

## Subject: Bendix® ESP® Stability System Event Counters

Bendix Commercial Vehicle Systems LLC provides its ABS-based ESP® Electronic Stability Program to a wide range of OEM customers, including Volvo, Mack, Kenworth, Peterbilt, and International.

### Bendix® ESP® consists of two systems:

- Roll Stability Program (RSP) to mitigate vehicle rollover events, which typically occur on a dry road surface, and,
- Yaw Control to address loss of stability events due to vehicle spin, which can occur on a slippery road surface, such as wet asphalt, ice, snow, etc.

The Bendix® ESP® stability system continuously monitors a variety of vehicle parameters and sensors to determine if the vehicle is reaching a critical stability threshold. If such a situation develops, the system will quickly and automatically intervene to assist the driver. The system can apply tractor and trailer brakes selectively, as well as de-throttle the engine and will do so automatically (without operator intervention).

The Bendix® ESP® stability system ECU contains **event counters** for both rollover and yaw interventions, which can be accessed using Bendix® ACom™ diagnostic software (version 5.4 and later). The purpose of this bulletin is to provide additional information to assist technicians in evaluating the event counters.

### Stability Event Counters

Stability counters for both rollover and yaw interventions are available using a PC running the Bendix® ACom™ Diagnostics Program. By using the Program, the technician is able to display a page that shows counters that indicate the number of system interventions, which are classified in "levels" from one to five.

The counters cannot be reset using Bendix® ACom™ Diagnostics.

### Interpreting the Stability Event Counters

**Note:** *The design of the counters is based on physical principles. They were intended for engineering use only. The counters were not intended to interpret the severity of individual interventions, the causation of accidents or a way to evaluate driver performance over time.*

The counters only indicate the amount of work performed by the system during an intervention, with a Level One intervention representing the lowest amount of work, and a Level Five intervention being the highest.

### Rollover Interventions

The Bendix® ESP stability system uses information from the sensors on the vehicle to detect that a risk of a rollover is present. Where the conditions make a rollover likely, the system will automatically reduce the engine throttle, and if necessary, apply all vehicle brakes [steer axle, drive axle(s) and trailer] to slow the vehicle down.

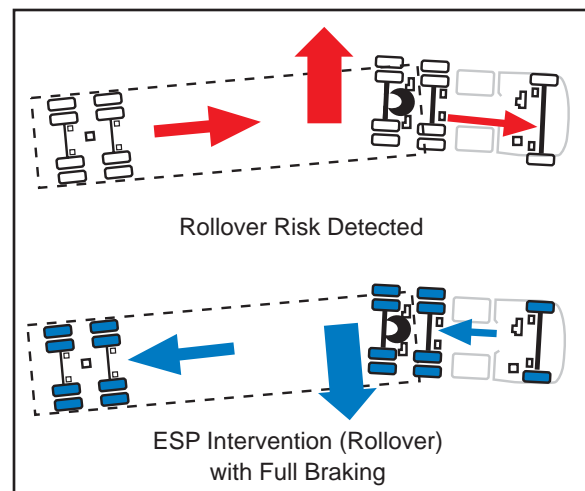


FIGURE 1 - ROLLOVER INTERVENTION

### Loss of Control Interventions

When the Bendix® ESP® system determines that the actual vehicle path is deviating from the driver's intended path, the system will automatically reduce the engine throttle, and if necessary, apply one or more individual brakes to provide optimal vehicle control.

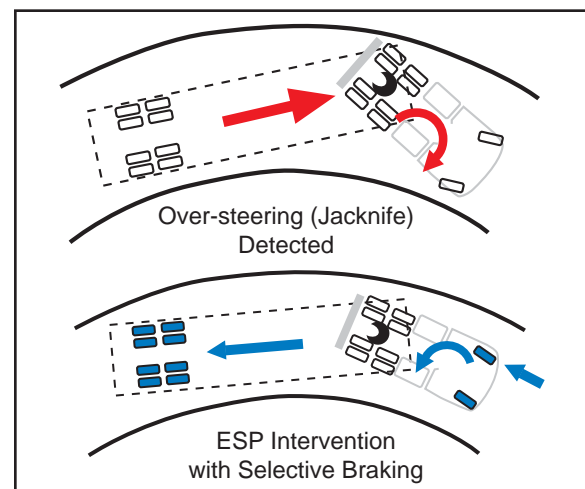


FIGURE 2 - LOSS OF CONTROL INTERVENTION

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Level One interventions may be so minor that they may not even be noticed by the driver, and can be events that use small engine throttle reductions only. In some cases, a Level One intervention may only limit the vehicle's speed, and may not actually reduce it.

Level Two through Five interventions typically indicate that the event involved a certain amount of brake application over a certain amount of time.

Since the intervention levels indicate the amount of work performed by the system, the levels are affected by both the magnitude of the invention, and the length of time that the intervention lasts.

In other words, an event of a certain duration, with a given amount of brake force applied by the system, may be classified at the same intervention Level as an event consisting of a shorter duration with a larger applied brake force, or another intervention with less applied brake force, but of longer duration.

Consider the following example:

A tractor/trailer exits a highway and enters a downhill, circular exit ramp. The ESP® system calculates a minor RSP intervention and makes a light brake application. Due to the amount of time the vehicle requires to depart the exit ramp, such an event may be classified as the same intervention Level as an event of a shorter time with a larger brake application.

**Evaluating Stability Event Counters**

While the counters indicate the amount of work performed by the system, many factors must be considered when attempting to evaluate the data. Examples are:

- A vehicle with poorly adjusted brakes may display higher intervention levels than a vehicle with properly adjusted brakes.
- Route, terrain, traffic and weather conditions may all affect the number of interventions logged.

Attempts to use the raw data from stability event counters to evaluate situations, vehicles and drivers must be approached with care. Bendix suggests that an abnormal pattern of Level two through five events is a better indicator of individual vehicle or driver performance when compared to similar information from other Bendix ESP-equipped vehicles in a fleet over similar routes, etc. In any case, the stability event counter should only be viewed as an indicator, and is not, by itself, a vehicle or driver performance evaluation tool.

**Reference Service Data Sheets:**

EC-60™ ABS/ATC/ESP Controllers (Advanced Models) . . . .SD-13-4869 (BW2429)

ACom® Diagnostics PC software. . . . . BW2329  
(Free downloads available on [www.bendix.com](http://www.bendix.com))

ABS Repair and Diagnostics DVD . . . . . BW2538

Visit the Literature Center on [www.bendix.com](http://www.bendix.com) for free downloads of Service Data sheets or to order copies.

For more information, contact your local Bendix representative or the Bendix Technical Assistance Team at 1-800-AIR-BRAKE (1-800-247-2725).

