
euraslog

FREQUENT QUESTIONS

Child road safety and the use of Retention Systems in cars has now become an almost full reality on a daily basis. The data is irrefutable, ensuring that the use of these systems has reduced child mortality on the road in the last decade by more than 90%.

The sensitivity for the safety of the little ones is practically total in fathers and mothers, and this fact has led to pose because in other means of transport the safety it is not similar and sometimes non-existent, as it is in the case of buses.

This reason led to the development in Spain of an exclusive Child Retention System for buses, the Kidy Bus Harness. Today, the only SRI approved by the R44.04 exclusive for buses in the world.

Although the car and the bus are means of transport that move along the same roads, move the same people and practically circulate at the same speeds, their technical characteristics are quite different, which caused the difficulty of approving a SRI for buses under an R44.04 standard designed almost exclusively for cars, it was really complicated.

The Kidy Bus Harness has won multiple awards and national and international recognitions, but it is still necessary to offer a series of answers to frequently asked questions that users can ask about the product.

1_"To use a lift, it must be approved for the bus"

Recently (May 14, 2019)the UNECE GRSP working group has met at its 65th meeting where one of the development points has been to create a working group to study and develop the necessary legislation to standardize Child safety systems for M2 and M3 vehicles.

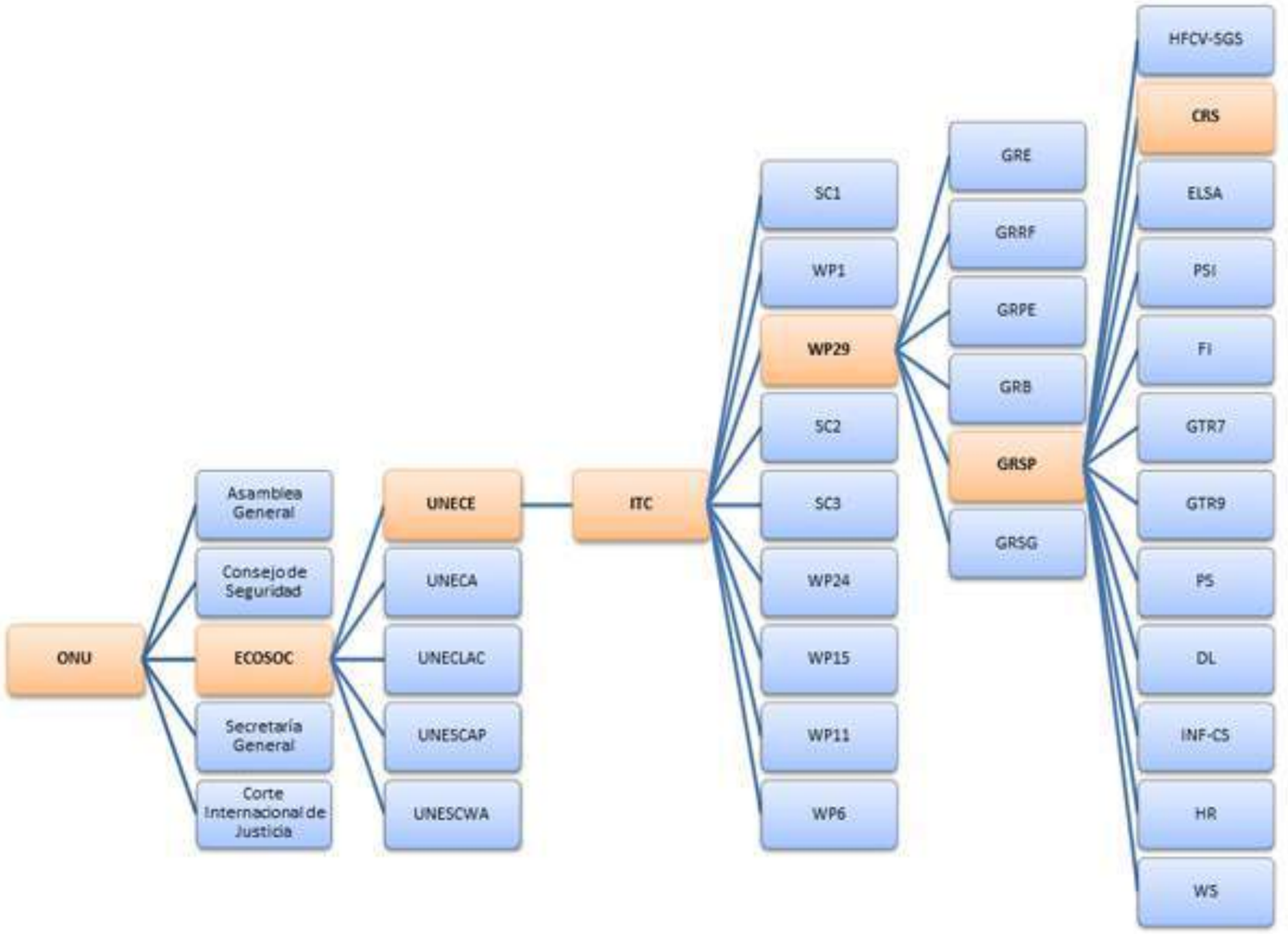
The GRSP hangs directly from the WP. 29, World Forum for the Harmonization of Vehicle Regulations.

At the request of the Swedish (GRSP 65-26) and Spanish (GRSP 65-11) delegation, the facts that the child restraint systems are approved for M1 vehicles and not for M2 and M3 were presented.

One of the first conclusions reached is that who has to declare in which places the SRIs (R44 and R129) can be used in a vehicle, what type of SRI can be used in each place and how it should be placed is the vehicle manufacturer in its manual.

Up to the present date, this declaration has only been mandatory for M1, the manufacturers of M2 and M3 have been exempt from said obligation, but they can do so voluntarily, as long as they have performed the tests in accordance with regulations R44 or R129.

Therefore, as of today and based on regulations, an M2 M3 vehicle may not use approved SRIs until manufacturers carry out and comply with the relevant tests.



2_"The Kidy Bus Harness is valid for the maximum possible number of models of bus seats"

Regulations R44 and R129 clearly specify the tests that every SRI must meet to obtain approval. Among them are marked the test conditions that must pass in the case of the crash tests and the bench that must be used for this purpose. A standard for all tests except M1 vehicles.

In the case of bus seats, this standard is not met, for which real seats must be used for impact tests.

For this homologation test, the greatest representativeness in the market was sought out, in order to provide a solution to the majority of minors who use the bus.

That is why Irizar was selected, with a market share in Spain of 47% of the bus fleet (not urban) and with about 60% if we focus on school transport.

Irizar, like almost all of the world's bus body builders, does not manufacture bus seats, but it does select and customize the ones it uses in its vehicles, homologating them for use.

The manufacturer of the Irizar bus seats is Sunviauto, which also manufactures and markets the Vogel brand, which in turn is directly related to the Brusa brand.

The armchair selected for the trial tests is the most standard in the catalogue, which coincides in chassis with most of the manufactured ones, making it extensible not only to Irizar armchairs but also to all under ECO chassis (Ligerus F450, Eco 05, Eco 010, Eco 015, Eco 020, Eco 030, Eco 040, Conturo, Elan and Basic).

With this test it was possible not only to cover the aforementioned market but also to other bus body builders who installed these chair models, raising even more the percentage of users that are minors.

3_"Kidy Bus Harness offers compatibility with the 2 and 3-point seat belts”

Since October 2007 it is mandatory that all buses incorporate seat belts in their seats.

This has led to no longer manufacturing any chair without the aforementioned passive safety system.

The possibilities of installing a seat belt are 3:

- Two-point seat belt
- Three-point seat belt
- Three-point seat belt with a height regulator

In an optimization process, the manufacturers homogenize the manufacturing of the seats making them all have the same chassis and pre-installation for all three points. In the end what is done, if the two-point one has been selected, is not to add the accessories and extras of the three points one, thus lowering the final price but still being the same in terms of resistance.

Gradually you can add more seats, which means to carry out homologation extensions and perform the precise tests under the regulations. However, at the European level, work is being done on the process of homogenizing the tests and requirements of the seats to extend to all those that meet the requirements, so it is preferred to wait for such effects.

Unless manufacturers of other brands of bus seats also request to add the SRI in their specifications, for which they must be the ones to perform the relevant tests.

The SRI Kidy Bus Harness, being the first to be approved exclusively for buses under the R44.04 regulation, has demonstrated that it is technically feasible to talk about getting real child safety in the movements of minors.

Can it be used in other seats? The Kidy Bus Harness has not been tested on other chair models. Economically speaking it would be unfeasible to carry out hundreds of impact tests for each existing model in the market. What is assumed is that those two-point seats with pre-installation of 3-seat belts and 3-point seats will have a practically similar behaviour. In that sense, it will always be better to use a Child Retention System approved directly in bus seats than not to use anything or systems not tested on real seats.

Ligerus seat F450 Vogël ECO (E1 80R 030135) with a two-point belt used in the approval process.

4_“Five-point harness safer than a three-way seat belt”

At this time, in addition to guaranteeing the maximum safety of minors in all means of transport with the use of Child Restraint Systems, the highest priority is that they are used properly. An incorrectly installed child restraint system will not offer the security for which it has been designed.

The use of a seat belt in children under 3 years in a bus plus a baby car seat has great chances that it is not properly installed. A school bus has an average of 56 seats; children must be helped by adults for the correct application of the seat belt.

During the journey, for the seat belt and lift to function properly, the child must be perfectly seated and not move. The chances that the lift plus the seat belt (let's not forget that it can be a one-hour drive) are incorrectly installed are very high.

In any of the situations described below, the child restraint system would not work properly either in the event of an impact or in the case of overturning.

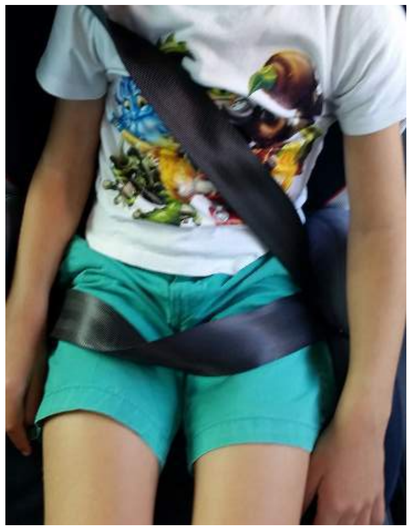
However, the 5-point harness greatly minimizes the possibility of improper installation.

There are old reports that questioned the claim that a 3-point seat belt in a minor is safer than a 5-point harness, fortunately, the technologies have allowed us to make considerable progress in this aspect with real dynamic simulations and tests that allow us to affirm that a harness of five points offers greater safety. As can be seen in rally pilots, airplanes or helicopters, where technical advances have allowed for a correct retention while minimizing the impact on the torso and the neck.

If it is necessary that the 5-point harnesses allow an elongation, so that at the moment of impact the head accompanies the body as long as possible fully minimizing dry impacts.








- The Kidy Bus Harness has been designed so that the body accompanies the movement of the head at the moment of impact, thus avoiding a strong twisting of the neck. Also at the moment of impact (at 50 km / h), the head should not touch the front seat, thus avoiding head damage.

- Example of a video demonstrating the problem of the lift without a backrest in front of one with backup https://www.youtube.com/watch?v=N8hlFdEH0Cc

5_"The Kidy Bus Harness has been created based on the realities of the bus world”

The main mission of a Child Retention System is undoubtedly to protect the child in the event of an accident.

However, all SRI must also look for ease of assembly (to minimize improper installation), ease of use, transport.

One or two SRIs are usually installed in a car (sometimes 3) and are usually installed.

However, a bus, with up to 56 passenger seats, has different users. On the same day, you can take adults to their job, minors to school or to an excursion. For that reason, usability and ease of assembly and disassembly become a priority.

The Kidy Bus Harness has been developed according to the needs of the bus companies and in collaboration with them, making it light (1.7 kg) and small to be able to store it in any hollow of the bus (for example in the attic) and very fast to install and uninstall, in less than 30 seconds.

Otherwise, the use of heavy and large child restraint systems would have received a negative response from bus companies.

6_"A 3-point seat belt and lift system has not been tested at 50 km / h on buses”

As mentioned above, bus seats are approved at 30 km / h and however SRIs must be approved at 50 km / h.

This speed difference of 20 km / h, a priori that seems almost irrelevant, makes the G forces, dynamics and accelerations grow exponentially.

The bus seats, having no need to perform the impact tests at 50 km / h, has caused the effect of using an approved SRI for M1 vehicles in the seats to be unknown.

Only the Kidy Bus Harness, being approved exclusively for buses under R44.04, has carried out the tests in real seats at 50 km / h with positive results and obtaining the homologation.

"In case of overturning a 3-point seat belt does not guarantee it as a 5 points belt"

As previously mentioned, any small error in the installation of a lift with a 3-point seat belt causes the operation of the lift to be incorrect. In addition to in the case of a frontal or lateral frontal impact, or in a simple sudden braking; where more dramatic damage can occur to the child is in the case of overturning (which is usually the most common accident on a bus).

It should also be taken into account that the continued use of the seat belt by different people can cause wear and tear of the seat belt causing the operation to not be perfect. Not to mention the misuse or vandalism on the same.

However, the Kidy Bus Harness, having been directly attached to the chassis and back of the bus seat, having been developed and tested for multiple assemblies and disassembly, ensures that its correct assembly and operation in the event of an accident is practically guaranteed.

8_"The 3-point seat belt is more likely to cause a submarining effect"

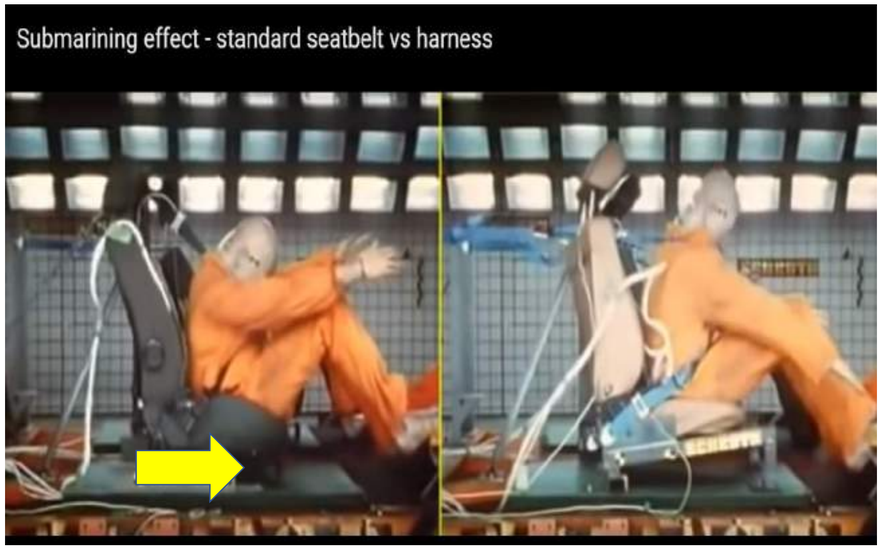
- Indeed **, the most effective fastening systems are those with five points**.

  Hence the system chosen for racing vehicles. The reason is that it retains the body much more in the event of a collision and in any direction: it prevents the body from going up, prevents lateral displacement and for the child to go down. In fact, it prevents the known **submarining effect** and distributes the impact load between both shoulders, hip and pelvis. Therefore, they are especially effective for preventing **abdominal injuries**. *Fuente* F. Mapfre

  But it looks better in an explanatory video:

  "Demonstrating the submarining effect of the 3-point seat belt vs the harness"

  https://www.youtube.com/watch?v=0Dv_zeveYR4

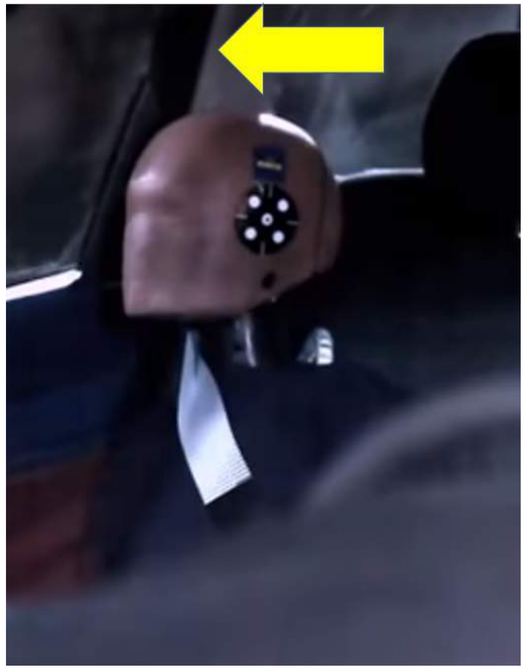


- Another important fact to consider is the effects of a side impact. Although a bus, for its great size and mass is difficult to suffer a great variation in an impact of these characteristics, it can always happen (in fact it has been) that another vehicle of similar or higher mass hits a bus.

  In that case, a 3-point belt plus an elevator will not avoid high-speed head shots against head or head against window, and yet a 5 point harness yes.

  "Elevator side impact".

  https://www.youtube.com/watch?v=mbQ0lOaUNbA



Thanks

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