Commission Regulation (EC) No 631/2009 of 22 July 2009 laying down detailed rules for the implementation of Annex I to Regulation (EC) No 78/2009 of the European Parliament and of the Council on the type-approval of motor vehicles with regard to the protection of pedestrians and other vulnerable road users, amending Directive 2007/46/EC and repealing Directives 2003/102/EC and 2005/66/EC

COMMISSION REGULATION (EC) No 631/2009

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THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Regulation (EC) No 78/2009 of the European Parliament and of the Council of 14 January 2009 on the type-approval of motor vehicles with regard to the protection of pedestrians and other vulnerable road users, amending Directive 2007/46/EC and repealing Directives 2003/102/EC and 2005/66/EC[(1)], and in particular Article 4(6) thereof,

Whereas:

(1) Regulation (EC) No 78/2009 is one of the separate regulatory acts under the type-approval procedure laid down by Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 on establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles ('Framework Directive')[(2)].

(2) Regulation (EC) No 78/2009 sets out the basic requirements for the protection of pedestrians and other vulnerable road users in the form of tests and limit values for the type-approval of vehicles and of frontal protection systems as separate technical units.

(3) The tests set out in Regulation (EC) No 78/2009 are based on the requirements set out in Directive 2003/102/EC of the European Parliament and of the Council of 17 November 2003 relating to the protection of pedestrians and other vulnerable road users before and in the event of a collision with a motor vehicle and amending Council Directive 70/156/EEC[(3)] and Directive 2005/66/EC of the European Parliament and of the Council of 26 October 2005 relating to the use of frontal protection systems on motor vehicles and amending Council Directive 70/156/EEC[(4)].

(4) A study completed regarding the specifications of certain requirements set out in Directive 2003/102/EC[(5)] indicated a need to provide amendments.

(5) The technical prescriptions necessary to implement the requirements of Regulation (EC) No 78/2009 should be based on the specifications used in Commission Decision

2004/90/EC of 23 December 2003 on the technical prescriptions for the implementation of Article 3 of Directive 2003/102/EC of the European Parliament and of the Council relating to the protection of pedestrians and other vulnerable road users before and in the event of a collision with a motor vehicle and amending Directive 70/156/EEC[6] and Commission Decision 2006/368/EC of 20 March 2006 on the detailed technical requirements for carrying out the tests specified in Directive 2005/66/EC of the European Parliament and of the Council relating to the use of frontal protection systems on motor vehicles[7].

(6) The measures provided for in this Regulation are in accordance with the opinion of the Technical Committee — Motor Vehicles.

HAS ADOPTED THIS REGULATION:

Article 1

This Regulation lays down the technical prescriptions necessary to carry out the tests and requirements specified in Annex I to Regulation (EC) No 78/2009.

Article 2

The tests set out in Annex I to Regulation (EC) No 78/2009 shall be carried out in accordance with the Annex to this Regulation.

Article 3

Where, in the case of the tests for type-approval of a vehicle with regard of it being fitted with a frontal protection system or for a type-approval of such systems as a separate technical unit, the frontal protection system to be tested has been designed for use on more than one vehicle type, that system shall be type-approved separately for every vehicle type for which it is intended.

However, the technical service shall have the discretion to waive additional tests where the intended vehicle types or the frontal protection system types are considered to be sufficiently similar.

Article 4

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

This Regulation shall be binding in its entirety and directly applicable in all Member States.

***Changes to legislation:** There are currently no known outstanding effects for the Commission Regulation (EC) No 631/2009. (See end of Document for details)*

ANNEX

PART I

GENERAL REQUIREMENTS AND DEFINITIONS

1. General

When performing measurements on a vehicle as described in this Part, the vehicle shall be positioned in its normal ride attitude.

If the vehicle is fitted with a badge, mascot or other structure which would bend back or retract under an applied load of maximum 100 N, then such a load shall be applied before and/or while these measurements are taken.

Any vehicle component which could change shape or position, other than suspension components or active devices to protect pedestrians, shall be set to their stowed position.

2. Definitions

For the purposes of this Annex the following definitions shall apply:

2.1. ‘Bonnet leading edge height’ for any section of a vehicle means the vertical distance between the ground and the bonnet leading edge reference line at that point;

2.2. ‘Bonnet Leading Edge Reference Line’ means the geometric trace of the points of contact between a straight edge 1 000 mm long and the front surface of the bonnet, when the straight edge, held parallel to the vertical longitudinal plane of the car and inclined rearwards by 50° from the vertical and with the lower end 600 mm above the ground, is traversed across and in contact with the bonnet leading edge (see Figure 16).

For vehicles having the bonnet top surface inclined at 50°, so that the straight edge makes a continuous contact or multiple contacts rather than a point contact, determine the reference line with the straight edge inclined rearwards at an angle of 40° from the vertical.

For vehicles of such shape that the bottom end of the straight edge makes first contact with the vehicle then that contact is taken to be the bonnet leading edge reference line, at that lateral position.

For vehicles of such shape that the top end of the straight edge makes first contact with the vehicle then the geometric trace of 1 000 mm wrap around distance, will be used as bonnet leading edge reference line at that lateral position.

The top edge of the bumper shall also be regarded as the bonnet leading edge if it is contacted by the straight edge during this procedure;

2.3. ‘Bonnet rear reference line’ means the geometric trace of the most rearward points of contact between a 165 mm sphere and the frontal upper surface, when the sphere is traversed across the frontal upper surface, while maintaining contact with the windscreen (see Figure 1). The wiper blades and arms are removed during this process;

If the bonnet rear reference line is located at a wrap around distance of more than 2 100 mm, the bonnet rear reference line is defined by the geometric trace of the 2 100 mm wrap around distance. Where the bonnet rear reference line and side reference lines do not intersect, the bonnet rear reference line shall be modified according to the procedure set out in point 2.17;

Changes to legislation: *There are currently no known outstanding effects for the Commission Regulation (EC) No 631/2009. (See end of Document for details)*

2.4. ‘Bumper lead’ for any longitudinal section of a vehicle means the horizontal distance measured in any vehicle vertical longitudinal plane between the upper bumper reference line and the bonnet leading edge reference line;

2.5. ‘Centre of the knee’ means the point about which the knee effectively bends;

2.6. ‘Corner of bumper’ means the vehicle's point of contact with a vertical plane which makes an angle of 60° with the vertical longitudinal plane of the vehicle and is tangential to the outer surface of the bumper (see Figure 2);

2.7. ‘Corner of frontal protection system’ means the frontal protection system's point of contact with a vertical plane, which makes an angle of 60° with the vertical longitudinal plane of the vehicle and is tangential to the outer surface of the frontal protection system (see Figure 3);

2.8. ‘Corner of frontal protection system leading edge’ means the frontal protection system's point of contact with a vertical plane which makes an angle of 45° with the vertical longitudinal plane of the vehicle and is tangential to the outer surface of the frontal protection system. The bottom edge of the plane shall be at a height of 600 mm, or 200 mm below the highest part of the frontal protection system, whichever is the higher;

2.9. ‘Corner reference point’ means the intersection of the bonnet leading edge reference line and of the side reference line (see Figure 4);

2.10. ‘Essential outer front end dimensions’ means solid points in space on the test frame, representing all points of the actual intended vehicle type where the frontal protection system would be liable to impact on the vehicle during testing;

2.11. ‘Femur’ means all components or parts of components (including flesh, skin covering, damper, instrumentation and brackets, pulleys, etc. attached to the impactor for the purpose of launching it) above the level of the centre of the knee;

2.12. ‘Frontal protection system lead’ for any point on a frontal protection system means the horizontal distance between the upper frontal protection system reference line and the position of the point being considered on the frontal protection system. This distance shall be measured, at any point, on a vertical plane parallel to the vertical longitudinal plane of the vehicle;

2.13. ‘Frontal protection system leading edge’ means the uppermost outer structure of the frontal protection system and excludes the vehicle bonnet and wings, the upper and side members of the headlight surround and any other attachments such as grills protecting only lights;

2.14. ‘Frontal protection system leading edge height’ for any vertical longitudinal section of the frontal protection system means the vertical distance between the ground reference level and the frontal protection system leading edge reference line at that section, with the vehicle positioned in its normal ride attitude;

2.15. ‘Frontal protection system leading edge reference line’ means the geometric trace of the points of contact between a straight edge 1 000 mm long and the front surface of the frontal protection system, when the straight edge, held parallel to the vertical longitudinal plane of the vehicle and inclined rearwards by 50° and with the lower end 600 mm above the ground, is traversed across and in contact with the frontal protection system leading edge. For frontal protection systems having a top surface inclined at essentially 50°, so that the straight edge makes a continuous contact or multiple contacts rather than a point contact, the reference line is determined with the straight edge inclined rearwards at an angle of 40°. For frontal protection systems of such shape that the bottom end of the straight edge makes first contact, then that contact is taken to be the frontal protection system leading edge reference line, at that lateral

position. For frontal protection systems of such shape that the top end of the straight edge makes first contact, then the geometric trace of 1 000 mm wrap around distance will be used as the frontal protection system leading edge reference line at that lateral position. The top edge of the frontal protection system shall also be regarded as the frontal protection system leading edge for the purposes of this Regulation, if it is touched by the straight edge during this procedure (see Figure 5);

2.16. 'Impact point' means the point on the vehicle where initial contact by the test impactor occurs. The proximity of this point to the target point is dependent upon both the angle of travel by the test impactor and the contour of the vehicle surface (see point B in Figure 6);

2.17. 'Intersection of bonnet rear reference line and side reference line'. Where the bonnet rear reference line and side reference line do not intersect, the bonnet rear reference line is extended and/or modified using a semi-circular template, of radius 100 mm. The template shall be made of a thin flexible sheet material that easily bends to a single curvature in any direction. The template shall, if possible, resist double or complex curvature where this could result in wrinkling. The recommended material is a foam backed thin plastic sheet to allow the template to 'grip' the surface of the vehicle.

The template shall be marked up with four points 'A' through 'D', as shown in Figure 7, while the template is on a flat surface. The template shall be placed on the vehicle with Corners 'A' and 'B' coincident with the side reference line. Ensuring these two corners remain coincident with the side reference line, the template shall be slid progressively rearwards until the arc of the template makes first contact with the bonnet rear reference line. Throughout the process, the template shall be curved to follow, as closely as possible, the outer contour of the vehicle's bonnet top, without wrinkling or folding of the template. If the contact between the template and bonnet rear reference line is tangential and the point of tangency lies outside the arc scribed by points 'C' and 'D', then the bonnet rear reference line is extended and/or modified to follow the circumferential arc of the template to meet the side reference line, as shown in Figure 8.

If the template cannot make simultaneous contact with the side reference line at points 'A' and 'B' and tangentially with the bonnet rear reference line, or the point at which the bonnet rear reference line and template touch lies within the arc scribed by points 'C' and 'D', then additional templates shall be used where the radii are increased progressively in increments of 20 mm, until all the above criteria are met.

Once defined, the modified bonnet rear reference line is assumed in all subsequent paragraphs and the original ends of the line are no longer used;

2.18. 'Lower bumper height' means, at any transverse position, the vertical distance between the ground and the lower bumper reference line, with the vehicle positioned in its normal ride attitude;

2.19. 'Lower bumper reference line' means a line which identifies the lower limit to significant points of pedestrian contact with the bumper. The line is the geometric trace of the lower most points of contact between a straight edge 700 mm long and the bumper, when the straight edge, held parallel to the vertical longitudinal plane of the vehicle and inclined forwards by 25°, is traversed across the front of the vehicle, while maintaining contact with the ground and with the surface of the bumper (see Figure 9);

2.20. 'Lower frontal protection system height' means, at any transverse position, the vertical distance between the ground and the lower frontal protection system reference line, with the vehicle positioned in its normal ride attitude;

2.21. 'Lower frontal protection system reference line' means a line which identifies the lower limit to significant points of pedestrian contact with the frontal protection system. The