



Vehicle Certification
Agency Europe

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without
written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Inspection/Test Report: WAV Seats, Belts, Belt Anchorages and WTORS

Legislation

Regulation (EU) 2018/858 Consolidated to Commission Delegated Regulation (EU) 2021/1445,
Annex II, Part III, Appendix 3
Item 15A (Footnote W3)
Item 19A (Footnote W5)
Item 31A (Footnote W6)

Inspection/Test Details

Location of Inspection/Test: Q'Straint 72-76 John Wilson Business Park, Whitstable CT5
3QT
Date(s) of Inspection/Test: 21-23 May 2024
VCA Representative(s): Calum McGowan-Franklin, Nicholas Bridge
Inspectors Home Office Location: VCA HQ
Manufacturer's Representative(s): Not applicable
Reason for Report: New Approval

Manufacturer Details

Name and Address: Tripod Mobility B.V.
Collseweg 10
5674 TR Nuenen
The Netherlands
Type: XFKT
Commercial Description: Kangoo / Townstar / Citan / T-Class Tripod
Category: M1

Conclusion

The above-mentioned vehicle / engine / component was tested in accordance with the above
mentioned legislation and was found to comply in all respects. This report relates only to the items
tested.

Witness Engineer
Signature:

Name: Nicholas Bridge
Position: Type Approval Engineer
Date: 23 May 2024

Stefano Savarese
Technical Manager
23 September 2024

List of Annexes



VCA Europe S.r.l.

Annex	No of Pages	Subject
-------	-------------	---------



**Vehicle Certification
Agency Europe**

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Issue Record

Issue 0 is original report

Note: Include reason for reissue, date of reissue, who has reissued.

Worst Case Rationale

Tripod Mobility convert the Renault Kangoo / Nissan Townstar / Mercedes – Benz Citan to WAV incorporating a floorpan situated behind row 2 seats.

1 x Wheelchair geometry.

Test # 1. IQTRP4543401

85Kg

Front Tie down – QER-3200-CVR – Electrical retractors 3.2 m long.

Rear Tie down – QE5-8752 – J hooks, Mounted to adaption brackets.

Lap/ Shoulder belt – QE58749 – Lap/shoulder occupant belt with k12 tongues.

Stalk and buckle – QE5-6460

Test # 2. IQTRP4543402

85Kg

Front Tie down – QER-3200-CVR

Rear Tie down – Q011003 – QRT 350 retractors, unmounted

Lap/ Shoulder belt – QE58749

Stalk and buckle – QE5-6460

Test # 3. IQTRP4543501

85Kg

Front Tie down – QER-3200-CVR

Rear Tie down – Q011056/ Q011057 – QRT 550 retractors, unmounted.

Lap/ Shoulder belt – QE58749

Stalk and buckle – QE5-6460

Test # 4. IQTRP4543502

200Kg

Front Tie down – QER-3200-CVR

Rear Tie down – Q011003

Lap/ Shoulder belt – QE58749

Stalk and buckle – QE5-6460

Significant Interpretations, Alternative Test Methods, New Technologies

Inspection/Tests Required

Seats, their anchorages and any head restraints (Item 15A):

Yes, NA, See Report ... / Approval ... / Annex ...

As stage 1.



Vehicle Certification Agency Europe

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Safety-belt anchorages, Isofix anchorages systems and Isofix top tether anchorages (Item 19A):
Safety-belts, restraint systems, child restraint systems and Isofix child restraint systems (Item 31A):
WTORS Anchorages:
WTORS Components – Dynamic Test
WTORS Components– Material Tests

Yes
As stage 1
Yes
Yes
NA

Vehicle/Component Specification

Vehicle Type/Variant/Version:
Wheelchair Front Tie-down
Details:

XFKT
QER-3200-CVR
QE5-8752 Q011003 Q011056/Q011057
QE58749

Wheelchair Rear Tie-down
Details:

Occupant Restraint Details:

Manufacturer's Documentation

Manufacturer's documentation is complete and reflects the agreed specification for the vehicle component tested and covers all variants and versions agreed in the worst case rationale.

Yes

Information document uploaded to job folder and identified by job number.

Yes

Facility and Equipment Checks

Facility Appraisal reference and date:
Reference and date if formal; state if ad-hoc appraisal).

Mandatory FA not applicable

Calibration certificates are traceable to national or international standards of measurement, where available:

Yes

Calibration certificates checked and valid, recorded in the following table:

Yes

Equipment

Description	Make	Model	Serial number	Calibration due date
Surrogate wheelchair	Q	SA000003	0001	NA



Vehicle Certification Agency Europe

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without
written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

iQ video tracking system @ 1000fps	Phantom	Miro R320S	VR0318 14797	09/07/2024
Accelerometer (50g)	Measurement Specialities	3801A-0050	A138300	21/10/2024
Anthropomorphic test device @ 78.6Kg	Humanetics	H3 50th Male	DV9270	16/01/2025
Hanging scales	AE ADAM	LHS2000	AE9AQ183	02/10/2024
Digital inclinometer	Bosch	GLM50C	612604164	07/03/2025
Tape measure	Stanley	Tylon 5m	iQT003	07/03/2025

*Specify calibrated date + (interval) or calibration due date.



**Vehicle Certification
Agency Europe**

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Inspection/Test Requirements

**Complies
Yes / NA**

Seats (Item 15A) – As Stage 1

Seatbelt Anchorages (Item 19A)

VCA

Modifications made to the vehicle structure are not deemed likely to affect the strength of the base vehicle's seatbelt anchorages, and therefore the base vehicle approval is deemed to remain valid.

NA

AND/OR

Seatbelt anchorage testing carried out on modified/compromised seat positions. (Give report number below.)

Yes

Details:

Covered by VCA report VCAE007617-1

Seatbelt Installation (Item 31A) – As Stage 1 (Ordinary Seats)

WTORS Anchorages

(Anchorage strength may be tested using either the dynamic or static options below.)

General Requirements

Footnote W3

Longitudinal plane of the intended wheelchair-travelling position is parallel to the longitudinal plane of the vehicle.

Yes

Footnote W3

Appropriate information is made available to the vehicle owner that, in order to be capable of withstanding the forces transmitted by the tie-down mechanism during the various driving conditions, a wheelchair with a structure meeting the relevant part of ISO 7176-19:2008 is recommended.

Yes

Dynamic Testing

2018/858, Ann II,
Part III, App 3,
4.1.

The full assembly of the WTORS system is tested by an in-vehicle dynamic test in accordance with the specified paragraphs and Annex of ISO 10542-1:2012, testing all components/anchorages simultaneously, using a vehicle body-in-white or representative structure.

Yes

2018/858, Ann II,
Part III, App 3,
4.2.

The component parts of the WTORS meet the relevant requirements of ISO 10542-1:2012 and paragraphs 5.1, 5.3 and 5.4. These requirements are deemed to have been met in respect of the occupant restraint if it is approved in accordance with UN Regulation No 16.06.

Yes

Static Testing - NA



Geometric Requirements

2018/858, Ann II, Part III, App 3, 1.2.	The wheelchair occupant's lower belt anchorages are located in accordance with UNECE Regulation 14-07, paragraph 5.4.2.2, relative to Point P on the SWC when placed in the travelling position designated by the manufacturer (between 30 and 80degrees from the horizontal).	Yes
2018/858, Ann II, Part III, App 3, 1.2.	The upper actual anchorage(s) are located at least 1,100 mm above the horizontal plane, passing through the points of contact between the rear tyres of the SWC and the vehicle floor. This condition is still satisfied after the static/dynamic strength test.	Yes

WTORS Components – Dynamic Test

Dynamic Test Set-up

ISO10542, Ann A, 4.2.(a)	Wheelchair design meets characteristics specified in Annex E.	Yes
ISO10542, Ann A, 4.2.(b)	Hybrid III dummy used with mass of 77.7 kg. Close-fitting cotton clothes worn and static resistance of all joints set to 1g.	Yes
2018/858, Ann II, Part III, App 3, 3.3.1.	Test carried out in representative vehicle body structure* OR All anchorages on sled set-up are within an absolute linear distance of 50 mm from those on the vehicle* <i>*Strikethrough, as appropriate.</i> <i>Note: There is no tolerance on the SWC P-point with respect to the declared travelling position of the wheelchair and so measurements of anchorage positions should be normalised to give the P-point as the origin in both sets of measurements.</i>	Yes
VCA	In the case of out-of-vehicle tests, comparison of anchorage positions is attached to the report as an Annex.	NA
ISO10542, Ann A, 5.7. VCA	Wheelchair reference plane parallel to vehicle longitudinal plane (+/- 3°). Where the wheelchair does not rest on a horizontal surface, this attitude is replicated on the sled, wherever possible.	Yes
ISO10542, Ann A, 5.8.	Tie-downs installed and tensioned, as per manufacturer's instructions.	Yes
ISO10542, Ann A, 5.12.	ATD is positioned upright in the SWC and symmetrical about its centreline with the pelvis as far back on the seat as possible and hands resting on thighs.	Yes
ISO10542, Ann A, 5.14.-5.18.	Occupant restraint installed, as per manufacturer's instructions.	Yes
ISO10542, Ann E, E.2.I	Tyre pressures set to 320 ⁺³⁰ / ₋₀ kPa.	Yes



Dynamic Test Results

ISO10542, Ann A, 4.1.(c)	Sled velocity change:	<table><tr><td>1. 48.69</td></tr><tr><td>2. 48.54</td></tr><tr><td>3. 48.7</td></tr><tr><td>4. 48.7</td></tr></table>	1. 48.69	2. 48.54	3. 48.7	4. 48.7	km/h	Yes	
1. 48.69									
2. 48.54									
3. 48.7									
4. 48.7									
	Requirement: 48 -0+2 km/h								
ISO10542, Ann A, 4.1.(d)	Acceleration pulse conforms to ISO 10542 requirements.			Yes					
	Requirement: > 0g for 75 ms; > 15 g for 40 ms; > 20 g for 15 ms								
ISO10542, 5.2.3.(a)	ATD retained in seat of SWC.			Yes					
ISO10542, 5.2.3.(b)	SWC is in an upright position on the impact sled.			Yes					
ISO10542, 5.2.3.(c)	No WTORS component became detached or separated.			Yes					
ISO10542, 5.2.3.(d)	Tools not required for release of SWC from tie-down system.			Yes					
ISO10542, 5.2.3.(e)	Tools not required for release of ATD from restraint system.			Yes					
ISO10542, 5.2.3.(f)	No part of the WTORS exhibits signs of tearing, fragmentation, fracture, or complete failure (unless designed to do so, e.g. load limiting webbing).			Yes					
ISO10542, 5.2.3.(g)	WTORS exhibits no dangerous roughness, sharp edges or protrusions likely to increase the risk of injury.			Yes					
ISO10542, 5.2.2.(a)	Movement of the SWC and ATD is within limits:			Yes					
	- Horizontal excursion of SWC:	<table><tr><td>1. 118</td></tr><tr><td>2. 91</td></tr><tr><td>3. 58</td></tr><tr><td>4. 95</td></tr></table>	1. 118	2. 91	3. 58	4. 95	mm	Limit: 200	
1. 118									
2. 91									
3. 58									
4. 95									
	- Horizontal excursion of ATD knee:	<table><tr><td>1. 236</td></tr><tr><td>2. 249</td></tr><tr><td>3. 216</td></tr><tr><td>4. 255</td></tr></table>	1. 236	2. 249	3. 216	4. 255	mm	Limit: 375	
1. 236									
2. 249									
3. 216									
4. 255									
	- Horizontal excursion of ATD head:	<table><tr><td>1. 545</td></tr><tr><td>2. 511</td></tr><tr><td>3. 508</td></tr><tr><td>4. 525</td></tr></table>	1. 545	2. 511	3. 508	4. 525	mm	Limit: 650	
1. 545									
2. 511									
3. 508									
4. 525									
ISO10542, 5.2.2.(b)	Horizontal excursion of ATD knee is at least 1.1 times excursion of SWC.			Yes					
	Remarks (condition of anchorages after test):	All anchorages remained intact with some deformation							



**Vehicle Certification
Agency Europe**

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

WTORS Components – Material Tests

ECE Regulation 16/Environmental/Material Tests

ISO10542, 5.1.1.

ECE regulation tests as specified in the table below have been carried out and passed for all component parts of the WTORS, as applicable.

Yes

Test report details or other reference:

Stored on file by VCA

ISO10542, 5.1.2.

Burn rate of webbing and padding does not exceed 100 mm/min.

Yes

Subclause	Component	Subject	ECE R 16 tests referenced	Application ^a
6.2.1.1	rigid parts	sharp edges	—	OR + WTD
6.2.1.2	rigid parts	corrosion	7.2	OR + WTD
6.2.1.4	rigid parts	cold impact test	7.5.4	OR + WTD
6.2.2.1	buckles	correct use and size	—	OR
6.2.2.2	buckles	closing/releasing	7.8.2	OR
6.2.2.3	buckles	cold mating	7.5.3	OR
6.2.2.4	buckles	repeated testing	7.7	OR
6.2.3.2	adjustment devices	micro-slip	7.3	OR
6.2.3.4	belt-adjusting device	force	7.5.6	OR + WTD
6.2.5	various belt retractors	performance	7.2, 7.6.1 to 7.6.4	OR
6.2.6	preloading devices	performance	7.2, 7.9.2	OR
6.3.1	belts	general specs	7.4.3	OR
6.3.2	belts	strength	7.4.1.1, 7.4.2	OR + WTD
6.3.3	belts	strength	7.4.1, 7.4.2	OR + WTD
6.4.2	belts	strength	7.4.1.6, 7.4.2, 7.5	OR + WTD

^a OR = occupant restraint, WTD = wheelchair tiedown.

Webbing Slippage Tests

ISO10542, 5.3.

Strap type adjustment mechanisms show slippage of no greater than 25 mm when tested in accordance with Annex C or ECE R16.

Yes

Partial Engagement Test

ISO10542, 5.4. &
Ann D

All parts of the WTORS with potential to be partially engaged separate from this condition, with a force of no greater than 22 ⁺²/₋₀ N, applied for a maximum of 3 ^{+0.5}/₋₀ seconds.

Yes

Description of components and subjected to the above test and manner of partial engagement (with photographs, if applicable):

NA



WTORS Occupant Restraint Installation

2018/858, Ann II, Part III, App 3, 2.3. R16.06, 8.2.2.	Belt(s) are installed so that, when properly worn, they will work satisfactorily and reduce the risk of bodily injury in the event of an accident. In particular, they are installed so that the:	Yes
R16.06, 8.2.2.1.	Straps are not liable to assume a dangerous configuration;	Yes
R16.06, 8.2.2.2.	Danger of a correctly positioned belt slipping from the shoulder of a wearer as a result of his/her forward movement is reduced to a minimum;	Yes
R16.06, 8.2.2.3.	Risk of the strap deteriorating through contact with sharp rigid parts of the vehicle or seat structure is reduced to a minimum;	Yes
R16.06, 8.2.2.4.	Safety belt provided for each wheelchair position is such as to be readily available for use, including after a seat (or wheelchair) has been displaced/folded and then restored.	Yes
R16.06, 8.3.1.	Rigid parts do not increase the risk of injury in the event of an accident.	Yes
R16.06, 8.3.2.	Device for releasing the buckle is clearly visible to and within easy reach of the wearer, and designed so that it cannot be opened inadvertently or accidentally. It is located so that it is readily accessible to a rescuer in an emergency.	Yes
R16.06, 8.3.2.	Both when not under load and when sustaining the wearer's weight, the buckle is capable of being released by the wearer with a single simple movement of either hand in one direction.	Yes
R16.06, 8.3.2.	If the buckle is in contact with the wearer, the parts of the buckle likely to contact the body of the wearer presents a section of not less than 20 cm ² and at least 46 mm in width, measured in a plane situated at a maximal distance of 2.5 mm from the contact surface.	Yes
R16.06, 8.3.3.	Belt either adjusts automatically to fit or is designed so that the manual adjusting device is readily accessible to the wearer, is convenient and easy to use, and may be tightened with one hand.	Yes
R16.06, 8.3.4.	Belts incorporating retractors are installed so that they operate correctly and stow the strap efficiently.	Yes

Remarks

-



Vehicle Certification
Agency Europe

VCA Europe S.r.l.
Point - Polo per l'Innovazione Tecnologica
Via Pasubio, 5
24044 Dalmine (BG)
Italy
enquiries@vca-europe.com |
europe.vehicle-certification-agency.gov.uk

Report Number: VCAE007617-3
Issue: 0

This test report shall not be reproduced except in full, without
written approval of the technical service.



ISP N° 0178 E

Membro degli Accordi di Mutuo Riconoscimento
EA, IAF e ILAC

Signatory of EA, IAF and ILAC
Mutual Recognition Agreements

Annex I – Comparison of Vehicle and WTORS Test Geometry

Measured with arbitrary datum													
		Vehicle				WTORS Test							
		X	Y	Z		X	Y	Z					
Front left		1278	-198	80		1278	-197	82					
Front right		1278	498	80		1278	499	82					
Rear left		0	0	0		0	0	0					
Rear right		0	0	0		0	0	0					
LB		60	-312	314		63	-307	327					
LNB		60	612	314		63	611	327					
Upper		185	569	1427		174	570	1433					
Reel		57	776	468		60	778	468					
P point		437	150	539		437	150	539					
Corrected to make P-point the origin (0,0,0) in both cases													
		Vehicle				WTORS Test				Difference			
		X	Y	Z		X	Y	Z		X	Y	Z	Abs
Front left*		841	-348	-459		841	-347	-457		0	-1	-2	2
Front right*		841	348	-459		841	349	-457		0	-1	-2	2
Rear left		-437	-150	-539		-437	-150	-539		0	0	0	0
Rear right		-437	-150	-539		-437	-150	-539		0	0	0	0
LB		-377	-462	-225		-374	-457	-212		-3	-5	-13	14
LNB^		-377	462	-225		-374	461	-212		-3	1	-13	13
Upper		-252	419	888		-263	420	894		11	-1	-6	13
Reel^		-380	626	-71		-377	628	-71		-3	-2	0	4