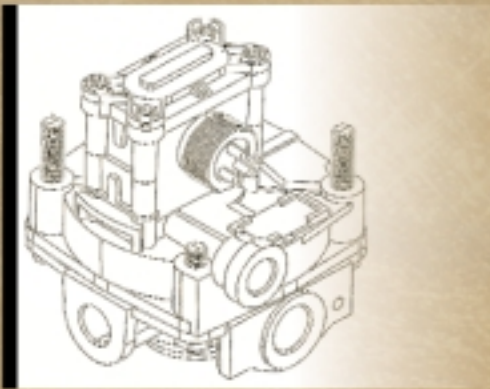
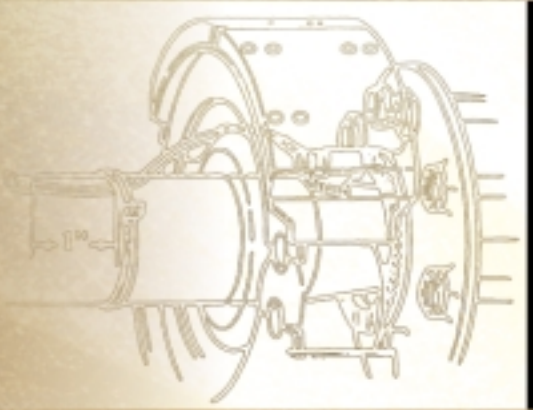


# Truck Drivers Guide to Antilock Braking Systems



U.S. Department of Transportation  
Federal Highway Administration

# NOTICE

Office of Motor Carrier and Highway Safety  
**Federal Highway Administration**

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The Trucking Research Institute has made a reasonable effort to ensure the accuracy of the information contained in this booklet. However, every carrier should satisfy itself that the procedures outlined herein are appropriate for its own use.

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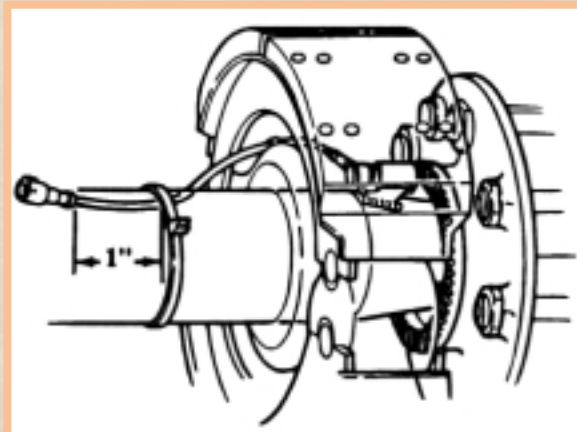
## WHAT IS AN ANTILOCK BRAKING SYSTEM (ABS)?

A computerized system that keeps your wheels from locking up during hard brake applications.

ABS is an addition to your normal brakes. It does not decrease or increase your normal braking capability. ABS only activates when wheels are about to lock up.

ABS does not necessarily shorten your stopping distance,

**BUT** it does help you keep the vehicle under control during hard braking.



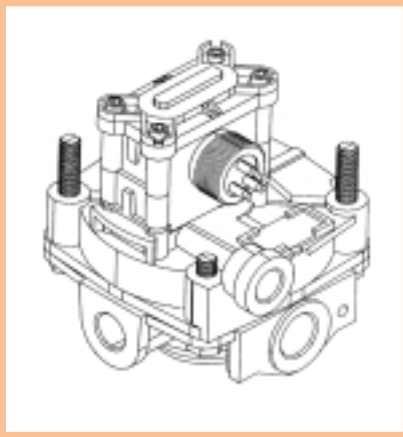
## HOW DO ANTILOCK BRAKING SYSTEMS WORK?

Sensors and computer logic detect potential wheel lock up, by sensing excessive deceleration rates and noting substantial differences in wheel speeds.

An electronic control unit (ECU) then tells the appropriate modulator valve(s) to decrease brake pressure to avoid wheel lock up.

Brake pressure is adjusted to a level providing the maximum braking without danger of lockup.

ABS works far faster than the driver can respond to potential wheel lock up. And it only adjusts the brake pressure to the wheels that are in danger of locking up.



At all other times the brake system will operate normally.

## HOW IS ABS GOING TO HELP ME?

First, it is important to understand what can happen to you **without** ABS:

When you brake hard on slippery surfaces in a vehicle without ABS, your wheels may lock up.

When your steering wheels lock up, you lose steering control. When your other wheels lock up, you may skid, jackknife or even spin the vehicle.

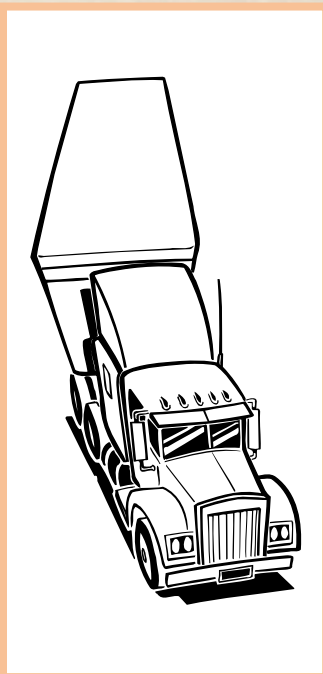
ABS helps you avoid wheel lockup. The computer senses **impending** lockup, reduces the braking pressure to a safe level, and you maintain control.

You may or may not be able to stop faster with ABS, but you should be able to steer around an obstacle while braking, and avoid skids caused by overbraking.

## BUT WHAT IF ABS IS ONLY ON THE TRACTOR, OR ONLY ON THE TRAILER?

Having ABS on only the tractor, only the trailer, or even on only one axle, still gives you **more control** over the vehicle during braking.

### BRAKE NORMALLY



When only the tractor has ABS, you should be able to maintain steering control **and** there is less chance of jackknifing.

**BUT** keep your eye on the trailer and let up on the brakes (if you can safely do so) if it begins to swing out.

When only the trailer has ABS, the trailer is less likely to swing out, but if you lose steering control or start a tractor jackknife, let up on the brakes (if you can safely do so) until you gain control.



## HOW SHOULD I BRAKE WITH ABS?

When you drive a tractor-trailer combination with ABS, you should brake as you always have. In other words:

*Use only the braking force necessary to stop safely and stay in control.*

*And brake the same way, regardless of whether you have ABS on the tractor, the trailer, or both.*

*As you slow down, monitor your tractor and trailer and back off the brakes (if it is safe to do so) to stay in control.*

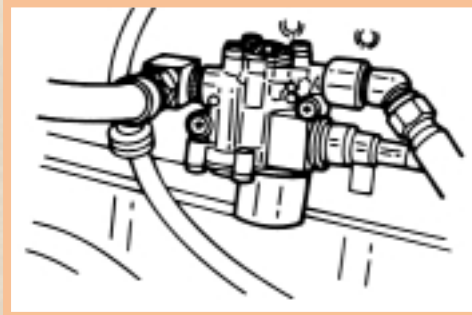
There is only one exception to this procedure. If you always drive a straight truck or combination with working ABS on all axles, in an emergency stop, you can fully apply the brakes.

## WHICH VEHICLES HAVE ANTILOCK BRAKING SYSTEMS, AND WHICH ONES DON'T?

The Department of Transportation **requires** that ABS be on:

- Air-braked truck tractors built on or after March 1, 1997.
- Other air-braked vehicles (trucks, buses, trailers and converter dollies) built on or after March 1, 1998.
- Hydraulically-braked trucks and buses with a gross vehicle weight rating of 10,000 lbs. or more built on or after March 1, 1999.

Many commercial vehicles built before these dates have been voluntarily equipped with ABS.



## HOW DO I KNOW IF MY VEHICLE IS EQUIPPED WITH ABS?

- Check the certification label for the date of manufacture, and compare it with the ABS schedule on page 8.
- Tractors, trucks and buses will have yellow ABS malfunction lamps on the instrument panel.
- Trailers will have yellow ABS malfunction lamps on the left side, either on the front or rear corner. Dollies manufactured after February 1998 are required to have a lamp on the left side.
- Some antilock braking systems have diagnostic lamps incorporated into their electronic control unit.
- In the case of towed units manufactured before it was required by the Department of Transportation, it may be difficult to tell if the unit is equipped with ABS. Look under the vehicle for the ECU and wheel speed sensor wires coming from the back of the brakes.

## WHAT HAPPENS IF THE ANTILOCK BRAKING SYSTEM ISN'T WORKING?

Without ABS, you **still** have **normal** brake functions. Drive and brake as you always have.

Vehicles with ABS have yellow malfunction lamps to tell you if something isn't working. The location of the lamps is described on page 9.

As a system check, on newer vehicles, the malfunction lamp comes on at start-up for a bulb check, then goes out quickly. On older systems the lamp could stay on until you are driving over five miles per hour.

If the lamp stays on after the bulb check, or goes on once you are underway, you may have lost ABS control at one or more wheels.

Remember, if your ABS malfunctions, you **still have regular brakes**. Drive normally, but get the system serviced soon.

## WHAT *WON'T* ABS DO?

**IT WON'T** allow you to drive faster, follow more closely, or drive less carefully.

**IT WON'T** prevent power or turning skids - ABS should prevent brake-induced skids or jackknives, **but not** those caused by spinning the drive wheels (traction-control might help there) or going too fast in a turn.

**IT WON'T** necessarily shorten stopping distance - ABS will help maintain vehicle control, but not always shorten stopping distance.

**IT WON'T** increase or decrease ultimate stopping power - ABS is an "add-on" to your normal brakes, not a replacement of them.

**IT WON'T** change the way you normally brake. Under normal brake conditions, your truck will stop as it always stopped. ABS only comes into play when a wheel would normally have locked up because of overbraking.

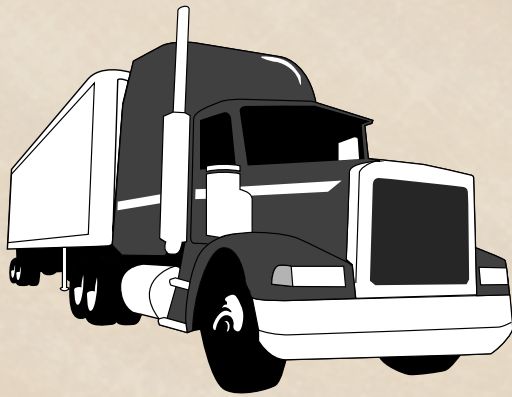
**IT WON'T** compensate for bad brakes or poor brake maintenance.

## WHAT'S THE MOST IMPORTANT THING TO REMEMBER ABOUT ABS?

**REMEMBER:** The best vehicle safety feature is still a  
safe driver.

**REMEMBER:** Drive so you never need to use your ABS.

**REMEMBER:** If you need it, ABS could help to prevent a  
serious accident.





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