

Technical Publication

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Troubleshooting

X-ray System

REVISION HISTORY

REVISION	DATE	REASON FOR CHANGE
0	OCT 03, 2022	First Edition.

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

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

ADVISORY SYMBOLS

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



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



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



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

Note 

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

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SECTION 1 INTRODUCTION

A guide for a quick solution of main typical problems in the use of this equipment follows. It is recommended to keep this troubleshooting guide with you when operating the equipment.

1.1 TORQUE VALUES FOR SCREWS

Generally, when any screw is installed during the procedures described in this document, it is recommended to apply the torque listed in *Table 1-1*, except in case that the torque value to be applied is specified in the corresponding procedure.



Apply only the tightening torques listed in Table 1-1 for mounting the mechanical parts of the unit (metallic parts to metallic parts), never for mounting electrical or electronic parts (e.g. electronic boards).

Note

It is also recommended to apply a drop of Loctite 243 to the end of the metallic screws before tightening them definitely.

**Table 1-1
Screws Torque Specifications**

SCREW SIZE (Metric ISO Screw Thread)	APPLIED TORQUE
M3	0.11 Nm
M4	2.9 Nm
M5	5.7 Nm
M6	10 Nm
M8	24.1 Nm
M10	47.7 Nm
M12	82 Nm
Note. - Conversion Factor: 1 Nm = 0.10197 kgf*m ; 1 Kgf*m = 9.80665 Nm.	

1.2 PREVIOUS CONSIDERATIONS CONCERNING THE GENERATOR

The Generator contains many self-diagnostic routines which greatly facilitate troubleshooting. Self-diagnostic functions require a proper performance of all microprocessors. Each microprocessor contains LEDs that indicate correct operation (*refer to Section 4.1.1*).

As a general rule, the first step in any troubleshooting procedure is to verify the correct Power Supply Voltages and perform a visual inspection of all boards and cable connections.

Upon arrival at the X-ray Room, the Service Engineer should carry out the following operations:

- Check which Error Code is displayed on the Console and run the troubleshooting routines for the last Error Code displayed.
- If there is no error code displayed, try to reproduce the failure in the conditions reported by the Operator. The Error Code displayed might be different from the one reported. In all cases, run the troubleshooting routines for the last Error Code displayed.



Whenever the HV Transformer or X-ray Tube is replaced in the Generator, the respective configuration and calibration procedures must be performed.

If the A3640-XX Control board is replaced, restore the configuration and AEC data from the backup files saved in the computer and perform the required calibration procedures, or transfer the U66-EEPROM from the old board to the new board and perform the calibration procedures. U66-EEPROM contains configuration and calibration data.

If the backup files cannot be restored and U66-EEPROM is not transferred, complete configuration procedure must be performed.

Update and record in the Data Book any new calibration data.

1.2.1 TOOLS AND TEST EQUIPMENT

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

- Standard service engineer's tool kit, including a reversible ratchet with socket set.
- Silicone Insulating Grease (proofing compound) (included in the X-ray Tube package).
- HV Oil (included in the HV Cables package).
- Alcohol cleaning agent.

The following test equipment is required for some configuration and calibration procedures carried out during Troubleshooting:

- Calculator.
- Anti-static Kit.
- Digital Multimeter.
- Non-invasive kVp Meter.
- Digital mAs Meter.
- Oscilloscope (Tektronics 486 or similar).
- Only for AEC purposes:
 - Sensitometer.
 - Densitometer.
 - Filtration based on the RQA5 standard (21 mm Al) for the Collimator Filter Holder (recommended for AEC/ABC calibration).
 - Copper Plates can be used Instead of Aluminum:
 - 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 μ Gy/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.

1.2.2 GENERAL CAUTIONS



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 BOARD AND ON THE ROTOR CONTROLLER ARE OFF BEFORE SERVICING THE EQUIPMENT (APPROX. 3 MINUTES AFTER THE UNIT IS TURNED OFF).



TO AVOID ELECTRIC SHOCK, DO NOT TOUCH ANY HEATSINK OF THE CIRCUIT BOARDS EVEN IF THE GENERATOR IS TURNED OFF. PREVIOUS TO DISASSEMBLE ANY BOARD, REMOVE ALL CONNECTORS PLUGGED TO IT.



DO NOT SUPPLY THE MAIN POWER FROM THE ELECTRICAL ROOM CABINET (MAIN DISCONNECT) OR TURN ON THE SYSTEM UNTIL SPECIFICALLY INSTRUCTED IN THIS DOCUMENT.



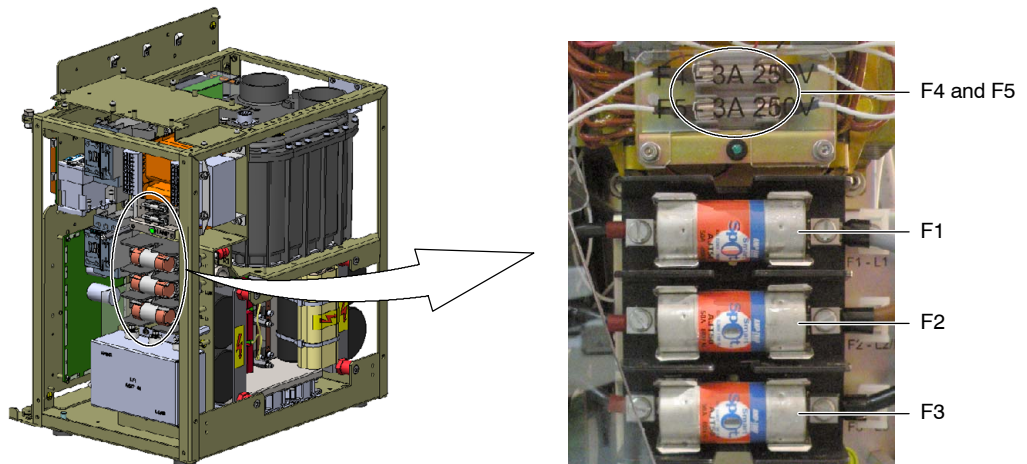
THIS GENERATOR IS PERMANENTLY CONNECTED TO THE POWER LINE AND POWERED ON UNLESS THE SAFETY SWITCH INSTALLED IN THE ROOM ELECTRICAL CABINET IS OFF. WHEN THE GENERATOR IS POWERED, THE NEON LAMP (GREEN) LOCATED IN THE TRANSFORMER T2 (GENERATOR CABINET) IS ON.

INTERNAL PARTS OF THE GENERATOR (ALL FUSES, LINE CONTACTOR [K2], INPUT TRANSFORMER [T2] AND ON/OFF RELAY [K1]) ARE PERMANENTLY POWERED ON THROUGH POWER LINE EVEN IF THE GENERATOR IS OFF. BE SURE THAT THE SAFETY SWITCH IS OFF BEFORE HANDLING ANY INTERNAL PART OF THE EQUIPMENT.

1.2.3 FUSES LIST AND LOCATION

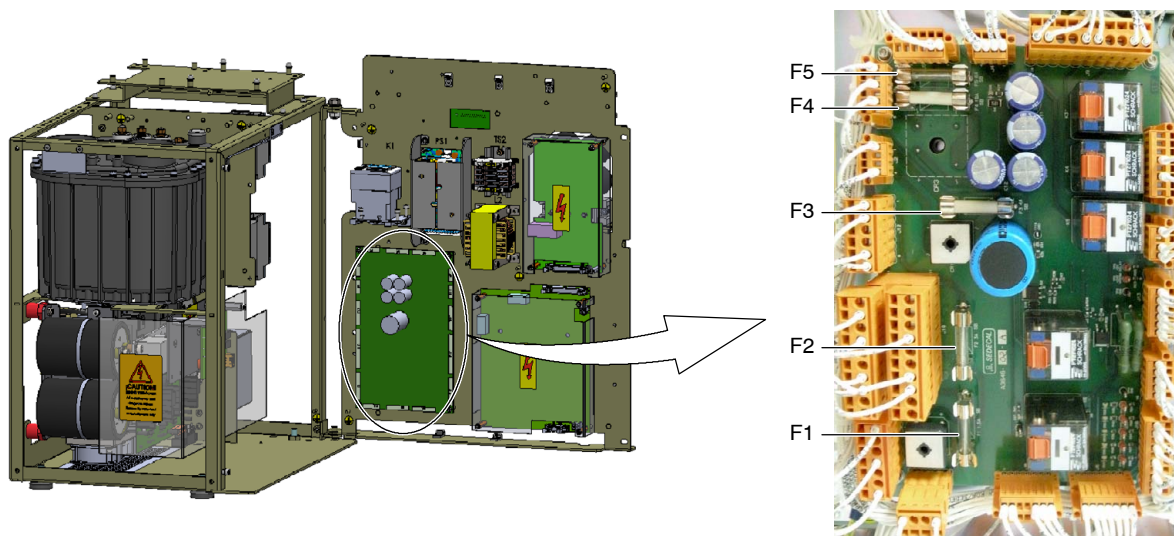
The SHFR Generator is provided with a set of fuses with the next features:

- F1, F2 and F3: Input line fuses, 50A, 600V, SB.
- F4 and F5: 3A, 250V, SB.



Fuses located in the A3646-XX Supply board:

- F1: 1.5A, 250V, SB.
- F2: 3A, 250V, SB.
- F3: 4A, 250V, SB.
- F4: 10A, 250V, SB.
- F5: 6,25A, 250V, SB.



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SECTION 2 GENERAL PROCEDURES

A series of basic procedures and common checks are then described to solve basic problems in each system component.

2.1 GENERATOR

2.1.1 COVERS DISASSEMBLY

The SHFR Generator covers consist of two parts joined by three rows of screws (two rows in the upper part and another one in the front).

To disassemble the covers, remove the eight lateral screws (four on each side) with an allen wrench. There is no need to remove the rest of the screws, as the two parts can be removed together.

Disconnect the internal ground wires before removing the covers.

Illustration 2-1
Internal ground wires



Remove the covers taking care not to pinch any cable. Take the same precautions when installing the covers back.

Optional handles can be used to easily remove and install the covers. The Generator covers have two specific slots, one on each side, to insert the handles as seen in the illustration below.

Illustration 2-2 Covers disassembly



Handles are only for covers removal and installation. Never use them to carry the Generator.

2.1.2 SOFTWARE UPDATE

Note 

Only the A3640-XX Control board can be updated using the software downloader.

1. Connect the USB-CAN Adapter (A11919-01) to the USB port of the Computer and wait for it to recognize the hardware. The LED of the Adapter should blink. If it remains off, there might be a hardware problem. On the other hand, if the LED is lighted but it does not blink, the Adapter might not be properly configured.
 - Let the operating system search and download the drivers.
 - If the operating system can not download the drivers, plug in the computer the USB with the Software Service Tools, select to install the drivers from specific location and select the location of the USB drive.

Illustration 2-3
USB-CAN Adapter



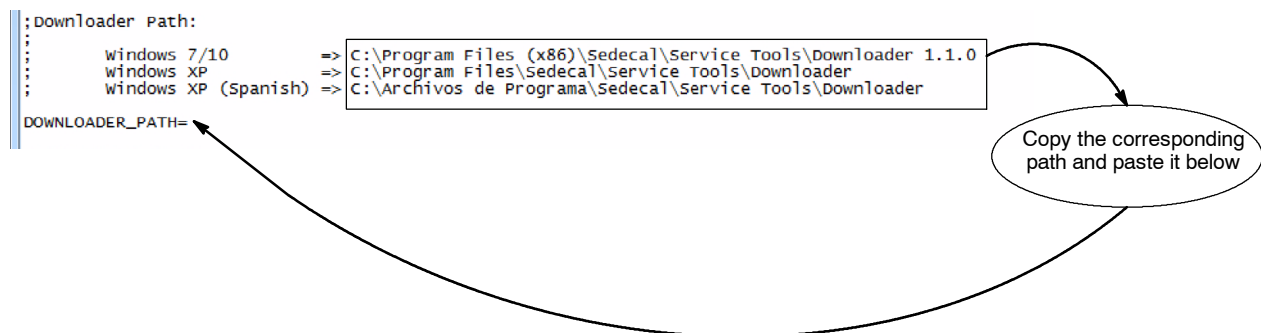
2. Once installed, connect the RJ45 cable (A7312-01) from the Adapter to J9 on the A3640-XX Control board of the Generator and install the downloader application. It can be connected either to J9A or J9B of the Control board. The downloader is used to update the Generator software.

Note

It is recommended to install the downloader to the default path, so it can be easily configured to be launched from the Service Console.

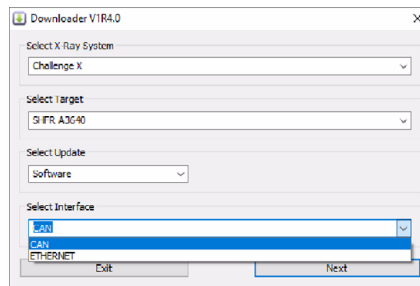
3. To be able to launch the downloader from the Service Console, open the ServiceConsole.ini file located in the Tech Service Console folder (refer to Illustration 2-4) with the Notepad and select the path where the downloader has been installed. If it has been installed in the default path, copy the corresponding line according to the operating system in use and paste it after the parameter DOWNLOADER_PATH=.

Illustration 2-4
Downloader path in the ServiceConsole.ini file

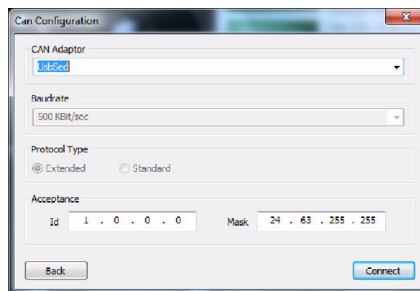


4. Start the Software Downloader by clicking on its desktop icon or from the Service Console by pressing the “Software Update” button.

5. Choose the following options:
 - a. Select X-ray System: **Challenge X**.
 - b. Select Target: **SHFR A3640**.
 - c. Select Update: **Software**.
 - d. Select Interface: **CAN**.



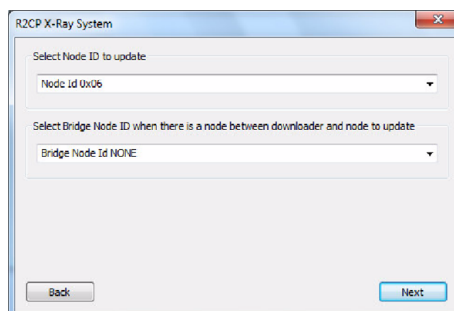
6. Click on "Next". Select the CAN Adaptor "**UsbSed**" and then, click on "Connect".



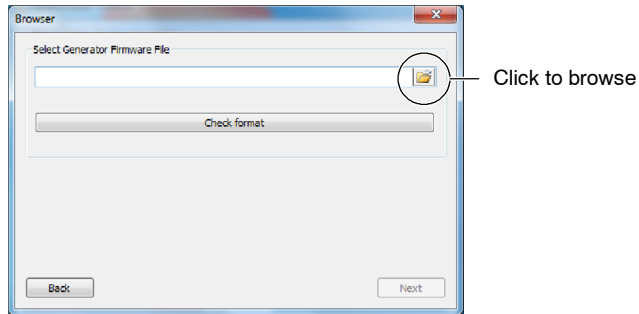
Note 

Unplug and plug again the USB cable from the computer to the Adapter in case an error message is shown when trying to connect with the Generator. Wait a few seconds and then, click on "Connect".

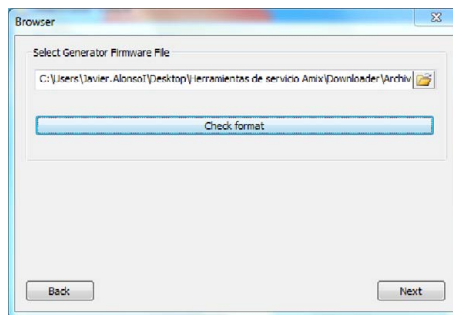
7. "Node Id" and "Bridge Node Id" are automatically selected if the connection is correctly established. Then, click on "Next".



- To select the file to be downloaded in order to update the software, browse for the .s19 file and open it. Make sure that the selected version of the .s19 file is compatible with the revision of the A3640-XX Control board mounted on the Generator.

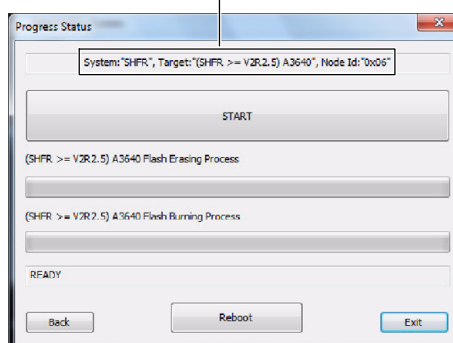


- Click on "Check format" and then click on "Next".



- Check that the selected options for the update are correct and click on the "START" button to begin the software update downloading.

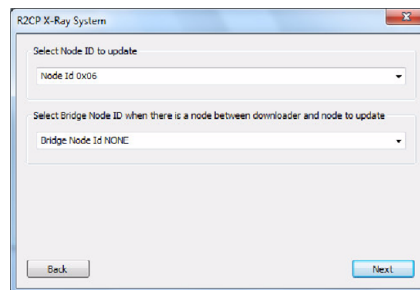
Check the selected options



Note 

If the wrong software is loaded to the Generator or software update is interrupted before finishing the process, remove jumper W1 (refer to the Control board layout in Section 5 for W1 location) and reset the Generator. The equipment will not complete the startup process, as it will be ready for the software update. Then, repeat the whole process. Don't forget to install again the jumper previously removed once the software update is finished and finally, reboot the Generator.

11. Wait until the "SUCCESS!" message is displayed. That means the software has been successfully updated. Install jumper W1, if previously removed, and click on the "Reboot" button to shut down the Generator and reboot it to complete the update.



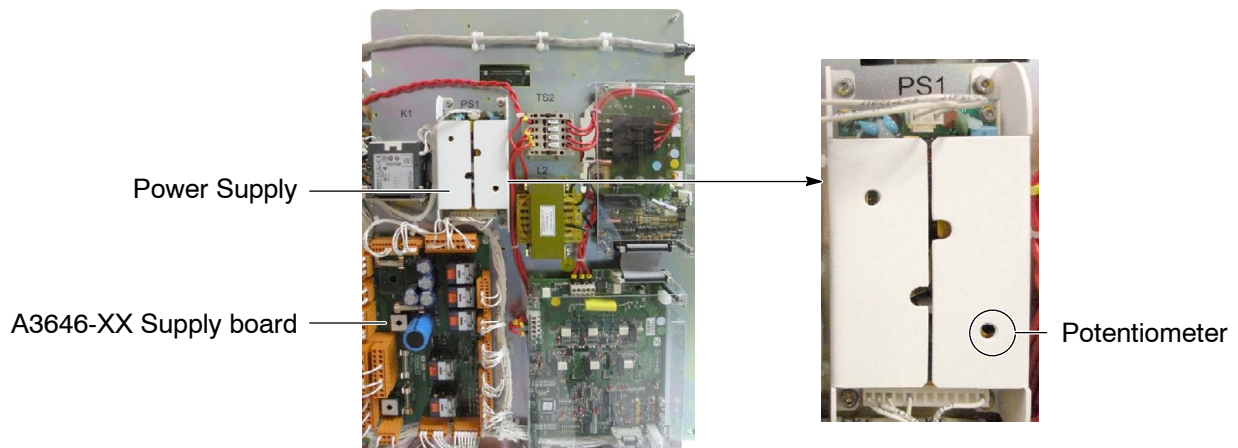
Note 

Once the software has been updated, there might be new configuration options available. Check the Configuration screen of the Service Console and update the values if necessary (refer to the Configuration document).

2.1.3 LOW DC VOLTAGE POWER SUPPLY TEST

The Generator operates from a Low DC Voltage Power Supply located in the Back Panel of the Generator Cabinet (*refer to Illustration 2-5*).

Illustration 2-5
Power Supply and A3646-XX Supply board in the Back Panel



Turn the Generator ON and with a Digital Multimeter measure:

- **+5 V_{DC}** between TP4 and GND (TP8, TP9, TP10 or TP11) or between J6-1 and J6-4 on the A3646-XX Supply board. Check that the voltage at this point is **+5.15 V_{DC} ± 100mV** (LED DS3).
- **+5 V_{DC} delayed** between TP5 and GND (TP8, TP9, TP10 or TP11) or between J15-1 and J15-3 on the A3646-XX Supply board. Check that the voltage at this point is **+5.15 V_{DC} ± 100mV** (LED DS7), present once the startup sequence is completed.
- **+15 V_{DC}** between TP6 and GND (TP8, TP9, TP10 or TP11) or between J6-2 and J6-4 on the A3646-XX Supply board. Check that the voltage at this point is **+14.9 V_{DC} ± 800mV** (LED DS4).
- **-15 V_{DC}** between TP7 and GND (TP8, TP9, TP10 or TP11) or between J6-3 and J6-4 on the A3646-XX Supply board. Check that the voltage at this point is **-15 V_{DC} ± 750mV** (LED DS5).
- **+24 V_{DC}** between TP1 and GND (TP8, TP9, TP10 or TP11) or between J6-5 and J6-4 on the A3646-XX Supply board. Check that the voltage at this point is **+28 V_{DC} ± 3V** (LED DS2).
- **+24 V_{DC} delayed** between TP3 and GND (TP8, TP9, TP10 or TP11) or between J6-6 and J6-4 on the A3646-XX Supply board. Check that the voltage at this point is **+23.1 V_{DC} ± 1.2V** (LED DS8), present once the startup sequence is completed.

If required, **adjust the voltage with the Adjustment Potentiometer** on the Power Supply (*refer to Illustration 2-5*) until measuring **+5.15 V^{DC} ± 100mV** between TP4 and GND (TP8, TP9, TP10 or TP11) or between J6-1 and J6-4 on the A3646-XX Supply board. The Adjustment Potentiometer affects not only the +5 V^{DC}, but take into account that +5 V^{DC} has to be always measured when adjusting any other voltage, as this is the one that is being adjusted with the Potentiometer in the first place.

If the measured voltage is not correct, remove the covers of the Low Voltage Power Supply and check J1 (230V~). Check J1-1 on the A3646-XX Supply board (230V~), Fuse F1 and Contactor K1 (*refer to schematic 54302260*).

+24 V^{DC} permanent, always present, can be measured between TP2 and GND (TP8, TP9, TP10 or TP11) on the A3646-XX Supply board. The voltage at this point must be **+29.7 V^{DC} ± 3V** (LED DS1). This voltage is not generated in the Power Supply.

Note 

No adjustments are required for voltage measurements.

2.2 SYSTEM CONTROL EQUIPMENT

PROBLEM	CHECK IF	SERVICE ACTION
SYSTEM NOT TURNED ON <i>(Refer to Illustration 2-6)</i>	PC Interface Box can initiate the System	Press the ON button of the PC Interface Box to switch the ON LED. Check that the PC Interface Box is being powered by the X-ray Generator. Check the cabling. Check if the PC Interface Box or the Generator Power ON circuit are defective.
	There is not enough power to switch the whole X-ray system	Check that the Line Power is provided to every component of the System. Check the A3707-XX board of each positioner of the system.
	Incorrect routing and connections of Bus Hardware Cables (Grey shielded Cables)	Check that the Bus Hardware circuit is correctly routed and connected.
THE SYSTEM SWITCHES ON IN SAFETY MODE (LED INDICATORS IN PINK), CAN NOT CHANGE TO USER MODE (LED INDICATORS IN WHITE) <i>(Refer to Illustration 2-7)</i>	The System Circuit is broken	Any of the components of the System is not powered, so Bus Hardware circuit is not completed. The Bus Hardware System is not correctly installed. Check if GPIO, CAN BUS and BUS Hardware cables are correctly routed and/or connected. In Case of the GPIO System check if the Terminator Connector is connected at the final positioner of the System.
THE REMOTE CONTROL IS NOT WORKING PROPERLY	The electronics of the Remote Control Device are working properly	Replace the Remote Control with a new one.
	IR Sensors of the Positioner are not working Properly	Check the IR sensor, PBA and cables and replace the defective component.

Illustration 2-6
System not turned ON

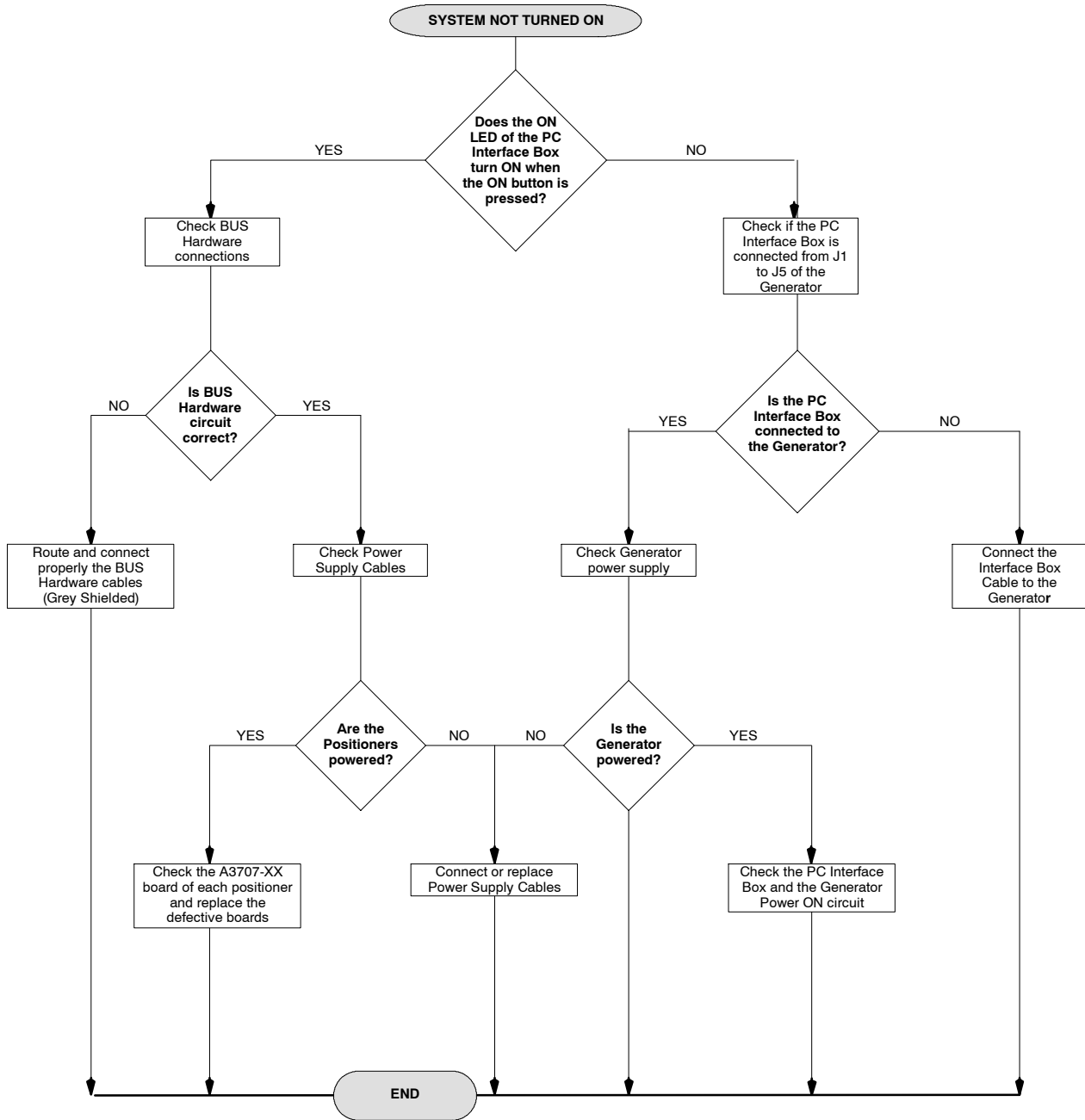
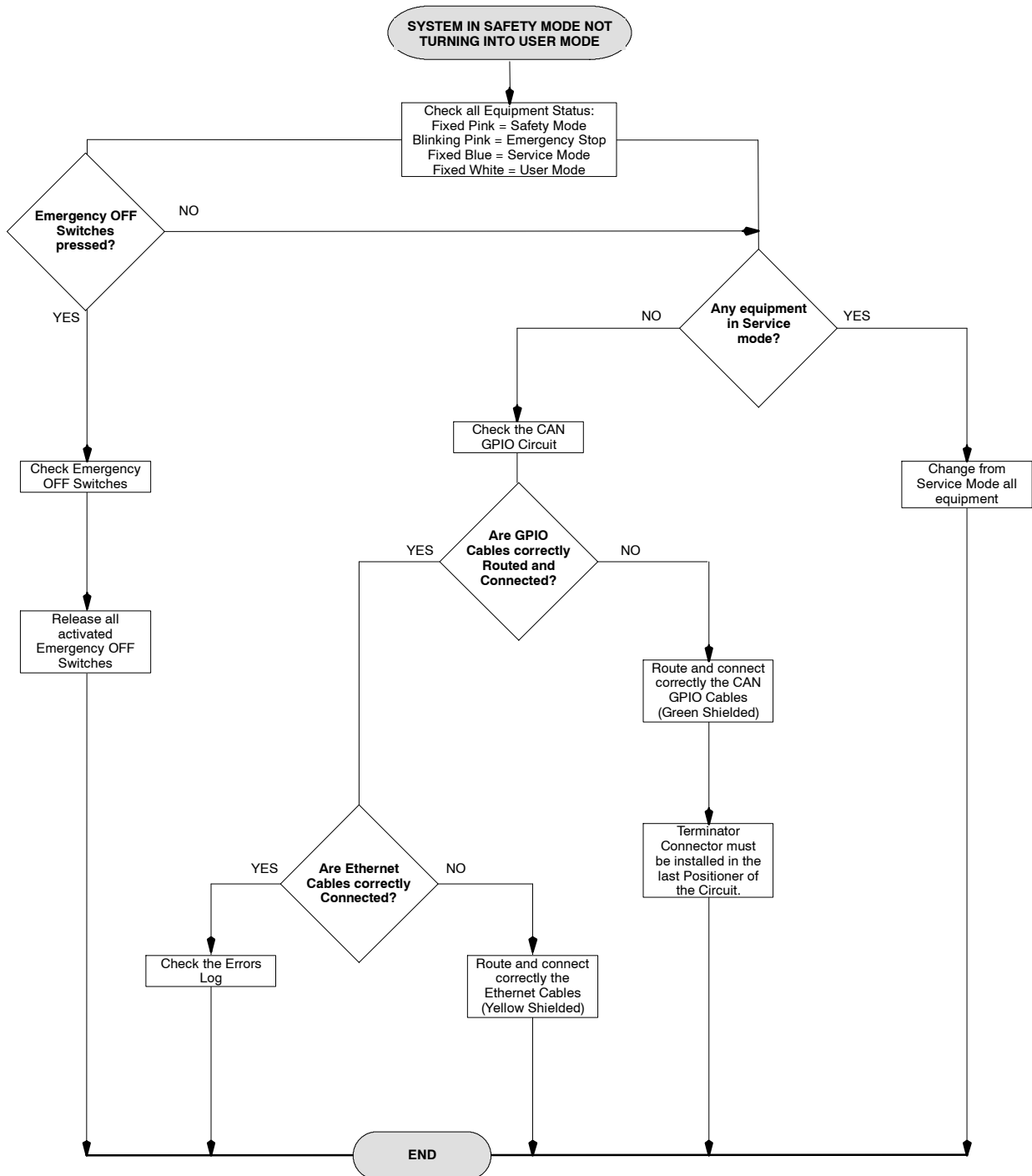


Illustration 2-7
System in Safety Mode no turning into User Mode



2.3 OVERHEAD TUBE CRANE

PROBLEM	CHECK IF	SERVICE ACTION
<p>OVERHEAD TUBE CRANE CAN NOT BE SWITCHED ON <i>(Refer to Illustration 2-8)</i></p>	<p>The BUS Hardware Circuit is correct</p>	<p>Check the BUS Hardware cable for a correct connection in the Master Board (DS32 LED must be lighted in green) and in the 1st Positioner.</p>
	<p>The Master Board and Input Module are correctly powered</p>	<p>Test the A15129-01 Cable for correct connection in Input Modules and Master Board (A3633-02).</p>
		<p>Check Power Supply Cable for sufficient voltage.</p>
		<p>Test the fuses for continuity.</p>
<p>Check if the Medical Power Supply is correctly connected and supplies the equipment.</p>		
<p>EMERGENCY STOP PRESSED <i>(Refer to Illustration 2-9)</i></p>	<p>Emergency Switch OFF is pressed (status LED blinking in pink)</p>	<p>Release the Emergency Switch OFF after resolving the cause of the emergency.</p>
<p>IN SAFETY MODE <i>(Refer to Illustration 2-10)</i></p>	<p>CAN GPIO and/or Ethernet Cables are not properly connected</p>	<p>Check the GPIO and/or Ethernet Cables for correct connection.</p>
	<p>Steel Cables are blocked due to safety problems</p>	<p>Check status of the Steel Cables.</p>
<p>OVERHEAD TUBE CRANE IN SERVICE MODE <i>(Refer to Illustration 2-11)</i></p>	<p>Service Mode is activated for the Overhead Tube Crane</p>	<p>Check the Status of the Local/Global ON Switch, it must be ON globally and not in Service Mode. Check the Status of the Service Mode Switch (SW5)</p>
<p>OVERHEAD TUBE CRANE ON, CONTROL CONSOLE OFF <i>(Refer to Illustration 2-12)</i></p>	<p>Control Console is properly connected</p>	<p>Check the Control Console for correct connections of the Cables.</p>
<p>OVERHEAD TUBE CRANE IS NOT MOVING WHEN HOLDING THE WHEEL OF THE CONTROL CONSOLE</p>	<p>The electronics of the Control Console is working properly</p>	<p>Check the microswitches and electronics of the Control Console for incorrect connection or malfunction.</p>

Illustration 2-8
Overhead Tube Crane not turned ON

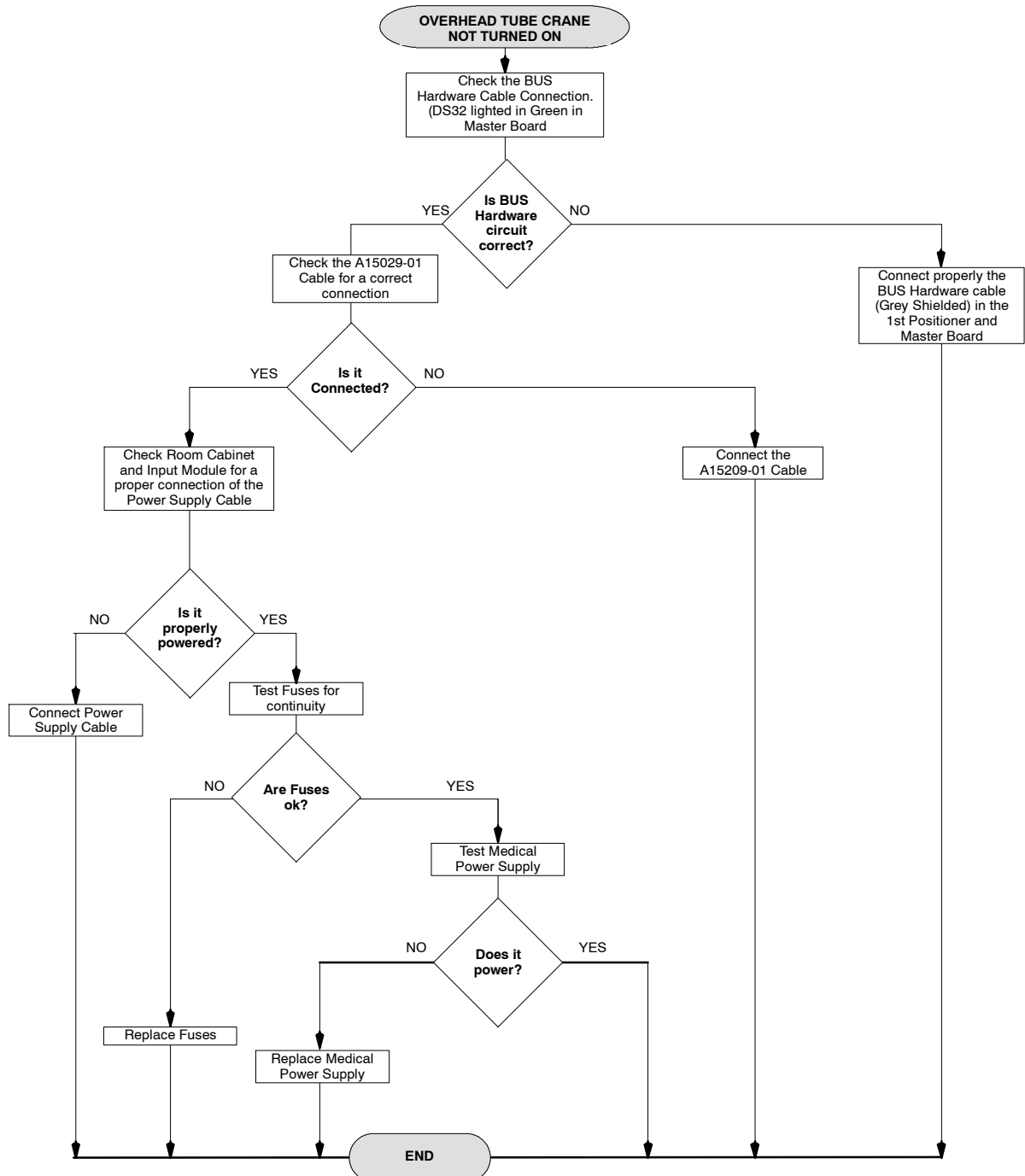


Illustration 2-9
Emergency Stop Activated

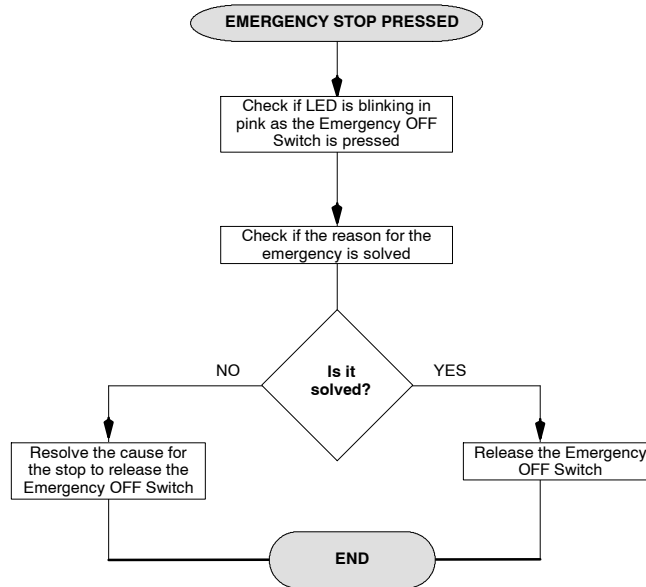


Illustration 2-10
Overhead Tube Crane in Safety Mode

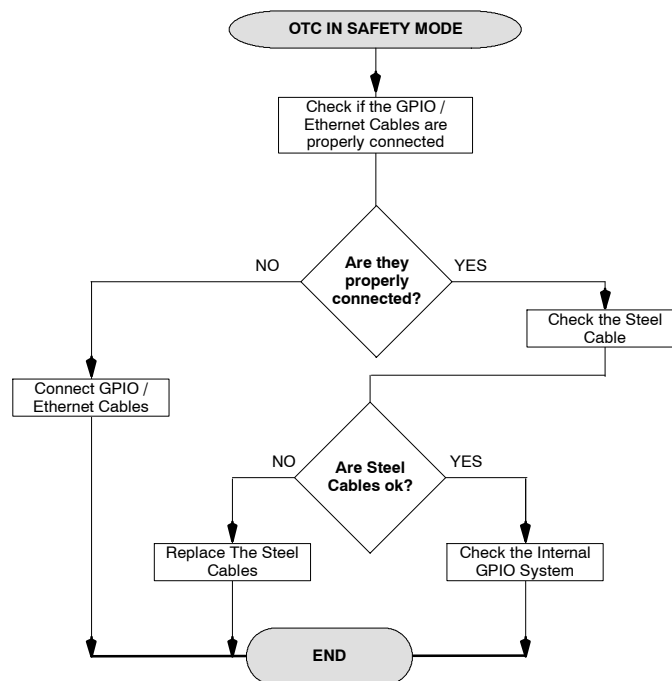


Illustration 2-11
Overhead Tube Crane in Service Mode

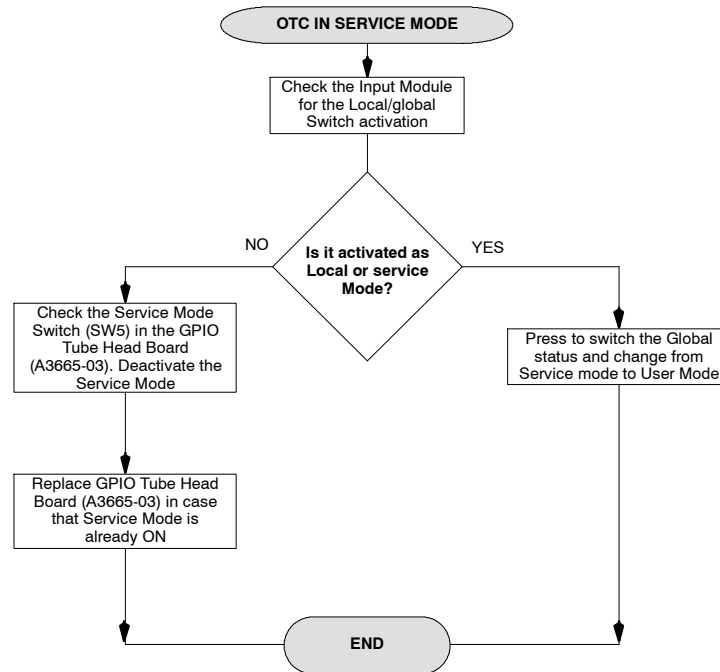
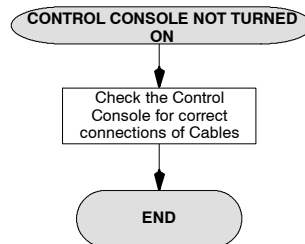


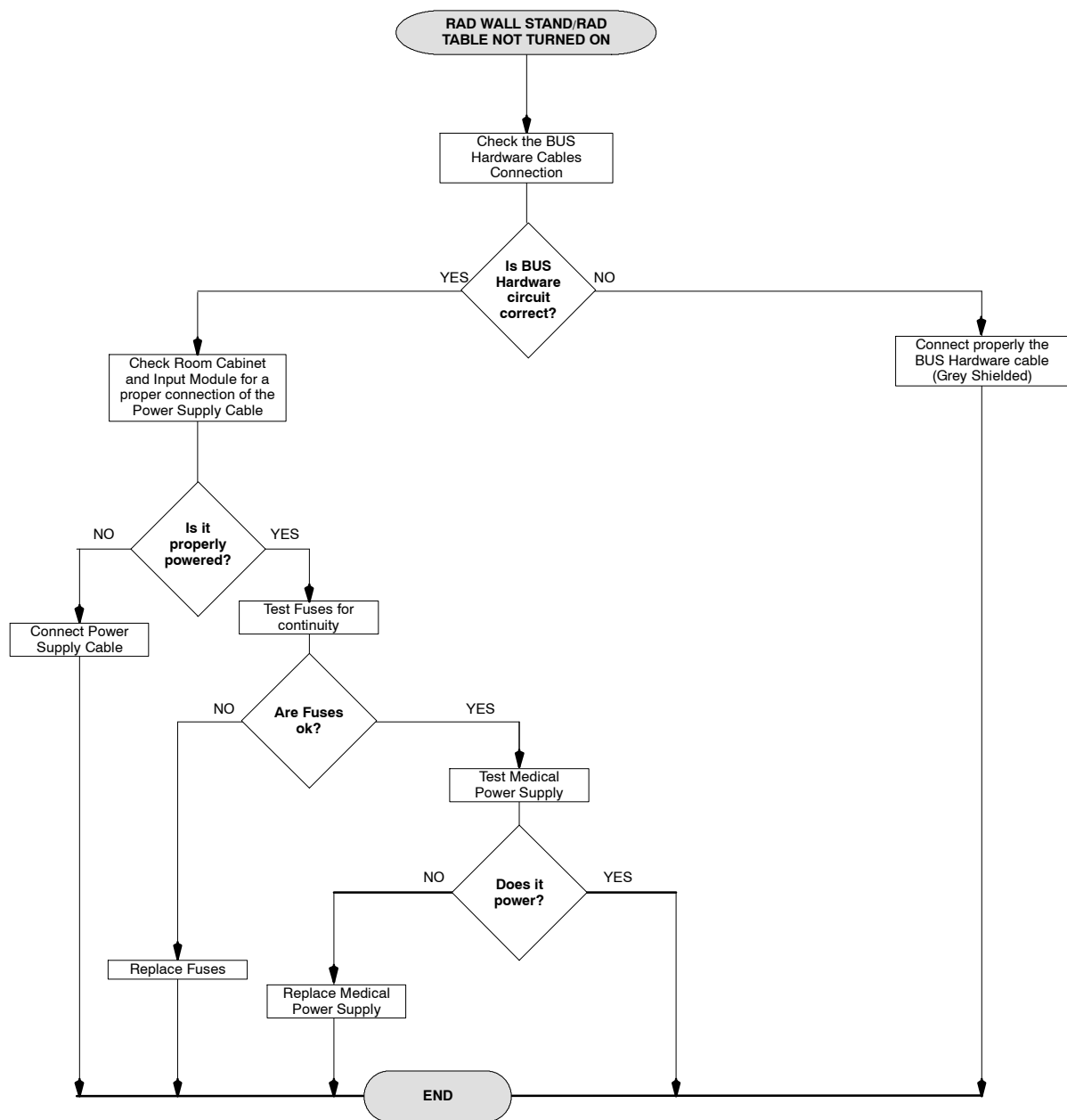
Illustration 2-12
Control Console not turned ON



2.4 RAD WALL STAND

PROBLEM	CHECK IF	SERVICE ACTION
RAD WALL STAND CAN NOT BE SWITCHED ON <i>(Refer to Illustration 2-13)</i>	The BUS Hardware Circuit is correct	Check the BUS Hardware cables are correctly connected and connectors are in proper conditions.
	The Input Module is correctly powered	Check Power Supply Cable for sufficient voltage.
		Test the fuses for continuity.
		Check if the Medical Power Supply is correctly connected and supplies the equipment.
EMERGENCY STOP PRESSED <i>(Refer to Illustration 2-9)</i>	Emergency Switch OFF is pressed (status LED blinking in pink)	Release the Emergency Switch OFF after resolving the cause of the emergency.
POSITIONER IN SAFETY MODE <i>(Refer to Illustration 2-10)</i>	CAN GPIO and/or Ethernet Cables are not properly connected	Check the GPIO and/or Ethernet Cables for correct connection.
POSITIONER IN SERVICE MODE <i>(Refer to Illustration 2-11)</i>	Service Mode is activated for Positioner	Check the Status of the Local/Global ON Switch, it must be ON globally and not in Service Mode. Check the Status of the Service Mode Switch (SW1)
RECEPTOR VERTICAL MOVEMENT IS NOT POSSIBLE	The column stand is free of any element that obstructs the bucky vertical movement.	Get the column stand free of any element that obstructs bucky vertical movement.
	It is locked.	Get unlocked. In case that Vertical lock is broken, replace it.
	It can be moved manually.	In case that it does not work, check the Vertical module and replace the defective component.
	The chains are broken.	In case that they are broken, replace them.
THE RECEPTOR DOES NOT TILT	Power supply is ON.	Switch on the Wall Stand.
	There is power in the coil.	
	The cables are broken.	Replace broken cables.
THE RECEPTOR DOES NOT ROTATE	Power supply is ON.	Switch on the Wall Stand.
	There is power in the coil.	
	The cables are broken.	Replace broken cables.

Illustration 2-13
RAD Wall Stand and RAD Table not turned ON



2.4.1 RAD WALL STAND TILTING CALIBRATION

Note 

This procedure is necessary when changing detector, tilting movement boards (A3624-XX and/or A3625-XX) or potentiometer.

1. Access the Service Mode on the Control Console (refer to the Service Mode Login and Main Menu section in the Configuration and Calibration document).
2. Go to the Positioner Setup Wizard menu and press the arrow icon until reaching the Wall Stand Tilting calibration screen. Then, press OK to start the calibration procedure (refer to the Positioner Setup section in the Configuration and Calibration document).



3. Place the Detector Assembly perpendicular to the floor (90°) and press OK.



To place the Wall Stand in the position indicated by the Positioner Setup Wizard, press the manual tilting button (only active when entering the service mode) and move the Detector Assembly manually.



WHENEVER THE MANUAL TILTING MOVEMENT BUTTON IS PRESSED, THE DETECTOR CABINET MUST BE HELD FIRMLY IN ORDER TO AVOID SUDDEN MOVEMENTS THAT COULD CAUSE INJURIES TO THE SERVICE PERSONNEL.

Note 

To check that the angle of the Wall Stand is correct, place an inclinometer on the rear side (metal cover) of the Detector Assembly.



4. Place the Detector Assembly parallel to the floor (0°) and press OK.



To place the Wall Stand in the position indicated by the Positioner Setup Wizard, press the manual tilting button and move the Detector Assembly manually (refer to the previous step).



WHENEVER THE MANUAL TILTING MOVEMENT BUTTON IS PRESSED, THE DETECTOR CABINET MUST BE HELD FIRMLY IN ORDER TO AVOID SUDDEN MOVEMENTS THAT COULD CAUSE INJURIES TO THE SERVICE PERSONNEL.

Note 

To check that the angle of the Wall Stand is correct, place an inclinometer on the rear side (metal cover) of the Detector Assembly.



2.5 RAD TABLE

PROBLEM	CHECK IF	SERVICE ACTION
RAD TABLE CAN NOT BE SWITCHED ON <i>(Refer to Illustration 2-13)</i>	The BUS Hardware Circuit is correct	Check the BUS Hardware cables are correctly connected and connectors are in proper conditions.
	The Input Module is correctly powered	Check Power Supply Cable for sufficient voltage.
		Test the fuses for continuity.
		Check if the Medical Power Supply is correctly connected and supplies the equipment.
EMERGENCY STOP PRESSED <i>(Refer to Illustration 2-9)</i>	Emergency Switch OFF is pressed (status LED blinking in pink)	Release the Emergency Switch OFF after resolving the cause of the emergency.
POSITIONER IN SAFETY MODE <i>(Refer to Illustration 2-10)</i>	CAN GPIO and/or Ethernet Cables are not properly connected	Check the GPIO and/or Ethernet Cables for correct connection.
POSITIONER IN SERVICE MODE <i>(Refer to Illustration 2-11)</i>	Service Mode is activated for Positioner	Check the Status of the Local/Global ON Switch, it must be ON globally and not in Service Mode. Check the Status of the Service Mode Switch (SW1).
VERTICAL MOVEMENTS OF THE TABLETOP ARE BLOCKED <i>(Refer to Illustration 2-14)</i>	Control Pedals can not work properly	Verify that the Control Pedals are not blocked with any obstacle, when the Pedals are pressed.
	Control Pedals are not powered	Check the Control Pedals for a correct connection and enough power.
	Motors of vertical movement do not work properly	Check the status of motors and other components related to the vertical movement (board, cables, switches, Control Pedals Assembly, Relay, fuses, etc.).
	Anti-collision Switches do not work	Check Anti-collision Switches installation.

X-ray System

Troubleshooting

PROBLEM	CHECK IF	SERVICE ACTION
HORIZONTAL MOVEMENTS OF THE TABLETOP ARE BLOCKED <i>(Refer to Illustration 2-15)</i>	Control Pedals can not work properly	Verify that the Control Pedals are not blocked with any obstacle, when the Pedals are pressed.
	Control Pedals are not powered	Check the Control Pedals for a correct connection and enough power.
	Tabletop Brakes do not work properly	Check that the Longitudinal and Transversal Brakes are connected and working properly.
	Tabletop microswitches do not work properly	Check that the Tabletop microswitches are not broken.
SLOW MOVEMENT WHEN RAISING OR LOWERING THE TABLETOP <i>(Refer to Illustration 2-16)</i>	When moving up & down the Tabletop, it travels slowly or each side moves out of time	Check the Motors for enough power and correct connection.
		Check the Motors for possible damages.

Illustration 2-14
Vertical Movements of the Tabletop are Blocked

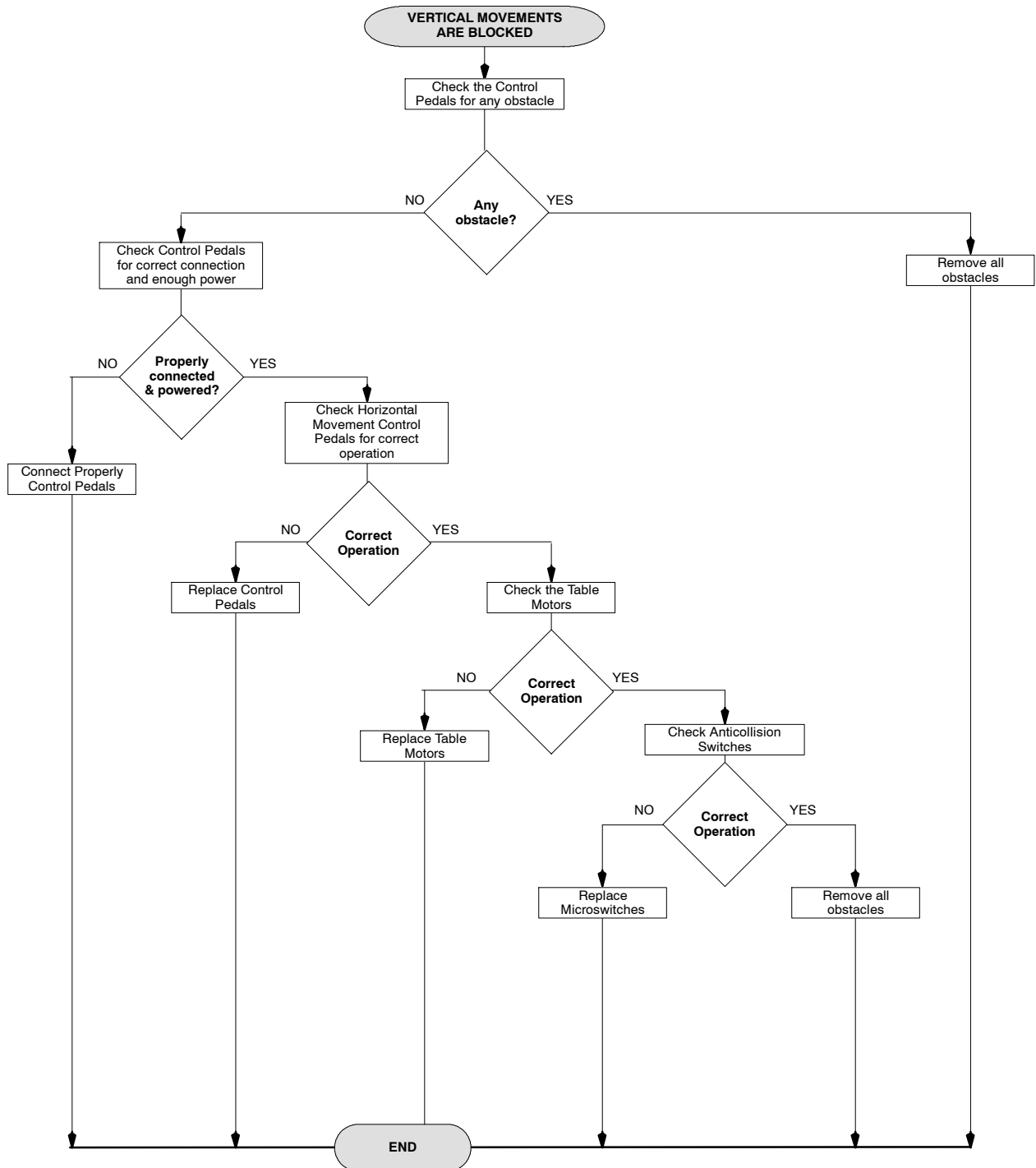


Illustration 2-15
Horizontal Movements of the Tabletop are Blocked

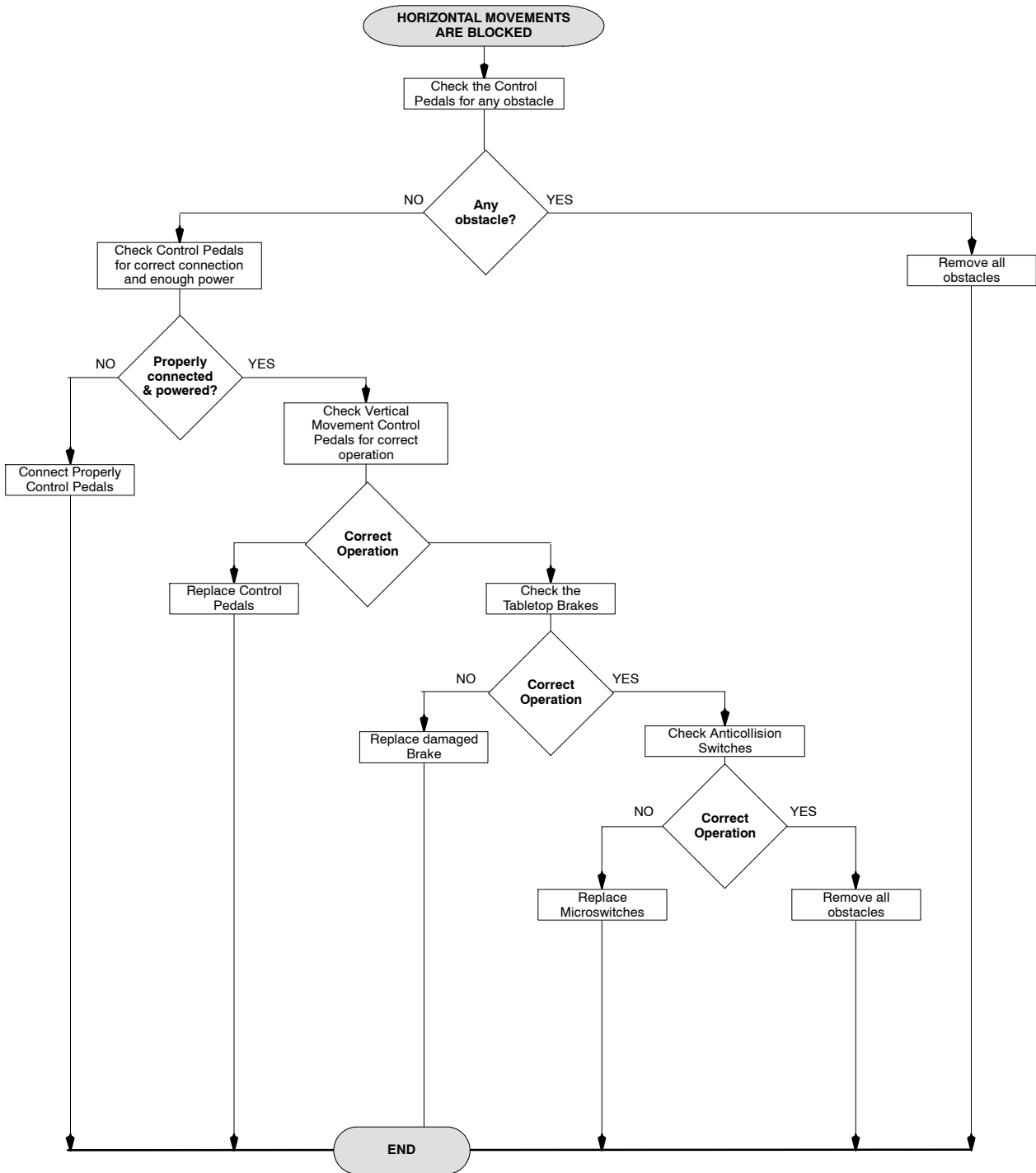
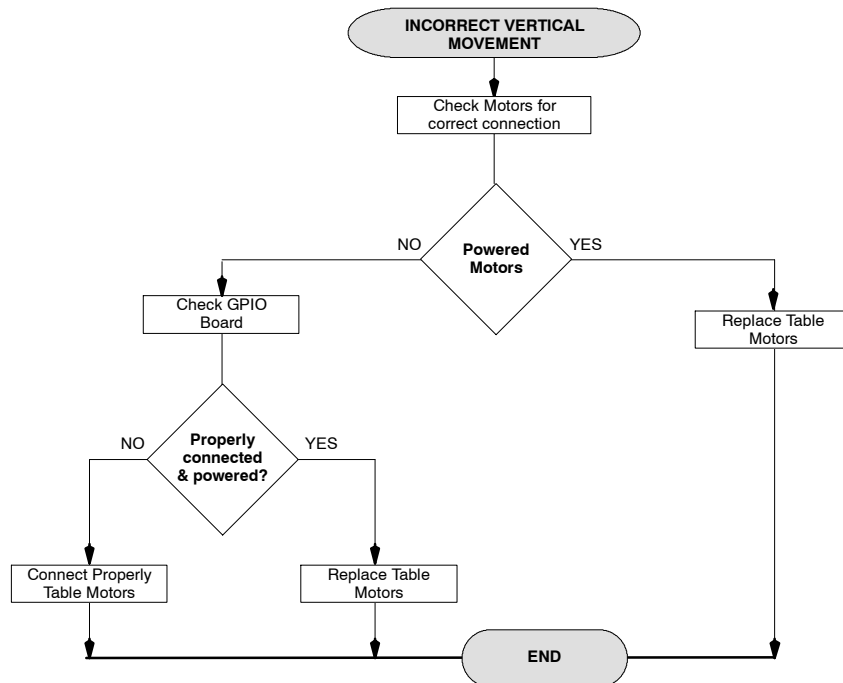


Illustration 2-16
Slow or/and Unbalanced Vertical Movement



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SECTION 3 SYSTEM MESSAGES

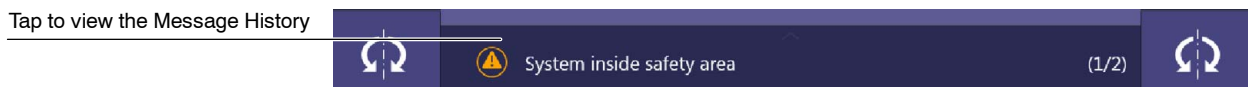
The System Messages are displayed in the Control Console of the Overhead Tube Crane, where errors, inhibit conditions and informative messages related to the whole operative of the X-ray System are shown, except those messages exclusively related to the Image Acquisition software, which are displayed in the Workstation Console.

3.1 SYSTEM MESSAGES DISPLAY

The Message area of the Main menu shows inhibit conditions and informative messages. The last message is always displayed in this area as long as it remains active.

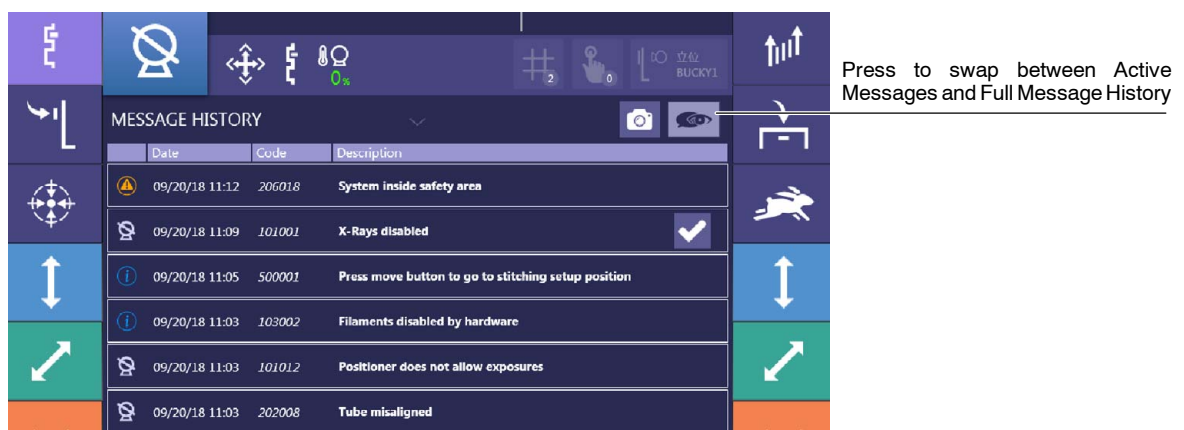
To check the message history, press on the Message area. A pop-up window will be displayed. To close it, tap on the message area again to go back to the previous screen.

Illustration 3-1
Message area in the Main menu



It is possible to check just the active messages or the complete message history. Use the “*Show Active Messages Only*” or “*Show Full Message History*” icon to swap between the two options.

Illustration 3-2
Message History



3.2 SYSTEM MESSAGES LIST

Following tables list all defined message codes:

- **ID.** Message code.
- **DESCRIPTION.** Displayed system message text.
- **SERVICE LOG_DESCRIPTION.** Extends the explanation of the message, describing the source of the problem.
- **SERVICE ACTION.** Suggests an action to be completed in order to fix the problem.

These messages are divided into different types, which are labeled by an specific icon:



- **Warning.** Alerts user about conditions that do not disable or abort exposures (e.g. maximum kVp value reached while modifying the exposure parameters).



- **Information.** Informative messages that do not require any action by the user. Most are automatically cleared by the system after a few seconds, although some require reading confirmation.



- **Exposure inhibit condition.** Exposures are inhibited. More than one inhibit condition could be active at the same time.



- **Movement inhibit condition.** Movements are inhibited. More than one inhibit condition could be active at the same time.



- **Emergency.** The emergency button is pressed. Therefore, movements and exposures are not allowed.



- **User action.** Exposure is inhibited until the required action is performed by the user.



- **Error.** Error Messages indicate the potential cause of a system failure that abort or inhibit the exposure or procedure. User or Service Support must correct the error cause. Until then, the error will remain in the Console and the exposures or movements will keep disabled.

Note

Remember that only the active messages of the selected Workstation will be displayed in the Message History.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100001	I2C bus error while trying to access the external redundant backup timer.	Error	BACKUP TIMER - I2C ERROR I2C bus error while trying to access the external redundant backup timer.	<ul style="list-style-type: none"> Turn the Generator OFF, check the proper external cable connections and then turn the Generator ON. (Refer to Error Code 100001 in Section 4.1).
100002	One or more workstations are not properly configured; a default value has been assigned.	Error	WRONG WS CONFIGURATION ERROR One or more workstations are not properly configured; a default value has been assigned.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100002 and 100003 in Section 4.1).
100003	All the workstations have no tube configured, there is no workstation available, and a default value has been assigned.	Error	NO WS CONFIGURED ERROR All the workstations have no tube configured, there is no workstation available, and a default value has been assigned.	
100004	The Fluoro order input signal is active during the Startup sequence.	Error	FLUORO ORDER ERROR The Fluoro order input signal is active during the Startup sequence.	<ul style="list-style-type: none"> Release any external exposure device or buttons. Turn the Generator OFF and ON. (Refer to Error Code 100004 in Section 4.1).
100005	The Exposure order input signal is active during the Startup sequence.	Error	EXP ORDER ERROR The Exposure order input signal is active during the Startup sequence.	<ul style="list-style-type: none"> Release any external exposure device or buttons. Generator will reboot after user confirmation. (Refer to Error Code 100005 and 100006 in Section 4.1).
100006	The Preparation order input signal is active during the Startup sequence.	Error	PREP ORDER ERROR The Preparation order input signal is active during the Startup sequence.	
100007	The tube index (that points a tube in the tube list) configured for the tube 2 is outside boundaries, a default value has been assigned.	Error	TUBE2 MODEL ERROR The tube index (that points a tube in the tube list) configured for the tube 2 is outside boundaries, a default value has been assigned.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Code 100007 in Section 4.1).

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100008	The tube index (that points a tube in the tube list) configured for the tube 1 is outside boundaries, a default value has been assigned.	Error	TUBE1 MODEL ERROR The tube index (that points a tube in the tube list) configured for the tube 1 is outside boundaries, a default value has been assigned.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100008 and 100009 in Section 4.1).
100009	The inverter module has been overloaded. There could be an arcing problem in the tube or in the tank, or the inverter is defective.	Error	INVERTER ERROR (IGBT FAULT) The inverter module has been overloaded. There could be an arcing problem in the tube or in the tank, or the inverter is defective.	<ul style="list-style-type: none"> Turn the Generator OFF and ON. (Refer to Error Codes 100010 and 100011 in Section 4.1).
100010	Erroneous data stored in the E2PROM.	Error	E2PROM CHECK ERROR Erroneous data stored in the E2PROM.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combinations of kV and mA values. (Refer to Error Codes 100012, 100013 and 100014 in Section 4.1).
100011	Error while charging the load capacitors. The DC bus voltage does not reach the right value during Startup.	Error	LOAD CAPACITOR ERROR Error while charging the load capacitors. The DC bus voltage does not reach the right value during Startup.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combinations of kV and mA values. (Refer to Error Codes 100012, 100013 and 100014 in Section 4.1).
100012	Tube current out of range during exposure.	Error	mA RANGE ERROR Tube current out of range during exposure.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combinations of kV and mA values. (Refer to Error Codes 100012, 100013 and 100014 in Section 4.1).
100013	Anode-Cathode voltage out of range during exposure.	Error	kVp RANGE ERROR Anode-Cathode voltage out of range during exposure.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combinations of kV and mA values. (Refer to Error Codes 100012, 100013 and 100014 in Section 4.1).
100014	Anode-Cathode voltage does not reach the final value in the designated rise time.	Error	kVp RAMP ERROR Anode-Cathode voltage does not reach the final value in the designated rise time.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combinations of kV and mA values. (Refer to Error Codes 100012, 100013 and 100014 in Section 4.1).

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100015	Large filament current out of range.	Error	LARGE FIL CURRENT RANGE ERROR Large filament current out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100015 and 100016 in Section 4.1).
100016	Small filament current out of range.	Error	SMALL FIL CURRENT RANGE ERROR Small filament current out of range.	
100017	DC bus voltage out of range.	Error	DC bus voltage out of range.	
100018	The Anode Rotor Controller (starter) is not sending back the Ready condition within the designated time.	Error	ROTOR ERROR The Anode Rotor Controller (starter) is not sending back the Ready condition within the designated time.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Code 100018 in Section 4.1).
100019	Tube current without exposure order from the microcontroller.	Error	mA WITHOUT EXP ERROR Tube current without exposure order from the microcontroller.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100019 and 100020 in Section 4.1).
100020	Anode-Cathode voltage without exposure order from the microcontroller.	Error	kVp WITHOUT EXP ERROR Anode-Cathode voltage without exposure order from the microcontroller.	
100021	Tube 1 Switch Error.	Error	Tube 1 Switch Error.	
100022	Tube 2 Switch Error.	Error	Tube 2 Switch Error.	
100023	Error while writing in the E2PROM.	Error	E2PROM ERROR Error while writing in the E2PROM.	Turn the Generator OFF and ON. (Refer to Error Code 100023 in Section 4.1).

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100024	The timeout for the acknowledge for X-Rays from the Bucky or FPD has been exceeded.	Error	BUCKY/DIGITAL PANEL ERROR The timeout for the acknowledge for X-rays from the Bucky or FPD has been exceeded.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and then turn the Generator ON. (Refer to Error Code 100024 in Section 4.1).
100025	Large filament current demand above the limit.	Error	LARGE FIL DEMAND ERROR Large filament current demand above the limit.	<ul style="list-style-type: none"> Press the "Accept" button. Repeat with same technique values, if the error code persists try with another combination of kV and mA values. (Refer to Error Codes 100025 and 100026 in Section 4.1).
100026	Small filament current demand above the limit.	Error	SMALL FIL DEMAND ERROR Small filament current demand above the limit.	
100027	I2C bus error while trying to access the digital potentiometer that adjusts the kV oscillator.	Error	kVp POTENTIOMETER-I2C ERROR I2C bus error while trying to access the digital potentiometer that adjusts the kV oscillator.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100027 and 100028 in Section 4.1).
100028	I2C bus error while trying to access the ABC digital potentiometers that adjust the ABC window.	Error	028 ABC POTENTIOMETER-I2C ERROR I2C bus error while trying to access the digital potentiometers that adjust the ABC window.	
100029	Generator heat capacity exceeded.	Error	GENERATOR OVERHEAT ERROR Generator heat capacity exceeded.	<ul style="list-style-type: none"> Turn the Generator OFF and wait 30 minutes before turning it ON again or decrease the exposure parameters. (Refer to Error Code 100029 in Section 4.1).
100030	Wrong date stored in the Real Time Clock (RTC) and/or the time stamp.	Error	CORRUPT RTC ERROR Wrong date stored in the Real Time Clock (RTC) and/or the time stamp.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100030, 100031 and 100032 in Section 4.1).
100031	The time stamp checksum is wrong.	Error	TIME STAMP CHECK ERROR The time stamp checksum is wrong.	
100032	I2C bus error while trying to access the Real Time Clock (RTC).	Error	RTC-I2C ERROR I2C bus error while trying to access the Real Time Clock (RTC).	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100033	The remote console has lost the communications with the generator.	Error	COMMUNICATIONS ERROR (COMMS LOST AT THE CONSOLE) The remote console has lost the communications with the generator.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and then turn the Generator ON.
100034	Tank presostat opened.	Error	TANK PRESOSTAT ERROR Tank presostat opened.	<ul style="list-style-type: none"> Turn the Generator OFF and wait 30 minutes before turning it ON again. (Refer to Error Code 100034 in Section 4.1).
100035	The acknowledge for X-Rays from the Bucky or FPD has been lost before the end of the exposure.	Error	BUCKY MOTION (X-RAY ACK) ERROR The acknowledge for X-rays from the Bucky or FPD has been lost before the end of the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and then turn the Generator ON. (Refer to Error Code 100035 in Section 4.1).
100036	Tube thermostat opened.	Error	TUBE THERMOSTAT ERROR Tube thermostat opened.	<ul style="list-style-type: none"> Turn the Generator OFF and wait 30 minutes before turning it ON again. (Refer to Error Code 100036 in Section 4.1).
100037	Tube ratings exceeded or not enough Heat Units to perform the selected exposure.	Error	TUBE OVERLOAD ERROR Tube ratings exceeded or not enough Heat Units to perform the selected exposure.	<ul style="list-style-type: none"> Wait for the Tube to cool down or decrease the exposure parameters. (Refer to Error Code 100037 in Section 4.1).
100038	+ 5 V Power supply failure.	Error	+5 V POWER SUPPLY FAILURE. +5 V Power Supply is out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100038 and 100039 in Section 4.1).
100039	+15 V Power Supply Failure.	Error	+15 V POWER SUPPLY FAILURE. +15 V Power Supply is out of range.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100040	Imbalanced kVp, there is not the same voltage in Anode and Cathode branches.	Error	IMBALANCED kVp ERROR Imbalanced kVp, there is not the same voltage in Anode and Cathode branches.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100040 and 100041 in Section 4.1).
100041	Imbalanced mA, there is not the same current in Anode and Cathode branches.	Error	IMBALANCED mA ERROR Imbalanced mA, there is not the same current in Anode and Cathode branches.	
100042	The counters checksum is wrong.	Error	CORRUPT COUNTERS ERROR The counters checksum is wrong.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON. (Refer to Error Codes 100042, 100043, 100044, 100045, 100046, 100047 and 100048 in Section 4.1).
100043	The error log checksum is wrong.	Error	CORRUPT ERROR LOG ERROR The error log checksum is wrong.	
100044	I2C bus error while trying to access the E2PROM.	Error	E2PROM-I2C ERROR I2C bus error while trying to access the E2PROM.	
100045	The tube data checksum is wrong.	Error	CORRUPT TUBE DATA ERROR The tube data checksum is wrong.	
100046	I2C bus error, the bus remains always busy.	Error	BUSY BUS - I2C ERROR I2C bus error, the bus remains always busy.	
100047	I2C bus error while trying to access the Licence.	Error	LICENCE - I2C ERROR I2C bus error while trying to access the Licence.	
100048	The door switch has been opened before the end of the exposure.	Error	DOOR ABORTED EXPOSURE The door switch has been opened before the end of the exposure.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100049	The generator has lost the communications with the remote console.	Error	COMMUNICATIONS ERROR (COMMS LOST AT THE GENERATOR) The generator has lost the communications with the remote console.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.
100050	The user has released the exposure device before the end of the exposure.	Error	ABORTED EXPOSURE ERROR The user has released the exposure device before the end of the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100051	The selected exposure time cannot be achieved.	Error	WRONG EXPOSURE TIME ERROR The selected exposure time cannot be achieved.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, increase the exposure time.
100052	The timeout for receiving the RAD synchronism pulse has elapsed.	Error	The timeout for receiving the RAD synchronism pulse has elapsed.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.
100053	The timeout for receiving the Fluoro synchronism pulse has elapsed.	Error	FLUORO SYNC ERROR The timeout for receiving the Fluoro synchronism pulse has elapsed.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.
100054	The timeout for receiving the Digital/DSI synchronism pulse has elapsed.	Error	DIGITAL SYNC ERROR The timeout for receiving the Digital/DSI synchronism pulse has elapsed.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.
100055	The backup timer has elapsed before the AEC or the System ends the exposure.	Error	NOT ENOUGH DOSE ERROR The backup timer has elapsed before the AEC or the System ends the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.
100056	The backup timer has elapsed before the Tomograph ends the exposure.	Error	NOT ENOUGH BACKUP TIME ERROR The backup timer has elapsed before the Tomograph ends the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, check the proper external cable connections and then turn the generator ON.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100057	It is not possible to load next exposure Dual Energy parameters.	Error	DUAL ENERGY ERROR It is not possible to load next exposure Dual Energy parameters.	<ul style="list-style-type: none"> Press the "Accept" button. Wait for the Tube/Generator to cool down or select a more suitable technique for the current thermal status.
100058	The tube data pointed by the tube 1 index are not defined, a default tube has been selected.	Error	TUBE1 DATA ERROR The tube data pointed by the tube 1 index are not defined, a default tube has been selected.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100059	The tube data pointed by the tube 2 index are not defined, a default tube has been selected.	Error	TUBE 2 DATA ERROR The tube data pointed by the tube 2 index are not defined, a default tube has been selected.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100060	The number of exposures to autocalibrate a mA station has run out.	Error	AUTOCAL ERROR The number of exposures to autocalibrate a mA station has run out.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100061	There has been an error while trying to access the Licence data. Default options have been selected.	Information	LICENCE ERROR There has been an error while trying to access the Licence data. Default options have been selected.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100062	AEC selection error.	Error	AEC ERROR AEC selection error.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100063	The Ready from the starter has been lost before the end of the exposure.	Error	ROTOR READY ERROR The Ready from the starter has been lost before the end of the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100064	The Feedback connector from the tank is not plugged in.	Error	TANK FEEDBACK ERROR The Feedback connector from the tank is not plugged in.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100065	+24 V Delayed power supply failure.	Error	+24 V DELAYED POWER SUPPLY FAILURE +24 V delayed power is out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100066	+24 V (UNR) power supply failure.	Error	+24 V (UNR) POWER SUPPLY FAILURE +24 V (unregulated) Power Supply is out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100067	-15 V power supply failure.	Error	-15 V POWER SUPPLY FAILURE: -15 V Power Supply is out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100068	+3.3 V power supply failure.	Error	+3.3 V POWER SUPPLY FAILURE +3.3 V Power Supply is out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100069	+24 V (UNR) permanent power supply failure.	Error	+24 V (UNR) PERMANENT POWER SUPPLY FAILURE +24 V (unregulated) Power Supply out of range.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100070	AEC Rapid Termination error: Exposure aborted because a lack of radiation received on the AEC.	Error	AEC RAPID TERMINATION ERROR Exposure aborted because a lack of radiation received on the AEC.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and then turn the Generator ON.
100071	Interlock error: Exposure aborted because an interlock has been deactivated during the exposure.	Error	INTERLOCK ERROR Exposure aborted because an interlock has been deactivated during the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100072	Exposure aborted by deactivation of Positioner-OK signal.	Error	POSITIONER OK ERROR Exposure was aborted because the signal Positioner OK (configured to be used as an interlock) has been deactivated during the exposure.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100073	XON Feedback Error.	Inhibit Exposure	XON FEEDBACK ERROR Exposure was aborted because the signal XON Feedback has not been activated, or has been deactivated during the exposure.	<ul style="list-style-type: none"> Reboot the generator.
100074	COP Generator Reset Error.	Inhibit Exposure	COP GENERATOR RESET ERROR The generator has been reseted because of the COP module. "Recoverable" with the Reset command.	<ul style="list-style-type: none"> Reboot the generator.
100075	CLK Generator Reset Error.	Inhibit Exposure	CLK GENERATOR RESET ERROR The generator has been reseted because of the CLK module. "Recoverable" with the Reset command.	<ul style="list-style-type: none"> Reboot the generator.
100076	TRAP Generator Reset Error.	Inhibit Exposure	TRAP GENERATOR RESET ERROR The generator has been reseted because of an illegal operation code. "Recoverable" with the Reset command.	<ul style="list-style-type: none"> Reboot the generator.
100077	Software Interrupt Generator Reset Error.	Inhibit Exposure	SOFTWARE INTERRUPT GENERATOR RESET ERROR The generator has been reseted because of a software interrupt. "Recoverable" with the Reset command.	<ul style="list-style-type: none"> Reboot the generator.
100078	Memory Interrupt Generator Reset Error.	Inhibit Exposure	MEMORY INTERRUPT GENERATOR RESET ERROR The generator has been reseted because of a memory overflow interrupt. "Recoverable" with the Reset command.	<ul style="list-style-type: none"> Reboot the generator.
100079	Required mA Stations Cal Error.	Inhibit Exposure	REQUIRED MA STATIONS CAL ERROR The required mA stations has not been calibrated. "Recoverable" with the Reset command. At least one required mA station has not been properly calibrated, and it/they has/have the default value/s.	<ul style="list-style-type: none"> It is necessary a calibration of the required mA stations.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100090	R2CP CAN Bus error.	Error	Exposure was aborted because the signal Positioner OK (configured to be used as an interlock) has been deactivated during the exposure.	
100091	R2CP Heartbeat error.	Error	R2CP Heartbeat error.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100099	Incorrect Message.	Error	INCORRECT MESSAGE Last message was not recognized as a SHFR protocol message.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100100	Starter CAN Bus error.	Error	Starter CAN Bus error.	
100101	The starter does not allow starting the tube neither in high speed nor in low one.	Error	NO SPEED AVAILABLE The starter does not allow starting the tube neither in high speed nor in low one.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100102	The starter does not allow starting the tube in low speed.	Error	LOW SPEED UNAVAILABLE The starter does not allow starting the tube in low speed.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100103	The starter does not allow starting the tube in high speed.	Error	HIGH SPEED UNAVAILABLE The starter does not allow starting the tube in high speed.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF and ON.
100104	No answer from Tube 1 Dosimeter.	Error	DOSIMETER TUBE1 NO ANSWER ERROR No answer from Tube 1 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.
100105	Test error from Tube 1 Dosimeter.	Error	DOSIMETER TUBE1 TEST ERROR Test error from Tube 1 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100106	Status error from Tube 1 Dosimeter.	Error	DOSIMETER TUBE1 STATUS ERROR Status error from Tube 1 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.
100107	No answer from Tube 2 Dosimeter.	Error	DOSIMETER TUBE2 NO ANSWER ERROR No answer from Tube 2 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.
100108	Test error from Tube 2 Dosimeter.	Error	DOSIMETER TUBE2 TEST ERROR Test error from Tube 2 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.
100109	Status error from Tube 2 Dosimeter.	Error	DOSIMETER TUBE2 STATUS ERROR Status error from Tube 2 Dosimeter.	<ul style="list-style-type: none"> Press the "Accept" button. If the error code persists, turn the Generator OFF, check the proper external cable connections and integrity of the dosimeter and then turn the Generator ON.
100125 to 100240	System failure related to Dual Speed Starter.	Error	System failure related to Dual Speed Starter.	<ul style="list-style-type: none"> In some cases, generator will reboot after user confirmation.
100801	Procedure finished.	Inhibit Exposure	Procedure finished.	
100802	Waiting for detector.	Inhibit Exposure	Waiting for detector.	<ul style="list-style-type: none"> Please, wait for the detector to finish acquisition.
100803	Activated Procedure is not allowed.	Inhibit Exposure	Activated Procedure is not allowed.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100901	AEC out of range.	Error	AEC out of range.	<ul style="list-style-type: none"> Change RAD (Kv, mA) or AEC (density) settings to fall into a minimum dose level for the AEC device.
100902	Detected Radiation too low or AEC Chamber not connected.	Error	AEC not connected.	<ul style="list-style-type: none"> No dose received on the AEC chamber. Check collimation aperture, patient position, or AEC hardware connection.
100903	AEC rapid termination.	Error	AEC rapid termination.	<ul style="list-style-type: none"> Too low dose received on the AEC chamber at the start of this exposure. Check collimation aperture for active AEC chamber or patient position.
100904	Detector acquisition window ended before exposure time selection.	Error	Out of X-ray window.	<ul style="list-style-type: none"> Detector finished x-ray acquisition before the generator. Decrease selected exposure time.
100905	Start exposure trigger not received by the generator.	Error	Frame request not received.	<ul style="list-style-type: none"> The Image System did not forward the prep signal to the generator to start the exposure sequence. Please, try again.
100906	Workstation not defined on this procedure.	Error	Workstation not defined.	
100909	Error in <i>image_receptor.xml</i> or <i>workstations.xml</i> file.	Error	Error in <i>image_receptor.xml</i> or <i>workstations.xml</i> file.	
100910	Error in <i>exposure_switches.xml</i> file.	Error	Error in <i>exposure_switches.xml</i> file.	
100920	<i>workstations.xml</i> has not been downloaded.	Error	<i>workstations.xml</i> file has not been downloaded.	
100921	<i>exposure_switches.xml</i> has not been downloaded.	Error	<i>exposure_switches.xml</i> has not been downloaded.	
100922	<i>image_receptors.xml</i> has not been downloaded.	Error	<i>image_receptors.xml</i> file has not been downloaded.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100923	<i>generator.xml</i> has not been downloaded.	Error	<i>generator.xml</i> file has not been downloaded.	
100924	<i>Tube_1.xml</i> has not been downloaded.	Error	<i>Tube_1.xml</i> file has not been downloaded.	
100925	<i>Tube_2.xml</i> has not been downloaded.	Error	<i>Tube_2.xml</i> file has not been downloaded.	
100926	<i>uarc_workstations.xml</i> has not been downloaded.	Error	<i>uarc_workstations.xml</i> file has not been downloaded.	
100927	<i>ConfigR2CP.xml</i> has not been downloaded.	Error	<i>ConfigR2CP.xml</i> file has not been downloaded.	
100930	Tube file wrong format.	Error	Tube file wrong format.	
100931	Configuration Process OK.	Warning	The generator has been configured. A restart is needed.	<ul style="list-style-type: none"> Generator will reboot after user confirmation.
100932	Configuration Process Error: Tube 1 Setting.	Error	Configuration file has at least one tube 1 parameter out of boundaries.	
100933	Configuration Process Error: Tube 2 Setting.	Error	Configuration file has at least one Tube 2 parameter out of boundaries.	
100934	Configuration Process Error: Rating Setting.	Error	Configuration file has at least one rating parameter out of boundaries.	
100935	Configuration Process Error: Behaviour Setting.	Error	Configuration file has at least one behaviour parameter out of boundaries.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
100936	Configuration Process Error: Power Control Setting.	Error	Configuration file has at least one power control parameter out of boundaries.	
100937	Configuration Process Error: Fluoro Setting.	Error	Configuration file has at least one fluoro parameter out of boundaries.	
100938	Configuration Process Error: Interlock Setting.	Error	Configuration file has at least one interlock parameter out of boundaries.	
100939	Configuration Process Error: Log Setting.	Error	Configuration file has at least one log parameter out of boundaries.	
100940	Configuration Process Error: Dropout Setting.	Error	Configuration Dropout file has at least one parameter out of boundaries.	
101001	X-rays disabled.	Inhibit Exposure	X-rays disabled.	
101002	Tube overload.	Warning	Tube overload.	<ul style="list-style-type: none"> Change the exposure values or wait for the X-ray Tube to cool.
101003	Tube thermostat.	Warning	Housing is too hot.	<ul style="list-style-type: none"> Wait for the Housing to cool. Check if there is a malfunction of the thermostat/pressurestat. If so, replace it.
101004	Generator model overload.	Warning	Generator model overload.	
101005	X-ray key not active.	Inhibit Exposure	X-ray key not active.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
101006	Door is open.	User Action	Exposures are inhibited due to the door switch detects the door is open.	<ul style="list-style-type: none"> No exposures are allowed until the Door is closed.
101007	INTERLOCK_1.	Inhibit Exposure	Configurable Interlock on field during the Configuration Procedure.	
101008	INTERLOCK_2.	Inhibit Exposure	Configurable Interlock on field during the Configuration Procedure.	
101009	INTERLOCK_3.	Inhibit Exposure	Configurable Interlock on field during the Configuration Procedure.	
101010	INTERLOCK_4.	Inhibit Exposure	Configurable Interlock on field during the Configuration Procedure.	
101011	Grid not detected.	Information	Grid not detected.	
101012	Positioner does not allow exposures.	Inhibit Exposure	The POS_OK signal is disabled.	
101013	AEC out of range.	User Action	AEC out of range.	<ul style="list-style-type: none"> Change RAD (Kv, mA) or AEC (density) settings to fall into a minimum dose level for the AEC device.
101014	Generator in Service Mode.	Inhibit Exposure	Generator in Service Mode.	
101015	Generator has not been calibrated yet.	Warning	Generator has not been calibrated yet.	<ul style="list-style-type: none"> Proceed to calibrate the Generator through the Service Mode of the Control Console or by the generator Tech Service software.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
101016	mA Station selected has not been calibrated.	User Action	At least one required mA station has not been properly calibrated and it has the default value.	<ul style="list-style-type: none"> Modify RAD (Kv, mA) settings. If error persists, recalibrate the generator or the required mA stations.
101017	Configurated Tube is different to Calibrated Tube.	User Action	Configurated Tube is different to Calibrated Tube.	<ul style="list-style-type: none"> Reboot the generator. If the error persists, check that the tubes list file is correct and recalibrate the X-ray tube.
101018	Exposure does not allowed in this Desktop.	Inhibit Exposure	Exposure does not allowed in this Desktop.	
101019	The system has to be rebooted for being upgraded.	Information	System has to be rebooted for being upgraded.	
101020	Positioner does not allow exposures Moving. Synchronization signal.	Information	POS_OK signal disabled: Positioner Moving (Sync).	<ul style="list-style-type: none"> Positioner moving. Please wait...
101023	Upgrade is ongoing. X-ray disabled during this process.	Information	Upgrade is ongoing. X-ray disabled during this process.	
102001	Value requested exceeds generator power.	Information	Generator max power.	
102002	Value requested exceeds tube maximum rating.	Information	Tube maximum rating.	
102003	Technique requested not allowed due to tube space charge.	Information	Space charge.	
102004	kVp requested out of range.	Information	kVp range.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
102005	mAs requested out of range.	Information	mAs range.	
102006	mA requested out of range.	Information	mA range.	
102007	ms requested out of range.	Information	ms range.	
102008	Focal spot change not allowed due to mA-mAs selection.	Information	Focal spot warning.	
102009	APR warning.	Information	APR warning.	
102010	Generator thermal limit.	Information	Generator thermal limit.	
102011	Line power limit.	Information	Line power limit.	
102012	Workstation warning.	Information	Workstation warning.	
102013	PPs range.	Information	PPs range.	
102014	AEC Warning.	Information	AEC warning.	
102015	Dual energy warning.	Information	Dual energy warning.	
102017	AEC disabled. Please, check exposure time.	Information	AEC disabled. Please, check exposure time.	
102018	AEC enabled. Please, check exposure time.	Information	AEC enabled. Please, check exposure time.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
103001	Filaments disabled by software.	Information	Filaments disabled by software.	
103002	Filaments disabled by hardware.	Information	Filaments disabled by hardware.	
103003	Time Stamp has not been updated from SNTP Server.	Information	Time Stamp has not been updated from SNTP Server.	
103008	File has not been uploaded. File Manager Service has not found.	Information	File has not been uploaded. File Manager Service has not found.	
103009	Demo Mode Enabled.	Information	Demo Mode Enabled.	
103010	Upgrade only allowed in Service Mode.	Information	Upgrade only allowed in Service Mode.	
103011	Demo Mode enabled by Dip Switch.	Information	Demo Mode enabled by Dip Switch.	
201001	Please wait, positioner is booting up.	Inhibit Movement	Positioner is booting up.	<ul style="list-style-type: none"> • Please wait, positioner is booting up.
201003	Motion inhibit by service.	Inhibit Movement	Motion inhibit by service.	
201004	Tabletop movement inhibit button active.	Inhibit Movement	The inhibit button of the Tabletop has been pressed.	<ul style="list-style-type: none"> • Release Table movement inhibit button.
201005	Motion inhibit. Ratchet is set.	Inhibit Movement	Motion inhibit. Ratchet is set.	<ul style="list-style-type: none"> • (Refer to Error 201005 in Section 4.2).

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
201180	Table Bucky by tray out.	Inhibit Movement	Tray is not inserted or partial inserted. Table Bucky movement is inhibited until Tray is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the tray has been fully inserted.
201181	Table Bucky by grid out.	Inhibit Movement	Grid is not inserted or partial inserted. Table Bucky movement is inhibited until Grid is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the grid has been fully inserted.
201196	Table Vertical by tray out.	Inhibit Movement	Tray is not inserted or partial inserted. Table Vertical movement is inhibited until Tray is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the tray has been fully inserted.
201197	Table Vertical by grid out.	Inhibit Movement	Grid is not inserted or partial inserted. Table Vertical movement is inhibited until Grid is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the grid has been fully inserted.
201199	Tabletop collision detected.	Inhibit Movement	The Tabletop has detected an object on the movement path.	<ul style="list-style-type: none"> Inspect the room and remove possible obstacles.
201212	Wallstand Vertical by tray out.	Inhibit Movement	Tray is not inserted or partial inserted. Wallstand Vertical movement is inhibited until Tray is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the tray has been fully inserted.
201213	Wallstand Vertical by grid out.	Inhibit Movement	Grid is not inserted or partial inserted. Wallstand Vertical movement is inhibited until Grid is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the grid has been fully inserted.
201228	Wallstand Tilting by tray out.	Inhibit Movement	Tray is not inserted or partial inserted. Wallstand Tilting movement is inhibited until Tray is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the tray has been fully inserted.
201229	Wallstand Tilting by grid out.	Inhibit Movement	Grid is not inserted or partial inserted. Wallstand Tilting movement is inhibited until Grid is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the grid has been fully inserted.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
201232	Wallstand Tilting by Patient Hold Bar.	Inhibit Movement	Patient Hold Bar is inserted. Wallstand Tilting movement is inhibited until Patient Hold Bar is removed.	<ul style="list-style-type: none"> Remove Patient Hold Bar.
201233	Wallstand is too low to tilt. Please move the Wall Stand upwards before tilting.	Inhibit Movement	Wallstand is too low to tilt.	<ul style="list-style-type: none"> Move the Wall Stand upwards before tilting.
201292	Tray out.	Inhibit Movement	Tray is not inserted or partial inserted. Detector Rotation of the Wall Stand is inhibited until Tray is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the tray has been fully inserted.
201293	Grid out.	Inhibit Movement	Grid is not inserted or partial inserted. Detector Rotation of the Wall Stand is inhibited until Grid is inserted in Cabinet.	<ul style="list-style-type: none"> Make sure the grid has been fully inserted.
201296	Wallstand Detector Holder Rotation by Patient Hold Bar.	Inhibit Movement	Patient Hold Bar is inserted, Wallstand Detector Holder Rotation movement is inhibited until Patient Hold Bar is removed.	<ul style="list-style-type: none"> Remove Patient Hold Bar.
201297	Wallstand is too low to rotate the docking. Please move the wallstand upwards before rotating the docking.	Inhibit Movement	Wallstand is too low to rotate the docking.	<ul style="list-style-type: none"> Move the wallstand upwards before rotating the docking.
201298	Wallstand Detector Holder Rotation by Tilting position. Please place tilting below 45degrees before rotation.	Inhibit Movement	Wallstand Detector Holder Rotation by Tilting position.	<ul style="list-style-type: none"> Place tilting below 45° before rotation.
202001	Positioner's booting.	Inhibit Exposure	Positioner is booting up. Movements are inhibited.	<ul style="list-style-type: none"> Please wait, positioner is booting up.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
202003	X-ray inhibit by service.	Inhibit Exposure	X-ray inhibit by service.	
202004	Auto motion.	Inhibit Exposure	System is in automatic motion.	
202005	Detector out.	Inhibit Exposure	Detector is not inserted on the Tray. Exposures are inhibited until detector is placed inside the Tray.	<ul style="list-style-type: none"> • Make sure the detector has been placed correctly inside the tray.
202006	Tray out.	Inhibit Exposure	Tray is not inserted. Exposures are inhibit until tray is completely inserted.	<ul style="list-style-type: none"> • Make sure the tray has been fully inserted.
202007	Grid partial inserted.	Inhibit Exposure	Grid is not completely inserted. Exposures are inhibit until grid is completely inserted.	<ul style="list-style-type: none"> • Make sure the grid has been fully inserted.
202008	Tube misaligned.	Inhibit Exposure	Tube is not pointing to the detector. Exposures are inhibit until tube and detector are aligned.	<ul style="list-style-type: none"> • Check that tube and detector are correctly aligned.
202009	Collimator busy.	Inhibit Exposure	Collimator is setting parameters.	<ul style="list-style-type: none"> • Wait until collimation aperture and filters are set.
202010	Grid mismatch.	Inhibit Exposure	Inserted grid does not match actual SID.	<ul style="list-style-type: none"> • Exposures are inhibit until the grid range matches actual SID.
202011	Manual motion.	Inhibit Exposure	System is in manual motion.	
202012	Default procedure.	Inhibit Exposure	System is configured with default procedure.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
202013	Target not reached in stitching procedure.	Inhibit Exposure	Target not reach in stitching procedure.	<ul style="list-style-type: none"> Exposures are inhibit until the target is reached.
202014	Safety Mode activated.	Inhibit Exposure	Exposures are inhibit because the system is in Safety Mode.	<ul style="list-style-type: none"> Exposures will be inhibited until the system turns operative.
202015	Service Mode activated.	Inhibit Exposure	Exposures are inhibit because the system is in Service Mode.	<ul style="list-style-type: none"> Exposures will be inhibited until the system turns operative.
202016	Generator Disconnected.	Inhibit Exposure	Exposures are inhibit because the Generator is disconnected.	<ul style="list-style-type: none"> Exposures will be inhibited until Generator turns operative.
202017	IS Disconnected.	Inhibit Exposure	Exposures are inhibit because the IS is disconnected.	<ul style="list-style-type: none"> Exposures will be inhibited until IS turns operative.
202018	Smarthub Disconnected.	Inhibit Exposure	Exposures are inhibit because the Smarthub is disconnected.	<ul style="list-style-type: none"> Exposures will be inhibited until Smarthub turns operative.
203001	Automatic collimator is not enabled in license.	Information	Automatic collimator is not enabled in license.	
203002	Dosimeter is not enabled in license.	Information	Dosimeter is not enabled in license.	
203003	Stitching is not enabled in license.	Information	Stitching is not enabled in license.	
203004	Tomography is not enabled in license.	Information	Tomography is not enabled in license.	
203005	Tomosynthesis is not enabled in license.	Information	Tomosynthesis is not enabled in license.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
203006	System will power off: Incorrect system in license.	Error	Incorrect system in license.	<ul style="list-style-type: none"> Replace the license.
203007	System will power off: Incorrect startup mode in license.	Error	Incorrect startup mode in license.	<ul style="list-style-type: none"> Replace the license.
203008	System will power off: Incorrect system in license.	Error	Incorrect system in license.	<ul style="list-style-type: none"> Replace the license.
203009	System will power off after updating license client.	Information	System will power off after updating license client.	<ul style="list-style-type: none"> Power on the system after shutdown.
203010	Waiting for Generator license.	Information	License not received from Generator.	<ul style="list-style-type: none"> Reboot the Generator.
204001	Tube Emergency Stop Switch active.	Emergency	Emergency Stop Switch placed in the tube has been activated. Please release switch to continue working with the system.	<ul style="list-style-type: none"> Emergency Stop Switch placed in the tube has been activated. For security reasons, no movements or exposures are possible until this button is released. Please release switch to keep working with the system.
204002	Table Emergency Stop Switch active.	Emergency	Emergency Stop Switch placed in the front side of the Table has been activated. Please release switch to continue working with the system.	<ul style="list-style-type: none"> Emergency Stop Switch placed in the front side of the Table has been activated. For security reasons, no movements or exposures are possible until this button is released. Please release switch to keep working with the system.
204003	Wall Stand Emergency Stop Switch active.	Emergency	Emergency Stop Switch placed in the Wall Stand or outside the room has been activated. Please release switch to continue working with the system.	<ul style="list-style-type: none"> Emergency Stop Switch placed in the Wall Stand or outside has been activated. For security reasons, no movements or exposures are possible until this button is released. Please release switch to keep working with the system.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
204005	ASK Emergency Stop Signal active.	Emergency	Emergency Stop Signal for Analog System Kit has been activated.	
205002	Auto-position not configured.	Information	The requested auto-position number is not configured.	<ul style="list-style-type: none"> Enter the Service Mode and configure the auto-position in the Programmable Positions window.
205003	System is going to restart.	Information	The system requires a reboot.	
205004	Configuration file not loaded.	Error	There was an error loading the configuration file <i>analog_system.ini</i> .	
205005	Configuration file not loaded.	Error	There was an error loading the configuration file <i>collimator.ini</i> .	
205006	Configuration file not loaded.	Error	There was an error loading the configuration file <i>demo.ini</i> .	
205007	Configuration file not loaded.	Error	There was an error loading the configuration file <i>devanit.ini</i> .	
205008	Configuration file not loaded.	Error	There was an error loading the configuration file <i>devices_alias.ini</i> .	
205009	Configuration file not loaded.	Error	There was an error loading the configuration file <i>device_monitor.ini</i> .	
205010	Configuration file not loaded.	Error	There was an error loading the configuration file <i>positioner_catalog.ini</i> .	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
205011	Configuration file not loaded.	Error	There was an error loading the configuration file <i>dimensions.ini</i> .	
205012	Configuration file not loaded.	Error	There was an error loading the configuration file <i>dof.ini</i> .	
205013	Configuration file not loaded.	Error	There was an error loading the configuration file <i>dof.xml</i> .	
205014	Configuration file not loaded.	Error	There was an error loading the configuration file <i>errors.ini</i> .	
205015	Configuration file not loaded.	Error	There was an error loading the configuration file <i>errors.dbf</i> .	
205016	Configuration file not loaded.	Error	There was an error loading the configuration file <i>events.dbf</i> .	
205017	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gen.ini</i> .	
205018	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpa.ini</i> .	
205019	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpi.ini</i> .	
205020	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpo.ini</i> .	
205021	Configuration file not loaded.	Error	There was an error loading the configuration file <i>http.ini</i> .	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
205022	Configuration file not loaded.	Error	There was an error loading the configuration file <i>image_receptor.xml</i> .	
205023	Configuration file not loaded.	Error	There was an error loading the configuration file <i>layout.ini</i> .	
205024	Configuration file not loaded.	Error	There was an error loading the configuration file <i>monitor_state.ini</i> .	
205025	Configuration file not loaded.	Error	There was an error loading the configuration file <i>network.ini</i> .	
205026	Configuration file not loaded.	Error	There was an error loading the configuration file <i>pedals.xml</i> .	
205027	Configuration file not loaded.	Error	There was an error loading the configuration file <i>positioner.xml</i> .	
205028	Configuration file not loaded.	Error	There was an error loading the configuration file <i>positions.xml</i> .	
205029	Configuration file not loaded.	Error	There was an error loading the configuration file <i>proximity_sensing.ini</i> .	
205030	Configuration file not loaded.	Error	There was an error loading the configuration file <i>safety_areas.ini</i> .	
205031	Configuration file not loaded.	Error	There was an error loading the configuration file <i>servoassistance.ini</i> .	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
205032	Configuration file not loaded.	Error	There was an error loading the configuration file <i>signature.ini</i> .	
205033	Configuration file not loaded.	Error	There was an error loading the configuration file <i>volumetrics.ini</i> .	
205034	Configuration file not loaded.	Error	There was an error loading the configuration file <i>workstation.xml</i> .	
205035	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpio_protocol.ini</i> .	
205036	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpio_catalog.ini</i> .	
205037	Configuration file not loaded.	Error	There was an error loading the configuration file <i>dof_pos_range.ini</i> .	
205038	Configuration file not loaded.	Error	There was an error loading the configuration file <i>remote.ini</i> .	
205039	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpio_intercomm.ini</i> .	
205040	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpio_otc.ini</i> .	
205041	Configuration file not loaded.	Error	There was an error loading the configuration file <i>gpio_collimator.ini</i> .	
205042	Configuration file not loaded.	Error	There was an error loading the configuration file <i>Config_R2CP.xml</i> .	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
205043	Configuration file not loaded.	Error	There was an error loading the configuration file <i>hwbuss_mapping.xml</i> .	
205044	Configuration file not loaded.	Error	There was an error loading the configuration file <i>usability_settings.xml</i> .	
205045	Configuration file not loaded.	Error	There was an error loading the configuration file <i>calibration_store.in</i> .	
205046	Configuration file not uploaded.	Error	There was an error uploading the configuration file <i>layout.xml</i> .	<ul style="list-style-type: none"> Enter Service Mode and review the layout configuration.
205047	Configuration file not downloaded.	Error	There was an error downloading the configuration file <i>layout.xml</i> .	<ul style="list-style-type: none"> Enter Service Mode and review the layout configuration.
205050	Configuration system failed to initialize.	Error	The configuration system cannot be initialized.	
205051	System not configured.	Error	The system is not properly configured.	
206015	Unreachable auto-position.	Information	Requested auto-position in not possible with current room geometry.	
206016	Invalid configuration for this auto-position.	Warning	Invalid configuration for requested auto-position.	<ul style="list-style-type: none"> Enter the Service Mode and reconfigure the selected auto-position in the Programmable Positions window.
206017	Not possible to find a clear path to specified target.	Information	It is temporarily not possible to reach an auto-position.	
206018	System inside safety area.	Information	System entered in Safety Area. System movement slowed down.	<ul style="list-style-type: none"> Move system carefully.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
206019	System inside patient area.	Information	System entered in Patient Safety Area. Procedure stopped.	
206020	The system stopped because is inside patient area.	Information	Top safety distance reached: Automatic movements Safety Policy activated.	
206021	Target is already reached.	Information	Auto-position is already reached.	
206022	System inside proximity sensor safety area.	Information	System inside proximity sensor safety area.	
206023	System inside proximity sensor patient area.	Information	System inside proximity sensor patient area.	
206024	OTC can not reach Table position.	Information	Not possible to find a clear path to the Table.	<ul style="list-style-type: none"> Place the OTC over the table manually and press "Move" again.
206025	OTC can not reach Wall Stand position.	Information	Not possible to find a clear path to the Wall Stand.	<ul style="list-style-type: none"> Place the OTC in front of the wallstand manually and press "Move" again.
206050	Target axis out of range (OTC Transversal).	Information	Overhead Tube Crane Transversal axis is out of range.	
206051	Target axis out of range (OTC Longitudinal).	Information	Overhead Tube Crane Longitudinal axis is out of range.	
206052	Target axis out of range (OTC Vertical).	Information	Overhead Tube Crane Vertical axis is out of range.	
206053	Target axis out of range (OTC Alpha).	Information	Overhead Tube Crane Alpha axis is out of range.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
206054	Target axis out of range (OTC Beta).	Information	Overhead Tube Crane Beta axis is out of range.	
206055	Target axis out of range (Table Bucky).	Information	Table Horizontal axis (Table Bucky) is out of range.	
206056	Target axis out of range (Table Vertical).	Information	Table Vertical axis is out of range.	
206057	Target axis out of range (Wall Stand Vertical).	Information	Wall Stand Vertical axis is out of range.	
206058	Target axis out of range (Wall Stand Tilting).	Information	Wall Stand Tilting axis is out of range.	
206059	Target axis out of range (Wall Stand Rail).	Information	Wall Stand Rail axis is out of range.	
206060	Target axis out of range (Wall Stand Swivel).	Information	Wall Stand Swivel axis is out of range.	
206061	Target axis out of range (Wall Stand Extension).	Information	Wall Stand Extension axis is out of range.	
206062	Target axis out of range (Wall Stand Detector Holder Rotation).	Information	Wall Stand Detector Holder Rotation axis is out of range.	
206063	Target axis out of range (Table Extension).	Information	Table Extension axis is out of range.	
206064	Target axis out of range (Wall Stand Column Rotation).	Information	Wall Stand Column Rotation axis is out of range.	
206065	Target axis out of range (OTC Arm).	Information	OTC Arm axis is out of range.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
206066	Target axis out of range (Table Tilting).	Information	Table Tilting is axis out of range.	
206067	Target axis out of range (Tabletop Longitudinal).	Information	Tabletop Longitudinal axis is out of range.	
206068	Target axis out of range (Tabletop Transversal).	Information	Tabletop Transversal axis is out of range.	
206069	Target axis out of range (Table Detector Holder Rotation).	Information	Table Detector Holder Rotation axis is out of range.	
206070	Target axis out of range (Table Detector Rotation).	Information	Table Detector Rotation axis is out of range.	
206071	Target axis out of range (Table Detector extension).	Information	Table Detector extension axis is out of range.	
206072	Target axis out of range (Wall Stand Detector Rotation).	Information	Wall Stand Detector Rotation axis is out of range.	
206073	Target axis out of range (Wall Stand Tray).	Information	Wall Stand Tray axis is out of range.	
206074	Target axis out of range (Wall Stand Detector extension).	Information	Wall Stand Detector extension axis is out of range.	
207001	Wrong detector orientation (portrait).	User Action	It is necessary to change the detector position to portrait.	<ul style="list-style-type: none"> Change the Detector position to portrait.
207002	Wrong detector orientation (landscape).	User Action	It is necessary to change the detector position to landscape.	<ul style="list-style-type: none"> Change the Detector position to landscape.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
207003	Grid is not recommended for this exposure. Please, remove the grid.	User Action	Grid is not recommended for this exposure.	<ul style="list-style-type: none"> Please, remove the grid.
207004	Grid is recommended for this exposure. Please, insert the grid.	User Action	Grid usage is recommended for this exposure.	<ul style="list-style-type: none"> Insert the GRID for the actual SID.
207005	Please, insert a valid detector for ASK1 (Film size).	User Action	Invalid film size for ASK1.	<ul style="list-style-type: none"> Insert a valid detector for ASK1 (Film size).
207006	Please, insert a valid detector for ASK2 (Film size).	User Action	Invalid film size for ASK2.	<ul style="list-style-type: none"> Insert a valid detector for ASK2 (Film size).
207007	Positioner is not calibrated. Please calibrate or move the system manually with caution.	User Action	Positioner is not calibrated.	<ul style="list-style-type: none"> Calibrate the positioner. If necessary, move the system manually with caution.
207008	OTC in Service mode.	User Action	OTC in Service mode.	
207101	OTC Transversal Axis (Y) not calibrated.	Warning	OTC Transversal Axis (Y) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207102	OTC Longitudinal Axis (X) not calibrated.	Warning	OTC Longitudinal Axis (X) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207103	OTC Vertical Axis (Z) not calibrated.	Warning	OTC Vertical Axis (Z) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207104	OTC Angular Axis (A) not calibrated.	Warning	OTC Angular Axis (A) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207105	OTC Rotational Axis (B) not calibrated.	Warning	OTC Rotational Axis (B) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
207106	Table Bucky Axis (X) not calibrated.	Warning	Table Bucky Axis (X) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207107	Table Vertical Axis (TB_Z) not calibrated.	Warning	Table Vertical Axis (TB_Z) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207108	Wallstand Vertical Axis (WS_Z) not calibrated.	Warning	Wallstand Vertical Axis (WS_Z) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207109	Wallstand Tilting Axis (WS_T) not calibrated.	Warning	Wallstand Tilting Axis (WS_T) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207110	Wallstand Longitudinal Axis (WS_X) not calibrated.	Warning	Wallstand Longitudinal Axis (WS_X) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207111	Wallstand Angular Axis (WS_A) not calibrated.	Warning	Wallstand Angular Axis (WS_A) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207112	Wallstand Transversal Axis (WS_Y) not calibrated.	Warning	Wallstand Transversal Axis (WS_Y) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207113	Wallstand Docking Holder Rotation Axis (WS_DHR) not calibrated.	Warning	Wallstand Docking Holder Rotation Axis (WS_DHR) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207114	Table Transversal Axis (TB_Y) not calibrated.	Warning	Table Transversal Axis (TB_Y) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207115	Wallstand Detector Rotation Axis (WS_DR) not calibrated.	Warning	Wallstand Detector Rotation Axis (WS_DR) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207116	OTC Arm Axis (TH_ARM) not calibrated.	Warning	OTC Arm Axis (TH_ARM) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
207117	Table Tilting Axis (TB_T) not calibrated.	Warning	Table Tilting Axis (TB_T) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207118	Table Tabletop Longitudinal axis (TB_TTX) not calibrated.	Warning	Table Tabletop Longitudinal axis (TB_TTX) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207119	Table Tabletop Transversal axis (TB_TTY) not calibrated.	Warning	Table Tabletop Transversal axis (TB_TTY) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207120	Table Detector Holder Rotation axis (TB_DHR) not calibrated.	Warning	Table Detector Holder Rotation axis (TB_DHR) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207121	Table Detector Rotation axis (TB_DR) not calibrated.	Warning	Table Detector Rotation axis (TB_DR) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207122	Table Detector Extension axis (TB_DE) not calibrated.	Warning	Table Detector Extension axis (TB_DE) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207123	Wallstand Detector Rotation axis (WS_DR) not calibrated.	Warning	Wallstand Detector Rotation axis (WS_DR) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207124	Wallstand Tray axis (WS_TRAY) not calibrated.	Warning	Wallstand Tray axis (WS_TRAY) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
207125	Wallstand Detector Extension axis (WS_DE) not calibrated.	Warning	Wallstand Detector Extension axis (WS_DE) not calibrated.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
208001	Waiting for Autocenter.	Information	Tracking cannot be activated. Master and Slave equipment are not centered.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
208002	Tracking deactivated due to inactivity.	Information	Tracking is deactivated after five minutes of inactivity.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
208003	Tracking deactivated by Wall Stand tilting.	Information	Tracking has been deactivated because of the initialization of a Wall Stand tilting movement.	<ul style="list-style-type: none"> Wall Stand Receptor is out of geometry in the tilting axis. Place the Wall Stand receptor in the original position and try again.
208004	Tracking deactivated by partial inhibit.	Information	Tracking has been deactivated due to a partial inhibit.	
208005	Tracking deactivated by target unreachable.	Information	Tracking has been deactivated because the target position is not reachable by the positioner.	<ul style="list-style-type: none"> Try again the tracking procedure to a reachable position.
208006	Tracking cannot be activated. Incorrect workstation.	Information	Tracking has been deactivated. Incorrect workstation selected.	<ul style="list-style-type: none"> Select another workstation.
208007	Tracking cannot be activated. SID out of range.	Information	Tracking has been deactivated. SID is out of range for actual room configuration.	<ul style="list-style-type: none"> Place positioners in a SID between 70 and 300 cm. If the message persists, review settings for current request considering room configuration.
208008	Tracking cannot be activated. ANG out of range.	Information	Tracking has been deactivated because the X-ray Tube angle is out of range.	<ul style="list-style-type: none"> Place the X-ray Tube at 0° and try again.
208009	Tracking cannot be activated. ROT out of range.	Information	Tracking has been deactivated because the X-ray Tube angle is out of range.	<ul style="list-style-type: none"> Place the X-ray Tube at 90° and try again.
208010	Tracking cannot be activated. Invalid component movement.	Information	A Slave equipment movement has been initialized during tracking.	<ul style="list-style-type: none"> Try to perform the tracking again, avoiding any other equipment movement during procedure.
208011	Tracking cannot be activated. Ratchet is set.	Information	Tracking has been deactivated because the ratchet is set.	<ul style="list-style-type: none"> (Refer to Error 208011 in Section 4.2).
208012	Tracking cannot be activated. Positioner in calibration.	Information	Tracking has been deactivated because the positioner is in calibration.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
208013	Tracking cannot be activated. Fast Alignment selected.	Information	Tracking has been deactivated because of selection of Fast Alignment.	
209001	Collimator working in manual mode for this workstation.	Information	Selected Workstation does not allow the automatic mode.	
209002	Collimator key is rotated, working in manual mode.	Information	Collimator key-switch on override mode.	
209003	Collimator in manual mode, SID out of auto mode limits.	Information	SID out of configured range for automatic collimation.	
209004	Adjusting collimator aperture.	Information	Overhead Tube Crane is in motion.	
209005	Collimator in manual mode, tube angulation out of auto mode limits.	Information	Tube Angulation angle is over ± 3 deg.	
209006	Collimator in manual mode, tube rotation out of auto mode limits.	Information	Tube Rotation angle is over ± 3 deg.	
209007	Collimator in manual mode, collimator is rotated.	Information	Collimator rotated.	
209008	Collimator: Detector out.	Information	Detector is not inserted.	
209009	Collimator: Wall Stand detector rotated.	Information	RAD Wall Stand Detector is rotated.	
209010	Collimator: Tube not pointing to detector.	Information	X-ray Beam not centered with Detector center.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
209011	Collimator: System on Stitching Mode.	Information	System on Stitching Mode.	
211001	OTC Iron-Cable loosened.	Error	The Iron-Cable of the Overhead Tube Crane is loosened.	<ul style="list-style-type: none"> Check the Overhead Tube Crane Iron-Cable installation.
211002	Ratchet is set.	Warning	Ratchet is set.	<ul style="list-style-type: none"> Grab the wheel, the positioner will move upwards automatically to unset the ratchet. (Refer to Error 211002 in Section 4.2).
211003	Movement is not allowed for security reason.	Warning	The ratchet is set and the last movement is not allowed for security reason.	<ul style="list-style-type: none"> (Refer to Error 211003 in Section 4.2).
211004	Movement is not allowed.	Warning	The movements are not allowed for unknown reason.	
211011	ASK Module Failure in Device 1 (Wall Stand). Potentiometer Measure Error.	Warning	Potentiometer Measure Error.	<ul style="list-style-type: none"> It is necessary to perform a system calibration.
211012	ASK Module Failure in Device 2 (Table). Potentiometer Measure Error.	Warning	Potentiometer Measure Error.	<ul style="list-style-type: none"> It is necessary to perform a system calibration.
212001	Servoassistance calibration drift error.	Warning	Calibration measurements mismatch.	<ul style="list-style-type: none"> It is necessary to perform a system calibration.
212002	OTC gauges broken.	Error	Symmetry error in the measurements of the sensors of the Servos.	<ul style="list-style-type: none"> Calibrate the gauge. If the error persists or it is not possible to calibrate the gauge, replace it.
212003	Servoassistance DAQ setup error.	Warning	System not configured or error in the configuration file.	<ul style="list-style-type: none"> It is necessary to perform a system calibration.
212004	Servoassistance config calibration error.	Warning	Calibration Error. Calibration procedure is not completed or correct.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
212005	Offset compensation error for the OTC Longitudinal Axis (X).	Warning	Calibration error in compensation DAQ of offset gauges for X axis.	<ul style="list-style-type: none"> Check the gauges installation. Then recalibrate the axis.
212006	Offset compensation error for the OTC Transversal Axis (Y).	Warning	Calibration error in compensation DAQ of offset gauges for Y axis.	<ul style="list-style-type: none"> Check the gauges installation. Then recalibrate the axis.
212007	Offset compensation error for the OTC Vertical Axis (Z).	Warning	Calibration error in compensation DAQ of offset gauges for Z axis.	<ul style="list-style-type: none"> Check the gauges installation. Then recalibrate the axis.
213001	Configuration Error in OTC Transversal Axis (Y). Configuration not applied.	Error	Configuration procedure is not completed or correct in the Transversal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213002	Configuration Error in OTC Transversal Axis (Y). Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Transversal Axis of the Overhead Tube Crane, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213003	Configuration Error in OTC Transversal Axis (Y). Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213004	Configuration Error in OTC Transversal Axis (Y). Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213005	Configuration Error in OTC Transversal Axis (Y). Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213007	Error in OTC Transversal Axis (Y) Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Transversal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the Axis Motor.
213008	Communication Error in OTC Transversal Axis (Y) UMC Module.	Error	Communication error in the UMC module of the Transversal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213009	Configuration Error in OTC Transversal Axis (Y). Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Transversal Axis of the Overhead Tube Crane. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213010	Error in OTC Transversal Axis (Y) Motor. Control Cycle Period Error.	Error	Overhead Tube Crane not able to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213011	Error in OTC Transversal Axis (Y) UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213012	Configuration Error in OTC Transversal Axis (Y). Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213013	UMC Module Failure in OTC Transversal Axis (Y). UMC Module Overtemperature Error.	Error	Excessive temperature in the Transversal Axis UMC boards.	
213014	UMC Module Failure in OTC Transversal Axis (Y). Mains Voltage Error.	Error	Not enough velocity to continue the movement in the Transversal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213015	UMC Module Failure in OTC Transversal Axis (Y). Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Transversal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213016	UMC Module Failure in OTC Transversal Axis (Y). Position Following Error.	Error	Position Following Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213017	UMC Module Failure in OTC Transversal Axis (Y). Position Redundancy Error.	Error	Position Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213018	UMC Module Failure in OTC Transversal Axis (Y). Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213019	UMC Module Failure in OTC Transversal Axis (Y). Position value out of the limits.	Error	Position value out of the limits. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213020	UMC Module Failure in OTC Transversal Axis (Y). UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213021	UMC Module Failure in OTC Transversal Axis (Y). IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	
213022	UMC Module Failure in OTC Transversal Axis (Y). Motor Phase Error.	Error	Motor Phase Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	
213023	UMC Module Failure in OTC Transversal Axis (Y). Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	
213024	UMC Module Failure in OTC Transversal Axis (Y). Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Transversal Axis.	
213025	UMC Module Failure in OTC Transversal Axis (Y). Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Transversal Axis.	
213026	UMC Module Failure in OTC Transversal Axis (Y). NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Transversal Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG DESCRIPTION	SERVICE ACTION
213027	UMC Module Failure in OTC Transversal Axis (Y). Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Transversal Axis.	
213028	UMC Module Failure in OTC Transversal Axis (Y). Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Transversal Axis.	
213030	UMC Module Failure in OTC Transversal Axis (Y). Homing not completed.	Error	Homing not completed. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	
213031	UMC Module Failure in OTC Transversal Axis (Y). Not in Operational Mode.	Error	Not in Operational Mode. Overhead Tube Crane is unable to continue the movement in the Transversal Axis.	
213033	Configuration Error in OTC Longitudinal Axis (X). Configuration not applied.	Error	Configuration procedure is not completed or correct in the Longitudinal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213034	Configuration Error in OTC Longitudinal Axis (X). Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Longitudinal Axis of the Overhead Tube Crane, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213035	Configuration Error in OTC Longitudinal Axis (X). Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213036	Configuration Error in OTC Longitudinal Axis (X). Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213037	Configuration Error in OTC Longitudinal Axis (X). Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213039	Error in OTC Longitudinal Axis (X) Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Longitudinal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the Axis Motor.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213040	Communication Error in OTC Longitudinal Axis (X) UMC Module.	Error	Communication error in the UMC module of the Longitudinal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213041	Configuration Error in OTC Longitudinal Axis (X). Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Longitudinal Axis of the Overhead Tube Crane. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213042	Error in OTC Longitudinal Axis (X) Motor. Control Cycle Period Error.	Error	Control Cycle Period Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213043	Error in OTC Longitudinal Axis (X) UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213044	Configuration Error in OTC Longitudinal Axis (X). Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213045	UMC Module Failure in OTC Longitudinal Axis (X). UMC Module Overtemperature Error.	Error	Excessive temperature in the Longitudinal Axis UMC boards.	
213046	UMC Module Failure in OTC Longitudinal Axis (X). Mains Voltage Error.	Error	Mains Voltage Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213047	UMC Module Failure in OTC Longitudinal Axis (X). Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Longitudinal Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213048	UMC Module Failure in OTC Longitudinal Axis (X). Position Following Error.	Error	Position Following Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213049	UMC Module Failure in OTC Longitudinal Axis (X). Position Redundancy Error.	Error	Position Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213050	UMC Module Failure in OTC Longitudinal Axis (X). Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213051	UMC Module Failure in OTC Longitudinal Axis (X). Position value out of the limits.	Error	Position value out of the limits. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213052	UMC Module Failure in OTC Longitudinal Axis (X). UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213053	UMC Module Failure in OTC Longitudinal Axis (X). IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	
213054	UMC Module Failure in OTC Longitudinal Axis (X). Motor Phase Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	
213055	UMC Module Failure in OTC Longitudinal Axis (X). Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	
213056	UMC Module Failure in OTC Longitudinal Axis (X). Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Longitudinal Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213057	UMC Module Failure in OTC Longitudinal Axis (X). Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Longitudinal Axis.	
213058	UMC Module Failure in OTC Longitudinal Axis (X). NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Longitudinal Axis.	
213059	UMC Module Failure in OTC Longitudinal Axis (X). Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Longitudinal Axis.	
213060	UMC Module Failure in OTC Longitudinal Axis (X). Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Longitudinal Axis.	
213062	UMC Module Failure in OTC Longitudinal Axis (X). Homing not completed.	Error	Homing not completed. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	
213063	UMC Module Failure in OTC Longitudinal Axis (X). Not in Operational Mode.	Error	Not in Operational Mode. Overhead Tube Crane is unable to continue the movement in the Longitudinal Axis.	
213065	Configuration Error in OTC Vertical Axis (Z). Configuration not applied.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213066	Configuration Error in OTC Vertical Axis (Z). Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Overhead Tube Crane, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213067	Configuration Error in OTC Vertical Axis (Z). Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213068	Configuration Error in OTC Vertical Axis (Z). Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213069	Configuration Error in OTC Vertical Axis (Z). Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213070	Iron-Cable broken in OTC Vertical Axis (Z).	Error	The Iron-Cable of the Vertical Axis of the Overhead Tube Crane is broken or has been damaged.	<ul style="list-style-type: none"> Replace the Overhead Tube Crane Iron-Cable.
213071	Error in OTC Vertical Axis (Z) Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Vertical Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the Axis Motor.
213072	Communication Error in OTC Vertical Axis (Z). UMC Module.	Error	Communication error in the UMC module of the Vertical Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213073	Configuration Error in OTC Vertical Axis (Z). Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Overhead Tube Crane. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213074	Error in OTC Vertical Axis (Z) Motor. Control Cycle Period Error.	Error	Control Cycle Period Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213075	Error in OTC Vertical Axis (Z) UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213076	Configuration Error in OTC Vertical Axis (Z). Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213077	UMC Module Failure in OTC Vertical Axis (Z). UMC Module Overtemperature Error.	Error	Excessive temperature in the Vertical Axis UMC boards.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213078	UMC Module Failure in OTC Vertical Axis (Z). Mains Voltage Error.	Error	Mains Voltage Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213079	UMC Module Failure in OTC Vertical Axis (Z). Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Vertical Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213080	UMC Module Failure in OTC Vertical Axis (Z). Position Following Error.	Error	Position Following Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213081	UMC Module Failure in OTC Vertical Axis (Z). Position Redundancy Error.	Error	Position Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213082	UMC Module Failure in OTC Vertical Axis (Z). Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213083	UMC Module Failure in OTC Vertical Axis (Z). Position value out of the limits.	Error	Position value out of the limits. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213084	UMC Module Failure in OTC Vertical Axis (Z). UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213085	UMC Module Failure in OTC Vertical Axis (Z). IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	
213086	UMC Module Failure in OTC Vertical Axis (Z). Motor Phase Error.	Error	Motor Phase Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213087	UMC Module Failure in OTC Vertical Axis (Z). Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	
213088	UMC Module Failure in OTC Vertical Axis (Z). Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Vertical Axis.	
213089	UMC Module Failure in OTC Vertical Axis (Z). Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Vertical Axis.	
213090	UMC Module Failure in OTC Vertical Axis (Z). NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Vertical Axis.	
213091	UMC Module Failure in OTC Vertical Axis (Z). Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Vertical Axis.	
213092	UMC Module Failure in OTC Vertical Axis (Z). Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Vertical Axis.	
213094	UMC Module Failure in OTC Vertical Axis (Z). Homing not completed.	Error	Homing not completed. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	
213095	UMC Module Failure in OTC Vertical Axis (Z). Not in Operational Mode.	Error	Not in Operational Mode. Overhead Tube Crane is unable to continue the movement in the Vertical Axis.	
213097	Configuration Error in OTC Alpha Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Alpha Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213098	Configuration Error in OTC Alpha Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Alpha Axis of the Overhead Tube Crane, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG DESCRIPTION	SERVICE ACTION
213099	Configuration Error in OTC Alpha Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213100	Configuration Error in OTC Alpha Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213101	Configuration Error in OTC Alpha Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213103	Error in OTC Alpha Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Alpha Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the Axis Motor.
213104	Communication Error in OTC Alpha Axis. UMC Module.	Error	Communication error in the UMC module of the Alpha Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213105	Configuration Error in OTC Alpha Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Alpha Axis of the Overhead Tube Crane. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213106	Error in OTC Alpha Axis Motor. Control Cycle Period Error.	Error	Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213107	Error in OTC Alpha Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213108	Configuration Error in OTC Alpha Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213109	UMC Module Failure in OTC Alpha Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Alpha Axis UMC boards.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213110	UMC Module Failure in OTC Alpha Axis. Mains Voltage Error.	Error	Mains Voltage Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213111	UMC Module Failure in OTC Alpha Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Alpha Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213112	UMC Module Failure in OTC Alpha Axis. Position Following Error.	Error	Position Following Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213113	UMC Module Failure in OTC Alpha Axis. Position Redundancy Error.	Error	Position Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213114	UMC Module Failure in OTC Alpha Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213115	UMC Module Failure in OTC Alpha Axis. Position value out of the limits.	Error	Position value out of the limits. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213116	UMC Module Failure in OTC Alpha Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213117	UMC Module Failure in OTC Alpha Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	
213118	UMC Module Failure in OTC Alpha Axis. Motor Phase Error.	Error	Motor Phase Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213119	UMC Module Failure in OTC Alpha Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	
213120	UMC Module Failure in OTC Alpha Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Alpha Axis.	
213121	UMC Module Failure in OTC Alpha Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Alpha Axis.	
213122	UMC Module Failure in OTC Alpha Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Alpha Axis.	
213123	UMC Module Failure in OTC Alpha Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Alpha Axis.	
213124	UMC Module Failure in OTC Alpha Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Alpha Axis.	
213126	UMC Module Failure in OTC Alpha Axis. Homing not completed.	Error	Homing not completed. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	
213127	UMC Module Failure in OTC Alpha Axis. Not in Operational Mode.	Error	Not in Operational Mode. Overhead Tube Crane is unable to continue the movement in the Alpha Axis.	
213129	Configuration Error in OTC Beta Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Beta Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213130	Configuration Error in OTC Beta Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Beta Axis of the Overhead Tube Crane, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213131	Configuration Error in OTC Beta Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213132	Configuration Error in OTC Beta Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213133	Configuration Error in OTC Beta Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213135	Error in OTC Beta. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Beta Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the Axis Motor.
213136	Communication Error in OTC Beta Axis. UMC Module.	Error	Communication error in the UMC module of the Beta Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213137	Configuration Error in OTC Beta Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Beta Axis of the Overhead Tube Crane. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213138	Error in OTC Beta Axis Motor. Control Cycle Period Error.	Error	Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213139	Error in OTC Beta Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213140	Configuration Error in OTC Beta Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213141	UMC Module Failure in OTC Beta Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Beta Axis UMC boards.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213142	UMC Module Failure in OTC Beta Axis. Mains Voltage Error.	Error	Mains Voltage Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213143	UMC Module Failure in OTC Beta Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Beta Axis of the Overhead Tube Crane.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213144	UMC Module Failure in OTC Beta Axis. Position Following Error.	Error	Position Following Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213145	UMC Module Failure in OTC Beta Axis. Position Redundancy Error.	Error	Position Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213146	UMC Module Failure in OTC Beta Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213147	UMC Module Failure in OTC Beta Axis. Position value out of the limits.	Error	Position value out of the limits. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213148	UMC Module Failure in OTC Beta Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213149	UMC Module Failure in OTC Beta Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	
213150	UMC Module Failure in OTC Beta Axis. Motor Phase Error.	Error	Motor Phase Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213151	UMC Module Failure in OTC Beta Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	
213152	UMC Module Failure in OTC Betha Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Beta Axis.	
213153	UMC Module Failure in OTC Betha Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Beta Axis.	
213154	UMC Module Failure in OTC Betha Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Beta Axis.	
213155	UMC Module Failure in OTC Betha Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Beta Axis.	
213156	UMC Module Failure in OTC Betha Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Beta Axis.	
213158	UMC Module Failure in OTC Beta Axis. Homing not completed.	Error	Homing not completed. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	
213159	UMC Module Failure in OTC Beta Axis. Not in Operational Mode.	Error	Not in Operational Mode. Overhead Tube Crane is unable to continue the movement in the Beta Axis.	
213161	Configuration Error in Table Horizontal Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Horizontal Axis of the RAD Table.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213162	Configuration Error in Table Horizontal Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Horizontal Axis of the RAD Table, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213163	Configuration Error in Table Horizontal Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213164	Configuration Error in Table Horizontal Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213165	Configuration Error in Table Horizontal Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213167	Error in Table Horizontal Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Horizontal Axis of the RAD Table.	<ul style="list-style-type: none"> Check the Axis Motor.
213168	Communication Error in Table Horizontal Axis. UMC Module.	Error	Communication error in the UMC module of the Horizontal Axis of the RAD Table.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213169	Configuration Error in Table Horizontal Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Horizontal Axis of the RAD Table. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213170	Error in Table Horizontal Axis Motor. Control Cycle Period Error.	Error	RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213171	Error in Table Horizontal Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213172	Configuration Error in Table Horizontal Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213173	UMC Module Failure in Table Horizontal Axis. UMC Module Overttemperature Error.	Error	Excessive temperature in the Horizontal Axis UMC boards.	
213174	UMC Module Failure in Table Horizontal Axis. Mains Voltage Error.	Error	Mains Voltage Error. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213175	UMC Module Failure in Table Horizontal Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Horizontal Axis of the RAD Table.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213176	UMC Module Failure in Table Horizontal Axis. Position Following Error.	Error	Position Following Error. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213177	UMC Module Failure in Table Horizontal Axis. Position Redundancy Error.	Error	Position Redundancy Error. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213178	UMC Module Failure in Table Horizontal Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213179	UMC Module Failure in Table Horizontal Axis. Position value out of the limits.	Error	Position value out of the limits. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213180	UMC Module Failure in Table Horizontal Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. RAD Table is unable to continue the movement in the Horizontal Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213181	UMC Module Failure in Table Horizontal Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. RAD Table is unable to continue the movement in the Horizontal Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213182	UMC Module Failure in Table Horizontal Axis. Motor Phase Error.	Error	Motor Phase Error. RAD Table is unable to continue the movement in the Horizontal Axis.	
213183	UMC Module Failure in Table Horizontal Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. RAD Table is unable to continue the movement in the Horizontal Axis.	
213184	UMC Module Failure in Table Horizontal Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Table Horizontal Axis.	
213185	UMC Module Failure in Table Horizontal Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Table Horizontal Axis.	
213186	UMC Module Failure in Table Horizontal Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Table Horizontal Axis.	
213187	UMC Module Failure in Table Horizontal Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Table Horizontal Axis.	
213188	UMC Module Failure in Table Horizontal Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Table Horizontal Axis.	
213190	UMC Module Failure in Table Horizontal Axis. Homing not completed.	Error	Homing not completed. RAD Table is unable to continue the movement in the Horizontal Axis.	
213191	UMC Module Failure in Table Horizontal Axis. Not in Operational Mode.	Error	Not in Operational Mode. RAD Table is unable to continue the movement in the Horizontal Axis.	
213193	Configuration Error in Table Vertical Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the RAD Table.	<ul style="list-style-type: none"> it is necessary to perform a new calibration.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213194	Configuration Error in Table Vertical Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the RAD Table, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213195	Configuration Error in Table Vertical Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213196	Configuration Error in Table Vertical Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213197	Configuration Error in Table Vertical Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213199	Error in Table Vertical Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Vertical Axis of the RAD Table.	<ul style="list-style-type: none"> Check the Axis Motor.
213200	Communication Error in Table Vertical Axis. UMC Module.	Error	Communication error in the UMC module of the Vertical Axis of the RAD Table.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213201	Configuration Error in Table Vertical Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the RAD Table. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213202	Error in Table Vertical Axis Motor. Control Cycle Period Error.	Error	RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.
213203	Error in Table Vertical Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213204	Configuration Error in Table Vertical Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213205	UMC Module Failure in Table Vertical Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Vertical Axis UMC boards.	
213206	UMC Module Failure in Table Vertical Axis. Mains Voltage Error.	Error	Mains Voltage Error. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213207	UMC Module Failure in Table Vertical Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Vertical Axis of the RAD Table.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213208	UMC Module Failure in Table Vertical Axis. Position Following Error.	Error	Position Following Error. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213209	UMC Module Failure in Table Vertical Axis. Position Redundancy Error.	Error	Position Redundancy Error. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213210	UMC Module Failure in Table Vertical Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213211	UMC Module Failure in Table Vertical Axis. Position value out of the limits.	Error	Position value out of the limits. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.
213212	UMC Module Failure in Table Vertical Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. RAD Table is unable to continue the movement in the vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213213	UMC Module Failure in Table Vertical Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. RAD Table is unable to continue the movement in the vertical Axis.	
213214	UMC Module Failure in Table Vertical Axis. Motor Phase Error.	Error	Motor Phase Error. RAD Table is unable to continue the movement in the vertical Axis.	
213215	UMC Module Failure in Table Vertical Axis. Hybrid Redundancy Error.	Error	Homing not completed. RAD Table is unable to continue the movement in the vertical Axis.	
213216	UMC Module Failure in Table Vertical Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Table Vertical Axis.	
213217	UMC Module Failure in Table Vertical Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Table Vertical Axis.	
213218	UMC Module Failure in Table Vertical Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Table Vertical Axis.	
213219	UMC Module Failure in Table Vertical Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Table Vertical Axis.	
213220	UMC Module Failure in Table Vertical Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Table Vertical Axis.	
213222	UMC Module Failure in Table Vertical Axis. Homing not completed.	Error	Homing not completed. RAD Table is unable to continue the movement in the vertical Axis.	
213223	UMC Module Failure in Table Vertical Axis. Not in Operational Mode.	Error	Not in Operational Mode. RAD Table is unable to continue the movement in the vertical Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213225	Configuration Error in Wall Stand Vertical Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213226	Configuration Error in Wall Stand Vertical Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213227	Configuration Error in Wall Stand Vertical Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213228	Configuration Error in Wall Stand Vertical Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213229	Configuration Error in Wall Stand Vertical Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213231	Error in Wall Stand Vertical Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the Axis Motor.
213232	Communication Error in Wall Stand Vertical Axis. UMC Module.	Error	Communication error in the UMC module of the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213233	Configuration Error in Wall Stand Vertical Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213234	Error in Wall Stand Vertical Axis Motor. Control Cycle Period Error.	Error	Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213235	Error in Wall Stand Vertical Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213236	Configuration Error in Wall Stand Vertical Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213237	UMC Module Failure in Wall Stand Vertical Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Vertical Axis UMC boards..	
213238	UMC Module Failure in Wall Stand Vertical Axis. Mains Voltage Error.	Error	Mains Voltage Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213239	UMC Module Failure in Wall Stand Vertical Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213240	UMC Module Failure in Wall Stand Vertical Axis. Position Following Error.	Error	Position Following Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213241	UMC Module Failure in Wall Stand Vertical Axis. Position Redundancy Error.	Error	Position Redundancy Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213242	UMC Module Failure in Wall Stand Vertical Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213243	UMC Module Failure in Wall Stand Vertical Axis. Position value out of the limits.	Error	Position value out of the limits. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213244	UMC Module Failure in Wall Stand Vertical Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213245	UMC Module Failure in Wall Stand Vertical Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213246	UMC Module Failure in Wall Stand Vertical Axis. Motor Phase Error.	Error	Motor Phase Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213247	UMC Module Failure in Wall Stand Vertical Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213248	UMC Module Failure in Wall Stand Vertical Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213249	UMC Module Failure in Wall Stand Vertical Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213250	UMC Module Failure in Wall Stand Vertical Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213251	UMC Module Failure in Wall Stand Vertical Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213252	UMC Module Failure in Wall Stand Vertical Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213254	UMC Module Failure in Wall Stand Vertical Axis. Homing not completed.	Error	Homing not completed. Wall Stand is unable to continue the movement in the Vertical Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213255	UMC Module Failure in Wall Stand Vertical Axis. Not in Operational Mode.	Error	Not in Operational Mode. Wall Stand is unable to continue the movement in the Vertical Axis.	
213257	Configuration Error in Wall Stand Tilting Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Tilting Axis of the Wall Stand.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213258	Configuration Error in Wall Stand Tilting Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Tilting Axis of the Wall Stand, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213259	Configuration Error in Wall Stand Tilting Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213260	Configuration Error in Wall Stand Tilting Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213261	Configuration Error in Wall Stand Tilting Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213263	Error in Wall Stand Tilting Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Tilting Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the Axis Motor.
213264	Communication Error in Wall Stand Tilting Axis. UMC Module.	Error	Communication error in the UMC module of the Tilting Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213265	Configuration Error in Wall Stand Tilting Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Tilting Axis of the Wall Stand. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213266	Error in Wall Stand Tilting Axis Motor. Control Cycle Period Error.	Error	Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213267	Error in Wall Stand Tilting Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213268	Configuration Error in Wall Stand Tilting Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213269	UMC Module Failure in Wall Stand Tilting Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Vertical Axis UMC boards.	
213270	UMC Module Failure in Wall Stand Tilting Axis. Mains Voltage Error.	Error	Mains Voltage Error. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213271	UMC Module Failure in Wall Stand Tilting Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Tilting Axis of the Wall Stand.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213272	UMC Module Failure in Wall Stand Tilting Axis. Position Following Error.	Error	Position Following Error. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213273	UMC Module Failure in Wall Stand Tilting Axis. Position Redundancy Error.	Error	Position Redundancy Error. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213274	UMC Module Failure in Wall Stand Tilting Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213275	UMC Module Failure in Wall Stand Tilting Axis. Position value out of the limits.	Error	Position value out of the limits. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213276	UMC Module Failure in Wall Stand Tilting Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Wall Stand is unable to continue the movement in the Tilting Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213277	UMC Module Failure in Wall Stand Tilting Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Wall Stand is unable to continue the movement in the Tilting Axis.	
213278	UMC Module Failure in Wall Stand Tilting Axis. Motor Phase Error.	Error	Motor Phase Error. Wall Stand is unable to continue the movement in the Tilting Axis.	
213279	UMC Module Failure in Wall Stand Tilting Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Wall Stand is unable to continue the movement in the Tilting Axis.	
213280	UMC Module Failure in Wall Stand Tilting Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Wall Stand Tilting Axis.	
213281	UMC Module Failure in Wall Stand Tilting Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Wall Stand Tilting Axis.	
213282	UMC Module Failure in Wall Stand Tilting Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Wall Stand Tilting Axis.	
213283	UMC Module Failure in Wall Stand Tilting Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Wall Stand Tilting Axis.	
213284	UMC Module Failure in Wall Stand Tilting Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Wall Stand Tilting Axis.	
213286	UMC Module Failure in Wall Stand Tilting Axis. Homing not completed.	Error	Homing not completed. Wall Stand is unable to continue the movement in the Tilting Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213287	UMC Module Failure in Wall Stand Tilting Axis. Not in Operational Mode.	Error	Not in Operational Mode. Wall Stand is unable to continue the movement in the Tilting Axis.	
213289	Configuration Error in Wall Stand Vertical Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213290	Configuration Error in Wall Stand Vertical Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213291	Configuration Error in Wall Stand Vertical Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213292	Configuration Error in Wall Stand Vertical Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213293	Configuration Error in Wall Stand Vertical Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213295	Error in Wall Stand Vertical Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the Axis Motor.
213296	Communication Error in Wall Stand Vertical Axis. UMC Module.	Error	Communication error in the UMC module of the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213297	Configuration Error in Wall Stand Vertical Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Vertical Axis of the Wall Stand. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213298	Error in Wall Stand Vertical Axis Motor. Control Cycle Period Error.	Error	Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213299	Error in Wall Stand Vertical Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213300	Configuration Error in Wall Stand Vertical Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213301	UMC Module Failure in Wall Stand Vertical Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Vertical Axis UMC boards.	
213302	UMC Module Failure in Wall Stand Vertical Axis. Mains Voltage Error.	Error	Mains Voltage Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213303	UMC Module Failure in Wall Stand Vertical Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Vertical Axis of the Wall Stand.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the UMC and Motor for enough power.
213304	UMC Module Failure in Wall Stand Vertical Axis. Position Following Error.	Error	Position Following Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213305	UMC Module Failure in Wall Stand Vertical Axis. Position Redundancy Error.	Error	Position Redundancy Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213306	UMC Module Failure in Wall Stand Vertical Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213307	UMC Module Failure in Wall Stand Vertical Axis. Position value out of the limits.	Error	Position value out of the limits. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213308	UMC Module Failure in Wall Stand Vertical Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Wall Stand is unable to continue the movement in the Vertical Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213309	UMC Module Failure in Wall Stand Vertical Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213310	UMC Module Failure in Wall Stand Vertical Axis. Motor Phase Error.	Error	Motor Phase Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213311	UMC Module Failure in Wall Stand Vertical Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Wall Stand is unable to continue the movement in the Vertical Axis.	
213312	UMC Module Failure in Wall Stand Vertical Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213313	UMC Module Failure in Wall Stand Vertical Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213314	UMC Module Failure in Wall Stand Vertical Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213315	UMC Module Failure in Wall Stand Vertical Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213316	UMC Module Failure in Wall Stand Vertical Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Wall Stand Vertical Axis.	
213318	UMC Module Failure in Wall Stand Vertical Axis. Homing not completed.	Error	Homing not completed. Wall Stand is unable to continue the movement in the Vertical Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213319	UMC Module Failure in Wall Stand Vertical Axis. Not in Operational Mode.	Error	Not in Operational Mode. Wall Stand is unable to continue the movement in the Vertical Axis.	
213385	Configuration Error in Detector Holder Rotation Axis. Configuration not applied.	Error	Configuration procedure is not completed or correct in the Detector Holder Rotation Axis of the Wall Stand.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213386	Configuration Error in Detector Holder Rotation Axis. Not configured Measurement Units.	Error	Configuration procedure is not completed or correct in the Detector Holder Rotation Axis of the Wall Stand, error in the measurement units.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213387	Configuration Error in Detector Holder Rotation Axis. Quick Stop Timeout.	Error	Timeout Failure due to an invalid calibration or/and configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213388	Configuration Error in Detector Holder Rotation Axis. Error in the Configuration File.	Error	Configuration file is damaged or not present.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213389	Configuration Error in Detector Holder Rotation Axis. Configuration Failure.	Error	Configuration procedure has not been completed or it is not valid.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213391	Error in Detector Holder Rotation Axis Motor. Overcurrent Failure.	Error	Overcurrent failure in the motor of the Detector Holder Rotation Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the Axis Motor.
213392	Communication Error in Detector Holder Rotation Axis. UMC Module.	Error	Communication error in the UMC module of the Detector Holder Rotation Axis of the Wall Stand.	<ul style="list-style-type: none"> Check the connections in UMC Module of the Axis.
213393	Configuration Error in Detector Holder Rotation Axis. Acceleration Failure.	Error	Configuration procedure is not completed or correct in the Detector Holder Rotation Axis of the Wall Stand. Accelerations not configured or wrong configuration.	<ul style="list-style-type: none"> It is necessary to perform a new calibration.
213394	Error in Detector Holder Rotation Axis Motor. Control Cycle Period Error.	Error	Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213395	Error in Wall Stand Detector Holder Rotation Axis UMC Module. CAN in Error Passive Mode.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213396	Configuration Error in Detector Holder Rotation Axis. Recovered from Bus-off.	Error	Communication Error in the BUS Hardware System.	<ul style="list-style-type: none"> Check the UMC Module for a correct connection of the BUS Hardware System.
213397	UMC Module Failure in Detector Holder Rotation Axis. UMC Module Overtemperature Error.	Error	Excessive temperature in the Detector Holder Rotation Axis UMC boards.	
213398	UMC Module Failure in Wall Stand Tilting Axis. Mains Voltage Error.	Error	Mains Voltage Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check the UMC Power Control Board for wrong offset.
213399	UMC Module Failure in Detector Holder Rotation Axis. Current Velocity Following Error.	Error	Not enough velocity to continue the movement in the Detector Holder Rotation Axis of the Wall Stand.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC and Motor for enough power.
213400	UMC Module Failure in Detector Holder Rotation Axis. Position Following Error.	Error	Position Following Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the UMC Module for correct lecture of the Hybrid, encoder and Potentiometer.
213401	UMC Module Failure in Detector Holder Rotation Axis. Position Redundancy Error.	Error	Position Redundancy Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check that there is no obstacle for the correct movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213402	UMC Module Failure in Detector Holder Rotation Axis. Maximum Velocity overpassed.	Error	Maximum Velocity overpassed. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check the UMC for error in the Motor and Encoder.
213403	UMC Module Failure in Detector Holder Rotation Axis. Position value out of the limits.	Error	Position value out of the limits. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check the UMC for incorrect engagement of the Potentiometer, Hybrid and Encoder.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213404	UMC Module Failure in Detector Holder Rotation Axis. UMC Motor overtemperature Error.	Error	UMC Motor overtemperature Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	<ul style="list-style-type: none"> Check that there are no obstacles preventing movement. If the error persists, check the Motor Supply in the UMC Module for enough power.
213405	UMC Module Failure in Detector Holder Rotation Axis. IGBT Module overcurrent Error.	Error	IGBT Module overcurrent Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	
213406	UMC Module Failure in Detector Holder Rotation Axis. Motor Phase Error.	Error	Motor Phase Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	
213407	UMC Module Failure in Detector Holder Rotation Axis. Hybrid Redundancy Error.	Error	Hybrid Redundancy Error. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	
213408	UMC Module Failure in Wall Stand Detector Holder Rotation Axis. Reference Current Following Error.	Error	Reference Current Following Error. OTC is unable to continue the movement in the Wall Stand Detector Holder Rotation Axis.	
213409	UMC Module Failure in Wallstand Detector Holder Rotation Axis. Hall Sensor Error.	Error	Hall Sensor Error. OTC is unable to continue the movement in the Wallstand Detector Holder Rotation Axis.	
213410	UMC Module Failure in Wallstand Detector Holder Rotation Axis. NCE Sensor Measure Error.	Error	NCE Sensor Measure Error. OTC is unable to continue the movement in the Wallstand Detector Holder Rotation Axis.	
213411	UMC Module Failure in Wallstand Detector Holder Rotation Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error. OTC is unable to continue the movement in the Wallstand Detector Holder Rotation Axis.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
213412	UMC Module Failure in Wallstand Detector Holder Rotation Axis. Encoder Error.	Error	Encoder Error. OTC is unable to continue the movement in the Wallstand Detector Holder Rotation Axis.	
213414	UMC Module Failure in Detector Holder Rotation Axis. Homing not completed.	Error	Homing not completed. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	
213415	UMC Module Failure in Detector Holder Rotation Axis. Not in Operational Mode.	Error	Not in Operational Mode. Wall Stand is unable to continue the movement in the Detector Holder Rotation Axis.	
217001	OTC Vertical Servodrive booting up.	Information	OTC Vertical Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217002	OTC Angular Servodrive booting up.	Information	OTC Angular Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217003	OTC Transversal Servodrive booting up.	Information	OTC Transversal Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217004	OTC Longitudinal Servodrive booting up.	Information	OTC Longitudinal Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217005	OTC Rotational Servodrive booting up.	Information	OTC Rotational Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217006	Table Bucky Servodrive booting up.	Information	Table Bucky Servodrive booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217009	Wallstand Tilting booting up.	Information	Wallstand Tilting booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.
217010	Wallstand Vertical booting up.	Information	Wallstand Vertical booting up.	<ul style="list-style-type: none"> • Wait for the system to boot up.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
217016	OTC GPIO booting up.	Information	OTC GPIO booting up.	<ul style="list-style-type: none"> Wait for the system to boot up.
217017	Table GPIO booting up.	Information	Table GPIO booting up.	<ul style="list-style-type: none"> Wait for the system to boot up.
217018	Wallstand GPIO booting up.	Information	Wallstand GPIO booting up.	<ul style="list-style-type: none"> Wait for the system to boot up.
217021	ASK GPIO booting up.	Information	ASK GPIO booting up.	<ul style="list-style-type: none"> Wait for the system to boot up.
219113	ASK Module Failure in Table Vertical Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error in Table Vertical Axis.	
219161	ASK Module Failure in Wallstand Vertical Axis. Potentiometer Measure Error.	Error	Potentiometer Measure Error in Wallstand Vertical Axis.	
220001	OTC Peripheral Communication Error.	Warning	RAM memory error during the RAM test before initializing the system.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220002	OTC Peripheral Access Error.	Warning	Dynamic memory error trying to allocate memory.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220003	OTC Peripheral Access Error.	Warning	Watchdog error: time expired executing main loop.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220004	OTC Peripheral Access Error.	Warning	EEPROM map error. It was detected a corrupted EEPROM memory map.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220005	OTC Peripheral Communication Error.	Warning	EEPROM error: reading or writing process failed.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220006	OTC Peripheral Communication Error.	Warning	SCI.0 general error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220007	OTC Peripheral Communication Error.	Warning	SCI.0 TX overrun.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220008	OTC Peripheral Communication Error.	Warning	SCI.0 RX overrun.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220009	OTC Peripheral Communication Error.	Warning	SCI.0 RX overrun.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220014	OTC System Communication Error.	Warning	CAN 0 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220015	OTC System Communication Error.	Warning	CAN 0 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220016	OTC System Communication Error.	Warning	CAN 0 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220017	OTC System Communication Error.	Warning	CAN 0 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220018	OTC Peripheral Communication Error.	Warning	CAN 4 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220019	OTC Peripheral Communication Error.	Warning	CAN 4 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220020	OTC Peripheral Communication Error.	Warning	CAN 4 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220021	OTC Peripheral Communication Error.	Warning	CAN 4 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220022	OTC Peripheral Access Error.	Warning	Deadman error. A key/signal for movement has been received but deadman was not activated.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220023	OTC Peripheral Access Error.	Warning	Error queue overflow. Some error messages may be lost.	
220024	OTC System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220027	Collimator Communication Error.	Error	Collimator general error.	
220028	Collimator Configuration Error.	Error	Collimator is not selected.	
220029	Collimator Communication Error.	Error	Collimator Communication Error.	
220030	Dosimeter Internal Error.	Error	Dosimeter general error.	
220031	Dosimeter Configuration Error.	Error	Dosimeter communication error.	
220032	Dosimeter Communication Error.	Warning	Dosimeter communication error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220033	Dosimeter Communication Error.	Warning	Dosimeter has been reset.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220039	OTC Peripheral Access Error.	Warning	FPGA access error.	
220040	OTC Peripheral Communication Error.	Warning	I2C error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220041	OTC Peripheral Communication Error.	Warning	SPI0 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220042	OTC Peripheral Access Error.	Warning	External ADC error.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220045	OTC Peripheral Access Error.	Warning	FPGA AutoSafety error.	
220046	OTC Proximity Sensors Error.	Warning	Proximity sensors general error.	
220047	OTC Peripheral Access Error.	Warning	AD5142A configuring error with intercommunication system.	
220048	OTC Temperature Error.	Warning	Temperature sensor error.	
220049	OTC Peripheral Access Error.	Warning	PCF8574A access error.	
220050	OTC Peripheral Communication Error.	Warning	SPI1 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220051	OTC Peripheral Access Error.	Warning	Flash failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220052	OTC Peripheral Access Error.	Warning	HDL failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220053	OTC Peripheral Access Error.	Warning	Accelerometer failure.	
220054	Focus Skin Distance Sensor Failure.	Error	Error detected in Proximity Sensor 1 (Focus Skin Distance Sensor).	
220055	OTC Right Proximity Sensor Failure.	Error	Error detected in Proximity Sensor 2 (Right Proximity Sensor).	
220056	OTC Left Proximity Sensor Failure.	Error	Error detected in Proximity Sensor 3 (Left Proximity Sensor).	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220057	OTC Rear Proximity Sensor Failure.	Error	Error detected in Proximity Sensor 4 (Rear Proximity Sensor).	
220058	OTC Bottom Proximity Sensor Failure.	Error	Error detected in Proximity Sensor 5 (Bottom Proximity Sensor).	
220257	Table Peripheral Communication Error.	Warning	RAM memory error during the RAM test before initializing the system.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220258	Table Peripheral Access Error.	Warning	Dynamic memory error trying to allocate memory.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220259	Table Peripheral Access Error.	Warning	Watchdog error: time expired executing main loop.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220260	Table Peripheral Communication Error.	Warning	EEPROM map error. It was detected a corrupted EEPROM memory map.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220261	Table Peripheral Communication Error.	Warning	EEPROM error: reading or writing process failed.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220270	Table System Communication Error.	Warning	CAN 0 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220271	Table System Communication Error.	Warning	CAN 0 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220272	Table System Communication Error.	Warning	CAN 0 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220273	Table System Communication Error.	Warning	CAN 0 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220274	Table Peripheral Communication Error.	Warning	CAN 4 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220275	Table Peripheral Communication Error.	Warning	CAN 4 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220076	Table Peripheral Communication Error.	Warning	CAN 4 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220277	Table Peripheral Communication Error.	Warning	CAN 4 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220278	Table Peripheral Access Error.	Warning	Deadman error. A key/signal for movement has been received but deadman was not activated.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220279	Table Peripheral Access Error.	Warning	Error queue overflow. Some error messages may be lost.	
220295	Table System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220296	Table Peripheral Access Error.	Warning	FPGA access error.	
220297	Table Peripheral Communication Error.	Warning	I2C error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220298	Table Peripheral Communication Error.	Warning	SPI0 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220299	Table Peripheral Access Error.	Warning	Longitudinal optical sensor failure in Tabletop.	
220300	Table Peripheral Access Error.	Warning	Transversal optical sensor failure in Tabletop.	
220301	Table Peripheral Access Error.	Warning	FPGA AutoSafety error.	
220306	Table Peripheral Communication Error.	Warning	SPI1 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220307	Table Peripheral Access Error.	Warning	Flash failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220308	Table Peripheral Access Error.	Warning	HDL failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220513	Wallstand Peripheral Communication Error.	Warning	RAM memory error during the RAM test before initializing the system.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220514	Wallstand Peripheral Access Error.	Warning	Dynamic memory error trying to allocate memory.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220515	Wallstand Peripheral Access Error.	Warning	Watchdog error: time expired executing main loop.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220516	Wallstand Peripheral Communication Error.	Warning	EEPROM map error. It was detected a corrupted EEPROM memory map.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220517	Wallstand Peripheral Communication Error.	Warning	EEPROM error: reading or writing process failed.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220526	Wallstand System Communication Error.	Warning	CAN 0 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220527	Wallstand System Communication Error.	Warning	CAN 0 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220528	Wallstand System Communication Error.	Warning	CAN 0 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220529	Wallstand System Communication Error.	Warning	CAN 0 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220530	Wallstand Peripheral Communication Error.	Warning	CAN 4 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220531	Wallstand Peripheral Communication Error.	Warning	CAN 4 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220532	Wallstand Peripheral Communication Error.	Warning	CAN 4 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220533	Wallstand Peripheral Communication Error.	Warning	CAN 4 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220534	Wallstand Peripheral Access Error.	Warning	Deadman error. A key/signal for movement has been received but deadman was not activated.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220535	Wallstand Peripheral Access Error.	Warning	Error queue overflow. Some error messages may be lost.	
220536	Wallstand System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220549	Wall Stand Display Error.	Warning	Wall Stand Display general error.	
220550	Wall Stand Display Configuration Error.	Warning	Display error: wrong display type.	
220551	Wallstand Peripheral Access Error.	Warning	FPGA access error.	
220552	Wallstand Peripheral Communication Error.	Warning	I2C error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220553	Wallstand Peripheral Communication Error.	Warning	SPI0 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220557	Wallstand Peripheral Access Error.	Warning	FPGA AutoSafety error.	
220562	Wallstand Peripheral Communication Error.	Warning	SPI1 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
220563	Wallstand Peripheral Access Error.	Warning	Flash failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
220564	Wallstand Peripheral Access Error.	Warning	HDL failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221281	AEM Peripheral Communication Error.	Warning	RAM memory error during the RAM test before initializing the system.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221282	AEM Peripheral Access Error.	Warning	Dynamic memory error trying to allocate memory.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221283	AEM Peripheral Access Error.	Warning	Watchdog error: time expired executing main loop.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221284	AEM Peripheral Communication Error.	Warning	EEPROM map error. It was detected a corrupted EEPROM memory map.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221285	AEM Peripheral Communication Error.	Warning	EEPROM error: reading or writing process failed.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221294	AEM System Communication Error.	Warning	CAN 0 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221295	AEM System Communication Error.	Warning	CAN 0 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221296	AEM System Communication Error.	Warning	CAN 0 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221297	AEM System Communication Error.	Warning	CAN 0 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221298	AEM Peripheral Communication Error.	Warning	CAN 4 bus status error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221299	AEM Peripheral Communication Error.	Warning	CAN 4 RX HW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
221300	AEM Peripheral Communication Error.	Warning	CAN 4 RX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221301	AEM Peripheral Communication Error.	Warning	CAN 4 TX SW overrun error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221302	AEM Peripheral Access Error.	Warning	Deadman error. A key/signal for movement has been received but deadman was not activated.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221303	AEM Peripheral Access Error.	Warning	Error queue overflow. Some error messages may be lost.	
221304	AEM System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221319	AEM Peripheral Access Error.	Warning	FPGA access error.	
221320	AEM Peripheral Communication Error.	Warning	I2C error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221321	AEM Peripheral Communication Error.	Warning	SPI0 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221325	AEM Peripheral Access Error.	Warning	FPGA AutoSafety error.	
221330	AEM Peripheral Communication Error.	Warning	SPI1 error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221331	AEM Peripheral Access Error.	Warning	Flash failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
221332	AEM Peripheral Access Error.	Warning	HDL failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
225000	OTC Protocol Function not available.	Information	GPIO protocol function not available.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225001	OTC Configuration Error.	Error	Hardware device not available.	
225002	OTC System Communication Error.	Warning	CAN Transmission error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225003	OTC System Communication Error.	Warning	CAN Request error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225004	OTC Device glitch.	Warning		
225005	OTC System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225007	OTC Offline.	Warning	Device Offline.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225011	Dosimeter Communication Error.	Error	Device Offline.	
225012	Collimator Offline.	Error	Device Offline.	
225018	Dosimeter Communication Error.	Warning	Dosimeter activity is out of sync.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225019	OTC Servo-assistance Right Failure.	Warning	Servo-assistance failure (Right). Axis movement remains blocked.	
225020	OTC Servo-assistance Left Failure.	Warning	Servo-assistance failure (Left). Axis movement remains blocked.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
225021	OTC Servo-assistance Push Failure.	Warning	Servo-assistance failure (Push). Axis movement remains blocked.	
225022	OTC Servo-assistance Pull Failure.	Warning	Servo-assistance failure (Pull). Axis movement remains blocked.	
225023	OTC Servo-assistance Up Failure.	Warning	Servo-assistance failure (Up). Axis movement remains blocked.	
225024	OTC Servo-assistance Down Failure.	Warning	Servo-assistance failure (Down). Axis movement remains blocked.	
225025	Collimator Communication Error.	Warning	Collimator is out of sync.	<ul style="list-style-type: none"> • Reboot the system and try to repeat the operation.
225055	OTC System Communication Error.	Warning	PWM specification: out of sync.	
225060	OTC System Communication Error.	Warning	Digital output error.	
225256	Table GPIO. Protocol Function not available.	Information	GPIO protocol function not available.	<ul style="list-style-type: none"> • Reboot the system and try to repeat the operation.
225257	Table Configuration Error.	Error	Hardware device not available.	
225258	Table System Communication Error.	Warning	CAN Transmission error.	<ul style="list-style-type: none"> • Reboot the system and try to repeat the operation.
225259	Table System Communication Error.	Warning	CAN Request error.	<ul style="list-style-type: none"> • Reboot the system and try to repeat the operation.
225260	Table Device glitch.	Warning		

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
225261	Table System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225263	Table RGB Monitor Offline.	Warning	Device Offline.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225270	Table Offline.	Warning	Device Offline.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225300	Downwards movement inhibit. Check there is not any obstacle under the tabletop.	Warning	Downwards movement inhibition error. Tabletop collision switches have been activated.	
225301	Table Downwards Movement disabled.	Warning	Downwards movement disabled due to being out of the range established by software.	
225302	Table Upwards Movement disabled.	Warning	Upwards movement disabled due to being out of the range established by software.	
225303	Table Elevation Movement out of limits.	Warning	Table Elevation is out of limits for automatic movements.	
225304	Table reached bottom end switch.	Information	Table reached bottom end switch.	
225305	Table reached top end switch.	Information	Table reached top end switch.	
225306	Hardware End of Range out of sync in Table Movements.	Information	Inconsistent error with end of the range established by hardware in Table movements.	
225307	Table Elevation Movement Failure.	Warning	Table Elevation is out of limits for automatic movements.	
225308	Table Elevation Detent: Out of Limits.	Warning	Detent reference is out of limits.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
225309	Tabletop Longitudinal Axis is out of limits.	Warning	Tabletop Longitudinal Axis is out of limits.	
225310	Tabletop Transversal Axis is out of limits.	Warning	Tabletop Transversal Axis is out of limits.	
225311	Table System Communication Error.	Warning	PWM specification: out of sync.	
225316	Table System Communication Error.	Warning	Digital output error.	
225317	Table Elevation Out of Limits.	Warning	Table Elevation Out of Limits.	
225512	Wall Stand GPIO. Protocol Function not available.	Information	GPIO protocol function not available.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225513	Wall Stand Configuration Error.	Error	Hardware device not available.	
225514	Wallstand System Communication Error.	Warning	CAN Transmission error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225515	Wallstand System Communication Error.	Warning	CAN Request error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225516	Wallstand Device glitch.	Warning		
225517	Wallstand System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225519	Wallstand RGB Monitor Offline.	Warning	Device Offline.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
225527	Wallstand Offline.	Warning	Device Offline.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
225538	WallStand Bucky Rotation : Out Of Sync.	Warning		
225539	Wall Stand Bucky Rotation : End Of Range.	Warning		
225540	Wall Stand Bucky IMMS.	Warning		
225567	Wallstand System Communication Error.	Warning	PWM specification: out of sync.	
225572	Wallstand System Communication Error.	Warning	Digital output error.	
226280	AEM GPIO, Protocol Function not available.	Information	GPIO protocol function not available.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
226281	AEM Configuration Error.	Error	Hardware device not available.	
226282	AEM System Communication Error.	Warning	CAN Transmission error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
226283	AEM System Communication Error.	Warning	CAN Request error.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
226284	AEM Device glitch.	Warning		
226285	AEM System Communication Error.	Warning	R2CP HeartBeat failure.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
226335	AEM System Communication Error.	Warning	PWM specification: out of sync.	
226340	AEM System Communication Error.	Warning	Digital output error.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
290200	Collision detected.	Inhibit Movement	The equipment has detected an object on the movement path.	<ul style="list-style-type: none"> Inspect the equipment and remove possible obstacles. Reboot the system and try to repeat the operation.
300001	Programmable Positions configuration could not be loaded.	Error	Error reading Programmable Positions configuration file.	<ul style="list-style-type: none"> Check if the configuration file <i>positions.xml</i> is well coded. If problem persists, please restore original configuration file.
300002	Positioner configuration could not be loaded.	Error	Error reading positioner configuration file.	<ul style="list-style-type: none"> Check if the configuration file <i>positioner_parameters.xml</i> is well coded. If problem persists, please restore original configuration file.
300003	Switches configuration could not be loaded.	Error	Error reading Switches configuration file.	<ul style="list-style-type: none"> Check if the configuration file <i>exposure_switches.xml</i> is well coded. If problem persists, restore original configuration file.
300004	Collimation configuration file not found.	Error	Collimation configuration file not found.	<ul style="list-style-type: none"> Check the configuration file <i>CollimationConfig.xml</i> in the Configuration application folder.
300005	Workstation Selected: {0}.	Information	Workstation has been changed for the next exam.	
300006	Generator configuration could not be loaded.	Error	Generator configuration file not found.	<ul style="list-style-type: none"> Check if all the Generator configuration files are available on the configuration folder. If problem persists, restore original configuration.
300007	Workstations configuration could not be loaded.	Error	Error reading Workstations configuration file.	<ul style="list-style-type: none"> Check if <i>workstations.xml</i> configuration file is well coded. If problem persists, restore original configuration file.
300008	Image receptors configuration could not be loaded.	Error	Error reading Image receptors configuration file.	<ul style="list-style-type: none"> Check if <i>image_receptors.xml</i> configuration file is well coded. If problem persists, restore original configuration file.
300009	Positioner disconnected.	Error	Positioner disconnected.	<ul style="list-style-type: none"> Positioner disconnected. Please reboot the positioner.

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
300010	Console disconnected.	Error	Console disconnected.	<ul style="list-style-type: none"> • Console has disconnected from the SmartHub. Restart this console, if problem persists, reboot the PC.
300011	Generator disconnected.	Error	Generator disconnected.	<ul style="list-style-type: none"> • Generator disconnected. Please reboot the generator.
300012	Workstation mismatch for Generator and Positioner.	Error	Data inconsistency detected for the selected Workstation.	<ul style="list-style-type: none"> • Try to select another workstation.
300013	Active Procedure mismatch for Generator and Positioner.	Error	Data inconsistency detected for the activated Procedure.	
300014	Error reading positioner configuration.	Error	Error reading positioner configuration.	<ul style="list-style-type: none"> • Check if <i>positioner_.xml</i> configuration file is well coded. If problem persists, restore original configuration file.
300015	Configuration changes could not be saved.	Error	Configuration changes could not be saved.	
300016	Initializing communications ...	Information	Connecting to SmartHub.	<ul style="list-style-type: none"> • Please, review your network settings if connection time takes too long.
300018	Current collimator aperture has been stored.	Information	Current collimator aperture has been stored.	
300019	Generator working in Service operation mode.	Warning	Generator was entered in Service operation mode from another node.	
300020	Positioner working in Service operation mode.	Warning	Positioner was entered in Service operation mode from another node.	
300021	Could not verify Service access.	Warning	Could not verify Service access.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
300022	License not allow stitching.	Warning	License not allow stitching.	
300023	Current position is not valid as auto-position.	Warning	Current position is not valid as auto-position.	<ul style="list-style-type: none"> Place the OTC to a valid position.
300024	Usability settings configuration could not be loaded.	Error	Usability settings configuration could not be loaded.	
300025	Layout settings calibration data could not be loaded.	Error	Layout settings calibration data could not be loaded.	
300026	Selecting technique.	Inhibit Exposure	Selecting technique.	<ul style="list-style-type: none"> Select an APR technique.
300027	Error loading APR Technique.	Inhibit Exposure	Error loading APR Technique.	<ul style="list-style-type: none"> Check the APR settings for this technique.
300028	AEC Calibration in progress.	Inhibit Exposure	Calibration in progress.	<ul style="list-style-type: none"> No exposures are allowed until the AEC calibration is finished.
300029	Snapshots in progress.	Inhibit Exposure	Snapshots in progress.	<ul style="list-style-type: none"> Wait for the System Snapshot files generation to complete.
500001	Press move button to go to stitching setup position.	Inhibit Exposure	Press move button to go to stitching setup position.	
500002	Stitching in setup mode.	Inhibit Exposure	Stitching in setup mode. Exposures are inhibit.	<ul style="list-style-type: none"> No exposures are allowed until parameters are adjusted.
500003	Keep the handswitch pressed.	Information	Keep the handswitch pressed.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
500004	Selecting technique.	Inhibit Exposure	Selecting technique.	
500007	Stitching cancelled.	Inhibit Movement	Stitching cancelled.	
500008	Generator parameters modified.	Information	Generator parameters modified.	
500009	Cannot open port.	Inhibit Exposure	Cannot open port.	
500010	Communication port with CR system is not open.	Inhibit Exposure	Communication port with CR system is not open.	
500011	Message queue to CR system WS full.	Inhibit Exposure	Message queue to CR system WS full.	
500012	There is not workstation configured for this request.	Information	There is not workstation configured for this request. New workstation selection is needed.	
500013	Gray image. Exposure without radiation.	Information	Gray image. Exposure without radiation.	
500014	Technique not loaded in generator.	Inhibit Exposure	APR parameters loaded in the generator do not match those received in the serial port.	<ul style="list-style-type: none"> • Check the APR settings for this technique.
500015	Detector not ready for exposure.	Inhibit Exposure	Detector not ready for exposure.	
500016	Error loading APR Technique.	Inhibit Exposure	Error loading APR Technique.	<ul style="list-style-type: none"> • Check the APR settings for this technique.
500017	Image system not available.	Information	Image system not available.	

ID	DESCRIPTION	CATEG.	SERVICE LOG_DESCRIPTION	SERVICE ACTION
500018	Power Off not allowed. Please close exam.	Inhibit Exposure	Power Off not allowed. It is necessary to exit the current exam.	<ul style="list-style-type: none"> Close the current exam.
500020	APR settings not defined.	Inhibit Exposure	APR settings not defined.	<ul style="list-style-type: none"> Check the APR settings for this technique.
500021	Stitching params not valid.	Inhibit Exposure	Stitching params not valid.	<ul style="list-style-type: none"> Reboot the system and try to repeat the operation.
500022	Console not available.	Inhibit Exposure	Console/s not connected.	
500023	Loading next stitching exposure.	Inhibit Exposure	Loading next stitching exposure.	
500024	Please, reselect technique.	Inhibit Exposure	Please, reselect technique.	
500025	Please, select a protocol from Image System.	Inhibit Exposure	It is necessary to select a protocol from the Image System.	<ul style="list-style-type: none"> Select a protocol from Image System.
500026	Selected detector not available.	Inhibit Exposure	Selected detector is not available.	<ul style="list-style-type: none"> Check detector connections.
500027	Please, close exam.	Inhibit Exposure	Please, close exam.	<ul style="list-style-type: none"> Close the current exam.
500028	Please, open x-ray acquisition screen.	Inhibit Exposure	Please, open x-ray acquisition screen.	<ul style="list-style-type: none"> Open the X-ray acquisition screen.
500029	Changing parameters.	Inhibit Exposure	Changing parameters.	<ul style="list-style-type: none"> No user action required.

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SECTION 4 TROUBLESHOOTING OF ERRORS

4.1 GENERATOR ERRORS

4.1.1 MICRO-CONTROLLER HEXADECIMAL CODIFICATION OF ERRORS

The status of the Dual Speed Starter errors is always shown by groups of eight LEDs, present in the micro-controller (μ c) indicated below.

MICRO-CONTROLLERS	P/N	DIODES
Dual Speed Starter μ c	S0008009	D40-D42-D43-D46-D47-D48-D50-D49

Each LED counts as logical **0** when switched OFF and as **1** when switched ON.

The LEDs are split in two groups of three LEDs in the first one and four in the second one. Using the Hexadecimal codification it gets a code ranged from 00 to 7F (symbols 0 to 9 represent values zero to nine, and A to F represent values ten to fifteen).

Red LED ON means error and OFF means status.

Red LED ON and the remaining LEDs lighted means that the micro is held in reset.

If more than one error occurred, they are shown alternatively.

Illustration 4-1
Hexadecimal codification of errors example

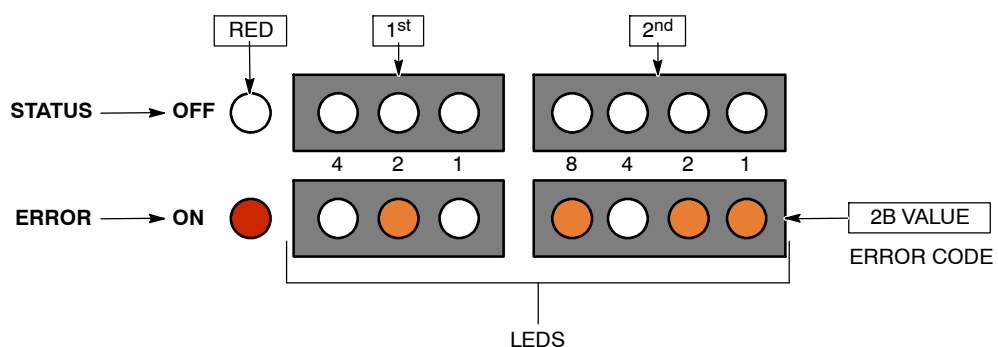
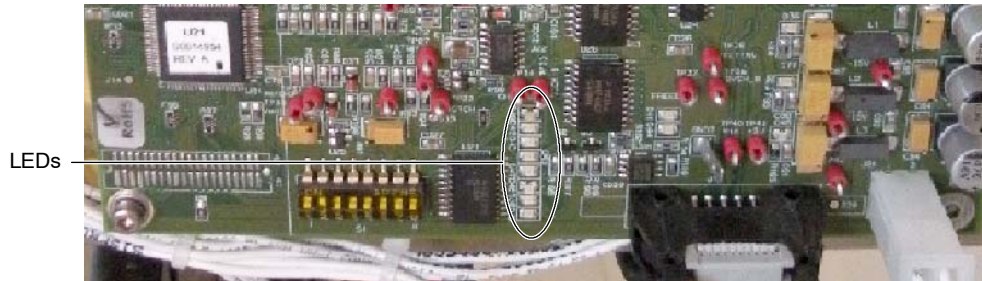


Illustration 4-2
Dual Speed Starter LEDs



4.1.2 TROUBLESHOOTING OF GENERATOR ERRORS

Note 

Depending on where the Generator errors are displayed (Touchscreen Console, Acquisition Software, Auxiliary Console, etc.) they may show different codes or numbers: 100002, E102, Err 102, ER1102... However, the last three digits should be the same in all cases.

ERROR CODE : 100001 BACKUP TIMER — I2C ERROR

DESCRIPTION :	I2C Bus error while trying to access the external redundant backup timer.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	Anytime.

POSSIBLE CAUSES

It is not possible to communicate with the secondary microcontroller that works as the redundant backup timer.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists and it appears right after a service operation, verify that no device has been connected to J31 (I2C) of the A3640-XX Control board by mistake. If so, unplug it and reset the error.
3. If the error code remains, unplug the licence from J17, reboot the Generator and check again:
 - a. If 100001 code is replaced by 100047 (Licence — I2C Error), replace the licence.
 - b. If 100001 code remains, replace the A3640-XX Control board.

ERROR CODE : 100002 WRONG WS CONFIGURATION ERROR

DESCRIPTION :	One or more workstations are not properly configured; a default value has been assigned.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence or when pressing “Prep”.

POSSIBLE CAUSES

The workstation configuration is invalid. For example, a workstation configured as bucky/digital panel has no input selected.

Any workstation configuration is not allowed by the licence.

ACTIONS

1. Review the workstation configuration and correct the wrong value (*refer to the Configuration document*).
2. If the error persists, consider initializing the EEPROM (*refer to the EEPROM Initialization Section on the Configuration document*).

Note 

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

3. If the error persists once the EEPROM is initialized, replace the A3640-XX Control board.

ERROR CODE : 100003 NO WS CONFIGURED ERROR

DESCRIPTION :	No tube has been configured for any of the workstations, there is no workstation available and a default value has been assigned.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence or when pressing “Prep”.

POSSIBLE CAUSES

The workstation configuration is invalid.

ACTIONS

1. Review the workstation configuration and configure at least one of them with a tube value different from '0'.
2. If the error persists, consider initializing the EEPROM (*refer to the EEPROM Initialization Section on the Configuration document*).

Note

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

3. If the error persists once the EEPROM is initialized, replace the A3640-XX Control board.

ERROR CODE : 100004 FLUORO ORDER ERROR

DESCRIPTION :	The Fluoro order input signal is active during the startup sequence.
ERROR TYPE :	“Unrecoverable”, the system remains lock.
APPLICABLE TO :	“All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

Fluoro order has been accidentally activated during the startup sequence.
Defective hardware.

ACTIONS

1. Check that the external fluoro device (pedal, etc.) has not been accidentally activated during startup.
2. If the error persists, check the fluoro order input in J23.14 of the A3640-XX Control board (FLUORO_ORDER_IN).
 - a. If the input signal is at a high logic level, replace the A3640-XX Control board.
 - b. If the input signal is at a low logic level, proceed with step 3. if the Generator is provided with the A3674-XX Interface board or proceed with step 4. if the Generator is not equipped with Interface board.

Note 

Fluoro order (FLUORO_ORDER_IN on the A3640-XX Control board) is named P. FLUORO in the A3674-XX Interface board schematics.

3. Disconnect the device connected to TS1-39 of the A3674-XX Interface board and reboot the Generator.
 - a. If the error message disappears, check the device condition and replace it if necessary.
 - b. If the error persists, check the ribbon cable from J2 of the A3674-XX Interface board to J32 of the A3640-XX Control board and replace it if necessary.
 - c. If the ribbon cable is in proper condition and the error persists, replace the A3674-XX Interface board.
4. Disconnect the external fluoro device to isolate the source of the error to be able to verify the cause of the fluoro order activation.

ERROR CODE : 100005 EXP ORDER ERROR

DESCRIPTION :	The Exposure order input signal is active during the startup sequence.
ERROR TYPE :	"Unrecoverable", the system remains lock.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

- Exposure order has been accidentally activated during the startup sequence.
- Defective hardware.

ACTIONS

1. Check that the external device which generates the Exposure order (handswitch, etc.) is not activated during startup.
2. If any device (handswitch) is connected to J14 of the A3640-XX Control board, disconnect it and reboot the Generator.
 - a. If the error message disappears, check the device condition and replace it if necessary.
 - b. If the error message persists and there is any device connected to J25 of the A3640-XX Control board, proceed with step 3. If no device is connected to J25, proceed with step 4. if the Generator is provided with the A3674-XX Interface board or proceed with step 6. if the Generator is not equipped with Interface board.
3. Check the Exposure order input in J25-10 (/EXP_EXT1) and J25-4 (EXP_EXT2) of the A3640-XX Control board.
 - a. If both signals are at a high logic level, replace the A3640-XX Control board.
 - b. If any of those signals is at a low logic level, check the device connected to it.

Note

Exposure order is named EXP ORDER in TS1-5 of the A3674-XX Interface board.

4. Disconnect the device connected to TS1-5 of the A3674-XX Interface board and reboot the Generator.
 - a. If the error message disappears, check the device condition and replace it if necessary.
 - b. If the error message persists, proceed with step 5.
5. Disconnect J5 from the A3674-XX Interface board and test for electrical continuity between J5-15 and J5-14 of the cable.
 - a. If there is electrical continuity, check the cable, Control Console or handswitch for a short-circuit.
 - b. If there is not electrical continuity, check the ribbon cable from J2 of the A3674-XX Interface board to J32 of the A3640-XX Control board and replace it if necessary.
 - c. If the ribbon cable is in proper condition and the error persists, replace the A3674-XX Interface board.
6. Disconnect the external device to isolate the source of the error to be able to verify the cause of the exposure order activation.

ERROR CODE : 100006 PREP ORDER ERROR

DESCRIPTION :	The Preparation order input signal is active during the startup sequence.
ERROR TYPE :	“Unrecoverable”, the system remains lock.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

- Prep order has been accidentally activated during the startup sequence.
- Defective hardware.

ACTIONS

1. Check that the external device which generates the Preparation order (handswitch, etc.) is not activated during startup.
2. If any device (handswitch) is connected to J14 of the A3640-XX Control board, disconnect it and reboot the Generator.
 - a. If the error message disappears, check the device condition and replace it if necessary.
 - b. If the error message persists and there is any device connected to J25 of the A3640-XX Control board, proceed with step 3. If no device is connected to J25, proceed with step 4. if the Generator is provided with the A3674-XX Interface board or proceed with step 6. if the Generator is not equipped with Interface board.
3. Check the Exposure order input in J25-11 (/PREP_EXT1) and J25-5 (PREP_EXT2) of the A3640-XX Control board.
 - a. If both signals are at a high logic level, replace the A3640-XX Control board.
 - b. If any of those signals is at a low logic level, check the device connected to it.

Note 

Preparation order is named PREP ORDER in TS1-4 of the A3674-XX Interface board.

4. Disconnect the device connected to TS1-4 of the A3674-XX Interface board and reboot the Generator.
 - a. If the error message disappears, check the device condition and replace it if necessary.
 - b. If the error message persists, proceed with step 5.
5. Disconnect J5 from the A3674-XX Interface board and test for electrical continuity between J5-16 and J5-14 of the cable.
 - a. If there is electrical continuity, check the cable, Control Console or handswitch for a short-circuit.
 - b. If there is not electrical continuity, check the ribbon cable from J2 of the A3674-XX Interface board to J32 of the A3640-XX Control board and replace it if necessary.
 - c. If the ribbon cable is in proper condition and the error persists, replace the A3674-XX Interface board.
6. Disconnect the external device to isolate the source of the error to be able to verify the cause of the exposure order activation.

ERROR CODE : 100007 TUBE2 MODEL ERROR

DESCRIPTION :	The tube index (related to a tube in the tube list) configured for the tube 2 is outside boundaries, a default value has been assigned.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

- The tube model configuration is invalid.
- The EEPROM is not initialized (not likely).
- Corrupted data in the EEPROM.

ACTIONS

1. Open the Service Console and go to the Configuration screen. Index “1” is automatically selected in Tube 2 configuration but, in order to correctly set the Tube selection, do as follows:
 - a. If the Index to be selected is “1”, change the selection to any other number (2 to 8) and press on the “Store Data (In SHFR)” button. Then, select Index “1” and press on the “Store Data (In SHFR)” button again.
 - b. If the Index to be selected should be different to “1”, change the selection to the correct Index and press on the “Store Data (In SHFR)” button.
2. If the error persists, consider initializing the EEPROM (*refer to the EEPROM Initialization Section on the Configuration document*).

Note

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

ERROR CODE : 100008 TUBE1 MODEL ERROR

DESCRIPTION :	The tube index (related to a tube in the tube list) configured for the tube 1 is outside boundaries, a default value has been assigned.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

- The tube model configuration is invalid.
- The EEPROM is not initialized (not likely).
- Corrupted data in the EEPROM.

ACTIONS

1. Open the Service Console and go to the Configuration screen. Index “1” is automatically selected in Tube 1 configuration but, in order to correctly set the Tube selection, do as follows:
 - a. If the Index to be selected is “1”, change the selection to any other number (2 to 8) and press on the “Store Data (In SHFR)” button. Then, select Index “1” and press on the “Store Data (In SHFR)” button again.
 - b. If the Index to be selected should be different to “1”, change the selection to the correct Index and press on the “Store Data (In SHFR)” button.
2. If the error persists, consider initializing the EEPROM (*refer to the EEPROM Initialization Section on the Configuration document*).

Note 

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

ERROR CODE : 100009 INVERTER ERROR (IGBT FAULT)

DESCRIPTION :	The inverter module has been overloaded.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the exposure and when pressing “Prep”/Fluoro pedal.
INFORMATION / SYMPTOM :	This error may appear at the Console as “100009” error code or as “Generator Overload” indication. During exposure an overcurrent on the IGBTs of the HV Inverter Module has been detected. This may be produced by an arc or malfunction on the HV Circuitry.

POSSIBLE CAUSES

- Defective X-ray Tube.
- Defective HV Transformer or HV Cable.
- Defective Inverter Module.
- Defective A3640-XX Control board.
- Extremely high Duty Cycle on Rad and Fluoro operation.

ACTIONS

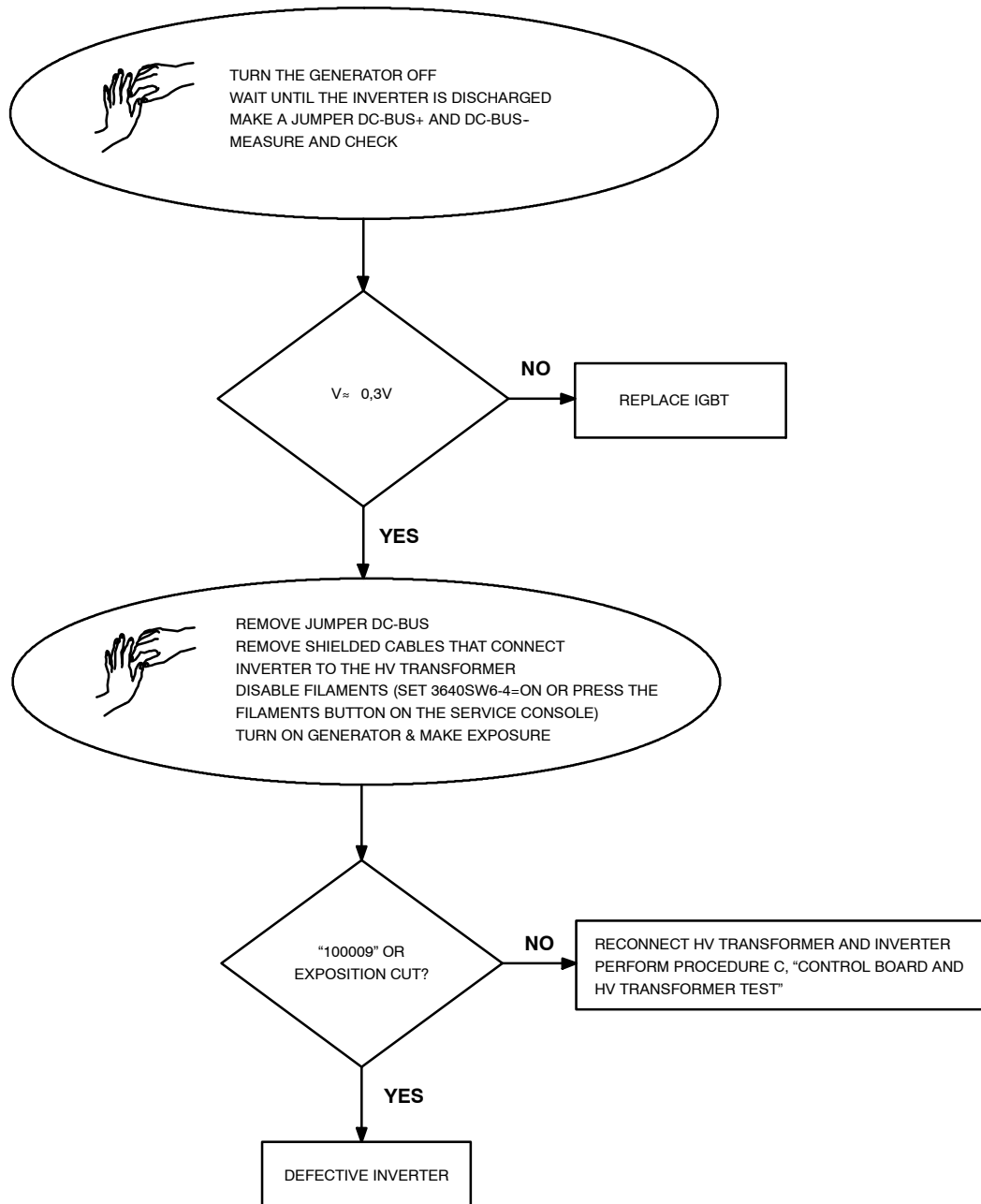
A. PRELIMINARY

1. Select minimum kVp, minimum mA, and 80 ms (for example 40 kVp, 10mA, and 80 ms). Make preparation and check that anode rotates in the X-ray Tube. If the anode is not rotating correctly, check the starter and the Stator connections.
2. In case the anode is rotating correctly, make an exposure:
 - If “100009” or “Generator Overload” appears, follow the procedure in paragraph B, “Inverter Module Test”.
 - If not, follow step 3.
3. Increment kVp in 10 kVp steps, select the same mA and time. Make an exposure:
 - If “100009” or “Generator Overload” appears, or the exposure is cut before 80 ms, then follow Procedure C, “Control board and HV Transformer Test”.
 - If not, keep on increasing the kVp in 10 kVp steps (60, 70, 80, 90, 100, 110, 120 and 125 kVp for 125 kVp HV Transformers; and 130, 140 and 150 kVp for 150 kVp HV Transformers) making Exposures at each kVp selected.
 - If “100009” or “Generator Overload” appears, or the exposure is cut before 80 ms at any kVp selected, follow Procedure C, “Control board and HV Transformer Test”.
 - If “100009” or “Generator Overload” has not appeared at the maximum kVp or the exposure was not cut before 80 ms, it means that the HV Transformer and the HV Cables are OK. Then follow Procedure F, “RANDOM ‘100009’ or ‘Generator Overload’”. In this case high mA causes “100009” or “Generator Overload”.

B. INVERTER MODULE TEST

Illustration 4-3 shows a Flowchart for Procedure B.

Illustration 4-3
Flowchart for B: Inverter Module Test



1. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF.
2. Remove the covers from the Generator Cabinet.
3. Wait for the DC Bus of the Inverter to be fully discharged. When it is fully discharged the LEDs on the Charge/Discharge board will be completely turned off.

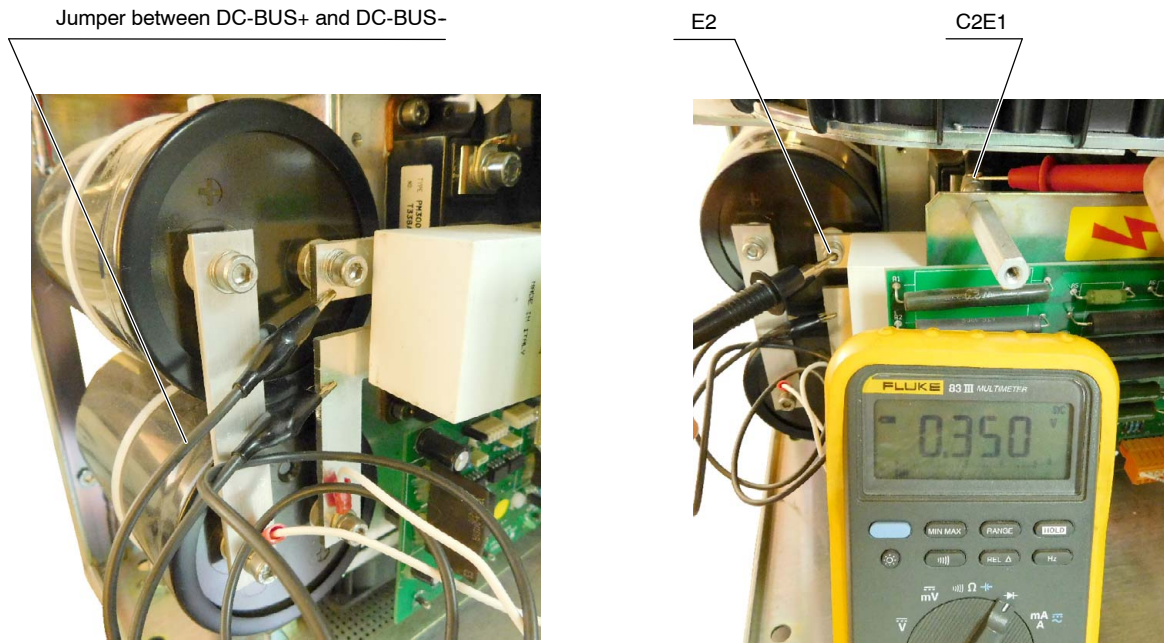


MAKE SURE THAT THE MAIN STORAGE CAPACITORS OF THE HIGH VOLTAGE INVERTER DO NOT CONTAIN ANY RESIDUAL CHARGE. WAIT UNTIL THE LIGHT EMITTING DIODES ON THE CHARGE/DISCHARGE BOARD ARE OFF BEFORE SERVICING THE EQUIPMENT (APPROX. 3 MINUTES AFTER THE UNIT IS TURNED OFF).

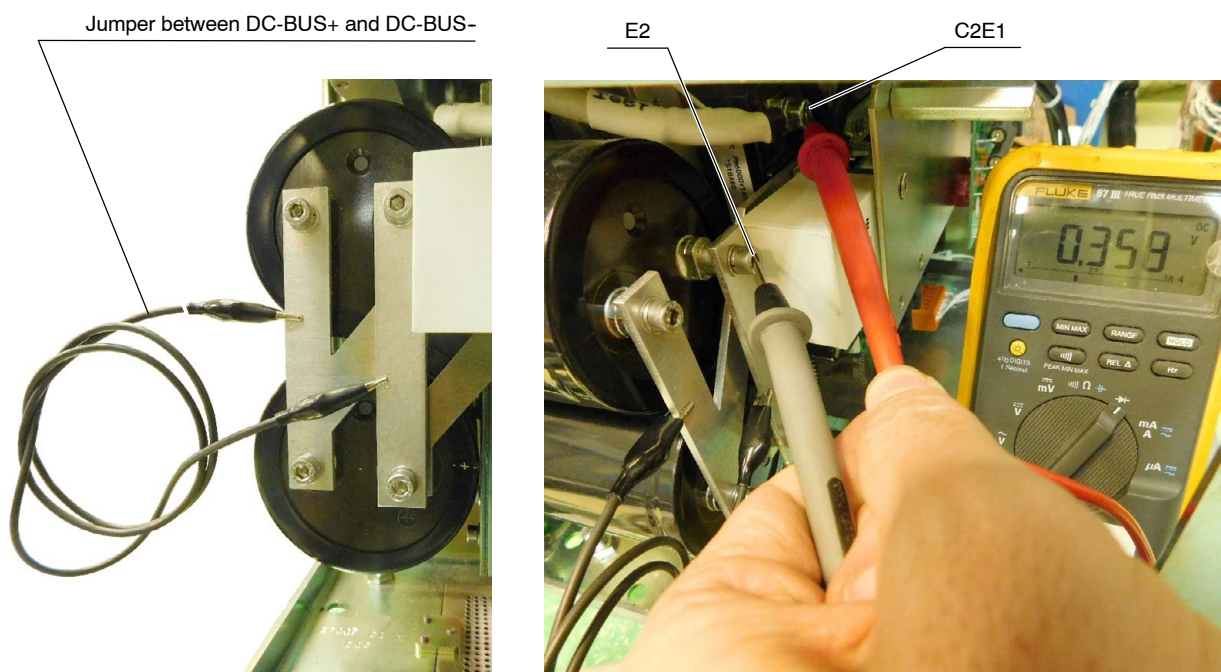
4. When LEDs are off make a jumper between DC-BUS+ and DC-BUS- (use a wire AWG 22 [0.5 mm²] or higher). Make sure that there is less than 10 V_{rms} across the BUS. (*Refer to Illustration 4-4 to see where to make the jumper.*)
5. Measure with a Multimeter in Diode (or ohms) between C2E1 (positive polarity) and E2 or C1 (negative polarity) in both IGBTs (*refer to Illustration 4-4 for more details*). Repeat the measure with different polarity between C2E1 (negative polarity) and E2 or C1 (positive polarity).

The voltage should be around 0.3 V (or the resistance must be a high impedance) for the IGBT to be OK. Normally when an IGBT is broken the voltage is = 0 volts (or the resistance is zero [0 Ohms] or very close.

Illustration 4-4
Jumper and Measurement Points



3-PHASE LINE POWERED GENERATOR



1-PHASE LINE POWERED GENERATOR OR BATTERY POWERED GENERATOR

- Repeat the measurements done in step 5. for the other IGBT.



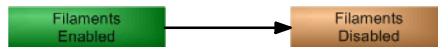
DON'T FORGET TO REMOVE THE JUMPER ACROSS THE DC BUS AFTER ALL MEASUREMENTS ARE MADE, OTHERWISE THE INVERTER WILL SUFFER SERIOUS DAMAGE.

- If any of the IGBTs are short-circuited, replace the IGBT.
- If both IGBTs are OK, remove both shielded cables that connect the Inverter to the HV Transformer: P1, P3, and SHLD (P2). Isolate the three (3) wires completely from each other and from the metal sheet or ground.



MAKE SURE THE WIRES ARE PERFECTLY ISOLATED AND THAT NO SHORT-CIRCUIT IS MADE, OTHERWISE SERIOUS DAMAGES COULD RESULT.

- Turn the Room Electrical Cabinet (Mains Disconnect) and Generator ON.
- Set dip switch 3640SW6-4 on the A3640-XX Control board to **On** (disables Filaments) or press the Filaments button on the Service Console menu to disable the Filaments by software.



- Make an exposure:
 - If "100014" appears, go to steps 12., 13. and 14. Then, follow Procedure C, "Control board and HV Transformer Test".
 - If "100009" or "Generator Overload" appears, replace the whole Inverter Module.
- Set DIP switch 3640SW6-4 on the A3640-XX Control board to **Off** or press the Filaments button on the Service Console menu to enable the Filaments by software, depending on the action performed before on step 10.
- Turn the Electrical Room Cabinet (Main Disconnect) and generator OFF. Wait three (3) minutes for the Main Storage Capacitors to discharge.
- Re-connect both shielded cables that connect the Inverter to the HV Transformer P1, P3, and SHLD (P2).

C. CONTROL BOARD AND HV TRANSFORMER TEST

1. Make these connections with the Oscilloscope:
 - CH.1 on mA+ (TP56) on the Control board.
 - CH.2 on mA- (TP59) on the Control board.
 - Base Time in 10 ms per division and 1 V per division
2. Turn the mains and Generator ON.
3. Select 40 kVp, 10mA, and 80 ms. Make an exposure and check that both waveforms are almost symmetric (a difference of 12% is normal).
 - If it is OK, follow the procedure in step 4.
 - If it is not OK, check:
 - that in the mA test point of the A3640-XX Control board (TP85 and TP86) the jumper is correctly placed and secure.
 - that connector J1 is correctly placed and secure in the HV Transformer.
 - continuity between the HV Transformer and the Control board in J1-B and J18.2, J1-C and J18.1, J1-M and J18.6, and J1-R and J18.3. Check that they are correctly connected and secure.
 - if after these actions the waveform is not OK, replace the A3640-XX Control board.
4. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF. Wait three (3) minutes for the Main Storage Capacitors to discharge.
5. Remove the HV Cables from the HV Transformer (anode and cathode) and fill the HV xReceptacles with oil.

Note 

Exposures up to 90 kVp can be made without filling the HV Receptacles with oil.

6. Turn the Electrical Room Cabinet (Main Disconnect) and Generator ON.
7. Make these connections with the Oscilloscope:
 - CH.1 on kV+ (TP42) on the Control board.
 - CH.2 on kV- (TP51) on the Control board.
 - Base time in 25 ms per division and 0.5 V per division.
8. Select 40 kVp, 10 mA, and 80 ms. Make an Exposure and check that both waveforms are symmetric. A difference of 12% is normal.
 - If it is OK, follow procedure in step 9.
 - If it is not OK, follow Procedure D, "Asymmetry on the kVp Loop".

9. Make exposures from 50 kVp to 140 kVp with the same Exposure Time and check that all kVp waveforms are symmetric and the values are similar according the table below.

Select	TP42 & TP51 on the Control board
50 kVp	2.2 V
70 kVp	3.0 V
90 kVp	3.9 V
110 kVp	4.7 V
125 kVp	5.3 V
130 kVp	5.6 V
140 kVp	6.0 V

Note 

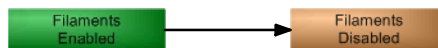
kV drop is slow due to the lack of charge.

10. If the waveforms are not symmetric (within 12% at any point), follow Procedure D, “Asymmetry on the kVp Loop”.
11. If everything is OK, it means that HV Transformer is OK and the problem could be in the X-ray Tube or in the HV Cables. In order to determine exactly what part must be replaced (the X-ray Tube or the HV Cables) it is necessary to replace one of both components and perform the procedure again. In most of the cases the part to be replaced usually is the X-ray Tube. To know when the Tube begins to arc follow Procedure E, “X-ray Tube Test”.
12. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF and wait three (3) minutes for the Main Storage Capacitors to discharge.

D. ASYMMETRY ON THE kVp LOOP

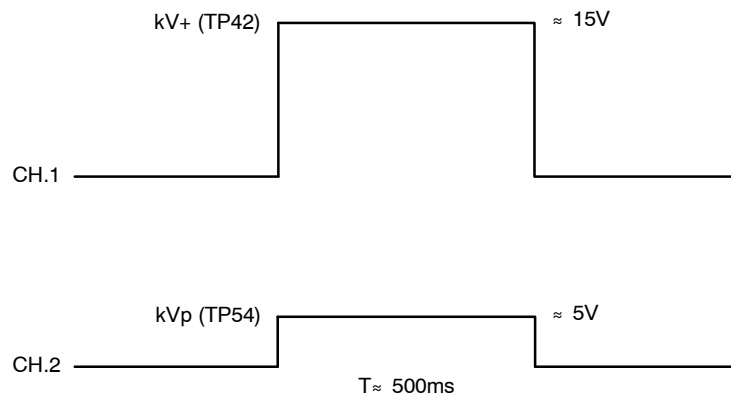
This procedure determines what part should be replaced due to asymmetry on the kVp Loop: the High Voltage Transformer or the A3640-XX Control board.

1. Set dip switch 3640SW6-4 on the A3640-XX Control board to **On** (disables Filaments) or press the Filaments button on the Service Console menu to disable the Filaments by software.

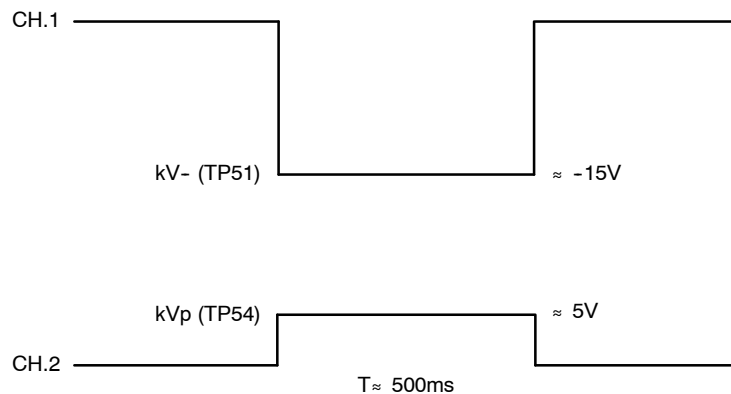


2. Make these connections with the Oscilloscope:
 - CH.1 on kV+ (TP42) on the Control board.
 - CH.2 on kVp (TP54) on the Control board.
3. Apply +15V (TP2 on the Control board) to kV+ (J18.2 on the Control board) for 500 ms. This operation may cause Error “020” if the voltage is applied for more than 500 ms. In this case, press reset to restore the error code.

4. Check the waveform's result:



- If it is OK, follow the procedure in step 5.
 - If it is not OK, replace the A3640-XX Control board. It is recommended to perform Procedure C, "Control board and HV Transformer Test", again.
5. Make these connections with the Oscilloscope:
- CH.1 on kV- (TP51) on the Control board.
 - CH.2 on kVp (TP54) on the Control board.
6. Apply -15V (TP1 on the Control board) to kV- (J18.1 on the Control board) for 500 ms. This operation may cause Error "020" if the voltage is applied for more than 500 ms. In this case, press reset to restore the error code.
7. Check the waveform's result:



- If it is OK, replace the HV Transformer.
 - If it is not OK, replace the A3640-XX Control board. It is recommended to perform Procedure C, "Control board and HV Transformer Test", again.
8. Set DIP switch 3640SW6-4 on the A3640-XX Control board to **Off** or press the Filaments button on the Service Console menu to enable the Filaments by software, depending on the action performed before on step 1.
9. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF and wait three (3) minutes for the Main Storage Capacitors to discharge.

E. X-RAY TUBE TEST

After the performance of the above referred test everything is found OK, the Service (Field) Engineer may want to know the actual status of the Tube. Perform the following procedure in order to determine the point in which the X-ray Tube begins to arc.



It is strongly recommended to replace the Tube as soon as possible to prevent potential damage to the Generator.

1. Select 40kVp, 10mA, and 100 ms.
2. Make an exposure.
3. Increment kVp in 10 kVp steps, select same mA and time. Make an exposure.
 - If "100009" or "Generator Overload" appears follow Procedure C, "Control board and HV Transformer Test", if it has not been performed before. If Procedure C has been already performed follow the procedure in step 4.
 - If "100009" or "Generator Overload" does not appear, keep on incrementing the kVp in steps of 10 kVp (up to the maximum kVp), making exposures at each kVp selected.
 - If "100009" or "Generator Overload" appears at any kVp selected it means that the Tube has dielectric problems above the selected kVp.
 - If "100009" or "Generator Overload" does not appear (up to maximum kVp), it means that arcing may be due to mA or kW. Follow the procedure in step 4.
4. Select 40 kVp and 10 mA. Increment the mA one station and make an Exposure. Keep on incrementing the mA station (making exposures) until "100009" or "Generator Overload" appears. This will give an idea of the maximum mA allowed by the Tube without arcing. If "100009" or "Generator Overload" does not appear follow step 5.
5. If the Tube still does not arc, the problem is related to $kW = kV \cdot mA$. Make selections on the Console at 100 ms incrementing kV and mA. A point will be reached in which "100009" or "Generator Overload" will appear. This will give an idea on the approximate value of kVp and mA that can be handled by the X-ray Tube. Also, this value may change when the Tube heats up.

F. RANDOM "100009" OR "GENERATOR OVERLOAD"

If everything is OK and random "100009" or "Generator Overload" appears, check:

1. That the signal IGBT FAULT on TP93 on the Control board is not low (logic 0) in stand-by and during the exposure. If there is noise, check for a loose connection between J5.4 on the Control board and J3.3 on the IPM Driver Board.
2. If IGBT FAULT is active during an exposure, try to isolate when it occurs. It may be due to noise coming from any device outside the Generator or it may occur when selecting a high power Exposure and the voltage of the main line goes down more than 10%.

ERROR CODE : 100010 EEPROM CHECK ERROR

DESCRIPTION : Erroneous data stored in the EEPROM.

ERROR TYPE : "Unrecoverable", the system remains lock.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The EEPROM is not initialized.

The EEPROM is defective.

ACTIONS

1. If the EEPROM has been replaced, reset the error code.
2. Turn the Generator OFF and ON again.
3. If the error does not reset, initialize the EEPROM (*refer to the EEPROM Initialization Section on the Configuration document*).
4. If the error persists, replace the EEPROM (U66).

Note 

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

ERROR CODE : 100011 LOAD CAPACITOR ERROR

DESCRIPTION :	No voltage in the Main Storage Capacitors of the Generator (Inverter Module).
ERROR TYPE :	“Unrecoverable”, the system remains lock.
APPLICABLE TO :	All Line or Battery Powered Generators.
APPEARS WHEN :	Only during initialization phase or when pressing “Prep”.

POSSIBLE CAUSES

No voltage in the Main Storage Capacitors (C1, C2, C3, C4) of the Generator (Inverter Module).
Defective Charge/Discharge board.
Precharge K2 contactor located inside the Generator Cabinet is not energized.
Main line fuse F3 is blown (only for Line Powered Generators).
Main Battery fuses F1 and/or F2 are blown (only for Battery Powered Generators).
“/CHRG” signal of Pin 1 on connector J6 of the A3640-XX Control board is not correct.
Cables disconnected accidentally or damaged connectors.

ACTIONS

Note

Due to Error 11, main Contactors will remain in the following state:

K2: *It is connected during the precharge of the Inverter and disconnected again when error 11 is detected.*

K3: *It is never activated when error 11 appears.*

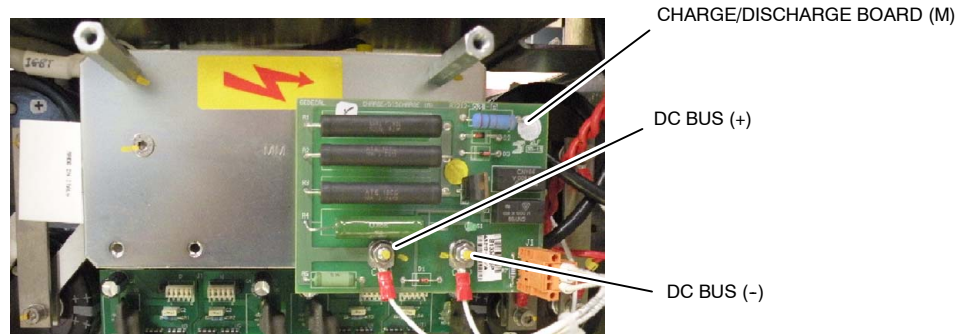
K2 Contactor disconnection can modify the initial measurements conditions due to the Inverter Module discharge. For accurate results, it is mandatory to perform the visual checks and measurements right after powering on the Generator.

A. IF LED DS1 [CHARGE/DISCHARGE BOARD (M)] OR LEDS DS1 AND DS2 [CHARGE/DISCHARGE BOARD (T)] IS/ARE ILLUMINATED (LINE OR BATTERY POWERED GENERATOR)

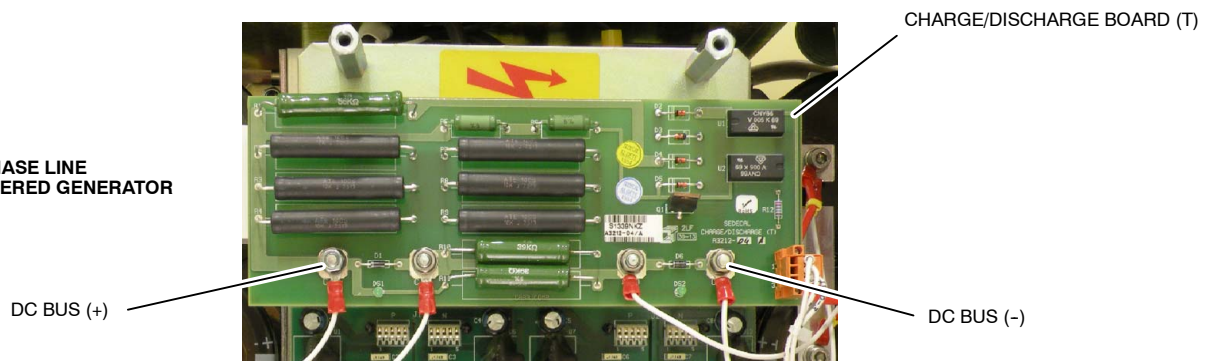
Check the voltage at the Main Storage Capacitors (C1, C2, C3, C4) (Inverter Module) measuring the voltage between DC BUS (+) and DC BUS (-) as indicated in the illustration below.

Illustration 4-5
Charge/Discharge board

1-PHASE LINE or BATTERY POWERED GENERATOR



3-PHASE LINE POWERED GENERATOR



The voltage at the Main Storage Capacitors should be the voltage of the Input Power Line multiply by 1.414 for Line Powered Generators (not in "Prep") ($\pm 10\%$). See the following examples:

Input Power Line	Voltage at the Main Storage Capacitors
Line Powered Generator at 230 V~	$230 \times 1.414 = 325 \text{ V}^= (\pm 10\%)$
Line Powered Generator at 400 V~	$400 \times 1.414 = 566 \text{ V}^= (\pm 10\%)$
Line Powered Generator at 480 V~	$480 \times 1.414 = 679 \text{ V}^= (\pm 10\%)$
Battery Powered Generator at any Power Line	approx. $400 \text{ V}^= (\pm 10\%)$ with all batteries fully charged.

- If the voltage is OK, check that J6.1 (/CHRG) on the A3640-XX Control board is at logic level "0". (0.15 V).
 - If logic level is OK (logic level 0), replace the A3640-XX Control board.
 - If logic level is not OK, check the link between J6.1 on the A3640-XX Control board and J1.1 on the Charge/Discharge board and between J6.3 on the A3640-XX Control board and J1.3 on the Charge/Discharge board.
 - If these links are OK, replace the defective Charge/Discharge board.
 - If they are not OK, repair connection.
- If the voltage in the Capacitors is not OK (be aware that the voltage must have been measured right after powering on the Generator), check the V~ on AC1 and AC2 (**for 3-phase Generators**) or AC1 and AC3 (**for 1-phase Generators**) at the Input Rectifier Board (**for Battery Powered Generators**: check the battery voltage). Reboot the Generator using the Control Console, the Tech Service Console or pressing SW3 on the A3640-XX Control board (*refer to the Configuration document*).
 - If the V~ is not OK, verify input connections and input fuses.
 - If the V~ is OK, disconnect BUS+ and BUS- at the Input Rectifier Board and check the V=
 - If the V= is not OK, replace any defective components (CR1, CR2, CR3) at the Input Rectifier Board.
 - If the V= is OK, check for and replace any defective components at the Generator Cabinet.

B. IF LED DS1 [CHARGE/DISCHARGE BOARD (M)] OR DS1 AND DS2 [CHARGE/DISCHARGE BOARD (T)] IS/ARE NOT ILLUMINATED AND IT IS A NON-BATTERY POWERED GENERATOR

For 3-phase Generators, start the procedure in step 1. For 1-phase Generators, start in step 4.

1. Check the input V~ on the Generator (L1, L2 and L3).
 - If the input V~ is not correct, check the V~.
 - If the input V~ is correct, proceed with step 2.
2. Check the input V~ on LF1 (L1, L2 and L3).
 - If the input V~ is not correct, check fuse F3 and the connections from the fuses to LF1.
 - If the input V~ is correct, proceed with step 3.
3. Check the output V~ on LF1 (L1', L2', L3').
 - If the output V~ is not correct, replace LF1 filter.
 - If the output V~ is correct, proceed with step 4.
4. Check the input V~ on K2 [L1, L2 (and L3 in case of 3-phase Generators)].
 - If the input V~ is not correct, check and repair connections between LF1 and K2.
 - If the input V~ is correct, proceed with step 5.
5. Connect the voltmeter between T1 and T3 of K2 (**for 3-phase Generators**) or T1 and T2 (**for 1-phase Generators**).
6. Reboot the Generator using the Control Console, the Tech Service Console or pressing SW3 on the A3640-XX Control board (*refer to the Configuration document*).
7. Check if the line voltage is present during 3 seconds approx. before the error is detected.
 - If the line voltage is present, proceed with step 8.
 - If the line voltage is not present, proceed with step 9.

8. Check the pre-charge resistance R1 (20 Ω , 100 W).
 - If the pre-charge resistance is defective, replace it. (*refer to procedure B.1.*)
 - If the pre-charge resistance is correct, check the following links:
 - K2-T1 — AC1-CR1 of the A3255-XX Input Rectifier board
 - K2-T3 — K3-L3 (**only for 3-phase Generators**)
 - K2-T2 — K3-L2 (**only for 1-phase Generators**)
 - If the previous links are not correct, repair them.
 - If the previous links are OK, check/replace CR1, CR2 and CR3 rectifiers of the Power Inverter.
9. Check if K2 has been energized during 3 seconds approx. after powering on the Generator, before the error is detected. To do so, reboot the Generator.
 - If K2 has been energized, replace it.
 - If K2 has not been energized, proceed with step 10.
10. Check for 24 V⁼ between A1 and A2 on K2 for 3 seconds during the start up.
 - If 24 V⁼ are present, replace K2.
 - If 24 V⁼ are not present, proceed with step 11.
11. Check the voltage (24 V⁼) between K2-A1 and GND. It is not necessary to reboot the Generator for this measurement.
 - If this measurement is correct, proceed with step 12.
 - If this measurement is not correct, proceed with step 13.
12. Reboot the Generator and check if LED DS5 of the A3640-XX Control board is lighted for 5 seconds approx. during the start up.
 - If DS5 is not lighted, replace the A3640-XX Control board.
 - If DS5 is lighted, connect the voltmeter between J4.4 (/LINE CONT) and GND on the A3640-XX Control board. Reboot the Generator and check that the voltage goes from 24 V⁼ to 0 V⁼ when DS5 is lighted during the start up.
 - If the voltage goes from 24 V⁼ to 0 V⁼, check/replace the connection between J4.4 of the A3640-XX Control board and K2-A2.
 - If the voltage does not go from 24 V⁼ to 0 V⁼, replace the A3640-XX Control board.
13. Check the voltage (24 V⁼) between TP1 and GND (TP8, TP9, TP10, TP11) on the A3646-XX Supply board.
 - If the voltage is correct, proceed with step 14.
 - If the voltage is not correct, proceed with step 15.
14. Check the voltage (24 V⁼) between J4.3 and GND on the A3640-XX Control board.
 - If the voltage is correct, check/repair the connection between J4.3 of the A3640-XX Control board and K2-A1.
 - If the voltage is not correct, check the connection between J6.5 of the A3646-XX Supply board and J3.5 of the A3640-XX Control board.
 - If the connection is not correct, repair it.
 - If the connection is correct, replace the A3646-XX Supply board.
15. Check the voltage (24 V⁼) between K1-23 and GND.
 - If the voltage is correct, check/repair the connection between K1-23 and J13.2 of the A3646-XX Supply board.
 - If the voltage is not correct, proceed with step 16.

16. Check the voltage (24 V⁼) between K1-24 and GND.
 - If the voltage is correct, replace K1.
 - If the voltage is not correct, verify/repair connection between K1-24 and J13.1 of the A3646-XX Supply board.

B.1. IF THE PRE-CHARGE RESISTANCE IS DEFECTIVE

1. Check that there is no short-circuit on the Power Inverter rectifier input. For that purpose, measure between AC1-CR1, AC2-CR2 (and AC3-CR3 for 3-phase Generators).
2. Check that there is no short-circuit on the Power Inverter rectifier output. For that purpose, measure between DC BUS (+) and DC BUS (-).
3. Once the R1 resistance has been replaced, and considering that Error 11 does not appear anymore, check that contactor K3 is energized approx. 5 seconds after K2 during the start up.
 - If K3 is energized, verify that contacts L2-T2 (1-phase) or L3-T3 (3-phase) are closed by checking that the voltage disappears when K3 is energized.
 - If the contacts are closed, no further actions are needed.
 - If the contacts are not closed, replace K3.
 - If K3 is not energized, check the voltage (24 V⁼) between A1 and A2 of K3.
 - If the voltage is OK, replace K3.
 - If the voltage is not OK, proceed with step 4.
4. Check the voltage (24 V⁼) between A1 and GND.
 - If the voltage is not OK, check/repair the connection between K2-A1 and K3-A1.
 - If the voltage is OK, check if the DS11 LED of the A3640-XX Control board is lighted.
 - If DS11 is not lighted, replace the A3640-XX Control board.
 - If DS11 is lighted, check/repair the connection between K3-A2 and J4.2 of the A3640-XX Control board.

C. IF LED DS1 IS NOT ILLUMINATED AND IT IS A BATTERY POWERED GENERATOR.

1. Check for battery voltage (≈ 400 V⁼, depending on the charge level) on K2 between L1 (BAT +) and L2 (BAT -).
 - If the voltage is not present, disconnect the Anderson connector J1 and verify that the batteries voltage is present in the part of J1 that comes from the batteries.
 - If the voltage is not present, check the connection of the J1 Anderson connector and the internal connections of the battery trays.
 - If the voltage is present, check fuses F1 and F2 and the connections from J1 to the fuses and from the fuses to K2 contactor (L1 and L2).
 - If the voltage is present, connect the voltmeter between T1 and T2 of K2. Reboot the Generator using the Tech Service Console or pressing SW3 on the A3640-XX Control board (*refer to the Configuration document*) and check if the battery voltage is present for about 3 seconds right after powering up the Generator, before the error is detected.
 - If the voltage is not present, proceed with **step 9. of procedure B.**
 - If the voltage is present, proceed with step 2.

2. Check the pre-charge resistance R1 (20 Ω , 100 W).
 - If the resistance is correct, check and repair the following connections:
 - K2-T1 — Power Inverter
 - K2-T2 — K3-L2
 - K3-T2 — Power Inverter
 - If the resistance is not correct, replace it and **follow procedure C.1.**

C.1. IF THE PRE-CHARGE RESISTANCE IS DEFECTIVE

1. Check that there is no short-circuit on the Power Inverter. For that purpose, measure between DC BUS (+) and DC BUS (-).
2. Once the R1 resistance has been replaced, and considering that Error 11 does not appear anymore, check that contactor K3 is energized approx. 5 seconds after K2 during the start up.
 - If K3 is energized, verify that contacts L2-T2 are closed by checking that the voltage disappears when K3 is energized.
 - If the contacts are closed, no further actions are needed.
 - If the contacts are not closed, replace K3.
 - If K3 is not energized, check the voltage (24 V \approx) between A1 and A2 of K3.
 - If the voltage is OK, replace K3.
 - If the voltage is not OK, proceed with step 3.
3. Check the voltage (24 V \approx) between A1 and GND.
 - If the voltage is not OK, check/repair the connection between K2-A1 and K3-A1.
 - If the voltage is OK, check if the DS11 LED of the A3640-XX Control board is lighted.
 - If DS11 is not lighted, replace the A3640-XX Control board.
 - If DS11 is lighted, check/repair the connection between K3-A2 and J4.2 of the A3640-XX Control board.

ERROR CODE : 100012 mA RANGE ERROR

DESCRIPTION :	Tube current out of range during exposure.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During exposure.

POSSIBLE CAUSES

- HV cables are swapped.
- The filament current demand is not calibrated properly.
- Defective filament control hardware.
- Fault/noise in the mA measure.

ACTIONS

- Press reset to restore the error code and check again.
- If the error persists, check the connection of the Anode and Cathode cables from the HV Transformer to the X-ray Tube, making sure they are connected to the corresponding receptacles.
 - If the HV cables are not properly connected, connect the cables correctly, maintaining correct Anode and Cathode orientation.
 - If the Tube connections are correct and the error persists, proceed with step 3.
- Check that the Anode cable is correctly inserted into the receptacle socket and its ring nut is tightened; and that the Cathode cable is not shorted.
 - If the High Voltage cables are defective, repair them.
 - If the High Voltage cables are correct, proceed with step 4.
- Check the “Filament Data Graph” in the Service Console.
 - If there are no Filament curves drawn in the graph, calibrate the X-ray Tube.
 - If there are Filament curves, proceed with step 5.
- Check the Filament Current data of the mA station(s) that are selected when Error 12 is displayed.
 - If the Filament Current data is set to “1000”, calibrate it (*refer to the Calibration document*).
 - If the Filament Current data is other than “1000”, proceed with step 6.
- Check that “Prep” can be pressed without the need of pressing “Exp”.
 - If “Prep” cannot be pressed independently of pressing “Exp”, check “Boosting Time” and “Filament Setting Time” in the Configuration screen of the Service Console.
 - If any or both of the fields are not properly configured, change their value (*refer to the Configuration document*).
 - If they are properly configured, proceed with step 10.
 - If “Prep” can be pressed independently of pressing “Exp”, proceed with step 7.

Note

Minimum exposition time to detect Error 12 is 32ms for single-phase generators and 20ms for Three-phase ones.

7. Press "Prep" during 5 seconds and, then, press "Exp".
 - If Error 12 is displayed, proceed with step 10.
 - If Error 12 is not displayed, set the "Filament Setting Time" to "2700" in the Configuration screen of the Service Console and try again.
 - If Error 12 is displayed, set the "Filament Setting Time" to the previous value, and proceed with step 10.
 - If Error 12 is not displayed, proceed with step 8.
8. Adjust the "Filament Setting Time" to the required value and open the Exposure Scope of the Service Console to check mA (*refer to the Calibration document*).
9. In order to verify that the problem has disappeared:
 - a. Select the highest mA station for Small Focus and the lowest kVp allowed for this mA station. Make an exposure by pressing at the same time the "Prep" and "Exp" controls; check that the mA reading at the beginning of the exposure is correct.
 - b. Select the highest mA station for Large Focus and the lowest kVp allowed for this mA station. Make an exposure by pressing at the same time the "Prep" and "Exp" controls; check that the mA reading at the beginning of the exposure is correct.
 - c. Calibrate the Filament Current data, if necessary.
10. Select 80 kVp and a mA station which causes Error 12; and make an exposure.
 - If Error 12 is not displayed, check the Filament Current data of the mA stations that cause the error and calibrate them, if necessary.
 - If Error 12 is displayed, proceed with step 11.
11. Remove the jumper between TP85 and TP86 and connect a mAs meter.
12. Open the Exposure Scope and the Manual Calibration screen of the Service Console.
13. Select 80 kVp and a mA station which causes Error 12.
14. Make an exposure and check the mAs with the mAs meter.

Note 

Error 12 is never displayed in Manual Calibration, regardless of the real mA value.

- If the measured mAs are correct, replace the A3640-XX Control board.
 - If the measured mAs are not correct, proceed with step 15.
15. Check that both mAs and mA are different from "0" as measured in the mAs meter and in the Exposure Scope, no matter if the value is not correct.
 - If the measured value of mAs and mA is not "0", calibrate the Filament Current data.
 - If the measured value of mAs and mA is "0", proceed with 16.
 16. Turn the Electrical Room Cabinet (Main Disconnect) and generator OFF. Wait three (3) minutes for the Main Storage Capacitors to discharge.
 17. Disconnect J18 from the A3640-XX Control board and J1 from the High Voltage Transformer and check continuity between:

J18.6 ↔ J1.M (-mA)
J18.3 ↔ J1.R (+mA)
 - If the connections are not correct, repair them.
 - If the connections are correct, proceed with step 18.

18. Turn the Room Electrical Cabinet (Mains Disconnect) and Generator ON.
19. Perform the Filament Current measurement test according to the table below. To do so:
 - a. Connect a DC voltmeter to the corresponding test point, according to the Focal Spot to be used for the test:
 - TP35 (FIL_FF) of the Control board for Small Focal Spot.
 - TP36 (FIL_FG) of the Control board for Large Focal Spot.
 - b. Go to the Manual Calibration screen of the Service Console, select the required Filament value and press "Prep" to read the value with the voltmeter.

Note 

The High Voltage cables can be swapped in order to short-circuit the output of the Filament Transformers of the High Voltage Transformer.



NEVER EXCEED THE HIGHEST CALIBRATED VALUE IN NORMAL CONDITIONS DURING THIS TEST. OTHERWISE, PERMANENT DAMAGE CAN BE CAUSED TO THE TUBE.

Filament Current data	TP35 & TP36 on the Control board
Stand-by	1.25 V ⁼
1000	1.16 V ⁼
1250	1.45 V ⁼
1500	1.74 V ⁼
1750	2.00 V ⁼
2000	2.33 V ⁼
2250	2.62 V ⁼
2500	2.90 V ⁼
2750	3.20 V ⁼

- If the test results are correct, there might be a problem in the Tube's filament. Check and replace the Tube, if necessary.
- If the test results are not correct, proceed with step 20.

20. Perform the Primary voltage of the Filament Transformer measurement test according to the table below. To do so:
- a. Measure with a True RMS AC voltmeter between the corresponding pins, according to the Focal Spot to be used for the test:
 - J13.1 and J13.3 for Large Focal Spot.
 - J13.3 and J13.5 for Small Focal Spot.
 - b. Go to the Manual Calibration screen of the Service Console, select the required Filament value and press "Prep" to read the value with the voltmeter.

Note 

The High Voltage cables can be swapped in order to short-circuit the output of the Filament Transformers of the High Voltage Transformer.



NEVER EXCEED THE HIGHEST CALIBRATED VALUE IN NORMAL CONDITIONS DURING THIS TEST. OTHERWISE, PERMANENT DAMAGE CAN BE CAUSED TO THE TUBE.

Filament Current data	J13.1 & J13.3 / J13.3 & J13.5 on the Control board
Stand-by	126 V~
1000	123 V~
1250	134 V~
1500	145 V~
1750	155 V~
2000	164 V~
2250	173 V~
2500	181 V~
2750	190 V~

- If the test results are correct, there might be a problem in the High Voltage Transformer. Check and replace it, if necessary.
- If the test results are not correct, replace the A3640-XX Control board.

ERROR CODE : 100013 kVp RANGE ERROR

DESCRIPTION :	Anode-Cathode voltage is out of range during exposure.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During exposure.

POSSIBLE CAUSES

- The A3640-XX Control board is defective.
- The DC-BUS goes down during exposure.
- Fault/noise in the kVp measure.
- Incorrect kVp gain calibration.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, open the Exposure Scope of the Service Console and make an exposure to check the kVp value (*refer to the Calibration document*).
 - If the kVp value is out of the $\pm 15\%$ range, check calibration of the kVp gain.
 - If the measured value of kVp is correct, replace the A3640-XX Control board.

ERROR CODE : 100014 kVp RAMP ERROR

DESCRIPTION : Anode-Cathode voltage does not reach the final value in the designated rise time.

ERROR TYPE : “Recoverable” with the Reset command.

APPLICABLE TO : All Generators.

APPEARS WHEN : During exposure.

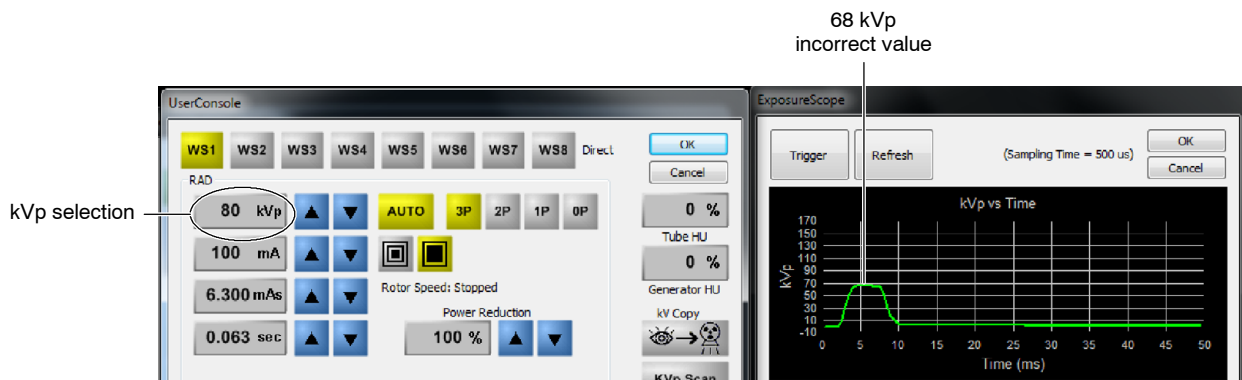
POSSIBLE CAUSES

- The A3640-XX Control board is defective.
- The DC-BUS goes down during exposure.
- Fault/noise in the kVp measure.
- kVp gain is not properly adjusted.
- Wrong connection on the A3063-XX IPM Driver board.
- The A3063-XX IPM Driver board is defective.
- Faulty IGBT.
- Open Serial Capacitor C9 in Power Inverter Module.
- Lack of +24V DELAY on the A3063-XX IPM Driver board.

ACTIONS

1. Open the Exposure Scope of the Service Console (*refer to the Calibration document*). Select a parameters combination which causes Error 14 and make an exposure to check the kVp signal.
 - If there is no kVp signal, proceed with step 2.
 - If there is kVp signal, check if it is within the $\pm 15\%$ range (*refer to Illustration 4-6*).
 - If the kVp value is correct, replace the A3640-XX Control board.
 - If the kVp value is not correct, calibrate the kVp gain.

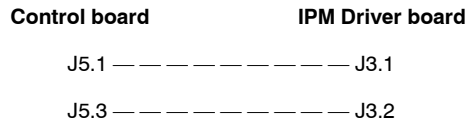
Illustration 4-6
kVp signal checking



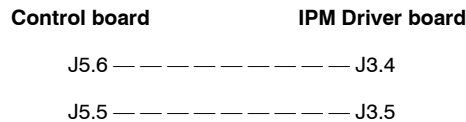


The following procedures involve the IPM Driver board, which is connected to the IGBTs. This area has dangerous HIGH VOLTAGE and must be treated with great care.

2. Check for +24V_DELAYED (LED DS2) between J3.1 and J3.2 of the A3063-XX IPM Driver board.
 - If the measurement is correct, proceed with step 3.
 - If the measurement is not correct, check for +24V_DELAYED between J5.1 and J5.3 of the A3640-XX Control board.
 - If the measurement is not correct, replace the A3640-XX Control board.
 - If the measurement is correct, check and repair the following connections:

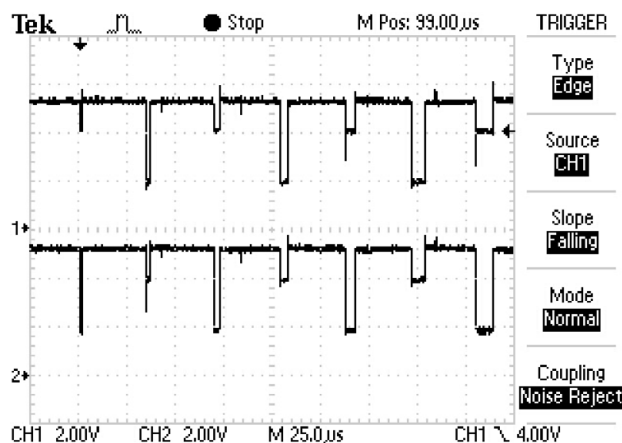


3. Make these connections with the Oscilloscope (the Exposure Scope cannot be used for this test):
 - CH.1 on TP2 of the IPM Driver board.
 - CH.2 on TP3 of the IPM Driver board.
4. Check if there are any pulses during the exposure (*refer to Illustration 4-7*).
 - If there are pulses during the exposure, proceed with step 5.
 - If there are no pulses during the exposure, check the following connections:



- If the connections are not correct, repair them.
- If the connections are correct, replace the A3640-XX Control board.

Illustration 4-7
Pulses checking on the Oscilloscope



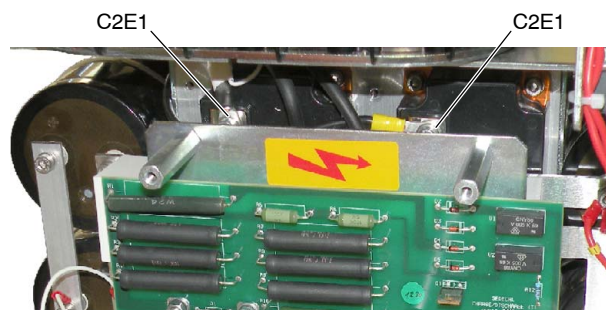
5. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF.
6. Wait for the DC Bus of the Inverter to be fully discharged. When it is fully discharged the LEDs on the Charge/Discharge board will be completely turned off.



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 BOARD ARE OFF BEFORE SERVICING THE EQUIPMENT (APPROX. 3 MINUTES AFTER THE UNIT IS TURNED OFF).

7. When LEDs are off, connect a Multimeter between both C2E1 points of the IGBTs.

Illustration 4-8
C2E1 position



- a. In Capacitor mode the reading should be "O.L.μF" (OUT OF LIMIT).
- b. In "OHMS" mode there should be a resistance changing until a stable value of $\approx 1M\Omega$.
 - If the reading is not correct, proceed with step 8.
 - If the reading is correct, proceed with step 10.
8. Check that the resistance at P1 and P2 of the High Voltage Transformer is low (approximately $0.2\ \Omega$).
 - If the resistance is too high, replace the HV Transformer.
 - If the resistance is correct, proceed with step 9.
9. Check the following connections (*refer to schematic 543022XX for the connections between the HV Transformer and the IGBTs*):

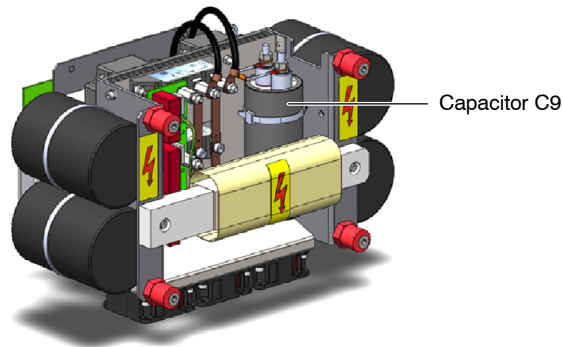
C2E1 (left side IGBT) — — — P3 (HVT)

C2E1 (right side IGBT) — — — C9

C9 — — — — — — — — — — P1 (HVT)

- If the connections are not correct, repair them.
- If the connections are correct, replace Capacitor C9 (*refer to Illustration 4-9*).

Illustration 4-9
Capacitor C9



10. The A3063-XX IPM Driver board or the IGBTs might be defective. It is recommended to replace the IPM Driver board first and if the problem persists, replace the defective IGBT(s) then.

Note 

It is not necessary to replace both IGBTs in case only one of them is defective.

11. To check the IGBTs, proceed as explained in steps 3. to 6. of Procedure B, "Inverter Module Test" of 100009 Inverter Error (IGBT Fault).
12. If the measurement is different from the correct value, replace the IGBT.

ERROR CODE : 100015 LARGE FIL CURRENT RANGE ERROR

DESCRIPTION :	Large filament current out of range.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	In stand-by or when pressing “Prep”.

POSSIBLE CAUSES

- Fault in the tube filament current control hardware (A3640-XX Control board).
- The tube large filament has blown up.
- The tube filament is not connected or there is a poor connection at the Cathode.
- Defective Filament Transformer inside the HV Transformer.
- Fault in the A3646-XX Supply board.
- Lack of voltage +SUPPLY/-SUPPLY in the A3640-XX Control board.

ACTIONS

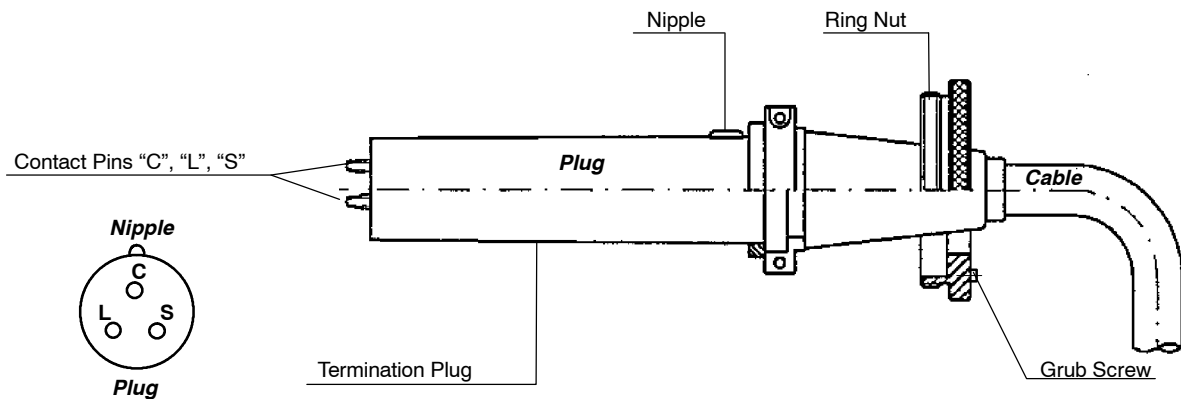
1. First of all, check the filament pre-heating value, as abnormally low values may cause this error. If the error appears **during stand-by, perform only step 2.** If error appears **when pressing “Prep”, perform steps 2. and 3.**
2. Open the Service Console and go to the Parameters Calibration screen to check the “Tube 1 - Large Focus Standby (#)” value. It should be within “718” and “1436”.
 - If the “Tube 1 - Large Focus Standby (#)” value is correct **and the error appears when pressing “Prep”,** proceed with **step 3.** If the value is correct **and the error appears during stand-by,** proceed with **step 4.**
 - If the “Tube 1 - Large Focus Standby (#)” value is not correct, press reset to restore the error code and perform the automatic calibration of the Large Focal Spot. If the error appears during the autocalibration procedure, press reset to restore and continue with the calibration.
 - Once the autocalibration is completed, go back to the Parameters Calibration screen to check the “Tube 1 - Large Focus Standby (#)” value again.
 - If the error continues to appear, proceed with step 4.
3. Go to the Manual Calibration screen and check the Filament Current data of the mA stations that cause the error.
 - If the Filament Current data are correct, proceed with step 4.
 - If any of the Filament Current data is lower than “1000”, calibrate it.
 - If the error continues to appear, proceed with step 4.

4. Perform the X-ray Tube Filaments resistance test:

With the Generator turned OFF, measure the Filaments of the Tube by disconnecting the Cathode High Voltage Cable from the HV Transformer (Generator side)

There are three pins located at the male end of the Plug: "C" (Common), "L" (Large) and "S" (Small). With an Ohm meter, measure between "C" and "S". If the filaments are OK (not opened), the reading should be close to zero Ohms. Also measure between "C" and "L" and between "L" and "S".

If there is an open circuit in any of the Tube filaments, measure the resistance on the Tube side. Remove the Cable from the Tube and test the ohms in the female plug (Tube side) with an Ohm meter that has sufficiently long probes.



5. Then, measure the Secondary of the Filament Transformer:

Measure with an Ohm Meter the pins inside the HV Transformer receptacle. For this, use long probes to be able to access to the pins of the "Female" High Voltage Connector of the HV Transformer. Measure between Common (this is the pin in line with the "Nipple") and Small (it is the pin to the left). Measure also between Common and Large (it is the pin to the right). The resistance should be around 0.5 Ohms for each Filament.

6. Once the test is finished, reconnect the Cathode HV cable in its position of the HV Transformer (it is marked in the Cable and in the HV Transformer). Clean the cable with a piece of clean dry paper before placing it inside the HV Transformer. Make sure you tighten the big washer of the HV Cable into the HV Transformer.
7. Turn ON the Generator and check if the error message still appears.
8. If the error is still present, check the voltage supply in the A3640-XX Control board. To do so, check that connector J1 is correctly plugged and measure with a voltmeter between J1.1 and J1.4. The measurement value should be $324\text{ V} = \pm 10\%$.
 - If the measured voltage is correct, proceed with step 9.
 - If the measured voltage is not correct, check that connector J11 of the A3646-XX Supply board is correctly plugged and measure with a voltmeter between J11.1 and J11.4. The measurement value should be $324\text{ V} = \pm 10\%$.
 - If the measured voltage is correct, check and repair the following connections:

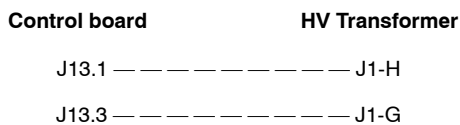
Supply board	Control board	
J11.1	J1.1	(+SUPPLY)
J11.4	J1.4	(-SUPPLY)

- If the measured voltage is not correct, replace the A3646-XX Supply board.

9. Measure the Primary of the Filament Transformer:

Turn the Generator OFF, disconnect J13 of the A3640-XX Control board and measure with an Ohm Meter in the cable connector between J13.1 and J13.3. The resistance should be around 3.8 Ohms for Transformers up to Rev. D and around 1.4 Ohms for Transformers from Rev. E.

- If the measurement is correct, replace the A3640-XX Control board.
- If the measurement is not correct, repeat it keeping the Generator turned off, this time by removing connector J1 on the HV Transformer and measuring on the Connector of the HV Transformer between the pin marked G (FIL_CURR_RTN) and H (FIL_SUPP_FG).
 - If the measurement is not correct, replace the HV Transformer.
 - If the measurement is correct, reconnect J1 to the HV Transformer and ensure that is securely connected and “locked” into position by twisting the outside cover until a “click” is heard. Then, check and repair the following connections:



ERROR CODE : 100016 SMALL FIL CURRENT RANGE ERROR

DESCRIPTION :	Small filament current out of range.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	In stand-by or when pressing “Prep”.

POSSIBLE CAUSES

- Fault in the tube filament current control hardware (A3640-XX Control board).
- The tube small filament has blown up.
- The tube filament is not connected or there is a poor connection at the Cathode.
- Defective Filament Transformer inside the HV Transformer.
- Fault in the A3646-XX Supply board.
- Lack of voltage +SUPPLY/-SUPPLY in the A3640-XX Control board.

ACTIONS

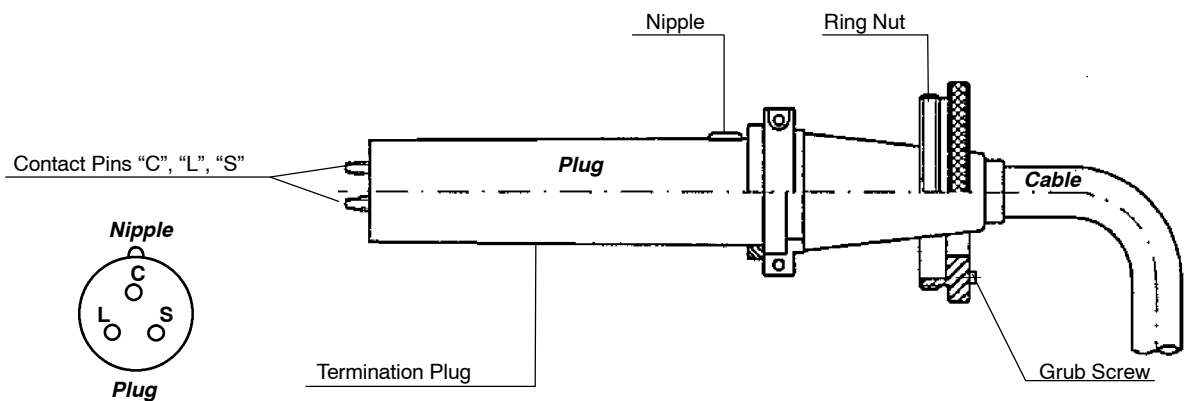
1. First of all, check the filament pre-heating value, as abnormally low values may cause this error. If the error appears **during stand-by, perform only step 2**. If error appears **when pressing “Prep”, perform steps 2. and 3.**
2. Open the Service Console and go to the Parameters Calibration screen to check the “Tube 1 - Small Focus Standby (#)” value. It should be within “718” and “1436”.
 - If the “Tube 1 - Small Focus Standby (#)” value is correct **and the error appears when pressing “Prep”, proceed with step 3**. If the value is correct **and the error appears during stand-by, proceed with step 4.**
 - If the “Tube 1 - Small Focus Standby (#)” value is not correct, press reset to restore the error code and perform the automatic calibration of the Small Focal Spot. If the error appears during the autocalibration procedure, press reset to restore and continue with the calibration.
 - Once the autocalibration is completed, go back to the Parameters Calibration screen to check the “Tube 1 - Small Focus Standby (#)” value again.
 - If the error continues to appear, proceed with step 4.
3. Go to the Manual Calibration screen and check the Filament Current data of the mA stations that cause the error.
 - If the Filament Current data are correct, proceed with step 4.
 - If any of the Filament Current data is lower than “1000”, calibrate it.
 - If the error continues to appear, proceed with step 4.

4. Perform the X-ray Tube Filaments resistance test:

With the Generator turned OFF, measure the Filaments of the Tube by disconnecting the Cathode High Voltage Cable from the HV Transformer (Generator side)

There are three pins located at the male end of the Plug: "C" (Common), "L" (Large) and "S" (Small). With an Ohm meter, measure between "C" and "S". If the filaments are OK (not opened), the reading should be close to zero Ohms. Also measure between "C" and "L" and between "L" and "S".

If there is an open circuit in any of the Tube filaments, measure the resistance on the Tube side. Remove the Cable from the Tube and test the ohms in the female plug (Tube side) with an Ohm meter that has sufficiently long probes.



5. Then, measure the Secondary of the Filament Transformer:

Measure with an Ohm Meter the pins inside the HV Transformer receptacle. For this, use long probes to be able to access to the pins of the "Female" High Voltage Connector of the HV Transformer. Measure between Common (this is the pin in line with the "Nipple") and Small (it is the pin to the left). Measure also between Common and Large (it is the pin to the right). The resistance should be around 0.5 Ohms for each Filament.

6. Once the test is finished, reconnect the Cathode HV cable in its position of the HV Transformer (it is marked in the Cable and in the HV Transformer). Clean the cable with a piece of clean dry paper before placing it inside the HV Transformer. Make sure you tighten the big washer of the HV Cable into the HV Transformer.
7. Turn ON the Generator and check if the error message still appears.
8. If the error is still present, check the voltage supply in the A3640-XX Control board. To do so, check that connector J1 is correctly plugged and measure with a voltmeter between J1.1 and J1.4. The measurement value should be $324\text{ V} \pm 10\%$.

- If the measured voltage is correct, proceed with step 9.
- If the measured voltage is not correct, check that connector J11 of the A3646-XX Supply board is correctly plugged and measure with a voltmeter between J11.1 and J11.4. The measurement value should be $324\text{ V} \pm 10\%$.

- If the measured voltage is correct, check and repair the following connections:

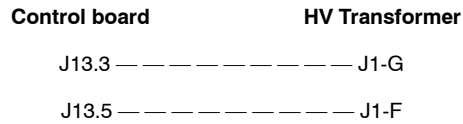
Supply board	Control board	
J11.1	J1.1	(+SUPPLY)
J11.4	J1.4	(-SUPPLY)

- If the measured voltage is not correct, replace the A3646-XX Supply board.

9. Measure the Primary of the Filament Transformer:

Turn the Generator OFF, disconnect J13 of the A3640-XX Control board and measure with an Ohm Meter in the cable connector between J13.3 and J13.5. The resistance should be around 3.8 Ohms for Transformers up to Rev. D and around 1.4 Ohms for Transformers from Rev. E onwards.

- If the measurement is correct, replace the A3640-XX Control board.
- If the measurement is not correct, repeat the test keeping the Generator turned off, this time by removing connector J1 on the HV Transformer and measuring on the Connector of the HV Transformer between the pin marked G (FIL_CURR_RTN) and F (FIL_SUPP_FF).
 - If the measurement is not correct, replace the HV Transformer.
 - If the measurement is correct, reconnect J1 to the HV Transformer and ensure that is securely connected and "locked" into position by twisting the outside cover until a "click" is heard. Then, check and repair the following connections:



ERROR CODE : 100018 ROTOR ERROR

DESCRIPTION : The Anode Rotor Controller (starter) is not sending back the Ready condition within the designated time.

ERROR TYPE : “Recoverable” with the Reset command.

APPLICABLE TO : All Generators.

APPEARS WHEN : When pressing “Prep”/Fluoro pedal.

INFORMATION / SYMPTOM : Exposure is not allowed.

POSSIBLE CAUSES

Defective Dual Speed Starter.

Previous detection of an Anode Rotor Controller related error that inhibits its further operation.

Lack of +5V in the S0008009 Dual Speed Starter.

Defective connection between the A3640-XX Control board and the S0008009 Dual Speed Starter.

Defective A3646-XX Supply board.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, reboot the Generator and check if there is any other error present during the startup sequence.
 - If there is another error during the startup sequence, follow the corresponding procedure described in this section.
 - If no other error is detected, proceed with step 3.
3. Check the voltage on TP42 (+5.15V ± 100mV) of the S0008009 Dual Speed Starter.
 - If the voltage is correct, check that the ribbon cable between J19 of the S0008009 Dual Speed Starter and J7 of the A3640-XX Control board is in proper conditions and correctly connected at both ends.
 - Replace the cable, if necessary.
 - If the cable is not defective and properly connected, replace the S0008009 Dual Speed Starter.
 - If the voltage is out of boundaries, adjust the Power Supply potentiometer (*refer to Section 2.1.3*).
 - If there is no voltage present in TP42, check for +5.15V ± 100mV on J16.5 and J16.2 of the A3646-XX Supply board.
 - If there is no voltage, replace the A3646-XX Supply board.
 - If the voltage is present, check/repair the following connections:

Control board	Dual Speed Starter
J16.5	J21.2
J16.2	J21.4

ERROR CODE : 100019 mA WITHOUT EXP ERROR

DESCRIPTION :	Tube current without exposure order from the microcontroller.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	In stand-by with the Filaments enabled.

POSSIBLE CAUSES

- Defective A3640-XX Control board.
- Defective wiring.

ACTIONS

Note 

Before servicing the equipment, make sure that the Filaments are enabled. In order to do so, check that the switch 3640SW6-4 of the Control board is set to OFF and that Filaments are not disabled by software in the Service Console.

1. Turn OFF the equipment and disconnect the J5 and J18 connectors from the A3640-XX Control board.
2. Turn ON the Generator.
 - If Error 19 persists, replace the A3640-XX Control board.
 - If Error 19 disappears, proceed with step 3.
3. Turn OFF the Generator and reconnect only J18.
4. Turn ON the Generator.
 - If Error 19 disappears, replace the A3640-XX Control board.
 - If Error 19 persists, check for possible short-circuits in the wiring that might be generating voltage in J18.3 or in J18.6 of the A3640-XX Control board. In stand-by mode, the voltage in those connectors must be 0 V= in respect to J18.7.

ERROR CODE : 100020 kVp WITHOUT EXP ERROR

DESCRIPTION :	Anode-Cathode voltage without exposure order from the microcontroller.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	In stand-by.

POSSIBLE CAUSES

- Defective A3640-XX Control board.
- Defective wiring.

ACTIONS

1. Turn OFF the equipment and disconnect the J5 and J18 connectors from the A3640-XX Control board.
2. Turn ON the Generator.
 - If Error 20 persists, replace the A3640-XX Control board.
 - If Error 20 disappears, proceed with step 3.
3. Turn OFF the Generator and reconnect only J18.
4. Turn ON the Generator.
 - If Error 20 disappears, replace the A3640-XX Control board.
 - If Error 20 persists, check for possible short-circuits in the wiring that might be generating voltage in J18.1 or in J18.2 of the A3640-XX Control board. In stand-by mode, the voltage in those connectors must be 0 V[±] in respect to J18.7.

ERROR CODE : 100023 EEPROM ERROR

DESCRIPTION :	Error while writing in the EEPROM.
ERROR TYPE :	"Unrecoverable", the system remains lock.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	After making an X-ray exposure or after saving calibration or configuration data.

POSSIBLE CAUSES

- The EEPROM is defective.
- Defective Control board.

ACTIONS

1. Check that the U66 EEPROM is correctly installed in the socket:
 - If the EEPROM is plugged upside down, place it correctly.
 - If the EEPROM is correctly installed, make a backup copy (*refer to the General backup section of the Configuration document*) and initialize it.

Note

If the EEPROM is initialized, the calibration data will be lost and the system configuration will be overwritten with the default values.

2. If the error persists, follow the procedure described for 100001 (Backup timer — I2C error), steps 2. and 3.
3. If the error persists and there is an available EEPROM to be used as a test tool, turn OFF the generator and replace the EEPROM with the second one.



Make sure to make a backup copy of the information contained in the EEPROM to be used.

4. Turn ON the Generator and modify the configuration values to check if it is possible to write the EEPROM (*refer to the Configuration document*):
 - If it is possible to write the EEPROM, keep it installed in the board and discard the old one.
 - If it is not possible to write the EEPROM, replace the A3640-XX Control board.

ERROR CODE : 100024 BUCKY/DIGITAL PANEL ERROR

DESCRIPTION : The designated time has elapsed since the exposure signal was activated while the equipment was “Ready” without any acknowledge from the WorkStation configured as Bucky or Digital Panel.

ERROR TYPE : “Recoverable” with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Defective interconnection cable or hardware related to the signals RX_RQ (Request) or RX_ORDER (Acknowledge).

Bucky/Digital Panel is not sending the RX_ORDER signal.

ACTIONS

1. Check the wiring.
2. If the error persists, replace the defective hardware.

ERROR CODE : 100025 LARGE FIL DEMAND ERROR

DESCRIPTION :	Large filament current demand above the limit.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep” or during exposure.

POSSIBLE CAUSES

- The filament current demand is not calibrated properly.
- X-ray Tube is defective.
- Defective Control board.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check the mA calibration data (*refer to the Calibration document*).
 - If the Filament Data shows an unreliable calibration, calibrate the mA station again or perform the whole calibration procedure, if needed (*refer to the Calibration document*).
 - If the Filament Data is correct, proceed with step 3.
3. Check the connection of the Anode and Cathode cables from the HV Transformer to the X-ray Tube, making sure they are connected to the corresponding receptacles.
 - If the HV cables are not properly connected, connect the cables correctly, maintaining correct Anode and Cathode orientation.
 - If the HV cables are correctly connected and the error persists, proceed with step 4.
4. Remove the collimator and check the Tube Large filament. To do so, select Large filament in the Service Console, press “Prep” and look through the Tube’s window to check if the whole filament gets heated.
 - If the filament is damaged, replace the X-ray tube.
 - If the filament is in proper condition, proceed with step 5.
5. Check the Large filament current in TP25 of the A3640-XX Control board.
 - If the measured current does not match the selected one in the Service Console, replace the A3640-XX Control board.
 - If the measured current is correct, replace the HV Transformer.

ERROR CODE : 100026 SMALL FIL DEMAND ERROR

DESCRIPTION :	Small filament current demand above the limit.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep” or during exposure.

POSSIBLE CAUSES

The filament current demand is not calibrated properly.
X-ray Tube is defective.
Defective Control board.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check the mA calibration data (*refer to the Calibration document*).
 - If the Filament Data shows an unreliable calibration, calibrate the mA station again or perform the whole calibration procedure, if needed (*refer to the Calibration document*).
 - If the Filament Data is correct, proceed with step 3.
3. Check the connection of the Anode and Cathode cables from the HV Transformer to the X-ray Tube, making sure they are connected to the corresponding receptacles.
 - If the HV cables are not properly connected, connect the cables correctly, maintaining correct Anode and Cathode orientation.
 - If the HV cables are correctly connected and the error persists, proceed with step 4.
4. Remove the collimator and check the Tube Small filament. To do so, select Small filament in the Service Console, press “Prep” and look through the Tube’s window to check if the whole filament gets heated.
 - If the filament is damaged, replace the X-ray tube.
 - If the filament is in proper condition, proceed with step 5.
5. Check the Small filament current in TP26 of the A3640-XX Control board.
 - If the measured current does not match the selected one in the Service Console, replace the A3640-XX Control board.
 - If the measured current is correct, replace the HV Transformer.

ERROR CODE : 100027 kVp POTENTIOMETER — I2C ERROR

DESCRIPTION :	I2C Bus error while trying to access the digital potentiometer that adjusts the kV oscillator.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

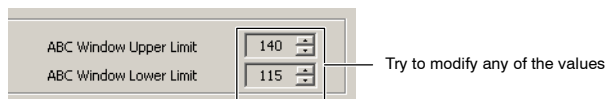
POSSIBLE CAUSES

It is not possible to communicate with the digital potentiometer.

ACTIONS

1. Press reset to restore the error code and check again.
2. Follow the procedure described for 100001 (Backup timer — I2C error).
3. If no problem is found, try to modify the value of the ABC potentiometer in the Parameters Calibration screen of the Service Console (refer to the Calibration document).

Illustration 4-10
ABC calibration menu



4. If the value of the potentiometer cannot be modified, replace the A3640-XX Control board.

ERROR CODE : 100028 ABC POTENTIOMETER — I2C ERROR

DESCRIPTION :	I2C Bus error while trying to access the digital potentiometers that adjust the ABC window.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

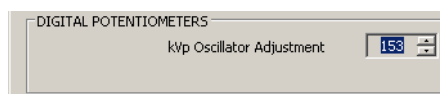
POSSIBLE CAUSES

It is not possible to communicate with the digital potentiometers.

ACTIONS

1. Press reset to restore the error code and check again.
2. Follow the procedure described for 100001 (Backup timer — I2C error).
3. If no problem is found, try to modify the value of the the kVp potentiometer in the Parameters Calibration screen of the Service Console (refer to the kVp oscillator adjustment in the Calibration document).

**Illustration 4-11
kVp Oscillator Adjustment**



4. If the value of the potentiometer cannot be modified, replace the A3640-XX Control board.

ERROR CODE : 100029 GENERATOR OVERHEAT ERROR

DESCRIPTION :	Generator heat capacity exceeded. “Warning”.
ERROR TYPE :	Informative. Recovers when the condition no longer exists.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	After an X-ray exposure.

POSSIBLE CAUSES

The generator temperature is too high so the selected exposure is inhibited.

ACTIONS

1. Wait until the generator gets cooler or decrease the exposure parameters selection.

ERROR CODE : 100030 CORRUPT RTC ERROR

DESCRIPTION :	Wrong date stored in the Real Time Clock (RTC) and/or in the time stamp.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.

POSSIBLE CAUSES

- The RTC has not been initialized.
 - The RTC battery is flat or missed.
 - The RTC is failing.
-

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check the RTC configuration.
 - Modify the time and date of the generator if any of them or both are not correct (*refer to the Configuration document*).
 - If the RTC configuration is ok, Initialize the RTC.
3. If the error persists, open the Service Console and check if the Licence info is readable to ensure that the I2C Bus is working (*refer to the Configuration document*).
 - If the Licence is not readable, follow the procedure described for 100001 (Backup timer — I2C error).
 - If the Licence is readable, proceed with step 4.



WAIT UNTIL THE LIGHT EMITTING DIODES ON THE CHARGE/DISCHARGE BOARD AND ON THE ROTOR CONTROLLER ARE OFF BEFORE REMOVING THE BATTERY. OTHERWISE, DAMAGE CAN BE CAUSED TO THE A3640-XX CONTROL BOARD.

4. Check the voltage in BAT1.
 - If the measured voltage is below 2.8V, replace the battery.
 - If the measured voltage is correct, replace the A3640-XX Control board.

ERROR CODE : 100031 TIME STAMP CHECK ERROR

DESCRIPTION : The time stamp checksum is wrong.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence.

POSSIBLE CAUSES

The RTC has not been initialized.
The RTC battery is flat or missed.
The RTC is failing.

ACTIONS

1. Follow the procedure described for 100030 (Corrupt RTC error).

ERROR CODE : 100032 RTC — I2C ERROR

DESCRIPTION : I2C Bus error while trying to access the Real Time Clock (RTC).
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : Anytime.

POSSIBLE CAUSES

It is not possible to communicate with the RTC.

ACTIONS

1. Follow the procedure described for 100001 (Backup timer — I2C error).

ERROR CODE : 100033 COMMUNICATIONS ERROR (Comms lost at the Console)

DESCRIPTION :	The remote console has lost communication with the generator.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

The status is not being received at the required rate.

ACTIONS

1. Check the wiring between the Generator and the remote console.

ERROR CODE : 100034 TANK PRESOSTAT ERROR

DESCRIPTION :	Tank presostat opened.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep”.

POSSIBLE CAUSES

The tank presostat has been opened due to overheat or hardware fault.
Presostat is not connected but it is selected in the Configuration screen.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists and the equipment is not equipped with presostat, proceed with step 3. If the equipment is equipped with presostat, proceed with step 4.
3. Check that presostat is not selected in the Configuration screen (*refer to the Configuration document*).
 - a. In case it is selected, set this option to “No”.
 - b. If presostat is not selected and the error persists, proceed with step 5.
4. Wait until the tank gets cooler.
 - a. If the error persists, take into account that this error may appear when the HV Transformer surpasses its maximum internal pressure capacity and is close to deforming. In this case, the HV Transformer must be replaced.
 - b. If the HV Transformer has been replaced and the error persists, proceed with step 5.
5. Check the A3640-XX Control board.

ERROR CODE : 100035 BUCKY MOTION (X-RAY ACK) ERROR

DESCRIPTION :	The acknowledge for X-rays from the Bucky or FPD has been lost before the end of the exposure.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

The Bucky or FPD has removed the acknowledge for X-rays during the exposure.
The Bucky or FPD (or its related circuitry) is failing.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, try to disable it by configuration. To do so, modify the “Bucky/FPD can abort EXP” configuration in the Service Console (*refer to the Configuration document for the available options*).
3. If the error persists, replace the defective hardware.

ERROR CODE : 100036 TUBE THERMOSTAT ERROR

DESCRIPTION :	Tube thermostat opened. “Warning”.
ERROR TYPE :	Informative. Recovers when the condition no longer exists.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

The housing thermostat has been opened due to overheat or hardware fault.

ACTIONS

1. Wait until the housing gets cooler
2. If the warning doesn't disappear itself check the hardware.

ERROR CODE : 100037 TUBE OVERLOAD ERROR

DESCRIPTION : Tube ratings exceeded or not enough Heat Units to perform the selected exposure. "Warning".
ERROR TYPE : Informative. Recovers when the condition no longer exists.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The selected exposure is not possible due to the tube thermal status.

ACTIONS

1. Wait until the tube cools down or decrease the exposure parameters.
-

ERROR CODE : 100038 +5V POWER SUPPLY FAILURE

DESCRIPTION : +5V power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Power source is not well adjusted.

ACTIONS

1. Adjust power source value (*refer to Section 2.1.3*).
-

ERROR CODE : 100039 +15V POWER SUPPLY FAILURE

DESCRIPTION : +15V power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Power source is not well adjusted.

ACTIONS

1. Adjust power source value (*refer to Section 2.1.3*).
-

ERROR CODE : 100040 IMBALANCED kVp ERROR

DESCRIPTION : Imbalanced kVp, there is not the same voltage in Anode and Cathode branches.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

- Defective A3640-XX Control board.
- Defective high voltage tank.
- Fault/noise in the measuring hardware.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, go to the Manual Calibration screen in the Service Console and increase the Filament Data value to start getting some current (*refer to the Calibration document*).
3. Check kVp imbalance in TP42 (kV+) and TP51 (kV-) by making exposures from 50 kVp to 140 kVp with the same Exposure Time and check that all kVp waveforms are symmetric and the values are similar according the table below.

Select	TP42 & TP51 on the Control board
50 kVp	2.2 V
70 kVp	3.0 V
90 kVp	3.9 V
110 kVp	4.7 V
125 kVp	5.3 V
130 kVp	5.6 V
140 kVp	6.0 V

Note 

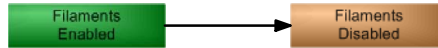
kV drop is slow due to the lack of charge.

- If the waveforms are symmetric (within 12% at any point), replace the A3640-XX Control board.
- If the waveforms are not symmetric (within 12% at any point), proceed with step 4. to perform the "Asymmetry on the kVp Loop" procedure.

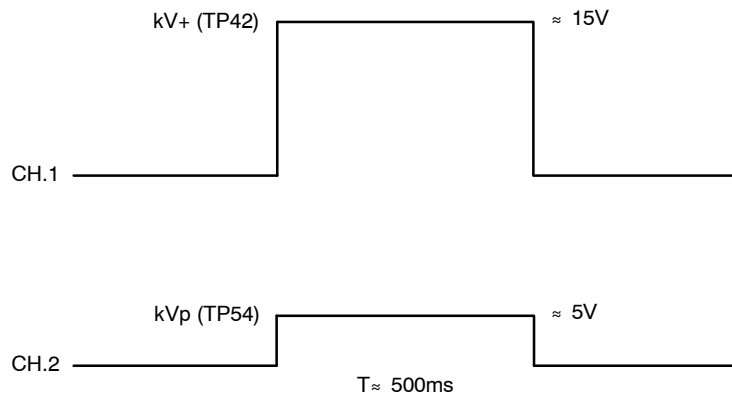
Note 

This procedure determines what part should be replaced due to asymmetry on the kVp Loop: the High Voltage Transformer or the A3640-XX Control board.

- Set dip switch 3640SW6-4 on the A3640-XX Control board to **On** (disables Filaments) or press the Filaments button on the Service Console menu to disable the Filaments by software.

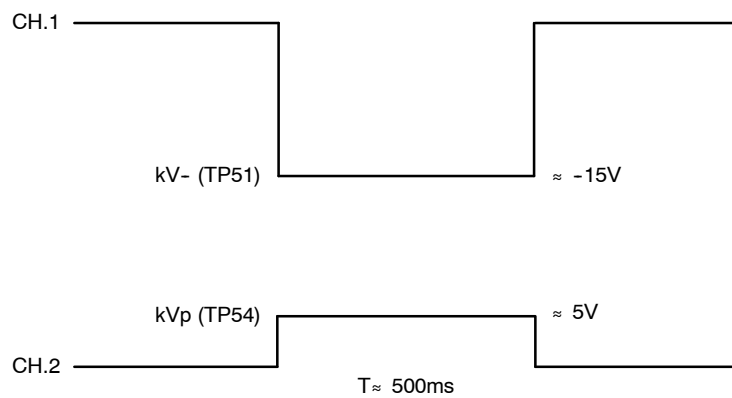


- Make these connections with the Oscilloscope:
 - CH.1 on kV+ (TP42) on the Control board.
 - CH.2 on kVp (TP54) on the Control board.
- Apply +15V (TP2 on the Control board) to kV+ (J18.2 on the Control board) for 500 ms. This operation may cause Error "020" if the voltage is applied for more than 500 ms. In this case, press reset to restore the error code.
- Check the waveform's result:



- If it is OK, follow the procedure in step 8.
 - If it is not OK, replace the A3640-XX Control board.
- Make these connections with the Oscilloscope:
 - CH.1 on kV- (TP51) on the Control board.
 - CH.2 on kVp (TP54) on the Control board.
 - Apply -15V (TP1 on the Control board) to kV- (J18.1 on the Control board) for 500 ms. This operation may cause Error "020" if the voltage is applied for more than 500 ms. In this case, press reset to restore the error code.

10. Check the waveform's result:



- If it is OK, replace the HV Transformer.
 - If it is not OK, replace the A3640-XX Control board.
11. Set DIP switch 3640SW6-4 on the A3640-XX Control board to **Off** or press the Filaments button on the Service Console menu to enable the Filaments by software, depending on the action performed before on step 4.
12. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF and wait three (3) minutes for the Main Storage Capacitors to discharge.

ERROR CODE : 100041 IMBALANCED mA ERROR

DESCRIPTION : Imbalanced mA, there is not the same current in Anode and Cathode branches.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Defective A3640-XX Control board.

Defective high voltage tank.

Fault/noise in the measuring hardware.

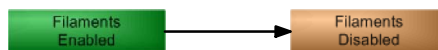
ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, go to the Manual Calibration screen in the Service Console and increase the Filament Data value to start getting some current (*refer to the Calibration document*).
3. Check mA imbalance in TP56 (mA+) and TP59 (mA-).
 - If the waveforms are symmetric (within 12% at any point), replace the A3640-XX Control board.
 - If the waveforms are not symmetric (within 12% at any point), proceed with step 4. to perform the "Asymmetry on the mA Loop" procedure.

Note

This procedure determines what part should be replaced due to asymmetry on the kVp Loop: the High Voltage Transformer or the A3640-XX Control board.

4. Set dip switch 3640SW6-4 on the A3640-XX Control board to **On** (disables Filaments) or press the Filaments button on the Service Console menu to disable the Filaments by software.

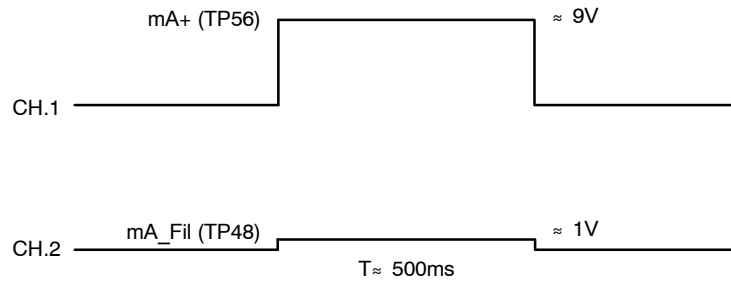


5. Make these connections with the Oscilloscope:
 - CH.1 on mA+ (TP56) on the Control board.
 - CH.2 on mA_Fil (TP48) on the Control board.
6. Apply +15V (TP2 on the Control board) to J18.3 on the Control board for 500 ms.
7. Check the waveform's result:

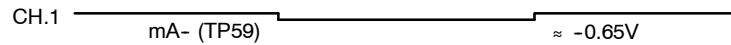
CH.1 ——— mA+ (TP56) ——— $\approx 0.65V$

- If it is OK, follow the procedure in step 8.
- If it is not OK, replace the A3640-XX Control board.

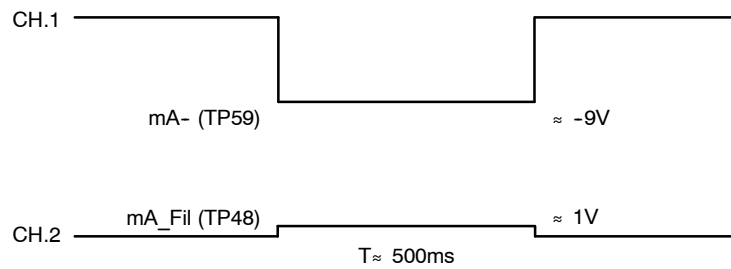
8. Apply +15V (TP2 on the Control board) to TP56 on the Control board for 500 ms.
9. Check the waveform's result:



- If it is OK, follow the procedure in step 10.
 - If it is not OK, replace the A3640-XX Control board.
10. Make these connections with the Oscilloscope:
 - CH.1 on mA- (TP59) on the Control board.
 - CH.2 on mA_Fil (TP48) on the Control board.
 11. Apply -15V (TP1 on the Control board) to J18.6 on the Control board for 500 ms.
 12. Check the waveform's result:



- If it is OK, follow the procedure in step 13.
 - If it is not OK, replace the A3640-XX Control board.
13. Apply -15V (TP1 on the Control board) to TP59 on the Control board for 500 ms.
 14. Check the waveform's result:



- If it is OK, replace the HV Transformer.
- If it is not OK, replace the A3640-XX Control board.

15. Set DIP switch 3640SW6-4 on the A3640-XX Control board to **Off** or press the Filaments button on the Service Console menu to enable the Filaments by software, depending on the action performed before on step 4.
16. Turn the Generator and Electrical Room Cabinet (Main Disconnect) OFF and wait three (3) minutes for the Main Storage Capacitors to discharge.

ERROR CODE : 100042 CORRUPT COUNTERS ERROR

DESCRIPTION : The counters checksum is wrong.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The NVRAM has not been initialized.
The NVRAM is failing.
The power down capacitor is missed.
The power down capacitor is wrong.

ACTIONS

1. If the error persists, replace the defective hardware.

ERROR CODE : 100043 CORRUPT ERROR LOG ERROR

DESCRIPTION : The error log checksum is wrong.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The NVRAM has not been initialized.
The NVRAM is failing.
The power down capacitor is missed.
The power down capacitor is wrong.

ACTIONS

1. If the error persists, replace the defective hardware.

ERROR CODE : 100044 EEPROM — I2C ERROR

DESCRIPTION :	I2C Bus error while trying to access the EEPROM.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

It is not possible to communicate with the EEPROM.

ACTIONS

1. Check the I2C Bus pull-up resistors (R225 and R226) and review all the elements connected to the I2C Bus: P89LPC925 (U60), M41T56 (U65), M24C16 (U66), AD5280 (U111), AD5282 (U112), licence and the related components to all of them.
 2. Replace the defective element/s.
-

ERROR CODE : 100045 CORRUPT TUBE DATA ERROR

DESCRIPTION :	The tube data checksum is wrong.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

The NVRAM has not been initialized.
No tube has been downloaded.
The power down capacitor is missed or wrong.
The NVRAM is failing.

ACTIONS

1. If the error persists, replace the defective hardware.
-

ERROR CODE : 100046 BUSY BUS — I2C ERROR

DESCRIPTION : I2C bus error, the bus remains always busy.
ERROR TYPE : “Recoverable” with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

It is not possible to communicate as the bus is always busy.

ACTIONS

1. Review all the elements connected to the I2C Bus: P89LPC925 (U60), M41T56 (U65), M24C16 (U66), AD5280 (U111), AD5282 (U112), licence and the related components to all of them.
2. If the error persists, replace the defective element/s.

ERROR CODE : 100047 LICENCE — I2C ERROR

DESCRIPTION : I2C bus error while trying to access the Licence.
ERROR TYPE : “Recoverable” with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

It is not possible to communicate with the Licence.

ACTIONS

1. Make sure the licence is installed and properly plugged in.
2. Check the I2C bus pull-up resistors (R225 and R226) and review all the elements connected to the I2C bus: P89LPC925 (U60), M41T56 (U65), M24C16 (U66), AD5280 (U111), AD5282 (U112), licence and the related components to all of them.
3. If the error persists, replace the defective element/s.

ERROR CODE : 100048 DOOR ABORTED EXPOSURE

DESCRIPTION : The door switch has been opened before the end of the exposure.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The door has been opened during the exposure.
The door switch (or related circuitry) is failing.

ACTIONS

1. This error can be disabled by configuration (*refer to the Configuration document*).
 2. If the error persists, replace the defective hardware.
-

ERROR CODE : 100049 COMMUNICATIONS ERROR (Comms lost at the Generator)

DESCRIPTION : The generator has lost the communications with the remote console. This check has to be enabled through the communications.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The status is not being received at the required rate.

ACTIONS

1. Check the wiring between the Generator and the remote console.
-

ERROR CODE : 100050 ABORTED EXPOSURE ERROR

DESCRIPTION : The user has released the exposure device/s before the end of the exposure (Prep and/or Exp).

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The user has prematurely released the exposure device.
The exposure device (handswitch...) is failing.

ACTIONS

1. If the error persists, replace the defective hardware.

ERROR CODE : 100051 WRONG EXPOSURE TIME ERROR

DESCRIPTION : The exposure time is above the maximum (very unlikely) or it is so short that it is not reachable according to the present configuration (rise time and kVp decay/high voltage capacity).

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The exposure time is shorter than the addition of 25% of the rise time plus the kVp tail from the selected kVp to 75% of that value.

ACTIONS

1. Increase the exposure time.

ERROR CODE : 100053 FLUORO SYNC ERROR

DESCRIPTION : The timeout for receiving the fluoro synchronism pulse has elapsed.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The synchronism pulse is not being received.

ACTIONS

1. This timeout can be disabled by configuration (*refer to the Configuration document*).
 2. Check the wiring between the generator and the system.
-

ERROR CODE : 100054 DIGITAL SYNC ERROR

DESCRIPTION : The timeout for receiving the Digital/DSI synchronism pulse has elapsed.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The synchronism pulse is not being received.

ACTIONS

1. This timeout can be disabled by configuration (*refer to the Configuration document*).
 2. Check the wiring between the generator and the system.
-

ERROR CODE : 100055 NOT ENOUGH DOSE ERROR

DESCRIPTION : The backup timer has elapsed before the AEC or the System has ended the exposure.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Backup time is too short.
Defective AEC or System connection.

ACTIONS

1. Increase the backup time.
 2. If the problem persists check the wiring between the generator and the AEC/System.
-

ERROR CODE : 100056 NOT ENOUGH BACKUP TIME ERROR

DESCRIPTION : The backup timer has elapsed before the Tomograph ends the exposure.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Backup time is too short.
Defective tomography signals connection.

ACTIONS

1. Increase the backup time.
 2. If the problem persists check the wiring between the generator and the Tomograph.
-

ERROR CODE : 100057 DUAL ENERGY ERROR

DESCRIPTION : It is not possible to load the Dual Energy parameters for the next exposure.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Tube and/or Generator too hot for the selected Dual Energy set of parameters.

ACTIONS

1. Wait until the tube and/or the unit gets cooler or select a more suitable technique for the current thermal status.

ERROR CODE : 100058 TUBE1 DATA ERROR

DESCRIPTION : The tube data pointed by the tube 1 index are not defined, a default tube has been selected.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

No tube data have been downloaded into the location pointed by the tube 1 index.

ACTIONS

1. Download the tube data or select the proper location using the tube 1 index.

ERROR CODE : 100059 TUBE2 DATA ERROR

DESCRIPTION : The tube data pointed by the tube 2 index are not defined, a default tube has been selected.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

No tube data have been downloaded into the location pointed by the tube 2 index.

ACTIONS

1. Download the tube data or select the proper location using the tube 2 index.

ERROR CODE : 100060 AUTOCAL ERROR

DESCRIPTION : The number of exposures to autocalibrate a mA station has run out.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Tube instability.

Defective filament control hardware.

Fault/noise in the mA measurement.

ACTIONS

1. Reset the error and continue with the Autocalibration process.
2. If the error persists, replace the defective hardware.

ERROR CODE : 100061 LICENCE ERROR

DESCRIPTION : There has been an error while trying to access the Licence data. Default options have been selected.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The Licence has not been burned.
The Licence is defective.

ACTIONS

1. Check the Licence info (*refer to the Configuration document*).
 2. If the error persists, replace the Licence.
-

ERROR CODE : 100062 AEC ERROR

DESCRIPTION : AEC selection error.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The AEC level for the current selection exceeds the boundaries.

ACTIONS

1. Try selecting different parameters and/or recalibrating the AEC (*refer to the Calibration document*).

ERROR CODE : 100063 ROTOR READY ERROR

DESCRIPTION : The Ready from the starter has been lost before the end of the exposure.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During exposure.

POSSIBLE CAUSES

The starter has deactivated the Ready condition during the exposure.

ACTIONS

1. If the error persists, replace the defective hardware.

ERROR CODE : 100064 TANK FEEDBACK ERROR

DESCRIPTION : The Feedback connector from the tank is not plugged in.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : When pressing "Prep".

POSSIBLE CAUSES

The A3640-XX Control board connector J18 is not properly plugged in.
The junction between pins 7 and 8 is missing.

ACTIONS

1. Make sure the connector J18 and its junction between pins 7 and 8 are in place.

ERROR CODE : 100065 +24V DELAYED POWER SUPPLY FAILURE

DESCRIPTION : +24V delayed power is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Power source is not well adjusted.

ACTIONS

1. Adjust power source value (*refer to Section 2.1.3*).

ERROR CODE : 100066 +24V (UNR) POWER SUPPLY FAILURE

DESCRIPTION : +24V (unregulated) power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Voltage value incorrect from the T2 transformer.
Voltage value incorrect from the Supply board.

ACTIONS

1. Check T2 transformer integrity and the A3646-XX Supply board.

ERROR CODE : 100067 -15V POWER SUPPLY FAILURE

DESCRIPTION : -15V power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Power source is not well adjusted.

ACTIONS

1. Adjust power source value (*refer to Section 2.1.3*).

ERROR CODE : 100068 +3.3V POWER SUPPLY FAILURE

DESCRIPTION : +3.3V power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Voltage from 3V3 regulator is not correct.

ACTIONS

1. Check the integrity of the U128 voltage regulator of the A3640-XX Control board.

ERROR CODE : 100069 +24 PERMANENT (UNR) POWER SUPPLY FAILURE

DESCRIPTION : +24 permanent (unregulated) power supply is out of range.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Voltage value incorrect from the T2 transformer.
Voltage value incorrect from the Supply board.

ACTIONS

1. Check T2 transformer integrity and the A3646-XX Supply board.

ERROR CODE : 100070 AEC RAPID TERMINATION

DESCRIPTION : Exposure was aborted because a lack of radiation received on the AEC.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During exposure.

POSSIBLE CAUSES

Voltage is less than expected at 30% of the backup time.

ACTIONS

1. Make sure the tube is pointing the selected device and the proper parameters have been selected.

ERROR CODE : 100071 INTERLOCK ERROR

DESCRIPTION : Exposure was aborted because an interlock configured to abort exposures has been deactivated during the exposure.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The interlock has been deactivated.
Hardware fault.

ACTIONS

1. Activate the interlock; if the warning doesn't disappear itself check the hardware.
2. If the interlock is not being used, configure it properly.

ERROR CODE : 100072 POSITIONER OK ERROR

DESCRIPTION : Exposure was aborted because the signal Positioner OK (configured to be used as an interlock) has been deactivated during the exposure.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The signal has been deactivated.
Hardware fault.

ACTIONS

1. Activate the signal Positioner OK.
2. If the warning doesn't disappear itself check the hardware.
3. If the signal is not being used, configure it properly by setting the Spare Input 1 functionality as "None" (*refer to the Configuration document*).

ERROR CODE : 100073 XON FEEDBACK ERROR

DESCRIPTION : Exposure was aborted because the signal XON Feedback has not been activated or has been deactivated during the exposure.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Hardware fault.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check the hardware (XON is the "logic and" of three signals: X-ray signal from the handswitch or fluoro pedal, Backup Timer TOUT signal and Main Controller X-ray signal).
3. Replace the A3640-XX Control board if required.

ERROR CODE : 100074 COP GENERATOR RESET ERROR

DESCRIPTION : The generator has been reset because of the COP module.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Software failure.

ACTIONS

1. Press reset to restore the error code and check again.

ERROR CODE : 100075 CLK GENERATOR RESET ERROR

DESCRIPTION : The generator has been reset because of the CLK module.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Software failure.

ACTIONS

1. Press reset to restore the error code and check again.

ERROR CODE : 100076 TRAP GENERATOR RESET ERROR

DESCRIPTION : The generator has been reset because of an illegal operation code.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Software failure.

ACTIONS

1. Press reset to restore the error code and check again.

**ERROR CODE : 100077 SOFTWARE INTERRUPT GENERATOR RESET
ERROR**

DESCRIPTION : The generator has been reset because of a software interrupt.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Software failure.

ACTIONS

1. Press reset to restore the error code and check again.

ERROR CODE : 100078 MEMORY OVERFLOW INTERRUPT GENERATOR

RESET ERROR

DESCRIPTION : The generator has been reset because of a memory overflow interrupt.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Software failure.

ACTIONS

1. Press reset to restore the error code and check again.

ERROR CODE : 100079 REQUIRED MA STATIONS CAL ERROR

DESCRIPTION : The required mA stations have not been calibrated.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

At least one required mA station has not been properly calibrated and it has the default value.

ACTIONS

1. Recalibrate the generator or the required mA stations.

ERROR CODE : 100091 HEARTBEAT ERROR (R2CP Protocol)

DESCRIPTION : The main controller is not receiving the Heartbeat messages within the configured timeout. R2CP (CAN) protocol functionality.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The host controller is not sending the Heartbeats with the proper pace
There could be a problem in the CAN cable.
There could be a problem in the CAN connections.

ACTIONS

1. Check the CAN cable.
2. Make sure the termination resistors are properly settled and the host controller is sending the messages properly.
3. If the problem persists, try increasing the configured Heartbeat pace.

ERROR CODE : 100099 INCORRECT MESSAGE

DESCRIPTION : Last message was not recognized as a SHFR protocol message.
ERROR TYPE : This error applies to communications layer only and it is not presented to the user.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Message is not as long as expected.
Message is not written correctly.
Communications are overloaded.
The command has been sent in the wrong mode or phase.

ACTIONS

1. Ensure messages are as long as expected, well written and messages are not overloading communications.

ERROR CODE : 100101 NO SPEED AVAILABLE

DESCRIPTION :	The starter does not allow starting the tube neither in high speed nor in low speed.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep”.

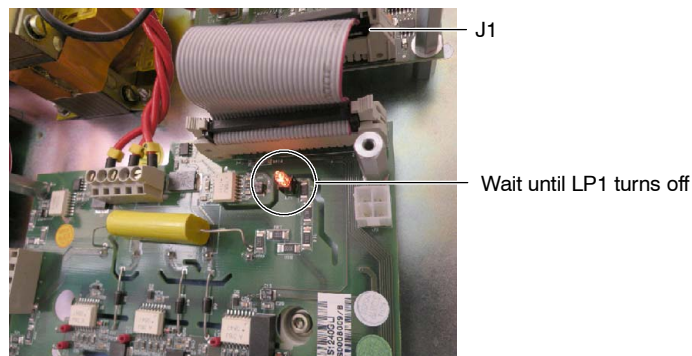
POSSIBLE CAUSES

The combination of tube selection, booster presence and generator configuration/licence does not allow starting the tube in high or low speed.

ACTIONS

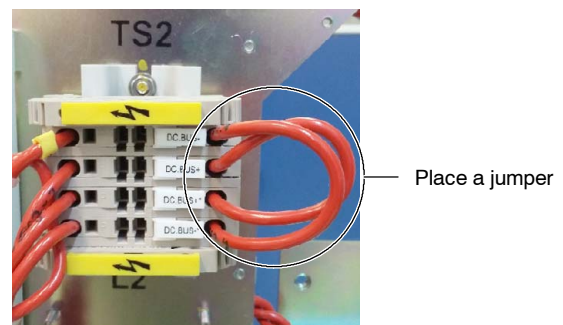
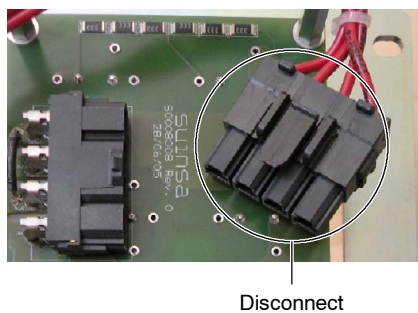
1. Press reset to restore the error code and check again.
2. If the error persists, disconnect the S0008007 Booster module (if equipped). In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.

Illustration 4-12
LP1 light



- c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).

Illustration 4-13
J7 connector of the S0008007 Booster module and jumper in TS2



3. Review the configured Tube:
 - a. Check that the installed tube allows the selected speed. Otherwise, modify the exposure parameters to match the Tube specifications.
 - b. Check in the Licence Info that the configured Tube matches the allowed parameters by licence (*refer to the Configuration document*). Otherwise, replace the installed Tube with a new one or order a new licence with the needed options.
4. If the Tube configuration is correct and the error persists, reconnect the S0008007 Booster module (if equipped) and make sure it is properly connected and working.
5. Check the S0008009 Dual Speed Starter LEDs for any possible errors indication.
 - If there is any error indicated in the S0008009 Dual Speed Starter LEDs, follow the corresponding procedure described in this section.
 - If there is no other error indication, replace the S0008007 Booster module.

ERROR CODE : 100102 LOW SPEED UNAVAILABLE

DESCRIPTION :	The starter does not allow starting the tube in low speed.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep”.

POSSIBLE CAUSES

The combination of tube selection, booster presence and generator configuration/licence does not allow starting the tube in low speed.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check that the installed tube allows the selected speed. If the tube only allows high speed operation, modify the exposure parameters to match the Tube specifications.
3. If the error persists and the tube only allows high speed operation, check in the Licence Info that high speed is allowed by licence (*refer to the Configuration document*). Otherwise, replace the installed Tube with a new one or order a new licence with the needed options.

ERROR CODE : 100103 HIGH SPEED UNAVAILABLE

DESCRIPTION :	The starter does not allow starting the tube in high speed.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing “Prep”.

POSSIBLE CAUSES

The combination of tube selection, booster presence and generator configuration/licence does not allow starting the tube in high speed.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, open the Service Console and check in the Licence Info if High Speed is allowed (*refer to the Configuration document*).
3. If the installed Tube allows high speed operation without the S0008007 Booster module, follow the procedure described for 100101 (No speed available), steps 2. to 5.

ERROR CODE : 100104 DOSIMETER TUBE 1 NO ANSWER ERROR

DESCRIPTION : The dosimeter of the tube 1 doesn't respond.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Communication with the dosimeter is lost.
The dosimeter is unable to communicate.

ACTIONS

1. Check communication cable and connectors, power source and integrity of the dosimeter.

ERROR CODE : 100105 DOSIMETER TUBE 1 TEST ERROR

DESCRIPTION : The dosimeter of the tube 1 didn't complete initialization test.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Incompatibility between versions of the dosimeter and the generator.
Wrong dosimeter.
Internal dosimeter problem.

ACTIONS

1. Review compatibility of the generator with dosimeter model and integrity of the dosimeter.

ERROR CODE : 100106 DOSIMETER TUBE 1 STATUS ERROR

DESCRIPTION : The dosimeter of the tube 1 answered a wrong or unexpected status.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Dosimeter has an internal error.
Messages from the dosimeter are unexpected in the current system status.

ACTIONS

1. Reset the generator to force initial tests.

ERROR CODE : 100107 DOSIMETER TUBE 2 NO ANSWER ERROR

DESCRIPTION : The dosimeter of the tube 2 doesn't respond.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Communication with the dosimeter is lost.
The dosimeter is unable to communicate.

ACTIONS

1. Check communication cable and connectors, power source and integrity of the dosimeter.

ERROR CODE : 100108 DOSIMETER TUBE 2 TEST ERROR

DESCRIPTION : The dosimeter of the tube 2 didn't complete initialization test.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Incompatibility between versions of the dosimeter and the generator.
Wrong dosimeter.
Internal dosimeter problem.

ACTIONS

1. Review compatibility of the generator with dosimeter model and integrity of the dosimeter.

ERROR CODE : 100109 DOSIMETER TUBE 2 STATUS ERROR

DESCRIPTION : The dosimeter of the tube 2 answered a wrong or unexpected status.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

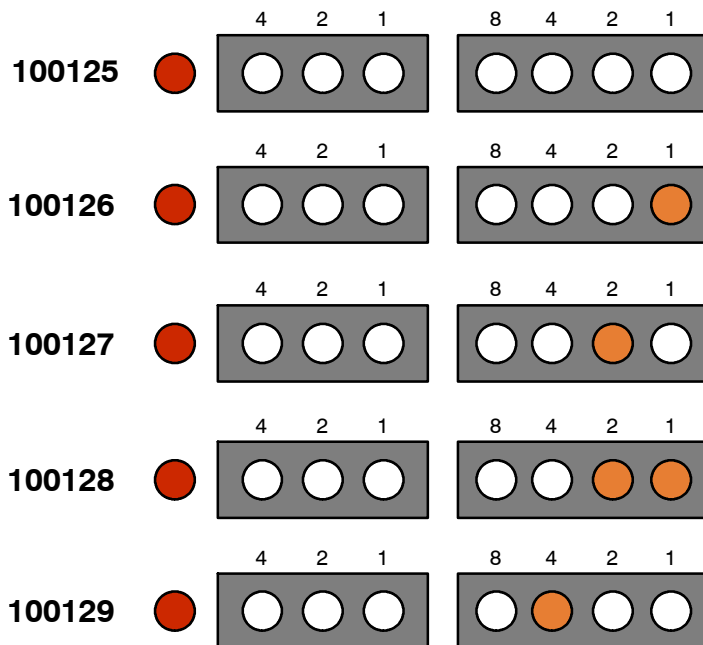
Dosimeter has an internal error.
Messages from the dosimeter are unexpected in the current system status.

ACTIONS

1. Reset the generator to force initial tests.

ERROR CODE : **100125 ROM TEST ERROR (LED CODE 00 HEX)**
 100126 INSTRUCTIONS TEST ERROR (LED CODE 01 HEX)
 100127 INTERNAL RAM TEST (LED CODE 02 HEX)
 100128 EXTERNAL RAM TEST (LED CODE 03 HEX)
 100129 INITIALIZATION ERROR (LED CODE 04 HEX)

DESCRIPTION : The starter microcontroller has detected an internal error.
ERROR TYPE : “Unrecoverable”, the system remains lock.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence.
INFORMATION / SYMPTOM : Only displayed on the S0008009 Dual Speed Starter LEDs.



POSSIBLE CAUSES

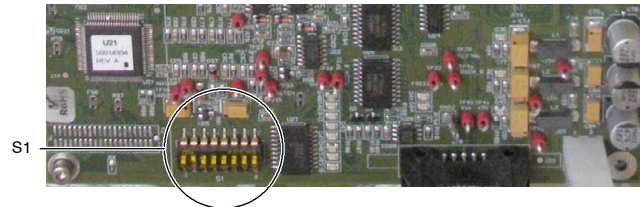
Defective starter microcontroller.

ACTIONS

1. Check the S0008009 Dual Speed Starter D47, D48, D49 and D50 LEDs to identify the error.
2. Press reset to restore the error code and check again.

3. If the error persists, check that Dip switch S0008009S1 on the S0008009 Dual Speed Starter is in the right position. All switches but switch 2 must be set to OFF. Switch 2 must be in ON position.

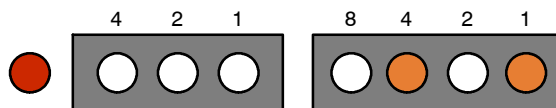
Illustration 4-14
S0008009 Dual Speed Starter switches location



4. If all the switches are in correct position and the error persists, proceed with step 5.
5. Check the voltage on TP41 (+5.15V \pm 100mV) of the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, proceed with step 6.
 - If the voltage is not OK, proceed with step 12.
6. Check the reference voltage (VAREF, +5.15V \pm 100mV) between TP38 and GND on the S0008009 Dual Speed Starter.
 - If VAREF is correct, proceed with step 7.
 - If VAREF is out of margins, proceed with step 9.
7. Turn the Generator OFF and ON again.
8. If the error persists, replace the S0008009 Dual Speed Starter.
9. Check the voltage (+14.9V \pm 800mV) in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage is OK, proceed with step 10.
 - If the voltage is not OK, proceed with step 11.
10. Check the cable connected from J21 of the S0008009 Dual Speed Starter to J16 of the A3646-XX Supply board.
 - If the cable is OK, replace the S0008009 Dual Speed Starter.
 - If the cable is damaged, replace it.
11. Check the voltage (+14.9V \pm 800mV) in the Power Supply (*refer to Section 2.1.3*).
 - If the voltage is not OK, replace the Power Supply.
 - If the voltage is OK, proceed with step 14.
12. Check the voltage (+5.15V \pm 100mV) in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage in the A3646-XX Supply board is correct, replace the S0008009 Dual Speed Starter.
 - If the voltage in the A3646-XX Supply board is not correct, proceed with step 13.
13. Check the voltage in the Power Supply.
 - If the voltage is not OK, replace the Power Supply.
 - If the voltage is OK, proceed with step 14.
14. Check the cable connected from J2 of the Power Supply to J14 of the A3646-XX Supply board.
 - If the cable is OK, replace the A3646-XX Supply board.
 - If the cable is defective, replace it.

ERROR CODE : 100130 CAN WATCHDOG

DESCRIPTION :	The CAN bus error is activated.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	Anytime.
LED CODE :	05 HEX



POSSIBLE CAUSES

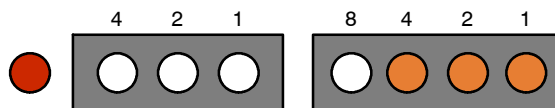
- CAN cable is defective.
- CAN cable is disconnected.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, verify that the CAN cable is properly connected to J19 of the S0008009 Dual Speed Starter.
3. If the CAN cable is properly connected, check the CAN wiring between J19 of the S0008009 Dual Speed Starter and J7 of the A3640-XX Control board:
 - If the cable is defective, replace it.
 - If the cable is in proper condition, proceed with step 4.
4. Check the voltage on TP41 (+5.15V \pm 100mV) of the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 5.
5. Check the voltage (+5.15V \pm 100mV) in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, proceed with step 6.
 - If the voltage is OK and the error persists, replace the S0008009 Dual Speed Starter.
6. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the power supply potentiometer to get +5.15V \pm 100mV (*refer to Section 2.1.3*).
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100132 BOOSTER CURRENT TEST

DESCRIPTION : High speed module current test failure.
ERROR TYPE : "Unrecoverable", the system remains lock.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence. It can also appear when pressing "Prep" or during exposure.
LED CODE : 07 HEX



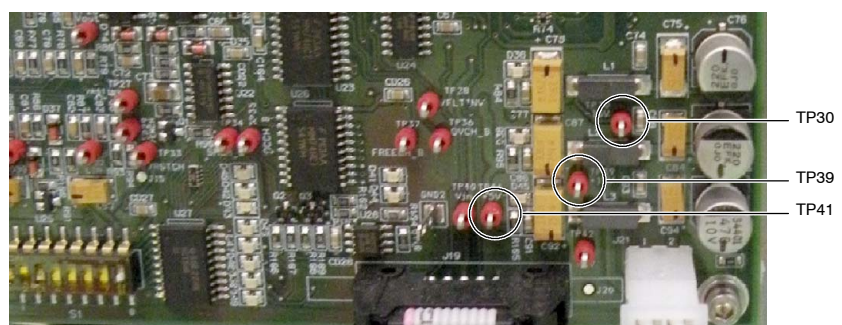
POSSIBLE CAUSES

No current detected by the Booster module during the initial test.

ACTIONS

1. Check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 2.
2. Make sure that connectors J6, J7, J12 and J13 of the S0008007 Booster module are properly connected.
3. If connectors J6, J7, J12 and J13 are properly connected and the error persists, check L2 inductance by measuring the resistance between the cables connected to J12 and J13 (the resistance must be $\approx 0 \Omega$).
 - If L2 inductance is defective, replace it.
 - If L2 inductance is OK, proceed with step 4.
4. Check U12 sensor on the S0008007 Booster module.
 - If U12 sensor is defective, replace the S0008007 Booster module.
 - If U12 sensor is OK, proceed with step 5.
5. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (refer to Illustration 4-15).

Illustration 4-15
+5V, +15V and -15V test points



- If the voltage is not OK, proceed with step 6.
 - If the voltage is OK, proceed with step 9.
6. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 7.
 7. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, proceed with step 8.
 - If the voltage is OK, proceed with step 9.
 8. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.
 9. Check the CAN wiring between J19 of the S0008009 Dual Speed Starter and J7 of the A3640-XX Control board:
 - If the cable is defective, replace it.
 - If the cable is OK, proceed with step 10.
 10. Check the main storage capacitors, IGBTs and DC-BUS.
 - If any of them is defective, replace it.
 - If main storage capacitors, IGBTs and DC-BUS are OK, replace the S0008007 Booster module.

ERROR CODE : 100133 CAN CONTROLLER INITIALIZATION

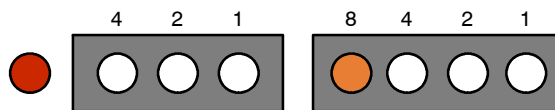
DESCRIPTION : The starter microcontroller has detected an error while initializing the CAN controller.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

APPEARS WHEN : During the startup sequence.

LED CODE : 08 HEX



POSSIBLE CAUSES

Power Supply out of boundaries.

The S0008009 Dual Speed Starter is defective.

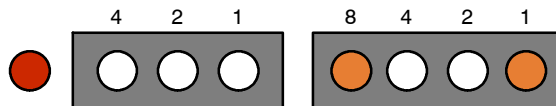
The A3640-XX Control board is defective.

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100134 MICROCONTROLLER POWER SUPPLY

DESCRIPTION :	The voltage supply for the microcontroller U21 is out of $5V \pm 10\%$.
ERROR TYPE :	"Recoverable" with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	Anytime.
LED CODE :	09 HEX



POSSIBLE CAUSES

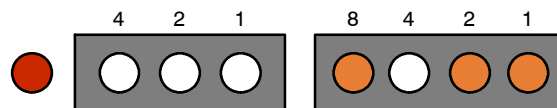
- The Power Supply is unbalanced.
- The A3646-XX Power Supply board is defective.
- The S0008009 Dual Speed Starter is defective.

ACTIONS

- Press reset to restore the error code and check again.
- If the error persists, check the voltage on TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (refer to Illustration 4-15).
 - If the voltage measured on TP41 is correct, replace the S0008009 Dual Speed Starter.
 - If the voltage measured on TP41 is not correct, proceed with step 3.
- Check the voltage ($+5.15V \pm 100mV$) in the A3646-XX Supply board (refer to Section 2.1.3).
 - If the voltage in the A3646-XX Supply board is correct, proceed with step 4.
 - If the voltage in the A3646-XX Supply board is not correct, proceed with step 5.
- Check the cable connected from J21 of the S0008009 Dual Speed Starter to J16 of the A3646-XX Supply board.
 - If the cable is OK, replace the S0008009 Dual Speed Starter.
 - If the cable is defective, replace it.
- Check the voltage in the Power Supply.
 - If the voltage is not OK, try to adjust the Power Supply potentiometer (refer to Section 2.1.3) to get $+5.15V \pm 100mV$. If it is not possible to adjust this voltage, replace the Power Supply.
 - If the voltage is OK and the error persists, proceed with step 6.
- Check the cable connected from J2 of the Power Supply to J14 of the A3646-XX Supply board.
 - If the cable is OK, replace the A3646-XX Supply board.
 - If the cable is defective, replace it.

ERROR CODE : 100136 +15V POWER SUPPLY

DESCRIPTION :	The voltage supply is out of $15V \pm 10\%$.
ERROR TYPE :	"Recoverable" with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	Anytime.
LED CODE :	0B HEX



POSSIBLE CAUSES

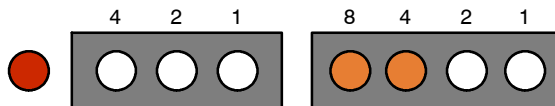
- The Power Supply is unbalanced.
- The A3646-XX Power Supply board is defective.
- The S0008009 Dual Speed Starter is defective.

ACTIONS

- Press reset to restore the error code and check again.
- If the error persists, check the voltage in TP39 ($+14.9V \pm 800mV$) on the S0008009 Dual Speed Starter.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 3.
- Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 4.
- Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 5.
- Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100137 BOOSTER ERROR

DESCRIPTION :	High speed module (booster) not detected.
ERROR TYPE :	"Recoverable" with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	When pressing "Prep" or during exposure.
LED CODE :	0C HEX



POSSIBLE CAUSES

- High speed module is defective.
- The ribbon cable is defective.

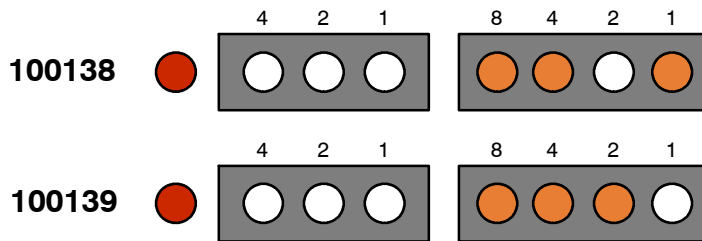
ACTIONS

- Press reset to restore the error code and check again.
- Check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 3.
- Check L2 inductance by measuring the resistance between the cables connected to J12 and J13 (the resistance must be $\approx 0 \Omega$).
 - If L2 inductance is defective, replace it.
 - If L2 inductance is OK, proceed with step 4.
- Check the voltage on TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (refer to Illustration 4-15).
 - If the voltage is not OK, proceed with step 5.
 - If the voltage is OK, proceed with step 8.
- Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 6.
- Check the voltage in the A3646-XX Supply board (refer to Section 2.1.3).
 - If the voltage is not OK, proceed with step 7.
 - If the voltage is OK, proceed with step 8.
- Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the power supply potentiometer to get $+5.15V \pm 100mV$ (refer to Section 2.1.3).
 - If the voltage is OK, replace the A3646-XX Supply board.

8. Check the CAN wiring between J19 of the S0008009 Dual Speed Starter and J7 of the A3640-XX Control board:
 - If the cable is defective, replace it.
 - If the cable is OK, proceed with step 9.
9. Check U12 sensor on the S0008007 Booster module.
 - If U12 sensor is defective, replace the S0008007 Booster module.
 - If U12 sensor is OK, proceed with step 10.
10. Check the Main Storage Capacitors, IGBTs and DC-BUS.
 - If any of them is defective, replace it.
 - If the Main Storage Capacitors, IGBTs and DC-BUS are OK, proceed with step 11.
11. Check the connection of the Anode and Cathode cables from the HV Transformer to the X-ray Tube, making sure they are connected to the corresponding receptacles.
 - If the HV cables are not properly connected, connect the cables correctly, maintaining correct Anode and Cathode orientation.
 - If the Tube connections are correct and the error persists, proceed with step 12.
12. Check that the Tube is in proper conditions:
 - If the X-ray Tube is defective, replace it.
 - If the X-ray Tube is in proper conditions, replace the S0008007 Booster module.

ERROR CODE : 100138 STARTER INVERTER ERROR (LED CODE 0D HEX)
100139 INVERTER FAILURE (LED CODE 0E HEX)

DESCRIPTION : The starter microcontroller has detected an error in its power module.
ERROR TYPE : “Unrecoverable”, the system remains lock.
APPLICABLE TO : All Generators.
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*).



POSSIBLE CAUSES

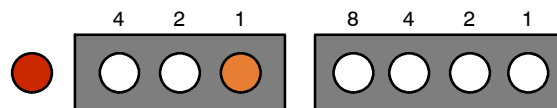
Power Supply is out of boundaries.
 Defective Starter hardware.

ACTIONS

1. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is not OK, proceed with step 2.
 - If the voltage is OK, proceed with step 5.
2. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 3.
3. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, proceed with step 4.
 - If the voltage is OK, proceed with step 5.
4. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.
5. Check J7 and J10 connections of the S0008009 Dual Speed Starter to ensure the wiring is OK and the screws are tight.
 - If any of the cables is defective, replace it.
 - If J7 and J10 connections are OK and the error persists, replace the S0008009 Dual Speed Starter.

ERROR CODE : 100141 μ CONTROLLER WATCHDOG

DESCRIPTION : A uC watchdog has occurred
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : Anytime.
LED CODE : 10 HEX



POSSIBLE CAUSES

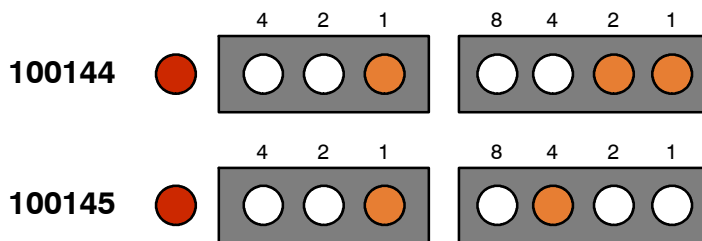
Can cable is defective or disconnected.
Defective Dual Speed Starter board.

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100144 MAIN CURRENT (LED CODE 13 HEX)
100145 AUX CURRENT (LED CODE 14 HEX)

DESCRIPTION : Stator winding current out of margin.
ERROR TYPE : "Unrecoverable", the system remains lock.
APPLICABLE TO : All Generators.
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*).



POSSIBLE CAUSES

The Tube model downloaded to the generator is not correct.
Stator cables are disconnected or swapped.
Power Supply out of boundaries.
Dual Speed Starter is defective.

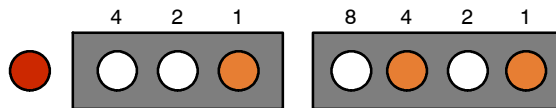
ACTIONS

1. Verify the tube selected in the Service Console (*refer to the Configuration document*).
 - If the Tube does not match the installed one in the system, modify the Tube selection or use the Tube's downloader to download the right Tube (*refer to the Configuration document*).
 - If the Tube selection is correct and the error persists, proceed with step 2.
2. Check the connection of the stator wiring (TS1 connector).
 - If the stator wiring connections are not correct, connect them properly.
 - If the connections are correct and the error persists, proceed with step 3.
3. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 4.
4. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 5.
5. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 6.

6. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100146 TUBE CODE OR NUMBER

DESCRIPTION :	Not used.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.
LED CODE :	15 HEX



POSSIBLE CAUSES

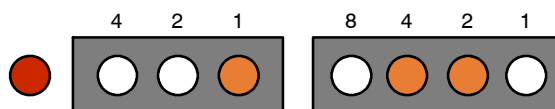
- Tube index is empty.
- The Tube model downloaded to the generator is not correct.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, verify the tube selected in the Service Console (*refer to the Configuration document*).
 - If the Tube does not match the installed one in the system or an empty index has been selected, modify the Tube selection or use the Tube's downloader to download the right Tube (*refer to the Configuration document*).
 - If the Tube selection is correct and the error persists, get in contact with the manufacturer to get a new Tube catalog file.

ERROR CODE : 100147 TUBE CONNECTION

DESCRIPTION : The tube stator connections are wrong.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
LED CODE : 16 HEX



POSSIBLE CAUSES

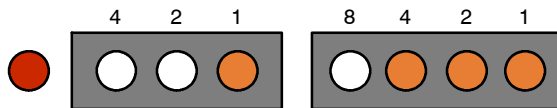
Stator cables are disconnected, swapped or defective.
The Tube model downloaded to the generator is not correct.
The X-ray Tube is defective.
The S0008009 Dual Speed Starter is defective.
The A3646-XX Supply board is defective.
The Power Supply is defective.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, download the Tube data again (*refer to the Configuration document*).
3. Check the stator resistance on the X-ray Tube between Main and Com, Main and Aux and Aux and Com.
 - If the measurement is not correct, replace the X-ray Tube.
 - If the measurement is correct, proceed with step 4.
4. Check the stator resistance on J7 of the S0008009 Dual Speed Starter.
 - If the measurement is not correct, replace the stator cable.
 - If the measurement is correct, proceed with step 5.
5. Get in contact with the manufacturer to get a new Tube catalog file.
6. If the error persists, check the voltage on TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 7.
7. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 8.
8. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100148 TUBE DEFINITION

DESCRIPTION : The downloaded tube data are wrong.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence
LED CODE : 17 HEX



POSSIBLE CAUSES

Tube model downloaded to the generator is not correct.
Tube model downloaded to the generator has been corrupted.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, download the Tube data again (*refer to the Configuration document*).
3. If the error persists, get in contact with the manufacturer to get a new Tube catalog file.

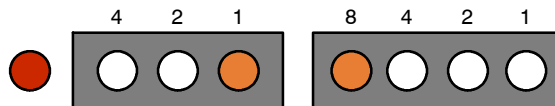
ERROR CODE : 100149 BOOSTER DISABLED

DESCRIPTION : An error has occurred on the S0008007 Booster Module and it has been disabled.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

LED CODE : 18 HEX



POSSIBLE CAUSES

Booster has been disabled due to an error.

ACTIONS

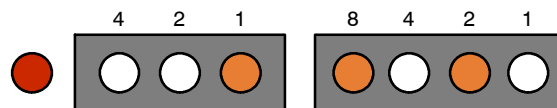
1. Press reset to restore the error code. Once the S0008007 Booster module is disabled, it remains disabled until the Generator is turned Off and On again.
2. If the error persists after turning the Generator Off and On again, make sure that the S0008007 Booster module is properly connected.
3. If the S0008007 Booster module is properly connected and the error persists, open the Service Console and check in the Licence Info if Booster is allowed (*refer to the Configuration document*).
 - If Booster is not allowed, get in contact with the manufacturer to get a new Licence.
 - If Booster is allowed, proceed with step 4.
4. Disconnect the S0008007 Booster module. In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.
 - c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).
5. Turn ON the equipment again and select a low speed technique.
 - If the error disappears, replace the S0008007 Booster module.
 - If the error persists, proceed with step 6.
6. Check the voltage in TP30 (-15V ± 750mV), TP39 (+14.9V ± 800mV) and TP41 (+5.15V ± 100mV) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 7.
7. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 8.

8. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 9.

9. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100151 INITIAL TEST

DESCRIPTION : Hardware error on Dual Speed Starter Module.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence.
LED CODE : 1A HEX



POSSIBLE CAUSES

Booster module is defective.
Stator cables are disconnected or swapped.
Power Supply out of boundaries.
Dual Speed Starter is defective.

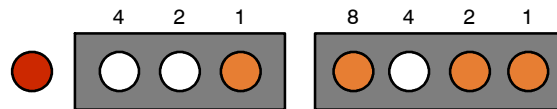
ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists and the Generator is equipped with the S0008007 Booster module, proceed with step 3. If the Generator is not equipped with Booster, proceed with step 5.
3. Disconnect the S0008007 Booster module. In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.
 - c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).
4. Turn ON the equipment again.
 - If the error message disappears, replace the S0008007 Booster module.
 - If the error persists, proceed with step 5.
5. Check the right connection of the stator wiring (TS1 connector).
 - If the stator wiring connections are not correct, connect them properly.
 - If the connections are correct and the error persists, proceed with step 6.
6. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 7.
7. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 8.

8. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 9.
9. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100152 STARTER TEST

DESCRIPTION : Hardware error on Dual Speed Starter Module.
ERROR TYPE : "Unrecoverable", the system remains lock.
APPLICABLE TO : All Generators.
LED CODE : 1B HEX



POSSIBLE CAUSES

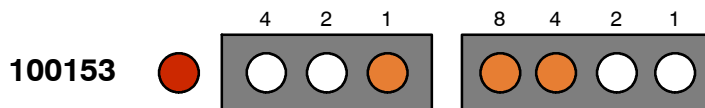
Power Supply out of boundaries.
Dual Speed Starter is defective.

ACTIONS

1. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (refer to *Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 2.
2. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 3.
3. Check the voltage in the A3646-XX Supply board (refer to *Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 4.
4. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100153 BOOSTER OVERVOLTAGE

DESCRIPTION :	A booster module overvoltage has occurred.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.
LED CODE :	1C HEX



POSSIBLE CAUSES

- Booster module is defective.
- IGBTs are defective
- Power Supply out of boundaries.
- Booster overvoltage caused by other error.
- Dual Speed Starter is defective

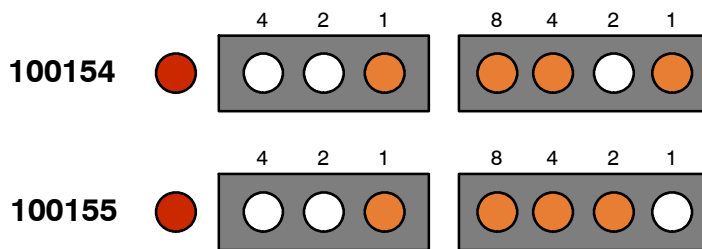
ACTIONS

1. Press reset to restore the error code and check again.
2. Check L2 inductance by measuring the resistance between the cables connected to J12 and J13 of the S0008007 Booster module (the resistance must be $\approx 0 \Omega$).
 - If L2 inductance is defective, replace it.
 - If L2 inductance is OK, proceed with step 3.
3. If the error persists, check U12 sensor and C15, C17, C21 and C23 capacitors on the S0008007 Booster module.
 - If any of this components is defective, replace the S0008007 Booster module.
 - If U12 sensor and C15, C17, C21 and C23 capacitors are OK, proceed with step 4.
4. Check IGBTs.
 - If the IGBTs are defective, replace them.
 - If the IGBTs are OK, proceed with step 5.
5. Check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 6.
6. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (refer to *Illustration 4-15*).
 - If the voltage is not OK, proceed with step 7.
 - If the voltage is OK, proceed with step 10.
7. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 8.

8. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, proceed with step 9.
 - If the voltage is OK, proceed with step 10.
9. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.
10. Disconnect the S0008007 Booster module. In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.
 - c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).
11. Turn ON the equipment again and select a low speed technique.
 - If the error is solved, replace the S0008007 Booster module.
 - If the error code persists, replace the S0008009 Dual Speed Starter.
 - If the error code is replaced by another error code, follow the corresponding procedure described in this section with the S0008007 Booster module disconnected.

ERROR CODE : 100154 BOOSTER OVERCURRENT (LED CODE 1D HEX)
100155 BOOSTER SHORTCUT (LED CODE 1E HEX)

DESCRIPTION : A booster module overvoltage has occurred.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence or when pressing "Prep".
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*)



POSSIBLE CAUSES

- The ribbon cable is defective.
- Power Supply out of boundaries.
- Booster module is defective.
- Booster overvoltage caused by other error.
- Dual Speed Starter is defective

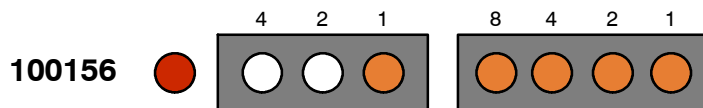
ACTIONS

- Press reset to restore the error code and check again.
- If the error persists, check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 3.
- Make sure that connectors J6 and J7 of the S0008007 Booster module are properly connected.
- If cable connections are OK, check the voltage on TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*..
 - If the voltage is not OK, proceed with step 5.
 - If the voltage is OK, proceed with step 8.
- Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 6.

6. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, proceed with step 7.
 - If the voltage is OK, proceed with step 8.
7. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.
8. Disconnect the S0008007 Booster module. In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.
 - c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).
9. Turn ON the equipment again and select a low speed technique.
 - If the error is solved, replace the S0008007 Booster module.
 - If the error code persists, replace the S0008009 Dual Speed Starter.
 - If the error code is replaced by another error code, follow the corresponding procedure described in this section with the S0008007 Booster module disconnected.

ERROR CODE : 100156 ROTOR BETWEEN MEASURE

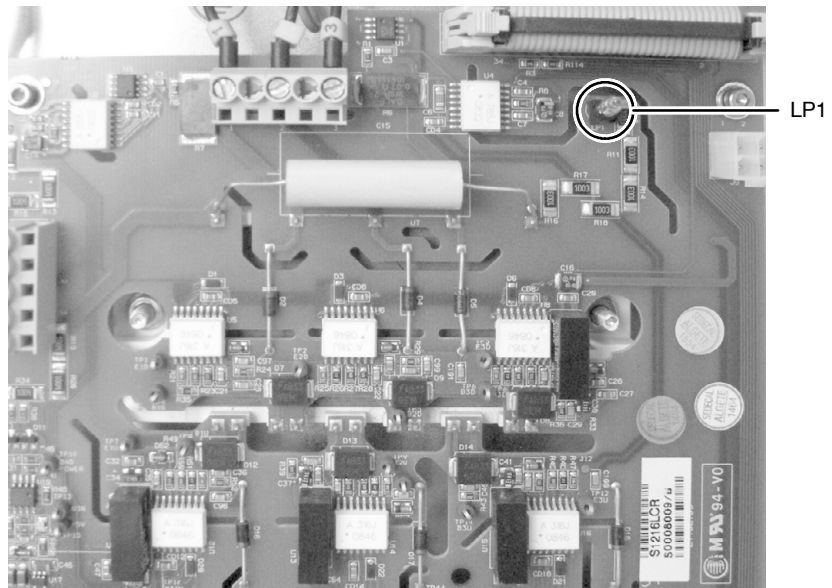
DESCRIPTION : Not used.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN :
LED CODE : 1F HEX



POSSIBLE CAUSES

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check that the LP1 light of the S0008009 Dual Speed Starter is lighting.



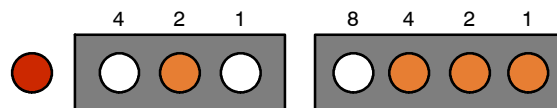
3. Check the tube condition.

4. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 5.
5. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 6.
6. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

5. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 6.
6. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : 100164 BOOSTER DISABLED

DESCRIPTION : An error has occurred on the Booster module and it has been disabled.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
APPEARS WHEN : When pressing "Prep" right after another error that has disabled the Booster.
LED CODE : 27 HEX



POSSIBLE CAUSES

Booster has been disabled due to an error.

ACTIONS

1. Press reset to restore the error code. Once the S0008007 Booster module is disabled, it remains disabled until the Generator is turned Off and On again.
2. If the error persists after turning the Generator Off and On again, make sure that the S0008007 Booster module is properly connected.
3. If the S0008007 Booster module is properly connected and the error persists, open the Service Console and check in the Licence Info if Booster is allowed (*refer to the Configuration document*).
 - If Booster is not allowed, get in contact with the manufacturer to get a new Licence.
 - If Booster is allowed, proceed with step 4.
4. Disconnect the S0008007 Booster module. In order to do so:
 - a. Turn OFF the equipment and wait for the LP1 light of the S0008009 Dual Speed Starter to completely turn off (*refer to Illustration 4-12*).
 - b. Then, disconnect the ribbon cable from J1 of the S0008007 Booster module.
 - c. Finally, disconnect J7 connector from the S0008007 Booster module and from TS2 and place a jumper in TS2 between pins 1-4 and 2-3 (*refer to Illustration 4-13*).
5. Turn ON the equipment again and select a low speed technique.
 - If the error disappears, replace the S0008007 Booster module.
 - If the error persists, proceed with step 6.
6. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 7.
7. Check fuse F3 on the A3646-XX Supply board.
 - If fuse F3 is blown, replace it.
 - If fuse F3 is OK, proceed with step 8.

8. Check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is OK, replace the S0008009 Dual Speed Starter.
 - If the voltage is not OK, proceed with step 9.
9. Check the voltage in the Power Supply.
 - If the voltage is not OK, adjust the Power Supply potentiometer.
 - If the voltage is OK, replace the A3646-XX Supply board.

ERROR CODE : **100168 1ST PULSE PWM WARNING (LED CODE 2B HEX)**
 100169 LINEAR PWM WARNING (LED CODE 2C HEX)

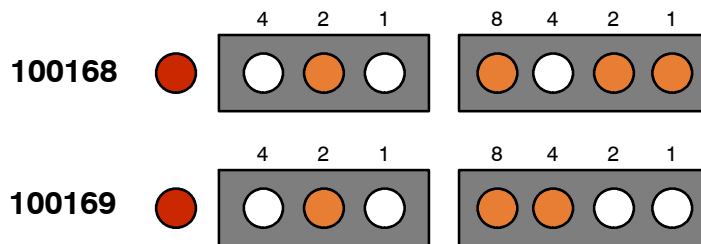
DESCRIPTION : Not used.

ERROR TYPE : "Recoverable" with the Reset command.

APPLICABLE TO : All Generators.

APPEARS WHEN : During anode acceleration.

LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*)



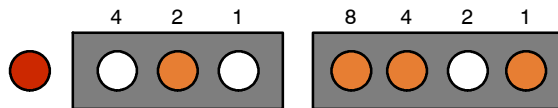
POSSIBLE CAUSES

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*). Adjust the Power Supply potentiometer, if necessary.
 - If the voltage is OK, proceed with step 3.
3. Check connections between J7 of the A3640-XX Control board and J19 of the S0008009 Dual Speed Starter.
 - If the CAN cable is defective, replace it.
 - If the CAN cable is OK, proceed with step 4.
4. Check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 5.
5. Check the connection of the stator cables between TS1 and J7 of the S0008009 Dual Speed Starter.
 - If any of them is not correctly connected, connect it properly.
 - If any of them is defective, replace it.
 - If the stator connections are OK, proceed with step 6.
6. Measure the stator resistance. If the stator resistance is OK and the error persists, replace S0008009 Dual Speed Starter.

ERROR CODE : 100170 COMMAND REJECTED

DESCRIPTION : Software error.
ERROR TYPE : "Recoverable", the system remains lock.
APPLICABLE TO : All Generators.
APPEARS WHEN : During the startup sequence or when pressing "Prep" and during exposure.
LED CODE : 2D HEX



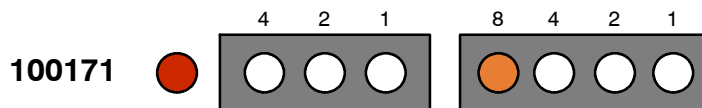
POSSIBLE CAUSES

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100171 RESOURCES ERROR

DESCRIPTION :	Not used.
ERROR TYPE :	“Unrecoverable”, the system remains lock.
APPLICABLE TO :	All Generators.
APPEARS WHEN :	During the startup sequence.
LED CODE :	08 HEX



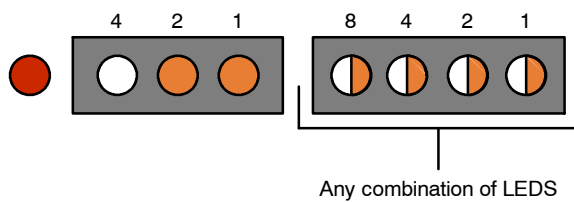
POSSIBLE CAUSES

ACTIONS

1. Turn the Generator OFF and ON again.
2. If the error persists, check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*). Adjust the Power Supply potentiometer, if necessary.
 - If the voltage is OK, proceed with step 3.
3. Check connections between J7 of the A3640-XX Control board and J19 of the S0008009 Dual Speed Starter.
 - If the CAN cable is defective, replace it.
 - If the CAN cable is OK, proceed with step 4.
4. Check the ribbon cable between J1 of the S0008007 Booster module and J5 of the S0008009 Dual Speed Starter.
 - If the ribbon cable is defective, replace it.
 - If the ribbon cable is OK, proceed with step 5.
5. Check J7 and J10 connections of the S0008009 Dual Speed Starter to ensure the wiring is OK and the screws are tight.
 - If any of the cables is defective, replace it.
 - If J7 and J10 connections are OK and the error persists, replace S0008009 Dual Speed Starter.

ERROR CODE : 100173 CAN INITIALIZATION (LED CODE 30 HEX)
100174 CAN STUFF (LED CODE 31 HEX)
100175 CAN FORM (LED CODE 32 HEX)
100176 CAN ACK (LED CODE 33 HEX)
100177 CAN BIT1 (LED CODE 34 HEX)
100178 CAN BIT0 (LED CODE 35 HEX)
100179 CAN CRC (LED CODE 36 HEX)
100180 CAN INIT ID (LED CODE 37 HEX)
100181 CAN BUS OFF (LED CODE 38 HEX)
100182 CAN EWARN (LED CODE 39 HEX)
100183 CAN OBJECT OUT OF RANGE (LED CODE 3A HEX)

DESCRIPTION : The CAN bus error is activated.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*)



POSSIBLE CAUSES

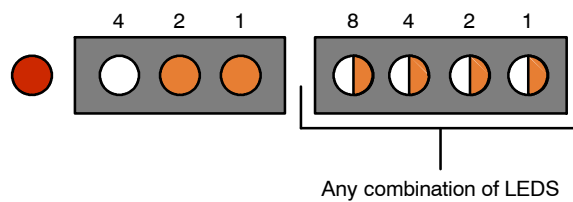
CAN cable is defective.
CAN cable is disconnected.

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100184 CAN OBJECT NOT USED (LED CODE 3B HEX)
100185 CAN OBJECT MISMATCH (LED CODE 3C HEX)
100186 CAN BUFFER FULL (LED CODE 3D HEX)
100187 CAN SLAVE OUT OF RANGE (LED CODE 3E HEX)
100188 CAN CONFIG PARAM (LED CODE 3F HEX)
100189 CAN FORM MESSAGE (LED CODE 40 HEX)
100190 CAN CONFIG MODIF OBJ1 (LED CODE 41 HEX)
100191 CAN CONFIG MODIF OBJ2 (LED CODE 42 HEX)
100192 CAN CONFIG MODIF OBJ3 (LED CODE 43 HEX)
100193 CAN CONFIG MODIF OBJ4 (LED CODE 44 HEX)
100194 CAN CONFIG MODIF OBJ5 (LED CODE 45 HEX)

DESCRIPTION : The CAN bus error is activated.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*)



POSSIBLE CAUSES

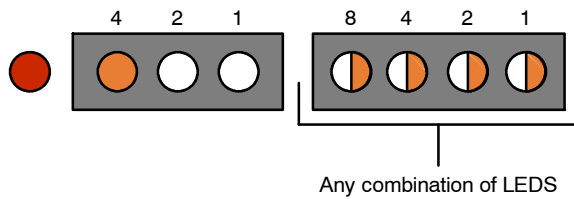
CAN cable is defective.
CAN cable is disconnected.

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100195 CAN CONFIG MODIF OBJ6 (LED CODE 46 HEX)
100196 CAN CONFIG MODIF OBJ7 (LED CODE 47 HEX)
100197 CAN CONFIG MODIF OBJ8 (LED CODE 48 HEX)
100198 CAN CONFIG MODIF OBJ9 (LED CODE 49 HEX)
100199 CAN CONFIG MODIF OBJ10 (LED CODE 4A HEX)
100200 CAN CONFIG MODIF OBJ11 (LED CODE 4B HEX)
100201 CAN CONFIG MODIF OBJ12 (LED CODE 4C HEX)
100202 CAN CONFIG MODIF OBJ13 (LED CODE 4D HEX)
100203 CAN CONFIG MODIF OBJ14 (LED CODE 4E HEX)
100204 CAN CONFIG MODIF OBJ15 (LED CODE 4F HEX)

DESCRIPTION : The CAN bus error is activated.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.
LED CODE : Indicated with the corresponding Error Code (*refer to Section 4.1 to read LED Code*)



POSSIBLE CAUSES

CAN cable is defective.
CAN cable is disconnected.

ACTIONS

1. Follow the procedure described for 100130 (CAN Watchdog).

ERROR CODE : 100238 STARTER NOT RESPONDING

DESCRIPTION : The starter is not answering the status queries from the main controller.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

Can cable is defective or disconnected.
Defective Dual Speed Starter board.

ACTIONS

1. Press reset to restore the error code and check again.
2. If the error persists, verify that the CAN cable is properly connected to J19 of the S0008009 Dual Speed Starter.
3. If the CAN cable is properly connected, check the CAN wiring between J19 of the S0008009 Dual Speed Starter and J7 of the A3640-XX Control board:
 - If the cable is defective, replace it.
 - If the cable is in proper condition, proceed with step 4.
4. Check the voltage in TP30 ($-15V \pm 750mV$), TP39 ($+14.9V \pm 800mV$) and TP41 ($+5.15V \pm 100mV$) on the S0008009 Dual Speed Starter (*refer to Illustration 4-15*).
 - If the voltage measured in the A3646-XX Supply board oscillates, replace the Power Supply.
 - If the voltage is not OK, check the voltage in the A3646-XX Supply board (*refer to Section 2.1.3*). Adjust the Power Supply potentiometer, if necessary.
 - If the voltage is OK and the error persists, replace the S0008009 Dual Speed Starter.

ERROR CODE : 100239 STARTER OVERLOAD ERROR

DESCRIPTION : The Starter module has been overloaded.
ERROR TYPE : "Recoverable" with the Reset command.
APPLICABLE TO : All Generators.

POSSIBLE CAUSES

The Starter module has been overloaded because too many accelerations have been demanded within one minute.

ACTIONS

1. Wait one minute to recover the starter functionality.
2. Check the starter configuration and make sure it matches the installation needs.

ERROR CODE : 100240 STARTER TUBE INDEX ERROR

DESCRIPTION :	The starter has received a wrong index from the main controller.
ERROR TYPE :	“Recoverable” with the Reset command.
APPLICABLE TO :	All Generators.

POSSIBLE CAUSES

The starter has received an order to be executed on a tube different from the currently selected one. It could be related to a software bug or communication problems.

ACTIONS

1. Check the ribbon cable between the A3640-XX Control board and the S0008009 Dual Speed Starter.

ERROR CODE : RAM MEMORY ERROR

DESCRIPTION :	Microcontroller memory fault. Only displayed on the Control board LEDs.
ERROR TYPE :	“Unrecoverable”, the system restarts again after 3 seconds.
APPLICABLE TO :	All Generators.
LED CODE :	DS27 (RED) + DS23, DS28 and DS24 (YELLOW).

POSSIBLE CAUSES

Defective microcontroller RAM memory.

ACTIONS

1. If the error persists, replace the defective hardware.

ERROR CODE : NON VOLATILE RAM (NVRAM) MEMORY ERROR

DESCRIPTION :	Non volatile memory fault. Only displayed on the Control board LEDs.
ERROR TYPE :	"Unrecoverable", the system restarts again after 3 seconds.
APPLICABLE TO :	All Generators.
LED CODE :	DS27 (RED) + DS29, DS25 and DS30 (YELLOW).

POSSIBLE CAUSES

Defective non volatile RAM memory.

ACTIONS

1. If the error persists, replace the defective hardware.

4.2 OVERHEAD TUBE CRANE ERRORS

ERROR CODE : 208011 TRACKING CANNOT BE ACTIVATED (RATCHET)

DESCRIPTION :	Tracking cannot be activated because the ratchet is set.
ERROR TYPE :	Warning
APPLICABLE TO :	Ceiling Suspension Carriage
APPEARS WHEN :	Anytime

POSSIBLE CAUSES

Ratchet gets locked before to perform an automatic movement when the OTC is below 30 mm from the upper limit of the vertical travel.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and there is still some upward travel distance.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and the telescopic column is completely enclosed.

ACTIONS

1. Follow the procedure described for Error 211002 (Ratchet is set).

ERROR CODE : 201005 MOTION INHIBIT. RATCHET IS SET

DESCRIPTION :	Motion gets inhibited because ratchet is set.
ERROR TYPE :	Inhibition
APPLICABLE TO :	Ceiling Suspension Carriage
APPEARS WHEN :	Anytime

POSSIBLE CAUSES

Ratchet gets locked before to perform an automatic movement when the OTC is below 30 mm from the upper limit of the vertical travel.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and there is still some upward travel distance.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and the telescopic column is completely enclosed.

ACTIONS

1. Follow the procedure described for Error 211002 (Ratchet is set).

ERROR CODE : 211002 RATCHET IS SET

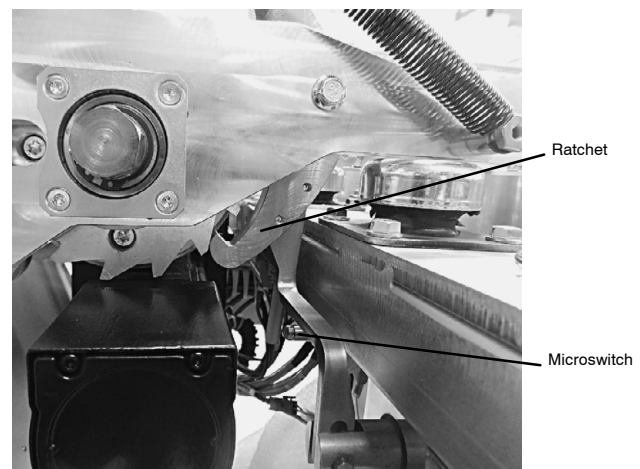
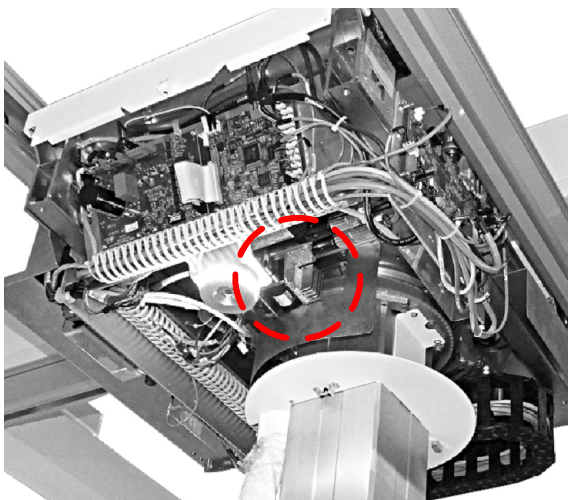
DESCRIPTION : Ratchet is set and vertical movement is blocked.
ERROR TYPE : Error
APPLICABLE TO : Ceiling Suspension Carriage.
APPEARS WHEN : Anytime.

POSSIBLE CAUSES

The ratchet deactivation system is locked and no vertical movements are possible.

ACTIONS

1. If ratchet has been locked during an automatic movement when the OTC is below 30 mm from the upper limit of the vertical travel, grab the steering wheel and the OTC will lift automatically releasing the ratchet.
2. If the OTC is over the 30 mm of the upper limit but there is still some upward travel, proceed as follows:
 - a. Remove the carriage covers to gain access to the bottom of the carriage (*refer to the "Final Installation Tasks & Covers Installation" Section on the Installation document*).
 - b. Press the ratchet microswitch, located on the lower right front of the carriage.

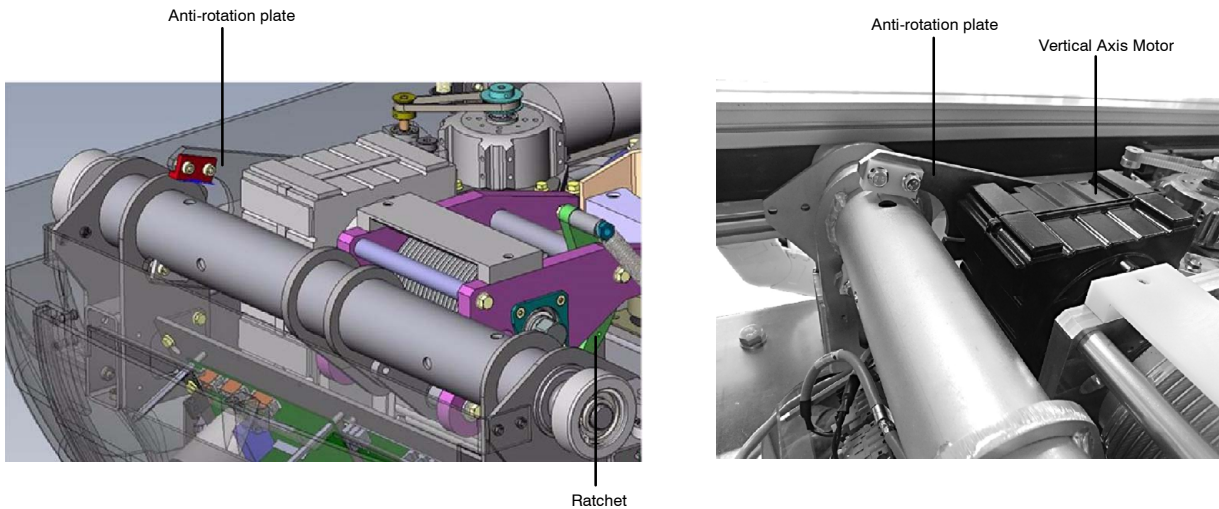


PINCH POINT. TAKE SPECIAL CARE WHEN RELEASING THE MICROSWITCH IN ORDER TO PREVENT INJURIES.

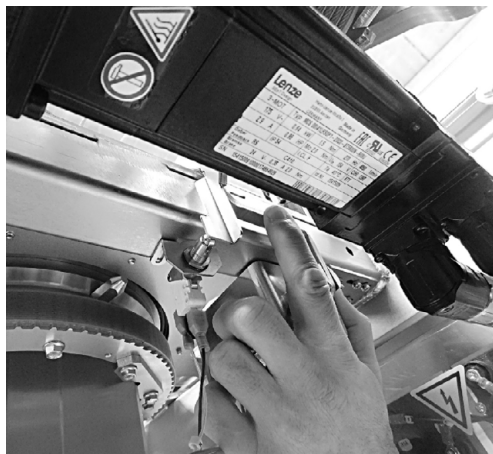
- c. Perform a servo-assisted upward movement to release the ratchet.

3. If the OTC is over the 30 mm of the upper limit and the telescopic column is completely enclosed, proceed as follows:

- a. Remove the carriage covers to gain access to the top of the carriage.
- b. Unscrew the anti-rotation plate from the Vertical Axis Motor.



- c. Rotate the Motor as far as necessary to release the ratchet.
- d. Press the ratchet microswitch, located on the lower right front of the carriage.



PINCH POINT. TAKE SPECIAL CARE WHEN RELEASING THE MICROSWITCH IN ORDER TO PREVENT INJURIES.

- e. Perform a servo-assisted upward movement to finally release the ratchet.
4. Reassemble all the removed elements during any of these operations(Anti-rotation plate, Carriage Covers...).

ERROR CODE : 211003 MOVEMENT NOT ALLOWED FOR SECURITY REASONS

DESCRIPTION :	Movement is not allowed for security reasons (The ratchet is set).
ERROR TYPE :	Error
APPLICABLE TO :	Ceiling Suspension Carriage
APPEARS WHEN :	Anytime

POSSIBLE CAUSES

Ratchet gets locked before to perform an automatic movement when the OTC is below 30 mm from the upper limit of the vertical travel.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and there is still some upward travel distance.

Ratchet gets locked when the OTC is over the 30 mm of the upper limit and the telescopic column is completely enclosed.

ACTIONS

1. Follow the procedure described for Error 211002 (Ratchet is set).

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SECTION 5 CENTRAL LISTINGS

This section is a compilation of the main components (Test Points, Connectors, LEDs, Switches and Fuses) of the electronic boards of the equipment.

Each drawing is accompanied by several tables including the most used components of the respective board. To find any component press “Ctrl + F”, enter the component reference (e.g. TP2) and press “Enter”.

5.1 BOARDS LIST

The following list includes the boards which contain components that may require access during service procedures:

- **Positioners common Boards:**
 - Servo Control **A3624-XX**.
 - UMC Power board **A3625-XX**.
 - GPIO Interface Analog/Digital board **A3697-XX**.
 - Input Module **A3707-XX**.

- **Ceiling Suspension Boards:**
 - Generic Room Master **A3633-XX**.
 - GPIO board **A3665-XX**.
 - Anticollision Adapter **A3708-XX**.
 - Audio GPIO **A40005-XX**.
 - Capacitive Switch **A40109-XX**.

- **Generator Boards:**
 - IPM Driver board **A3063-XX**.
 - Control board **A3640-XX**.
 - Supply board **A3646-XX**.
 - Booster Module **S0008007**.
 - Dual Speed Starter **S0008009**.

5.1.1 SERVO CONTROL

**Table 5-1
A3624-XX TP List**

TEST POINTS	
TP	Measured signal
TP1	GND
TP2	GND
TP3	GND
TP4	GND
TP5	GND
TP6	ADC A1
TP7	ADC B1
TP8	ADC A2
TP9	ADC B2
TP10	ADC A3
TP11	ADC B3
TP12	ADC A4
TP13	ADC B4
TP14	ADC B6
TP15	RESOLVER OUT+
TP16	ADC A0
TP17	VREF
TP18	ADC B0
TP19	GND EXT
TP20	GND EXT
TP21	GND HW
TP22	GND HW

Table 5-2
A3624-XX LEDs List

LEDs		
LED	Color	Description
DS1	GREEN	+24V
DS2	GREEN	+5V
DS3	BLUE	VCCO
DS4	YELLOW	CAN TX
DS5	YELLOW	CAN RX
DS6	YELLOW	BRAKE1 RET
DS7	YELLOW	BRAKE2 RET
DS8	YELLOW/RED	STATUS
DS10	YELLOW	GP LED1
DS11	YELLOW	GP LED2

Table 5-3
A3624-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	POWER
J2	BRAKE
J3	BRAKE
J4	TEST
J5	JTAG DSP
J6	JTAG FPGA
J7	CAN
J8	AN1
J9	AN2
J10	ENC1
J11	ENC2
J12	RESOLVER

**Table 5-3 (cont.)
A3624-XX Connectors List**

CONNECTOR	Description
J13	HALL
J14	GPIO
J15	GPIO
J16	GPIO
J17	SERVICE OUT
J18	SERVICE IN
J19	SERIAL
J20	EXPANSION
J21	SPARE
J22	AUX

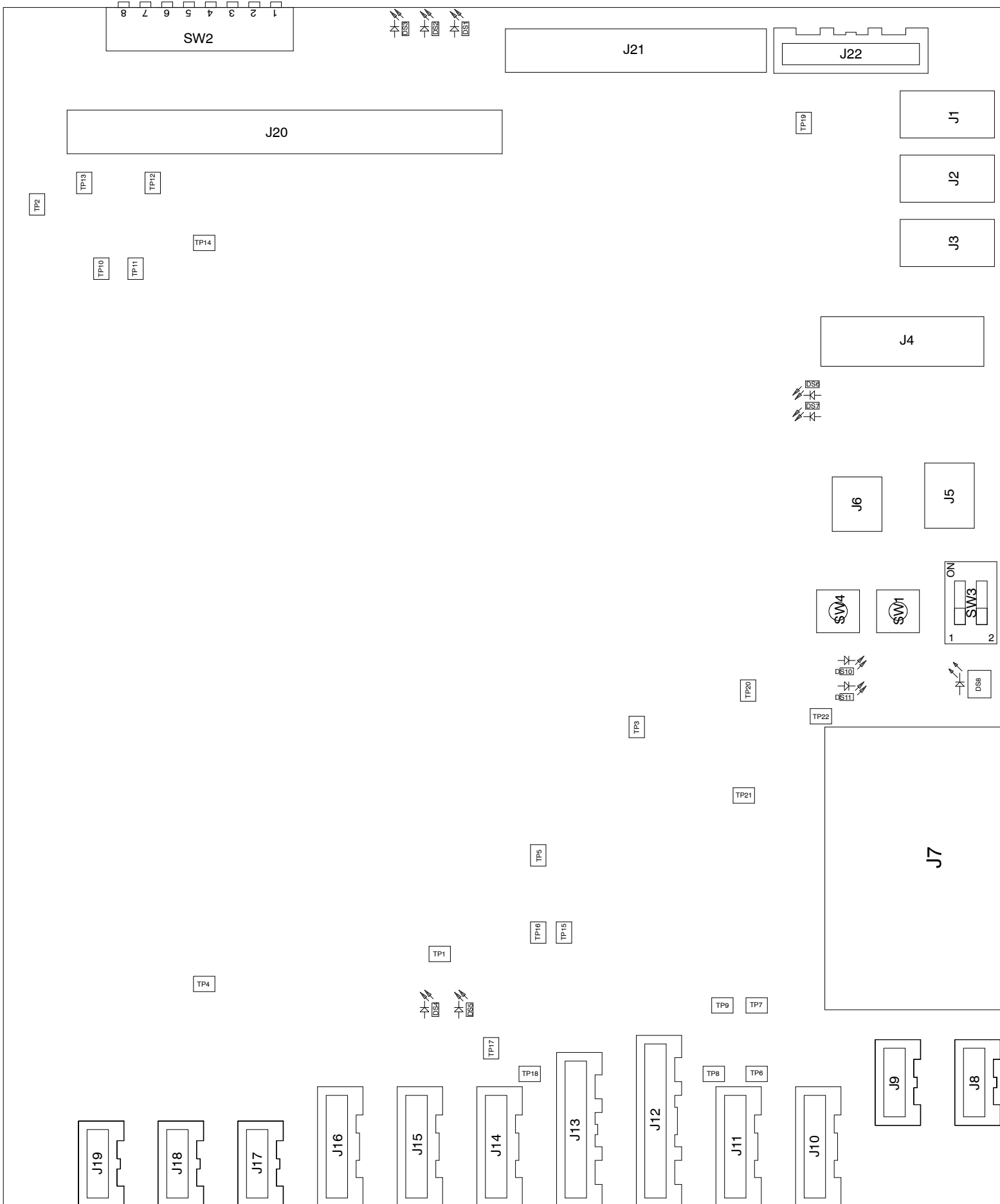
**Table 5-4
A3624-XX Pushbuttons List**

PUSHBUTTON SWITCHES	
SWITCH	Function
SW1	DEBUG
SW4	RESET

Table 5-5
A3624-XX Switches List

SWITCHES		
SWITCH		Function
SW2	1	CAN NODE IDENTIFICATION
	2	
	3	
	4	
	5	
	6	
	7	
	8	NOT USED
SW3		BOOTLOADER

A3624-XX SERVO CONTROL BOARD



5.1.2 UMC POWER BOARD 24V

Table 5-6
A3625-XX TP List

TEST POINTS	
TP	Measured signal
TP1	+24V
TP2	+15V PWR
TP3	+5V PWR
TP4	GND
TP5	+24V PWR
TP6	GND
TP7	GND
TP8	GND
TP9	GND
TP10	GND PWR
TP11	GND PWR
TP12	GND PWR
TP13	GND PWR
TP14	AN P5
TP15	AN P4
TP16	AN P1
TP17	AN P3
TP18	AN P2
TP19	OVERCURRENT
TP20	+5V PWR
TP21	+5V PWR
TP22	+5V PWR
TP23	J3-1
TP24	PHASE V / J3-2
TP25	+5V PWR
TP26	J3-3

X-ray System

Central Listings

Table 5-6 (cont.)
A3633-XX TP List

TP	Measured signal
TP27	+5V PWR
TP28	+5V PWR

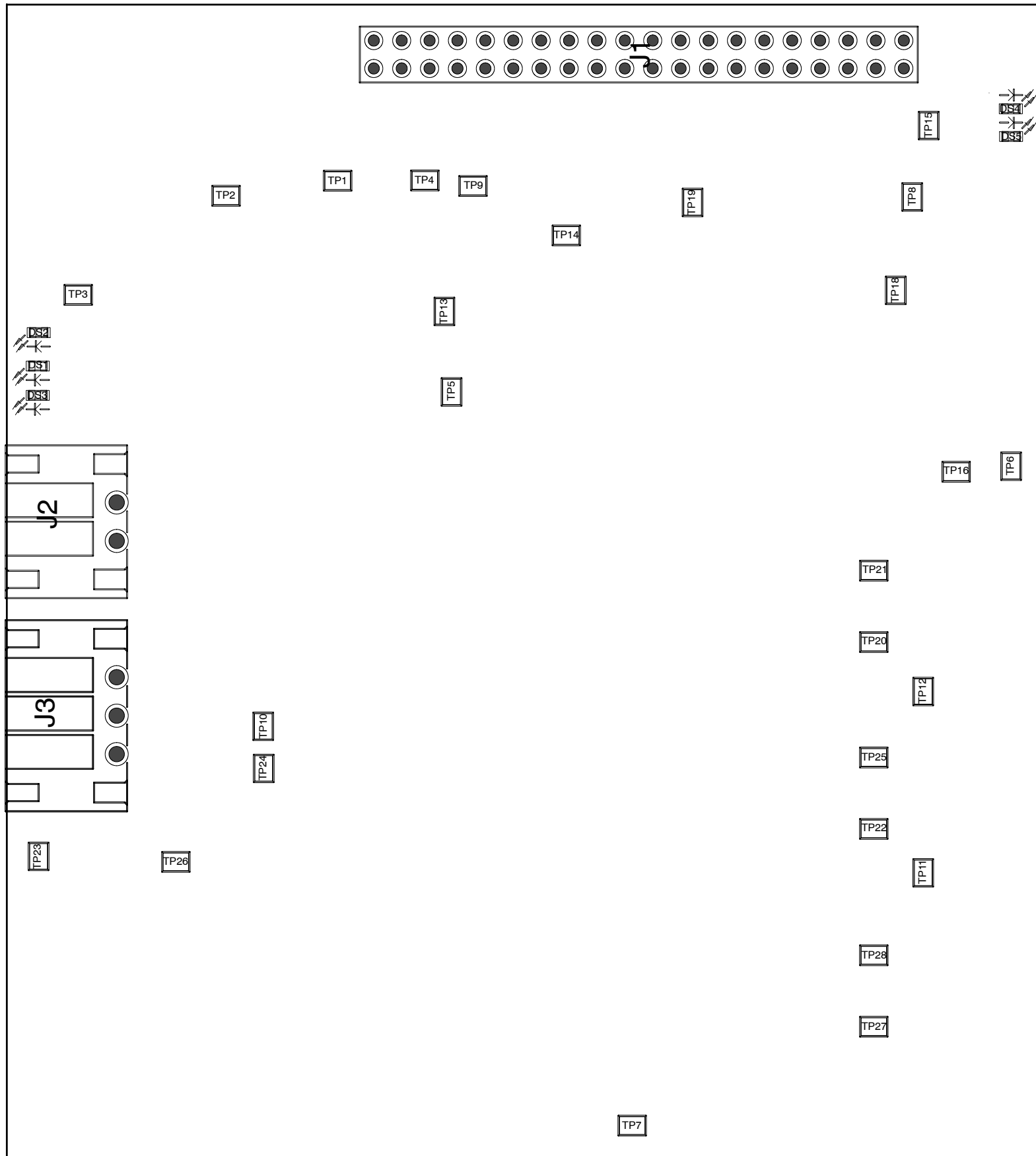
Table 5-7
A3625-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+15V PWR
DS2	GREEN	+5V PWR
DS3	GREEN	+24V PWR
DS4	YELLOW	/POWERG
DS5	YELLOW	OVERCURRENT

Table 5-8
A3625-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	EXPANSION
J2	POWER SUPPLY
J3	MOTOR SUPPLY

A3625-XX UMC POWER BOARD 24V



5.1.3 GPIO INTERFACE ANALOG/DIGITAL

**Table 5-9
A3697-XX TP List**

TEST POINTS	
TP	Measured signal
TP1	GND
TP2	GND
TP3	GND
TP4	GND
TP5	24V DET ISO
TP6	5V DET ISO
TP7	EXP TRIGGER HWB
TP8	DEADMAN CAN
TP9	/SERVICE OUT
TP10	AN I1
TP11	AN I2
TP12	AN I3
TP13	AN I4
TP14	DAC1
TP15	DAC2
TP16	DAC3
TP17	DAC4
TP18	GND HW
TP19	GND HW
TP20	GND EXT
TP21	GND EXT
TP25	/HWB OUT 1
TP26	GND DET ISO
TP27	AN I5
TP28	AN I6
TP29	AN I7
TP30	AN I8

Table 5-10
A3697-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+24V
DS2	GREEN	+5V
DS3	BLUE	DONE F
DS4	RED	+5V
DS5	YELLOW	+5V
DS8	YELLOW	DEADMAN F
DS9	YELLOW	SERVICE OUT F
DS10	YELLOW	+5V EMGCY_B
DS11	YELLOW	LED1 F
DS12	YELLOW	LED2 F
DS13	YELLOW	LED3 F
DS14	YELLOW	LED4 F
DS15	YELLOW	LED5 F
DS16	YELLOW	LED6 F
DS17	YELLOW	LED7 F
DS18	YELLOW	LED ERROR F
DS19	RED	LED ALIVE F
DS20	YELLOW	+24V RGB1 RET
DS21	YELLOW	+24V BRAKE1 RET
DS22	YELLOW	+24V RGB2 RET
DS23	YELLOW	+24V BRAKE2 RET
DS24	YELLOW	+24V RGB3 RET
DS25	GREEN	24V DET ISO
DS26	GREEN	5V DET ISO

X-ray System

Central Listings

Table 5-11
A3697-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	POWER 1
J2	POWER 2
J3	DIG IN 1
J4	DIG IN 2
J5	DIG IN 3
J6	DIG IN 4
J7A	CAN 1
J7B	CAN 2
J8	DIG OUT
J9	ANALOG 1
J10	ANALOG 2
J11	AUX
J12	ANALOG 3
J13	ANALOG 4
J14	JTAG FPGA
J15	JTAG MICRO
J16	BRAKE 1
J17	SERVICE OUT
J18	SERVICE IN
J19	RGB
J20A	HWB IN
J20B	HWB OUT
J21	EXPANSION
J22	DEBUG
J23	SERIAL
J24	ON OFF
J25	EMERGENCY

Table 5-11 (cont.)
A3697-XX Connectors List

CONNECTOR	Description
J26A	RAD PANEL 1
J26B	RAD PANEL 2
J27	TEST
J28	BRAKE 2
J29	ANALOG 5
J30	ANALOG 6
J31	ANALOG 7
J32	ANALOG 8

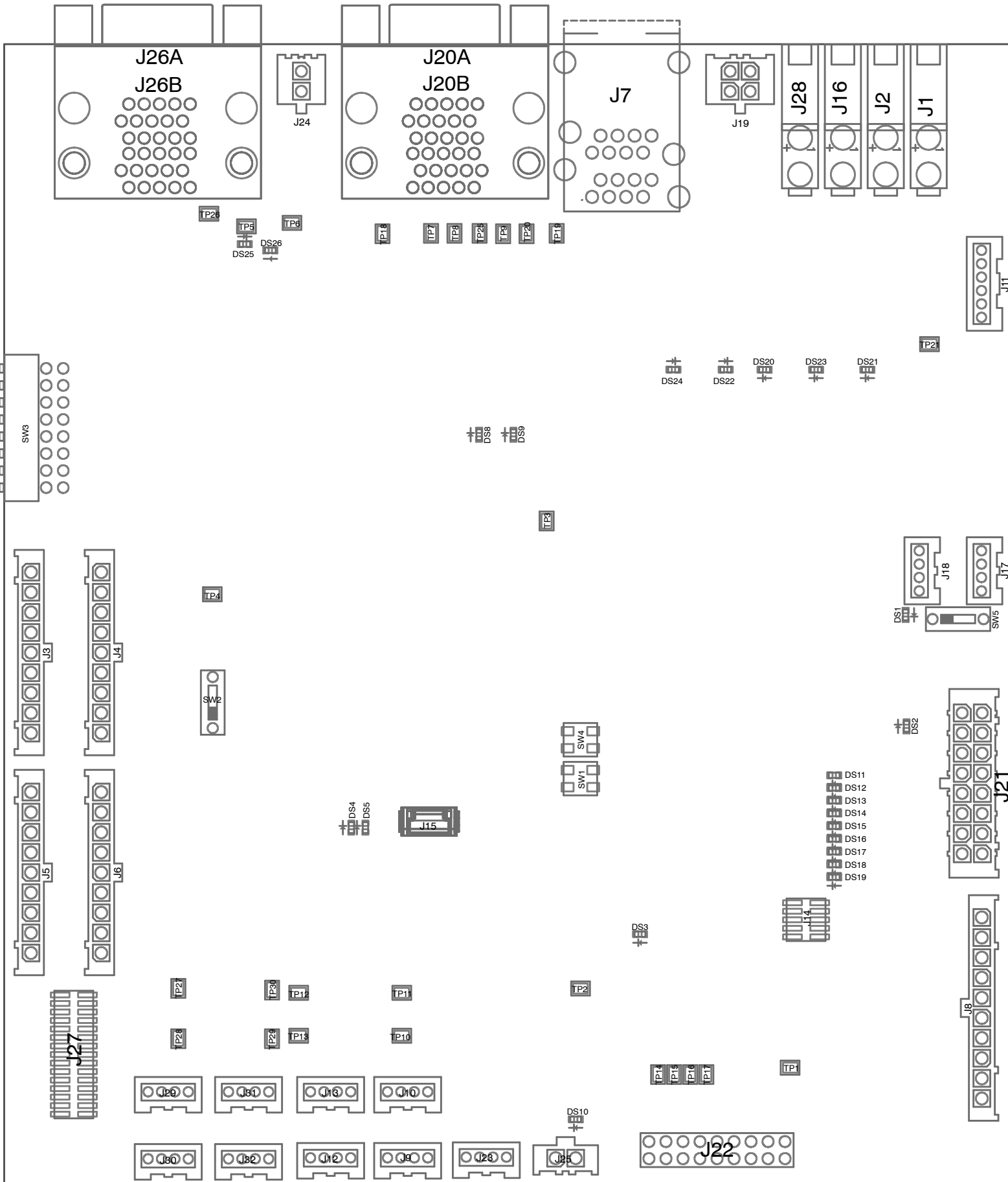
Table 5-12
A3697-XX Pushbuttons List

PUSHBUTTON SWITCHES	
SWITCH	Function
SW1	RESET
SW4	DEBUG

Table 5-13
A3697-XX Switches List

SWITCHES		
SWITCH	Function	
SW2	BOOTLOADER	
SW3	1	CAN NODE IDENTIFICATION
	2	
	3	
	4	
	5	
	6	
	7	
	8	NOT USED
SW5	SERVICE	

A3697-XX GPIO INTERFACE ANALOG/DIGITAL



X-ray System

Central Listings

5.1.4 INPUT MODULE

Table 5-14
A3707-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	TO MAINS
J2	ON/OFF
J3	POWER SUPPLY

Table 5-15
A3707-XX Pushbuttons List

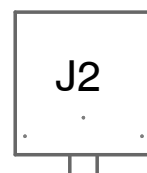
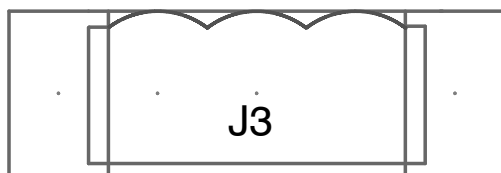
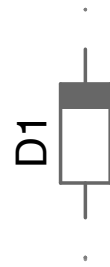
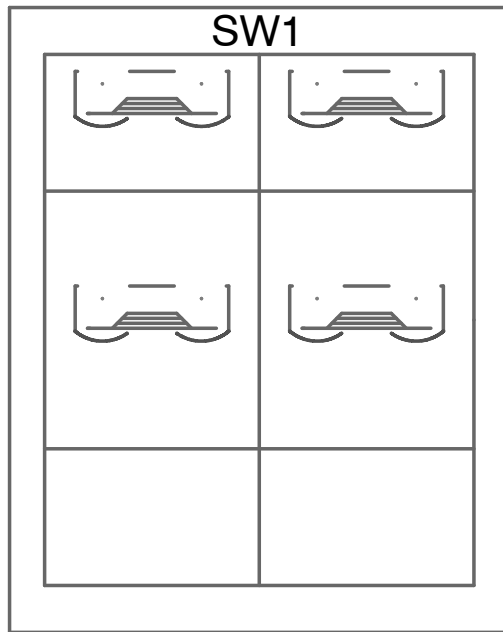
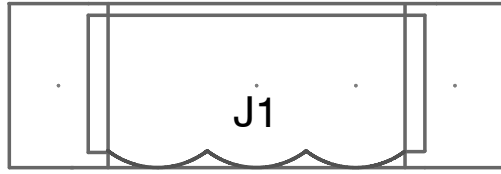
PUSHBUTTON SWITCHES	
SWITCH	Function
SW1	POWER ON/OFF

Table 5-16
A3646-XX Fuses List

FUSES		
FUSE	Description	
	115 V~	230 V~
F1	5A, 250V, 3A-SB	2A, 250V, 3A-SB
F2	5A, 250V, 3A-SB	2A, 250V, 3A-SB

* F2 is replaced by a Neutral Cartridge in Single-Phase Systems

A3707-XX INPUT MODULE



5.1.5 GENERIC ROOM MASTER

**Table 5-17
A3633-XX TP List**

TEST POINTS	
TP	Measured signal
TP1	+24V
TP2	+5V
TP3	GND24V=
TP4	GND
TP5	GND
TP6	GND
TP7	GND
TP8	+3.3V
TP9	+1.8V
TP10	+1.4V
TP11	+0.9V
TP12	+0.9V CPU
TP14	+5V-CAN0
TP16	HWB EMERGENCY CAN OUT
TP17	GND-1
TP18	HWB EMERGENCY CAN OUT 2
TP19	HWB EMERGENCY CAN OUT 3
TP20	/SERVICE
TP28	/HWB EXON
TP29	/HWB FLUORO ORDER
TP30	/HWB PREP ORDER
TP31	/HWB EXP ORDER
TP32	/HWB DEADMAN CAN
TP33	/HWB DYNAMIC MODE 1
TP34	/HWB DYNAMIC MODE 2
TP35	/HWB SPARE IN
TP36	GP OUTPUT 0

Table 5-17 (cont.)
A3633-XX TP List

TP	Measured signal
TP37	GP OUTPUT 1
TP38	GND HW
TP39	GND HW

Table 5-18
A3633-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+5V
DS2	GREEN	+3.3V
DS3	YELLOW	F LED1
DS4	YELLOW	F LED2
DS5	YELLOW	F LED3
DS6	YELLOW	F LED4
DS7	YELLOW	F LED5
DS8	YELLOW	F LED6
DS9	YELLOW	F LED7
DS11	RED	F LED ERROR
DS13	BLUE	+3.3V
DS15	GREEN	+5V CAN0
DS16	GREEN	+5V USB21
DS17	GREEN	+5V USB22
DS20	YELLOW	RGB1 RET
DS21	YELLOW	RGB2 RET
DS22	YELLOW	RGB3 RET
DS23	YELLOW	/HWB MOVE ENABLE SERVO
DS24	YELLOW	/HWB MOVE ENABLE GPIO
DS26	YELLOW	/HWB RESET SERVO
DS27	GREEN	+5V HB

X-ray System

Central Listings

Table 5-18 (cont.)
A3633-XX LEDs List

LED	Color	Measured signal
DS29	YELLOW	HWB EXP RQST
DS30	YELLOW	HWB POSITIONER OK
DS31	YELLOW	/HWB RESET GPIO
DS32	GREEN	VCC HW
DS33	YELLOW	/HWB SPARE OUT

Table 5-19
A3633-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	POWER 1
J2	JTAG uP
J3	MICRO SD
J4	JTAG FPGA
J5	REMOTE CONTROL
J6	RGB
J7	ETHERNET
J8A	UART-1
J8B	UART-0
J15	POWER 2
J16	CAN TUBE GPIO
J17	SERVICE OUT
J18	SERVICE IN
J21	HARDWARE BUS

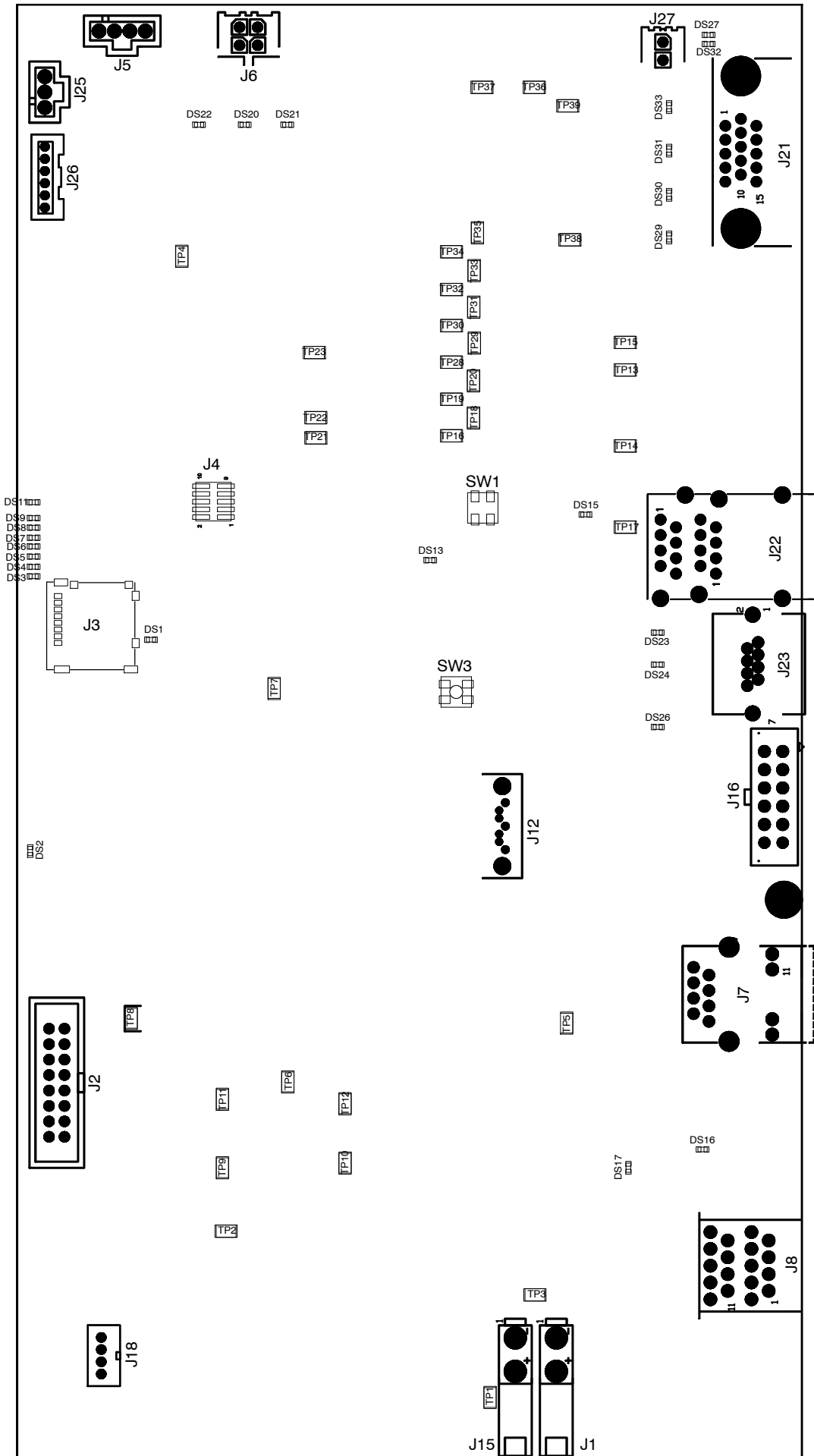
Table 5-19 (cont.)
A3633-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J22	CAN SERVO
J23	CAN GPIO
J25	REMOTE CONTROL OUT
J27	ON OFF

Table 5-20
A3633-XX Pushbuttons List

PUSHBUTTON SWITCHES	
SWITCH	Function
SW1	RESET
SW3	DEBUG

A3633-XX GENERIC ROOM MASTER



5.1.6 GPIO BOARD

Table 5-21
A3665-XX TP List

TEST POINTS	
TP	Measured signal
TP1	GND
TP2	GND
TP3	GND
TP4	GND
TP5	GND_HW
TP6	GND_HW
TP7	GND_EXT
TP8	GND_EXT
TP9	/DEADMAN_CAN
TP10	/SERVICE
TP17	PW_PROX_SENS_1
TP18	PW_PROX_SENS_2
TP19	PW_PROX_SENS_3
TP20	PW_PROX_SENS_4
TP21	PW_PROX_SENS_5
TP22	PW_PROX_SENS_6

X-ray System

Central Listings

Table 5-22
A3665-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+24V
DS2	GREEN	+5V
DS6	YELLOW	EMGCY_B
DS7	YELLOW	LED1_F
DS8	YELLOW	LED2_F
DS9	YELLOW	LED3_F
DS10	YELLOW	LED4_F
DS11	YELLOW	LED5_F
DS12	YELLOW	LED6_F
DS13	YELLOW	LED7_F
DS14	YELLOW	LED_SPARE_F
DS15	RED	LED_ERROR_F
DS16	YELLOW	/DEADMAN_F
DS17	YELLOW	/SERVICE_F

Table 5-23
A3665-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	POWER 1
J2	FORCE SENSOR1
J3	FORCE SENSOR2
J4	FORCE SENSOR3
J5	I2C AUDIO

Table 5-23 (cont.)
A3665-XX Connectors List

CONNECTOR	Description
J2	FORCE SENSOR1
J3	FORCE SENSOR2
J4	FORCE SENSOR3
J6	EMERGENCY/SERVICE/SPARE
J7	CAN COLLIMATOR
J8	SW ROT COL
J9	DEADMAN FLYWHEEL
J10	POWER AUDIO
J11	PROXIMITY SENSOR
J14	JTAG FPGA
J15	BDM MICRO
J16	COLLIMATOR LIGHT
J17	SERVICE OUT
J19	CAN DAP CNFG
J24	ON OFF
J25	EMERGENCY

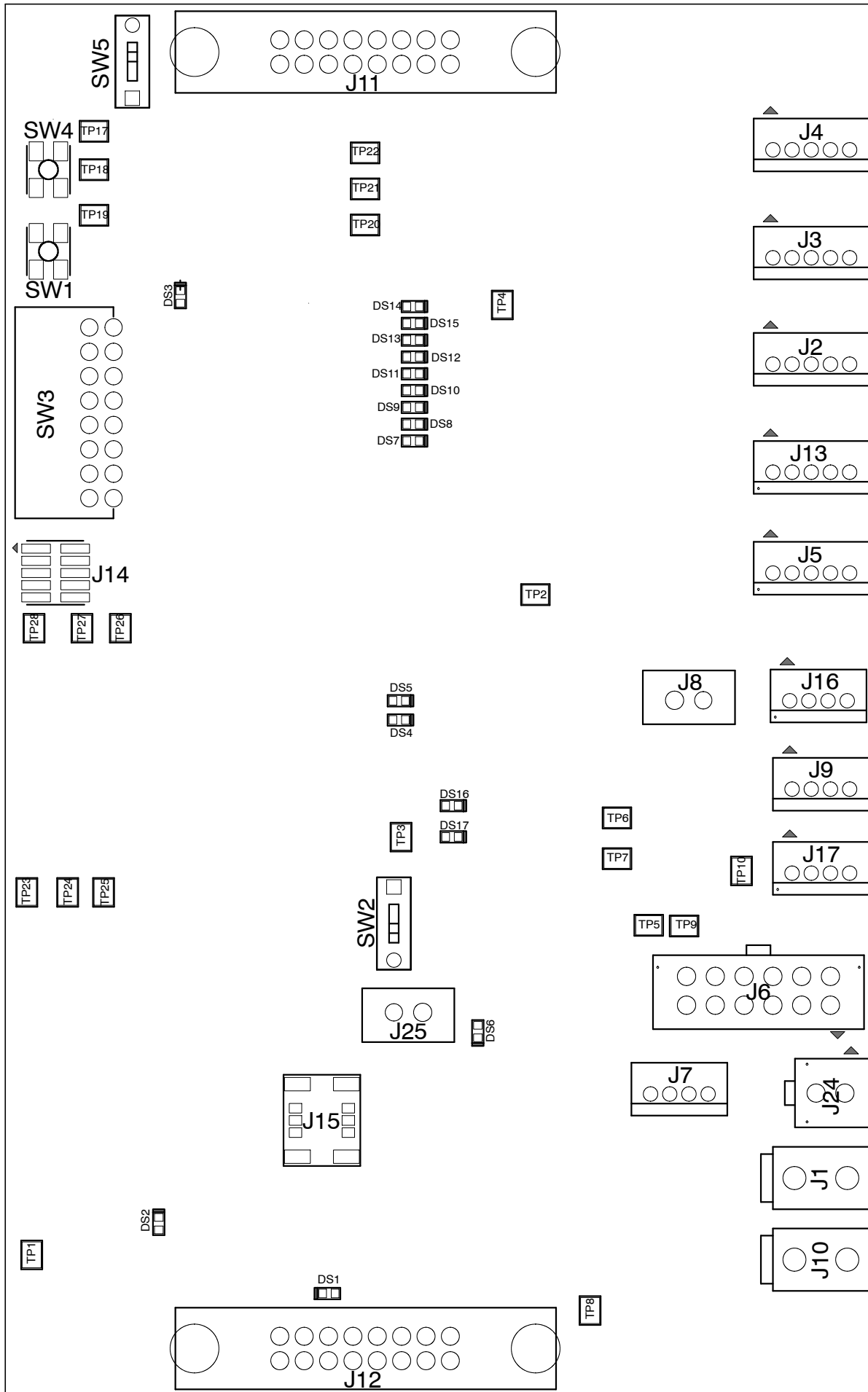
Table 5-24
A3665-XX Pushbuttons List

PUSHBUTTON SWITCHES	
SWITCH	Function
SW1	DEBUG
SW4	DEBUG

Table 5-25
A3665-XX Switches List

SWITCHES		
SWITCH	Function	
SW2	BOOTLOADER	
SW3	1	CAN NODE IDENTIFICATION
	2	
	3	
	4	
	5	
	6	
	7	
	8	NOT USED
SW5	SERVICE	

A3665-XX GPIO BOARD



5.1.7 ANTICOLLISION ADAPTER

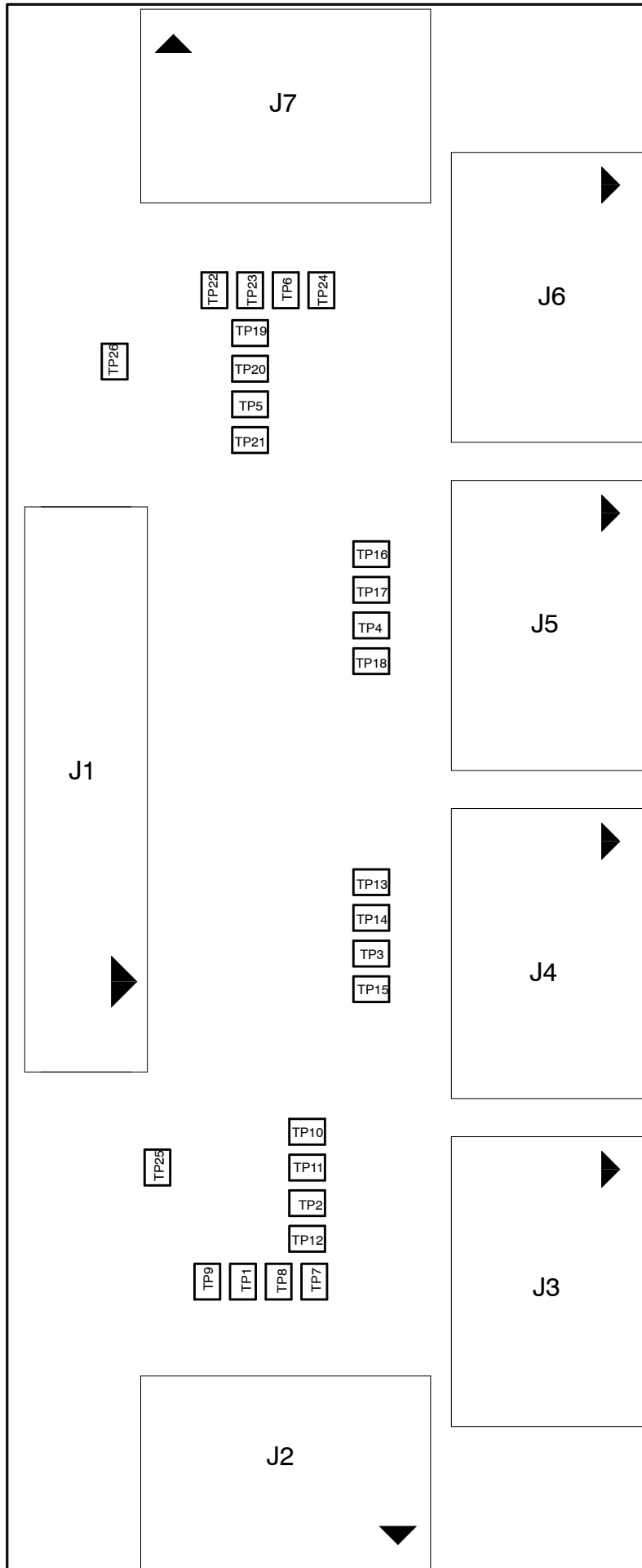
**Table 5-26
A3708-XX TP List**

TEST POINTS	
TP	Measured signal
TP1	RX SENSOR 1
TP2	RX SENSOR 2
TP3	RX SENSOR 3
TP4	RX SENSOR 4
TP5	RX SENSOR 5
TP6	RX SENSOR 6
TP7	PW SENSOR 1
TP8	AN SENSOR 1
TP9	TX SENSOR 1
TP10	PW SENSOR 2
TP11	AN SENSOR 2
TP12	TX SENSOR 2
TP13	PW SENSOR 3
TP14	AN SENSOR 3
TP15	TX SENSOR 3
TP16	PW SENSOR 4
TP17	AN SENSOR 4
TP18	TX SENSOR 4
TP19	PW SENSOR 5
TP20	AN SENSOR 5
TP21	TX SENSOR 5
TP22	PW SENSOR 6
TP23	AN SENSOR 6
TP24	TX SENSOR 6

Table 5-27
A3708-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	PROXIMITY SENSOR
J2	PROX SENSOR
J3	PROX SENSOR
J4	PROX SENSOR
J5	PROX SENSOR
J6	PROX SENSOR
J7	PROX SENSOR

A3625-XX ANTICOLLISION ADAPTER



5.1.8 AUDIO GPIO

Table 5-28
A40005-XX TP List

TEST POINTS	
TP	Measured signal
TP1	MIC OUT
TP2	AUDIO OUT+
TP3	AUDIO OUT-
TP4	+5V
TP5	GND
TP6	GND
TP8	GND
TP9	GND

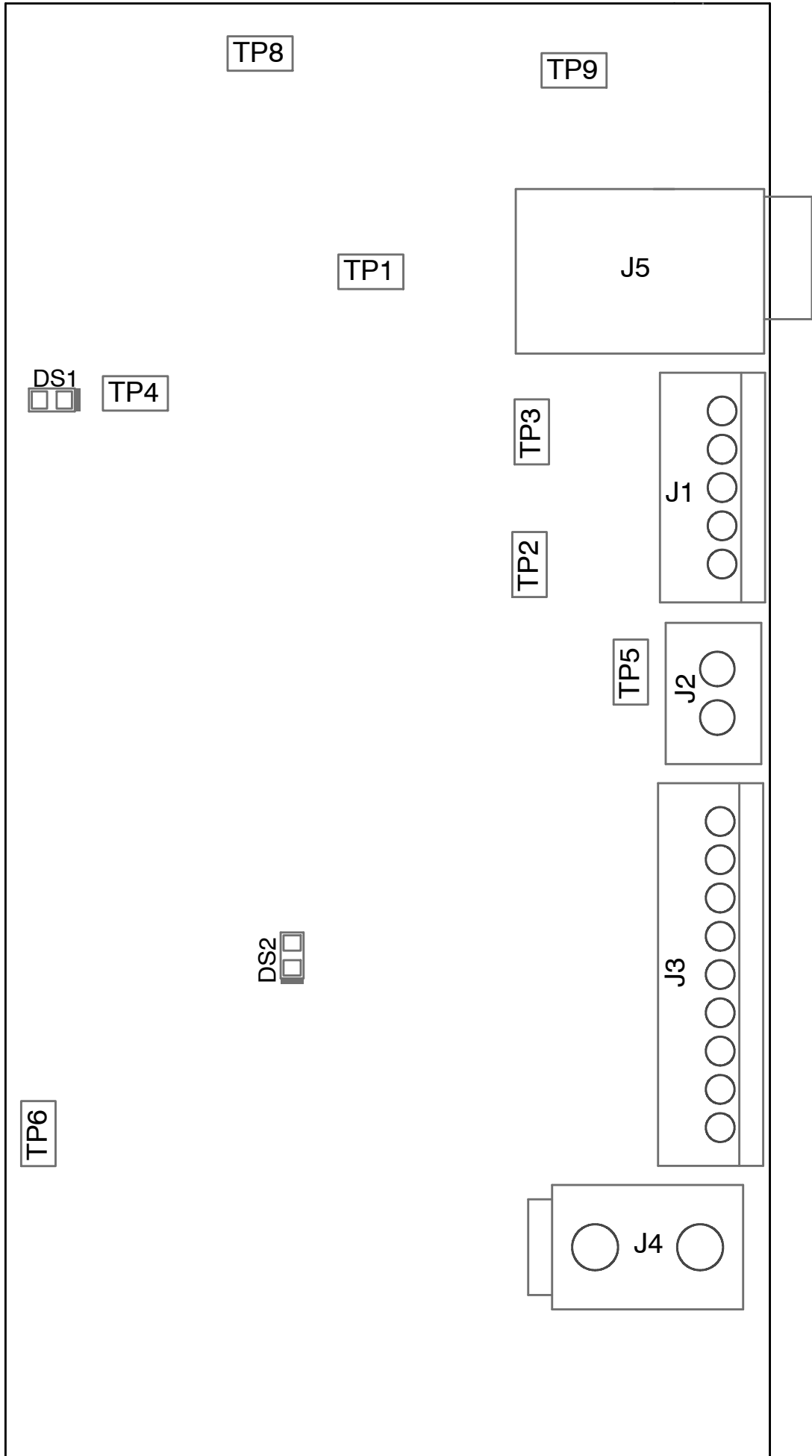
Table 5-29
A40005-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+5V
DS2	GREEN	+24V

Table 5-30
A40005-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	AUDIO IN/OUT
J2	SPEAKER
J3	ALARM
J5	MIC

A40005-XX AUDIO GPIO



5.1.9 CAPACITIVE SWITCH

Table 5-31
A40109-XX TP List

TEST POINTS	
TP	Measured signal
TP1	DEADMAN
TP2	+15V
TP3	CAP IN
TP4	+15V
TP5	0V
TP6	0V

Table 5-32
A40109-XX LEDs List

LEDs		
LED	Color	Measured signal
D3	YELLOW	DEADMAN
D7	GREEN	+15V

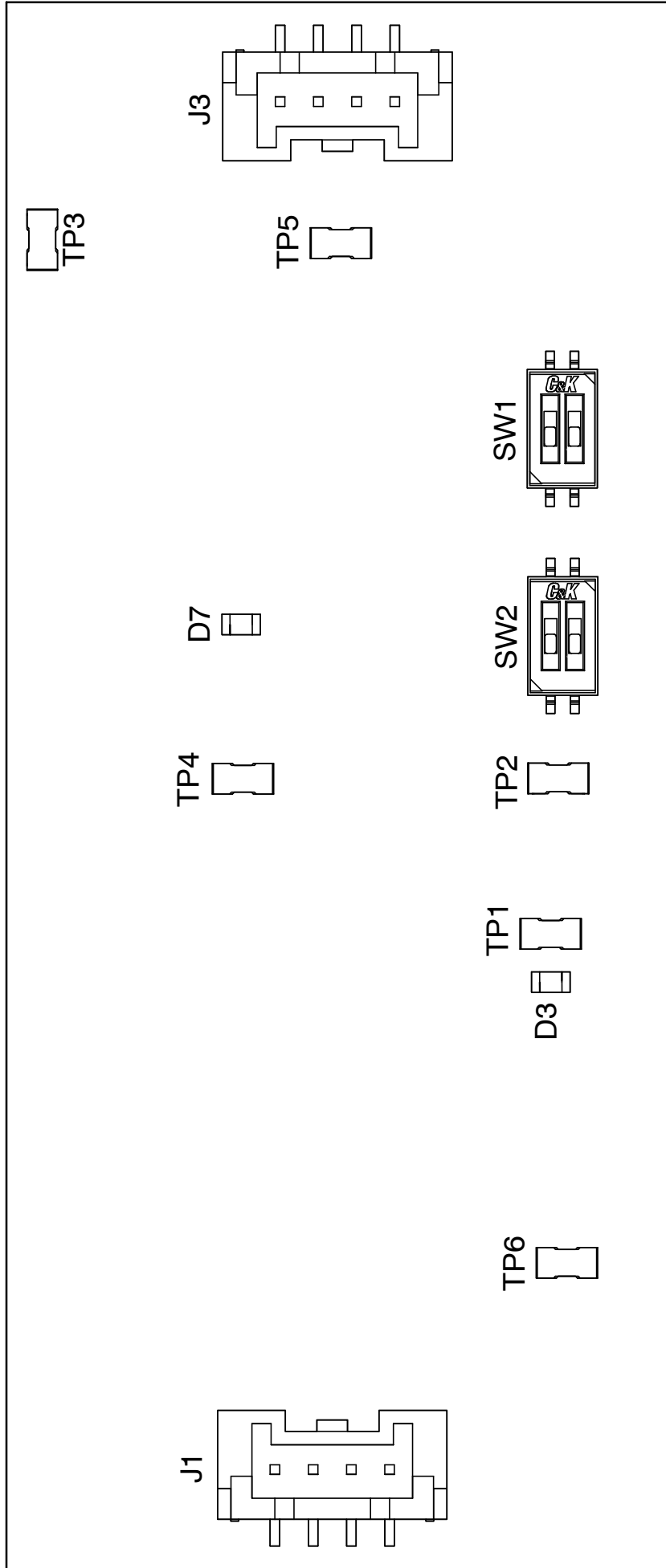
Table 5-33
A40109-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	DEADMAN
J3	CAP_IN1

Table 5-34
A40109-XX Switches List

SWITCHES		
SWITCH		Function
SW1	1	SENSITIVITY ADJUSTMENT. ALL SET TO OFF BY DEFAULT (STANDARD SENSITIVITY).
	2	
SW2	1	
	2	

A40109-XX CAPACITIVE SWITCH



5.1.10 IPM DRIVER BOARD

**Table 5-35
A3063-XX TP List**

TEST POINTS	
TP	Measured signal
TP2	kV DR1
TP3	kV DR2
TP5	GND

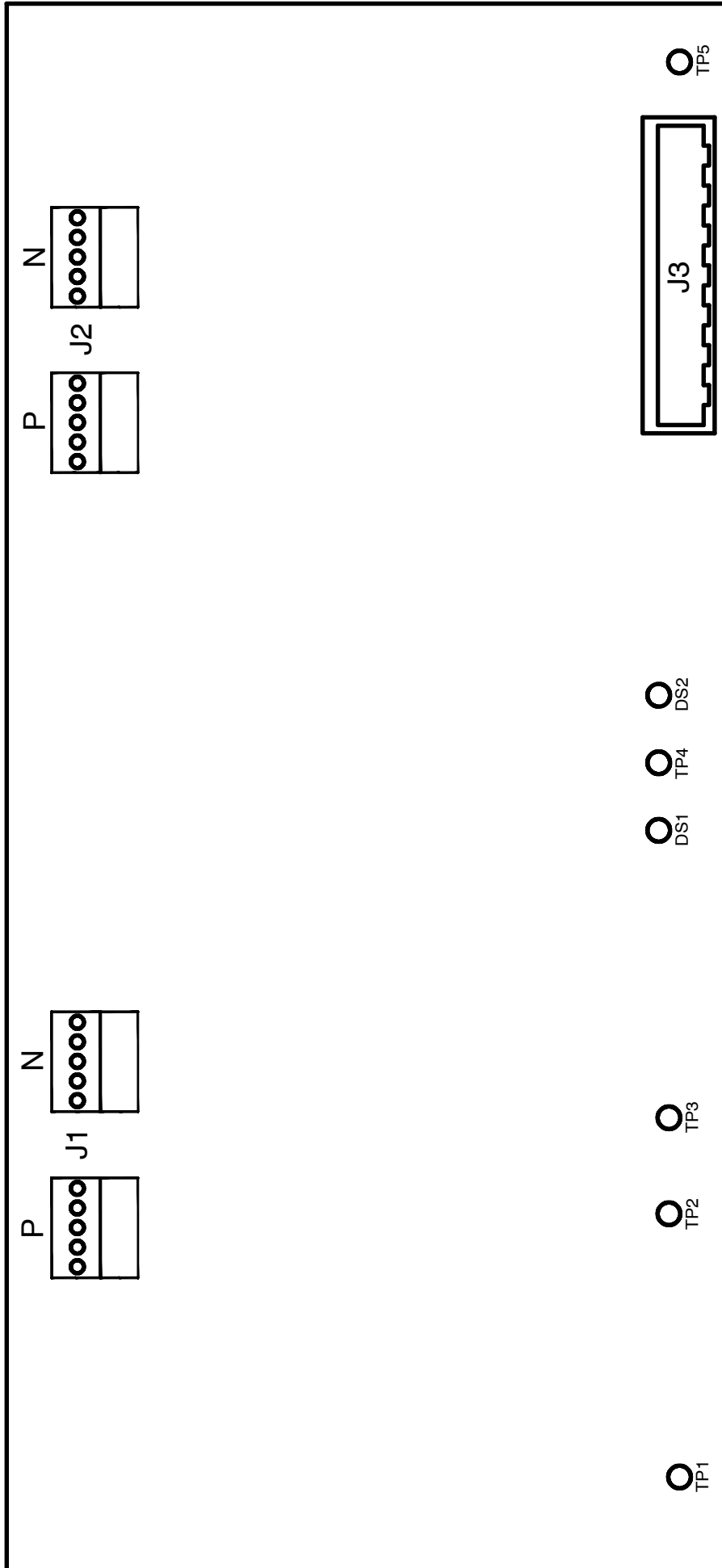
**Table 5-36
A3063-XX LEDs List**

LEDs		
LED	Color	Measured signal
DS1	GREEN	+5V
DS2	GREEN	+24V

**Table 5-37
A3063-XX Connectors List**

CONNECTORS	
CONNECTOR	Description
J1	IPM1 CONNECTION
J2	IPM2 CONNECTION
J3	CONTROL BOARD

A3063-XX IPM DRIVER BOARD



5.1.11 CONTROL BOARD

Table 5-38
A3640-XX TP List

TEST POINTS	
TP	Measured signal
TP1	-15V
TP2	+15V
TP3	+5V
TP4	GND
TP13	GND
TP14	GND
TP21	PREP
TP22	EXP
TP25	FIL CURR FG
TP26	FIL CURR FF
TP34	FLUORO SYNCHRONISM
TP35	SMALL FOCAL SPOT FILAMENT
TP36	LARGE FOCAL SPOT FILAMENT
TP37	kVp IMBALANCE
TP39	SMALL FOCAL SPOT FILAMENT INVERTER FREQUENCY
TP40	LARGE FOCAL SPOT FILAMENT INVERTER FREQUENCY
TP42	kV+
TP47	GND
TP48	Filtered mA
TP50	GND
TP51	kV-
TP54	Filtered kVp
TP56	mA+
TP57	kV DEMAND
TP59	mA-
TP60	kV INVERTER FREQUENCY
TP61	GND

**Table 5-38 (cont.)
A3640-XX TP List**

TP	Measured signal
TP64	GND
TP66	RAMP
TP67	UP PT
TP68	DWN PT
TP69	SCAN
TP77	ABC IN
TP81	GND
TP85	mAs
TP86	
TP92	ALOE/XOn
TP93	IGBT FAULT

Note 

Beside the most used test points, J12 connector on the A3640-XX Control board can also be useful for certain signals measurement: kVp, mA, Small and Large Focus Filaments, +24V, ±15V, +5V, Aloe and IGBT fault (refer to the Schematics document).

HF Series Generators

Central Listings

Table 5-39
A3640-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	-15V
DS2	GREEN	+15V
DS3	GREEN	+5V
DS4	GREEN	+24V DELAYED
DS5	YELLOW	/LINE CONT
DS6	GREEN	+5V SEC1
DS7	GREEN	SUPPLY FIL
DS8	YELLOW	/BUCKY DR2
DS9	YELLOW	/BUCKY DR1
DS10	GREEN	+5V SEC
DS11	YELLOW	/CHRG DR
DS12	YELLOW	RXCAN0
DS13	YELLOW	TXCAN0
DS14	YELLOW	TXCAN1
DS15	YELLOW	RXCAN1
DS16	RED	/ROT FAULT
DS17	YELLOW	/RST
DS18	YELLOW	/C FLUORO ORDER +
DS21	YELLOW	μ PROCESSOR
DS22	RED	ALARM
DS23	YELLOW	/ERROR LED1
DS24	YELLOW	/ERROR LED3
DS25	YELLOW	/ERROR LED5
DS26	YELLOW	/ERROR LED7
DS27	RED	/ERROR LED0
DS28	YELLOW	/ERROR LED2
DS29	YELLOW	/ERROR LED4
DS30	YELLOW	/ERROR LED6

**Table 5-39 (cont.)
A3640-XX LEDs List**

LED	Color	Measured signal
DS31	YELLOW	BACKUP TIMER STATUS
DS32	YELLOW	TXCAN2
DS33	YELLOW	RXCAN2
DS34	YELLOW	/PREP
DS35	YELLOW	/EXP
DS36	YELLOW	/ALOE
DS37	YELLOW	/READY
DS38	GREEN	+24V UNR
DS39	YELLOW	RS232 RXD
DS40	YELLOW	RS232 TXD
DS41	YELLOW	START DR1
DS42	YELLOW	START DR2
DS43	YELLOW	FLD3 CAM1
DS44	YELLOW	FLD2 CAM1
DS45	YELLOW	FLD1 CAM1
DS46	YELLOW	RXD0
DS47	YELLOW	TXD0
DS49	GREEN	+5V ISO2
DS50	GREEN	+15V PERM ISO

**Table 5-40
A3640-XX Connectors List**

CONNECTORS	
CONNECTOR	Description
J1	FILAMENT SUPPLY IN
J2	SUPPLY
J3	POWER IN
J4	CONTACTOR
J5	IPM DRIVER

HF Series Generators

Central Listings

**Table 5-40 (cont.)
A3640-XX Connectors List**

CONNECTOR	Description
J6	CHARGE/DISCHARGE
J7	DUAL SPEED STARTER
J8	BUZZER
J9	CAN
J11	SPARE IN
J12	SUPERVISION
J13	FIL POWER
J14	HSW
J15	BDM
J17	LICENSE
J18	HV TRF
J19	CAN
J20	GP INP0
J21	ANALOG
J23A	BATTERY MONITOR
J23B	FLUORO/DSI
J24A	OUT1
J24B	OUT2
J25A	CONSOLA
J25B	RS422/485
J27	INTERLOCKS
J28	DOSE
J30	SCOPE PROBE
J32	INTERFACE BOARD
J33	GENERATOR J5 CONNECTOR
J34	AMP

Table 5-41
A3640-XX Pushbuttons List

PUSHBUTTON SWITCHES	
SWITCH	Function
SW3	RESET

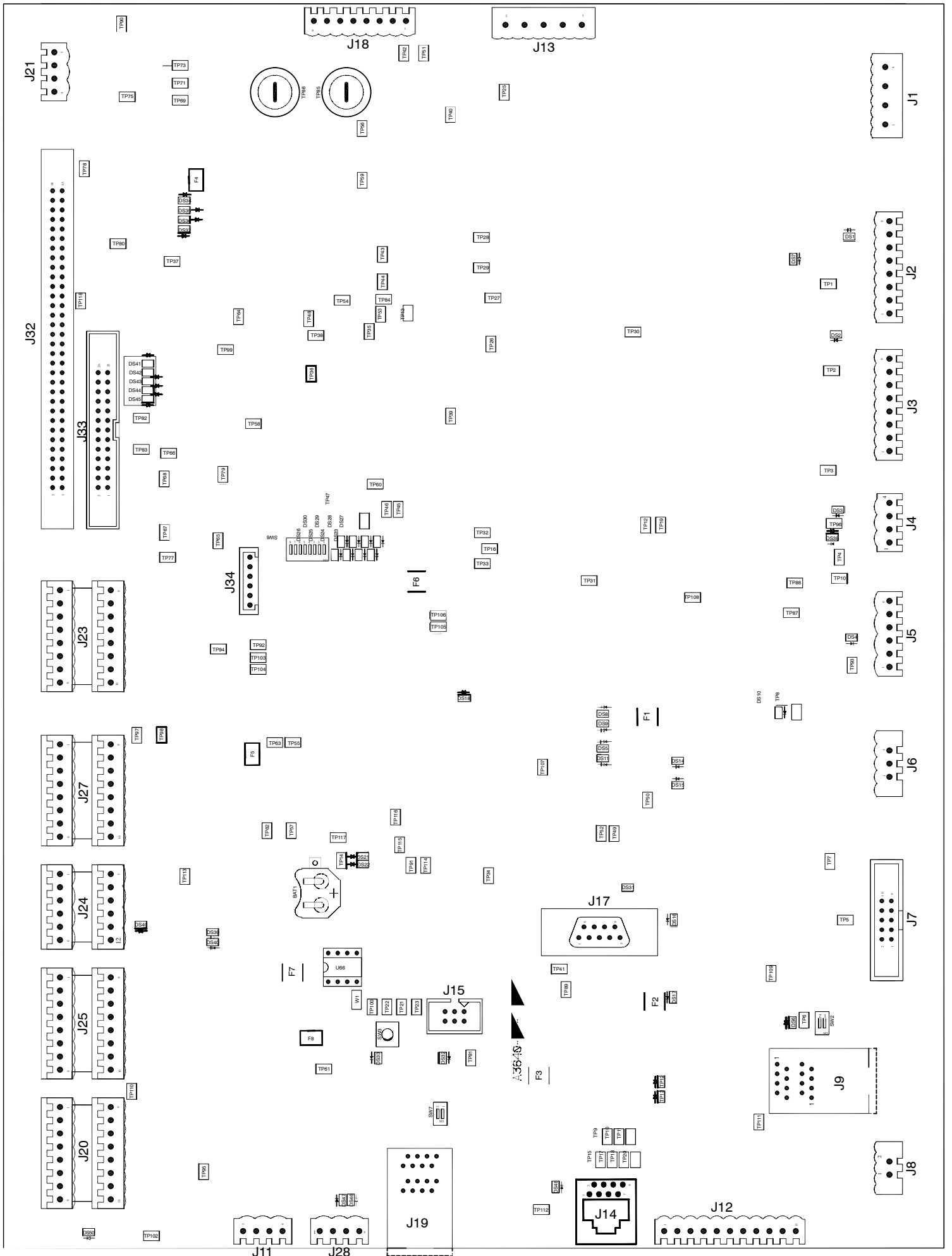
Table 5-42
A3640-XX Switches List

SWITCHES		
SWITCH		Function
SW2		NOT USED
SW6	1	NOT USED
	2	DISABLES HARDWARE ERRORS
	3	DEMO MODE (NO X-RAY)
	4	DISABLES THE FILAMENTS
	5	DISABLES DOSEMETER
	6	NOT USED
	7	NOT USED
	8	INITIALIZES THE EEPROM
SW7		NOT USED

Table 5-43
A3640-XX Jumpers List

JUMPERS	
JUMPER	Function
W1	SOFTWARE UPDATE

A3640-XX CONTROL BOARD



5.1.12 SUPPLY BOARD

Table 5-44
A3646-XX TP List

TEST POINTS	
TP	Measured signal
TP1	+24V
TP2	+24V VPERM
TP3	+24V DELAY
TP4	+5V
TP5	+5V DELAY
TP6	+15V
TP7	-15V
TP8	GND
TP11	GND

Table 5-45
A3646-XX LEDs List

LEDs		
LED	Color	Measured signal
DS1	GREEN	+24V PERM UNR
DS2	GREEN	+24V UNR
DS3	GREEN	+5V
DS4	GREEN	+15V
DS5	GREEN	-15V
DS6	GREEN	LOCK
DS7	GREEN	+5V DELAY
DS8	GREEN	+24V DELAY

HF Series Generators

Central Listings

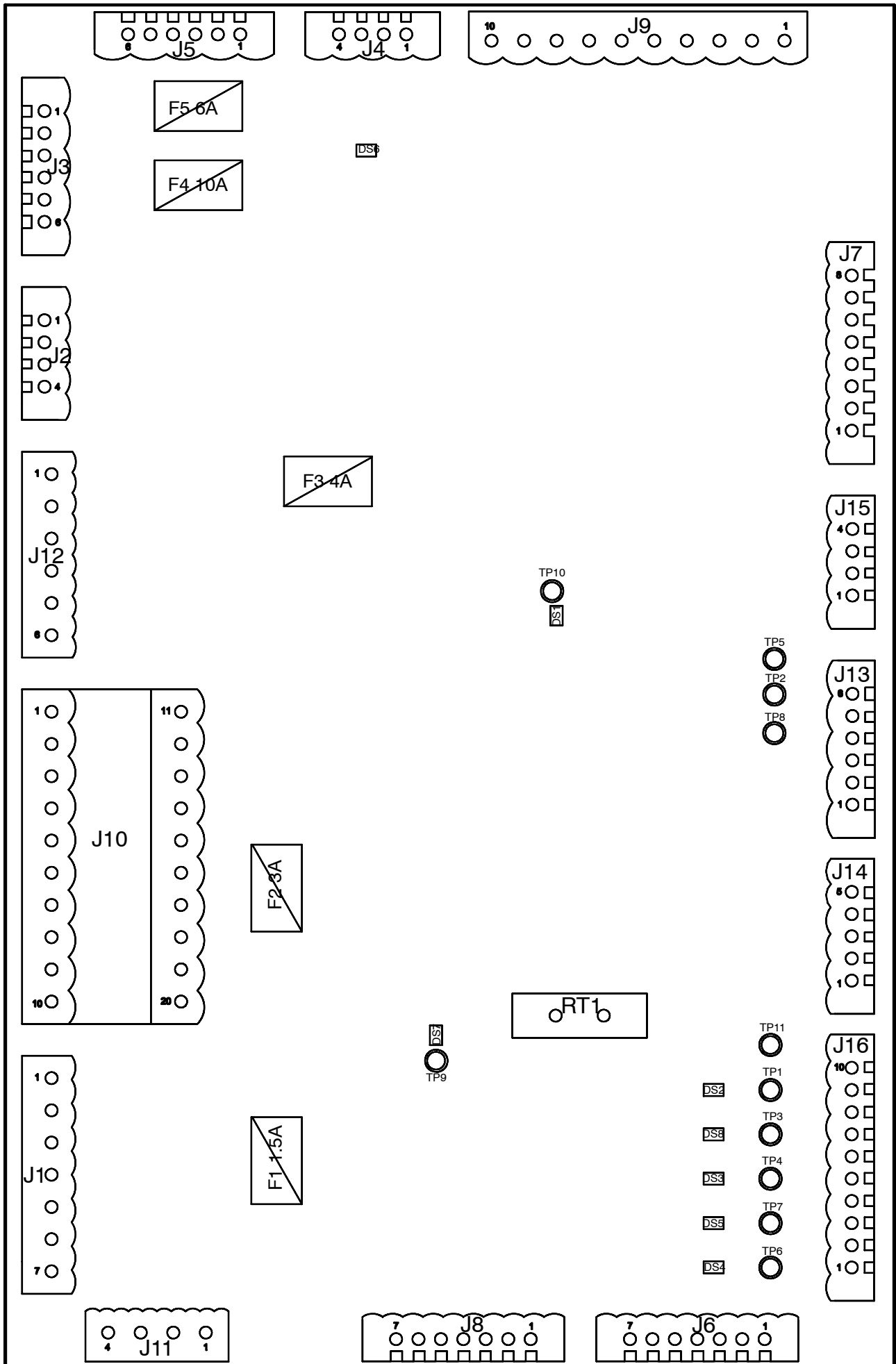
Table 5-46
A3646-XX Connectors List

CONNECTORS	
CONNECTOR	Description
J1	120/230 AC IN
J2	24 AC
J3	COLLIMATOR & LOCKS POWER IN
J4	LOCKS OUT
J5	COLLIMATOR
J6	PCB CONTROL SUPPLY
J7	ON/OFF
J8	CONTROL PCB
J9	ROOM LIGHT & DETECTORS CONTROL
J10	PS INTERFACE
J11	FILAMENT SUPPLY OUT
J12	RELAY K1
J13	RELAY K1
J14	DC POWER IN
J15	POWER DELAY
J16	GENERAL PURPOSE POWER

Table 5-47
A3646-XX Fuses List

FUSES	
FUSE	Description
F1	1.5A, 250V, SB
F2	3A, 250V, SB
F3	4A, 250V, SB
F4	10A, 250V, SB
F5	6.25A, 250V, SB

A3646-XX SUPPLY BOARD



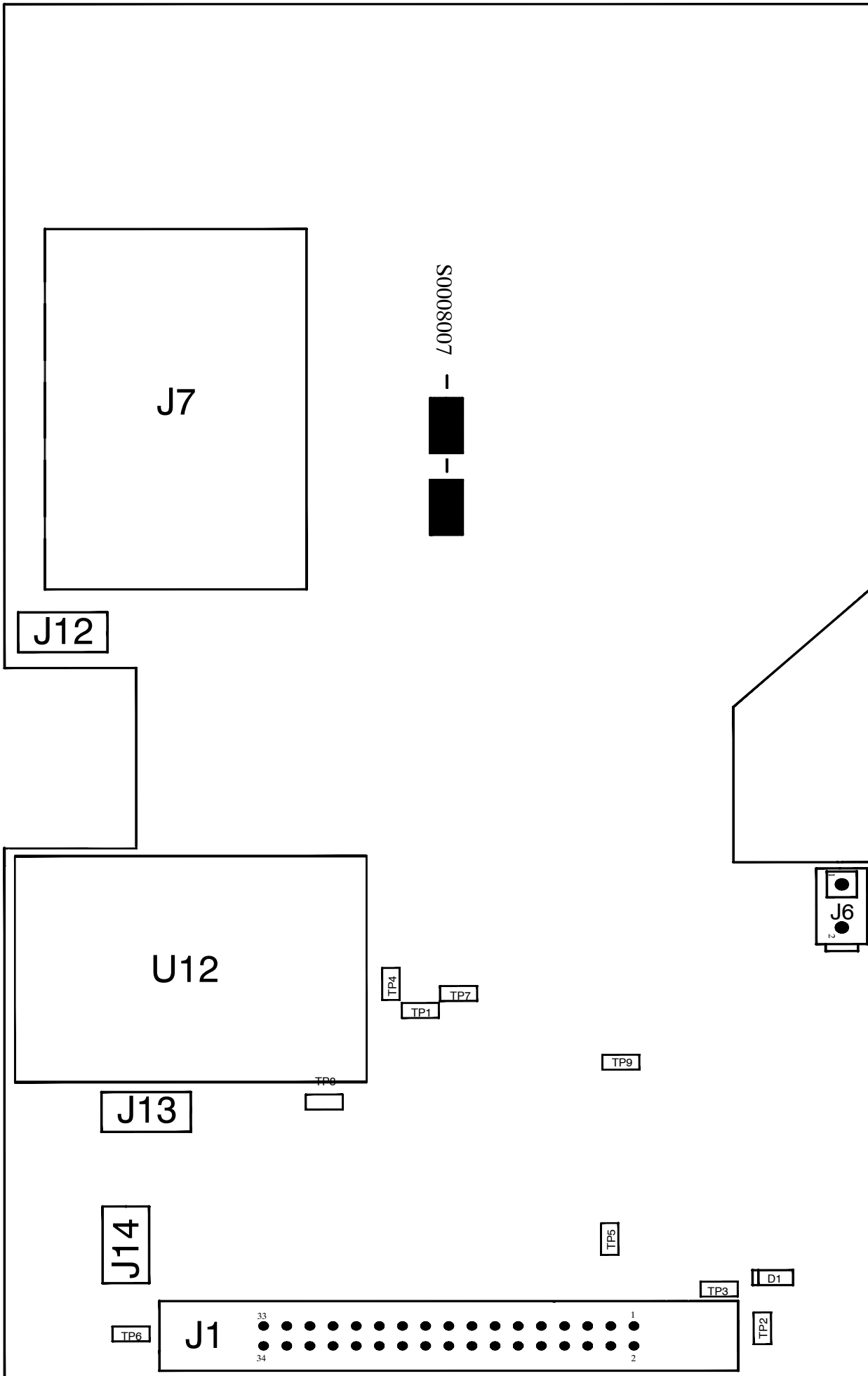
5.1.13 BOOSTER MODULE**Table 5-48
S0008007 TP List**

TEST POINTS	
TP	Measured signal
TP6	+15V
TP7	+5V
TP8	-15V
TP9	+5V

**Table 5-49
S0008007 Connectors List**

CONNECTORS	
CONNECTOR	Description
J1	DUAL SPEED STARTER
J6	IGBT GATE
J7	DC BUS
J12	INDUCTANCE
J13	INDUCTANCE

S0008007 BOOSTER MODULE



5.1.14 DUAL SPEED STARTER

Table 5-50
S0008009 TP List

TEST POINTS	
TP	Measured signal
TP26	Vout
TP30	-15V
TP38	VAREF
TP39	+15V
TP41	+5V
TP42	+5V

Table 5-51
S0008009 LEDs List

LEDs		
LED	Color	Measured signal
D15	GREEN	-5V
D27	RED	/FLTINV
D28	RED	/FLTINV1
D29	RED	/FLTINV2
D30	RED	/FLTINV3
D31	RED	/FLTINV4
D32	RED	/FLTINV5
D33	RED	/FLTINV6
D36	GREEN	-15V
D38	GREEN	+15V
D40	RED	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D41	YELLOW	RXD
D42	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)

Table 5-51 (cont.)
S0008009 LEDs List

LED	Color	Measured signal
D43	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D44	YELLOW	TXD
D45	GREEN	+5V
D46	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D47	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D48	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D49	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)
D50	YELLOW	ERROR INDICATOR (Refer to Section 4.1 of the Troubleshooting document)

Table 5-52
S0008009 Connectors List

CONNECTORS	
CONNECTOR	Description
J5	BOOSTER MODULE
J7	STATOR
J9	SUPPLY BOARD (N.U.)
J10	DC BUS
J19	CONTROL BOARD
J21	SUPPLY BOARD

Table 5-53
S0008009 Switches List

SWITCHES	
SWITCH	Function
S1	NOT USED

S0008009 DUAL SPEED STARTER

