

Side Impact

Protocol

Implementation January 2026

Copyright © Euro NCAP 2025 - This work is the intellectual property of Euro NCAP. Permission is granted for this material to be shared for non-commercial, educational purposes, provided that this copyright statement appears on the reproduced materials and notice is given that the copying is by permission of Euro NCAP. To disseminate otherwise or to republish requires written permission from Euro NCAP.

PREFACE

During the test preparation, vehicle manufacturers are encouraged to liaise with the laboratory and to check that they are satisfied with the way cars are set up for testing. Where a manufacturer feels that a particular item should be altered, they should ask the laboratory staff to make any necessary changes. Manufacturers are forbidden from making changes to any parameter that will influence the test, such as dummy positioning, vehicle setting, laboratory environment etc.

It is the responsibility of the test laboratory to ensure that any requested changes satisfy the requirements of Euro NCAP. Where a disagreement exists between the laboratory and manufacturer, the Euro NCAP secretariat should be informed immediately to pass final judgment. Where the laboratory staff suspect that a manufacturer has interfered with any of the setup, the manufacturer's representative should be warned that they are not allowed to do so themselves. They should also be informed that if another incident occurs, they will be asked to leave the test site.

Where there is a recurrence of the problem, the manufacturer's representative will be told to leave the test site and the Secretary General should be immediately informed. Any such incident may be reported by the Secretary General to the manufacturer and the person concerned may not be allowed to attend further Euro NCAP tests.

DISCLAIMER: Euro NCAP has taken all reasonable care to ensure that the information published in this protocol is accurate and reflects the technical decisions taken by the organisation. In the unlikely event that this protocol contains a typographical error or any other inaccuracy, Euro NCAP reserves the right to make corrections and determine the assessment and subsequent result of the affected requirement(s).

CONTENTS

SCORING	1
1 MEASURING EQUIPMENT	2
1.1 Reference system	2
2 TEST CONDITIONS	3
2.1 VUT preparation	3
2.2 Occupant compartment adjustments	3
3 TEST PROCEDURES	5
3.1 Side head protection airbag evaluation (HPD)	5
3.2 Rollover	9

SCORING

Crash Protection – Side Impact assessments	Total points 10
Head Protection Device	10
HPD	10

Definitions used in this protocol can be found in Euro NCAP Technical Bulletin CP 001.

1 MEASURING EQUIPMENT

Data processing and reporting shall be in accordance with Technical Bulletin CP 005.

1.1 Reference system

The sign convention used for configuring the transducers is stated in SAE J211 (2022).

2 TEST CONDITIONS

2.1 VUT preparation

In advance of test preparation, the OEM shall provide Euro NCAP and the test laboratory with the information detailed in Technical Bulletin CP 002. Prepare the vehicle as defined in Technical Bulletin CP 004.

2.2 Occupant compartment adjustments

Position the seats as detailed below. Adjustments not listed shall be set to mid positions or the nearest position rearward, lowest or outboard. Adjustments are to be made following the order in each table.

Where specific settings are NOT indicated for either the driver or passenger, the same MDP and setting must be used for all occupants. For seat movement definitions, see CP 001.

2.2.1 50th percentile occupants

Adjustment	Required setting - WorldSID
Fore/aft	As per UN Regulation No. 135. Driver - Must not be further rearward than 95 th percentile position.
Front seat cushion tilt	As per UN Regulation No. 135.
Front seat height	As per UN Regulation No. 135.
Front seat torso angle	MDP otherwise 25° torso angle
Front seat lumbar support	As per UN Regulation No. 135.
Front seat cushion length	Fully retracted
Front head restraint	Fore/aft or tilt - Mid position. Height - Mid position.
Front seat belt anchorage	MDP or mid
Arm-rests	Adjustable arm-rests on the seat back will have them positioned in the 'not in use' position Adjustable arm rests as part of the centre console will have them positioned fully down and fully retracted. The lid of any arm rest/storage compartment shall be closed.

2.2.2 Other settings

Other settings	Required setting
Steering wheel	Highest position and closest to driver
Side window glazing	Front & rear - All raised
Gear change lever	In the neutral position
Parking brake	Engaged. If the vehicle transmission automatically engages park when the parking brake is engaged, return the transmission to the neutral position. If the vehicle does not allow the transmission to be in neutral with the parking brake engaged, the transmission may remain in park. Where a powertrain or energy management prevents the restraint system firing when the parking brake is engaged, perform the test with the parking brake disengaged.
Pedals	Normal position of rest or fully forward for adjustable pedals
Doors	Closed, not locked. Rear child locks disengaged. See Post Crash protocol for ADL requirements.
Roof	Raised
Sunroof	Closed
Sun visors	Stowed
Rear view mirror	Normal position of use

3 TEST PROCEDURES

All of the below requirements must be met in order to gain any rewards for HPD protection, no partial rewards are given. Vehicles with asymmetric curtain HPDs will be required to demonstrate protection on both side of the vehicle in order to gain rollover rewards.

3.1 Side head protection airbag evaluation (HPD)

HPD requirements	
Coverage area	Vehicles equipped with side impact head protection devices (HPD) curtain, seat mounted or any other, will have the inflated energy absorbing areas evaluated by means of a geometric assessment. The HPD must provide protection for a range of occupant sizes in the front row on both sides of the vehicle. The coverage area is detailed in Section 3.1.1.
Symmetrical protection	Where the airbags differ between the left and right hand sides of the vehicle, the airbags on both sides of the vehicle will be evaluated and the assessment will be based upon worst performing side. All areas of the airbag will be evaluated and the assessment will be based upon the worst performing part of any of the airbags.
Exclusions	The head protecting airbags should cover all glazed areas of the first row within the defined zone up to the edge of door daylight opening (FMVSS201) where it meets the roofline, B-pillar and door waistline. Seams in the airbag will not be penalised provided that the un-inflated area is no wider than 15mm. Any other areas where the airbag layers are connected will not be penalised provided that the surrounding areas are inflated, and any un-inflated areas are no larger than 50mm in diameter or equivalent area or the sum of the major and minor axes of individual areas does not exceed 100mm. In the case that the un-inflated area would be larger than described above, the OEM shall provide data to demonstrate sufficient energy absorption is guaranteed.

3.1.1 Side head protection device evaluation

Using the location of the H-point as measured for the front seating position, calculate and record the corresponding 5th female and 95th male head centre of gravity positions for the front seat to determine the corners of the head CoG box:

3.1.2 5th female Head CoG:

$$X_{CoG,5th} = H\text{-point}(X) + 126 - \text{seat travel } 5^{th}\text{-}50^{th}$$
$$Z_{CoG,5th} = H\text{-point}(Z) + 594$$

3.1.3 95th male Head CoG:

$$X_{CoG,95th} = H\text{-point}(X) + 147 + \text{seat travel } 50^{th}\text{-}95^{th}$$
$$Z_{CoG,95th} = H\text{-point}(Z) + 693$$

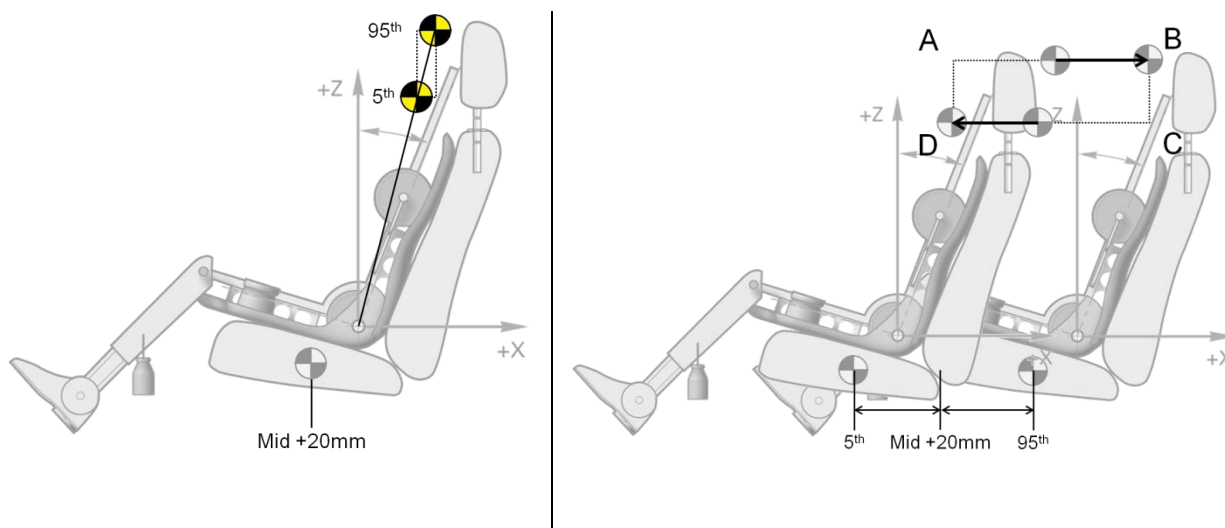


Figure 1: HPD zone front seat row

The four corners of the Head CoG box are:

	X-position	Z-position
A	$X_{CoG,5th}$	$Z_{CoG,95th}$
B	$X_{CoG,95th}$	$Z_{CoG,95th}$
C	$X_{CoG,95th}$	$Z_{CoG,5th}$
D	$X_{CoG,5th}$	$Z_{CoG,5th}$

The seat travel for the 5th and 95th positions will be required from the vehicle manufacturer in Technical Bulletin CP 002 but verified by the laboratory. Where differences exist, the worst case seat positions shall be used.

Using the location of the H-point for the rear seating position as measured for the Rear Whiplash protocol, calculate and record the corresponding head centre of gravity positions in the most forward and rearward seating positions, see Figure 2:

3.1.4 5th female Head CoG in most forward seating position:

$$X_{CoG,5th} = \text{H-point}(X) + 126 - \text{remaining seat travel (if applicable)}$$

$$Z_{CoG,5th} = \text{H-point}(Z) + 594$$

3.1.5 95th male Head CoG in most rearward seating position:

$$X_{CoG,95th} = \text{H-point}(X) + 147 + \text{remaining seat travel (if applicable)}$$

$$Z_{CoG,95th} = \text{H-point}(Z) + 693$$

Fixed rear bench

Movable rear bench

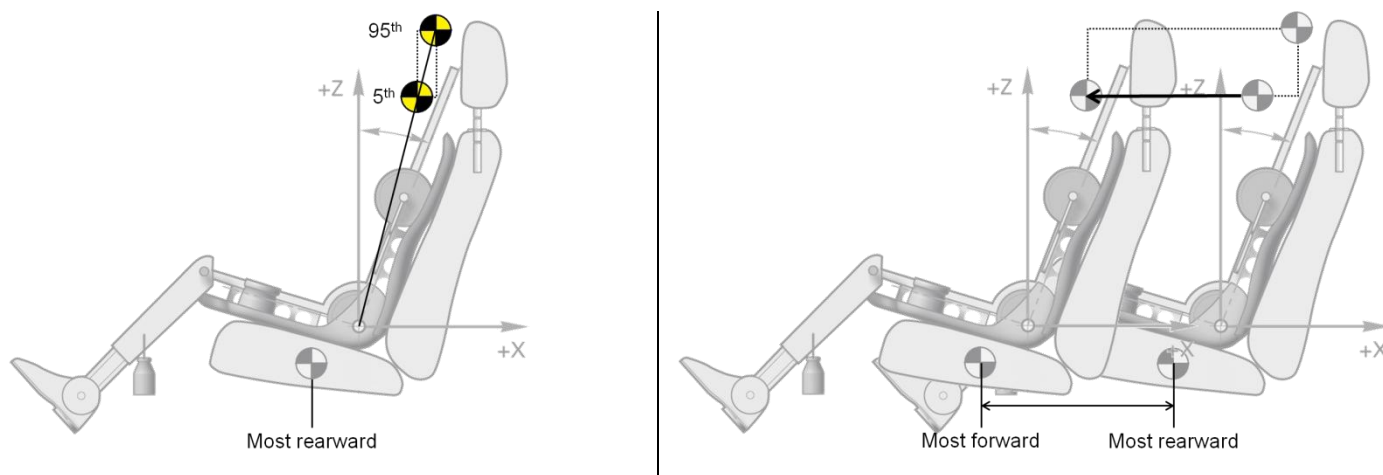


Figure 2: HPD zone rear seat row(s)

The side curtain evaluation zone is defined as a rounded rectangle around the head CoG box at a distance of 82mm from the upper and fore/aft edges and 52mm below the bottom edge. It is acceptable for the 82mm radius in the lower corners of the airbag to be cut-off at 52mm below the CoG box. The zone shall be constructed parallel and perpendicular to the ground reference level, see Figure 3.

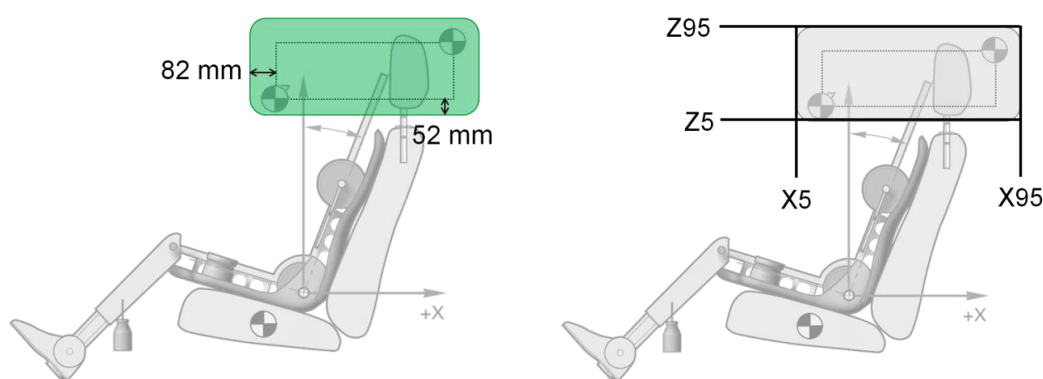


Figure 3: HPD assessment zone

After the pole test, deploy the head protection device on the non-struck side of the vehicle. Make sure that the airbags are identical on both sides of the vehicle. Where this is not the case, the assessment must be performed on both sides.

Inflate the airbag to the pressure recommended by the OEM.

Project the assessment zone onto the inflated airbag for front and rear seating positions using the measurements marked/recorded above.

3.1.6 Seat mounted head protection devices

Based on the head CoG paint mark on the airbag, mark the HPD assessment zone defined as a rounded rectangle extending 95mm forward, 90mm rearward, 120mm upward and 115mm downward on the flattened airbag.

When the paint mark cannot be used, the OEM needs to supply Euro NCAP in-house data for the Side Airbag Head Protection Evaluation.

Evaluate coverage area of the airbag(s), record and check the dimensions of any joined, stitched or seamed areas, see Figure 4.

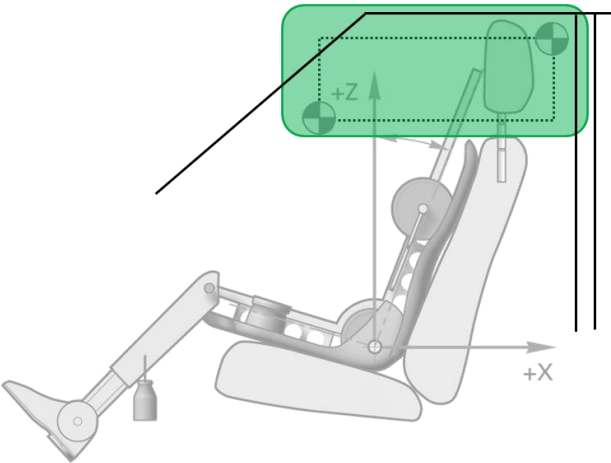


Figure 4: HPD assessment zones

3.2 Rollover

Rollover requirements	
Triggering of HPD	The vehicle manufacturer must provide evidence showing that the vehicle can both sense rollover and that the side curtain HPD is deployed as a result. Functionality of rollover triggering shall be demonstrated with a full scale rollover dynamic test which may be selected by the OEM.
HPD inflation	<p>During the HPD measurements, after airbag deployment, detailed in Section 3.1, the laboratory will check that the deployed curtain airbag remains inflated and maintains sufficient pressure for at least 6 seconds to provide head impact protection.</p> <p>Where the laboratory check cannot be performed or there are doubts regarding inflation, functionality of rollover countermeasures shall be demonstrated with one of the following:</p> <p>HPD internal pressure retention of 50% for a minimum of 6 seconds – C-NCAP 2024. Data must include pressure vs time output.</p> <p>Compliance with FMVSS 226.</p>