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agenda item 13)





# Evaluation of belt guide and inflatable child seat systems

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- Clepa informal document 49-37 (May 2011)

Regulation UN No.44  
GOST R 41.44-2005

**Not allowed**                      **Allowed**



**MASS GROUPS**

**I**  
9 - 18 kg

**II**  
15 - 25 kg

**III**  
22 - 36 kg

Tested by "JAEI AUTOKUT kft", "TÜV Rheinland InterCert.KET",  
International official approval sign - E7 44E - 040802.

Meet the requirements of item 22. 9, Rule of the Road of the Russian Federation.



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# Evaluation of a belt guide system



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## Evaluation of a belt guide system



**Figure 1: test set-up with belt guide device using the P10 dummy**

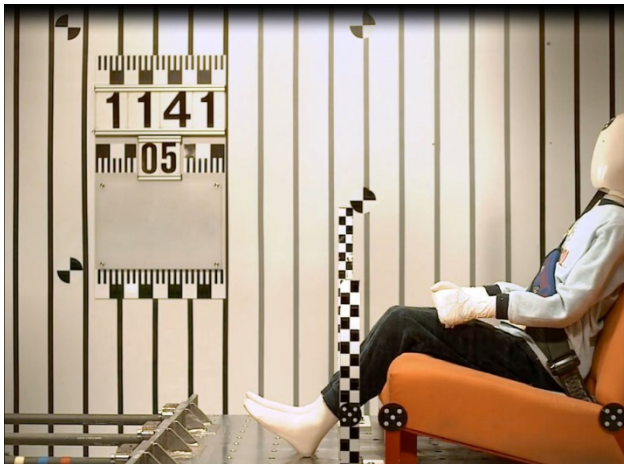
Approved as ECE R44  
Group I, II and III

The system is shown in Figure 1. It consists of a non-rigid flexible material to be used with the vehicle seat belt. The system is sold as a group I, II and III ECE R44 approved.

## **Group I issue with regards to §6 1 12**

The system doesn't comply with R44/04 because it is not an integral system, which must have a harness feature (§6.1.12).

## Group II/III Frontal test with P10 dummy with R44 set-up



**Figure 2a: Time 0 ms – Initial P10 dummy position**



**Figure 2b: Time 51 ms – P10 dummy and belt geometry during loading phase**



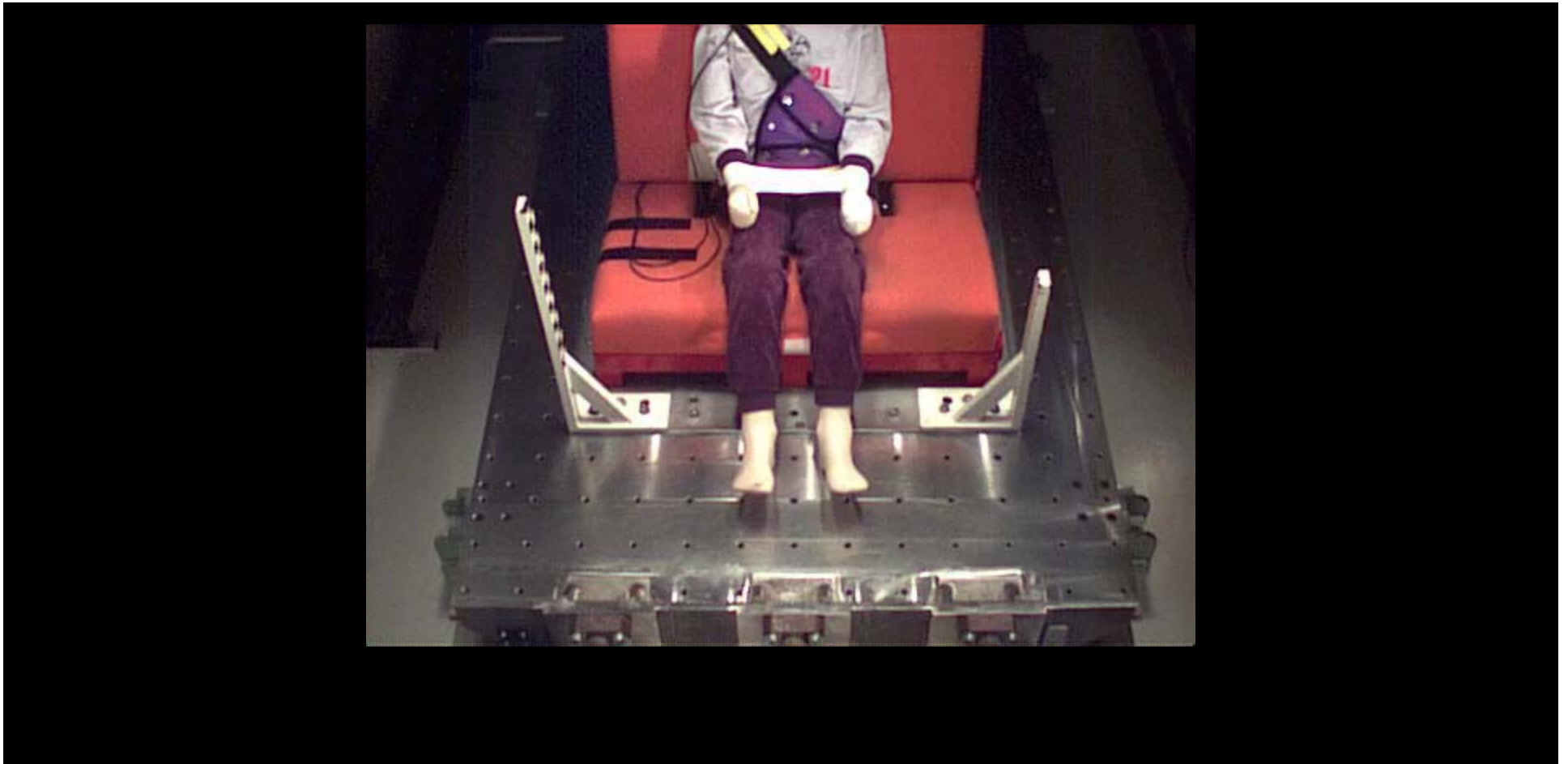
**Figure 2c: Time 91 ms – Submarining has already taken place– The lap belt has intruded into the abdomen.**





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# Evaluation of a belt guide system - Video front view



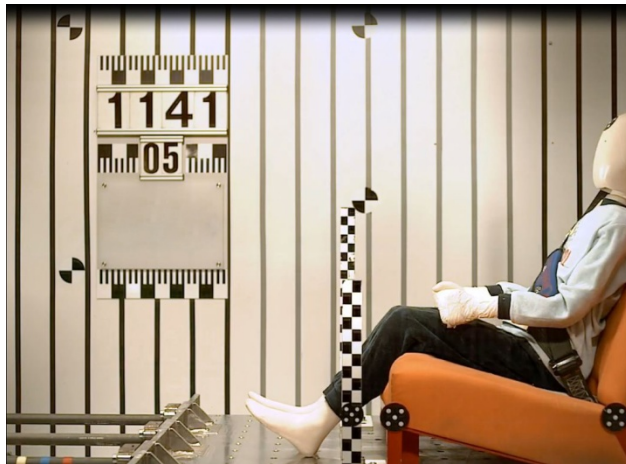


## Group II/III

Frontal test with P10 dummy with R44 set-up

The kinematic of the occupant shows that the lap portion of the seat belt is intruding into the abdomen of the dummy, which is a clear indication of a severe submarining (Figure 2 a/b/c).

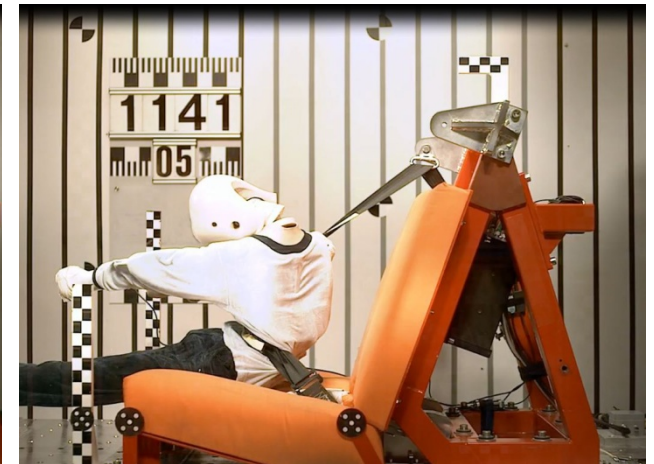
This major shortcoming of such systems is that they can't maintain belt geometry for a proper restraint of the child



**Figure 2a: Time 0 ms – Initial P10 dummy position**



**Figure 2b: Time 51 ms – P10 dummy and belt geometry during loading phase**



**Figure 2c: Time 91 ms – Submarining has already taken place– The lap belt has intruded into the abdomen.**

## **Conclusion:**

Such system does not comply with R44/04.

- For group I the system does not comply with the requirements of §6.1.12 of R44/04.
- For group II/III the lap portion of the belt intrudes into the abdomen of the dummy, leading to a submarining situation.
- That means the system does not comply with § 6.2.4.  
§7.1.4.3.1
- The major shortcoming of such systems is that they can't maintain belt geometry for a proper restraint of the child.
- *“ 6.2.4. The assembly shall not subject weak parts of the child's body (abdomen, crotch, etc.) to excessive stresses. The design shall be such that compression loads shall not be imposed on the crown of the child's head in the event of a collision” .*



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# Evaluation of an inflatable child seat system

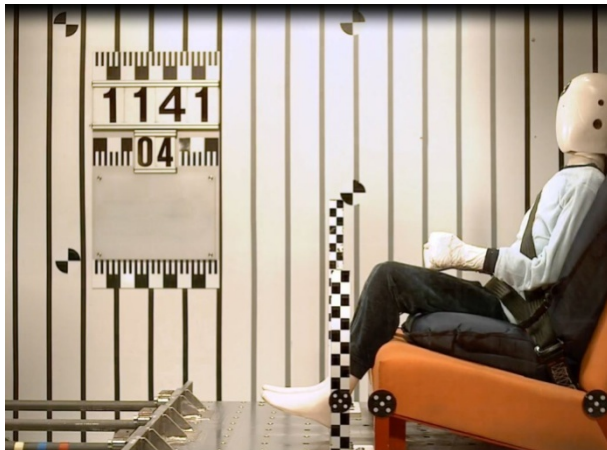




**Figure 3: test set-up with the inflatable system**

The system is described in figure 3. In order to operate the system has to be inflated by the user. It is claimed that it was approved according to UN ECE R44/04 as well as to US FMVSS213. In EU it is sold as universal group II/III seat.

## Frontal test with P10 dummy with R44 set-up



**Figure 4a: Time 0 ms – Initial P10 dummy position**



**Figure 4b: Time 40 ms – P10 dummy and belt geometry during loading phase**



**Figure 4c: Time 80 ms – Start of the submarining – The lap belt has intruded into the abdomen.**



## Frontal test with P10 dummy with R44 set-up

The kinematic of the occupant is illustrated in Figure 1, with 3 sequences selected from the test video. It shows that the lap portion of the seat belt is intruding into the abdomen of the dummy, which is a clear indication of a severe submarining (Figure 4 a/b/c).



**Figure 4a: Time 0 ms – Initial P10 dummy position**



**Figure 4b: Time 40 ms – P10 dummy and belt geometry during loading phase**



**Figure 4c: Time 80 ms – Start of the submarining – The lap belt has intruded into the abdomen.**

## **Conclusion:**

Such system does not comply with R44/04.

- The lap portion of the belt intrudes into the abdomen of the dummy, leading to a submarining situation.
- That means the system does not comply with §6.2.4 and §7.1.4.3.1 of R44/04.
- The major shortcoming of such systems is that they can't maintain belt geometry for a proper restraint of the child.



- Both the belt guide and the inflatable systems do not comply with R44
- Clepa request GRSP to issue an official statement confirming non compliance of these products with regulation R44