交通安全環境研究所
National Traffic Safety and Environment Laboratory

UN Regulation No.39

Speedometer and Odometer

(Test procedures)

NTSEL
National Traffic Safety and Environment Laboratory
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5th February 2020

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Outline

1. Test conditions
2. Evaluation of Display
3. Evaluation of Accuracy
4. Facility & Equipment

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Test conditions

Table	Test conditions for speed meter test
Test track surface	Flat with sufficient friction coefficient
Weather	No test on surface wet with rain, snow, etc.
Test vehicle	Check information of test vehicle included application e.g. frame number, speedometer type, tyre size
Vehicle weight	Unladen Weight of measuring equipment may be added
Speedometer temperature	23 +/- 5 ℃
tyre pressure	Cold inflation pressure + 0.2 bar

Tyres

- Tyres shall be one of the types normally fitted to vehicles by vehicle manufacturers.
- Snow tyres are not regarded as normally fitted tyres.

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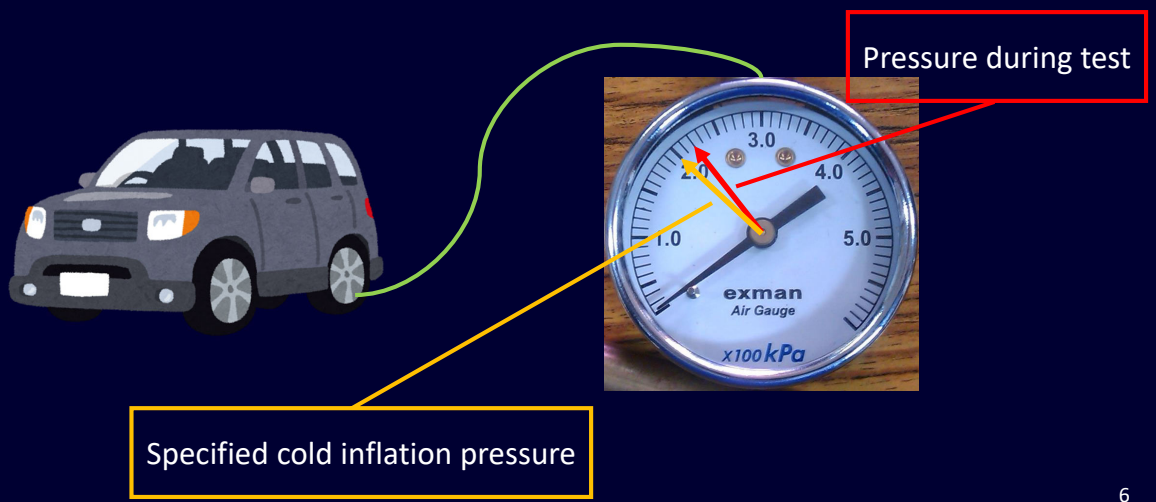
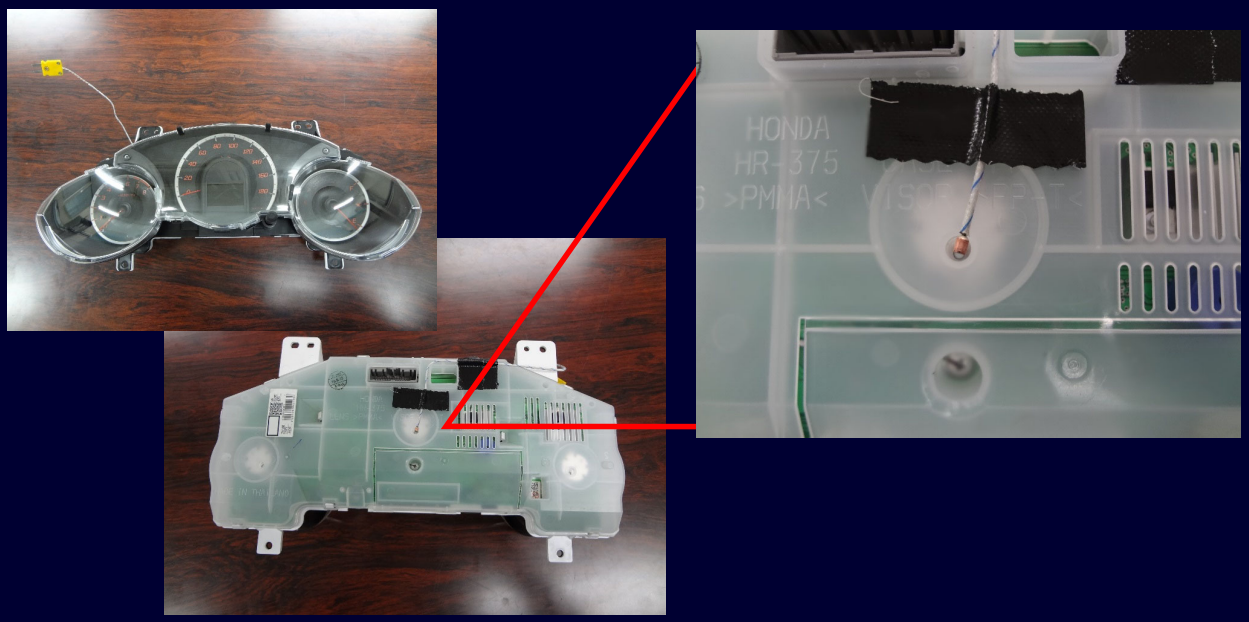
Tyre pressure

Cold inflation pressure specified by vehicle manufacturer + 0.2 bar



Speedometer temperature



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Evaluation of Display

- Installation position of speedometer
- Legibility
- Range of indicated speed
- Graduation
- Speed values

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Legibility

- Speedometers must be clearly legible both day and night.

Range of indicated speed

- Must include maximum speed indicated by manufacturer of vehicle fitted with speedometer
- Speedometers for categories L1 & L2 : display reading must not exceed 80km/h

Maximum speed : 225km/h

Category L1

Digital

Graduations

- Graduations shall be of 1, 2, 5 or 10km/h

2 km/h

5 km/h

10 km/h

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Evaluation of Accuracy

Maximum design speed (Vmax) of vehicle specified by vehicle manufacturer [km/h]	Displayed speed on meter (V_1) [km/h]		
$V_{max} \leq 45$	80 % of V_{max}		
$45 < V_{max} \leq 100$	40	80 % of V_{max} (if resulting speed is ≥ 55)	
$100 < V_{max} \leq 150$	40	80	80 % of V_{max} (if resulting speed is ≥ 100)
$150 < V_{max}$	40	80	120

Criteria for determination

Requirement
$0 \leq (V_1 - V_2) \leq 0.1 \times V_2 + 4$ [km/h]

V_1 : Displayed speed
V_2 : True speed

e.g.) V1 = 40 km/h
V2 = 37.5 km/h

$0 \leq (40 - 37.5) \leq 0.1 \times 37.5 + 4$

$\Rightarrow 0 \leq 2.5 \leq 7.75$ ... OK

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Facility & Equpment

- Test track
  - Phoelectric tube
  - Non-contact
  - Fifth-wheel
  - GPS
- Roller dynamometer

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Test track

e.g.) NTSEL's test track

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Test track

- Flat and level pavement
- Dry surface
- Good Sufficient adhesion

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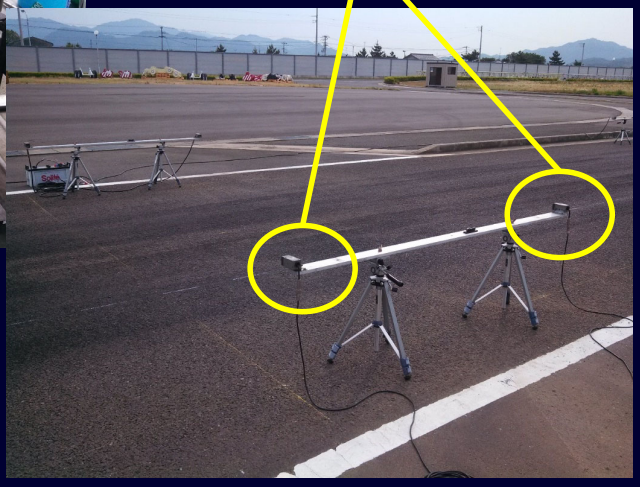
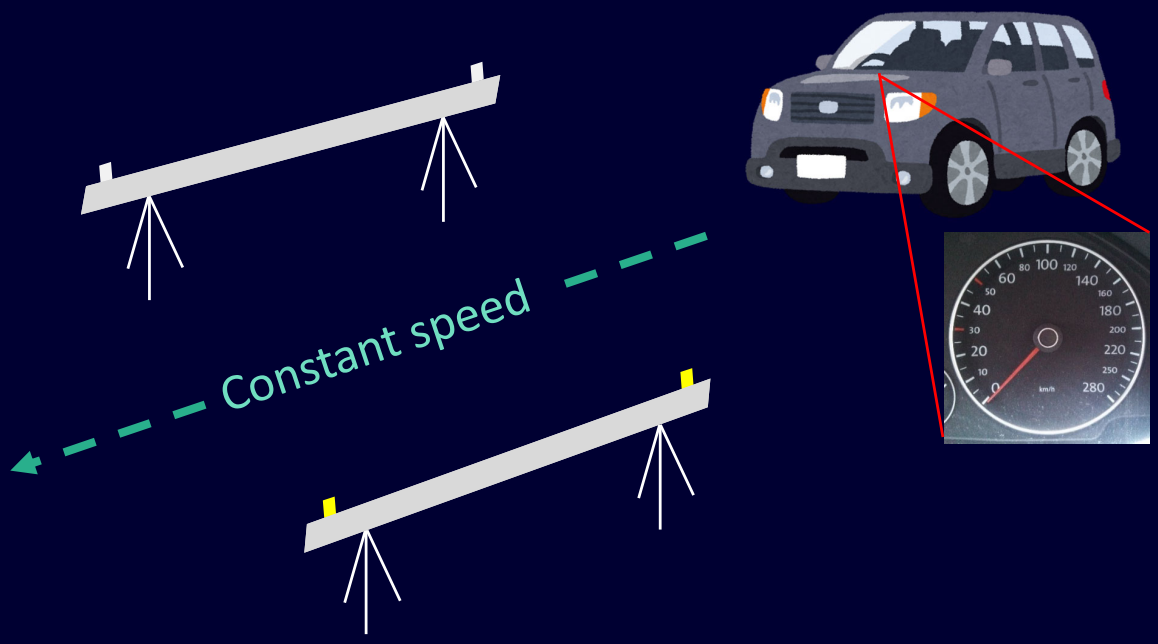
Photoelectric tube



Photoelectric tube



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Non-contact type

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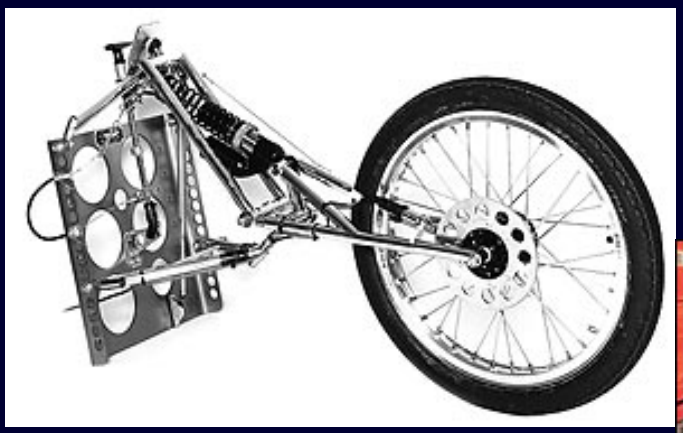
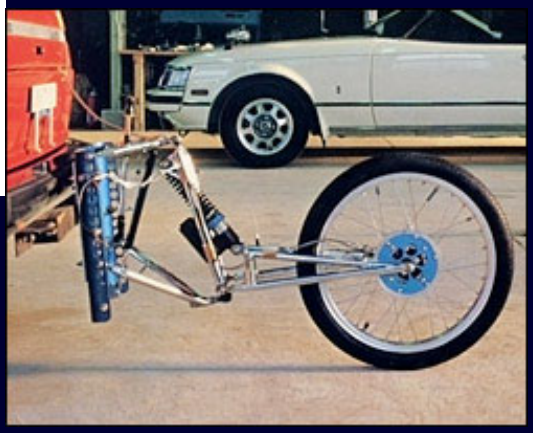
Fifth-wheel





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GPS

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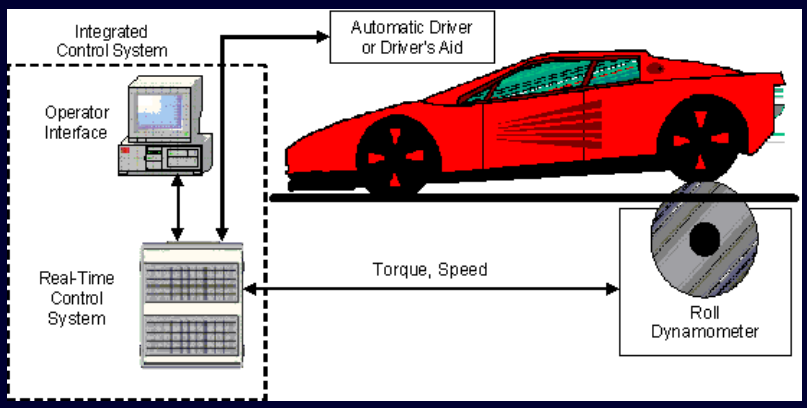
Roller dynamometer



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Thank you for your attention !