



**ANCAP**  
Crash testing for safety

# GUIDELINES FOR RECORDING COMPLIANCE WITH CRASH TEST PROTOCOL

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## FRONTAL OFFSET CRASH TEST

Test Organisation Reference No.:		
Test Organisation		
Vehicle Make & Model:		
ANCAP Reference Code:		
Date of ANCAP authorisation to proceed with test:		
Euro NCAP Test Protocol	Version:	Date:
Test Date:		
Test Engineer (name):		
Task	Date Completed	Initials
A. Vehicle Specification Checks		
B. Vehicle Preparation & marking		
C. Barrier & Camera Preparation		
D. Passenger Compartment Setup		
E. Dummy installation		
F. Final pre-test checks (OK to "fire")		
G. Post-test tasks		
H. Data processing & reporting		

## INTRODUCTION

This document sets out the *information that is required to be recorded* in association with the frontal offset crash test. *It is not intended to be a description of how the tests are to be performed.* Test organisations must develop their own documentation for this purpose.

The test is to be conducted in accordance with the version of the published Euro NCAP Test Protocol that has been agreed to by ANCAP, subject to variations described in this document and in the ANCAP Notes on the Assessment Protocol. This version of the checklist is based on version 5.1 of the Euro NCAP Frontal Impact Testing Protocol, June 2011.

Test organisations may use this document or their own checklists, provided that the in-house checklists cover all items described in this document and that the checklists are made available to authorised ANCAP personnel for inspection, if requested.

Requirements that are additional to the Test Protocol are shown in **red text**.

## A. VEHICLE SPECIFICATION CHECKS

### Purpose:

- To record delivery information
- To ensure that the vehicle meets the specifications required by ANCAP
- To ensure that manufacturer's settings have been sought and received
- To record safety-related features of the vehicle

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
<b>A1 Delivery information &amp; manufacturer's settings</b>				
A1.1	-	Delivery date	(date)	
A1.2	-	Name of motor dealer		
A1.3	-	Date manufacturer's settings requested	(date)	
A1.4	-	Date manufacturer's setting received (see A4)	(date)	
A1.5	-	Name of manufacturer's representative		

<b>A2. Vehicle specifications</b>				
A2.1	-	Variant (eg "GLX")		
A2.2	-	Body type (eg "5 door hatch")		
A2.3	-	Photographs of vehicle (without signage)		
		Front		A2.3a
		Front $\frac{3}{4}$		A2.3b
		Driver's side		A2.3c
		Rear $\frac{3}{4}$		A2.3d
		Passenger side		A2.3e
		Underside - front		A2.3f
		Underside - rear		A2.3g

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ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
		Under bonnet Plan view		A2.3h A2.3i
A2.4	-	Build date (photo of build plate)		A2.4
A2.5	-	ADR Compliance Plate date (photo of plate)		A2.5
A2.6	-	VIN (& photo):		A2.6
A2.7	-	Engine number (& photo):		A2.7
A2.8	-	Engine size & configuration		
A2.9	-	Transmission type and number of gears		
A2.10	-	Odometer reading	km	
A2.11	-	Wheels (type & size)		
A2.12	-	Tyres (type & size)		
A2.13	-	<b>Tyre placard pressures</b> Front: <b>for "normal" load (photo of placard)</b> Rear:	kPa kPa	A2.13
A2.14	-	Is steering column tilt (vertical) adjustable? Is steering column reach adjustable? (X)	Y / N Y / N	
A2.15	-	Function of instrument warning lights		
A2.16	-	Vehicle roadworthy		
A2.17	-	Vehicle clean outside, inside & underneath		
A2.18	-	Condition of bodywork (eg dents) Have pedestrian tests been performed?	Y / N	

### A3 Seats and Restraints

Item	Driver	Front Passenger	Rear Outboard	Rear Centre
A3.1 Seat style (BU=bucket or BE=bench)				
A3.2 Seat back angle adjustment*				
A3.3 Seat fore/aft adjustment*				
A3.4 Seat height adjustment*				
A3.5 Seat cushion tilt adjustment*				
A3.6 Head restraint fitted?				
A3.7 Head restraint height adjustment				
A3.8 Head restraint tilt adjustment				
A3.9 Active head restraint?				
A3.10 Seat belt type#				
A3.11 Upper anchorage height adjustable				
A3.12 Seat belt pretensioner				

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A3.13 Seat belt load limiter				
A3.14 Front airbag				
A3.15 Side airbag - thorax				
A3.16 Side airbag - head (Curtain, Tube, Bag or None)				
A3.17 Knee airbag				
A3.18 Anti-submarining seat design (where claimed by manufacturer)				
A3.19 Top tether anchorage location@				
A3.20 ISOFIX anchorages				

\* E=electrical adjustment, M=manual adjustment F=fixed (non-adjustable)

# ELR=3 point emergency locking retractor. ALR=3 point automatic locking retractor, L=2 point LS=fixed 3 point

@ P=parcel shelf, S=back of seat, F=floor, T=tailgate sill, R=roof/ceiling

#### A4. Manufacturer-specified settings (for tyre pressures see A2.13)

Where "page number" is requested, indicate the page number in the owner's handbook that explains *how to adjust* the item concerned.

Where the manufacturer provides set-up information this must be retained for archive purposes but should not be included in the report, unless to explain a variation to the set-up.

It is recommended that the R-point data (item 4.12) is checked by physically measuring the vehicle early in the set-up process. In particular the Y value of the R-point should match the centreline of the driver's seat. Resolve with manufacturer if there is a discrepancy.

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
A4.1	1.1.1	Fuel tank capacity Page number (in owners manual)	litres	
A4.2	1.1.8	Unladen kerb weight	kg	
A4.3	7.1.1	H-point machine torso angle (if only seat back angle is provided then the reference system must be described) Page number (seat back angle adjustment)	degrees	
A4.4.	6.1.6	Seat fore/aft position for 95%ile male (distance from foremost point of travel) Page number	mm	
A4.5	6.1.11	Seat base tilt angle (from horizontal) or position of control(s) Page number	degrees	
A4.6	6.1.12	Seat lumbar support setting Page number		

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A4.23	2.1.3	Instructions for removing the driver airbag, if necessary <b>(not required by ANCAP)</b>		
A4.24	-	Recommendations for attaching tow cable to vehicle. ANCAP requires that the towing points are not rearward of the front axle. The tow cable will be attached to the lower control arms if there is no other suitable structure.		

A5	-	<p><b>Special instructions/requests from manufacturer:</b></p> <p>Recommendation from test organisation:</p> <p>Authorised by ANCAP on (date):</p>
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<p><b>A6 Notes about vehicle specifications</b></p>       
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## B. VEHICLE MASS CALCULATIONS AND PREPARATION

### Purpose:

- To measure vehicle unladen mass
- To calculate the reference (test) mass and simulate the test mass distribution
- To prepare the vehicle and add ballast, if necessary
- To apply vehicle markings

B1. Measuring unladen mass							
ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO			
B1.1	1.1.1	Fuel tank capacity (see A4.1)	litres				
B1.2	1.1.3	Mass of fuel in full tank = B1.1 x 0.745 for Petrol. Use 0.840 for diesel.	kg				
B1.4	1.1.3	Volume of fuel substitute = B1.2 / density (density of water is 1 kg/litre)	litres of [water]				
B1.5	1.1.4	Fuel tank drained and refilled to the equivalent of FULL capacity (B1.4) Dye colour	litres of [water]				
B1.6	1.1.5 & 1.4.2-3	Other liquids at maximum Engine oil Coolant Power steering Brake reservoir Transmission Washer bottle(s) Others  OR replaced with ballast of equivalent mass					
B1.7	1.1.6	Spare wheel & tools present					
B1.8	1.1.7	Tyres pressures (+/-10kPa of A2.13)	Front L kPa Front R kPa Rear R kPa Rear L kPa				
B1.9	1.1.8	Close bonnet, boot and doors. Rock vehicle to settle suspension then measure unladen wheel loads  <b>Unladen Kerb</b>	kg	Left	Right	Total	
			Front				
			Rear				
			Total			UKM	

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		Mass					
B1.10	-	Difference between measured kerb mass and stated kerb mass (A4.2)			kg		
B1.11	1.1.9	Mark body panel at top of wheelarch, in same vertical line as wheel centreline. Measure height of this point above the ground ("ride height")  Photograph 2 measurements			Front L	mm	B1.11a
					Front R	mm	
					Rear R	mm	B1.11b
					Rear L	mm	

<b>B2. Measuring reference (laden) mass</b>				
Caution: Do not switch on ignition with battery, airbag or pretensioner disconnected Vehicle should have equivalent of 90% of capacity in fuel tank (B1.4)				
ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
B2.1	1.2.1	Calculate 10% of fuel mass (0.1 x B1.2) Remove this amount of ballast from the fuel tank (i.e. vehicle tested with 90% of fuel mass)	kg	
B2.2	1.2.3	Determine mid-position (fore/aft) of driver seat and place in mid-position (or first notch rearward). Photograph position of seat (note this is not necessarily the final test position)		B2.2
B2.3	1.2.3	Determine mid-position (fore/aft) of front passenger seat and place in mid-position (or first notch rearward). Photograph seat.		B2.3
B2.4	1.2.4	Place 88kg* ballast on driver's seat Photograph ballast on seat (wheel mass measurements may be used to determine when 88kg is reached)  * Hybrid III with cables is typically 82kg. 88kg is from the protocol		B2.4
B2.4a	1.2.4	Place 88kg ballast on front passenger seat Photograph ballast on seat (wheel mass measurements may be used to determine when 88kg is reached)		B2.4a
B2.5	1.2.5	Evenly distribute 36kg of ballast in luggage compartment Photograph ballast in luggage compartment	kg	B2.5
B2.6	1.2.6	Fit CRS to outboard rear seat and install P1.5 dummy (or 11kg ballast). Assume CRS is an extra 3kg, if one is not available.		B2.6

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		Photograph CRS/ballast					
B2.7	1.2.6	Fit CRS to inboard rear seat and install P3 dummy (or 15kg ballast) . Assume CRS is an extra 3kg, if one is not available.  Photograph CRS/ballast  Note that 2 seat vehicle do not have child restraints and child dummies (1.2.7)					B2.7
B2.9	1.2.8	Close bonnet, boot and doors. Rock vehicle to settle suspension then measure laden wheel loads  Reference laden mass	kg	Left	Right	Total	
			Front			FRM	
			Rear			RRM	
			Total			RLM	
B2.10	-	Difference between RLM and unladen kerb mass (B1.9)			kg		
B2.11	1.4.9- 1.4.11	Calculate acceptable ranges for final test masses (see B4.12). Round to nearest kg.  Front axle is FRM +/- lesser of FRM x 0.05 or 20kg (= kg)  Rear axle is RRM +/- lesser of RRM x 0.05 or 20kg (= kg)  Total mass is RLM +/- 25kg	kg	Min	Max		
			Front range				
			Rear range				
			Total range				
B2.12	1.2.10	Measure laden ride heights (see B1.11)				B2.12a	
		Front L	mm				
		Photograph 2 measurements	Front R	mm		B2.12b	
			Rear R	mm			
			Rear L	mm			
B2.13	1.2.11	Remove all weights from driver's seat and luggage compartment (CRS may remain in place)					

### B3. Vehicle Width and Overlap

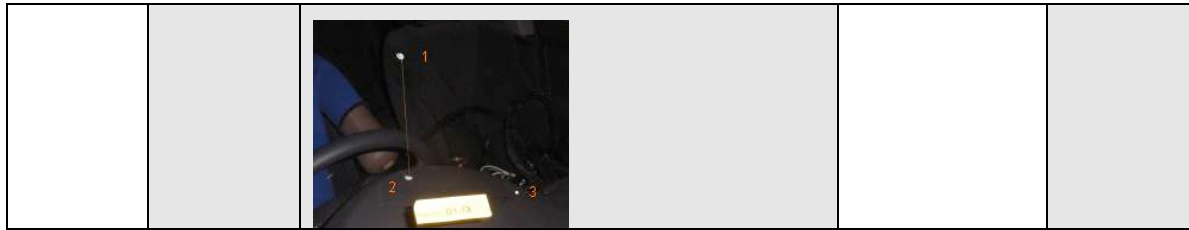
ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
B3.1	1.3.3	From manufacturer's reference points, or by using several symmetrical points on the vehicle body, mark a point at the front of the vehicle that is in the longitudinal centreline of the vehicle. Repeat for a point at the rear of the vehicle.		
B3.2	1.3.1	<p>Ensure that the measuring system is aligned with the longitudinal centreline of the vehicle.</p> <p>Determine the widest point of the nearside of the vehicle ignoring the rear-view mirrors, side marker lamps, tyre pressure indicators, direction indicator lamps, position lamps, flexible mud-guards and the deflected part of the tyre side-walls immediately above the point of contact with the ground.</p> <p>Photograph the measurement of the widest point on both sides</p>	Y =        mm	B3.2
B3.3	1.3.1	<p>In the same manner, determine the widest point of the offside of the vehicle</p> <p>Photograph this point</p>	Y =        mm	B3.3
B3.4	1.3.2-3	Calculate the width of the vehicle (B3.2 - B3.3)	Width = mm	
B3.5	1.3.3	Calculate 10% of width ( 0.1 x B3.4)	10% width = mm	
B3.6	1.3.3	<p>Mark a line on the bonnet and bumper that is parallel to the centreline of the vehicle and is 10% of the width (B3.5) from the centreline, on the driver's side. This is the barrier overlap.</p> <p>Photograph the line</p>		B3.6
B3.7	ANCAP	<p>Apply three marks in line with the lateral centreline of the driver's seat cushion . One should be on the windscreen at about dummy nose height. The second should be on top of the instrument panel vertically below (Z) the windscreen mark. <i>Install string between these two marks.</i> The third mark should be on the windscreen at about mid-height between the other two points. These will be used to visually check dummy alignment.</p>		

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#### B4. Deformation measurements - pre-crash

A 3D measuring system must be used for deformation and intrusion measurements. The vehicle must be on a flat, horizontal floor for these measurements.

Note that ANCAP assesses steering column and pedal intrusion relative to the driver's seat and therefore precise measurement of the driver seat mounting bolts is required in the section.

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
B4.1	2.1.1	Determine and mark centre of each pedal		B4.1
B4.2	2.1.2-4	<p>Set steering wheel to mid-position (vertical and horizontal)</p> <p>The test lab may follow clauses 2.1.3 and 2.1.4 to mark a point on the end of the steering column shaft (i.e. remove airbag assembly, if fitted). The removal and reassembly of the airbag module must be done in accordance with the vehicle manufacturer's instructions.</p> <p>As an alternative to removal of the steering wheel/airbag assembly, determine, mark and measure two points that are symmetrically positioned on the steering wheel hub such that the mid-point of a line between them is located on the axis of the steering column (+/-5mm). The axis could be determined by turning the steering wheel and locating a point on the hub that does not move. Check the chosen points are on the axis by rotating the steering wheel through 180 degrees.</p> <p>The marks should be located on components that are unlikely to be significantly deformed during the crash. In particular, they should not be located over an airbag housing.</p> <p>Photograph marks on steering column</p>	<p>Disassembled? Y / N</p> <p>Symmetrical points? Y / N</p>	B4.2

B4.3	2.1.5-6	Locate three suitable reference points at the back of the vehicle, such as inside the boot. Remove carpet and other soft obstructions, if necessary. The reference points should be sufficiently spread out and in suitable directions to give highly repeatable 3D measurements. Assign one of these points as the "origin".  Photograph the reference points				B4.3
B4.4	2.1.9	Ensure the vehicle is level and place jack stands under vehicle				
B4.5	2.1.6-7	<b>Align the 3D measurement system with the longitudinal centreline of the vehicle and with the horizontal floor</b> (see item B3.1).				
B4.6	2.1.9	Measure & record co-ordinates of reference points (record can be electronic)  Origin 1. 2. 3.	X	Y	Z	B4.6 (origin measurement)
B4.7	2.1.8	Record height of reference points from the ground (record can be electronic)  Origin 1. 2. 3.	Height from ground			
			mm			
			mm			
B4.8	2.1.11	Locate and measure at least two more reference points at the rear of the vehicle on components that are unlikely to deform	X	Y	Z	B4.8 (extra ref. points)
B4.9	2.1.12	Locate, mark and measure points on the <i>passenger-side A-pillar, B-pillar and C-pillar</i> (if applicable) that are  a) 100mm above the door sill b) are 100mm below the window aperture  Photograph B-pillar marks on passenger side				B4.9

B4.10	2.1.14	Locate, mark and measure points on the <i>driver-side</i> A-pillar, B-pillar and C-pillar (if applicable) that are a) 100mm above the door sill b) are 100mm below the window aperture Photograph A-pillar marks on driver side		B4.9
B4.11	2.1.15	Locate and measure the mark(s) on the steering column Photograph measurement being taken		B4.11
B4.12	2.1.16	Locate and measure the mark(s) on the pedals Photograph brake pedal measurement being taken	Accel Brake Clutch Park	B4.12 (brake pedal)
B4.13	-	Locate and measure the tops of the four mounting bolts for the driver's seat. Photograph the measurement of the front outboard seat mounting bolt.		B4.13
B4.14	2.1.17	If applicable, replace the steering wheel hub and airbag assembly and check the airbag warning light operation		

<b>B5. Vehicle preparation</b>				
ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
B4.1	1.4.4	Remove carpet, tools and jack from luggage compartment		
B4.2	1.4.4	Remove spare wheel, unless manufacturer indicated otherwise (see A4.20) Remove hubcaps		
B4.3	1.4.1	Battery connected and fully charged ANCAP does not permit an auxiliary battery. Caution should be exercised after the test to avoid contact with battery acid.		
B4.5	1.4.1	Switch ignition on and check airbag warning light. Switch ignition off.		
B4.6	1.4.6	Install on-board data acquisition system and related components in luggage area and route cabling to seats		B4.6
B4.7	1.4.5	Install abort braking system, if appropriate. Note that the Test Contractor is responsible for the full costs of a retest if an abort system is not used (or fails to operate correctly) and the test is invalid due to incorrect speed or alignment.		B4.7

		Photograph abort system actuator		
B4.7a	-	<p>Determine the optimum position and method for attaching the tow cable to the front underside of the vehicle. The points of attachment should be symmetrical and as far forward and low as possible, without interfering with the deformation characteristics of the vehicle. Unless approved by ANCAP, they must not be rearward of the front axle.</p> <p>Photograph attachment points.</p>		B4.7a
B4.8	4.2.1	Install accelerometers on each b-pillar in the X-direction. Remove carpet and trim. Fit mounting plate to sill at bottom of B-pillar, inside the vehicle. Fix accelerometer to mounting plate. Ensure accelerometer horizontal to $\pm 5^\circ$ . Photograph accelerometers		B4.8a B4.8b
B4.9	1.4.7	Place 88kg ballast on driver's seat (seat should still be in mid position)		
B4.9a	1.4.7	Place 88kg ballast on front passenger seat (seat should still be in mid position)		
B4.10	1.4.8	Fit CRS to outboard rear seat and install P3 dummy (or 11kg ballast)		
B4.11	1.4.8	Fit CRS to inboard rear seat and install P1.5 dummy (or 15kg ballast)		

B4.12	1.4.9	Close bonnet, boot and doors. Rock vehicle to settle suspension and measure laden wheel loads. Adjust ballast to achieve required axle and total masses  Total Test Mass	kg	Left	Right	Total	
			Front			FTM	
			Rear			RTM	
			Total			TTM	
B4.13	1.4.10	Is TTM within required range (B2.10a)?			Y / N		
B4.14	1.4.10	Is FTM within required range (B2.10a)?			Y / N		
B4.15	1.4.10	Is RTM within required range (B2.10a)?			Y / N		
B4.18	-	Difference between final test masses and manufacturer expectations (A4.21)	Front	kg			
	Rear		kg				
	Total		kg				

**B5. Vehicle Marking** (see example photographs, see specifications for logos and identification lettering)

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
B5.1	1.5.1	Attached ANCAP logo to driver and passenger front doors and to roof (front half).		
B5.2	-	Attach vehicle and test identification sheets to front doors, bonnet and roof (Vehicle make & model, test date, test identification number)		
B.5.3	1.5.2	Optionally, attach test organisation logos of a size and location that does not detract from the other markings		
B5.5	ANCAP	<b>If requested by ANCAP</b> , mark grid points on the front of the vehicle for measuring crush profile in accordance with SAE J224 (dimensions C1-C6 for frontal impact).  Record the 3D positions of these grid points (electronic record is acceptable). Photograph the marks.		B5.5

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**B6 Notes about vehicle preparation**

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**C3 Notes about barrier & camera preparation**

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## D. Passenger Compartment Setup

### Purpose:

- To set seats in required positions
- To set steering wheel in required position
- To seat belt upper anchorage in required position

ANCAP does not require the use of the Gabarit device (protocol clause 6.4)

### D1. Seat adjustments

Refer to settings and owner's handbook page numbers at A4.3 to A4.6

Seat back angle is set during dummy positioning.

Only test organisation personnel are permitted to adjust vehicle settings. With ANCAP approval, manufacturer's representatives may observe and advise on adjustments but must not touch any controls.

"Set" stickers or masking tape should be applied to controls after they have been adjusted to the required test position.

ITEM	PROTOCOL	DESCRIPTION	CHECKED		PHOTO
			DRV.	PAS.	
D1.1	6.1.11	Is seat base tilt adjustable? If YES, set seat base tilt at flattest (or any point up to mid-range, if specified by manufacturer - see A4.5)	Y / N	Y/N	
D1.2	5.2.5	If seat is tilt adjustable, mark and photograph the adjustment devices to clearly show their position  Least tilt Largest tilt Test position			D1.2a/d D1.2b/e D1.2c/f
D1.3	6 (table)	Is seat height adjustable? If YES, set to lowest height Photograph height control in lowest position	Y / N	Y/N	D1.3a/b
D1.4	6.1.12	Is lumbar support adjustable? If YES set lumbar support to manufacturers setting (A4.6) or fully retracted & photograph control position	Y/N	Y/N	D1.4
D1.5	6 (table)	Set armrest in lowered position (unless interferes with dummy positioning)			
D1.7	6 (table)	Set head restraint to highest position Set head restraint tilt to mid-position,			

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		unless otherwise specified by manufacturer			
D1.8	6.1.2	Mark mechanical foremost seating position on the door sill or seat runner			
D1.9	ANCAP	Mark mechanical rearmost seating position on the door sill or seat runner			
D1.10	6.1.5	Mark 95%ile seating position (Manufacturer Settings A4.4) on door sill or seat runner. Label "95"			
D1.11	6.1.7	Measure distance between foremost and 95%ile points  Half of distance =			
D1.12	6.1.7	Mark centre position between foremost and 95%ile position on sill tape and adjust seat to this position			
D1.13	6.1.9	Ensure seat is latched on both rails (move rearward if required to latch)  Photograph seat and marks			D1.13
D1.14	6 (table)	Rear seat adjustments, where applicable  Fore/aft - mid-point (move rearward to latch)  Height adjustment - mid-travel  Base tilt adjustment - flattest  Lumbar support adjustment - retracted  Head restraints - for v5.1 lowest, unless specified by manufacturer. For v5.2+ see protocol  Armrests stowed  Photograph the test position of the rear seat(s), showing set-up marks			D1.7 (if adjusted)

## D2 Steering Wheel Adjustments

A 3D measuring machine could be used to determine steering wheel adjustments. In this case the final (test) position of the steering column must still be clearly marked.

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
D2.1	6.2.2-6.2.8	Is horizontal adjustment provided? If YES, mark steering column fully forward Mark steering column fully rearward Calculate distance (X) between marks Mark mid-position and adjust steering column to this position. Lock in place Photograph marks and steering column position	Y / N  mm	D2.1

D2.2	6.3	Is vertical adjustment provided? If YES, mark steering column fully down Mark steering column fully up Calculate distance (X) between marks Mark mid-position and adjust steering column to this position. Lock in place Photograph marks and steering column position	Y / N    mm	
D2.3	-	<p style="color: red;">Determine axis of steering wheel and mark a cross on the hub, in line with this axis (eg the mark should not move when the steering wheel is rotated). This is used for measuring dummy position.</p> <p style="color: red;">See also item B4.2</p>		

### D3 Seat belt upper anchorage

ITEM	PROTOCOL	DESCRIPTION	CHECKED		PHOTO
D3.1	6 (table)	Is vertical adjustment provided? Did manufacturer specify a setting? If provided, adjust to manufacturer's setting If adjustable but no manufacturer's setting, mark anchorage fully down Mark anchorage fully up Calculate distance (X) between marks Mark mid-position and adjust anchorage to this position. Ensure it is locked in place (nearest notch upwards) Photograph marks and seat belt anchorage position	Y / N Y / N    mm	Y / N Y / N    mm	D3.1

### D4 H-Point position

Install H-Point machine as described in SAE J826 and section 7.1 of Test Protocol  
 Seat must not be loaded and must be at room temp for 1 hour before H-Point check  
 Only test organisation personnel are permitted to install and adjust the H-point machine. With ANCAP approval, manufacturer's representatives may observe but must not touch the H-point machine.

D4.1 to D4.26 applies to driver's seat. D4.27 to 4.52 applies to the front passenger seat

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
<b>DRIVER'S SEAT</b>				
D4.1	7.1	New seat cycled by 65-85kg person for 1 minute on two occasions		
D4.2	-	Place jack stands under vehicle		

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D4.3	7.1.1	Did manufacturer provide seat back angle setting? (see A4.3)		
D4.4	7.1.1	Set seat back angle to manufacturer's setting or 25 degrees (default)		
D4.5	7.1.2	Muslin cloth placed on seat		
D4.6	7.1.3	Install seat and back components of H-point machine		
D4.7	7.1.4	Set leg lengths 401mm thigh and 414mm lower leg. Photograph setting		D4.7
D4.8	7.1.5	Attach lower legs to H-point machine and check that t-bar is horizontal		
D4.9	7.1.6	Place right foot on undepressed accelerator pedal with heel as far forwards as possible		
D4.10	7.1.6	Measure Y distance from foot to centreline of machine	mm	
D4.11	7.1.7	Place left foot at same distance from centreline, foot flat on footwell. <b>If the foot is touching a footrest after this adjustment it may be moved until it is naturally and fully resting on the footrest.</b>		
D4.12	7.1.8	Install lower leg and thigh weights		
D4.13	7.1.9	Tilt back pan fully forward and draw machine away from seat back		
D4.14	7.1.10	Push machine back against seat back		
D4.15	7.1.11	Apply (nominal) 100N load twice as specified		
D4.16	7.1.12	Return back pan to normal position, against seat back		
D4.17	7.1.13	Install buttock weights		
D4.18	7.1.14	Install torso weights (alternatively)		
D4.19	7.1.15	Tilt back pan fully forwards, rock 5 degrees side to side (feet unrestrained). Return upright so T-bar is horizontal. <b>Ensure machine is at lateral centreline of seat</b>		
D4.20	7.1.16	Reposition feet by lifting then lowering so heel contacts floor and sole on undepressed accelerator pedal		
D4.21	7.1.17	Return back pan to normal position, against seat back		
D4.22	7.1.18	Check that the machine is horizontal		
D4.23	7.1.19	Using the spirit level on the machine, adjust torso angle to manufacturer's setting or 25 degrees. Ensure back pan stays in contact with seat and is level. Record angle	degrees	

D4.24	7.1.20	Measure H-Point (relative to a suitable reference point)		X	Y	Z	D4.24
		Photograph measurement of H-Point					
D4.25	-	<p>Mark and record one point on seat back and two points on seat base/cushion (points chosen to B3.10 may be used for this purpose). These can be used to check if seat has been moved out of position, if necessary.</p> <p>Photograph alignment marks</p>	mm	X	Y	Z	D4.25
			Seat back				
			Seat base 1				
			Seat base 2				
D4.26	-	Remove H-point machine.					
FRONT PASSENGER SEAT							
D4.27	7.2	New seat cycled by 65-85kg person for 1 minute on two occasions					
D4.28	-	Place jack stands under vehicle					
D4.29	7.1.1 (same as driver)	Did manufacturer provide seat back angle setting? (see A4.3)					
D4.30	7.1.1	Set seat back angle to manufacturer's setting or 25 degrees (default)					
D4.31	7.1.2	Muslin cloth placed on seat					
D4.32	7.1.3	Install seat and back components of H-point machine					
D4.33	7.1.4	Set leg lengths 401mm thigh and 414mm lower leg. Photograph setting					D4.7
D4.34	7.1.5	Attach lower legs to H-point machine and check that t-bar is horizontal					
D4.35	7.2	Place right foot flat on the floor					
D4.36	7.2	Adjust lateral position of foot to match that of the driver		mm			
D4.37	7.1.7	Place left foot at same distance from centreline, foot flat on floor					
D4.38	7.1.8	Install lower leg and thigh weights					
D4.39	7.1.9	Tilt back pan fully forward and draw machine away from seat back					
D4.40	7.1.10	Push machine back against seat back					
D4.41	7.1.11	Apply (nominal) 100N load twice as					

		specified				
D4.42	7.1.12	Return back pan to normal position, against seat back				
D4.43	7.1.13	Install buttock weights				
D4.44	7.1.14	Install torso weights (alternatively)				
D4.45	7.1.15	Tilt back pan fully forwards, rock 5 degrees side to side (feet unrestrained). Return upright so T-bar is horizontal. <b>Ensure machine is at lateral centreline of seat</b>				
D4.46	7.1.16	Reposition feet by lifting then lowering so heel contacts floor and sole on undepressed accelerator pedal				
D4.47	7.1.17	Return back pan to normal position, against seat back				
D4.48	7.1.18	Check that the machine is horizontal				
D4.49	7.1.19	Using the spirit level on the machine, adjust torso angle to manufacturer's setting or 25 degrees. Ensure back pan stays in contact with seat and is level. Record angle		degrees		
D4.50	7.1.20	Measure H-Point (relative to reference point A4.12) <b>Photograph measurement of H-Point</b>	X	Y	Z	D4.24
D4.51	-	<b>Mark and record one point on seat back and two points on seat base/cushion (points chosen to B3.10 may be used for this purpose). These can be used to check if seat has been moved out of position, if necessary.</b> <b>Photograph alignment marks</b>	mm	X	Y	Z
			Seat back			
			Seat base 1			
			Seat base 2			D4.25
D4.52	-	Remove H-point machine. Jack stands may also be removed.				



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<b>D5 Vehicle settings</b> - see Section 6 (Table) of Test Protocol				
D5.1	-	Set all adjustable glazing to lowered (open) position. Sunroof must be closed.		
D5.2	-	Set transmission to neutral		
D5.3	-	Set parking brake to disengaged		
D5.4	-	Set pedals to normal position of rest		
D5.6	-	Set roof to lowered position (convertibles)		
D5.7	-	Set sunvisors to stowed		
D5.8	-	Set rear view mirror to normal position of use		
D5.9	-	Set all other relevant adjustments to mid position (record these components):		
D5.10	-	Remove any extra keys/key rings from ignition key		

<p><b>D6 Notes about passenger compartment setup</b></p>
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Date & initial cover page when this section is complete

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## E. Dummy installation

### Purpose:

- To install child dummies in vehicle
- To install Hybrid III dummies in vehicle
- Align vehicle with barrier
- To mark and paint dummies

### E1 Child dummy installation

It is usually easiest to install the child dummies before the front seat dummies. Order is not important.

See A4.16 & A4.17 for make and model of child restraint.

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
E1.1	7.6	TNO P1.5 dummy Serial No. Date of last calibration: Child restraint model:		
E1.2	7.6	TNO P3 dummy Serial No. Date of last calibration: Child restraint model		
E1.3	-	Close-fitting stretch cotton clothing fitted to both child dummies		
E1.4	-	Will child dummies be at controlled temperature for at least the same duration as Hybrid III dummies? (If not justify)	Y / N	
E1.5	7.6.1	Check handbook for CRS installation instructions		
E1.6	7.6.1	Install child restraints according to CRS/handbook instructions, <b>including top tether</b> (6.4.1)		
E1.7	7.6.3	Do rear outboard seats have automatic locking retractors?  If instructions on a label near seat belt then follow them to engage automatic lock and photograph label  Otherwise, install without locking	Y/ N  Label Y / N	E1.7 (label)
E1.8	7.6.2	Set 50N tension in both lap and sash portions of seat belt and then apply CRS webbing clamps, if fitted		
E1.9	-	<b>Apply 50N tension to top tether adjuster</b>		
E1.10	-	Install P3 dummy behind driver seat & P1.5 behind passenger seat (note different to side impact test)		
E1.11	7.6.4.1	Install 25x60mm flexible spacer between		

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		dummy back and CRS		
E1.12	7.6.4.1	Apply 250+/-50N tension to harness adjusters (or less if CRS manual indicates)		
E1.13	7.6.4.2	Release harness and remove spacer		
E1.14	7.6.4.2	Re-fasten harness push dummy back in seat and distribute harness slack evenly		
E1.15	7.6.4.2	Lift legs and allow to drop naturally		
E1.16	7.6.4.2	Lightly tape hands onto thighs		
E1.17	7.6.4.2	Check dummy is visually upright and legs are parallel		

## E2 Adult dummy installation

Dummy should not be sitting on seat for more than 2 hours before the test.

Only test organisation personnel are permitted to install and adjust the dummies. With ANCAP approval, manufacturer's representatives may observe but must not touch any dummy.


If the dummy is moved in a way that might cause the neck or spine to be unusually distorted, then remove dummy, straighten neck and spine and repeat procedure.


Dummy temperature must be stabilised at least 5 hours prior to the test (3.5.1.1). Record dates as well as times if not all events on same day. Recording temperature inside dummy flesh is not necessary if ambient temperature is continuously recorded within 1 metre of the dummy and remains with the specified range of 19 to 22 degrees. This is a NHTSA provision.

Dummy instrumentation and calibration requirements are set out in clauses 3.2 and 4.1 of test protocol, except that ANCAP requires dummy recalibration after every four tests (Euro NCAP protocol specifies after every three tests).

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
DRIVER DUMMY (HYBRID III)				
E2.1	3.2	Driver dummy Serial no.: Date of last calibration: Number of times used since last calibration (prior to this test):		
E2.1a	3.3	Dummy modifications: Ford ankle/foot Roller ball-bearing knees Extra lower leg instrumentation Foam neck shields (if airbag present)		
E2.2	3.4	Cotton short-sleeve top and shorts fitted to dummy		
E2.3	3.4	Shoes, as specified in MIL-S13192 rev P. (size XW), fitted to dummy		
E2.4	3.5.1	Dummy temperature stabilised between 19 to 22 deg - Start date & time	Date Time	

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		Measurement method (ambient temperature or dummy flesh): Photograph temperature measuring device		E2.4
E2.5	3.5.2.4	Dummy joint stiffness set at (time) Time elapsed since temperature stabilised	Date Time Hours	
E2.7		Dummy installed in vehicle at (time)	Date Time	
E2.8	7.4.2 7.5.6	Position the dummy so its centreline is coincident with the seat centreline marks Place torso and upper arms against seat back. Lower arms against thighs		
E2.9		Not used		
E2.10	-	<b>Support vehicle on jacks</b>		
E2.11	7.5.1	Manoeuvre dummy until H point is within a 13mm vertical and 13mm longitudinally of Target Point (which is 6mm below the H-point determined in item D.4).		
E2.11a	7.5.2	Adjust pelvic angle to 22.5 degrees (+/-2.5 degrees) of horizontal  <b>The line through the dummy H points should be horizontal with a maximum inclination of +/-2 degrees (equivalent to a vertical (Z) difference of 12mm).</b>	Pelvic angle degrees	
E2.12	7.5.3	Visually check dummy for a square and central positioning. If necessary, adjust dummy so that the transverse instrument platform is within 2.5 degrees of the horizontal.	Transverse angle of platform degrees	
E2.13	7.5.7	<b>Initially move the legs to adjust knee gap (measured from outer metal plate) so that each is 135mm (+/-5mm) from the seat centreline.</b>    <b>Knee gap device (recommended)</b>  <b>Each knee plate should be vertical. This can be confirmed with a spirit level. The femur, tibia and foot should be in the same vertical plane, which need not align with the axis of the vehicle.</b>		

		 <p>Knee alignment spirit level (recommended)</p>		
E2.13	7.5.8	<p>Move the whole right leg so that the right foot is centred (as far as possible) on the accelerator pedal, with heel on floor.</p> <p>If the foot does not reach the accelerator pedal then align the foot at right angles to tibia and place heel on floor as far forward as possible so the heel is in line with the centre of the pedal.</p> <p>In either case the femur, tibia and foot should be maintained in the same vertical plane. The knee gap of 135mm does not need to be retained but the knee plate must still be vertical.</p>		
E2.14	7.5.8	<p>With the initial knee to centreline distance of 135mm, move the left foot so that it is flat as possible on the toe-board.</p> <p>If the left foot is in contact with a footrest then move the whole left leg so that the left foot is centred (as far as possible) on the footrest, with the heel on floor.</p> <p>In either case the femur, tibia and foot should be maintained in the same vertical plane. The knee gap of 135mm does not need to be retained but the knee plate must still be vertical.</p>		
E2.15	7.5.7	If possible, dummy thighs should touch seat cushion. Do they touch?	Y / N	
E2.16	7.5.6	Ensure dummy back is in contact with seat back and torso is central on the seat		
E2.17	7.5.4	Upper arms should be close to the torso		
E2.18	7.5.5	Place hands on steering wheel at quarter to three position, with palms against rim. Lightly tape thumbs to rim.		
E2.19	-	Check all cables to ensure they are unlikely to become trapped or interfere with dummy movement		

E2.20	7.5.6	Visually check dummy for a square and level positioning		
E2.21	7.5.1	Check that H point is still within tolerances		
E2.22	7.5.9	<p>Remove slack from lap section of seat belt, using minimal force.</p> <p>Use one finger to gently pull sash portion away from sternum. Release and allow sash to sit naturally across sternum. Repeat three times.</p> <p>Ensure sash portion is not in contact with the neck and is not higher than the hole for the shoulder rotation adjustment screw. See protocol for permissible adjustments.</p> <p>Use decals or similar to record position of seat belt on chest. Photograph sash portion.</p> <p style="color: red;">Seat belt may then be unfastened to facilitate adjustments, measurements and painting.</p>		E2.22

E2.24	6.5	<p><i>With 3D machine, measure &amp; record dummy reference points (see diagram below). Photograph measurement of right Hm.</i></p> <p>a) Right H-point</p> <p>b) Left H-point (Z value should be within 12mm of point a)</p> <p>c) Head C of G (outboard side of head)</p> <p>d) Front centre of lower neck</p> <p>e) Outboard knee outer pivot</p> <p>f) Rearmost point of head at C of G height</p> <p>h) Centre of steering wheel (D2.3)</p> <p>i) Y value of lateral centreline of seat cushion (not illustrated - see B3.10)</p>	X	Y	Z	E2.24

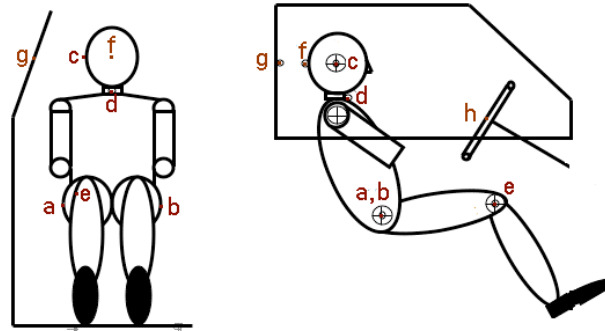


Diagram for E2.24

E2.25	-	<p>Compare Y values of points d and f with the Y value of the seat centreline (B3.10)</p> <p style="text-align: right;">difference for d:   mm</p> <p style="text-align: right;">difference for f:   mm</p>		
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E2.26	6.5	Measure and record dummy to vehicle clearances (see diagram and notes overleaf). <b>Where horizontal measurements are taken with a tape measure use a spirit level or similar to ensure accuracy.</b>	
		A. Top of head to roof lining (Z)	mm
		B. Tip of nose to windscreen joint (XZ plane)	mm
		C. Tip of nose to centre of steering wheel	mm
		D. Chest to centre of steering wheel(X)	mm
		E. H point to door opening (X)	mm
		F. H point to door sill	mm
		G. Knee bolt to floor covering (Z)	mm
		H. Head (C of G decal) to side window or interior trim (Y)	mm
		J. Shoulder bolt to side window or interior trim (Y)	mm
		L. H point to interior door trim/handle (Y)	mm
		M. Knee bolt to interior door trim (Y)	mm
		N. <b>Not used</b>	
		P. <b>Not used</b>	
Q. <b>Not used</b>			

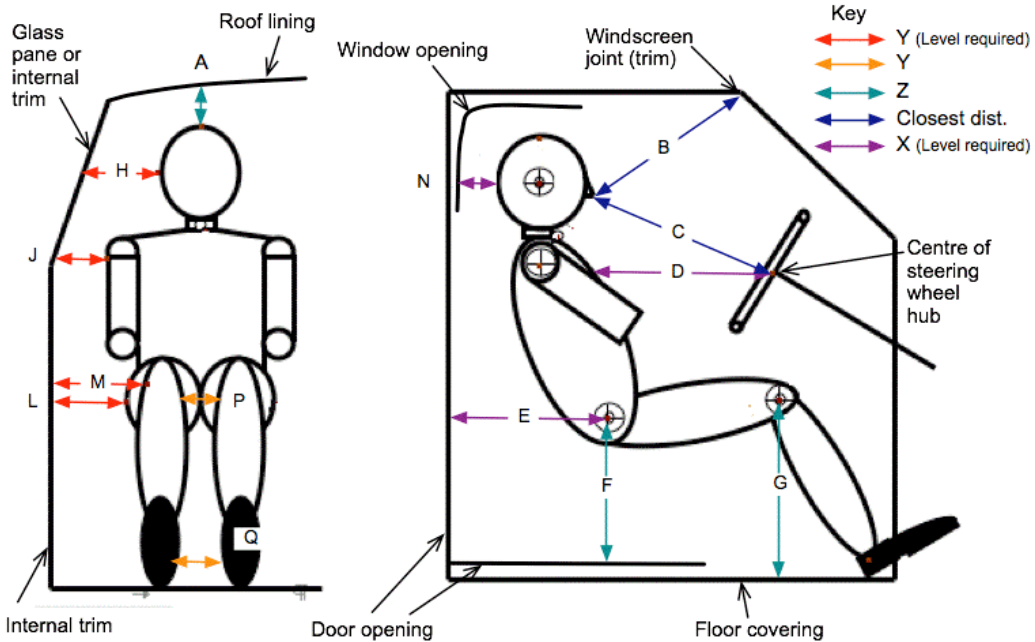


Diagram for E2.26

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ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
PASSENGER DUMMY (HYBRID III)				
EP2.1	3.2	Passenger dummy Serial no.: Date of last calibration: <b>Number of times used since last calibration (prior to this test):</b>		
E2.1a	3.3	Dummy modifications: Ford ankle/foot Roller ball-bearing knees Extra lower leg instrumentation Foam neck shields (if airbag present)		
EP2.2	3.4	Cotton short-sleeve top and shorts fitted to dummy		
EP2.3	3.4	Shoes, as specified in MIL-S13192 rev P. (size XW), fitted to dummy		
EP2.4	3.5.1	Dummy temperature stabilised between 19 to 22 deg - Start date & time Measurement method (ambient temperature or dummy flesh): Photograph temperature measuring device	Date Time	EP2.4
EP2.5	2.5.2.4	Dummy joint stiffness set at (time) Time elapsed since temperature stabilised	Date Time Hours	
EP2.7		Dummy installed in vehicle at (time)	Date Time	
EP2.8	7.4.2 7.5.6	Position the dummy so its centreline is coincident with the seat centreline marks Place torso and upper arms against seat back. Lower arms against thighs		
EP2.9		Not used		
EP2.10	-	<b>Support vehicle on jacks</b>		
EP2.11	7.5.1	Manoeuvre dummy until H point is within a 13mm vertical and 13mm longitudinally of Target Point (which is 6mm below the H-point determined in item D.4).		
EP2.11a	7.5.2	Adjust pelvic angle to 22.5 degrees (+/-2.5 degrees) of horizontal <b>The line through the dummy H points should be horizontal with a maximum inclination of +/-2 degrees (equivalent to a vertical (Z) difference of 12mm).</b>	Pelvic angle degrees	
EP2.12	7.5.3	Visually check dummy for a square and central positioning.	Transverse angle of	

		If necessary, adjust dummy so that the transverse instrument platform is within 2.5 degrees of the horizontal.	platform degrees	
EP2.13	7.5.7	If necessary, move the legs to adjust knee gap (between outer metal surfaces surface) to 270+/-10mm. Record gap  Each leg should be as close as possible to being aligned with a longitudinal vertical plane (XZ plane)	mm	
EP2.13	7.5.8	Position right foot flat on floor as far forward as possible.		
EP2.14	6.3.3.1	Position left foot on floor as far forward as possible. Ensure leg and foot are in the same vertical plane (XZ plane)		
EP2.15	7.5.7	If possible, dummy thighs should touch seat cushion. Do they touch?	Y / N	
EP2.16	7.5.6	Ensure dummy back is in contact with seat back and torso is central on the seat		
EP2.17	7.5.4	Upper arms should be close to the torso and in contact with the seat back		
EP2.18	7.5.5	Place hands on beside thighs with palms against leg and little finger in contact with the seat cushion		
EP2.19	-	Check all cables to ensure they are unlikely to become trapped or interfere with dummy movement		
EP2.20	7.5.6	Visually check dummy for a square and level positioning		
EP2.21	7.5.1	Check that H point is still within tolerances		
EP2.22	7.5.9	Remove slack from lap section of passenger seat belt, using minimal force.  Use one finger to gently pull sash portion away from sternum. Release and allow sash to sit naturally across sternum. Repeat three times.  Ensure sash portion is not in contact with the neck and is not higher than the hole for the shoulder rotation adjustment screw. See protocol for permissible adjustments.  Use decals or similar to record position of seat belt on chest.  Seat belt may then be unfastened to facilitate adjustments, measurements and painting.		EP2.22

EP2.24	6.5	<p><i>With 3D machine, measure &amp; record dummy reference points (see diagram below). Photograph measurement of left Hm.</i></p> <p>a) Right H-point</p> <p>b) Left H-point (Z value should be within 12mm of point a)</p> <p>c) Head C of G (outboard side of head)</p> <p>d) Front centre of lower neck</p> <p>e) Outboard knee outer pivot</p> <p>f) Rearmost point of head at C of G height</p> <p>h) Centre of steering wheel (D2.3)</p> <p>i) Y value of lateral centreline of seat cushion (not illustrated - see B3.10)</p>	X	Y	Z	EP2.24

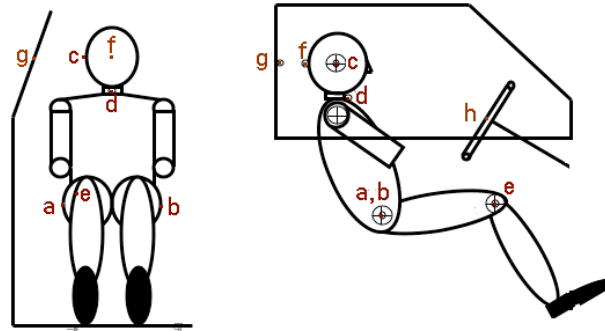


Diagram for EP2.24

EP2.25	-	<p>Compare Y values of points d and f with the Y value of the seat centreline (B3.10)</p> <p style="text-align: right;">difference for d:   mm</p> <p style="text-align: right;">difference for f:   mm</p>		
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EP2.26	6.5	Measure and record dummy to vehicle clearances (see diagram and notes overleaf). <b>Where horizontal measurements are taken with a tape measure use a spirit level or similar to ensure accuracy.</b>	
		A. Top of head to roof lining (Z)	mm
		B. Tip of nose to windscreen joint (XZ plane)	mm
		C. <b>Not used</b>	mm
		D. <b>Not used</b>	mm
		E. H point to door opening (X)	mm
		F. H point to door sill	mm
		G. Knee bolt to floor covering (Z)	mm
		H. Head (C of G decal) to side window or interior trim (Y)	mm
		J. Shoulder bolt to side window or interior trim (Y)	mm
		L. H point to interior door trim/handle (Y)	mm
		M. Knee bolt to interior door trim (Y)	mm
		N. <b>Not used</b>	
		P. <b>Not used</b>	
		Q. <b>Not used</b>	

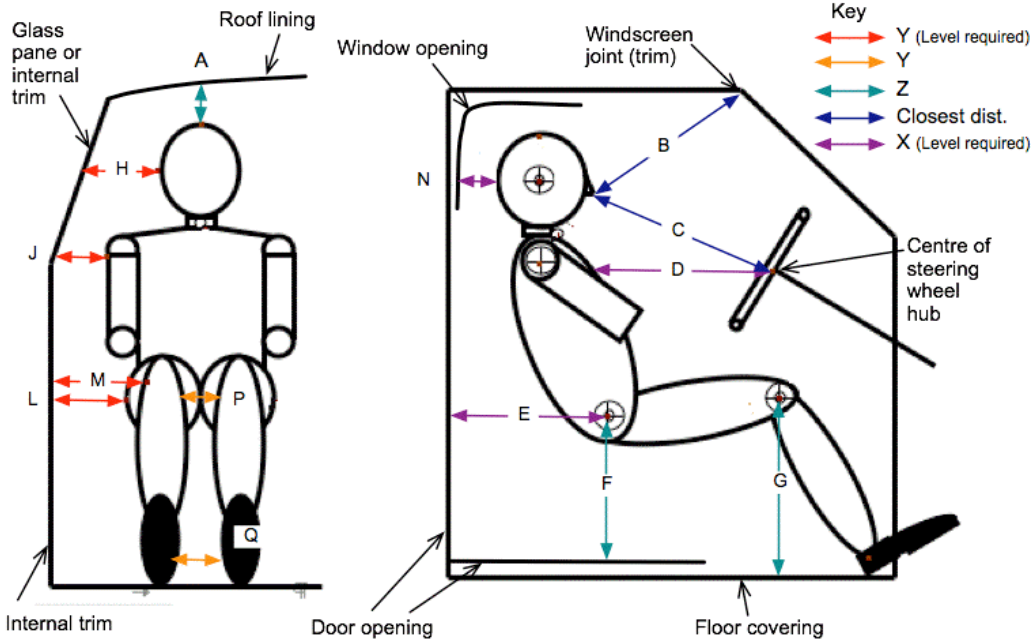


Diagram for EP2.26

EP2.27	-	Compare dummy position measurements	
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		with manufacturer's target values (if any). Resolve any major discrepancy.		
EP2.28	-	Does dummy positioning comply with protocol and reasonably match manufacturer's data? If not notify ANCAP before proceeding with test.		
EP2.29	-	Photograph dummy in position <div style="text-align: center;">                     side view - driver's side                      side view - from passenger side                      front view (through windscreen) in line with seat centreline                      dummy feet position - driver side                      dummy feet position - from passenger side                 </div>		EP2.29a EP2.29b EP2.29c EP2.29d EP2.29e
E2.30	4.2	Install seat belt load cells and/or reel-out devices to sash portion of front seat belts. Check sash positioning.	Drv	Pas

### E3 DUMMY PAINTING (Protocol 3.5.3)

Dummy painting must be done just prior to the test (or moistened) so that the paint is still wet during the impact.

Except for the Hybrid III face, apply masking tape to the parts of the dummy to be painted. The paint should completely cover the tape. See 3.5.3.1 for details of locations.

Take care to not move the dummy during painting. If the arm is moved or the seat belt is unfastened to facilitate painting then the person who installed the dummy must restore the arm to the original position and fasten the seat belt.

E3.1 Paint location		Size	Colour	Checked	
				Drv	Pas
H3 eyebrows		(25/2)x50	Red		
H3 nose		25x40	Green		
H3 chin		25x25	Yellow		
H3 left knee		50x50	Red		
H3 right knee		50x50	Green		
H3 left tibia		100x50	Blu/Grn/Red/Yel		
H3 right tibia		100x50	Yel/Red/Grn/Blu		
Child dummy (x2) top of head		50x50	Blue		
Child dummy (x2) head band - eyebrow level (cog to cog) left to right thirds		25 strip	Red/Yel/Grn		
ITEM	PROTOCOL	DESCRIPTION	CHECKED		PHOTO
E3.2	-	All dummy painting completed to protocol ( <b>record time</b> )	Drv	Pas	
E3.3	-	Seat belt fastened by person who	Drv	Pas	

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		installed dummy			
E3.4	-	Check that the decals (E2.22 & EP2.22) to the dummy chest and sash portion of the seat belt that are aligned and will be clearly visible in the camera view through the windscreen just prior to the impact. These will be used to check dummy and seat belt movement.			
E3.5	-	Visually check both Hybrid III dummies once more for square and level positioning			
E3.6	4.1	Check that the data for all dummies, vehicle accelerometers and seat belt force devices are being acquired	Right side (46ch)	Left side (49ch)	

**E4 Notes about dummy installation**

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## F. Final checks prior to crash test

### Purpose:

- To check that all tasks have been completed
- To secure the area
- To manage witnesses
- To check vehicle items

#### F1 Final checks

Witnesses to an ANCAP test may include test contractor personnel, ANCAP members, manufacturer's representatives and approved ANCAP contractors, No other individuals shall be allowed to witness any ANCAP vehicle test unless specifically authorized by an ANCAP member.

It is the contractor's responsibility to secure the test site area during a test and to shield the impact area from the public view.

Any witnesses to the test must be informed that, unless authorised by ANCAP, they must not :

- touch the vehicle or dummies at any time
- take any photographs or any other record of the test and
- divulge any aspects of the test to another party.

An attendance book with a statement based on the above wording may be used for this purpose.

ITEM	PROTOCOL	DESCRIPTION	CHECKED	PHOTO
F1.1		Sections A to E of cover sheet completed?		
F1.2		All pre-crash photos taken		
F1.3		Test area secured (all access points locked, all visitors in secure area)		
F1.4		All witnesses signed in and briefed about confidentiality and safety		
F1.5		Check tow attachments.		
F1.6		Child dummies correct position (P3 behind driver for frontal offset test)		
F1.7		Seat belts / harnesses fastened		
F1.8		Windows down (for frontal offset test)		
F1.9		Ignition on Witnessed/performed by manufacturer's representative:		
F1.10		Check airbag warning light functions correctly (if applicable)		
F1.11		Remove external power supply. Check battery voltage within manufacturer's recommendation (A4.15)  Run engine, if specified by manufacturer (eg to charge suspension system)		
F1.12		Bonnet and boot closed		
F1.13		Temperature sensor removed &		

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		temperature reading confirmed within tolerances		
F1.14		Temperature-controlled conditions ceased at (eg record time that air-conditioning ceases and/or prep-room door is opened)	Date Time	
F1.15		Vehicle doors closed but not locked		
F.16	-	All jacks and other obstacles removed		
F.17	1.1.8	Measure laden ride heights  Front L Front R Rear R Rear L  Do any of the values differ from those measured at B2.11 by more than 10mm? If YES delay test and investigate problem.	mm mm mm mm  Y / N	
F1.18		Time elapsed since dummy was seated	hh:mm	
F1.19		Time of test	Time	

## F2 Notes about test

Name of manufacturer's representative:

Comments by representative

Test organisation response/comments/recommendations

Name of ANCAP representative:

Comments by / Decision of ANCAP representative

Date & initial cover page when this section is complete

Test Engineer	Signature	Date:
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## G. Post-crash checks & measurements

### Purpose:

- To check that impact parameters were within tolerances
- To check and record vehicle items
- To remove dummies from vehicle

### G Immediate post-crash checks and measurements

Vehicle and impact area should be secured. In particular, ensure that there is no danger from broken glass, leaked fluids (such as battery acid) or stored energy in deformed panels.

Ensure that only test organisation personnel touch the vehicle and dummies after the impact and that only authorised personnel take photographs or video - visitors with authority should be clearly identified by tag or similar means. Avoid moving the dummies and airbags before photographs have been taken.

ITEM	PROTOCOL	DESCRIPTION	CHECKED		PHOTO
G1	8	Photograph vehicle and barrier in post-crash positions			G1
G2	9.3	If possible, locate pin marks on bumper and determine alignment difference Within +/-20mm?  Photograph pins marks or alternative method of determining alignment  If no pin marks could be located, or marks were outside tolerance, analyse overhead video to check alignment.	mm  Y / N		G2
G3	9.1	Record test speed measurement Within 64km/h +/-1km/h	km/h  Y/ N		
G4	9.2	Examine available videos and check for any unusual events, such as late airbag deployment	Y / N		
G5	9.4	Check whether any doors have opened during impact, including tailgate  Photograph all doors, clearly showing the latch position if any are deemed to be "open"	Y / N		G5 (one for each door)
G6	9.4.1	Check if any doors have locked  Photograph any doors that have locked	Y / N		G6 (if locked)
G7	9.4.2	<b>Video</b> and measure the opening force for each door (Write "T" where tools were required)  Front unlatch Front 45° Rear unlatch Rear 45°	Drv  N N N N	Pass  N N N N	

Test Engineer	Signature	Date:
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G7a	2.2.1	Measure the position of pedals relative to a suitable component within the vehicle (in case the pedals are disturbed during removal of the dummy) Photograph pedals prior to dummy removal			G7a
G8	9.5	Removal of dummies. Use the following order: a) removed without any vehicle adjustments b) recline seat back c) slide seat back on runners d) remove seat from vehicle	Drv  Y / N Y / N Y / N Y / N	Pass  Y / N Y / N Y / N Y / N	
G9	-	Record seat belt condition Did pretensioners fire?	Y / N	Y / N	
G10	-	Record airbag deployments Photograph deployed airbags and any contact marks			G10a & G10b
G11	-	Examine dummy for damage and record any damage Photograph damage			G11(each item)
G12	-	Examine vehicle interior for paint marks and other signs of contacts with dummy Photograph contact marks			G12 (each contact)
G13	-	Check for fuel leaks Photograph any leaks			G13 (if leak)

## H. Data processing and reporting

### Purpose:

- To process injury data, prepare graphs and calculate injury parameters
- To process crash test video and prepare edited footage in digital format
- To take remaining post-crash photographs
- To conduct post-crash damage inspection and record observations
- Where requested, establish the knee impact points and mark the limits of the assessable "knee impact zone" in accordance with the ANCAP "Notes about the Assessment Protocol" (<http://www.ancap.com.au>) - see illustration. The lines showing the limits (50mm above and below the knee impact point) should be parallel to the pre-crash reference frame of the vehicle (i.e horizontal before the crash). If there is uncertainty about the location of knee impact points then the limits should not be marked but a reference line should be marked on the dash to establish the pre-crash reference frame. The Test Contractor does not normally conduct the knee modifier assessment and components should be retained in their post-crash position as far as is practicable to enable subsequent assessment.
- To measure post-crash intrusion in accordance with section 2.2 of the test protocol. However, steering column and pedal movement to be reported relative to the average displacement of the four mounting bolts of the driver's seat - see Item B4.14. That is, use the average of the four X displacements to calculate the steering wheel and pedal X displacements and similar for Y and Z values. ANCAP requires the pedal displacement to be measured in blocked and unblocked positions, in accordance with clause 2.2.9 of the test protocol. If pedals were disturbed during dummy removal then restore to post-crash position prior to taking measurements (see clause 2.2.1 of test protocol). If steering column mounts have released and cannot be reliably restored then record this in the report and do not take steering column intrusion measurements.
- If requested by ANCAP, locate the crush profile grid points from B5.5. Measure the 3D co-ordinates of points that are accessible and report the amount of crush (X axis difference). Photograph measurement of crush.
- If vehicle acceleration exceeded 0.3g during the tow event, the test contractor must analyse the seat belt measurements and video footage to demonstrate that, at the point of impact, the dummy was within 10mm of the at-rest position and that the position of the sash seat belt had not changed by more than 15mm, relative to the dummy chest. See item E3.4 for dummy marking prior to the test for this purpose. On board video footage would be useful for demonstrating this requirement.
- To prepare Crash Test Report and data CD/DVD
- To archive crash test data
- To store and dispose wrecked vehicle



No ANCAP checklists are associated with this section