



Anti-lock Brake System



**SUZUKI
TRAINING ACADEMY**

Brake Control System

Course code: BR02

Student training manual
Suzuki Online Training



Foreword

The ABS system is installed in modern vehicle to prevent wheel lock up during braking. This ensures the vehicle steering control is maintained during hard braking. In this training manual, we will study the operation of the ABS and EBD systems.

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 the green button to watch a video providing you with detailed information on that subject. **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 / Electronics
3. GE03 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 BR02 Brake control systems. This module consists of the following courses:

- [Anti-lock Braking System](#)
- ABS Practical Activities

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The contents of this chapter will enable learners to:

- Describe the purpose of ABS.
- List the components of the ABS.
- Describe the functions of each of the components of the ABS.
- Explain the working principles of the ABS.
- Describe the load changes in the vehicle due to braking force.
- Describe the displacement of load of the vehicle during braking force.
- Define slip ratio
- Explain the different ABS control module functions.

Lesson 1

Anti-lock Braking System

When you drive a vehicle on a wet paved road or on a road covered with snow, you may lose control of the vehicle if you step on the brake pedal strongly.

If the driver steps on the brake pedal deeply while driving on such a slippery road, the driver may not be able to control the vehicle by steering wheel. In such a case, the driver cannot turn the vehicle and the vehicle will run out of the road. There is also a probability of hitting some obstacles even though the driver drives on a straight road. ABS (Anti-lock Braking System) is a system which was developed to prevent such dangerous situations.

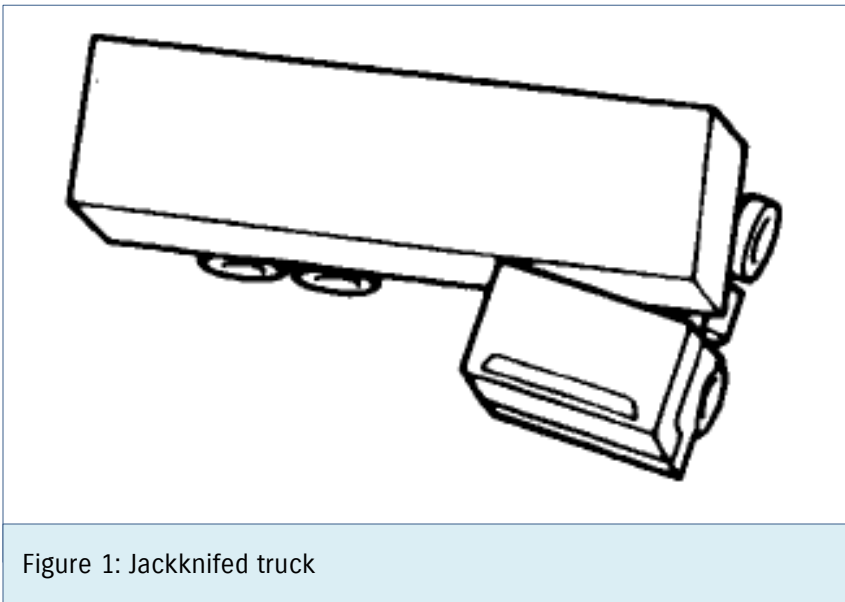


Figure 1: Jackknifed truck

ABS was developed as an active safety system to be added to the conventional brake system which consists of master cylinder, disc brake, drum brake, proportioning valve and so on.

The ABS has become a more familiar system to automobile these years, although ABS itself had already been adopted to aircrafts and trains earlier than automobile.

When a driver strongly steps on the brake pedal of a vehicle without ABS, the wheels may be decelerated and finally stopped. In spite of this, the vehicle may keep on running. We say in this situation that a big slip occurred between the wheel and the road or that the wheels were locked. Under this condition, the vehicle loses skid friction (skid means slip or slide in the direction perpendicular to the vehicles forward traveling direction), resulting in the following symptoms:

- Reduction of steering stability: steering wheel out of control, fishtailing, spin or jackknife (jackknifing means to bend suddenly at the connecting part of a truck and its trailer and go out of control, see figure 1).
- Reduction of cornering force: the vehicle cannot turn even if the driver turns the steering wheel.
- Expansion of braking distance: in general, braking distance becomes longer.