

Park brake operation



Technical Advisory Procedure



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About this Technical Advisory Procedure (TAP):

This Technical Advisory Procedure is published by the Australian Trucking Association Ltd (ATA) to assist the road transport industry improve its technical understanding of park brake operation in trucks and heavy trailers that comply to the Australian Design Rules (ADRs) via UN ECE regulation R13 brake standard. It is not, nor is it intended to be, complete or without exceptions.

The Technical Advisory Procedure is a guide only, and its use is entirely voluntary. Recommendations or procedures may not be suitable for or applicable to all operators. Operators should consider their own circumstances, practices and procedures when using this Technical Advisory Procedure.

Operators must comply with the Australian Design Rules (ADRs), the Australian Vehicle Standards Regulations, the Roadworthiness Guidelines and any specific information and instructions provided by manufacturers in relation to vehicle's systems and components.

No endorsement of products or services is made or intended. Brand names, where used in this Technical Advisory Procedure, are for illustrative purposes only.

Suggestions or comments about this Technical Advisory Procedure are welcome. Please write to the Industry Technical Council, Australian Trucking Association, Minter Ellison Building, 25 National Circuit, Forrest ACT 2603.

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Introduction

This Technical Advisory Procedure (TAP) has been developed by the ATA Industry Technical Council (ITC) to provide operators with key information about the operation of park brake systems.

ADR 35 (truck braking) and ADR 38 (trailer braking) accept the UN ECE R13 regulation as an acceptable alternative standard. There are now vehicles designed in accordance with UN ECE R13 being sold in Australia. The UN ECE regulations are commonly referred to as the international standards for vehicles and represent an increasing base in the Australian regulatory framework for vehicle design. These regulations tend to have a foundation based on European experience and operation, which does not always translate directly to the Australian market.

As a standard practice in Australia, trailers with positive air pressure brake systems are parked using the mechanical force of their foundation system's spring park brakes. Applying the park brake in the cab of a prime mover should apply the spring park brakes on the prime mover and all connected trailers by venting the air from the supply system.

In 2006, however, Australian Design Rule 35 was amended so trucks and prime movers that meet the European braking standard, UN ECE R13, are deemed to meet the ADR provided they also meet a performance specification. Compliance with the ADR via the UN ECE R13 brake regulation, which allows the trailer to be parked on air and does not represent normal Australian truck/trailer setup or behaviour. It also raises known operational safety issues.

Operational safety issues

ATA members have reported a number of operational incidents in which setting the park brake on a prime mover either applied its trailer's brakes on air or did not apply the trailer brakes at all.

Applying the park brake in some trucks and prime movers will only provide service air to the brakes on its connected trailers rather than venting release air to apply the spring park brakes.

It is unsafe to park a trailer on air, even if the truck is compliant with the European UN ECE R13 brake regulation, because its brakes would release if the air leaked out of its service system. The UN ECE R13 brake regulation only requires the service brakes to maintain air supply for 15 minutes, to allow the driver to fit wheel chocks.

European operating practice is to use wheel chocks when trucks and trailers are parked. Because Australian operating practices do not involve using wheel chocks, it is possible that a trailer could roll. As a result, parking on air is a significant safety reduction compared with parking trailers on spring brakes, as these brakes fail to safe.

In addition, damage to foundation brake system components can occur with the wrong sequence of connecting and disconnecting airlines, with full air pressure being delivered to service brakes, joining as the spring brakes apply brake force - doubling the load on the brake components. Trucks are typically fitted, as standard, with an anti-compounding feature using a Bendix SR5 or similar valve, but trailers are not always specified with anti-compounding.

There are additional situations where a trailer may roll away

Maintenance plays a large part in the correct operation of any vehicle.

- Brake systems can perform poorly because they have worn linings, linings that are out of adjustment, or are simply faulty.
- Air system contamination can occur via either the truck's air system or directly through the coupling heads, which can lead to valve failures. Airlines can drag in dirt and collect contaminants, which can then be blown through into the trailer's airlines.

Either of these maintenance issues could result in reduced performance of the service brakes and a roadworthiness problem that must be fixed. Even with a correctly applied park brake, these can result in poor performance of the trailer spring brakes and result in a roll away. An appropriate coupling / uncoupling procedure, such as the sample procedure on page 5, will limit this possibility.

Finally, the park brake will not stop a truck or trailer rolling away if the driver forgets to put it on.

Testing the operation of park brakes

On flat level ground, with both truck and trailer wheels chocked to prevent the vehicle combination rolling away, test the park brake function by applying the park brake in the cab of the truck without the service brakes applied.

All normal workshop safety procedures and requirements must be met

- A. At the coupling point, disconnect the blue signal airline. If air is present, the trailer was positively parked on air.
- B. At the coupling point, disconnect the red supply airline. If air is present, the trailer was positively parked on air.

If either condition A or B is found:

- 1) Take your vehicle to an approved and authorised servicing agent to ensure the system is operating correctly. If not, repair and retest to ensure the combination does not park on air. For new vehicles covered by warranty, the selling dealer would be appropriate.
- 2) If the system is without fault, refer to a suitably qualified engineering consultant to assess the system and recommend an ADR compliant modification to ensure trailers are not parked on air.

Trailer airline coupling procedure:

- 1) Connecting trailer airline order - blue signal before red supply line.
- 2) Disconnecting trailer airline order - red supply before the blue signal line.

To improve safety the ATA recommends:

- 1) Operators do not park a combination on air.
- 2) Operators fit a door interlock system that sounds an alarm if the door is opened without the park brake being applied.
- 3) Drivers should be trained to disconnect airlines and electrical cables before dropping landing legs and releasing the fifth wheel.

Note:-

- A semi-trailer can only roll away if the fifth wheel is in the release position.
- Trucks with tipping dog or pig trailers frequently use duo-matic or trio-matic couplings. These couplings release air pressure in both lines simultaneously, negating the need to consider the sequence in the procedure.

Semi-trailer coupling procedure

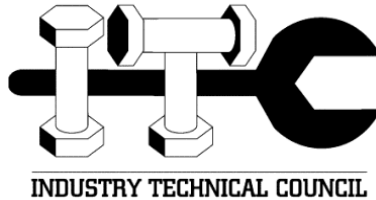
Move the prime mover to the front of the semi-trailer and position it so it can be reversed squarely onto the semi-trailer.

1. Reverse the prime mover towards the front of the semi-trailer stopping short of the turntable going underneath the trailer. Use your mirrors to line up the sides of the trailer with the outer sides of the prime movers mudguards and reverse back so that the rear mudguards on the prime mover are in line with the front of the trailer
2. Once in position apply park brake. Lower airbags on prime mover. Check for alignment of turntable and kingpin. Jaws are open. Check height of the trailer (making sure it's higher than the turntable's height). Check the turntable is in correct position and correct type for trailer **eg: if applicable, the ball race under the turntable is not turned off centre, pins are removed and block on trailer is in place if required.**
3. Return to truck, disengage park brake and reverse back so that the front mudguards are halfway under the front of the trailer. Apply park brake. Check that turntable is under the skid plate, but **CLEAR** of the kingpin. Return to truck, raise airbags on the prime mover.
4. Once the airbags are fully raised (and there is no gap between the skid plate and the turntable) return to truck, disengage park brake and reverse back **SLOWLY** until turntable locks onto the kingpin. Apply park brake.
5. Exit vehicle. Check locking lever is locked away. **CHECK JAWS ARE LOCKED. USE A TORCH IF NEEDED.** Wind up legs approximately 100 mm (use 1st gear until pressure is off the legs, then use 2nd gear) until at required height. Connect airlines, blue signal before red supply line, ensuring that fittings are turned to lock hoses. If taps are fitted on the airlines, ensure they are opened.
6. Connect trailer electrical plug(s).
7. Reach into cab and turn headlights on and check trailer lights are working.
8. Disengage the truck's park brake, engage the truck's 1st gear and attempt to move vehicle forward slowly. This is called the **TUG TEST**.
9. Exit vehicle and wind up legs on trailer until they are fully raised, lock the handle away and return to vehicle.
10. Engage trailer air supply (red button), wait till brakes release and move forward one metre and apply trailer brakes to stop.
11. Apply park brake.

The uncoupling trailer procedure is the reverse of the above procedure.

Always ensuring the landing legs are located on hard stand and won't sink under the weight of the trailer.

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About the ATA Industry Technical Council:

The Industry Technical Council (ITC) is a standing committee of the Australian Trucking Association (ATA). The ITC's mission is to improve trucking equipment, its maintenance and maintenance management. The ITC was established in 1995.

As a group, the ITC provides the ATA with robust professional advice on technical matters to help underpin ATA policymaking. It is concerned with raising technical and maintenance standards, improving the operational safety of the heavy vehicle sector, and the development of guidelines and standards for technical matters.

ITC performs a unique service in the Australian trucking industry by bringing operators, suppliers, engineers and other specialists together in a long-term discussion forum. Its members provide expert and independent advice in the field to inform the work of the ITC. The outcomes from ITC benefit all ITC stakeholders and the industry at large.

The ITC operates under the Australian Trucking Association's Council, which formulates industry policy for the implement by the organisation.

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We welcome applications to join the ITC. For further information, please call the ATA (02) 6253 6900

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