EURO NCAP

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EUROPEAN NEW CAR ASSESSMENT PROGRAMME
(Euro NCAP)

HEAVY QUADRICYCLES (L7)

ASSESSMENT PROTOCOL – OVERALL RATING

Version 1.0
April 2016

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HEAVY QUADRICYCLES/L7 - ASSESSMENT PROTOCOL – OVERALL RATING

1   INTRODUCTION

Euro NCAP first tested L7 type vehicles in 2014. Individual documents are released for the two main areas of assessment:

- Test & Assessment Protocol Frontal Impact – Adult Occupant Protection;
- Test & Assessment Protocol Side Impact – Adult Occupant Protection;

In addition to these two assessment protocols, the present document is provided describing the method and criteria by which the overall safety rating is calculated on the basis of the vehicle performance in each of the above areas of assessment.

2   OVERALL RATING CALCULATION

2.1   Method

The overall rating is composed of scores achieved in the two areas of assessment:

Adult Occupant Frontal Impact & Adult Occupant Side Impact

Body regions assessed in Frontal Impact (Driver only):

Head	4 points
Neck	4 points
Chest	4 points
Knee & Femur	4 points

Body regions assessed in Side Impact (Driver only):

Head	4 points
Chest	4 points
Abdomen	4 points
Pelvis	4 points

The protection provided for adults for each body region are presented visually, using coloured segments within body outlines. The colour used is based on the points awarded for that body region (rounded to three decimal places), as follows:

Green	'Good'	4.000 points
Yellow	'Adequate'	2.670 - 3.999 points
Orange	'Marginal'	1.330 - 2.669 points
Brown	'Weak'	0.001 - 1.329 points
Red	'Poor'	0.000 points

For dummy results above or below the lower and higher performance limits, 0 to 4 points is available. For dummy results falling between these two limits a score of 2 points is automatically awarded (i.e. sliding scales not used for L7 vehicles). However modifiers such as dimensional based modifiers, inspection modifiers, T12 and Backplate are then applied to the 0, 2 or 4 point body region result.

The weighted overall score is calculated from the individual assessment scores using weight factors. These weight factors reflect the relative importance of the frontal and side impact performance. The weight factors shown below are used in an effort to relate to real world accidents resulting in AIS3+ injuries. The frequency of this injury severity occurs up to 3 times more often in frontal impacts than in side impacts.

Table 3.1
Weight factors

Box 1: Adult Occupant Protection Frontal	75%
Box 2: Adult Occupant Protection Side	25%

The overall weighted score is calculated as follows:

100 x (3 x Front integer + Side integer) / 64 = % overall score

2.2   Star Rating bands for Quadricycles:

Table 3.2
Star Rating bands

5 stars	75% - 100%
4 stars	60% - 74.9%
3 stars	45% - 59.9%
2 stars	35% - 44.9%
1 star	25% - 34.9%
0 star	0% - 24.9%

2.3   Rounding

The following rounding rules will be applied in the calculation of the overall rating.

- Data is entered to 2 decimal places.
- Intermediate calculations (e.g. calculations needed to derive parameters which are then used to calculate scores) are not rounded.
- Calculation of points scores (e.g. for individual body regions) are rounded to 3 decimal points e.g. a head score of 3.1238 in frontal impact would be rounded to 3.124.

- The total points score in each test is the sum of scores rounded to the nearest integer e.g. 11.9 points for side test becomes 12 points.

- The overall weighted score is calculated as follows:

  100 x (3 x Front integer + Side integer) / 64 = % overall score

  Worked examples:

  Vehicle A scores 4 points in frontal and 8 points in side tests.

  100 x (3 x 4 + 8) / 64 = 31.25% which falls into the 1 star range.

  Vehicle B scores 12 points in frontal and 12 points in side tests.

  100 x (3 x 12 + 12) / 64 = 75% which falls into the 5 star range.