



Charging system



**SUZUKI
TRAINING ACADEMY**

Engine Auxiliary Systems

Course code: EN05



Student training manual
Suzuki Online Training

Foreword

This training manual contains basic operating principles of the charging system in a motor vehicle. The main charging system in a motor vehicle includes the alternator which generates charging current, the battery which stores electrical current and generates electrical current when the alternator is not charging and the electrical loads which require electrical energy to operate.

In this manual, we will look at the basic operating principles of the alternator and the battery. After you have carefully studied this lesson, you must complete the on-line lesson exam on Suzuki Online Training, before continuing to the next lesson.

Smart manuals

Some sections of this training manual contain videos with detailed information on the topics you are studying. If you are studying this training manual on a PC, look out for the “green play video” symbol on any photo or picture in this manual, click on photo/figure to watch a video providing you with detailed information on that topic. **Note: Internet connection required**

This document is intended solely for training purposes only. All vehicle repairs and adjustments must be carried out according to the procedures stipulated in current service manuals and technical bulletins.

Suzuki Technician curriculum

This training manual is part of the [Non Suzuki Technician to Suzuki Technician curriculum](#). The curriculum consists of the following modules:

1. GE01 Suzuki Introduction
2. GE02 Electrical and Electronics
3. Diagnostics
4. EN02 Engine Mechanical part I
5. EN03 Engine Mechanical part II
6. EN04 Engine Mechanical part III
7. [EN05 Engine Auxiliary systems](#)
8. DS01 Driveshaft/Axle
9. DS02 Driveshaft/Axle transfer case
10. BR02 Brake control systems
11. Manual transmission / transaxle
12. CS02 Control system / body electrical
13. CS03 Communication / bus systems

You are currently studying EN05 Engine Auxiliary Systems. This module consists of the following courses:

- [Charging systems](#)
- [Starting systems](#)
- [Exhaust system](#)

Click on the other training modules to view their training contents.

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Introduction - Charging system

A motor vehicle uses a lot of electrical energy whilst in operation. Systems like the starter motor, lights, radio, electronic control units, engine ignition systems, etc. require sufficient electrical energy at all times to operate reliably. The charging system in the motor vehicle ensures that the electrical consumers are supplied with the current they require to operate at all times.

The charging system consists of the following main components.

- Alternator
- Battery
- Charge warning light (in instrument cluster)
- Wiring harness

Function

The main function of the charging system is:

- To supply all electrical consumers (loads) in the vehicle with direct current (DC) voltage.
- To keep the battery sufficiently charged.

With the engine switched OFF, the battery supplies all the electrical energy required by any electrical consumers switched ON, in the vehicle. If electrical loads are switched ON for extended periods, the battery can be discharged.

The battery also supplies electrical energy to the consumers when the alternator stops charging with the engine running.

When the engine is running, the alternator supplies the electrical loads with electrical energy and also charges the battery. At idle speed, a three phase alternator already delivers at least a third of its rated output. This charging current is increased when the electrical loads increase.

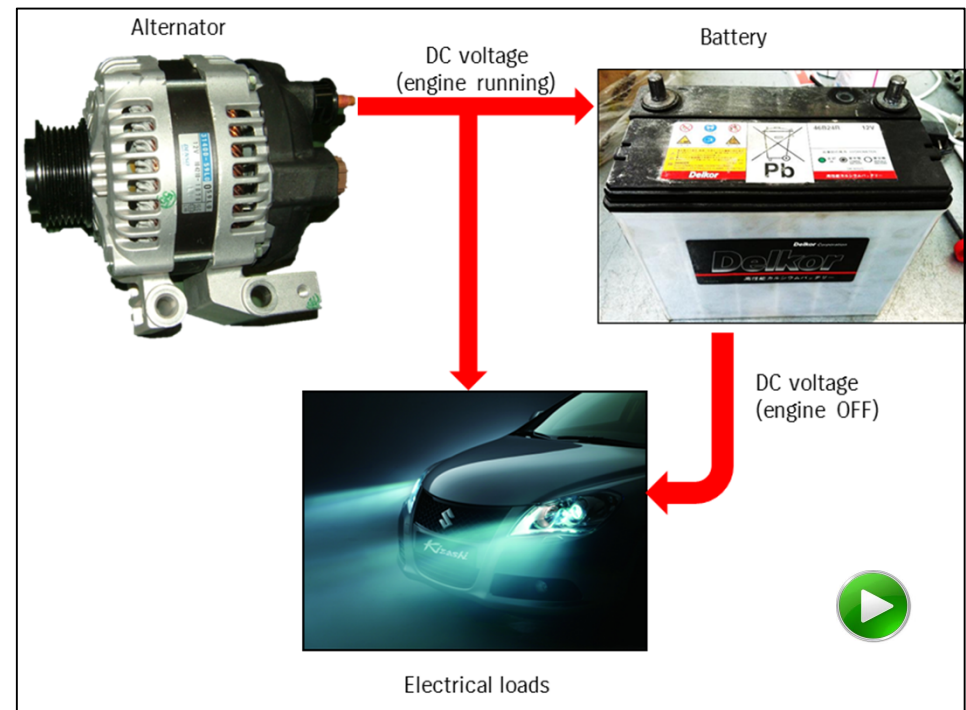


Figure 1 - Charging system