

Draft Procedure for Assessing the Protection Provided by Deployable Pedestrian Protection Devices

1. INTRODUCTION

1.1. The procedure used by Euro NCAP for assessing pedestrian protection provided by deployable devices is still being developed. So far, only two cars equipped with such devices have been assessed (Citroen C6 and Honda Legend). Based on the experience gained from testing these cars, Euro NCAP's procedures have been updated. With further experience, these procedures will be developed into a comprehensive protocol.

1.1.2. Currently, the only deployable devices seen by Euro NCAP have been "pop up" bonnets. If and when other devices are seen, this procedure will be amended to cover them.

2. POP UP BONNETS

2.1. Marking out of test zones

2.1.1. Head Impact Test Zones - These will be marked out with the bonnet in the un-deployed state.

Note: If the deployed state were used, discontinuities in the surface could cause anomalies.

2.1.2. Bonnet Leading Edge - These will be marked out with the bonnet in the un-deployed state. If however, bonnet deployment may occur prior to pedestrian contact with the Bonnet Leading Edge creating a possibly increased hazard, consideration will be given to marking out the bonnet in the deployed state.

2.2. Choice of impact test sites

2.2.1. Head Impact - The test sites will be chosen with the bonnet in its deployed state.

2.2.2. Bonnet Leading Edge – The test sites will be chosen with the bonnet in its un-deployed state. If however, bonnet deployment may occur prior to pedestrian contact with the Bonnet Leading Edge creating a

possibly increased hazard, consideration will be given to choosing the test sites with the bonnet in the deployed state.

2.3. Impact Testing

- 2.3.1. Head Impact – Provided that the manufacturer can provide assurance that the bonnet will always be deployed in time, all testing will be carried out with the bonnet in the deployed state.
- 2.3.2. Bonnet Leading Edge – Unless there is concern about additional hazards being created by the bonnet deploying prior or during pedestrian contact with the Bonnet Leading Edge, all testing will be carried out with the bonnet in the un-deployed state.

2.4. Bonnet Deployment

- 2.4.1. The car manufacturer is responsible for providing sufficient information for Euro NCAP to be assured about the detection of pedestrians and the deployment of the bonnet.
- 2.4.2. When it has been decided that the car will be assessed by Euro NCAP, the manufacturer should advise the Secretariat about all the issues necessary to take into account in pedestrian testing. The following points should be considered:
 - 2.4.2.1. Can all head impact testing be carried out with the bonnet statically deployed?
 - 2.4.2.2. If the bonnet has to be dynamically deployed during the test, the manufacturer should provide information about how this should be done.
 - 2.4.2.3. Can all Bonnet Leading Edge tests be carried out with the bonnet in the un-deployed state?
 - 2.4.2.4. Do any of the deployment device's components require replacement between tests? If so, the manufacturer should ensure that sufficient components are supplied prior to testing.
 - 2.4.2.5. Full operating instructions should be provided to enable the test laboratory to carry out its test programme. These instructions should cover: deployment, replacement of parts and resetting of the system.
 - 2.4.2.6. Any other issues that need to be taken into account.

2.5. 121 Meeting

- 2.5.1. At the 121 meeting, between the manufacturer, the inspectors and the Secretariat, it will be necessary for the manufacturer to provide convincing evidence to assure Euro NCAP of the following:

- 2.5.1.1. Ability of the system to detect child and adult pedestrians.
- 2.5.1.2. Ability of the system to ensure that the bonnet is deployed and locked, in time for child or adult head impacts over the full range of vehicle impact velocities.
- 2.5.1.3. Pedestrian protection is provided at speeds below the deployment threshold.
- 2.5.1.4. Pedestrian protection is provided at higher speeds, where the bonnet is not able to deploy in time, up to 55 km/h.

Note: *Bonnets which offer protection without a deployable device, offer protection at lower speeds and some protection at higher speeds. There are no firm requirements yet regarding 2.5.1.3. and 2.5.1.4. So far no car has been seen that was unable to deploy in time for a 55 km/h impact*

- 2.5.1.5. Head impact protection is not compromised by bonnet deflection due to contact by the pedestrian's body.

Note: *Prior to head impact, the pedestrian's body is likely to load the bonnet top. With a normal bonnet, which is supported around its periphery, this deflection is limited. Pop-up bonnets may not be supported around their full periphery and are more susceptible to deformation or deflection due to such body contact. The manufacturer is required to show convincing evidence that such deformation or deflection is not significantly greater than that experienced with a normal bonnet, at the time of head contact.*

Euro NCAP Secretariat

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