

PLEASE APPLY THE SAFETY PRECAUTIONS!

1. SAFETY PRECAUTIONS

- Wear safety goggles and clothes.
- Keep spark-emitting things away from the batteries.
- Make sure the battery terminals are accurately connected.
- Do not bend the batteries more than 45 degrees.
- Keep a frozen battery until it reaches to room temperature.
- Keep the batteries away from children.
- Read the instruction carefully and follow them definitely.

Attention!
As the batteries contain sulphuric acid, they cause severe burns. If acid contacts with eyes or any part of the body, the affected area should be rinsed with plenty of water and you should seek medical help urgently.



2. STORAGE

- Batteries may be stored for 6 months without going down below the critical battery limit (12.40 V).
- Batteries should be inspected in maximum 6 months and if necessary recharged.
- If temperature of the battery storage space exceeds a temperature of 25°C, they should be inspected once in a month and recharged, if necessary
- Batteries should be stored in a cool, dry and closed area upright on a flat and fixed surface.
- Principle of first-in first-out (FI-FO) should be applied for storage.
- Batteries should not be stowed more than 2 pallets or 5 units on each other.
- If batteries are individually stored, always place a separator (Styrofoam, etc.) in-between.
- Batteries should always be clean and dry.
- Batteries should not be stored to directly contact with the ground.

Attention!
When open-circuit voltage of a battery drops below 12.40, it should be charged again.
For more detailed information, please refer to the **Sample Battery Charging Table**.



3. TEST PROCEDURES

ALWAYS CHECK THE FOLLOWING STEPS PRIOR TO TESTING A BATTERY.

- Does the certificate of warranty comply?
- Is there any crack and/or break on the terminals, case or cover?
- Is there any swelling on the case?

For batteries with openable plug:

- Any reduction in the electrolyte level?
- Any loosening or damage on the plugs?

IF THE BATTERY IS NOT DAMAGED, PROCEED TO THE NEXT STEP.

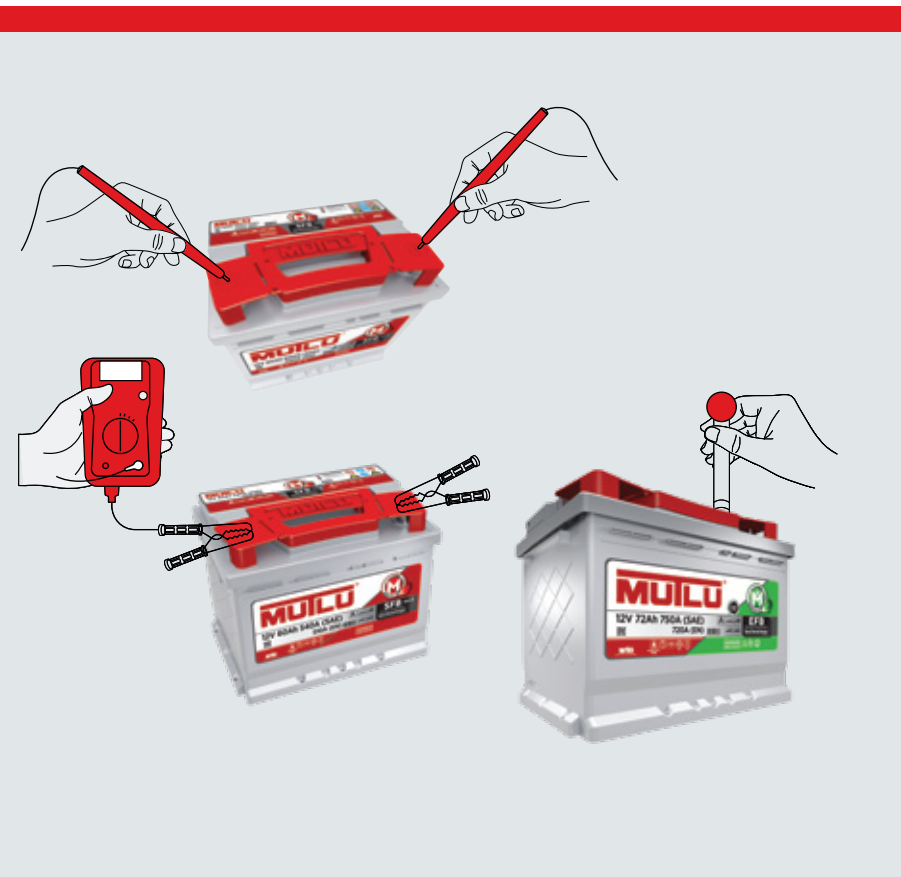
- Measure the open-circuit voltage using a precise voltmeter.
- If the charge level is minimum 75% (voltage about 12.40 V), proceed to the loading test.
- If it is less than 75%, charge the battery according to the specified method. (See Sample Battery Charging Table)
- When replacing battery, check the car's electrical equipment for the battery.
- A widespread failure to occur on the vehicle is overcharging or undercharging of the battery by the alternator.
- In case of full throttle for a regular vehicle, alternator output is expected to be in the range of 13.8 V – 14.8 V.
- Situations leading to leakage currents (e.g. short circuit, extra equipment, etc.) should be checked.

Attention!
To Remove Surface Voltage to Occur on the Battery:

- Rest for at least 4 hours the battery which is newly charged or newly removed and taken out from the vehicle.
- If the battery is on board, keep the high beams on for 15 seconds and then measure the voltage.

ASSESSMENT OF TEST RESULT
Assessment of the battery test and result is performed according to the equipment instructions.

- Assessment of results depends on brand, model and system of the equipment in use.
- Results of observation, measuring and test are assessed by the qualified officer of the service centre.
- Mechanical damages, electrical equipment failures of the vehicle and discharged batteries are not covered by the warranty.
- Any disconnection in the inner structure of the battery and/or short circuit failures is under warranty.



4. CHARGING PROCESS

- If the measured value is below 12.40 V, recharge the battery as shown in the sample battery charging table.

CHARGE STATUS	VOLTAGE(V)
100%	12.80V
75%	12.50V
65%	12.40V
50%	12.40V
25%	11.90V
0%	11.40V

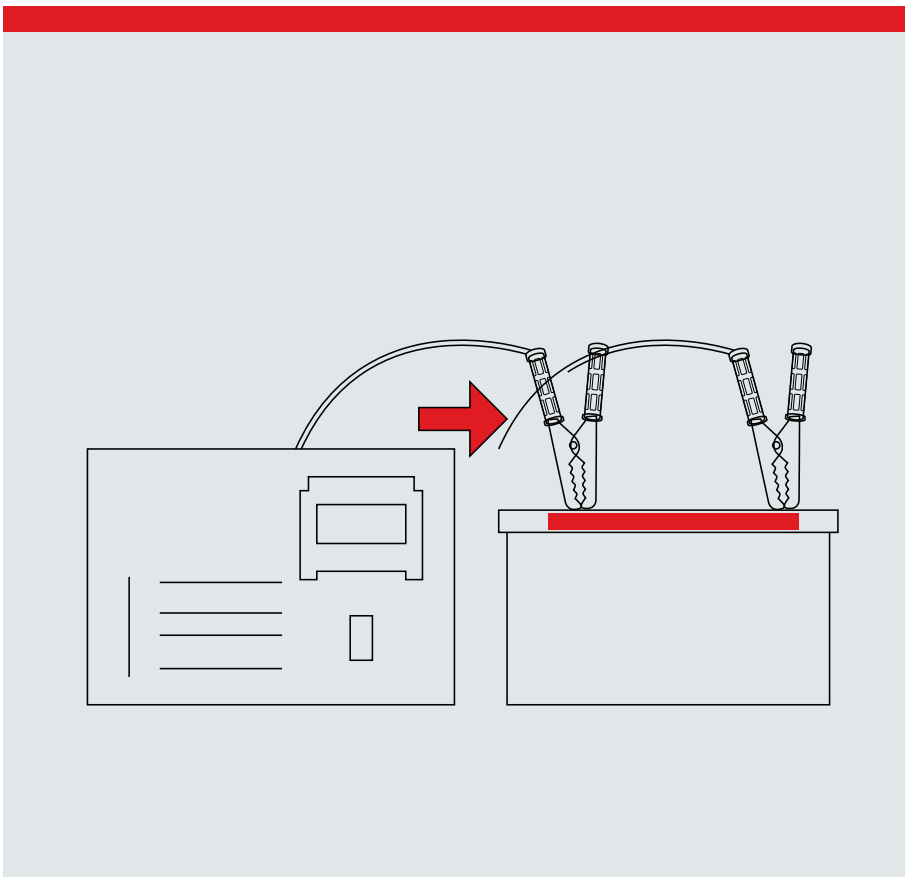
- Charging varies depending on the discharge rate and inner structure hardening.
- Batteries which could not rise above 12.40 V after charging procedure are considered as user fault.
- Voltage limit should be applied as 14.40 V for charging AGM and GEL batteries.
- For batteries with same discharge levels and capacity values, you may charge them simultaneously depending on capacity of the rectifier.

ADDITIONAL SAFETY PRECAUTIONS

- Prior to connecting the battery, make sure the charger is off.
- Make terminal connections correctly. (Positive-Positive & Negative-Negative)



- Choose current and voltage in the Sample Battery Charging Table according to the characteristic and usage instructions of the charger and then connect to the charger.
- Firstly, switch the charger off prior to disconnecting the terminals from the charge.
- When charging, do not allow excessive rise of temperature and overflow of acid. In such case, reduce the charging current or interrupt charging process until the battery gets cool.



5. BATTERY SELECTION AND POST-INSTALLATION

- Select the correct battery for your car from the product size list in our catalogues or via Find Your Battery application available at our website www.mutlu.com.tr/en-US according to your car.



Find Your Mutlu Battery

- The most important selection criteria you should consider are measurements given in the product size list, cold start-up current and capacity values.
- For correct connection, mark the car's connection cables as (+) and (-) prior to removal of the old battery and first remove the negative terminal and then the positive terminal.
- Measure the battery voltage value and check direction of the battery terminals
- Inspect battery installation place on board carefully.
- If there is any oxidation or blackening on the car's cable connections, clean them off.
- Place the new battery and make the connections and tighten carefully.
- As overtightening may give damage to the terminal, be careful.
- Complete all information in the warranty certificate fully. (See Sample Certificate of Warranty)
- Keep that part of the certificate of warranty with the inscription "to remain with the selling company", and deliver the other part to the customer.

