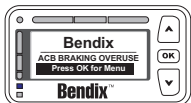


Special Alerts

⚠ Brake Overuse Warning – The Bendix® Wingman® Advanced™ system provides a warning when the system uses the foundation brakes excessively. Overuse of the foundation brakes can lead to the brakes overheating and a potential loss of braking performance caused by brake fade.



Additional Operational Notes

Adjusting the Alert Volume

The Bendix® Wingman® Advanced™ system audible alerts are pre-set at the factory for fully integrated systems and can not be turned off by the driver, nor can the volume may adjusted, unless configured to do so. For systems using a Driver Interface Unit (DIU) display, see the Bendix® Service Data Sheet SD-61-4962 for information about volume adjustment.

Passing a Vehicle/Changing Lanes

With cruise control set, if the driver decides to change lanes or pass a vehicle by applying the throttle, the vehicle being passed will no longer be detected by the radar.

When No Other Vehicles are Present

When no forward vehicle is within range of the radar, your vehicle will maintain its set speed just like ordinary cruise control.

Radar-Reflective Stationary Vehicles & Objects

You should be attentive to stopped vehicles and objects on the roadway.

⚠ The Bendix® Wingman® Advanced™ system will give up to three (3) seconds alert to you when approaching a detected, sizable, stationary object with metallic (radar-reflective) surfaces in your lane of travel.

⚠ The SOA is ready to alert the driver whenever the vehicle is moving above ten (10) mph / 16 kph. The SOA is an alert only. No intervention actions (such as de-throttling, engaging the engine retarder or applying the brakes) will be taken. This alert indicates that a collision with a stationary object is likely. The driver must immediately act to potentially avoid, or lessen the severity of, a collision.

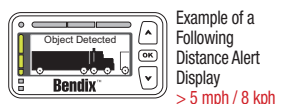
⚠ Metallic Objects May Impair the Radar – Objects that are radar-reflective—such as crash barriers, guard rails, construction zone barricades, and tunnel entrances—may impair the function of the radar.

Pedestrians, Animals, Non-Metallic and Limited-Metallic Objects

Pedestrians, animals, non-metallic or limited-metallic objects – The Bendix® Wingman® Advanced™ system will not warn or react to pedestrians, animals, and non-metallic objects. The Wingman Advanced system may not warn or react to limited-metallic objects (such as recreational vehicles, horse-drawn buggies, motorcycles, logging trailers, etc.).

Are the three alerts always available?

Yes, all three driver alerts (Impact Alert, Following Distance Alert and Stationary Object Alert) are always ready to alert you regardless of whether or not cruise control is operating, unless a DTC is set.



Sources Of Additional Information About Bendix® Systems On Your Vehicle

Consult the vehicle manufacturer's documentation. Visit www.bendix.com for free downloads of the Service Data Sheets listed below, or order paper copies of these publications from the Literature Center at www.bendix.com.

Service Data Sheets

- SD-61-4962 Bendix® Wingman® Advanced™ (FLR10™ Sensor)
 - SD-61-4960 Bendix® Wingman® Advanced™ System (FLR20™ Sensor)
 - SD-13-4869 Bendix® EC-60™ ABS / ATC / ESP Controllers (Advanced)
- Contact the Bendix Tech Team via email at techteam@bendix.com or call 1-800-AIR-BRAKE (1-800-247-2725) option 2.



Reference Guide



Bendix® Wingman® Advanced™ A Collision Mitigation Technology

This booklet contains important operational and safety information that benefits you and subsequent drivers.

WARNING:

Bendix safety technologies complement safe driving practices. No commercial vehicle safety technology replaces a skilled, alert driver exercising safe driving techniques and proactive, comprehensive driver training. Responsibility for the safe operation of the vehicle remains with the driver at all times.

Log-on and Learn from the Best

On-line training that's available when you are —24/7/365.
Visit www.brake-school.com.

901 Cleveland Street • Elyria, Ohio 44035
1-800-AIR-BRAKE (1-800-247-2725) • www.bendix.com
BW8046 ©2017 Bendix Commercial Vehicle Systems LLC,
a member of the Knorr-Bremse Group • 03/17 • All Rights Reserved



The Bendix® ESP® Stability System Overview

All vehicles equipped with the Bendix® Wingman® Advanced™ system are also equipped with the Bendix® ESP® stability system. The Bendix ESP stability system is an always ready, full-stability system which monitors vehicle performance and, when necessary, automatically intervenes to reduce the throttle and/or apply the foundation brakes to help you maintain stability during potential loss-of-control or rollover events.

The Wingman Advanced system uses the ESP system to help maintain vehicle stability during automatic brake applications on slick surfaces. The Bendix ESP stability system and the Wingman Advanced system do not replace the need for you to remain alert, react appropriately and in a timely manner, and use safe driving practices.

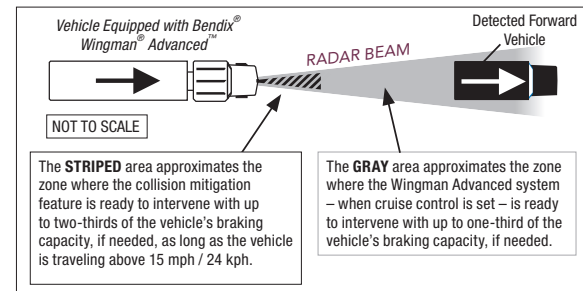
WARNING: Improper use of the Bendix Wingman Advanced system can result in a collision causing property damage, serious injuries, or death. Be sure to read, understand, and follow all these instructions carefully.

Bendix Wingman Advanced System Overview

The Wingman Advanced system is an integrated combination of three features:

1. Active Cruise with Braking (ACB);
2. Alerts (three types of alerts); and
3. Collision mitigation technology.

See the diagram below



What Features Are Included In The Bendix® Wingman® Advanced™ System?

Part One: Active Cruise Control with Braking

Think of the active cruise control with braking feature as an additional upgrade to ordinary cruise control. When using cruise control, your vehicle not only will maintain the set speed, but the system will also intervene – as needed – to help maintain a set following distance behind the vehicle in front of you.

Using a radar (with a range of approximately 500 feet) mounted to the front of your vehicle, the Wingman Advanced system reacts ONLY to vehicles moving in the same direction as you. (The system DOES NOT respond to side-to-side moving traffic or oncoming traffic.)

See the **GRAY** area in the diagram on System Overview. The active cruise control with braking feature is designed to help maintain a set following distance between your vehicle and the vehicle ahead when cruise control is set.

Once cruise control is set and the system is maintaining a set following distance between you and the vehicle in front:

• **If the vehicle in front of you slows down** below your cruise control's set speed, the system will intervene, as necessary, in this order:

(a) reduce the engine throttle; then (b) apply the engine retarder; then (c) apply the foundation brakes, in an attempt to maintain the set following distance behind the vehicle ahead. *NOTE: If during the intervention, it is necessary to apply the foundation brakes, the vehicle will not automatically resume the cruise control set speed.*

• **If the vehicle ahead slows, below your cruise control's set speed, but then accelerates away** and the Bendix® Wingman® Advanced™ system did not need to use the foundation brakes, the system will automatically accelerate back to the original cruise control set speed, and again maintain a set following distance behind any vehicles ahead of you.

Because the Wingman Advanced system operates along with normal cruise control, all the typical features built into cruise control work as usual. For example, limits imposed by factory-set road speed governors, etc. are fully supported by the Wingman Advanced system.

Part Two: Alerts

Bendix Wingman Advanced also assists by giving audible and visual alerts, whether or not cruise control is on. See *Operator's Manual (BW2850) pages 19-20* for more information on the three types of alerts you may hear and/or see displayed.

Part Three: Collision Mitigation Technology

See the **STRIPED** area in the diagram on System Overview. Wingman Advanced's collision mitigation technology is designed to be ready to react to the presence of moving vehicles in front of your vehicle (whether or not cruise control is set). Collision mitigation interventions can be up to two-thirds of the vehicle's braking capacity. The system provides you with an alert before an intervention occurs. You must immediately act to potentially avoid, or lessen the severity of, a collision.

Alerts & Warnings

The Bendix® Wingman® Advanced™ system is a unique, patented system that functions differently than other cruise control/forward collision alert and mitigation systems. It is important for **YOU** to fully understand the system's features, especially the driver indications and alerts.

Three main alerts provided by the Wingman Advanced system are the **Impact Alert (IA)**, **Following Distance Alert (FDA)**, and **Stationary Object Alert (SOA)**. All of the alerts are always ready to alert the driver, whether or not you are using cruise control.

WARNING: Any audible and/or visual alert by the system means that your vehicle is too close to the vehicle ahead and you must immediately act to potentially avoid, or lessen the severity of, a collision.

Driver Alerts & Warnings

Impact Alert (IA)

• Always available above 15 mph / 24 kph

All Red LEDs Illuminated



Left: Bendix® Driver Interface Unit (DIU™) - Showing Impact Alert warning - a loud continuous tone will also sound.



Left: Examples of other vehicle manufacturer's displays.

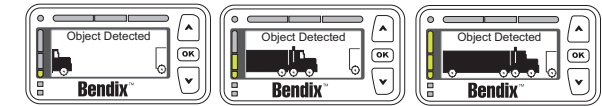
WARNING: The Impact Alert (IA) is the most severe warning issued by the Wingman Advanced system. This alert indicates that a collision with the detected forward vehicle is likely. As the driver, you must immediately act to potentially avoid, or lessen the severity of, a collision. The IA is ready to alert you, the driver, whenever the vehicle is moving above 15 mph / 24 kph.

When activated, the IA will sound and a visual message/icon typically appears on the dash screen or Bendix® Driver Interface Unit (DIU) display. The actual sound/display method varies by vehicle manufacturer.

NOTE: The IA is typically accompanied by automatic brake interventions. The Wingman Advanced system will apply up to two-thirds of our vehicle's braking capacity. You must apply additional braking, when necessary, to maintain a safe distance from the vehicle ahead.

Following Distance Alert (FDA)

• Always available above 5 mph / 8 kph



Above: Bendix® Driver Interface Unit (DIU™) – Showing Examples of Following Distance Alerts – with progressively faster audible alerts.

WARNING: The Following Distance Alert (FDA) provides both audible and visual alerts whenever the distance between your vehicle and the detected forward vehicle ahead is less than one and a half (1.5) seconds* and getting closer. Once the audible alert is given, you should increase the distance between your vehicle and the vehicle ahead until the audible alert stops.

The FDA is ready to alert you whenever the vehicle is moving above 5 mph / 8 kph. If the following distance continues to decrease, you will hear more rapid audible alerts. When the FDA reaches its highest level, typically a red LED also illuminates on the instrument cluster. The FDA may be accompanied by a visual alert.



Above: Examples of other vehicle manufacturer's displays.

* 1.5 seconds is the system default and may vary by fleet/OEM.

Stationary Object Alert (SOA)

• Typically available above 10 mph / 16 kph



DIU: Showing Stationary Object Alert – a continuous tone will also sound. *NOTE:* Entering a curve may reduce the alert time to less than three (3) seconds.

WARNING: Stationary Object Alert (SOA) – The Bendix® Wingman® Advanced™ system will give up to three (3) seconds alert to you when approaching a detected, sizable, stationary object with metallic (radar-reflective) surfaces in your lane of travel. This alert indicates that a collision with a stationary object is likely and you must immediately act to potentially avoid, or lessen the severity of, a collision.

Typically, the SOA is ready to alert you whenever the vehicle is moving above 10 mph / 16 kph. You should be especially careful when approaching certain types of vehicles and objects. The Wingman Advanced radar may not be able to detect objects with limited metal surfaces (such as recreational vehicles, horse-drawn buggies, motorcycles, logging trailers, etc).

