Technical Publication
IN-1005R10

Installation

HF Series Generators

REVISION HISTORY

REVISION	DATE	REASON FOR CHANGE
5	MAR 30, 2004	General improvements and new RF Adaptation
6	NOV 30, 2006	General improvements
7	APR 02, 2008	Bucky Interconnection Maps
8	JUN 02, 2010	Interconnection Maps
9	SEP 13, 2012	IEC Standards update
10	JUL 15, 2013	New Contactors and Terminal Strip 5TS1

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 HEEDED OR AVOIDED WILL CAUSE SERIOUS PERSONAL INJURY OR DEATH.

ADVISE OF CONDITIONS OR SITUATIONS THAT IF NOT HEEDED 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.

TABLE OF CONTENTS

Section **Page**

SECTION 1 INTRODUCTION

The Installation process depends on the Generator and System configuration. Installation must be performed in the order indicated along this document. Perform only the sections required to install this Generator.

1.1 TOOLS AND TEST EQUIPMENT

The following hand tools and products are required for the Installation:

- Standard service engineers tool kit.
- Electric drill motor and assorted bits.
- Silicone Insulating Grease (proofing compound).
- Alcohol cleaning agent.

The following test equipment is required for Configuration and Calibration:

- Digital Multimeter.
- Non-invasive kVp Meter.
- Digital mAs Meter.
- Calculator.

- Only for AEC purposes:
  - Sensitometer.
  - Densitometer.
  - Copper Plates for the Collimator Filter Holder (recommended for AEC / ABC calibration):
    2 units of 1 mm thickness,
    1 unit of 0.5 mm thickness,
    2 units of 0.2 mm thickness,
    1 unit of 0.1 mm thickness.
  - Acrylic Plastic Plates can be used Instead of Copper Plates:
    6 units of 5 cm. thickness,
    5 units of 1cm. thickness.

- Only for Tomo purposes:
  - Tomophantom tool.

- Only for Fluoro purposes:
  - Dosimeter, with R/min and mR/min meters and/or mGy/min and μGy/min meters.
  - Imaging Test Phantom tool.
  - Copper Plates: 2 units of 1 mm thickness,
    1 unit of 0.5 mm thickness,
    2 units of 0.2 mm thickness,
    1 unit of 0.1 mm thickness.

1.2 PRE-INSTALLATION CHECK

Prior to beginning installation, it is recommended to inspect the site and verify that the X-ray room complies with Pre-installation requirements, such as:

- Incoming Line.
- Main Switch and Safety Devices.
- Conduits.
- Space Requirements.

(*Refer to the "Pre-Installation" document.*)

1.3 GENERAL CAUTIONS

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.

MAKE SURE THAT THE MAIN STORAGE CAPACITORS OF THE HIGH VOLTAGE INVERTER DO NOT CONTAIN ANY RESIDUAL CHARGE. WAIT UNTIL THE LIGHT EMITTING DIODES ON THE CHARGE-DISCHARGE MONITOR BOARDS ARE OFF, APPROXIMATELY 3 MINUTES AFTER THE UNIT IS TURNED OFF.

ALWAYS HAVE THE "IPM DRIVER BOARD" CONNECTED IN THE GENERATOR PREVIOUS TO MAINS POWER IS ACTIVATED IN IT. IF THE "IPM DRIVER BOARD" IS NOT CONNECTED, PERMANENT DAMAGE WILL OCCUR TO IGBTS.

TO AVOID THE RISK OF ELECTRIC SHOCK, THIS EQUIPMENT MUST ONLY BE CONNECTED TO A SUPPLY MAINS WITH PROTECTIVE EARTH. DO NOT TOUCH ANY HEATSINK OF THE CIRCUIT BOARDS EVEN THE GENERATOR IS TURNED OFF. PREVIOUS TO DISASSEMBLE ANY BOARD, REMOVE ALL CONNECTORS PLUGGED TO IT.

LINE POWERED GENERATOR:
THIS GENERATOR IS PERMANENTLY CONNECTED TO THE POWER LINE, AND POWERED ON UNLESS THE SAFETY SWITCH INSTALLED IN THE ROOM ELECTRICAL CABINET IS OFF. WHEN THE GENERATOR IS POWERED, THE NEON LAMP (GREEN) LOCATED ON THE TRANSFORMER 6T2 (GENERATOR CABINET) IS ON.

INTERNAL PARTS OF THE GENERATOR (ALL FUSES, LINE CONTACTOR (6K5), INPUT TRANSFORMER (6T2), ON/OFF RELAY (3K3) AND LF-RAC MODULE) ARE PERMANENTLY POWERED ON THROUGH POWER LINE ALTHOUGH THE CONTROL CONSOLE IS OFF. BE SURE THAT THE SAFETY SWITCH IS OFF BEFORE HANDLING ANY INTERNAL PART OF THE EQUIPMENT.

BATTERY POWERED GENERATOR:
THIS GENERATOR IS PERMANENTLY CONNECTED TO THE POWER LINE THROUGH A LINE PLUG.

WHEN IT DOES NOT WORK WITH STAND-ALONE, IT IS POWERED ON UNLESS THE SAFETY SWITCH INSTALLED IN THE ROOM ELECTRICAL CABINET IS OFF. WHEN THE UNIT IS POWERED, THE NEON LAMP (GREEN) LOCATED ON THE TRANSFORMER 6T2 IS ON.

WHEN IT WORKS WITH OPTIONAL STAND-ALONE IT IS POWERED ON IN ALL SITUATIONS. WHEN THE UNIT IS TURNED ON, THE NEON LAMP (GREEN) LOCATED ON THE TRANSFORMER 6T2 IS ON.

KEEP THE PROTECTION COVERS IN PLACE ALL THE TIME, ONLY REMOVE THE COVERS TO PERFORM SERVICE OPERATIONS. INTERNAL PARTS (CONTACTOR 6K5, LINE FUSES, BATTERY CHARGER BOARD, LINE MONITOR BOARD, BATTERY MONITOR BOARD, ENERGY GUARD BOARD AND STAND-ALONE BOARD) ARE PERMANENTLY POWERED ON AND HAVE THE FULL VOLTAGE POTENTIAL OF THE BATTERIES (APPROX. 400 VDC) ALTHOUGH THE UNIT IS DISCONNECTED FROM THE LINE OR THE CONTROL CONSOLE IS OFF. USE CAUTION WHEN WORKING IN THIS AREA.

SECTION 2 UNPACKING, CABINET INSTALLATION AND POWER LINE CONNECTION

The Generator is shipped in one box to facilitate transport and installation.

Upon receipt of the X-ray unit and associated equipment, inspect all shipping containers for signs of damage. If damage is found, immediately notify the carrier or their respective agent.

2.1 COMPACT GENERATORS – LINE POWERED

1. Open the shipping box. Take out the Control Console, Interconnection Cables, Cabinet Cover and other furnished parts. Do not discard any packing material such as envelopes, boxes or bags until all parts are accounted for as listed on the packing list.

2. Remove the packing material from the pallet.

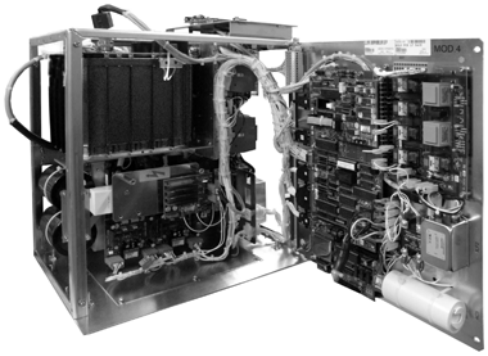
3. Remove the Generator Cabinet from the shipping pallet, placing it near its chosen room position. This operation requires at least two people.

4. When the equipment is unpacked, verify that all items on the customer order are present, and the hardware and internal wiring is secure.

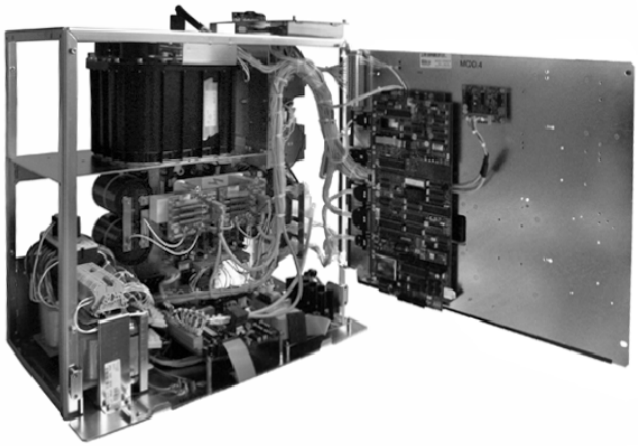
5. Check the part numbers / serial numbers of each component with its identification labels, and inspect all pieces for visible damage. If any damaged parts are found, repair or order replacements to prevent unnecessary delay in installation.

Illustration 2-1
Compact Generators (two versions)

COMPACT GENERATOR FOR ONLY ONE LS TUBE (MINI)



COMPACT GENERATOR FOR ONE OR TWO LS/HS TUBES



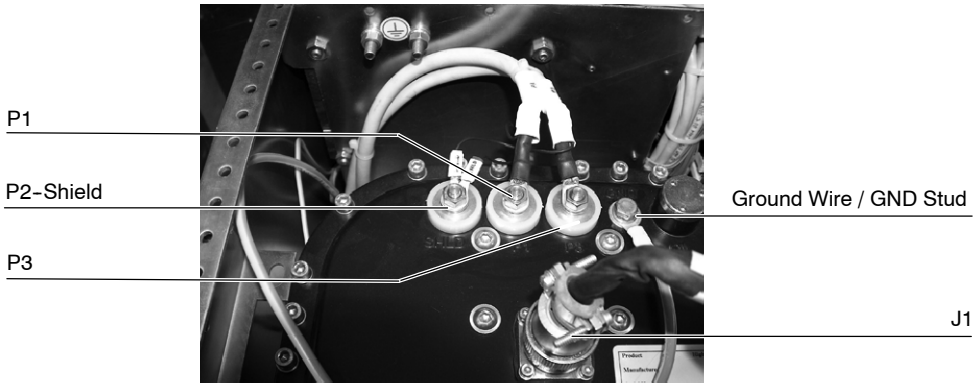
6. In some cases, due to transport safety requirements, the HV Transformer is shipped out of the Generator Cabinet. Install the HV Transformer inside the Cabinet (upper area) and secure it with the respective anchors or plates, then connect the following cables from the Power Module to the corresponding terminals on the HV Transformer:

   - P2-Shield (2 thin wires), P1 and P3. Connect these cables to the stud-brass terminals using two wrenches to tighten the nuts (one to hold the base nut in place and the other to tighten the nut over the cable) and avoiding twisting the studs. Ensure that the connection is secure and properly tightened.
   - Ground wire to Ground stud.
   - Connector J1.

WARNING

THE HV TRANSFORMER HAS TO BE SECURED WITH ITS ANCHORS OR PLATES INSIDE THE CABINET. OTHERWISE P1, P2 AND P3 STUDS MAY BE IN CONTACT WITH THE CABINET FRAME AND PRODUCE A SHORT-CIRCUIT.

Illustration 2-2
Cable Connections to the HV Transformer



7. The Line Powered Generator Cabinet can be installed in one of the following ways:

   - **Using the optional Wall Support only** (*for installation refer to step-8.*)
   - **Using the optional Wall Support and Base Support** (*for installation refer to steps-9.)*
   - **Freestanding** without supports (*for installation refer to steps-12.)*

Note ☞ *Optional Supports must be requested in the customer order.*

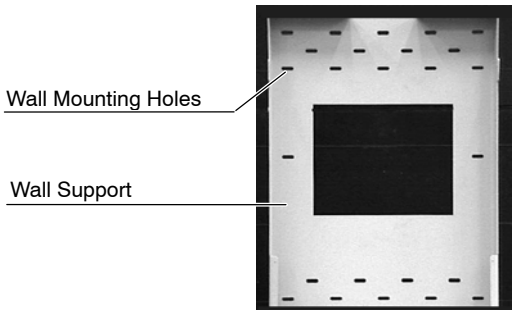
8. **Installation of the Generator Cabinet using a Wall Support Only.**

An optional Wall Support can be provided to hang the Cabinet. The Wall Support must be securely installed on a resistant wall that can hold both the Generator and Cables (keep in mind their weights). (*Refer to the "Pre-Installation" document for more information.*)

a. Place the Wall Support against the wall and level it.

b. Mark the anchoring holes on the wall. Make sure that there is a sufficient number of anchoring points in order to firmly secure the Generator Cabinet to the wall (minimum 4 / 6 anchoring points).

Illustration 2-3
Installation of the Wall Support (optional)

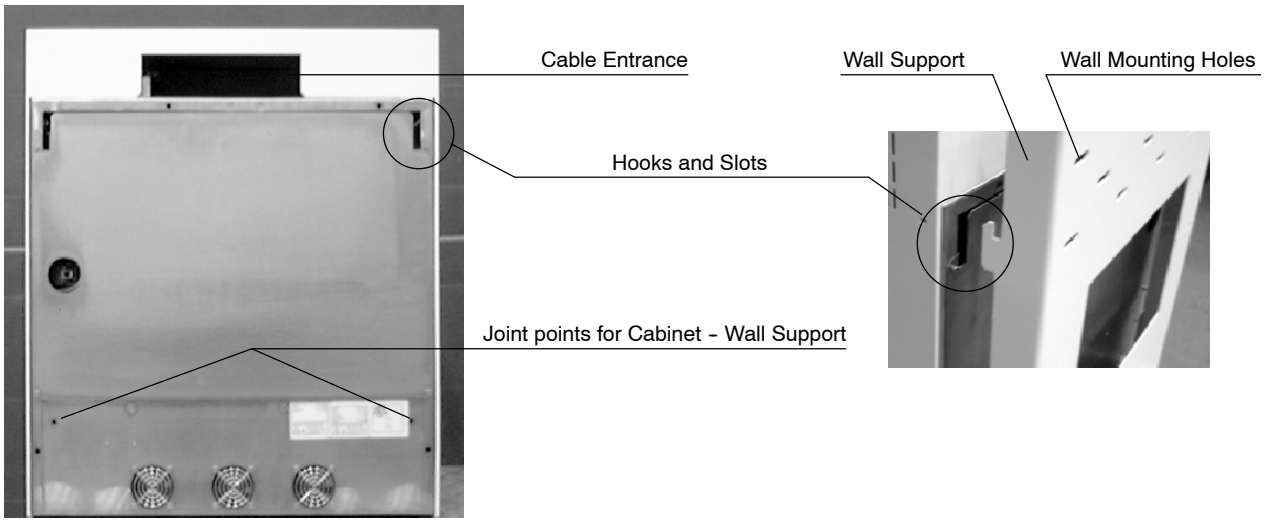


c. Secure the Support firmly to the wall.

d. Hang the Generator, at least two people are required.

e. Fix the two screws that join the rear side of the Cabinet to the Wall Support. Go to step-13.

Illustration 2-4
Installation of the Generator in the Wall Support (optional)

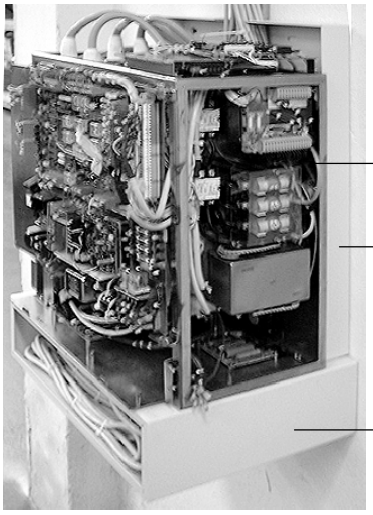


9. **Installation of the Generator Cabinet using a Wall Support and a Base Support.**

The Generator Cabinet can be assembled over a metallic Base Support (Cable Box) and a Wall Support at the rear side. The final assembly (Generator + Supports) can be hung on the wall (*refer to step 10.*) or left freestanding (*refer to step 11.*).

(*Refer to the "Pre-Installation" document for more information.*)

Illustration 2-5
Compact Generator with optional Supports

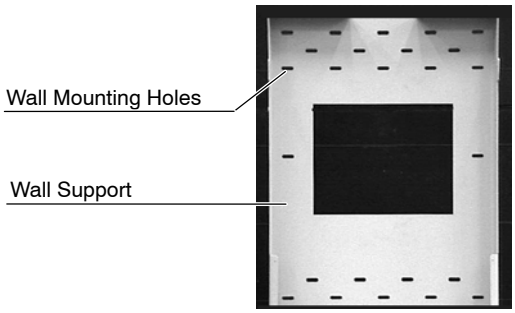


10. *When hanging the Generator on the wall*, the Wall Support must be securely installed on a resistant wall that can hold the Generator with the Supports and Cables (keep in mind their weights). (*Refer to the "Pre-Installation" document for more information.*)

    a. Place the Wall Support against the wall and level it.

    b. Mark the anchoring holes on the wall. Make sure that there is a sufficient number of anchoring points in order to firmly secure the Generator Cabinet to the wall (minimum 4 / 6 anchoring points).

Illustration 2-6
Installation of the Wall Support (optional)

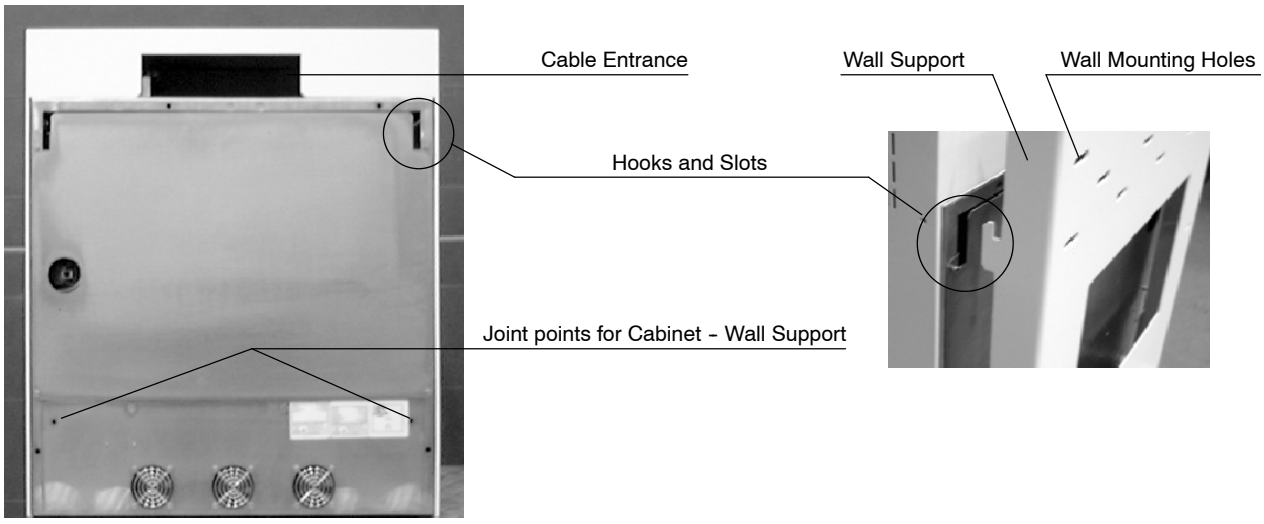


    c. Secure firmly the Support to the wall.

    d. Hang the Generator, at least two people are required.

    e. Fix the two screws that join the rear side of the Cabinet to the Wall Support.

Illustration 2-7
Installation of the Generator in the Wall Support (optional)

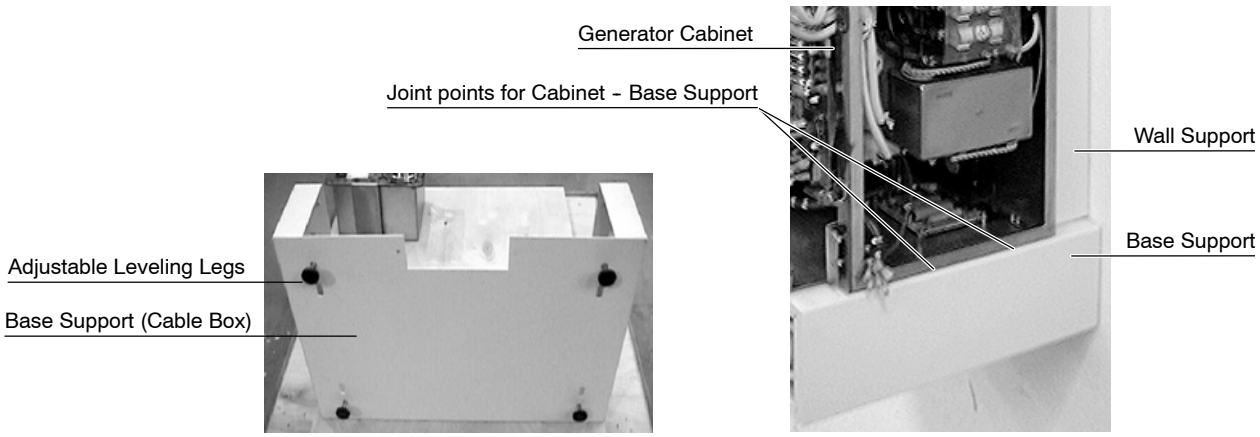


f. Remove the four Adjustable Leveling Legs from the base of the Generator Cabinet and re-install them in the Base Support.

g. Assemble the Base Support under the Generator Cabinet and secure it using four M6x20 screws (supplied). At least two people are required for this operation.

h. Go to step-13.

Illustration 2-8
Installation of the Base Support (optional)



11. *When the Generator is freestanding*, perform the following steps:

a. Remove the four Adjustable Leveling Legs from the Base of the Generator Cabinet and re-install them in the Base Support.

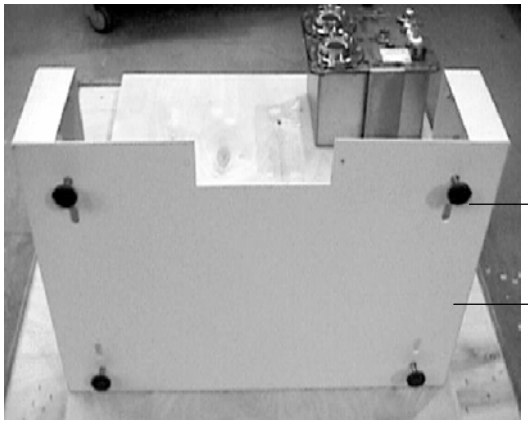
b. Place the Base Support near its chosen place in the room. Level the Base using the Adjustable Leveling Legs. Keep the Base at the maximum distance from the floor.

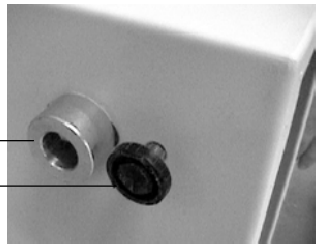
Seismic areas and other conditions require the Generator to be secured to the floor. There are mounting holes on the bottom of the Base Support. Place the four spacers (provided) under the Base and secure them to the floor. Keep the four Leveling Legs at the same height as the spacers (*refer to Illustration 2-9*).

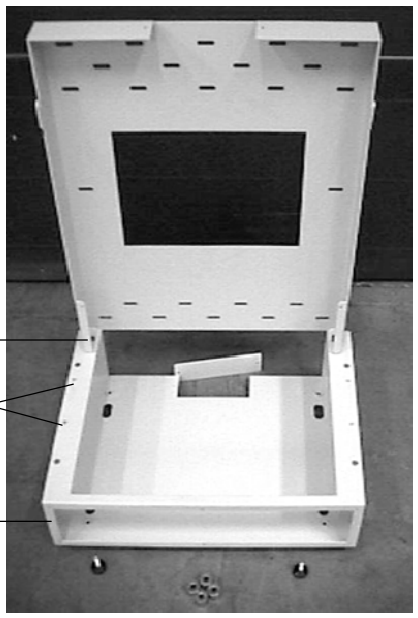
c. Assemble the Wall Support to the Base Support using two M6x20 screws (supplied). Place the Generator Cabinet over the Base Support and secure it using four M6x20 screws (supplied). At least two people are required for this operation.(*refer to Illustration 2-9*).

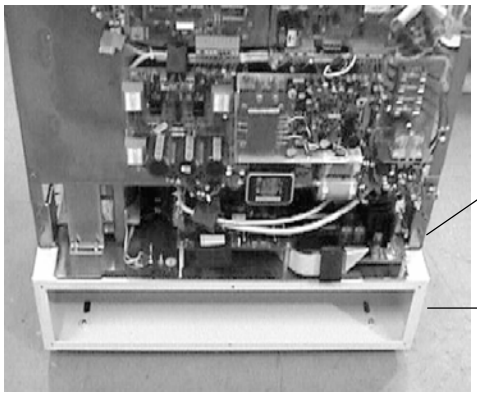
d. Go to step-13.

Illustration 2-9
Installation of the Generator over the Base Support (optional)







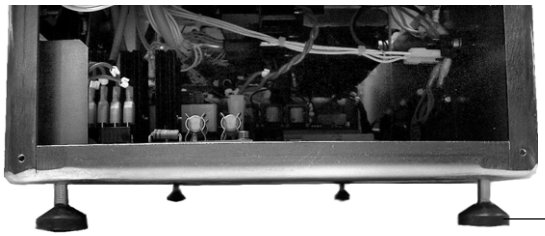


12. **Installation of the Generator Cabinet Freestanding.**

Usually, the Generator Cabinet is freestanding. Place the Cabinet near its chosen place in the room. Level it using the Adjustable Leveling Legs at the bottom of the Cabinet. Keep the Base at the maximum distance from the floor.

Seismic areas and other conditions require the Generator to be secured to the floor. There are mounting holes on the bottom of the Cabinet. Keep the four Leveling Legs at the same height (*refer to Illustration 2-10*).

Illustration 2-10
Adjustable Leveling Legs



Adjustable Leveling Legs

13. Leave a sufficient working area around the equipment that will permit unhindered movements until its final assembly.

POWER LINE CONNECTION

KEEP IN MIND THE GENERAL CAUTIONS FOR LINE POWERED GENERATORS INDICATED IN SECTION 1.3.

DO NOT POWER ON THE GENERATOR UNTIL SPECIFICALLY INSTRUCTED IN THIS SERVICE MANUAL.

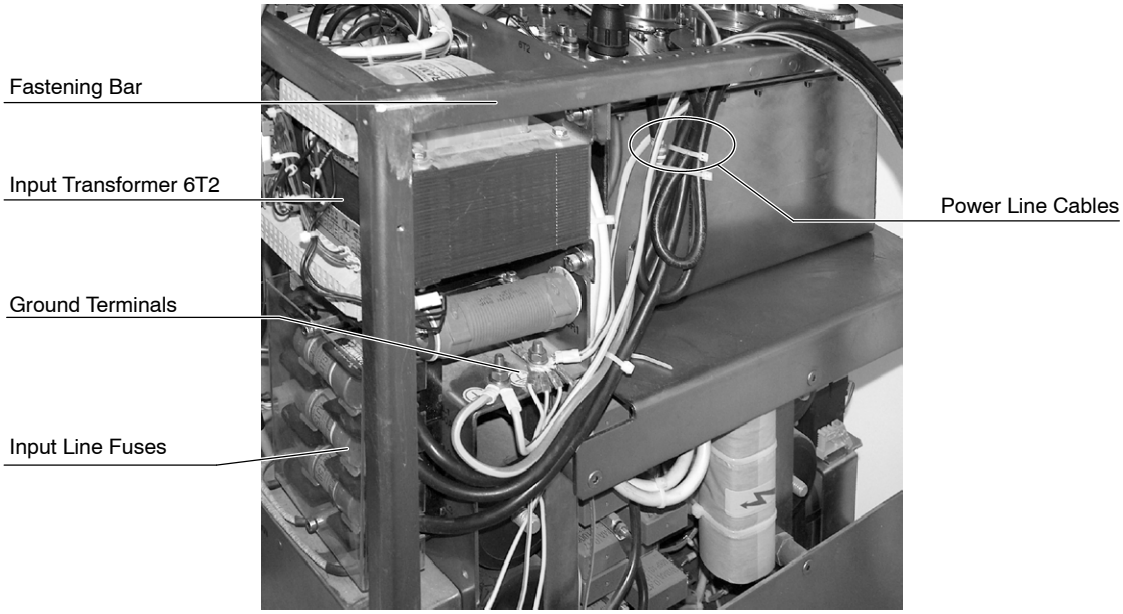
14. Verify that the power supply line is "*OFF*" in the Room Electrical Cabinet. Verify that the power line to the Generator is cut when the Emergency Switch(es) is(are) activated.

15. The power supply line should conform with the Generator model defined in the "*Pre-Installation*" document. Wire sizes indicated in this document are relative to the power supply line and wire length. Verify that the power line voltage and phase of the Generator coincides with the one for Room Electrical Cabinet.

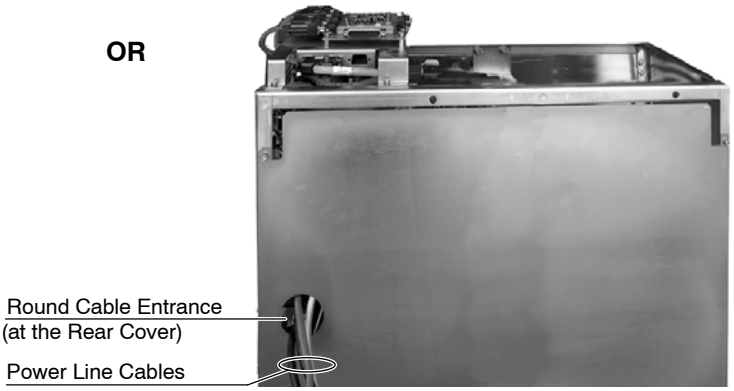
16. Cut the cables to the appropriate length and remove insulation from both ends of the power and ground wires. Connect them to the respective terminals in the Room Electrical Cabinet.

17. Route the Power Line Cables to the Ground Terminal and Input Line Fuses. These cables can be secured to the Fastening Bar of the Cabinet and routed internally along the rear side of the Cabinet; or they can be routed through the Round Cable Outlet on the Rear Cover of the Cabinet (always apply Local Codes for cable routing). (*Refer to Illustration 2-11.*)

Illustration 2-11
Cable Routing in the Line Powered Generator



OR



18. For Single Phase Generators, connect the Power wires L1 and N (L2) to the Fuse Holders of F3 and F4 (right side of the Cabinet), and the Ground wire to the Ground stud in the Cabinet Frame (above these fuses or close to the right side of the HV Transformer).

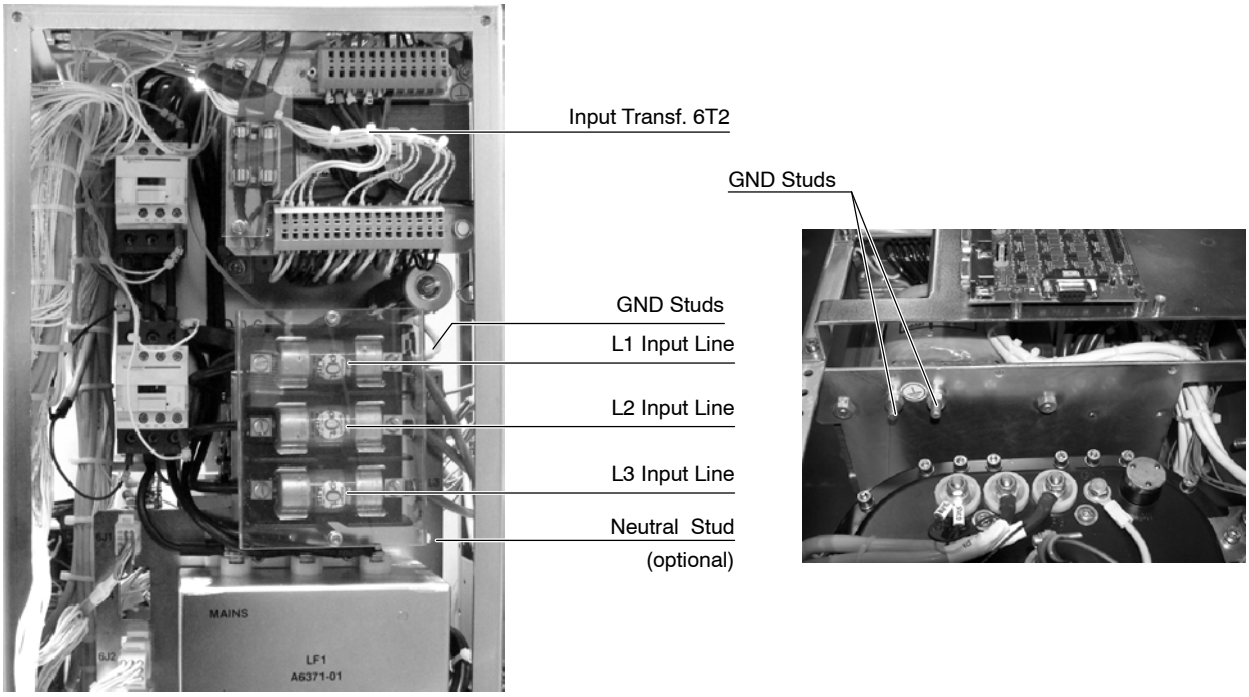
WARNING

SINGLE PHASE GENERATORS ARE FACTORY DELIVERED TO OPERATE ON PHASE AND NEUTRAL. IN CASE OF CONNECTING THE EQUIPMENT TO A TWO-PHASE LINE, REPLACE THE NEUTRAL CARTRIDGE WITH THE FUSE SUPPLIED WITH THE GENERATOR.

19. For Three Phase Generators, connect the Power wires L1, L2 and L3 to the Fuse Holders of F3, F4 and F5 (right side of the Cabinet), and the Ground wire to the Ground Studs in the Cabinet Frame (located above these fuses or close to the right side of the HV Transformer).

Three Phase Generators do not need Neutral (N) wire connection from the Line. If the unit is provided with the optional Fuse Module, connect the Neutral (N) wire from the Line to the Neutral Stud below F3 Fuse Holder.

Illustration 2-12
Power Line connections



For 80 kW Generators, the power supply line must be 480 VAC (or 530 VAC). If the Generator is supplied with an external step-up autotransformer, it will include the cables to connect the autotransformer to the Generator Cabinet. Power line should be connected to the autotransformer terminals according to the line.

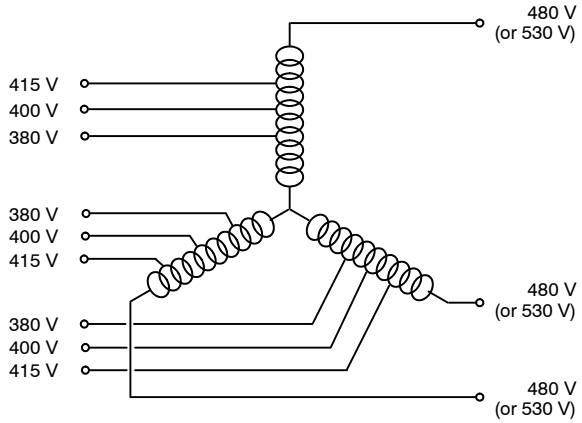
SEP-UP TRANSFORMER

Input: 380 VAC / 400 VAC / 415 VAC, Three-Phase.

Output: 480 VAC / 530 VAC, Three-Phase.

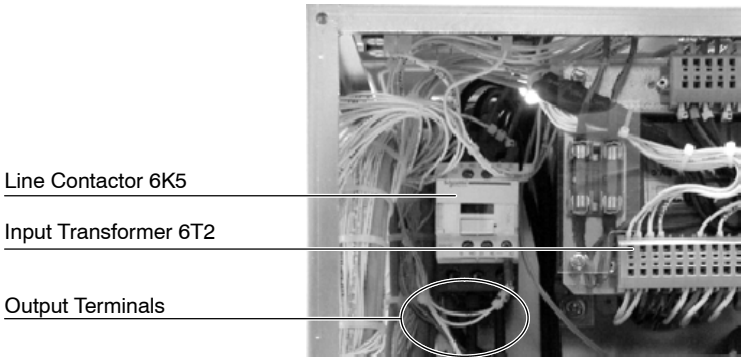
Max Power Output: 80 kW, 10% duty cicle
(approx. 5 seconds / minute)

Rising Temperature: 40ºC



20. The whole System (Tables, Spot Film Devices, etc.) can be switched ON/OFF when the Generator is switched ON/OFF. For this, power the System through the output terminals of the Line Contactor 6K5 (upper contactor close to the Input Transformer). These terminals are located underneath the Line Contactor 6K5.

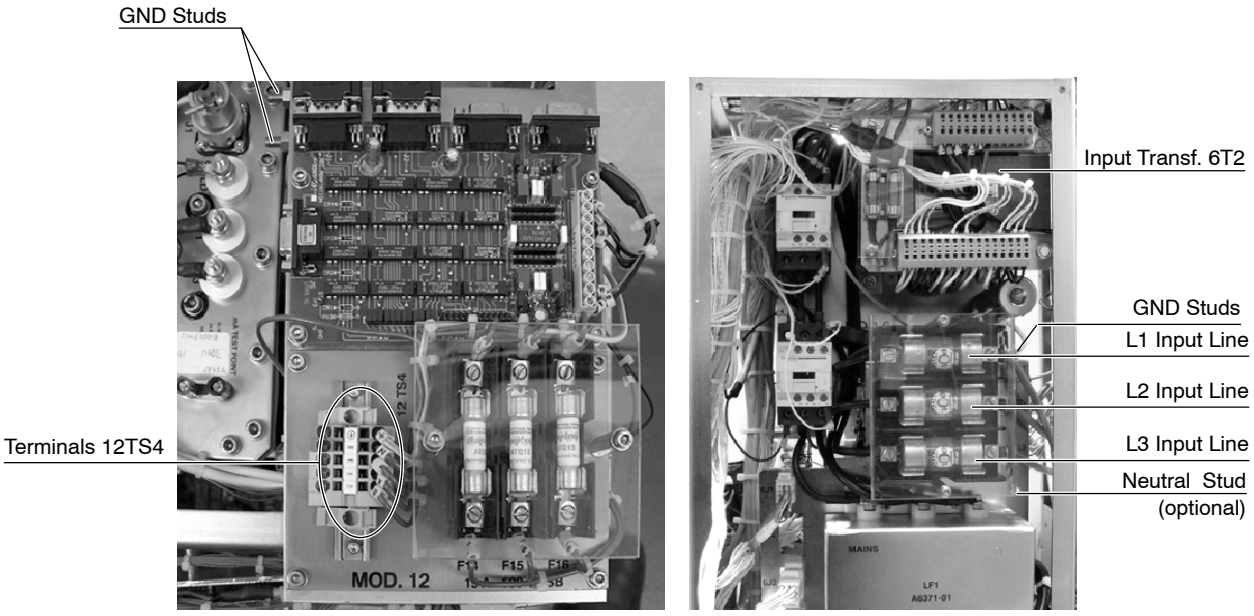
Illustration 2-13
Line Contactor 6K5

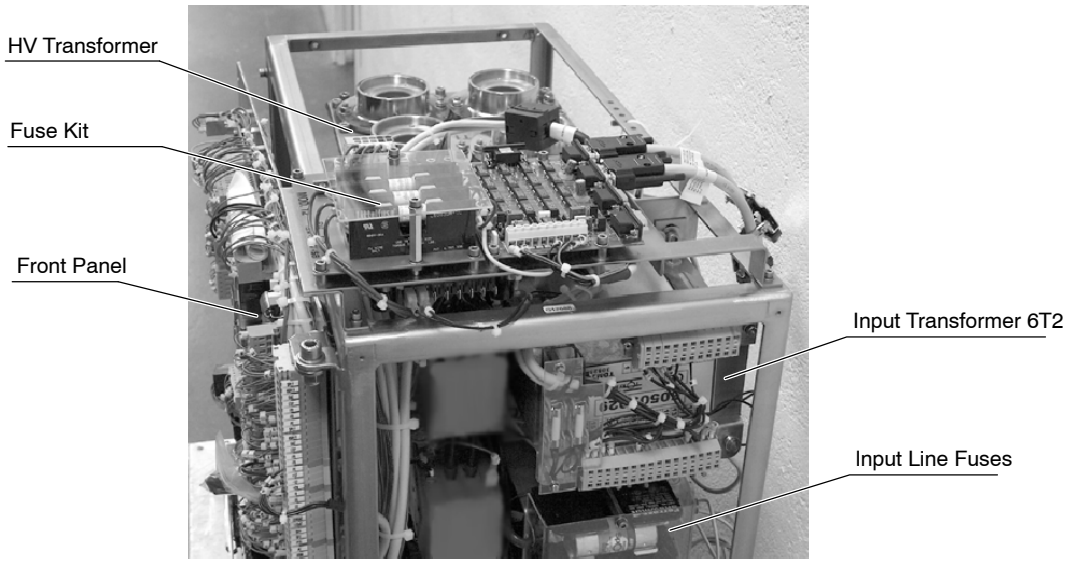


21. Three-Phase Generators can be provided with an optional Fuse Module mounted on Module-12, for switching ON/OFF the whole system when the Generator is turned ON/OFF.

    For this, connect the Neutral (N) wire from the Line to the Neutral Stud below F3 Fuse Holder. Power the System through the Output Terminals 12TS4 (U, V, W, N, GND) close to Fuses F14, F15, F16.

Illustration 2-14
Power Line connections in the optional Fuse Module

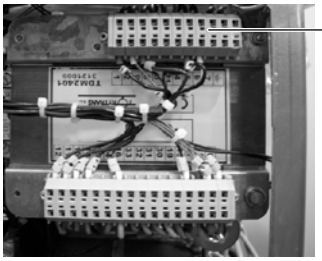




22. According to the **nominal voltage** of the line, verify or connect the wire "⁎" to the indicated terminal (TB) of Transformer 6T2. This wire is factory connected to 230 VAC (for 1-Phase), 400 VAC (for 3-Phase) or 480 VAC / 530 VAC (for 80 kW 3-Phase Generators). (*Refer to Schematic 543020XX*).

Note ☞ *For 220 VAC power line, connect the wire "⁎" to the 230 VAC terminals. For 380 VAC power line, connect the wire "⁎" to the 400 VAC terminals.*

Illustration 2-15
Connections on Transformer 6T2



23. After connecting the Power Line Cables, secure them to the Fastening Bar using cable ties if they are routed over the Fastening Bar, or using a suitable clamp if they are routed through the Round Cable Outlet on the Rear Cover of the Cabinet (always apply Local Codes).

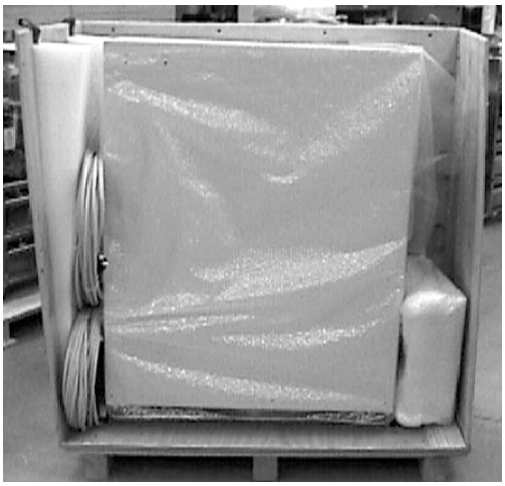
24. Install the Control Console as indicated in Section 2.3.

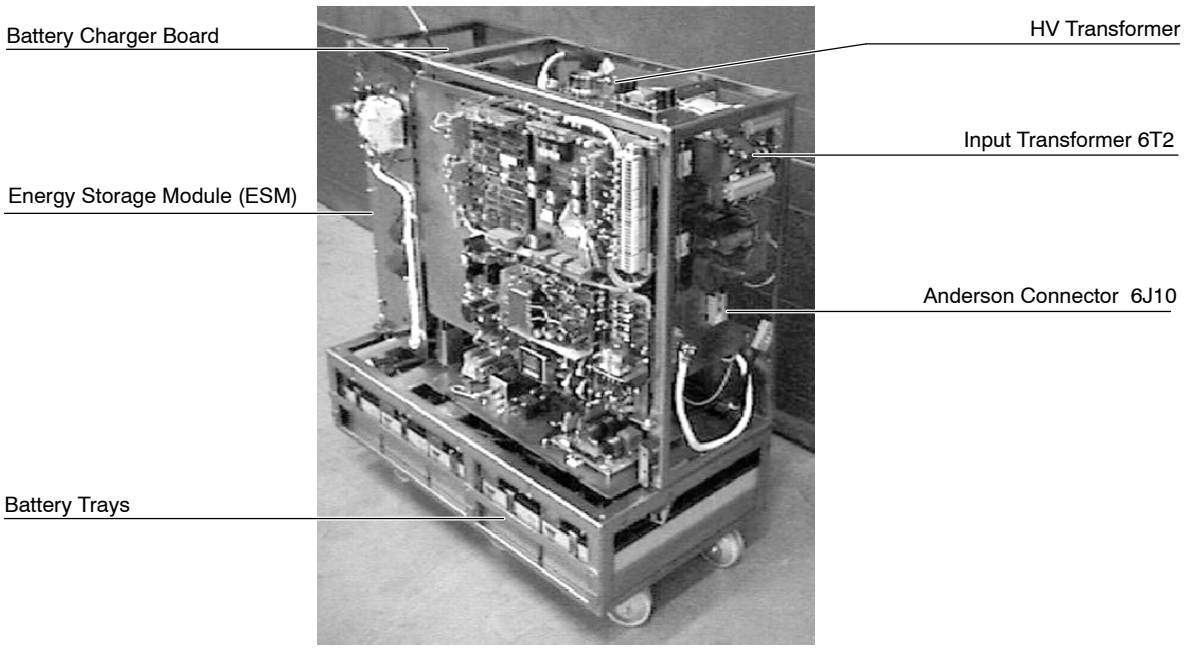
2.2 COMPACT-ESM GENERATORS – BATTERY POWERED

1. Open the shipping box, unpack the Control Console, Interconnection Cables, Cabinet Cover and other furnished parts. Do not discard any packing material such as envelopes, boxes, bags until all parts are accounted for as listed on the packing list.

2. Remove the packing material from the pallet. One of the laterals is adapted to be used as a ramp for unpacking the Generator.

Illustration 2-16
Compact-ESM Generator (unit with batteries)





3. Remove both lateral anchoring plates of the Generator Cabinet. Assemble the ramp to the pallet base. Move the Generator from the shipping pallet and place it near its site in the room. At least two people are required for this operation.

WARNING

THIS GENERATOR IS VERY HEAVY BECAUSE IT IS SHIPPED WITH THE BATTERIES INSTALLED. AT LEAST TWO PEOPLE ARE REQUIRED TO REMOVE THE UNIT FROM THE PALLET. THE EQUIPMENT IS SHIPPED WITH THE BATTERIES CHARGED (APPROX. 400 VDC). CAREFULLY HANDLE THE UNIT DURING ITS UNPACKING AND INSTALLATION.

SOME CONNECTORS ARE UNPLUGGED FOR TRANSPORT, DO NOT PLUG IN THEM UNTIL SPECIFICALLY INSTRUCTED TO DO SO IN THIS DOCUMENT.

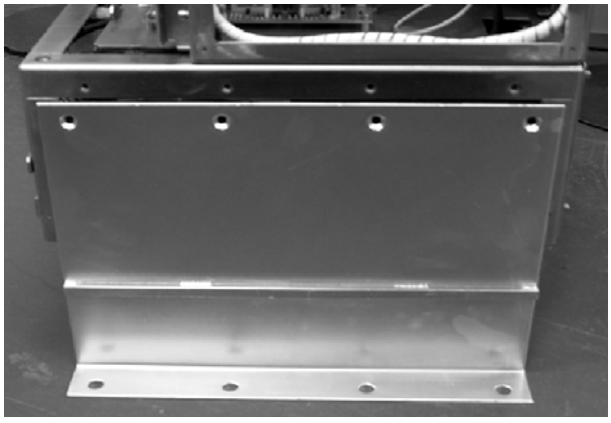
4. When the equipment is unpacked, verify that all items in the customer order are present, and the hardware and internal wiring is secure.

5. Check the part numbers / serial numbers of each component with its identification labels and inspect all pieces for visible damage. If any damaged parts are found, repair or order replacements to prevent unnecessary delay in installation.

6. The Generator Cabinet usually is freestanding. Seismic areas and other conditions require the Generator to be secured to the floor by anchoring plates fixed to both lateral sides of the Cabinet.

7. Leave a sufficient working area around the equipment that will permit unhindered movements until its final assembly.

Illustration 2-17
Anchoring Plates for the Battery Powered Generator



POWER LINE CONNECTION

KEEP IN MIND THE GENERAL CAUTIONS FOR BATTERY POWERED GENERATORS INDICATED IN SECTION 1.3.

DO NOT PLUG THE UNIT INTO THE MAINS SOCKET OR POWER ON THE GENERATOR UNTIL SPECIFICALLY INSTRUCTED TO DO SO IN THIS SERVICE MANUAL.

8. Before connecting the cables, ensure that the power line to the Generator is cut when the Emergency Switch(es) is(are) activated.

9. Measure the line voltage at the wall socket. The power supply line should be according to the "*Pre-Installation*" document.

10. Obtain a suitable line cord with line plug to conform to local codes and requirements.

11. Cut the line cord to the appropriate length. Fasten and route the cable over the top bar of the frame as shown in the Illustration 2-18, using cable ties (tie-wraps) in the holes provided. The cables should be routed through the cable entrance of the Front Panel of Module-1 before connecting the cable to the Terminals in 1TB-1 at the Front Panel. (*Refer to Illustration 2-18.*)

12. The Terminal Block 1TB1 is also provided with connections:

    - to supply power to a Table or another device (1TB1-Table), so the whole system (Tables, etc.) can be switched ON/OFF when the Generator is switched ON/OFF. (*refer to Schematics 543020XX*).

    - to install an optional Emergency Stop Button for isolating the Batteries and Power Line of the Generator. In this case, remove the jumpers installed in the Terminals of 1TB1 (8–9, 7–10, 11–12) and connect the Emergency Stop Button as indicated in *Schematics 543020XX.*

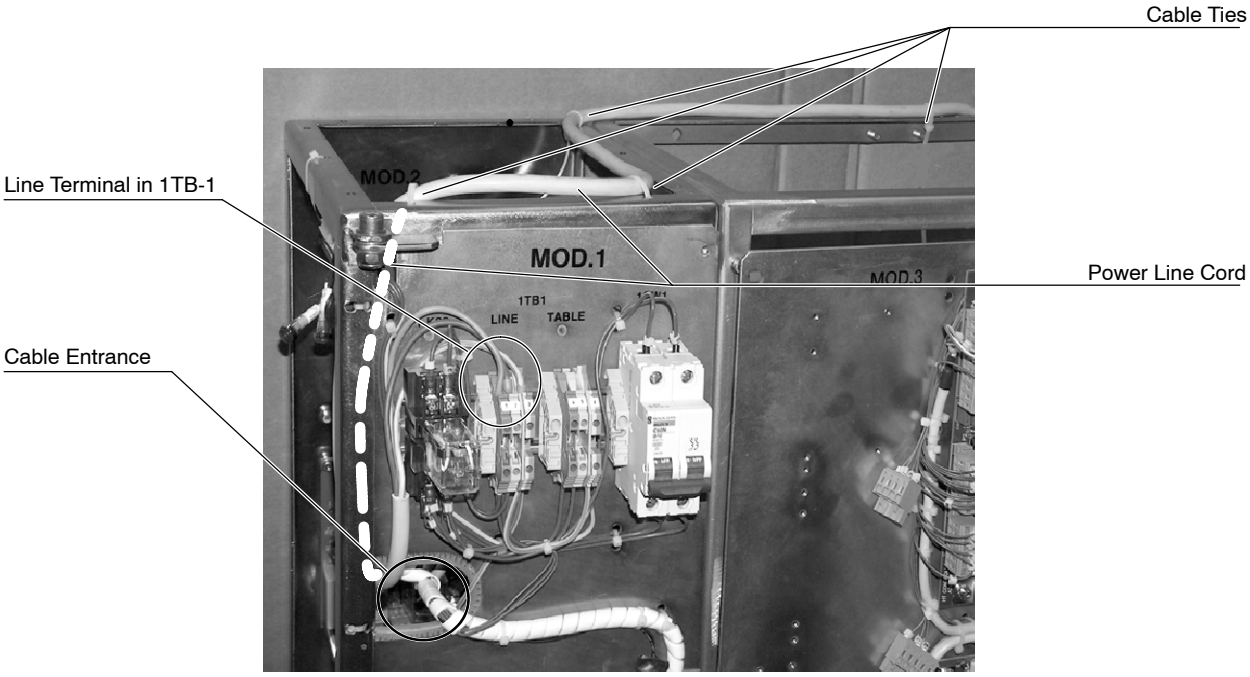
      The minimum specification for this installation should be:
      - Emergency Stop Button: *AC-15 , 240 V, 3 A, Ith 10 A.*
      - Cable: *2.5 mm^2 (AWG 14), 600 V.*

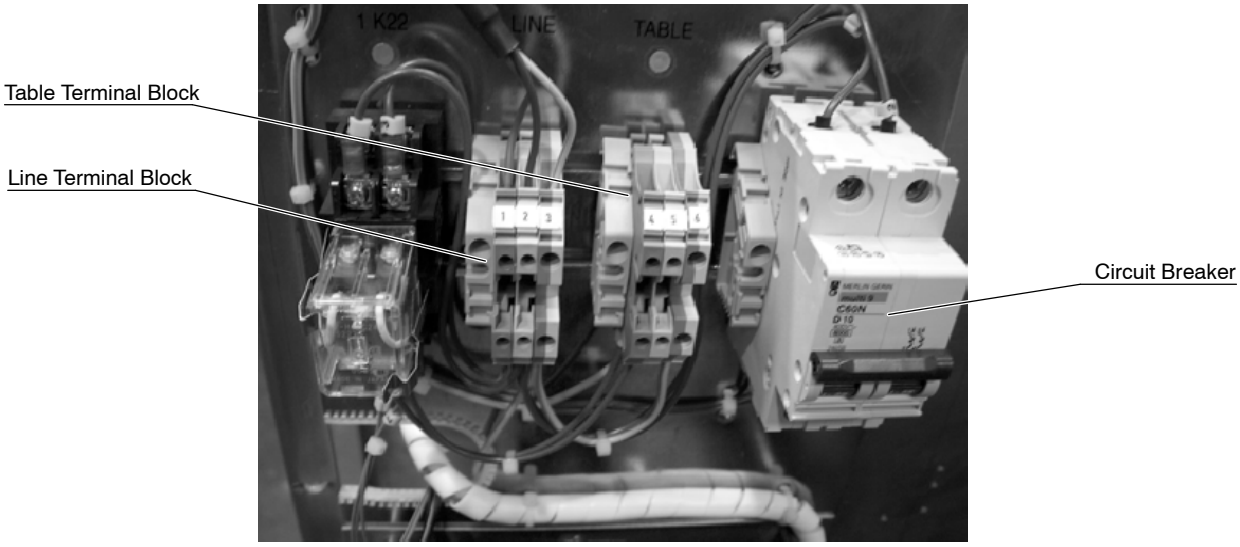
13. Connections of power supply must be made as indicated below:

LINE VOLTAGE			TABLE SUPPLY (WHOLE SYSTEM)		
1TB1-1	1TB1-2	1TB1-3	1TB1-4	1TB1-5	1TB1-6
Phase	Neutral	GND	Phase	Neutral	GND

14. Install the line plug to the other end of the cord.

Illustration 2-18
Cable Routing in the Battery Powered Generator



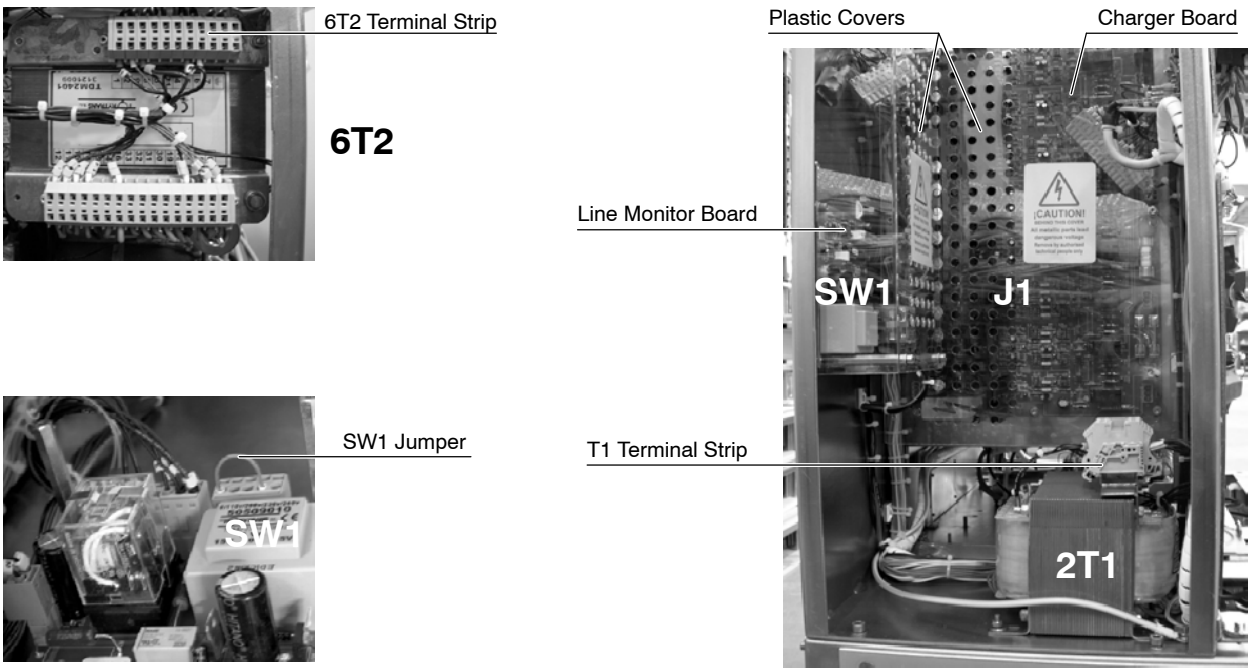


15. The equipment is factory set for a 230 VAC input line. Connect cable "⁎" to Transformer 2T1 (close to Battery Charger Board) according to the nominal voltage of the Line.

    Set Jumper in SW1 of Line Monitor Board and connect cable "⁎" in Transformer 6T2 (right side of Cabinet), as indicated below.

	POWER SUPPLY LINE (NOMINAL VOLTAGE)				
	Stand-Alone option	**110 VAC**	**208 VAC**	**230 VAC (or 220 VAC)**	**240 VAC**
Cable-⁎ in Transformer 6T2	TB-3 or TB-8	TB-3 or TB-8	TB-21	TB-4 or TB-5	TB-6 or TB-7
Jumper in SW1 Line Monitor	Set according to Power Supply Line	SW1-5 with SW1-4	SW1-5 with SW1-3	SW1-5 with SW1-2	SW1-5 with SW1-1

Illustration 2-19
Connections according to Nominal Voltage



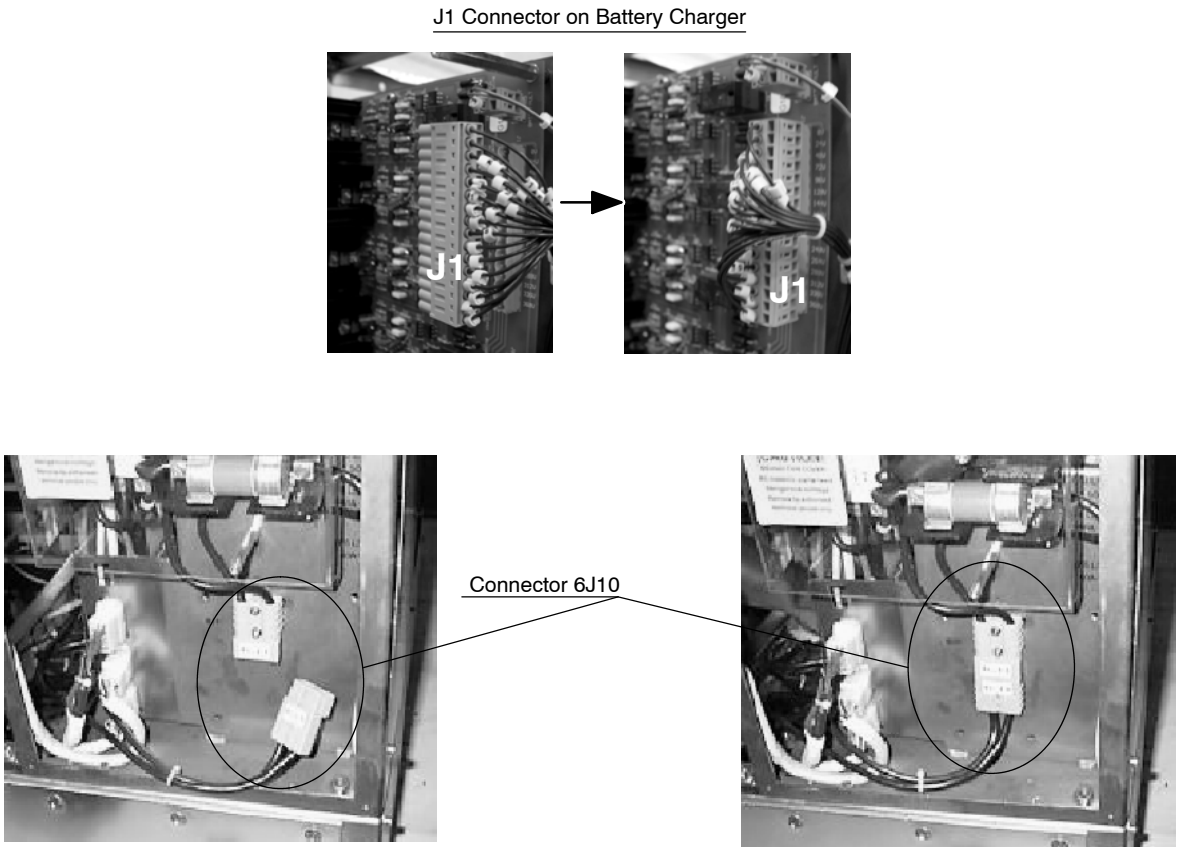
16. **For safety purpose**, the following connectors are unplugged during shipping:

    - Remove the Protective Cover of the Battery Charger Board and carefully plug Connector J1 into the Battery Charger Board. Re-install the Protective Cover.
    - Carefully plug the Anderson Connector 6J10 at the right side of the Cabinet.

WARNING

WHEN THESE CONNECTORS ARE PLUGGED, FULL BATTERY VOLTAGE IS PRESENT ON THE TERMINALS OF CONTACTOR 6K5 AND ON THE BATTERY CHARGER BOARD, REGARDLESS OF WHETHER THE LINE PLUG IS CONNECTED OR NOT. WHEN THE LINE PLUG IS CONNECTED, THE BATTERIES ARE SUBJECT TO VOLTAGES PRODUCED BY THE CHARGER BOARD.

Illustration 2-20
Connections of J1 on Battery Charger and Anderson 6J10



17. With Cabinet Cover close to the Cabinet, connect the “Line” and “Battery” lamp wires from the Cabinet cover to the respective Molex connectors on the top of the Cabinet (remove the wire tie-wrap).

18. Plug the Generator to the line socket and turn ON the Circuit Breaker. Visually check that:

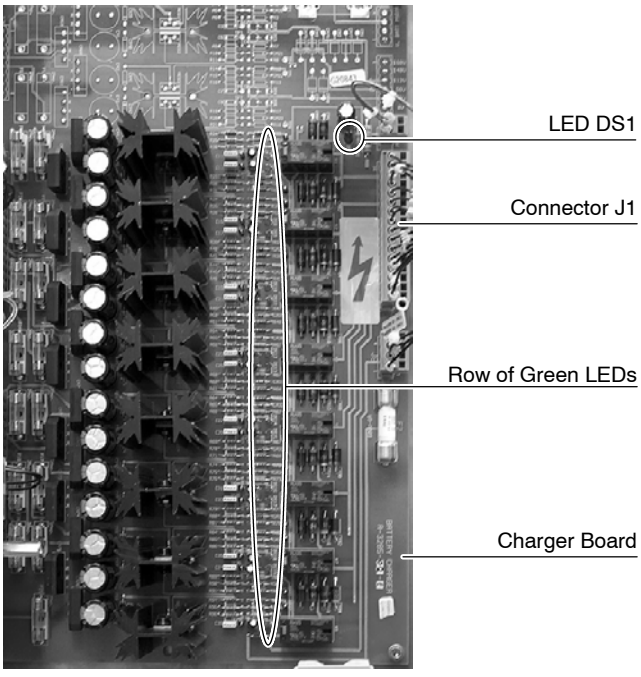
- “*Line*” and “*Batteries*” Lamps (on the Cabinet cover) are lit.
- LED “*CHECK*” (yellow) is flashing on the Line Monitor Board (2A3). The MAX and MIN LEDs (red) on the Line Monitor Board should be off.

  Perform the **Line Monitor Board Adjustment**:
  - Note the Nominal Line Voltage configured with SW1 at the Line Monitor Board.
  - Measure and note the Power Line Voltage with a Digitalmeter in the mains socket.
  - Adjust VDC on TP2 (positive) and TP1 (negative) with POT1 at the Line Monitor Board as per the following formula:

$$\frac{V_{mains}}{V_{nominal}} \times 2.5 = V_{TP2} \qquad Example: \frac{V_{(mains:220V)}}{V_{(nominal:230V)}} \times 2.5 = V_{TP2}(2.4VDC)$$

V mains is the line voltage obtained in the mains socket.
V nominal is the nominal voltage configured with SW1.

- All of the green LEDs and LED DS1 are lit on the Battery Charger Board.



19. Turn Off the Circuit Breaker and unplug the Generator from the mains socket. Observe the "*Line*" Lamp is switch off.

20. Install the Control Console as indicated in Section 2.3.

2.3 CONTROL CONSOLE INSTALLATION

1. Control Console can be freestanding, wall supported or mounted on an optional Pedestal. Console is provided with several mounting holes on the bottom for anchoring to the Pedestal or another support.

   Console CPU Boards and AEC Control Board can be located inside the Console (standard) or inside the Generator Cabinet (for Serial communication).

2. When a Pedestal is used, secure the Pedestal to the floor through the anchoring holes on its base and place the base cover. Attach the Console to the Pedestal using the mounting holes on the bottom of the Console.

3. When the Console is wall supported, secure the support to the wall and attach the Console to the support using the mounting holes on the bottom of the Console.

4. Leave a sufficient working area around the equipment until its final assembly.

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SECTION 3 CABLE CONNECTIONS

This section provides the information necessary to connect the Generator Cables with the system and options.

Note ☞ *For more information about electrical requirements and cable connections, refer to the "Pre-Installation" document and Section 5 "System Interconnections" at the end of this document.*

Note ☞ *Identification of some terminal connections (TB, TS), boards, etc... along with this document (text and schematics) may have a prefix number which indicates the module number in the equipment. (a.e. TS2 as 4TS2, 10TS2 or 11TS2).*

Some safety devices such as the Safety Switch / Emergency Switch, Warning Light, and Door Interlock Switch are supplied and installed by the customer. Verify that safety devices have been properly installed and routed during the Pre-Installation procedure.

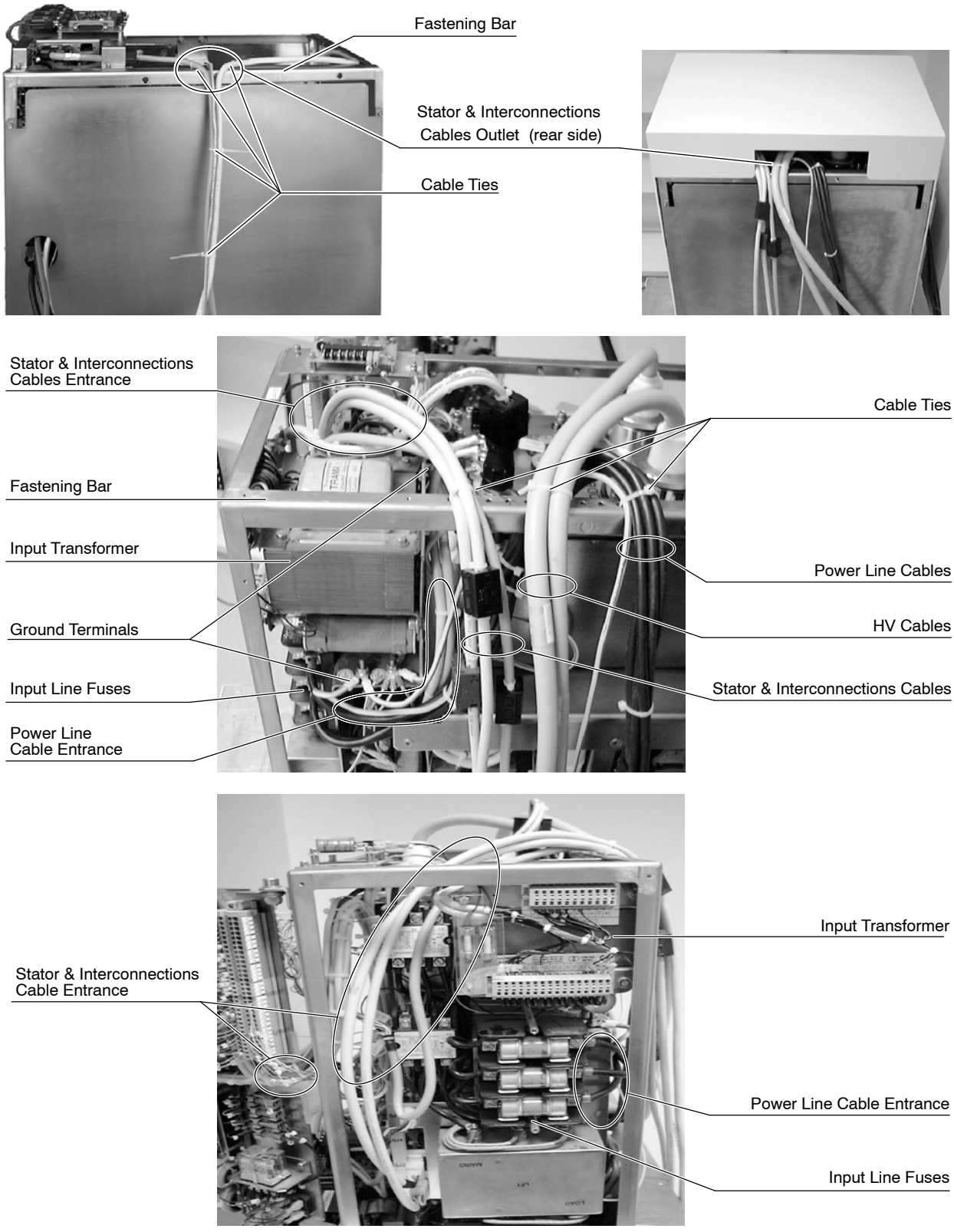
3.1 CABLE ROUTING INSIDE GENERATOR CABINET

3.1.1 GENERAL CABLE ROUTING

1. Before connecting the Interconnection cables within the Generator Cabinet, cables must be first connected to each Device (Tables, Buckys, etc.) and routed through the raceways. Remove the ferrite blocks of the cables (factory clamped) when it is required to carry out a correct routing, then re-install the ferrite blocks where they originally were around cables.

2. Inside the Generator Cabinet, all Interconnection cables must be routed over the Fastening Bar (upper rear bar) of the Cabinet Frame minding the upper Cable Outlet at the rear side of the Cabinet Cover. (*Refer to Illustration 3-1*).

Illustration 3-1
Cable Routing in Compact Generator

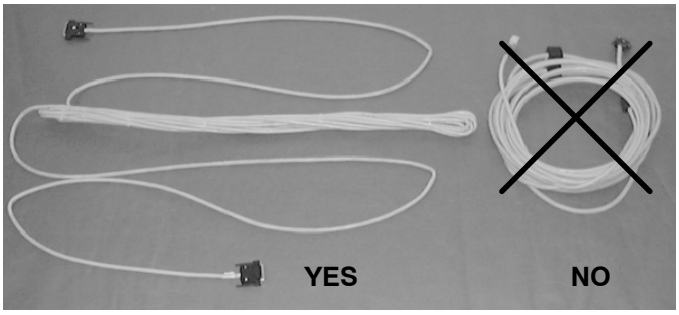


3. For Generators with a Low Speed Starter located behind the Front Panel (Module 4), Stator and Interconnections Cables have to be routed internally through the Cabinet close to the Input Transformer.

4. For Generators with the Low or High Speed Starter located on a shelf (Module 10 or 11), Stator and Interconnections Cables have to be routed internally through the Cabinet close to the HV Transformer.

CAUTION

In order to avoid signal interferences, it is strongly recommended to fold and fasten close to the Generator Cabinet the portion of cables not routed (see picture below). Never wrap in circles.



5. Connect all cables as indicated in Section 3 "*Cable Connections*".

6. Secure all cables to the Fastening Bar using cable ties after all cable / wire connections are complete.

3.1.2 LINE POWERED GENERATOR WITH OPTIONAL SUPPORTS

1. Before connecting the Interconnection cables within the Generator Cabinet, cables must be first connected to each Device (Tables, Buckys, etc.) and routed through the raceways. Remove the ferrite blocks of the cables (factory clamped) when it is required to carry out a correct routing, then re-install the ferrite blocks where they originally were around cables.

2. Cables can enter into the Generator through the Cable Outlet on the upper side of the Wall Support or through the Cable Outlet at the rear side of the Base Support (according to the raceway position in the room and Local Codes). The non used Cable Outlet has to be closed with the cover supplied. (*Refer to Illustration 3-2*).

3. Route each cable through the Base Support and take out each one to fold and fasten individually the remaining portion of cable that is not used for Generator connections. Then, route the other end of the cable through both Supports. (*Refer to Illustration 3-2*).

4. Inside the Generator Cabinet, all Interconnection cables must be routed over the Fastening Bar (upper rear bar) of the Cabinet Frame minding the upper Cable Outlet at the rear side of the Cabinet Cover. (*Refer to Illustration 3-1*).

5. For Generators with a Low Speed Starter located behind the Front Panel (Module 4), Stator and Interconnections Cables have to be routed internally through the Cabinet close to the Input Transformer.

6. For Generators with the Low or High Speed Starter located on a shelf (Module 10 or 11), Stator and Interconnections Cables have to be routed internally through the Cabinet close to the HV Transformer.

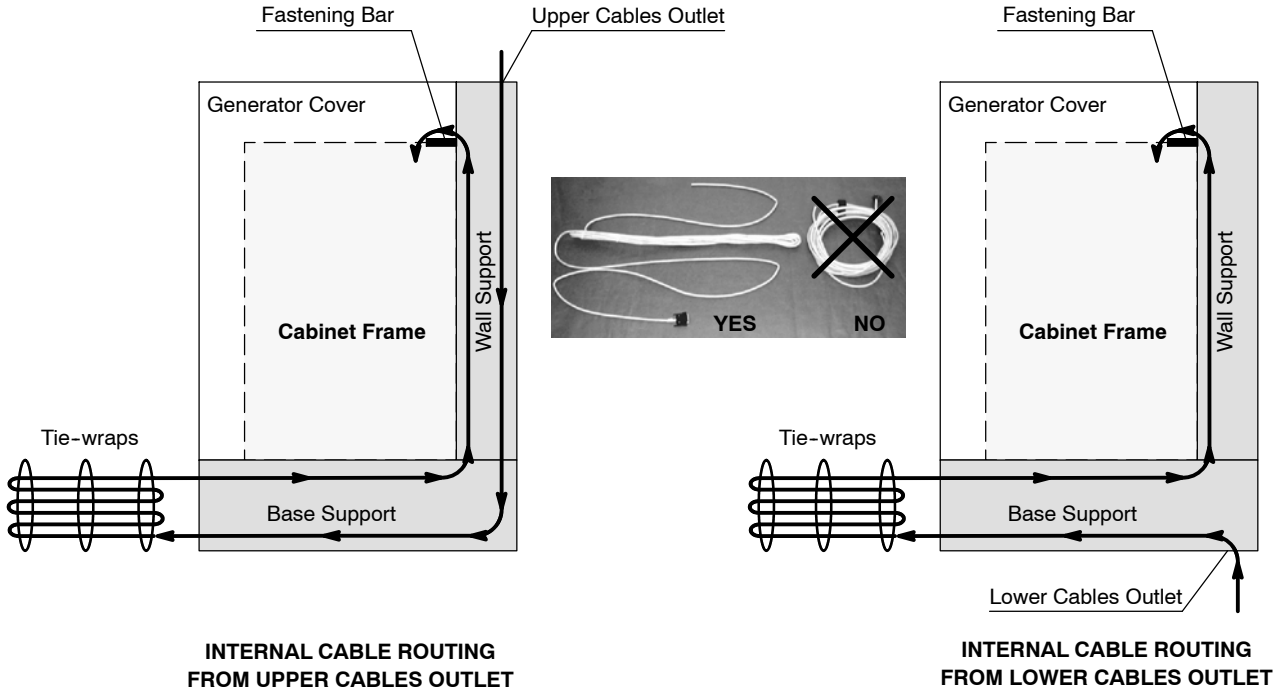
7. All the folded cables should be put into the Base Support. Install the Front Cover of the Base Support.

In order to avoid signal interferences, it is strongly recommended to fold and fasten the remaining portion of cables as indicated in Illustration 3-2, before putting them inside the Base Support. Never wrap them in circles.

8. Connect all cables as indicated in Section 3 "*Cable Connections*".

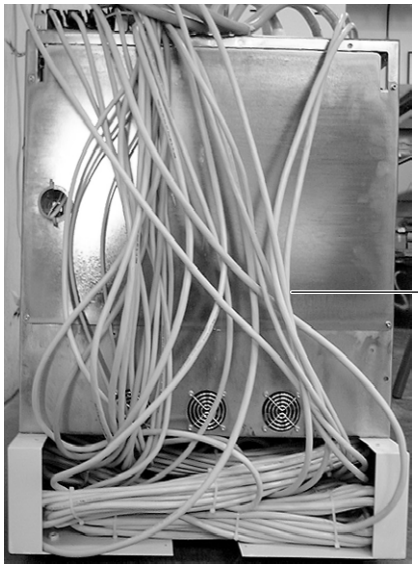
9. Secure all cables to the Fastening Bar using cable ties after all cable / wire connections are complete.

Illustration 3-2
Cable Routing and Outlets



INTERNAL CABLE ROUTING FROM UPPER CABLES OUTLET

INTERNAL CABLE ROUTING FROM LOWER CABLES OUTLET



Cables Entrance (upper side of Wall Support

Cables Routing from Cabinet to Base Support (rear view)

Cables Outlet (rear side of Cabinet Cover)

3.2 HIGH VOLTAGE CABLES CONNECTION

FOR GENERATORS WITH A HV TRANSFORMER WITH X-RAY TUBE RECEPTACLES (ANODE / CATHODE) FOR ONLY ONE X-RAY TUBE CONNECTION AND WHEN THIS TUBE IS BEING USED FOR "FLUOROSCOPY / SPOT FILM": CONNECTIONS OF THE FILAMENT LEADS "FIL-1 RTN" (J4-15) AND "FIL-2 RTN" (J4-16) ON THE INTERFACE CONTROL BOARD HAVE BEEN INVERTED, AND THE "HT INL" (J3-13) IS DISCONNECTED AND INSULATED IN THE CABINET. THESE CONNECTIONS ARE FACTORY SET. (REFER TO SCHEMATIC 543020XX).

FOR GENERATORS WITH A HV TRANSFORMER WITH DOUBLE X-RAY TUBE RECEPTACLES (ANODE / CATHODE TO CONNECT TWO TUBES) AND WHEN ONE OF THE X-RAY TUBES IS BEING USED FOR "FLUOROSCOPY / SPOT FILM", THIS TUBE MUST ALWAYS BE CONNECTED TO THE TUBE-2 RECEPTACLES.

FOR GENERATORS WITH A HV TRANSFORMER WITH DOUBLE X-RAY TUBE RECEPTACLES (ANODE / CATHODE TO CONNECT TWO TUBES): CONNECTIONS OF THE FILAMENT LEADS "FIL-1 RTN" (J4-15) AND "FIL-2 RTN" (J4-16) ON THE INTERFACE CONTROL BOARD HAVE BEEN INVERTED. THESE CONNECTIONS ARE FACTORY SET. (REFER TO SCHEMATIC 543020XX).

3.2.1 HIGH VOLTAGE CABLES

Connect the HV Cables in the HV Transformer (Generator).

These cables must enter into the Generator through the cable outlet on the upper side of the Cabinet and then attached to the fastening bar (upper rear bar) of the Cabinet frame minding the upper cable outlet at the rear side of the Cabinet cover.

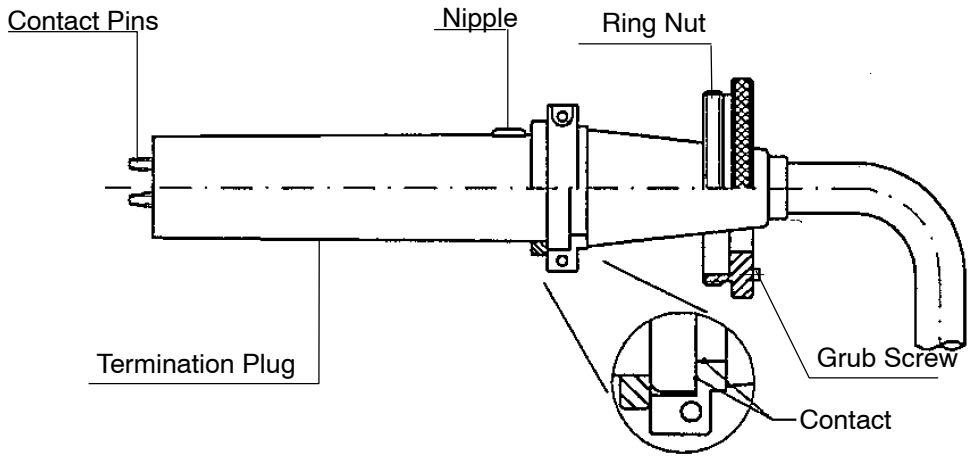
The Terminal Pins of the High Voltage cables are extremely delicate and easily damaged. Therefore they must be handled carefully. Make sure that they are straight and that the splits in the pins are open (parallel to sides).

Anode and Cathode cables are furnished according to the room layout (length of the cables).

1. The mounting accessories of each termination plug are factory assembled. For extended information refer to the HV Cable manufacturer's instructions located inside the HV Cable package.

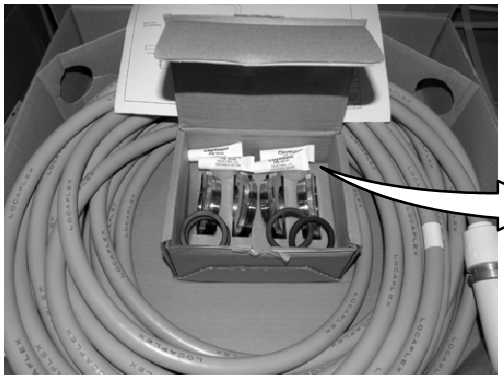
Do not install the Silicone washer supplied with the HV Cables.

2. Unscrew the grub screw of the ring nut. (Refer to the illustration below.)



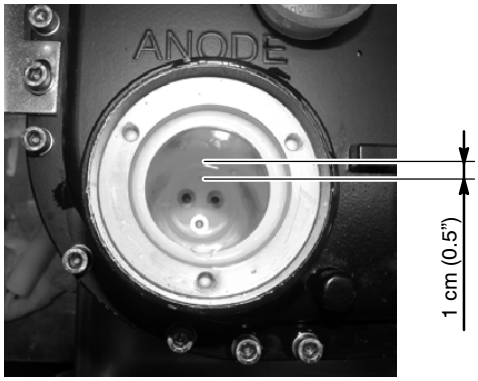
3. Prepare the High Voltage terminals that will be installed in the HV Transformer.

   - Put approximately 1 cm (0.5”) of HV Silicone Oil in the HV Transformer receptacles (included in the HV Cables package).



HV Cables Package

HV Silicone Oil



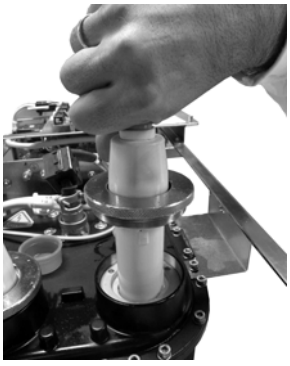
HV Transformer Receptacle

   - If HV Silicone Oil is not available, fill the receptacles using silicone paste provided with the X-ray Tube.

HV Silicone Paste

HV Cable Terminal with Silicone Paste

4. Carefully insert the Anode and Cathode termination plug into the respective receptacle socket (watch the nipple on the plug to ensure correct positioning of the contact pins).



5. Hand tighten the ring nut. It must be secure. Tighten the grub screw.

6. Prepare the High Voltage terminals that will be installed in the X-ray Tube(s) receptacles as previously described. Apply Silicone Paste over the entire surface of the Plug including the Pins.

7. Carefully connect the Anode and Cathode cables from the HV Transformer to the respective X-ray Tube(s) receptacles. Ensure that all connections aremade correctly, maintaining correct Anode and Cathode orientation.

8. Hand tighten the ring nut. It must be secure. Tighten the grub screw.

3.2.2 X-RAY TUBES WITH METALLIC INSERT ENVELOPE

In case of X-ray Tubes with a Metallic Insert Envelope, it is required to connect the wire from the Metallic Insert Envelope to the Black Banana Plug connection on the HV Transformer to obtain a correct mA measures. For these X-ray Tubes the part number of the HV Transformer has to be coded in revision A or higher (a.e. A6094–16A). (*Refer to Section 5.2 – Map 54302035).*

3.3 X-RAY TUBE CONNECTION

3.3.1 STATOR CABLE

X-ray Tubes are equipped with the Stator cable installed.

Note ☞ *For Generators with a "Single X-ray Tube for Fluoroscopy / Spot Film", connect the Stator wires as indicated for Tube-2, except for Generators with the Low Speed Starter LF-RAC located behind the Front Panel (module-4), in this case connect wires as Tube-1.*

A LV-DRAC (Low Voltage - Digital Rotatory Anode Controller) is required for High Speed X-ray Tubes. Connections between LV-DRAC and Power Module are factory made.

Route the Stator cable together with the HV cables to the Generator Cabinet. Connect the Stator cable terminals to the indicated Terminal Block TS2:

STATOR WIRES	TERMINAL TS2	
	TUBE-1	TUBE-2
MAIN	TS2-1	TS2-9
AUX (Shift)	TS2-2	TS2-10
COMMON	TS2-3	TS2-11

Note ☞ *Terminal Block TS2 may be marked as 4TS2, 10TS2 or 11TS2 depending on the Generator model.*

Note ☞ *For Philips or Siemens X-ray Tubes refer to Interconnection Maps I/F-021 or I/F-024.*

MAKE SURE THAT STATOR WIRES ARE PROPERLY CONNECTED. BEFORE MAKING ANY EXPOSURE, CHECK THAT THE ANODE ROTATES CORRECTLY.

IN GENERATORS EQUIPPED WITH LV-DRAC: THE LV-DRAC OUTPUT CAN BE AS HIGH AS 1000 VRMS. FOR SAFETY REASONS (TO AVOID ELECTRIC SHOCKS), THE STATOR CABLE MUST BE SHIELDED AND BOTH ENDS OF THE SHIELD MUST BE CONNECTED TO GROUND.

DUE TO ELECTROMAGNETIC INTERFERENCE (EMC) PROBLEMS, THE IGBT'S HEATSINK IS NOT GROUNDED. IT IS CONNECTED TO THE NEGATIVE TERMINAL OF THE INPUT RECTIFIER. TO AVOID ELECTRIC SHOCK, BE SURE THAT THE INPUT LINE IS DISCONNECTED AND THE CAPACITOR BANK IS PROPERLY DISCHARGED BEFORE MANIPULATING THE LV-DRAC.

FANS

Wires from fans should be routed with the Stator Cables, and connected to the indicated terminal of the Generator Cabinet. Depending on the model of X-ray Tube, the fans are powered at 115 VAC or 220 VAC. Make the following connections to select the fan voltage.

For Compact Generators (for only one LS Tube) with the Low Speed Starter LF-RAC located behind the Front Panel (module-4), connect wires from fans to:

0 VAC	115 VAC	220 VAC
3TS1-3 or 3TS1-10	3TS1-27	3TS1-26

For Compact Generators (for one or two LS Tubes) with the Low Speed Starter LF-RAC located on a shelf at the bottom of the Generator (module-10), connect wires from fans to:

TUBE CONNECTION	GENERATOR WITH LOW SPEED STARTER		
	WIRES FROM FANS	115 VAC	220 VAC
AS TUBE-1	10TS2-6 and 10TS2-7 on the Generator Cabinet	TB4-T1 with TB1-22 or TB1-23 on the LF-RAC Board	TB4-T1 with TB1-25 or TB1-26 on the LF-RAC Board
AS TUBE-2	10TS2-14 and 10TS2-15 on the Generator Cabinet	TB4-T2 with TB1-22 or TB1-23 on the LF-RAC Board	TB4-T2 with TB1-25 or TB1-26 on the LF-RAC Board

Note ☞ *For Generators with a "Single X-ray Tube for Fluoroscopy / Spot Film" connect the Fan wires as indicated for Tube-2.*

For Compact Generators (for one or two HS Tubes) with the High Speed Starter LV-DRAC located on a shelf at the bottom of the Generator (module-11), connect wires from fans to:

TUBE CONNECTION	GENERATOR WITH HV TRANSFORMER AND HIGH SPEED STARTER FOR ONLY ONE X-RAY TUBE		
	WIRES TO FANS	115 VAC	220 VAC
AS TUBE-1	11TS2-6 and 11TS2-7 on the LV-DRAC Module	Jump 11TS2-6 with 11TS2-17 on the LV-DRAC Module	Jump 11TS2-6 with 11TS2-18 on the LV-DRAC Module
AS TUBE-2	11TS2-14 and 11TS2-15 on the LV-DRAC Module	Jump 11TS2-14 with 11TS2-17 on the LV-DRAC Module	Jump 11TS2-14 with 11TS2-18 on the LV-DRAC Module

TUBE CONNECTION	GENERATOR WITH HV TRANSFORMER AND HIGH SPEED STARTER FOR TWO X-RAY TUBES		
	WIRES TO FANS	115 VAC	220 VAC
AS TUBE-1	11TS2-6 and 11TS2-7 on the LV-DRAC Module	wire marked "T1" with 11TS2-17 on the LV-DRAC Module	wire marked "T1" with 11TS2-18 on the LV-DRAC Module
AS TUBE-2	11TS2-14 and 11TS2-15 on the LV-DRAC Module	wire marked "T2" with 11TS2-17 on the LV-DRAC Module	wire marked "T2" with 11TS2-18 on the LV-DRAC Module

Note ☞ *For Generators with a "Single X-ray Tube for Fluoroscopy / Spot Film" connect the Fan wires as indicated for Tube-2.*

THERMOSTAT OR PRESSURE SWITCH SIGNAL

If the X-ray Tube is provided with a Safety Thermostat (approx. 65ºC) or Pressure Switch (must be NC Contact), the two wires should be routed to the Terminal Block TS2 in the Generator Cabinet and connected to the following Terminals.

In case that the X-ray Tube is provided with a Safety Thermostat (approx. 65ºC) and a Pressure Switch (both must be NC Contacts), connect them in series before routing, connecting both wire-ends to their respective Terminals in TS2.

THERMOSTAT WIRES	TUBE-1	TUBE-2
THERMOSTAT SIGNAL	TS2-4	TS2-12
THERMOSTAT COMMON	TS2-5	TS2-13

Note ☞ *Terminal Block TS2 may be marked as 4TS2, 10TS2 or 11TS2 depending on the Generator model.*

Note ☞ *For Generators with a "Single X-ray Tube for Fluoroscopy / Spot Film", connect the Stator wires as indicated for Tube-2, except for Generators with the Low Speed Starter LF-RAC located behind the Front Panel (module-4), in this case connect wires as Tube-1.*

If an X-ray Tube is not provided with Thermostat signal, jump both connections in the Terminal Block TS2 (*refer to above table).*

GND AND/OR SHIELD

The connection of the GND and/or Shield wire of the Stator cables depend on the Generator model.

GENERATOR MODEL		CONNECTION OF GND and/or SHIELD WIRE
Number of X-ray Tubes	**Starter type and Location**	
ONLY 1 Tube	LF-RAC (Low Speed) behind the Front Panel (Module 4)	4TS2-6
1 or 2 Tubes	LF-RAC (Low Speed) Lower Cabinet Shelf (Module 10)	10TS2-8 or 10TS2-16
1 or 2 Tubes	LV-DRAC (High Speed) Lower Cabinet Shelf (Module 11)	11TS2-8 (for Tube-1) 11TS2-16 (for Tube-2)

3.3.2 TUBE SELECTION SIGNALS

Note ☞ *This section only applies to Generators with two X-ray Tubes.*

The Tube Selection signals are available through two contacts free of voltage located on the starter.

	TUBE-1 SELECTION	TUBE-2 SELECTION	SELECTION COMMON
on the LF-RAC Board	J1-10	J1-11	J1-12
on the LV-DRAC Module	11KT1-84	11KT1-72	11KT1-83 and 11KT1-71 (connect both)

3.4 INTERCONNECTION CABLES

This section identifies the cables and runs needed for Generator and System Interconnection. Route and connect the interconnection cables from each component installed in the system to the Generator Cabinet as indicated in Illustration 3-3 and Section 5.2 – Interconnection Maps *"543010XX*".

Interconnection cables should not be routed into the same conduit or cable raceway as the Power or High Voltage cables.

Note ☞ *For Serial Generators (RS232 / RS422): Console CPUs are located inside the Generator Cabinet and Interconnections are factory made. Only one cable (serial communication) from J5 of the Generator Cabinet should be connected to the Serial Console, Control Box or PC Interface Box.*

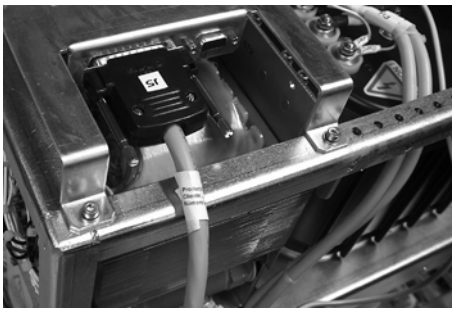
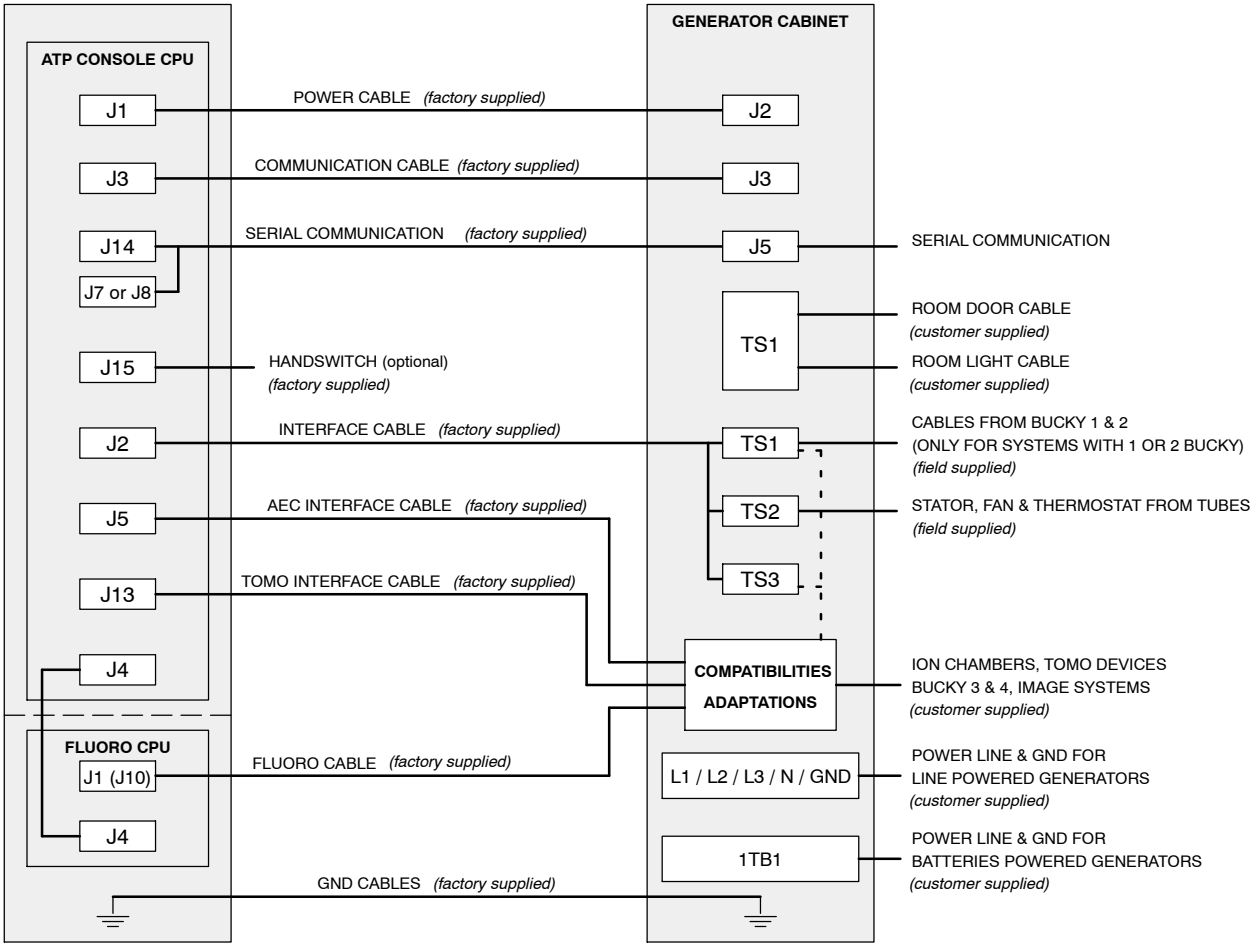


Illustration 3-3
Interconnection Cables



3.4.1 SERIAL INTERCONNECTION RS232 / RS422

SERIAL CONSOLE

For systems using a Serial Console, only a Serial Interconnection Cable (A7066-xx) from J5 of the Generator Cabinet must be connected to the J1 of the Serial Console. (*Refer to Section 5.2 - Maps 54301052, A6188-03).*

TOUCH SCREEN PC (TPC)

For systems using a TPC, perform the following connections:

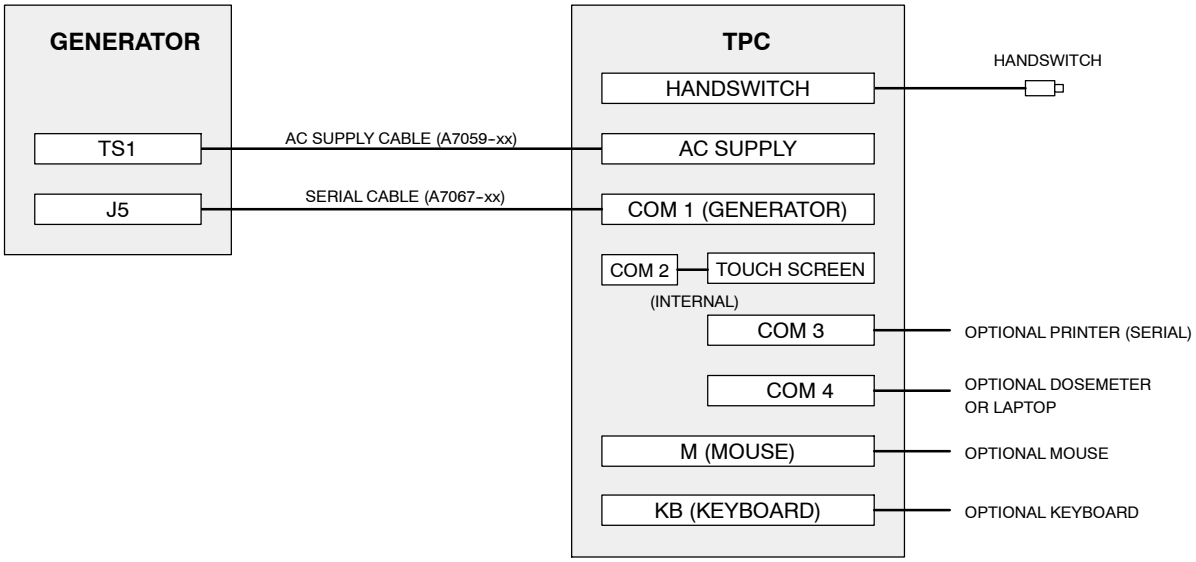
(*Refer to Section 5.2 - Maps 54301052, A6188-03).*

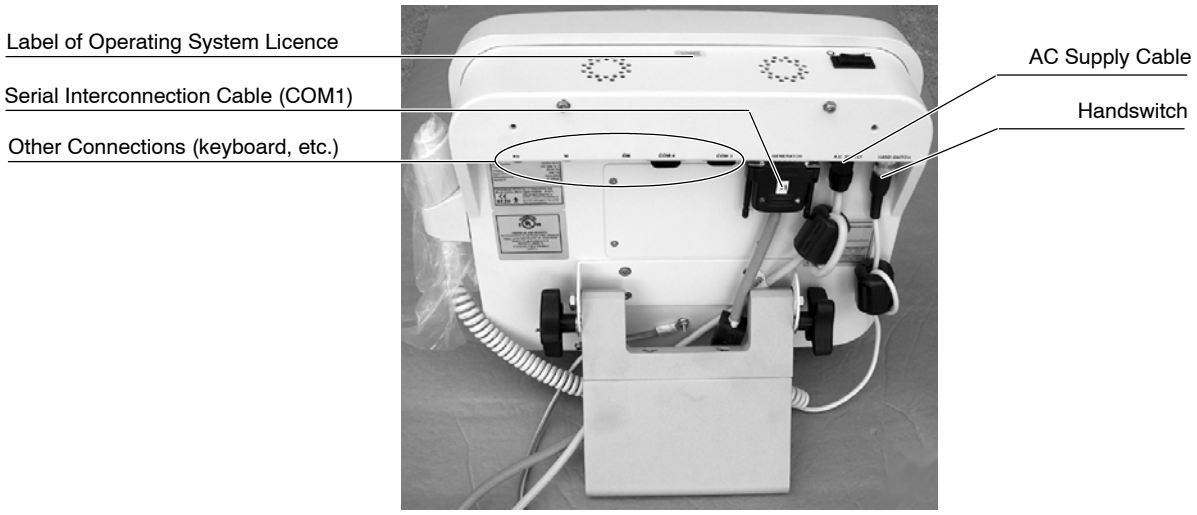
1. Connect the AC Supply Cable (A7059-xx) from "*AC Supply*" connector of the TPC to the respective terminals in TS1 of the Generator Cabinet.

2. Connect the Serial Interconnection Cable (A7067-xx) from "*COM1 (Generator)*" of the TPC to J5 of the Generator Cabinet.

3. Connect the Handswitch Cable to the Handswitch connector of the TPC.

4. The TPC includes extra connectors for optional connections of a Printer, Dosimeter, Laptop, Mouse or/and Keyboard. Connect them as indicated in the illustration below. In some cases, these communication ports are used to interface the TPC with an Imaging System (*refer also to "Configuration" document in the Service Manual*).





VIRTUAL CONSOLE (PC)

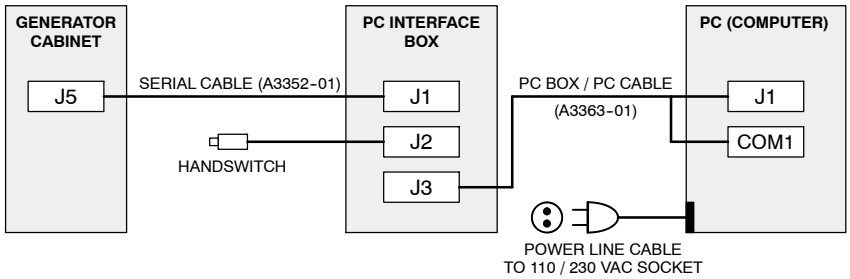
Systems using a Virtual Console running on a PC usually must have a PC Interface Box installed between the PC and Generator. (*Refer to Section 5.2 – Maps 54301052, A6188-03 and I/F-213).*

Perform the following connections:

1. Remove the Back Cover of the PC Interface Box.
2. Connect the Serial Interconnection Cable (A3352-01) from J5 of the Generator Cabinet to J1 of the PC Interface Box.
3. Connect the Handswitch Cable to J2 of the PC Interface Box.
4. Connect the Interface Box-Computer Cable (A3363-01) to J3 of the PC Interface Box and the other end (2 connectors) to COM1 (Communication) and J1 (Auto ON/OFF) of the Computer connectors.

Note ☞ *J1 connector is only available in Computers provided with Auto ON/OFF Board inside (factory installed).*

5. Re-install the Back Cover of the PC Interface Box.
6. Check to set proper Line Voltage on PC. Plug the Power Line cable for the Computer to a 110 VAC or 230 VAC socket.



3.4.2 COLLIMATOR ERROR SIGNAL (OPTIONAL)

This option must be requested on the customer order. For systems using an Automatic Collimator, the X-ray exposure can be inhibited due to a Collimator Error. This signal can be used only for one Automatic Collimator in the system, special interconnection should be required when two Collimators are present.

Connect two wires from the Collimator to Terminal Block 4TS3-20 (Collimator Error signal) and 3TS1-18 (or another GND in this Terminal Block). Collimator Error signal goes (through the Interface Cable) from 4TS3-20 in the Generator Cabinet to terminal J2-6 in Connector J2 of the ATP Console CPU Board. If the system is not provided with Automatic Collimator connect 4TS3-20 to GND (3TS1-18).

3.4.3 DOOR INTERLOCK SIGNAL

Connect two wires from the Room Door Interlock Switch(es) to Terminal Block 3TS1-22 (Door signal) and 3TS1-23 (Door Rtn - gnd). If the X-ray Room is not provided with a Door signal, place a jumper between both connections in Terminal Block 3TS1.

CAUTION

At this point, proceed to perform the complete Configuration and the Calibration procedures except for AEC, Fluoro and ABC procedures. Once Configuration and Calibration tasks have been performed, proceed with the rest of the Installation and Calibration tasks.

3.4.4 WARNING LIGHT SIGNAL

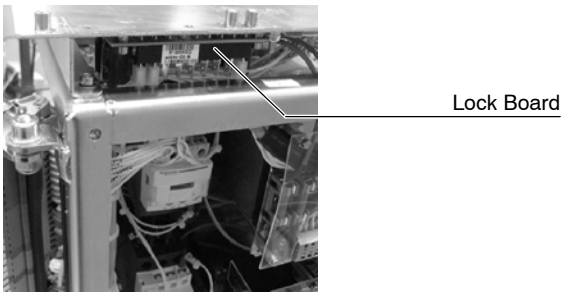
Room Warning Lamp(s) for "*X-ray ON*" indication can be externally powered, or internally by the Terminal Block 3TS1. Room Lamp(s) must be connected through the Terminal Block 3TS1-47 and 3TS1-48 (internal relay on Interface Control Board) to enable the Generator switches On/Off the Room Warning Lamps. (*Refer to Section 5.2 – I/F-008*).

3.4.5 COLLIMATOR LAMP AND SYSTEM LOCKS

The Generator can supply power to the Manual Collimator Lamp and System Locks (Table, Vertical Bucky, etc.)

Connect wires from the Collimator Lamp to Terminal Block TB7-3 (24 VAC) and TB7-4 (0 VAC) of the Lock Board.

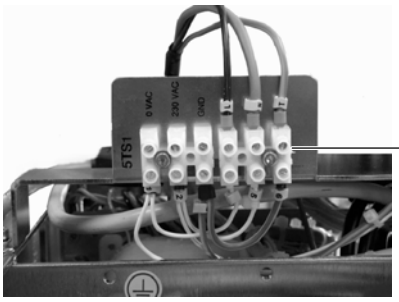
Connect wires from the Locks to Terminal Block TB7-5 (+24 VDC) and TB7-6 (0 VDC) of the Lock Board.



Note ☞ *When required, voltages (VAC and VDC) on TB7 can be changed by connecting their respective wires to the other available terminals on the Input Transformer 6T2. (Refer to Schematics 543020XX*).

3.4.6 230 VAC POWER SUPPLY FOR TWO EXTERNAL DEVICES (OPTIONAL)

Optionally the Generator can be provided with a Terminal Strip 5TS1 at the top of the cabinet in order to make easy the connection to supply 230 VAC for two external devices such as two Detector Power Supplies.



3.4.7 BUCKYS

Connect the Bucky as indicated in the Section 5.2 (*Interconnections Maps for Buckys*), and test them before connecting the Ion Chambers.

The following table represents the standard Bucky cable connections:

SYSTEM	CABLE FROM BUCKY IS CONNECTED TO
Systems with 1 or 2 Bucky	Terminal Block 3TS1 of the Generator Cabinet *(Refer to Section 5.2 - Bucky)*
Systems with 3 or 4 Bucky	Terminal Block TB2 of the optional "*Tomo / Bucky Adaptation Board*", located in the Generator Cabinet (*Refer to* "*Tomo / Bucky Adaptation Board*" and *Section 5.2 - Buckys).*
The Bucky of a RAD only Table with Tomo Device	Terminal Block TB1 of the optional "*Tomo / Bucky Adaptation Board*", located in the Generator Cabinet (*Refer to* "*Tomo / Bucky Adaptation Board*" and *Section 5.2 - Buckys).*

Note ☞ *Optional "Tomo / Bucky Adaptation Board" is required to install more than two Buckys in the System. (Refer to the "Tomo / Bucky Adaptation Board" and the Manual for the Bucky).*

If the "Bucky Start" signal enters the Bucky through a relay or another inductive device (a.e. a motor), it is mandatory to add the supplied R2-C2 close to each Bucky, so they have to be connected on the terminal output of the Bucky assembly. The R-Cs are attached to the Generator harness in a bag.

If "Bucky Start" signal enters the Bucky through an optocoupler, do not add the supplied R2-C2 for the Bucky.

Note ☞ *The operations described above will prevent noises and uncontrolled Bucky movements that can cause exposure cutting or console blocking.*

HOW TO INTERFACE NON STANDARD BUCKYS

Note ☞ *Perform this section only if the interconnections for the Bucky are not indicated in Section 5.2 (Interconnections Maps for Buckys).*

Connection of Bucky-1:

1. TS1-1 in the generator is to connect one of thewires to provide the power supply for the Bucky. In the Generator, TS1-1 is “free of voltage” (there is no wire connected) and therefore a jumper needs to be made to supply power for the Bucky: add a jumper between TS1-1 and TS1-26 for a voltage of 220-240 VAC or add a jumper between TS1-1 and TS1-27 for a voltage of 115 VAC.
2. TS1-3 is the return of this power supply (0 VAC).
3. TS1-2 is the voltage reference of the signal that will be sent to the Bucky to start. If the Bucky needs to send 0 VAC as “Bucky Start” (Bucky-1 Drive) make a jumper between TS1-2 and TS1-3, if the Bucky needs to send the power supply voltage as “Bucky Start” (Bucky-1 Drive) make a jumper between TS1-2 and TS1-26 or 27 as required.
4. TS1-4 is the connecting point of the “Bucky Start” signal for the Bucky (Bucky-1 Drive).
5. TS1-5 and TS1-6 is the signal to know if the Bucky is moving. TS1-6 is already connected to ground inside the Generator and provides this reference voltage to the contact inside the Bucky. TS1-5 is the “Bucky moving” signal (Bucky Motion) that is referenced to ground when the Bucky is ready for an exposure.

Connection of Bucky-2:

1. TS1-8 in the generator is to connect one of thewires to provide the power supply for the Bucky. In the Generator, TS1-8 is “free of voltage” (there is no wire connected) and therefore a jumper needs to be made to supply power for the Bucky: add a jumper between TS1-8 and TS1-26 for a voltage of 220-240 VAC or add a jumper between TS1-8 and TS1-27 for a voltage of 115 VAC.
2. TS1-10 is the return of this power supply (0 VAC).
3. TS1-9 is the voltage reference of the signal that will be sent to the Bucky to start. If the Bucky needs to send 0 VAC as “Bucky Start” (Bucky-2 Drive) make a jumper between TS1-9 and TS1-10, if the Bucky needs to send the power supply voltage as “Bucky Start” (Bucky-2 Drive) make a jumper between TS1-9 and TS1-26 or 27 as required.
4. TS1-11 is the connecting point of the “Bucky Start” signal for the Bucky (Bucky-1 Drive).
5. TS1-12 and TS1-13 is the signal to know if the Bucky is moving. TS1-13 is already connected to ground in the Generator and provides this reference voltage to the contact inside the Bucky. TS1-12 is the “Bucky moving” signal (Bucky Motion) that is referenced to ground when the Bucky is ready for an exposure.

3.4.8 TOMO DEVICE

RAD Only Table

The Tomo cable (A3083-01) from connector J13 of the "*ATP Console CPU Board*" has to be connected to the Terminal Blocks TB1 and TB2 of the optional "*Tomo / Bucky Adaptation Board*", located in the Generator Cabinet.

The cables from the Tomo Device are also connected to the Terminal Blocks TB1 and TB2 of the optional "*Tomo / Bucky Adaptation Board*". Refer to the "*Tomo / Bucky Adaptation Board*" for more detailed information and interface. (*Refer also to the Manuals of the Tomo Device).*

Note ☞ *RAD only Table requires the optional "Tomo / Bucky Adaptation Board".*

RF Table

The Tomo cable (A6742-01) from connector J13 of the "*ATP Console CPU Board*" has to be connected to the "*RF Adaptation Board*".

Some RF Tables with Tomo send Tomo Time information (binary code) to the Generator. Each Table has a specific codification of this binary code. In order to ensure proper functioning, the Table type has to be specified for interfacing it with the Generator.

3.4.9 ION CHAMBERS (OPTIONAL)

The "*AEC Control Board*" (A3012-XX) must be installed on the ATP Console CPU Board before installing the Ion Chamber(s). The optional "*AEC Adaptation Board*" (A3263-03) is also required except for Systems with **only one** AID or Vacutec Ion Chamber type. (*Refer to the "Ion Chamber" Service Manuals*).

Systems with only one AID or Vacutec Ion Chamber type:

Connect the Ion Chamber cable to the Terminal Block 3TS1 of the Generator Cabinet and Connector J5 of the ATP Console CPU Board, as indicated in *Section 5.2 - AEC / Ion Chambers.*

Systems that require the optional "AEC Adaptation Board":

For Systems with more than one Vacutec, AID or similar (Comet) Ion Chamber type, or with another type of Ion Chamber (even if it is only one), perform the following tasks in the order described:

Note ☞ *The Generator is only compatible with Ion Chambers that output a positive ramp.*

1. If an Ion Chamber requires High Voltage (200 to 500 VDC), the Generator must include an Interface Control Board (version A3009-09/12) that supplies this voltage.

   The Interface Control Board must have Jumpers from W3 to W8 in "A" position. This High Voltage is supplied through Terminal Block 3TS1-39 "*PT SPLY*" of the Generator Cabinet and sent with a wire to TB1-9 of the "*AEC Adaptation Board*".

ION CHAMBERS WITH HIGH VOLTAGE			
GE	**BVM-CGR**	**PHILIPS AMPLIMAT**	
		AMP-Phenolic Connector	**DB 15 Connector**
300 VDC	230 VDC	500 VDC	400 VDC
Notes: - If the System included both GE and BVM-CGR Ion Chambers, Terminal TB1-9 must supply 270 VDC. *- Philips Amplimat Ion Chambers can not be installed with GE or BVM-CGR Ion Chambers.*			

DO NOT CONNECT ANY ION CHAMBER TO THE GENERATOR CABINET UNTIL HIGH VOLTAGE IS EITHER VERIFIED OR ADJUSTED TO THE VALUES REQUIRED. OTHER VOLTAGE COULD DAMAGE THE ION CHAMBERS.

Turn the Generator ON and verify voltage in TB1-9 according to the Ion Chambers to be installed. If necessary, adjust the High Voltage at Potentiometer R20 of the Interface Control Board. Turn the Generator OFF after adjustment.

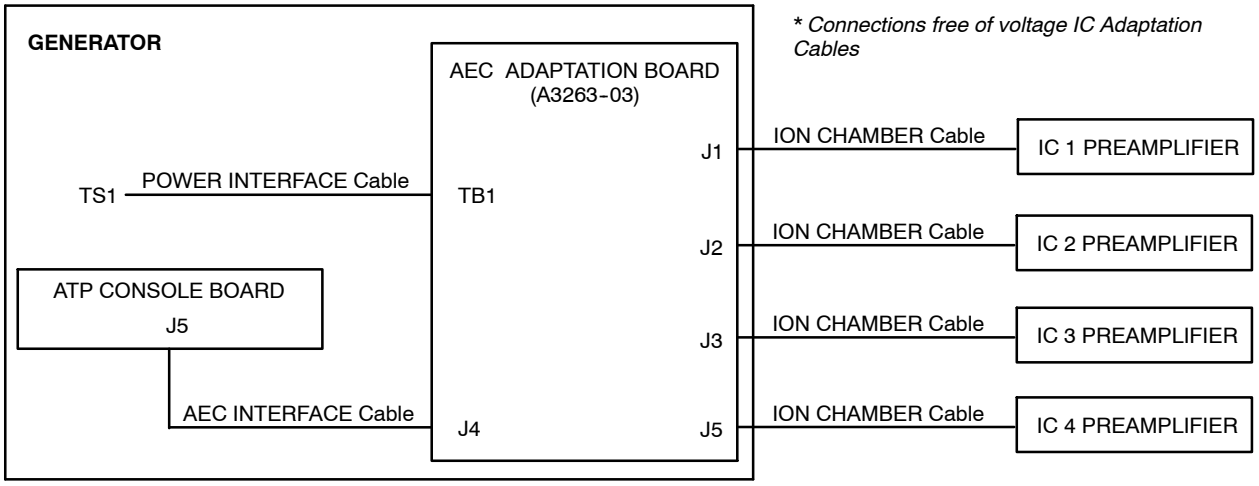
2. Connect each Ion Chamber cable to J1 (IC1), J2 (IC2), J3 (IC3) or J5 (IC4) of the "*AEC Adaptation Board*". The code for the Ion Chamber cable supplied by the Generator manufacturer is A3253-01.

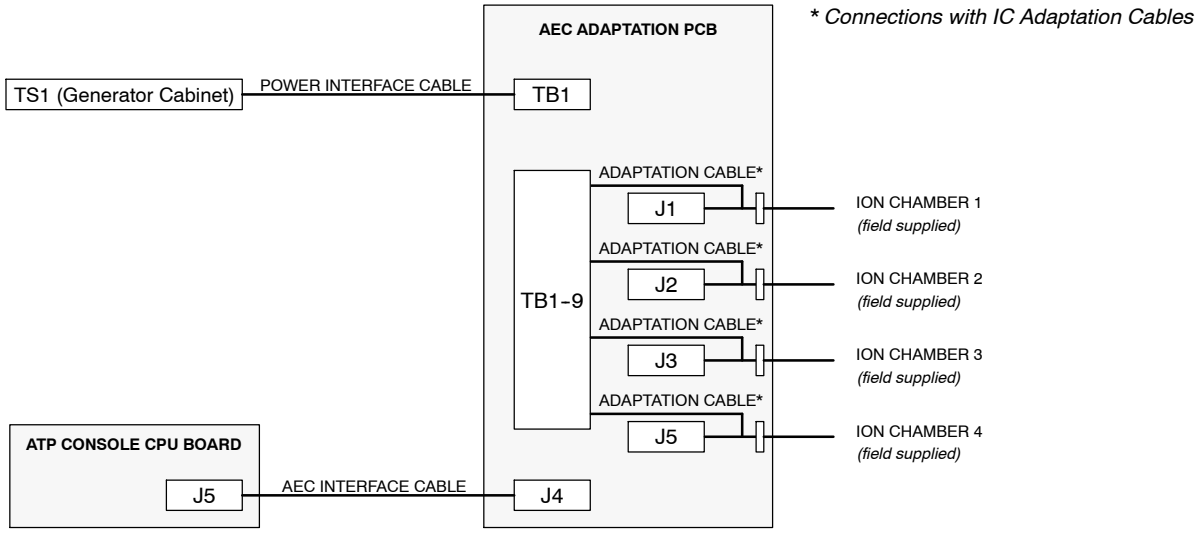
Note ☞ *Same Ion Chamber types have to be installed in consecutive order starting at J1 (IC1). In the case of using four Ion Chambers, IC3 and IC4 must have the same film/cassette combination.*

Note ☞ *The Vacutec, AID or similar Ion Chamber type is directly connected to the "AEC Adaptation Board". For Comet Ion Chambers, cable connection has to be made previously through the Comet Preamplifier PA-021 and then directly to the "AEC Adaptation Board".*

For other cases, a cable adapter is required. The Generator manufacturer has the following cable adapters available: GE (A3082-01), CGR-BVM (A3081-01), Philips Amplimat (A3080-01/02 with DB-15 or A6727-01/02 with Phenolic connector) and MEDYS (A6715-01).

Illustration 3-4
Four Ion Chamber Connection





3. Configure Jumpers from JP1 to JP8 and from JP13 to JP16 according to the group of Ion Chamber type:

ION CHAMBER TYPE	JUMPERS POSITION		
	JP3, JP4, JP7, JP8	JP1, JP2, JP5, JP6	JP13, JP14, JP15, JP16
IC1 = IC2 = IC3 = IC4	B	B	B
IC1 = IC2 = IC3	B	B	A
IC1 = IC2	B	A	A
IC1 ≠ IC2 ≠ IC3 ≠ IC4	A	A	A

4. Each type of Ion Chamber requires a specified reference voltage for "*Area Selections*" and "*AEC Reset*" signals:

   - Vacutec, Claymount, AID and Comet Ion Chambers require GND (TB1-10).
   - MEDYS, CGR-BVM, GE and Philips Amplimat Ion Chambers require +24 VDC (TB1-4).

   The reference voltage is provided from: TB1-7 "*Relay 1*" for IC1; TB1-6 "*Relay 2*" for IC2; TB1-5 "*Relay 3*" for IC3; and TB1-8 "*Relay 4*" for IC4.

   For each group of Ion Chambers of the same type, connect a wire between each of the above mentioned terminals to TB1-10 (GND), TB1-4 (+24 VDC) or TB1-3 (+12 VDC) depending on the voltage required (*examples: for four MEDYS Ion Chambers add only a wire-jumper between TB1-7 and TB1-4; or for one MEDYS Ion Chamber as IC-1 and one COMET Ion Chamber as IC-2 add a wire-jumper between TB1-7 and TB1-4, and another wire between TB1-6 and TB1-10*).

DO NOT TURN ON THE GENERATOR UNTIL THE INPUT SIGNALS OF ALL THE ION CHAMBERS ARE CONNECTED TO THE REQUIRED VOLTAGE. OTHER VOLTAGE MIGHT DAMAGE THE ION CHAMBERS.

5. Ion Chambers output must be 0 VDC when there is no-radiation (No-Offset adjustment). If an Ion Chamber output has an offset, it must be adjusted to 0 VDC with the respective Potentiometer.

   Configure Jumpers from JP9 to JP12 and turn ON the Generator only to adjust the following Potentiometers (if needed) according to the Ion Chamber output:

ION CHAMBER OUTPUT	JUMPERS POSITION			
	JP9 (IC1)	JP10 (IC2)	JP11 (IC3)	JP12 (IC4)
NO-OFFSET ADJUSTMENT	A	A	A	A
OFFSET ADJUSTMENT	B	B	B	B
TEST POINT AND POTENTIOMETER (ONLY IF JUMPER IS IN "B" POSITION)	TP1 - R11	TP2 - R8	TP4 - R2	TP12 - R5

6. Turn OFF the Generator and connect the AEC Interface cable (A3251-01) between Connector J5 of the ATP Console CPU Board and Connector J4 of the "*AEC Adaptation Board*".

3.4.10 PHOTOMULTIPLIER (OPTIONAL)

Connect the optional Photomultiplier as indicated in the schematic "*Section 5.2 - Photomultiplier (IF-011) and RF System (IM-300)".*

Note ☞

"*AEC Control Board*" version A3012-06/07/09 is factory installed when the Photomultiplier option is ordered. It can be used for AEC with up to four Ion Chambers, AEC controlled by the Photomultiplier, and ABC performed with the Photomultiplier or the TV Camera.

The Photomultiplier requires negative High Voltage controlled by the Generator. The "*Interface Control Board*" (version A3009-09 or A3009-12) in the Generator Cabinet supplies this type of voltage. Check on this board that Jumpers from W3 to W8 are in "B" position. High Voltage is supplied through Terminal Block 3TS1-39 "*PT SPLY*" and 3TS1-42 "*IC GND*" of the Generator Cabinet.

CAUTION

The High Voltage Power Supply of the Generator can be used to provide either Positive High Voltage to the Ion Chambers or Negative High Voltage to the Photomultiplier, not both. Never connect the Photomultiplier if the Jumpers W3 to W8 in the "Interface Control Board" are in "A" position (positive voltage).

In order to have the Photomultiplier working with AEC, it has to be externally selected by using the "-PT SEL (-SFC)" signal in terminal 4TS3-7 of the Generator Cabinet.

If the System always uses the Photomultiplier for AEC, connect a wire between 4TS3-7 and GND (from 3TS1) in the Generator Cabinet.

If the System is provided with a Photomultiplier Selection signal, use one of the Spare signals in the "*RF Adaptation Board*" (*refer to Section 3.4.13).*

3.4.11 RAD & FLUORO TABLE (SPOT FILM DEVICE)

The "*RF Adaptation Board*" is installed in all Conventional RF Generators. It provides circuitry to induce compatibility between numerous Rad and Fluoro Tables with the Generator. Connections between the "*RF Adaptation Board*" and the Generator are factory performed.

The Fluoro cable (A3267-01) from connector J1 of the "*Fluoro CPU Board*" must be connected to J1 of the "*RF Adaptation Board*".

INTERFACE OF RF SYSTEMS

The Generator can be interfaced with the main RF Systems. Additional Interface Schematics can be provided with this Service Manual whenever the RF System is indicated in the Generator order. Perform all the connections and set all the jumpers according to the respective interface as detailed in each Schematic.

If Interface Schematics are not available, refer to the Manuals of the Table and/or Spot Film Device for the interface signals required as well as the schematics in *Section 5.2 - RF System*. Perform connections as described in the points below:

- The "*PREP*", "*FLUORO*" and "*RAD EXPOSURE*" orders from the Table to the "*RF Adaptation Board*" are adapted to give the "*-SF PREP*", "*-FT SW CMD*" and "*-FL EXP* (*RAD EXPOSURE)*" signals of the Generator. Each one has three jumpers for its configuration according to the type of voltage given by the Table. They share the same Return to the Table.

  Insert or remove the following Jumpers on the "*RF Adaptation Board*" according to the type of signals given from the Table for PREP, RAD EXPOSURE and FLUORO.

TABLE SIGNAL TYPE	CONNECTION ON RF ADAPTATION BOARD
FREE OF VOLTAGE (DRY CONTACT)	INSERT Jumpers: JP1, JP2, JP3, JP4, JP8, JP9, JP10, JP12, JP13 and JP14.
24 VDC	INSERT Jumpers: JP1, JP3, JP4, JP8, JP9, JP10, JP12, JP13 and JP14.
	REMOVE Jumper: JP2
230 VAC	REMOVE Jumpers: JP1, JP2, JP3, JP4, JP8, JP9, JP10, JP12, JP13 and JP14.
115 VAC	INSERT Jumpers: JP1, JP8 and JP12.
	REMOVE Jumper: JP2, JP3, JP4, JP9, JP10, JP13 and JP14.

- The "*READY*" output of the Generator is sent through a N.O. (Normally Open) contact as "*GEN READY*" to the Table to inform that the Generator is ready for a RAD Exposure.
- The "*ALOE*" output of the Generator is sent through a N.O. contact to the Table as "*EXPOSURE ON"* to acknowledge the RAD exposure, or as "*EXPOSURE END"* to advance the film to the next position. Set Jumper JP17 in position A for "*EXPOSURE ON"* or in position B for "*EXPOSURE END*" (50 ms pulse at the end of the RAD exposure). Any of these signals can also be configured for "*NO FLUORO ACKNOWLEDGE"* by setting Jumper JP16 in position A or for "*FLUORO ACKNOWLEDGE*" by setting Jumper JP16 in position B.
- "*GEN READY*" and "*EXPOSURE ON / EXPOSURE END*" share the same return to the Table which is common for both N.O. contacts.

TABLE SIGNALS	CONNECTION ON RF ADAPTATION BOARD
PREP order	TB4-2
RAD EXPOSURE order	TB4-3
FLUORO order	TB4-4
RETURN of PREP, RAD EXPOSURE and FLUORO	TB4-20 *GND* (Jumper JP2 is inserted – *free of voltage*) or TB4-1 (Jumper JP2 is removed)
GENERATOR READY	TB4-9
EXPOSURE ON / EXPOSURE END	TB4-7
NO FLUORO ACKNOWLEDGE / FLUORO ACKNOWLEDGE	
COMMON of GENERATOR READY and EXPOSURE ON / END	TB4-8

- An independent "*FLUORO FOOT SWITCH*" can be connected directly to TB1-1 and TB1-2 of the "*RF Adaptation Board*" .

SELECTION OF TABLE OPERATION MODE FROM THE GENERATOR (OPTIONAL)

Some RF Tables (Prestige, Prestilix, Televix, Telegem, etc) need a selection of Table Operation Mode from the Generator.

A binary code from the Generator (WS1 and WS2) is sent to the "*RF Adaptation Board*". It is decoded and sent to the Table through N.O. contacts as "*SFD SELECT*", "*DIRECT SELECT*", "*DIGITAL SELECT (DSI)*" and "*SPECIAL SELECT*" to select the operating mode. These signals share the same return to the Table which is common for all the N.O. contacts.

Connect the wire marked "*Tomo*" (WS2) of the "*Tomo Cable*" (A6742-xx) to TB3-5 of the "*RF Adaptation Board*".

Connect the wires from the Table as indicated below:

WIRE FROM TABLE SIGNAL	CONNECTION ON RF ADAPTATION BOARD
SFD SELECT	TB4-5
DIRECT SELECT	TB1-7
DIGITAL SELECT (DSI)	TB1-6
SPECIAL SELECT	TB1-8
SEL RETURN (common)	TB4-6

3.4.12 IMAGE SYSTEM

The "*RF Adaptation Board*" is the interface of the Generator with an Image System and, if needed, with the Image Intensifier. (*Refer to schematics in Section 5.2 - RF System).*

FLUORO PULSES SYNCHRONISM

Fluoro pulses must be synchronized with the Vertical Synchronism of the TV Camera. Connect the signals according to the following situations:

- If the Imaging System provides a Digital output signal for Vertical Synchronism, connect it as "EXP SYNC+" to J2-4, its return as "EXP SYNC–" to J2-9, and set Jumper JP19 in C position, on the "*RF Adaptation Board*".
- If the Imaging System does not provide the Vertical Synchronism signal, connect the Video Cables as indicated below:

VIDEO CABLES OF IMAGING SYSTEM	CONNECTION ON RF ADAPTATION BOARD	
FROM IMAGING SYSTEM CONTROL	VID IN (BNC)	
TO TV MONITOR	VID OUT (BNC)	
-	Jumper JP19 in B position	
-	Jumper JP23 to connect or to isolate the shield of the Video Cable (BNC) to Generator GND	Inserted = Connected
		Removed = Isolated

Note ☞ *Some TV Monitors provide a Video output connector (BNC). In this case, to avoid noises on the Image, connect directly:*
- *The Video signal from the Imaging System to the Monitor*
- *The Video output of the TV Monitor to the VID IN of the "RF Adaptation Board".*
- *Set Jumper JP19 in B position.*

ABC INTERFACE

Connect the signals according to the following situations:

- If the Imaging System provides an ABC output signal proportional to the brightness, connect the “ABC SIGNAL” to TB2-12, its return as “GND” to TB2-14, set Jumper JP21 in B position and remove Jumper JP22, on the “*RF Adaptation Board*”.
- If the Imaging System does not provide an ABC output signal proportional to the brightness, connect Video Cables as indicated below:

VIDEO CABLES OF TV SYSTEM	CONNECTION ON RF ADAPTATION BOARD	
FROM IMAGING SYSTEM CONTROL	VID IN (BNC)	
TO TV MONITOR	VID OUT (BNC)	
-	Jumpers JP20 and JP21 in A position	
-	Insert Jumper JP22	
-	Jumper JP23 to connect or to isolate the shield of the Video Cable (BNC) to Generator GND	Inserted = Connected
		Removed = Isolated

According to the type of “*AEC Control Board*” (A3012-xx) installed, check that the ABC output signal is correctly routed between J3-9 on the “*RF Adaptation Board*” and the terminal in the Generator Cabinet indicated in the table below (*for more details, refer to Section 5.2 - RF System (IM-300)”.*

RF ADAPTATION BOARD	with AEC Control Board A3012-02	with AEC Control Board A3012-06/07
J3-9 (ABC OUT)	3TS1-51 (PT INPUT)	4TS3-18 (ABC OUT)

INTERFACE OF RF SYSTEMS

Additional Interface Schematics can be provided with this Service Manual whenever the RF System is indicated in the Generator order. Perform all the connections and set all the jumpers according to the respective interface as detailed in each Schematic.

If Interface Schematics are not available, refer to the Manuals of the Image System and Image Intensifier for the interface signals required as well as to schematics in *Section 5.2 - RF System*. Perform the connections as indicated in the following points.

Imaging System Interface

The “VIDEO UNBLANK” output is activated with RAD preparation (PREP ACTIVE), the full Image Blanking on the TV Monitor is obtained. This prevents a flash on the TV Monitor during radiographic exposures. The following connection is provided through a “dry contact” (free of voltage):

SIGNALS TO IMAGING SYSTEM	CONNECTION ON RF ADAPTATION BOARD
VIDEO UNBLANK	TB2-10
VIDEO UNBLANK RETURN	TB2-11

The “LAST IMAGE HOLD (LIH)” output is activated at the same time that the X-rays are switched-off (Fluoro not active). The last full image is maintained on the TV Monitor until the X-rays are switched-on again. Set Jumpers JP11 and JP15 in B position for “LIH” function. The following connection is provided through a “dry contact” (free of voltage):

SIGNALS TO IMAGING SYSTEM	CONNECTION ON RF ADAPTATION BOARD
LAST IMAGE HOLD (LIH)	TB2-8
LAST IMAGE HOLD RETURN (LIH RTN)	TB2-9

It is recommended to connect the 24 VDC from the Imaging System to TB2-13 “LIH ENABLE” on the “*RF Adaptation Board*”.

Pulsed Fluoro at variable rate (a.e. from 30 PPS to 1 PPS) needs an interface from the Generator to the Imaging System in order to freeze or capture a new image. This interface is achieved with the connections indicated in the table below, with each signal passing through the Open Collectors and Emitters to Ground of the corresponding transistor.

SIGNALS FROM GENERATOR	CONNECTION ON RF ADAPTATION BOARD		IMAGING SYSTEM
	INPUT	OUTPUT	
MEMORY ENABLE	J1-13	J2-8	VID MEM ENABLE -
-	24 VDC	J2-3	VID MEM ENABLE +
MEMORY GATE	J1-14	J2-7	MAINGATE -
-	24 VDC	J2-2	MAINGATE +

Image Intensifier Field Selection (Zoom)

Normally, the Image Intensifier Field Selections are connected directly from the Table to the Image Intensifier. If the outputs from the Table are not compatible with the inputs on the Image Intensifier, adapt these selections on the "*RF Adaptation Board*" as indicated below:

SELECTIONS FROM TABLE	CONNECTION ON RF ADAPTATION BOARD		IMAGE INTENSIFIER
	INPUT	OUTPUT	
I.I. MINIMUM	TB4-11	TB2-1	ZOOM 1
I.I. MEDIUM	TB4-12	TB2-2	ZOOM 2
I.I. MAXIMUM	TB4-13	TB2-3	ZOOM 3
-	TB4-20 (Generator GND)	TB2-4	ZOOM COMMON
Set Jumpers JP5, JP6 and JP7 in B position			

The Selections from the Table have to send Ground (from the Generator) when they are activated. The outputs to the Image Intensifier (ZOOM 1, 2, 3) are sent as "dry contacts" (free of voltage). The Common is sent as "ZOOM COMMON".

TV MONITOR IMAGE REVERSE SELECTION

Image Reversal Selections are normally connected directly from the Table to the Imaging System. If the outputs from the Table are not compatible with the inputs on the Imaging System, adapt these selections on the "*RF Adaptation Board*" as indicated below:

SELECTIONS FROM TABLE	CONNECTION ON RF ADAPTATION BOARD		IMAGING SYSTEM
	INPUT	OUTPUT	
HORZ REVERSE	TB4-14	TB2-6	H REV
VERT REVERSE	TB4-15	TB2-7	V REV
-	TB4-20 (Generator GND)	TB2-5	REV COMMON

The Selections from the Table have to send Ground (from the Generator) when they are activated. The outputs to the Image Intensifier (H REV and V REV) are sent as "dry contacts" (free of voltage). The Common is sent as "REV COMMON".

3.4.13 SPARE SIGNALS ON RF ADAPTATION BOARD

Note ☞ *If the RF System has been interfaced using Additional Interface Schematics, some Spare signals may have already been used.*

Spare Signals for direct connections:

SIGNAL NAME	CONNECTIONS ON RF ADAPTATION BOARD	
SPARE 1	J3-12	TB3-1
SPARE 2	J3-13	TB3-2
SPARE 3	J3-14	TB3-3
SPARE 4	J3-15	TB3-4
SPARE 5	J3-10	TB2-16

Spare Signals through Optocouplers, all inputs have to be 24 VDC:

CONNECTIONS ON RF ADAPTATION BOARD			
INPUT		OUTPUT	
IN 1	TB4-16	OUT 1	TB2-17
IN 2	TB4-17	OUT 2	TB2-18
IN 3	TB4-18	OUT 3	TB2-19
IN 4	TB4-19	OUT 4	TB2-20
IN COMMON	TB4-10	GND	TB2-14

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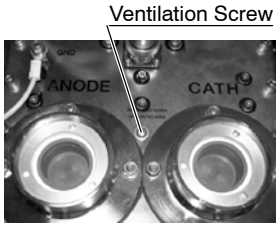
SECTION 4 FINAL INSTALLATION AND CHECKS

4.1 HV TRANSFORMER

CAUTION

This point does not apply to the hermetic HV Transformers (black aluminium HV Transformers).



The HV Transformer contains “Shell Diala AX” oil. Check that there is no oil leakage. If leakage is found, remove the oil fill plug from the top of the HV Transformer and verify that the oil level is within 20 mm (3/4”) from the top of the HV Transformer. Add “Shell Diala AX” oil if necessary.

Unscrew the Ventilation Screw from the top of the HV Transformer.

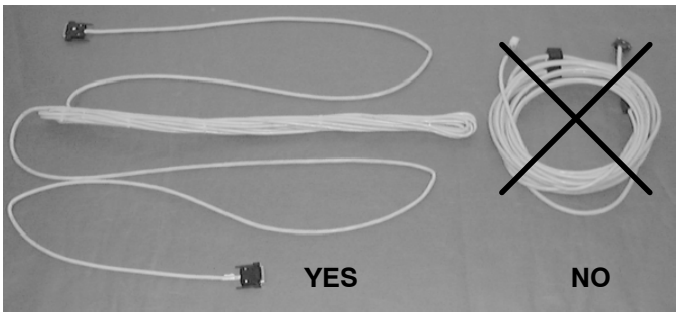
4.2 CABLE FASTENING AND COVERS

Note ☞ *Before re-installing cabinet covers, perform the rest of the required Calibration procedures (i.e. AEC, Fluoro, ABC).*

Check that all electrical connections are firm and secure. Cables should be correctly routed. *(Refer to Section 3.1)*

CAUTION

In order to avoid signal interferences, it is strongly recommended to fold and fasten close to the Generator Cabinet the portion of cables not routed (see picture below). Never wrap in circles.



Re-install the Cabinet covers and connect its internal ground wires. Power line, High Voltage and Interconnections cables must go through the cover cable outlet.

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SECTION 5 SYSTEM INTERCONNECTIONS

5.1 SYSTEM INTERCONNECTION SIGNALS

All input signals are active low. This means the inputs must be pulled to ground (chassis ground of the Generator) thru relay contacts, by a transistor or other switching device. The current requirement of the switch is less than 10 mA.

Do not apply 115 / 220 VAC logic signals to any of the logic inputs. If 115 / 220 VAC logic signals are used in the X-ray table (i.e. fluoro command), these signals must be converted to a contact closure by a relay.

The outputs signals from the Generator to the subsystem devices are usually active low (switched to chassis ground of the Generator). The outputs are open collector transistor drivers with a maximum current of 0.5 Amperes.

Table 5-1
System Interconnection Signals

SIGNAL NAME	SIGNAL DESCRIPTION
ABC OUT	This analog input is the output from the RF Adaptation Board or from Imaging System. A DC level signal is used for systems that uses a Imaging Systems for the Brightness level. When a DC level is used, an input range of 0 to 10 volts is required. The stabilized value of the input will be between 5 and 7 volts.
-ABC	This signal selects the Fluoro operation mode: a low signal selects Automatic Brightness Control, a high signal selects Manual Mode.
ALOE	This high going signal indicates the Actual Length Of Exposure. This signal is used to interface to some Spot Film system and is used to advance the Spot Film device to the next position when multi-exposures are made on the same film.
-ALOE	This low going signal indicates the Actual Length Of Exposure. This signal is used to interface to some Spot Film system and is used to advance the Spot Film device to the next position when multi-exposures are made on the same film.
-AUTO OFF	This signal only applies to Generator systems with the Stand-alone option.
AUX BUCKY SPLY	External voltage supply required for the Bucky motion, when this voltage is not +24 VDC.
-BEEP	A low signal energizes the Fluoro buzzer.
-BUCKY 1 DR CMD	A low signal to the Interface Control Board as a command to output a Bucky-1 (normally the Table Bucky) drive signal.
-BUCKY 1 MOTION	This low going signal from Bucky-1 indicates Bucky-1 motion, and therefore the exposure is enabled.
BUCKY 1 DR	This signal is originated from the Bucky supply of the Power Module when an exposure order. It starts the Bucky.
-BUCKY 2 DR CMD	A low signal to the Interface Control Board as a command to output a Bucky-2 (normally the Vertical Bucky Stand) drive signal.
-BUCKY 2 MOTION	This low going signal from Bucky-2 indicates Bucky-2 in motion, and therefore the exposure is enabled.

Table 5-1 (cont.)
System Interconnection Signals

SIGNAL NAME	SIGNAL DESCRIPTION
BUCKY 2 DR	This signal is originated from the Bucky supply of the Power Module when an exposure order. It starts the Bucky.
-BUCKY EXP	This low going (0 volts) signal starts the Bucky exposure. The signal originates on the Interface Board
BUCKY SPLY	Voltage supply required for the Bucky drive command.
CAM SYNC	Sync. signal from Imaging System. This signal is used for timing in the Generator.
-CAM FL EXP	This signal interfaces to any Video Camera. A low signal tells the camera that the Generator is making a Fluoro exposure and the Camera should unblank.
C-HT CLK	Serial data clock to the HT Control Board. This clock synchronizes the C-HT DATA signal.
C-HT DATA	Serial data to the HT Control Board. This data is synchronous with the C-HT CLK signal.
-COLLIMATOR	This active low signal indicates that NO EXPOSURE HOLD condition exists at the Collimator. This input is read only when the Radiographic Tube is selected.
-COMP	This low signal indicates that a Compression Device has been selected. This input changes the original density to the appropriate density for Compression selection.
-DOOR	This low signal is the interlock for the Door of the X-ray room.
-DSI SEL	This low going signal from a DSI device indicates that the DSI has been selected and will be used for the next exposure.
-EXP	Low going Expose signal to the HT Control Board. If -PREP is low then a Spot Film or RAD exposure is made, else a Fluoro exposure is made.
FL DSI	Sync. signal from the DSI device. This signal is used for timing in the Generator.
-FL EXP	This is the EXPOSURE COMMAND input when the Tube-2 (Fluoro / Spot Film) is selected. If the -SF PREP input is open then a Fluoro exposure is started, and if the -SF PREP input is low then a Spot Film exposure is made.
-FLD1 DR	A low signal to select the right field in the Ion Chamber.
-FLD2 DR	A low signal to select the left field in the Ion Chamber.
-FLD3 DR	A low signal to select the center field in the Ion Chamber.
-FT SW CMD	This low going signal indicates the Fluoro exposure command. It is needed for Pulsed Fluoro at variable rate.
HT-C CLK	Serial data clock from the HT Control Board. This clock synchronizes the HT-C DATA signal.
HT-C DAT	Serial data from the HT Control Board. This data is synchronous with the HT-C CLK signal.
-HT INL	This signal is low when the switch in the high voltage transformer is in the RAD position. This is a safety interlock which prevents an exposure if the high voltage switch (in the HV Transformer) is in the wrong position.
HV PT CRL	This analogic signal (originates in the optional AEC Control Board) controls the output of the HV Power Supply on the Interface Control Board. +5 volts programs the output to be 0 volts, and 0 volts programs the output to approximately -1200 volts.
IC GND	GND for the IC SPLY.
IC1 INPUT	This input is the output of the Bucky 1 Ion Chamber (normally the Table Ion Chamber).
IC2 INPUT	This input is the output of the Bucky 2 Ion Chamber (normally the Vertical Bucky Stand Ion Chamber).
IC3 INPUT	This input is the output of the Spot Film Ion Chamber.
IC SPLY	Power supply for the Ion Chamber. This output should be within the range of 500 to 800 volts.
-kV DWN	A low signal is a command for the HT Control Board to drive the Fluoro kVp DOWN during a Fluoro exposure in ABC mode.
-kV UP	A low signal is a command for the HT Control Board to drive the Fluoro kVp UP during a Fluoro exposure in ABC mode.

Table 5-1 (cont.)
System Interconnection Signals

SIGNAL NAME	SIGNAL DESCRIPTION
-LINE CONT	A low signal energizes the main line contactor K5 in the Power Module.
LINE SYNC	Signal synchronous with the AC line. This signal originates in the Interface Board and is used to synchronize Fluoro exposures with the AC line.
-MAG 1	A low signal selects Magnification-1 mode on the Image Tube.
-MAG 2	A low signal selects Magnification-2 mode on the Image Tube.
-MEM EN	A low signal enables a frame grabber function in some Video Camera.
-MEM GATE	A low signal enables a record function in some Video Camera. Sometime it can be used to start a VCR or other recording device not integrated into the Video Camera.
-NORM	A low signal selects Normal mode on the Image Tube.
-PREP	Commands to the HT Control Board to boost X-ray Tube Filament to the value of mA selected and to start the X-ray Tube Rotor is RAD Tube is selected.
PT INPUT	This analog input is normally the output of the Photo Multiplier Tube in the Image System and is used for Automatic Brightness Control. A DC level signal can be used for systems with solid state pick-up device or the TV Camera for the Brightness level. When a DC level is used, an input range of 0 to 10 volts is required. The stabilized value of the input will be between 5 and 7 volts.
PT SPLY	Power supply output for the Photomultiplier. The level of this signal is controlled by the HV PT CRL.
-READY	This low going signal indicates the system is ready to make an exposure (Prep cycle complete). This signal is used to interface to certain peripheral devices such as Film Changers, etc.
-ROOM LIGHT	This low going signal indicates the X-ray preparation or exposure. This signal is used to interface to the Room X-ray warning light.
-SFC	This low going signal from a Spot Film camera indicates that the Spot Film camera has been selected and will be used for the next exposure.
-SF PREP	This low going signal indicates the system to boost the filament to the level required for the mA selected on the Control Console and prepares the system for a Spot Film. This input is read only when the Tube-2 (Fluoro / Spot Film) is selected.
-STRT DR	A low signal to indicate the start of an exposure to the Ion Chamber.
-THERMOSTAT-1	This signal from X-ray Tube indicates the overheat of the Tube-1.
-THERMOSTAT-2	This signal from X-ray Tube indicates the overheat of the Tube-2.
V SYNC	Vertical Sync pulses from the TV Camera. In Fixed Rate Pulsed Fluoro the X-ray tube is pulsed at line rate. However, with the Variable Rate Pulsed Fluoroscopy option the X-ray tube is pulsed at rate selected by the operator, the rate is driven from the V Sync signal (it is obtained by dividing the timing frequency of the V sync).

5.2 SYSTEM INTERCONNECTION MAPS

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

SYSTEM INTERCONNECTION

- Compact / Compact-ESM Generators.
  System Interconnection 54301045
- Serial Communication to Generator.
  System Interconnection 54301052
- RS-232/422/485 Serial Communication A6188-03
- PC / Serial Interface Box I/F-213
- Metallic Case X-ray Tube Connection 54302035
- Earthing Diagram I/F-103

STATOR INTERFACE

- Philips Tubes – Stator Interface I/F-021
- Siemens Tubes – Stator Interface I/F-024

ROOM LAMPS

- Room Warning Light Interface I/F-008

BUCKYS

- Table Bucky Interface
  (Liebel / Midwest / Ultravit / Dong-A) I/F-001
- Vertical Bucky Interface
  (Liebel / Midwest / Ultravit / Dong-A) I/F-002
- Table Bucky Interface (Philips) I/F-005
- Vertical Bucky Interface (Philips) I/F-006
- Bucky TS Table Interface I/F-041
- Bucky VE/VT (Philips) Interface I/F-042
- US X-ray Bucky Interface I/F-045

AEC – ION CHAMBERS

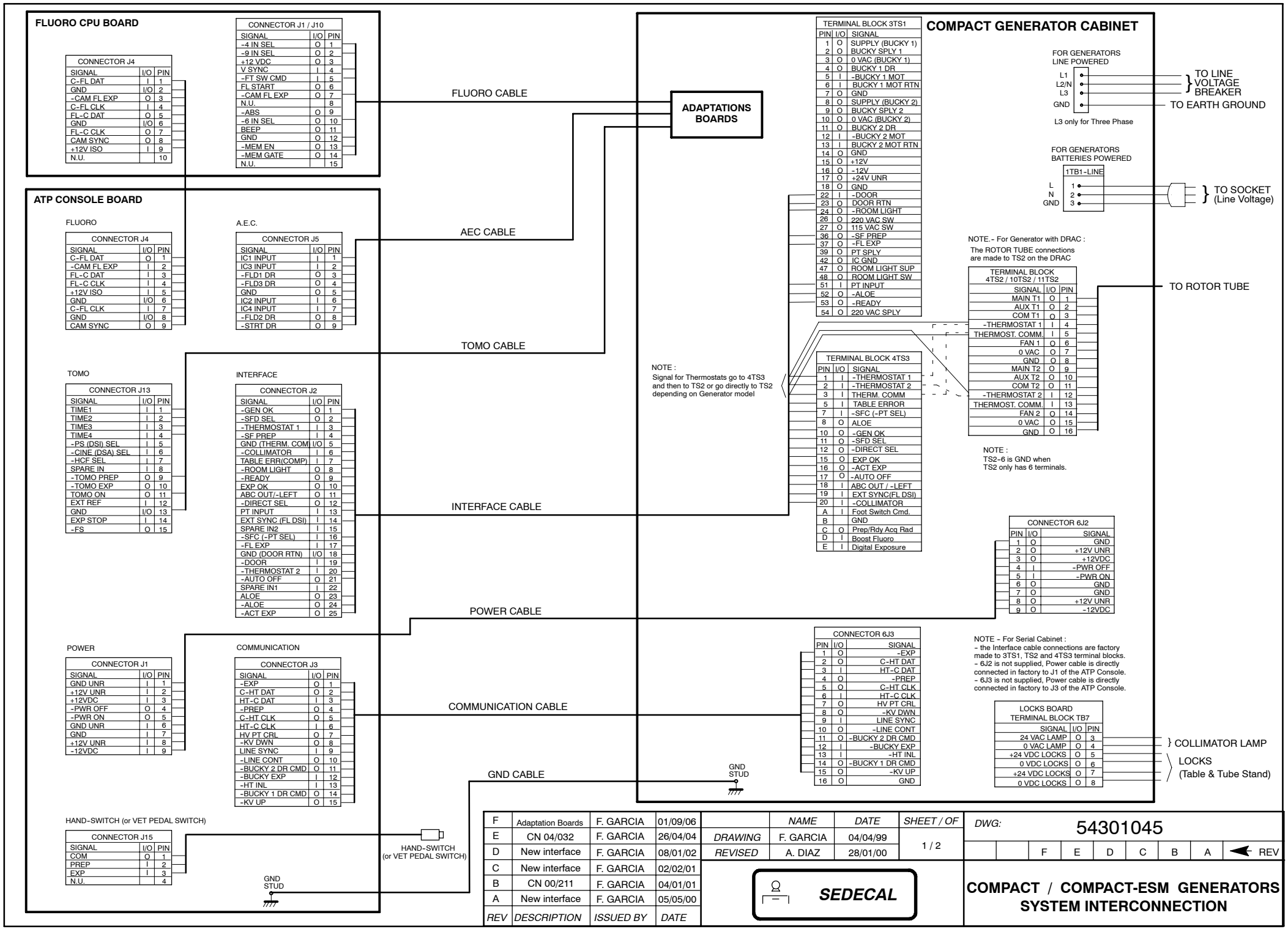
- AEC Compatibility for only one Ion Chamber I/F-003
- AEC Compatibility with AID / VACUTEC / COMET /
  CLAYMOUNT for more than one Ion Chamber I/M-015
- AEC – Philips Compatibility I/M-014
- AEC – GE Compatibility I/M-018
- AEC – BVM Compatibility I/M-019
- AEC – MEDYS Compatibility I/M-081
- AEC Adaptation A3263–03

RF SYSTEMS (RF TABLE / IMAGE SYSTEM)

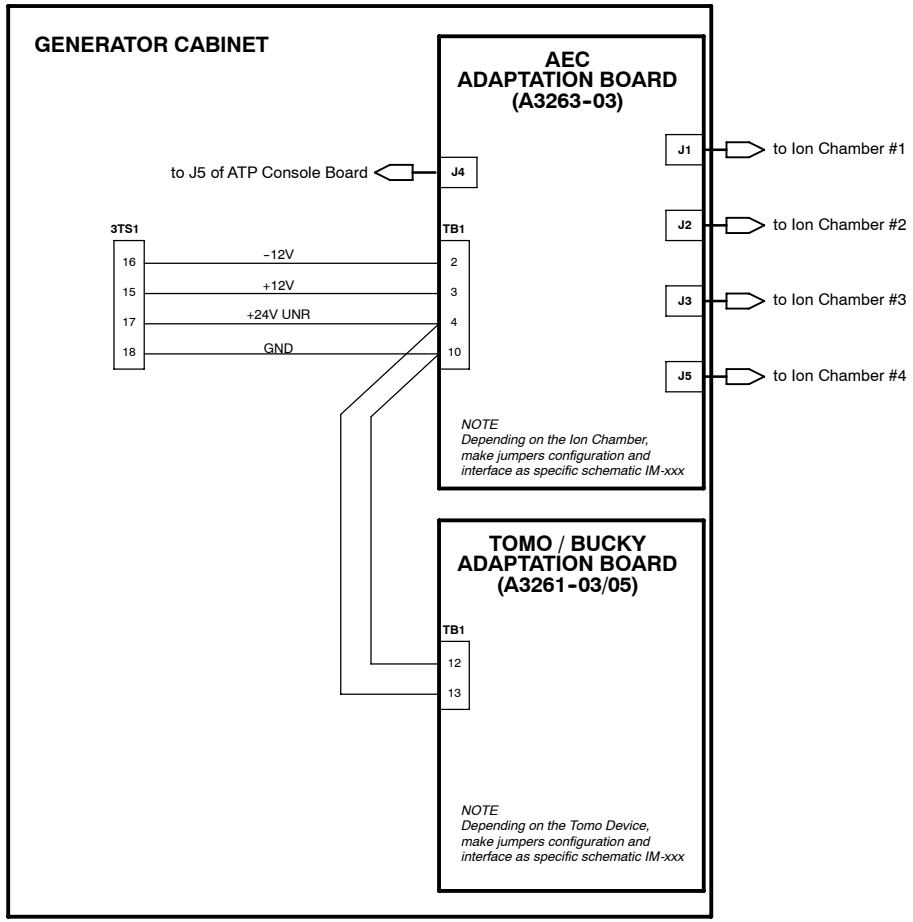
- RF Adaptation Interface A3514-04S
- RF Adaptation Board A3514-04
- ABC Interface (jumper setting) IM-300
- Standard System with CC TV Interface IM-302
- Evolution Table with Standard System IM-312

PHOTOMULTIPLIER

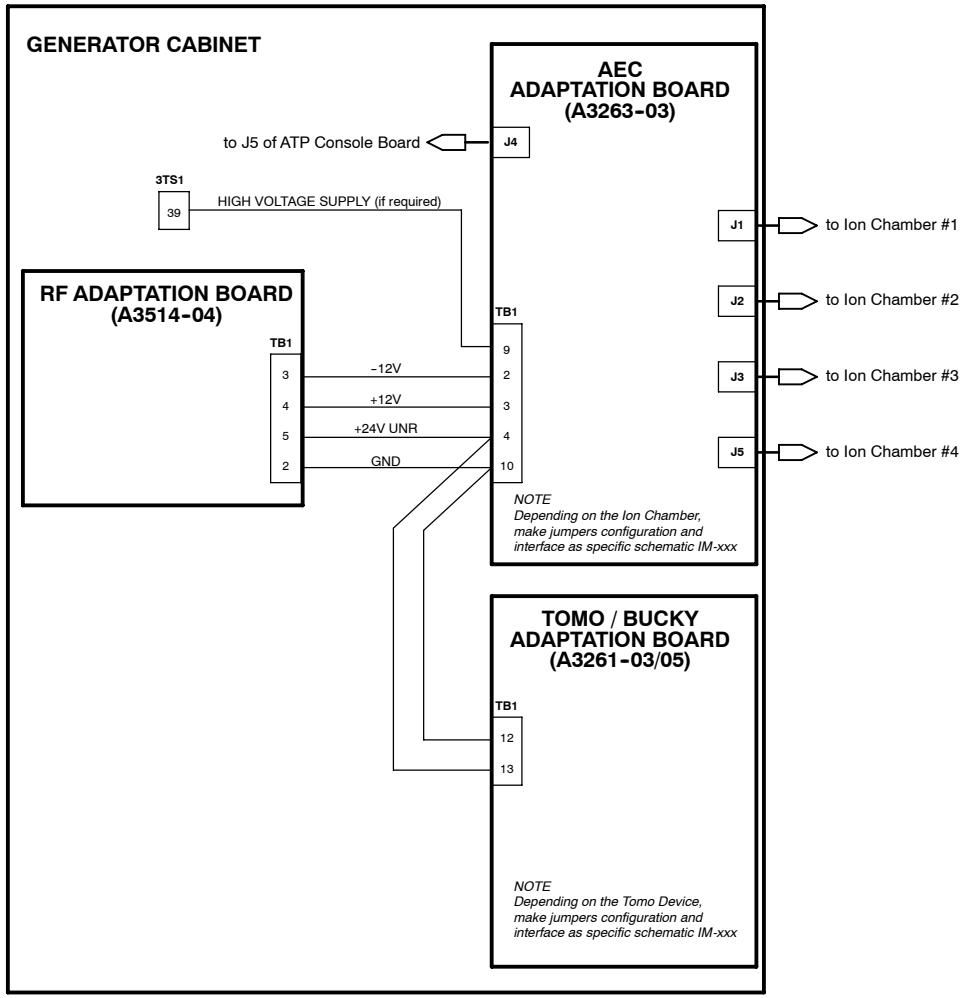
- Photomultiplier Interface I/F-011
- Photomultiplier Amplifier A3168-02


FLUORO CPU BOARD
CONNECTOR J4
SIGNAL | I/O | PIN
C-FL DAT | I | 1
GND | I/O | 2
-CAM FL EXP | O | 3
C-FL CLK | I | 4
FL-C DAT | O | 5
GND | I/O | 6
FL-C CLK | O | 7
CAM SYNC | O | 8
+12V ISO | I | 9
N.U. | | 10
CONNECTOR J1 / J10
SIGNAL | I/O | PIN
-4 IN SEL | O | 1
-9 IN SEL | O | 2
+12 VDC | O | 3
V SYNC | I | 4
-FT SW CMD | I | 5
FL START | O | 6
-CAM FL EXP | O | 7
N.U. | | 8
-ABS | O | 9
-6 IN SEL | O | 10
BEEP | O | 11
GND | O | 12
-MEM EN | O | 13
-MEM GATE | O | 14
N.U. | | 15
FLUORO CABLE
ADAPTATIONS BOARDS
ATP CONSOLE BOARD
FLUORO
CONNECTOR J4
SIGNAL | I/O | PIN
C-FL DAT | O | 1
-CAM FL EXP | I | 2
FL-C DAT | I | 3
FL-C CLK | I | 4
+12V ISO | I | 5
GND | I/O | 6
C-FL CLK | I | 7
GND | I/O | 8
CAM SYNC | O | 9
A.E.C.
CONNECTOR J5
SIGNAL | I/O | PIN
IC1 INPUT | I | 1
IC3 INPUT | I | 2
-FLD1 DR | O | 3
-FLD3 DR | O | 4
GND | O | 5
IC2 INPUT | I | 6
IC4 INPUT | I | 7
-FLD2 DR | O | 8
-STRT DR | O | 9
AEC CABLE
TOMO CABLE
TOMO
CONNECTOR J13
SIGNAL | I/O | PIN
TIME1 | I | 1
TIME2 | I | 2
TIME3 | I | 3
TIME4 | I | 4
-PS (DSI) SEL | I | 5
-CINE (DSA) SEL | I | 6
-HCF SEL | I | 7
SPARE IN | I | 8
-TOMO PREP | O | 9
-TOMO EXP | O | 10
TOMO ON | O | 11
EXT REF | I | 12
GND | I/O | 13
EXP STOP | I | 14
-FS | O | 15
INTERFACE
CONNECTOR J2
SIGNAL | I/O | PIN
-GEN OK | O | 1
-SFD SEL | O | 2
-THERMOSTAT 1 | I | 3
-SF PREP | I | 4
GND (THERM. COM) | I/O | 5
-COLLIMATOR | I | 6
TABLE ERR(COMP) | I | 7
-ROOM LIGHT | O | 8
-READY | O | 9
EXP OK | O | 10
ABC OUT/-LEFT | O | 11
-DIRECT SEL | O | 12
PT INPUT | I | 13
EXT SYNC (FL DSI) | I | 14
SPARE IN2 | I | 15
-SFC (-PT SEL) | I | 16
-FL EXP | I | 17
GND (DOOR RTN) | I/O | 18
-DOOR | I | 19
-THERMOSTAT 2 | I | 20
-AUTO OFF | O | 21
SPARE IN1 | I | 22
ALOE | O | 23
-ALOE | O | 24
-ACT EXP | O | 25
INTERFACE CABLE
POWER
CONNECTOR J1
SIGNAL | I/O | PIN
GND UNR | I | 1
+12V UNR | I | 2
+12VDC | I | 3
-PWR OFF | O | 4
-PWR ON | O | 5
GND UNR | I | 6
GND | I | 7
+12V UNR | I | 8
-12VDC | I | 9
POWER CABLE
COMMUNICATION
CONNECTOR J3
SIGNAL | I/O | PIN
-EXP | O | 1
C-HT DAT | O | 2
HT-C DAT | I | 3
-PREP | O | 4
C-HT CLK | O | 5
HT-C CLK | I | 6
HV PT CRL | O | 7
-KV DWN | O | 8
LINE SYNC | I | 9
-LINE CONT | O | 10
-BUCKY 2 DR CMD | O | 11
-BUCKY EXP | I | 12
-HT INL | I | 13
-BUCKY 1 DR CMD | O | 14
-KV UP | O | 15
COMMUNICATION CABLE
HAND-SWITCH (or VET PEDAL SWITCH)
CONNECTOR J15
SIGNAL | I/O | PIN
COM | O | 1
PREP | I | 2
EXP | I | 3
N.U. | | 4
HAND-SWITCH (or VET PEDAL SWITCH)
GND STUD
GND CABLE
GND STUD
COMPACT GENERATOR CABINET
TERMINAL BLOCK 3TS1
PIN | I/O | SIGNAL
1 | O | SUPPLY (BUCKY 1)
2 | O | BUCKY SPLY 1
3 | O | 0 VAC (BUCKY 1)
4 | O | BUCKY 1 DR
5 | I | -BUCKY 1 MOT
6 | I | BUCKY 1 MOT RTN
7 | O | GND
8 | O | SUPPLY (BUCKY 2)
9 | O | BUCKY SPLY 2
10 | O | 0 VAC (BUCKY 2)
11 | O | BUCKY 2 DR
12 | I | -BUCKY 2 MOT
13 | I | BUCKY 2 MOT RTN
14 | O | GND
15 | O | +12V
16 | O | -12V
17 | O | +24V UNR
18 | O | GND
22 | I | -DOOR
23 | O | DOOR RTN
24 | O | -ROOM LIGHT
26 | O | 220 VAC SW
27 | O | 115 VAC SW
36 | O | -SF PREP
37 | O | -FL EXP
39 | O | PT SPLY
42 | O | IC GND
47 | O | ROOM LIGHT SUP
48 | O | ROOM LIGHT SW
51 | I | PT INPUT
52 | O | -ALOE
53 | O | -READY
54 | O | 220 VAC SPLY
FOR GENERATORS LINE POWERED
L1
L2/N
L3
GND
TO LINE VOLTAGE BREAKER
TO EARTH GROUND
L3 only for Three Phase
FOR GENERATORS BATTERIES POWERED
1TB1-LINE
L 1
N 2
GND 3
TO SOCKET (Line Voltage)
NOTE.- For Generator with DRAC :
The ROTOR TUBE connections are made to TS2 on the DRAC
TERMINAL BLOCK 4TS2 / 10TS2 / 11TS2
SIGNAL | I/O | PIN
MAIN T1 | O | 1
AUX T1 | O | 2
COM T1 | O | 3
-THERMOSTAT 1 | I | 4
THERMOST. COMM. | I | 5
FAN 1 | O | 6
0 VAC | O | 7
GND | O | 8
MAIN T2 | O | 9
AUX T2 | O | 10
COM T2 | O | 11
-THERMOSTAT 2 | I | 12
THERMOST. COMM. | I | 13
FAN 2 | O | 14
0 VAC | O | 15
GND | O | 16
TO ROTOR TUBE
NOTE :
TS2-6 is GND when TS2 only has 6 terminals.
NOTE :
Signal for Thermostats go to 4TS3 and then to TS2 or go directly to TS2 depending on Generator model
TERMINAL BLOCK 4TS3
PIN | I/O | SIGNAL
1 | I | -THERMOSTAT 1
2 | I | -THERMOSTAT 2
3 | I | THERM. COMM
5 | I | TABLE ERROR
7 | I | -SFC (-PT SEL)
8 | O | ALOE
10 | O | -GEN OK
11 | O | -SFD SEL
12 | O | -DIRECT SEL
15 | O | EXP OK
16 | O | -ACT EXP
17 | O | -AUTO OFF
18 | I | ABC OUT / -LEFT
19 | I | EXT SYNC(FL DSI)
20 | I | -COLLIMATOR
A | I | Foot Switch Cmd.
B | | GND
C | O | Prep/Rdy Acq Rad
D | I | Boost Fluoro
E | I | Digital Exposure
CONNECTOR 6J2
PIN | I/O | SIGNAL
1 | O | GND
2 | O | +12V UNR
3 | O | +12VDC
4 | I | -PWR OFF
5 | I | -PWR ON
6 | O | GND
7 | O | GND
8 | O | +12V UNR
9 | O | -12VDC
CONNECTOR 6J3
PIN | I/O | SIGNAL
1 | O | -EXP
2 | O | C-HT DAT
3 | I | HT-C DAT
4 | O | -PREP
5 | O | C-HT CLK
6 | I | HT-C CLK
7 | O | HV PT CRL
8 | O | -KV DWN
9 | I | LINE SYNC
10 | O | -LINE CONT
11 | O | -BUCKY 2 DR CMD
12 | I | -BUCKY EXP
13 | I | -HT INL
14 | O | -BUCKY 1 DR CMD
15 | O | -KV UP
16 | O | GND
NOTE - For Serial Cabinet :
- the Interface cable connections are factory made to 3TS1, TS2 and 4TS3 terminal blocks.
- 6J2 is not supplied, Power cable is directly connected in factory to J1 of the ATP Console.
- 6J3 is not supplied, Power cable is directly connected in factory to J3 of the ATP Console.
LOCKS BOARD TERMINAL BLOCK TB7
SIGNAL | I/O | PIN
24 VAC LAMP | O | 3
0 VAC LAMP | O | 4
+24 VDC LOCKS | O | 5
0 VDC LOCKS | O | 6
+24 VDC LOCKS | O | 7
0 VDC LOCKS | O | 8
COLLIMATOR LAMP
LOCKS (Table & Tube Stand)
F | Adaptation Boards | F. GARCIA | 01/09/06
E | CN 04/032 | F. GARCIA | 26/04/04
D | New interface | F. GARCIA | 08/01/02
C | New interface | F. GARCIA | 02/02/01
B | CN 00/211 | F. GARCIA | 04/01/01
A | New interface | F. GARCIA | 05/05/00
REV | DESCRIPTION | ISSUED BY | DATE
NAME | DATE | SHEET / OF
DRAWING | F. GARCIA | 04/04/99
REVISED | A. DIAZ | 28/01/00
1 / 2
SEDECAL
DWG: 54301045
F E D C B A REV
COMPACT / COMPACT-ESM GENERATORS
SYSTEM INTERCONNECTION

NOTE.- The Adaptation Boards are optional



Interconnection of Adaptation Boards
for a Generator without RF Adaptation Board



Interconnection of Adaptation Boards
for a Generator with RF Adaptation Board

REV	DESCRIPTION	ISSUED BY	DATE
F	Adaptation Boards	F. GARCIA	01/09/06
E	CN 04/032	F. GARCIA	26/04/04
D	New interface	F. GARCIA	08/01/02
C	New interface	F. GARCIA	02/02/01
B	CN 00/211	F. GARCIA	04/01/01
A	New interface	F. GARCIA	05/05/00

	NAME	DATE
DRAWING	F. GARCIA	04/04/99
REVISED	A. DIAZ	28/01/00

SHEET / OF: 2/2

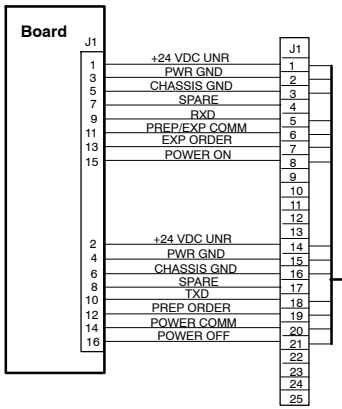
SEDECAL

DWG: 54301045

		F	E	D	C	B	A	REV

COMPACT GENERATORS
SYSTEM INTERCONNECTION

SERIAL OPERATOR CONSOLE



NOTES:
RXD ON GENERATOR IS CONNECTED TO TXD ON SERIAL OPERATOR CONSOLE
TXD ON GENERATOR IS CONNECTED TO RXD ON SERIAL OPERATOR CONSOLE

TPC or PC INTERFACE BOX

CONNECTOR J1		
SIGNAL	I/O	PIN
CTS (RXD-)	I	1
RXD (RXD+)	I	2
TXD (TXD+)	O	3
RTS (TXD-)	O	4
SPARE PIN 5		5
ACT EXP	O	6
LOGIC GND	O	7
CHASSIS GND	O	8
CHASSIS GND	O	9
+12 VDC		10
-ALOE		11
PWR GND	O	12
PWR GND	O	13
PREP/EXP COMM	O	14
EXP ORDER	I	15
PREP ORDER	I	16
POWER COMM	I/O	17
POWER OFF	I	18
POWER ON	I	19
SPARE PIN 20		20
SPARE PIN 21		21
DOOR		22
DOOR RTN		23
+24 VDC UNR	O	24
+24 VDC UNR	O	25

NOTES:

RXD AND TXD ARE INTERNALLY REVERSED IN TPC OR PC INTERFACE BOX
REFER TO SCHEMATICS I/F-036 FOR OTHER PC INTERFACE BOX CONNECTIONS

SERIAL INTERCONNECTION CABLE FOR SERIAL CONSOLE (A7066-xx or A3149-01)

SERIAL INTERCONNECTION CABLE FOR TPC (A7067-xx or A3352-01)
SERIAL INTERCONNECTION CABLE FOR INTERFACE BOX (A3352-01)

GENERATOR CABINET

NOTE: FOR GENERAL INTERCONNECTIONS REFER TO SCHEMATIC 54301045 (COMPACT / COMPACT-ESM GENERATORS)

CONNECTOR J5		
PIN	I/O	SIGNAL
1	I	CTS (RXD-)
2	I	RXD (RXD+)
3	O	TXD (TXD+)
4	O	RTS (TXD-)
5		SPARE PIN 5
6	O	ACT EXP
7	O	LOGIC GND
8	O	CHASSIS GND
9	O	CHASSIS GND
10		+12 VDC
11		-ALOE
12	O	PWR GND
13	O	PWR GND
14	O	PREP/EXP COMM
15	I	EXP ORDER
16	I	PREP ORDER
17	I/O	POWER COMM
18	I	POWER OFF
19	I	POWER ON
20		SPARE PIN 20
21		SPARE PIN 21
22		DOOR
23		DOOR RTN
24	O	+24 VDC UNR
25	O	+24 VDC UNR

NOTE: REFER TO SCHEMATIC A6188-02 FOR RS-232/422/485 SERIAL COMMUNICATION

REV	DESCRIPTION	ISSUED BY	DATE
C	NC 03 / 050	F. GARCIA	08/03/03
B	New schematic	F. GARCIA	08/01/02
A	Connections	F. GARCIA	02/02/01

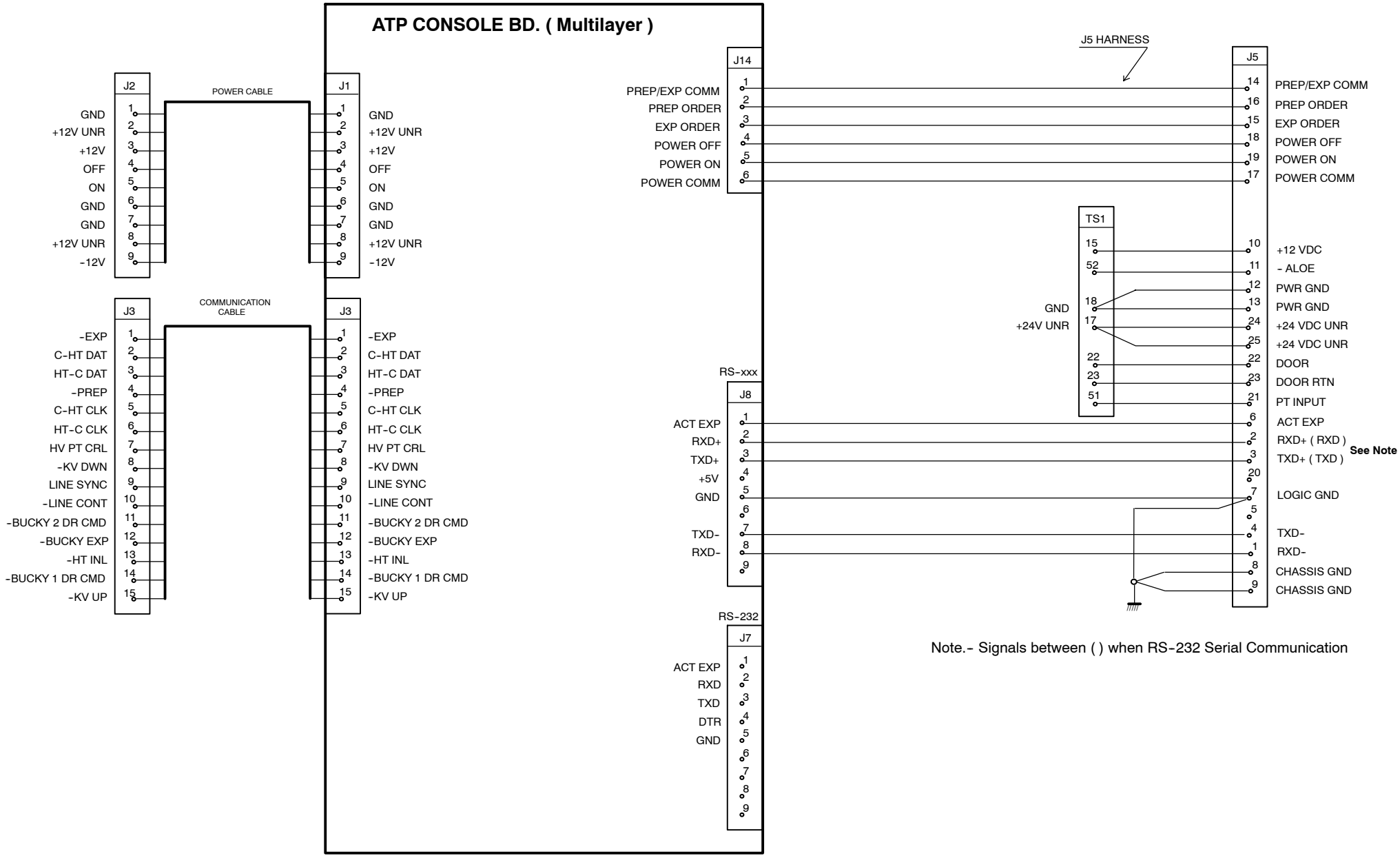
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	07/07/99	1 / 1
REVISED	A. DIAZ	24/01/00	

SEDECAL

DWG: 54301052

C B A ◄ REV

SERIAL COMMUNICATION TO GENERATOR SYSTEM INTERCONNECTION



Note.- Signals between ( ) when RS-232 Serial Communication

REV	DESCRIPTION	ISSUED BY	DATE
A	CN 04/148	F. GARCIA	09/09/04

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	04/04/04	1 / 1
REVISED	A. DIAZ	04/04/04	

DWG: A6188-03

A REV

SEDECAL

RS-232/422/485 SERIAL COMMUNICATION

PC INTERFACE BOX (A6509-40)

PC Interface Box Board (A9532-01)

J1

25	+24V UNR
13	PWR GND
14	PREP/EXP COMM
15	EXP ORDER
16	PREP ORDER
19	PWR ON
18	PWR OFF
17	PWR COM
2	T x D
3	R x D
7	GND
5	
10	
11	
21	
22	
23	
9	

J4

1	LAMP
2	

J2

1	Handswitch Cable (A3223-05)
3	
2	

J5

4	OFF
3	
2	ON
1	

J3

4	Interface Box-Computer Cable (A3363-01)
1	
6	
3	
2	
5	

J6

1	
2	
3	
4	
5	
6	

TP1 — CHASSIS GND

CHASSIS

CONNECTION TO GENERATOR

Interface Box Cable (A3352-01)

Handswitch Cable (A3223-05)

Handswitch

Exp Order

Prep Order

Interface Box-Computer Cable (A3363-01)

COMPUTER

AUTO ON/OFF Board (A3179-01/02)

J1/J2

4	
1	
6	

J2

1	+12V
2	GND

COM1

3	RS232
2	
5	

REV	DESCRIPTION	ISSUED BY	DATE

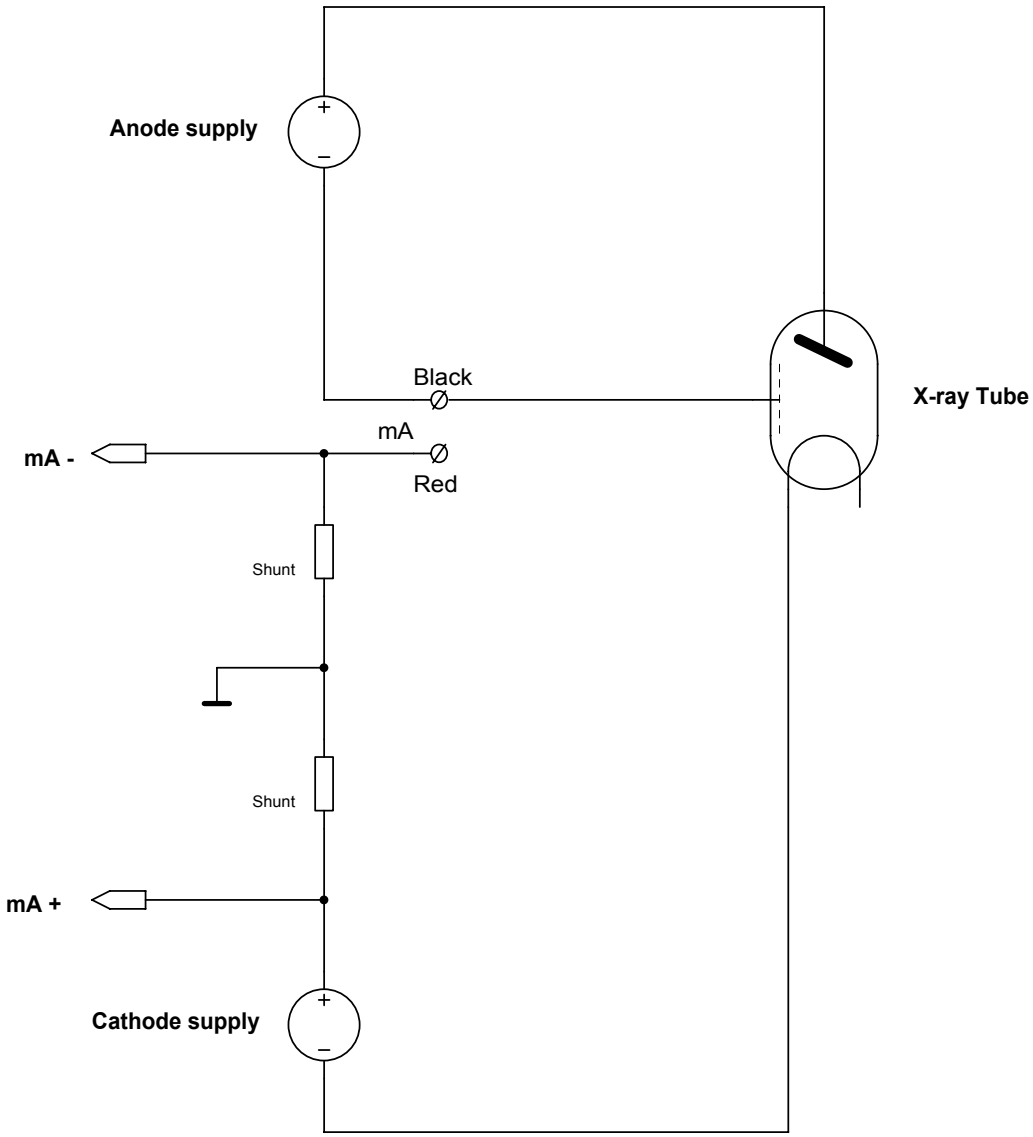
	NAME	DATE	SHEET / OF
DRAWING	F.GARCIA	20/05/08	1/1
REVISED	A.DIAZ	26/05/08	

SEDECAL

I/F - 213

A ← REV

PC/SERIAL INTERFACE



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE
DRAWING	F. Díaz	11/02/03
REVISED	A. Díaz	11/02/03

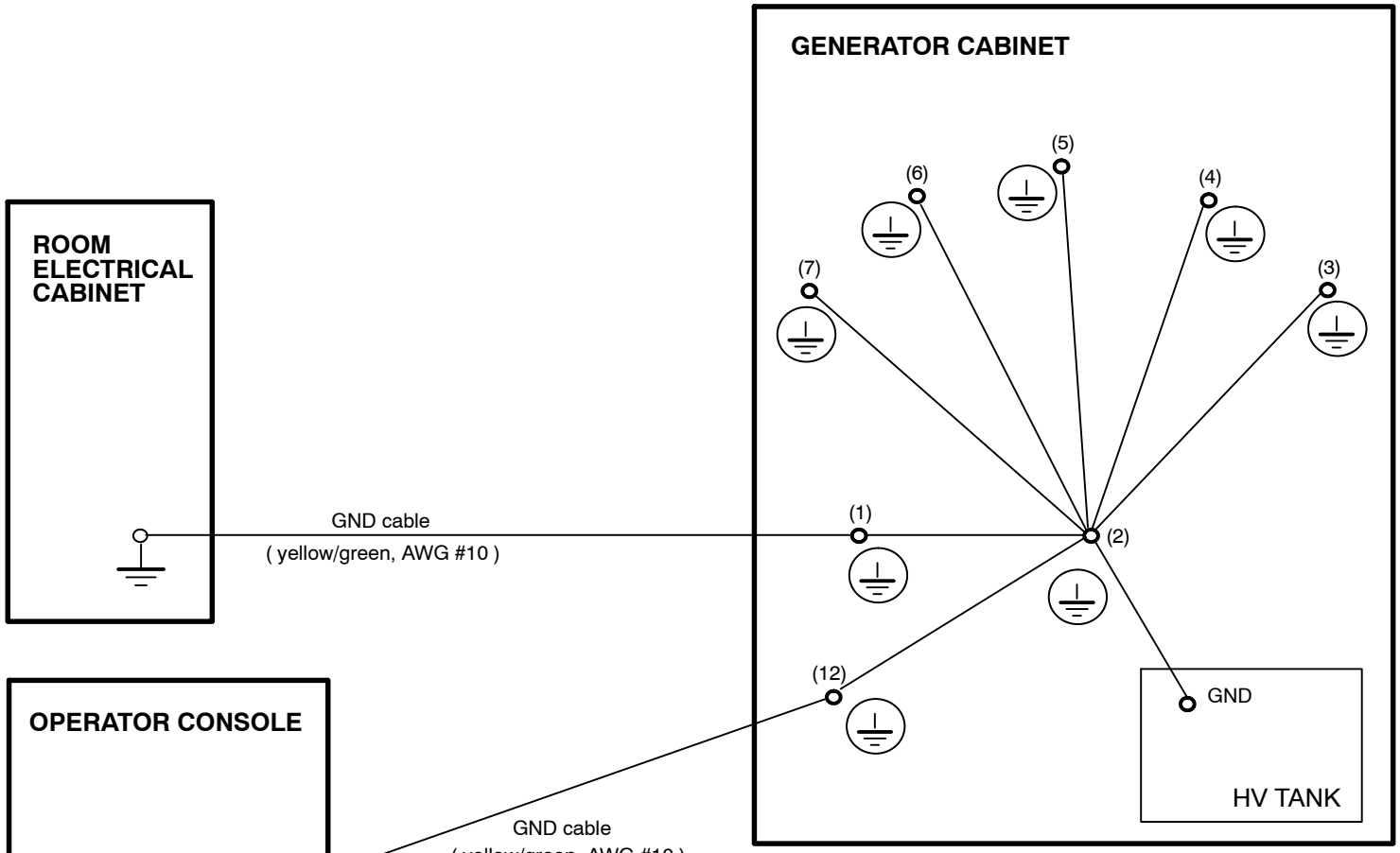
SHEET / OF: 1/1

SEDECAL

54302035

REV

METALLIC CASE X-RAY TUBE CONN.



(1)	Central Ground
(2)	GND Stud
(3)	Cabinet Cover GND
(4)	Back Panel GND
(5)	Front Panel GND
(6)	Filter LF1 Cover GND
(7)	Adaptations Panel GND
(8)	Console GND (Bottom Panel)
(9)	Console Support GND
(10)	Pedestal Tube GND
(11)	Pedestal Cover GND
(12)	GND STUD

Note.- (9) applicable only for metallical Box Console

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	30/06/04	1 / 1
REVISED	A. DIAZ	30/06/04	

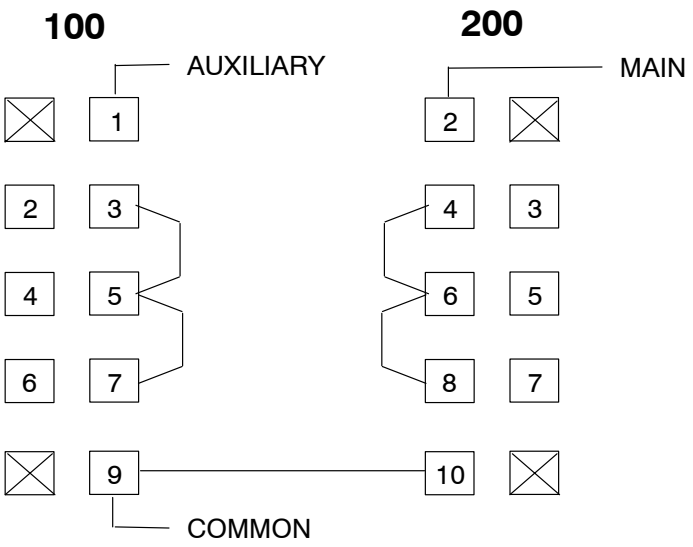
SEDECAL

I/F-103

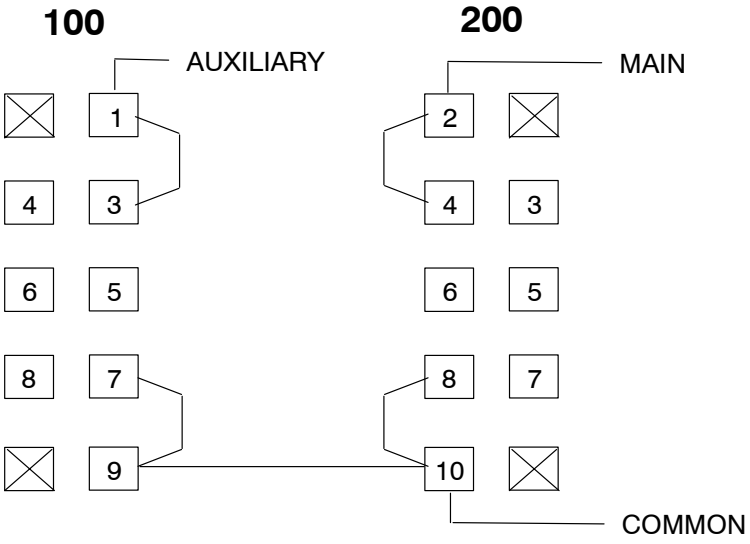
REV

EARTHING DIAGRAM

STATOR ROTALIX 350/351 CONNECTIONS



STATOR SUPER ROTALIX 350 CONNECTIONS

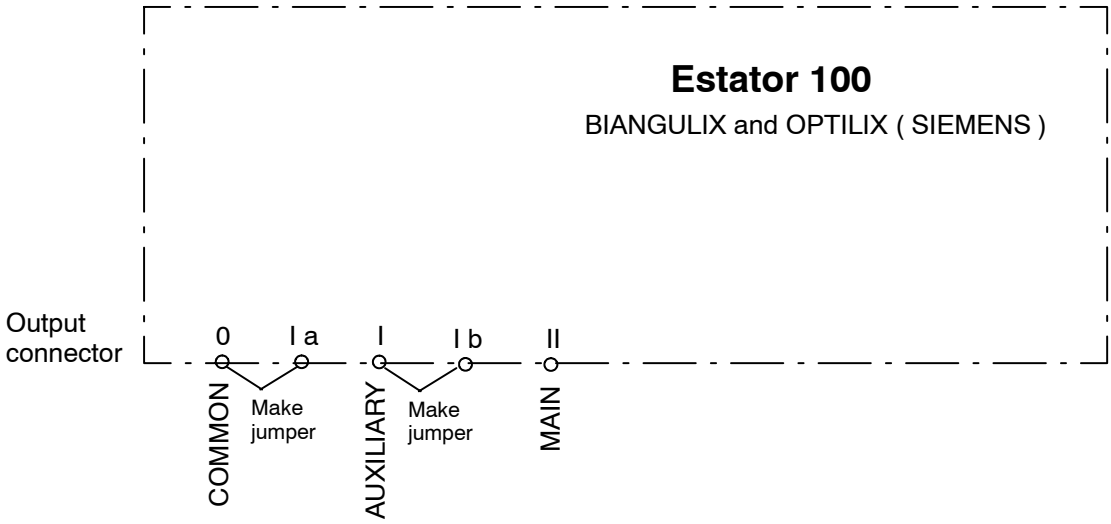


					NAME	DATE	SHEET / OF	Interconnection *Interconexión*	**I/F–021**
				DRAWING	F. GARCIA	09/09/98	1 / 1		
				REVISED	A. DIAZ	09/09/98			REV
REV	*DESCRIPTION*	*ISSUED BY*	*DATE*						

SEDECAL

PHILIPS TUBES–STATOR INTERFACE

STATOR 100 CONNECTIONS (BIANGULIX and OPTILILIX TUBES)



NOTE

CONNECT THE STATOR CABLE AS SHOWN.
CHECK THE CABLE SUPPLIED WITH THE TUBE.

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	09/09/98	1 / 1
REVISED	A. DIAZ	09/09/98	

SEDECAL

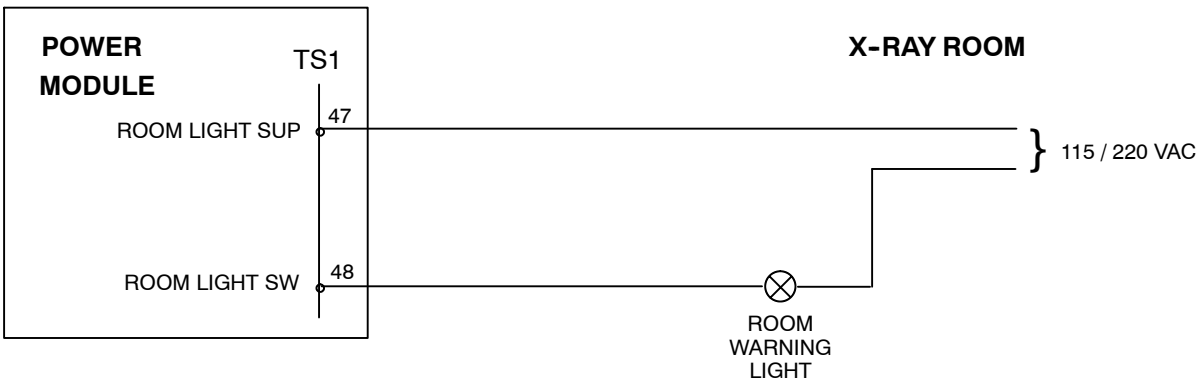
Interconnection
Interconexión

I/F–024

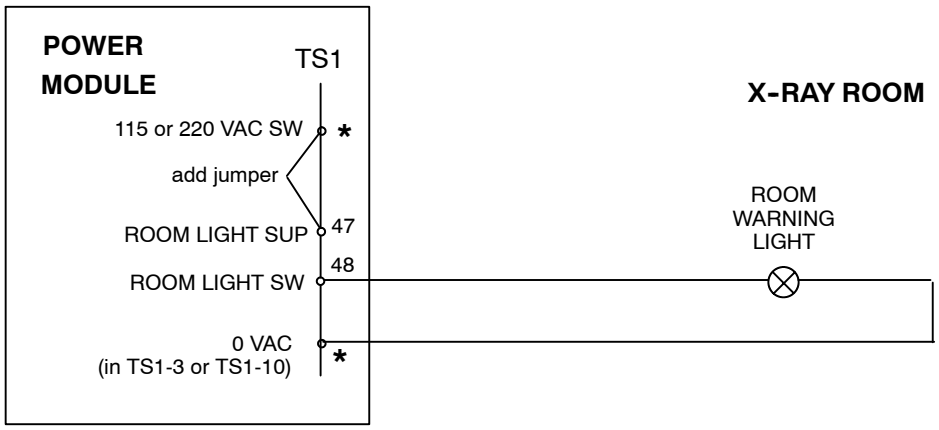
REV

SIEMENS TUBES–STATOR INTERFACE

Interconnection 1.- For Generator Interface with control relay and externally powered

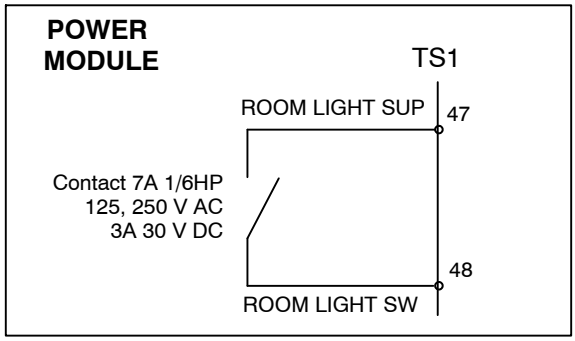


Interconnection 2.- For Generator Interface with control relay and internally powered



* Select the power supply on TS1 according to the lamp voltage.
Add jumper to TS1-26 for 220 VAC or to TS1-27 for 115 VAC.

Interconnection 3,- Additional option to meet some Local Electrical Codes



REV	DESCRIPTION	ISSUED BY	DATE
E	I/F update	F. GARCIA	20/06/04
D	I/F update	F. GARCIA	02/02/02
C	I/F changing	F. GARCIA	05/05/99
B	TS1 changing	F. GARCIA	24/05/96
A	EMC	F. GARCIA	29/03/96

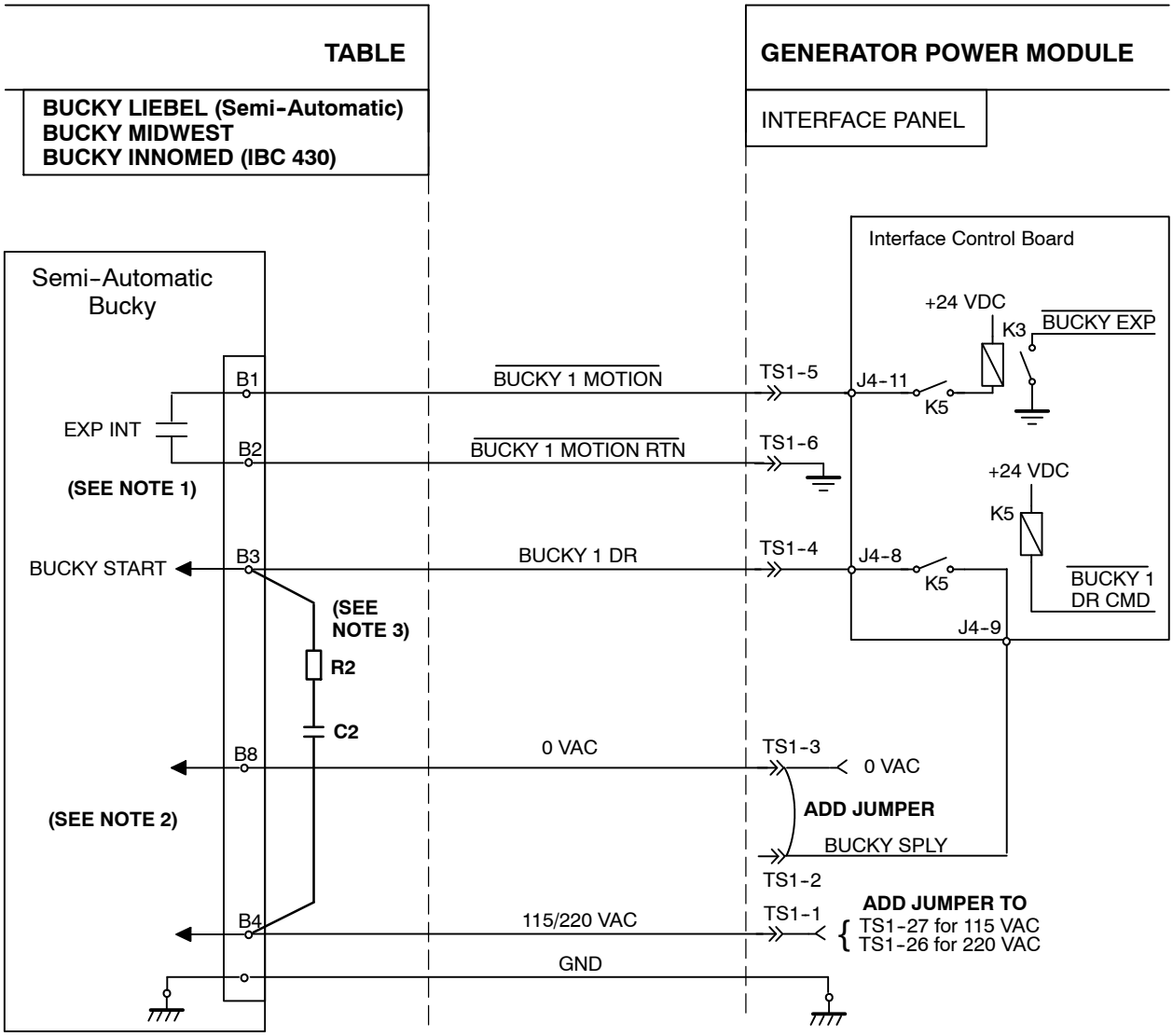
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	04/19/95	1 / 1
REVISED	A. DIAZ	04/19/95	

SEDECAL

I/F-008

E D C B A ← REV

ROOM WARNING LIGHT INTERFACE
INTERFAZ LAMPARA RAYOS-X SALA



NOTE 1: Be sure that B2 terminal is not connected to B3 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.
Don't add that R2-C2 for Liebel-Flarsheim 8000 Series Bucky, and remove resistor R36 and R37 in the INTERFACE CONTROL board.

NOTA 1: Asegurarse que el terminal B2 no está conectado al B3.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.
Para Bucky Liebel-Flarsheim Series 8000, no añadir esa R2-C2, y quitar las resistencias R36 y R37 en la tarjeta INTERFACE CONTROL.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf. board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	1 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

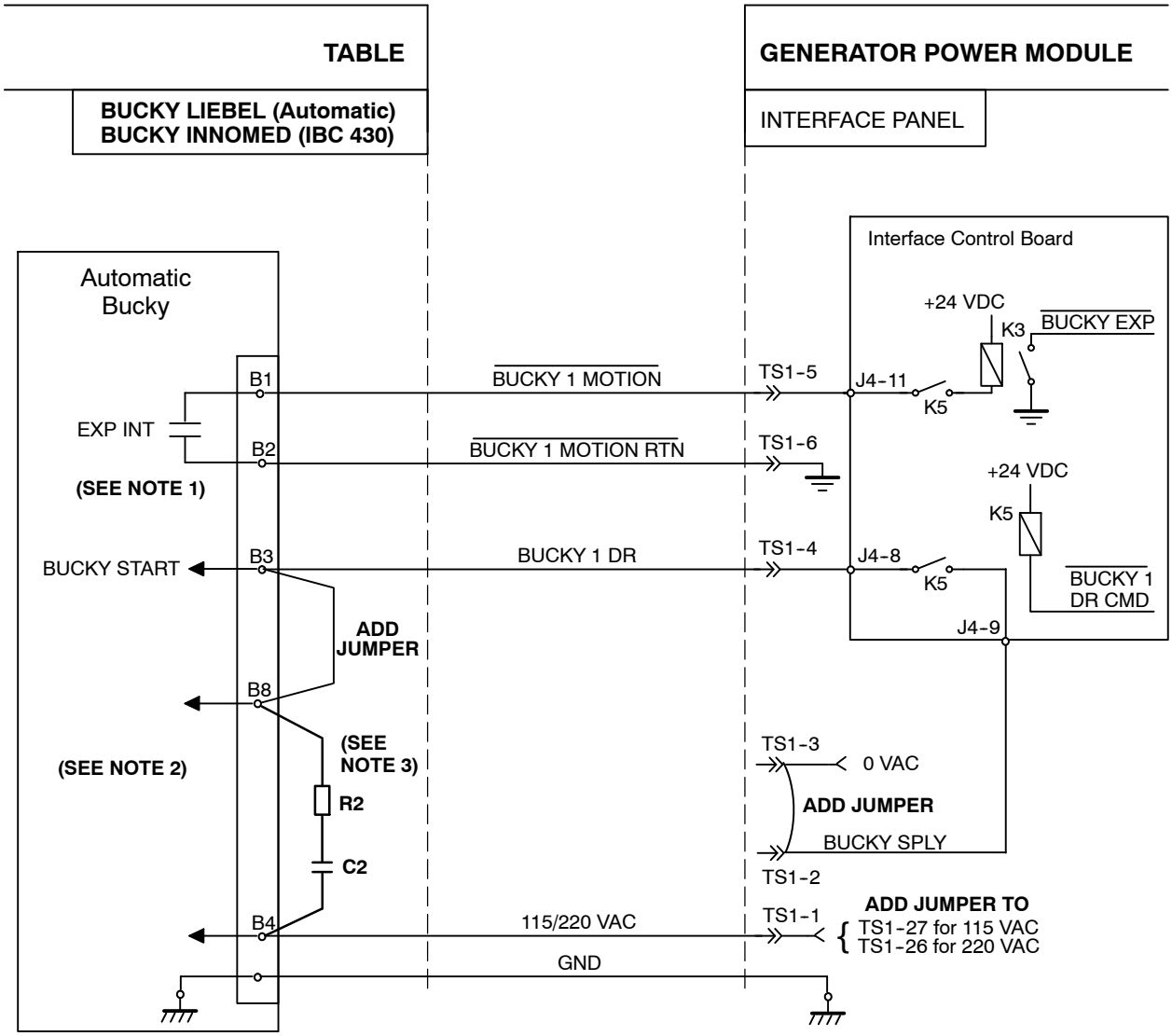
Interconnection Cable
Cable de Inerconexión

I/F-001

8 7 REV

TABLE BUCKY INTERFACE

INTERFAZ BUCKY MESA



NOTE 1: Be sure that B2 terminal is not connected to B3 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.
Don't add that R2-C2 for Liebel-Flarsheim 8000 Series Bucky, and remove resistor R36 and R37 in the INTERFACE CONTROL board.

NOTA 1: Asegurarse que el terminal B2 no está conectado al B3.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.
Para Bucky Liebel-Flarsheim Series 8000, no añadir esa R2-C2, y quitar las resistencias R36 y R37 en la tarjeta INTERFACE CONTROL.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf. board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	2 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

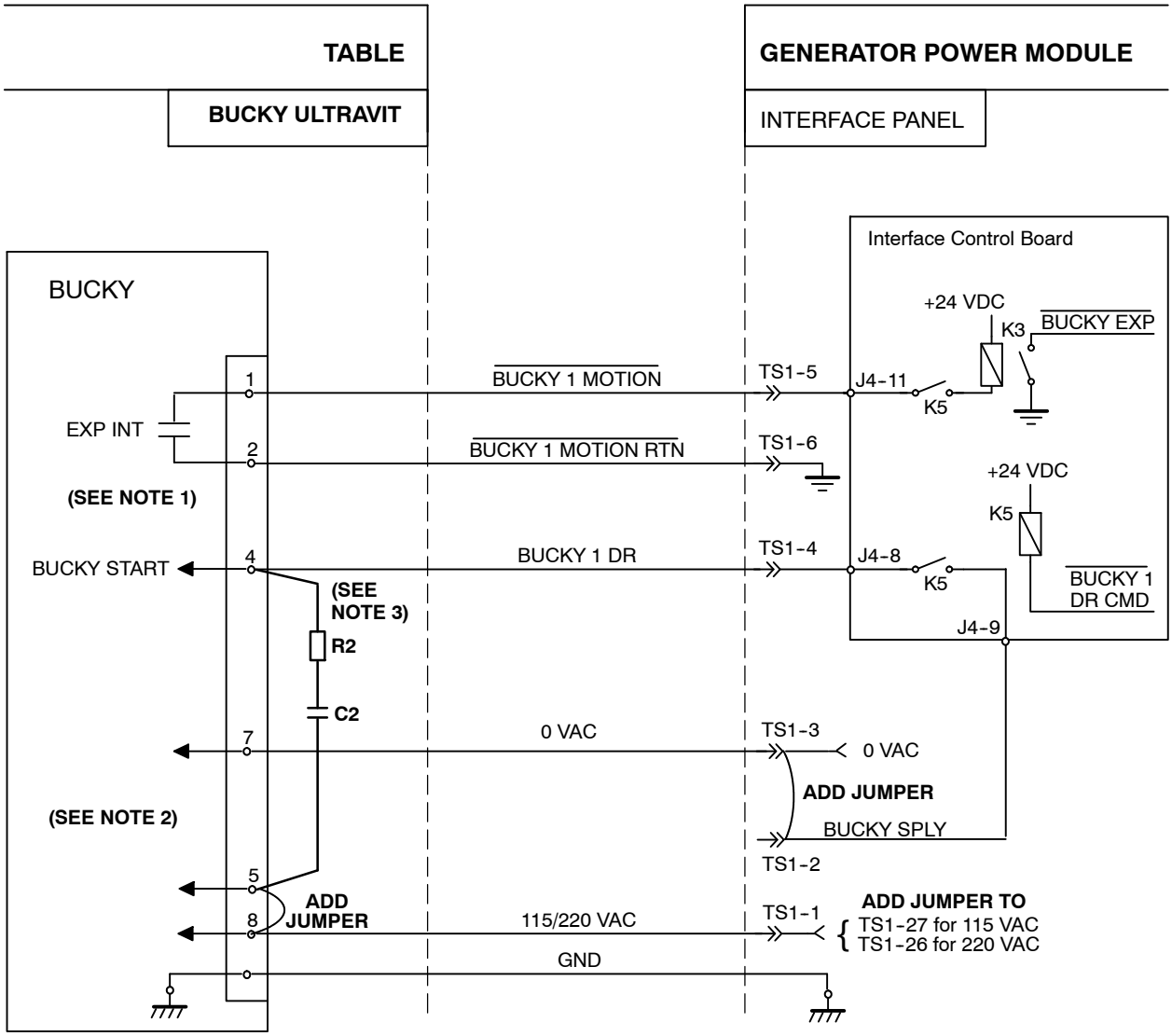
Interconnection Cable
Cable de Inerconexión

I/F-001

8 7 REV

TABLE BUCKY INTERFACE

INTERFAZ BUCKY MESA



NOTE 1: Be sure that 2 terminal is not connected to 4 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA 1: Asegurarse que el terminal 2 no está conectado al 4.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%; y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf. board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	3 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

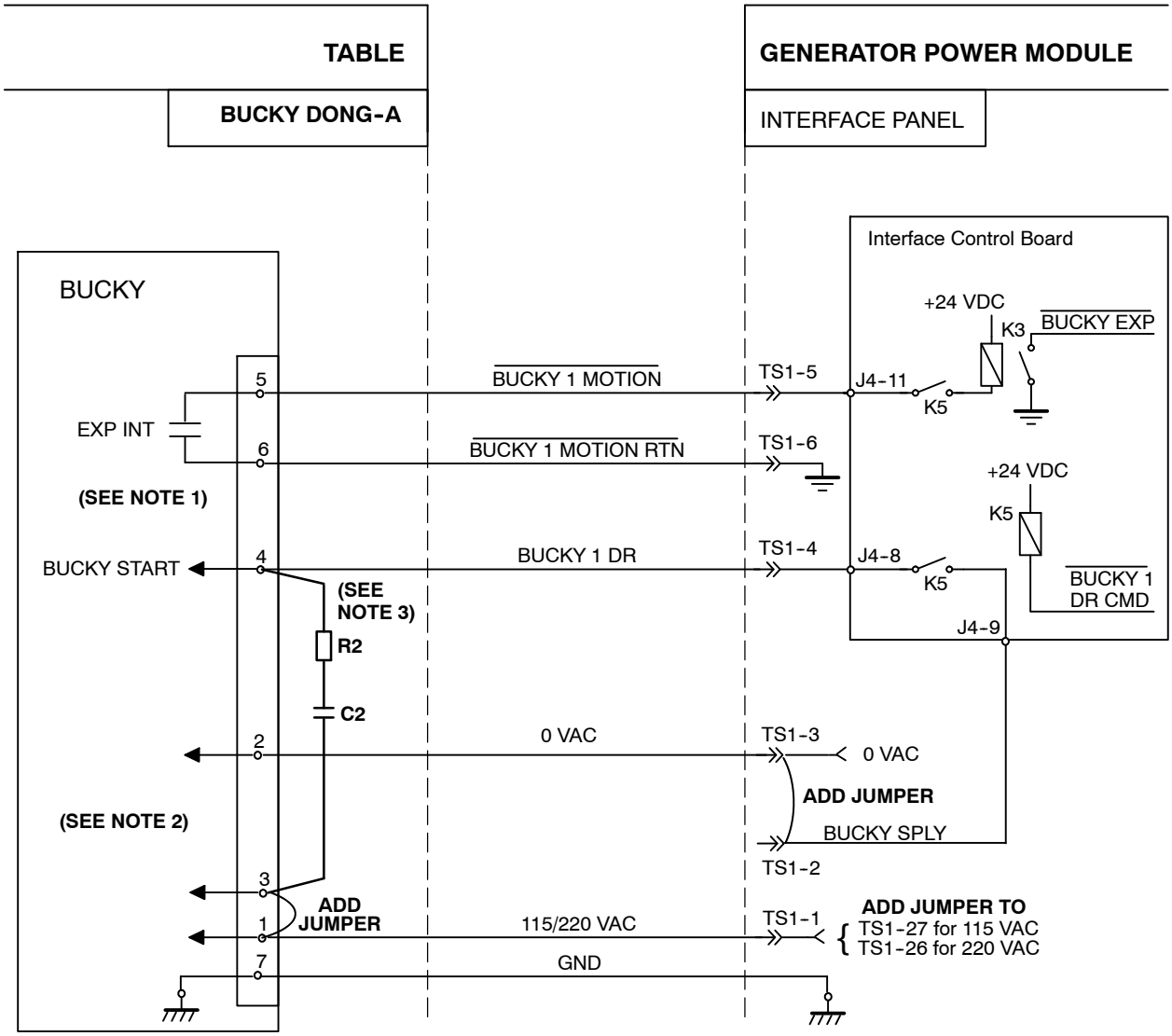
Interconnection Cable
Cable de Inerconexión

I/F-001

8 7 REV

TABLE BUCKY INTERFACE

INTERFAZ BUCKY MESA



NOTE 1: Be sure that 6 terminal is not connected to 4 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA 1: Asegurarse que el terminal 6 no está conectado al 4.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%; y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf. board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	4 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

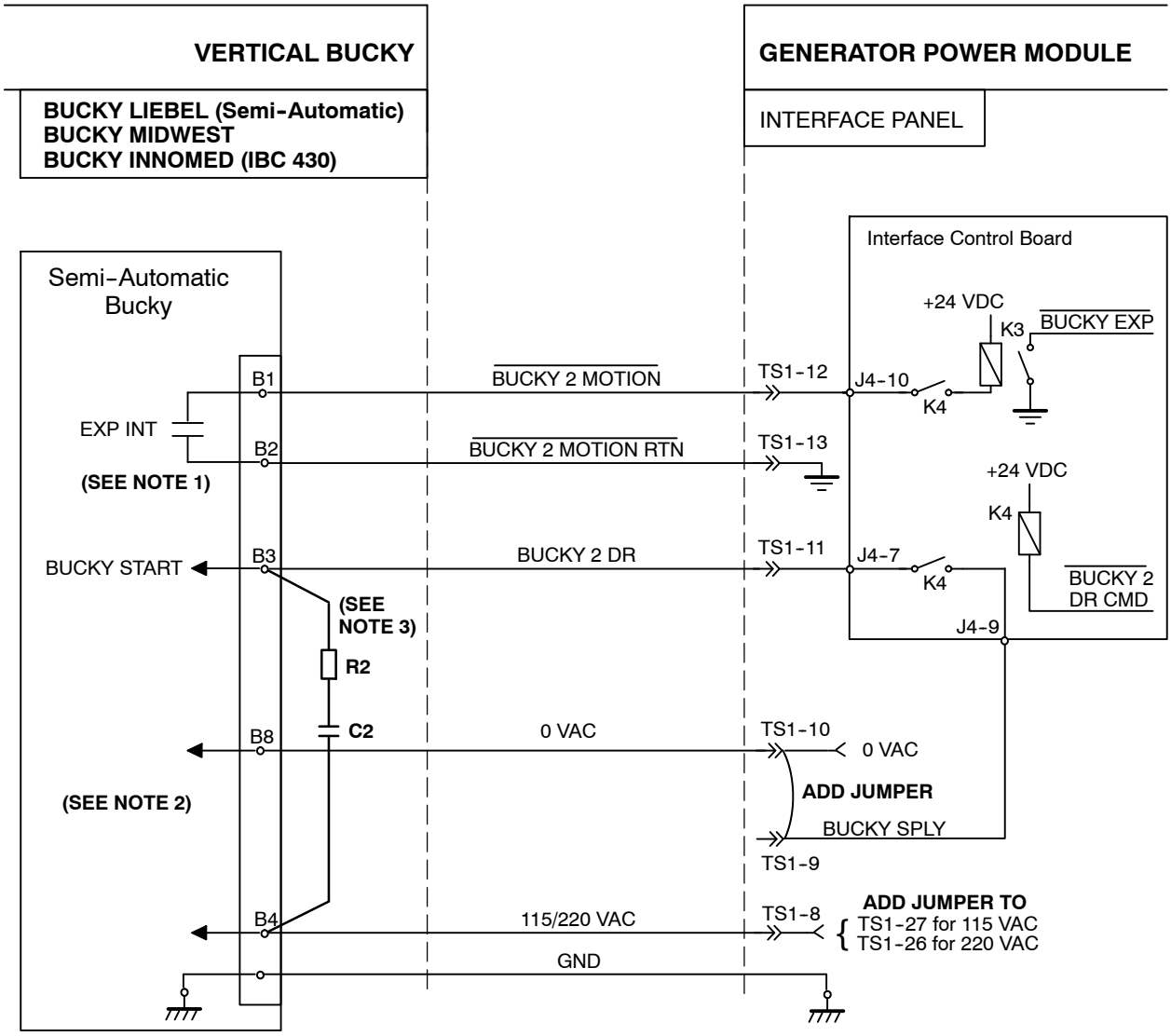
Interconnection Cable
Cable de Inerconexión

I/F-001

8 7 REV

TABLE BUCKY INTERFACE

INTERFAZ BUCKY MESA



NOTE 1: Be sure that B2 terminal is not connected to B3 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.
Don't add that R2-C2 for Liebel-Flarsheim 8000 Series Bucky, and remove resistor R36 and R37 in the INTERFACE CONTROL board.

NOTA 1: Asegurarse que el terminal B2 no está conectado al B3.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.
Para Bucky Liebel-Flarsheim Series 8000, no añadir esa R2-C2, y quitar las resistencias R36 y R37 en la tarjeta INTERFACE CONTROL.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	1 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

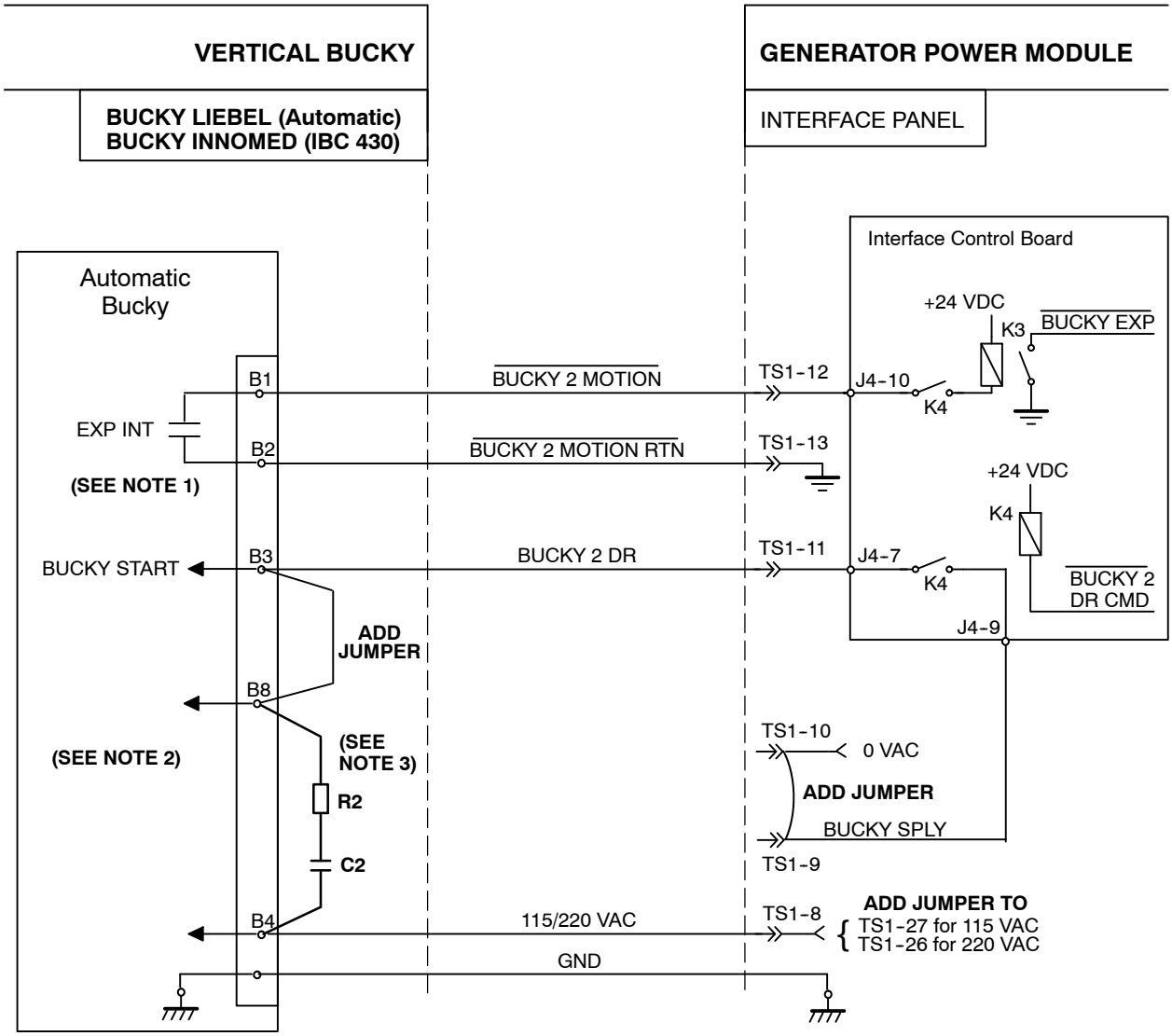
Interconnection Cable
Cable de Inerconexión

I/F-002

8 7 REV

VERTICAL BUCKY INTERFACE

INTERFAZ BUCKY VERTICAL



NOTE 1: Be sure that B2 terminal is not connected to B3 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.
Don't add that R2-C2 for Liebel-Flarsheim 8000 Series Bucky, and remove resistor R36 and R37 in the INTERFACE CONTROL board.

NOTA 1: Asegurarse que el terminal B2 no está conectado al B3.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.
Para Bucky Liebel-Flarsheim Series 8000, no añadir esa R2-C2, y quitar las resistencias R36 y R37 en la tarjeta INTERFACE CONTROL.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	2 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

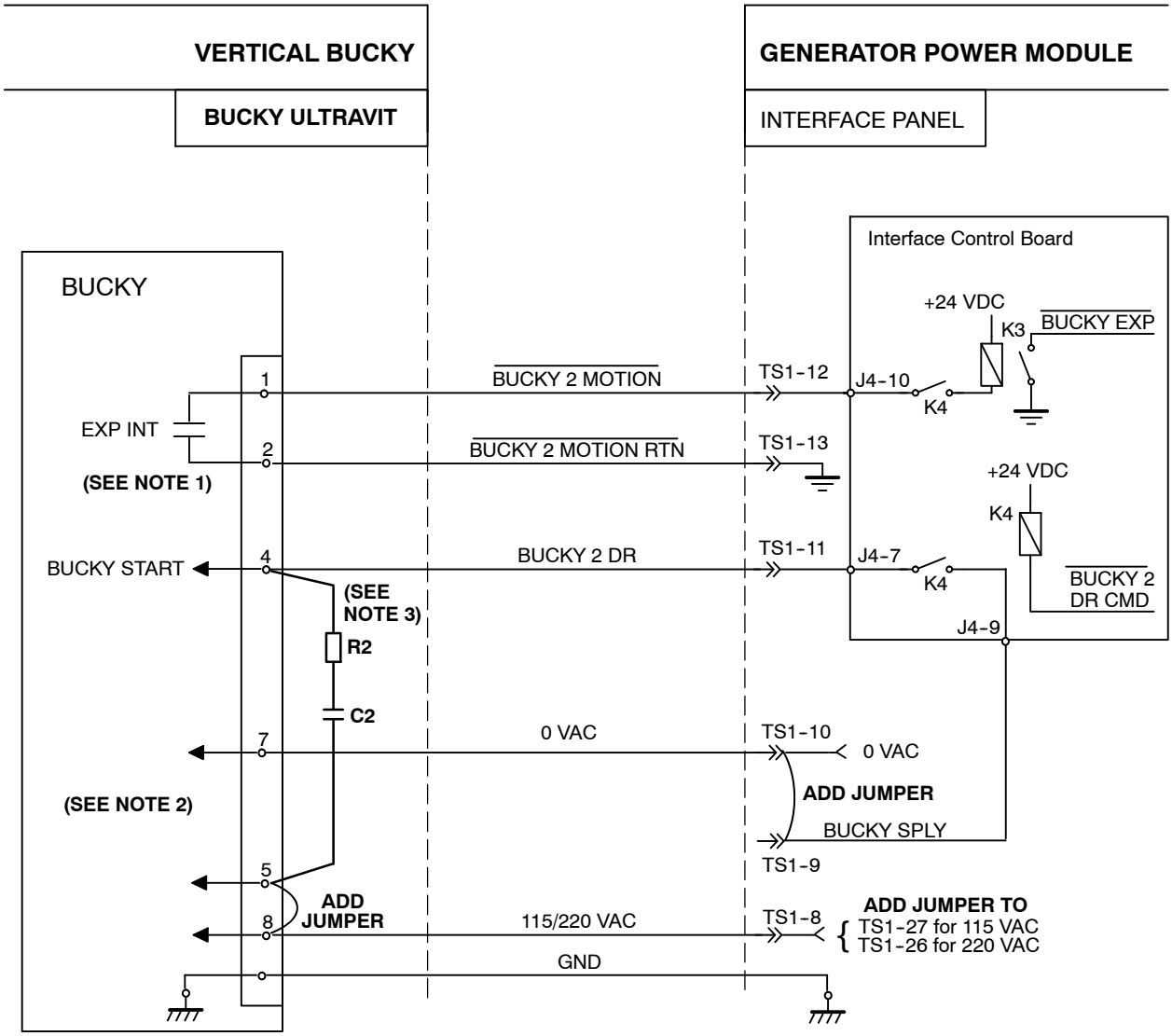
Interconnection Cable
Cable de Inerconexión

I/F-002

8 7 REV

VERTICAL BUCKY INTERFACE

INTERFAZ BUCKY VERTICAL



NOTE 1: Be sure that 2 terminal is not connected to 4 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA 1: Asegurarse que el terminal 2 no está conectado al 4.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%; y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	3 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

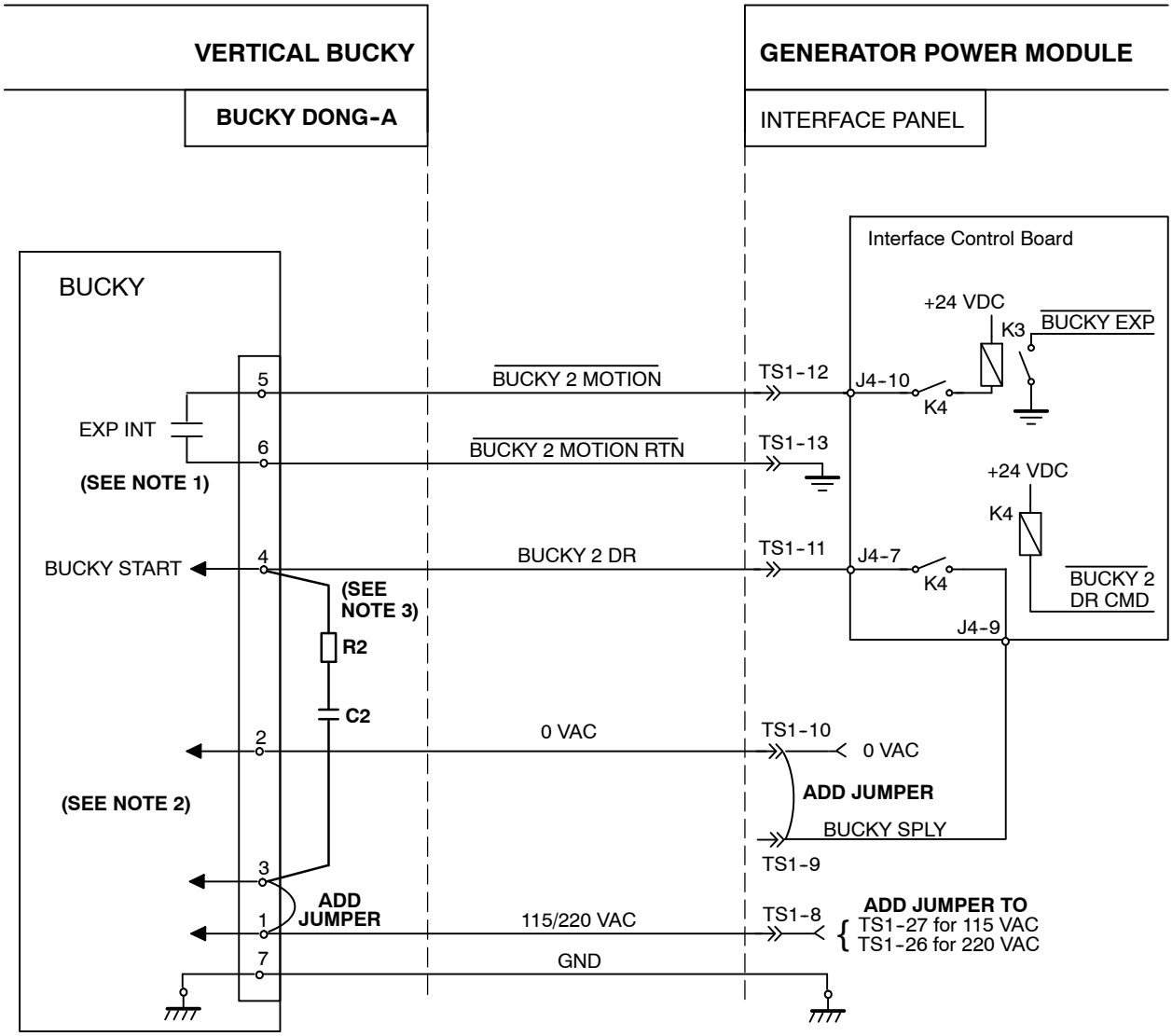
Interconnection Cable
Cable de Inerconexión

I/F-002

8 7 REV

VERTICAL BUCKY INTERFACE

INTERFAZ BUCKY VERTICAL



NOTE 1: Be sure that 6 terminal is not connected to 4 terminal.

NOTE 2: Select correct voltage in the bucky according to AC input

NOTE 3: In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA 1: Asegurarse que el terminal 6 no está conectado al 4.

NOTA 2: Seleccionar la tensión del bucky según la entrada AC

NOTA 3: En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%; y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
8	Interf board revised	F. GARCIA	14/03/08
7	Innomed added	F. GARCIA	09/09/02

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	15/03/95	4 / 4
REVISED	A. DIAZ	15/03/95	

SEDECAL

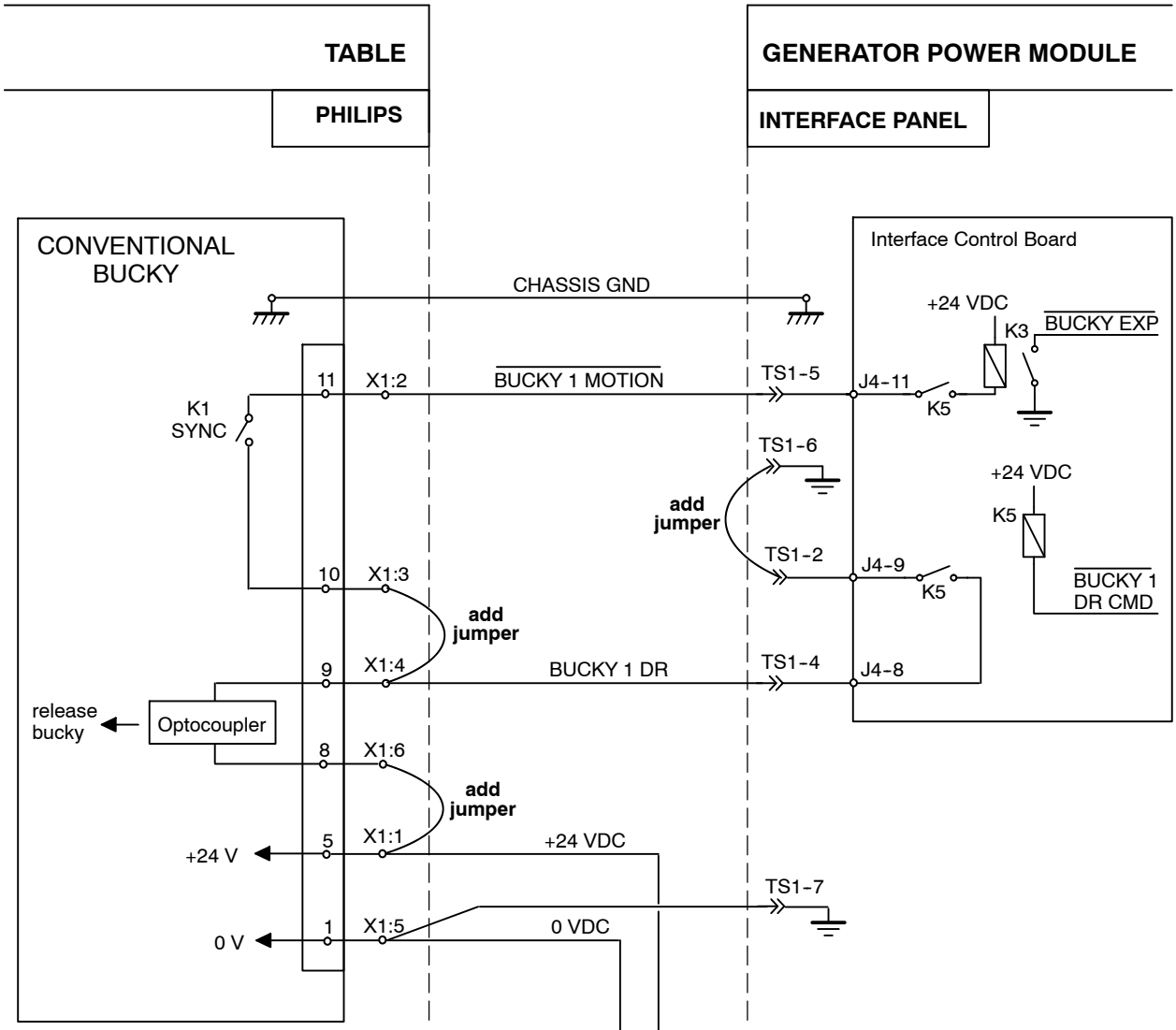
Interconnection Cable
Cable de Inerconexión

I/F-002

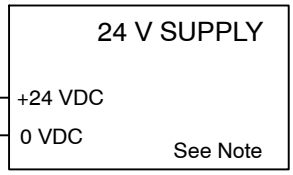
8 7 REV

VERTICAL BUCKY INTERFACE

INTERFAZ BUCKY VERTICAL



Note.- Occasionally, the +24 V supply could be obtained from TS1 interface of the Generator Power Module cabinet (see +24V UNR output terminal)



REV	DESCRIPTION	ISSUED BY	DATE
A	Interf board revised	F. García	14/03/08

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	22/04/97	1 / 1
REVISED	A. DIAZ	22/04/97	

SEDECAL INNERSCAN

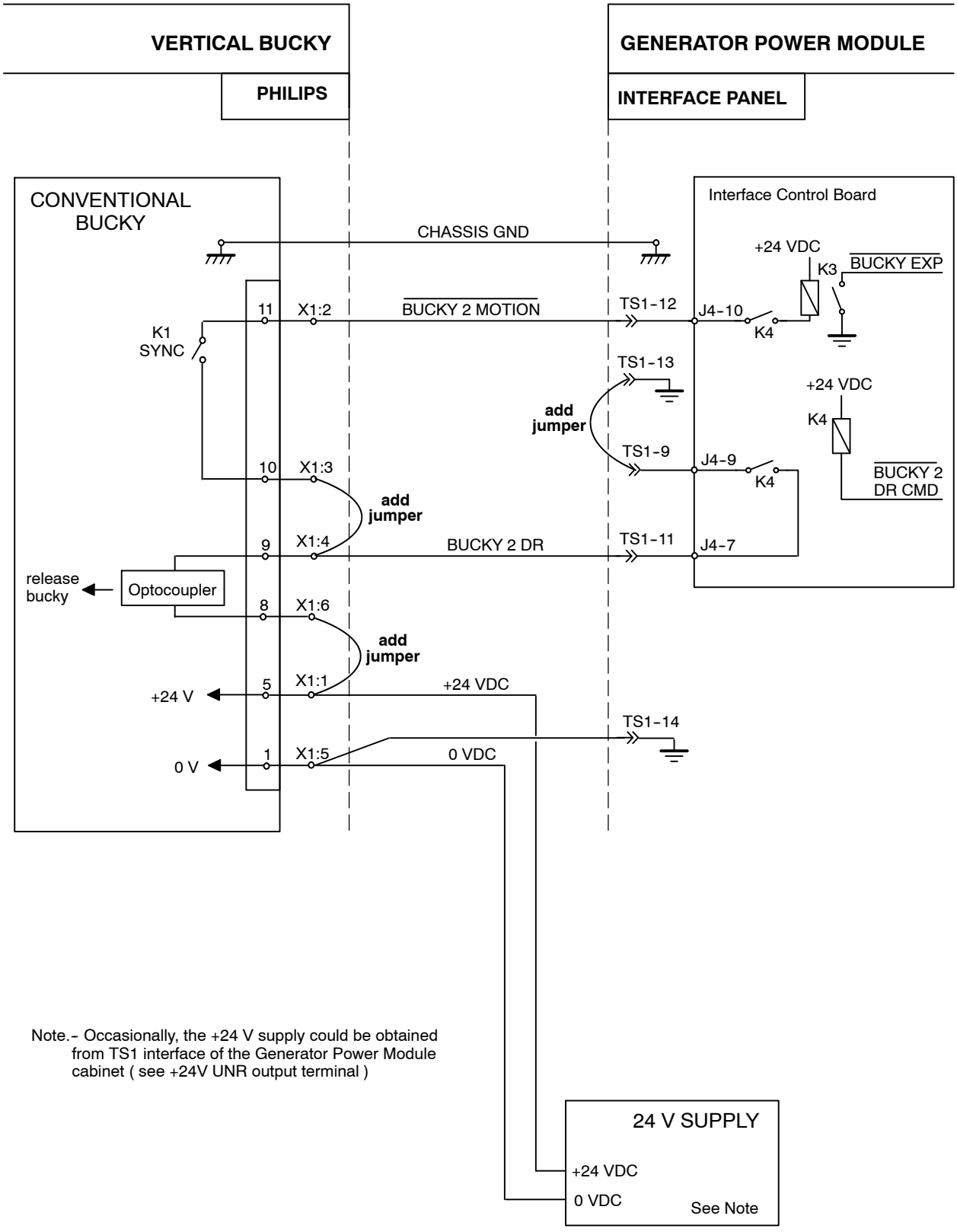
Interconnection Cable
Cable de Inerconexión

I/F-005

A ◄ REV

TABLE BUCKY INTERFACE

INTERFAZ BUCKY MESA



Note.- Occasionally, the +24 V supply could be obtained from TS1 interface of the Generator Power Module cabinet (see +24V UNR output terminal)

REV	DESCRIPTION	ISSUED BY	DATE
A	Interf board revised	F. García	14/03/08

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	22/04/97	1 / 1
REVISED	A. DIAZ	22/04/97	

SEDECAL INNERSCAN

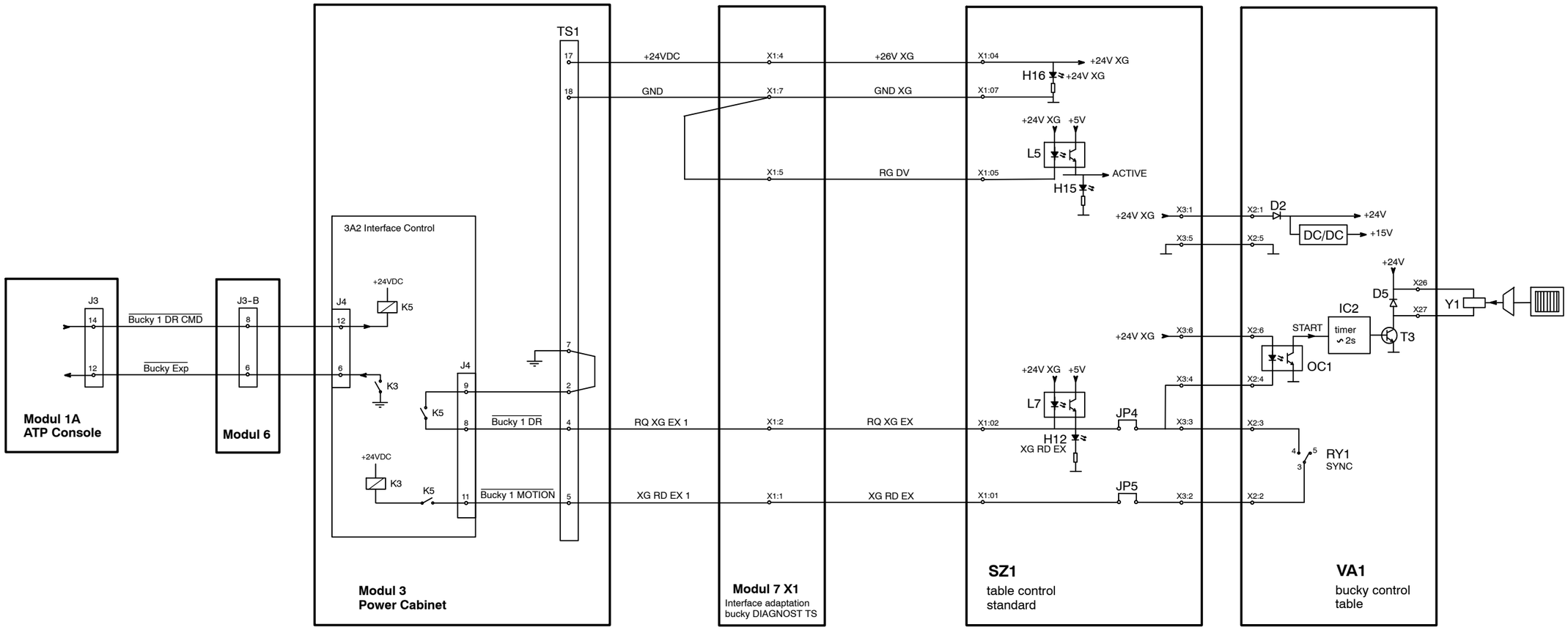
Interconnection Cable
Cable de Inerconexión

I/F-006

A ← REV

VERTICAL BUCKY INTERFACE

INTERFAZ BUCKY VERTICAL



REV	DESCRIPTION	ISSUED BY	DATE
A	nterf board revised	F. García	14/03/08

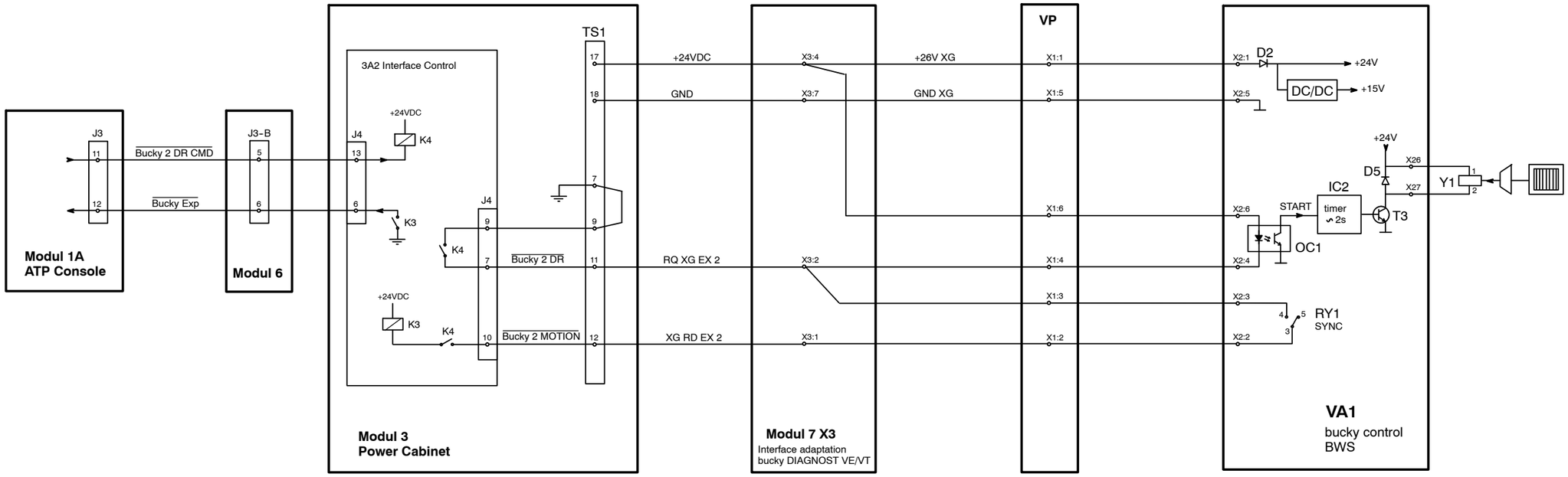
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	25/09/00	1 / 1
REVISED	A. DIAZ	25/09/00	

SEDECAL

DWG: I/F - 041

A REV

Bucky TS Table (PHILIPS) Interface Adaptation



REV	DESCRIPTION	ISSUED BY	DATE
A	Interf board revised	F. García	14/03/08

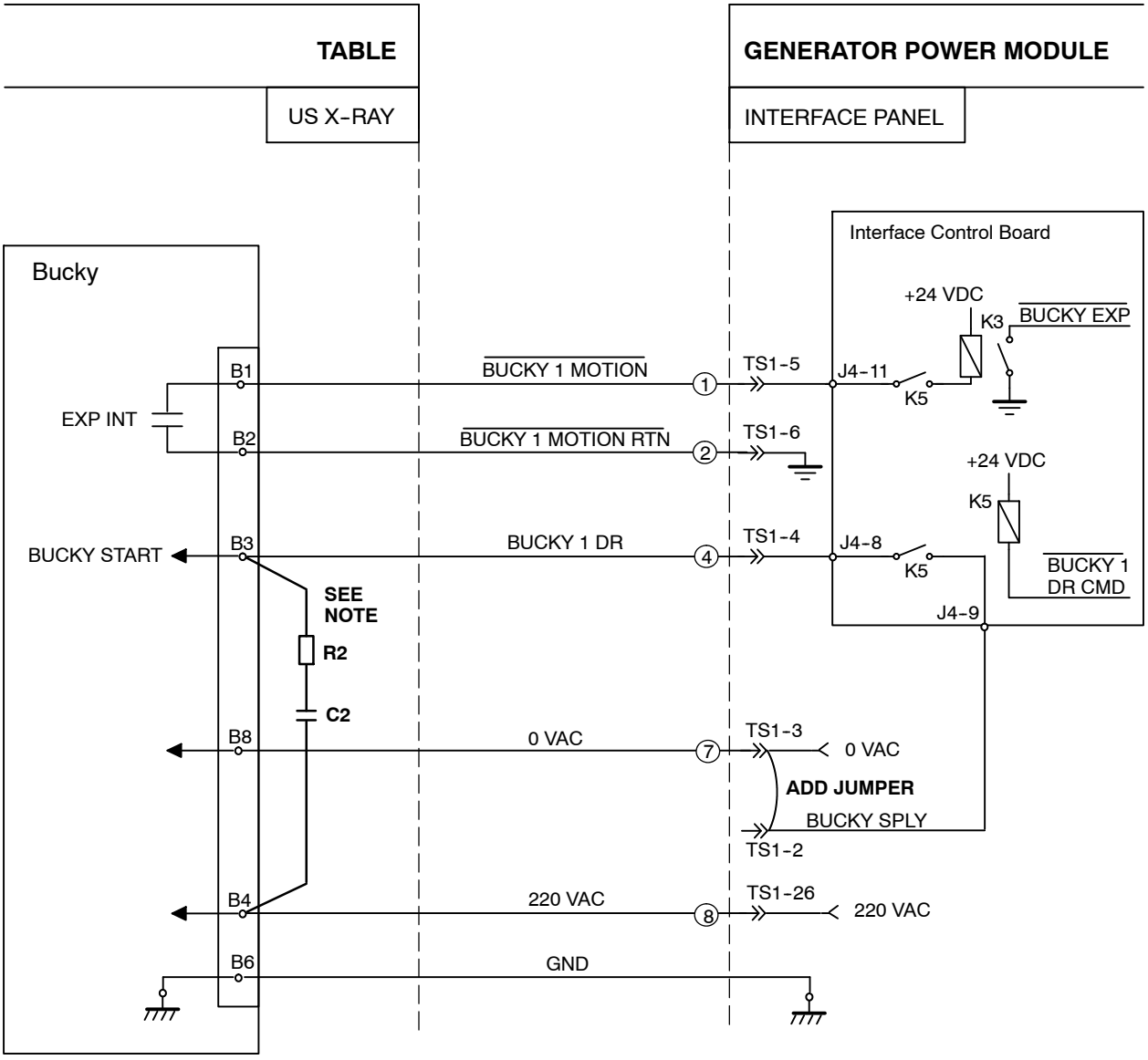
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	25/09/00	1 / 1
REVISED	A. DIAZ	25/09/00	

SEDECAL

DWG: I/F - 042

A REV

Bucky VE/VT (PHILIPS) Interface Adaptation



NOTE : In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA : En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
A	Interf bd. revised	F. García	14/03/08

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	08/08/01	1 / 2
REVISED	A. DIAZ	08/08/01	

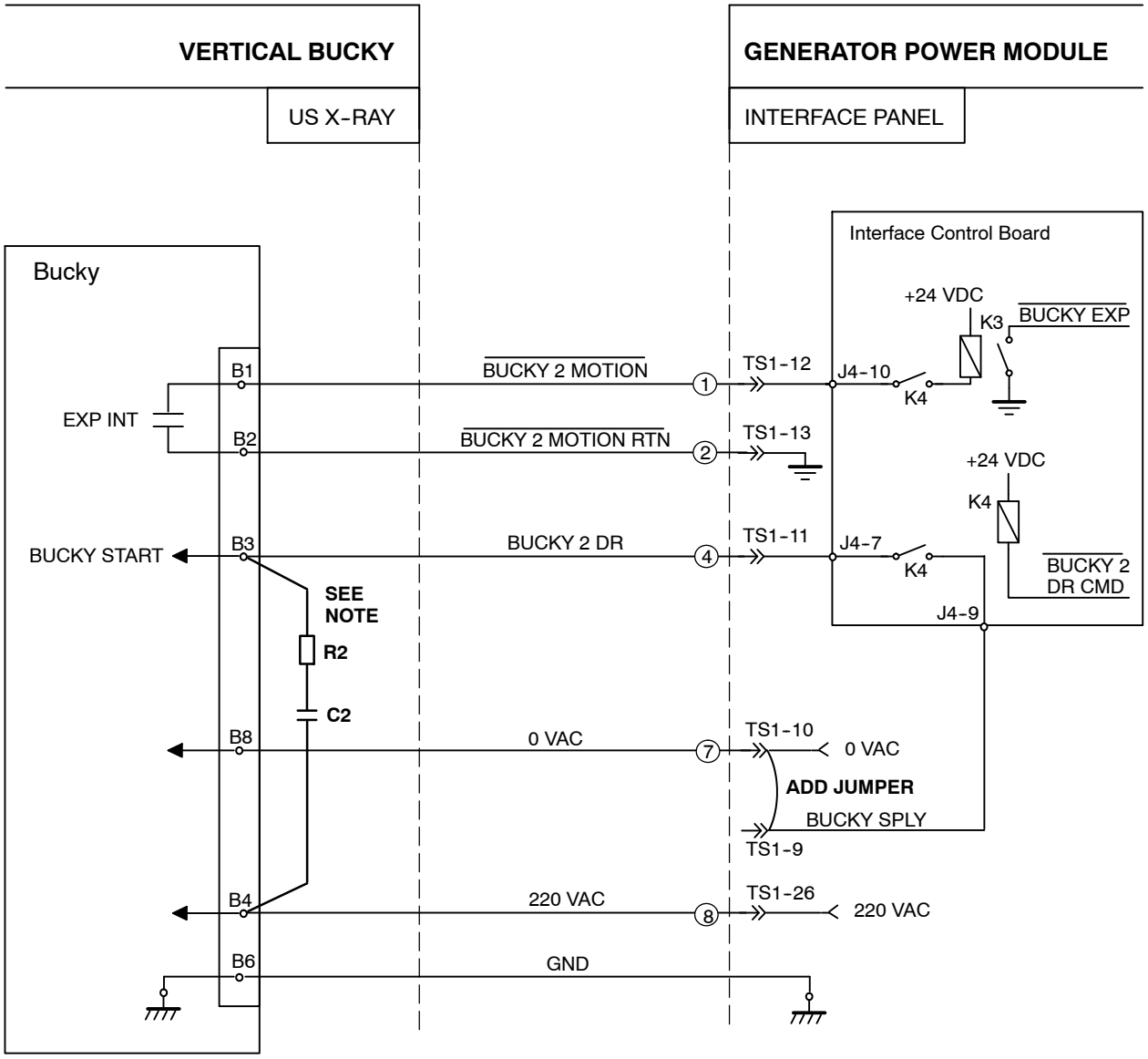
SEDECAL

Interconnection Cable
Cable de Inerconexión

I/F-045

A REV

US X-RAY BUCKY INTERFACE



NOTE : In the case of noise due to Bucky, add R2=22 ohm, 1/2w, 5%; and C2=470 nF, 250 VAC as shown.

NOTA : En caso de ruidos debido al Bucky, añadir R2=22 ohm, 1/2w, 5%, y C2=470 nF, 250 VAC según se muestra.

REV	DESCRIPTION	ISSUED BY	DATE
A	Interf bd. revised	F. García	14/03/08

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	08/08/01	2 / 2
REVISED	A. DIAZ	08/08/01	

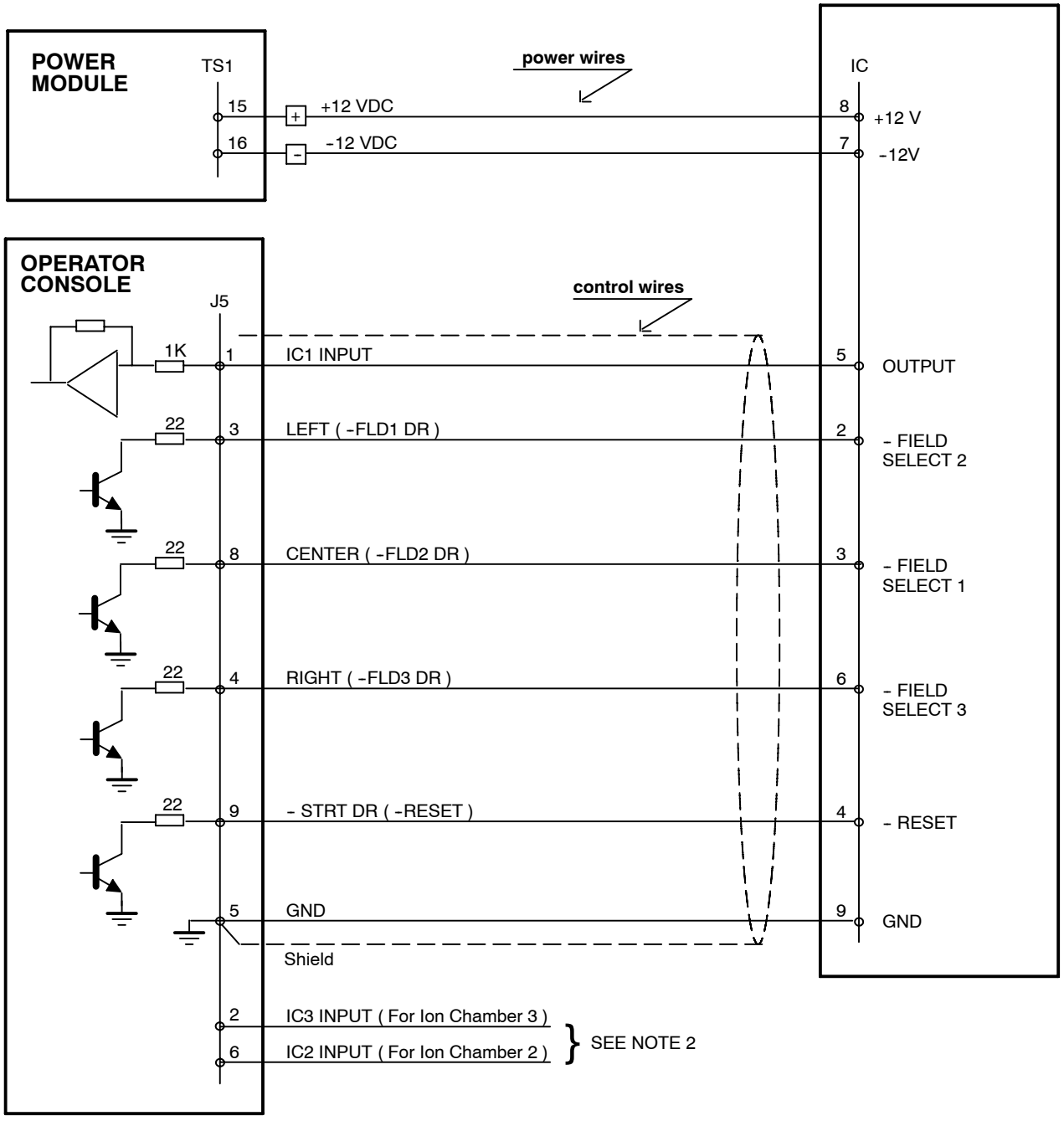
SEDECAL

Interconnection Cable
Cable de Inerconexión

I/F-045

A ◄ REV

US X-RAY BUCKY INTERFACE



NOTE 1.- CABLE COMPATIBLE FOR ONE ION CHAMBER (STANDARD COMMUNICATION).
THE CABLE HAS TWO SEPARATED PARTS : CONTROL AND POWER.

NOTE 2.- THE A.E.C. CABLE IS FACTORY CONNECTED FOR ION CHAMBER 1 (J5-1). IF ION CHAMBER 2 OR ION CHAMBER 3 IS USED, REMOVE THE CONNECTION TO J5-1 AND CONNECT TO J5-6 OR J5-2 RESPECTIVELY.

NOTE 3.- THE ASSOCIATION BETWEEN FIELD SELECTION AND AREA DEPENDS ON TYPE OF ION CHAMBER. CHECK THAT THE FIELD SELECTION IN THE ION CHAMBER IS ACCORDING TO THE AREA SELECTION ON THE OPERATOR CONSOLE.

REV	DESCRIPTION	ISSUED BY	DATE
E	Notes	F. GARCIA	24/05/96
D	EMC	F. GARCIA	29/03/96
C	s/NC 95/181	F. GARCIA	02/01/96
B		F. GARCIA	12/12/95
A	s/NC 95/098	F. GARCIA	30/06/95

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	04/19/95	1 / 1
REVISED	A. DIAZ	04/19/95	

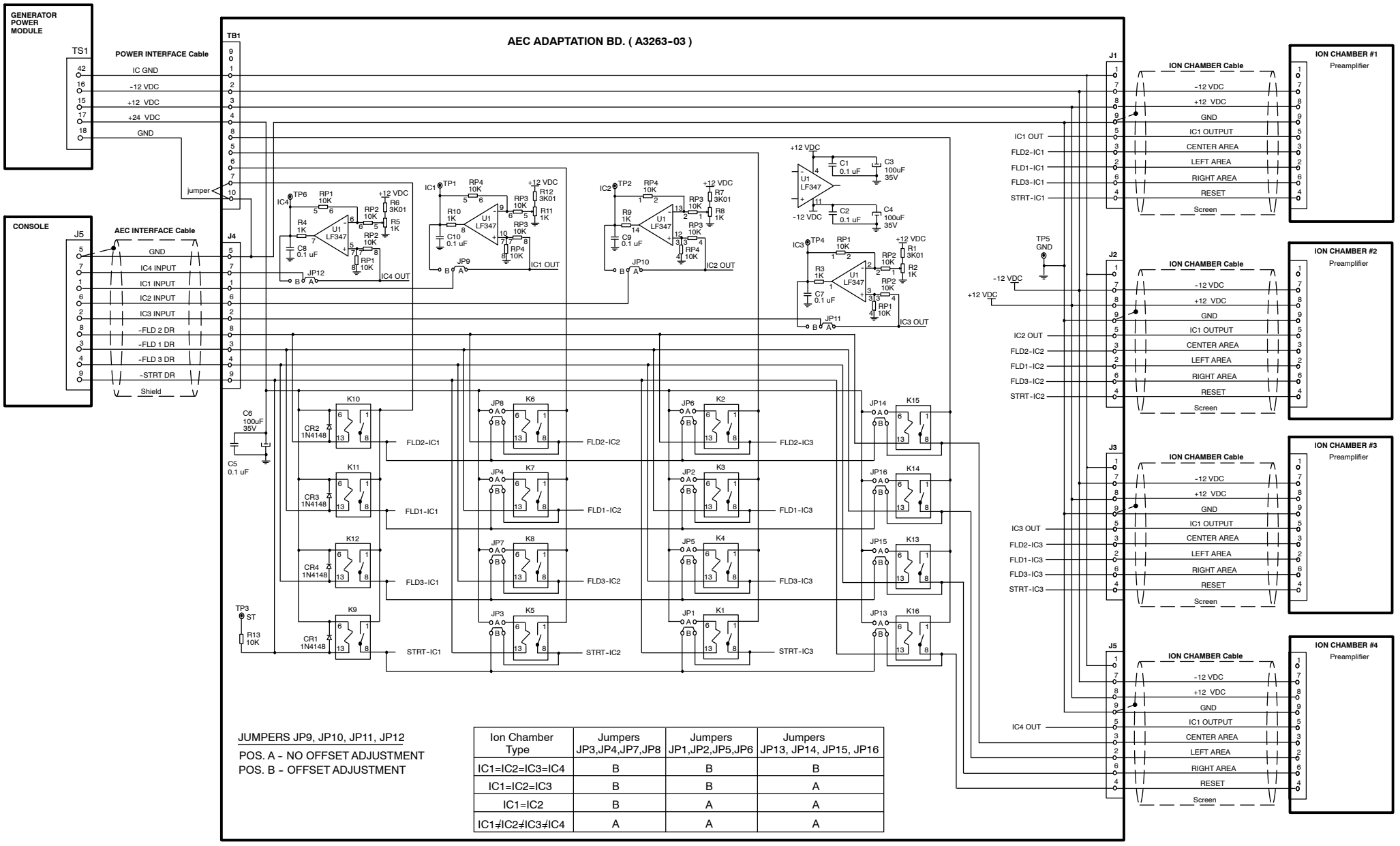
SEDECAL

I/F-003

E D C B A ← REV

AEC COMPATIBILITY
(for ONLY ONE IonChamber)

COMPATIBILIDAD AEC
(para SOLO UNA Cámara de Ionización)



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT
POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

Note.- Compatible interface with preamplifier for Ion Chamber types :

- Expos-AID
- Vacutec 70145/70151
- Comet Ion Chambers with PA-021 Preamplifier
- Claymount with preamplifier SSMC1006

REV	DESCRIPTION	ISSUED BY	DATE
B	new interface	F. García	30/09/10
A	Version 03	F. GARCIA	10/10/99

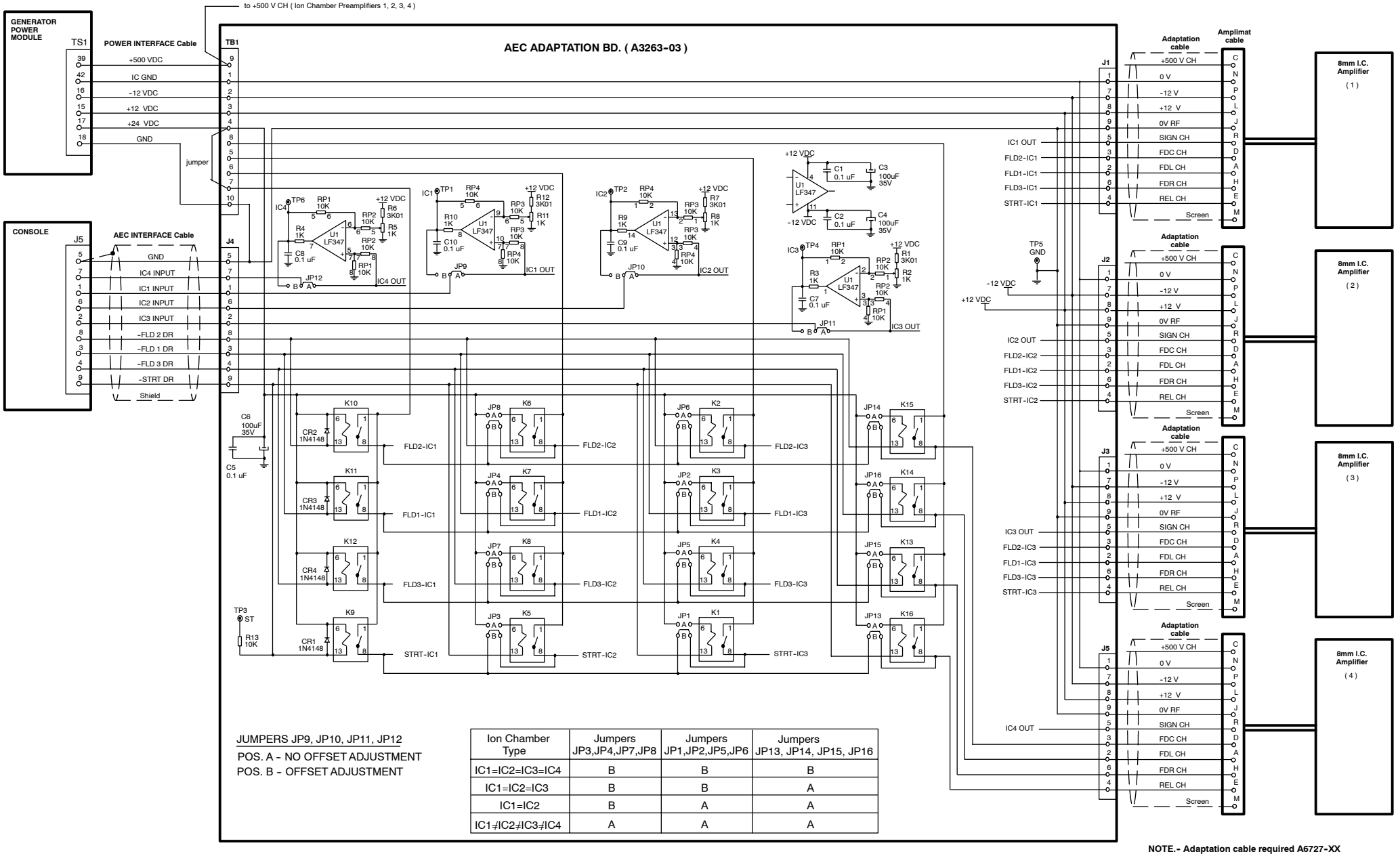
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	07/08/96	1 / 1
REVISED	A. DIAZ	10/10/96	

SEDECAL

DWG: IM-015

B A REV

AEC COMPATIBILITY with AID / VACUTEC / COMET / CLAYMOUNT



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT

POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

NOTE.- Adaptation cable required A6727-XX

NOTE

Compatible interface with amplifier of 8mm measuring chamber.

REV	DESCRIPTION	ISSUED BY	DATE
C	I/F - 2 sheets	F. GARCIA	10/10/01
B	Adaptation cable	F. GARCIA	03/03/00
A	VERSION 03	F. GARCIA	10/10/99

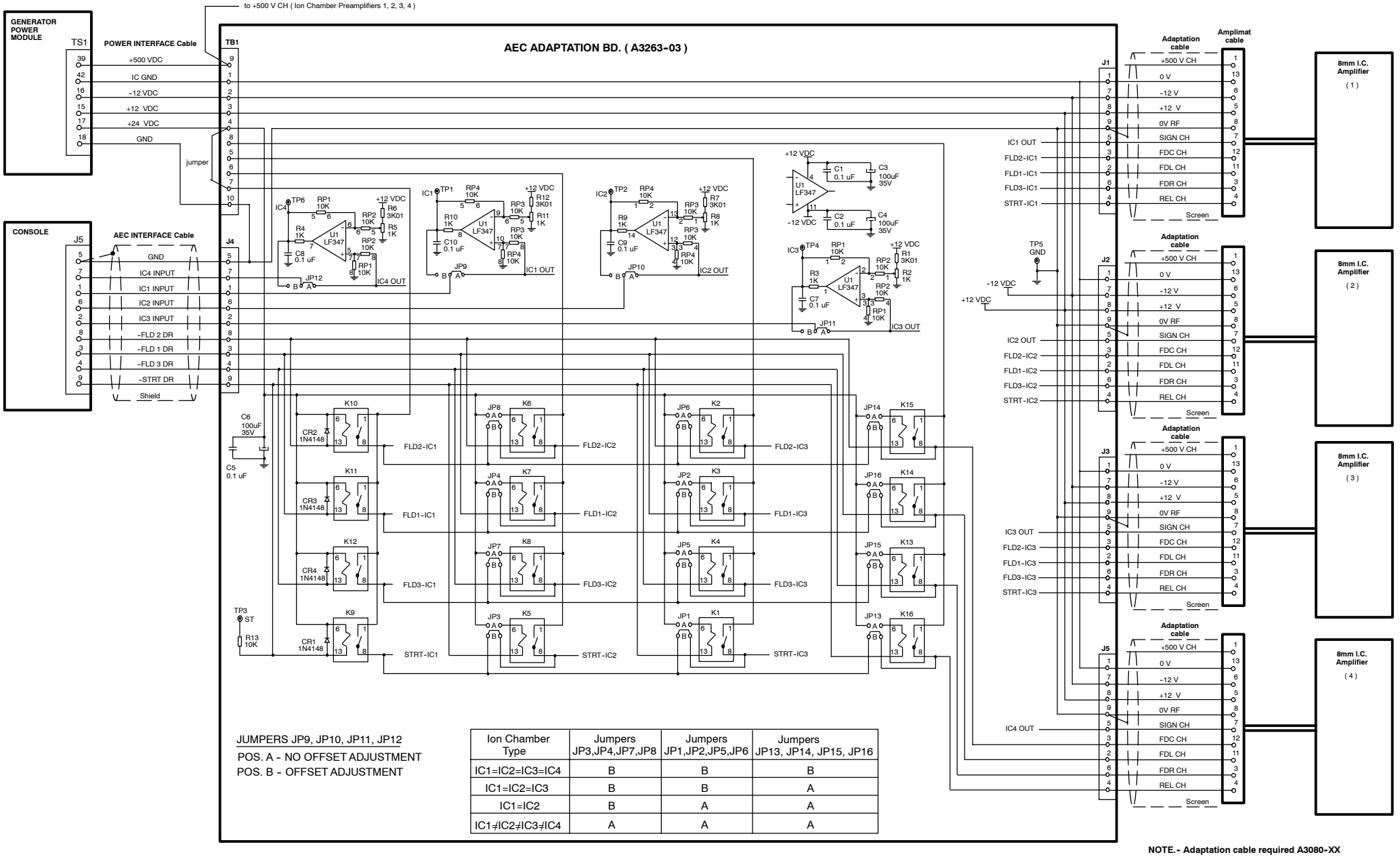
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	09/09/98	1 / 2
REVISED	A. DIAZ	09/09/98	

SEDECAL

DWG: IM-014

C B A REV

AEC-PHILIPS COMPATIBILITY (FOUR ION CHAMBERS)



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT

POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

NOTE.- Adaptation cable required A3080-XX

NOTE

Compatible interface with amplifier of 8mm measuring chamber.

REV	DESCRIPTION	ISSUED BY	DATE
C	I/F - 2 sheets	F. GARCIA	10/10/01
B	Adaptation cable modified	F. GARCIA	03/03/00
A	VERSION 03	F. GARCIA	10/10/99

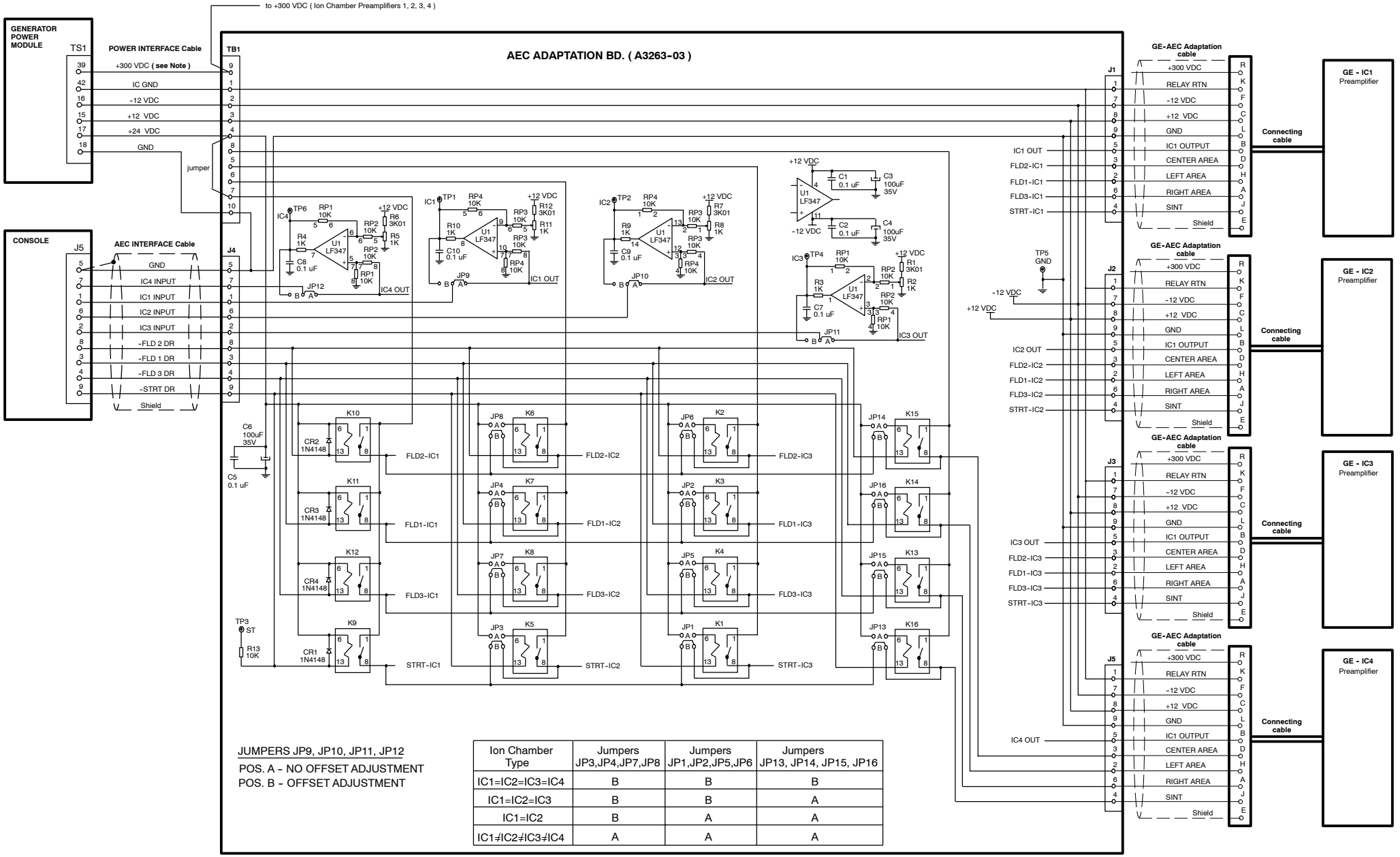
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	09/09/98	2 / 2
REVISED	A. DIAZ	09/09/98	

SEDECAL

DWG: IM-014

C B A REV

AEC-PHILIPS COMPATIBILITY (FOUR ION CHAMBERS)



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT
POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

NOTE :
The +300 VDC only required for old GE Ion Chambers (not generated on preamplifier board)

REV	DESCRIPTION	ISSUED BY	DATE
A	Version 03	F. GARCIA	10/10/99

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	10/10/97	1 / 1
REVISED	A. DIAZ	10/10/97	

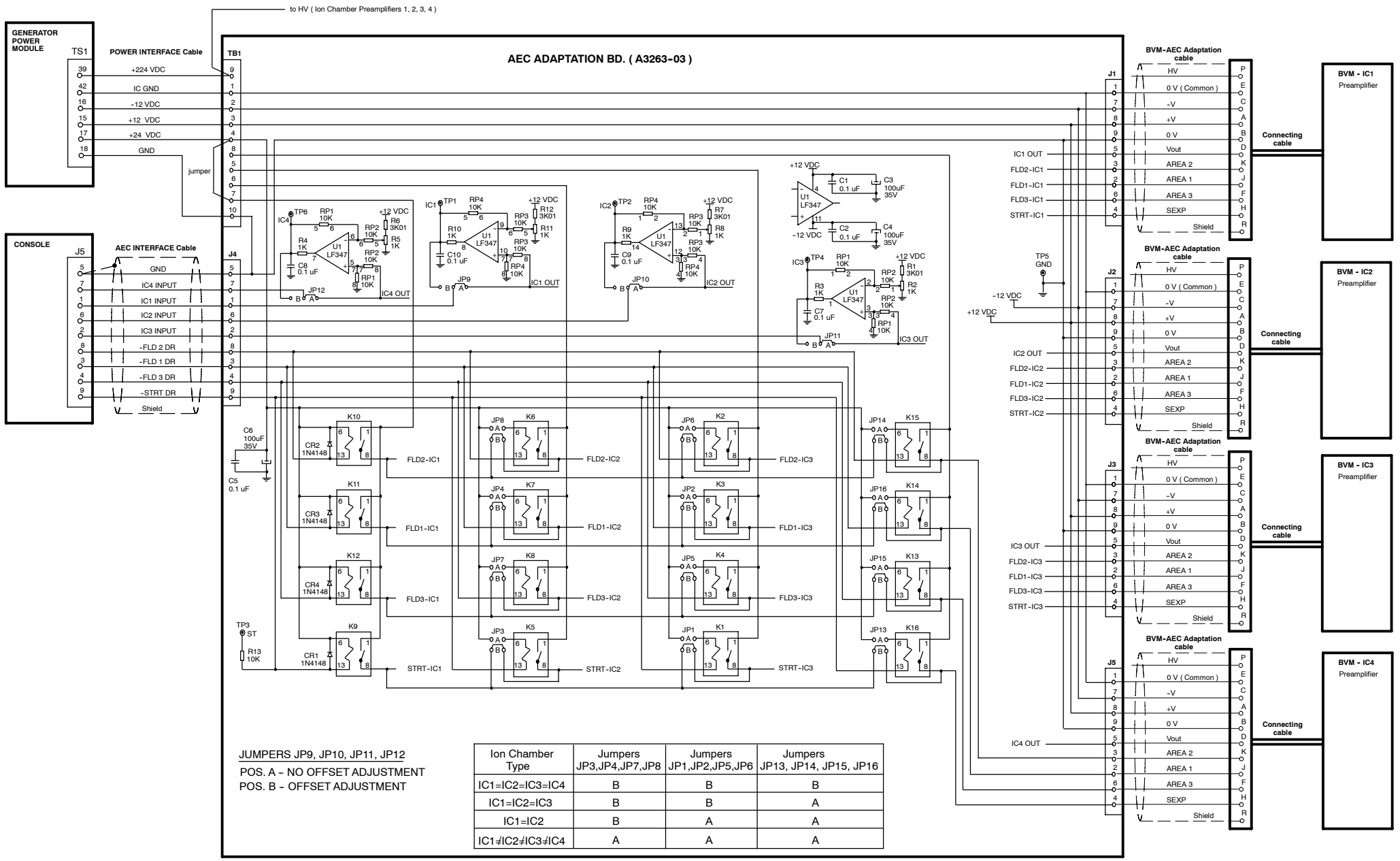
DWG: IM-018

A REV

SEDECAL

AEC - GE COMPATIBILITY (FOUR ION CHAMBERS)

-FIELD SEL 3



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT

POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

REV	DESCRIPTION	ISSUED BY	DATE
A	Version 03	F. GARCIA	10/10/99

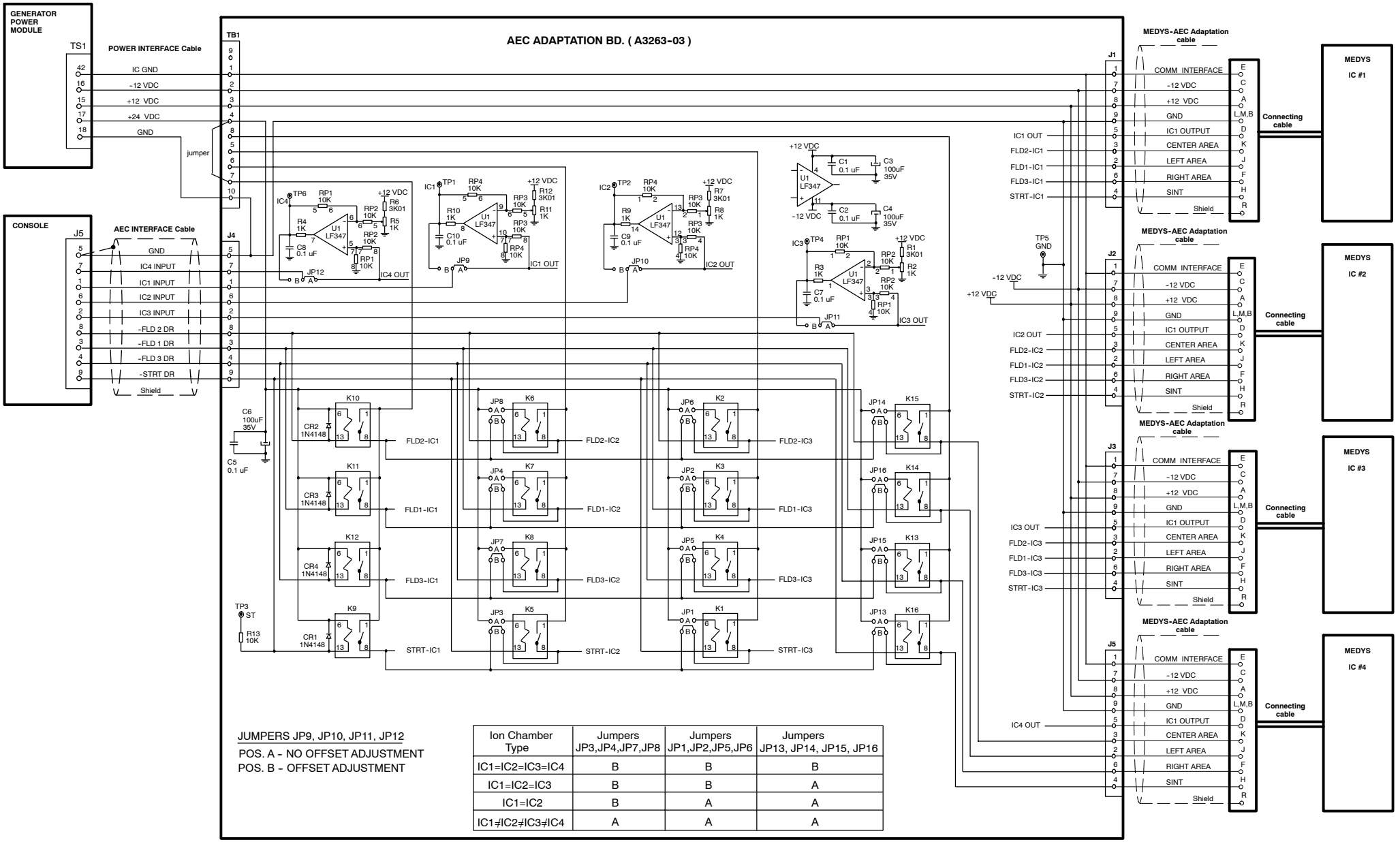
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	10/10/97	1 / 1
REVISED	A. DIAZ	10/10/97	

SEDECAL

DWG: IM-019

REV: A

AEC - BVM COMPATIBILITY (FOUR ION CHAMBERS)



JUMPERS JP9, JP10, JP11, JP12

POS. A - NO OFFSET ADJUSTMENT

POS. B - OFFSET ADJUSTMENT

Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

REV	DESCRIPTION	ISSUED BY	DATE
A	CN 03/211	F. García	09/12/03

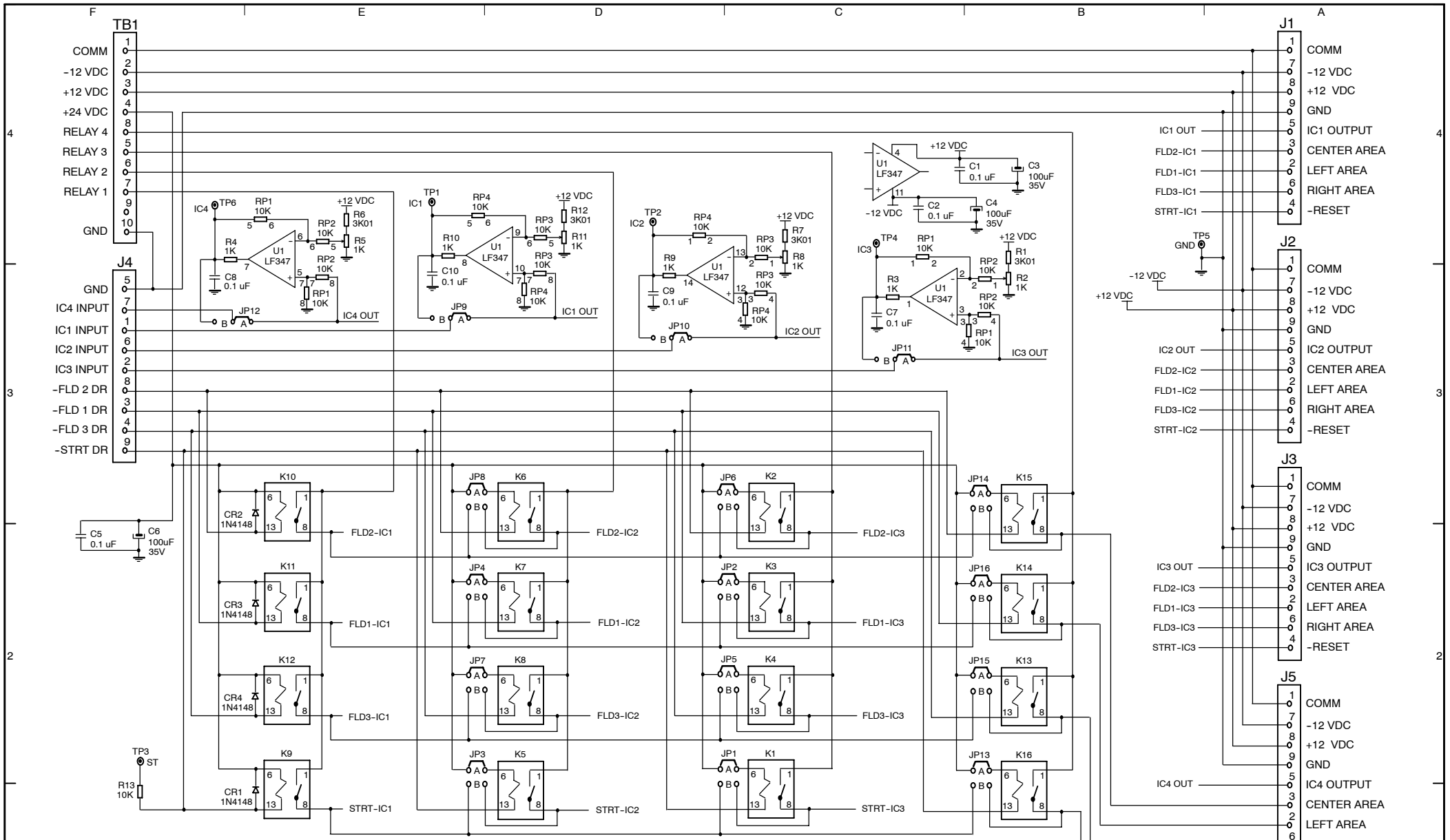
	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	08/08/01	1 / 1
REVISED	A. DIAZ	10/10/01	

SEDECAL

DWG: IM-081

A REV

MEDYS ION CHAMBER ADAPTATION



Ion Chamber Type	Jumpers JP3,JP4,JP7,JP8	Jumpers JP1,JP2,JP5,JP6	Jumpers JP13, JP14, JP15, JP16
IC1=IC2=IC3=IC4	B	B	B
IC1=IC2=IC3	B	B	A
IC1=IC2	B	A	A
IC1≠IC2≠IC3≠IC4	A	A	A

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	07/07/99	1 / 1
REVISED	A. DIAZ	07/07/99	

SEDECAL

DWG: A3263-03

REV

AEC ADAPTATION

ADAPTACION AEC

Note.- Version 03 as CN 99/45

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

Note.- Connect ABC OUT as shown when using AEC CONTROL board - version A3012-XX (Large board). Connect ABC OUT (as PT INPUT) to TS1-51 (for Compact Generator), or to TS3-4 (for Tall Generator), when using AEC CONTROL board - version A3012-XX (Small board).

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE
	ABC OUT

TS3

18	SFD sel (WS1)
11	

R&F Interface Harness (A6760-01)

R & F ADAPTATION Board (A3514-04)

J3

1	
2	
3	
4	
5	
6	
7	
8	
9	SPARE 5
10	
11	SPARE 1
12	SPARE 2
13	SPARE 3
14	SPARE 4
15	

Note.- Configure jumpers position according to the System used with the Generator

TB5

FOR DIGITAL CONTROL OF THE ABC (THE ABC OUT SIGNAL IS NOT USED)

1	KV UP
2	KV DWN
3	GND

TB4

Table Cable

1	ORDER COMM
2	PREP ORDER
3	RAD ORDER
4	FLUORO ORDER
5	SFD SELECT
6	SEL RTN
7	EXP ON/END
8	EXP/RDY RTN
9	GEN READY
10	IN COMM
11	I.I. MINIMUM
12	I.I. MEDIUM
13	I.I. MAXIMUM
14	HORIZ REVERSE
15	VERT REVERSE
16	IN 1
17	IN 2
18	IN 3
19	IN 4
20	GND

TABLE

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-XX)

Note.- J1 connector of the board is J10 on the Console

J1

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	-CAM FL EXP
8	-PULSED FL SEL
9	
10	-6 IN SEL
11	
12	GND
13	-MEM EN
14	-MEM GATE
15	-BOOST FLUORO

Fluoro Adaptation Cable (A3267-01/02)

J1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

ATP CONSOLE Board (A3024-XX)

J13

1	time1
2	time2
3	time3
4	time4
11	tomo (WS2)

Tomo Cable (A6742-01/02)

TB3

1	
2	
3	
4	
5	TOMO TIME 4
6	TOMO TIME 3
7	TOMO TIME 2
8	TOMO TIME 1
9	
10	

FOR TOMO TIME OUTPUT SIGNALS FROM TABLE

Fluoro Foot-Switch

FLUORO FT SW
FLUORO FT SW RTN

TB1

1	GND
2	-12 VDC
3	+12 VDC
4	+24 VDC
5	DSI SELECT
6	DIRECT SELECT
7	SPECIAL SELECT
8	PULSED FL SEL
9	BOOST FLUORO
10	

FOR POWER SUPPLY OF THE ADAPTATION BOARDS

FOR WORKSTATION INFORMATION TO THE TABLE

FOR FLUORO MODES INFORMATION

TB2

Imaging System Cable #1

1	ZOOM 1
2	ZOOM 2
3	ZOOM 3
4	ZOOM COMMON
5	REV COMMON
6	H REV
7	V REV
8	LIH
9	LIH RTN
10	VIDEO UNBLANK
11	VIDEO UNBLANK RTN
12	ABC SIGNAL
13	ENABLE
14	GND
15	+24 VDC
16	SYNC
17	OUT 1
18	OUT 2
19	OUT 3
20	OUT 4

J2

Imaging System Cable #2

1	O. FLUORO
2	Fluoro FT SW
3	COMM (+24V)
4	EXP SYNC +
5	PHL-L (KV UP)
6	PHL-H (KV DWN)
7	MAIN GATE -
8	VID MEM EN -
9	EXP SYNC -

IMAGING SYSTEM

VID IN — **Video Cable** — VID OUT

VID OUT — **Video Cable (A6765-01))** — TV MONITOR

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE
DRAWING	F.GARCIA	07/07/03
REVISED	A.DIAZ	07/07/03

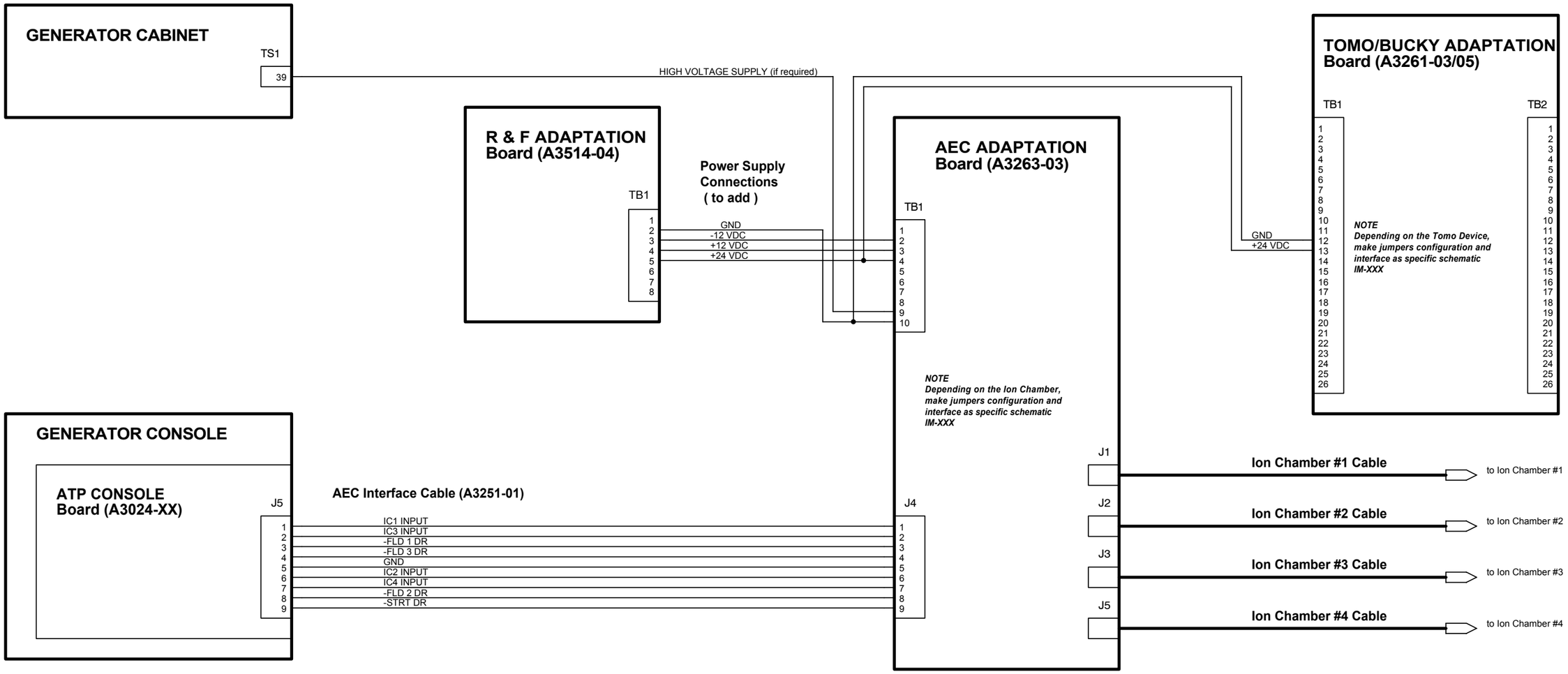
SHEET / OF: 1/2

SEDECAL

A3514-04-S

REV

R & F INTERFACE



THIS SHEET ONLY APPLIES WHEN AEC ADAPTATION BOARD AND/OR TOMO/BUCKY ADAPTATION BOARD ARE REQUIRED

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE
DRAWING	F.GARCIA	07/07/03
REVISED	A.DIAZ	07/07/03

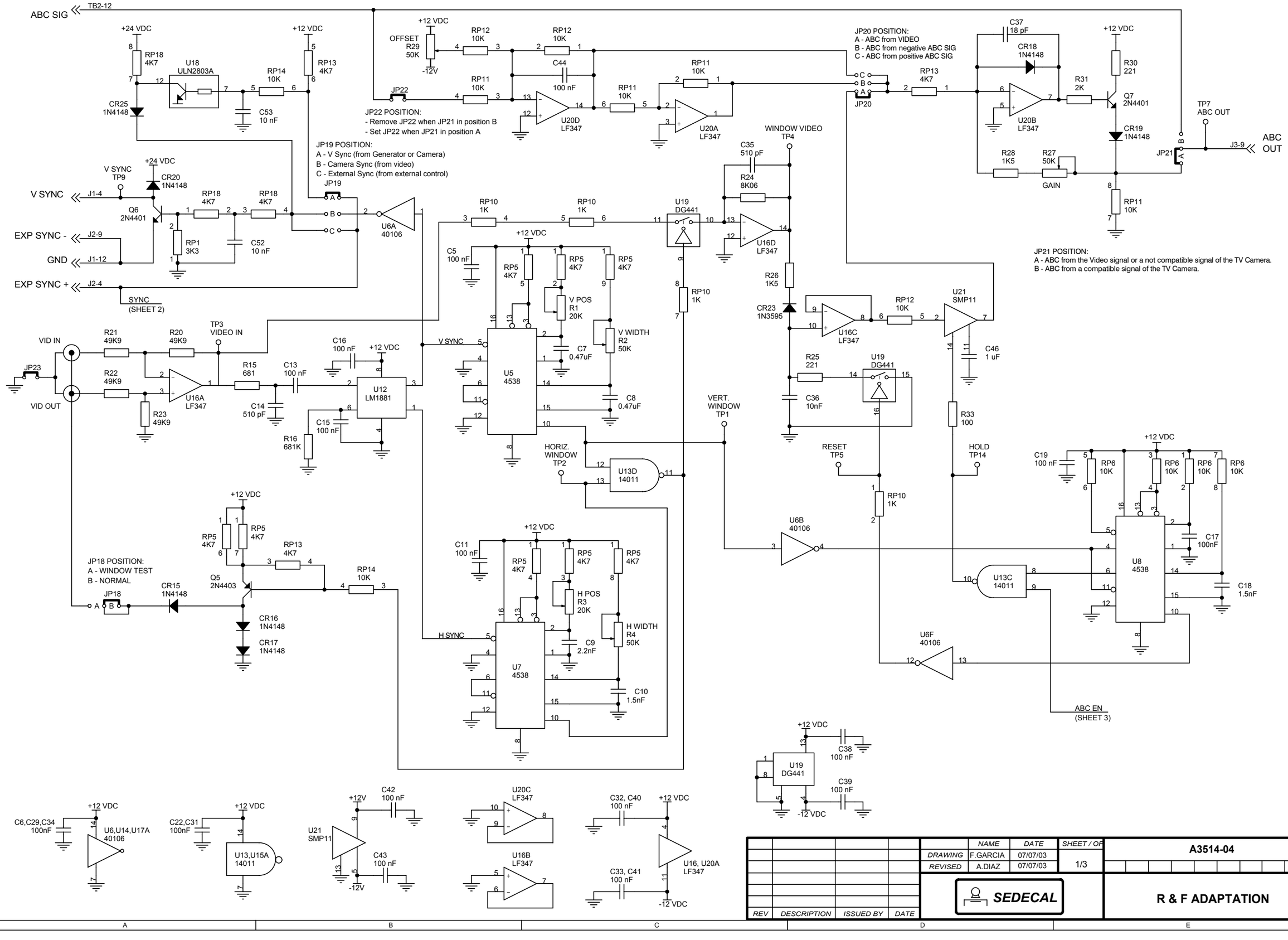
SHEET / OF: 2/2

A3514-04-S

REV

SEDECAL

R & F INTERFACE



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE
DRAWING	F.GARCIA	07/07/03
REVISED	A.DIAZ	07/07/03

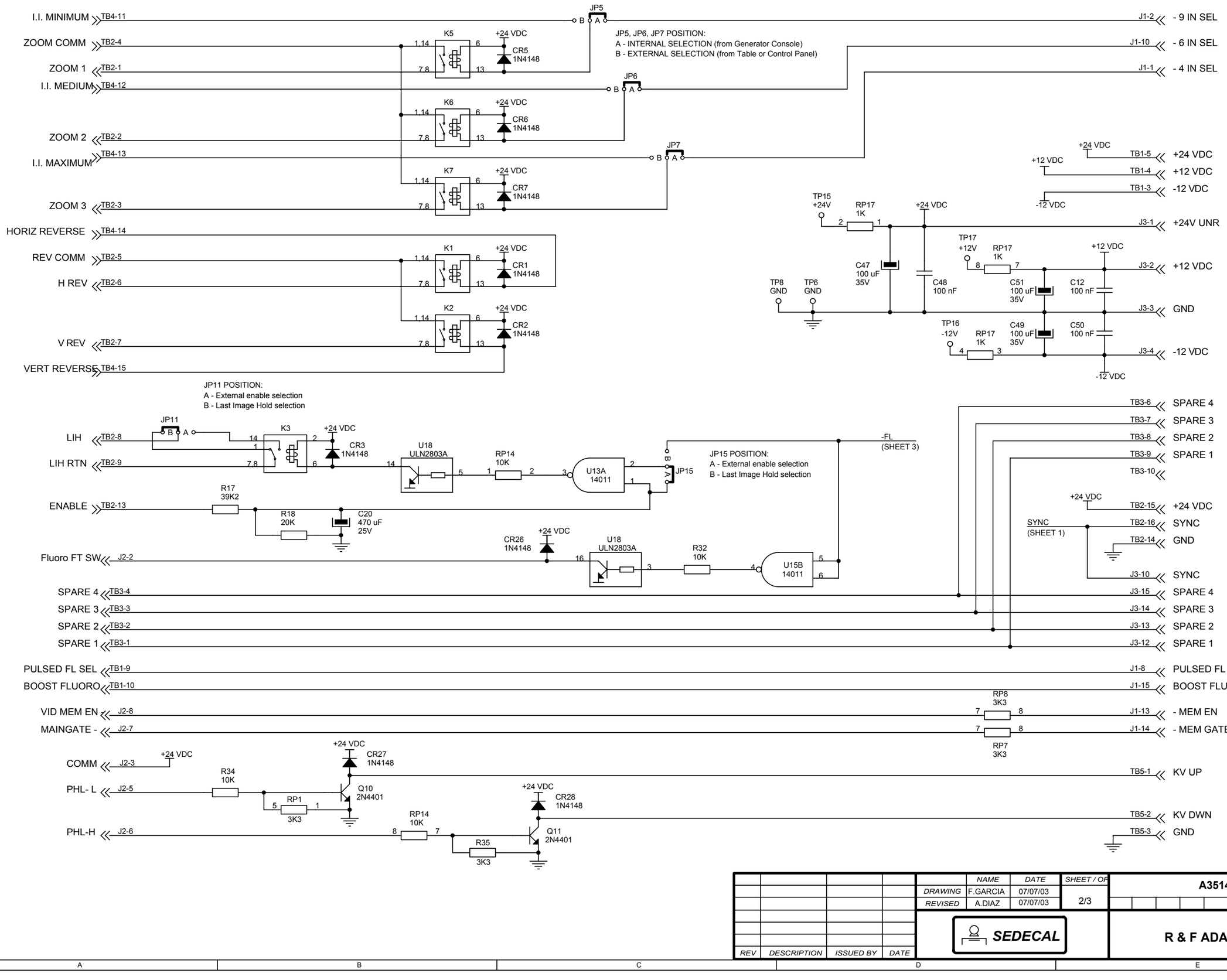
SHEET / OF: 1/3

SEDECAL

A3514-04

REV

R & F ADAPTATION



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE
DRAWING	F.GARCIA	07/07/03
REVISED	A.DIAZ	07/07/03

SHEET / OF: 2/3

SEDECAL

A3514-04

REV

R & F ADAPTATION

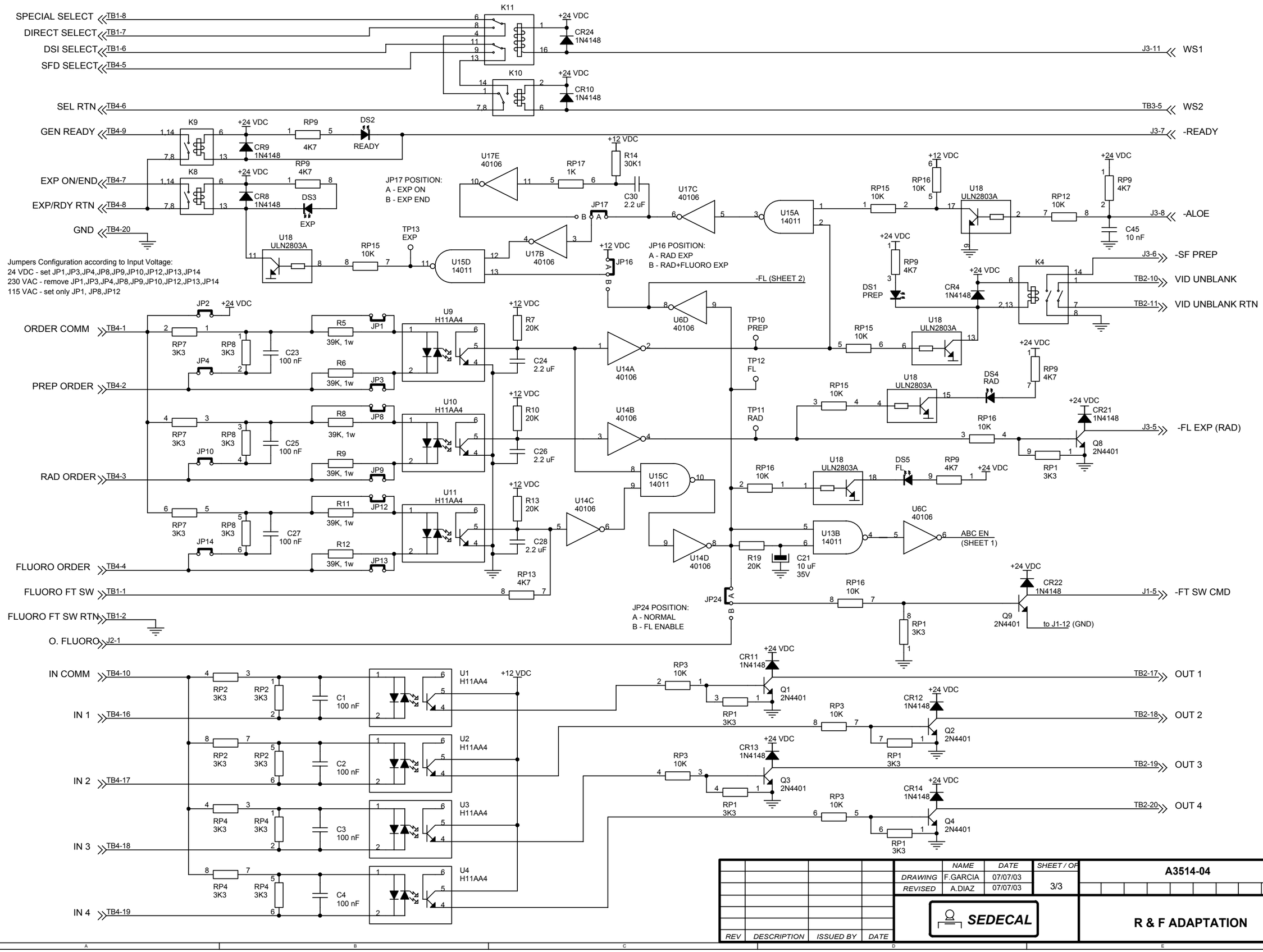
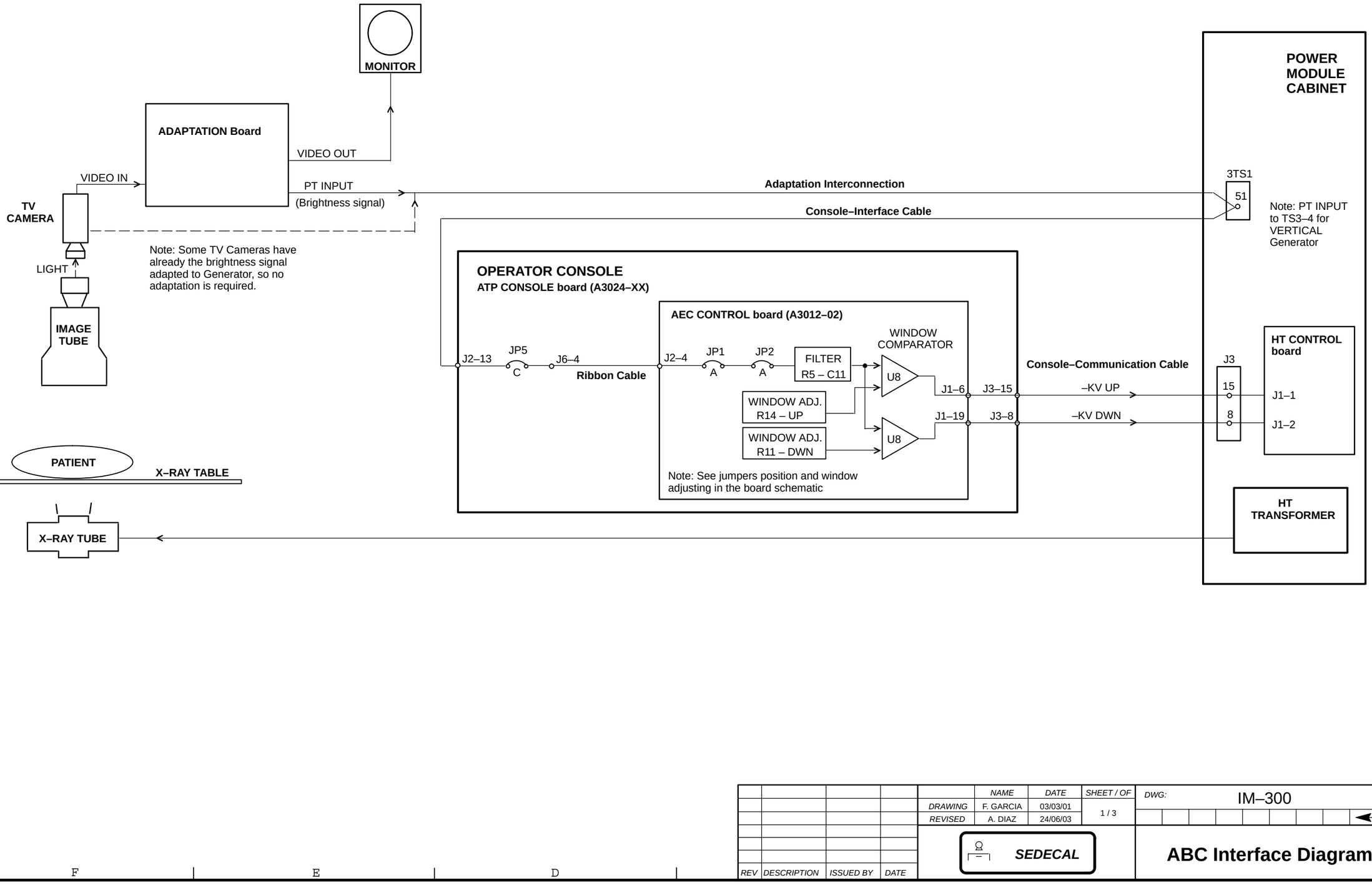

SPECIAL SELECT TB1-8
DIRECT SELECT TB1-7
DSI SELECT TB1-6
SFD SELECT TB4-5
K11
K10
+24 VDC
CR24 1N4148
CR10 1N4148
J3-11 WS1
SEL RTN TB4-6
TB3-5 WS2
GEN READY TB4-9
K9
CR9 1N4148
RP9 4K7
DS2 READY
J3-7 -READY
EXP ON/END TB4-7
K8
CR8 1N4148
DS3 EXP
EXP/RDY RTN TB4-8
GND TB4-20
JP17 POSITION:
A - EXP ON
B - EXP END
U17E 40106
RP17 1K
R14 30K1
+12 VDC
C30 2.2 uF
U17C 40106
U15A 14011
RP15 10K
RP16 10K
U18 ULN2803A
RP12 10K
C45 10 nF
J3-8 -ALOE
U18 ULN2803A
RP15 10K
TP13 EXP
U15D 14011
U17B 40106
JP16
JP16 POSITION:
A - RAD EXP
B - RAD+FLUORO EXP
-FL (SHEET 2)
U6D 40106
TP10 PREP
DS1 PREP
CR4 1N4148
K4
J3-6 -SF PREP
TB2-10 VID UNBLANK
TB2-11 VID UNBLANK RTN
Jumpers Configuration according to Input Voltage:
24 VDC - set JP1,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14
230 VAC - remove JP1,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14
115 VAC - set only JP1, JP8,JP12
ORDER COMM TB4-1
PREP ORDER TB4-2
RAD ORDER TB4-3
FLUORO ORDER TB4-4
JP2
JP4
JP10
JP14
RP7 3K3
RP8 3K3
C23 100 nF
C25 100 nF
C27 100 nF
R5 39K, 1w
R6 39K, 1w
R8 39K, 1w
R9 39K, 1w
R11 39K, 1w
R12 39K, 1w
JP1
JP3
JP8
JP9
JP12
JP13
U9 H11AA4
U10 H11AA4
U11 H11AA4
R7 20K
R10 20K
R13 20K
C24 2.2 uF
C26 2.2 uF
C28 2.2 uF
RP13 4K7
U14A 40106
U14B 40106
U14C 40106
U15C 14011
U14D 40106
TP12 FL
TP11 RAD
DS4 RAD
DS5 FL
RP16 10K
U18 ULN2803A
CR21 1N4148
Q8 2N4401
RP1 3K3
J3-5 -FL EXP (RAD)
U13B 14011
U6C 40106
ABC EN (SHEET 1)
R19 20K
C21 10 uF 35V
FLUORO FT SW TB1-1
FLUORO FT SW RTN TB1-2
O. FLUORO J2-1
JP24
JP24 POSITION:
A - NORMAL
B - FL ENABLE
CR22 1N4148
Q9 2N4401
to J1-12 (GND)
J1-5 -FT SW CMD
IN COMM TB4-10
IN 1 TB4-16
IN 2 TB4-17
IN 3 TB4-18
IN 4 TB4-19
RP2 3K3
RP4 3K3
C1 100 nF
C2 100 nF
C3 100 nF
C4 100 nF
U1 H11AA4
U2 H11AA4
U3 H11AA4
U4 H11AA4
RP3 10K
CR11 1N4148
CR12 1N4148
CR13 1N4148
CR14 1N4148
Q1 2N4401
Q2 2N4401
Q3 2N4401
Q4 2N4401
TB2-17 OUT 1
TB2-18 OUT 2
TB2-19 OUT 3
TB2-20 OUT 4
REV DESCRIPTION ISSUED BY DATE
NAME DATE SHEET / OF
DRAWING F.GARCIA 07/07/03
REVISED A.DIAZ 07/07/03
3/3
A3514-04
REV
SEDECAL
R & F ADAPTATION

Illustration 1.– ABC System for TV Camera (with AEC CONTROL board A3012–02)



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	03/03/01	1 / 3
REVISED	A. DIAZ	24/06/03	

SEDECAL

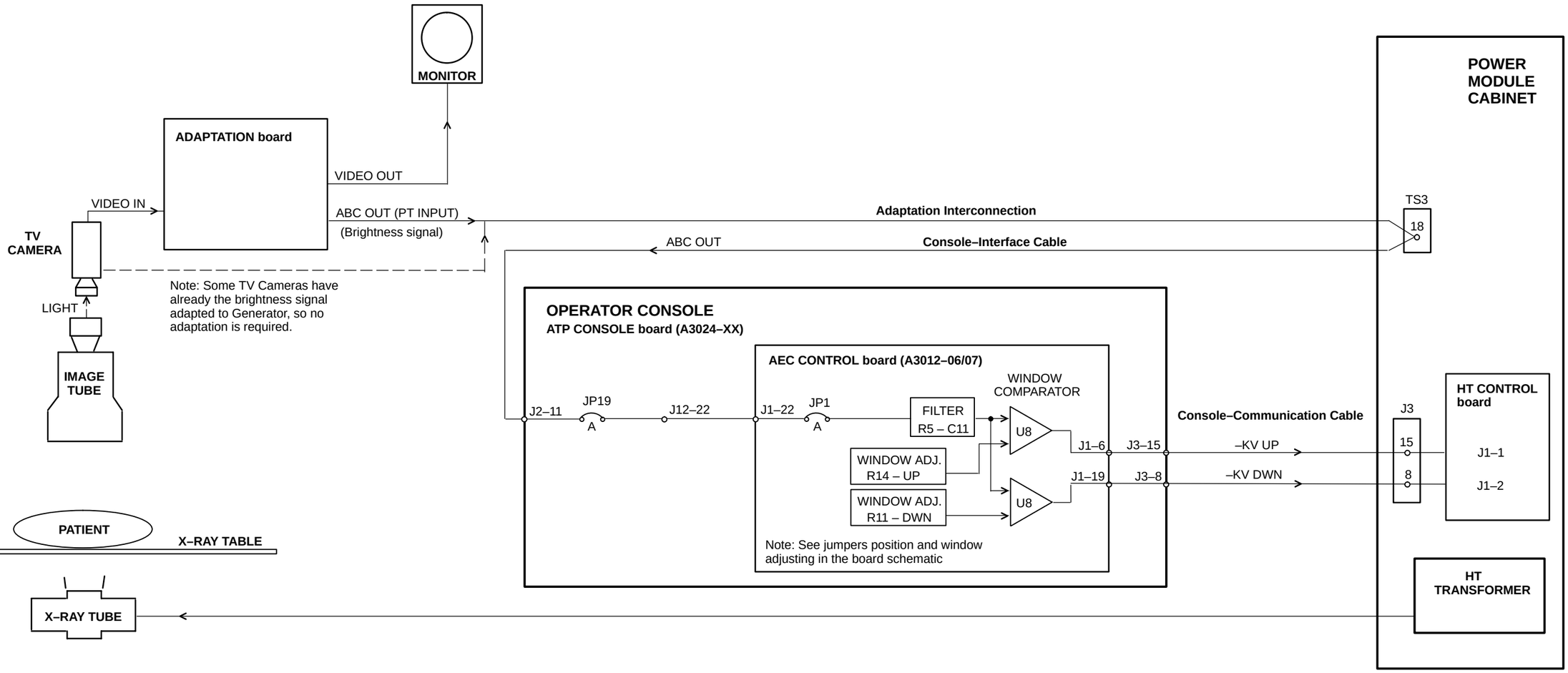
DWG: IM–300

REV

ABC Interface Diagram

-FIELD SEL 3

Illustration 2.– ABC System for TV Camera (with AEC CONTROL board A3012–06/07)



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	03/03/01	2 / 3
REVISED	A. DIAZ	24/06/03	

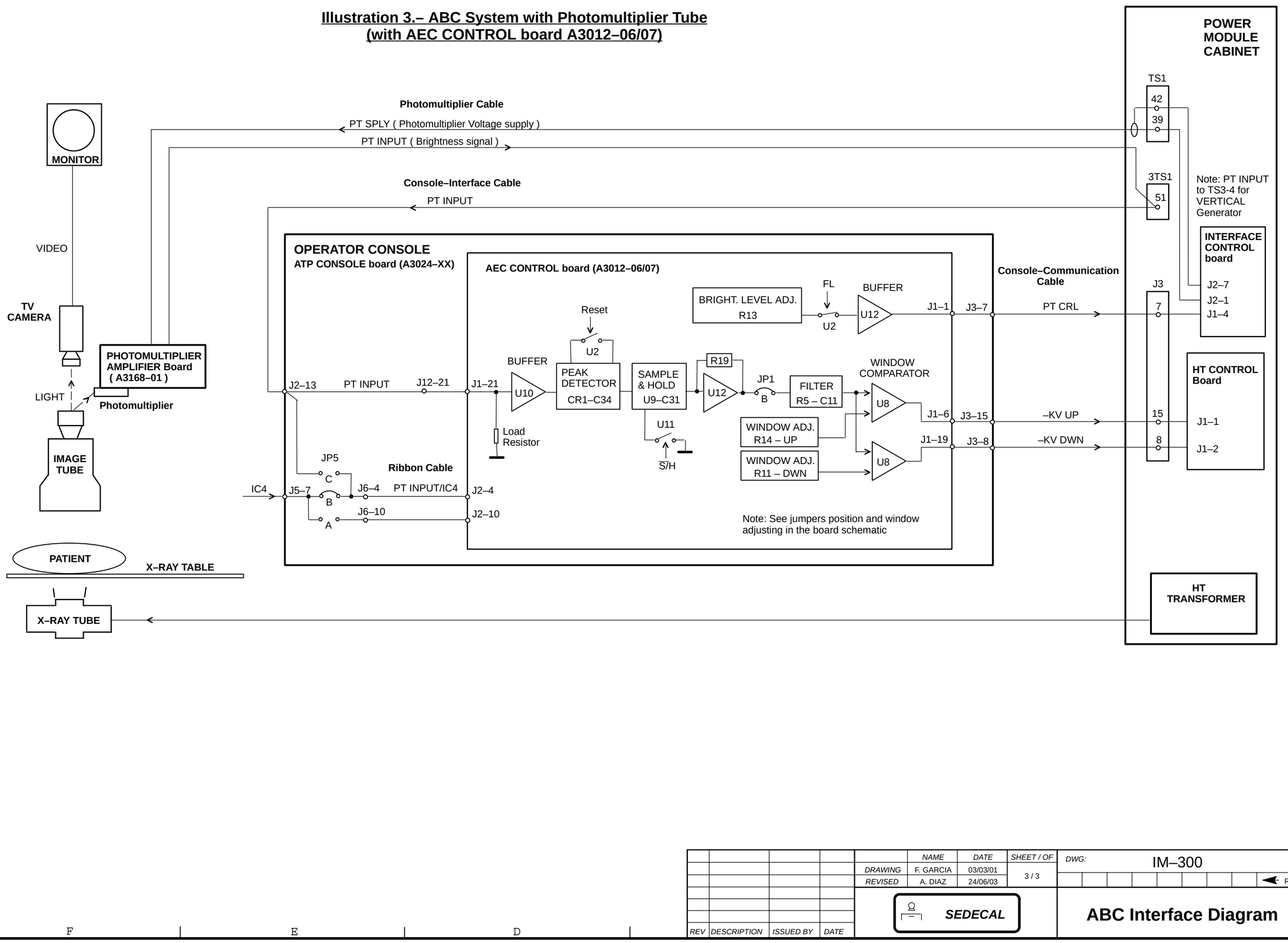
SEDECAL

DWG: IM–300

REV

ABC Interface Diagram

Illustration 3.– ABC System with Photomultiplier Tube (with AEC CONTROL board A3012–06/07)



REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	03/03/01	3 / 3
REVISED	A. DIAZ	24/06/03	

SEDECAL

DWG: IM–300

REV

ABC Interface Diagram

GENERATOR CABINET

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

TS3

18	ABC OUT
11	WS1

Note.- Connect ABC OUT as shown when using AEC CONTROL board - version A3012-XX (Large board). Connect ABC OUT (as PT INPUT) to TS1-51 (for Compact Generator), or to TS3-4 (for Tall Generator), when using AEC CONTROL board - version A3012-XX (Small board).

R&F Interface Harness (A6760-01)

R&F ADAPTATION Board (A3514-04)

J3

1	+24V UNR
2	+12 VDC
3	GND
4	-12 VDC
5	-FL EXP (RAD)
6	-SF PREP
7	-READY
8	-ALOE
9	ABC OUT
10	WS1
11	
12	
13	
14	
15	

WARNING:
Configure jumpers position according to the System used with the Generator prior to connecting mains power

TB4

1	PREP ORDER
2	RAD ORDER
3	FLUORO ORDER
4	
5	
6	
7	EXP ON
8	COMMON
9	GEN READY
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	GND

Table Cable

TABLE (Standard)

PREP
RAD
FLUORO
Actual Exposure
Common
Generator Ready

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-XX)

J1

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	
8	
9	-6 IN SEL
10	
11	GND
12	
13	
14	
15	

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

ATP CONSOLE Board (A3024-XX)

J13

1	time1
2	time2
3	time3
4	time4
11	tomo (WS2)

Tomo Cable (A6742-01/02)

TB3

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

Fluoro Foot-Switch

FLUORO FT SW
FLUORO FT SW RTN

TB1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TB2

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	ABC SIGNAL (option to use)
13	GND
14	
15	
16	
17	
18	
19	
20	

Imaging System Cable

C.C. TV (Standard)

CONTROL

VID IN

Video Cable (A6765-01)

VIDEO

TV MONITOR

VID OUT

Video Cable

IN

REV	DESCRIPTION	ISSUED BY	DATE
A	board version 04	F. Garcia	10/10/03

	NAME	DATE
DRAWING	F.GARCIA	13/01/03
REVISED	A.DIAZ	13/01/03

SHEET / OF: 1/1

IM - 302

REV: A

SEDECAL

STANDARD SYSTEM with C.C. TV Interface

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE
	ABC OUT

TS3

18	
11	

R&F Interface Harness (A6760-01)

R&F ADAPTATION Board (A3514-04)

J3

1	+24V UNR
2	+12 VDC
3	GND
4	-12 VDC
5	-FL EXP (RAD)
6	-SF PREP
7	-READY
8	-ALOE
9	*ABC OUT*
10	
11	
12	
13	
14	
15	

JUMPERS CONFIGURATION

JP1,JP2, JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - A
JP15 - A
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20, JP21 and JP22 - See configuration in the schematic
JP24 - A

WARNING: Verify Jumpers configuration before connecting power

TB1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TB4

1	
2	PREP ORDER
3	RAD ORDER
4	FLUORO ORDER
5	
6	
7	
8	+24V TABLE
9	GEN READY
10	
11	
12	
13	
14	
15	TOMO TIME 1
16	TOMO TIME 2
17	TOMO TIME 3
18	TOMO TIME 4
19	GND
20	

Table Cable

EVOLUTION / EVIDENCE TABLE

PM20

5	PREP
7	RAD
9	FLUORO
16	Tomo
11	
1	
4	
37	Ref A3
	Ref A0
15	Ref A1
12	Ref A2
13	
14	
17	
10	
8	
6	
22	
23	Ampli 2
25	Ampli 3
27	Ampli 4
29	H Rev
31	V Rev
	SR31
19	
18	
2	

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1

1	-4 IN SEL
2	-9 IN SEL
3	V SYNC
4	-FT SW CMD
5	
6	-CAM FL EXP
7	
8	
9	-6 IN SEL
10	
11	GND
12	-MEM EN
13	-MEM GATE
14	
15	

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

J1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

ATP CONSOLE Board (A3024-XX)

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

J13

4	TOMO TIME 4
3	TOMO TIME 3
2	TOMO TIME 2
1	TOMO TIME 1
8	FLUORO SECOND TIME

Tomo Cable (A6742-01/02)

J2

1	
2	
3	
4	
5	
6	
7	
8	
9	

TB3

1	
2	
3	
4	FLUORO SECOND TIME
5	
6	
7	
8	
9	
10	

TB2

1	MAG 1
2	MAG 2
3	MAG 3
4	MAG COMMON
5	REVERSAL COMMON
6	HORIZ REVERSAL
7	VERT REVERSAL
8	
9	
10	
11	
12	
13	
14	ABC SIGNAL *(See JP21 configuration)*
15	
16	GND
17	
18	
19	
20	

I.I. System Cable

IMAGE INTENSIFIER

Interface

See documentation for Interface connection

Imaging System Cable

TV CAMERA

Interface

VID IN

VID OUT

Video Cable

Video OUT

Video Cable (A6765-01)

TV MONITOR

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 1/7

SEDECAL

IM - 312

E D C B A ← REV

EVOLUTION / EVIDENCE TABLE with STANDARD SYSTEM

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE
	ABC OUT (not used)

TS3

18	
11	

R&F Interface Harness (A6760-01)

HT CONTROLLER Board (A3000-XX)

Remove wires on P1-1 and P1-2 from Console, and connect as shown (ABC OUT signal on TS3-18 is not used)

P1-1
P1-2

KV UP/DWN Cable (A7019-01)

KV UP
KV DWN

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	-CAM FL EXP
8	
9	
10	-6 IN SEL
11	
12	GND
13	-MEM EN
14	-MEM GATE
15	

ATP CONSOLE Board (A3024-XX)

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

J13

Tomo Cable (A6742-01/02)

8	FLUORO SECOND TIME
1	TOMO TIME 1
2	TOMO TIME 2
3	TOMO TIME 3
4	TOMO TIME 4

R&F ADAPTATION Board (A3514-04)

JUMPERS CONFIGURATION

JP22 - REMOVED

JP1,JP2,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14, JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - B
JP15 - A
JP16 - A
JP17 - A
JP18 - B
JP19 - C
JP20 - C
JP21 - B
JP24 - B

WARNING: Verify Jumpers configuration before connecting power

J3

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

TB5

1	
2	
3	

J1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

TB1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TB4

1	
2	PREP ORDER
3	RAD ORDER
4	FLUORO ORDER
5	
6	
7	
8	+24V TABLE
9	GEN READY
10	
11	
12	
13	
14	
15	TOMO TIME 1
16	TOMO TIME 2
17	TOMO TIME 3
18	TOMO TIME 4
19	GND
20	

TB3

1	
2	
3	
4	FLUORO SECOND TIME
5	
6	
7	
8	
9	
10	

TB2

1	zoom 1
2	zoom 2
3	zoom 3
4	hrev
5	vrev
6	0V
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

J2

1	O. FLUORO
2	FLUORO FOOT SW
3	COMMON (+24 VDC)
4	VERT. SYNC
5	KV UP
6	KV DWN
7	
8	
9	

VID IN
VID OUT

Table Cable

EVOLUTION / EVIDENCE TABLE

PM20

5	PREP
7	RAD
9	FLUORO
16	Tomo
11	
1	
4	
37	
15	Ref A3
12	Ref A0
13	Ref A1
14	Ref A2
17	
10	
8	
6	
22	
23	Ampli 2
25	Ampli 3
27	Ampli 4
29	H Rev
31	V Rev
19	
18	SR31
2	

IMAGE SYSTEM CD - 100

Imaging Unit Cable (A6709-01)

CM1

1	
2	
3	
4	
5	
9	

CM2 Cable (A7624-01)

CM2

4	
2	
3	
6	
9	
8	
7	
5	
1	

TV MONITOR

Video Cable

Video OUT

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 2/7

SEDECAL

IM - 312

REV: E D C B A

EVOLUTION / EVIDENCE TABLE with CD-100 SYSTEM

GENERATOR CABINET

TS1

Note.- For Vertical Generator :
Connect -READY and -ALOE to
TS3-6 and TS3-9 respectively

Note.- Connect ABC OUT as shown when using AEC CONTROL board - version A3012-06. Connect ABC OUT (as PT INPUT) to TS1-51 (for Compact Generator), or to TS3-4 (for Tall Generator), when using AEC CONTROL board - version A3012-01/02/05.

TS3

R&F Interface Harness (A6760-01)

TS1		J3
17	+24V UNR	1
15	+12 VDC	2
18	GND	3
16	-12 VDC	4
37	-FL EXP (RAD)	5
36	-SF PREP	6
53	-READY	7
52	-ALOE	8
	ABC OUT	9
TS3		10
18		11
		12
		13
		14
		15

R&F ADAPTATION Board (A3514-04)

JUMPERS CONFIGURATION

JP1,JP2,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - A
JP15 - A
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20, JP21, JP22 - see chematic
JP24 - A

WARNING: Verify Jumpers configuration before connecting power

J2

J1

TB1

TB1
1
2
3
4
5

TB4

TB4		Table Cable	PM20
1	PREP ORDER		5
2	RAD ORDER		7
3	FLUORO ORDER		9
4			
5			
6			16
7	+24V TABLE		11
8	GEN READY		1
9			4
10			
11			37
12			
13			
14			
15	TOMO TIME 1		15
16	TOMO TIME 2		12
17	TOMO TIME 3		13
18	TOMO TIME 4		14
19	GND		17
20			10
			8
			6
			22
	MAG 1		23
	MAG 2		25
			27

TB3

TB3		
1		
2	H REV	29
3	V REV	31
4		19
5	FLUORO SECOND TIME	18
6		
7		
8		
9		
10		2

EVOLUTION / EVIDENCE TABLE

PREP
RAD
FLUORO
Tomo
Ref A3
Ref A0
Ref A1
Ref A2
Ampli 2
Ampli 3
Ampli 4
H Rev
V Rev
SR31

TB2

TB2		Imaging System Cable	std interface connector (Sub D25)
1	ZOOM 1		18
2	ZOOM 2		5
3			
4	ZOOM COMMON (+24 VDC Intensifier)		16
5	Recurs. Filter 4 ***(See Note 1)***		24
6	H REV		11
7	V REV		23
8	LIH		13
9	ABC Set-up Point ***(See Note 1)***		7
10	VIDEO UNBLANK		9
11	0 V Camera reference		10
12	ABC SIGNAL (see JP21 configuration)		21
13	+24 VDC Intensifier		15
14			14
15			1
16			
17			
18			
19			
20			

GND Intensifier
+24 VDC Intensifier

+24 VDC Intensifier P.S. (to add)

TH 59432 RIU

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1

Note.- J1 connector of the board is J10 on the Console

ATP CONSOLE Board (A3024-XX)

J13

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

Fluoro Adaptation Cable (A3267-01/02)

1	-4 IN SEL	1
2	-9 IN SEL	2
3		3
4	V SYNC	4
5	-FT SW CMD	5
6		6
7	-CAM FL EXP	7
8		8
9		9
10	-6 IN SEL	10
11		11
12	GND	12
13	-MEM EN	13
14	-MEM GATE	14
15		15

Tomo Time Cable (A6742-01/02)

8	FLUORO SECOND TIME	6
1	TIME 1	17
2	TIME 2	18
3	TIME 3	19
4	TIME 4	20

J2

Imaging System Cable (only for variable Pulsed Fluoro)

J2		X-Ray generator connector (Sub D9)
1	MAIN GATE +	1
2	VID MEM EN +	2
3	EXP SYNC +	3
4		4
5		5
6	MAIN GATE -	6
7	VID MEM EN -	7
8	EXP SYNC -	8
9		9

VID IN
VID OUT ***(See Note 3)***

Video Cable (A6765-01) ***(See Note 2)***

VIDEO before digital
VIDEO after digital

TV MONITOR

Video Cable ***(See Note 3)***

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

Note 1
See TH 59432 RIU Service Manual for Recursive Filter and ABC Set-up Point selections

Note 2
This Video Cable connecting to VID IN is not required when J2 interface is used

Note 3
ONLY FOR ABC WINDOW ADJUSTMENT: Remove connection to VIDEO after digital of the Video Cable and connect it to VID OUT of the R&F Adaptation board, in order to adjust the ABC window with jumper JP18 in A position.

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF 3/7

SEDECAL

IM - 312

E D C B A ← REV

EVOLUTION / EVIDENCE TABLE with TH59432 SYSTEM

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE

TS3

18	ABC OUT
11	

R&F Interface Harness (A6760-01)

R&F ADAPTATION Board (A3514-04)

J3

1	+24V UNR
2	+12 VDC
3	GND
4	-12 VDC
5	-FL EXP (RAD)
6	-SF PREP
7	-READY
8	-ALOE
9	ABC OUT
10	
11	
12	
13	
14	
15	

JUMPERS CONFIGURATION

JP1,JP2,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP22,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - B
JP15 - A
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20 - A
JP21 - A
JP24 - A

WARNING: Verify Jumpers configuration before connecting power

TB5

1	
2	
3	

TB4

1	PREP ORDER
2	RAD ORDER
3	FLUORO ORDER
4	
5	
6	
7	
8	+24V TABLE
9	GEN READY
10	
11	
12	
13	
14	
15	TOMO TIME 1
16	TOMO TIME 2
17	TOMO TIME 3
18	TOMO TIME 4
19	GND
20	

Table Cable

EVOLUTION / EVIDENCE TABLE

PM20

5	PREP
7	RAD
9	FLUORO
16	Tomo
11	
1	
4	
37	Ref A3
	Ref A0
15	Ref A1
12	Ref A2
13	
14	
17	
10	
8	
6	
22	
23	MAG 1 / Ampli 2
25	MAG 2 / Ampli 3
27	MAG 3 / Ampli 4
29	H REV / H Rev
31	V REV / V Rev
19	
18	SR31
2	

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	-CAM FL EXP
8	
9	
10	-6 IN SEL
11	
12	GND
13	-MEM EN
14	-MEM GATE
15	

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

J1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

TB3

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

ATP CONSOLE Board (A3024-XX)

J13

8	FLUORO SECOND TIME
1	TOMO TIME 1
2	TOMO TIME 2
3	TOMO TIME 3
4	TOMO TIME 4

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

Tomo Cable (A6742-01/02)

TB2

1	zoom 1
2	zoom 2
3	zoom 3
4	common
5	
6	
7	
8	
9	
10	
11	H REV
12	V REV
13	FL/RAD *See Note 1*
14	0V
15	
16	
17	
18	
19	
20	

Imaging Unit Cable (A6709-01)

Note 1.- You could use VID UNBLANK & RTN signal (TB2-10 & TB2-11) to remove power supply of the TV Camera when RAD mode.

IMAGE INTENSIFIER

CM5

15	
14	
4	
13	220 VAC
A1	0 VAC
A2	Ground
12	

external power supply

IMAGE SYSTEM CD - 1000

VID IN

Video Cable

Video

J2

1	
2	
3	
4	
5	
6	
7	
8	
9	

TB1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

VID OUT

Video Cable (A6765-01)

TV MONITOR

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 4/7

SEDECAL

IM - 312

E D C B A ← REV

EVOLUTION / EVIDENCE TABLE with CD-1000 SYSTEM

GENERATOR CABINET

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE
	ABC OUT

TS3

18	ABC OUT

Note.- For Vertical Generator : Connect -READY and -ALOE to TS3-6 and TS3-9 respectively

Note.- Connect ABC OUT as shown when using AEC CONTROL board - version A3012-06. Connect ABC OUT (as PT INPUT) to TS1-51 (for Compact Generator), or to TS3-4 (for Tall Generator), when using AEC CONTROL board - version A3012-01/02/05.

R&F Interface Harness (A6760-01)

R&F ADAPTATION Board (A3514-04)

J3

1	+24V UNR
2	+12 VDC
3	GND
4	-12 VDC
5	-FL EXP (RAD)
6	-SF PREP
7	-READY
8	-ALOE
9	ABC OUT
10	
11	
12	
13	
14	
15	

JUMPERS CONFIGURATION

JP1,JP2,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - A
JP15 - A
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20, JP21, JP22 - see configuration in the schematic
JP24 - A

WARNING: Verify Jumpers configuration before connecting power

J2

1	
2	
3	
4	
5	
6	
7	
8	
9	

J1

1	-4 IN SEL
2	-9 IN SEL
3	V SYNC
4	-FT SW CMD
5	-CAM FL EXP
6	-6 IN SEL
7	GND
8	-MEM EN
9	-MEM GATE
10	
11	
12	
13	
14	
15	

TB4

1	PREP ORDER
2	RAD ORDER
3	FLUORO ORDER
4	
5	
6	
7	+24V TABLE
8	GEN READY
9	
10	
11	
12	
13	
14	
15	TOMO TIME 1
16	TOMO TIME 2
17	TOMO TIME 3
18	TOMO TIME 4
19	GND
20	

TB3

1	
2	
3	
4	
5	
6	MAG 1
7	MAG 2
8	MAG 3
9	H REV
10	V REV

TB2

1	NORMAL
2	MAG1
3	MAG2
4	COMMON
5	COMMON (24V)
6	HORIZONTAL REVERSAL
7	VERTICAL REVERSAL
8	
9	
10	GO TO BLACK
11	COMMON (0V)
12	ABC OUTPUT
13	
14	
15	
16	
17	
18	
19	
20	

TB1

1	VID IN
2	
3	
4	
5	VID OUT

Table Cable

EVOLUTION / EVIDENCE TABLE

PM20

5	PREP
7	RAD
9	FLUORO
16	Tomo
11	
1	
4	
37	Ref A3
	Ref A0
15	Ref A1
12	Ref A2
13	
14	
17	
10	
8	
6	
22	
23	Ampli 2
25	Ampli 3
27	Ampli 4
29	H Rev
31	V Rev
19	
18	SR31
2	

FLUORO SECOND TIME

Imaging System Cable

HYPERLUX 23

PR118

4	XJ2
3	
2	XJ3
1	

XJ2: 4, 1, 2
XJ3: 6, 5, 4

TV CAMERA MONICON

XJ4

Video Cable

Video Cable (A6765-01))

TV MONITOR

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

ATP CONSOLE Board (A3024-XX)

J13

8	FLUORO SECOND TIME
1	TIME 1
2	TIME 2
3	TIME 3
4	TIME 4

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

Tomo Time Cable (A6742-01/02)

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 5/7

SEDECAL

IM - 312

E D C B A ← REV

EVOLUTION/ EVIDENCE TABLE with HYPERLUX 23 SYSTEM

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE

TS3

18	ABC OUT
11	

R&F Interface Harness (A6760-01)

R&F ADAPTATION Board (A3514-04)

J3: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

J2: 1 2 3 4 5 6 7 8 9

J1: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

TB4: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

TB3: 1 2 3 4 5 6 7 8 9 10

TB2: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

TB1: 1 2 3 4 5 6 7 8 9 10

TB5: 1 2 3

JUMPERS CONFIGURATION

JP1,JP2,JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 - B
JP15 - B
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20 - JP21, JP22 - see configuration in the schematic
JP24 - A

WARNING: Verify Jumpers configuration before connecting power

EVOLUTION / EVIDENCE TABLE

PM20

Table Cable

PREP ORDER	5
RAD ORDER	7
FLUORO ORDER	9
+24V TABLE	16
GEN READY	11
	1
	4
	37
TOMO TIME 1	15
TOMO TIME 2	12
TOMO TIME 3	13
TOMO TIME 4	14
GND	17
	10
	8
	6
	22
MAG 1	23
MAG 2	25
MAG 3	27
H REV	29
V REV	31
FLUORO SECOND TIME	19
	18
	2

PREP, RAD, FLUORO, Tomo, Ref A3, Ref A0, Ref A1, Ref A2, Ampli 2, Ampli 3, Ampli 4, H Rev, V Rev, SR31

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	-CAM FL EXP
8	
9	
10	-6 IN SEL
11	
12	GND
13	-MEM EN
14	-MEM GATE
15	

ATP CONSOLE Board (A3024-XX)

J13: 8 1 2 3 4

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

Tomo Cable (A6742-01/02)

8	FLUORO SECOND TIME
1	TOMO TIME 1
2	TOMO TIME 2
3	TOMO TIME 3
4	TOMO TIME 4

Imaging Unit Cable

zoom 1	
zoom 2	
zoom 3	
common	
H REV	9
V REV	22
LIH	11
ABC OUT (+KV)	1
GND	14
	25
	24
	13
	12

connect to GND according to recursive filter selected: X0 FILTER, X4 FILTER, X8 FILTER, X16 FILTER

IMAGE INTENSIFIER

NICAL N33 CCD CAMERA

DB25

Note for +KV : With jumper in analog KV Control (OUT=0V to 12V)

Video Cable

VID IN — CHA

Video Cable (A6765-01)

VID OUT — TV MONITOR

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 6/7

SEDECAL

IM - 312

REV: E D C B A

EVOLUTION / EVIDENCE TABLE with NICAL N33 CCD CAMERA

GENERATOR CABINET

Note.- The connections shown are for Compact Generator.
For Tall Generator, connect -READY to TS3-6, and -ALOE to TS3-9.

Note.- Connect ABC OUT (as PT INPUT) to TS1-51 (for Compact Generator), or to TS3-4 (for Tall Generator), when using AEC CONTROL board - version A3012-XX (Small board).
Connect ABC OUT as shown when using AEC CONTROL board - version A3012-XX (Large board).

TS1

17	+24V UNR
15	+12 VDC
18	GND
16	-12 VDC
37	-FL EXP (RAD)
36	-SF PREP
53	-READY
52	-ALOE
	ABC OUT

TS3

18	
11	

R&F Interface Harness (A6760-01)

J3

1	+24V UNR
2	+12 VDC
3	GND
4	-12 VDC
5	-FL EXP (RAD)
6	-SF PREP
7	-READY
8	-ALOE
9	ABC OUT
10	
11	
12	
13	
14	
15	

R&F ADAPTATION Board (A3514-04)

JUMPERS CONFIGURATION

JP1,JP2, JP3,JP4,JP8,JP9,JP10,JP12,JP13,JP14,JP23 - SET
JP5 - B
JP6 - B
JP7 - B
JP11 and JP15 - See board doc.
JP16 - A
JP17 - A
JP18 - B
JP19 - B
JP20 - A
JP21 - B
JP22 - REMOVE
JP24 - A (only in version 04)

WARNING: Verify Jumpers configuration before connecting power

J2

1	
2	
3	
4	
5	
6	
7	
8	
9	

GENERATOR CONSOLE

INTEGRATED FLUORO CPU Board (A3213-01)

J1

1	-4 IN SEL
2	-9 IN SEL
3	
4	V SYNC
5	-FT SW CMD
6	
7	-CAM FL EXP
8	
9	
10	-6 IN SEL
11	
12	GND
13	-MEM EN
14	-MEM GATE
15	

Note.- J1 connector of the board is J10 on the Console

Fluoro Adaptation Cable (A3267-01/02)

J1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

ATP CONSOLE Board (A3024-XX)

SW3-8 = ON for standard fluoro sequence
SW3-8 = OFF for quick fluoro sequence

J13

4	TOMO TIME 4
3	TOMO TIME 3
2	TOMO TIME 2
1	TOMO TIME 1
8	FLUORO SECOND TIME

Tomo Cable (A6742-01/02)

TB1

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TB4

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

TB3

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	

TB2

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

VID IN

VID OUT

Table Cable

PREP ORDER
RAD ORDER
FLUORO ORDER
+24V TABLE
GEN READY
TOMO TIME 1
TOMO TIME 2
TOMO TIME 3
TOMO TIME 4
GND
MAG 1
MAG 2
H REV
V REV
FLUORO SECOND TIME

EVOLUTION/EVIDENCE TABLE

PM20

5	PREP ORDER
7	RAD ORDER
9	FLUORO ORDER
16	
11	
1	+24V TABLE
4	GEN READY
37	
15	TOMO TIME 1
12	TOMO TIME 2
13	TOMO TIME 3
14	TOMO TIME 4
17	GND
10	
8	
6	
22	
23	MAG 1
25	MAG 2
27	
29	H REV
31	V REV
19	FLUORO SECOND TIME
18	
2	

PREP
RAD
FLUORO
Tomo
Ref A3
Ref A0
Ref A1
Ref A2
Ampli 2
Ampli 3
Ampli 4
H Rev
V Rev
SR31

Imaging System Cable (A7224-01)

1	Field 1
2	Field 2
3	Field common
4	
5	
6	H Inv
7	V Inv
8	LIH
9	
10	
11	
12	Control
13	+24 VDC Camera
14	GND Camera
15	
16	
17	
18	
19	
20	

CCU (NE23)

Interface

See IDETEC documentation for Interface connection

Video Cable (A6765-01)

Analog Video Out (50Hz or 60 Hz)

Digital Video Out (100Hz or 120Hz)

Video Cable

TV MONITOR

TOMO TIME CODE

TIME1	TIME2	TIME3	TIME4	Back-up Time
1	1	1	0	1000 ms
0	1	1	0	500 ms
1	0	1	0	2000 ms
1	1	0	0	4000 ms
0	0	1	0	1000 ms
0	1	0	0	4000 ms
1	0	0	0	4000 ms
0	0	0	0	2000 ms
x	x	x	1	no tomo

1 = log "1" (open) 0 = logic "0" (GND) x = logic "1" or "0"

REV	DESCRIPTION	ISSUED BY	DATE
E	new interface	F. García	11/11/10
D	Sheet 5,6 added	F. García	09/09/08
C	Sheet 4 added	F. García	09/09/04
B	Board version 04	F. García	07/07/04
A	Board version 03	F. García	21/05/04

	NAME	DATE
DRAWING	F.GARCIA	07/07/02
REVISED	A.DIAZ	02/02/03

SHEET / OF: 7/7

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IM - 312

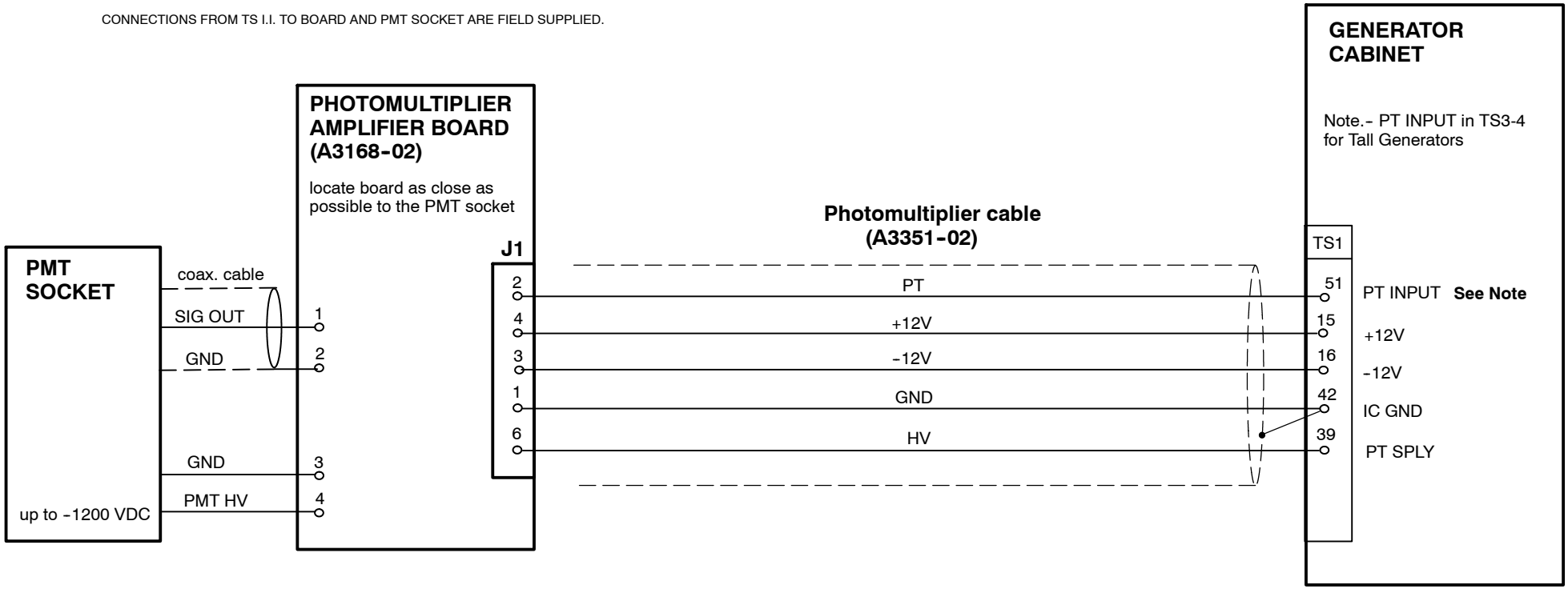
E D C B A ← REV

EVOLUTION/ EVIDENCE TABLE with IDETEC SYSTEM

NOTES

PHOTOMULTIPLIER AMPLIFIER BOARD (A3168-02) REQUIRES AEC CONTROL BOARD (A3012-06), FOR ADECUATE OPERATION WITH PHOTOMULTIPLIER TUBE.

CONNECTIONS FROM TS I.I. TO BOARD AND PMT SOCKET ARE FIELD SUPPLIED.



REV	DESCRIPTION	ISSUED BY	DATE
E	CN 04/169	F. GARCIA	10/10/04
D	CN 02/115	F. GARCIA	20/07/02
C	CN 02/067	F. GARCIA	20/05/01
B	TS I.I. added	F. GARCIA	01/01/01
A	Sheet 2 added	F. GARCIA	25/04/00

	NAME	DATE
DRAWING	F. GARCIA	03/03/98
REVISED	A. DIAZ	03/03/98

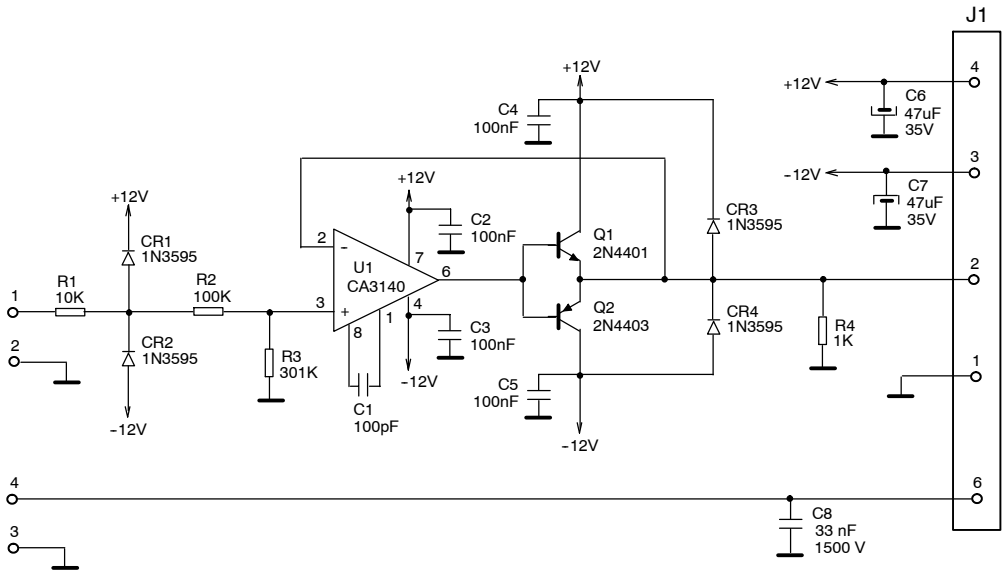
SHEET / OF: 1 / 1

SEDECAL

I/F-011

REV: E D C B A

PHOTOMULTIPLIER INTERFACE



Note.- Version as per CN 04/169

REV	DESCRIPTION	ISSUED BY	DATE

	NAME	DATE	SHEET / OF
DRAWING	F. GARCIA	10/10/04	1 / 1
REVISED	A. DIAZ	10/10/04	

DWG: A3168-02

REV

SEDECAL

PHOTOMULTIPLIER AMPLIFIER