

Australian/New Zealand Standard™

AS/NZS 3629.3:2013

Methods of testing child restraints

Method 3: Dynamic testing of upper anchorage components and top tether extension straps

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-085, Child Restraints for Use in Motor Vehicles, to supersede AS/NZS 3629.3:1997, *Methods of testing child restraints*, Method 3: *Dynamic testing of upper anchorage components*.

The objective of this Standard is to provide manufacturers and testing authorities with a method for determining the dynamic performance of critical upper anchorage components of a child restraint system.

The test procedure has been revised to provide a method for dynamically testing top tether extension straps for upper anchorages for child restraints as specified in AS/NZS 8005.

METHOD

1 SCOPE

This Standard sets out the methods for determining the dynamic performance of child restraint upper anchorage components and top tether extension straps.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1753	Webbing for restraining devices for occupants of motor vehicles
AS/NZS	
1754	Child restraint systems for use in motor vehicles
8005	Accessories for child restraints for use in motor vehicles
NZS	
5432	Webbing for restraining devices for occupants of motor vehicles
SAE	
J211	Instrumentation for impact tests

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 1754 apply.

4 PRINCIPLE

The anchorage components or extension strap are subjected to a dynamic force under deceleration of a test rig to simulate a frontal vehicle impact.

5 APPARATUS

The following apparatus is required:

- (a) A test trolley of mass not less than 380 kg. The test trolley shall be calibrated in accordance with Clause 7(a).
- (b) A means of measuring deceleration of the test trolley for calibration purposes. Instrumentation shall comply with the requirements of SAE J211 for Channel Frequency Class 60.
- (c) A test mass capable of generating a force between 7 kN and 7.5 kN under the conditions specified in Clause 7(b).
- (d) A structure capable of guiding the test mass under the conditions specified in Clause 7.
- (e) A structure, rigidly attached to the trolley to which the anchorage component is attached.
- (f) A length of Class C13 webbing as specified in AS 1753/NZS 5432.
- (g) Means of measuring the force in the webbing referred to in Item (f).
- (h) For impact-type test trolleys, a stop to overcome the inertial effects of the test mass during the run-up to impact.
- (i) A torque wrench.

6 SAMPLING AND SAMPLE PREPARATION

6.1 General

Test samples shall be new, unused and not previously tested components.

6.2 Anchorage components

Each sample shall comprise the following anchorage components as specified in AS/NZS 1754 and/or AS/NZS 8005:

- (a) Hexagon headed set screw.
- (b) Helical spring lock washer.
- (c) Metal spacers.
- (d) Upper anchor fitting.
- (e) Attachment clip.

A 500 mm length of Class C13 webbing shall be attached to the attachment clip. All stitching shall be in accordance with the manufacturer's normal practice.

NOTE: Manufacturers may supply extension straps for this purpose.

6.3 Straps

6.3.1 Extension strap

An extension strap shall have an anchor fitting profile on one end, designed to engage an attachment clip, and an attachment clip on the other end, designed to engage an anchor fitting. The strap may be adjustable.

6.3.2 Anchorage strap

An anchorage strap shall have an anchor fitting profile on one end, designed to engage an attachment clip, and an anchor bracket on the other end, designed to be bolted directly to the vehicle. The strap may be adjustable.

Straps shall be no longer than 1.0 m in length when submitted for testing. If straps are longer than 1.0 m, the manufacturer may supply samples that are 1.0 m in length using the same method of manufacture.

7 CALIBRATION OF APPARATUS

The apparatus shall be calibrated as follows:

- (a) *Test trolley* The calibration shall be carried out with a rigid mass equivalent to, and in place of, the test apparatus referred to in Clause 5, Items (c) to (g), or with the force-producing mass described in Clause 5(c) rigidly attached to the test trolley. When subject to a velocity change of not less than 49 km/h, a deceleration of between 24g and 34g shall be achieved within 30 ms. The deceleration shall remain within the range 24g to 34g for not less than 20 ms, but deceleration values outside this range that occur for periods of not greater than 1 ms, may be disregarded.
- (b) *Test mass* The calibration shall be carried out on a calibrated test trolley with either the test apparatus referred to in Clause 5, Items (c) to (g), replacing the rigid mass, or the load-producing mass referred to in Clause 7(a) released from its rigid attachment to the test trolley, as appropriate. The test mass shall be restrained by one length of Class C13 webbing which shall have an unsupported length of 200 ± 5 mm. The webbing shall lie in a horizontal plane and be parallel to the direction of travel of the test trolley over its unsupported length. The webbing shall have elongation of not less than 10% and not more than 15%, determined in accordance with AS 1753/NZS 5432, under a tensile load of 7 kN. The webbing shall be pre-tensioned to not more than 200 N. In the case of impact-type test trolleys, mount the stop to overcome the inertial effects on the test mass during the run-up to impact.

8 PROCEDURE

8.1 Testing of upper anchorage components

The procedure shall be as follows:

- (a) Calibrate the test trolley and test mass (as per Clause 7).
- (b) Attach the hexagon headed set screw, spacer(s), helical spring lock washer, and anchor fitting to a fixed rigid vertical surface of the calibrated test trolley, as shown in Figure 1. The set screw shall be tightened in accordance with the manufacturer's instructions.
NOTE: Spacer height may vary if testing to AS/NZS 8005.
- (c) Hook the attachment clip to the anchor fitting.
- (d) Clamp the end of webbing on attachment clip to the test mass ensuring webbing is horizontal and parallel to direction of travel of the test trolley. The unclamped length of webbing shall be adjusted to 200 ± 5 mm.
- (e) Pre-tension the webbing to not more than 200 N.
- (f) In the case of impact-type test trolleys, mount the stop to overcome the inertial effects on the test mass during the run-up to impact.
- (g) Set the test rig to the settings established during calibration of the test trolley.
- (h) Operate the test trolley.