

Transmitted by the expert of CLEPA

Belt guide device

Summary:

Special devices are sold in Europe as restraint system allegedly complying with R44/04. These systems were already discussed in the past and were banned in several countries. This report deals with a belt guide device that is sold in Russia (see GRSP-49-37) and its evaluation in a dynamic test according to R44/04.

Evaluating a belt guide device:

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.



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

Group I issue

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

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

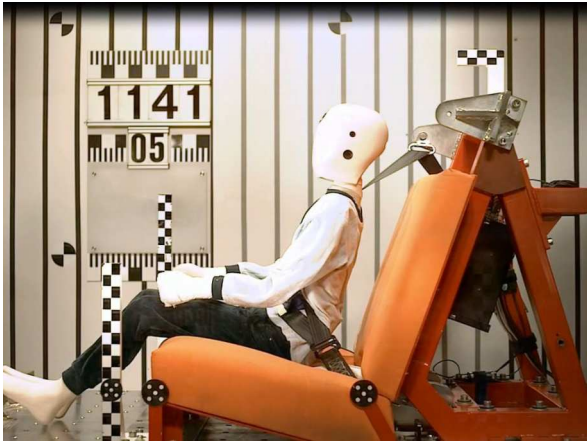


Figure 2b: Time 51 ms – P10 dummy and belt geometry during loading phase

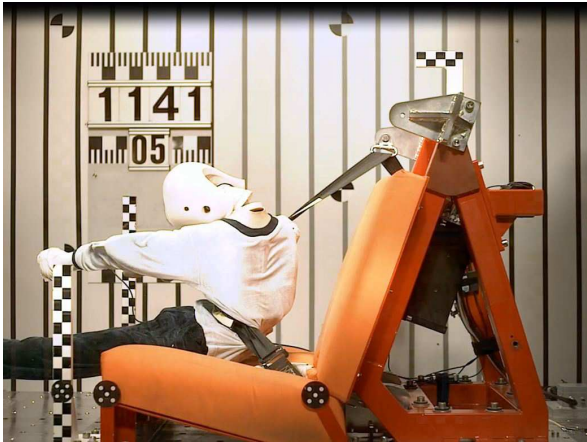


Figure 2c: Time 91 ms – Submarining has already taken place– The lap belt has intruded into the abdomen.

Conclusion:

Such system does not comply with R44/04.

For group I the system does not comply 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 §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.
