



# Communications Test Set 3500 / 3500A Getting Started Manual

1002-6200-8P0  
Issue-7

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# GETTING STARTED MANUAL

## COMMUNICATIONS TEST SET

### 3500 / 3500A

PUBLISHED BY  
Aeroflex

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**Subject to Export Control, see Cover Page for details.**

This manual contains essential information relating to initial use of the unit.

Aeroflex recommends the operator become familiar with the 3500 / 3500A Operation Manual before attempting to operate the unit.

## **SAFETY FIRST: TO ALL OPERATIONS PERSONNEL**

**REFER ALL SERVICING OF UNIT TO QUALIFIED TECHNICAL PERSONNEL. THE 3500 / 3500A CONTAINS NO OPERATOR SERVICEABLE PARTS.**

**WARNING: USING THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE ACCOMPANYING DOCUMENTATION MAY IMPAIR THE SAFETY PROTECTION PROVIDED BY THE EQUIPMENT.**

### **CASE, COVER OR PANEL REMOVAL**

Opening the Case Assembly exposes the operator to electrical hazards that can result in electrical shock or equipment damage. Do not operate the 3500 / 3500A with the Case Assembly open.

### **SAFETY IDENTIFICATION IN TECHNICAL MANUAL**

This manual uses the following terms to draw attention to possible safety hazards that may exist when operating or servicing this equipment.

**CAUTION:** THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN EQUIPMENT OR PROPERTY DAMAGE (E.G., FIRE).

**WARNING:** THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN PERSONAL INJURY OR DEATH.

### **SAFETY SYMBOLS IN MANUALS AND ON UNITS**



**CAUTION:** Refer to accompanying documents. (This symbol refers to specific CAUTIONS represented on the unit and clarified in the text.)



**AC OR DC TERMINAL:** Terminal that may supply or be supplied with ac or dc voltage.



**DC TERMINAL:** Terminal that may supply or be supplied with dc voltage.



**AC TERMINAL:** Terminal that may supply or be supplied with ac or alternating voltage.

### **EQUIPMENT GROUNDING PRECAUTION**

Improper grounding of equipment can result in electrical shock.

### **USE OF PROBES**

Check the specifications for the maximum voltage, current and power ratings of any connector on the 3500 / 3500A before connecting a probe from a terminal device. Be sure the terminal device performs within these specifications before using a probe for measurement, to prevent electrical shock or damage to the equipment.

### **POWER CORDS**

Power cords must not be frayed, broken nor expose bare wiring when operating this equipment.

### **USE RECOMMENDED FUSES ONLY**

Use only fuses specifically recommended for the equipment at the specified current and voltage ratings.

**Subject to Export Control, see Cover Page for details.**

## **SAFETY FIRST: TO ALL OPERATIONS PERSONNEL (cont)**

### **INTERNAL BATTERY**

The 3500 / 3500A contains a Lithium Ion Battery, serviceable only by a qualified technician.

**CAUTION:** SIGNAL GENERATORS CAN BE A SOURCE OF ELECTROMAGNETIC INTERFERENCE (EMI) TO COMMUNICATION RECEIVERS. SOME TRANSMITTED SIGNALS CAN CAUSE DISRUPTION AND INTERFERENCE TO COMMUNICATION SERVICES OUT TO A DISTANCE OF SEVERAL MILES. USERS OF THIS EQUIPMENT SHOULD SCRUTINIZE ANY OPERATION THAT RESULTS IN RADIATION OF A SIGNAL (DIRECTLY OR INDIRECTLY) AND SHOULD TAKE NECESSARY PRECAUTIONS TO AVOID POTENTIAL COMMUNICATION INTERFERENCE PROBLEMS.

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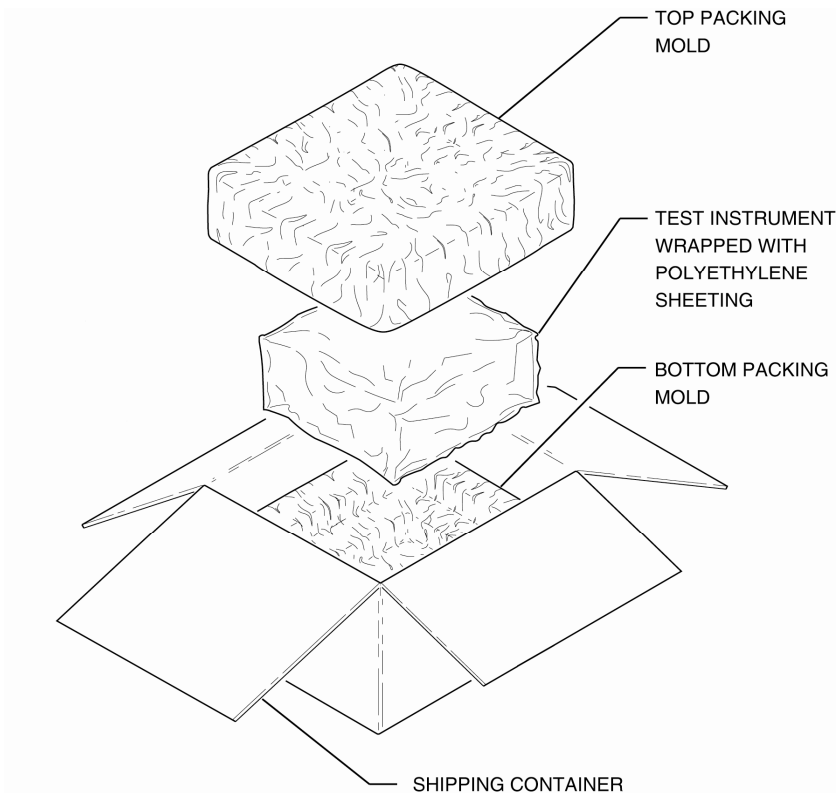
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## SERVICE UPON RECEIPT OF MATERIAL

### UNPACKING

Special-design packing material inside this shipping carton provides maximum protection for the 3500 / 3500A. Avoid damaging the carton and packing material during equipment unpacking. Use the following steps for unpacking the 3500 / 3500A.

- Cut and remove the sealing tape on the carton top and open the carton.
- Remove the top packing mold.
- Remove 3500 / 3500A and packing material from bottom packing mold.
- Remove the protective plastic bag from the 3500 / 3500A.
- Place protective plastic bag and packing material inside shipping carton.
- Store the shipping carton for future use should the 3500 / 3500A need to be returned.



## SERVICE UPON RECEIPT OF MATERIAL (cont)

### CHECKING UNPACKED EQUIPMENT

- Inspect the equipment for damage incurred during shipment. If the equipment has been damaged, report the damage to Aeroflex.
- Check the equipment against the packing slip to see if the shipment is complete. Report all discrepancies to Aeroflex.

### 3500 STANDARD ITEMS

DESCRIPTION	PART NUMBER		QTY
3500 Communications Test Set			1
Adapter (BNC-F to TNC-M)	2200-0410-700	AC25027	5
Cable (BNC) (M-M) (48 in)	6041-4284-400	AC25026	2
Cable (TNC) (M-M) (48 in)	6041-5680-800	AC27016	1
Case, Accessory	1000-6200-800	N/A	1
Case, Soft-Sided Carrying	1412-0006-006	AC27004	1
Comm Breakout Box	7005-6242-900	N/A	1
External DC Power Supply	7110-6200-200	N/A	1
Fuse, Spare (5 A, 32 Vdc, Type F)	5106-0000-057	N/A	2
Handset	7005-6240-200	N/A	1
Handset Cable	6041-6280-000	N/A	1
Manual, Getting Started (Paper)	1002-6200-8P0	AC27010PP	1
Manual, Operation/ICW (CD)	1002-6200-2C0	AC27008CD	1
Power Cable (AC)	6041-0001-000	N/A	1
Power Cable (DC Cigarette Lighter)	6041-6281-400	N/A	1
Short-Open-Load VSWR Calibrator (TNC)	2901-0000-054	N/A	1

**SERVICE UPON RECEIPT OF MATERIAL (cont)**



## SERVICE UPON RECEIPT OF MATERIAL (cont)

### 3500A STANDARD ITEMS

DESCRIPTION	PART NUMBER		QTY
3500A Communications Test Set			1
Adapter (BNC-F to TNC-M)	2200-0410-700	AC25027	5
Antenna (BNC) (50 MHz)	1201-7617-001	AC25042	1
Antenna (BNC) (150 MHz)	1201-7616-801	AC25045	1
Antenna (BNC) (450 MHz)	1201-7616-901	AC25043	1
Antenna (BNC) (800 MHz)	1201-7616-001	AC25044	1
Cable (BNC) (M-M) (48 in)	6041-4284-400	AC25026	2
Cable (TNC) (M-M) (48 in)	6041-5680-800	AC27016	1
Case, Accessory	1000-6200-800	N/A	1
Case, Soft-Sided Carrying	1412-0006-007	N/A	1
Comm Breakout Box	7005-6242-900	N/A	1
External DC Power Supply	7110-6200-200	N/A	1
Fuse, Spare (5 A, 32 Vdc, Type F)	5106-0000-057	N/A	2
Handset	7005-6244-700	N/A	1
Manual, Getting Started (Paper)	1002-6200-8P0	AC27010PP	1
Manual, Operation/ICW (CD)	1002-6200-2C0	AC27008CD	1
Power Cable (AC)	6041-0001-000	N/A	1
Power Cable (DC Cigarette Lighter)	6041-6281-400	N/A	1
Short-Open-Load VSWR Calibrator (TNC)	2901-0000-054	N/A	1
USB Flash Drive (1 GB)	7110-1100-600	N/A	1

**SERVICE UPON RECEIPT OF MATERIAL (cont)**



## SERVICE UPON RECEIPT OF MATERIAL (cont)

**3500 / 3500A OPTIONAL ITEMS**  
(These optional items may be included if ordered.)

DESCRIPTION	PART NUMBER		QTY	MODEL
Antenna (BNC) (50 MHz)	1201-7617-001	AC25042	1	3500
Antenna (BNC) (150 MHz)	1201-7616-801	AC25045	1	3500
Antenna (BNC) (450 MHz)	1201-7616-901	AC25043	1	3500
Antenna (BNC) (800 MHz)	1201-7616-001	AC25044	1	3500
Attenuator (20 dB / 50 W) Adapter (N-M to BNC-F) Adapter (N-M to TNC-M)	2901-0000-049 2200-0412-800 2200-0412-400	AC27002	1 1 1	3500 / 3500A
Attenuator (20 dB / 150 W) Adapter (N-F to BNC-F) Adapter (N-M to BNC-F)	2901-0000-051 2200-0412-800 2113-0000-004	AC27003	1 1 1	3500 / 3500A
Battery, Spare	7020-0012-500	AC27005	1	3500 / 3500A
Case, Transit	1412-6200-500	AC27001	1	3500 / 3500A
Desk Top Stand	6500-5681-000	AC0820	1	3500 / 3500A
Directional Coupler (20 to 200 MHz) Attenuator (10 dB) Adapter (N-M to BNC-F) Cable (BNC) (M-M) (16 in)	4100-0900-000 2901-0401-010 2113-0000-004 6041-6282-000	AC27013	1 1 2 2	3500 / 3500A
Flip Cover	7001-6242-100	AC27006	1	3500 / 3500A
Maintenance Manual (CD)	1002-6200-4C0	AC27009CD	1	3500 / 3500A
Tripod	7112-8102-500	AC0826	1	3500 / 3500A
Tripod, Stand, Dolly	7112-8102-500 1005-1000-000 6500-5881-100	AC24006	1	3500 / 3500A

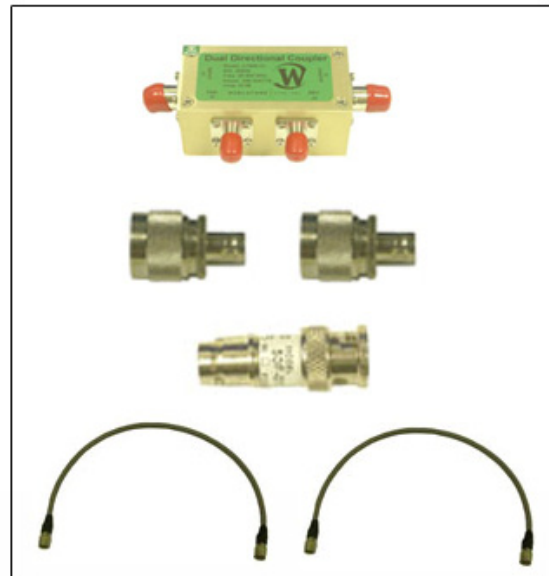
**SERVICE UPON RECEIPT OF MATERIAL (cont)**



**(AC27002)**



**(AC27003)**



**(AC27013)**

## SPECIFICATIONS

### Environmental / Physical

Overall Dimensions:	231 mm (W), 285 mm (L), 70 mm (D) (9.1 in X 11.2 in X 2.8 in)
Weight:	8.5 lbs.; 12 lbs with accessories and soft carrying case
Temperature	
Storage:	-51°C to +71°C Battery must not be subjected to temperatures below -20°C, nor above +60°C
Operation:	-20°C to +55°C
Humidity:	
Storage	Mil-PRF-28800F Class 2
Operation	Mil-PRF-28800F Class 2
Altitude	
Operation	MIL-PRF-28800F, Class 2
Shock, Functional	
Operation	MIL-PRF-28800F, Class 2
Bench Handling	
Operation	MIL-PRF-28800F, Class 2
Vibration	
Operation	MIL-PRF-28800F, Class 2

### Compliance / Safety

Use:	Indoors
Pollution Degree:	2
Relative Humidity:	80% minimum for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C.
EMC:	MIL-PRF-28800F, Class 2

### AC Input Power

AC Input Voltage Range:	100 to 240 VAC, 1.5 A maximum, 47 Hz to 63 Hz
AC Input Voltage Fluctuation:	<10% of the nominal input voltage
Transient Overvoltage:	According to Installation Category II

## **SPECIFICATIONS (cont)**

### **AC-DC Converter**

Usage Environment:	Indoor Use, Pollution Degree 2
Operating Temperature:	0°C to +40°C
Storage Temperature:	-20°C to +85°C
EMI:	EN55022 Class B, EN61000-3-2 Class D
Safety:	UL 1950, CSA 22.2 No. 234 and No.950, IEC 950/EN 60950

### **DC Input Power (DC IN Connector)**

DC Input Voltage Range:	11 to 32 Vdc
DC Power Input:	25 W Nominal 55 W Maximum
DC Fuse Requirement:	5A, 32 Vdc, Type F

### **Battery**

Battery Type:	Lithium Ion (Li Ion) Battery pack Battery must not be subjected to temperatures below -20°C, nor above +60°C
Operation Time:	5 hours continuous use
Charge Time:	4 hours Battery is to be charged at temperatures between +5°C and +45°C only. Dead Battery (<10% capacity) is to be charged for 20 minutes before operation of AC power.

## INSTALLATION

### GENERAL

The 3500 / 3500A is powered by an internal Lithium Ion battery pack. The 3500 / 3500A is supplied with an External DC Power Supply which allows the operator to recharge the battery using AC power.

**NOTE:** The 3500 / 3500A can operate continuously on AC power via the External DC Power Supply, for servicing and/or bench tests.

### BATTERY OPERATION

The internal battery is equipped to power the 3500 / 3500A for five hours of continuous use, after which time, the 3500 / 3500A battery needs recharging. When the POWER Indicator is GREEN, the battery is at >25% capacity. When the POWER Indicator is YELLOW, the battery is at <25% capacity.

If the battery level, shown in the BAT Field on most Test Screens, drops to 10 (10%), the 3500 / 3500A powers down automatically.

### BATTERY CHARGING

The battery charger operates whenever DC power (11 to 32 Vdc) is applied to the 3500 / 3500A with the supplied External DC Power Supply. When charging, the battery reaches 100% charge in approximately four hours. The internal battery charger allows the battery to charge from 5° to 45°C.

The battery should be charged every three months (minimum) or disconnected for long term inactive storage periods of more than six months. The Battery must be removed when conditions surrounding the Test Set are <-20°C or >60°C.

Allow 20 minutes for the battery to charge when turning 3500 / 3500A ON from a dead battery condition.

### SAFETY PRECAUTIONS

The following safety precautions must be observed during installation and operation. Aeroflex assumes no liability for failure to comply with any safety precaution outlined in this manual.

#### Complying with Instructions

Installation/operating personnel should not attempt to install or operate the 3500 / 3500A without reading and complying with instructions contained in this manual. All procedures contained in this manual must be performed in exact sequence and manner described.

#### Grounding Power Cord

**WARNING: DO NOT USE A THREE-PRONG TO TWO-PRONG ADAPTER PLUG. DOING SO CREATES A SHOCK HAZARD BETWEEN THE CHASSIS AND ELECTRICAL GROUND.**

For AC operation, the AC Line Cable, connected to the External DC Power Supply, is equipped with a standard three-prong plug and must be connected to a properly grounded three-prong receptacle. It is the customer's responsibility to:

- Have a qualified electrician check receptacle(s) for proper grounding.
- Replace any standard two-prong receptacle(s) with properly grounded three-prong receptacle(s).

#### Operating Safety

Due to potential for electrical shock within the 3500 / 3500A, the Case Assembly must be closed when the 3500 / 3500A is connected to an external power source.

Battery replacement, fuse replacement and internal adjustments must only be performed by qualified service technicians.

## INSTALLATION (cont)

### AC POWER REQUIREMENTS

The External DC Power Supply, supplied with the 3500 / 3500A, operates over a voltage range of 100 to 240 VAC at 47 to 63 Hz.

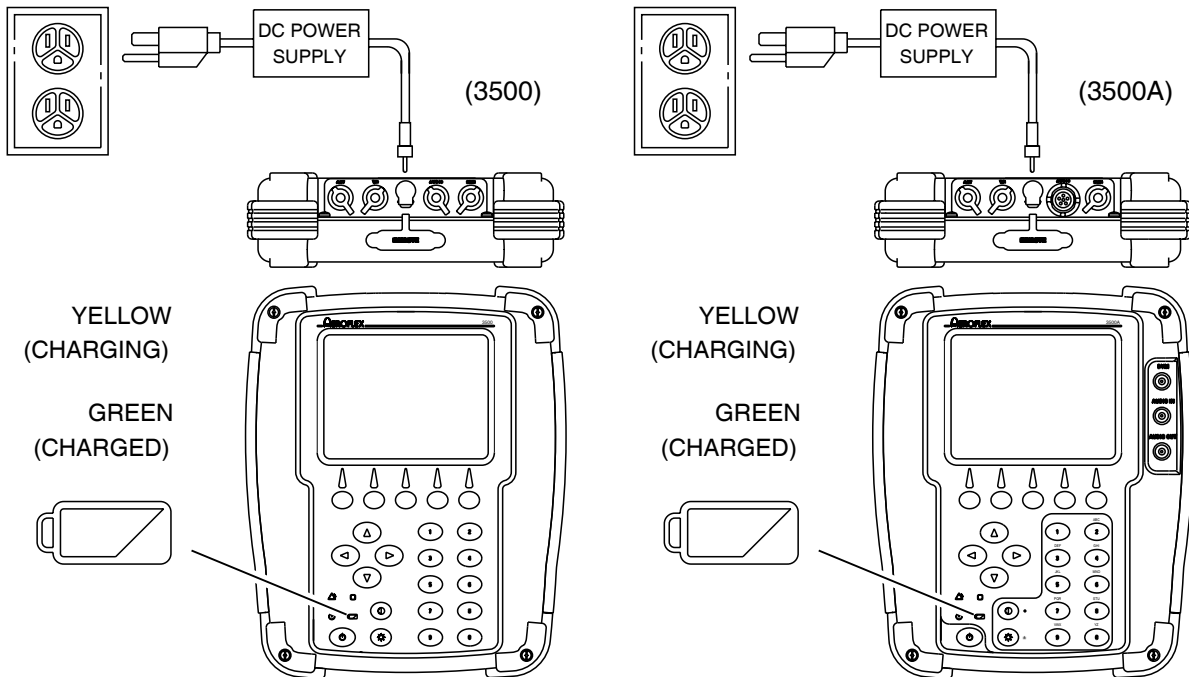
### BATTERY RECHARGING

STEP	PROCEDURE
------	-----------

1. Connect the External DC Power Supply to the DC IN Connector on the 3500 / 3500A.
2. Connect the AC Power Cable to the AC PWR Connector on the External DC Power Supply and an appropriate AC power source
3. Verify the CHARGE Indicator is yellow.
4. Allow four hours for battery charge or until the CHARGE Indicator is green.

**NOTE:** If the CHARGE Indicator is yellow and/or the battery fails to accept a charge and the 3500 / 3500A does not operate on battery power, the battery, serviceable only by a qualified technician, requires replacement. Refer to Battery/Voltage Instructions.

**NOTE:** The 3500 / 3500A may turn OFF whenever the External DC Power Supply (connected to AC power) is plugged into the 3500 / 3500A. This is a design behavior to prevent damage to the lithium batteries. Performing the Steps above in order shown helps to avoid the inadvertent turning OFF of the 3500 / 3500A when the External DC Power Supply is connected.



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## INSTALLATION (cont)

### EXTERNAL CLEANING

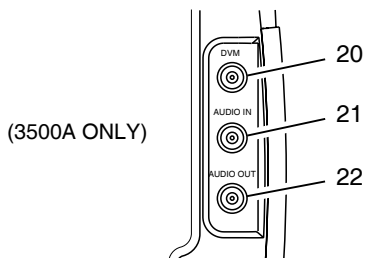
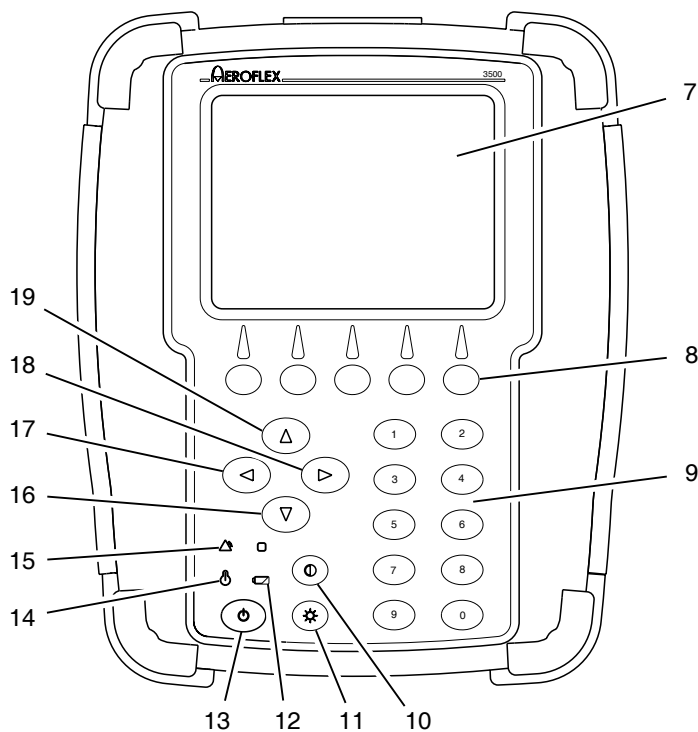
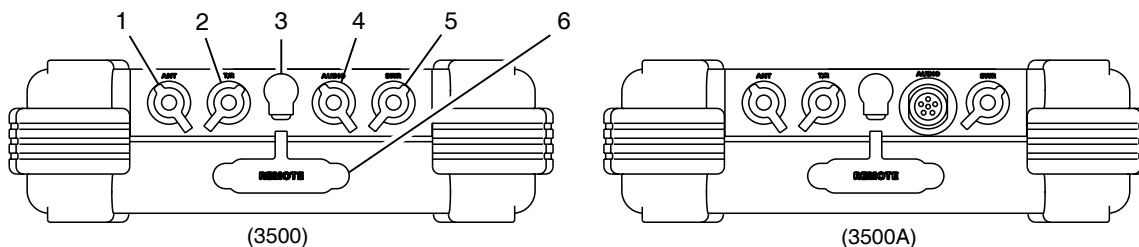
The following procedure contains routine instructions for cleaning the outside of the 3500 / 3500A.

**CAUTION:** DISCONNECT POWER FROM 3500 / 3500A TO AVOID POSSIBLE DAMAGE TO ELECTRONIC CIRCUITS.

STEP	PROCEDURE
1.	Clean front panel buttons and display face with soft lint-free cloth. If dirt is difficult to remove, dampen cloth with water and a mild liquid detergent.
2.	Remove grease, fungus and ground-in dirt from surfaces with soft lint-free cloth dampened (not soaked) with isopropyl alcohol.
3.	Remove dust and dirt from connectors with soft-bristled brush.
4.	Cover connectors, not in use, with suitable dust cover to prevent tarnishing of connector contacts.
5.	Clean cables with soft lint-free cloth.
6.	Paint exposed metal surface to avoid corrosion.

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## CONTROLS, CONNECTORS AND INDICATORS



- 1 ANT Connector
- 2 T/R Connector
- 3 DC IN Connector
- 4 AUDIO Connector
- 5 SWR Connector
- 6 REMOTE Connector
- 7 Display (LCD)
- 8 Multi-Function Soft Keys
- 9 Number Keys
- 10 CONTRAST / • Key
- 11 BACKLIGHT / ± Key
- 12 CHARGE Indicator
- 13 POWER Key
- 14 POWER Indicator
- 15 FAULT Indicator
- 16 ▼ DOWN Key
- 17 ◀ LEFT Key
- 18 ▶ RIGHT Key
- 19 ▲ UP Key
- 20 DVM Connector
- 21 AUDIO IN Connector
- 22 AUDIO OUT Connector

062-006b

## CONTROLS, CONNECTORS AND INDICATORS (cont)

ITEM	DESCRIPTION
◀ LEFT Key	Used to move the on-screen cursor from one frame to another. Also used to move the on-screen cursor to the next digit to the left in an edit field.  <b>NOTE:</b> The on-screen cursor moves in a fixed order. This is to ensure that all frames and fields are accessed in a predictable fashion.
▶ RIGHT Key	Used to move the on-screen cursor from one frame to another. Also used to move the on-screen cursor to the next digit to the right in an edit field.  <b>NOTE:</b> The on-screen cursor moves in a fixed order. This is to ensure that all frames and fields are accessed in a predictable fashion.
▲ UP Key	Used to move the on-screen cursor from one field to another within a frame. Also used to increment an edit field.  <b>NOTE:</b> The on-screen cursor moves in a fixed order. This is to ensure that all frames and fields are accessed in a predictable fashion.
▼ DOWN Key	Used to move the on-screen cursor from one field to another within a frame. Also used to decrement an edit field.  <b>NOTE:</b> The on-screen cursor moves in a fixed order. This is to ensure that all frames and fields are accessed in a predictable fashion.
<b>AUDIO Connector</b>	Used for connection to the Microphone.
<b>AUDIO IN Connector</b> (3500A only)	Used to receive external modulation input, and as input for the SINAD and Distortion Meters and AF Counter.
<b>AUDIO OUT Connector</b> (3500A only)	Used as output for Demod and Function Generators and for Audio In signal output.
<b>ANT Connector</b>	Used for over-the-air tests.
<b>BACKLIGHT / ± Key</b>	Used for selecting the Backlight Adjust Mode. The ▲ UP or ▼ DOWN Keys may be used to adjust the Backlight level.  Used to change between positive (+) and negative (-) values during data entry.
<b>CHARGE Indicator</b>	Illuminates when external DC power is applied:  GREEN            Battery at Full Charge YELLOW        Battery is Charging RED              Battery Charge Failure

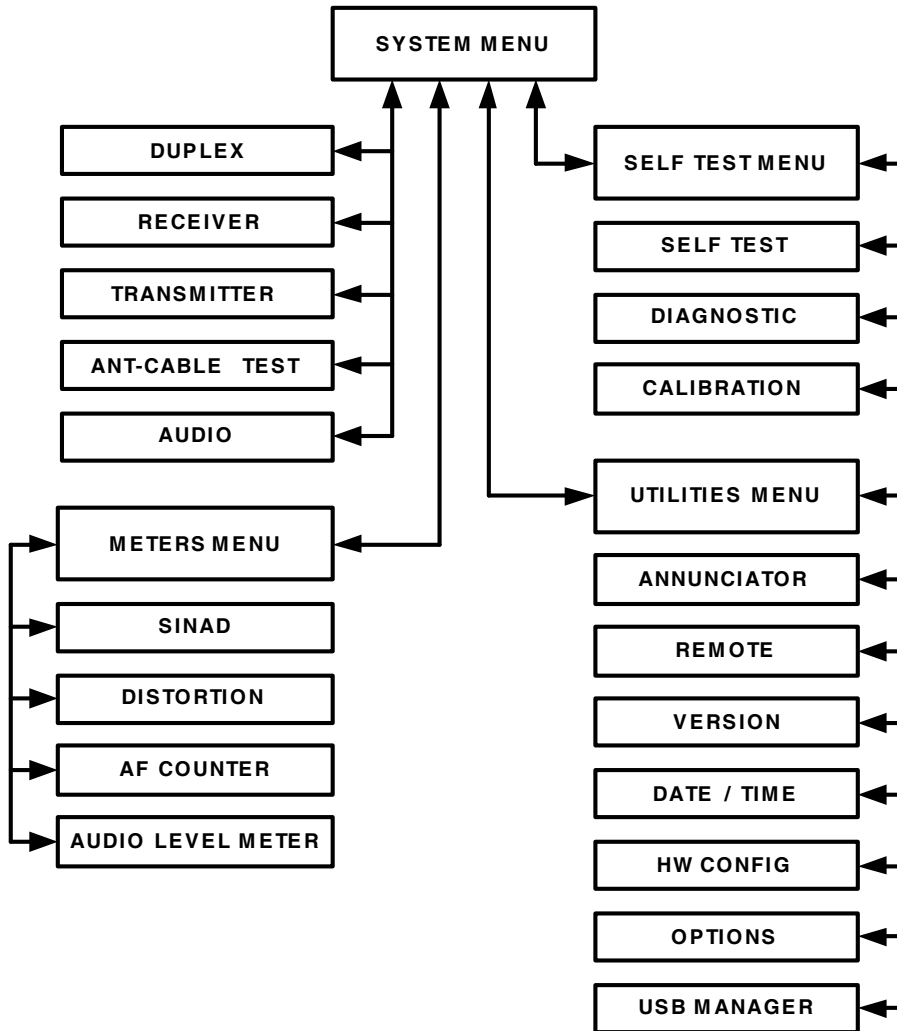
## CONTROLS, CONNECTORS AND INDICATORS (cont)

ITEM	DESCRIPTION
<b>CONTRAST / • Key</b>	Used for selecting the Contrast Adjust Mode. The ▲ UP or ▼ DOWN Keys may be used to adjust the Contrast level.  Used to add a decimal point (•) to values during data entry.
<b>DC IN Connector</b>	Used for operation of the 3500 / 3500A or battery charging.
<b>Display (LCD)</b>	Used for viewing menus and screens. Soft Key boxes appear at the bottom of the menus/screens.
<b>DVM Connector (3500A only)</b>	Not Used
<b>FAULT Indicator</b>	Illuminates when a fault exists in the 3500 / 3500A: YELLOW            Caution Condition exists RED                 Warning Condition exists
<b>Multi-Function Soft Keys</b>	Five Soft Keys are provided. The legends are displayed in boxes at the bottom of the Display.
<b>Number Keys</b>	Used for data entry or to select a numbered item.  3500A Alternate key functions are not utilized.
<b>POWER Indicator</b>	Illuminates when the 3500 / 3500A is powered up.
<b>POWER Key</b>	Used for powering the 3500 / 3500A ON and OFF.
<b>REMOTE Connector (External I/O)</b>	Used for communicating with external equipment.
<b>SWR Connector</b>	Used for measuring the VSWR of Antenna systems. Also used as a transmit signal output.
<b>T/R Connector</b>	Used for high power direct connection to radio equipment.

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## SCREEN HIERARCHY

The operation mode screen hierarchy is as follows.



## SCREEN HIERARCHY (cont)

### System Menu

<p>1 - DUPLEX TEST 2 - RECEIVER TEST 3 - TRANSMITTER TEST 4 - ANT-CABLE TEST 5 - AUDIO</p>				
	Meters	System	Selftest	Util

### Duplex Test Screen

DUPLEX TEST				
Generator MHz: <u>40.000000</u>	Receiver MHz: 40.000000	More		
Port: T/R	Port: T/R			
Level: -70 dBm	Mod: FM 10k	AFBW: 0.3k HP		
Modulator	Freq	FM	Group	
Gen 1: ON	1000 Hz	6.25 kHz		
Gen 2: ON	150 Hz	3.25 kHz		
MIC: ON		6.25 kHz		
Ext Aud: OFF	Load: High Z			
Bat: 0	Temp: 33			
Vol: 10				
Recall	Save			
Aud Out	Speaker			
Edit	Return	Hold	Setup	PTT on

### Receiver Test Screen

RECEIVER TEST				
Generator MHz: <u>40.000000</u>				
Port: T/R				
Level: -70 dBm				
Modulator	Freq	FM	Group	
Gen 1: ON	1000 Hz	6.25 kHz		
Gen 2: ON	150 Hz	3.25 kHz		
MIC: ON		6.25 kHz		
Ext Aud: OFF	Load: High Z			
Bat: 0	Temp: 33			
Vol: 10				
Recall	Save			
Aud Out	Speaker			
Edit	Return	Hold	Setup	

### Transmitter Test Screen

TRANSMITTER TEST				
Receiver MHz: <u>40.000000</u>	More			
Port: T/R				
Mod: FM 10k				
AFBW: NONE				
Bat: 0	Temp: 33			
Vol: 10				
Recall	Save			
Aud Out	Speaker			
Edit	Return	Hold	Setup	

### ANT-Cable Test Screen

ANT-CABLE TEST				
Freq (MHz): <u>500.0</u>	2008/09/29 11:34:21		97.4	
Span (MHz): 100.0	6.0			
Start (MHz): 450.0				
Stop (MHz): 550.0				
Type: SWR				
Marker 1: OFF				
Delta: 1				
Auto Scale				
Peak Left Right				
	450.0	MHz	550.0	
VSWR	0.00	Delta	0.00	
Freq	0.00	Delta	0.00	
Edit	Return	Hold	Cal	

### Audio Test Screen

AUDIO FUNCTION GENERATOR				
Function Generator				
	Freq	Level		
# 1: <input checked="" type="checkbox"/>	1000.0 Hz	1.00 Vrms		
# 2: <input type="checkbox"/>	2400.0 Hz	1.00 Vrms		
Bat: 0	Temp: 33			
Vol: 10				
Recall	Save			
Aud Out	Speaker			
Edit	Return	Hold	Setup	

### Meters Menu

<p>1 - SINAD 2 - DISTORTION 3 - AF COUNTER 4 - AUDIO LEVEL METER</p>				
	Meters	System	Selftest	Util

### SINAD Meter Screen

SINAD				
Source	<u>Audio In</u>			
Load	High Z			
Avg Reading	1			
Limits	dB	State		
Lower	1.0	OFF		
Upper	50.0	OFF		
59.1				
0 dB 60				
Edit	Return	Hold		

## SCREEN HIERARCHY (cont)

### Distortion Meter Screen

DISTORTION			
Source:	Audio In		
Load:	150		
Avg Reading:	1		
Limits	%	State	
Lower	0.0	OFF	
Upper	20.0	OFF	
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value="Hold"/> <input type="button" value=""/> <input type="button" value=""/>			

### AF Counter Screen

AF COUNTER			
Source	Audio In		
Load	High Z		
Avg Reading	1		
Limits	Hz	State	
Lower	15.0	OFF	
Upper	20000.0	OFF	
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value="Hold"/> <input type="button" value=""/> <input type="button" value=""/>			

### Audio Level Meter Screen

AUDIO LEVEL METER			
Source	DVM		
Detector	RMS	DivBy20	OFF
Load	High Z	Ext Load	1
Unit	V		
Avg Reading	1		
Limits	Volts	State	
Lower	0.0	OFF	
Upper	50.0	OFF	
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value="Hold"/> <input type="button" value=""/> <input type="button" value=""/>			

### Self Test Menu

1 - SELFTEST 2 - DIAGNOSTIC 3 - CALIBRATION
<input type="button" value="Meters"/> <input type="button" value="System"/> <input type="button" value="Selftest"/> <input type="button" value="Util"/>

### Self Test Screen

SELF TEST			
Test Mode:	Normal Run		
TDM	Pass	0	Fail 0
Modulation	Pass	0	Fail 0
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value=""/> <input type="button" value=""/> <input type="button" value="Start"/>			

### Diagnostics Screen

STAND ALONE TEST			
		Mode:	Normal Run
RF CPLD	Invalid	Distortion	Invalid
TDM	Invalid	Gen Lock	Invalid
FPGA	Invalid	Rec Lock	Invalid
Temperature	Invalid	Button Battery	Invalid
AM Mod	Invalid	AF Counter	Invalid
FM Mod	Invalid	Time Domain	Invalid
RF Power	Invalid	Freq Domain	Invalid
RF Error	Invalid	SWR	Invalid
RSSI	Invalid	DTMF	Invalid
SPI	Invalid	DCS	Invalid
SINAD	Invalid		
RF CPLD	Pass:	0	Fail: 0
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value=""/> <input type="button" value=""/> <input type="button" value="Start"/>			

### Calibration Screen

SETUP-CALIBRATION	
CAL PASSWORD:	0
<input type="button" value="Edit"/> <input type="button" value="Return"/> <input type="button" value=""/> <input type="button" value=""/> <input type="button" value=""/>	

### Utilities Menu

1 - ANNUNCIATOR 2 - REMOTE 3 - VERSION 4 - DATE AND TIME 5 - HW CONFIG 6 - OPTIONS 7 - USB MANAGER
<input type="button" value="Meters"/> <input type="button" value="System"/> <input type="button" value="Selftest"/> <input type="button" value="Util"/>

## SCREEN HIERARCHY (cont)

### Annunciator Screen

ANNUNCIATOR	
Alarm:	<input type="checkbox"/> ON
Key Press:	<input type="checkbox"/> OFF
PTT:	<input type="checkbox"/> OFF
<input type="button" value="Edit"/>	<input type="button" value="Return"/>

### HW Config Screen

HW-CONFIG	
Settings:	<input type="button" value="Restore to Default"/>
Time-Out Timer:	
State:	ON
Minutes:	20
Minutes Remaining:	20
<input type="button" value="Edit"/>	<input type="button" value="Return"/>

### Remote Setup Screen

SETUP-REMOTE	
Config Port:	<input type="button" value="ETHERNET"/>
IP:	10 10 10 193
Subnet Mask:	255 0 0 0
Gateway:	0 0 0 0
Ethernet Port:	9991
Ethernet Type:	STANDARD
Port Currently Active:	ETHERNET
<input type="button" value="Edit"/>	<input type="button" value="Return"/>
<input type="button" value="Config"/>	

### Options Screen

OPTIONS	
Install Status:	Installed
Unique ID:	820902c346237d0d
<input type="button" value="Return"/>	<input type="button" value="Install"/>

### Version Screen

SETUP-VERSION	
CRM:	Release-3_3_1:30-SEP-08
PPC:	Release-3_3_1:30-SEP-08
FPGA:	2.0.34:10-April-08
MFIO:	2
RF:	0x1
digital CPLD:	0x62
RF CPLD:	0x93
MAC Address:	00:50:31:09:03:32
SERIAL:	301000106
<input type="button" value="Return"/>	

### USB Manager Screen

USB-MANAGER	
<input type="button" value="Saved Screen Data"/>	
Screenshots	Erase from unit
Report File	Erase from unit
Status:	Ready
<input type="button" value="Return"/>	<input type="button" value="Save"/>
<input type="button" value="Recall"/>	

### Date/Time Screen

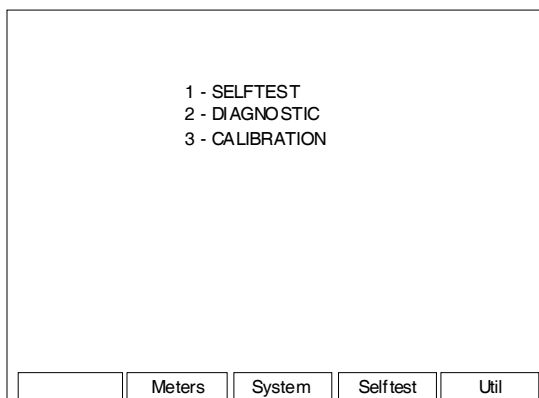
SETUP-DATE/TIME	
Current Date:	Tuesday, 09:55:04, 30-Sep-2008
New Date (DMV):	<input type="text" value="20"/> SEP 2008
New Time (HMS):	9 53 2
Cal Due Date:	29-SEP-2009
Active Time:	11 Days, 8 Hr, 46 Min, 20 Sec
<input type="button" value="Edit"/>	<input type="button" value="Return"/>

## SELF TEST

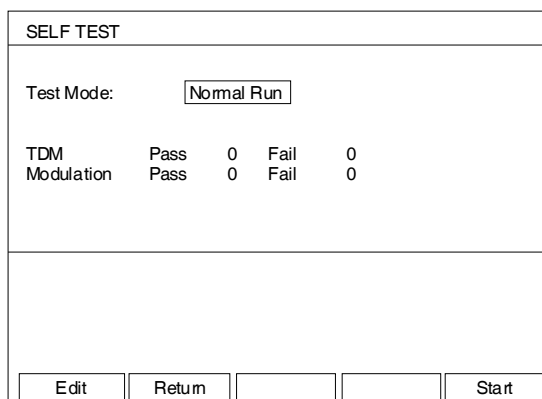
The 3500 / 3500A is equipped with a Self Test for quick performance evaluation. The Self Test can be performed in a single pass or looped for more consistent results. Test results are shown next to the tests in the Pass/Fail Counters.

STEP	PROCEDURE
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1. On the System Menu, Meters Menu or Utilities Menu, press the **F4 "Selftest" Key** to display the Self Test Menu.



2. With the Self Test Menu displayed, press the **1 Key** to display the Self Test Screen.



3. Press the **F5 "Start" Key** to initiate the Self Test.
4. Verify the Self Test passes. If any failure occurs, refer to the 3500 / 3500A Operation Manual for more information.

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**FOR QUALIFIED SERVICE  
PERSONNEL ONLY**

**BATTERY/VOLTAGE INSTRUCTIONS**

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## **SAFETY FIRST: TO ALL SERVICE PERSONNEL**

**REFER ALL SERVICING OF THE 3500 / 3500A TO QUALIFIED TECHNICAL PERSONNEL.**

**WARNING: USING THIS EQUIPMENT IN A MANNER NOT SPECIFIED BY THE ACCOMPANYING DOCUMENTATION MAY IMPAIR THE SAFETY PROTECTION PROVIDED BY THE EQUIPMENT.**

### **CASE, COVER OR PANEL REMOVAL**

Opening the Case Assembly exposes the operator to electrical hazards that can result in electrical shock or equipment damage. Do not operate the 3500 / 3500A with the Case Assembly open.

### **SAFETY IDENTIFICATION IN TECHNICAL MANUAL**

This manual uses the following terms to draw attention to possible safety hazards that may exist when operating or servicing this equipment.

**CAUTION:** THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN EQUIPMENT OR PROPERTY DAMAGE (E.G., FIRE).

**WARNING:** THIS TERM IDENTIFIES CONDITIONS OR ACTIVITIES THAT, IF IGNORED, CAN RESULT IN PERSONAL INJURY OR DEATH.

### **SAFETY SYMBOLS IN MANUALS AND ON UNITS**



**CAUTION:** Refer to accompanying documents. (This symbol refers to specific CAUTIONS represented on the unit and clarified in the text.)



**AC OR DC TERMINAL:** Terminal that may supply or be supplied with ac or dc voltage.



**DC TERMINAL:** Terminal that may supply or be supplied with dc voltage.



**AC TERMINAL:** Terminal that may supply or be supplied with ac or alternating voltage.

### **EQUIPMENT GROUNDING PRECAUTION**

Improper grounding of equipment can result in electrical shock.

### **USE OF PROBES**

Check the specifications for the maximum voltage, current and power ratings of any connector on the 3500 / 3500A before connecting a probe from a terminal device. Be sure the terminal device performs within these specifications before using a probe for measurement, to prevent electrical shock or damage to the equipment.

### **POWER CORDS**

Power cords must not be frayed, broken nor expose bare wiring when operating this equipment.

### **USE RECOMMENDED FUSES ONLY**

Use only fuses specifically recommended for the equipment at the specified current and voltage ratings.

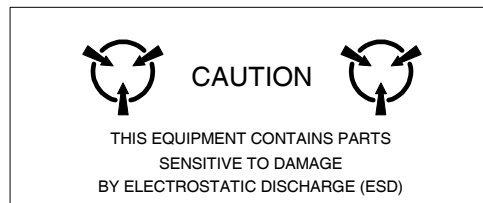
## **SAFETY FIRST: TO ALL SERVICE PERSONNEL (cont)**

**WARNING:** THE 3500 / 3500A USES A LITHIUM ION BATTERY PACK. THE FOLLOWING WARNINGS CONCERNING LITHIUM ION BATTERIES MUST BE HEEDED:

- DO NOT RECHARGE OUTSIDE THE 3500 / 3500A.
- DO NOT CRUSH, INCINERATE OR DISPOSE OF IN NORMAL WASTE.
- DO NOT SHORT CIRCUIT OR FORCE DISCHARGE AS THIS MIGHT CAUSE THE BATTERY TO VENT, OVERHEAT OR EXPLODE.

**CAUTION:** INTEGRATED CIRCUITS AND SOLID STATE DEVICES SUCH AS MOS FETS, ESPECIALLY CMOS TYPES, ARE SUSCEPTIBLE TO DAMAGE BY ELECTROSTATIC DISCHARGES RECEIVED FROM IMPROPER HANDLING, THE USE OF UNGROUNDED TOOLS AND IMPROPER STORAGE AND PACKAGING. ANY MAINTENANCE TO THIS UNIT MUST BE PERFORMED WITH THE FOLLOWING PRECAUTIONS:

- BEFORE USE IN A CIRCUIT, KEEP ALL LEADS SHORTED TOGETHER EITHER BY THE USE OF VENDOR-SUPPLIED SHORTING SPRINGS OR BY INSERTING LEADS INTO A CONDUCTIVE MATERIAL.
- WHEN REMOVING DEVICES FROM THEIR CONTAINERS, GROUND THE HAND BEING USED WITH A CONDUCTIVE WRISTBAND.
- TIPS OF SOLDERING IRONS AND/OR ANY TOOLS USED MUST BE GROUNDED.
- DEVICES MUST NEVER BE INSERTED INTO NOR REMOVED FROM CIRCUITS WITH POWER ON.
- PC BOARDS, WHEN TAKEN OUT OF THE SET, MUST BE LAID ON A GROUNDED CONDUCTIVE MAT OR STORED IN A CONDUCTIVE STORAGE BAG. REMOVE ANY BUILT-IN POWER SOURCE, SUCH AS A BATTERY, BEFORE LAYING PC BOARDS ON A CONDUCTIVE MAT OR STORING IN A CONDUCTIVE BAG.
- PC BOARDS, IF BEING SHIPPED TO THE FACTORY FOR REPAIR, MUST BE PACKAGED IN A CONDUCTIVE BAG AND PLACED IN A WELL-CUSHIONED SHIPPING CONTAINER.



**CAUTION:** SIGNAL GENERATORS CAN BE A SOURCE OF ELECTROMAGNETIC INTERFERENCE (EMI) TO COMMUNICATION RECEIVERS. SOME TRANSMITTED SIGNALS CAN CAUSE DISRUPTION AND INTERFERENCE TO COMMUNICATION SERVICES OUT TO A DISTANCE OF SEVERAL MILES. USERS OF THIS EQUIPMENT SHOULD SCRUTINIZE ANY OPERATION THAT RESULTS IN RADIATION OF A SIGNAL (DIRECTLY OR INDIRECTLY) AND ENSURE COMPLIANCE WITH INSTRUCTIONS IN FAA CIRCULAR AC 170-6C, DATED FEBRUARY 19, 1981.

## FOR QUALIFIED SERVICE PERSONNEL ONLY

### FUSE REPLACEMENT

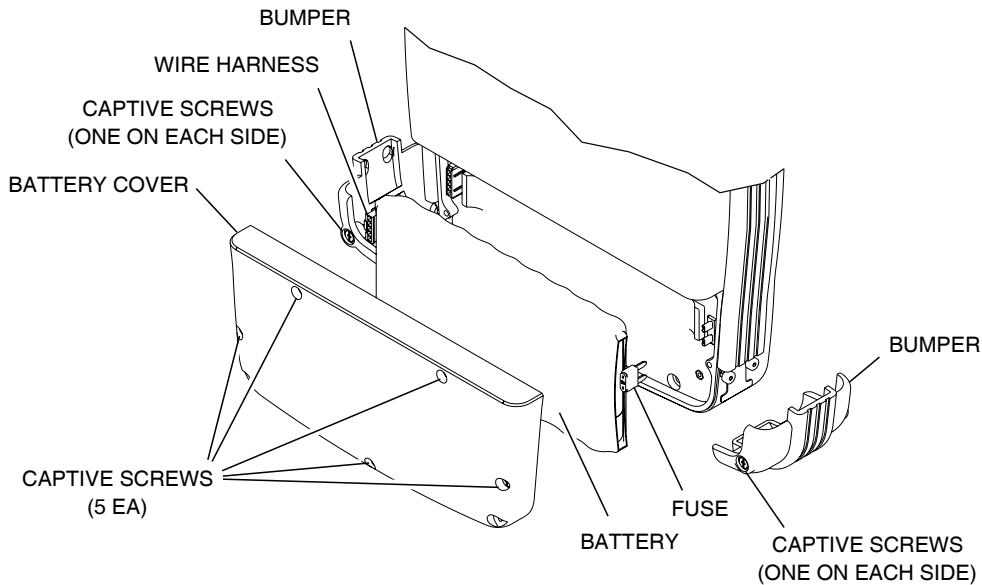
STEP	PROCEDURE
------	-----------

1. Verify the 3500 / 3500A is OFF and not connected to AC power.
2. Fully loosen two captive screws in each of the two lower bumpers and remove the bumpers.
3. Fully loosen five captive screws and lift the Battery Cover from the Case Assembly.
4. Replace fuse:

5 A, 32 Vdc, Type F  
(Mini Blade Fuse)  
(Aeroflex PN: 5106-0000-057)

**CAUTION:** FOR CONTINUOUS PROTECTION AGAINST FIRE, REPLACE ONLY WITH FUSES OF THE SPECIFIED VOLTAGE AND CURRENT RATINGS.

5. Install the Battery Cover on the Case Assembly and tighten the five captive screws (8 in/lbs.).
6. Install the two lower bumpers and tighten the two captive screws in each bumper (8 in/lbs.).



## FOR QUALIFIED SERVICE PERSONNEL ONLY

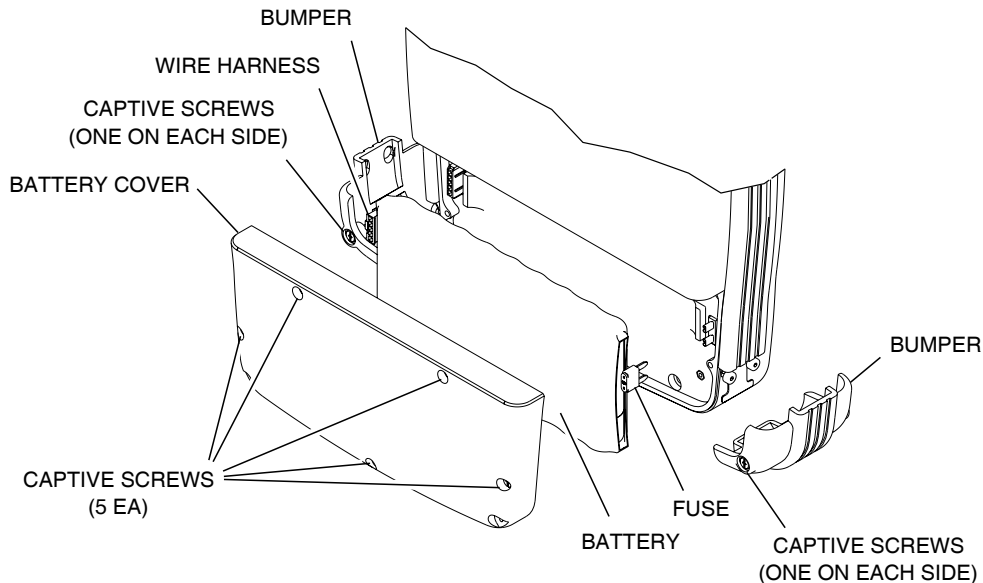
### BATTERY REPLACEMENT

STEP	PROCEDURE
------	-----------

1. Verify the 3500 / 3500A is OFF and not connected to AC power.
2. Fully loosen two captive screws in each of the two lower bumpers and remove the bumpers.
3. Fully loosen five captive screws and lift the Battery Cover from the Case Assembly.
4. Disconnect the wire harness connecting the battery to the Test Set and remove the battery.
5. Install new battery and reconnect the wire harness.
6. Install the Battery Cover on the Case Assembly and tighten the five captive screws (8 in/lbs.).
7. Install the two lower bumpers and tighten the two captive screws in each bumper (8 in/lbs.).

**WARNING: DISPOSE OF OLD BATTERY ACCORDING TO LOCAL STANDARD SAFETY PROCEDURES.**

**CAUTION:** REPLACE ONLY WITH THE BATTERY SPECIFIED BY AEROFLEX. DO NOT ATTEMPT TO INSTALL A NON-RECHARGEABLE BATTERY.



As we are always seeking to improve our products, the information in this document gives only a general indication of the product capacity, performance and suitability, none of which shall form part of any contract. We reserve the right to make design changes without notice.

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The logo for AEROFLEX, featuring a stylized 'A' with a blue triangle pointing downwards, followed by the word 'AEROFLEX' in a bold, sans-serif font.

Our passion for performance is defined by three attributes represented by these three icons: solution-minded, performance-driven, customer-focused.



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