

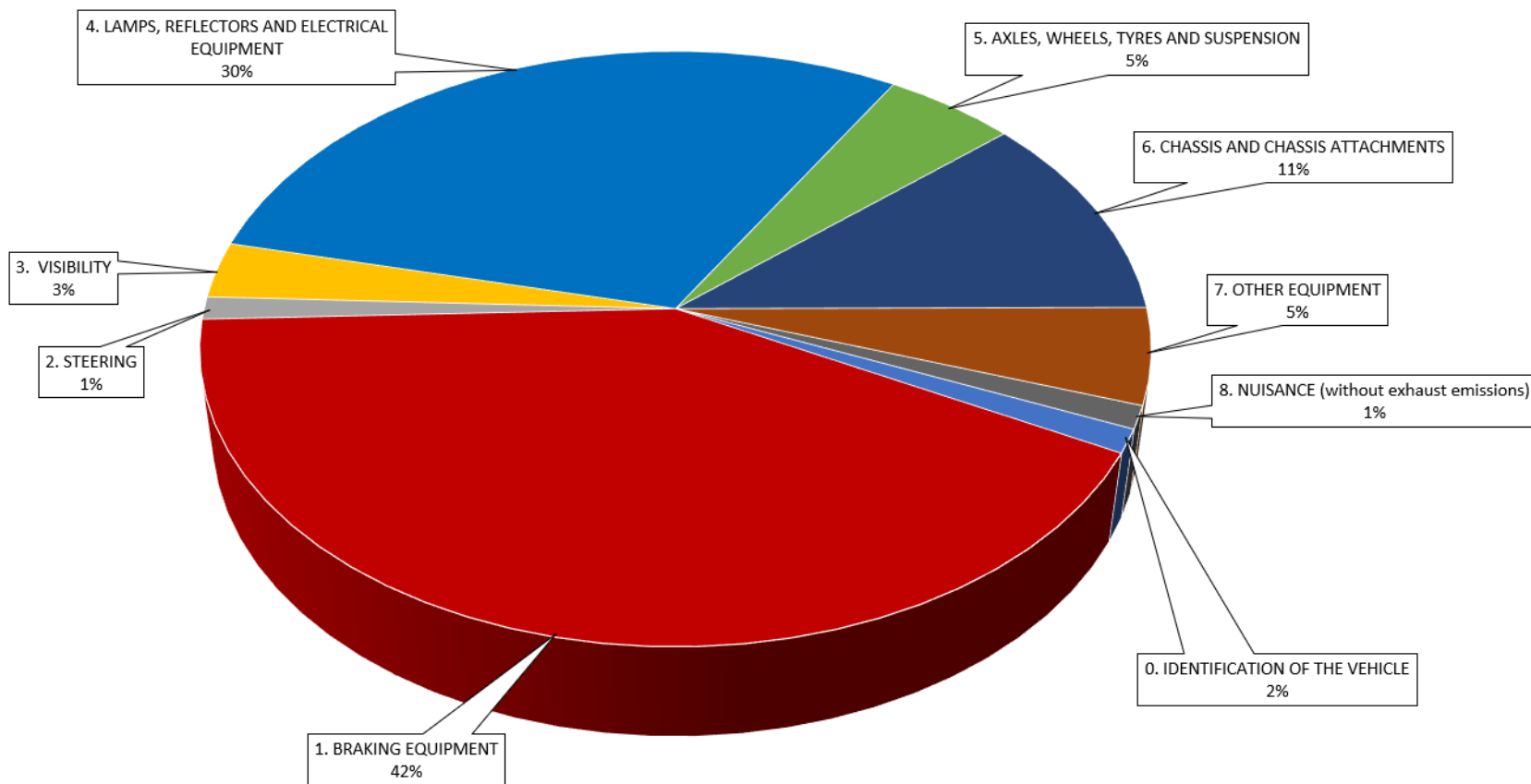
CITA WG1 Safety Systems
webmeeting, 7th April 2020



PTI brake testing items mostly affected by fraud

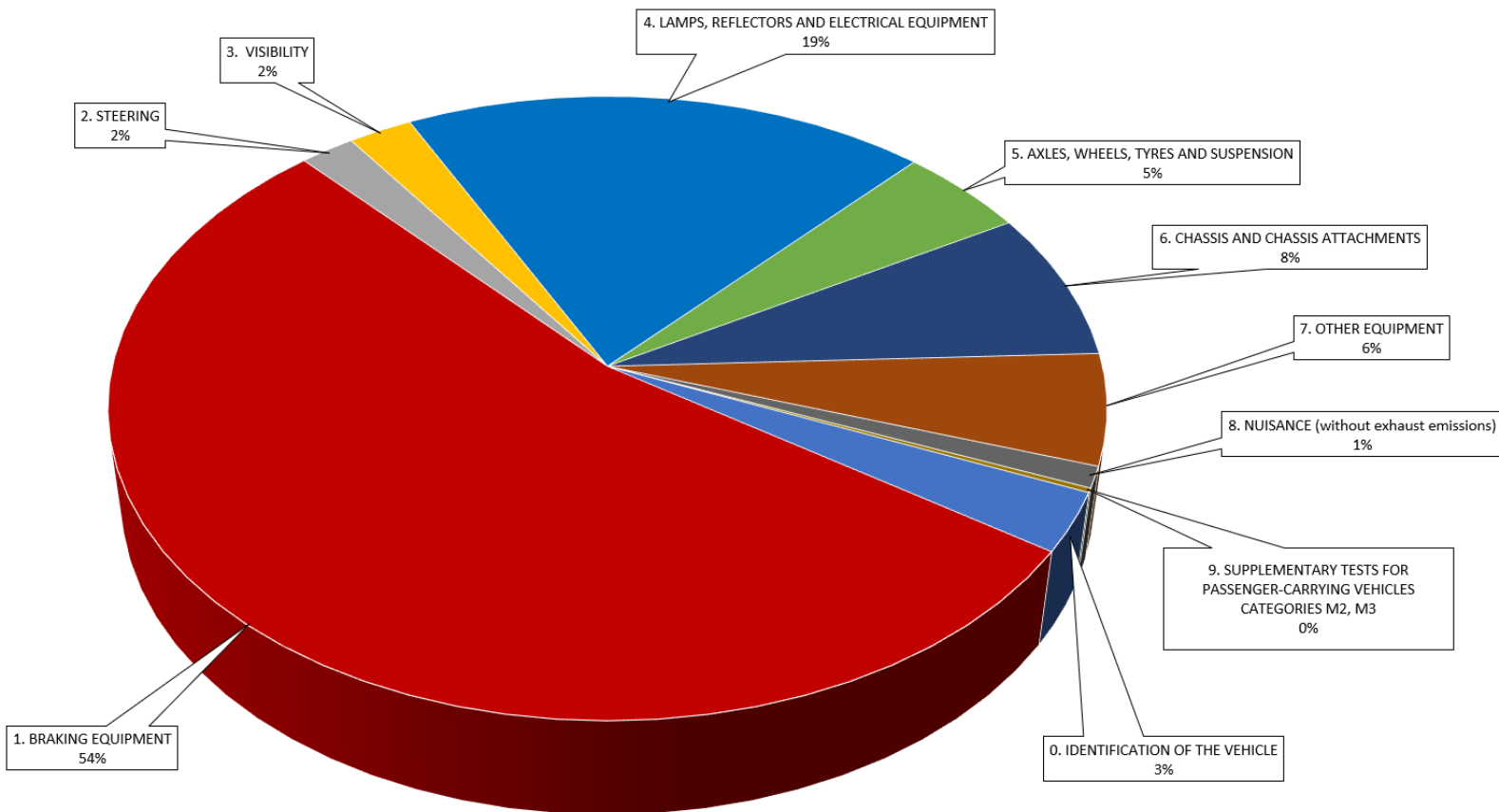
Marián Rybianský

Major and dangerous defects of the L, M1, N1 and O2 vehicle categories in 2019



PTI brake testing items mostly affected by fraud

Major and dangerous defects of the M2, M3, N2, N3, O3, O4, T and R vehicle categories in 2019



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Most frequent major and dangerous defects of the L, M1, N1 and O2 vehicle categories in 2019



Rank No.	Defect	Occurrence (% of insp.)
1	1.2.1.b.1 Service braking performance: Braking effort from any wheel is less than 70 % of the maximum effort recorded from the other wheel on the same axle. Or, in the case of testing on the road, the vehicle deviates excessively from a straight line.	Major 3,19%
2	1.4.2.1 Parking braking efficiency: Does not give, for all vehicles, a braking ratio of at least 16 % in relation to the maximum authorized mass or, for motor vehicles, of at least 12 % in relation to the maximum authorized combination mass of the vehicle, whichever is the greater.	Major 2,34%
3	1.2.1.e Service braking performance: Excessive fluctuation of brake force during each complete wheel revolution.	Major 1,65%
4	4.3.1.a.2 Stop lamps condition and operation: Defective light source - single light sources; in the case of LED less than 2/3 functioning.	Major 1,50%
5	4.2.1.a Front and rear position lamps, side marker lamps, end outline marker lamps and daytime running lamps: Defective light source.	Major 1,15%
6	4.5.1.a.2 Front and rear fog lamps: Defective light source - single light sources; in the case of LED less than 2/3 functioning.	Major 0,94%
7	1.4.1.1 Parking braking performance: Brake inoperative on one side or, in the case of testing on the road, the vehicle deviates excessively from a straight line.	Major 0,91%
8	4.7.1.b.2 Rear registration plate lamp: Defective light source. (Single light source)	Major 0,77%
9	6.1.6.SK.2 Record of coupling device in vehicle documents incorrect, the same defect already detected in previous inspection.	Major 0,76%
10	4.1.2.a Headlamps alignment: Headlamp grossly misaligned	Major 0,62%

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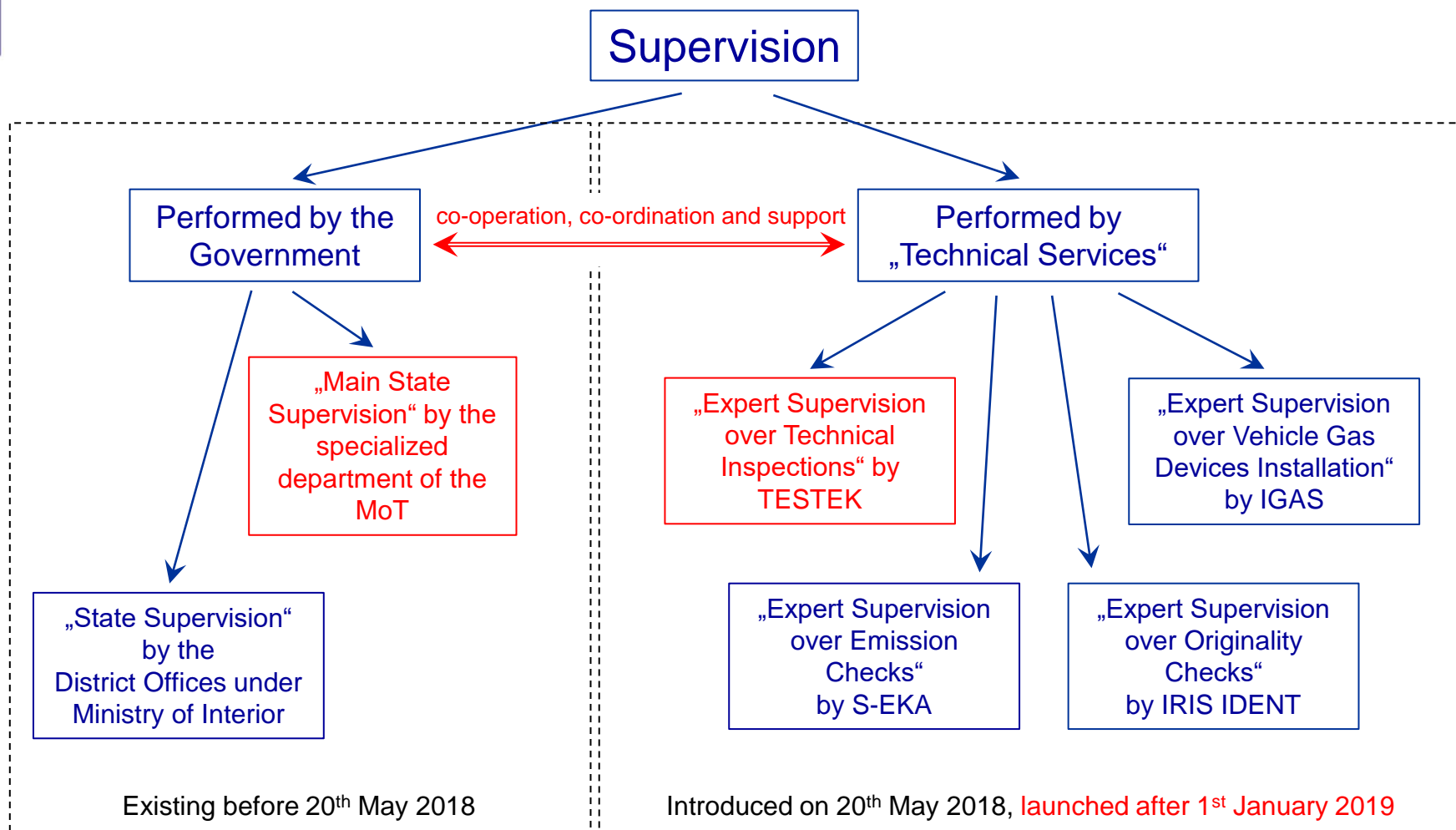
Most frequent major and dangerous defects of the M2, M3, N2, N3, O3, O4, T and R vehicle categories in 2019



Rank No.	Defect	Occurrence (% of insp.)
1	1.2.1.b.1 Service braking performance: Braking effort from any wheel is less than 70 % of the maximum effort recorded from the other wheel on the same axle. Or, in the case of testing on the road, the vehicle deviates excessively from a straight line.	Major 8,52%
2	1.2.1.e Service braking performance: Excessive fluctuation of brake force during each complete wheel revolution.	Major 3,56%
3	1.4.2.1 Parking braking efficiency: Does not give, for all vehicles, a braking ratio of at least 16 % in relation to the maximum authorized mass or, for motor vehicles, of at least 12 % in relation to the maximum authorized combination mass of the vehicle, whichever is the greater.	Major 2,21%
4	4.2.1.a Front and rear position lamps, side marker lamps, end outline marker lamps and daytime running lamps: Defective light source.	Major 2,21%
5	1.2.2.1 Service braking efficiency: Does not give at least the minimum figure but is more than 50 % of the prescribed value.	Major 2,06%
6	1.2.1.d Service braking performance: Abnormal lag in brake operation of any wheel.	Major 1,41%
7	1.2.1.b.2 Service braking performance: Braking effort from any wheel is less than 50 % of the maximum effort recorded from the other wheel on the same axle in the case of steered axles.	Dange- rous 1,26%
8	1.4.1.1 Parking braking performance: Brake inoperative on one side or, in the case of testing on the road, the vehicle deviates excessively from a straight line.	Major 1,22%
9	7.SK.2.1 Obligatory markings on vehicle: Obligatory information about maximum trailer GVW, maximum speed or tire pressure is missing, not readable or not in accordance with regulations.	Major 1,00%
10	4.5.1.a.2 Front and rear fog lamps: Defective light source - single light sources; in the case of LED less than 2/3 functioning.	Major 0,97%

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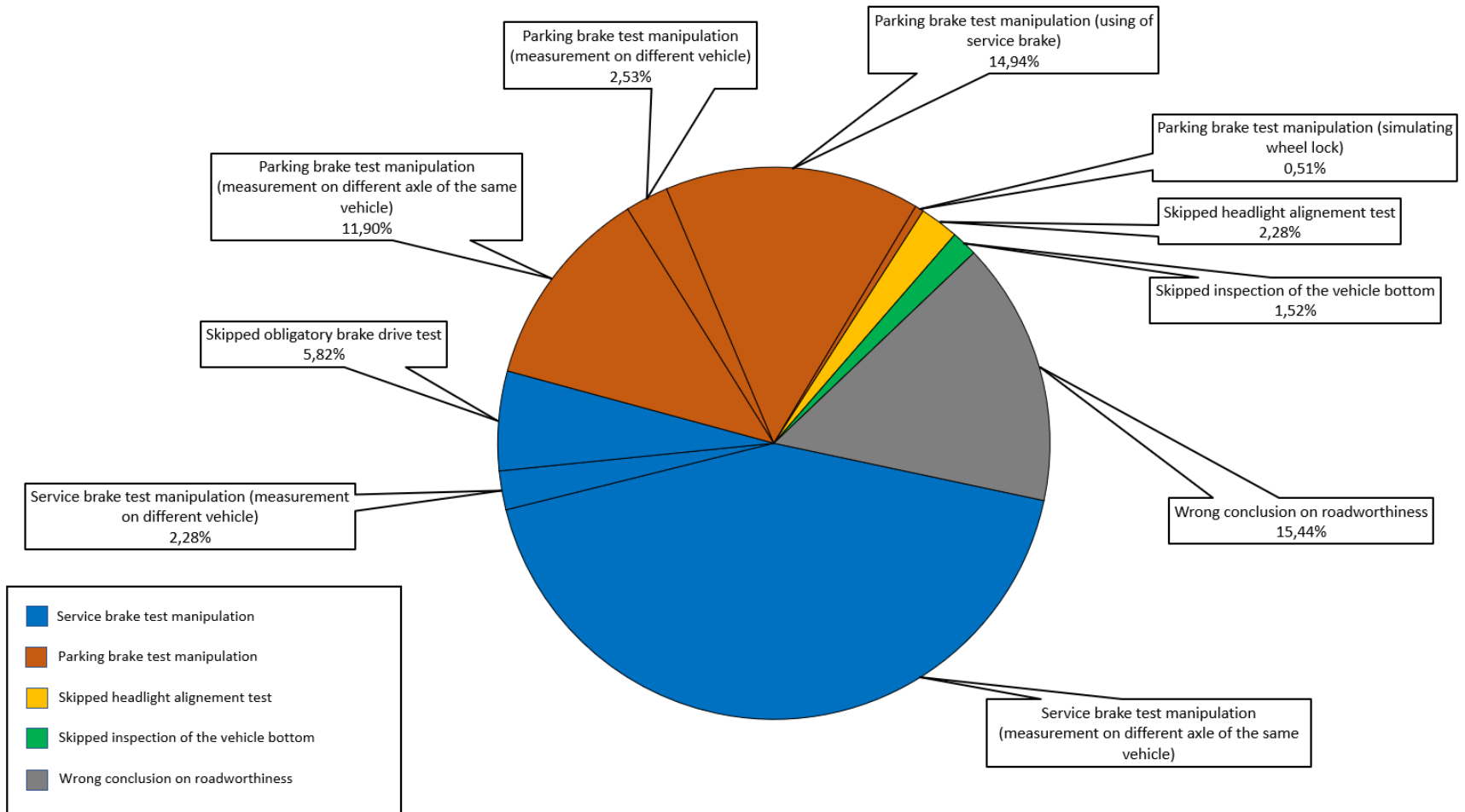
Supervision over PTI according to the new Act No. 106/2018 Coll.



PTI brake testing items mostly affected by fraud

Consequence: more effective supervision, more reliable PTI data

Serious cases of PTI fraud and intentional manipulation in 2019



PTI brake testing items mostly affected by fraud

Corresponding with top ranks in most frequent defects tables

1.2. Service braking performance and efficiency

1.2.1. Performance (E)

During a test on a brake tester, apply the brakes progressively up to maximum effort.

(a) Inadequate braking effort
No braking effort

(b) Braking effort from any wheel is less than 70 % of the maximum effort recorded from the other wheel on the same axle. Or, in the case of testing on the road, the vehicle deviates excessively from a straight line.

Braking effort from any wheel is less than 50 % of the maximum effort recorded from the other wheel on the same axle in the case of steered axles.

(c) No gradual variation in brake effort (grabbing).

(d) Abnormal lag in brake operation of any wheel.

(e) Excessive fluctuation of brake force during each complete wheel revolution.

1.2.2. Efficiency (E)

Test with a brake tester at the presented weight or, if one cannot be used for technical reasons, by a road test using a deceleration recording instrument.

Does not give at least the minimum figure as follows (2):

Category M₁, M₂ and M₃: 50 % (1)

1.4. Parking braking performance and efficiency

1.4.1. Performance (E)

Apply the brake during a test on a brake tester

Brake inoperative on one side or, in the case of testing on the road, the vehicle deviates excessively from a straight line.

Less than 50 % of the braking effort values as referred to in point 1.4.2 reached in relation to the vehicle mass during testing

1.4.2. Efficiency (E)

Test with a brake tester. If not possible, then by a road test using an indicating or deceleration recording instrument

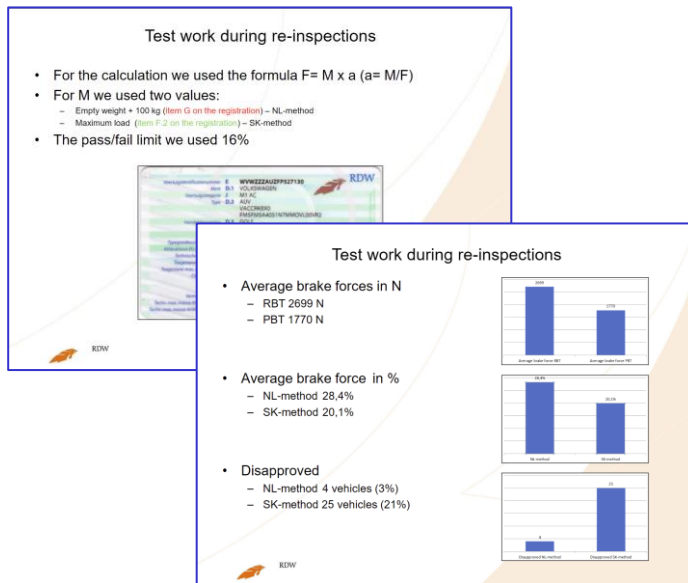
Does not give, for all vehicles, a braking ratio of at least 16 % in relation to the maximum authorised mass, or, for motor vehicles, of at least 12 % in relation to the maximum authorised combination mass of the vehicle, whichever is the greater.

Less than 50 % of the above braking ratio values reached in relation to the vehicle mass during testing.

Only for pneumatic brake systems

Are we perhaps too hard in some brake test criteria or methods?

- of course, it is wrong to break the rules
- but we can use cases of fraud and inspection results manipulation as an indicator where we perhaps are too hard
- an example from *Parking brake efficiency - Field work by the RDW* (presented in our SubWG on 30.01.2018)



Different weight is used in the same formula for parking brake efficiency in the Netherlands and in Slovakia.

The same vehicle would pass in the Netherlands but fail in Slovakia; in both countries the same criteria from the Directive 2014/45/EU are applied.

Another example: Distribution of Brake Force Left - Right per Axle

CITA Recommendation No. 8:

Corresponding with the text of the Directive 2014/45/EU

6.3.2. Distribution of Brake Force Left-Right per Axle

Braking effort from any wheel less than 70% of the maximum effort recorded from another wheel on the same axle should be considered as a reason for failure of the vehicle. Or, in the case of testing on the road, the vehicle deviating excessively from a straight line.

Slovak national regulation:

... If there is no variation of the braking forces unbalance between left and right wheel, the final braking force values can be used for calculation of unbalance. But if there is any variation, the **maximum value of unbalance in upper 2/3 of the final braking force** must be considered. ...

Other EU Member states:

???

- More reliable data (thanks to new intensified supervision) help us to identify and understand problematic parts of the PTI.
- That means not only to find fraud cases, but also to find deviations between the „ideal world“ of regulations and „real life“ state of vehicles.
- „The devil is in the detail“. We have common Directive 2014/45/EU prescribing the harmonized inspection items, methods and criteria. But the details of implementation in various Member States may differ. And this still allows the situation that one and the same vehicle might pass the PTI in one of the Member States and fail in another one.

The End



Thank you for your attention

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