Shorai LFM Manual

Do not throw away the box or any foam packaging until after installation is complete!!

See **http://shoraipower.com/installation-guides** for install guides, product manuals, and specifications.

CAUTIONS

- Do not short terminals together!
- Do not short, nor attach anything to the 5-pin BMS port except Shorai BMS01 Chargers
- Do not open or damage the battery case
- Use anti-corrosion spray on terminals during use in salty and/or wet environments
- Keep batteries away from pets and children
- Do not allow discharge **below 13.0V**
- Do not allow charge voltage in excess of 14.8V
- Lead-acid chargers which employ a high-voltage "anti-sulfation" or "recovery" routine can NOT be used and may result in damage or injury. Do NOT use such chargers.
- Standard lead-acid chargers with peak charge voltage of 14.4V or less may be used
- Fully discharge before disposal

CONTENTS

- Shorai LFM Engine Starter Battery, #3 Case Series
- L-Terminals, Z-Terminals, M2.5 & M6 bolts and spares
- 4 Shorai Decals (1 safety reflective)
- High-Density, Adhesive- Backed Foam for custom installations
- Manual and Tip Sheet

SHIPPING DAMAGE

Any item damaged in transit must be reported to the SHIPPER IMMEDIATELY upon opening of the package, and also Shorai Service Center. All original packaging must be retained until further notice.

Shorai will respond with instructions ASAP, after consultation with the shipping agent.

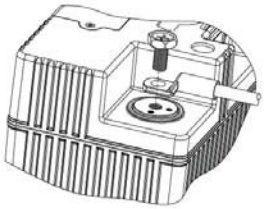
INSTALLATION

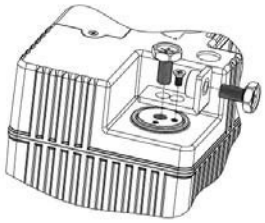
First, remove the original lead-acid battery from your vehicle, according to the maker's guidelines.

Compare the original battery side-by-side with the new Shorai battery. First check that the Polarity (+/- terminals) arrangement is the same on both. If not, contact Shorai directly for advice. Next check that the Shorai battery does not **exceed** the size of the original in any dimension (length, width, height). If larger in any dimension, and therefore will not fit into the stock battery box, please contact us directly.

Assuming that polarity and size are correct, now compare the original battery to find any dimension in which it is **larger** than the LFM replacement. For example, the two may have the same width, but the original is 25mm taller, etc. For any such difference, apply the appropriate thickness of the included adhesive-backed foam pieces to the **vehicle's battery box**, so the LFM battery fits snugly inside and can attach to the battery cables.

The LFM batteries can bolt cable eyelets to either the top of the terminals directly (pic 1 below), or top using the supplied Z-brackets (not pictured), or vertically using the L-brackets, as shown (pic 2 below). Choose whichever allows best cable fit.





Note: for the L or Z terminals the small taper-head screw is installed first, and then the M6 bolt. The adapters can face forward or to the sides. Install the Positive Cable first, then the Negative. Max torque for the M6 terminal screws is 75kg/cm (7.3nm,68 inch/lb.). Do not over-tighten. A quality anti-corrosion spray on the terminals is recommended if used in salty and/or wet environments.

Check that the positive terminal of the LFM battery cannot short against any part of the vehicle; and be sure that the original positive terminal cover, if any, is re-installed on the LFM battery before the battery box cover is fitted.

Because shipping regulations require that batteries be shipped with very low charge, **the battery must now be well charged before first use**. Charge for at least 8 Amp Hours, so 8 hours for a 1A charger, or 16 hours for a 0.5A charger, etc.

USAGE

The most damaging two conditions for any starter battery are prolonged storage at high temperatures, and allowing the battery to be deeply discharged.

Compared to lead-acid batteries, LFM have a slower self-discharge rate, and therefore can be stored longer without a charge. In fact, if there is no current flow in the system when your vehicle's key is OFF, Shorai LFM should only need a maintenance charge every three months.

Vehicles which do have a current drain while off will need the battery periodically charged, depending on the rate of current drain. If you ride at least two hours per month year-round, that is usually sufficient. For storage of more than a month a simple battery charger-maintainer on a daily ten-minute timer is an excellent method. Seasonal storage can also be achieved by disconnecting the negative battery cable, to eliminate any key-off draw on the battery.

Shorai LFM Batteries have included an advanced Battery Management System (BMS) inside. One key function provided by the BMS is Protection from Over Discharge. If the battery state of charge falls too low the LFX Battery will disconnect the main terminals, to prevent further discharge from the vehicle systems which would damage the battery. The battery will read zero volts (or near) at the main terminals if it has been locked to prevent over discharge.

Many "smart chargers" will not charge the battery in this state. If your charger isn't working, a "jump" of ten minutes from a 12V~14V DC source, such as a DC Power Supply, or 30-second attachment to another 12V powersports battery, will reset the LFX Battery BMS system and allow normal charging when the smart charger is again connected.

LIFE HACKS

High temperatures accelerate aging for any battery type. When LFM are stored, the ideal temperature for maximum lifespan is 3°C (38°F). As such, it is always best to locate your vehicle in the coolest possible location while in storage. If you know that your vehicle will be unused for an extended period of time - and during that time it will be exposed to high temperatures - you may remove the LFM and store it in a cool place - even a refrigerator. If so, do be sure that the terminals are taped and the battery bagged in plastic to avoid possibility of shorting or corrosion.

Again, these temperature notes generally apply to batteries of any type; it is not necessary to be overly concerned. This storage advice is for those who want the longest possible lifespan from their Shorai LFM batteries.

WARRANTY (USA)

Shorai offers a Limited Five-Year Warranty for defects in material or workmanship.
All warranty claims for United States are handled directly by Shorai Service USA. For submission of warranty claims or Return Merchandise Authorization (RMA#) assignment, visit
www.shoraipower.com/rma

Please do NOT return any product without an RMA# or before Shorai has contacted you to perform some simple diagnostics. In many cases issues can be solved prior to return.

Conditions NOT Covered
- Physical Damage to the pack after purchase
- Over-voltage or over-current charging
- Other errors by charger or user setting of charger
- Current draw in excess of CCA specification
- Cranking cycles >10 sec duration
- Short circuit of main terminals or BMS port
- Improper connections to the 5-pin BMS port
- Damage due to OVER DISCHARGE
  (Do not forget headlights and grip warmers, etc!!)

Returns MUST be accompanied by:
***** A copy of Original Receipt (or Shorai Order ID#)
***** Shorai-Issued RMA#

Returns without Receipt and/or RMA# can only be replaced at 25% discount from Shorai MSRP (suggested retail price), plus return shipping charges.

Products found NOT defective after in-house testing at Shorai may be returned to customers, at their expense for shipping.

The warranty pro-rated with coverage as follows:

Month	1~12	13~18	19~60
Discount from MSRP	100%	65%	50%

Note: For any Shorai product which is purchased from a U.S. seller (or Shorai USA website) and shipped to an end user outside United States, ALL shipping costs related to warranty claims are the responsibility of the user.

NON-WARRANTY RETURNS

Any merchandise in "**new**" condition which was originally purchased via the Shorai website may be returned to Shorai Service Center within 30 days of purchase. For "as new" returns to other sellers, please consult your seller for their terms.

Merchandise must be accompanied by a Return Authorization Number, copy of receipt or order number, and all original packaging in "new" condition.

A restocking fee may be assessed - or refund entirely refused - in case the product or packaging is damaged, depending on severity.

Thank you for choosing Shorai LFM!
We hope and expect that you'll be pleased with the performance of our products, for years to come.

Do be sure to contact us if you have questions, problems, or suggestions. We are here to help.

SHORAI SERVICE CENTER USA
TEL: 408-720-8821
shop@shoraipower.com

See **www.shoraipower.com** for full product details, install guides, RMA Return forms, and much more…

