

## Vehicle Standards Guide 25 (VSG-25)

### Connecting Advanced Braking Systems in Combination

This guide provides advice to heavy vehicle owners and operators about when a trailer equipped with an advanced braking system must have the antilock braking system (ABS) /electronic braking system (EBS) electrical plug connected.

#### Introduction

With an increasing number of trailers fitted with advanced braking systems making up the vehicle fleet, the National Heavy Vehicle Regulator (NHVR) has received a number of enquiries about the requirement to connect these advanced systems.

There are also questions relating to the compatibility of advanced braking systems by different manufacturers.

This document provides guidance as to when a trailer's ABS/EBS plug must be connected and also a link to a guide mapping out possible compatibility issues with technologies across different markets (Australia, Europe, North American, Japan and so on).

#### What are advanced braking systems

Traditional braking systems are relatively simple and result in the application of a vehicle's brakes in response to a signal from the driver. Over time these systems have evolved to be able to be adjusted based on the load carried on the vehicle (load proportioning) to now more advanced systems that incorporate a number of different functions. Depending how advanced the system is, it is now possible to achieve the following:

- the combination to maintain directional control (steering) under heavy braking
- brake force modulation to maximise effectiveness
- quicker braking response times
- improved brake distribution/balance
- automatic brake applications on the relevant wheels to counteract effects of oversteer, sway and so on.

While these systems are being mandated on newer vehicles, older vehicles can also be upgraded by retrofitting these systems. By upgrading an older vehicle you can potentially increase its ability to handle emergency situations on the road.

#### What does the Heavy Vehicle National Law say?

The *Heavy Vehicle (Vehicle Standards) National Regulation* (heavy vehicle safety standards) requires that any equipment fitted to a vehicle must comply with the appropriate standards and be in working order.

#### How does this apply to advanced braking systems?

The rule of thumb when it comes to connecting a trailer to its hauling unit is that all plugs / lines must be connected if they are capable of being connected.

For traditional trailers this is simple as there are no compatibility issues - all hauling units and trailers will have both air brake lines and a lighting/power electrical plug and both must be connected.

In situations where a trailer fitted with an advanced braking system, an additional ABS/EBS plug will also be fitted. As this is a relatively new technology not all hauling units will be fitted with the additional ABS/EBS plug, so the rule of thumb is *if the system can be connected, it must be connected*. This means:

- If a trailer with advanced braking systems is coupled to a hauling unit which does not provide a separate ABS/EBS plug to power these advanced systems, the air brake lines and the lighting/power electrical plug must be connected, but as there is no ability to connect the ABS/EBS plug, it need not be connected.
- If a trailer with advanced braking systems is coupled to a hauling unit which does provide a separate ABS/EBS plug to power these advanced systems, then the air brake lines, lighting/power electrical plug and ABS/EBS plug must be connected.

**Note:** The purpose of advanced braking systems is to assist in increasing the stability of the vehicle/combination and its performance under braking. As such, it is recommended that all vehicles used in a combination are equipped with these features.

Where an operator has a trailer fitted with advanced braking systems, the NHVR strongly recommends that it is coupled to a hauling unit that is capable of powering the advanced systems. This is to ensure the trailer is able to function at peak performance. Operators may achieve this by using late model hauling units fitted with advanced braking systems or by retrofitting an ABS/EBS plug to provide power the trailer systems to an earlier model hauling unit.

## Information regarding the compatibility of advanced braking technologies.

With a mix of advanced braking system technologies available, ensuring compatibility between systems and assembling the safest possible combination can be complex.

To assist owners achieve best practice, a number of Australia's leading heavy vehicle industry associations have developed the 'Guide to Braking and Stability Performance for Heavy Vehicle Combinations'.

[http://www.artsa.com.au/assets/library/2017/braking\\_advisory\\_web\\_version\\_final\\_2\\_may\\_17.pdf](http://www.artsa.com.au/assets/library/2017/braking_advisory_web_version_final_2_may_17.pdf)

## Retrofitting 'through wiring' and outlets on hauling units

Where a hauling unit (including a dolly or prime mover) does not have an ABS/EBS plug/pass-through wiring and plug to supply power to a trailer's advanced systems, these connections can be easily retrofitted.

Providing power to the trailer's advanced system, even when the hauling unit is only fitted with a traditional braking system, still allows a number of the trailer's advanced systems (load sensing, ABS and roll stability) to operate, resulting in a safer vehicle combination.

For further information regarding retrofitting it is recommended that you contact a reputable brake supplier, G2 accredited Approved Vehicle Examiner or auto electrician with a good understanding of these advanced systems.

## Chain of Responsibility

Under the new Chain of Responsibility (CoR) laws which will commence on 1 October 2018, relevant parties in the transport supply chain will have a duty to ensure the safety of their transport activities.

Parties in the chain will have an obligation to eliminate or minimise potential harm or loss (risk) by doing all that is reasonably practicable in their business to ensure safety.

An effective advanced braking system is an example of a method which can be applied to support transport safety.

## Complying with the Heavy Vehicle National Law

The operator of a heavy vehicle must ensure that their vehicle complies with the applicable Australian Design Rules (ADRs), *Heavy Vehicle National Law* and heavy vehicle safety standards. Using or permitting another person to use a defective heavy vehicle, or a heavy vehicle with unapproved modifications on a road, is an offence.

Penalties can include on-the-spot fines or prosecution. Formal warnings or a defect notice may also be issued. For more information see the *Heavy vehicle defects—Compliance and enforcement bulletin* at [www.nhvr.gov.au/ce-bulletins](http://www.nhvr.gov.au/ce-bulletins)

### For more information:

Subscribe: [www.nhvr.gov.au/subscribe](http://www.nhvr.gov.au/subscribe)

Visit: [www.nhvr.gov.au/hvmodifications](http://www.nhvr.gov.au/hvmodifications)

Phone: 1300 MYNHVR\* (1300 696 487)

Email: [vehiclestandards@nhvr.gov.au](mailto:vehiclestandards@nhvr.gov.au)

© Copyright National Heavy Vehicle Regulator 2017, [creativecommons.org/licenses/by-sa/3.0/au](https://creativecommons.org/licenses/by-sa/3.0/au)  
Disclaimer: This fact sheet is only a guide and should not be relied upon as legal advice.  
\*Standard 1300 call charges apply. Please check with your phone provider.