearing	2	SAT-51501401	



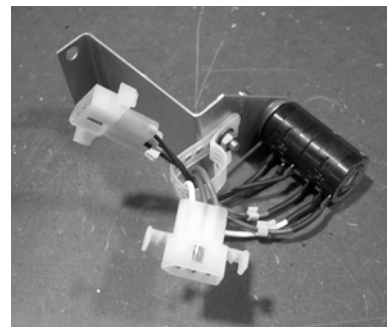
2D1



2D2



2D3



2D4



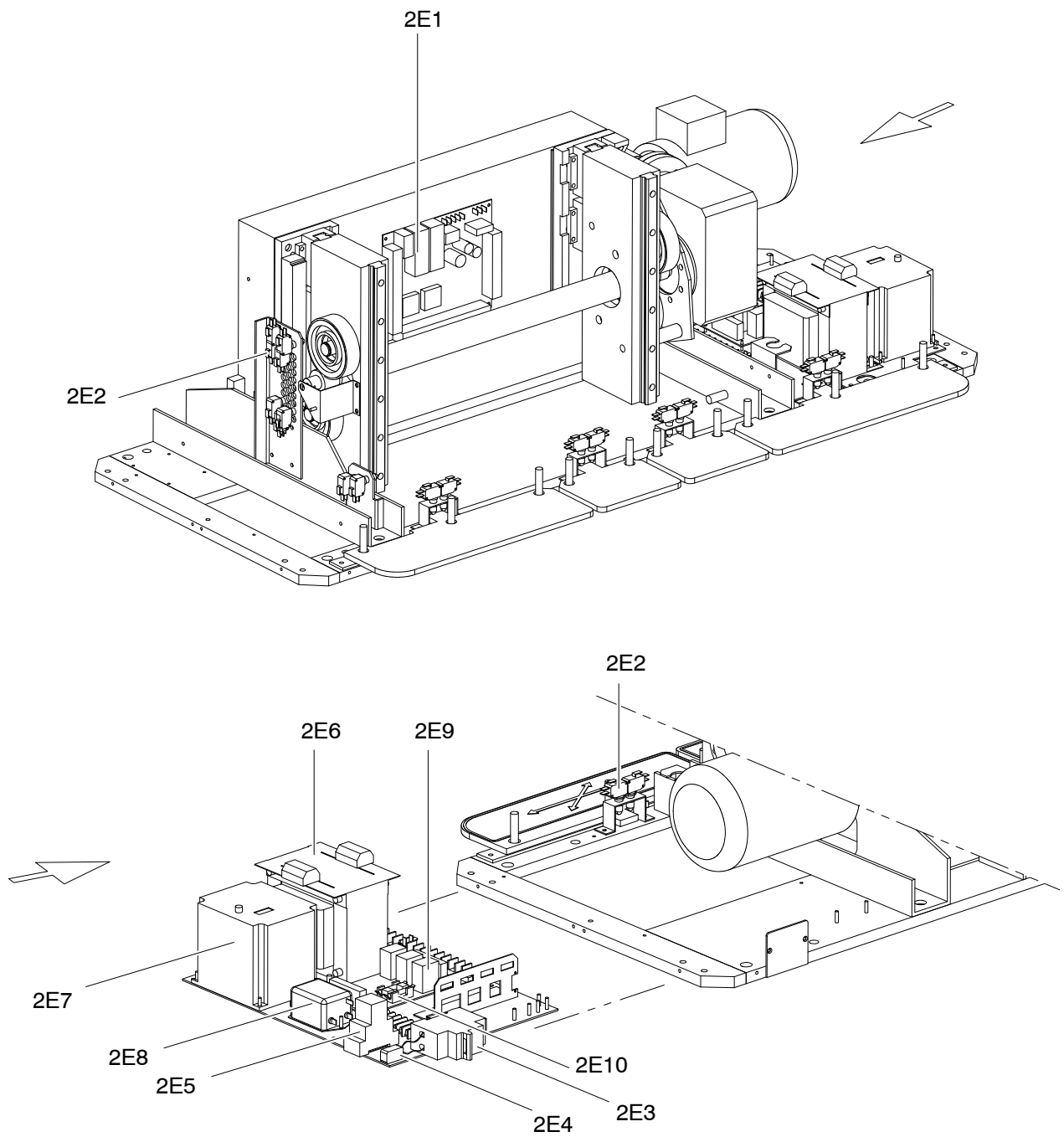
2D5



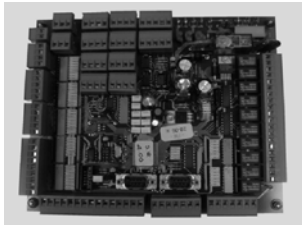
RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2E0	ELEVATING TABLE BASE			
2E1	Automatic Collimation PCB	1	A525326-01	Option - Specify collimator serial nr
2E2	Microswitch	10	SAT-50605015	
2E3	Circuit Breaker	1	SAT-50613105	
2E4	Varistor Kit	1	A520026-01	
2E5	Relay Kit	1	A520027-01	
2E6	Transformer	1	SAT-50509040	
2E7	Inverter	1	SAT-52403006	
2E8	Line Filter	1	SAT-50208001	
2E9	Optima Millennium PCB	1	SAT-A3127-02	
2E10	Fuse Kit	1	A520074-01	



2E1



2E2



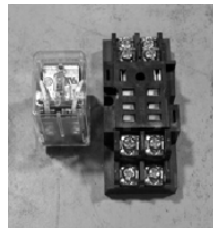
2E3



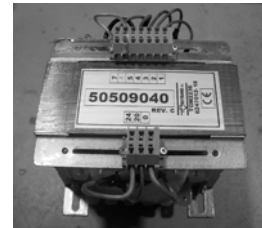
2E4



2E5



2E6



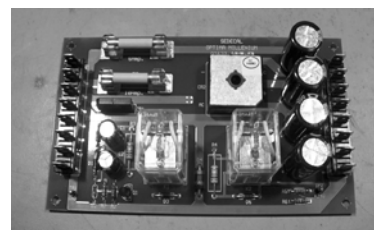
2E7



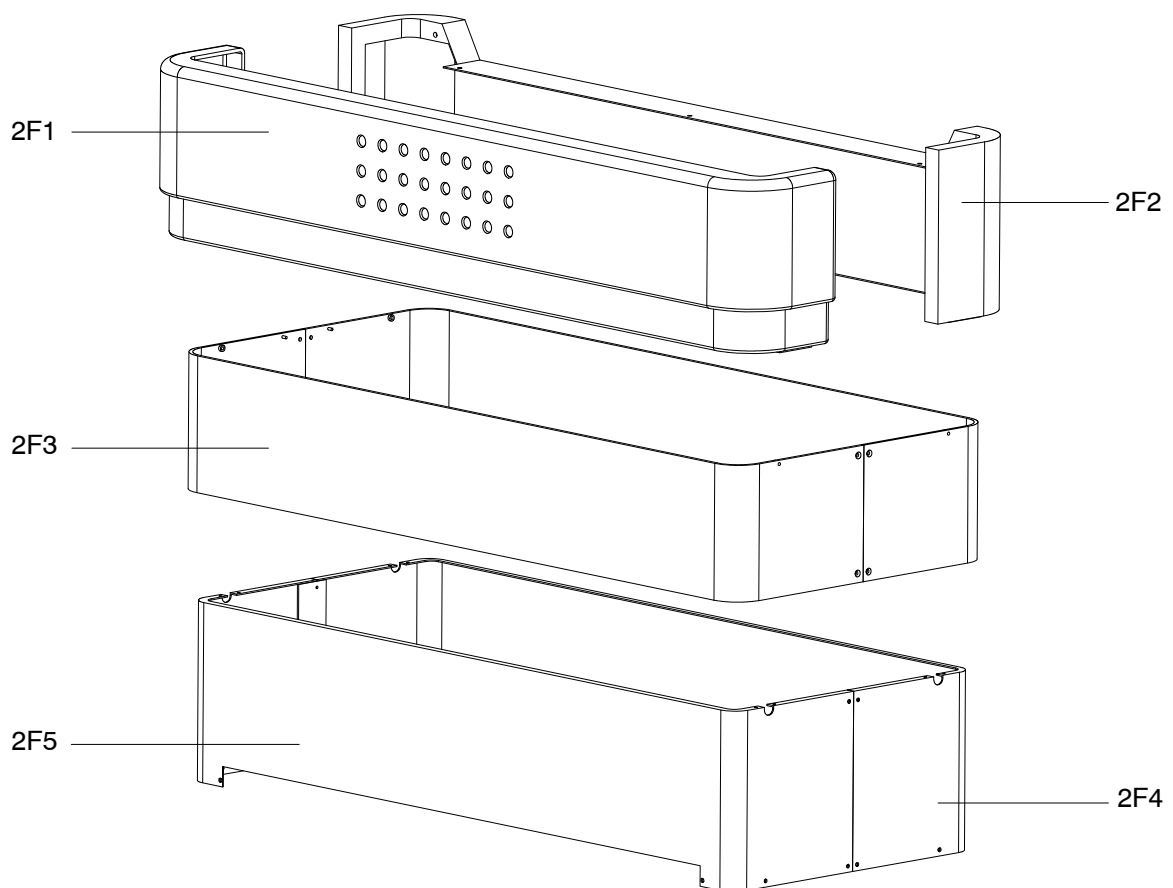
2E8



2E9



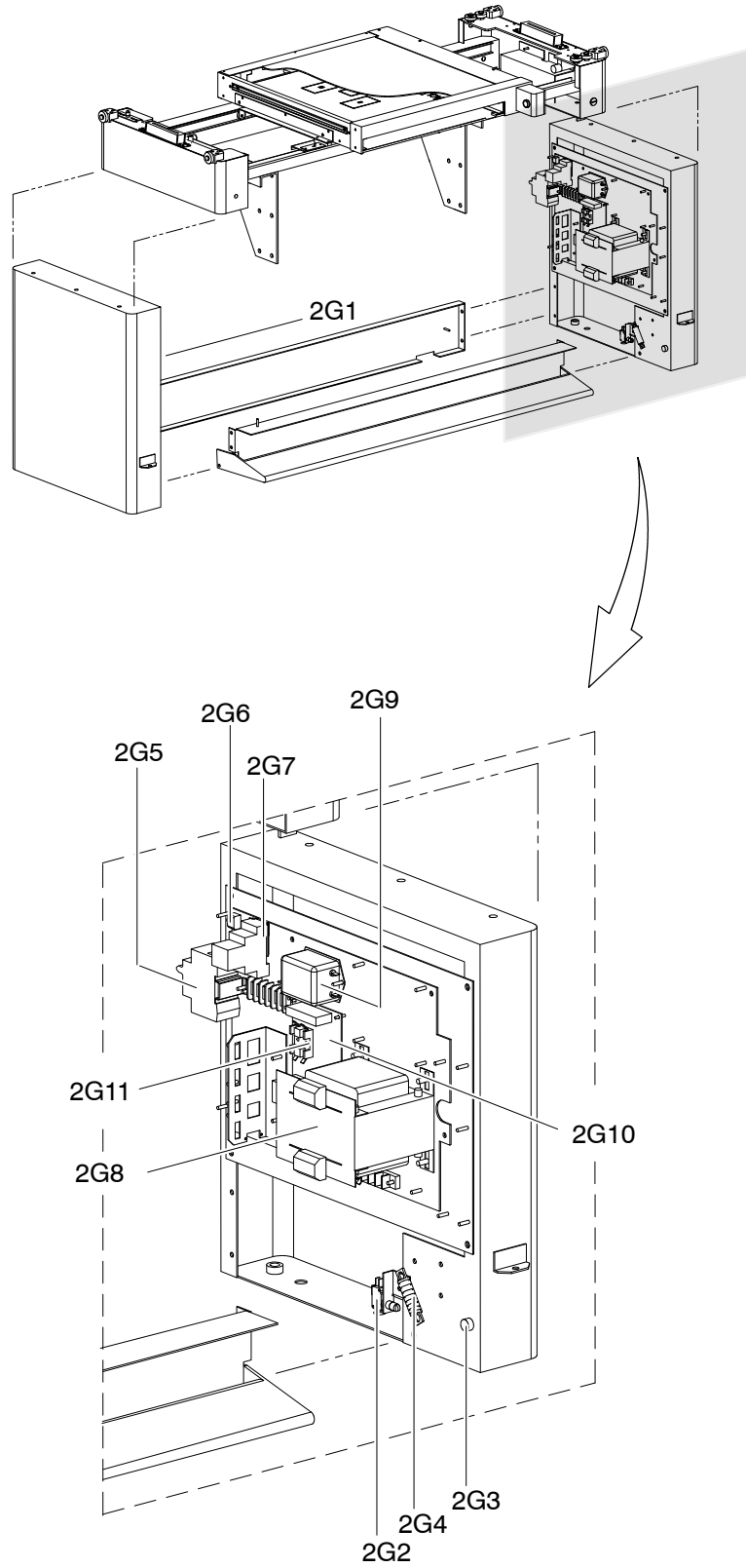
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2F0	ELEVATING TABLE COVERS			
2F1	Upper Front Cover Kit	1	A520002-01	
2F2	Upper Back Cover Kit	1	A520003-01	
2F3	Middle Cover Kit	2	A520004-01	
2F4	Back Lower Cover Kit	1	A520005-01	
2F5	Front Lower Cover Kit	1	A520006-01	



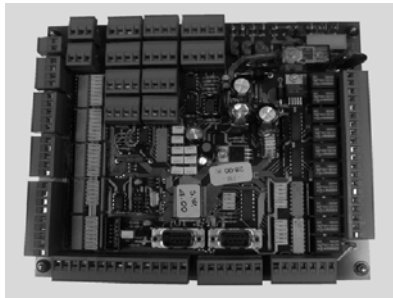
RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2G0	NON ELEVATING TABLE BASE			
2G1	Automatic Collimation PCB	1	A525326-01	Option - Specify collimator serial nr
2G2	Microswitch	2	SAT-50605015	
2G3	Bumper	6	SAT-6633-01	
2G4	Spring	2	SAT-11330-01	
2G5	Circuit Breaker	1	SAT-50613105	
2G6	Varistor Kit	1	A520026-01	
2G7	Relay Kit	1	A520027-01	
2G8	Transformer	1	SAT-50509040	
2G9	Line Filter	1	SAT-50208001	
2G10	Optima Millennium PCB	1	SAT-A3127-02	
2G11	Fuse kit	1	A520074-01	



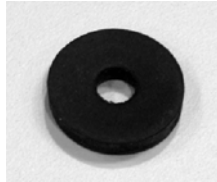
2G1



2G2



2G3



2G4



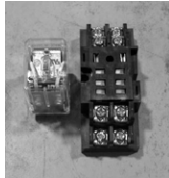
2E5



2E6



2E7



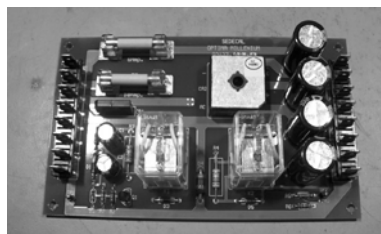
2E8



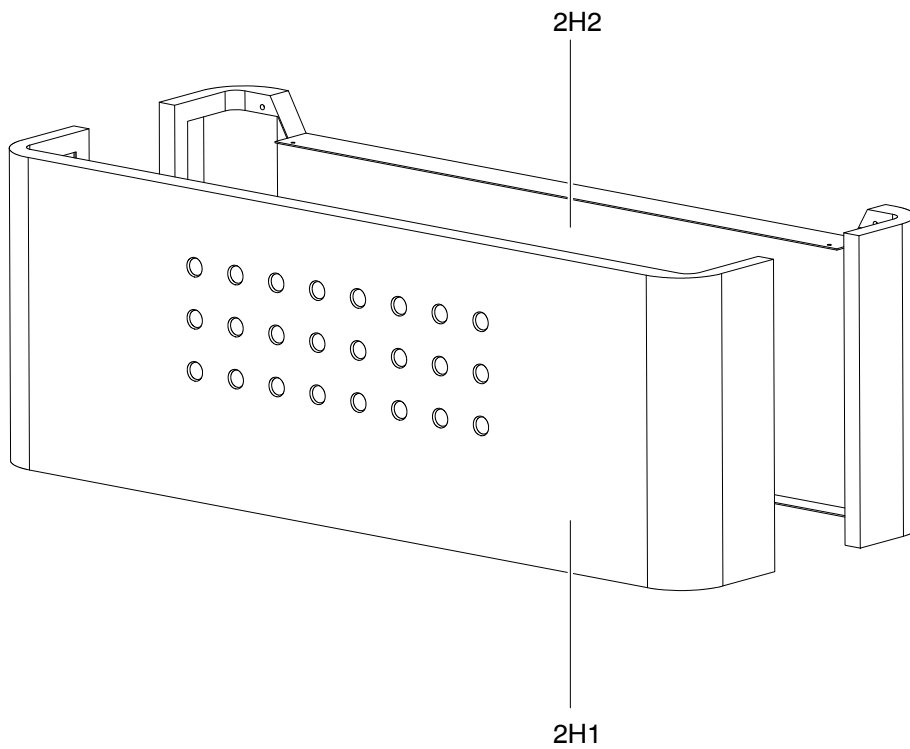
2E9



2E10

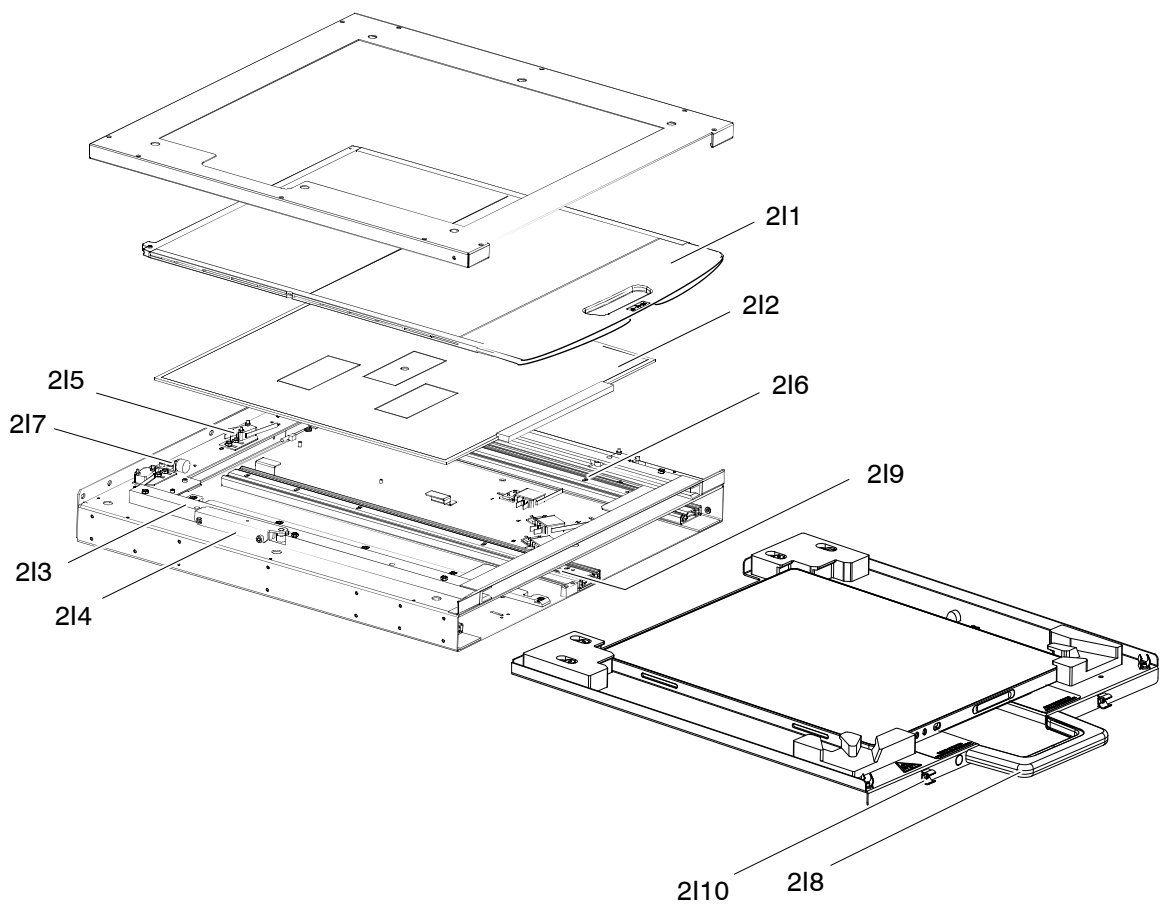


ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2H0	NON ELEVATING TABLE COVERS			
2H1	Front Cover Kit	1	SAT-7717-01	
2H2	Back Cover Kit	1	SAT-7718-01	



DETECTOR CABINET OPTIONS

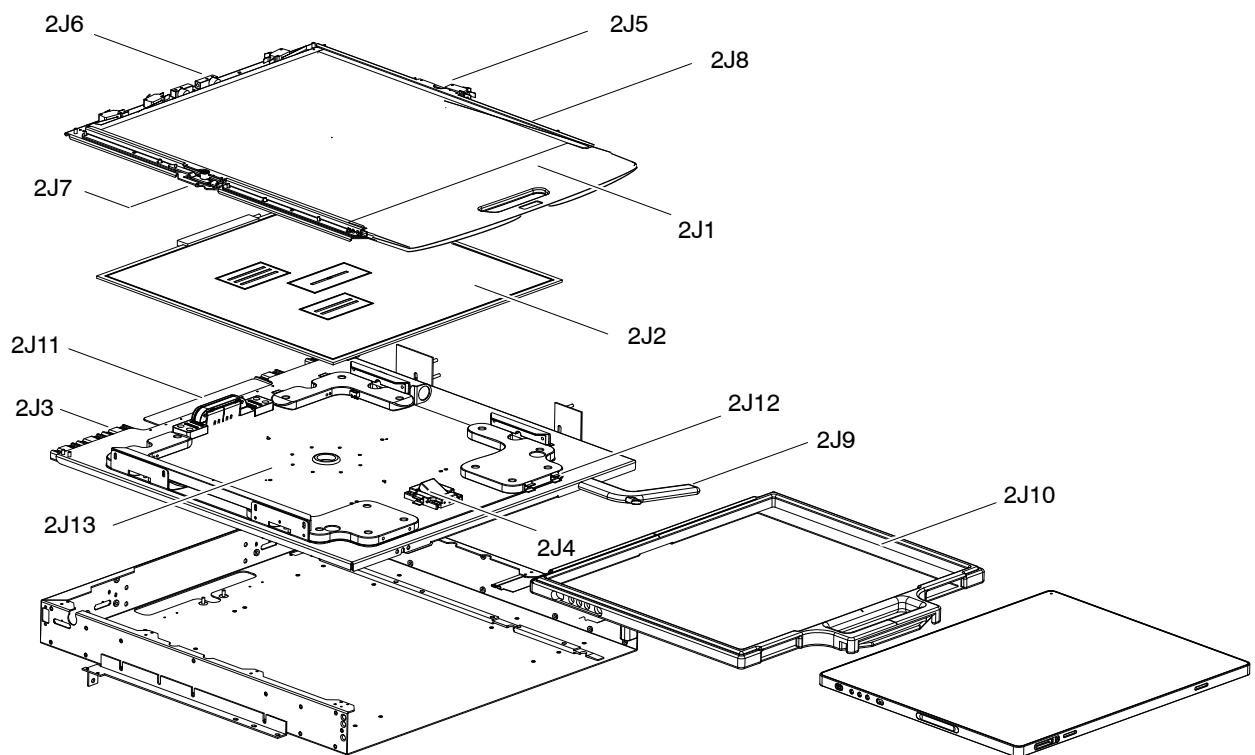
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
210	DETECTOR CABINET WITH NON ROTATING TRAY			
211	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
212	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
213	Tray Blockage	1	SAT-28213-01	
214	Grid Blockage	1	A525510-01	
215	Switch Kit BDC	1	A520491-01	
216	Grid Guides BDC Kit	1	A520492-01	Includes ITEM 214
217	Rubber Bumper	1	SAT-6533-01	<i>This reference comprises 5 units</i>
218	Handle Kit	1	SAT-A10634-02	
219	Ball Bearing Slide	3	SAT-54505012	
2110	Cable Support	1	SAT-53530150	Includes 10 Units



RAD Room

Service Manual

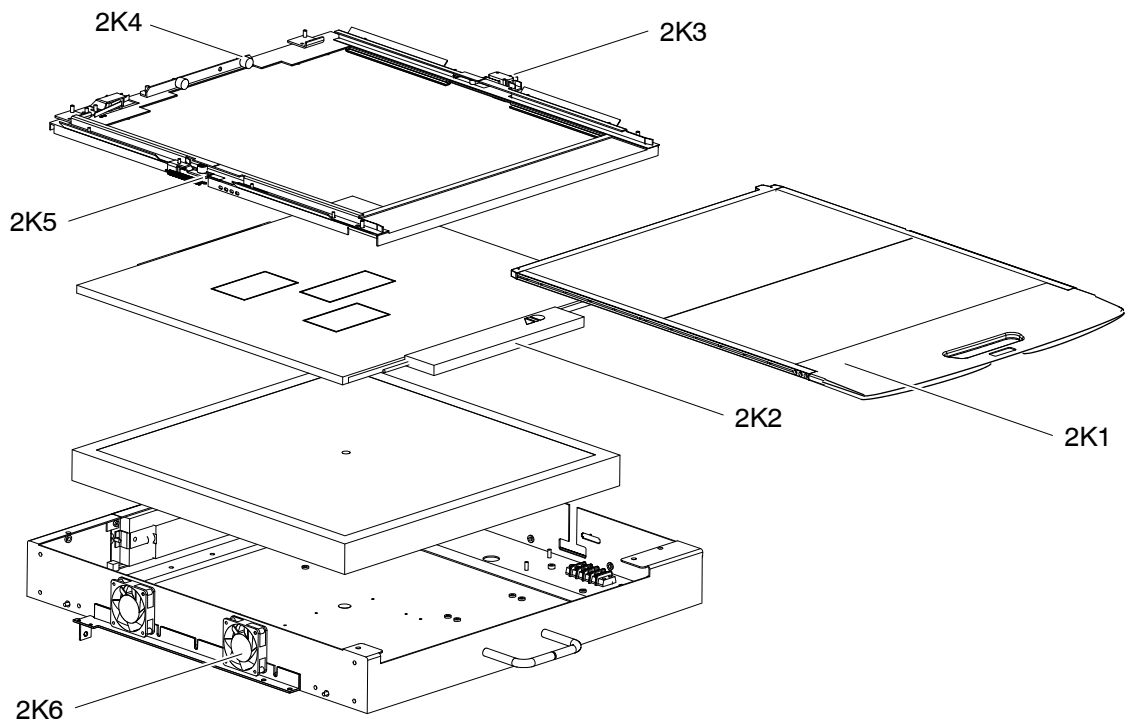
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2J0	DETECTOR CABINET WITH ROTATING TRAY			
2J1	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
2J2	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
2J3	Rear bumper Kit	1	SAT-A10676-02	
2J4	Detector Detent Kit	1	SAT-A10677-01	
2J5	Switch Kit BCG	1	A520490-01	
2J6	Bumper Rubber	1	SAT-6533-01	<i>This reference comprises 5 units</i>
2J7	Grid Blockage	1	A520476-01	
2J8	Grid Guides BDG Kit	1	A520493-01	Includes ITEM 2J7
2J9	Handle Kit	1	SAT-A10634-11	
2J10	Holder for Detector	1	SAT-A10904-01	Only for detector without handle
2J11	Ball Bearing Slide	5	SAT-54505012	
2J12	Cable Support	1	SAT-53530150	Includes 10 Units
2J13	Turning Kit	1	SAT-A10654-01	



RAD Room

Service Manual

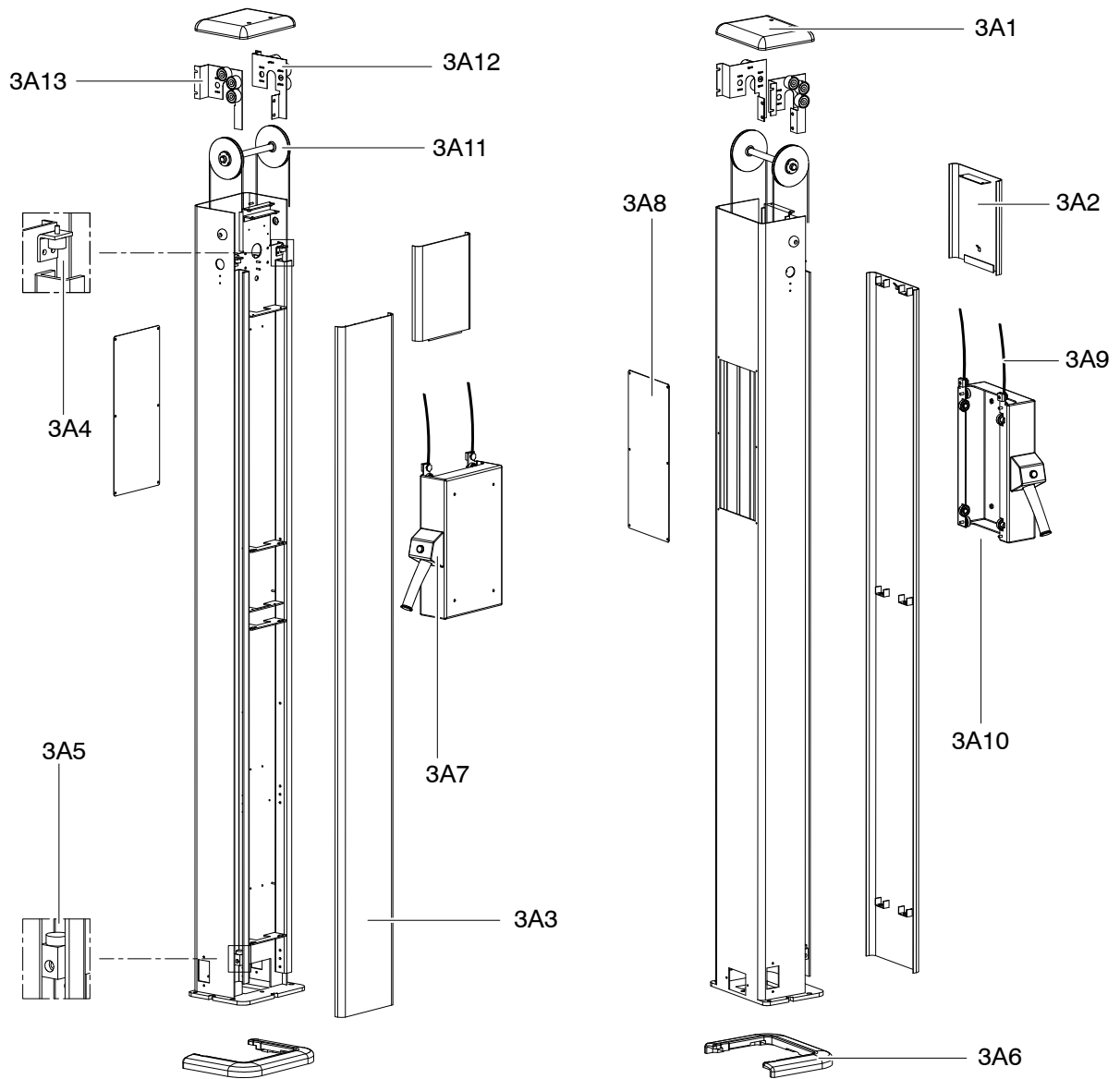
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
2K0	DETECTOR CABINET FIXED DETECTOR AND REMOVABLE GRID			
2K1	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
	Frame 3mm for Grid 1.8m	1	SAT-A10663-02	
	2K2	Vacutec Ion Chamber	1	6695-21
AID Ion Chamber		1	6695-11	
Medys Ion Chamber		1	6695-66	
Claymount Ion Chamber		1	6695-56	
	1	6695-57		
2K3	Switch Kit BDC	1	A520491-01	
2K4	Bumper Rubber	1	SAT-6533-01	<i>This reference comprises 5 units</i>
2K5	Grid Blockage	1	A520476-01	
2K6	Fans Kit	2	SAT-A9721-01	



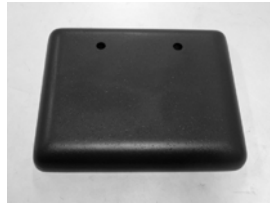
RAD Room

Service Manual

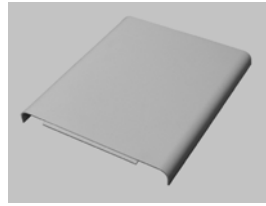
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3A0	MANUAL COLUMN ASSEMBLY			
3A1	Upper Cap	1	SAT-17189-xx	
3A2	Upper Front Cover	1	SAT-17226-xx	
3A3	Front Cover	1	SAT-7805-01	
3A4	Upper Limit Kit	2	SAT-A9804-01	
3A5	Lower Stop Kit	2	SAT-A9807-01	
3A6	Lower Cover	1	SAT-7816-xx	
3A7	Handle Assembly Kit	1	A520082-xx	
3A8	Counterweigh Cover	1	SAT-7833-01	
3A9	Steel Cable	1	A520001-01	
3A10	Bearing Kit	1	SAT-A9429-01	
3A11	Pulley	2	A520083-01	
3A12	Right Brake Kit (3 Coils)	1	A520076-01	
3A13	Left Brake Kit (3 Coils)	1	A520075-01	
3A12	Right Brake Kit (5 Coils)	1	A520078-01	Optional
3A13	Left Brake Kit (5 Coils)	1	A520077-01	Optional



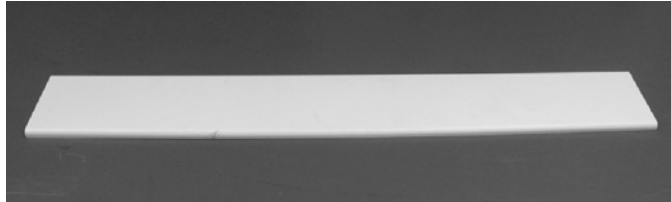
3A1



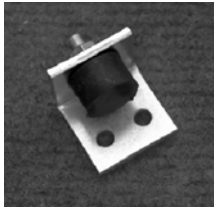
3A2



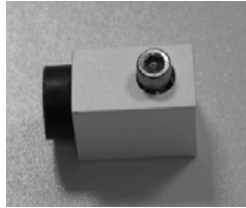
3A3



3A4



3A5



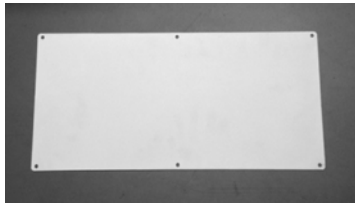
3A6



3A7



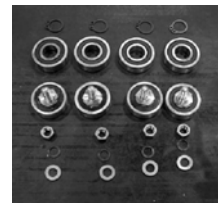
3A8



3A9



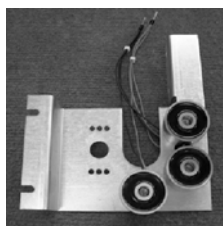
3A10



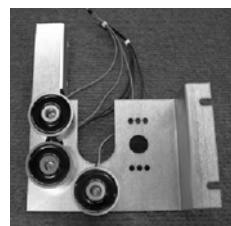
3A11



3A12



3A13

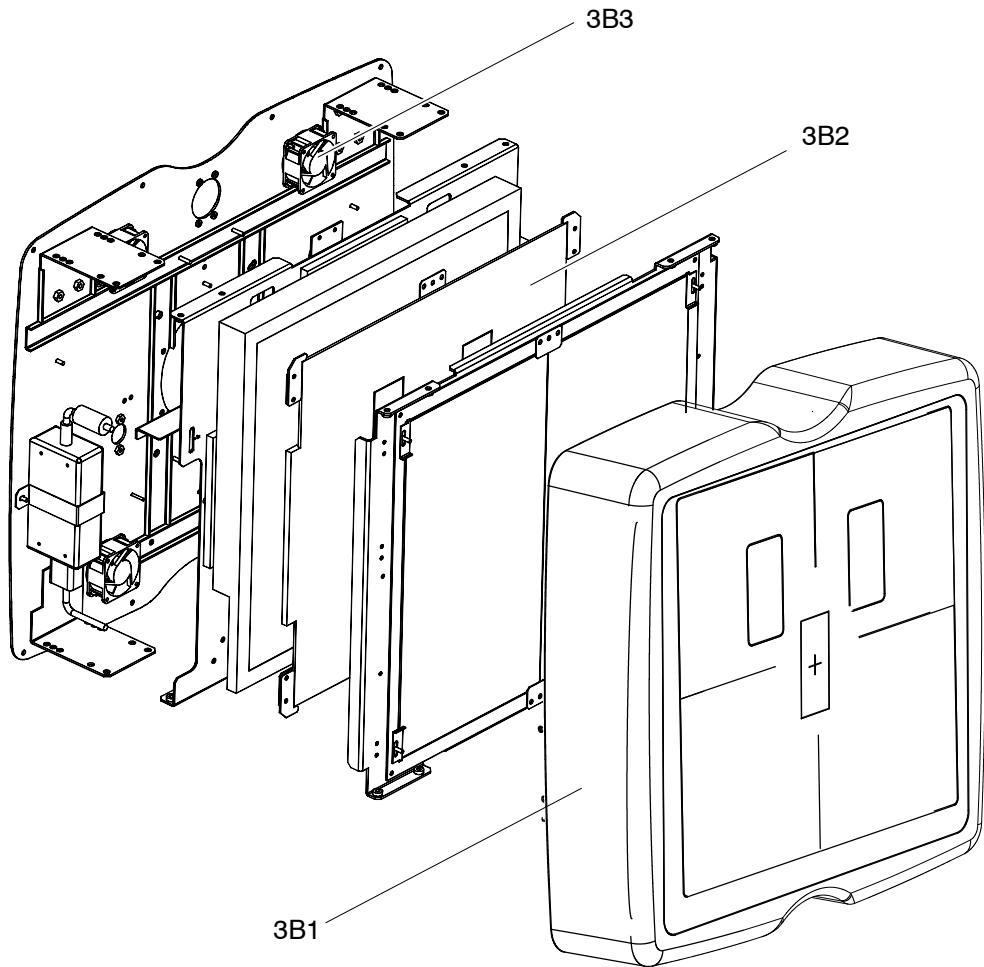


This page intentionally left blank.

RAD Room

Service Manual

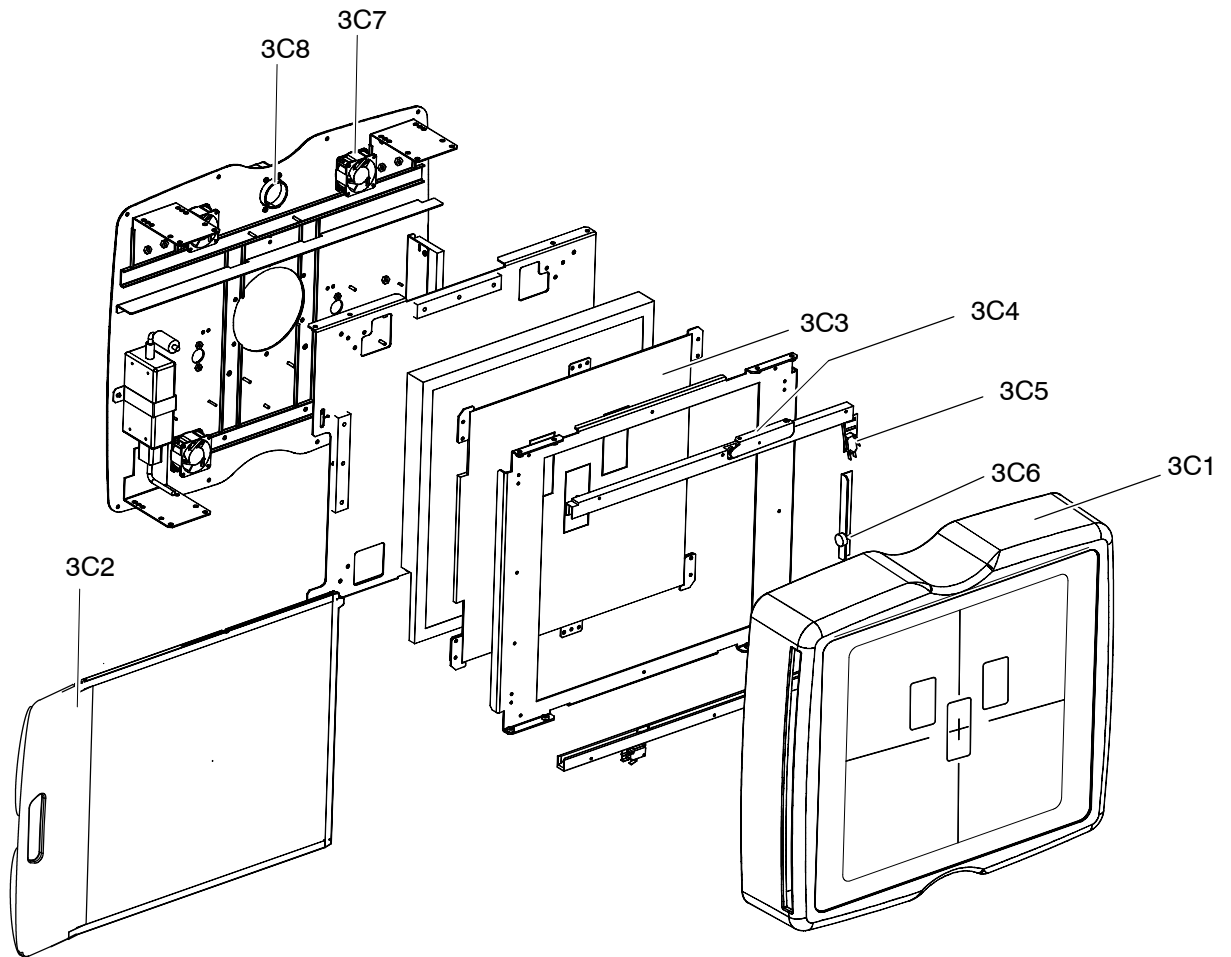
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3B0	DETECTOR CABINET FOR FIXED DETECTOR WITH FIXED GRID			
3B1	Cover of Detector Assembly	1	A525511-01	
3B2	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
3B3	Fans	4	SAT-A9721-01	Optional



RAD Room

Service Manual

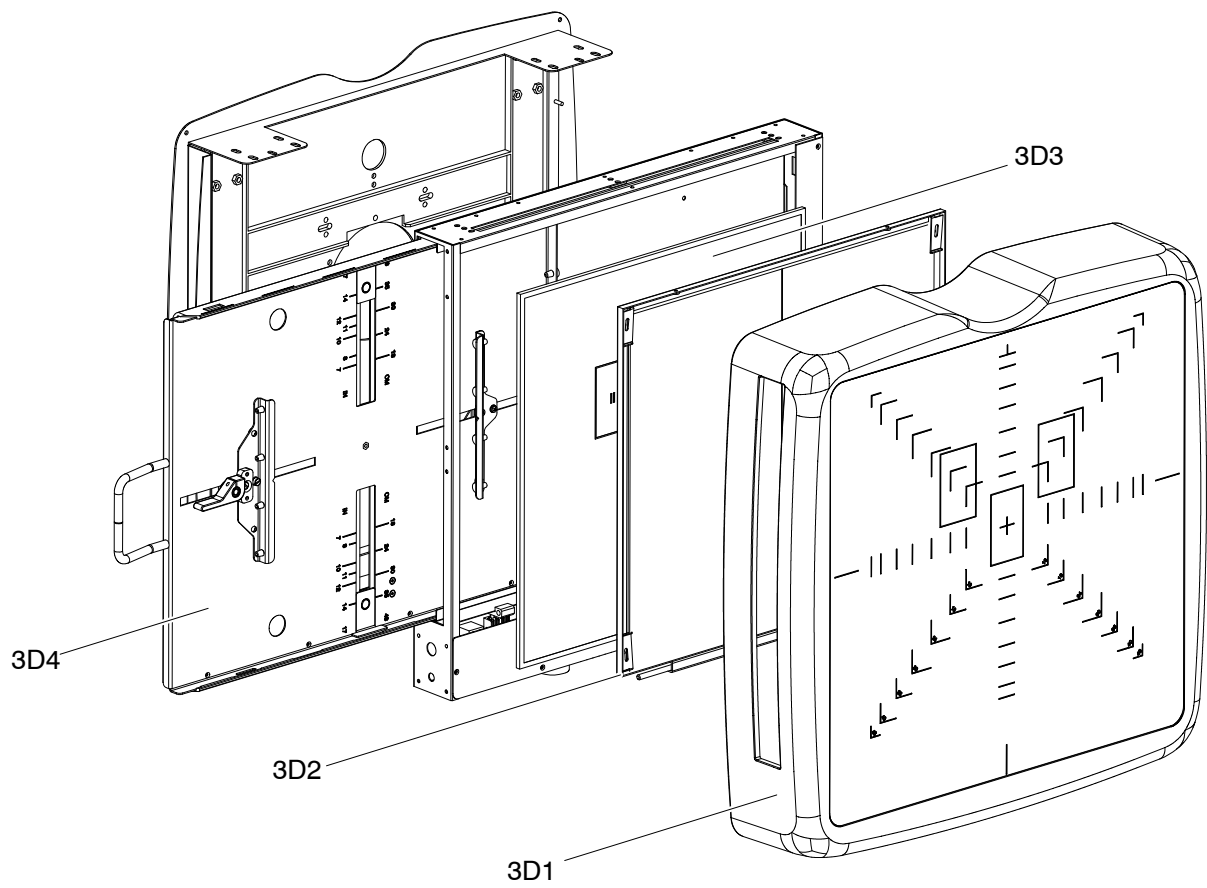
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3C0	DETECTOR CABINET FOR FIXED DETECTOR WITH DETACHABLE GRID			
3C1	Cover of Detector Assembly	1	A525511-02	
3C2	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
3C3	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
		1	6695-57	
3C4	Grid Blockage	1	A525510-01	
3C5	Switch Kit BDC	1	A520491-01	
3C6	Rubber Bumper	1	SAT-6533-01	<i>This reference comprises 5 units</i>
3C7	Fans	4	SAT-A9721-01	Optional
3C8	Cable Outlet Kit	1	A520403-01	



RAD Room

Service Manual

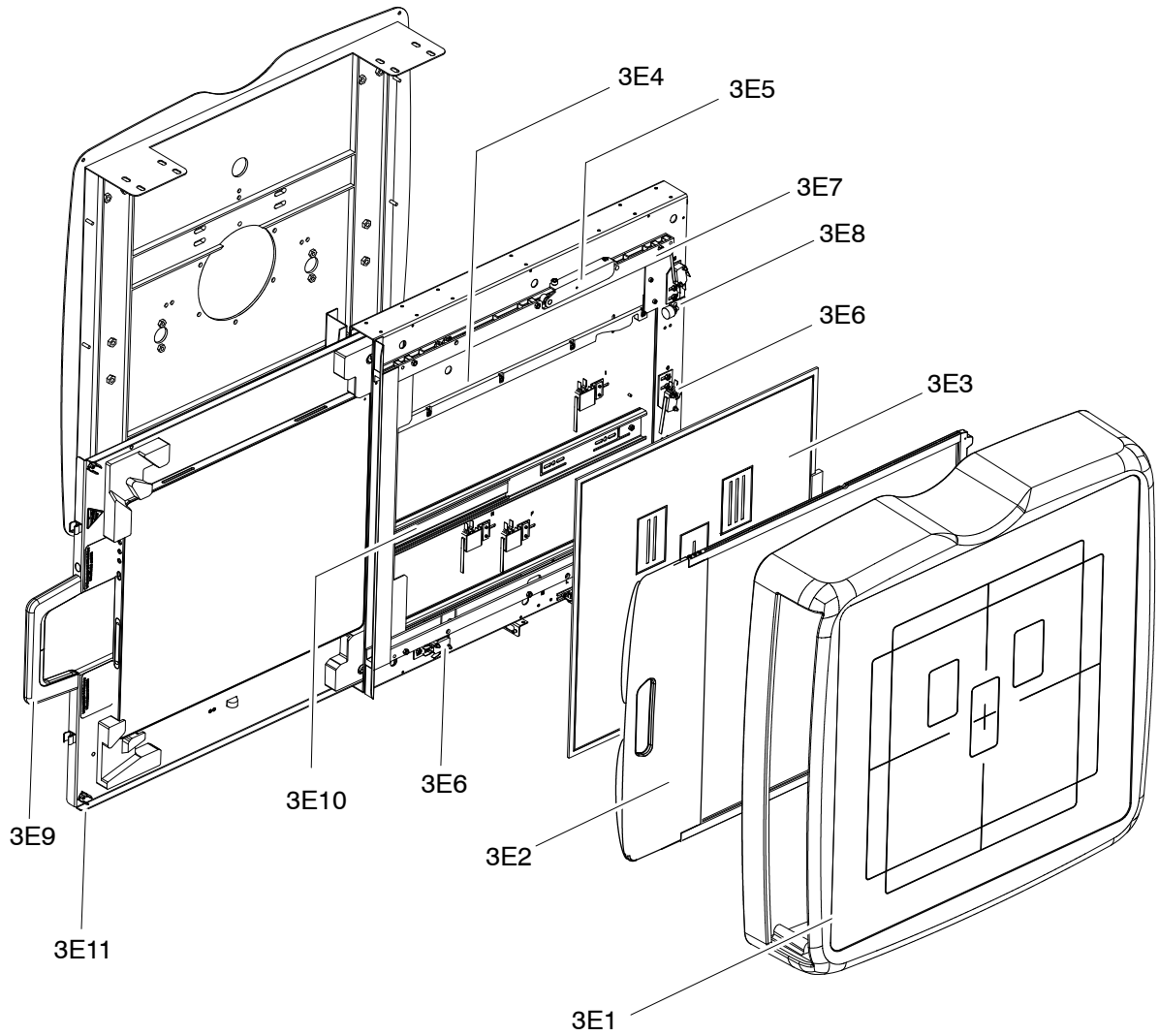
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3D	RECEPTOR CABINET FOR FILM / CR BUCKY			
3D1	Cover of Receptor Assy Left Loading	1	A524013-01	
	Cover of Receptor Assy Right Loading	1	A524013-02	
3D2	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
3D3	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
3D4	Cassette Tray	1	SAT-A8894-01	



RAD Room

Service Manual

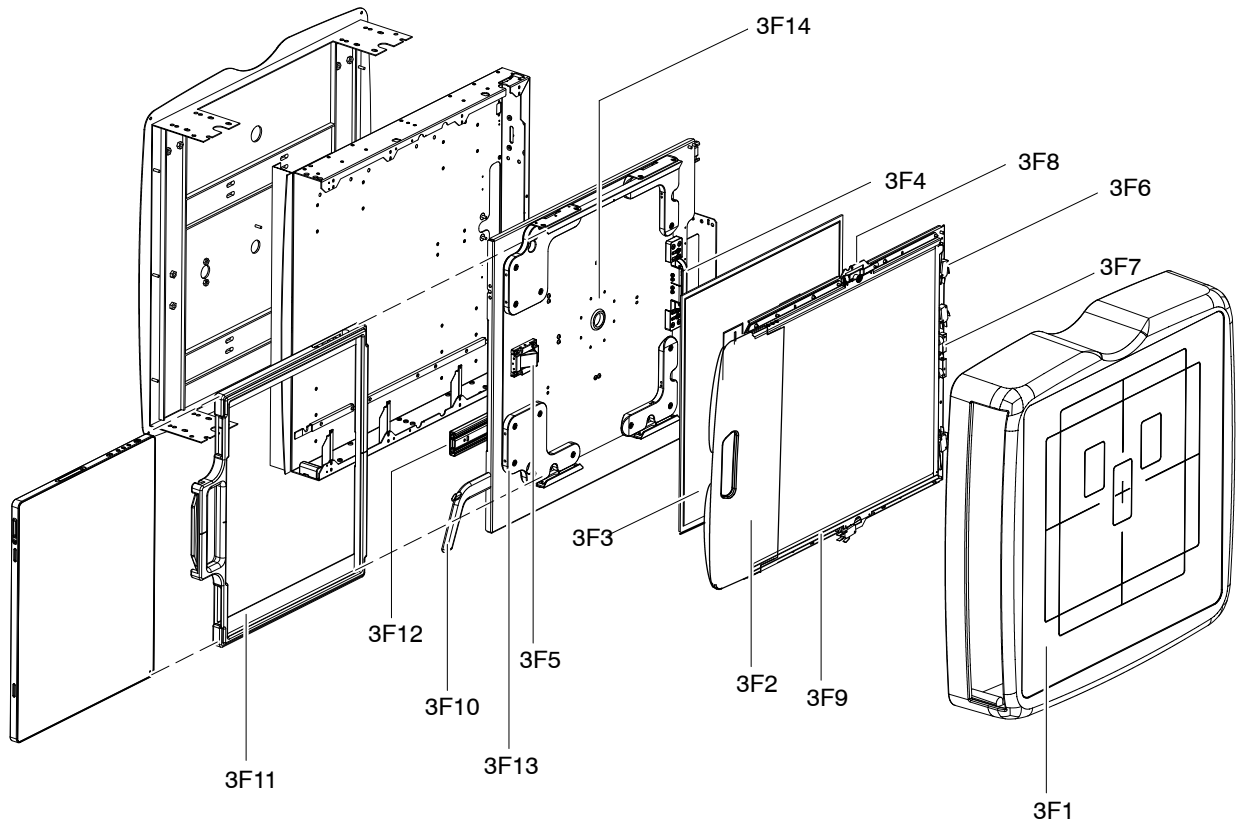
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3E0	DETECTOR CABINET WITH NON ROTATING TRAY			
3E1	Cover of Detector Assy Left Loading	1	A521066-01	
	Cover of Detector Assy Right Loading	1	A521067-01	
3E2	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
3E3	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
3E4	Tray Blockage	1	SAT-28213-01	
3E5	Grid Blockage	1	A525510-01	
3E6	Switch Kit BDC	1	A520491-01	
3E7	Grid Guides BDC Kit	1	A520492-01	Includes ITEM 3E5
3E8	Rubber Bumper	1	SAT-53830100	<i>This reference comprises 5 units</i>
3E9	Handle Kit	1	SAT-A10634-01	
3E10	Ball Bearing Slide	3	SAT-54505012	
3E11	Cable Support	1	SAT-53530150	Includes 10 Units



RAD Room

Service Manual

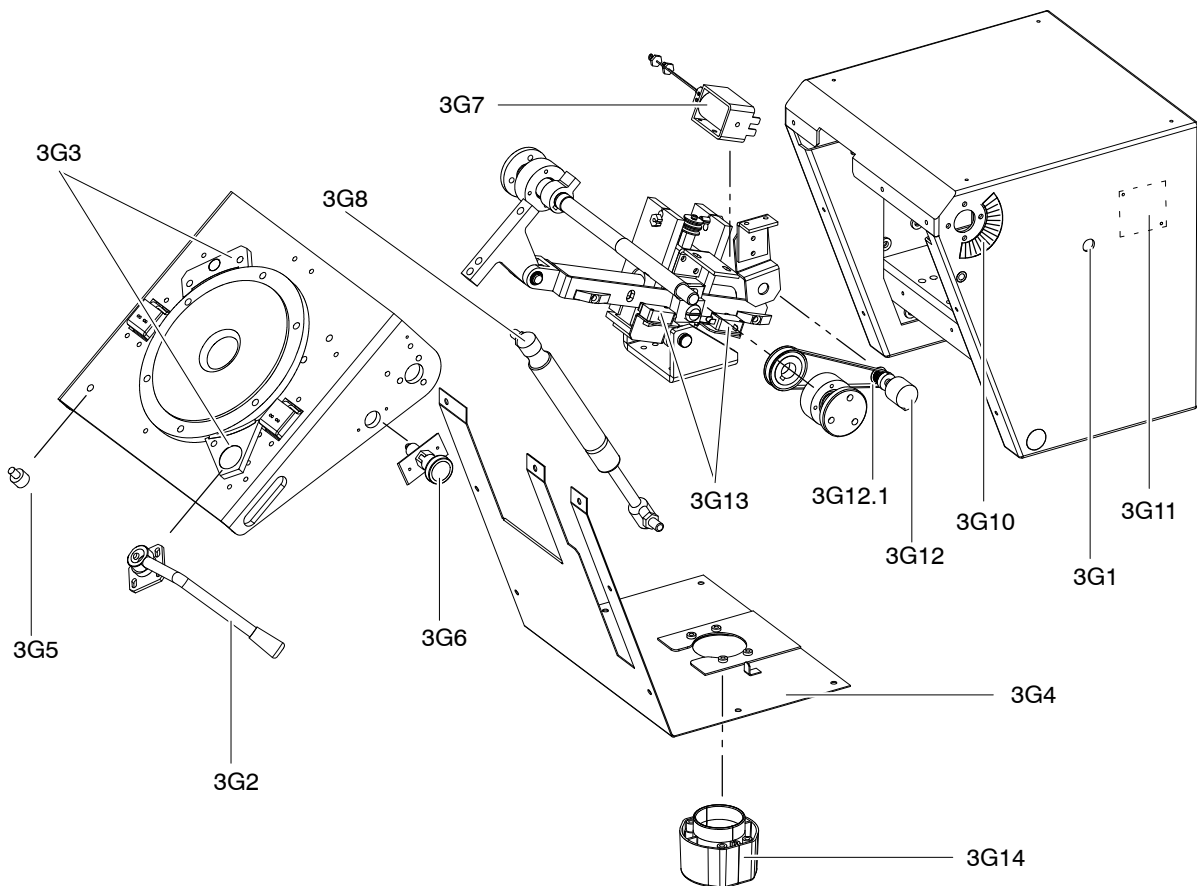
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3F0	DETECTOR CABINET WITH ROTATING TRAY			
3F1	Cover of Detector Assy Left Loading	1	A521066-01	
	Cover of Detector Assy Right Loading	1	A521067-01	
3F2	Frame 1.5mm for Grid 1m	1	SAT-A10521-01	
	Frame 1.5mm for Grid 1.3m	1	SAT-A9657-02	
	Frame 1.5mm for Grid 1.4m	1	SAT-A10523-01	
	Frame 1.5mm for Grid 1.5m	1	SAT-A9656-02	
	Frame 1.5mm for Grid 1.8m	1	SAT-A10522-01	
	Frame 2mm for Grid 1m	1	SAT-A10667-01	
	Frame 2mm for Grid 1.3m	1	SAT-A10666-01	
	Frame 2mm for Grid 1.4m	1	SAT-A10665-01	
	Frame 2mm for Grid 1.5m	1	SAT-A10664-01	
	Frame 2mm for Grid 1.8m	1	SAT-A10663-01	
	Frame 3mm for Grid 1m	1	SAT-A10667-02	
	Frame 3mm for Grid 1.3m	1	SAT-A10666-02	
	Frame 3mm for Grid 1.4m	1	SAT-A10665-02	
	Frame 3mm for Grid 1.5m	1	SAT-A10664-02	
Frame 3mm for Grid 1.8m	1	SAT-A10663-02		
3F3	Vacutec Ion Chamber	1	6695-21	
	AID Ion Chamber	1	6695-11	
	Medys Ion Chamber	1	6695-66	
	Claymount Ion Chamber	1	6695-56	
1		6695-57		
3F4	Rear bumper Kit	1	SAT-A10676-02	
3F5	Detector Detent Kit	1	SAT-A10677-01	
3F6	Switch Kit BCG	1	A520490-01	
3F7	Rubber Bumper Kit	1	SAT-6533-01	<i>This reference comprises 5 units</i>
3F8	Grid Blockage	1	A520476-01	
3F9	Grid Guides BDG Kit	1	A520493-01	Includes ITEM 3F8
3F10	Handle Kit	1	SAT-A10634-11	
3F11	Holder for Detector	1	SAT-A10904-01	Only for detector without handle
3F12	Ball Bearing Slide	5	SAT-54505012	
3F13	Cable Support	1	SAT-53530150	Includes 10 Units
3F14	Turning Kit	1	SAT-A10654-01	



RAD Room

Service Manual

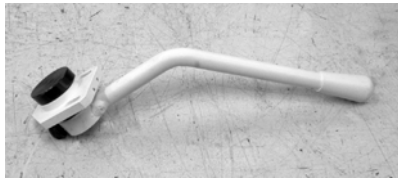
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
3G0	TILTING ASSEMBLY (optional)			
3G1	Brake Cable with Pushbutton	2	RS0022399	
3G2	Rotation Lever Kit	1	RS0022416	
3G3	Brake Kit	1	RS0022417	
3G4	Lower Cover Kit	1	RS0018205	
3G5	Bumper	1	RS0022012	
3G6	Detent Knob	1	RS0017805	
3G7	Solenoid Kit	1	RS0022421	
3G8	Gas Spring "Colorado"	1	RS0008749	
3G9	0° / 180° Angulation Label	1	SAT-20064-01	Not in Illus. - Located at the back of the Bucky
3G10	-20° / 90° Angulation Labels	1	RS0019403	
3G11	Tilting Signal PBA	1	A3654-01	
3G12	Spare Set Potentiometer Tilting NBS AU	1	RS0024204	Included Item 3G12.1
3G12.1	Potentiometer Belt	1	RS0018452	
3G13	Spare Support Micro Rotation New	2	A529501-01	
3G14	Cable Outlet Kit	1	A520403-01	



3G1



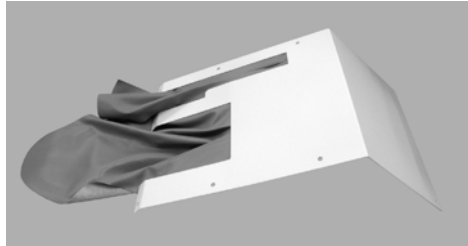
3G2



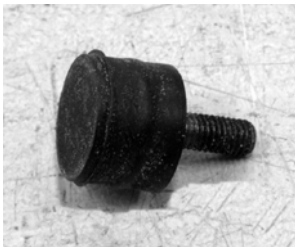
3G3



3G4



3G5



3G6



3G7



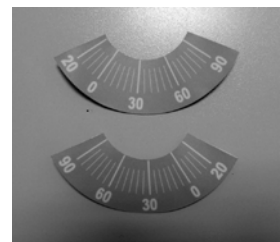
3G8



3G9



3G10



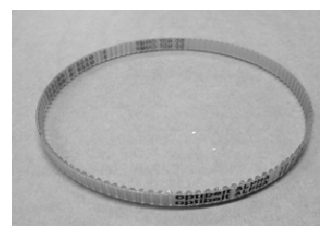
3G11



3G12



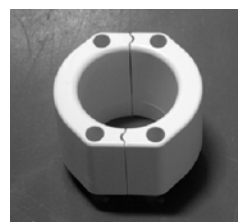
3G12.1



3G13



3G14



RAD Room

Service Manual

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
4A	MISCELLANEOUS			
4A1	Compression Band	1	SAT-A6585-02	
4A2	Handgrips	1	SAT-A6586-01	
4A3	Hand Support for Wall Stand	1	SAT-A6832-01	
4A4	Lateral Cassette Holder 24 x 30	1	SAT-A6595-12	
4A5	Lateral Cassette Holder 35 x 43	1	SAT-A6595-05	

ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
5A	CABLES			
5A1	BASIC COLUMN			
	Column Table Harness		SAT-A6759-01	
	Long Brake Cable		SAT-A6771-01	
	SW Cable		SAT-A6772-01	
	Base Cable		SAT-A6770-01	
	Arm Cable		SAT-A6774-01	
	Column Collimator Cable		SAT-A6775-01	
	Connections Cable		SAT-A6773-01	
	Basic Millennium Control Cable		SAT-A6724-01	
5A2	ADVANCED COLUMN			
	Column-Column Control Cable		SAT-A6748-01	
	Column-Table Control Cable		SAT-A6750-01	
	Column-Table Control Cable		SAT-A6779-01	
	Column-Column Control Cable		SAT-A6780-01	
	Column-Table Cable+24V		SAT-A6754-01	
	Long Brake Cable		SAT-A6771-02	
	Perpendicular Column SW Cable		SAT-A6772-02	
	Arm-Column Cable+24V		SAT-A6753-01	
	Column-Arm Cable Control Cable		SAT-A6749-01	
	Base Cable		SAT-A6770-01	
5A3	NON ELEVATING TABLE			
	Input Module Harness Table		SAT-A6398-04	
	Connection Plate Cable		SAT-A6738-01	
	Connection Plate Emergency Switch Cable		SAT-A7205-01	
	Transversal Brake Cable		SAT-A6735-01	
	Switch Harness		SAT-A6800-01	
	Collimator Pedal Cable		SAT-A6737-02	
	Table Harness		SAT-A6741-01	
	Supply Cable 12 m		SAT-A6739-01	
	Table Bucky Harness 12 m		SAT-A6729-03	
	Ion Chamber AID Cable 12 m		SAT-A3253-02	

RAD Room

Service Manual

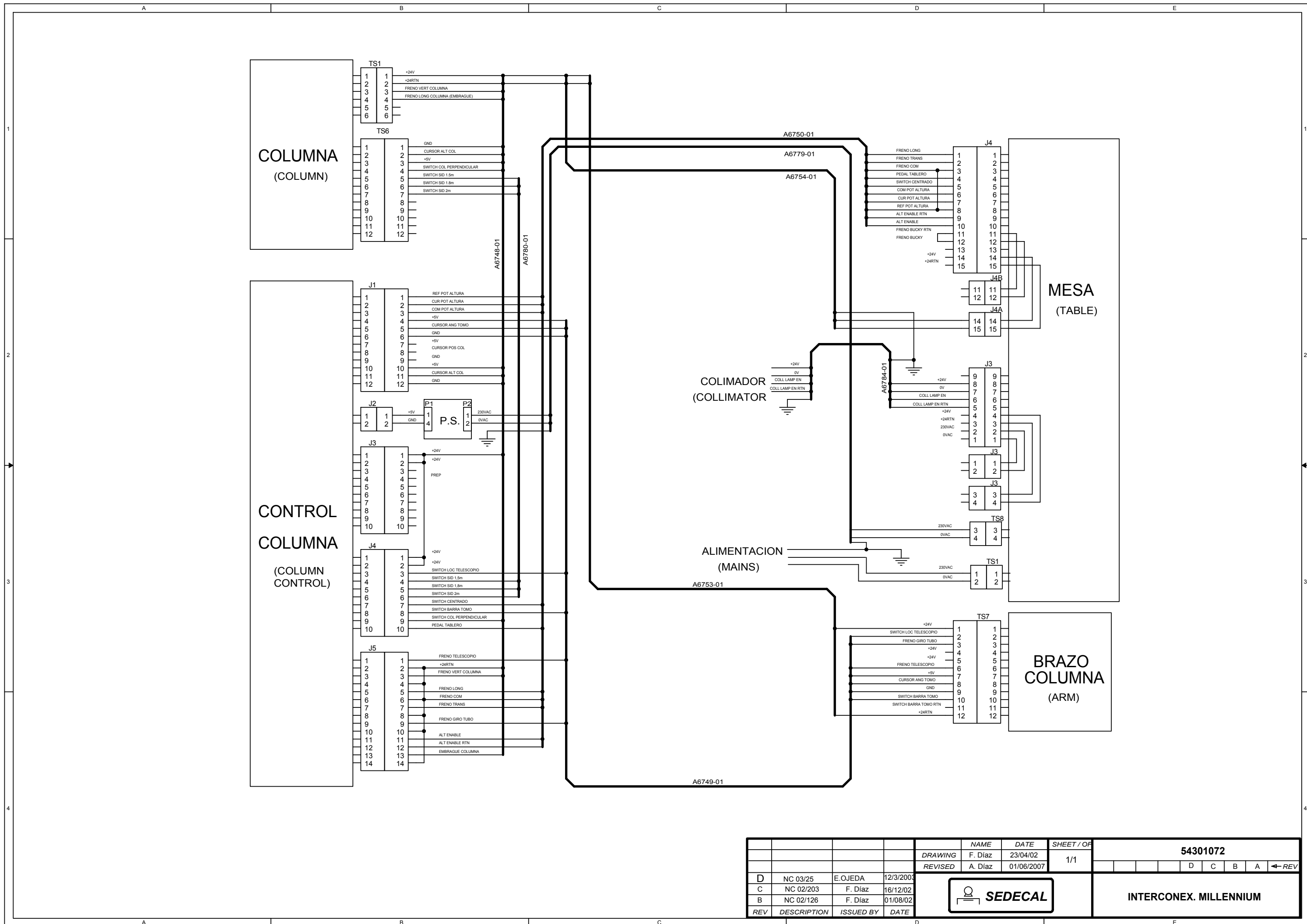
ITEM	DESCRIPTION	QTY	REFERENCE	REMARKS
5A4	ELEVATING TABLE			
	Input Module Harness Table		SAT-A6398-04	
	Connection Plate Cable		SAT-A6738-01	
	Connection Plate Emergency Switch Cable		SAT-A7205-01	
	Transversal Brake Cable		SAT-A6735-01	
	Switch Harness		SAT-A6800-01	
	Elevating table Pedal Harness		SAT-A6398-06	
	Table Harness		SAT-A6741-01	
	Supply Cable 12 m		SAT-A6739-01	
	Table Bucky Harness 12 m		SAT-A6729-03	
	Ion Chamber AID Cable 12 m		SAT-A3253-02	
	Table Motor Cable		SAT-A6744-01	
5A5	WALL STAND			
	Wall Stand with Ion Chamber Harness		SAT-A6612-01	
	Wall Stand Harness		SAT-A6703-01	
	Ion Chamber Cable		SAT-A6304-01	
	Bucky Cable		SAT-A6705-01	
	Wall Stand Push-button Cable		SAT-A6706-01	

SECTION 11 SYSTEM INTERCONNECTION MAPS

Refer to the following maps for details of the wire connections.

- Interconn. Millennium (Only For Systems with Digital Control Panel) 54301072
- Basic Millennium Column Interconnections (Only For Systems with Basic Control Panel) 54301058
- Elevating Table RAD Room - Mesa Elevadora 54301061
- Horizontal Table RAD Room - Mesa Horizontal 54301063
- PCB Optima Millennium A3127-02
- Column Control - Control Columna A3507-01
- Basic Mill Control A3510-02S
- Wall Bucky Stand Interconn - Interconn Bucky Pared 54301068
- Column - Columna 54301075
- Column Arm - Brazo Columna 54301076
- Auto Collimator Interconnections 54303033

This page intentionally left blank.



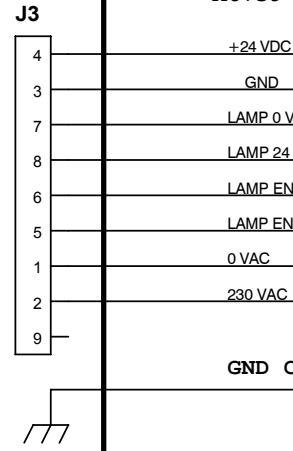
				NAME	DATE	SHEET / OF	54301072						
				DRAWING	F. Diaz	23/04/02	1/1						
				REVISED	A. Diaz	01/06/2007			D	C	B	A	← REV
D	NC 03/25	E.OJEDA	12/3/2003										
C	NC 02/203	F. Diaz	16/12/02										
B	NC 02/126	F. Diaz	01/08/02										
REV	DESCRIPTION	ISSUED BY	DATE										



INTERCONEX. MILLENNIUM

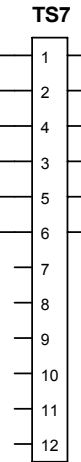
MESAS HORIZONTAL Y ELEVADORA (HORIZONTAL AND ELEVATING TABLES)

Manguera Columna-Mesa (Column-Table Cable) A6759-01



COLUMNA MILENNIUM BASICA (BASIC MILENNIUM COLUMN)

Cable Brazo (Arm Cable) A6774-01



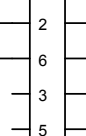
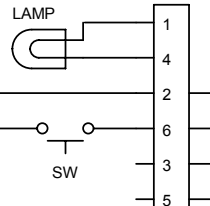
Cable Conexiones (Connections Cable) A6773-01



Manguera Colimador/Columna (Collimator/Column Cable) A6775-01

COLIMADOR Ralco (Ralco Collimator)

TIMER

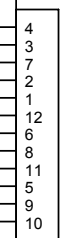


Cable SW A6772-01



BASIC MIL CONTROL BOARD

J2

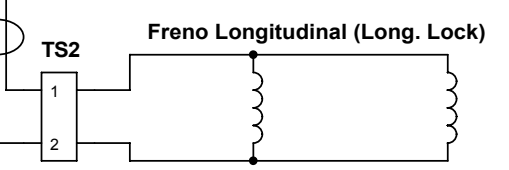
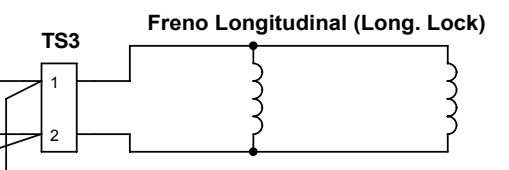
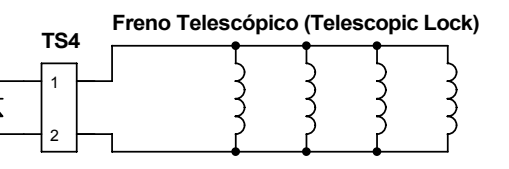
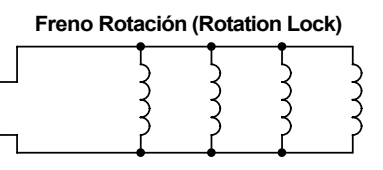
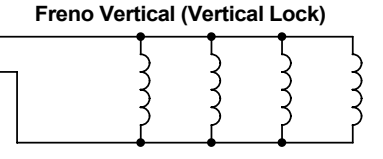


BASIC MIL CONTROL DISPLAY BOARD

BASIC MIL CONTROL CABLE

J1

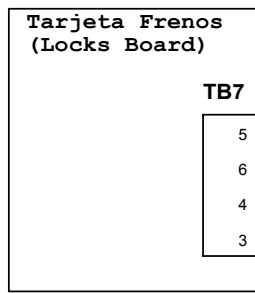
Note - See drawing A3510-XX-S for BASIC MIL CONTROL information. Nota - Ver plano A3510-XX-S para información de BASIC MIL CONTROL.



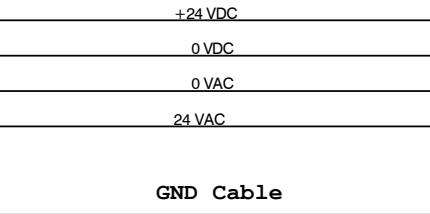
ESTA HOJA SE APLICA SOLO CUANDO LA COLUMNA VA ASOCIADA A UNA MESA HORIZONTAL O ELEVADORA (THIS SHEET ONLY APPLIES WHEN THE COLUMN IS ASSOCIATED WITH A HORIZONTAL OR ELEVATING TABLE)

				NAME	DATE	SHEET / OF	54301058	
				DRAWING	F.GARCIA	11/11/01	1/2	
				REVISED	A.DIAZ	11/11/01	A ← REV	
				SEDECAL		INTERCONEXIONES COLUMNA Basica Millennium (Basic Millennium COLUMN INTERCONNECTIONS)		
REV	DESCRIPTION	ISSUED BY	DATE					
A	New Interface	F. Garcia	05/05/02					

**GENERADOR COMPACT
(COMPACT GENERATOR)**

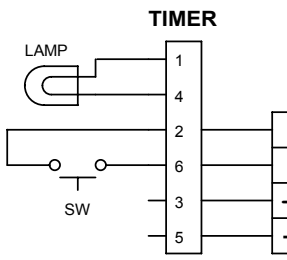


Manguera Alimentación Columna
(Column Supply Cable)
A6776-01

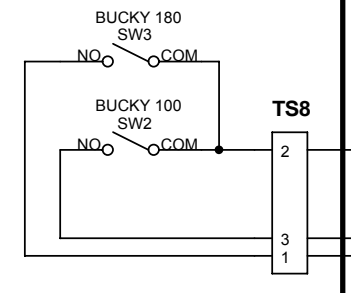
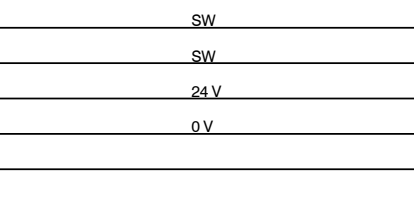


NOTA.- Para modelos de Generador A6380-2X conectar el Cable Alimentación a la regleta TS1 (+24 VDC a TS1-31, 0 VDC a TS1-32, 24 VAC a TS1-19, y 0 VAC a TS1-20).
NOTE.- For A6380-2X Generator models, connect the Supply Cable to terminal strip TS1 (+24 VDC to TS1-31, 0 VDC to TS1-32, 24 VAC to TS1-19, and 0 VAC to TS1-20)

**COLIMADOR Ralco
(Ralco Collimator)**

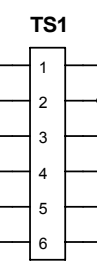


Manguera Colimador/Columna
(Collimator/Column Cable)
A6775-01

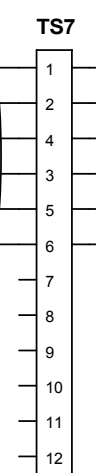


Cable SW
A6772-01

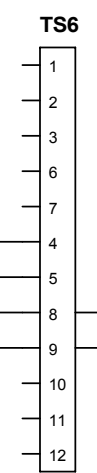
**COLUMNA MILENNIUM BASICA
(BASIC MILENNIUM COLUMN)**



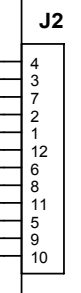
Cable Brazo
(Arm Cable)
A6774-01



Cable Conexiones
(Connections Cable)
A6773-01



**BASIC MIL
CONTROL BOARD**



**BASIC MIL CONTROL
DISPLAY BOARD**

BASIC MIL CONTROL CABLE



Note.- See drawing A3510-XX-S for BASIC MIL CONTROL information.
Nota.- Ver plano A3510-XX-S para información de BASIC MIL CONTROL.

Freno Vertical (Vertical Lock)

Freno Rotación (Rotation Lock)

Solenoide (Solenoid)

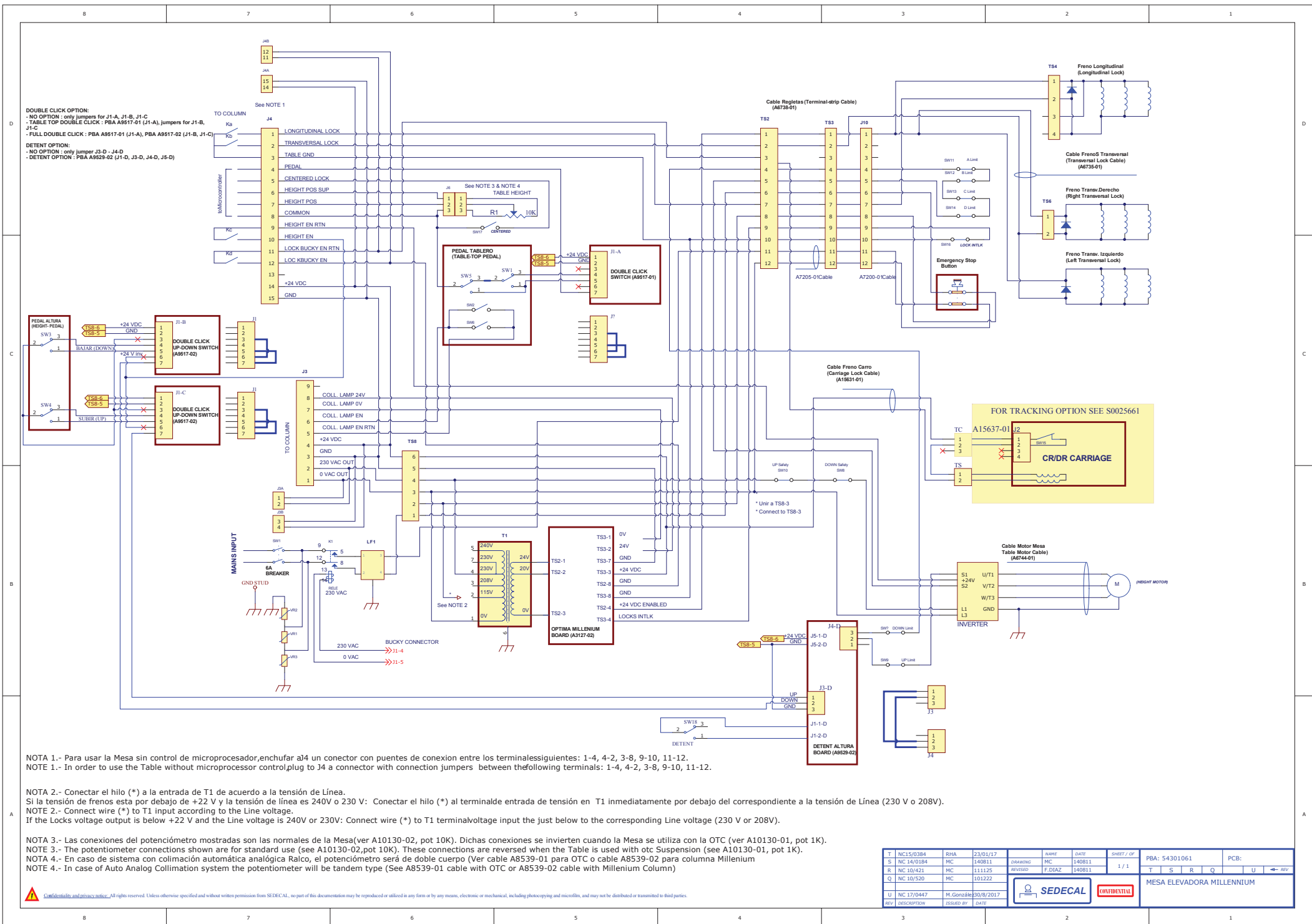
Freno Telescópico (Telescopic Lock)

Freno Longitudinal (Long. Lock)

Freno Longitudinal (Long. Lock)

ESTA HOJA SE APLICA CUANDO LA COLUMNA NO VA ASOCIADA A UNA MESA HORIZONTAL O ELEVADORA
(THIS SHEET APPLIES WHEN THE COLUMN IS NOT ASSOCIATED WITH A HORIZONTAL OR ELEVATING TABLE)

				NAME	DATE	SHEET / OF	54301058				
				DRAWING	F.GARCIA	11/11/01	2/2				
				REVISED	A.DIAZ	11/11/01					
A	New Interface	F. García	05/05/02								
REV	DESCRIPTION	ISSUED BY	DATE								
				INTERCONEXIONES COLUMNA Basica Millennium (Basic Millennium COLUMN INTERCONNECTIONS)							



NOTA 1.- Para usar la Mesa sin control de microprocesador,enchufar alJ4 un conector con puentes de conexión entre los terminalesiguientes: 1-4, 4-2, 3-8, 9-10, 11-12.
 NOTE 1.- In order to use the Table without microprocessor control,plug to J4 a connector with connection jumpers between thefollowing terminals: 1-4, 4-2, 3-8, 9-10, 11-12.

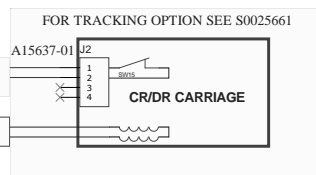
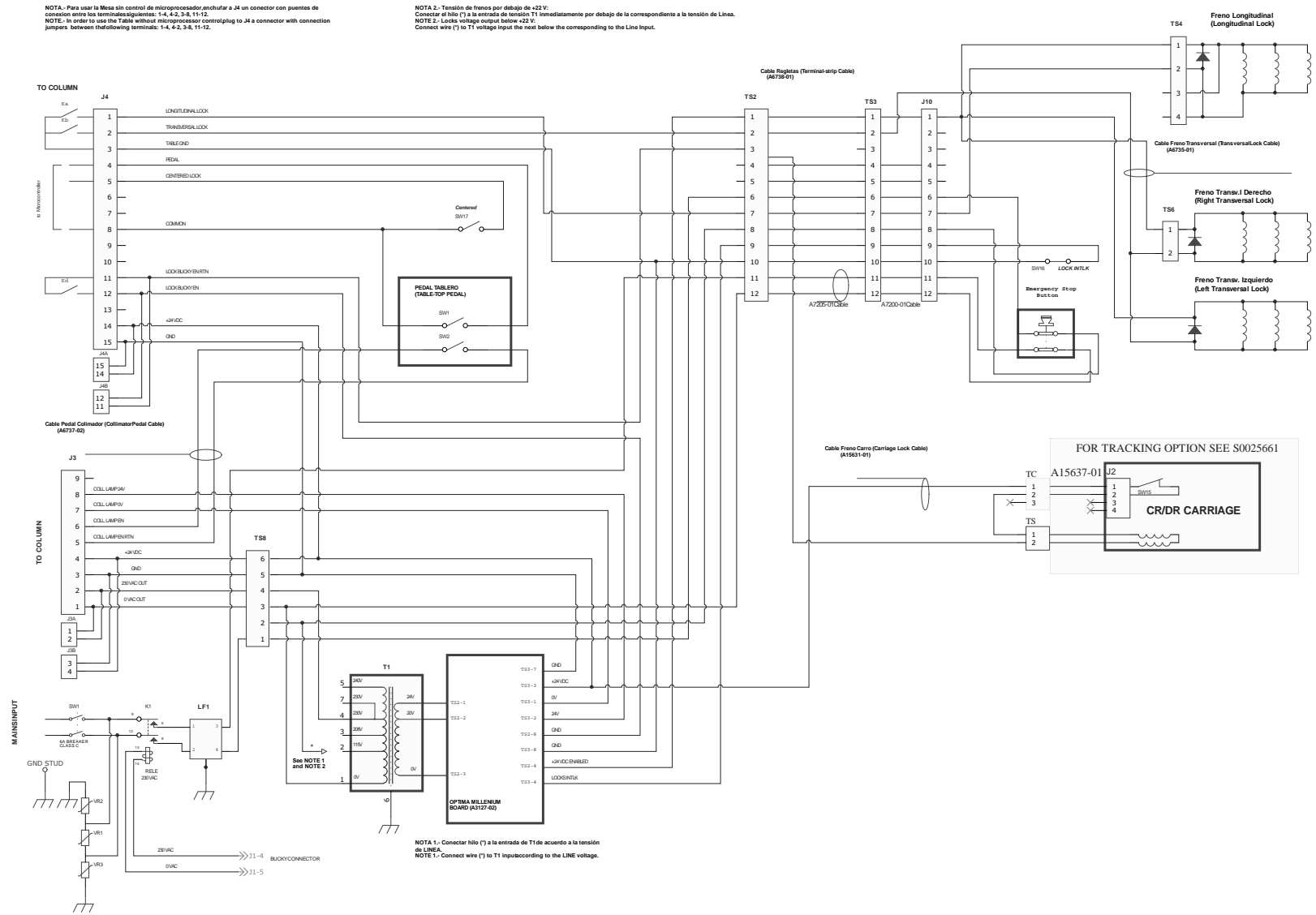
NOTA 2.- Conectar el hilo (*) a la entrada de T1 de acuerdo a la tensión de Línea.
 Si la tensión de frenos esta por debajo de +22 V y la tensión de línea es 240V o 230 V: Conectar el hilo (*) al terminalde entrada de tensión en T1 inmediatamente por debajo del correspondiente a la tensión de Línea (230 V o 208V).
 NOTE 2.- Connect wire (*) to T1 input according to the Line voltage.
 If the Locks voltage output is below +22 V and the Line voltage is 240V or 230V: Connect wire (*) to T1 terminalvoltage input the just below to the corresponding Line voltage (230 V or 208V).

NOTA 3.- Las conexiones del potenciómetro mostradas son las normales de la Mesa(ver A10130-02, pot 10K). Dichas conexiones se invierten cuando la Mesa se utiliza con la OTC (ver A10130-01, pot 1K).
 NOTE 3.- The potentiometer connections shown are for standard use (see A10130-02,pot 10K). These connections are reversed when the Table is used with otc Suspension (see A10130-01, pot 1K).
 NOTA 4.- En caso de sistema con colimación automática Alralco, el potenciómetro será de doble cuerpo (Ver cable A8539-01 para OTC o cable A8539-02 para columna Millenium
 NOTE 4.- In case of Auto Analog Collimation system the potentiometer will be tandem type (See A8539-01 cable with OTC or A8539-02 cable with Millenium Column)

T	NC15/0384	RHA	23/01/17	DRAWING	NAME	DATE	SHEET / OF	PBA: 54301061	PCB:
S	NC 14/0184	MC	140811	REVISED	MC	140811	1 / 1	T S R Q	U ← REV
R	NC 10/421	MC	111125	REVISED	F.DIAZ	140811		MESA ELEVADORA MILLENNIUM	
Q	NC 10/520	MC	101225						
U	NC 17/047	M. Gonzalez	30/8/2017	ISSUED BY	DATE				
REV	DESCRIPTION	ISSUED BY	DATE						

NOTA: Para usar la Mesa sin control de microprocesador, enchufar a J4 un conector con puentes de conexión entre los terminales siguientes: 1-4, 4-2, 2-8, 2-8, 11-12.
 NOTE: In order to use the Table without microprocessor controlling to J4 a connector with connection jumpers between the following terminals: 1-4, 4-2, 2-8, 2-8, 11-12.

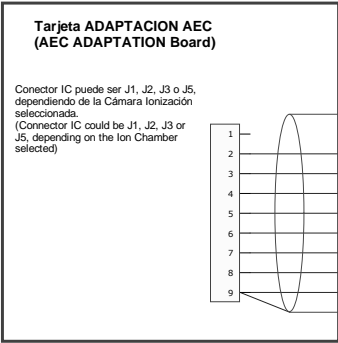
NOTA 2: Tensión de frenos por debajo de +22 V:
 Conectar el hilo (*) a la entrada de tensión T1 firmadamente por debajo de la correspondiente a la tensión de Línea.
 NOTE 2: Locks voltage output below +22 V:
 Connect wire (*) to T1 voltage input the next below the corresponding to the Line input.



				NAME	DATE	SHEET / OF	PBA: 54301063		PCB:
DRAWING				F. Garcia	03/03/02	1 / 2			
REVISED				A. Diaz	03/03/02				
N	NC15/0384	RHA	23/01/17						
M	NC11/0421	MC	25/11/11						
L	Note 2 added	F. Garcia	24/07/08						
REV	DESCRIPTION	ISSUED BY	DATE						

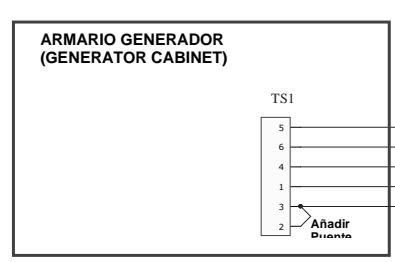
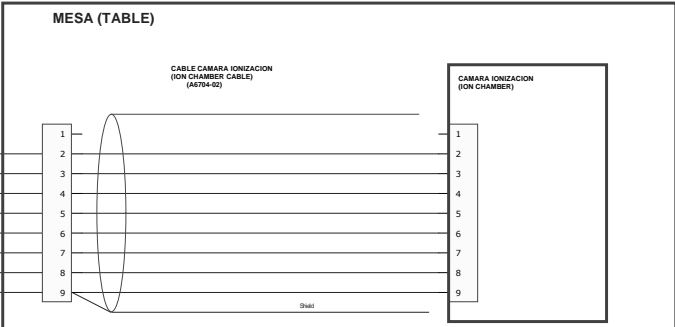
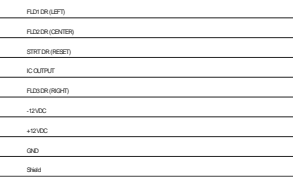


MESA HORIZONTAL MILLENNIUM



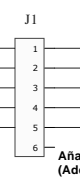
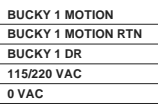
Nota.- En caso que no se requiera la tarjeta AEC ADAPTATION, usar el cable Cámara Ionización A3234-02 (Ver plano I/F-003)
Note.- In case the AEC ADAPTATION board is not required, the IonChamber cable A3234-02 should be used (refer to drawing I/F-003)

**MANGUERA CAMARA IONIZACION (ION CHAMBER CABLE)
(A3234-XX)**

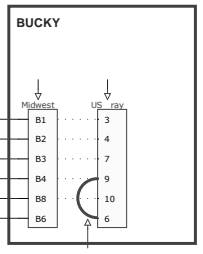


ONLY FOR ANALOG BUCKY OPTION

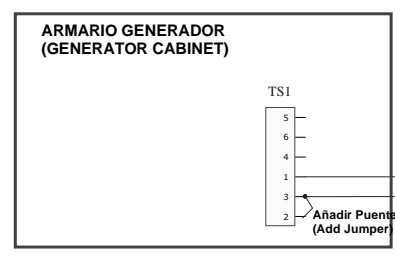
**MANGUERA BUCKY (BUCKY CABLE)
(A6729-XX)**



CABLE BUCKY (A6705-02)

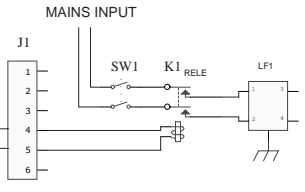
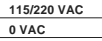


Añadir Puente para bucky US Xray
(Add Jumper for US Xray bucky)



ONLY FOR DIGITAL DETECTOR OPTION

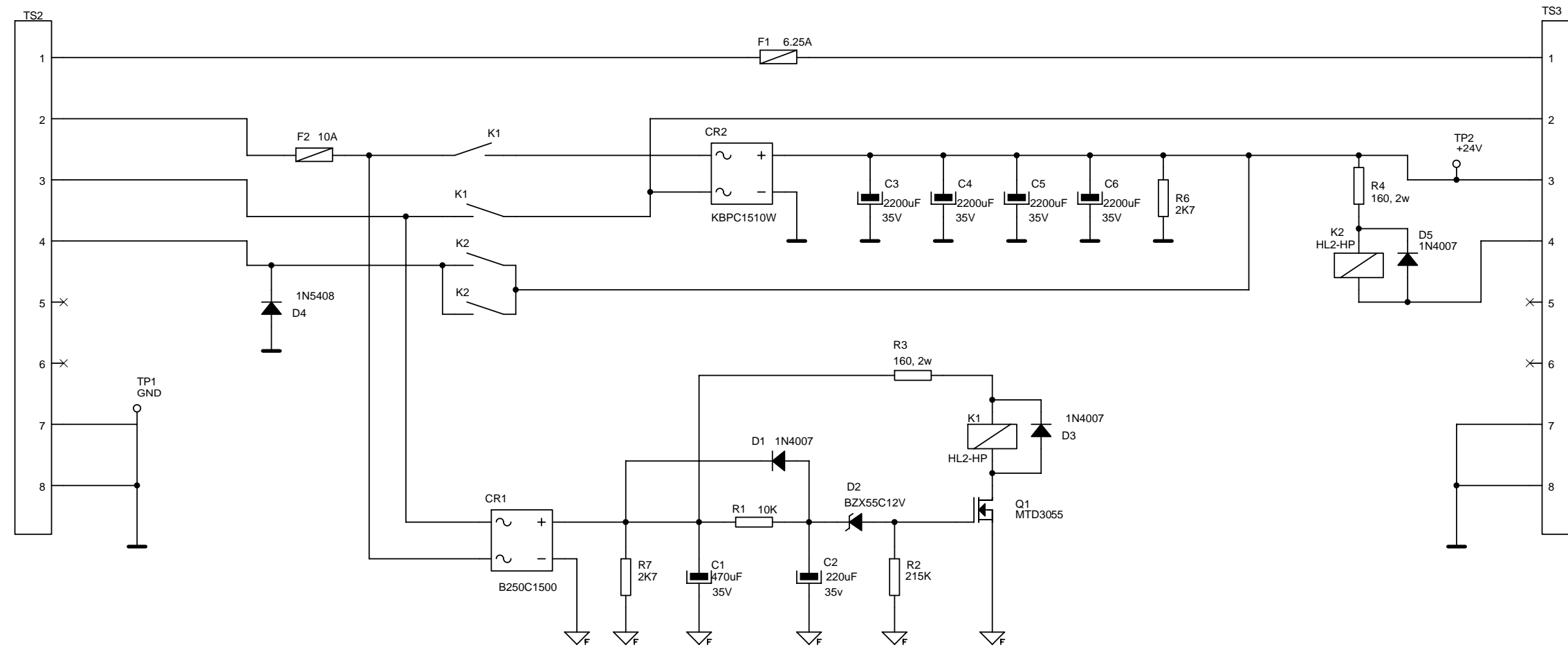
DIGITAL TABLE ON-OFF CABLE (A7163-XX)



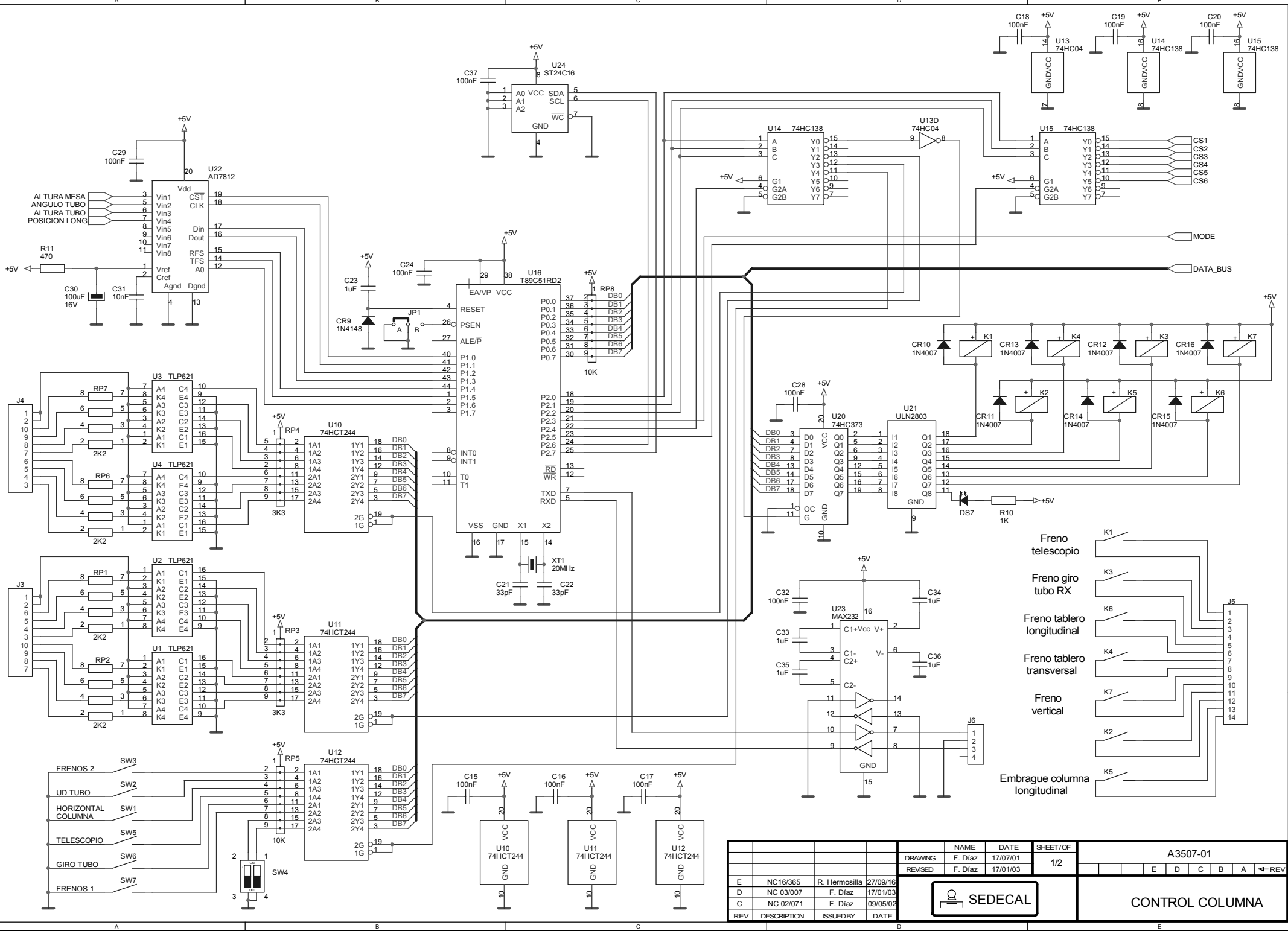
DRAWING		NAME	DATE	SHEET / OF	PBA: 54301063		PCB:	
REVISED		F. Garcia	03/03/02	2 / 2				
		A. Diaz	03/03/02					
N	NC15/0384	RHA	23/01/17					
M	NC11/421	MC	25/11/11					
L	Note 2 added	F. Garcia	24/07/08					
REV	DESCRIPTION	ISSUED BY	DATE					



MESA HORIZONTAL MILLENNIUM



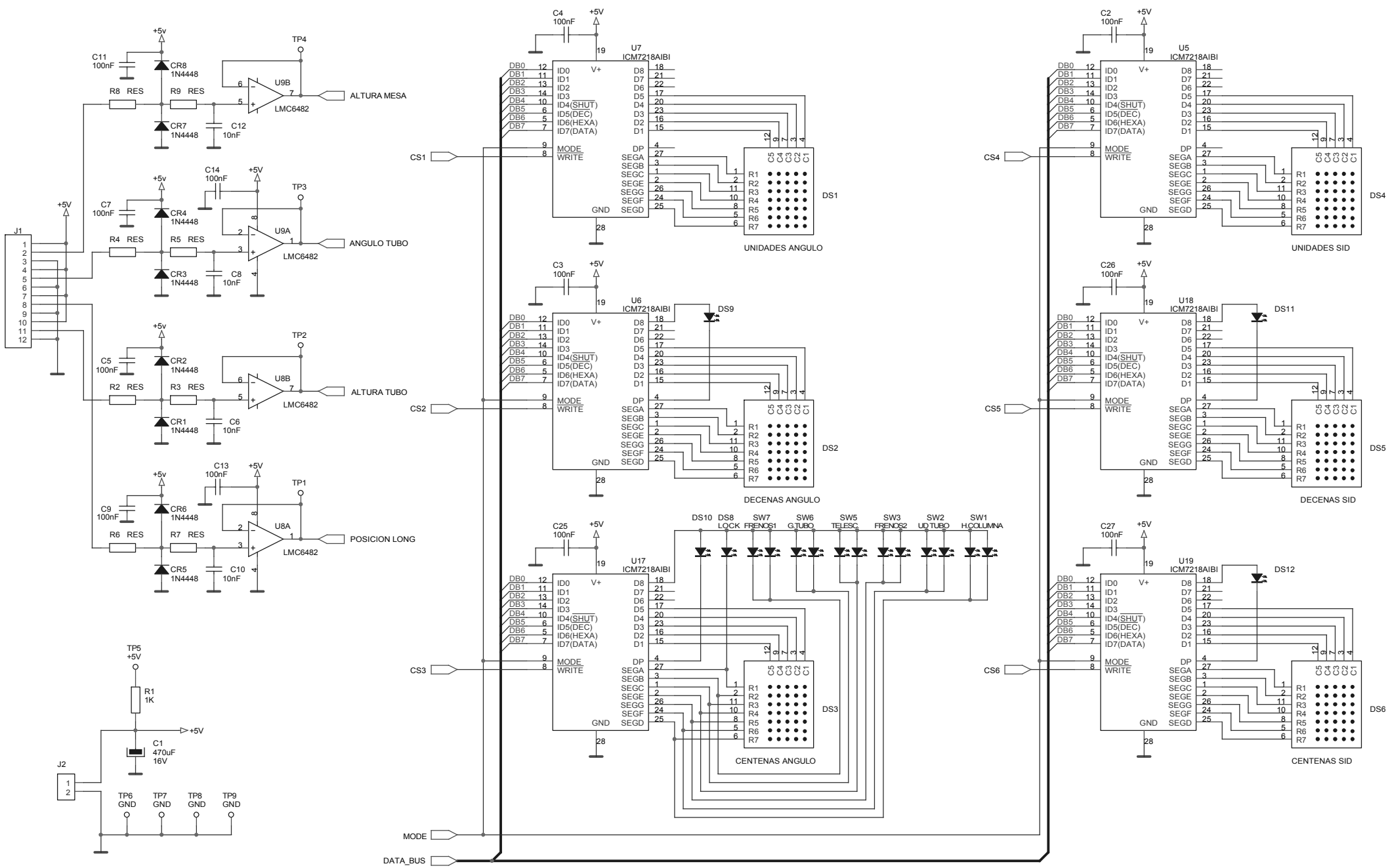
REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET / OF	A3127-02	
				DRAWING	EOJEDA	11/03/03	1/1	
				REVISED	EOJEDA	11/03/03		A ← REV
A	NC 03/045	E. OJEDA	11/03/03	SEDECAL		PCB OPTIMA MILLENIUM		



DRAWING		NAME		DATE		SHEET/OF		A3507-01			
REVISED		F. Diaz		17/07/01		1/2		E D C B A ←REV			
E	NC16/365	R. Hermosilla	27/09/16								
D	NC 03/007	F. Diaz	17/01/03								
C	NC 02/071	F. Diaz	09/05/02								
REV	DESCRIPTION	ISSUEDBY	DATE								

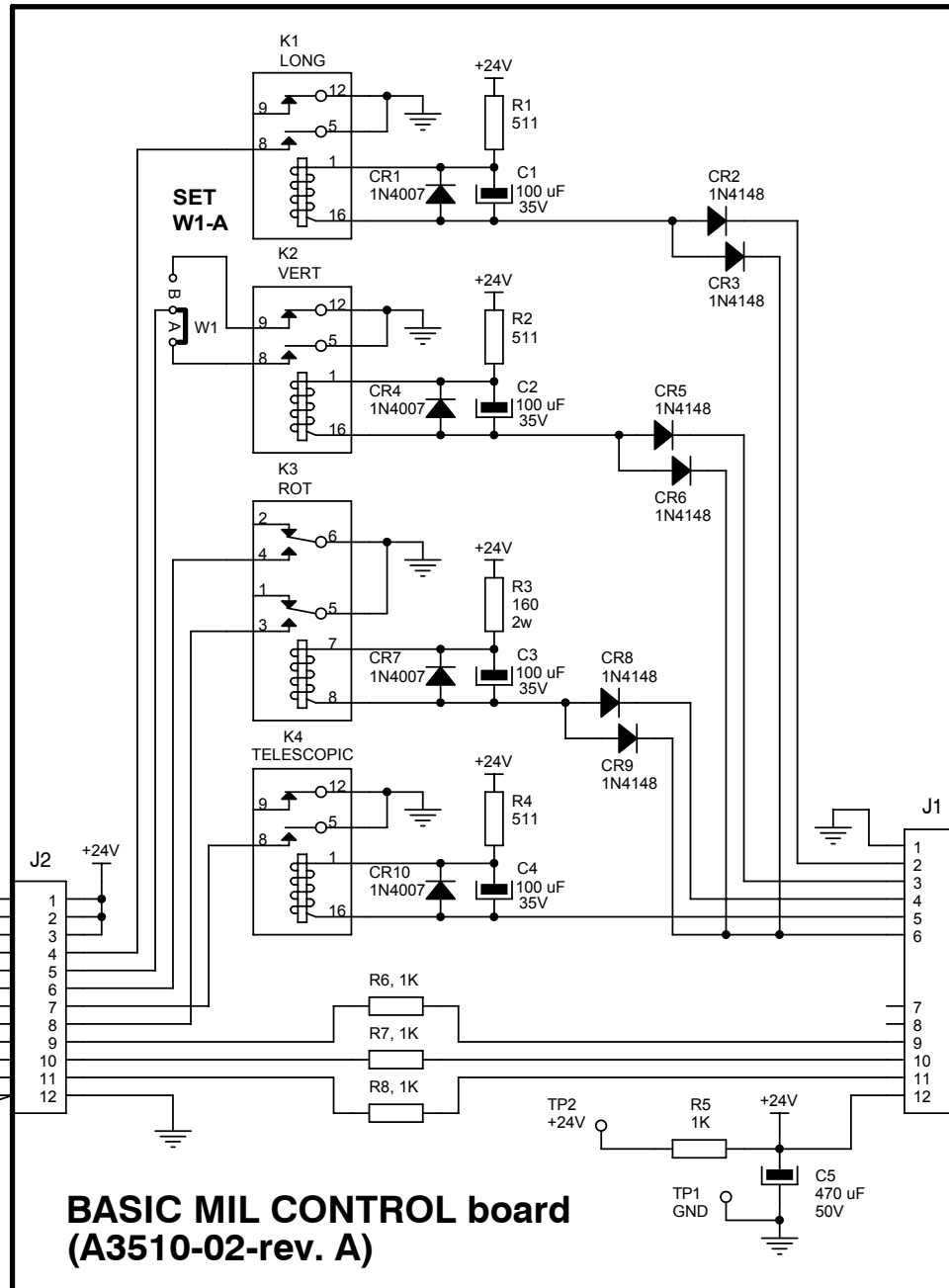
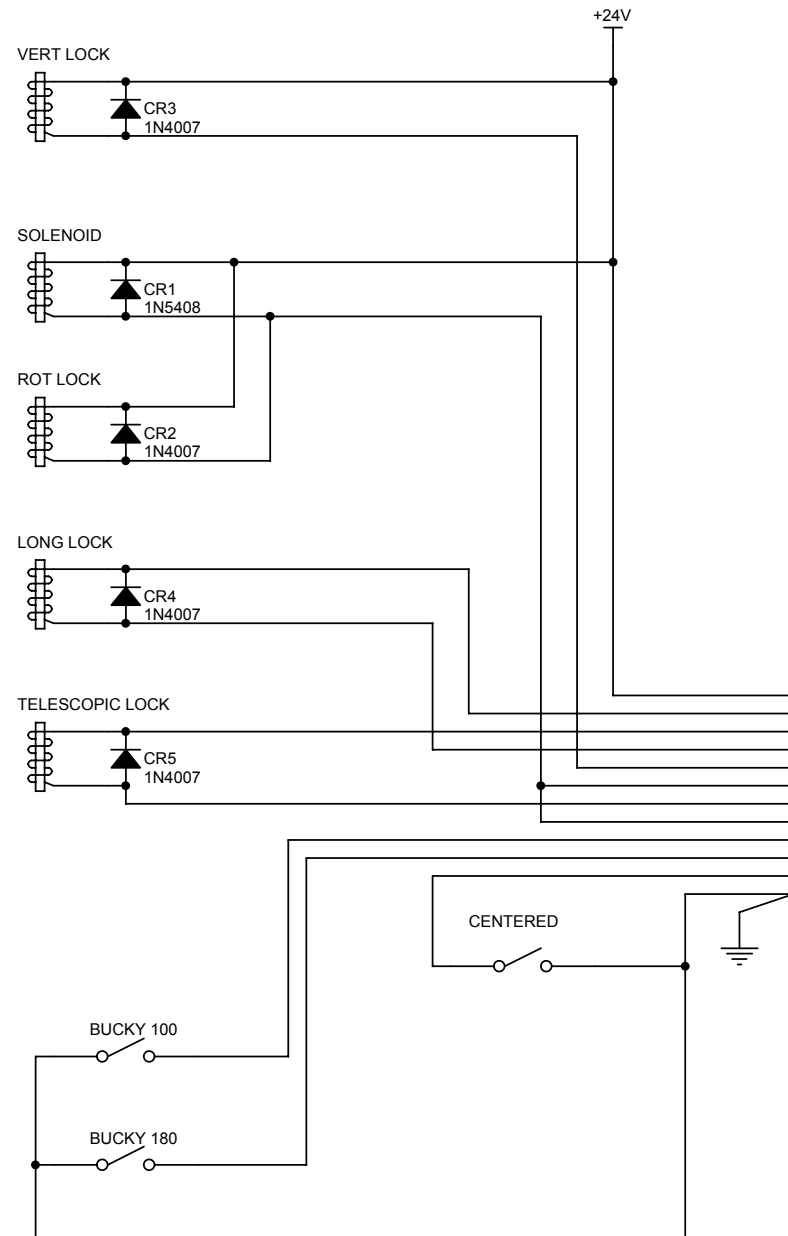


CONTROL COLUMN

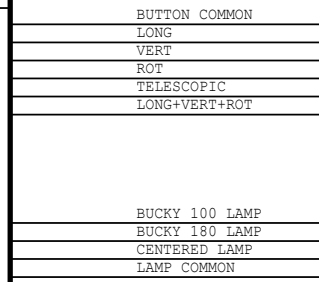


				DRAWING		NAME		DATE		SHEET/OF		A3507-01					
				REVISED		F. Diaz		17/07/01		2/2		E D C B A ←REV					
E	NC16/365	R. Hermosilla	27/09/16										<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="border: 1px solid black; padding: 2px;"> </div> <div style="text-align: right;"> CONTROL COLUMNNA </div> </div>				
D	NC 03/007	F. Diaz	17/01/03														
C	NC 02/071	F. Diaz	09/05/02														
REV	DESCRIPTION	ISSUEDBY	DATE														

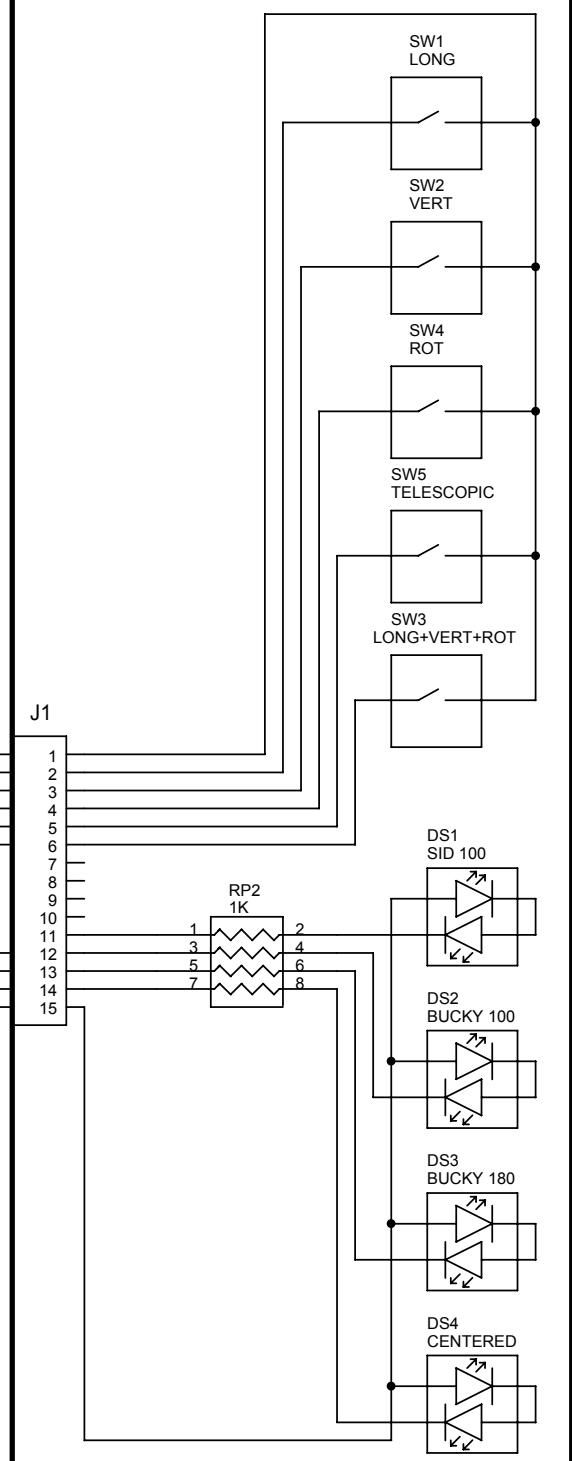
COLUMN



Basic Mil Control Cable (A6724-01)



BASIC MIL CONTROL DISPLAY Board (A3195-01)

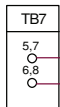


REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET / OF	A3510-02-S	
				DRAWING	F.GARCIA	05/05/02	1/1	
				REVISED	A.DIAZ	05/05/02		A ← REV
A	CN 04/051	F. Garcia	22/09/05			BASIC MIL CONTROL		

GENERATOR

Analog bucky and Ion Chamber wiring on pag5/6
Digital detector wiring on the room general schematic

TARJETA FRENOS (LOCKS BOARD)



Nota 1.- Para Generador de Baterías con Millennium, conectarla a la regleta TS8 de la Mesa (+24 VDC LOCKS a TS8-6, y 0 VDC LOCKS a TS8-5)

Note 1.- For Battery Generator with Millennium, connect the cable to TS8 terminal strip of the Table (+24 VDC LOCKS to TS8-6, and 0 VDC LOCKS a TS8-5)

MANGUERA POTENCIA BUCKY MURAL (ver nota 1.)
(WALL BUCKY POWER CABLE - see note 1.)
(A6707-01/02/03)

+24 VDC LOCKS
0 VDC LOCKS

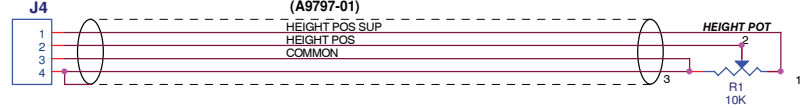
ROOM CABINET



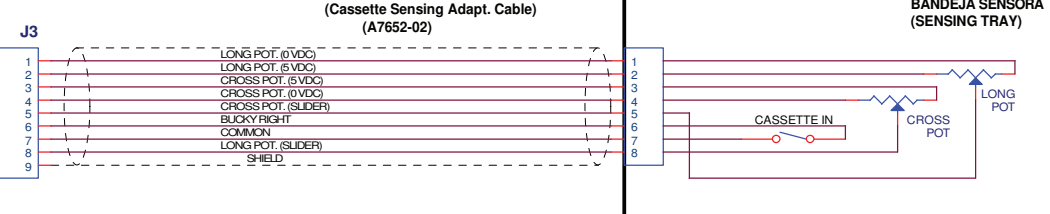
GND CABLE

INTERNAL WALL SUPPORT WIRING

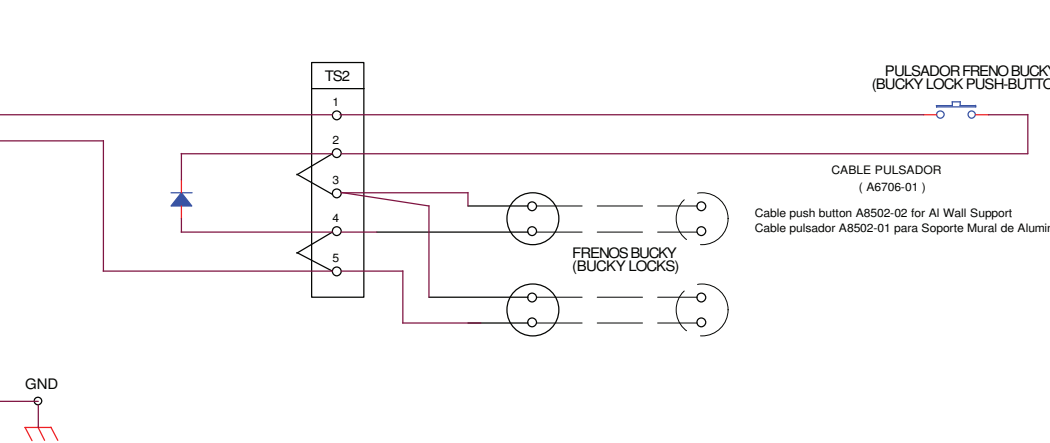
OPTIONAL HEIGHT POT



OPTIONAL SENSING



ELECTRIC BRAKES MODEL



Internal Wall Support standard configuration

Analog Bucky interconnection on page 5
Ion Chamber interconnection on page 6
Docking switches interconnection on page 7

REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET/OF	54301068					
F	NC 13/291	S.PEREZ	17-09-13									
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA 09-09-02	2/7						
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ 09-09-02							
C	NC 472/10	S.PEREZ	27-01-11									
B	CN 281/09	F. GARCIA	30-09-09									
A	CN 03/044	F. GARCIA	06-03-03									
							INTERCONEXIONES SOPORTE MURAL					

GENERATOR

Analog bucky and Ion Chamber wiring on pag5/6
Digital detector wiring on the room general schematic

ROOM CABINET

GND

GND CABLE

CEILING SUSPENSION

Carriage

J5-2

POWER SUPPLY
+24VDC

I2C Cable
(S0013940)

J18

I2C Cable
(A8542-01)

If single panel room

Power Supply Cable
(S0020989)

Power Supply Cable
(S0021066)

If not single panel room

IF ELEVATING TABLE
(NET4000)

JP7

Power Supply Cable
(S0002176)

INTERNAL WALL SUPPORT WIRING

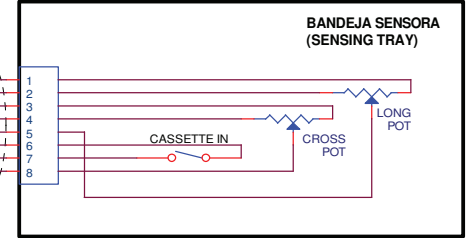
OPTIONAL SENSING

Cable Adapt. Sensor Cassette
(Cassette Sensing Adapt. Cable)
(A7652-02)

J3

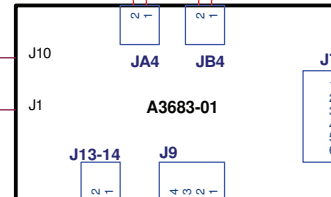
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9

- LONG POT. (0VDC)
- LONG POT. (5VDC)
- CROSS POT. (5VDC)
- CROSS POT. (0VDC)
- CROSS POT. (SLIDER)
- BUCKY RIGHT COMMON
- LONG POT. (SLIDER)
- SHIELD



GND

A15001-01 Cable



HEIGHT POT. CABLE
(A8545-01)

- HEIGHT POS SUP
- HEIGHT POS COMMON

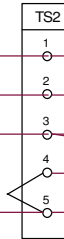
HEIGHT POT

- 1
- 2
- 3

R1
10K

BRAKE CABLE
(A8540-01)

CABLE PULSADOR
(A8541-01)



PULSADOR FRENO BUCKY
(BUCKY LOCK PUSH-BUTTON)

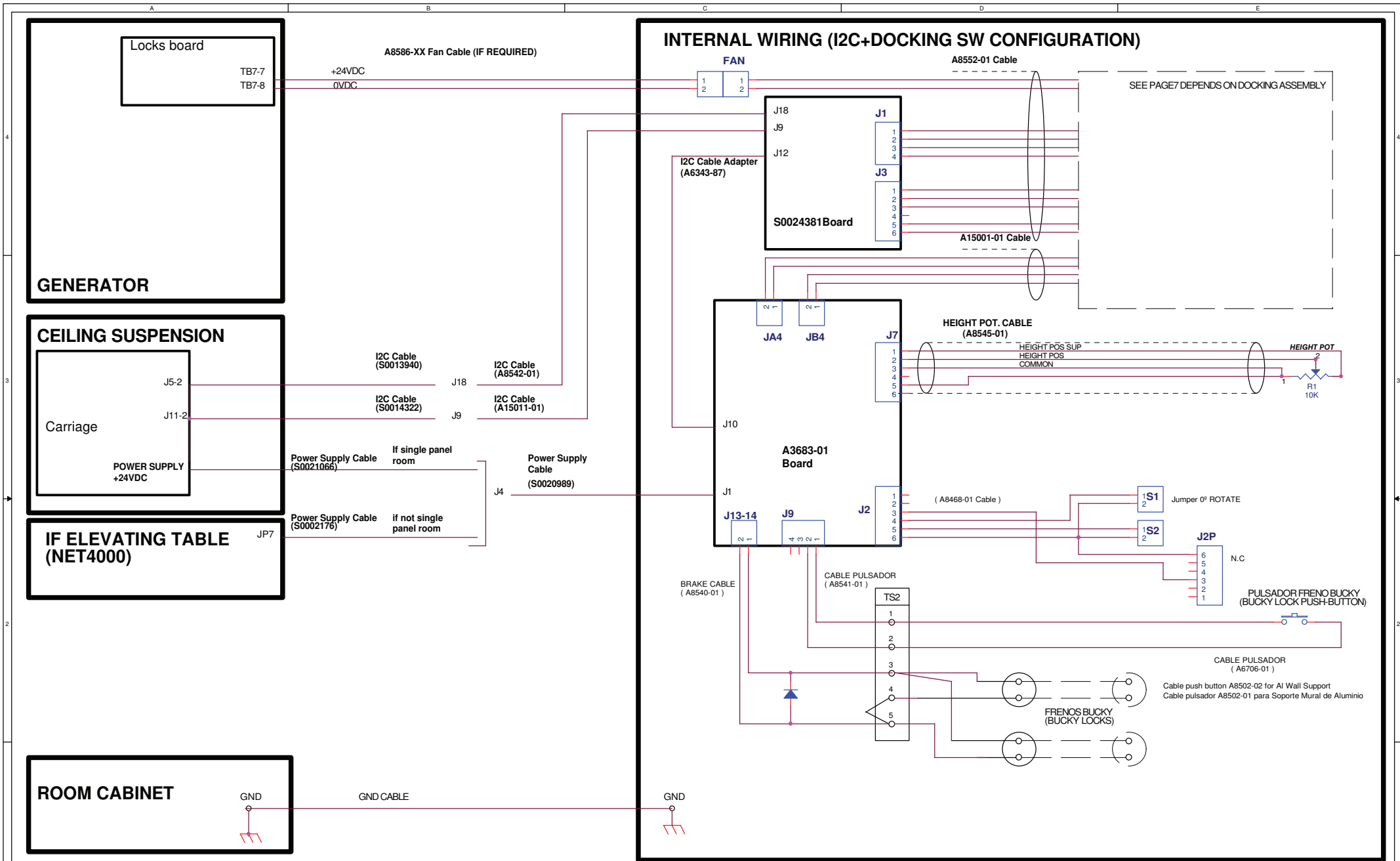
CABLE PULSADOR
(A6706-01)

Cable push button A8502-02 for Al Wall Support
Cable pulsador A8502-01 para Soporte Mural de Aluminio

FRENOS BUCKY
(BUCKY LOCKS)

Internal Wall Support with I2C configuration
Analog Bucky interconnection on page 5
Ion Chamber interconnection on page 6
Docking switches interconnection on page 7

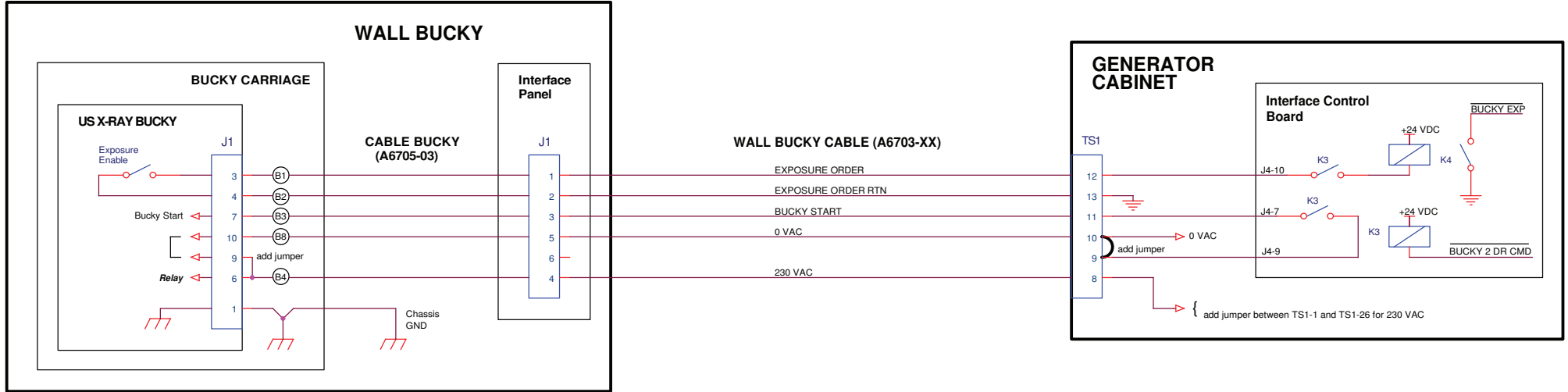
REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET/OF	54301068									
F	NC 13/291	S.PEREZ	17-09-13													
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA	09-09-02										
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ	09-09-02	3/7	F	E	D	C	B	A	← REV		
C	NC 472/10	S.PEREZ	27-01-11													
B	CN 281/09	F. GARCIA	30-09-09													
A	CN 03/044	F. GARCIA	06-03-03													
										INTERCONEXIONES SOPORTE MURAL						



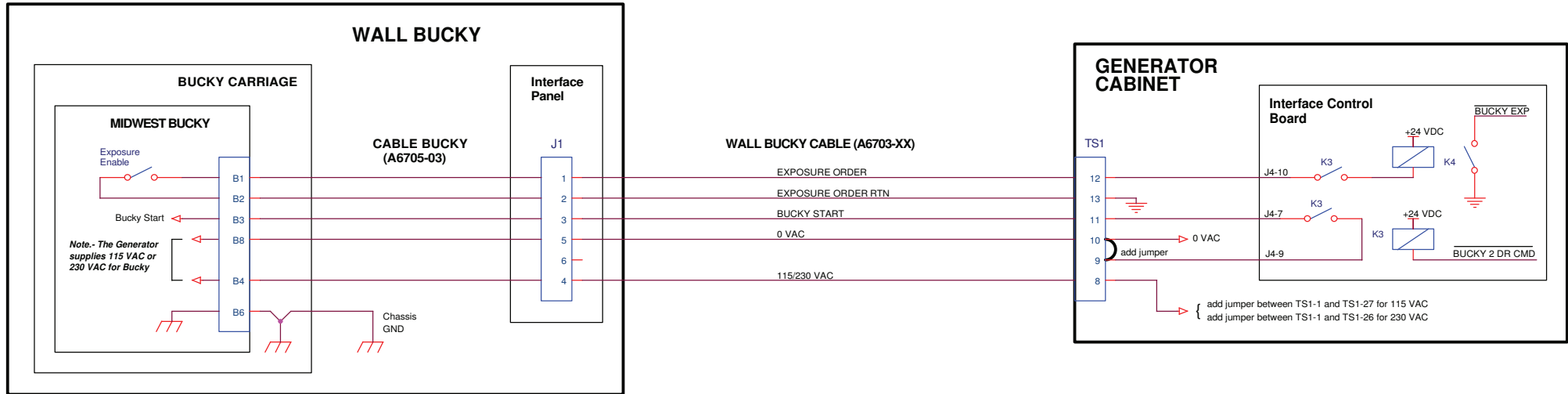
Internal Wall Support with I2C configuration + SW DOCKING DETECTOR
 Analog Bucky interconnection on page 5
 Ion Chamber interconnection on page 6
 Docking switches interconnection on page 7

REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET/OF	54301068							
F	NC 13/291	S.PEREZ	17-09-13											
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA	09-09-02	4/7							
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ	09-09-02			F	E	D	C	B	A
C	NC 472/10	S.PEREZ	27-01-11											
B	CN 281/09	F. GARCIA	30-09-09											
A	CN 03/044	F. GARCIA	06-03-03											
										INTERCONEXIONES SOPORTE MURAL				

THIS INTERFACE FOR US X-RAY BUCKY

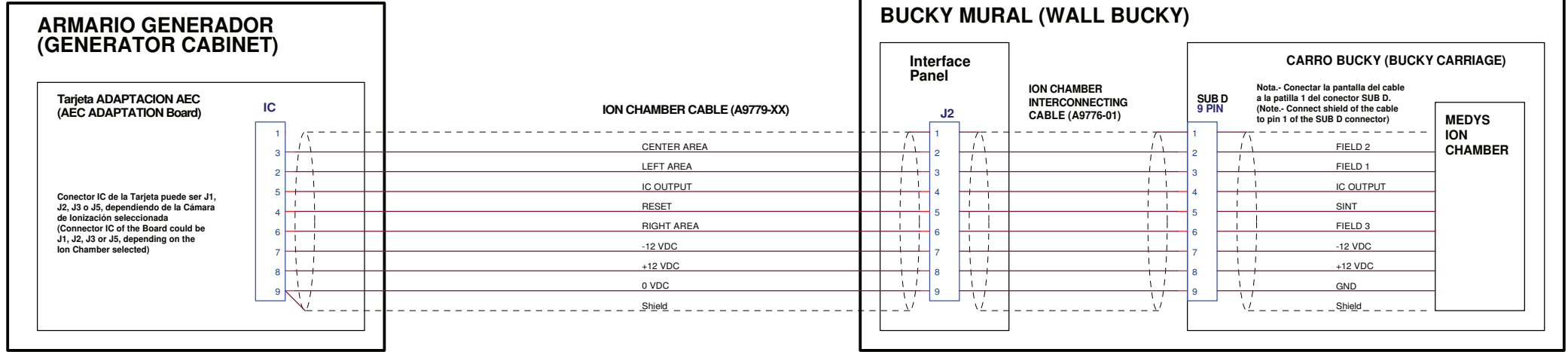


THIS INTERFACE FOR MIDWEST BUCKY

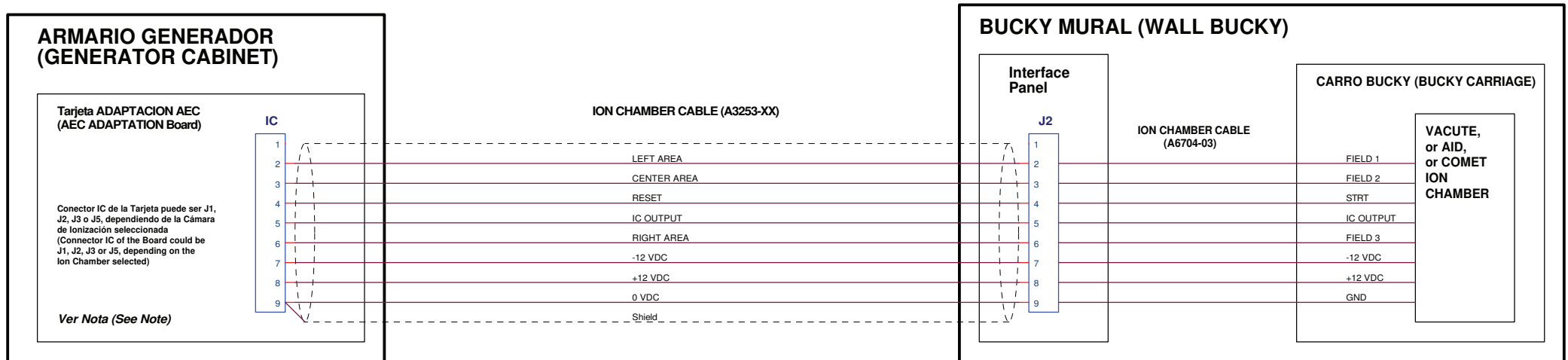


F	NC 13/291	S.PEREZ	17-09-13		NAME	DATE	SHEET/OF	54301068						
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA	09-09-02	5/7							
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ	09-09-02		F	E	D	C	B	A	← REV
C	NC 472/10	S.PEREZ	27-01-11		SEDECAL INTERCONEXIONES SOPORTE MURAL									
B	CN 281/09	F. GARCIA	30-09-09											
A	CN 03/044	F. GARCIA	06-03-03											
REV	DESCRIPTION	ISSUED BY	DATE											

**ESTA INTERFACE PARA BUCKY MURAL CON CAMARA DE IONIZACION MEDYS
(THIS INTERFACE FOR WALL BUCKY WITH MEDYS ION CHAMBER)**



**ESTA INTERFACE PARA BUCKY MURAL CON CAMARA DE IONIZACION VACUTE, o AID, o CLAYMOUNT o COMET
(THIS INTERFACE FOR WALL BUCKY WITH VACUTE, or AID, or CLAYMOUNT, or COMET ION CHAMBER)**



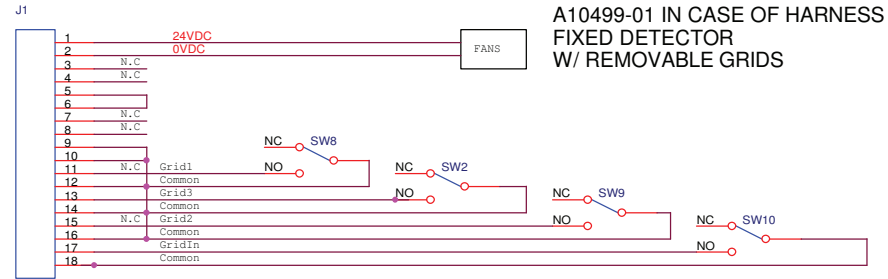
Nota.- En caso que no se requiera la tarjeta AEC ADAPTATION, usar el cable Cámara Ionización A3234-02 (ver plano I/F-003).

Note.- In case the AEC ADAPTATION board is not required, the Ion Chamber cable A3234-02 should be used (see sch. I/F-003)

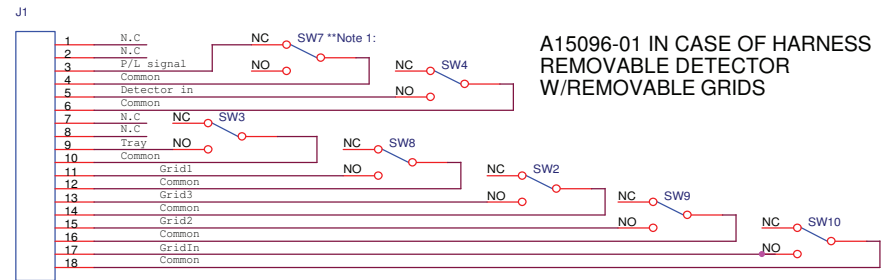
REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET / OF	54301068							
F	NC 13/291	S.PEREZ	17-09-13											
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA	09-09-02								
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ	09-09-02	6/7	F	E	D	C	B	A	← REV
C	NC 472/10	S.PEREZ	27-01-11											
B	CN 281/09	F. GARCIA	30-09-09											
A	CN 03/044	F. GARCIA	06-03-03											
										INTERCONEXIONES SOPORTE MURAL				

INTERNAL DOCKING WIRING IN CASE OF DETECTOR

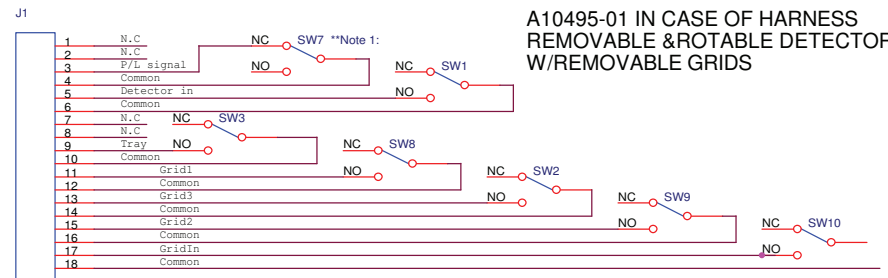
A10499-01 IN CASE OF HARNESS FIXED DETECTOR W/ REMOVABLE GRIDS



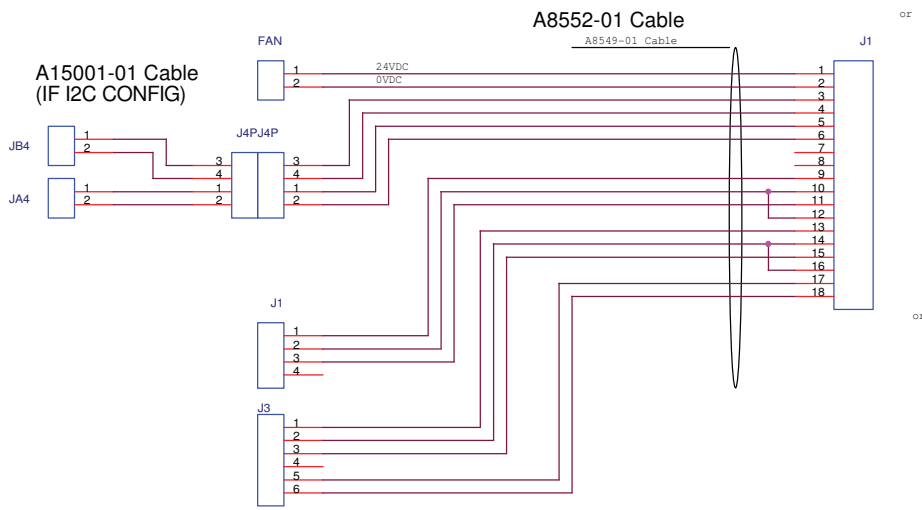
A15096-01 IN CASE OF HARNESS REMOVABLE DETECTOR W/REMOVABLE GRIDS



A10495-01 IN CASE OF HARNESS REMOVABLE & ROTABLE DETECTOR W/REMOVABLE GRIDS



A8544-01 IN CASE OF RADAX (MANUAL TILTING BUCKY W/ I2C CONFIG)



See pag3

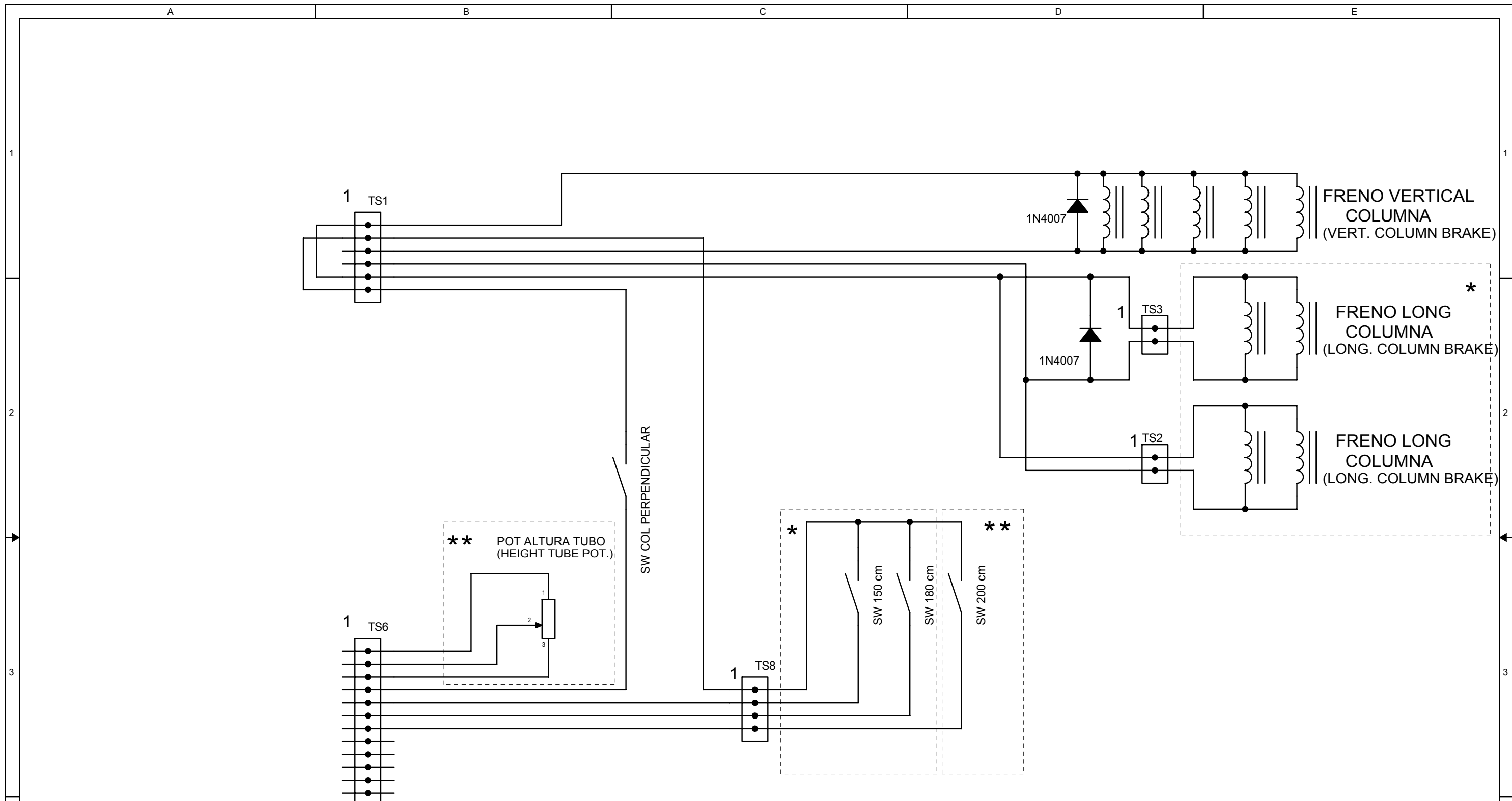
**Note 1:

DETECTOR POSITION	SW7	P/L SIGNAL
PORTRAIT POSITION (vertical)	PRESSED	OPEN
LANDSCAPE POSITION (horizontal)	NOT PRESSED	CLOSED

F	NC 13/291	S.PEREZ	17-09-13	NAME	DATE	SHEET/OF	54301068							
E	NC 13/036	S.PEREZ	04-02-13	DRAWING	F.GARCIA	09-09-02								
D	NC 12/056	S.PEREZ	13-07-12	REVISED	A.DIAZ	09-09-02	7/7	F	E	D	C	B	A	← REV
C	NC 472/10	S.PEREZ	27-01-11											
B	CN 281/09	F. GARCIA	30-09-09											
A	CN 03/044	F. GARCIA	06-03-03											
REV	DESCRIPTION	ISSUED BY	DATE											



INTERCONEXIONES SOPORTE MURAL



** The enclosed areas are only installed in the column when the digital control is available.

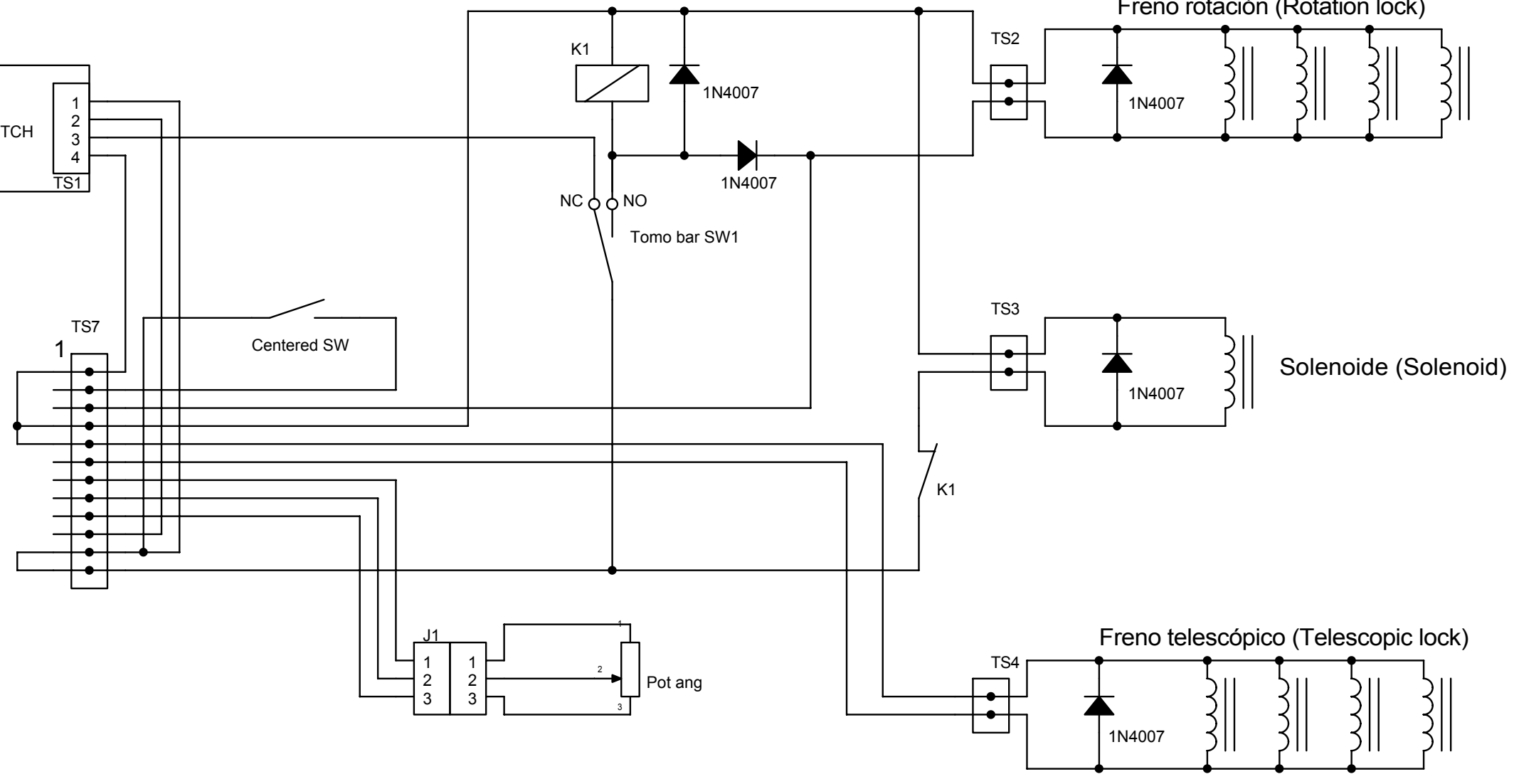
** Las zonas encuadradas sólomente se montan en la Columna con control digital.

* The enclosed areas are only installed if TOMO feature is not available

* Las zonas encuadradas sólomente se montan en la Columna sin tomo.

					NAME	DATE	SHEET / OF	54301075						
					DRAWING	E. Ojeda	17/0/03	1/1						
					REVISED	E. Ojeda	17/02/03					B	A	← REV
B	NC 03/030	E. Ojeda	18/02/03			COLUMNA								
REV	DESCRIPTION	ISSUED BY	DATE											

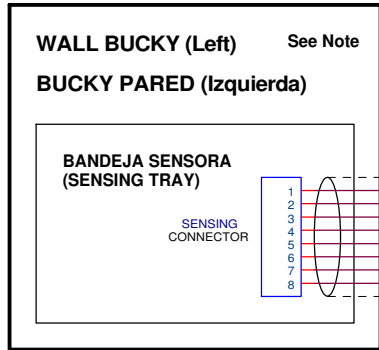
A3581-01
PCB ARM SWITCH



					NAME	DATE	SHEET / OF	54301076					
					DRAWING	F. Díaz	23/04/02	1/1					
					REVISED	F. Díaz	08/07/02					B	A ← REV
B	NC 04/011	E. OJEDA	30/01/04			BRAZO COLUMNA							
REV	DESCRIPTION	ISSUED BY	DATE										

Note.- For WALL BUCKY (Right):
Connect the corresponding CASSETTE SENSING CABLE
(A15061-XX) to the Wall Bucky (Right) connections.

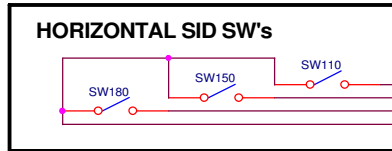
Nota.- Para BUCKY PARED (Derecha):
Conectar el correspondiente CABLE SENSOR CASSETTE
(A15061-XX) a las conexiones Wall Bucky (Right).



Cable Adapt. Sensor Cassette
(Cassette Sensor Adapt. Cable)
(A7652-01)

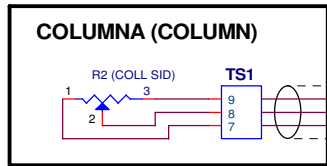
ADAPT
CONNECTOR
TB2

CABLE SENSOR CASSETTE
(CASSETTE SENSING CABLE)
(A15006-01)

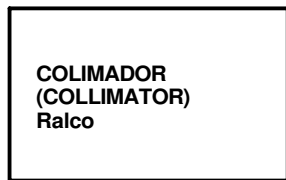


CABLE SENSOR CASSETTE
RIGHT (A15061-01)

SID-H CABLE
(A8572-01)



CABLE POT SID COLUMNA
(COLUMN SID POT CABLE)
(A15008-01)



COLLIM CTRL CABLE

**COLLIM ADAPTER CTRL CABLE
(S0023749 if R302DACs A15075-XX if
R225ACS))

**Note.- Only if required because of length (OPTIONAL)

**Note.- Solo si se requiere longitud adicional
(OPCIONAL)

Conexions to PCB
(EXTERNAL UNIT)

Table Bucky

Wall Bucky (Left)

Wall Bucky (Right)
See Note

M101
M96
M94
M98
M100
M99
M56
M58
M95

M109
M108
M106
M102
M104
M103
M59
M61
M107

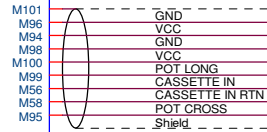
M116
M114
M110
M112
M111
M62
M64
M115
M117

M65
M66
M68
M72

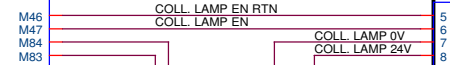
M86
M87
M88
M89

1
2
3
4
5
6
7
8
9
10

CABLE SENSOR CASSETTE
(CASSETTE SENSING CABLE)
(A15002-01)



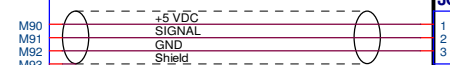
CABLE POTENCIA COLIMADOR
(COLL. POWER CABLE)
(A15003-01)



TOMO INTLK CABLE
(A15009-01)



CABLE POT SID MESA
(TABLE SID POT CABLE)
(A7064-01)



MESA (TABLE)

BANDEJA SENSORA
(SENSING TRAY)

SENSING
CONNECTOR

4
3
1
2
8
6
7
5

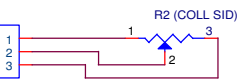
J3

TERMINAL BLOCK

CONTROL TOMO
(TOMO CONTROL)



JCOLL



COLUMN-AUTO COLLIM CABLE
(A8539-01)

THIS SHEET ONLY APPLIES TO TABLE WITH TOMO
(ESTA HOJA SOLO APLICA A MESA CON TOMO)

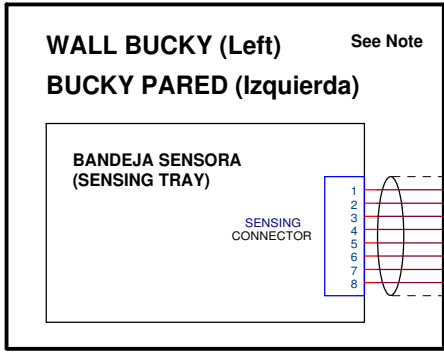
				NAME	DATE	SHEET/OF	54303033			
				DRAWING	S.PEREZ	13/02/12				
				REVISED	M.A.GONZ	13/02/12	1/2			
C	NC 12/494	Sonia Pérez	28/12/12							
B	NC 12/484	Sonia Pérez	12/11/12							
A	New Interface	Sonia Pérez	12/02/12							
REV	DESCRIPTION	ISSUED BY	DATE							



TABLE&WS&USXRAY& (R302DACs or R225 ACS)
W/EXTERNAL UNIT (COLUMN &SHF)

Note.- For WALL BUCKY (Right):
Connect the corresponding CASSETTE SENSING CABLE
(A15061-XX) to the Wall Bucky (Right) connections.

Nota.- Para BUCKY PARED (Derecha):
Conectar el correspondiente CABLE SENSOR CASSETTE
(A15061-XX) a las conexiones Wall Bucky (Right).

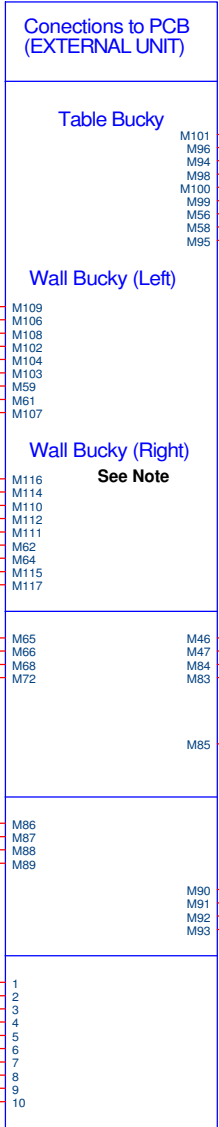


Cable Adapt. Sensor Cassette
(Cassette Sensor Adapt. Cable)
(A7652-01)

ADAPT
CONNECTOR

CABLE SENSOR CASSETTE
(CASSETTE SENSING CABLE)
(A15006-01)

GND
VCC
VCC
GND
POT CROSS
CASSETTE IN
CASSETTE IN RTN
POT LONG
Shield



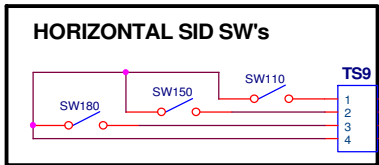
CABLE SENSOR CASSETTE
(CASSETTE SENSING CABLE)
(A15002-01)

GND
VCC
GND
VCC
POT LONG
CASSETTE IN
CASSETTE IN RTN
POT CROSS
Shield

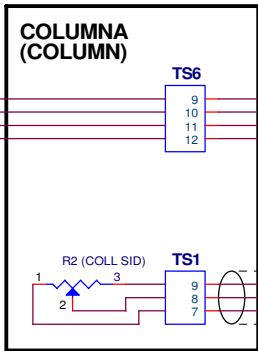
MESA (TABLE)

BANDEJA SENSORA
(SENSING TRAY)

SENSING
CONNECTOR



SID-H CABLE
(A7081-01)

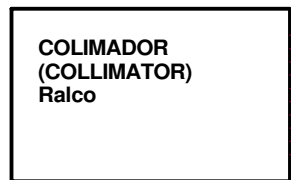


SID-H (no Tomo) CABLE
(A15007-01)

SID 110
SID 150
SID 180
COM

CABLE POT SID COLUMNA
(COLUMN SID POT CABLE)
(A15008-01)

+5 VDC
SIGNAL
GND
Shield



COLLIM CTRL CABLE

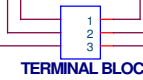
**COLLIM ADAPTER CTRL CABLE
(S0023749 if R302DACS A15075-XX if
R225ACS)

**Note.- Only if required because of length (OPTIONAL)

**Note.- Solo si se requiere longitud adicional
(OPCIONAL)

CABLE POTENCIA COLIMADOR
(COLL. POWER CABLE)
(A15003-01)

COLL. LAMP EN RTN
COLL. LAMP EN
COLL. LAMP 0V
COLL. LAMP 24V



CABLE POT SID MESA
(TABLE SID POT CABLE)
(A7064-01)

+5 VDC
SIGNAL
GND
Shield



COLUMN-AUTO COLLIM CABLE
(A8539-01)

THIS SHEET ONLY APPLIES TO TABLE WITHOUT TOMO
(ESTA HOJA SOLO APLICA A MESA SIN TOMO)

REV	DESCRIPTION	ISSUED BY	DATE	NAME	DATE	SHEET/OF	54303033					
				DRAWING	S.PEREZ	13/02/12	2/2		C	B	A	← REV
				REVISED	M.A.GONZ	13/02/12						
C	NC 12/494	Sonia Pérez	28/12/12									
B	NC 12/484	Sonia Pérez	12/11/12									
A	New Interface	Sonia Pérez	12/02/12									
				SEDECAL			TABLE&WS&USXRAY& (R302DACS or R225 ACS) W/EXTERNAL UNIT (COLUMN & SHF)					