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After reviewing the Consumers Union (CU) reports of its tests of the Orbit Infant System, the response of the manufacturer, and comments posted on blogs, I believe that the CU warnings about this infant carrier are justified. In two of the six tests the infant carrier separated from the base during the test, almost as troubling is the finding that in the other four tests cracks occurred in the bottoms of the carriers.

The manufacturer has leveled two criticisms at the CU tests. One is that the harness straps that held the infant test dummies in the carriers were placed in the top slot when the middle was more appropriate. CU experts and the personnel at the facility conducting the tests concluded that the top slot was correct for the size of the test dummy. Thus, this becomes an argument among experts, and if the experts can disagree on this, it seems likely that some parents would use the top slot for infants the same size as the test dummy and others a lower slot. If the safety performance of the carrier depends on parents always making the correct choice of which slot to use, then the design has problems.

The second criticism, and one frequently alluded to in the blogs, is that the testing facility staff did not use the StrongArm™ knob (a part of the Orbit system) to tighten the belts holding the bases in place. Orbit Bases have installation instructions printed on them stating:

“ALWAYS check that the Base is tightly secured to vehicle by pulling the Base from side to side. If the Base moves more than 1 inch, turn the StrongArm™ knob clockwise...” (Emphasis added)

The personnel at the testing laboratory did verify that the Orbit Bases in the tests would not move more than one inch in any direction when pulled, which, according to the above instructions, meant that the StrongArm™ was not needed.

There are additional instructions for the Base installation on pages 34 and 40 of the manual for the Orbit Infant Car Seat and Base, these are:

“CHECK the installation is secure by tugging and pulling the Base in various directions (Photo J) – the Base Upright, where the belt is secured, should not move by more than 1 inch in any direction.”

Also on the same pages:

“You know that you have reached the optimal tightness setting when the Base Upright cannot move more than 1" in any direction.”

Thus, the Orbit Bases in the CU tests were installed according to the manufacturer’s instructions and were at “optimal tightness”. Furthermore, the belt tension levels were within the ranges specified by the National Highway Traffic Safety Administration (NHTSA) in the compliance test requirements for infant and child restraints in Federal Motor Vehicle Safety Standard (FMVSS) 213.

Although it is possible that the StrongArm™ knob could have made the belts even tighter, this mechanism is less likely to be needed in a testing laboratory because the restraints being tested are mounted on a bench seat that is not inside a vehicle, and this makes it easier to tighten the belts than is the case in many back seats of cars where there is cramped access.

If I have a criticism of the CU tests, it is that they were conducted at 30mph which is the required test speed to assess compliance with the federal standard that all seats must meet, rather than at 35mph which is the test speed used by the federal government to assess occupant protection for adults in frontal crashes (infant and child seats are also included in vehicles tested at these speeds). Furthermore, in Europe the consumer testing organization EuroNCAP routinely tests and rates child and infant seats in cars in frontal offset crash tests at 40mph.

A 35mph crash involves 36 percent more energy than one at 30mph (the ratio of the square of the speeds). The fact that the four carriers that didn’t separate in the 30mph tests sustained cracks means it is possible that there might have been more separations if the tests had been conducted at 35mph – the test speed used by the government to rate and compare adult occupant safety.

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