

Commission Decision 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 (notified under document number C(2006) 776) (Text with EEA relevance) (2006/368/EC)

- Article 1 (1) The detailed technical requirements necessary to carry out the...
- Article 2 This Decision shall apply from 26 November 2006.
- Article 3 This Decision is addressed to the Member States.
- Signature

ANNEX

PART I

1. DEFINITIONS

- 1.1. 'Ground reference level' means the horizontal plane parallel to the...
- 1.2. 'Corner of frontal protection system' means the frontal protection system's...
- 1.3. 'Third of the frontal protection system' means the geometric trace...
- 1.4. 'Frontal protection system leading edge' means the uppermost outer structure...
- 1.5. 'Frontal protection system leading edge height' for any section of...
- 1.6. 'Frontal protection system lead' for any point on a frontal protection...
- 1.7. 'Corner of frontal protection system leading edge' means the frontal...
- 1.8. 'Third of the frontal protection system leading edge' means the...
- 1.9. 'Frontal protection system wrap around distance' of any point on...
- 1.10. 'Essential outer front end dimensions' means solid points in space...
- 1.11. The 'centre of the knee' of the legform impactor means...
- 1.12. The 'femur' of the legform impactor is defined as all...
- 1.13. The 'tibia' of the legform impactor is defined as all...

PART II

CHAPTER I

Test set-up

1. Testing the frontal protection system as original equipment fitted to...
 - 1.1. The frontal protection system mounted on the vehicle must comply...
 - 1.2. The vehicle must be in its normal ride attitude and...
 - 1.3. All devices designed to protect pedestrians and other vulnerable road...
 - 1.4. Any vehicle component that could change shape or position, such...

2. Testing of frontal protection system as separate technical unit.
 - 2.1. Where only a frontal protection system is supplied for tests, it...
 - 2.2. The test may be carried out either with the frontal...

CHAPTER II

Test provisions

1. To be approved, frontal protection systems must comply with the...
2. Propulsion systems
 - 2.1. The lower legform impactor for the frontal protection system tests...
 - 2.2. The upper legform impactor for tests to the frontal protection...
 - 2.3. The child/small adult headform impactor for the frontal protection system...
 - 2.4. In all cases the impactors may be propelled by an...

CHAPTER III

Lower legform to frontal protection system

1. Test purpose
 - 1.1. To test compliance with the requirements laid down in paragraph...
2. Test points
 - 2.1. A minimum of three lower legform to frontal protection system tests...
3. Test apparatus
 - 3.1. The lower legform impactor must consist of two foam covered...
 - 3.2. Transducers must be fitted to measure knee-bending angle and knee-shearing...
 - 3.3. The instrumentation response value CFC, as defined in ISO 6487:...
 - 3.4. The impactor must meet the performance requirements specified in Section...
 - 3.5. The impactor must be mounted, propelled and released as specified...
4. Test procedure
 - 4.1. The stabilised temperature of the test apparatus and the vehicle...
 - 4.2. Tests must be made to the frontal protection system at...
 - 4.3. The direction of impact must be in the horizontal plane...
 - 4.4. The axis of the impactor must be perpendicular to the...
 - 4.5. The bottom of the impactor must be 25 mm above...
 - 4.6. At the time of first contact the impactor must have...
 - 4.7. At the time of the first contact the centre line...
 - 4.8. During contact between the impactor and the frontal protection system,...
 - 4.9. The impact velocity of the impactor when striking the frontal...
5. Lower legform impactor
 - 5.1. The diameter of the femur and tibia must be 70...
 - 5.1.1. The length of the femur and tibia must be 432...
 - 5.2. The total mass of the femur and tibia must be...
 - 5.3. The centre of gravity of the femur and tibia must...
 - 5.4. The moment of inertia of the femur and tibia, about...
 - 5.5. A uni-axial accelerometer must be mounted on the non-impacted side of...
 - 5.6. The impactor must be instrumented to measure the bending angle...
 - 5.7. A damper must be fitted to the shear displacement system and...

CHAPTER IV

Upper legform to frontal protection system

1. Test purpose
 - 1.1. To test compliance with the requirements laid down in paragraph 3.1.2...
2. Test points
 - 2.1. Upper legform to frontal protection system tests must be carried...
3. Test apparatus
 - 3.1. The impactor must comply with the requirements laid down in...
 - 3.2. Two load transducers must be fitted to measure individually the...
 - 3.3. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
 - 3.4. The impactor must meet the performance requirements specified in Section 3 of...
 - 3.5. The impactor must be mounted and propelled as specified in...
4. Test procedure
 - 4.1. The stabilised temperature of the test apparatus and the vehicle...
 - 4.2. Tests must be made to the frontal protection system between...
 - 4.3. The direction of impact must be parallel to the longitudinal...
 - 4.4. The impact velocity of the impactor when striking the frontal...
5. Upper legform impactor
 - 5.1. The total mass of the upper legform impactor including those...
 - 5.2. The total mass of the front member and other components...
 - 5.3. The foam must be two sheets of 25 mm thick Confor™...
 - 5.4. The front member must be strain gauged to measure bending...
 - 5.5. The torque limiting joint must be set so that the...
 - 5.6. The centre of gravity of those parts of the impactor...
 - 5.7. The length between the load transducer centrelines must be 310 ±...

CHAPTER V

Upper legform to frontal protection system leading edge

1. Test purpose
 - 1.1. To test compliance with the requirements laid down in paragraph 3.1.3...
2. Test points
 - 2.1. A minimum of three tests must be carried out to...
3. Test apparatus
 - 3.1. The impactor must comply with the requirements laid down in...
 - 3.2. When impacting the upper leading edge reference line the impactor...
 - 3.3. Two load transducers must be fitted to individually measure the...
 - 3.4. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
 - 3.5. The impactor must meet the performance requirements specified in Section 3 of...

- 3.6. The impactor must be mounted and propelled as specified in...
4. Test procedure
 - 4.1. The stabilised temperature of the test apparatus and the vehicle...
 - 4.2. The tests must be made to the frontal protection system...
 - 4.3. The impactor must be aligned in such a way that the...
 - 4.4. The required impact velocity, the angle of impact and the...
 - 4.5. The required impact velocity and the angle of impact are...
 - 4.6. The required impact energy must be derived from Figure 13 with...
 - 4.7. The total mass of the impactor includes those propulsion and...
 - 4.7.1. The required value of the impactor mass must be calculated...
 - 4.7.2. The impactor mass may be adjusted from the calculated value...
 - 4.7.3. The required extra weights must be fitted accordingly in order...

CHAPTER VI

Child/small adult headform to frontal protection system

1. Test purpose
 - 1.1. To test compliance with the requirements laid down in paragraph 3.1.4...
2. Test points
 - 2.1. Test points for the child/small adult headform impactor must be...
 - 2.2. Three headform impact tests must be carried out at positions...
3. Test apparatus
 - 3.1. The impactor must be as described in Section 5 and as shown...
 - 3.2. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
 - 3.3. The impactor must meet the performance requirements specified in Section 4 of...
 - 3.4. The impactor must be mounted, propelled and released as specified...
4. Test procedure
 - 4.1. The stabilised temperature of the test apparatus and the vehicle...
 - 4.2. Tests must be made to the frontal protection system at...
 - 4.3. A child/small adult headform impactor, as described in Section 5, must...
 - 4.4. The direction of impact must be downward and rearward and...
 - 4.5. At the time of first contact, the point of first...
 - 4.6. The impact velocity of the impactor when striking the impact...
5. Headform impactor
 - 5.1. The child/small adult headform impactor is a sphere made of aluminium...
 - 5.2. The sphere must be covered with a $14 \pm 0,5$ mm thick synthetic...
 - 5.3. The centre of gravity of the impactor, including instrumentation, must...
 - 5.4. A recess in the sphere must allow for mounting one...
 - 5.4.1. One of the accelerometers must have its sensitive axis perpendicular...
 - 5.4.2. The remaining accelerometers must have their sensitive axes perpendicular to...

Appendix 1

Impactor certification

1. CERTIFICATION REQUIREMENTS
 - 1.1. The impactors used in the tests specified in Part II must...
2. LOWER LEGFORM IMPACTOR
 - 2.1. Static tests
 - 2.1.1. The lower legform impactor must meet the requirements specified in...
 - 2.1.2. For both tests the impactor must have the intended orientation...
 - 2.1.3. The stabilised temperature of the impactor during certification must be...
 - 2.1.4. The CAC response values, as defined in ISO 6487:2000, must be...
 - 2.1.5. When the impactor is loaded in bending in accordance with...
 - 2.1.6. When the impactor is loaded in shearing in accordance with...
 - 2.1.7. The impactor, without foam covering and skin, shall be mounted...
 - 2.1.7.1. A horizontal normal force must be applied to the metal...
 - 2.1.7.2. The energy is calculated by integrating the force with respect...
 - 2.1.8. The impactor, without foam covering and skin, must be mounted...
 - 2.1.8.1. A horizontal normal force must be applied to the femur...
 - 2.2. Dynamic tests
 - 2.2.1. The impactor must meet the requirements specified in paragraph 2.2.3 when...
 - 2.2.2. The stabilised temperature of the impactor during certification must be...
 - 2.2.3. When the impactor is impacted by a linearly guided certification impactor,...
 - 2.2.4. For all these values the readings used must be from...
 - 2.2.5. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
 - 2.3. Test procedure
 - 2.3.1. The impactor, including foam covering and skin, must be suspended...
 - 2.3.2. The certification impactor must have a mass of $9,0 \pm 0,05$ kg,...
 - 2.3.3. The guidance system must be fitted with low friction guides,...
 - 2.3.4. The impactor must be certified with previously unused foam.
 - 2.3.5. The impactor foam must not be excessively handled or deformed...
 - 2.3.6. The certification impactor must be propelled horizontally at a velocity of...
3. UPPER LEGFORM IMPACTOR
 - 3.1. The upper legform impactor must meet the requirements specified in...
 - 3.2. The stabilised temperature of the impactor during certification must be...
 - 3.3. Requirements
 - 3.3.1. When the impactor is propelled into a stationary cylindrical pendulum the...
 - 3.3.2. For all these values the readings used must be from...
 - 3.3.3. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
 - 3.4. Test procedure
 - 3.4.1. The impactor must be mounted to the propulsion and guidance...
 - 3.4.2. The impactor mass must be adjusted to give a mass of...
 - 3.4.3. The centre of gravity of those parts of the impactor...

- 3.4.4. The impactor must be certified with previously unused foam.
- 3.4.5. The impactor foam must not be excessively handled or deformed...
- 3.4.6. The impactor with the front member vertical must be propelled...
- 3.4.7. The pendulum tube must have an outside diameter of 150 +1...

4. HEADFORM IMPACTOR

- 4.1. The child/small adult headform impactor must meet the requirements specified...
- 4.2. The stabilised temperature of the impactor during certification must be...
- 4.3. Requirements
 - 4.3.1. When the child/small adult headform impactor is impacted by a linearly...
 - 4.3.2. The instrumentation response value CFC, as defined in ISO 6487:2000, must...
- 4.4. Test procedure
 - 4.4.1. The headform impactor must be suspended as shown in Figure 23....
 - 4.4.2. The certification impactor must have a mass of $1,0 \pm 0,01$ kg....
 - 4.4.3. The certification impactor must be propelled horizontally at a velocity of...
 - 4.4.4. The test must be performed on three different impact positions...

(1) OJ L 309, 25.11.2005, p. 37.