

Submitted by the experts from CITA

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# 19<sup>th</sup> GRVA

## PTI test of HDV brake systems May 2024

Alejandro Checa, Technical Director

[a.checa@citainsp.org](mailto:a.checa@citainsp.org)

WHY?



**To avoid adding operational difficulties  
to the owners of HDV**

**Difficulty/Impossibility of ensuring the  
safety of brakes in critical vehicles like  
buses and coaches, ADR, vehicle with  
nuisance cargo, transport of animals...**

**Proposal to keep a reliable test of HDV brakes in PTI regardless of the technology:**

- **Without creating new obligations to vehicle owners/managers.**
- **To ensure that the braking efficiency is subject to PTI test.**
- **Reading only proposal, no cybersecurity threats.**

**Without exceptions...**

# Reference Braking Forces Method (1/2)



- **Similar method as described for pneumatic braking systems in ISO 21069\*.**
- **Physical values needed to evaluate the correct function of braking system in vehicle's all load states from empty to fully laden:**
  1. **Standardized wheel brake demand value (*voltage, electrical power or percent value*).**
  2. **Reference braking forces associated to specific wheel brake demand value, as given until today in R13.**

**\* Referred by 1997 Agreement and Directive 2014/45/EU**

- **Type or vehicle specific sets of reference braking forces will be declared at the time of type approval.**
- **Reference braking forces (values given for corresponding demand values) should be given per axle.**
- **The reference braking forces shall be available for the roadworthiness activities.**
- **Demand values shall be available live on the vehicle for roadworthiness purposes.**
- **PTI is a sovereign legally enforced activity (1997 Agreement, Directive 2014/45/EU, ...)**

# Option 1 – Digital procedure



**Wheel brake demand value or wheel brake actuator value shall be available in the vehicle**

- **Reading out the (harmonized) live wheel brake demand value or wheel brake actuator value for each axle on the OBD using a universal diagnostic tool.**
- **Connector OBD-II / SAE J1962.**



# Option 1 – Digital procedure



- **Wheel brake demand value or wheel brake actuator value shall be controlled by operation of the service brake pedal and accessible live through the OBD port.**
- **Braking forces will be then measured live in PTI using current test equipment (roller brake testers) and assessed in relationship with the wheel brake demand value or wheel brake actuator value.**

# Option 2 – Analogic procedure



- **Wheel brake demand value or wheel brake actuator value shall be measured at some point of the system (TBD by the manufacturer)**
  - **Equivalent to the current external measurement of air pressure.**
  - **Reading out the voltage/power supplied to the brake actuators.**
  - **Connector (e.g.) SAE J2222 or DIN 43589.**
    - **Connection between truck and trailer shall use an equivalent standardized interface to be plugged in between.**





# Option 2 – Analogic procedure



- **Information on the testing point connections shall be made accessible for legally enforced roadworthiness activities.**
- **Wheel brake demand value or wheel brake actuator value shall be controlled by operation of the service brake pedal.**
- **Braking forces related to specific reference value shall stay measurable using current PTI equipment (roller brake testers).**

**To avoid adding operational difficulties to the owners of HDV**

**Difficulty/Impossibility of ensuring the safety of brakes in critical vehicles like buses and coaches, ADR, vehicle with nuisance cargo, transport of animals...**



**THANK YOU**

**[www.citainsp.org](http://www.citainsp.org)**

Rue du Commerce 123 - 1000 Brussels, Belgium

+32 (0)2 469 06 70

[secretariat@citainsp.org](mailto:secretariat@citainsp.org)

# BACKUP: HDV PTI test (1 wheel)

