Informal document No. **GRSP-45-28**
(45th GRSP, 25-29 May 2009
agenda item 18)

Draft Proposal ECE-R 100

protection against electric shock

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ECE-R100 – electric shock

history

- 12/2006: German proposal to GRPE, Japan presents strategy
- 01/2007: GRPE is not longer responsible
- 03/2007: WP.29 agreed responsibility to GRSP
- 10/2007: USA propose amendment (FMVSS 305)
- 11/2007: WP.29 agreed new inf. group ELSA for GTR HFCV
- ELSA:
  - Experts of Canada, CLEPA, China, EU-Commission, France, Germany, ISO, Japan, Korea, OICA , Techn. Service, USA
  - 6 meetings (01/2008 – 04/2009)

ECE-R100 – electric shock

terms of reference

- ECE-R100 (German proposal), attachments 101, 110 and 111 (Japan), FMVSS 305 (USA)
- two modules:
  - “in-use“: normal operation (type approval)
  - “post-crash“: after defined crash (self certification)
- time frame:
  - short-term: ECE-R 100 (“in-use“)
  - medium-term: GTR HFCV (“in-use“ and “post-crash“)

ECE-R100 – electric shock

scope

The following prescriptions apply to safety requirements with respect to the electric power train of road vehicles of categories M and N, with a maximum design speed exceeding 25 km/h, equipped with one or more traction motor(s) operated by electric power and not permanently connected to the grid and the high voltage components and systems which are galvanically connected to the high voltage bus of the electric power train.

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Voltage thresholds

• Class A circuits: (no requirements)	≤ 30 V AC (alternating current) or ≤ 60 V DC (direct current)
• Class B circuits :	> 30 and ≤ 1000 V AC or > 60 and ≤ 1500 V DC

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requirements

- protection against direct contact (e.g. test wire in passengers compartment)
- protection against indirect contact (e.g. enclosure)
- isolation resistance (e.g. 100Ω/V for DC buses, 500 Ω/V for AC buses)
- protection of rechargeable energy storage system against excessive current (e.g. fuses)
- functional safety (e.g. avoid vehicle movement during charging)

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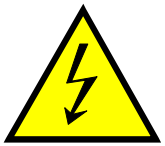
Identification

- Approval mark:

- Warning symbol:



- Isolation color of voltage class B wires: orange

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next steps

- adoption of ECE-R 100
- further activities on “post-crash”
- incorporation “in-use“ and “post-crash“ into GTR HFCV

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back-up

- test probes
- shared responsibilities
- introduction of ECE-R 100 into EU type approval system

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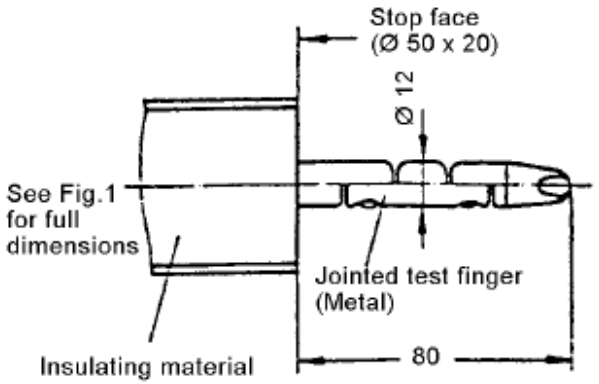
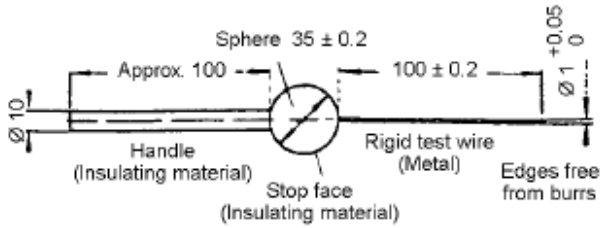
test probes

First numeral	Addit. letter	Access probe (Dimensions in mm)	Test force
2	B	**Jointed test finger** 	10 N ± 10 %
4, 5, 6	D	**Test wire 1.0 mm diameter, 100 mm long** 	1 N ± 10 %

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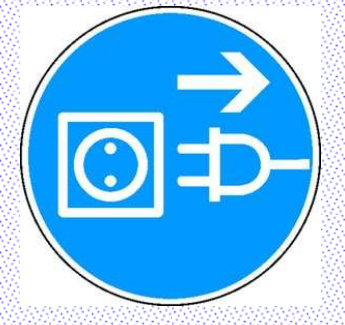
shared responsibilities

ISO, IEC, SAE



ECE-R 100

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introduction of ECE-R 100 into EU type approval system

- Electrical safety had become an issue in draft of general safety regulation
- EU commission intend to decide up to October 2009 about inclusion of ECE-R 100 (workplan January 2009)
- Actual ECE-R 100 is only related to battery electric vehicles