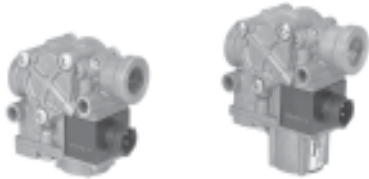


Typical Bendix® ABS Components



Bendix® ABS-6™ Frame- and Cab-Mount ECU



Bendix® M-32™ Modulators



Bendix® WS-24™ Wheel Speed Sensors

Understanding Bendix® Anti-lock Braking Systems (ABS) *for air braked vehicles*

**Have a Question?
Need More Information?**

**Call our Tech Team at
1-800-AIR-BRAKE
(1-800-247-2725).
Representatives are available
Monday - Friday
8:00 a.m. to 6:00 p.m. EST.**



Understanding Anti-lock Braking Systems (ABS) for Air Braked Vehicles

What is ABS?

An anti-lock braking system, or ABS, is an electronic control system that manages brake pressure at the wheel end to reduce wheel lock up resulting from excessive brake force in slippery road conditions. The primary benefits of ABS are to reduce the tendency for the vehicle to slide or jackknife while enhancing vehicle stability and steerability during braking.

How ABS Works

ABS is an integrated system which includes wheel speed sensors, an Electronic Control Unit (ECU) and modulator valves. Wheel speed sensors monitor wheel rotation. If the system detects that any wheel is over-braked for the conditions, the electronic control unit signals a modulator valve to reduce brake pressure at that wheel.

Tips for Driving with ABS

1. **Don't brake any differently to slow or stop an ABS equipped vehicle vs. a non-ABS equipped vehicle.** If necessary, ABS will automatically modulate braking.
2. **Avoid taking unnecessary risks.** ABS is not a substitute for safe driving. Cautious driving practices, such as maintaining adequate distances from the vehicle ahead or driving at the posted speed, are key to safe operation.
3. **Use extra care if only your tractor (but not your trailer) is equipped with ABS...** Use your mirrors to watch your trailer during emergency braking, applying your brakes as necessary to keep your vehicle in line. Tractor ABS will help reduce jackknifing, but it won't keep your trailer from swinging out.

Understanding the ABS Warning Lamp

For Trucks, Tractors and Buses

- The amber ABS warning lamp is typically located on the dashboard or instrument cluster. Mounting location of the ABS warning lamp can vary, so check the vehicle operators manual.
- Your ABS is functioning properly if the lamp comes on for approximately three seconds (during the bulb check at vehicle ignition) and then turns off. The warning lamp should remain off during vehicle operation.
- If the lamp remains on or illuminates during operation, the ABS may not be operating. *The vehicle will retain normal service braking, although without the benefits of ABS.* Have the vehicle serviced as soon as possible to restore ABS operation.
- If the warning lamp does not come on at ignition, have the lamp bulb and power source inspected.
- New tractors, built since March 1, 2001, have a trailer warning lamp on the dash of the tractor. The function is a bulb check at ignition, then the lamp will go out. If the lamp stays on or illuminates during driving, trailer ABS is not functional and should be serviced. The trailer will retain normal service braking, but without the benefits of ABS.

For Trailers

- Trailers built since March 1, 2001 are equipped with the capability of operating with tractors with a trailer ABS warning lamp on the dash.
- All new trailers built through March 1, 2009 will be equipped with an amber ABS warning lamp located on the driver's side near the rear of the trailer. The operation of the lamp varies depending on how the ABS system is powered.
- **Full-time powered ABS** (*usually obtaining power over the blue line of the J560 connector*)
The trailer ABS warning lamp will function just like the tractor ABS warning lamp, listed above.
- **Brake-light-only powered ABS**
Each time the brakes are applied the warning lamp will come on for approximately 3 seconds and then turn off. If the lamp remains on during braking, ABS may not be operating. The vehicle will retain normal service braking, although without the benefits of ABS. Have the trailer serviced as soon as possible to restore ABS operation.

Understanding Automatic Traction Control (ATC)

What is ATC?

Automatic Traction Control, or ATC, is optional for ABS-equipped vehicles. ATC controls wheel spin during vehicle acceleration by:

- Applying a braking force to a spinning drive wheel to transfer torque to the wheels with better traction.
- Reducing engine throttle for improved traction if all drive wheels begin to spin.

Understanding the ATC activation lamp

The ATC activation lamp is typically located on the dashboard or instrument cluster. ATC is functioning properly if the ATC lamp comes on during the bulb check at vehicle ignition and then remains on until the brake pedal is applied. The lamp will then turn off and remain off until a low traction event is encountered.

NOTE: Some non-ATC equipped vehicles have an ATC light that is labeled as a spin light. It indicates when a low traction condition is encountered. No control action is taken.

How do I operate a vehicle with ATC?

If the vehicle's drive wheels lose traction during acceleration, the ATC lamp will turn on and begin to flash rapidly. If the vehicle is equipped with an interaxle differential lock switch, the driver should stop the wheels from spinning and move the switch to the locked position. The ATC lamp will flash rapidly whenever ATC is functioning to assist the driver in accelerating the vehicle. If an ATC lamp remains on continuously during operation, ATC may not be operating - have the vehicle serviced to restore ATC operation. Remember to unlock the interaxle differential lock when the road surface is dry.

What is the Deep Snow/Mud Switch?

This is an optional feature operated by a switch in the dash. This function allows more engine power and wheel spin during ATC operation. For vehicles with this feature, move the switch to snow and mud position on soft road surfaces. The ATC lamp will flash slowly as long as this function is selected. In this mode a low traction event will cause the lamp to flash rapidly. Always remember to turn this feature off when driving on a firm road surface.