TECAM Técnicas Aplicadas de Movilidad, S.L.
SAFETY EQUIPMENT FOR WHEELCHAIR AND PASSENGERS

FIJACIÓN COMBINADA 4 PUNTOS PARA SILLA RUEDAS Y PASAJERO C-601

- **Método seguro y eficaz, todo en uno, para asegurar tanto la silla de ruedas como al ocupante.**
- **Adecuado para asegurar la mayoría de las sillas de ruedas.**
- **Correas delanteras y traseras ajustables de alta resistencia.**
- **Cinturón de seguridad ventral y diagonal de tres puntos.**
- **Bases de clip compatibles con guías de paso universal instaladas en el piso del vehículo.**
- **Sistema de liberación rápida en caso de emergencia.**
- **Ensayado con éxito según norma ISO 10542.**
- **Apto para vehículos tipo M1, M2 y M3.**

SISTEMA RETENCIÓN SILLA

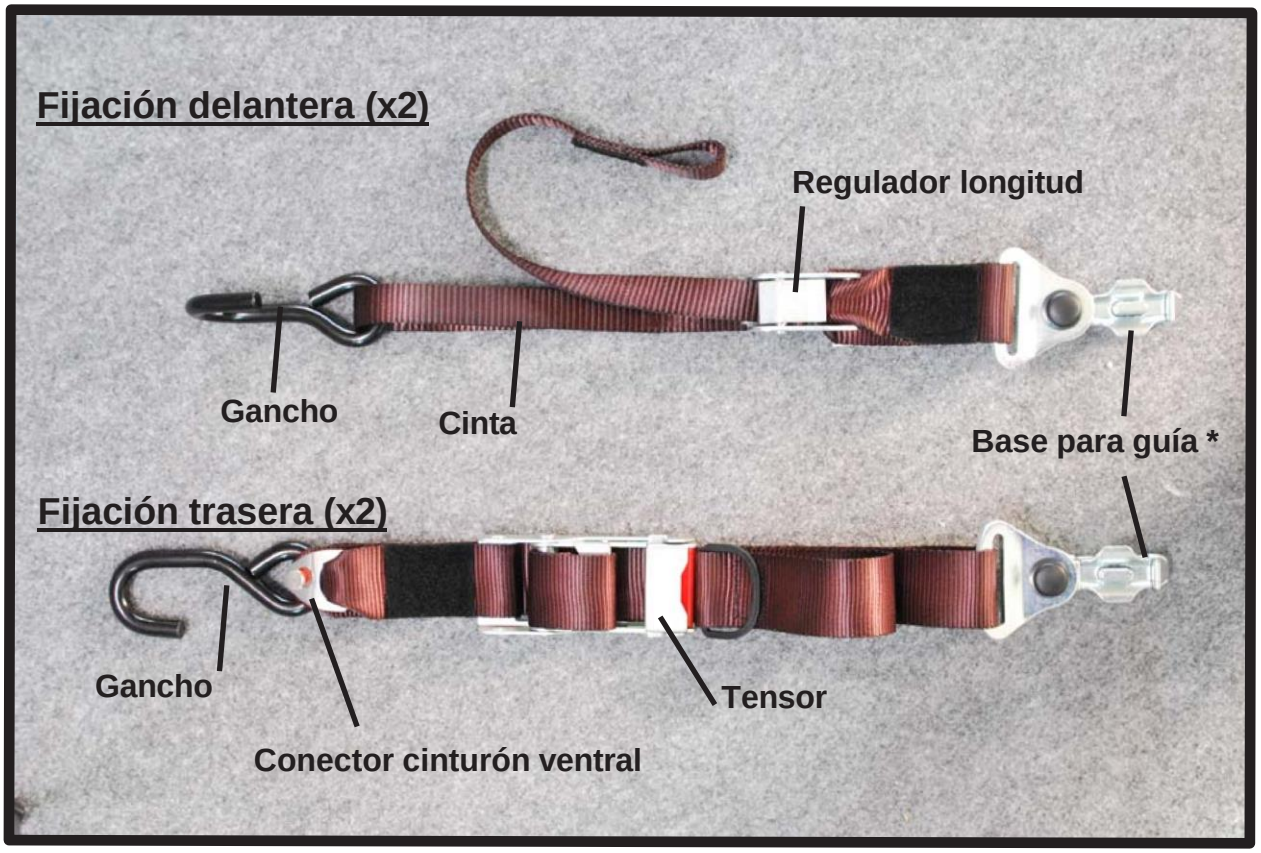
CINTURÓN SEGURIDAD

ISO 10542 TESTED

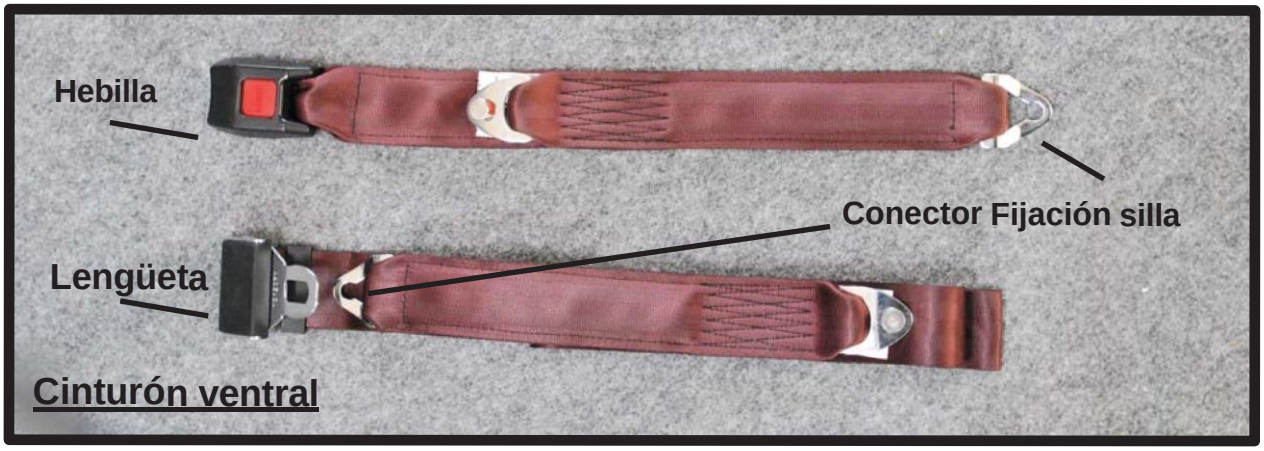
Técnicas Aplicadas de Movilidad, S.L.
Camí de La Vía 22 08840 Viladecans-Barcelona, Spain
934559759-info@tecamsafe.com

Fijación combinada para silla y pasajero C-601.

Componentes Principales.



* Existe opción de base circular por puntos.

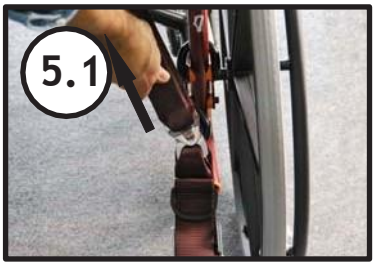


TECAM Técnicas Aplicadas de Movilidad, S.L.
SAFETY EQUIPMENT FOR WHEELCHAIR AND PASSENGERS

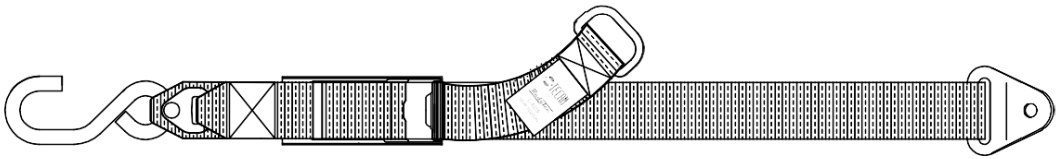
INSTRUCCIONES DE USO:

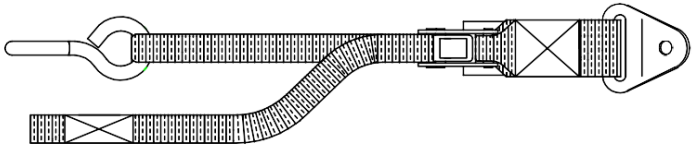
1- Situar la silla de ruedas en posición
2- Activar el freno de la silla de ruedas
3- Conectar y ajustar las fijaciones delanteras
   3.1-Insertar la base de clip en las guías
   3.2- Situar el gancho en el marco de la silla de ruedas.
   3.3- Ajustar la longitud de la cinta
4 Conectar y tensar las fijaciones traseras.
   4.1-Insertar las bases de clip en las guías
   4.2-Situar el gancho en el marco de la silla de ruedas
   4.3- Tensar tirando firmemente de la cinta y cerrando el tensor
5- Conectar el cinturón ventral:
   5.1-Ajustar el terminal de cada ramal del cinturón en los conectores situados en las fijaciones

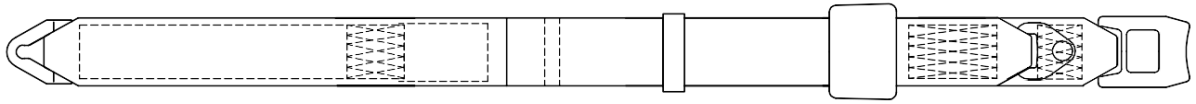


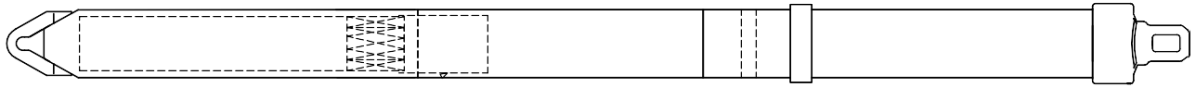


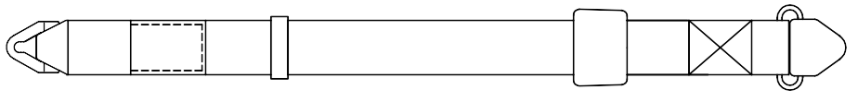

Opción de base circular.
-Conectar cada ramal, deslizándolo hacia su base correspondiente fijada al piso del vehículo.
-Girar cada ramal 90º de forma que se encuentren en la dirección de la silla de ruedas.
-Tensar cada ramal











MODIFICACION	
Fecha	Responsable
14/05/2012	Luis
17/07/2015	Luis

NR.	DESCRIPCION	REF	CANT
1	Rear tiedown	C-601A	2
2	Front tiedown	C-601B	2
3	Lap belt female	C-611F	1
4	Lap belt male	C-601D	1
5	Diagonal belt	C-601E	1

NR.	DESCRIPCION	REF	CANT
6	Cardboard box per set		
7			
8			
9			
10			

REFERENCIA	MATERIAL	Fecha	Nº plano
C-601		12-12-15	11617

FOUR POINTS RESTRAINT

TECAM Técnicas Aplicadas de Movilidad, S.L.

SAFETY EQUIPMENT FOR WHEELCHAIR AND PASSENGERS

TRL

Creating the future of transport

Product Testing Report

Wheelchair Tiedown and Occupant Restraint Systems – IS010542-1 – Frontal Impact

Customer: Técnicas Aplicadas de Movilidad, S.L.

TRL Project Reference: PTC151 (C151I01)

Abstract

Customer	Técnicas Aplicadas de Movilidad, S.L.
Contact	Wilhelm L. Runde
Address	Técnicas Aplicadas de Movilidad, S.L., C/Amargor 5-7, 08026-Barcelona
Telephone	00-34-934559759
Email	tecam@tecamsafe.com

Test Centre	TRL (Product Testing)
Test Type	ISO10542-1
TRL Project Reference #	PTC151
Test Reference #	C151I01
Test Date	05 October 2012
Report Date	05 October 2012

	Approvals
Test Engineer C Walker	
Technical Referee T Robinson	

Contents

1. Introduction

This report details the test preparation and results for dynamic impact test completed in accordance with ISO10542-1:2012 on behalf of Técnicas Aplicadas de Movilidad, S.L. The tests were completed at the TRL ISF test facility on 05 October 2012.

The results section of this report assesses the performance of the Redy Tec Wheelchair Tiedown and Occupant Restraint System (specified in Section 2.1) against criteria stipulated in the above standard.

2. Test Specifications

2.1 Test sample

The test sample detailed below was provided by Técnicas Aplicadas de Movilidad, S.L. and the Test House (TRL) has had no influence on the selection procedure. TRL prepared the product for test using the manufacturer's guidelines with assistance from the customer where required.

Test Object	Manufacturer	Reference Number	Description	Mass
Wheelchair	TRL	N/A	Surrogate Wheelchair designed to Annex E of ISO10542	85 kg
Wheelchair tiedowns	Redy Tec	C-601-F C-601-A	Front tie-down assembly comprising 2 units C-601-B Rear tie-down assembly comprising 1 C-601-A-LH and 1 C601-A-RH	N/A
Occupant restraints	Redy Tec	C601-H C601-E	Lap belt assembly comprising 1 unit C-601-C and 1 unit C-601-D Diagonal belt standard	N/A
Anchorage	Redy Tec	N/A	M10 Bolt	N/A
Test dummy	HIII 50th percentile male			78 kg
Set up concessions	None			

2.2 Pre-Test Conditions

The following conditions were observed and measured prior to test.

Adjustment	Pre-Test Measurement
B-post height	1240 mm
B-post height (above shoulder) (effective)	178 mm

2.3 Photography

Video: A high speed camera (500fps) was positioned on the right side perpendicular to the direction of travel of the impact sled. The high speed video was used for analysis of the dynamic behaviour of the test dummy and wheelchair during the test.

Stills: Pre and post impact test photographs were taken using a digital stills camera to provide records of pre and post test conditions.

2.4 Instrumentation

A HIII 50th percentile male test manikin was used with a nominal mass of 78kg. The ATD was not instrumented.

The test sled was instrumented with two longitudinal accelerometers and conforms to the sign convention in SAE J1733.

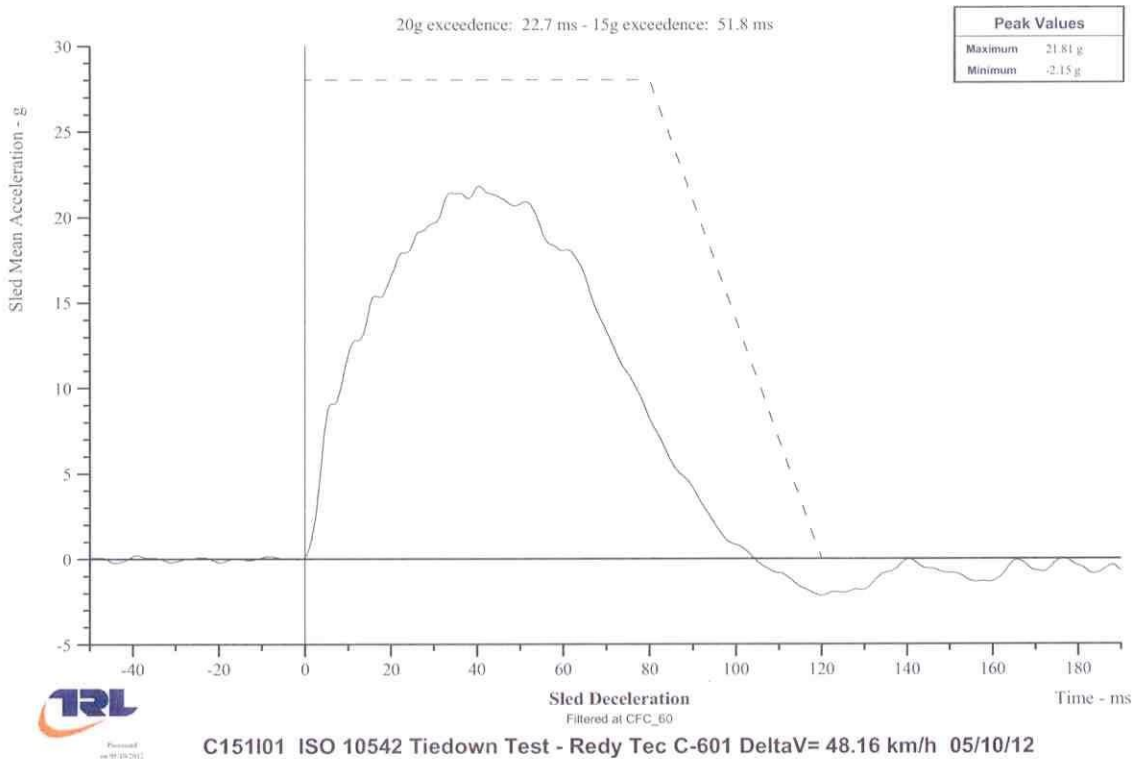
The instrumentation, used in this test, is calibrated annually at least.

3. Results

The test results are detailed below, including test pulse characteristics. The WTORS supplied meet the requirements of the paragraph 5.2 of ISO10542-1:2012.

3.1 Sled Deceleration Pulse

Annex A	Test Pulse Criteria	Results	Acceptance
A.3.1	The processed sled deceleration time pulse shall:		
(c)	• Represent a change in velocity of 48^{+2}_{-0} km/h	48.16 km/h	Acceptable
(k) 1)	• Fall within the marked area of Figure A.1	Yes	Acceptable
(k) 2)	• Exceed 20 g for a cumulative time period of at least 15 ms	22.7 ms	Acceptable
(k) 3)	• exceeds 15 g for a cumulative time period of at least 40ms	51.8 ms	Acceptable
(k) 4)	• Have a duration of at least 75 ms from t_0 (start time) to t_f (finish time)	>75 ms	Acceptable



C151I01 ISO 10542 Tiedown Test - Redy Tec C-601 DeltaV= 48.16 km/h 05/10/12

4. Observations

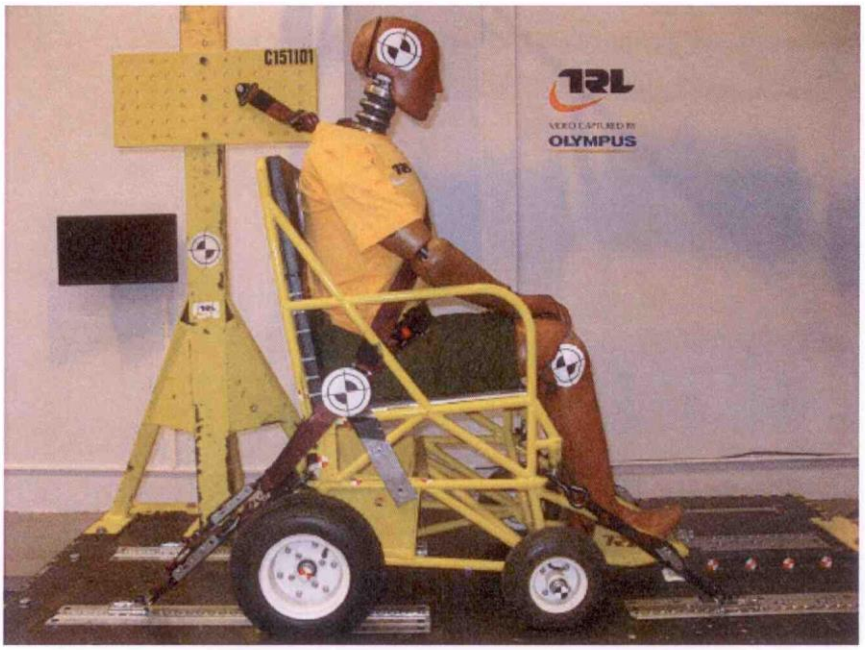
The performance criteria below are derived from Section 5.2 of ISO 10542-1:2012.

Section	Performance Criteria	Result	Pass/Fail
6.2.2	**During the test**		
(a)	The horizontal excursions of the ATD and the SWC with respect to the impact sled shall not exceed the following limits:		
	• Wheelchair point P [X_{WC}] : 200 mm	146mm	Pass
	• ATD knee [X_{Knee}] : 375 mm	276mm	Pass
	• ATD front of head [XheadF] : 650 mm	398mm	Pass
(b)	Ratio of [X_{Knee}] : [X_{WC}] ≥ 1.1	1.9	Pass

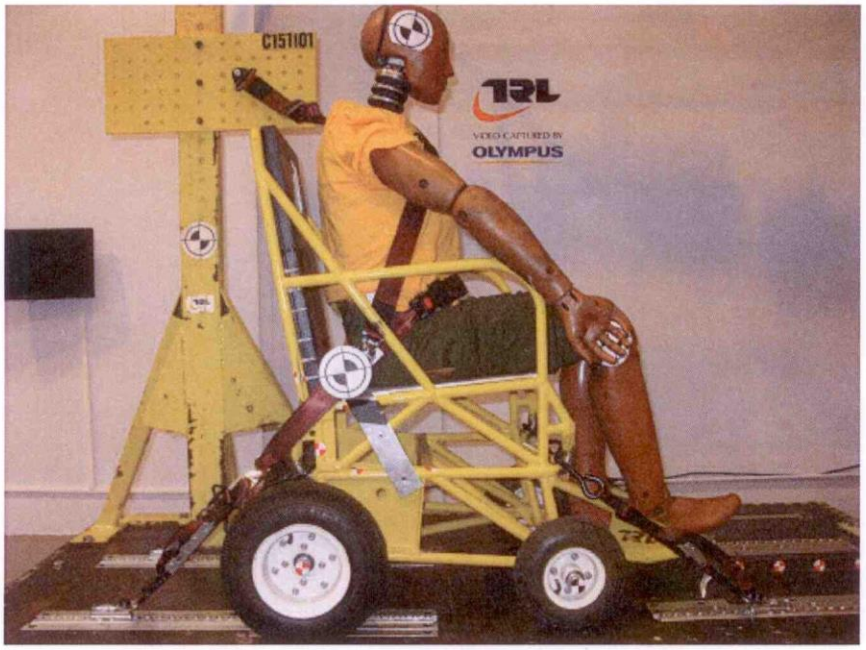
Section 5.2.3	Performance Criteria and Observation	Pass/Fail
a)	The ATD shall be retained in the seat of the TWC.	
	ATD retained in the seat	Pass
b)	The TWC shall remain on all four wheels on the impact sled.	
	TWC remained on all four wheels	Pass
c)	No WTORS anchorage components or securement end fittings shall be detached or separated.	
	No detachment	Pass
d)	Release of the TWC from the wheelchair tiedown shall not require the use of tools.	
	No tools required	Pass
e)	Release of the ATD form the occupant restraint shall not require the use of tools.	
	No tools required	Pass
f)	No part of the WTORS shall exhibit visible signs of tearing, fragmentation, fracture or complete failure of any load bearing part, unless such parts are intended to fail in a manner that limits the forces on the occupant.	
	No visible signs	Pass
g)	The WTORS shall exhibit no dangerous roughness, sharp edges, or protrusions likely to increase the risk of injury to the occupant.	
	No sharp edges	Pass

5. Still Photography

Pre-Test



Post-Test



END OF REPORT