

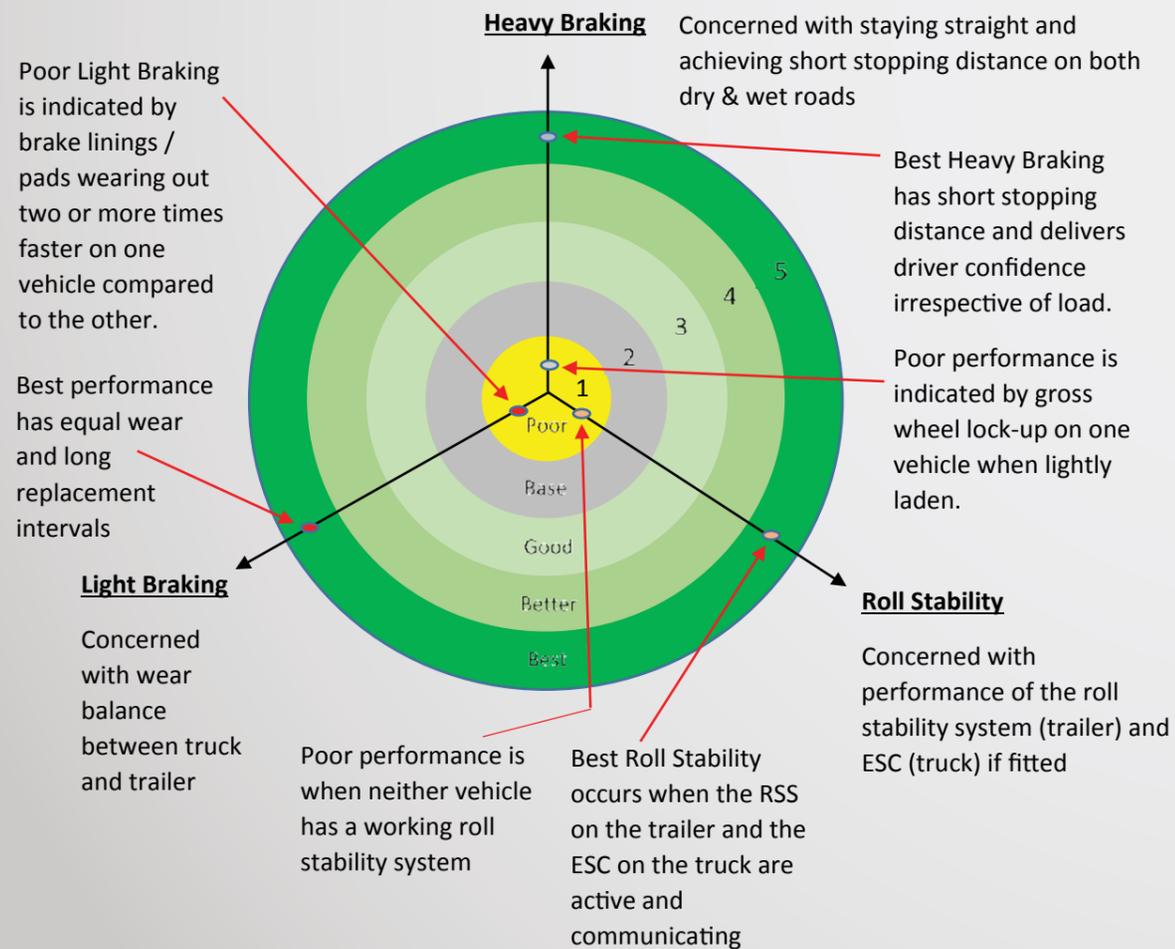


Hooray for the Braking Guide

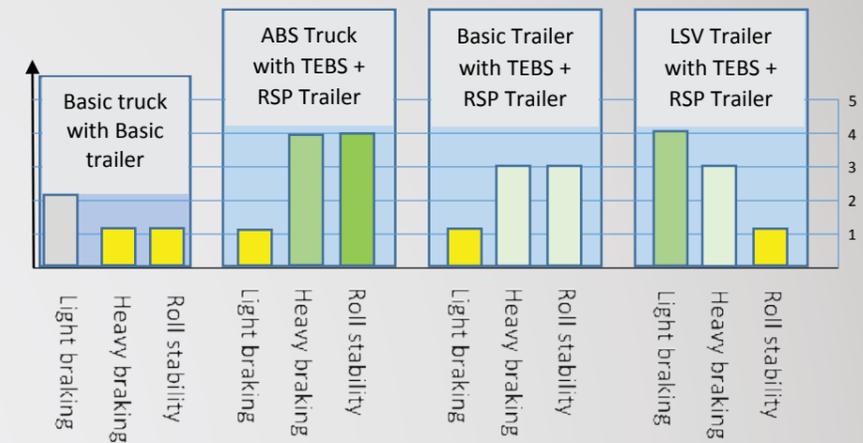
developed by six heavy vehicle industry associations – the Australian Road Transport Suppliers Association (ARTSA), the Australian Trucking Association's (ATA) Industry Technical Council (ITC), the Australian Livestock and Rural Transporters Association (ALRTA), the Commercial Vehicle Industry Association of Australia (CVIAA), Heavy Vehicle Industry Australia (HVIA) and the Truck Industry Council (TIC), along with the encouragement of the regulators,

including Vehicle Safety Standards (VSS) and the National Heavy Vehicle Regulator (NHVR). Work on this guide started back in 2014, and it represents a substantial contribution by industry towards understanding safe and effective braking of combination vehicles in Australia. It is intended to inform operators and suppliers about likely braking performance when different braking and stability technologies are mixed on a combination vehicle.

The Brake and Stability Guide for Heavy Vehicle Combinations was released at a ceremony at the Brisbane Truck Show last month. The Guide has been jointly



So, why is the Guide needed and why do the Australian Design Rules (ADRs) not guarantee an adequate level of braking safety for combination vehicles? In short: Because vehicle braking and stability technologies are advancing and it is common that 'old' is mixed with 'new', and 'intelligent' is mixed with 'basic'. Further, the ADRs do not regulate lightly-laden brake compatibility or brake-wear performance. Therefore, operators should consider which combination of braking technologies will deliver superior stopping performance, wear balance and dynamic stability.



Three braking aspects are considered: heavy/emergency braking performance, light/wear braking performance and the reliability of roll stability program intervention. The diagram on the left illustrates the rating scale that is used in the Braking Guide.

The Brake and Stability Guide for Heavy Vehicle Combinations provides guidance on the likely performance ranking for each of the three braking aspects when the following brake technologies are mixed between trucks and trailers:

Basic: Drum or disc foundation brakes. No antilock brakes and no adaptive brake system, i.e. no variation of the brake system as the load changes.

Load Sensing Valve (LSV) brakes: An air valve that causes the control air pressure at the brake to be substantially less when the axle is lightly loaded than when it is fully loaded.

Anti-lock brakes (ABS): An intelligent system that senses wheel speed on one or more axles in a group during braking and intervenes to limit or release the brake control pressure when wheel lock-up is pending or occurring.

Roll Stability Program (RSP): An intelligent brake control system that applies all the rear axle-group brakes on a trailer when a pending rollover is predicted.

Electronic Brake System (EBS): An intelligent brake control system that has electronic communication between valves and manages the brake level on each side of an axle group to achieve short stopping distance and balanced wear.

Electronic Stability Control (ESC): An intelligent brake control system that can apply brakes on one side of any axle group to change the trajectory of a truck to enhance road handling and/or avoid rollover.

The Guide does not explicitly consider mixing drum and disc foundation brakes on different vehicles in the combination vehicle. A vehicle with disc brakes is likely to do more low-pressure braking than a vehicle with drum brakes. There is usually less mechanical friction in the disc brake mechanism than the drum brake mechanism and the disc brake is likely to apply at a lower control air pressure than the drum brake. The difference in wear performance that is likely to occur can be corrected by altering the threshold pressure levels at which braking commences in the air control connections between the towed and towing vehicle. This is a specialist task to be done by a brake supplier. The scope of the Guide covers a truck

pulling a trailer (semi-trailer, lead trailer, dolly trailer, dog trailer, pig trailer) and a trailer pulling a trailer (B-double follower, dolly trailer, pig trailer). This split-up allows all single and long combinations used in Australia to be considered. The graph above shows the assessments for four braking combinations taken from the Guide.

The Guide is general in nature and it is no substitute for professional advice from OEMs, brake system suppliers and vehicle engineers in particular cases. However, it does provide well-considered general opinions about combination vehicle braking from many of Australia's best heavy-vehicle brake experts. The Guide also presents 11 'good practice' braking principles that should be followed. I recommend the Brake and Stability Guide for Heavy Vehicle Combinations to all operators, dealers and workshop managers. It is available from any of the industry associations who have contributed to its development. In ARTSA's case it is available at www.artsa.com.au/library.

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