

# **Proposed changes to the EEC UN Regulations 29**

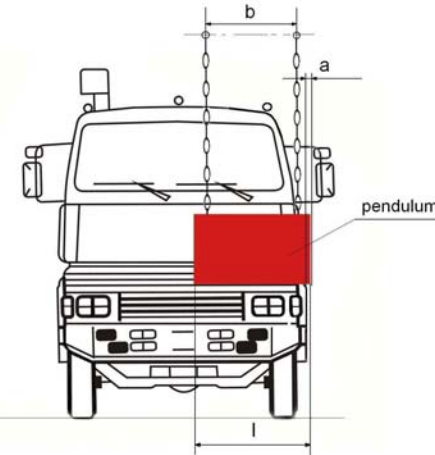
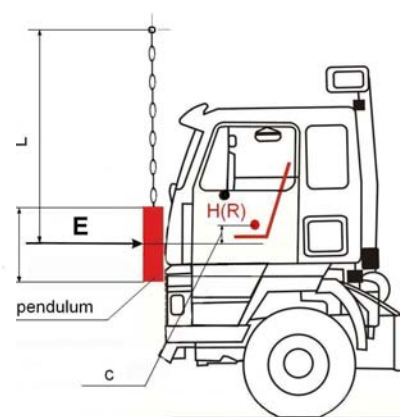
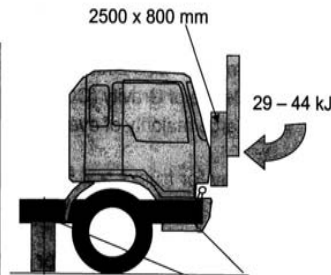
**10-11 April 2007  
Lion**

# Front part strength testing (Test A)

## Current UNECE R29 (R29.02)

### Frontal impact:

Device	Pendulum
Energy	GVW > 7t: 44.1kJ GVW ≤ 7t: 29.4kJ
Impactor	Flat (800 mm width x 2500 mm height)
Arm	Rigid
Overlap	100% overlap



## Frontal Impact - OICA proposal



- Impactor size 2500 x 800 mm
- Rigid beams for impactor suspension
- CG: 50 mm below R-point
- CG in median longitudinal plane of truck
- N2 > 7.5 t GVM and N3: 50 kJ impact energy
- N2 ≤ 7.5 t GVM and N1: 29.4 kJ impact energy
- At least for N1 vehicles, allow UNECE R33 or UNECE R94 as alternative

### Pendulum energy:

- for N1 Category – [25] kJ
- for N2 Category – [30] kJ
- for N3 Category – 40 kJ

### Pendulum:

- dimensions: h=600 mm; l=1000 mm
- weight m = 1000-1500kg

### Pendulum position:

c=50±5mm ( 50±5 mm below point H (R)),  
chain-hanged pendulum, L≥3500 mm, b≥800 mm, a=30 mm

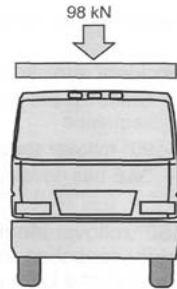
Test A may be skipped for N1 cargo vehicles based on an already tested model that fulfills the requirements of the EEC UN Regulations #94 (or equivalent regulatory documents).

# Roof strength testing (Test B)

## Current UNECE R29 (R29.02)

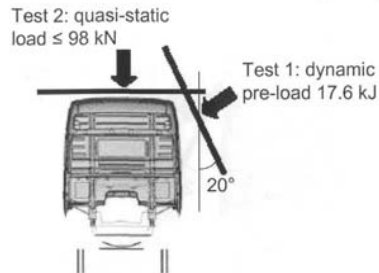
### Roof strength test

Device	Rigid flat plate
Load	Equal to max load on front axle(s), max 98 kN



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## 180° rollover – OICA proposal



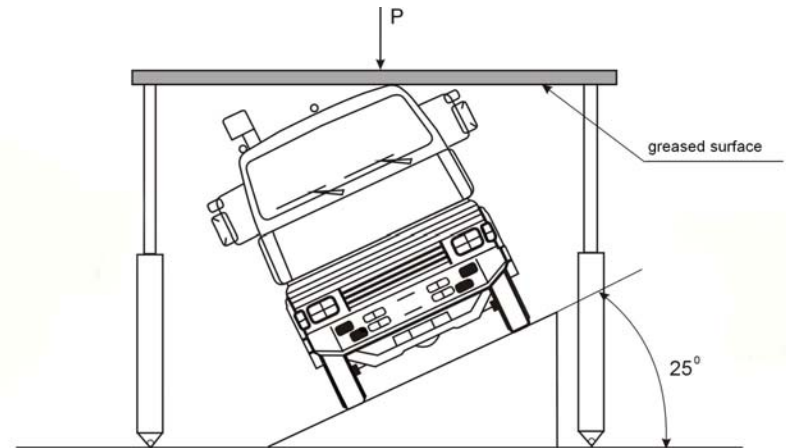
Test 1 - dynamic pre-deformation:

- Rigid platen
- Inclined 20° to the vertical
- Energy level: 17.6 kJ
- Direction of the impact: perpendicular to the longitudinal axis of the cab

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Test 2 – quasi-static load:

- On same cab as test 1
- Rigid platen
- Force = maximum authorised load front axle(s), ≤ 98 kN
- Direction of the load: vertical



Static load

$$P = [K] \times PCH \leq 10T,$$

where PCH – full load of the vehicle that falls to the front axle;

K – dynamic load coefficient.

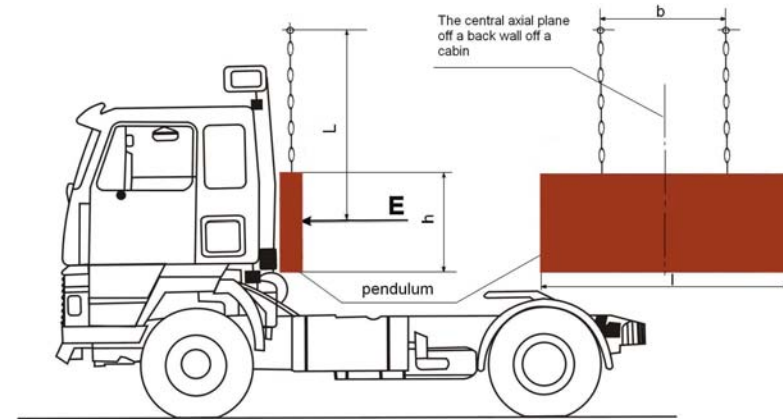
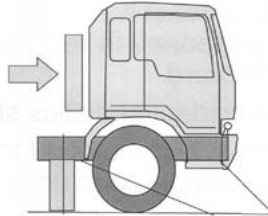
Test B may be skipped for N1 cargo vehicles based on an already tested model that fulfills the requirements of the EEC UN Regulations #94 (or equivalent regulatory documents).

# Back part strength testing (Test C – A-pillar test)

## Current UNECE R29 (R29.02)

### Rear wall test

Device	Rigid barrier
Load	1.96 kN per tonne payload



## OICA proposal – new test

90° rollover with subsequent impact (A-pillar test) – to be included in UNECE R29:



Based on Swedish test, with further improvements:

- Steel pendulum  $\geq 1,000$  kg
- Inclined  $45^\circ$  to vertical,  $15^\circ$  in horizontal XZ plane
- Impact direction:  $15^\circ$  to vehicle longitudinal axis
- Impact energy 30 kJ

### Pendulum energy:

- for N1 Category – [15] kJ
- for N2 Category – [20] kJ
- for N3 Category – 30 kJ

### Pendulum:

- dimensions:  $h=500$  mm;  $l=1600$  mm
- weight  $m = 1000$ kg

### Pendulum position:

- the center of the strike must coincide with the central axial plane of the back wall and be located in the middle between the floor and the roof of the cabin;
- chain-hanged pendulum,  $L \geq 3500$  mm,  $b \geq 800$  mm



***Thanks  
for  
attention!***