HEAVY VEHICLES TEST AND ASSESSMENT PROTOCOL

Version 2.0

EUROPEAN NEW CAR ASSESSMENT PROGRAMME

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1. INTRODUCTION

In 2011, Euro NCAP published its first protocol for the assessment of 'heavy vehicles'. The protocol reflected concerns that testing large, heavy vehicles in the same way as mainstream passenger cars would lead to designs which were very stiff, exacerbating the aggressivity of such vehicles in real-world accidents. In particular, a frontal impact speed of 64km/h would, it was argued, force manufacturers to make their vehicles stiffer. There was also recognition that some test procedures had not been developed for use on large vehicles, whose shape and construction was quite different from regular cars.

Accordingly, the protocol released in 2011 highlighted the ways in which the testing of heavy vehicles (and the protocol was based on passenger-carrying vans derived from commercial variants) should differ from the established protocols used for other vehicles. The frontal impact test speed was lowered to 56km/h to allay fears of increased aggressivity, and other protocols were adapted to make them more suitable. The modified protocols were for use only with vehicles of maximum mass up to 3500kg, as is this update. Euro NCAP's protocols may be irrelevant or inappropriate for masses greater than 3500kg and there is no current intention to assess such vehicles.

In 2015, Euro NCAP will add a full-width rigid wall frontal impact test to its assessment. In conjunction with the offset deformable barrier test, this should ensure that manufacturers have to find ways to provide good occupant protection without making their vehicles exceedingly stiff. Therefore, it is expected that the combination of frontal tests will address the concerns previously espoused that heavy vehicles will also become stiff vehicles. This version of the protocol updates the references to 'mainstream' protocols and the changes that are needed to make them appropriate to vans.

In 2016, Euro NCAP also introduces a new 'dual-rating' scheme. A base rating is given for the performance of the vehicle with standard equipment and a second rating may be given for the performance with certain other, optional items of safety equipment. This scheme addresses another concern of earlier versions of this protocol; that vehicles in the 'Business and Family Vans' category are more poorly equipped than those in other segments and have longer life cycles, making it more difficult to update their specifications. With the advent of the dual rating, 'Business and Family Vans' can be treated in the same way as other vehicles.

2. PRINCIPLES

A vehicle type may fall within the scope of this protocol if there exists within the model range at least one variant meeting all of the following criteria:

- M1 category.
- Maximum Mass (Gross Vehicle Weight) > 2500kg and <3500kg.
- 8 or 9 seats, including the driver's seat.
- Derived from commercial vehicle.

Euro NCAP does not intend to assess vehicles intended primarily for commercial use or those where the majority of variants have a gross vehicle weight greater than 3500kg, even if the criteria set out above are met. In such cases, the manufacturer should discuss with the programme manager whether the application of this protocol is appropriate.

The application of this definition and the way in which the test variant is identified is discussed in more detail in paragraph 3.1.

3. APPLICATION AND AMENDMENT OF PROTOCOLS

For testing vehicles which fall within the scope of this protocol, the amendments and interpretations of the following paragraphs shall be applied. In cases where no specific reference to a test protocol is given, testing is the same as for other vehicle categories and the extant version of the relevant protocol should be used.

Note: The use of the `alternative font` indicates text taken from the original protocol concerned. Paragraph references contained in such text refer to the numbering system of that protocol.

3.1. Vehicle Specification, Selection, Testing & Retesting (VSSTR) Protocol

3.1.1. Base Safety Equipment

When identifying the Basic Level Safety specification, the fitment of equipment to the following variants in the model range is considered:

Item of Safety Equipment	Criteria in order to be included in Base Safety Rating
Frontal airbags	Standard on M1 (up to 3500kg) and at least optional on N1 excluding chassis cab variants of both categories
Seatbelt Reminder (rear SBR not applicable to N1)	
All other safety equipment	Standard on M1 only (up to 3500kg)

Table 1 Variants.

3.1.2. Test Variant

3.1.2.1. The manufacturer shall identify the M1 variant (excluding chassis cabs) which sells better than any other single M1 variant (excluding chassis cabs). The test vehicle shall be the variant which is nearest to the best seller having the following characteristics:

- Is equipped only with the base safety equipment identified in 3.1.1.
- Has two distinct front seats (no bench seats).
- Has eight or nine seats.

3.1.2.2. For further information on which parameters can be changed if the test variant is different from the best-selling variant, see the VSSTR protocol.

3.2. Euro NCAP Offset Deformable Impact Testing Protocol

3.2.1. Child Dummy Positioning

Child dummies shall be used in the second row passenger and driver side seating positions.

3.3. Euro NCAP Full Width Frontal Impact Testing Protocol

3.3.1. Rear Seat Dummy Positioning

Hybrid III 05F test dummies should be used for the front driver seat and the second row passenger seat.

3.4. Euro NCAP Side Impact Testing Protocol

3.4.1. Child Dummy Positioning

Child dummies shall be used in the second row passenger and driver side seating positions.

3.5. Euro NCAP Rear Whiplash Test Protocol

3.5.1. Dynamic Testing

Dynamic whiplash tests are not done on Heavy Vehicles and the requirements of the Euro NCAP Whiplash Test Protocol are not relevant.

3.5.2. Head Restraint Geometry

The backset and effective height of the front and rear head restraints shall be determined according to the procedures detailed in the Euro NCAP Rear Whiplash Test Protocol. The following changes apply:

- `2.2.2.3 Seatback – Set to a position to give a nominal HPM torso angle of 20°.`
- For the front row, the geometry is assessed only for the outboard seats. However, points can be scored for this row only if a head restraint is fitted as standard equipment on all M1 variants with a centre seating position.
- Section 3.5 ‘Non-use Position Measurement’ does not apply to front seats but is applied to rear seats. Scoring is adjusted as described in section 4.1.1 of this protocol.

3.6. Pedestrian Test Protocol (version 8.1 and later)

The test details specific to Heavy Vehicles are addressed in the regular protocol.

4. SCORING AND OVERALL RATING

The scores for the four areas of overall assessment – Adult Occupant, Child Occupant, Pedestrian and Safety assist – shall be incorporated into the overall rating scheme as defined in 'Euro-NCAP Assessment Protocol Overall Rating'.

4.1. Euro NCAP Assessment Protocol – AOP

The scoring for the Offset Deformable Impact Test, Full-Width Frontal Test, Side Barrier Impact Test and Side Pole Impact test remains unchanged. Amendments have been introduced for the following sections.

4.1.1. Whiplash Scoring

Scoring is different for the front row to that of subsequent rows as non-use assessment is not relevant for the front row. The following changes apply:

5.3.2.2 Scaled Rear Whiplash Score

The raw score for the front seats is scaled to a maximum of two points by a factor of 1/3 to determine the front seat whiplash score

The raw score for rows other than the front row is scaled to a maximum of one point by multiplication by a factor of 1/4n where n is the number of rear outboard seating positions.

4.2. Euro NCAP Assessment Protocol – COP

The scoring for the Child Occupant Protection remains unchanged.

4.3. Euro NCAP Assessment Protocol – SA

As Euro NCAP will assess vehicles with distinct front seats (no bench – see Section 3.1.2.1), and as the Assessment Protocol – SA (version 6.0 or newer) refers to seats which can be removed as part of 'normal usage', the scoring for front seatbelt reminder will be based only the outboard seating positions.