

- 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.

ATC Indicator Lamp

If your vehicle is also equipped with the optional Automatic Traction Control (ATC) system, a third indicator lamp will be installed on the dash. (The same lamp is also used to indicate the ATC "Mud/Snow" mode, see below.)

- During the bulb check at vehicle ignition your ATC indicator lamp will illuminate for approximately two and a half seconds and then turn off. If the ATC indicator lamp does not illuminate at ignition, or if it remains on steadily (not flashing) after ignition, or if it illuminates steadily (not flashing) while you are driving (except in off-road mode), the ATC system may not be fully functional or its operation may be completely disabled. If this happens, your vehicle will still have normal service braking and it still can be driven, although without the benefits of ATC. Have the vehicle serviced by a qualified mechanic as soon as possible to restore full ATC functionality.
- The ATC indicator lamp also flashes continually (at different rates) to show that either: the off-road mode is being used, or during an ATC intervention event.

Sources of Additional Information about your Bendix® ABS System

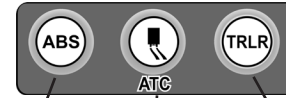
Consult the vehicle manufacturer's documentation.

Visit www.bendix.com for free downloads of Service Data sheets, or go to the Literature Center at bendix.com.

Contact the Bendix Tech Team at techteam@bendix.com or 1-800-AIR-BRAKE (1-800-247-2725)
Representatives are available Mon. - Fri. 8:00 a.m. to 6:00 p.m. EST.

ABS and ATC Indicator Lamps Chart

		Mode	ABS Lamp	ATC Lamp	Trailer ABS Lamp	
At Vehicle Startup	Ignition on - start up (trailer with PLC)		On for 3 seconds*	On for 2.5 seconds*	On for 3 seconds*	*If any of the described lamp behaviors do not occur — or if the lamp remains on during operation — have the vehicle serviced by a qualified mechanic as soon as possible to restore full system functionality.
	3 seconds after ignition (with no Diagnostic Trouble Codes)		Lamp Off*	Lamp Off*	Lamp Off*	
Special Mode Operation	During an Automatic Traction Control (ATC) Event		Lamp Off	Lamp flashes quickly		• Reduces wheel slip during acceleration at low speeds
	ABS Off-Road Mode	Normal		Lamp Off	• Uses dash switch • Not for firm road surfaces • Allows more wheel lock-up (less ABS intervention) • Mode only applies under 25 mph (Over 25 mph, the system reverts to full ABS, and ATC lamp goes off)	
		During an ATC Event	Lamp flashes slowly	Lamp flashes quickly		
	ATC Deep Mud/Snow/ Mode	Normal	Lamp Off	Lamp flashes slowly	Lamp flashes quickly	• Uses dash switch • Increases allowable wheel slip during ATC interventions • Not for firm road surfaces
During an ATC Event		Lamp flashes quickly				
Traction Control Override				Lamp On		• Uses dash switch • ATC system switched off



Introduction to Understanding Bendix® Anti-lock Braking Systems (ABS) for Air Braked Vehicles



This booklet is an introduction to ABS for vehicles with standard ABS features. For vehicles with Bendix advanced ABS features such as ESP® stability systems, see booklet BW2489

What Is ABS?

ABS is an electronic control system that improves vehicle stability and steerability by preventing wheel lock during braking.

How Does ABS Work?

The ABS system monitors wheel rotation, and if it detects any wheel locking up, the system automatically reduces the brake pressure at that wheel. If necessary, the ABS system automatically modulates braking forces at one or more of the wheel ends. The system maintains lateral stability by preventing wheel lock during braking.

Important Safety Information About Bendix® Antilock Braking Systems (ABS)

Braking with ABS

- **Do not pump your brakes.** Use steady, even brake applications. Apply the brake pedal with the same pressure as you would without ABS. If you are towing a vehicle that is not equipped with ABS, you may need to adjust your braking applications in some instances. See below.
- **Do not attempt to modulate your brake applications to prevent wheel lock.** The system controls braking pressure automatically and independently at each wheel end.

Limitations of ABS

- **ABS does not apply the brakes automatically.** It's still up to you to apply the brakes at the right time and with the right amount of pedal force. A basic ABS system only starts to do its job after you apply the brake pedal.
- **ABS is not a substitute for safe driving.** Even with ABS, you must remain alert, react appropriately and in a timely manner, and drive defensively. Don't take unnecessary risks. Cautious driving practices, such as maintaining an adequate distance away from the vehicle ahead, not speeding, anticipating obstacles and adjusting your vehicle's speed for traffic, weather and road conditions, are essential for safe operation.

Towed Vehicles Without ABS

Some towed vehicles, especially older trailers built before 2001, may not be equipped with their own ABS systems. Use extra care when towing a vehicle that is not equipped with its own ABS system. During emergency braking or braking on slippery surfaces, a non-ABS equipped trailer could lose its lateral stability and swing out if its wheels lock up. Use your mirrors to watch carefully and adjust your brake applications as necessary to keep your tractor and the non-ABS equipped towed vehicle in line with each other. Tractor ABS helps reduce the tendency to jackknife, but it cannot prevent a non-ABS equipped trailer from swinging out.

What is the optional ABS Off-Road Mode?

This is an optional ABS feature operated by a dash-mounted switch for use when operating your vehicle "off-road" on soft surfaces. Below 25 mph (40.2 kmh), this feature improves ABS performance under off-road operating conditions. If your vehicle is equipped with this feature, depress the "ABS off-road" switch when operating on soft surfaces. **Always remember to turn the ABS off-road feature off when driving on a firm road surface.** A new ignition cycle, or a second depression of the off-road switch, will turn this function off and restore normal ABS functionality.

WARNING! The ABS off-road mode should not be used on normal, paved road surfaces because vehicle stability and steerability may be reduced. The ABS indicator lamp will flash slowly to indicate to the driver that the ABS off-road mode is engaged.

What is Automatic Traction Control (ATC)?

ATC is an optional feature for Bendix® ABS-equipped vehicles. ATC controls wheel spin during vehicle acceleration to improve traction.

- The ATC system will intervene automatically and apply braking pressure to a spinning wheel transferring engine power to other drive wheels that have better traction. This feature is active only at speeds below 25 mph (40.2 kmh).
- If all of the drive wheels begin to spin, the ATC system will reduce engine throttle to improve traction at all of the drive wheels.

What is the Optional Deep Mud/Snow Mode?

This is an optional ATC feature operated by a dash-mounted switch. This function allows greater engine power and more wheel spin during ATC operation. On vehicles equipped with this feature, depress the "Mud/Snow" switch when operating on soft road surfaces. The ATC lamp will flash slowly whenever the ATC system is operating in the Mud/Snow mode. **Always remember to turn the Mud/Snow feature off when driving on a firm road surface.** A new ignition cycle, or a second depression of the Mud/Snow switch, will turn this function off.

What is Traction Control Override?

Another optional feature operated by a switch in the dash. When enabled, the ATC lamp remains on to indicate that the ATC system has been turned off.

How Do I Operate a Vehicle with ATC?

If drive wheels begin to lose traction during acceleration, ATC will engage automatically to assist the driver in accelerating the vehicle. The ATC lamp will flash rapidly to let you know whenever ATC is actively functioning.

Note: For vehicles equipped with an interaxle differential lock switch, you should consult the vehicle Operator's Manual for additional information about that feature. Typically, the driver is advised to stop the wheels from spinning and engage the interaxle differential lock switch, but you should always follow the specific instructions given in your vehicle's Operator's Manual for this feature and your vehicle's particular configuration.



Understanding Your ABS System Dash Indicator Lamps

Tractor ABS Indicator Lamp

An amber ABS Indicator Lamp is typically located on the dashboard.

- At each vehicle ignition your ABS indicator lamp should illuminate as a bulb check for approximately three seconds and then turn off. If the lamp does not illuminate at ignition, you should have the vehicle serviced by a qualified mechanic as soon as possible. Note: without a functioning indicator lamp, you may not be able to determine the ABS status without using an external diagnostic tool.
- If the indicator lamp remains on for more than three seconds after ignition, or if it illuminates while you are driving, the ABS system may not be fully functional or may be completely disabled. If the ABS is completely disabled or not functioning properly, your vehicle will still have normal service braking and it still can be driven, although without the benefits of ABS. Have the vehicle serviced by a qualified mechanic as soon as possible to restore full ABS functionality.
- The ABS lamp is also used to indicate the optional off-road ABS mode. The lamp will flash continually when the vehicle is operating in the off-road mode.

If the lamp stays on or illuminates during driving, ABS is not functional and should be serviced. The vehicle will retain normal service braking, but without the benefits of ABS.

Trailer ABS Indicator Lamp

The Trailer ABS Indicator Lamp is also dash-mounted.

All trailers built since March, 2001 are able to communicate with the towing vehicle and to operate the trailer ABS indicator lamp on the towing vehicle's dash. The dash-mounted Trailer ABS Indicator Lamp is in addition to a Trailer ABS Indicator Lamp that is mounted on the side of the trailer itself.

All new trailers built since March 1, 2001 are 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.