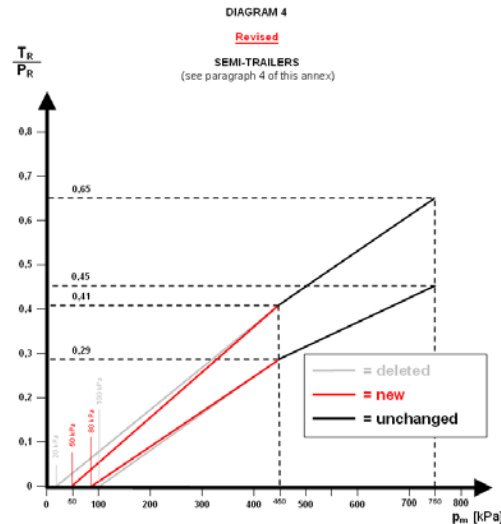


Proposal for amendment of ECE R13: Improved HGV brake compatibility



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72nd GRRF, 20-24 February 2012

Present situation

1. Too frequent brake performance rejections at PTI
2. Brake performance often not maintained throughout lining life
3. Not worn out brake pads and linings often disposed due to sleeping and glazed lining material
4. Brake maintenance costs should be reduced

Studies and observations

- Nordic Road Association, Vehicles and Transport Committee (NVF), brake study recommends focus on better distribution of brake forces between truck and trailer
- ISO 20918 sets out test method in roller brake tester and recommends start pressure between 0.5 and 0.8 bar
- Swedish voluntary test scheme XTB – Extra Tested Brakes – recommends start pressure between 0.5 and 0.8 bar
- Danish study found 38% weak brakes on trailers at roadside inspections and poor brake compatibility
- International Road Transport Union (IRU) study found technical failures in 5.3% of all main causes for traffic accidents with trucks – queue accidents accounted for 20.6 per cent of all accidents
- Proposed stricter Swedish compatibility demands not implemented due to lesser ECE R13 demands

Objective

To counteract sleeping or overloaded brakes each individual wheel brake should

- take its part of everyday brake events (ie. $p_m < 200$ kPa)
- brake in relation to load on axle

which should be possible to confirm at PTI

In short

HGV wheel brakes are sensitive to use and to environment

Each HGV wheel brake handles up to 15 times more energy compared to passenger car brakes

HGV brakes are conditioned at everyday low demand

In event of emergency demand only well conditioned brakes will perform

Well performing HGV brakes are a prerequisite to function of

- Automatic Emergency Brake System (AEBS)
- Stability Control and Roll-Over Control Systems (ESC)
- Adaptive and Advanced Cruise Control Systems (ACC)

Compatibility at low pressures should be possible to confirm at PTI to assure long term performance

Initiatives

- NVF recommends better standards
- IRU technical committee supports upgrading of ECE R13
- NVF/IRU trusts DK at NVF Copenhagen December 2010 meeting to prepare proposal amending ECE R13
- DK presents draft GRRF papers at NVF Helsinki August 2011 meeting
- DK presents draft informal papers at 71st GRRF
- DK presents working document ECE/TRANS/WP29/GRRF/2012/12 at 72nd GRRF today
 - + updated document as an informal document

Content

Coupling force control

1. Coupling Force Control System (paragraph 5.2.1.28.5)
compensation limits adjusted

Compatibility

2. Test connection in control line
3. Compatibility diagrams (annex 10) narrowed at low pm pressures and apply at all load conditions at
 $p_m < 200 \text{ kPa}$

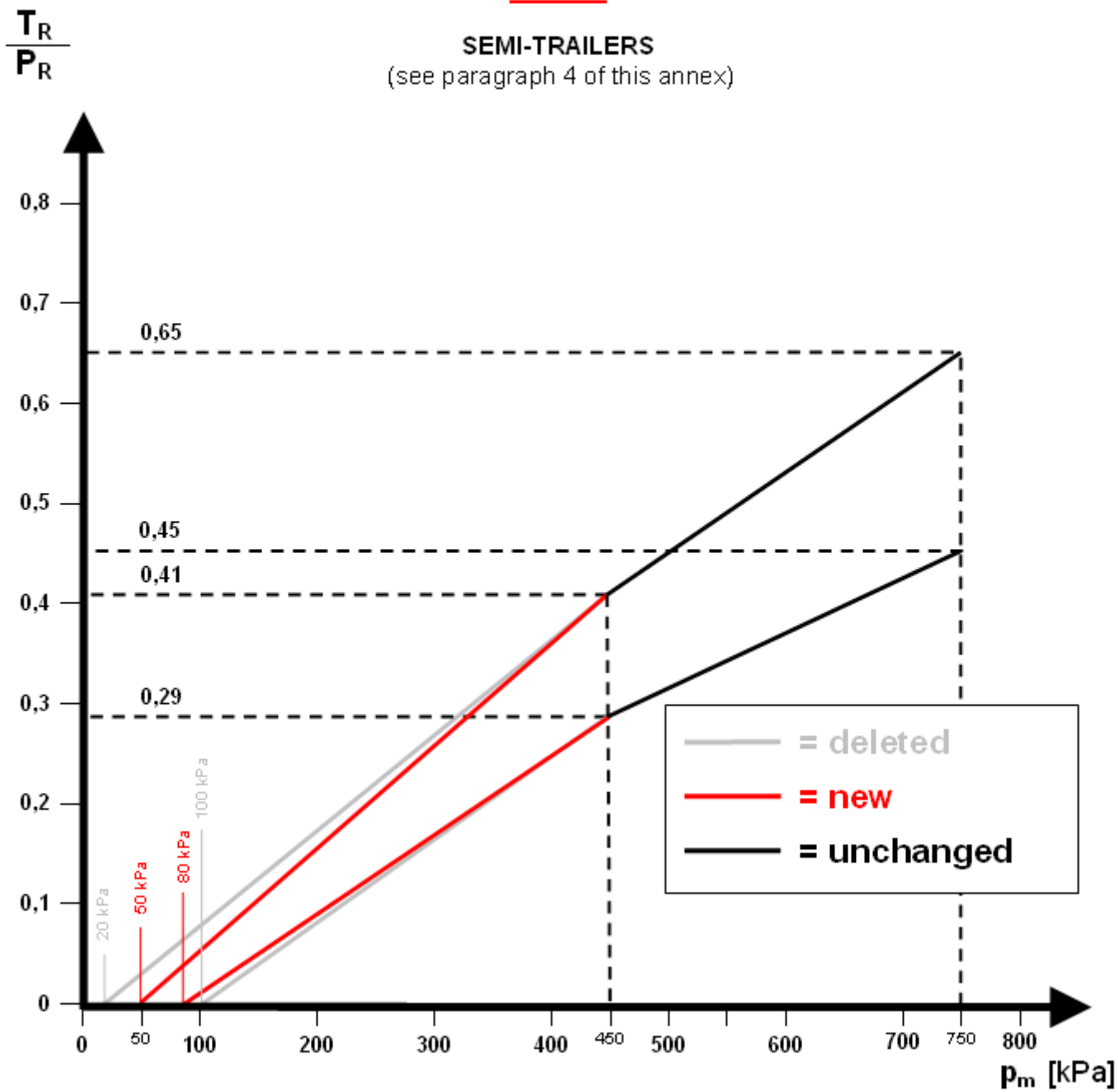
Compatibility diagrams

DIAGRAM 4

Revised

SEMI-TRAILERS

(see paragraph 4 of this annex)



Informal paper (updated) regarding diagram 4, semi-trailer

Correction factors " K_v " and K_c " to diagram 4, semi-trailers, are simplified in line with simplification of diagram 2 and 3:

1. Only "laden" corridors and corresponding "laden" K-factor apply
2. For load conditions other than fully laden, corridors apply only up to 200 kPa (2 bar)

Coupling Force Control

Diagram 1
Towing vehicles for trailers (except semi-trailers)

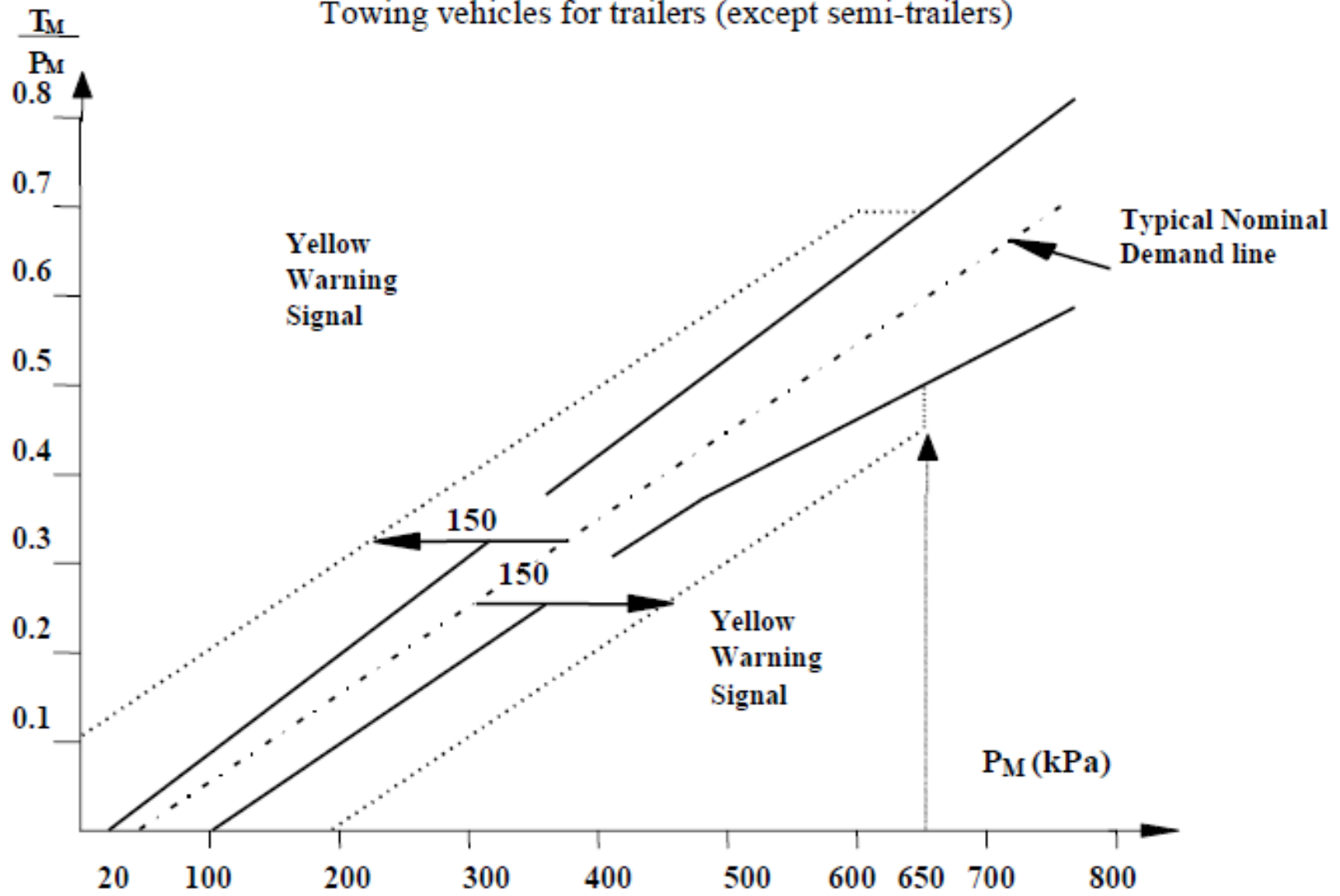


Diagram 1

Revised

Towing vehicles for trailers (except semi-trailers)

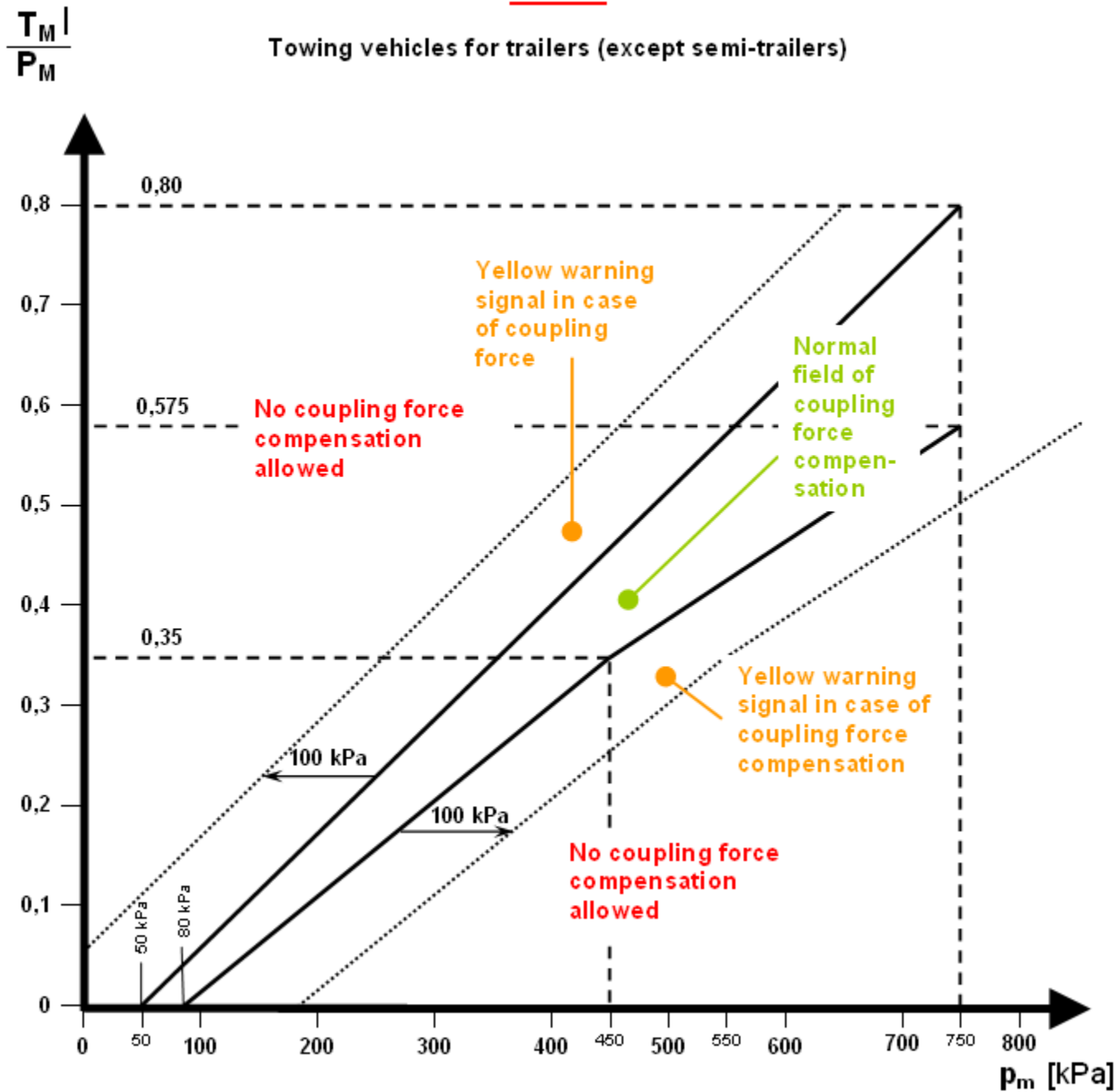


Diagram 2
Tractive units for semi-trailers

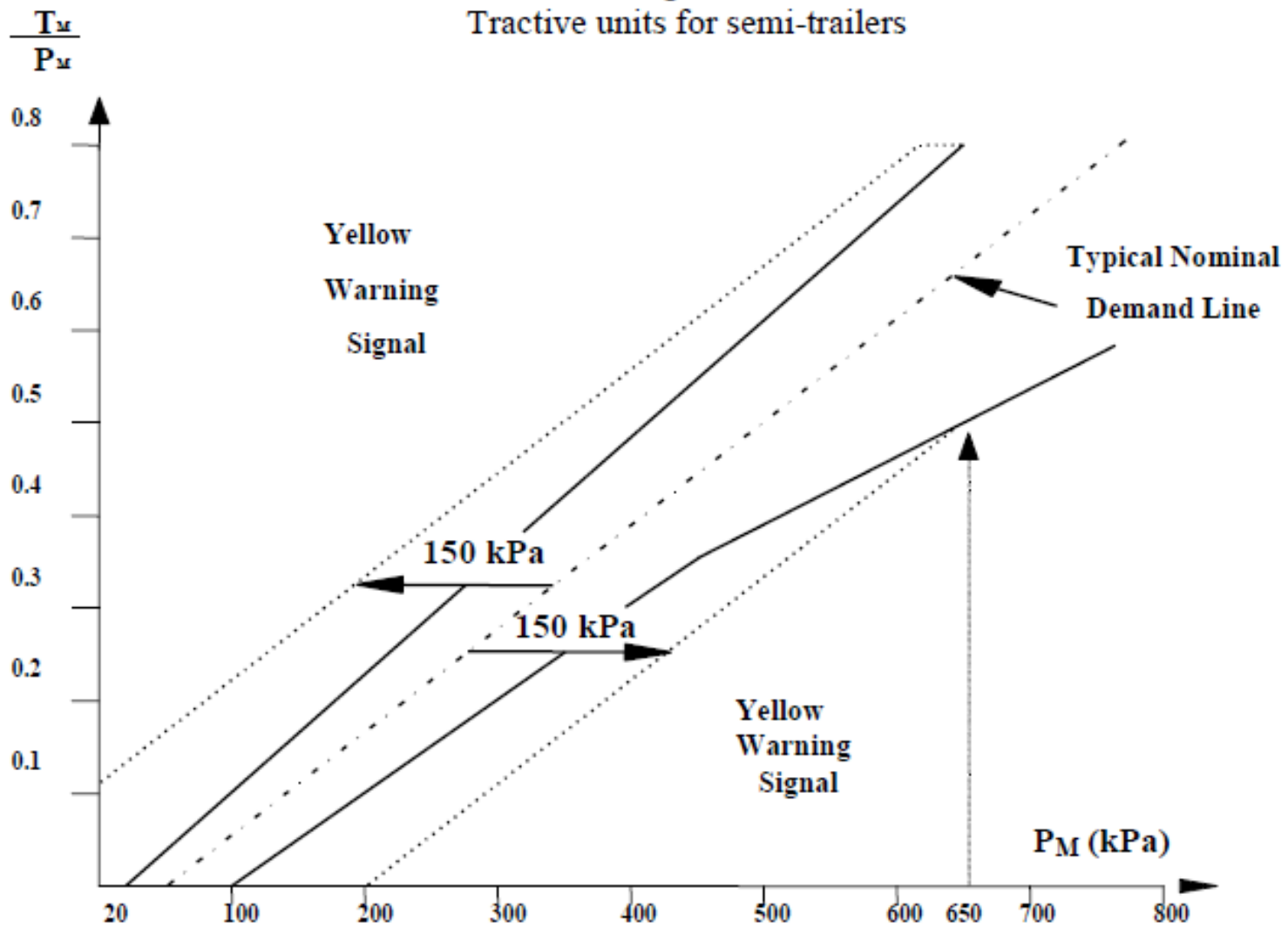
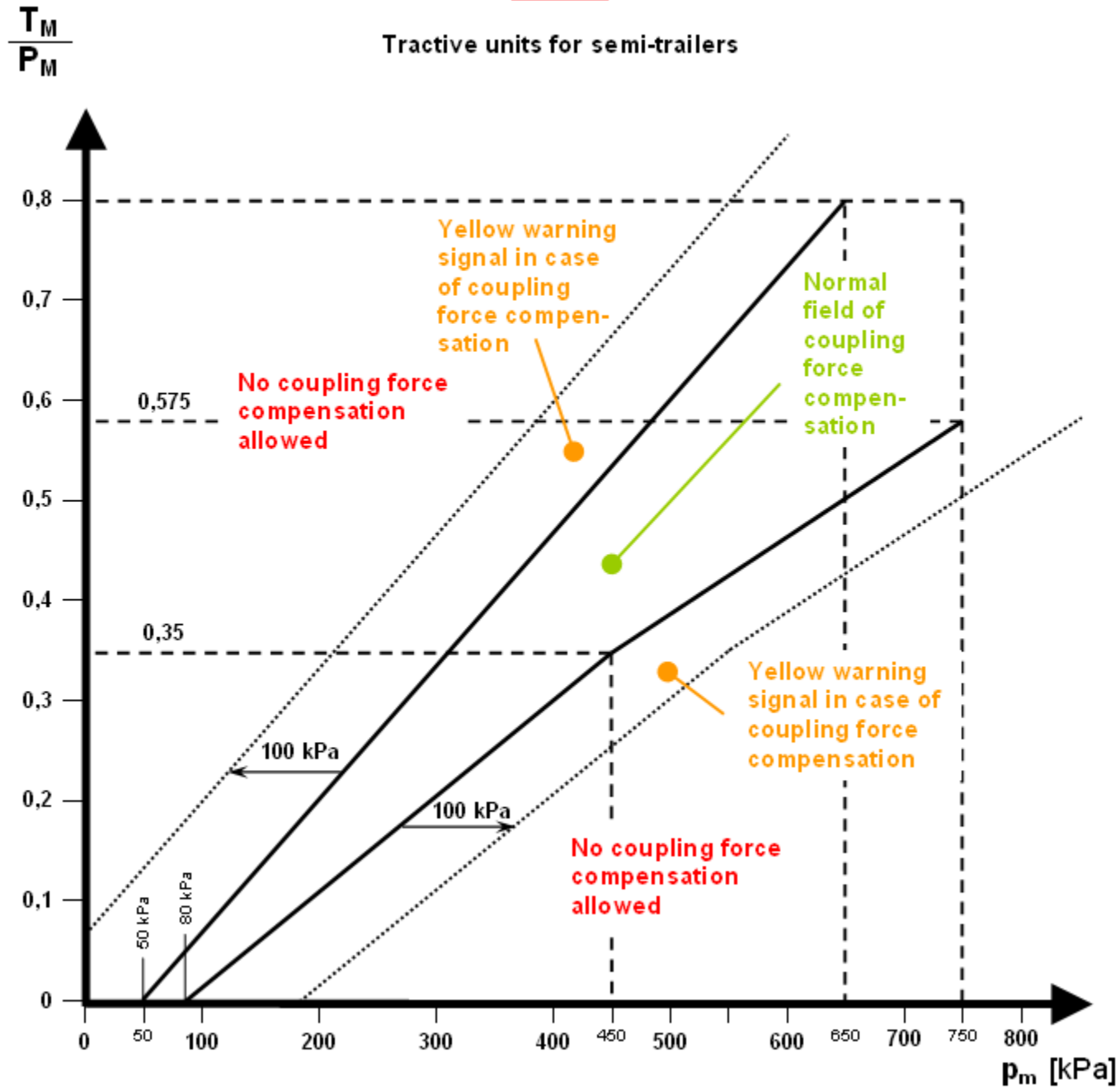


Diagram 2

Revised

Tractive units for semi-trailers



Distribution and discussion

Informal documents presented to

1. NVF at 24-25 August 2011 meeting
2. IRU-CIT at primo September 2011 meeting
3. 71st GRRF 13-15 September 2011 – informal documents
4. 72nd GRRF today – working document
+ updated document as an informal document

Presentation

- Working document + updated document as an informal document at 72nd GRRF meeting
- Submitted by Denmark, and coordinated and supported by the International Road Transport Union, International Commission of Technical Affairs (IRU CIT) and the Nordic Road Association, Vehicles and Transport Committee (NVF).

Conclusion

The common DK, NVF and IRU proposal will bring an important step towards solving the long standing challenge regarding which vehicle – truck or trailer – should take the heaviest brake load.

The room for inconsistency is a disadvantage to vehicle owners and can be mitigated by the presented proposal.