

Submitted by the experts
from CITA

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20th GRVA

PTI test of HDV brake systems

Reference Braking Forces Using Vehicle Interface

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To avoid adding operational difficulties to the owners of HDV and in the implementation of the PTI activities, guaranteeing the highest level of safety

Reference Braking Forces Using Vehicle Interface

In-use Solution



For reference braking forces, PTI needs this information:

- reference braking forces (**brake demand value** (in-vehicle data) and **respective min. wheel brake force**)
- diagnostic information how to **access this in-vehicle data**

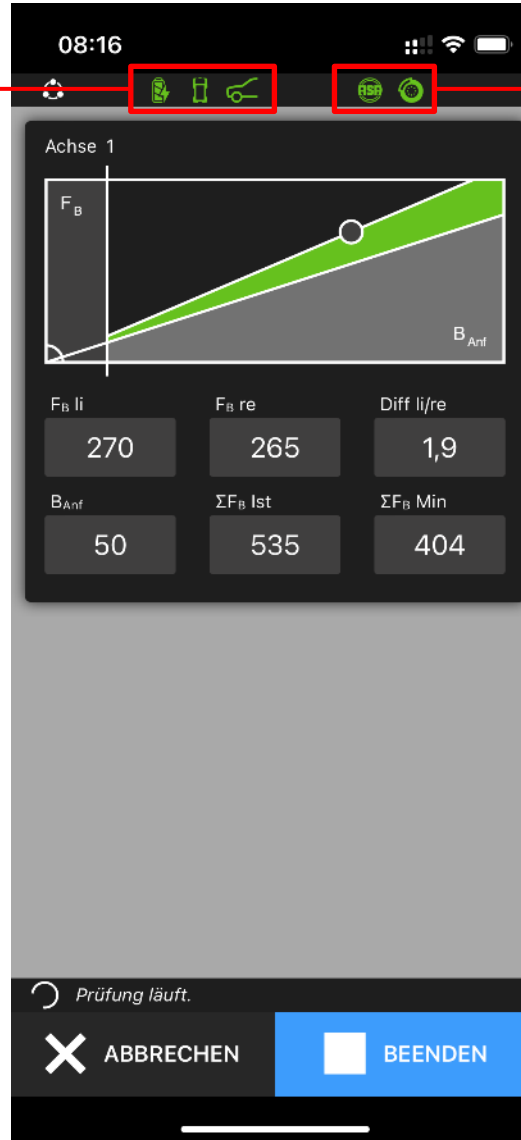
Reference Braking Forces Using Vehicle Interface

In-use Solution (example, connection)



Reference Value

Status symbols show that the software is connected to the scan tool, and the scan tool is connected to the vehicle



Brake Force



Symbols show that the connection to the brake tester is established

PTI software application



Reference Braking Forces Using Vehicle Interface

In-use Solution (example, usage)



Reference Value



Reference value / brake demand value – read out from the brake control unit (here: hydraulic braking system)

Brake Force



Brake force – from brake tester via network manager

Minimum brake force for the current brake demand value (data delivered or approved by OEM)

Current brake force for this axle

PTI software application



Reference Braking Forces Using Vehicle Interface

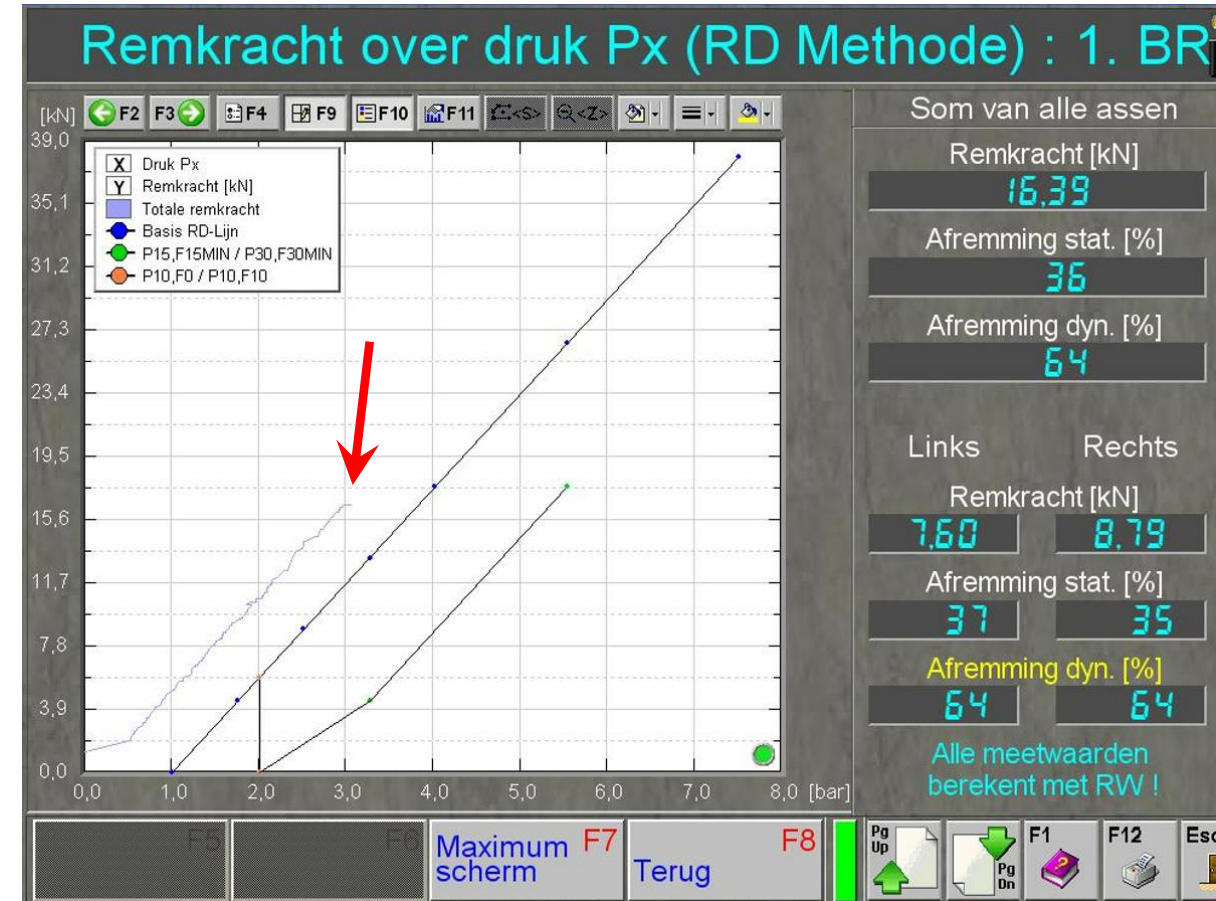
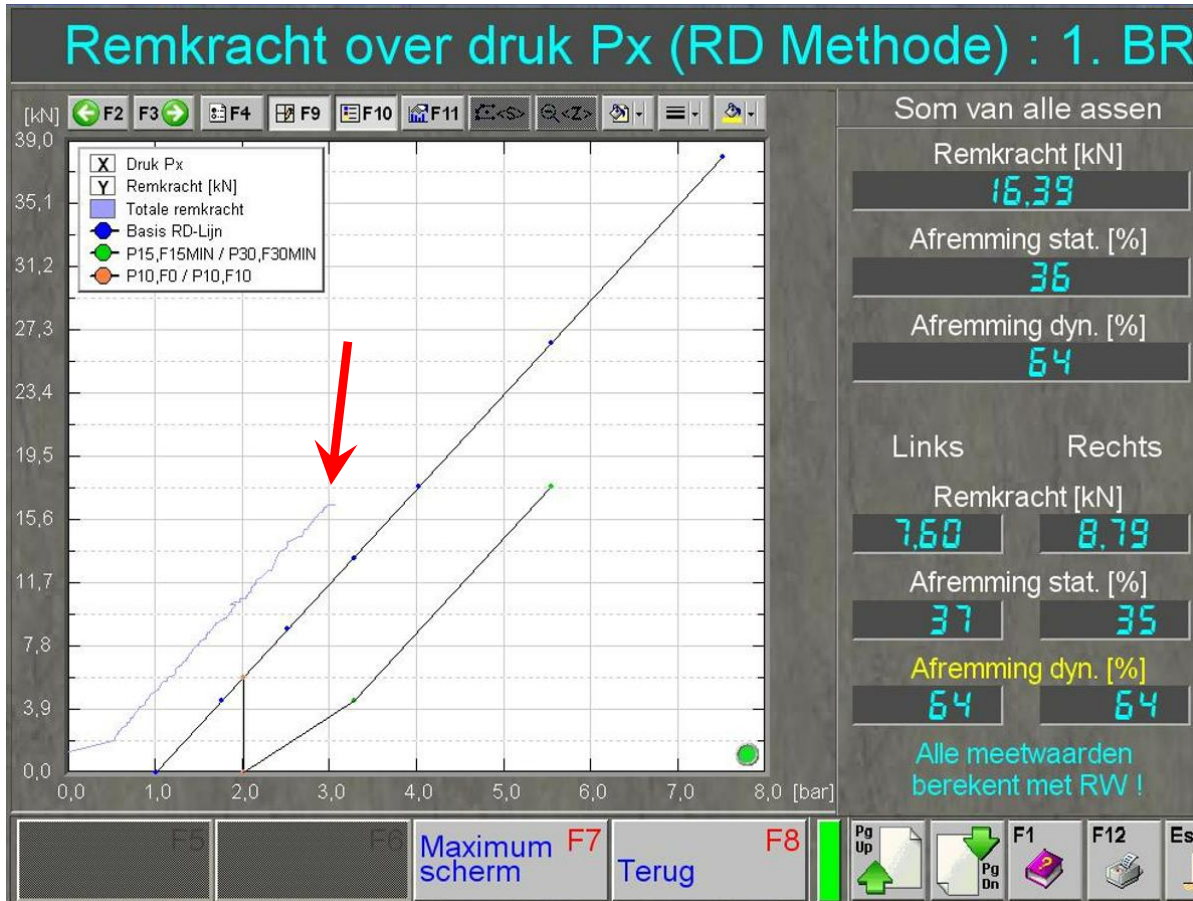
In-use Solution (example, usage)



CURRENT METHOD

Left Wheel

Right Wheel



Note: Equivalent methods applied in countries like Germany, The Netherlands, Spain, Belgium and many others...

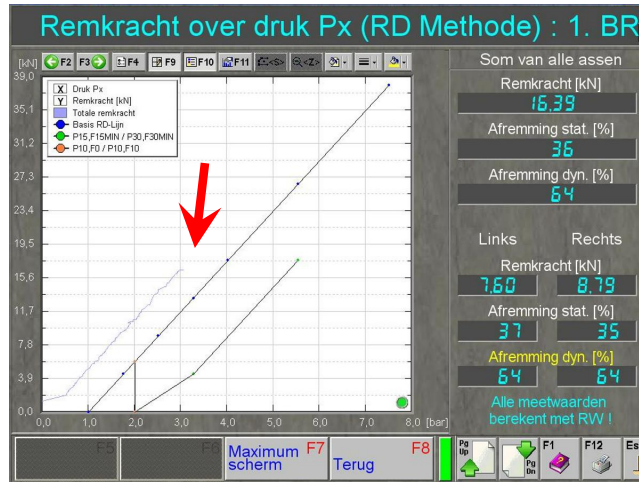
Reference Braking Forces Using Vehicle Interface

In-use Solution (example, usage)

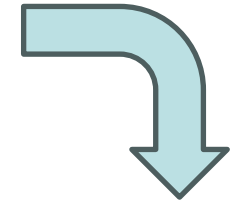
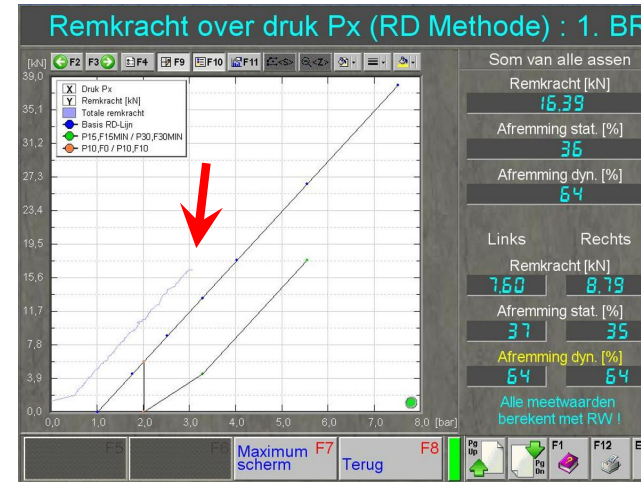


EMB ENDORSED METHOD

Left Wheel

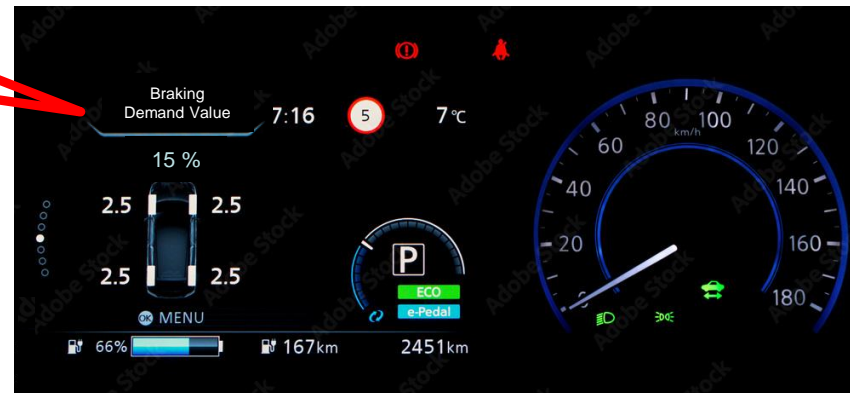


Right Wheel



Car Displayed Info

**DYNAMIC
BRAKING
DEMAND
VALUE**



Recording



Reference Braking Forces Using Vehicle Interface

Summary



- **Reference braking forces** are well-proven and long in use, both **for hydraulic-braked, and air-braked vehicles.**
- **Reference to vehicle braking data** is well proven and **often delivered to PTI.**
- **Reading this data via vehicle interface** for PTI is **well-proven.**
- It is **not human** to record **3 different dynamic values at 1 Hz.**

Conclusions

ECE/TRANS/WP.29/2024/143

Display

vs

GRVA-19-17

OBD

- | | | |
|---|---|------------------------------------|
| ✘ Human visual verification of 3 dynamic values in parallel at 1 Hz | ↔ | ✓ Machine readable values |
| ✘ Longer comparison time | ↔ | ✓ Live comparison |
| ✘ Recorded “by hand” (early 90’s) | ↔ | ✓ Digital record file |
| ✘ Lack of traceability | ↔ | ✓ Traceability guaranteed |
| ✘ Error % higher due to human factor | ↔ | ✓ Human errors reduced to 0% |
| ✘ <u>Degradation of the current safety level</u> | ↔ | ✓ <u>Current safety level kept</u> |

Same reference values without further technical requirements



THANK YOU

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