



Inspection Bulletin

North American Standard Inspection Program

2023-03 – Hill Start Aid/Brake Hold Modes on Power Units

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Summary

Some newer tractors have a “hill start aid” and/or “brake hold mode” function (some manufacturers may have different names for the same function, such as standstill brake, halt brake, etc.) that automatically keeps the service brakes applied after the tractor is taken out of gear and the service brakes are applied. These systems may activate at the beginning of an inspection. If so, the brake lamps will remain on, and the service brakes will also be activated.

This inspection bulletin is intended to provide information on both systems so that inspectors can ensure they understand the system functionality and the system is not enabled during an inspection.

Background

Inspectors have found that, based on how the driver pulls in and stops for inspection, the brake hold mode or hill start aid may activate, and the driver may be unaware the system is activated and/or may not know how to deactivate the system for inspection. This may result in inaccurate violations if the inspector and/or driver are not aware of how the system(s) function.

Feature(s) Information

Hill Start Aid

Some transmissions are equipped with a hill start aid (HSA) feature to prevent rolling backward when advancing the vehicle on an uphill grade. The system delays the release of service brakes until enough torque is available to begin moving the vehicle forward. The system will hold the brakes for a short amount of time. If driveline torque is not detected, the system will audibly alert the driver and release the brakes.

HSA has existed for several years; however, recently, the function can be active for more than three seconds. The purpose of HSA is to allow the automatic transmission to engage the clutch while on a grade. Without the HSA function, the transmission’s clutch life will be impacted. HSA also has an extension called the brake hold mode function.

Brake Hold Mode

The brake hold function is intended to relieve the driver when driving in stop-and-go traffic by allowing the driver to hold the service brake on without constant pressure on the brake pedal. This is particularly driver friendly in work environments that involve waiting periods in the truck while at a standstill, such as a weigh scale or in heavy traffic.

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The brake hold function cannot be engaged if any of the following situations are present:

- The anti-lock braking system was active in bringing the vehicle to a stop.
- The anti-lock braking system is in a fault state.
- The vehicle is in reverse gear.

If the brake hold function is active for four minutes, the window shown in Figure 1 appears on the instrument panel display, warning the driver to engage the park brake. An audible alarm activates at the same time and repeats every minute until the park brake is set.

The same warnings are triggered if the brake hold function is active and:

- The ignition is turned off without the park brake being set or
- The brakes are not strong enough to hold the vehicle in place and it starts rolling.

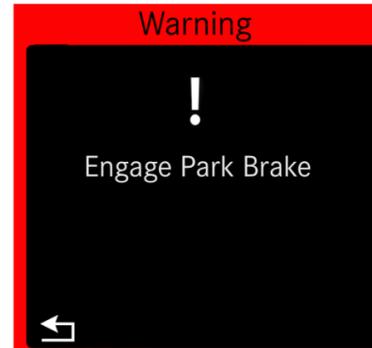


Figure 1

To Activate the brake hold function, the vehicle must come to a complete stop, then the driver must press the brake pedal further toward the floor. The HOLD telltale, shown in Figure 2, illuminates on the driver's display, indicating the function is active, and the vehicle's brake lights come on. The driver can then take their foot off the brake pedal without the service brakes releasing. If the brake pedal is pressed down harder again, air will be added to the service brake chamber, continuing the brake hold.



Figure 2

To Deactivate the brake hold function, with the engine running, the driver can press the accelerator pedal, or engage the parking brake, or press the brake pedal to full stroke and immediately release the brake pedal.

Alternatively, the brake hold function is completely deactivated when the "HSA Off" (disable) switch, as shown in Figure 3, is pressed.



Figure 3

Inspection Guidance

At the beginning of the inspection procedure, drivers are instructed to turn off the engine and put the key in the "on" position. In this instance, none of the ways outlined with the engine running above will deactivate the brake hold function. The only method to deactivate the brake hold function in this case, is to press the "HSA Off" button on the dash.

In situations where an inspection is being conducted and the brake lamps are continuously illuminated and/or the service brakes are constantly applied, ensure the brake hold function is not activated.

Instruct the driver to look at the dash to see if "HOLD" is showing on the display. If the system is activated, have the driver deactivate the system by pressing the "HSA Off" switch. When the service brakes release, continue with your inspection.