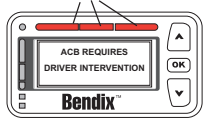


Stationary Vehicle Braking (SVB)
 • Typically available above 15 mph / 24 kph

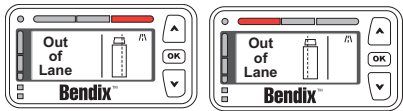
All Red LEDs Illuminated



DIU: Showing Stationary Vehicle Braking Alert – a continuous tone will typically also sound. *NOTE:* Entering a curve may reduce the alert time to less than 3 seconds.

⚠ Stationary Vehicle Braking (SVB) – When a large, stationary, metallic object in a vehicle's lane of travel is definitively identified as a vehicle, you will be notified up to 3.5 seconds before impact. If you do not take action to address the potential impact that caused the alert, Wingman Fusion can automatically engage the brakes to assist you in reducing the severity of, or potentially avoiding a collision with, that stationary vehicle. If the system cannot definitively identify the stationary object as a vehicle – for example, if the vehicle is not a licensed motorized vehicle, or certain types of trailers – the driver will get up to 3.0 seconds of alert to address the situation ahead, but no automatic braking will be applied. SVB is most useful when approaching a line of stopped traffic or a stalled vehicle that is not immediately recognized by the driver. Without the automatic alert and braking, it may be too late to avoid impact.

Lane Departure Warning (LDW)
 • Enabled above 37 mph / 60 kph

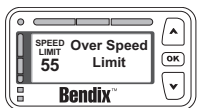


Red LED illuminated indicates direction of departure

⚠ Lane Departure Warning (LDW) – The Bendix® Wingman® Fusion™ system has the ability to warn you if the vehicle is not tracking in the intended roadway path. In most vehicle applications the LDW system is enabled above 37 mph / 60 kph. You should immediately correct the vehicle tracking and maintain the correct position in the lane.

Overspeed Alert (OA) • Enabled above 20 mph / 32 kph

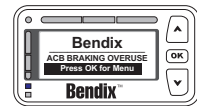
⚠ Overspeed Alert (OA) – The Bendix Wingman Fusion system has the ability to warn you if the vehicle's speed exceeds the posted legal limits. The OA is enabled when the vehicle is traveling greater than 5 mph / 8 kph from the posted limit. You should immediately reduce your speed to the posted legal limit.



International travel: When changing between regions which post speeds in miles and those which post in kilometers, the speed limit sign recognition feature will not function until the correct US/Metric selection has been made.

Special Alerts

⚠ Brake Overuse Warning – The Bendix® Wingman® Fusion™ 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® Fusion™ system audible alerts are pre-set at the factory for fully integrated systems and cannot be turned off by the driver, but, depending on the OE, the volume may adjustable. For systems using a Driver Interface Unit (DIU) display, see Bendix® Service Data Sheet SD-61-4962 for information about volume adjustment.

Temporarily Disable the Lane Departure Warning (LDW)

To avoid erroneous LDW warnings in areas such as construction zones – where the non-standard or overlapping road markings might cause false alerts – the Bendix Wingman Fusion system has an enable/disable switch. Each OEM typically has a different arrangement to allow the driver to temporarily disable the LDW system and to display the system status. Refer to the OEM Operator's Manual for any system indicator lamp(s).

Event Capture

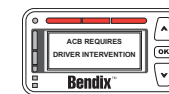
In the case of vehicles configured to do so, the enable/disable switch used by the LDW system also functions – when depressed for 6 seconds – to activate a request from the SafetyDirect® By Bendix CVS Web Portal Processor to the On Board Computer (OBC)/Telematics system to transmit ten seconds of video data – the 5 seconds before, and 5 after the button was pressed). In some cases, more video data may be available using the Bendix SafetyDirect Client.

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

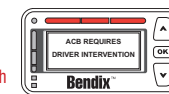
Pedestrians, animals, non-metallic or limited-metallic objects – The Bendix® Wingman® Fusion™ system will not warn or react to pedestrians, animals, and non-metallic objects. The Wingman Fusion system may not warn or react to limited-metallic objects (such as recreational vehicles, horse-drawn buggies,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

Are the six alerts always available?

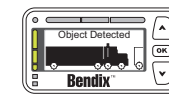
Yes, but only above their minimum activation speeds.



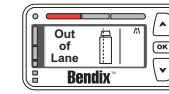
Example of an Impact Alert Warning System
 >15 mph / 24 kph



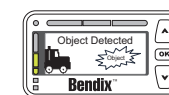
Example of a Stationary Vehicle Braking Display
 >15 mph / 24 kph



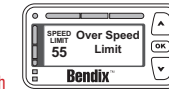
Example of a Following Distance Alert Display
 > 5 mph / 8 kph



Example of a Lane Departure Warning Display
 > 37 mph / 60 kph



Example of a Stationary Object Alert Display
 >10 mph / 16 kph



Example of an Overspeed Alert Display*
 > 20 mph / 32 kph

*Overspeed alerts are not available for the first 5-10 minutes of vehicle operation.

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-61-4963 Bendix® Wingman® Fusion™ System
 - SD-64-20124 Bendix™ AutoVue® FLC20™ Camera
 - SD-13-4986 Bendix® EC-80™ ESP® Controllers
- Contact the Bendix Tech Team via email at techteam@bendix.com or call 1-800-AIR-BRAKE (1-800-247-2725) option 2.



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Reference Guide



Bendix® Wingman® Fusion™ Driver Assistance System (Fusion)

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.



The Bendix® ESP® Stability System Overview

All vehicles equipped with the Bendix® Wingman® Fusion™ 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. When necessary, Bendix ESP 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 Fusion 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 Fusion system do not replace the need for you to remain alert, react appropriately and in a timely manner, and use safe driving practices.

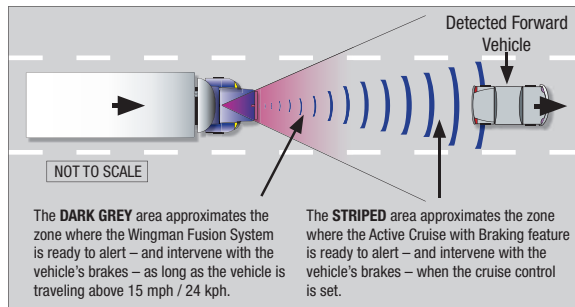
⚠ WARNING: Improper use of the Bendix Wingman Fusion system can result in a collision causing property damage, serious injuries, or death. Be sure to read, understand, and follow all these instructions carefully.

Bendix Wingman Fusion System Overview

Integrating camera, radar and brakes, the Bendix Wingman Fusion Driver Assistance System (Fusion) provides the following alerts and actions:

1. Stationary Vehicle Braking (SVB);
2. Enhanced Collision Mitigation Braking (CMB);
3. Active Cruise with Braking (ACB);
4. Overspeed Alert and Action (OAA);
5. Lane Departure Warnings (LDW);
6. Stationary Object Alerts (SOA); and
7. Alert prioritization.

See the diagram below



What Features Are Included In The Bendix® Wingman® Fusion™ 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 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 STRIPED area in the diagram above. 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® Fusion™ 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 Fusion 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 Fusion system.

Part Two: Alerts

Bendix Wingman Fusion also assists by giving audible and visual alerts, whether or not cruise control is on. See Operator's Manual Pages 24-29 for more information on the six types of alerts you may hear and/or see displayed.

Part Three: Collision Mitigation Technology

See the DARK GREY area in the diagram on System Overview. Wingman Fusion's Stationary Vehicle Braking (SVB) is designed to be ready to react to the presence of stationary vehicles in front of your vehicle (whether or not cruise control is set, as long as the vehicle is traveling above 15 mph / 24 kph.) 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® Fusion™ 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.

Six main alerts provided by the Wingman Fusion system are the Impact Alert (IA), Following Distance Alert (FDA), Stationary Object Alert (SOA), Lane Departure Warning and Overspeed Alert. All of the alerts are always ready to alert you, whether or not you are using cruise control.

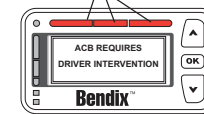
⚠ WARNING: Any audible and/or visual alert by the system means that your vehicle is too close to the vehicle ahead, your vehicle is outside the intended lane of travel, or your vehicle is overspeeding the posted speed limit. You must immediately act to potentially avoid, or lessen the severity of, a collision and to maintain regulated control of the vehicle to the intended lane and speed.

Driver Alerts & Warnings

Impact Alert (IA) / Collision Mitigation Braking (CMB)

- 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.

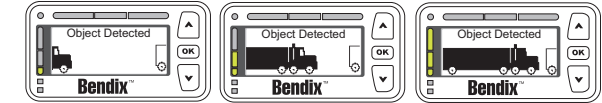
⚠ The Impact Alert (IA)/Collision Mitigation Braking (CMB) is the most severe warning issued by the Wingman Fusion system. This alert indicates that a collision with the detected forward vehicle is likely. As the driver, you must immediately act to potentially avoid, or lessen the severity of, a collision.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

When activated, the IA/CMB 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/CMB is typically accompanied by automatic brake interventions. The Wingman Fusion system is ready to intervene with braking as needed. 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.

⚠ 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 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.

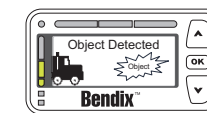
The FDA is ready to alert you whenever the vehicle is moving above 5 mph / 8 kph. If the following distance continues to decrease, you will hear more rapid audible alerts. When the FDA reaches its highest level a visual indication/alert will activate.



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 3 seconds.

⚠ Stationary Object Alert (SOA) – The Bendix® Wingman® Fusion™ system will give up to 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, but some OEs/fleets may select higher minimum speeds. You should be especially careful when approaching certain types of vehicles and objects. The Wingman Fusion radar may not be able to detect objects with limited metal surfaces (such as recreational vehicles, horse-drawn buggies, motorcycles, logging trailers, etc).