MOTOROLA

IMPRES ™

Adaptive Multi-Unit Charger

Disassembly & Board/Top Housing
Service Procedure

Accessories

Service Manual

Table of Contents

THE *IMPRES*™ ADAPTIVE MULTI-UNIT CHARGER IS UNLIKE ANY OTHER CHARGING DEVICE YOU HAVE EVER USED.

This unit performs automatic recondition cycles (with *IMPRES* smart batteries only) and utilizes a unique negative pulse/rapid charge algorithm. This tri-chemistry unit is universal and charges all Motorola high tier radios' smart or standard batteries. As a result of this advanced technology, battery operation time and cycle life can be maximized (when used in conjunction with *IMPRES* Smart Batteries). This unit is also field repairable, only by qualified service technicians authorized by Motorola.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

This document contains important safety and operating instructions. Please read these instructions carefully and save them for future reference.

Before using the battery charger, read all the instructions and cautionary markings on (1) the charger and (2) the battery (3) and on the radio using the battery.

WARNING

1. To reduce risk of injury, charge only the rechargeable Motorola authorized batteries. Other batteries may explode, causing personal injury and damage.
2. Use of accessories not recommended by Motorola may result in risk of fire, electric shock, or injury.

(Continued on next page)

WARNINGS (continued)

WARNING

3. To reduce risk of damage to the electric plug and cord, pull by the plug rather than the cord when disconnecting the charger.
4. An extension cord should not be used unless absolutely necessary. Use of an improper extension cord could result in risk of fire and electric shock. If an extension cord must be used, make sure that the cord size is 18AWG for lengths of up to 100 feet (30.48m), and 16AWG for lengths up to 150 feet (45.72m).
5. To reduce risk of fire, electric shock, or injury, do not operate the charger if it has been broken or damaged in any way. Take it to a qualified Motorola service representative.
6. This unit is repairable. Each pocket is powered by a unique printed circuit board & power supply. The PCB / power supply can be purchased from the Aftermarket / Parts organization. The PCB replacement part number is RLN5325.
7. To reduce risk of electric shock, unplug the charger from the ac outlet before attempting any maintenance or cleaning.
8. Observe all safety rules to prevent electric shock.
9. Wear ESD device to prevent electrical damage to the unit and/or replacement board.
10. For fuse replacement, use only fuses of the same type and rating listed on the charger label. The following parts can be ordered from your local Parts / Aftermarket facility:

Fuse	6571489S01
Cover	0987739G01
US/NA Power Cords	3087791G01
European Power Cord	3087791G04

WARNINGS (continued)

UK/British Power Cord	3087791G07
Australian/New Zealand Power Cord	3087791G10
Argentina Power Cord	3087791G13
Korea Power Cord	3087791G16
Americas User Guide	6880309L67
EMEA User Guide	6866537D22
Main Board Replacement Kit	RLN5325
Top Housing Replacement Kit	RLN5330
Astro/Saber Battery Adapter	4385922B01
Eric Battery Adapter Kit (6-adapters per kit)	RLN5212
#10-3/8 in. Screw, Base-to-Top Housing (6 places)	0371239S01
#20-3/8 in. Screw, Main Board-to-Base (3-per board) and Rubber Feet-to-Base (4-places)	0387775G01
#10-3/4 in. Screw, Fan-to-Housing (2 places)	0387775G02
Fan, 60mm, MUC	5987634G01
Rubber Foot, *IMPRES* MUC	7587636G01
Bezel, LCD, *IMPRES* MUC	1587630G01

OPERATIONAL SAFETY GUIDELINES

- Turn the radio off when charging the battery.
- This equipment is not suitable for outdoor use. Use only in dry locations/conditions.
- Connect equipment only to an appropriately fused and wired supply of the correct voltage (as specified on the product).
- Disconnect from line voltage by removing the main plug from the outlet.
- The socket outlet to which this equipment is connected should be close and easily accessible.
- For equipment using fuses, replacements must comply with the type and rating specified in the equipment instructions.
- Maximum ambient temperature around the charger must not exceed 40°C (104°F).
- Make sure the cord is located where it will not be stepped on, tripped over, or subjected to water, damage, or stress.
- This unit utilizes the same wall mount unit as the NTN4796 Multi Unit Charger. The wall mount part number is NLN7967.

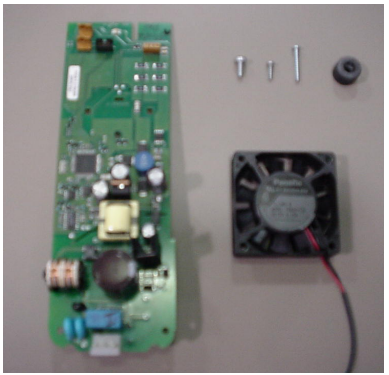
REQUIRED TOOLS

- Torque Driver
  Capable of delivering
  8 and 10 in-lbs.
- #10 Torx Bit.
- #20 Torx Bit.

REPLACEMENT PARTS

- Top Housing Assembly, RLN5330 which includes all parts except the Fan (5987634G01).

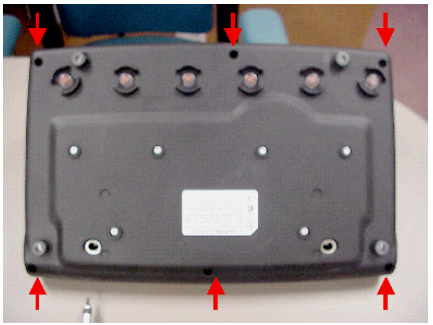
REPLACEMENT PARTS, continued

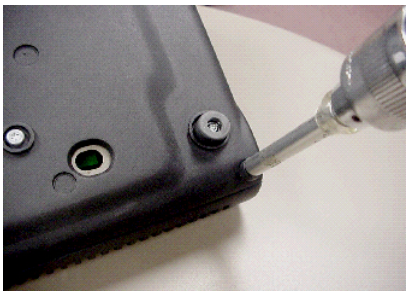


- Main PC Board, RLN5325.
- Fan (5987634G01).
- Miscellaneous Hardware:
  Screws –
  (left to right: 0371239S01,
  0387775G01, and 0387775G02)
  Rubber Feet (7587636G01)

INSTRUCTIONS TO REPLACE A DEFECTIVE PC BOARD

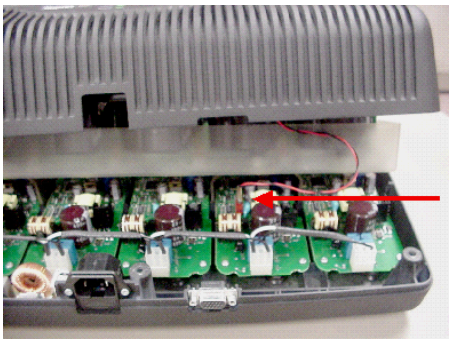
1. Separate the Housing From the Base



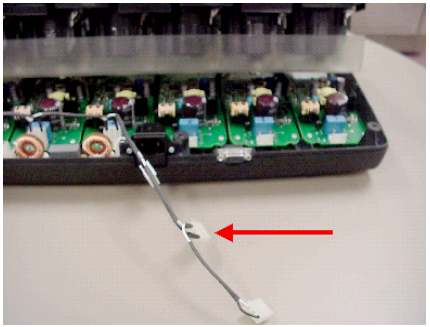
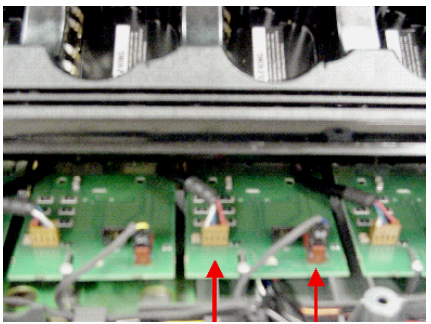


- From the bottom of the Base, remove the six screws (0371239S01) that secure the Top Housing to the Base using a Torx Bit #20.

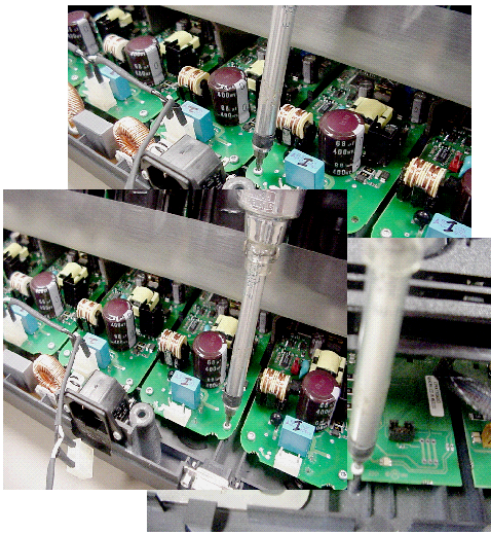
Separate the Housing from the Base, continued

	• Turn the unit over (Base down) – holding the Top Housing and Base together.
	• Lift the back of the Top Housing a few inches away from the Base, exposing the Fan Harness. Disconnect the Fan Harness from the PC Board. • The Top Housing can now be fully removed from the Base and set aside.

2. Access the “Effected” Board

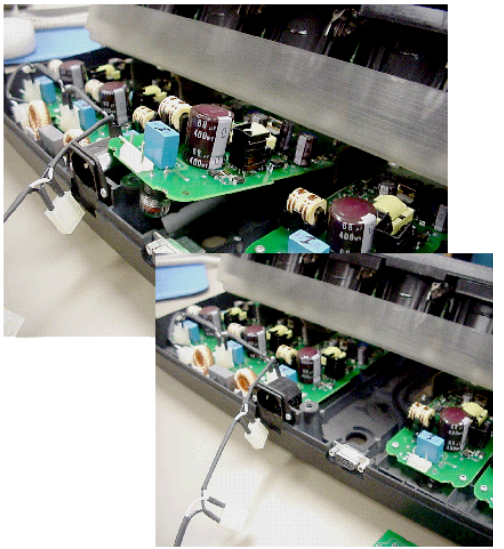
	• Disconnect the Power Harness from the effected board by pushing the receptacle snap away from the header.
	• Remove the Pocket Harness by pulling straight up on the connector. • Remove the Communication Harness by pulling straight up on the connector.

Access the “Effected” Board, continued



- Remove the three Board Screws (0387775G01) using the #10 Torx Bit – two screws reside in the back of the unit (power-side) while the third is located in front.

Access the “Effected” Board, continued

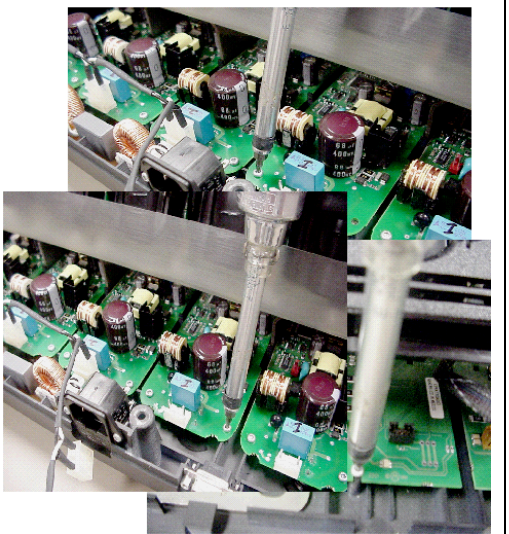


- Lift the effected board at a 45-degree angle and slide it out from under the Pocket Assembly/ Shield.

3. Replace with a New Board

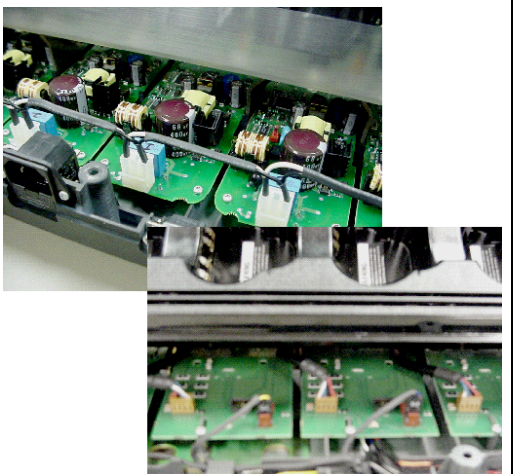
- Replace the new board by holding it at a 45-degree angle and slide it underneath the Pocket Assembly/ Shield.
- Make sure the board is seated flush with the Base.

Replace with a New Board, continued



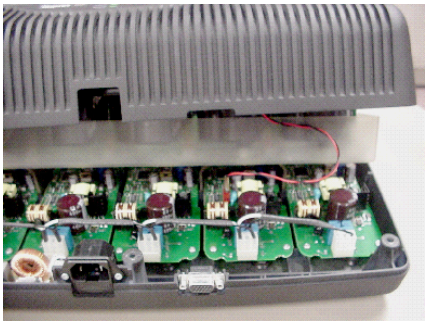
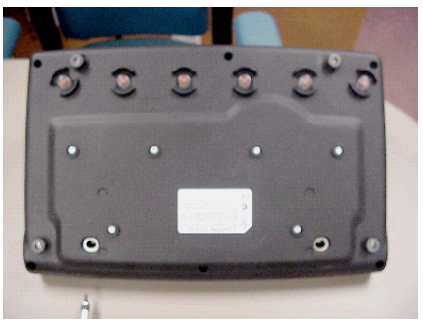
- Affix the three Board screws (0387775G01) using the #10 Torx Bit and torquing to approximately 8 in-lbs.

Replace with a New Board, continued



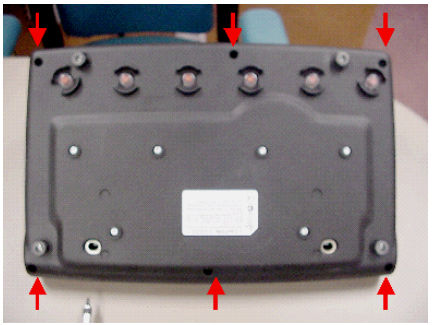
- Reinstall all Harnesses and Connectors – Power, Pocket, and Communication.

4. Re-Assemble the Unit – Housing to Base

	• Replace the Top Housing. • With the Top Housing a few inches away from the Base, connect the Fan Harness into the PC Board (second from the right).
	• Turn the unit over (Base up) – holding the Top Housing and Base together. • Replace the six Base Screws (0371239S01) using the #20 Torx Bit, torquing to approximately 10 in-lbs.

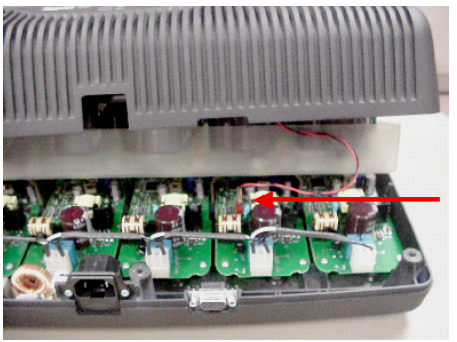
INSTRUCTIONS TO REPLACE A DEFECTIVE RUBBER FOOT, TOP HOUSING AND/OR FAN

1. Separate the Housing from the Base

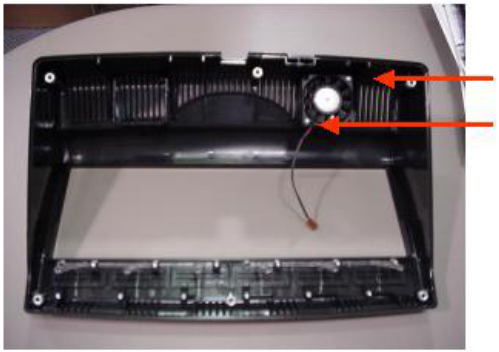


- From the bottom of the Base, remove the six screws (0371239S01) that secure the Top Housing to the Base using a Torx Bit #20.
- Additionally, the Rubber Feet can be accessed and replaced using a Torx Bit #10 and torquing to approximately 8 in-lbs.

Separate the Housing from the Base, continued

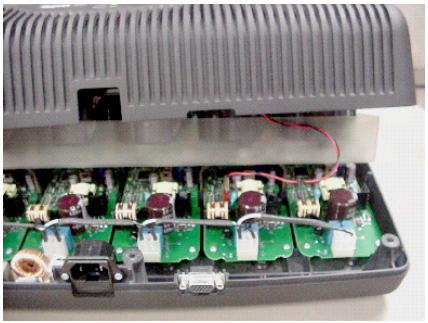
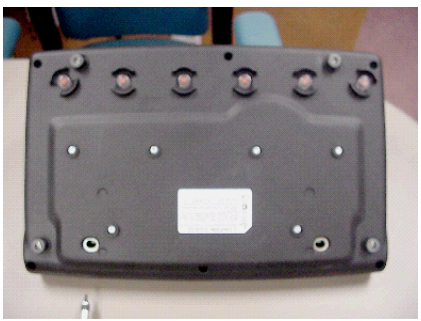
	• Turn the unit over (Base down) – holding the Top Housing and Base together.
	• Lift the back of the Top Housing a few inches away from the Base, exposing the Fan Harness. Disconnect the Fan Harness from the PC Board. • The Top Housing can now be fully removed from the Base and set aside.

2. Replace the Fan



- Remove the two Fan Screws (0387775G02).
- Remove the Fan from the Defective Top Housing and insert into the New Top Housing.
  OR
  Insert the new Fan into the existing Top Housing.
- Insert the two Fan Screws using a Torx Bit #10 and torque to approximately 8 in-lbs.

3. Re-Assemble the Unit – Housing to Base

	• Replace the Top Housing. • With the Top Housing a few inches away from the Base, connect the Fan Harness into the PC Board (second from the right).
	• Turn the unit over (Base up) – holding the Top Housing and Base together. • Replace the six Base Screws (0371239S01) using the #20 Torx Bit, torquing to approximately 10 in-lbs.

CHARGER DISPLAY MODULE (CDM)

Charger Compatibility

The Charger Display Module (CDM), P/N RLN5382, can be installed in any of the following existing *IMPRES* Adaptive Multi-Unit Chargers:

WPLN4108	WPLN4119
WPLN4109	WPLN4120
WPLN4110	WPLN4121
WPLN4118	WPLN4123

In addition, the CDM can be installed as a replacement for any of the following *IMPRES* Adaptive Multi-Unit Chargers with displays:

WPLN4127	WPLN4133
WPLN4130	WPLN4134
WPLN4131	WPLN4135
WPLN4132	WPLN4136

Charger Display Module Installation

It is recommended that qualified self-maintained users, independent service shops, or the Motorola Service Depot complete installation of the CDM.

Note: For charger software versions 1.2 or earlier, the *IMPRES* multi-unit charger should be returned to the Rockford Support Center at the follow address for re-flashing:

Motorola Radio Support Center
3761 South Central Avenue
Rockford, IL 61102-4294
1-800-227-6772
1-815-489-1000

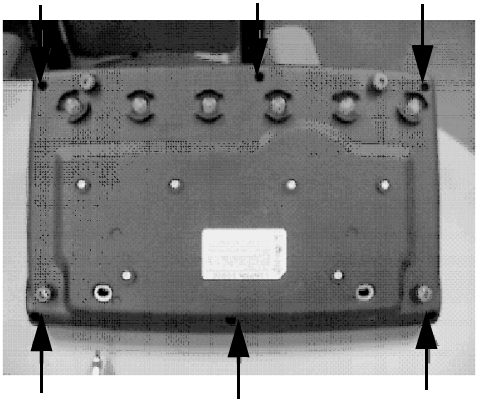
To quickly and easily install the CDM, refer to the diagrams and information in the steps that follow.

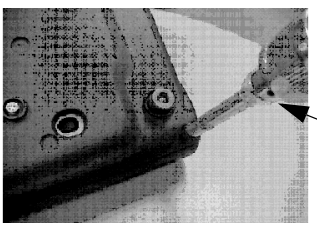
Required Tools

- Torque driver capable of delivering 8 and 10 in-lbs
- #10 Torx bit, P/N 6680387A74
- #20 Torx bit, P/N 6680387A76

Step 1.

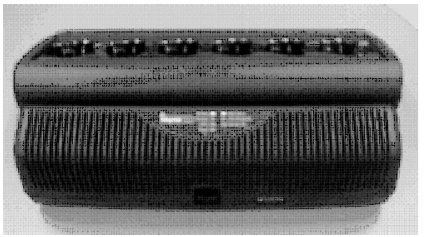
With the *IMPRES* Adaptive Multi-Unit Charger face down, remove the six screws, P/N 0371239S01, with #20 Torx bit.

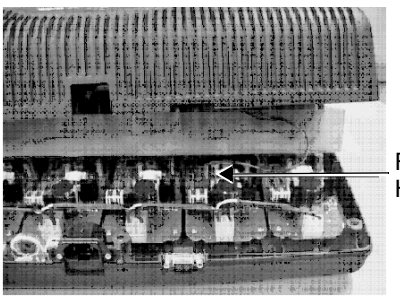




Step 2.

Turn the unit over (base down) while holding the top housing and base together. Lift the back of the top housing a few inches away from the base, exposing the fan harness. Disconnect the fan harness from the PC board. The top housing can then be fully removed from the base and set aside.

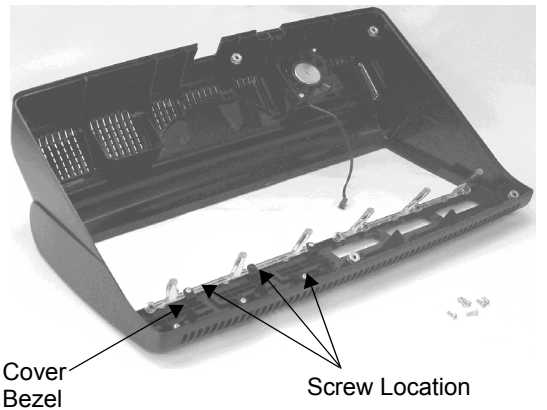




Step 3.

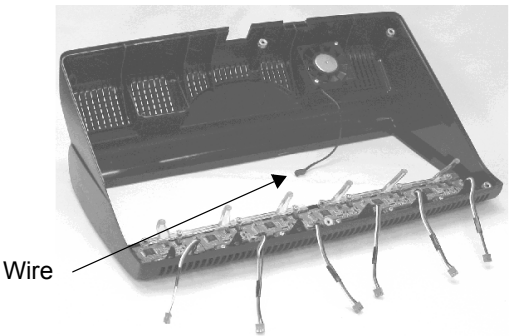
Remove the 12 screws, P/N 0387775G01, and take out the existing cover bezels, P/N 1587630G01, using a #10 Torx bit. Keep the screws for reassembly.

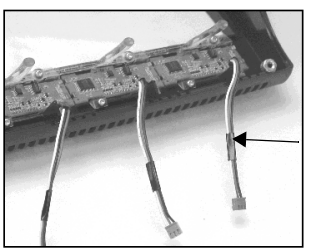
Note: Check that the LCD is not broken. If the LCD breaks and you get liquid on your hands, wash hands with soap and water. Discard or return the LCD.



Step 4.

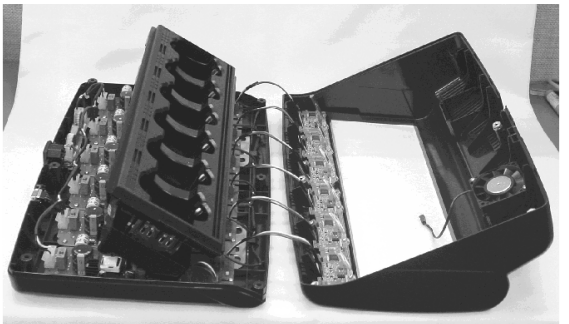
Replace the previously removed bezels with the LCD modules, using the 12 screws (removed in Step 3) with the #10 Torx bit. Torque down to approximately 8 in-lbs.

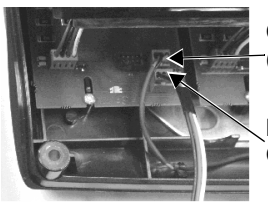




Step 5.

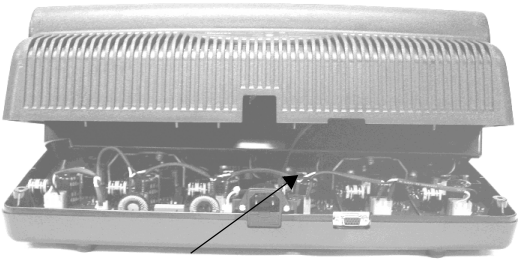
Turn the unit around and plug each LCD module/ wire connector into its corresponding PC board. The connector and header are keyed (grooved to properly align during insertion.)



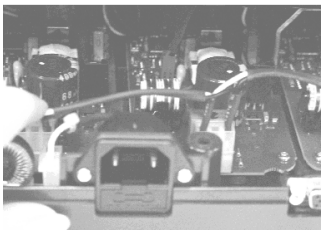


Step 6.

Fold the front housing over the base assembly and plug the fan harness into the nearest PC board. The fan connector and header are keyed to properly align during insertion. Ensure all LCD wire harnesses are encased in the housing.

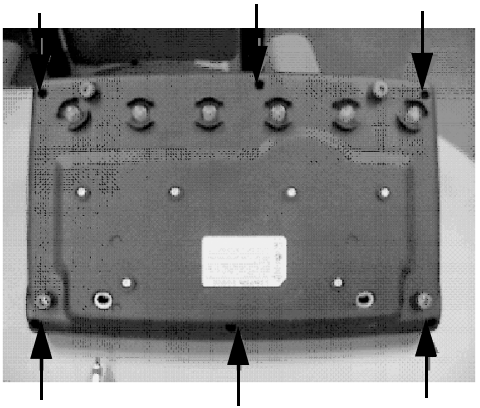


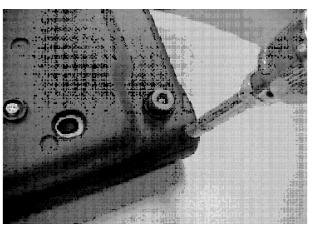
Plug Fan
Harness into 3rd PC board
from the right.



Step 7.

Close the unit carefully to avoid pinching any wires. Replace all six screws (previously removed in Step 1) with #20 Torx bit, and torque to approximately 10 in-lbs.





CHARGER DISPLAY MODULE (CDM) TEST MODE

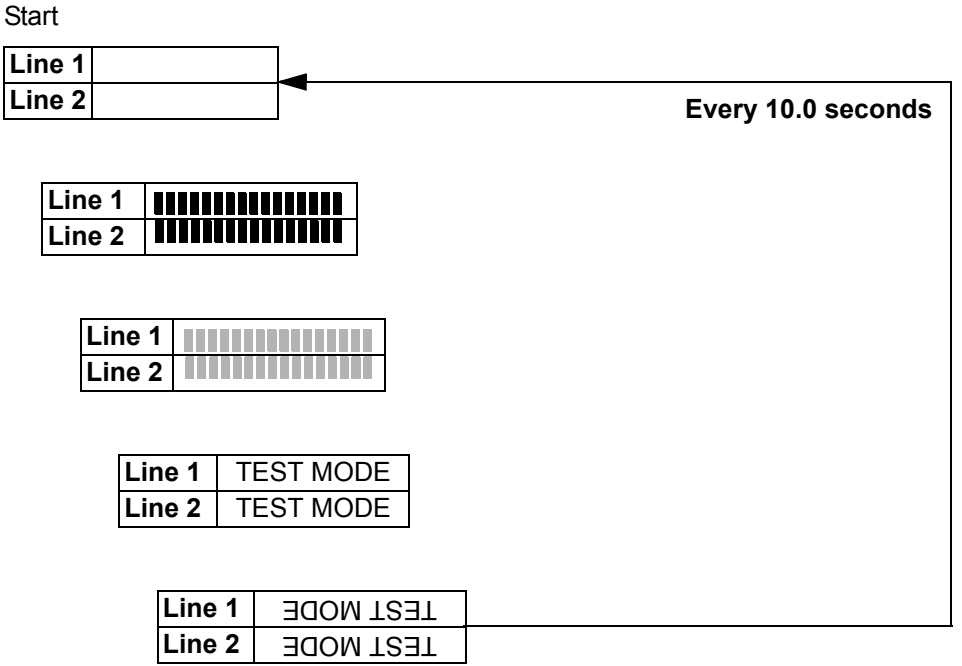
Once the installation of the CDM is complete, the display can be tested to ensure proper installation and functionality. To initiate the test mode:

1. Plug the charger into an AC power outlet.

2. Insert the end of a large paper clip into the pinhole below the display on the front of the charger. The paper clip should be inserted perpendicular to the desktop. A “click” indicates the toggle button has been accessed.

3. Press and hold the toggle button for five seconds to access the test sequence.

4. The display will cycle through a series of displays (shown below) to indicate proper installation and operation.



5. Press the toggle button again to exit the test mode.

Note: Each CDM operates independently. If more than one CDM is installed in a charger, the test mode sequence can be run for each individual CDM.

CHARGER DISPLAY MODULE (CDM) GENERAL DISPLAY INFORMATION

The CDM is designed to provide the user with valuable information while performing battery maintenance and care. Below details the information the CDM will display along with the corresponding LED indicator.

Start Up

Upon Charger Power-up

LED	SINGLE FLASH GREEN
Line 1	*IMPRES*
Line 2	

If There is No Battery in Pocket

LED	OFF
Line 1	NO BATTERY
Line 2	

Non-IMPRES Battery in the Pocket

LED	Defined by Charge State
Line 1	NON-*IMPRES*
Line 2	BATTERY

Note: If a **non-*IMPRES*** battery is in the pocket, this is the only information displayed.

IMPRES Battery in the Pocket

IMPRES and Software Versions are Displayed

LED	Defined by Charge State
Line 1	*IMPRES*
Line 2	SW xx.yy; aa.bb

Note: xx.yy denotes charger SW version, and aa.bb denotes CDM SW version.

Note: For charger software versions 1.2 or earlier, the *IMPRES* multi-unit charger should be returned to the Rockford Support Center (see the address on page 22) for re-flashing. The software version is displayed near the bar code on the label. If no version is shown, it is an earlier version than 1.3 (for example, version will appear as V1.20).

IMPRES Battery Kit # and Serial # are Displayed (Each *IMPRES* battery shows a unique serial # for Easy ID)

LED	Defined by Charge State
Line 1	KIT# --------
Line 2	SN: ----------

IMPRES Battery Kit # and Chemistry are Displayed

LED	Defined by Charge State
Line 1	KIT# --------
Line 2	-----CHEMISTRY

Forecasted # of Cycles prior to Automatic Recondition

LED	Defined by Charge State
Line 1	- - - -CYCLES
Line 2	TO RECONDITION

* Displayed only when the number of cycles to recondition is less than 6

Charger Waiting to Charge, Battery is Hot

LED	Flashing YELLOW
Line 1	WAITING TO CHG
Line 2	HOT BATTERY

Charger Waiting to Charge, Battery is Cold

LED	Flashing YELLOW
Line 1	WAITING TO CHG
Line 2	COLD BATTERY

Charger Waiting to Charge, Low Voltage

LED	Flashing YELLOW
Line 1	WAITING TO CHG
Line 2	LOW VOLTAGE

Charger is in Rapid Charge Mode

LED	Steady RED
Line 1	RAPID CHARGE
Line 2	

Charger is in Trickle Charge Mode

LED	Flashing GREEN
Line 1	TRICKLE CHARGE
Line 2	

Charge is Complete

LED	Steady GREEN
Line 1	CHARGE COMPLETE
Line 2	

Charger is in Discharge/Reconditioning Mode

LED	Steady YELLOW
Line 1	DISCHARGE
Line 2	

Charger is Calibrating an IMPRES Battery

LED	Steady YELLOW, RED, Flashing YELLOW or GREEN
Line 1	Calibrating
Line 2	Battery

LED	Steady GREEN
Line 1	Battery
Line 2	Calibrated

* An *IMPRES* batteries should be calibrated before initial use. An *IMPRES* charger will automatically initiate calibration for all new batteries.

Battery Capacity Data is Displayed as "%" in mAH, and Voltage

LED	Defined by Charge State
Line 1	----% RATED CAP.
Line 2	----mAH --.-V

Estimated Time to Charge Complete Displayed in Hours and Minutes for NiCd & NiMH IMPRES Batteries Only

LED	Defined by Charge State
Line 1	EST COMPLETE IN
Line 2	--HRS, --MIN

Note: Not all screens shown will be displayed. For example, Waiting to Charge displays (battery hot, cold, low voltage) will only be shown if the situation warrants.

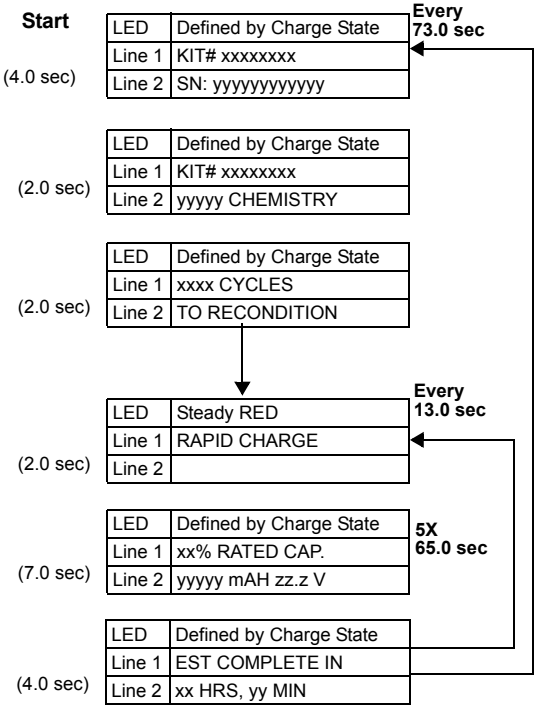
Note: Fully charged *IMPRES* batteries immediately inserted into a different pocket will show a slightly lower initial capacity due to stand loss estimation, but the charger will correct this deviation when the battery reaches full charge in the new pocket, typically in a few minutes.

Note:

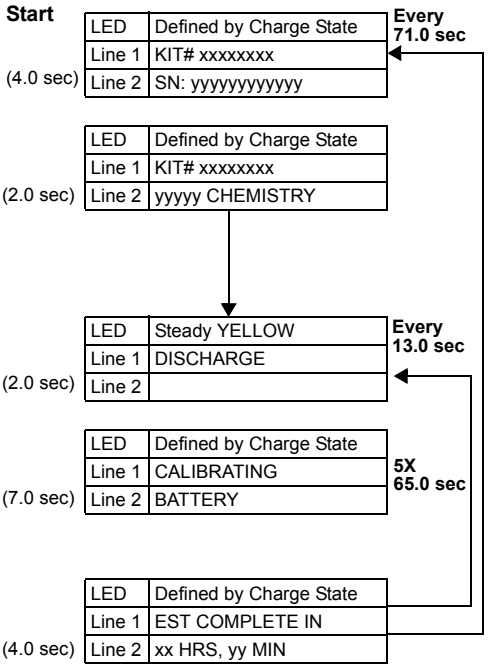
(1) Estimated time to complete charging includes trickle charge and discharge cycles (if applicable).
(2) Battery capacity information is not displayed for uncalibrated batteries.
(3) Use of *IMPRES* batteries with non-*IMPRES* chargers can affect capacity and charging time accuracy.
(4) Fully charged *IMPRES* NiCd & NiMH batteries inserted into a pocket will initially show 1 hour and 10 minutes estimated time to complete charge, but will typically revert to solid GREEN within a few minutes.

SEQUENCING DIAGRAMS FOR *IMPRES* NiCD & NiMH BATTERIES

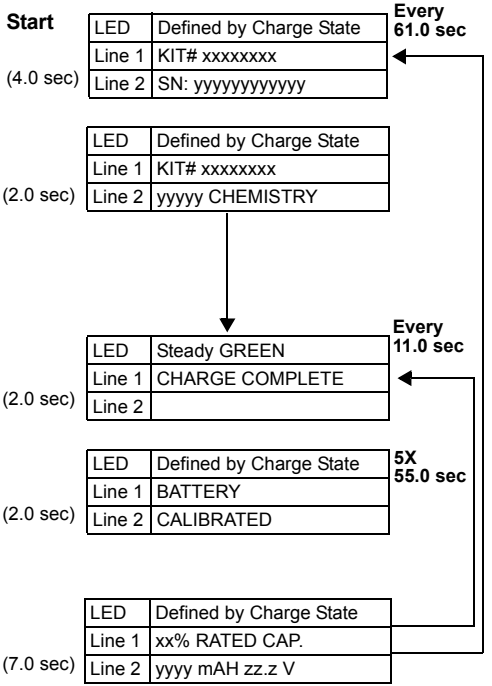
IMPRES Battery Display Sequence



Before Calibration

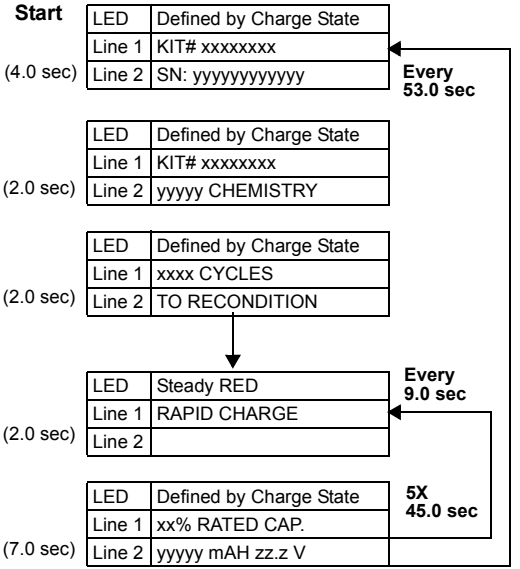


After Calibration for NiCD & NiMH

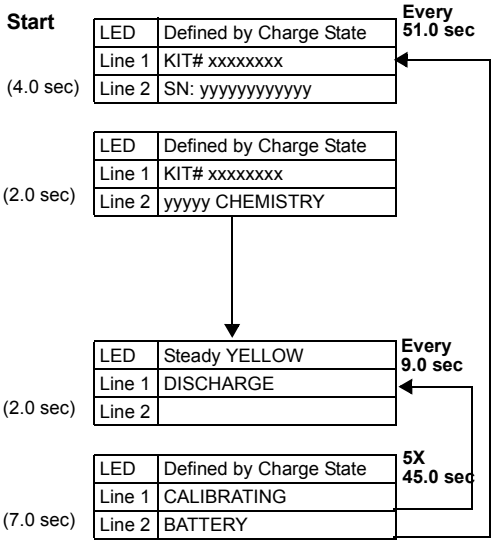


SEQUENCING DIAGRAMS FOR *IMPRES* Li-Ion BATTERIES

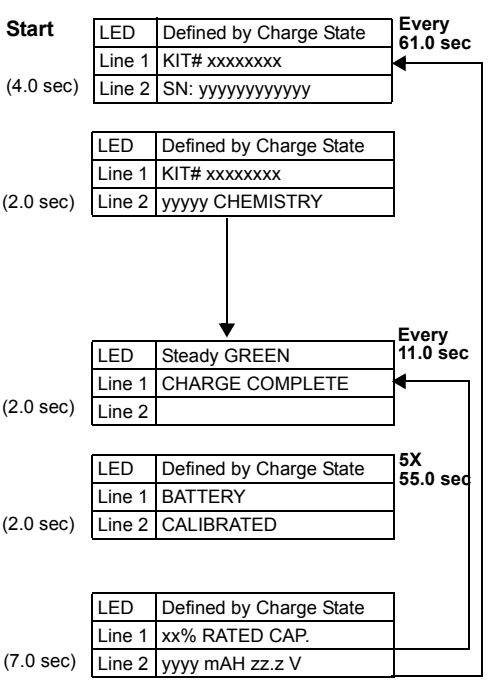
IMPRES Battery Display Sequence



Before Calibration



After Calibration for Li-Ion



DISPLAY TEXT ORIENTATION

In order to allow for desk or wall mounting of the *IMPRES* Adaptive Multi-Unit Charger, the CDM is equipped with the ability to “flip” the display text 180 degrees.

To do this, insert a large paper clip into the pinhole below the display perpendicular to the desktop. A “click” indicates the toggle button has been actuated, flipping the text 180 degrees.

IMPRES ADAPTIVE MULTI-UNIT CHARGER OPERATION

For more information on the operation of the Multi-Unit Charger, refer to the User Guide.

6880309L66-D