Australian Road Transport Suppliers Association

EBS and More

What can you do with advanced braking systems?

Chair : Mario Colosimo

Panel : Neil Chilton, Warnambool Cheese and Butter
Robert Smedley, Knorr Bremse
Ian Thomson, BPW Transpec

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Trailer Electronic Braking Systems

Trailer Electronic Braking control systems are a development of trailer antilock (ABS) braking systems, which in turn are a development of pneumatic brake control systems.

Trailer EBS is a pneumatic control valve with on-board computer and sensors and solenoids.

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Benefits of Trailer EBS

- Electronic actuation of the trailer brakes
- Anti-Lock Function (ABS)
- Integrated electronic load sensing
- Trailer Roll Stability function for Roll Over Protection
- Optional Trailer Monitor

When connected to an ABS Prime Mover, the EBS valve is pneumatically actuated, and the benefits of ABS, Load Sensing, Roll Stability and the Trailer Monitor apply. Can be either 12V or 24V.

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Roll Stability Automatically Helps to Prevent Rollover

The Trailer EBS Roll Stability function gathers information from various sensors, including an accelerometer and pressure transducers in the EBS valve, and the wheel speed sensors.

The computer in the EBS valve processes this information and automatically applies the trailer brakes when it determines that the trailer is approaching point of rollover.

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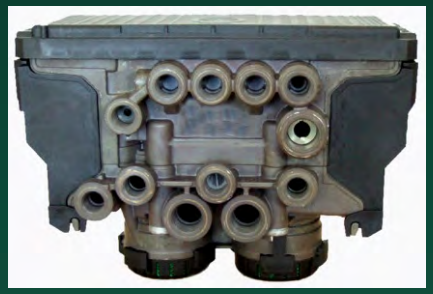
Trailer EBS Valves on the Market

Wabco

BPW / Haldex



Knorr Bremse

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Additional functions….

Having a computer on the trailer opens up a number of possibilities. Trailer EBS can do more than apply the brakes and help prevent rollovers.

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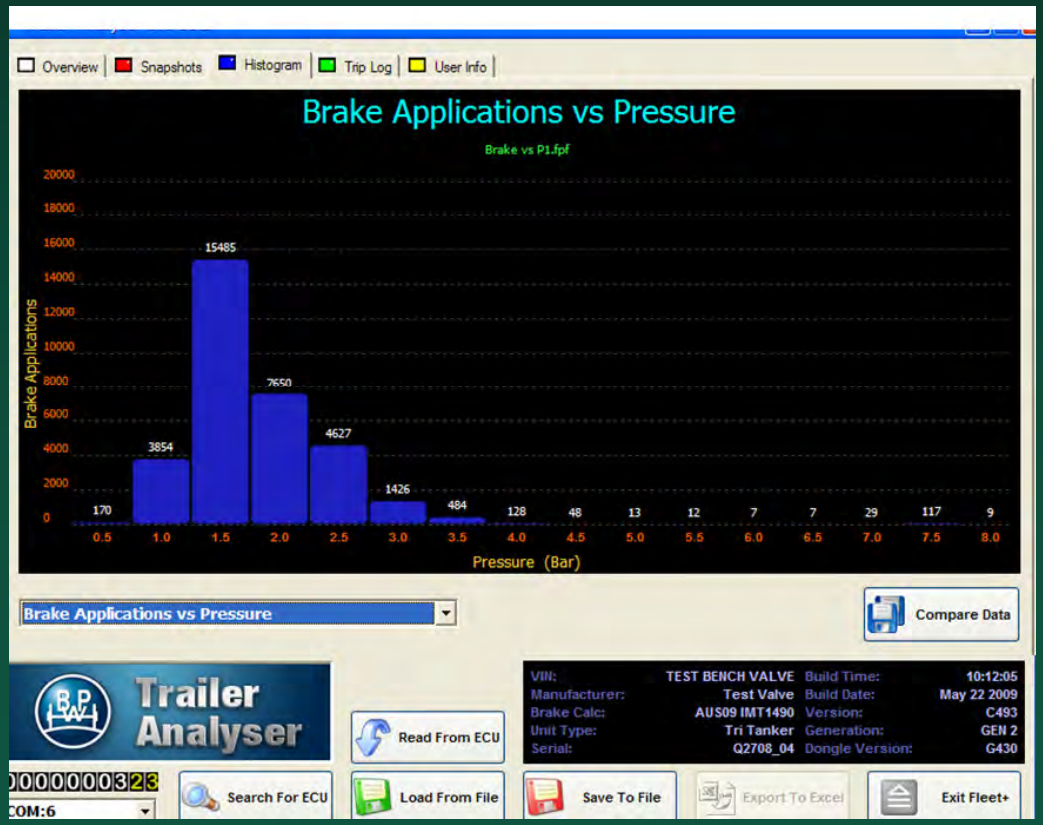
BPW Ecotronic EBS

EBS enables high level of information data to be available to review:



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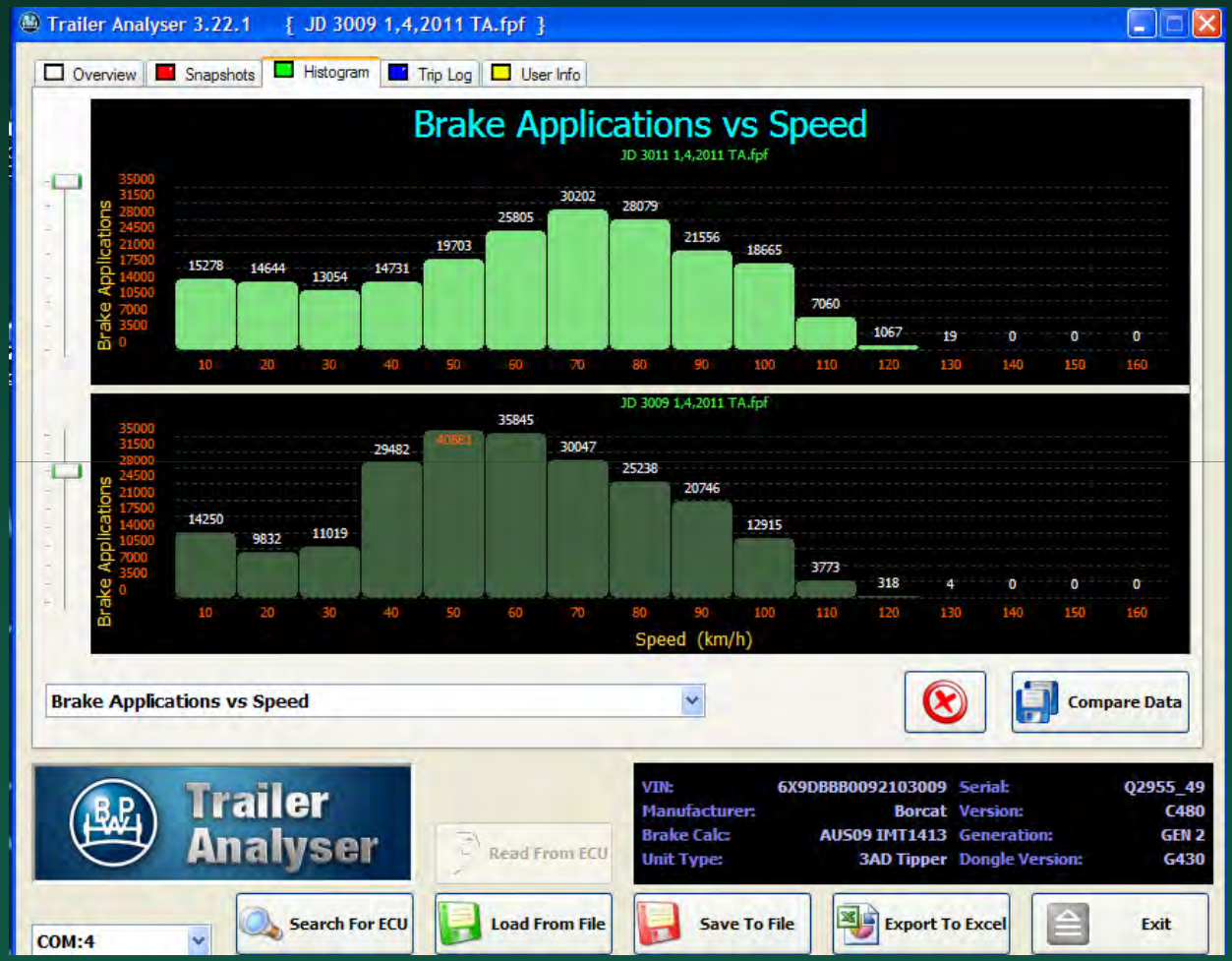
Comparison of data can be easily carried out.



Histograms

Compare 2 vehicles on same screen.

Shows different driver/vehicle behavior.

Top vehicle braked harder and later.

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BPW Ecotronic EBS

EBS enables control of optional features through the EBS modules software *:

- Axle Lift Control
- Reset To Ride / Raise Lower
- Steer Axle Lock
- Soft Docking
- Others

*= additional hardware is also required

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Axle Lift Control with EBS

Program lift and drop pressures in the EBS Valve to correspond to the ADR drop weights.

System load senses the brakes in both modes so you always have optimum braking.

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Reset To Ride / Raise Lower

Program the EBS Valve to automatically reset the raise lower (dock levelling) when the vehicle reaches a preset low speed.
Helps prevent equipment damage.

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EBS enables a range auxiliary functions to be controlled.

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Knorr-Bremse TEBS G2

What more can it do for you?

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TIM G2 Optional Features – Data Logging – TDR:

Trailer Drive Recorder (TDR), records up to 10 years worth of data about each drive. including:

- **Starting Distance, Date, Time and GPS Co-ordinates – See Note 1.**
- **Minimum, Average, Maximum Load.**
- **Distance and Time overloaded.**
- **Maximum speed reached when overloaded.**
- **Average, Maximum Brake pressure / Duration.**
- **Average and Maximum Speed.**
- **Number of RSP and ABS events.**
- **Average and Maximum Lateral Acceleration.**
- **System Status (fault status)**
- **Tire Pressure Status**
- **Finishing Distance, Date Time and GPS Coordinates – See Note 1.**

Note 1: if a GPS enabled device is available on the J1939 bus

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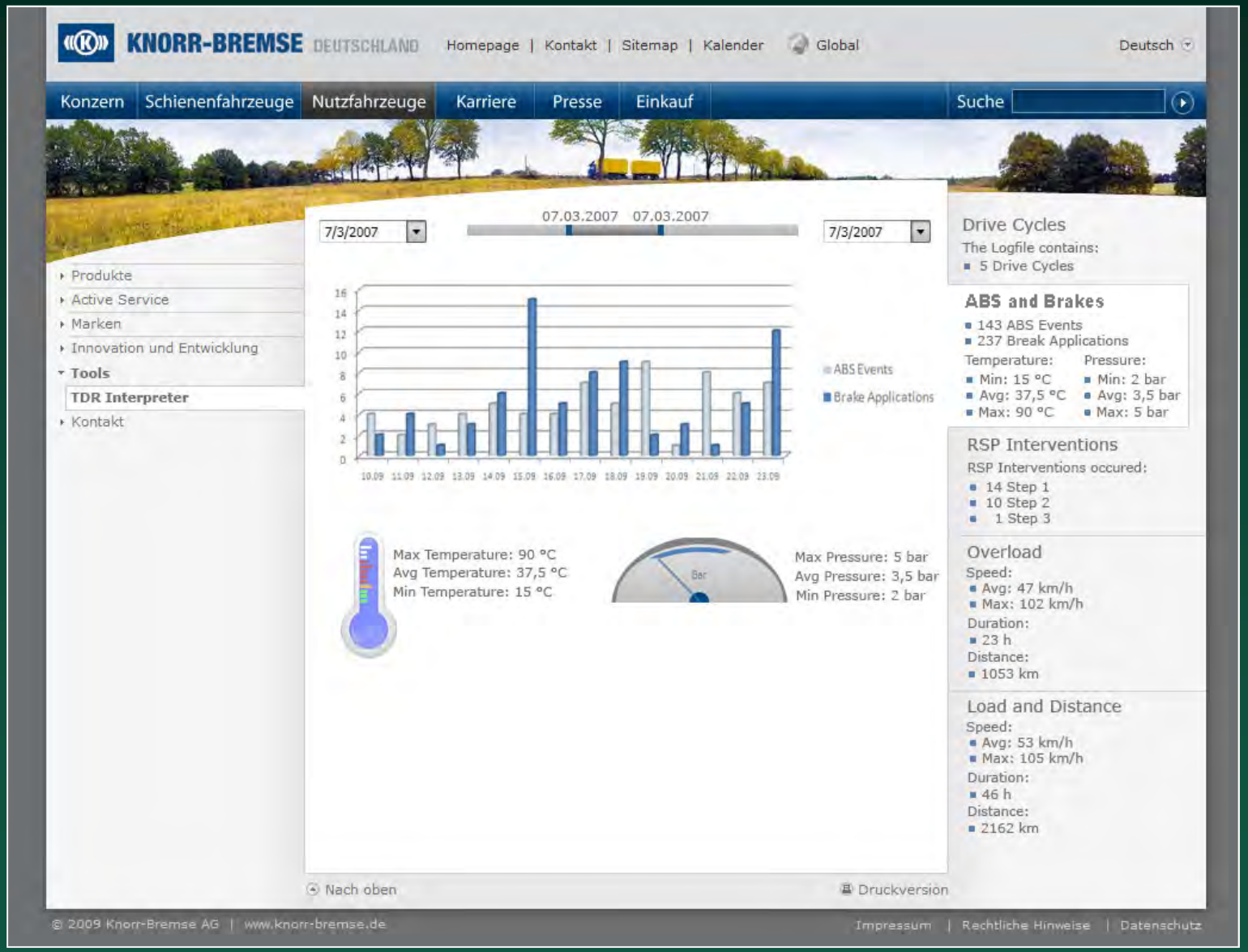
TDR Interpreter



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Emergency Mode Regulation (EMR):

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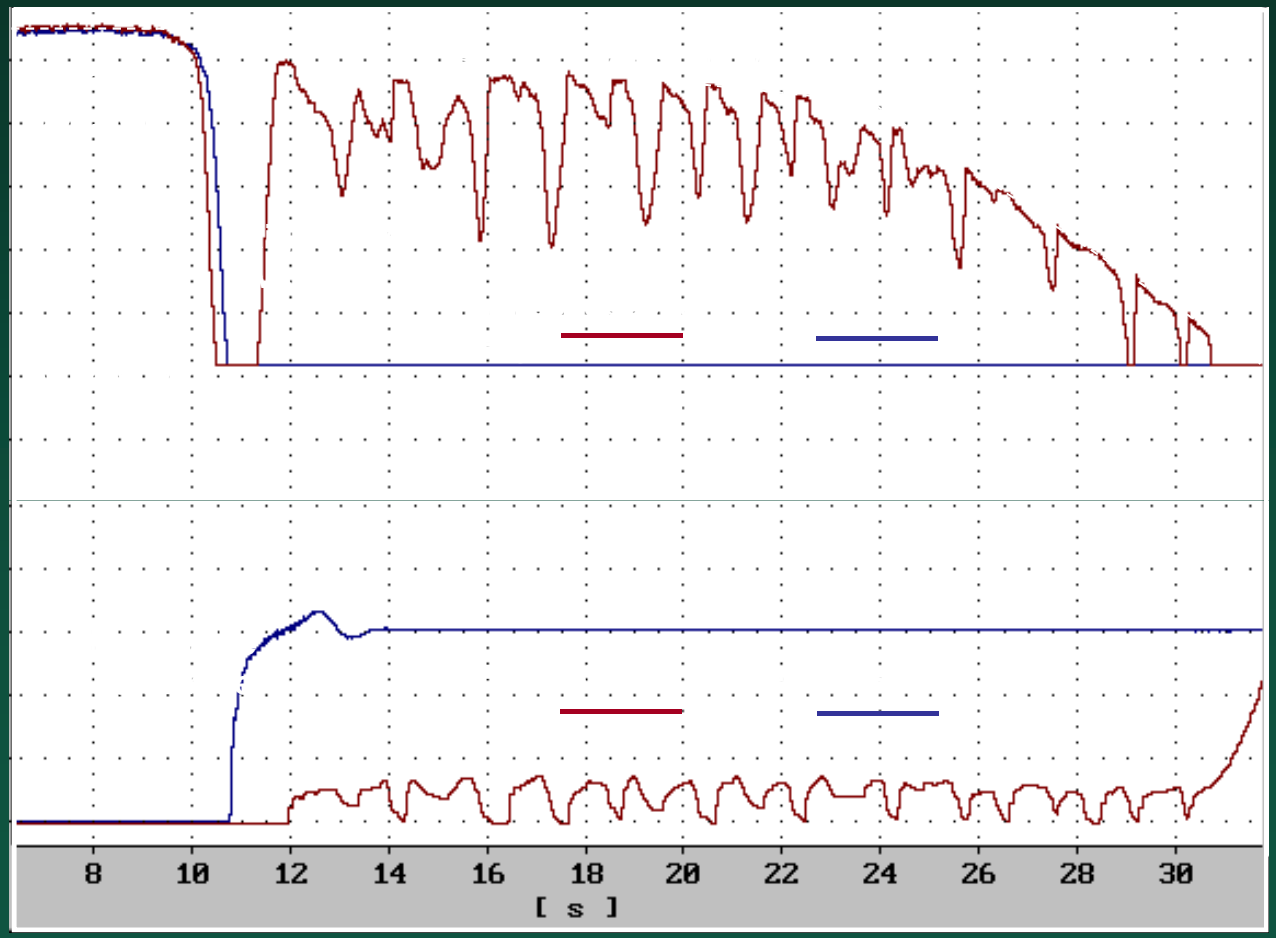
- ABS function when automatic brake results in application of the spring brakes.



Note:

The double check valve in TEBS G2 receives pressure from the left delivery which is the opposite to the current TEBS.

However functionality is unchanged

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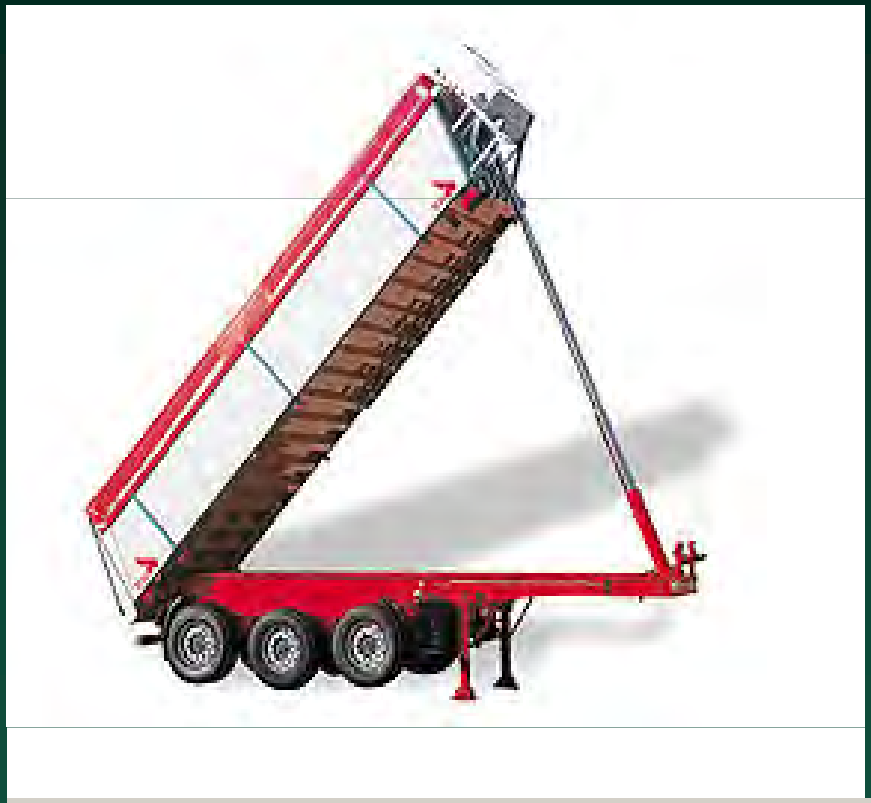
Auxiliary Functions:

- Speed pulse (Reset to Ride)
- Independent speed switch (ISS)
- Steering axle lock (Speed, ABS, Reverse),
- ABS active,
- RSP active,
- Tilt angle,
- Body Lift emergency function,
- Voltage Supply,
- Suspension Release Function,
- Road Layer Function,
- Trailer Brake Release, ADL (Including brake interface),
- Lift Axle Control,
- Traction Help,
- Manoeuvring Help,
- iCorner,
- iCargo,
- Stop Lamp Request,
- Brake wear monitoring
- Force lift axle to lower
- Advance lift axle control
- Reverse Lights.
- Body Lift Sensor.

Auxiliary Outputs may be configured for 6, 12 or 24V operation

Instability During Tipping:

Auxiliary Functions – Tilt Angle:



RSP Lateral Acceleration Sensor used to define angle of trailer platform prior to and during tipping.

Output generated when programmed tilt angle is exceeded.

Provides operator warning or interface with lifting control system.

AUXIO settings

TBM

Pin	Type	Function name	Device Type	V_{avg}[V]
AUXIO1	Output	TA	Valve/bulb	24V
AUXIO2	N/A	Disabled		
AUXIO3	N/A	Disabled		

AUXIO function parameters

TA

Maximum speed [km/h]	8
Tilt angle []	5.0
Inverted mode	No

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ADR – Brake Interface

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"Resistance Brake" for Road Laying:

Conditions:

- Only selectable when the vehicle is stationary.
- Maximum speed – 15km/h
- Maximum brake pressure – 8.5bar
- May be used for other applications such as extendable trailers.

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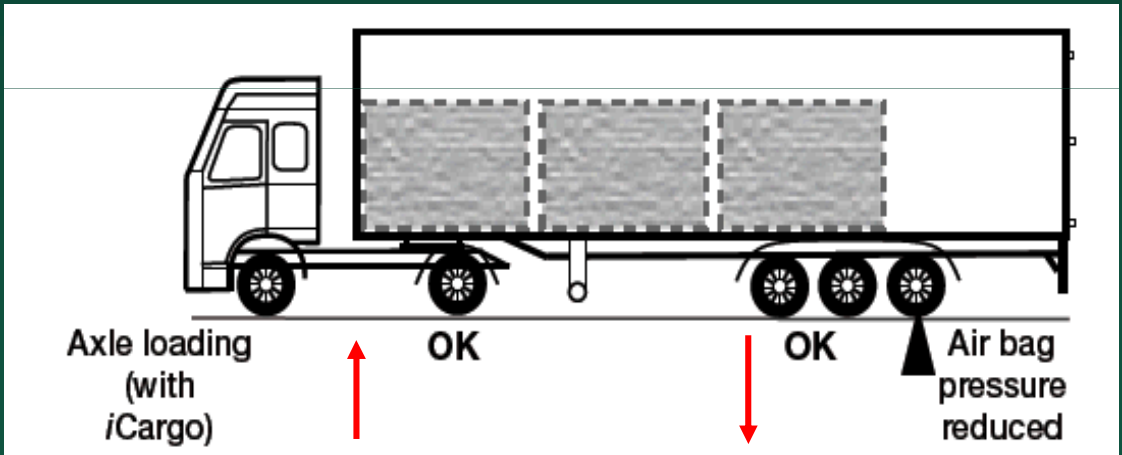
TEBS G2.1: iCargo & iCorner

iCargo:

- Reduces overload on drive axle of the truck.
- Partially loaded :
  - Maintain 130%[Programmable] load on the axles in front of the iCargo axles up to 30 km/h, 100% above.
- Pressure in iCargo axle will be reduced to a minimum of 0.5bar [Programmable]



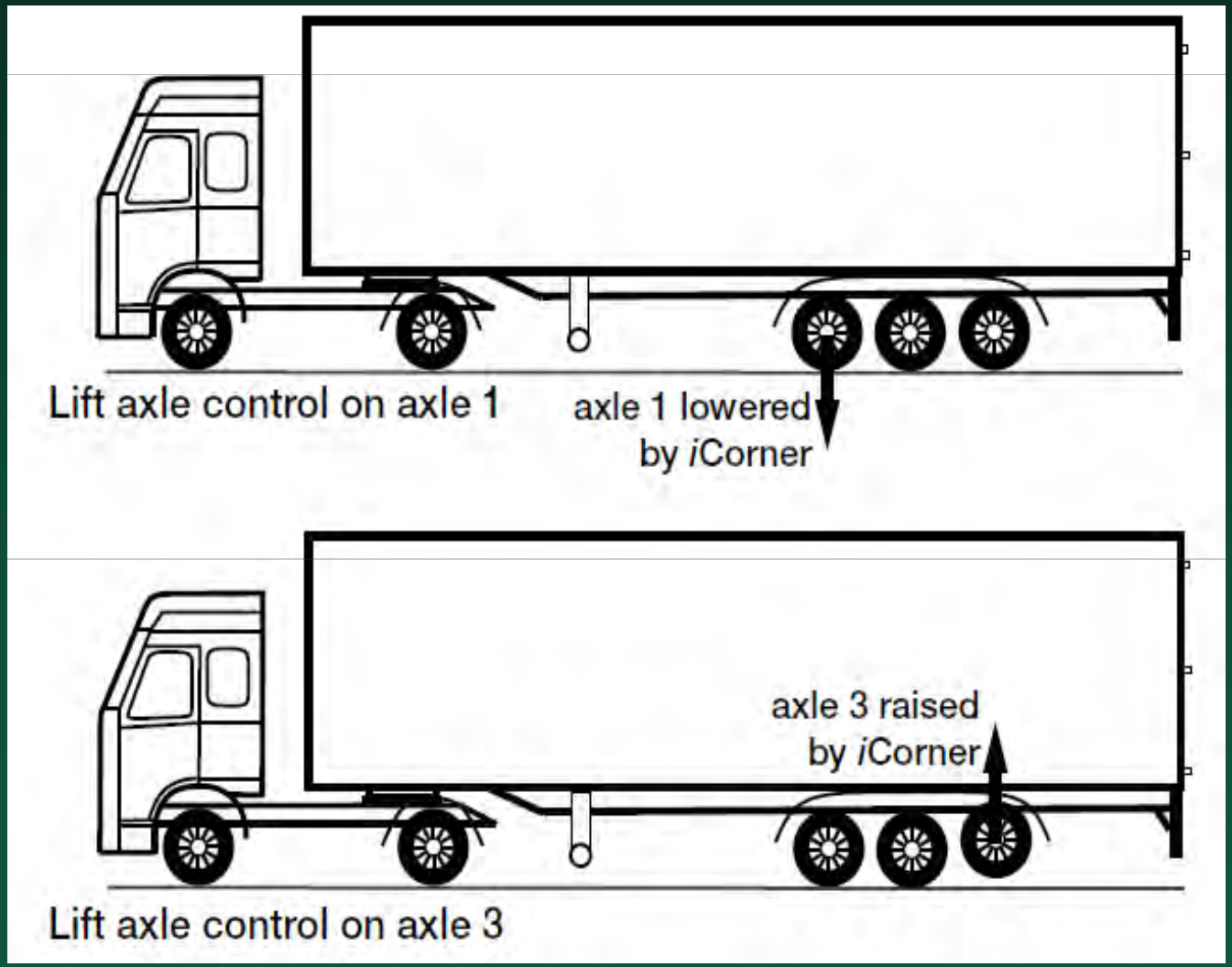
TEBS G2.1: iCargo & iCorner

iCorner:

- Reduces the turning circle by reducing the wheel base.
- Two Operating modes:
  - Turning Circle Optimised.
  - Tire wear Optimised.

TEBS G2.1: iCargo & iCorner

iCorner: Turning Circle Optimised



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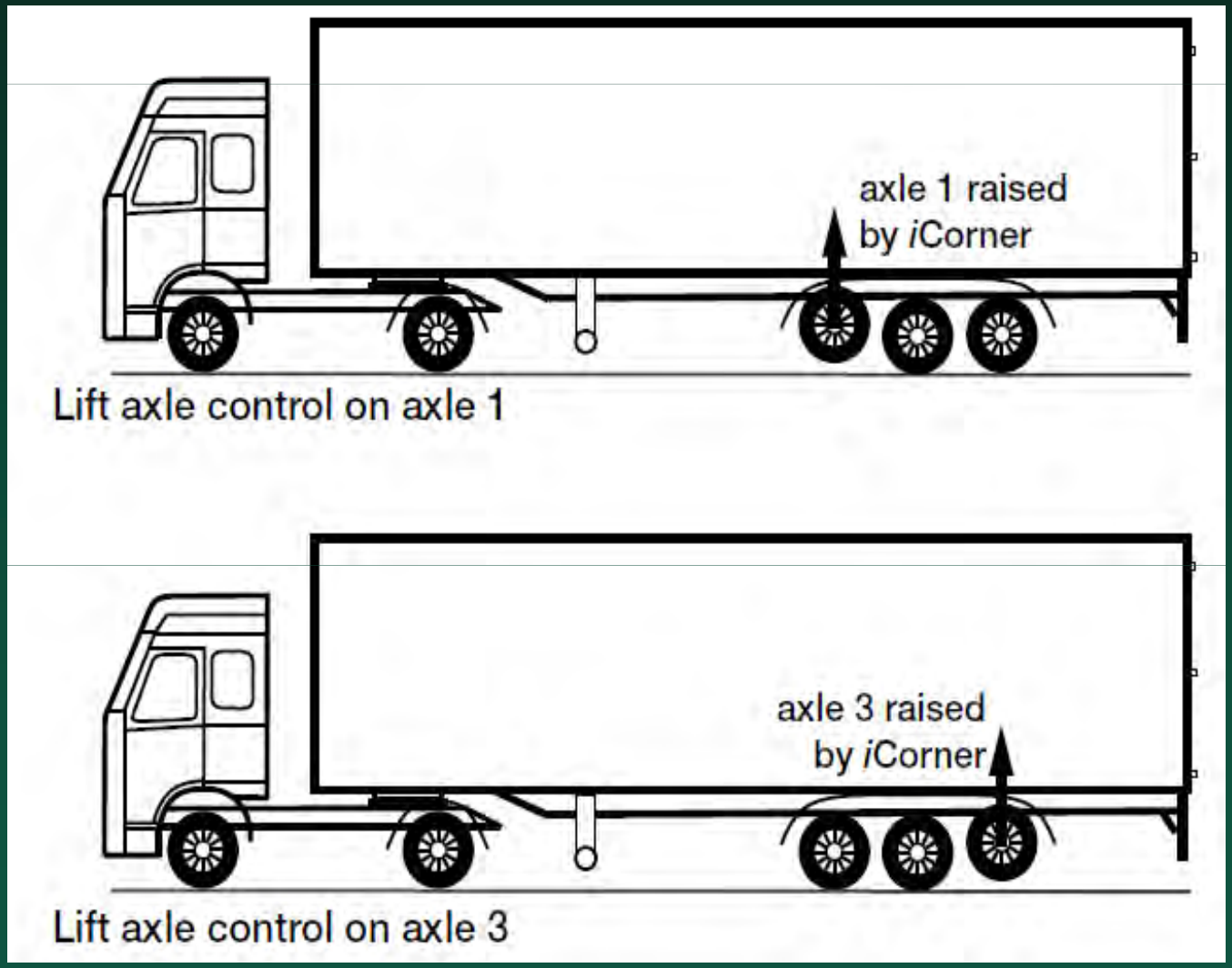
TEBS G2.1: iCargo & iCorner

iCorner: Tire Wear Optimised



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