ATV
SERVICE
Bulletin

July 18, 2011 Subject: **Batteries Activation, Charging and Maintenance** No. **2012-4**

YEAR	MODEL	MODEL NUMBER	SERIAL NUMBER
2012	All	All	All

GENERAL INFORMATION

As a reference to predelivery inspection bulletin, this service publication provides instructions for the activation, charging and maintenance of new Yuasa† batteries. It contains standard practices and can be used as a reference for preparing vehicles before delivery to customers.

For complete battery information and detailed procedures, refer to battery manufacturer's instructions.

BATTERIES ON MY2012 VEHICLES

For MY2012 vehicles, the dry cell batteries could be either:

– Dealer activated
– Factory activated.

The battery is a VRLA (Valve Regulated Lead Acid) maintenance free and non-spillable. It never need electrolyte level check, readjustment and refilling, however, they still need periodic charging.

Dealer Activated Battery

This battery is NOT activated. It comes with an electrolyte container (acid pack) and need to be activated. It is of the uppermost importance to activate them properly and to perform an initial charging.

Factory Activated Battery

This battery is factory filled and activated. It requires an initial charging to ensure proper operation and maximum life span.

BATTERY PREPARATION (DEALER ACTIVATED)

The following table is a summary of the steps required for proper battery activation. Refer to *BATTERY ACTIVATION AND INITIAL CHARGING* for complete procedure.

STEP	TASK SUMMARY
1	Place battery on a level workbench
2	Install electrolyte container on battery
3	Keep container in place for 20 minutes minimum to fill
4	Remove electrolyte container from battery
5	Do not install cap strip before battery is fully charged
6	**Wait for 1 hour minimum**
7	Charge battery for 4 - 9 hours at 2 A
8	Install cap strip on battery
9	**Wait for 2 hours (without charger)**
10	Check battery voltage

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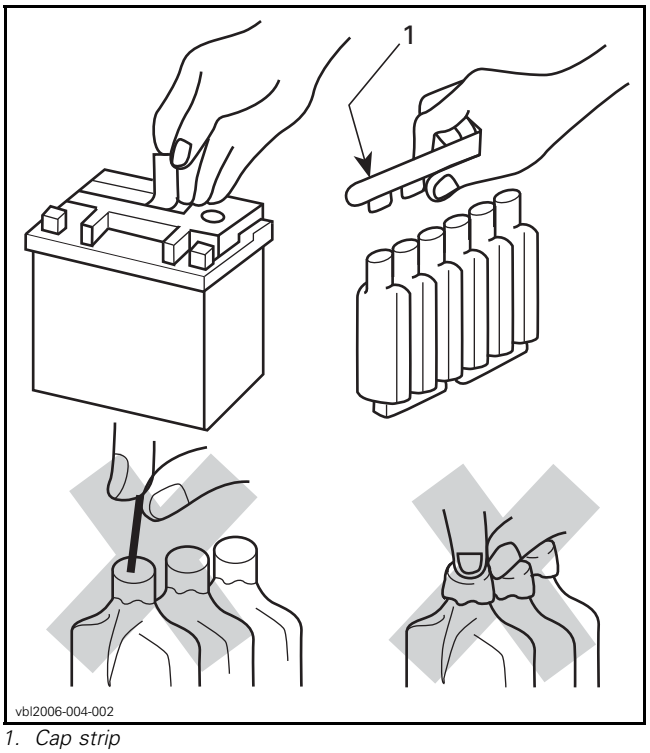
STEP	TASK SUMMARY
11	Ensure that voltage is 12.8 V or higher, charge as required
12	**Keep battery leveled (upright) for 12 - 17 hours prior to installation**
13	Install battery on vehicle

NOTICE **A minimum of 24 hours is required between STEP 1 and STEP 13, otherwise acid spillage can occur after battery installation.**

Battery Activation and Initial Charging

1. Carefully read the *SAFETY WARNINGS* section before starting.
2. Wear plastic gloves and eye protection.
3. Remove battery from vehicle.
4. Place battery on a level surface.
5. Remove electrolyte container from vinyl bag.
6. Remove the strip of caps.
7. Put the cap strip aside (will be used later as the battery sealing plug).
8. Ensure to use only the dedicated container that comes with the battery.

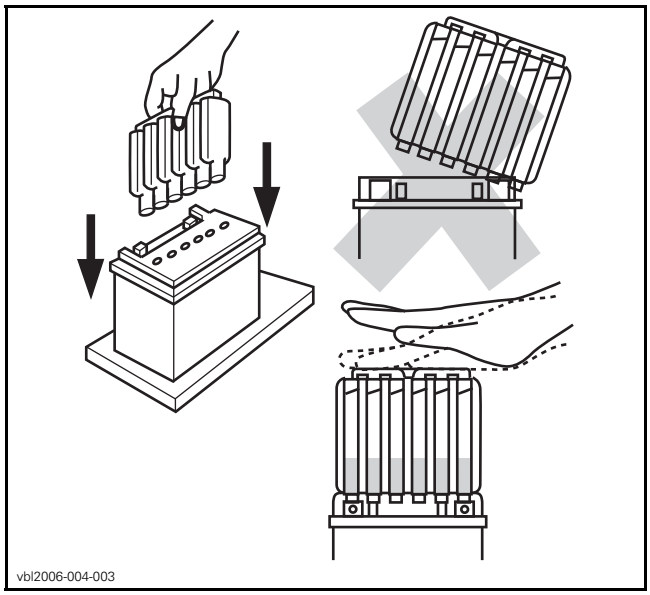


1. Cap strip

9. Place electrolyte container, sealed top of the cells down, into the filler ports of the battery.
10. Hold the container level then push down to break the seals.
11. Check the electrolyte flow.
12. Keep the container in place for 20 minutes or longer until it empties completely.

NOTE: Air bubbles will appear as the ports fill. Do not tilt or compress the electrolyte container.

NOTE: If no air bubbles are coming up from the filler ports, or if container cells have not emptied completely, tap the container a few times. Do not remove the container from the battery until it's empty. The battery requires all the electrolyte from the container for proper operation.



13. Remove the electrolyte container from battery.
14. Let stand for at least 1 hour. (This allows the electrolyte to permeate into the plates for optimum performance.)

NOTE: Gently shake the battery to insure that the electrolyte is totally permeated into the plate before the charging process. If the electrolyte is not totally absorbed by the plates, let the battery stand for another 30 minutes.

NOTICE **Do not install cap strip before battery is fully charged**

15. Place a clean rag over the open filler port of battery while charging it.

16. Charge battery to bring it to a full state of charge.
    – If you are using a constant current charger, refer to the standard (STD) charging method printed on the battery however, keep an eye on the voltmeter and battery to avoid overcharging that may lead to battery overheating and damage.
    – If you are using an automatic type taper charger, check to make sure that the charger current (amps) is equal to or greater than the standard (STD) charging method indicated on the battery.

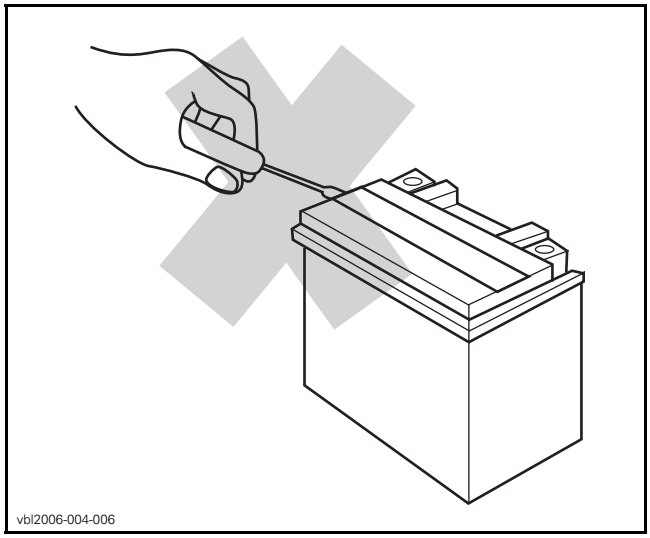
TYPICAL
Some batteries may differ

17. Remove clean rag from battery.
18. Install cap strip on battery and press down firmly with both hands after charging is completed (do not pound or hammer).
19. Let stand for at least 2 hours.
20. Check battery voltage using a voltmeter.
21. Ensure that the battery voltage is 12.8 V or higher.

NOTE: Reading for a charged, newly-activated battery should be 12.8 V or higher. If less, it needs additional charge.

22. Let stand for 12 - 17 hours while battery is level (upright) prior to installation.
23. Install battery on vehicle.

NOTICE Never remove cap strip from battery or add electrolyte for the life of the battery.



NEVER REMOVE BATTERY STRIP

BATTERY PREPARATION (FACTORY ACTIVATED)

The following table is a summary of the steps required for proper battery activation. Refer to *BATTERY INITIAL CHARGING* for complete procedure.

NOTICE At vehicle predelivery, even if the battery is able to start the engine, its state of charge is not at a maximum. Failure to properly charge battery will reduce its life span.

STEP	TASK SUMMARY
1	Place battery on a level workbench
2	Charge battery for 4 - 9 hours at 2 A
3	Wait for 2 hours (without charger)
4	Check battery voltage
5	Ensure that voltage is 12.8 V or higher
6	Install battery on vehicle

Battery Activation

Since the batteries are factory activated, they never need to be activated using electrolyte container (acid packs). The electrolytes are already in the batteries.

Battery Initial Charging

1. Carefully read the *SAFETY WARNINGS* section before starting.
2. Remove battery from vehicle.
3. Place battery on a level surface.

4. Charge battery to bring it to a full state of charge.
   – If you are using a constant current charger, refer to the standard (STD) charging method printed on the battery however, keep an eye on the voltmeter and battery to avoid overcharging that may lead to battery overheating.
   – If you are using an automatic type taper charger, check to make sure that the charger current (amps) is equal to or greater than the standard (STD) charging method indicated on the battery.

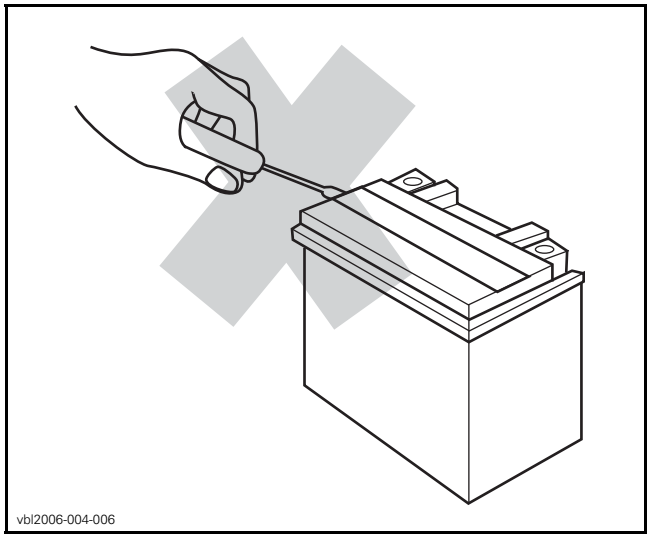
TYPICAL
Some batteries may differ

5. Let stand for at least 2 hours.
6. Check battery voltage using a voltmeter.
7. Ensure that the battery voltage is 12.8 V or higher.

NOTE: Reading for a newly-charged battery should be 12.8 V or higher. If less, it needs additional charge.

8. Install battery on vehicle.

NOTICE Never remove the battery strip from caps or add electrolyte for the life of the battery.



NEVER REMOVE BATTERY STRIP

BATTERY ROUTINE CHARGING

Use the following information to maintain the charge of a battery already activated and charged.

NOTICE Overcharging can harm the battery beyond recovery.

Charging for Voltage of 11.6 V to 12.8 V

The most important thing to properly maintain a VRLA battery is to never let stand discharged. A sealed VRLA battery should always be kept to near fully charged for peak performance and maximum life span. In fact, it can need charging more often than a car battery because it is probably not used routinely and, therefore, not "automatically" charged.

A fully charged battery should read 12.8 V or higher after battery has been off the charger 2 hours.

NOTE: The static voltage of a battery should be considered an indication of the state of charge only. A battery can show a good voltage while not being able to supply suitable power. In doubt, a load test should be carried out.

It is not recommended to overcharge sealed VRLA batteries. Because of their characteristics, too much of a boost charge will decrease the volume of electrolyte. The longer the overcharge time, the greater the drop in electrolyte and starting power.

Refer to the following tables for charging routine.

Note that charging times can vary depending on type of charger. Follow the charger's instructions for details.

STATE OF CHARGE : 100%		
VOLTAGE	ACTION	CHARGE TIME *
12.9 – 13.0	None Check at 3 months from date of manufacture	None required
* Using a constant current charger at standard amps specified on the battery		

STATE OF CHARGE : 75% - 100%		
VOLTAGE	ACTION	CHARGE TIME *
12.6 – 12.8	May need slight charge, if no charge given, check in 3 months	3 – 6 hours
* Using a constant current charger at standard amps specified on the battery		

STATE OF CHARGE : 50% - 75%		
VOLTAGE	ACTION	CHARGE TIME *
12.1 – 12.5	Need charge	5 – 11 hours
* Using a constant current charger at standard amps specified on the battery		

STATE OF CHARGE : 25% - 50%		
VOLTAGE	ACTION	CHARGE TIME *
11.6 – 12.0	Need charge	At least 13 hours verify state of charge
* Using a constant current charger at standard amps specified on the battery		

Charging for Voltage of 11.5 V or Less

Batteries with voltage below 11.5 V may require special equipment and procedures to recharge.

In charging an over discharged battery having a terminal voltage of 11.5 V or lower, its internal resistance may be too high to charge at a normal charge voltage.

Therefore, it may be necessary to raise the voltage of the battery initially (25 V as a maximum), and charge for approximately 5 minutes. If the ammeter shows no change in current after 5 minutes, you need a new battery.

Current flowing into the battery at high voltage can become excessive. Monitor amperage and adjust voltage as necessary to keep current at the battery's standard amp rating. Charge for approximately 20 hours.

STATE OF CHARGE : 0% - 25%		
VOLTAGE	ACTION	CHARGE TIME *
11.5 or less	Need charge	20 hours
* Using a constant current charger at standard amps specified on the battery		

BATTERY MAINTENANCE

These batteries require little maintenance to perform perfectly. Follow this simple check list for optimum battery performance:

- Check voltage every 3 months using a voltmeter.
- Keep a battery fully charged to 100% (12.9 V - 13.0 V after standing 2 hours).
- Check and charge battery if the voltage drops below 12.5 V.
- Keep the battery top free of grime.
- Clean terminals and connectors if necessary.
- For storage, pull battery or disconnect battery cables.

BATTERY STORAGE

Battery storage is critical for battery life, it is important to follow the above battery maintenance check list to keep an optimal condition.

Always remove battery from vehicle for storage. Keeping the battery in vehicle for storage may lead to contacts degradation/corrosion and case damage if freezing occurs. A discharged battery will freeze and break in area where freezing point is experienced. Electrolyte leakage will damage surrounding parts.

Regularly charging the battery during storage will prevent cell sulfation.

Keep in mind that higher storage temperatures cause faster self-discharge and require checking more often.

BATTERY CARE REMINDER

Through proper maintenance and care, today's modern batteries can survive long storage periods, however one must adhere to the proper maintenance procedures as specified in this bulletin.

It is a good practice to strictly follow all activated batteries and apply the maintenance procedure to keep them at a high level of performance.

All batteries which did not receive proper periodic maintenance will not be covered by the warranty.

SAFETY WARNINGS

Here are important safety things to keep in mind before working with batteries. Any person who intends to work with batteries should read and understand the information contained on the following safety warnings before doing so.

⚠ WARNING

- ⚠ Absolutely no smoking, sparks or open flames around batteries. Batteries can produce hydrogen and oxygen; if they ignite the battery can rupture.
- ⚠ Properly connect charger to battery: positive to positive, negative to negative. Unplug the charger or turn it off before you disconnect the leads; that cuts down on the chance of sparks.
- ⚠ Always wear eye protection, protective gloves and protective clothing.
- ⚠ Clean up acid spills immediately, using a water and baking soda solution to neutralize.
- ⚠ If sulfuric acid is swallowed or splashed in the eyes, take immediate action. While the diluted sulfuric acid used as electrolyte can burn the skin, this type of injury is generally less serious. Sulfuric acid in the eyes can cause blindness. Serious internal injuries or death can result from ingesting sulfuric acid.
- ⚠ Always ventilate battery charging area.
- ⚠ Never charge or boost battery while installed on vehicle.

NOTICE

- Store the battery in a cool, dry place out of direct sunlight.
- The sealed VRLA battery will not be topped off during its life. Never pry off sealing caps: it is dangerous and damaging. Water cannot be added to the sealed VRLA battery.
- Always stop charging if the battery becomes really warm to the touch. Let it cool down for 6 - 12 hours and resume charging. Overcharging can warp plates, making future charging difficult or impossible. Watch charging times carefully, or ideally, use a Yuasa Automatic Charger. A battery that is too hot can rupture.
- Improper activation or excessive over charging (possibly by equipment failure) could cause damage to the battery or vehicle by forcing acid out of the safety vent.
- Always connect battery cables exactly in the specified order. Connect RED positive cable first, then BLACK negative ground cable.