ISSN 1725-2555

Official Journal

of the European Union

L 31

Volume 47

4 February 2004

English edition

Legislation

Contents

Price: EUR 18

([1]) Text with EEA relevance

EN

Acts whose titles are printed in light type are those relating to day-to-day management of agricultural matters, and are generally valid for a limited period.

The titles of all other acts are printed in bold type and preceded by an asterisk.

II

(Acts whose publication is not obligatory)

COMMISSION

COMMISSION DECISION

of 9 July 2003

on the aid scheme implemented by Italy for natural disasters up to 31 December 1999

(notified under document number C(2003) 2048)

(Only the Italian version is authentic)

(2004/89/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community, and in particular the first subparagraph of Article 88(2) thereof,

Having called on interested parties [1] to submit their comments pursuant to the aforementioned provisions, and having regard to those comments,

Whereas:

I. PROCEDURE

(1) By letter dated 22 February 1993, registered on 26 February 1993, the Italian Permanent Representation to the European Union notified the Commission under Article 88(3) of the Treaty of a Sicilian draft law providing for aid measures designed to help farmers affected by natural disasters and for modifications to existing aid schemes in the agriculture sector. The draft law was registered under State aid number N 126/93.

(2) Supplementary information was requested by the Commission by letter dated 17 March 1993. In the absence of any reply from the Italian authorities, by letter dated 15 June 1993, the Commission invited the Italian authorities to provide the information requested within fifteen days from the date of the letter. An additional reminder was sent by the Commission by letter dated 20 August 1993.

(3) In reply to the reminders above, the Italian authorities transmitted an incomplete reply by letter dated 16 September 1993, registered as received on 26 September 1993. By letter dated 14 October 1993, the Commission invited the Italian authorities to submit a complete reply to the questions requested in its letter of 17 March 1993.

(4) The Italian authorities replied by letter of 14 February 1994 registered on 22 February 1994.

(5) From the reply it emerged that the draft aid measures notified by the Italian authorities on 22 February 1993 had meanwhile been adopted as Regional Law No 6 of 12 January 1993 [2] (hereinafter Regional Law 6/93) and that the newly-adopted law also contained additional measures not initially notified to the Commision under Article 88(3) of the Treaty. The Commission therefore decided to transfer the aid on to the register of non-notified aids under number NN 31/94.

[1] OJ C 295, 10.11.1995, p. 5.

[2] 'Norme per consentire alle aziende agricole danneggiate da eccezionali avversità naturali l'accesso ai benefici della legge 30 gennaio 1991, n. 31. Rifinanziamento della legge regionale 25 marzo 1986 n. 13 nonché anticipazioni dell' intervento dello Stato per le finalità del D.M. 21 dicembre 1987, N. 524 in applicazione del Regolamento CEE n. 857/84' Gazzetta Ufficiale della Regione siciliana del 16.1.1993. (Provisions to enable agricultural undertakings affected by exceptional weather events to benefit from the aids provided for by Law No 31 of 30 January 1991; Refinancing of regional law No 13 of 25 March 1986 as well as advanced payments on the aids to be provided by the National Government in accordance with Ministerial Decree No 524 of 21 December 1987 implementing (EEC) Regulation No 857/84).

(6) By telex of 30 March 1994, the Commission asked the Italian authorities to submit the final text of Regional Law No 6/93 and asked for additional information.

(7) Having received no reply to the above-mentioned letter, by letter dated 21 June 1994, the Commission sent a reminder to the Sicilian authorities asking them to provide the requested information.

(8) The Italian authorities replied to the Commission' s reminder by letters of 14 July 1994 and 14 September 1994 registered on 16 September 1994.

(9) By letter dated 2 March 1995, the Commission informed Italy that it had no objections to raise with respect to the aid measures provided for by Articles 5 and 7 of Regional Law No 6/93 in that they did not constitute aids within the meaning of Article 87(1). The Commission also raised no objections with respect to the refinancing of the aids provided for by Articles 9 and 15, paragraph 3 and following paragraphs of Regional Law (Sicily) No 13/86 ([3]). However, by the same letter, the Commission also informed Italy that it reserved the right to examine the said aids under Article 87(1) of the Treaty upon the adoption of general criteria for the assessment of aids given in the form of short-term subsidised loans.

(10) By the same letter the Commission also informed Italy of its decision to initiate the procedure laid down in Article 88(2) of the Treaty in respect of Articles 1 and 6 of Regional Law No 6/93 and with respect to the Italian national legislation providing for aids designed to compensate farmers in the case of natural disasters.

(11) The Commission explained the decision to initiate the proceedings provided for by Article 88(2) of the Treaty not only with respect to Articles 1 and 6 of Law No 6/93 but also with respect to the Italian national legislation on natural disasters by virtue of the fact that it was practically impossible to assess the compatibility of Articles 1 and 6 of Law No 6/93, which provided for aids in favour of farmers affected by natural disasters, with the applicable Community provisions on the subject without taking into account the national legislation on the matter to which Law No 6/93 made constant reference and whose accumulation with the aids under assessment could not be excluded ([4]).

(12) In order to be able to proceed with the assessment of Regional Law No 6/93 and undertake the evaluation of the national legislation on natural disasters, when opening the procedure the Commission asked the Italian authorities to specifically provide the following acts which had not been notified to the Commission as required by Article 88(3) of the EC Treaty:

— all legal texts adopted up to then concerning, amending or implementing National Law No 590 of 15 October 1981 'Nuove norme per il Fondo di solidarietà nazionale' which was the national framework law on natural disasters to which Law No 6/93 made reference and in conjunction with which Law No 6/93 needed to be assessed,

— all legal texts adopted up to then concerning, amending or implementing Law Decree No 367 of 6 December 1990 co-ordinated with conversion Law No 31 of 30 January 1991 on 'Urgent measures in favour of agricultural and livestock undertakings affected by the exceptional drought of the 1989-1990 agricultural year' ([5]) with respect to which Articles 1 and 6 of Law No 6/93 provided for specific derogations and benefits,

([3]) See note 2.

([4]) More specifically in its opening, the Commission stated that even though to a certain extent it was possible to 'isolate' the assessment of Articles 1 and 6 of Law 6/93 from that of the national legislation on which the law was based, in practice it was not possible to ignore the links existing between the regional text and the national legislation on natural disasters quoted in the regional law of which the latter was at the same time a refinancing and a modification. In fact in the first place, the two national texts provided for additional aid measures which, on the basis of the information available at the time might be cumulated with the regional measures. Secondly, the conditions for benefiting from the regional law were to be found in the national texts. In the absence of any information on these aspects the Commission therefore concluded that on the basis of the information available it was not in a position to verify the conformity of the regional aid measures with the Community criteria on aids to compensate farmers for damage caused by natural disasters.

([5]) Decreto Legge 6 dicembre 1990, n. 367 (in Gazzetta Ufficiale — serie generale — No 285 of 6 December 1990), coordinato con la legge di conversione 30 gennaio 1991, n. 31 (in the same Gazzetta Ufficiale on page 3) recante: 'Misure urgenti a favore delle aziende agricole e zootecniche danneggiate dalla eccezionale siccità verificatasi nell'annata agraria 1989—1990'.

— the text of Law No 185 of 14 February 1992 'Nuova disciplina del Fondo di solidarietà nazionale' which was, and still is, the Italian national framework law on natural disasters in force; along with all the legal acts amending, supplementing or implementing that law,

— the text of national Law No 198 of 13 May 1985 ([6]) with respect to which Articles 1 and 6 of Law No 6/93 provided for derogations and benefits, along with all the legal acts amending, supplementing or implementing that law,

— with respect to the abovementioned acts, any element capable of defining the scope of the measures contained therein, the criteria for granting the aids and the powers of the State, regions, and autonomous provinces as regards grant of the aids.

(13) The Commission decision to initiate the procedure was published in the *Official Journal of the European Communities* ([7]). The Commission invited interested parties to submit their comments.

(14) By letter dated 12 April 1995, the Italian national authorities submitted their comments on the opening of the procedure related to the national legislation on natural disasters and sent the Commission the texts of all the national laws requested in the opening of the procedure. The Italian national authorities left it to the Sicilian regional authorities to send their comments on Regional law No 6/93. No comments were sent by the Sicilian authorities.

(15) By letter of 19 April 2000, the Commission asked the Italian authorities to provide additional information on the national legislation on natural disasters and on Regional law No 6/93. With respect to Regional Law No 6/93, in its letter, the Commission reiterated part of the questions already asked in previous requests for additional information made to the Italian authorities and to which they had not replied. In the same letter ([8]), the Commission drew the attention of the Italian authorities to the need to provide clear answers to those questions, failing which the Commission would be obliged to take a decision on the basis of the elements available at that moment.

(16) By letter dated 20 November 2000, the Italian authorities provided the information requested by the Commission in its letter of 19 April 2000 as regards the national legislation on natural disasters. As regards Regional Law No 6/93, they clarified that it would be up to the Sicilian regional authorities to submit the information requested. No information has reached the Commission in this regard.

(17) By letter dated 29 January 2001, the Italian authorities also transmitted the texts of two additional acts related to Law No 185/92: Ministerial Decree No 100460 of 18 March 1993 implementing Article 6 of Law No 185/92 and Presidential Decree No 324 of 17 May 1996. In the same letter, the Italian authorities stated that Decree No 100460 of 18 March 1993 had never been implemented in practice (non ha mai trovato pratica applicazione).

(18) On 13 November 2002, the Commission decided to split the case under assessment into three parts: State aid C 12/A/95 concerning all aids to compensate for the damage caused by natural disasters granted by Italy on the basis of Law No 185 of 14 February 1992 up to 31 December 1999; State aid C 12/B/95 concerning all aids granted by the Italian authorities on the basis of Law No 185 of 14 February 1992 from 1 January 2000; State aid C 12/C/95 concerning Articles 1 and 6 of Regional Law No 6 of 12 January 1993 and the other national legislation mentioned therein.

(19) This decision only concerns the State aids granted by Italy on the basis of Law No 185 of 14 February 1992 up to 31 December 1999, namely the aids examined under State aid C 12/A/95 . The aids granted by Italy on the basis of Law No 185 of 14 February 1992 from 1 January 2000 as well as Articles 1 and 6 of Regional Law No 6 of 12 January 1993, which are covered by State aid C 12/B/95 and State aid C 12/C/95, will be the subject of a separate decision.

II. **DESCRIPTION**

Content of Law No 185 of 1992

(20) Law No 185 of 14 February 1992 is the Italian national framework law on natural disasters. The law, which is

([6]) 'Interventi per i danni causati dalle eccezionali calamità naturali e da avversità atmosferiche nei mesi di dicembre 1984 e gennaio 1985. Nuova disciplina per la riscossione agevolata dei contributi agricoli di cui alla legge 15 ottobre 1981, n. 590' Italian Official Gazette n. 118 of 21 May 1985 (Measures to compensate damage caused by the exceptional weather events of December 1984 and January 1985. New provisions for easier access to the contributions provided for by Law No 590 of 15 October 1981).

([7]) OJ C 295, 10.11.1995.

([8]) Commission letter VI/10837 of 19 April 2000.

currently in force, provides for a comprehensive set of aid measures designed to compensate farmers for the damage to agricultural production or the means of agricultural production resulting from natural disasters, adverse weather conditions and animal diseases.

(21) The resources to compensate farmers for the damage suffered as a result of these events are provided through a national fund known as National Solidarity Fund (Fondo di solidarietà nazionale), which allocates to the individual regions the sums necessary to compensate farmers. The Fund was originally set up in 1970 with a view to establishing an automatic system designed to implement specific actions of active and passive defence in the agricultural sector without having to resort each time to individual financial laws (leggi di spesa).

(22) The law, which consists of 12 articles, provides for four basic types of aid measures:

1. Aids designed to compensate farmers for the damage caused by natural disasters and adverse weather events

2. Aids for combating animal diseases

3. Aids in favour of active forms of defence against adverse weather events

4. Aids towards the payment of insurance premiums (also defined as passive forms of defence)

(23) The law does not specify the actual arrangements for granting the aids. The detailed arrangements for implementing the law are explained, *inter alia*, in an explanatory letter (Circolare No 7 — hereinafter the Circolare) sent by the Italian Ministry for Agriculture on 28 May 1992 to all Italian regions, the autonomous provinces of Bolzano and Trento, banks and financial institutions specialising in agricultural loans and a large number of professional associations operating in the agriculture sector. The Circolare was transmitted to the Commission by the Italian authorities immediately after the opening of the proceedings provided for by Article 88(2) of the Treaty. Law No 185/92 cannot be read in isolation from the Circolare and therefore the assessment of the Law cannot be separated from that of the Circolare.

Aids designed to compensate farmers for the damage caused by natural disasters and adverse weather events (Articles 3, 4 and 5 of Law No 185/92)

(24) Article 3 of Law No 185/92 defines various types of intervention in favour of the agricultural sector designed to favour the resumption of production activities following natural disasters or adverse weather events. According to this Article, the bodies which are entitled to benefit from these measures are individual agricultural undertakings or groups thereof located in areas which have been declared affected by a natural disaster or exceptionally adverse weather conditions by the competent regional authorities. It is therefore up to regional authorities to ascertain the exceptionality of the event as well as the actual damage caused by it.

(25) To be entitled to the aid, the undertakings concerned must have reported production losses equal at least to 35 % of their gross marketable production, with the exclusion of livestock losses. The calculation of the damage may also include the losses due to previous natural disasters which hit the same holding and the same crop during the same marketing year.

(26) Law No 185/92 does not specify the types of 'natural disasters and exceptionally adverse weather events' for which farmers may be compensated. In their letter of 20 November 2000, however, the Italian authorities specified that these events were identified in Circolare No 7 of 28 May 1992. The standard form, attached to the Circolare, which is to be used by potential beneficiaries to report the losses suffered, mentions the following events: hail, ice, persistent rainfalls, drought and heavy snowfalls, floods, *scirocco* winds, earthquakes, whirlwinds, frost, strong winds and sea storms. In their letter, the Italian authorities added that all the events in question can only be considered exceptional when they result in serious losses to gross marketable production not lower than 35 %.

(27) Neither the Law nor the Circolare explain the methods of calculation of the gross marketable production. In their letter of 20 November 2000, the Italian authorities explained that the calculation is done as follows:

(a) Calculation of normal gross marketable production:

— based on the production features of the undertaking, the quantities which may be produced under normal circumstances (no damage) are estimated, net of the products re-employed in the farm. Their monetary value is thus calculated;

— ancillary revenues already cashed and to be cashed during the year are calculated, including income support (if any);

— the sum of the production value and of ancillary revenues gives the normal gross marketable production.

(b) Calculation of actual gross marketable production which can be obtained after the damage:

— on the basis of the production features of the undertaking (same as above) the quantities obtainable after the event are calculated with the relevant monetary values;

— ancillary revenue and income support measures (if any) are calculated;

— the sum of the production obtainable after the damage and ancillary revenues gives the actual gross marketable production after the damage.

(c) Calculation of the incidence of the damage:

— the ratio between the gross marketable production after the event producing the damage and the normal gross marketable production gives the actual damage as a percentage of gross marketable production.

(28) With respect to the damage to infrastructure and land improvement works, the Circolare states that any damage which may be attributed to negligence, insufficient maintenance, natural deterioration, or normal seasonal conditions is not entitled to compensation through the Fondo di Solidarietà Nazionale. The exceptionality of the event must be proven by irrefutable technical data substantiated by official climatic detectors. They must be compared with the data of previous years over a sufficiently long period which must be statistically significant.

(29) According to the information submitted by the Italian authorities in their letter of 20 November 2000, the calculation of the loss is made at the level of the individual holding and takes into account any damage to crops benefiting from a subsidised insurance scheme as well as the normal costs not incurred by farmers.

(30) Under Article 3 of Law No 185/92, the holdings which meet the requirements above may benefit from the following types of aids:

(a) 'First aid' measures.

The Article generically speaks of 'first aid measures' as provided for by Article 1 of Law No 590 of 15 October 1981 and its subsequent amendments.

On the basis of the information contained in the abovementioned Circolare, it is possible to infer that these aids are granted in the presence of significant damage and for specific situations of need which require prompt intervention. This heading includes one-off contributions designed to partially cover the damage suffered by farmers, paying particular attention to the costs incurred to reduce the damage to production, including transport costs, warehousing costs, and processing costs. According to the Circolare sent by Italian authorities to the Regions, these measures include:

— a per hectare contribution in case of crops which were completely or partially lost;

— up to 40 % of the damage suffered by the loss of livestock and up to 30 % of the damage suffered by the destruction of dead stock;

— a contribution up to ITL 5 million for urgent repairs of rural premises ([9]);

— a contribution up to ITL 50 million for the restoration of infrastructure serving agricultural holdings;

— a contribution up to 100 % of costs incurred for the collection, sheltering and feeding of the livestock only during the emergency period and for no longer than six months in any event;

— up to 90 % contribution of costs incurred to alleviate the damage to production.

(b) Grants up to ITL 3 million to farmers and agricultural holdings having farming as their main occupation. This amount may be increased up to ITL 10 million in the case of damage to facilities for protected specialised crops. The aid may reach 80 %

([9]) These values are those contained in Law 185/92 and in the accompanying Circolare; they do not take account of subsequent amendments.

of eligible expenditure. The aid is designed to enable farmers to restore their working capital (capitale di conduzione). Farmers and agricultural holdings not having farming as their main occupation may benefit only from five-year soft loans.

(c) Soft-loans of a duration of five years to enable farmers to continue their operations during the year in which the event took place, and the following year. The loan granted may also cover the loan instalments falling due the year in which the event took place, provided they are not extended for more than 24 months.

(d) 10-year soft loans for the recovery, restoration and conversion of structures in the holdings which were damaged by the event, including damage to trees, greenhouses and road facilities within the holding. As an alternative to this measure, the holdings may benefit from grants of up to 80 % of the actual costs incurred in the case of small holdings, 65 % for medium sized ones and 50 % for large holdings. The aid may be granted for the recovery and repair of premises, land, trees, repair and replacement of agricultural equipment, plants for the storage and processing of products and lastly, for the purchase of seeds and the restoration of stocks.

(e) Five-year soft loans for processing and marketing cooperatives and producer groups within the meaning of Community legislation which, by virtue of damage to their members, have suffered a reduction in income due to a reduction of least 35 % of the average production conferred and marketed over the last two years. Only a reduction in the quantities conferred directly due to a decrease in production caused by a natural distaster or like event may be taken into accout. Any reduction due to other factors such as modifications in the operation of cooperatives, changes in the number of their members or changes in agricultural practices cannot be taken into account. Furthermore, the aid cannot be granted to those cooperatives which purchase from market suppliers more than half of the overall amount processed.

(f) Special contributions for the storage of citrus fruit which cannot be marketed may be granted to cooperatives and groups of fruit and vegetables producers.

(g) The Regions may also provide up to 100 % aid for the restoration and repair of road networks and water works.

(31) In addition to the above measures which are provided for by Article 3 of Law No 185/92, Article 4 provides for an extension of the repayment period for operating, improvement and agricultural loans due by the agricultural undertakings which meet the requirements to be entitled to the aids. The extended instalments benefit from a subsidised interest payments. Article 5 of the law grants the same undertakings a partial exemption from the payment of the social security contributions for agriculture falling due within 12 months of the occurrence of the event. The reduction may vary between 20 % and 50 % of the amount due.

Aids for combating animal diseases (Article 6 of Law No 185/92)

(32) Article 6 authorises producer consortia to support the income of livestock farmers affected by animal diseases which require the compulsory slaughter of the animals under Law No 218 of 2 June 1988. The contributions take account of the loss of production due to the waiting period imposed by the competent authorities. The contribution from the State may be up to 50 % of the expenses actually incurred by the funds.

(33) The Article leaves the definition of the exact arrangements for implementing the law to a Decree to be issued by the Ministry of Agriculture. At the Commission's request, the Italian authorities submitted the relevant Decree: Ministerial Decree No 100460 of 18 March 1993 which, according to the Italian authorities, has never been implemented.

(34) The decree provides for aid measures in favour of agricultural undertakings affected by foot-and-mouth disease, classical swine fever, African swine fever, vesicular stomattatis, pleuropneumonia. Only agricultural undertakings that are members of a consortium for the defense of production and who report the number of animals they have by March 30 of each year, agree to pay their membership contribution and commit themselves to meeting all hygienic and sanitary provisions for the protection of the stock farm may benefit from the aid. The aid may not exceed 40 % of the gross marketable production which might have been obtained from the slaughtered animals. For each year and head of cattle, the decree fixes the value of the gross marketable production. The aid (within the 40 % limit) takes into account the farm's fixed costs and whether the animal was registered in the genealogical register. The overall aid contribution is proportional to the waiting period of the farm which cannot be longer than six months for bovine animals and three months for pigs, sheep and goats. The State contribution is paid to the consortia only after approval of the final accounts upon presentation of the relevant applications

to the competent regional authorities. As an alternative, the consortia may decide to resort to insurance contracts on the basis of Article 9(1)(b) of Law No 185/92.

Active forms of defence against adverse weather events (Article 8 of Law No 185/92)

(35) A contribution up to 80 % of eligible expenses may be provided for investments concerning initiatives — even pilot ones — of 'active protection' ([10]) of the holdings (crops) against adverse weather events. A case in point is the installation of special nets against hail. The beneficiaries of the measures are protection consortia, which are also responsible for actual implementation of the projects. A 50 % aid rate may also be granted for the running and maintenance of the equipment installed by virtue of the above contribution. The active protection projects may only be financed if they prove to be economically viable compared to the corresponding forms of passive protection. It is up to the Ministry for Agriculture to establish the minimum thresholds below which the active protection projects are not considered economically viable.

(36) According to the information submitted by the Italian authorities in their letter of 20 November 2000, no initiative of this type has ever been undertaken since apparently no suitable technological solutions to counter the damage caused by either natural disasters or adverse weather conditions have yet been found.

Insurance contracts (Article 9 of Law No 185/1992)

(37) Article 9 of Law 185/1992 authorises the defense consortia set up on the basis of Law No 364 of 25 May 1970 and of Law No 590 of 15 October 1981 to conclude insurance contracts covering losses caused by adverse weather events as well as animal or plant diseases. Farmers may choose among three types of contracts:

(a) compensation for the damage caused to specific crops by hail, ice, frost and other adverse weather events (individual events affecting individual crops);

(b) compensation for the damage caused to a holding's facilities and specific crops by all adverse weather events affecting production beyond the normal business risk. The losses may also be due to plant diseases, if strictly related to adverse weather events, and to animal diseases (various weather events affecting individual crops or structures). This type of contract also includes damage to quality;

(c) compensation for the damage caused to the main crops on the farm by all adverse weather events whenever the level of damage exceeds the normal business risk (several weather events affecting more than one crop or structure).

(38) As to the ordinary business risk, the Italian authorities have clarified that it is generally set at 10 to 15 %.

(39) The fund paying out the insurance premiums is financed through:

1. the contributions of the members;

2. a contribution from the State equal to 50 % of the overall costs;

3. contributions from the regional authorities, private and public bodies.

(40) The Circolare states that the policies made in areas characterised by high climatic risk, which are to be defined by Ministerial Decree, may benefit from a public (State, regions etc.) contribution of up to 65 % of the overall cost. In their letter of 20 November 2000, the Italian authorities stated that the State contribution to the actual costs sustained generally ranged between 30 % and 40 %. In those few cases where a regional contribution is also granted, like in the Province of Trento, the overall public contribution never exceeds 65 %.

Insurance contracts Decree (Presidential Decree No 324 of 17 May 1996)

(41) In their letter of 20 November 2000, the Italian authorities clarified that Article 9 of Law No 185/92 had been replaced by Presidential Decree No 324 of 17 May 1996 (Regolamento concernente norme sostitutive dell' art. 9 della legge 14 febbraio 1992, n. 185,

([10]) As opposed to 'passive protection' represented by insurance schemes.

sull'assicurazione agricola agevolata). The assessment of the Italian legislation on compensation of damage caused by natural disasters until the entry into force of the new Guidelines ([11]) needs therefore to take this Decree into account as well.

(42) According to the Italian authorities, the Decree was issued in order to bring the Italian legislation on subsidised insurance into line with Community provisions. The 2001 Finance Act contains an Article which further modifies the Italian legislation on subsidised insurance to bring it into line with the new Community Guidelines for State aid in the agriculture sector. This last provision is not covered by this Decision.

(43) Presidential Decree No 324/96 explicitly governs subsidised insurance contracts. The types of contract which may benefit from public contributions are the same as those laid down in Law No 185/92. The State contribution to these contracts may be up to 50 % of eligible expenditure, which may be increased to 65 % in areas characterised by high climatic risk.

III. **ASSESSMENT**

(44) Article 87(1) of the EC Treaty provides that any aid granted by a Member State or through State resources in any form whatsoever which distorts or threatens to distort competition by favouring certain undertakings or the production of certain goods shall, in so far as it affects trade between Member States, be incompatible with the common market.

(45) Law No 185/92 provides for the grant of aid, through public resources, to specific agricultural undertakings which will undeniably be granted an undue economic and financial advantage to the detriment of other agricultural undertakings not receiving the same contribution. According to the case law of the Court of Justice, an improvement in the competitive position of an undertaking as a result of State financial aid leads to possible distortion of competition compared with other competing undertakings not receiving such assistance ([12]).

(46) The measures under consideration affect trade between Member States in that there is substantial intra-Community trade in agricultural products as indicated by the table ([13]) below, which lists the overall value of agricultural imports and exports between Italy and the rest of the EU over the 1992-1999 period, with the relevant percentage share.

	All products			All agriculture			Share of Agric in All trade	
	Exports	Imports	(+Balance (E-I))	Exports	Imports	(+Balance (E-I))	Exports	Imports
1992	79 388 214	85 692 624	−6 304 409	6 562 005	14 020 411	−7 458 406	8,27	16,36
1993	77 274 764	70 223 928	7 050 836	6 714 141	12 741 140	−6 026 999	8,69	18,14
1994	86 512 176	80 515 251	5 996 925	7 360 628	13 390 286	−6 029 659	8,51	16,63
1995	102 383 525	95 845 379	6 538 146	8 364 233	13 629 860	−5 265 628	8,17	14,22
1996	110 160 747	100 188 306	9 972 440	9 191 731	14 525 682	−5 333 951	8,34	14,50
1997	116 528 196	113 098 493	3 429 703	9 458 357	15 356 986	−5 898 629	8,12	13,58
1998	124 669 240	120 903 295	3 765 945	9 996 756	15 628 673	−5 631 917	8,02	12,93
1999	128 692 641	127 285 283	1 407 359	10 665 255	15 927 386	−5 262 131	8,29	12,51

([11]) Community Guidelines for State aid in the agriculture sector (OJ C 28, 1.2.2000, republished in OJ C 232, 12.8.2000).

([12]) See Case C-730/79 [1980] ECR. 2671, grounds 11 and 12.

([13]) Source: Comext.

(47) With respect to the above, it should however be noted that the Court of Justice has held that aid to an undertaking may be such as to affect trade between the Member States and distort competition where that undertaking competes with products coming from other Member States even if it does not itself export its products. Where a Member State grants aid to an undertaking, domestic production may for that reason be maintained or increased with the result that undertakings established in other Member States have less chance of exporting their products to the market in that Member State. Such aid is therefore likely to affect trade between Member States and distort competition ([14]).

(48) The Commission therefore concludes that the measures are caught by the prohibition in Article 87(1) of the EC Treaty.

(49) The prohibition in Article 87(1) is followed by exemptions in Article 87(2) and (3).

(50) The exemptions listed in Article 87(2)(a) and (c) are manifestly inapplicable given the nature of the aid measure in question and its objectives. Indeed, Italy has not submitted that either Article 87(2)(a) or (c) are applicable.

(51) Article 87(3)(a) is also inapplicable since the aid is not intended to promote the development of areas where the standard of living is abnormally low or where there is serious underemployment.

(52) With regard to Article 87(3)(b), the aid in question is not intended to promote the execution of an important project of common European interest or to remedy a serious disturbance in Italy's economy.

(53) This aid is not intended to achieve or suitable for achieving the objectives referred to in Article 87(3)(d).

(54) Considering the nature of the aid under examination and its objectives, the only exemptions which may be applicable are those provided for by Article 87(2)(b) and (c).

Applicable provisions

(55) The applicability of one of the abovementioned exceptions needs to be assessed in the light of the provisions applicable to the granting of State aids in the agriculture sector, namely the Community Guidelines for State aid in the agriculture sector ([15]) (hereinafter the Guidelines), which entered into force on 1 January 2000.

(56) Point 23.3 of the Guidelines states that the Community will apply them with effect from 1 January 2000 to new notifications of State aid and to notifications which are pending on that date. Unlawful aid within the meaning of Article 1(f) of Council Regulation (EC) 659/1999 of 22 March 1999 laying down detailed rules for the application of Article 88 of the EC Treaty ([16]) will be assessed in accordance with the rules and the guidelines in force at the time the aid is granted.

(57) Law No 185/92 was never notified to the Commission and was therefore put into effect in contravention of Article 88(3) of the Treaty. It therefore falls within the scope of Article 1(f) of Regulation (EC) No 659/1999 and needs to be examined on the basis of the rules in force at the time the relevant aids were granted. Any aids granted on the basis of this law up to 31 December 1999 need therefore to be assessed in the light of the provisions applicable before the entry into force of the new Guidelines. Any aid granted on the basis of the same law from 1 January 2000 will on the other hand need to be assessed on the basis of the new Guidelines.

(58) As stated in paragraph 19 above, this decision only concerns the aids granted by Italy on the basis of Law No 185 of 1992 up to 31 December 1999. The aids granted on the basis of Law No 185/1992 from 1 January 2000 onwards as well as the aids granted on the basis of Articles 1 and 6 of Regional Law No 6/93 and the other national legislation referred to therein are assessed within the framework of State aid C 12/B/95 and State aid C 12/C/95 and will be the subject of separate decisions.

Aids designed to compensate farmers for the damage caused by natural disasters and adverse weather events (Articles 3, 4 and 5 of Law 185/92).

(59) The Articles at issue provide for aids to compensate farmers for the damage suffered as a result of natural disasters or adverse weather events. At the time they were granted, these types of aid were assessed on the basis of the Rules governing the grant of national aids

([14]) Judgment of the Court of Justice of 13 July 1988 in Case 102/87 French Republic v Commission of the European Communities ECR [1988] 4067.

([15]) OJ C 232, 12.8.2000, p. 19.
([16]) OJ L 83, 27.3.1999, p. 1.

in the event of damage to agricultural production or the means of agricultural production and national aids involving the defraying of a proportion of the insurance premiums covering such risks ([17]). Under these rules it was customary for the Commission to regard as covered by the provision of Article 87(2)(b) national aids compensating for material damage of all kinds caused by earthquakes, flood avalanches or landslides. Exceptional occurrences such as wars, internal disturbances or strikes or, with some reservation, nuclear catastrophes and fires (depending on their extent) were to be treated in the same way in the Commission's view. Regardless of the extent of the damage, all these events *per se* justified compensating private individuals for the damage incurred.

(60) On the other hand, the Commission customarily held that weather events such as frost, ice, hail, rain or drought could not be regarded as a natural disaster within the meaning of the Treaty unless the damage caused to the individual recipient of the proposed aid reached a certain minimum threshold. The threshold was set at 30 % of normal production (20 % in the less-favoured areas) based on the one hand on the total gross production affected by the event on an individual holding applying for an allowance to compensate for the losses suffered and, on the other hand, on the corresponding normal gross annual production. That rate needed to be determined by comparing the average normal production recorded objectively for each holding concerned during a reference period of three years preceding that of the event in question (disregarding, where appropriate, a previous year which also gave rise to compensation on the same grounds) against the reduced or destroyed production under consideration.

Nature of the events covered by the law and level of damage giving right to compensation

(61) The Italian law generically speaks of natural disasters and adverse weather conditions without mentioning any specific event. In this respect, the Commission asked the Italian authorities to specify the types of event which, under certain conditions, might entitle farmers to compensation. In their letter of 20 November 2000, the Italian authorities replied by stating that the events covered by the law had been identified in the explanatory circular letter sent to all the Regions concerned and to other interested parties. The standard form attached to the Circolare which was to be used by potential beneficiaries to report the losses suffered mentions the following events: hail, ice, persistent rainfalls, drought, heavy snowfalls, floods, *scirocco* winds, earthquakes, whirlwinds, frost, strong winds and sea storms.

([17]) Working document VI/5934/86, 10.11.1986.

(62) Of these events, only floods and earthquakes fall within the definition of natural disasters laid down in Article 87(2)(b) of the Treaty and justify the grant of compensatory aids regardless of the level of damage caused. As to the others, to be entited to the aid the agricultural undertaking affected must have reported damage reaching at least the 30 % threshold mentioned in the abovementioned document, calculated using the methodology described therein. The Italian law establishes that the agricultural undertakings affected by adverse weather events are entitled to compensatory aids only when they report a loss of production of at least 35 % of gross marketable production.

(63) Neither the law nor the Circolare specifies how the losses are to be calculated. At the Commission's explicit request, the Italian authorities explained in their letter of 20 November 2000 the method of calculation used. As shown from the description provided at paragraph 27 above, the method adopted by the Italian authorities to calculate the loss of production does not coincide perfectly with that proposed by the Commission.

(64) In fact, while the Commission requires a 30 % loss of normal production calculated over a reference period of three years, the Italian authorities require a 35 % loss of 'gross marketable production' in the year in which the event takes place. The Italian method does not therefore require a reference period of three years on the basis of which normal production is calculated. Since the purpose of the reference period is to make sure that the resulting calculation is actually representative and is not based on abnormally high yields, it can be questioned whether the absence of the three-year reference period can actually make the Italian method of calculation unrepresentative of average normal production, so opening the way to abuse and distortion.

(65) To this end, it should be noted that the method used by the Italian authorities is based on the level of production which can be obtained by the holding under normal conditions, i.e. in the absence of damage. The method takes account of the specific production features of the holding, net of the percentage of production which is re-employed on the holding. The production level is therefore calculated on 'objective' parameters (namely the surface of the holding, the inputs used) which are typical of the specific production unit concerned and which cannot be affected by external seasonal factors capable of changing the level of production that can on average be achieved on that holding. The use of such parameters therefore makes it no longer necessary to resort to a reference period of three year to have a 'representative' value. The level of normal production which is obtained through this method cannot in fact be inflated by external factors giving abnormally high yields. Moreover, it should also be considered that the loss is calculated at the level of

the individual holding and not on the basis of an average of several holdings, something that could lead to an inaccurate representation of the damage suffered by the individual holdings and might involve the risk of overcompensation.

Intensity of the aid and risk of overcompensation

(66) Under Community legislation, if the requirements described in point 60 are met, aids to compensate farmers for the damage suffered may reach 100 %. Under no circumstances can the aids granted exceed the losses actually suffered by farmers.

(67) The law under examination lays down that the farmers affected by the event may have access to one or more of the types of aid described by the law itself, depending on the type of damage reported and the type of agricultural holding. The Italian authorities have clearly indicated that even though the farmers may receive several types of aid, no overcompensation is ever possible. They have in fact clarified that the aids covering damage to crops must be related and in any event not exceed the value of the capital invested in the production cycle and not recovered as a result of the loss of the product, and the greater costs, if any, to be sustained by the agricultural undertaking to complete the production cycle. The aids for the restoration of the holding's facilities and premises cover only part of the costs of their restoration. The authority paying out the aids must always make sure that the compensation of the damage does not exceed the damage suffered since that would obviously result in an illegal enrichment. Furthermore, the authorities responsible for the payment of the aids must take account of any other regional, national or Community aids which might be granted to the same end as the law under consideration here.

(68) In addition, the Italian authorities have confirmed that the amount of the aid paid is reduced by any amount received under subsidised insurance schemes and that the normal costs not incurred by the farmer — because of the non-harvesting of the crop, for example — are also taken into account.

(69) Based on the above, it is possible to conclude that the aids designed to compensate farmers for damage caused by natural disasters and adverse weather conditions provided for by Articles 3, 4 and 5 of Law No 185/92 are compatible with the common market under Article 87(2)(b) of the Treaty as aid to make good the damage caused by natural disasters.

Aid to cooperatives engaged in the processing and marketing of agricultural products (Article 3 of Law 185/92)

(70) Law No 185/92 lays down that also cooperatives engaged in the processing and marketing of agricultural products which have suffered a reduction in income due to a reduction in the products conferred by their members who were affected by the catastrophic events concerned may benefit from the aids provided for therein. The reduction must be at least equal to 35 % of the average production conferred and marketed over the last two years.

(71) Before the entry into force of the new Community Guidelines on State aids in the agriculture sector, it was Commission practice ([18]) to authorise aids of this type in favour of processing and marketing cooperatives. The Commission's approach was based on the idea that, because of the reduction in production caused by an adverse climatic event or natural disaster, farmers had to reduce the quantity of products supplied to cooperatives of which they were members and which were responsible for the marketing of their production. Farmers who had been affected by natural disasters were therefore penalised twice: first of all as a result of the loss of their crops and secondly as a result of the losses of the cooperatives of which they were members and to which they generally supplied their production. The latter in fact, due to the scarcity of supplies caused by the event, might operate at a loss on account of the fixed costs they have to pay. In line with the Commission's practice at the time in question, there is no reason why processing and marketing cooperatives should be excluded from the benefits of the law.

(72) On the basis of the above considerations, it is possible to conclude that the aids provided for by Articles 3, 4 and 5 of Law No 185/92 designed to compensate cooperatives engaged in the processing and marketing of agricultural products for the damage suffered as a result of adverse weather conditions are compatible with the common market in accordance with Article 87(2)(b) of the Treaty.

Aids for combating animal diseases (Article 6 of Law No 185/92)

(73) Article 6 of Law No 185/92 generically authorises producers' consortia to take measures to support incomes on holdings affected by animal diseases. The specific arrangements for the implementation of this aid, which are not laid down in the Article, are left to a Decree to be issued by the Ministry of Agriculture. In

([18]) See for example aids N 877/95 and N 435/95.

this respect, Law No 185/92 does not provide for the grant of immediate and direct aids to the farmers concerned; that task is left to the abovementioned Decree. So Article 6 of Law No 185/92 does not constitute State aid within the meaning of Article 87(1) of the Treaty.

Ministerial Decree No 100460 of 18 March 1993

(74) The Decree lays down the detailed rules for implementing the measures generically defined by Article 6 of Law No 185/92 and therefore falls within the scope of Article 87(1) of the Treaty.

(75) Before the entry into force of the new Community Guidelines for State aid in the agricultural sector, it was established Commission practice, based on its working document VI/5934/86 Rev. 2 of 10 November 1986 ([19]) to authorise compensatory aids for farmers affected by epizootic diseases aids provided that:

— they concerned measures compulsory under the law of the country concerned or Community law and were granted by the Member States in whose territory such measures were carried out,

— they formed part of a national program limited to the time needed to secure the effective eradication of the disease concerned,

— the objective of the aid measures were either preventive, compensatory or both.

(76) The aids provided for by the Ministerial Decree are only granted in the case of diseases for which a compulsory program of eradication is laid down by Law No 218 of 2 June 1988 relating to measures designed to combat foot-and-mouth disease and other epizootic disease (Misure per la lotta contro l'afta epizootica ed altre malattie epizootica degli animali). The aids are envisaged only for a limited period of either six months or three months, which is the waiting period imposed on the livestock holding as a result of the slaughtering obligation. The objective of the measure is compensatory since it is designed to compensate farmers for the loss of income suffered as a result of the compulsory slaughtering of their animals under eradication programmes. No overcompensation is possible as a result of the aid since the contribution cannot exceed 40 % of the gross marketable production of the slaughtered animals.

([19]) Based on the Commission's working paper: Rules governing the grant of national aids in the event of damage to agricultural production or the means of agricultural production and national aids involving the defraying of a proportion of the insurance premium covering such risks.

(77) It follows from the above that the aid measures provided for by Ministerial Decree No 100460 comply with the applicable Community provisions in force at the time as defined in point 75. They can therefore be considered compatible with the common market under Article 87(3)(c) of the Treaty.

(78) In their letter of 29 January 2001, the Italian authorities stated that the Ministerial Decree has never been implemented.

Aids for the implementation of active defense projects (Article 8 of Law No 185/92)

(79) Article 8 of Law No 185/92 provides for a 80 % aid rate in respect of eligible expenditure for investments related to 'active defense' including the construction of anti-hail nets, as well as a 50 % aid rate in respect of eligible expenditure for the operation and management of the facilities created by virtue of this investment. The investments are designed to prevent the damage caused by adverse weather events or other exceptional occurrences. According to the information provided by Italian authorities, these investments are to be considered as an alternative to passive defense initiatives (insurance) when they prove to be more viable and economically convenient than the latter.

(80) Despite the objective they pursue, the aids provided for by Article 8 cannot be assessed on the basis of the Commission's working document governing the grant of national aids in the event of damage to agricultural production and national aids covering the defraying of a proportion of the insurance premium covering such risks ([20]). The document in fact only covers *ex post* compensatory aids granted after the actual occurrence of the damage or loss and *ex ante* aids in the form of insurance premiums against such potential risks. The document makes no provision for aids for active defense initiatives such as the ones described in Article 8 of Law No 185/92.

(81) It follows from the above that the aids provided for by the Article in question must be assessed in the light of the provisions applicable to aids for investments in holdings, that is investments carried out at the level of primary production which, at the time the law was issued, were regulated by Council Regulation (EEC) No 2328/91 of 15 July 1991 on improving the efficiency of agricultural structures ([21]), later replaced by Council Regulation (EC) No 950/97 ([22]) of 20 May 1997.

([20]) Working document VI/5934/86, 10.11.1986.
([21]) OJ L 218, 6.8.1991, p. 1.
([22]) OJ L 142, 2.6.1997, p. 1.

(82) Regulation 2328/91 basically established a Community part-financed system providing for a series of measures to improve the efficiency of agricultural structures. It established a framework for common action authorising or obliging Member States to implement a certain number of aid schemes which were part-financed by the Community. At the same time the Regulation established a framework regulating the grant of certain types of national aid financed by the Member States. Article 35 of Regulation (EEC) No 2328/91 defined the conditions under which Member States were authorised to provide State aids in order to achieve the objectives of the Regulation. More specifically, Article 35 stated that the Regulation was without prejudice to the right of Member States to adopt additional aid measures in the areas covered by the Regulation with the exception of those covered by Articles 2, 6 to 9, 11, 12(2), (3) and (4) and 17 on terms differing from, or in amounts exceeding, the ceilings laid down in the Regulation, provided that Articles 92, 93 and 94 of the Treaty were not infringed. Article 35(2) laid down that the provisions of Articles 92, 93 and 94 of the Treaty, with the exception of Article 92(2), did not apply to the aid measures governed by Articles 2, 6 to 9, 11, 12(2), (3) and (4) and 17.

(83) The types of aid which Member States were authorised to grant were therefore clearly defined by Article 35, which limited the Member States' scope for intervention as regards aids financed entirely by the state. In practice, Member States had to notify the Commission of any decision to grant aids for the initiatives covered by the Regulation either in the framework of the procedure provided for by the Regulation with a view to obtaining Community part-financing or on the basis of Articles 87 and 88 of the Treaty with respect to State aid. The Italian authorities did not notify the Commission of the aids provided for by Article 8 of Law No 185/92 within the framework of the procedure provided for by Regulation (EEC) No 2328/91 with a view either to obtaining Community part-financing or with a view to granting the aids in accordance with Article 12(2), (3) and (4) of that same Regulation; the aids need therefore to be assessed against Articles 87, 88 and 89 of the Treaty within the limits and under the conditions laid down by the Regulation.

(84) Article 12 of Regulation (EEC) No 2328/91 specifies the types of investment which Member States were authorised to fund exclusively out of their own resources. As stated under Article 35, Articles 87, 88 and 89 of the Treaty do not apply to the aid measures governed by Article 12(2), (3) or (4). The aids provided for by Article 8 of Law No 185/92 therefore can only be assessed on the basis of Article 12(1) and (5) of Regulation (EEC) No 2328/91.

(85) Article 12(1) prohibits aid for investments in agricultural holdings satisfying the conditions laid down in Articles 5 and 9 and which exceed the amounts laid down in Article 7(2) increased, where appropriate, by the aid referred to in Article 11 (with the exception of aid for the construction of farm buildings), aid for the relocation of farm buildings where this is done in the public interest, aid for land improvement operations or for investments for the purpose of environmental protection or improvement, provided that the grant of these higher amounts does not infringe Article 6 and Articles 87 and 88 of the Treaty.

(86) As its wording indicates, the aids provided for by Article 12(1) are additional aids which under strictly defined conditions may be granted by Member States on top of the Community part-financed system of aids granted under Regulation (EEC) No 2328/91. Such additional aids may only be granted to holdings which satisfy all the conditions laid down by the Regulation (Articles 5 to 9) for access to Community aid and only with a view to topping up previously approved part-financed aids. The aids provided for by Article 8 of Law No 185/92 are, on the other hand, granted regardless of the existence of a previously approved part-financed system of aids established on the basis of Regulation (EC) No 2328/91 to holdings which most probably do not meet the conditions of Articles 5 to 9 of Regulation (EEC) No 2328/91. These aids by definition do not fall under the scope of Article 12(1) of Regulation (EEC) No 2328/91.

(87) Article 12(5) indicates the cases where Member States are free to provide aids which are not subject to the limitations and prohibitions laid down by the Article, provided that the aids are granted in accordance with Articles 87 and 88 of the Treaty. The Article mentions the following six cases:

— aid for land purchase,

— subsidised operating loans the term of which does not exceed one marketing year,

— aid for the purchase of male breeding stock,

— securities for loans contracted, including interest,

— aid for investments in the protection and improvement of the environment provided that this does not entail an increase in production,

— aids in respect of investments for the purpose of improving hygiene conditions or complying with Community animal welfare standards or national standards where these are stricter than the Community standards, provided that these investments do not give rise to an increase in production.

(88) The aids provided for by Article 8 of Law No 185/92 are generically defined as 'active defense' investments to be carried out as an alternative to passive defense initiatives (insurance). The Italian authorities were asked to describe and provide examples of the types of investment which might be covered by this definition. In their reply of 20 November 2000, the Italian authorities generically referred to anti-hail nets as the sole example of possible investments. In the same letter they stated that in reality no investments of this type had ever been financed for want of appropriate technology. Even in the absence of more specific information from the Italian authorities, the aids provided for by Article 8 of Law No 185/92 are neither aids for the purchase of land nor aids for the purchase of male breeding stock, nor do they concern environmental investments or investments designed to improve hygiene conditions or to guarantee compliance with Community animal welfare standards, nor are they securities for loans contracted. They cannot therefore be considered to fall under any of the categories provided for by Article 12(5) of Regulation (EEC) No 2328/91.

(89) In addition to the considerations above, it should also be recalled that Article 8 of Law No 185/92 provides for an aid rate of up to 80 % for the investments concerned. The maximum aid rate authorised by the Commission for general investments in primary production was 35 % in the case of investments undertaken in normal areas and 75 % for investments undertaken in less favored regions within the meaning of Directive 75/268/EEC of 28 April 1975 ([23]). An exceptional aid rate of 40 % applied to the purchase of male breeding stock. The 80 % aid rate provided for by the Italian authorities would therefore exceed the maximum aid rate authorised by the Commission.

(90) The Commission therefore considers that the 80 % aid in favour of active defense investments provided for by Article 8 of Law No 185/92 cannot benefit from any of the derogations to Article 87(1) laid down in the Treaty and is therefore incompatible with the common market.

(91) Article 8 of Law No 185/92 also provides for 50 % aid in respect of eligible expenditure for the operation and maintenance of the facilities and structures created as a result of the aids described in the previous paragraphs. In its letter of 19 April 2000, the Commission asked the Italian authorities to justify the grant of this contribution which is apparently designed to cover operating costs which should normally be sustained by the holdings as part of their normal day to-day activity. In their reply of 20 November 2000, the Italian authorities explained that the active defense initiatives envisaged were 'collective' and were carried out by defense consortia or other bodies. The related costs did not cover the costs sustained by individual undertakings. The 50 % contribution was granted by analogy with the aid towards the costs of insurance policies.

(92) The reply provided by the Italian authorities confirms that the 50 % contribution is indeed granted to cover the maintenance and operating costs of the weather defence facilities created as a result of the investments described above. The fact that the contribution is granted and is managed by the consortia is irrelevant since the final beneficiaries of the aid are in any event the farmers benefiting from the active defense structures. The aid is therefore simply designed to relieve farmers of normal operating costs associated with the day-to-day running of their activities (including those for the maintenance of farm structures and investments) for the duration of the aid. Aids towards the payment of cost which should normally be borne by farmers themselves are by definition operating aids ([24]), in other words an aid which simply confers a short-term economic advantage. These aids have no structural effect on the development of the sector and cannot be considered to facilitate the economic development of certain economic activities or of certain economic areas. It can therefore be concluded that these aids cannot benefit from any of the derogations to Article 87(1) laid down in the Treaty and are therefore incompatible with the common market.

Assessment of the aids provided for by Article 8 of Law No 185/92 on the basis of Regulation (EC) No 950/97

(93) Regulation 2328/91 was repealed by Council Regulation (EC) No 950/97 of 20 May 1997 on improving the efficiency of agricultural structures ([25]), which entered into force in June 1997. The provisions concerning the application of Articles 87 and 88 of the Treaty to the aid measures governed the Regulation did not change with respect to Regulation (EEC) No 2328/91.

(94) Article 37(1) of Regulation (EC) No 950/97 authorised Member States to adopt additional aid measures in the

([23]) OJ L 128, 19.5.1975, p. 1.

([24]) See Judgment of the Court of First Instance of 8 June 1995 in Case T-459/93 (Siemens SA v Commission of the European Communities 1995 ECR -1675).

([25]) OJ L 142, 2.6.1997, p. 1.

areas covered by the Regulation, with the exception of those covered by Articles 5 to 9, 11, 12(4) and 17, on terms differing from those laid down therein or for amounts exceeding the ceilings laid down therein, provided that Articles 92, 93 and 94 of the Treaty were not infringed. Article 37(2) laid down that Articles 92, 93 and 94 of the Treaty, with the exception of Article 92(2) did not apply to the aid measures governed by Articles 5 to 9, 11, 12(4) and 17 of the Regulation. Under Article 12 of the Regulation, State aids for investments in agricultural holdings granted outside the aid scheme referred to in Title II were subject to the conditions set out in the Article itself, which applied even in Member States which did not institute the aid scheme provided for in Title II.

(95) Article 12(2) of Regulation (EC) No 950/97 stated the types of investment which were generally authorised and to which Articles 92, 93, 94 of the Treaty applied. These were:

— aid for land purchase;

— subsidised operating loans the term of which did not exceed one marketing year;

— aid for the purchase of male breeding animals; securities for loans contracted, including interest;

— aid for investments to protect and improve the environment, provided that it did not entail an increase in production;

— aids in respect of investments for the purpose of improving hygiene conditions or of complying with Community animal welfare standards or national standards where these are stricter than the Community standards, provided that these investments do not give rise to an increase in production;

— aids for activities not relating to field crops or stockfarming where such activities are carried out on agricultural holdings.

(96) The only difference with respect to the same provisions of Article 12(5) of Regulation (EEC) No 2328/91 was the possibility of granting aids for activities not relating to field crops or livestock farming where such activities are carried out on agricultural holdings. The investments covered by Article 8 of Law No 185/92 do not fall under this heading since they are obviously related to crop and livestock farming, the destruction of which they are designed to prevent. The investments at issue are not covered therefore by Article 12(2) of Regulation (EC) No 950/97, just as they were not covered by Article 12(5) of Regulation (EEC) No 2328/91.

(97) Article 12(3) of Regulation (EC) No 950/97 coincides exactly with Article 12(1) of Regulation (EEC) No 2328/91 and therefore the same considerations apply with respect to it.

(98) As regards the applicable aid rates, in this case too Regulation (EC) No 950/97 introduced no changes from Regulation (EEC) No 2328/91. The maximum authorised aid rates continued therefore to be 35 % in normal areas and 75 % in less favoured areas. The aid rates laid down in Article 8 of Law No 185/92 do not comply with the abovementioned aid rates.

(99) The aids provided for by Article 8 of Law No 185/92 could not therefore benefit from any of the derogations to Article 87(1) of the Treaty and are therefore incompatible with the common market.

(100) With respect to the 50 % aid rate for the maintenance and operation of existing facilities the same considerations made under points 91 and 92 apply. The aids are in fact designed to cover costs which should normally be borne by farmers themselves and are by definition operating aids which have no structural effect on the development of the sector and cannot therefore be considered aids to facilitate the economic development of certain economic activities or of certain economic areas. These aids cannot therefore benefit from any of the derogations to Article 87(1) laid down in the Treaty and are therefore incompatible with the common market.

Aids for the payment of insurance contracts (Article 9 of Law No 185/92)

(101) Article 9 of Law No 185/92 lays down the conditions under which aids to cover the cost of insurance premiums may be granted by the New National Solidarity Fund.

(102) Before the entry into force of the new Guidelines, these types of aids were assessed on the basis of the already mentioned Commission working paper VI/5934/86 Rev. 2, which regulated aids to compensate farmers for damage affected by adverse weather events. The paper considered aids intended to cover the insurance premiums paid by farmers for adverse weather events

and exceptional occurrences an alternative to the *ex post* compensation for losses caused by natural disasters; the paper accordingly analysed two kinds of aid. According to the paper, aids to cover the cost of insurance premiums could be granted under the following conditions and at the following aid rates:

(a) where the insurance relates to losses which the Member States might, in the absence of insurance, reimburse 100 % either as a natural disaster or other exceptional occurrence pursuant to Article 92(2)(b) of the Treaty or pursuant to Article 92(3)(c) as compensatory aid in the case of an epizootic or plant disease, State aid towards insurance premiums may, on a permanent basis, cover up to 80 % of the premium payable by the farmer, the remainder of at least 20 % — considered a fair share of the almost total guarantee provided by the State — being repayable by the farmer.

(b) This percentage is reduced to 50 % in the case of insurance covering other risks involving the loss of crops or livestock to which the State could not respond and where the damage meets the criteria laid down in points 2.2 and 3.2 of document VI/5934/86 Rev. 2.

(c) In the case of insurance not covering the risk of natural disasters: up to 30 % (this can be exceeded in areas of high climatic risk, in especially justified cases) of the premium payable by the farmer for a maximum ten year period on a degressive basis.

However, the aid rate could be increased in duly justified cases in areas characterised by high climatic risk ([26]).

(103) For a better understanding of the provisions above, it is important to recall that the same working document regards adverse weather conditions such as frost, hail, ice, rain or drought only as a natural disaster within the meaning of Article 87(2)(b) of the Treaty if they caused losses equal to at least 30 % (20 % in less-favoured areas) of normal production, calculated in accordance with the criteria contained in the document. According to the above criteria, insurance policies covering exclusively natural disasters within the meaning of Article 87(2)(b) and weather events such as frost, hail, rain, etc., which could be considered natural disasters under Article 87(2)(b) would fall within category (a) and would therefore be entitled to an 80 % aid rate. Any policy covering, in addition to the risks falling under Article 87(2)(b), other risks not meeting the criteria for being considered natural disasters under Article 87(2)(b) would fall within category (b) and could therefore benefit of a maximum 50 % aid rate. Policies exclusively covering weather events which could not be considered natural disasters under Article 87(2)(b) would fall under category (c) and could only benefit from a maximum and degressive aid rate of 30 % over a maximum period of 10 years.

(104) Law No 185/92, which generically refers to insurance contracts covering damage caused by adverse weather events, provides for three types of contracts:

(a) compensation for the damage caused to specific crops by hail, ice, frost and other adverse weather events (Article 9(1)(a));

(b) compensation for the damage caused to a holding's facilities and specific crops by all adverse weather events affecting production beyond the normal business risk. The losses may also be due to plant diseases, if strictly related to adverse climatic events, and to animal diseases. This type of contract also includes damage to quality (Article 9(1)(b));

(c) compensation for the damage caused to the main crops on the holding by all adverse weather events whenever the level of damage exceeds the normal business risk ([27]) (Article 9(1)(c)).

(105) The contracts above must be analysed in the light of the provisions of point 4.2 of document VI/5934/86 Rev. 2. Each type of insurance contract is assessed on its merits.

([26]) Letter from the Commission to Member States of 21 March 1989 (SG(89) D/3659) where it is stated that the 80 %, 50 % and 30 % percentages can be exceeded in areas of high climatic risk in especially justified cases.

([27]) As explained by the Italian authorities in their letter of 20 November 2000, the main difference between the three types of insurance contract above lies in the fact that contracts under (a) concern damage to individual crops caused by individual weather events; insurance contracts under (b) concern damage to individual crops or facilities caused by a plurality of adverse events while insurance contracts under (c) concern damage to more than one crop caused by a plurality of events.

Contracts provided for by Article 9(1)(a)

(106) Under Article 9(1)(a) of Law No 185/92, compensation may be granted towards the payment of insurance contract premiums covering damage caused to specific crops by hail, ice, frost and other adverse weather events. Natural disasters or other exceptional occurrences under Article 87(2)(b) of the Treaty are not mentioned. As to adverse weather events, the Article does not say whether the insurance contracts at issue cover risks meeting the conditions for being considered natural disasters under Article 87(2)(b) of the Treaty (minimum 30 % loss in normal areas; 20 % in less-favoured areas). Indeed the Law does not specify a minimum level of damage triggering the insurance coverage specified. So, under Article 9(1)(a), farmers may receive aid towards the payment of insurance premiums for insurance contracts covering any type of weather event, regardless of the level of losses actually suffered.

(107) In order to clarify the point above, in its letter of 19 April 2000 the Commission explicitly asked the Italian authorities to specify whether the aids provided for by Article 9(1)(a) of Law No 185/92 concerned insurance schemes covering damage caused by hail, frost or other adverse weather events regardless of the level of damage caused by the event in question or whether there was a minimum threshold of damage triggering compensation. In their letter of 20 November 2000, the Italian authorities omitted to reply to this question, stating instead that Article 9 of Law No 185/92 had been replaced by Presidential Decree No 324 of 17 May 1996 with a view to bringing national legislation into line with Community law.

(108) In the absence of a specific reply from the Italian authorities, it appears that no specific condition was attached to the grant of aids under Article 9(1)(a) of Law No 185/92 which therefore could be granted for any type of insurance covering adverse weather events regardless of the actual level of damage suffered as a result of the event.

(109) These types of contract therefore do not meet the conditions of either point 4.2(a) or point 4.2(b) of document VI/5934/86 Rev. 2 and would therefore fall under point 4.2(c) of the same document applying to insurance covering any type of weather event risk regardless of the level of damage caused. In this respect these contracts would be entitled to a 30 % degressive aid rate over a maximum period of 10 years.

Contracts provided for by Article 9(1)(b) and 9(1)(c)

(110) Article 9(1)(b) and 9(1)(c) of Law No 185/92 concern insurance contracts covering damage caused by a plurality of weather events affecting the value of production beyond 'ordinary level'. No reference is made to natural disasters or exceptional occurrences under Article 87(2)(b) of the Treaty. In order to see whether these insurance contracts meet the conditions of either point 4.2(a) or 4.2(b) it is therefore necessary to see whether the adverse weather events they cover can be considered natural disasters or exceptional occurrences under Article 87(2)(b).

(111) In order to clarify this point, in its letter of 19 April 2000, the Commission asked the Italian authorities to specify the exact meaning of 'beyond ordinary level' which was not quantified either in the Law or Circolare. In their letter of 20 November 2000, the Italian authorities replied that 'beyond ordinary level' meant that damage could be compensated only when it exceeded a certain threshold, equal to the farmer's ordinary risk, which had to be paid by the farmer. According to the Italian authorities, normal business risk is considered to range between 10 and 15 % even though insurance contracts may provide for a higher business risk in order to contain costs. No specific provision is however made to this end in any document.

(112) The weather events covered by the insurance contracts described under Articles 9(1)(b) and 9(1)(c) of Law No 185/92 cannot therefore be considered natural disasters within the meaning of Article 87(2)(b) as they do not meet the conditions laid down to this end in document VI/5934/86 Rev. 2. It follows that aids towards the payment of the relevant insurance premiums do not meet the conditions of either point 4.2(a) or point 4.2(b) of the abovementioned working document and would therefore fall under point (c) of the same document. These contracts could qualify for a maximum 30 % aid rate, degressive over a maximum 10-year period.

(113) Law No 185/92 does not set any specific aid rate for the various types of insurance contracts it provides for. Details on the level of aid rates are only to be found in the Circolare sent by the Italian authorities to the Regions. The Circolare explains that the fund (Cassa sociale) of the consortium (out of which the insurance premiums are paid) receives contributions from the members of the consortium, from the State and from the regional authorities as well as private and public bodies. The contribution from the State accounts for 50 % of the overall eligible expenditure. That contribution may be increased to 65 % in the case of areas characterised by high climatic risk. No indication is given as to the maximum aid that might be paid out

as a result of the possible accumulation of the state contributions with regional contributions and with aids coming from other public bodies.

(114) In its letter of 19 April 2000, the Commission asked the Italian authorities to indicate the maximum aid rate which could be awarded. In their reply of 20 November 2000, the Italian authorities stated that the maximum contribution to be paid by the State was 50 %, which could be raised to 65 % in areas of high climatic risk. In practice, according to the Italian authorities, the 65 % aid rate had never been applied for lack of resources. In general, State contributions ranged between 30 % and 40 %. In the cases (very few, according to the Italian authorities) where a regional contribution was paid, as is the case of the province of Trento, it never exceeded 25 to 30 %, thus resulting in an overall public contribution not exceeding 65 %.

(115) In points 109 and 112, the Commission has concluded that the insurance contracts provided for by Article 9 of Law No 185/92 meet the conditions of point 4.2(c) of working paper VI/5934/86 Rev. 2 and that therefore aid towards the payment of the relevant insurance premiums could not exceed 30 % during the first year, needed to be degressive and could only be paid for a maximum period of 10 years. In the same paragraphs the Commission has also concluded that the insurance contracts at issue did not meet the conditions of either point 4.2(a) or point 4.2(b) of working document VI/5934/86 Rev. 2 as, in principle, they authorise farmers to receive aid towards the payment of insurance premiums covering any type of weather event regardless of the level of damage triggering compensation. These contracts cannot therefore benefit from the higher aid rates (80 % and 50 % respectively) referred to in the aforementioned points.

(116) Since, according to the Italian authorities, a maximum aid rate of 50 % (65 % in high climatic risk areas) could be paid by the State with respect to the insurance premiums provided for by Law 185/92, the maximum 30 % aid rate provided for by point 4.2(c) of working document VI/5934/86-2 might not always have been observed. Moreover, since there is nothing in the Law or Circolare which limits the duration of the aid to 10 years or which obliges the public authorities to reduce the aid progressively from the initial 30 % aid rate as laid down in the applicable Community provisions, it cannot be ruled out that these conditions too have not always been complied with.

(117) The Commission can therefore conclude that the aids towards the payment of insurance premiums granted by Italy on the basis of Law No 185/92 are compatible with the common market under Article 87(3)(c) only to the extent that they were granted in compliance with the provisions of point 4.2(c) of working paper VI/5934/86 Rev. 2, namely only to the extent that the aid rate did not exceed 30 % and that the aid was degressive over a maximum period of 10 years. Any aid paid by Italy on the basis of Law No 185/92 not complying with the provisions of point 4.2(c) of the working paper and at the same time not fulfilling all the requirements of either point 4.2(a) or point 4.2(b) of document VI/5934/86 Rev. 2 cannot benefit from any of the derogations to Article 87(1) of the Treaty and is therefore incompatible with the common market.

Presidential Decree No 324 of 17 May 1996

(118) In their letter of 20 November 2000, the Italian authorities clarified that Article 9 of Law No 185/92 on subsidised insurance schemes had been replaced by Presidential Decree No 324 of 17 May 1996 (Regolamento concernente norme sostitutive dell' art. 9 della legge 14 febbraio 1992, n. 185, sull' assicurazione agricola agevolata). So the assessment of the Italian legislation on the compensation of damage caused by natural disasters up to the entry into force of the new Guidelines also needs to take this Decree into account.

(119) According to the Italian authorities, the Decree was issued in order to bring the Italian legislation on subsidised insurance ([28]) into line with Community law. Presidential Decree No 324/96 explicitly lays down the provisions relating to subsidised insurance contracts. The types of contract which may benefit from public contributions are exactly the same as those laid down in Law No 185/92. The State contribution to these contracts may be up to 50 % of eligible expenditure, which may be increased to 65 % in areas characterised by high climatic risk.

(120) The only difference between the new Presidential Decree and Article 9 of Law No 185/92 it replaces lies in the clear indication of the aid rates payable towards the costs of insurance premiums, which was not contained in Article 9. However, as in the case of Article 9 of Law No 185/92, no indication is given as to the criteria which the various types of insurance contract need to meet to be entitled to aid. As in the case above, it is therefore not possible to say whether all the types of contract listed in Presidential Decree No 324/96 can actually benefit from the 50 % or 65 % aid rates in the case of high climatic risks provided for by the Decree. Again, on the basis of the Decree's wording, it is

([28]) The Finance Act for 2001 contains an Article which further amends the Italian legislation on subsidised insurance to bring it into line with the new Community Guidelines for State aid in the agriculture sector. The latter is not covered by this Decision.

possible to say that all the contracts mentioned could benefit from the basic 30 % aid rate authorised by the Commission in the case of insurance not covering also natural disasters within the meaning of Article (87)(2)(b) and this over a maximum period of 10 years phased out degressively from an initial percentage equal to 30 % of the cost of the insurance premiums.

(121) Moreover, the Decree only refers to the maximum aid rate to be granted by the State for insurance premiums. It does not say that these aid rates are the maximum aid rates possible for this type of intervention. No reference is made in the Decree either to possible accumulation with aids for the same purpose granted out of public funds at either regional or provincial level. It cannot therefore be ruled out that the 50 % (or 65 %) aid rate laid down in the Decree may be exceeded far beyond the aid rates acceptable under Community provisions.

(122) In this respect again, the Commission concludes that the aids towards the payment of insurance premiums granted by Italy on the basis of Law No 185/92 are compatible with the common market under Article 87(3)(c) only to the extent that they were granted in compliance with point 4.2(c) of working paper VI/5934/86 Rev. 2, namely only to the extent that the aid rate did not exceed 30 % and that the aid was degressive over a maximum period of 10 years. Any aid paid by Italy on the basis of Law No 185/92 not complying with point 4.2(c) of the working paper and at the same time not fulfilling all the requirements of either point 4.2(a) or point 4.2(b) of document VI/5934/86 Rev. 2 cannot benefit from any of the derogations to Article 87(1) of the Treaty and is therefore incompatible with the common market.

IV. **CONCLUSIONS**

(123) From the abovementioned considerations, it follows that the aid measures provided for by Articles 3, 4 and 5 of Law No 185 of 14 February 1992 concerning the grant of aid for damage caused by natural disasters can be considered compatible with the common market under Article 87(2)(b) of the Treaty as aids designed to make good the damage caused by natural disasters.

(124) The aid measures provided for by Article 6 of Law No 185/92 as implemented by Ministerial Decree No 100460 of 18 March 1993 are compatible with the common market under Article 87(3)(c) of the Treaty.

(125) The aid measures provided for by Article 8 of Law No 185/92 cannot benefit from any of the derogations to Article 87(1) laid down in the Treaty and are therefore incompatible with the common market.

(126) According to the information provided by the Italian authorities in their letter of 20 November 2000 ([29]), the aids have never been implemented and do not need therefore to be recovered.

(127) The aids towards the payment of insurance premiums provided for by Article 9 of Law No 185/92 are compatible with the common market in so far as they comply with point 4.2(c) of working document VI/5934/86 Rev. 2, namely in so far as they are granted up to maximum aid rate of 30 % and are degressive over a maximum 10-year period. Any aids towards the payment of insurance premiums granted by the Italian authorities on the basis of Article 9 of Law No 185/92 not complying with the abovementioned point 4.2(c) (maximum aid rate of 30 %, degressive over a maximum 10-year period) and not fulfilling any of the conditions entitling farmers to receive a higher rate in accordance with the criteria of point 4.2(a) and 4.2(b) of Commission document VI/5934/86 Rev. 2 are not compatible with the common market.

(128) The aids towards the payment of insurance premiums provided for by Presidential Decree No 324 of 17 May 1996 are compatible with the common market in so far as they comply with point 4.2(c) of working document VI/5934/86 Rev. 2, namely in so far as they are granted up to maximum aid rate of 30 %, degressive over a maximum 10-year period. Any aidstowards the payment of insurance premiums granted by the Italian authorities on the basis of Presidential Decree No 324 of 17 May 1996 not complying with the abovementioned point 4.2(c) (maximum aid rate of 30 %, degressive over a maximum 10-year period) and not fulfilling any of the conditions entitling farmers to receive a higher rate in accordance with the criteria of point 4.2(a) and 4.2(b) of Commission document VI/5934/86 Rev. 2 are not compatible with the common market.

(129) Incompatible and illegally granted aid must, in principle, be recovered (see also Article 14 of Council Regulation (EC) 659/1999). However, the Commission has come to the conclusion that in this case recovery would be contrary to the general principles of Community law, in particular the principle of legal certainty, for the reasons given below. First of all, the Commission notes that working document VI/5934/86 has not been published in the *Official Journal of the European Communities*. That, in itself, is not a sufficient reason for non-recovery, since it is incumbent upon the beneficiary of a State aid to verify whether it has been duly approved by the Commission, even where the Commission does not have any published policy in the sector concerned. In this case, however, the Commission has noted that there is an ambiguity relating to

([29]) See paragraph 15.

agricultural insurance in the Italian version of the agricultural State aid guidelines published in 2000 (OJ C 232, 12.8.2000). This ambiguity is not there in any of the other language versions. The ambiguity lies in the fact that the Italian word for 'also' is missing in the last sentence of point 11.5.1 of the Italian version of the guidelines. That imperfection in the Italian translation of the aforementioned guidelines, together with the phrase 'the aid rate is reduced to 50 % of the cost of the premium', and the fact that document VI/5934/86 was not published in the Official Journal, may have created the impression with Italian operators that until recently, the Commission had a practice of approving higher aid rates than 50 % also for insurance policies which did not cover natural disasters and exceptional occurrences. Under those circumstances, recovery is not appropriate. The Commission will, however, publish a corrigendum of the Italian version of the guidelines as soon as possible.

HAS ADOPTED THIS DECISION:

Article 1

1. The aid measures designed to compensate farmers for damage caused by natural disasters provided for by Articles 3, 4 and 5 of Law No 185/92 are compatible with the common market under Article 87(2)(b) of the Treaty.

2. The measures provided for by Article 6 of Law No 185/92 do not constitute aids within the meaning of Article 87(1) of the Treaty.

3. The aid measures provided for by Ministerial Decree No 100460 of 18 March 1993 are compatible with the common market under Article 87(3)(c) of the Treaty.

4. The aids concerning active defence measures against weather events provided for by Article 8 of Law No 185/92 are incompatible with the common market.

5. The aids towards the payment of insurance premiums provided for by Article 9 of Law No 185/92 are compatible with the common market in so far as they comply with point 4.2(c) of working document VI/5934/86 Rev. 2, namely in so far as they are granted up to maximum aid rate of 30 % and are degressive over a maximum 10-year period.

6. The aids towards the payment of insurance premiums granted by the Italian authorities on the basis of Article 9 of Law No 185/92 not complying with point 4.2(c) of working document VI/5934/86 Rev. 2 and not fulfilling any of the conditions entitling farmers to receive a higher rate in accordance with the criteria of point 4.2(a) and 4.2(b) of Commission document VI/5934/86 Rev. 2 are not compatible with the common market.

7. The aids towards the payment of insurance premiums provided for by Presidential Decree No 324 of 17 May 1996 are compatible with the common market in so far as they comply with point 4.2(c) of working document VI/5934/86 Rev. 2, namely in so far as they are granted up to maximum aid rate of 30 %, degressive over a maximum 10-year period.

8. The aids towards the payment of insurance premiums granted by Italy on the basis of Presidential Decree No 324 of 17 May 1996 not complying with point 4.2(c) of working document VI/5934/86 Rev. 2 (maximum aid rate of 30 %, degressive over a maximum 10-year period) and not fulfilling any of the conditions entitling farmers to receive a higher rate in accordance with the criteria of point 4.2(a) and 4.2(b) of Commission document VI/5934/86 Rev. 2 are not compatible with the common market.

Article 2

Italy shall inform the Commission, within two months following notification of this Decision, of the measures taken to comply with it.

Article 3

This Decision is addressed to the Italian Republic.

Done at Brussels, 9 July 2003.

For the Commission

Franz FISCHLER

Member of the Commission

COMMISSION DECISION

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

(notified under document number C(2003) 5041)

(Text with EEA relevance)

(2004/90/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to 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 [1], and in particular Article 3 thereof,

Whereas:

(1) Directive 2003/102/EC sets out the basic requirements in the form of tests and limit values for the Community type-approval of motor vehicles with regard to pedestrian protection.

(2) Under that Directive, with a view to ensuring its uniform application by the competent authorities of the Member States, the technical prescriptions necessary to carry out the tests laid down in section 3.1 or 3.2 of Annex I to that Directive should be specified.

(3) Those tests are based on the scientific work performed by the European Enhanced Vehicle Committee (EEVC); whereas the technical prescriptions to carry them out should also be based on the recommendations by the EEVC.

HAS ADOPTED THIS DECISION:

Article 1

The technical prescriptions necessary to carry out the tests specified in section 3.1 and section 3.2 of Annex I to Directive 2003/102/EC are laid down in the Annex to this Decision.

Article 2

This Decision shall apply from 1 January 2004.

Article 3

This Decision is addressed to the Member States.

Done at Brussels, 23 December 2003.

For the Commission
Erkki LIIKANEN
Member of the Commission

[1] OJ L 321, 6.12.2003, p. 15.

ANNEX

CONTENTS

PART I

1. **General**

When performing measurements on a vehicle as described in this Part, the vehicle should be positioned in its normal ride attitude as described in point 2.3. If the vehicle is fitted with a badge, mascot or other structure which would bend back or retract under a low applied load, then such a load shall be applied before and/or while these measurements are taken. Any vehicle component which could change shape or position, such as 'pop-up' headlights, other than suspension components or active devices to protect pedestrians, shall be set to a shape or position that the test institutes, in consultation with the manufacturer, consider to be the most appropriate while taking these measurements.

2. **Definitions**

For the purposes of this Decision:

2.1. 'Vehicle type' means a category of vehicles which, forward of the A-pillars, do not differ in such essential respects as:

— the structure,

— the main dimensions,

— the materials of the outer surfaces of the vehicle,

— the component arrangement (external or internal),

in so far as they may be considered to have a negative effect on the results of the impact tests prescribed in Part II.

Vehicles of category N1 described as being derived from M1 category refer to those vehicles of N1 category which, forward of the A-pillars, have the same general structure and shape as a pre-existing M1 category vehicle.

2.2. 'Primary reference marks' means holes, surfaces, marks and identification signs on the vehicle body. The type of reference mark used and the vertical (Z) position of each mark relative to the ground shall be specified by the vehicle manufacturer according to the running conditions specified in point 2.3. These marks shall be selected such as to be able to easily check the vehicle front and rear ride heights and vehicle attitude.

If the primary reference marks are found to be within ± 25 mm of the design position in the vertical (Z) axis, then the design position shall be considered to be the normal ride height. If this condition is met, either the vehicle shall be adjusted to the design position, or all further measurements shall be adjusted, and tests performed, to simulate the vehicle being at the design position.

2.3. 'Normal ride attitude' is the vehicle attitude in running order positioned on the ground, with the tyres inflated to the recommended pressures, the front wheels in the straight-ahead position, with maximum capacity of all fluids necessary for operation of the vehicle, with all standard equipment as provided by the vehicle manufacturer, with a 75 kg mass placed on the driver's seat and with a 75 kg mass placed on the front passenger's seat, and with the suspension set for a driving speed of 40 km/h or 35 km/h in normal running conditions specified by the manufacturer (especially for vehicles with an active suspension or a device for automatic levelling).

2.4. 'Ground reference level' is the horizontal plane parallel to the ground level, representing the ground level for a vehicle placed at rest on a flat surface with the hand brake on, with the vehicle positioned in its normal ride attitude.

2.5. 'Bumper' is the front, lower, outer structure of a vehicle. It includes all structures that are intended to give protection to a vehicle when involved in a low speed frontal collision with another vehicle and also any attachments to this structure. The reference height and lateral limits of the bumper are identified by the corners and the bumper reference lines as defined in points 2.5.1 to 2.5.5.

2.5.1. 'The upper bumper reference line' identifies the upper limit to significant points of pedestrian contact with the bumper. It is defined as the geometric trace of the upper 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 car and inclined rearwards by 20°, is traversed across the front of the car, while maintaining contact with the ground and with the surface of the bumper (see Figure 1a).

Where necessary the straight edge shall be shortened to avoid any contact with structures above the bumper.

2.5.2. 'The lower bumper reference line' identifies the lower limit to significant points of pedestrian contact with the bumper. It is defined as 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 car and inclined forwards by 25°, is traversed across the front of the car, while maintaining contact with the ground and with the surface of the bumper (see Figure 1b).

2.5.3. 'Upper bumper height' is the vertical distance between the ground and the upper bumper reference line, defined in point 2.5.1 with the vehicle positioned in its normal ride attitude.

2.5.4. 'Lower bumper height' is the vertical distance between the ground and the lower bumper reference line, defined in point 2.5.2 with the vehicle positioned in its normal ride attitude.

2.5.5. 'Corner of bumper' is defined as the vehicle's point of contact with a vertical plane which makes an angle of 60° with the vertical longitudinal plane of the car and is tangential to the outer surface of the bumper (see Figure 2).

2.5.6. 'Third of the bumper' is defined as the geometric trace between the 'Corners of the bumper' as defined in point 2.5.5, measured with a flexible tape following the outer contour of the bumper, divided in three equal parts.

2.6. 'Bumper lead' for any section of a car is the horizontal distance between the upper bumper reference line, as defined in point 2.5.1 and the bonnet leading edge reference line, as defined in point 2.9.2.

2.7. 'Frontal upper surface' is the outer structure that includes the upper surface of all outer structures except the windscreen, the A-pillars and structure rearwards of them. It therefore includes, but is not limited to, the bonnet, wings, scuttle, wiper spindle and lower windscreen frame.

2.8. '1 000 mm wrap around distance' is the geometric trace described on the frontal upper surface by one end of a 1 000 mm long flexible tape, when it is held in a vertical fore and aft plane of the car and traversed across the front of the bonnet and bumper. The tape is held taut throughout the operation with one end held in contact with the ground, vertically below the front face of the bumper and the other end held in contact with the frontal upper surface (see Figure 3). The vehicle is positioned in the normal ride attitude.

Similar procedures shall be followed, using alternative tapes of appropriate lengths to describe 1 500 and 2 100 mm wrap around distances.

2.9. 'Bonnet top' is the area which is bounded by (a), (b) and (c) as follows:

(a) the bonnet leading edge reference line, as defined in point 2.9.2;

(b) the bonnet side reference lines as defined in point 2.9.4;

(c) the bonnet rear reference line as defined in point 2.9.7.

2.9.1. 'Bonnet leading edge' is the front upper outer structure including the bonnet and wings, the upper and side members of the headlight surround and any other attachments. The reference line identifying the position of the leading edge is defined by its height above the ground and by the horizontal distance separating it from the bumper (bumper lead), determined in accordance with points 2.6, 2.9.2 and 2.9.3.

2.9.2. 'Bonnet leading edge reference line' is defined as 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° and with the lower end 600 mm above the ground, is traversed across and in contact with the bonnet leading edge (See Figure 4). For vehicles having the bonnet top surface inclined at essentially 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°. For vehicles of such shape that the bottom end of the straight edge makes first contact 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 then the geometric trace of 1 000 mm wrap around distance as defined in point 2.8, 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 for this Commitment, if it is contacted by the straight edge during this procedure.

2.9.3. 'Bonnet leading edge height' for any section of a car is the vertical distance between the ground and the bonnet leading edge reference line defined in point 2.9.2, with the vehicle positioned in its normal ride attitude.

2.9.4. 'Bonnet side reference line' is defined as the geometric trace of the highest points of contact between a straight edge 700 mm long and the side of a bonnet, when the straight edge, held parallel to the lateral vertical plane of the car and inclined inwards by 45° is traversed down the side of the Frontal Upper Surface, while maintaining contact with the surface of the body shell (see Figure 5).

2.9.5. 'Corner reference point' is the intersection of the bonnet leading edge reference line and of the bonnet side reference line (see Figure 6).

2.9.6. 'Third of the bonnet leading edge' is defined as the geometric trace between the 'Corner reference points' as defined in point 2.9.5, measured with a flexible tape following the outer contour of the leading edge, divided in three equal parts.

2.9.7. 'Bonnet rear reference line' is defined as the geometric trace of the most rearward points of contact between a sphere and the Frontal Upper Surface, as defined in point 2.7, when the sphere is traversed across the Frontal Upper Surface, while maintaining contact with the windscreen (see Figure 7). The wiper blades and arms are removed during this process. For the tests described in Section 3.1 of Annex I to the Directive, the diameter of the sphere is 165 mm. For the tests described in Section 3.2 of Annex I to the Directive, the diameter of the sphere is 165 mm if the lower windscreen frame on the vehicle's centre line is located at a wrap around distance, as defined in point 2.8, of 1 500 mm or more from the ground and the diameter of the sphere is 130 mm when this wrap around distance is less than 1 500 mm. If the bonnet rear reference line is located at a wrap around distance of more than 2 100 mm from the ground, the bonnet rear reference line is defined by the geometric trace of the 2 100 mm wrap around distances, as defined in point 2.8. Where the Bonnet Rear Reference Line and bonnet side reference Lines do not intersect, the Bonnet Rear Reference Line is modified according to the procedure outlined in point 2.9.9.

2.9.8. 'Third of the bonnet top' is defined as the geometric trace between the 'Bonnet side reference lines' as defined in point 2.9.4, measured with a flexible tape following the outer contour of the bonnet top, divided in three equal parts.

2.9.9. 'Intersection bonnet rear reference line and bonnet side reference line' where the bonnet rear reference line and bonnet side reference line do not intersect, the bonnet rear reference line should be extended and/or modified using a semi-circular template, of radius 100 mm. The template should be made of a thin flexible sheet material that easily bends to a single curvature in any direction. The template should, preferably, 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 should be marked up with four points 'A' through 'D', as shown in Figure 8, while the template is on a flat surface.

The template should 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 should be slid progressively rearwards until the arc of the template makes first contact with the bonnet rear reference line. Throughout the process, the template should be curved to follow, as closely as possible, the outer contour of the vehicle's bonnet op, 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 bonnet side reference line, as shown in Figure 9.

If the template cannot make simultaneous contact with the bonnet 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 should 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.

2.10. 'Head performance criterion (HPC)' shall be calculated from the resultant of accelerometer time histories as the maximum (depending on t_1 and t_2) of the equation:

$$HPC = \left[\frac{1}{t_2 - t_1}\int_{t_1}^{t_2} a\, dt\right]^{2,5} (t_2 - t_1)$$

where 'a' is the resultant acceleration as a multiple of 'g', and t_1 and t_2 are the two time instants (expressed in seconds) during the impact, defining the beginning and the end of the recording for which the value of HPC is a maximum. Values of HPC for which the time interval $(t_1 - t_2)$ is greater than 15 ms are ignored for the purposes of calculating the maximum value.

2.11. 'Windscreen' is the frontal glazing of the vehicle which meets all the relevant requirements of Annex I to EU Directive 77/649/EEC.

2.11.1 'Rear windscreen reference line' is defined as the geometric trace of the most forward points of contact between a sphere and the windscreen, as defined in paragraph 2.11, when a sphere of diameter 165 mm is traversed across the windscreen top frame, including any trim, while maintaining contact with the windscreen (see Figure 10).

Figure 1a

Determination of upper bumper reference line

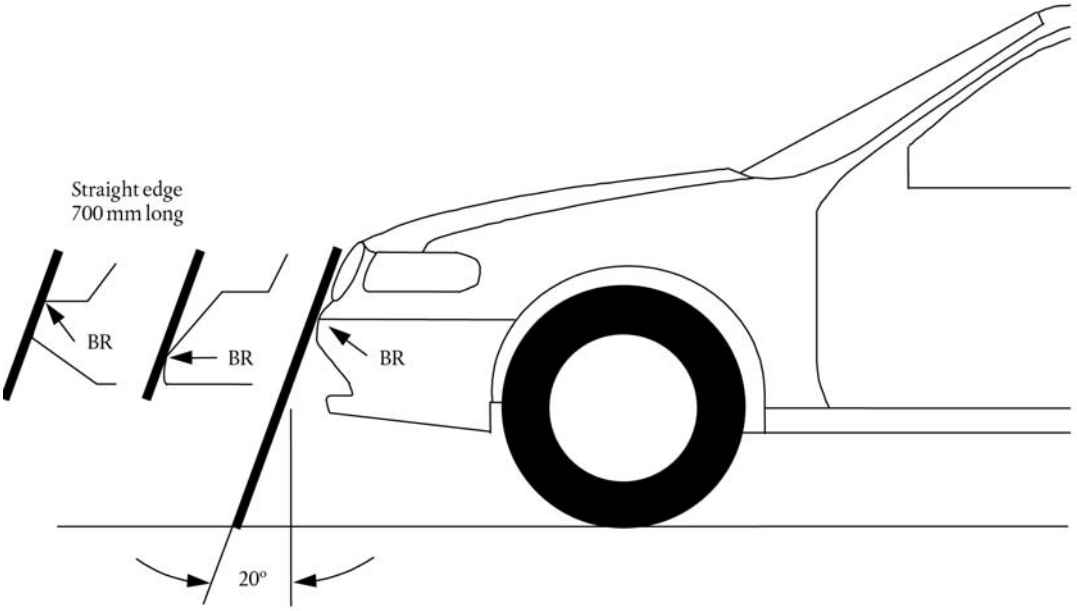


Figure 1b

Determination of lower bumper reference line

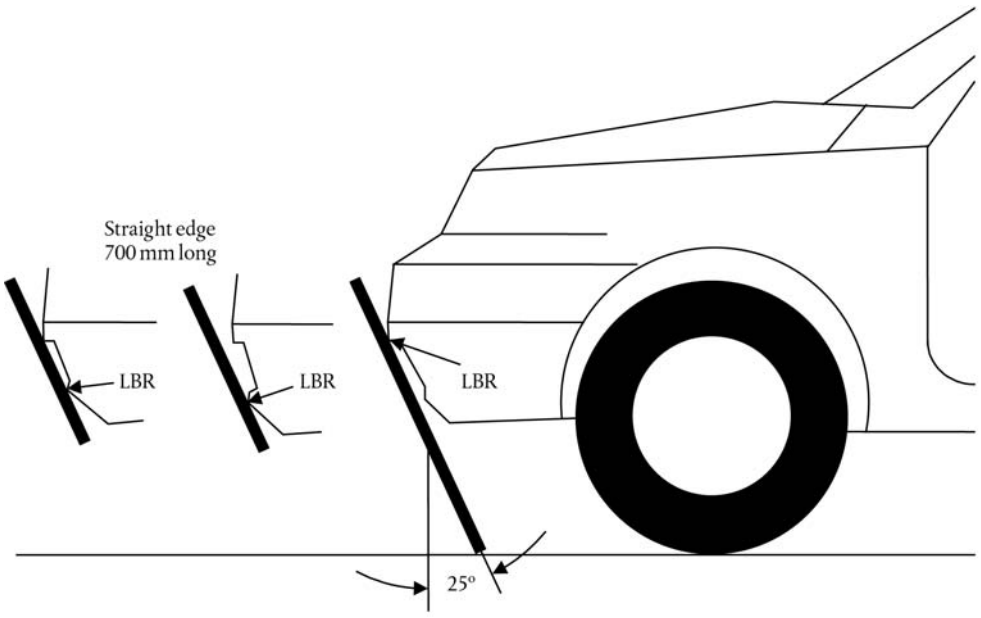


Figure 2

Determination of corner of bumper

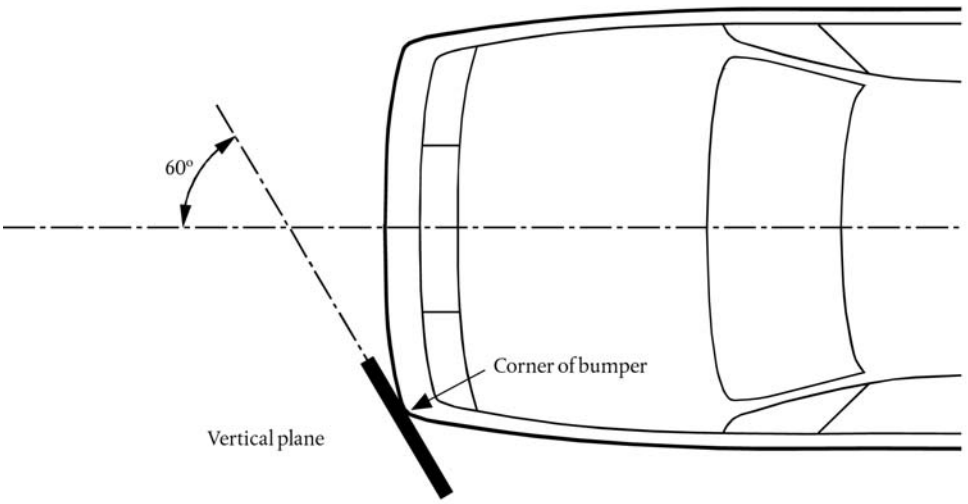


Figure 3

Determination of wrap around distance

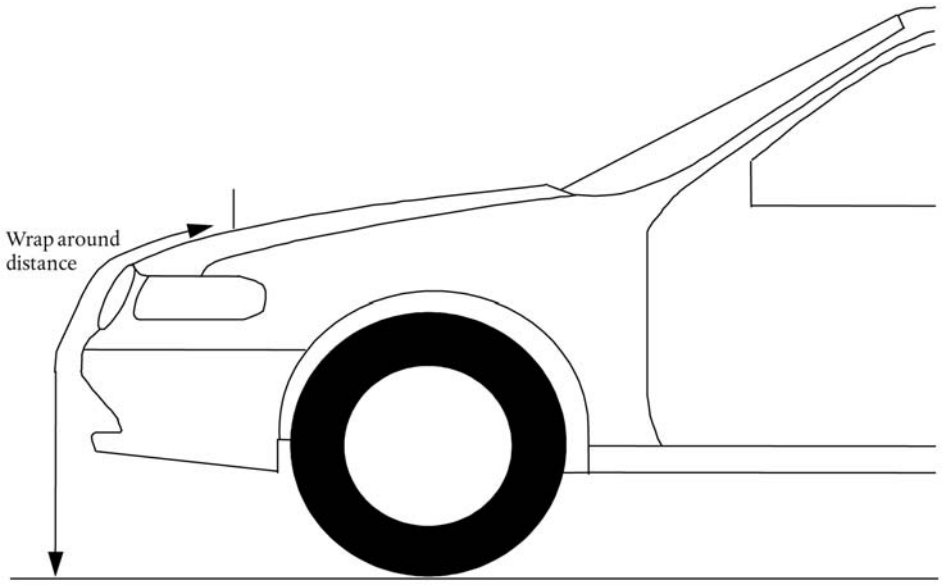


Figure 4

Determination of bonnet leading edge reference line

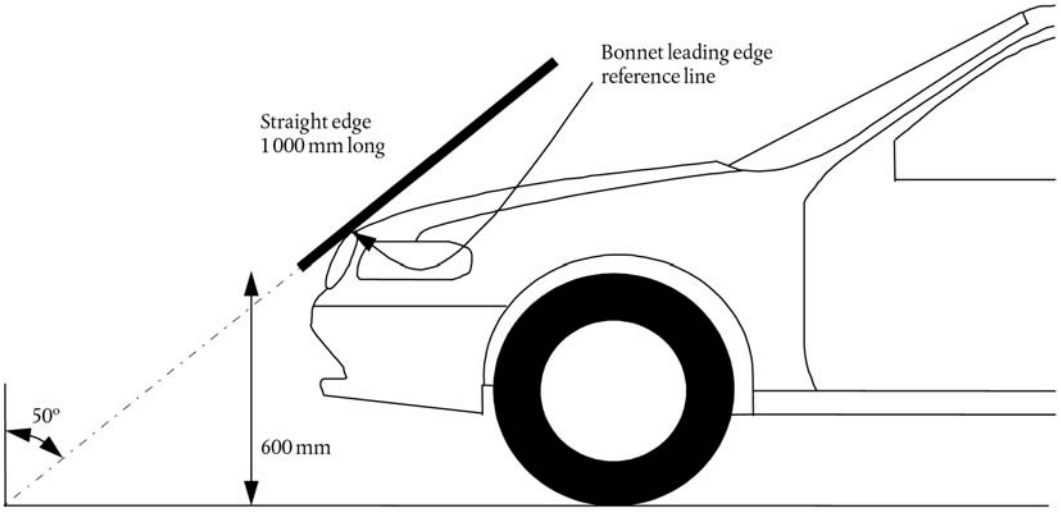


Figure 5

Determination of bonnet side refernce line

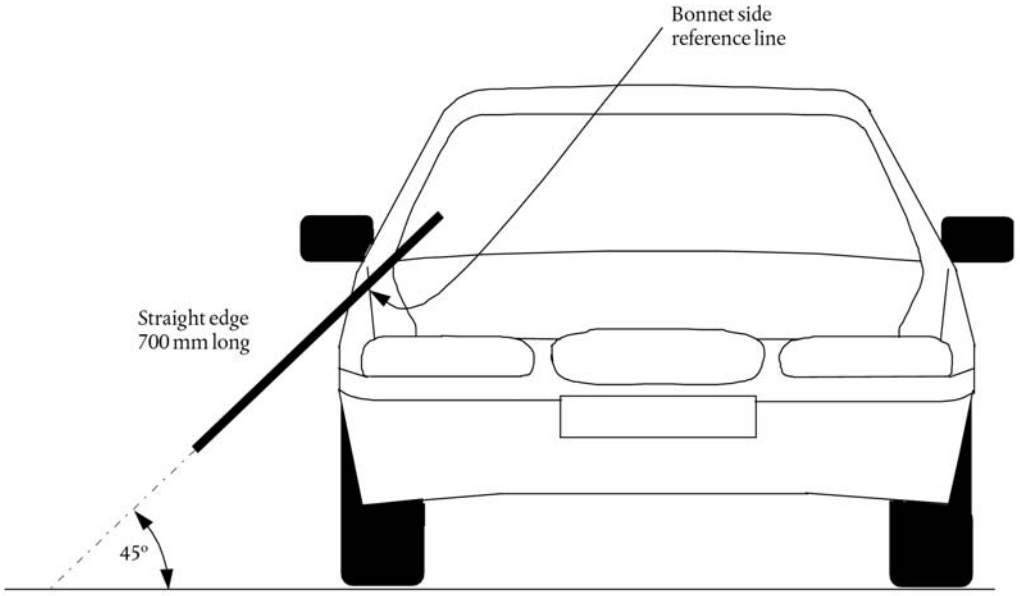


Figure 6

Determination of corner reference point; intersection of the bonnet leading edge reference line and the bonnet side reference line

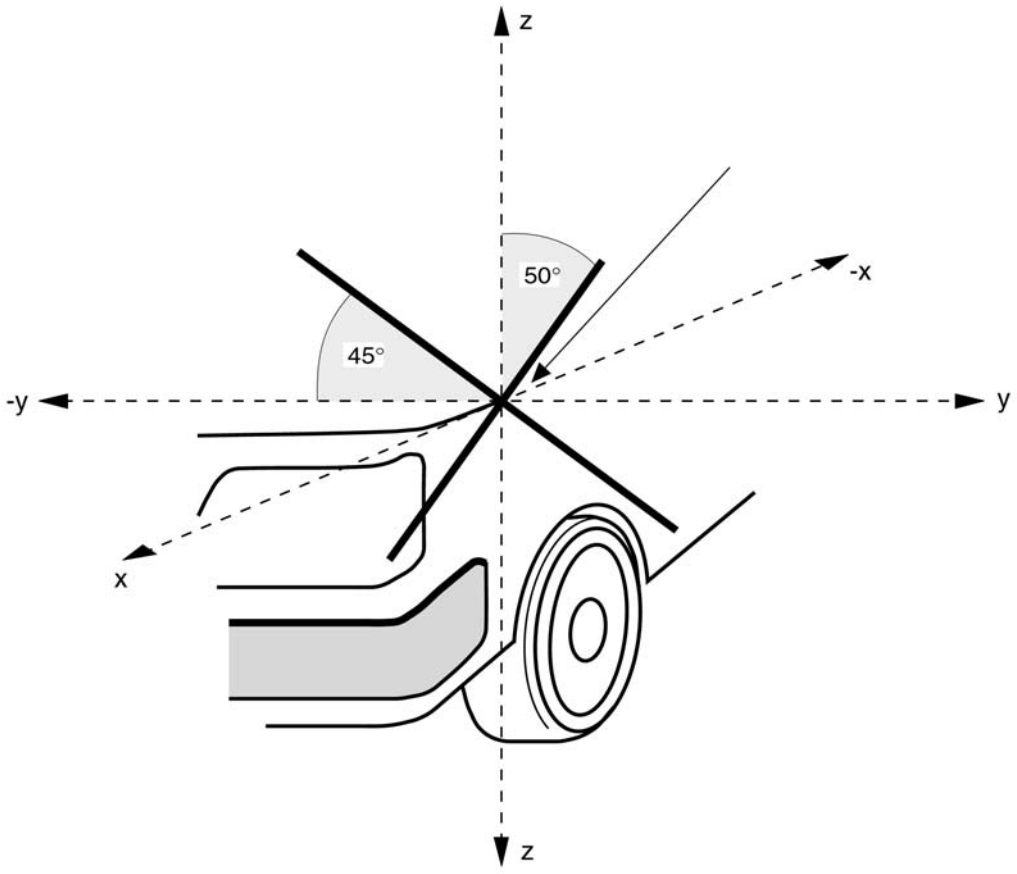


Figure 7

Determination of bonnet rear reference line

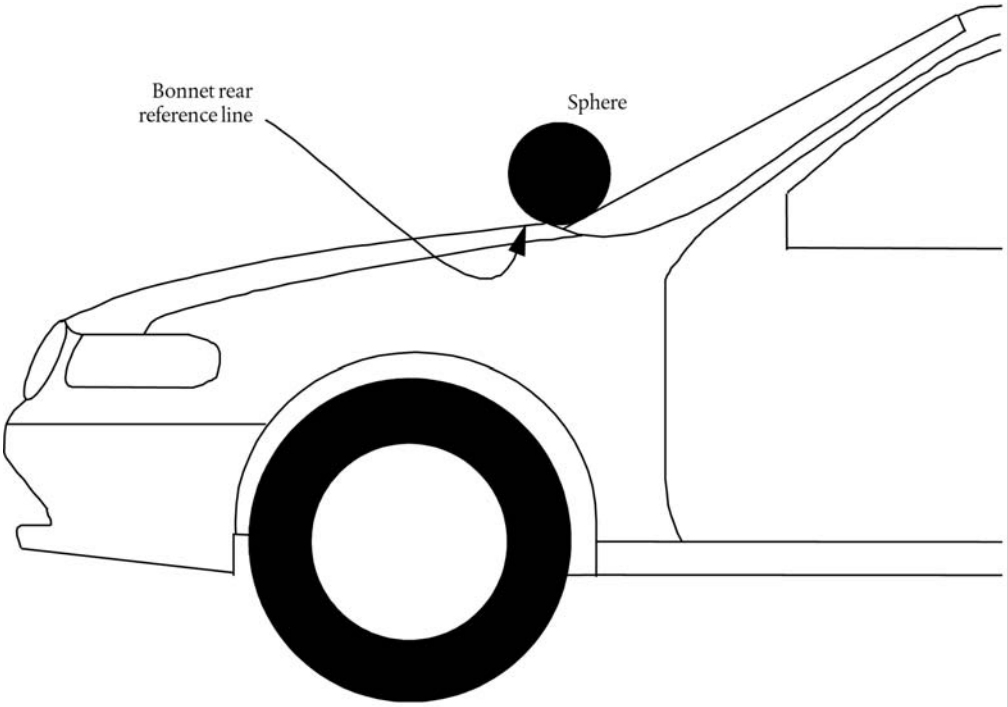


Figure 8

Template design and markings used to join bonnet rear reference line and bonnet side reference line

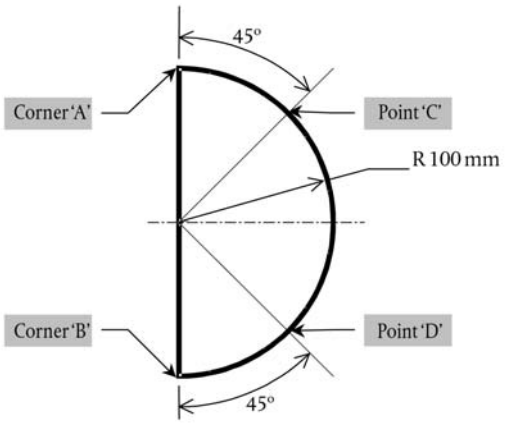


Figure 9

Plan view of rear corner of bonnet — extending the bonnet rear reference line to meet the bonnet side reference line along the circumferential arc of template

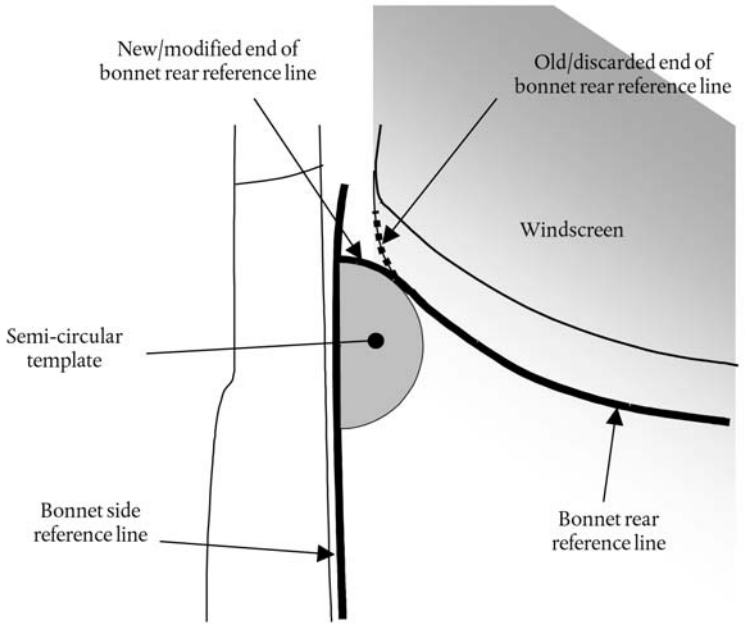
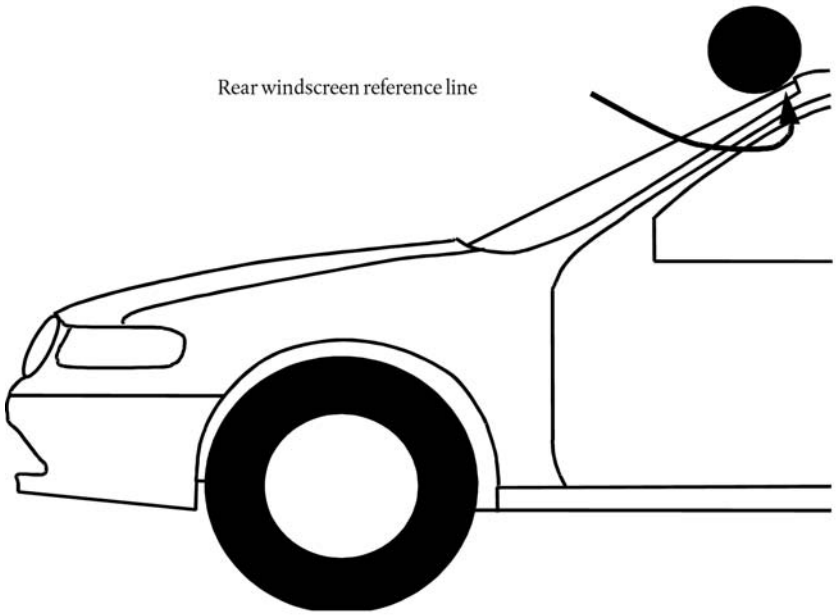


Figure 10

Determination of rear windscreen reference line



PART II

CHAPTER I

General conditions applicable

1. **Complete vehicle**

1.1. Tests on complete vehicles shall comply with the conditions detailed in paragraphs 1.1.1, 1.1.2 and 1.1.3.

1.1.1. The vehicle shall be in its normal ride attitude and shall be either securely mounted on raised supports or at rest on a flat surface with the hand brake on.

1.1.2. All devices designed to protect vulnerable road users shall be correctly activated before and/or be active during the appropriate test. It shall be the responsibility of the applicant for approval to show that the devices will act as intended in a pedestrian impact.

1.1.3. Any vehicle component which could change shape or position, such as 'pop-up' headlights, other than active devices to protect pedestrians, shall be set to a shape or position that the test institutes in consultation with the manufacturer consider to be the most appropriate, for these tests.

2. **Subsystem of vehicle**

2.1. Where only a subsystem of the vehicle is supplied for tests, it shall comply with the conditions detailed in paragraphs 2.1.1, 2.1.2, 2.1.3 and 2.1.4.

2.1.1. All the parts of the vehicle structure and under bonnet components or behind windscreen components that may be involved in a frontal impact with a vulnerable road user shall be included in the test to demonstrate the performance and interactions of all the contributory vehicle components.

2.1.2. The vehicle subsystem shall be securely mounted in the normal vehicle ride attitude.

2.1.3. All devices designed to protect vulnerable road users shall be correctly activated before and/or be active during the appropriate test. It shall be the responsibility of the applicant for approval to show that the devices will act as intended in a pedestrian impact.

2.1.4. Any vehicle component which could change shape or position, such as 'pop-up' headlights, other than active devices to protect pedestrians, shall be set to a shape or position that the test institutes in consultation with the manufacturer consider to be the most appropriate, for these tests.

CHAPTER II

Lower legform to bumper tests

1. **Scope**

This test procedure is applicable to requirements under both Section 3.1 and Section 3.2 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The lower legform impactor for the bumper tests shall be in 'free flight' at the moment of impact. The impactor shall be released to free flight at such a distance from the vehicle that the test results are not influenced by contact of the impactor with the propulsion system during rebound of the impactor.

2.2. The impactor may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in paragraphs 3.1.1.1 and 3.2.1.1 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. A minimum of three lower legform to bumper tests shall be carried out, one each to the middle and the outer thirds of the bumper at positions judged to be the most likely to cause injury. Tests shall be to different types of structure, where they vary throughout the area to be assessed. The selected test points shall be a minimum of 132 mm apart, and a minimum of 66 mm inside the defined corners of the bumper. These minimum distances are to be set with a flexible tape held tautly along the outer surface of the vehicle. The positions tested by the laboratories shall be indicated in the test report.

3.3. Manufacturers might apply for derogation concerning an exemption zone for a removable towing hook.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The lower legform impactor shall consist of two foam covered rigid segments, representing femur (upper leg) and tibia (lower leg), joined by a deformable, simulated knee joint. The overall length of the impactor shall be 926 ± 5 mm, having a required test mass of 13,4 ± 0,2 kg and comply with Section 4 of this Chapter and Figure 1 of this Part. Brackets, pulleys, etc. attached to the impactor for the purpose of launching it, may extend the dimensions shown in Figure 1.

3.4.1.2. Transducers shall be fitted to measure knee bending angle and knee shearing displacement. One uni-axial accelerometer shall be fitted to the non-impacted side of the tibia, close to the knee joint, with its sensitive axis in the impact direction.

3.4.1.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 180 for all transducers. The CAC response values, as defined in ISO 6487:2000, shall be 50° for the knee bending angle, 10 mm for the shearing displacement and 500 g for the acceleration. This does not require that the impactor itself be able to physically bend and shear to these angles and displacements.

3.4.1.4. The impactor shall meet the performance requirements specified in Section 2 of Appendix I, and shall be fitted with deformable knee elements from the same batch as those used in the certification tests. The impactor shall also be fitted with foam cut from one of up to four consecutive sheets of Confor™ foam flesh material produced from the same batch of manufacture (cut from one block or bun of foam), provided that foam from one of these sheets was used in the dynamic certification test and the individual weights of these sheets are within ± 2 % of the weight of the sheet used in the certification test. The certified impactor may be used for a maximum of 20 impacts before re-certification. With each test new plastically deformable knee elements should be used. The impactor shall also be re-certified if more than one year has elapsed since the previous certification or if any impactor transducer output, in any impact, has exceeded the specified CAC.

3.4.1.5. The impactor shall be mounted, propelled and released as defined in paragraphs 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or subsystem shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or subsystem shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the bumper between the corners to locations defined in point 3.2.

3.4.2.3. The direction of the impact velocity vector shall be in the horizontal plane and parallel to the longitudinal vertical plane of the vehicle. The tolerance for the direction of the velocity vector in the horizontal plane and in the longitudinal plane shall be ± 2° at the time of first contact.

The axis of the impactor shall be perpendicular to the horizontal plane with a tolerance of ± 2° in the lateral and longitudinal plane. The horizontal, longitudinal and lateral planes are orthogonal to each other (see Figure 3).

3.4.2.4. The bottom of the impactor shall be at ground reference level at the time of first contact with the bumper (see Figure 2), with a ± 10 mm tolerance.

When setting the height of the propulsion system, an allowance must be made for the influence of gravity during the period of free flight of the impactor.

At the time of first contact the impactor shall have the intended orientation about its vertical axis, for the correct operation of its knee joint, with a tolerance of ± 5° (see Figure 3).

3.4.2.5. At the time of first contact the centre line of the impactor shall be within a ± 10 mm tolerance to the selected impact location.

3.4.2.6. During contact between the impactor and the vehicle, the impactor shall not contact the ground or any object which is not part of the vehicle.

3.4.2.7. The impact velocity of the impactor when striking the bumper shall be 11,1 ± 0,2 m/s. The effect of gravity shall be taken into account when the impact velocity is obtained from measurements taken before the time of first contact.

4. **Lower Legform impactor**

4.1. The diameter of the femur and tibia shall be 70 ± 1 mm and both shall be covered by foam 'flesh' and skin. The foam flesh shall be 25 mm thick Confor™ foam type CF-45. The skin shall be made of neoprene foam, faced with ½ mm thick nylon cloth both sides, with an overall thickness of 6 mm.

4.2. The 'centre of the knee' is defined as the point about which the knee effectively bends.

The 'femur' is defined as 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.

The 'tibia' is defined as all components or parts of components (including flesh, skin covering, instrumentation and brackets, pulleys, etc. attached to the impactor for the purpose of launching it) below the level of the centre of the knee. Note that the tibia as defined includes allowances for the mass etc. of the foot.

4.3. The total mass of the femur and tibia shall be 8,6 ± 0,1 kg and 4,8 ± 0,1 kg respectively, and the total mass of the impactor shall be 13,4 ± 0,2 kg.

The centre of gravity of the femur and tibia shall be 217 ± 10 mm and 233 ± 10 mm from the centre of the knee respectively.

The moment of inertia of the femur and tibia, about a horizontal axis through the respective centre of gravity and perpendicular to the direction of impact, shall be 0,127 ± 0,010 kg/m² and 0,120 ± 0,010 kg/m² respectively.

4.4. A uniaxial accelerometer shall be mounted on the non-impacted side of the tibia, 66 ± 5 mm below the knee joint centre, with its sensitive axis in the direction of impact.

4.5. The impactor shall be instrumented to measure the bending angle and the shearing displacement between femur and tibia.

4.6. A damper shall be fitted to the shear displacement system and may be mounted at any point on the rear face of the impactor or internally. The damper properties shall be such that the impactor meets both the static and dynamic shear displacement requirements and prevents excessive vibrations of the shear displacement system.

Figure 1

Lower legform impactor with skin and foam covering

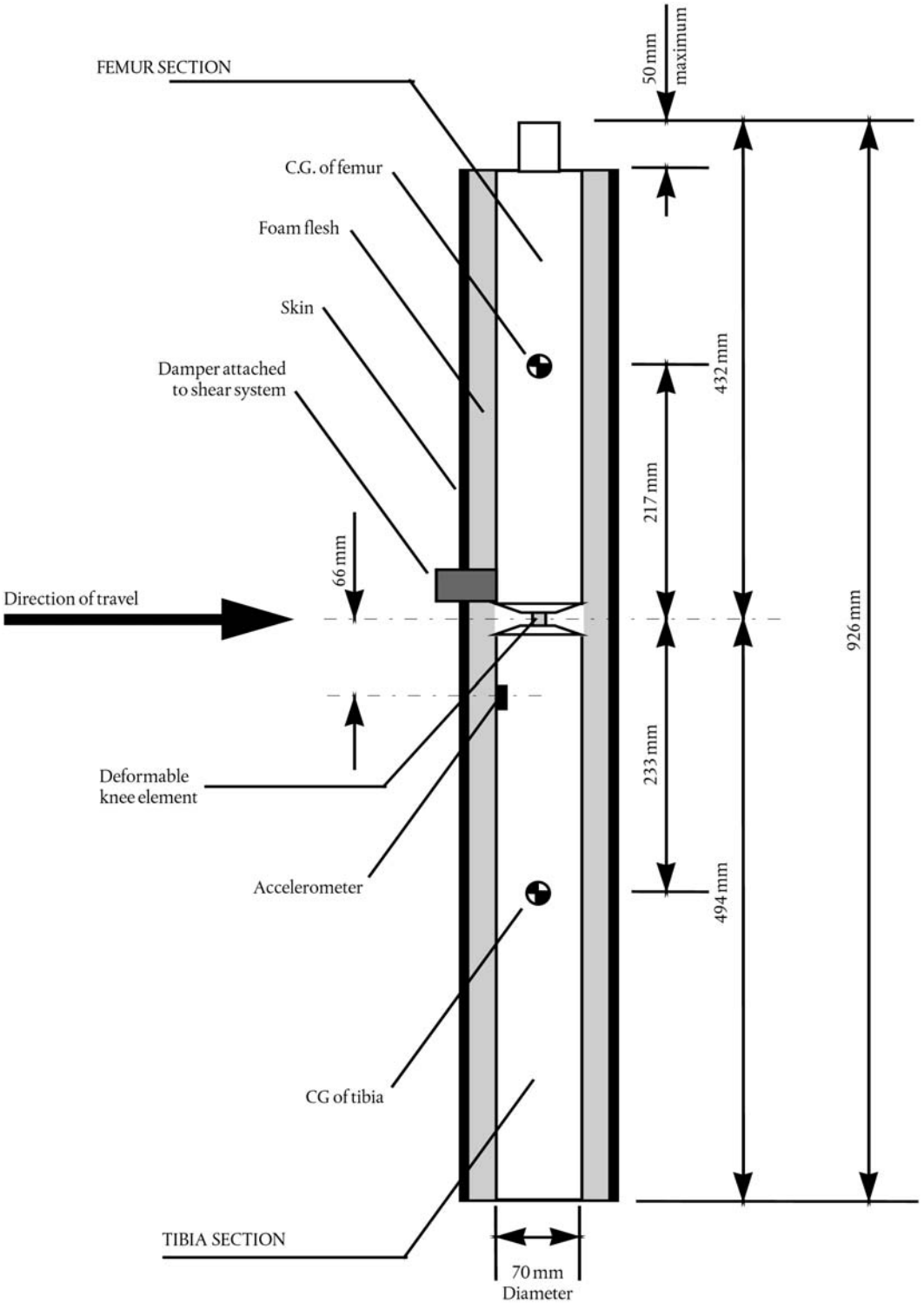


Figure 2

Lower legform to bumper tests for complete vehicle in normal ride attitude (left) and for complete vehicle or sub-system mounted on supports (right)

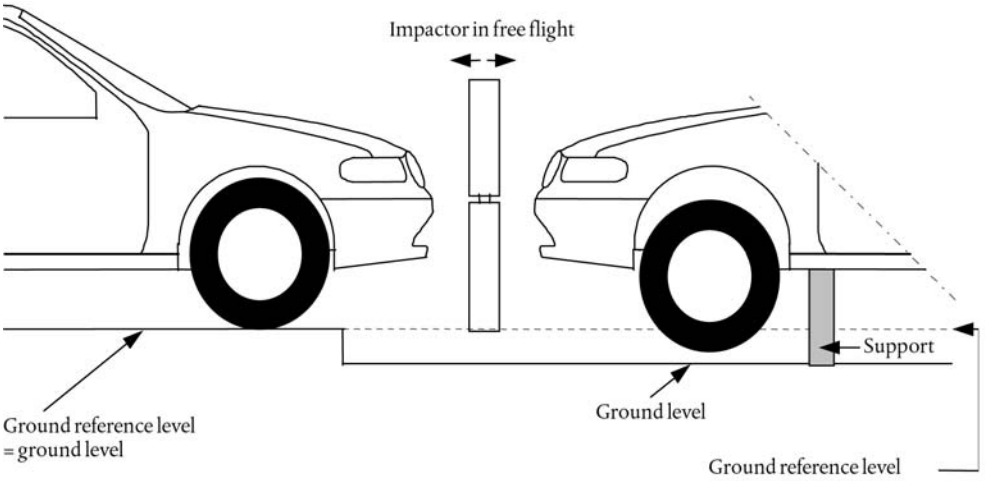
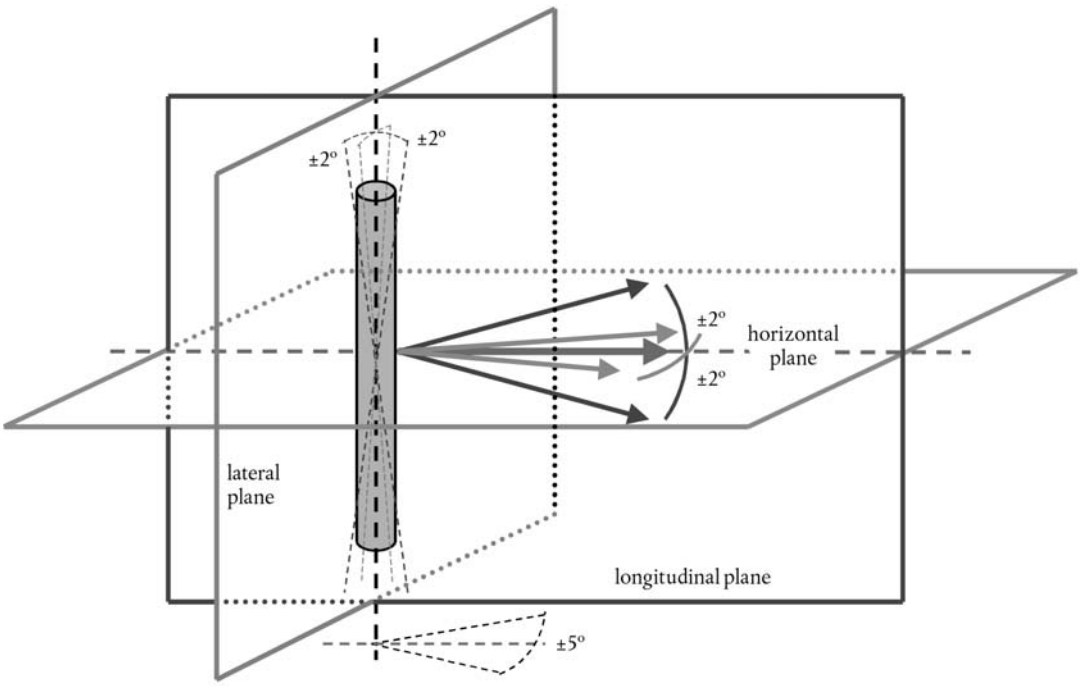


Figure 3

Tolerances of angles for the lower legform impactor at the time of first impact



CHAPTER III

Upper legform to bumper tests

1. **Scope**

This test procedure is applicable to requirements under both Section 3.1 and Section 3.2 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The upper legform impactor for the bumper test shall be mounted to the propulsion system, by a torque limiting joint, to prevent large off centre loads damaging the guidance system. The guidance system shall be fitted with low friction guides, insensitive to off-axis loading, that allow the impactor to move only in the specified direction of impact, when in contact with the vehicle. The guides shall prevent motion in other directions including rotation about any axis.

2.2. The impactor may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in paragraphs 3.1.1.2 and 3.2.1.2 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. Upper legform to bumper tests shall be carried out to test positions selected in paragraph 3.2, Chapter II of this Part, if the lower bumper height at the test position is more than 500 mm and the manufacturer elects to perform an upper legform test instead of a lower legform test. In exceptional cases, and only with regard to the test procedure applicable under point 3.1.1.2 of Annex I of the Directive, manufacturers may apply for a derogation concerning the application of this alternative test to vehicles with a lower bumper height of less that 500 mm.

3.3. Manufacturers may apply for derogation concerning an exemption zone for a removable towing hook.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The upper legform impactor shall be rigid, foam covered at the impact side, and 350 ± 5 mm long and comply with Section 4 of this Chapter and Figure 4a of this Part.

3.4.1.2. Two load transducers shall be fitted to measure individually the forces applied at either end of the upper legform impactor, plus strain gauges measuring bending moments at the centre of the upper legform impactor and at positions 50 mm either side of the centre line, see Figure 4a.

3.4.1.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 180 for all transducers. The CAC response values, as defined in ISO 6487:2000, shall be 10 kN for the force transducers and 1 000 Nm for the bending moment measurements.

3.4.1.4. The upper legform impactor shall meet the performance requirements specified in Section 3 of Appendix I, and shall be fitted with foam cut from the sheet of material used for the dynamic certification test. The certified impactor may be used for a maximum of 20 impacts before re-certification (this limit does not apply to propulsion or guidance components). The impactor shall also be re-certified if more than one year has elapsed since the previous certification or if any impactor transducer output, in any impact, has exceeded the specified CAC.

3.4.1.5. The upper legform impactor shall be mounted and propelled as specified in points 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or sub-system shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or sub-system shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the bumper between the corners to locations defined in paragraph 3.2.

3.4.2.3. The direction of impact shall be parallel to the longitudinal axis of the vehicle, with the axis of the upper legform vertical at the time of first contact. The tolerance to these directions is ± 2°. At the time of first contact the impactor centre line shall be midway between the upper bumper reference line and the lower bumper reference line with a ± 10 mm tolerance and laterally with the selected impact location with a tolerance of ± 10 mm.

3.4.2.4. The impact velocity of the upper legform impactor when striking the bumper shall be 11,1 ± 0,2 m/s.

4. **Upper legform impactor**

4.1. The total mass of the upper legform impactor including those propulsion and guidance components which are effectively part of the impactor during the impact shall be 9,5 kg ± 0,1 kg. The upper legform impactor mass may be adjusted from this value by up to ± 1 kg, provided the required impact velocity is also changed using the formula:

$$V = \sqrt{\frac{1\,170}{M}}$$

where

V = impact velocity (m/s)

M = mass (kg), measured to an accuracy of better than ± 1 %

4.2. The total mass of the front member and other components in front of the load transducer assemblies, together with those parts of the load transducer assemblies in front of the active elements, but excluding the foam and skin, shall be 1,95 ± 0,05 kg.

4.3. The foam shall be two sheets of 25 mm thick Confor™ foam type CF-45. The skin shall be a 1,5 mm thick fibre reinforced rubber sheet. The foam and rubber skin together shall weigh 0,6 ± 0,1 kg (this excludes any reinforcement, mountings, etc. which are used to attach the rear edges of the rubber skin to the rear member). The foam and rubber skin shall be folded back towards the rear, with the rubber skin attached via spacers to the rear member so that the sides of the rubber skin are held parallel. The foam shall be of such a size and shape that an adequate gap is maintained between the foam and components behind the front member, to avoid significant load paths between the foam and these components.

4.4. The front member shall be strain gauged to measure bending moments in three positions, as shown in Figure 4a, each using a separate channel. The strain gauges are located on the impactor on the back of the front member. The two outer strain gauges are located 50 ± 1 mm from the impactor's symmetrical axis. The middle strain gauge is located on the symmetrical axis with a ± 1 mm tolerance.

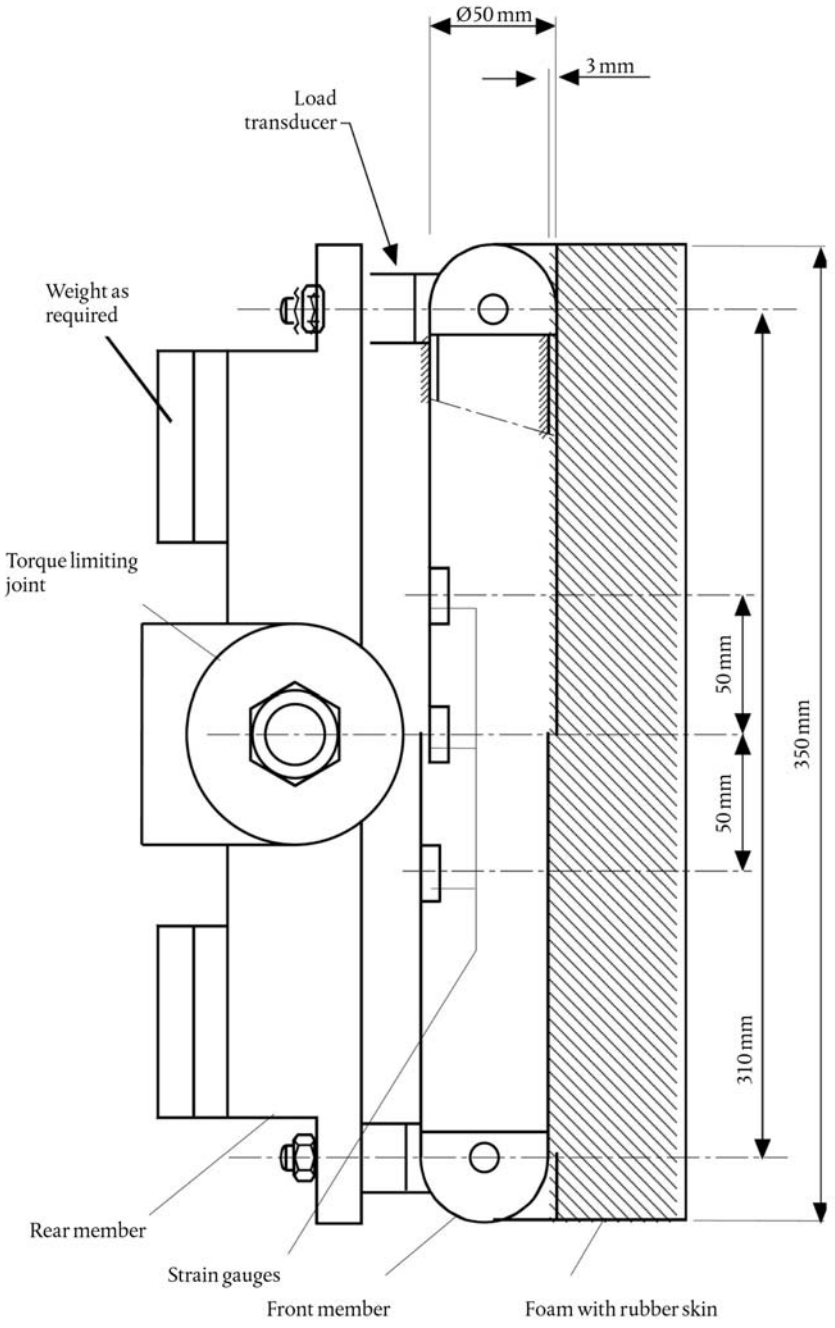
4.5. The torque limiting joint shall be set so that the longitudinal axis of the front member is perpendicular to the axis of the guidance system, with a tolerance of ± 2°, with the joint friction torque set to a minimum of 650 Nm.

4.6. The centre of gravity of those parts of the impactor which are effectively forward of the torque limiting joint, including any weights fitted, shall lie on the longitudinal centre line of the impactor, with a tolerance of ± 10 mm.

4.7. The length between the load transducer centre lines shall be 310 ± 1 mm and the front member diameter shall be 50 ± 1 mm.

Figure 4a

Upper legform impactor



CHAPTER IV

Upper legform to bonnet leading edge tests

1. **Scope**

This test procedure is applicable to requirements under both Section 3.1 and Section 3.2 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The upper legform impactor for the bonnet leading edge test shall be mounted to the propulsion system, by a torque limiting joint, to prevent large off centre loads damaging the guidance system. The guidance system shall be fitted with low friction guides, insensitive to off-axis loading, that allow the impactor to move only in the specified direction of impact, when in contact with the vehicle. The guides shall prevent motion in other directions including rotation about any axis.

2.2. The impactor may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in points 3.1.3 and 3.2.3 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. A minimum of three upper legform to bonnet leading edge tests shall be carried out, one each to the middle and the outer thirds of the bonnet leading edge at positions judged to be the most likely to cause injury. However, the test point in each third shall be selected such that the required kinetic energy of impact, determined in point 3.4.2.7, exceeds 200 J, if such a point is available. Tests shall be to different types of structure, where they vary throughout the area to be assessed. The selected test points shall be a minimum of 150 mm apart, and a minimum of 75 mm inside the defined corner reference points. These minimum distances are to be set with a flexible tape held tautly along the outer surface of the vehicle. The positions tested by the laboratories shall be indicated in the test report.

3.3. All standard equipment fitted to the front end of the vehicle shall be in position.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The upper legform impactor shall be rigid, foam covered at the impact side, and 350 ± 5 mm long and comply with Section 4 of this Chapter and Figure 4b of this Part.

3.4.1.2. The upper legform impactor mass shall be dependent upon the general shape of the front of the car and determined as specified in point 3.4.2.7.

3.4.1.3. Two load transducers shall be fitted to measure individually the forces applied at either end of the upper legform impactor, plus strain gauges measuring bending moments at the centre of the upper legform impactor and at positions 50 mm either side of the centre line, see Figure 4b.

3.4.1.4. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 180 for all transducers. The CAC response values, as defined in ISO 6487:2000, shall be 10 kN for the force transducers and 1 000 Nm for the bending moment measurements.

3.4.1.5. The upper legform impactor shall meet the performance requirements specified in Section 3 of Appendix I, and shall be fitted with foam cut from the sheet of material used for the dynamic certification test. The certified impactor may be used for a maximum of 20 impacts before re-certification (this limit does not apply to propulsion or guidance components). The impactor shall also be re-certified if more than one year has elapsed since the previous certification or if any impactor transducer output, in any impact, has exceeded the specified CAC.

3.4.1.6. The upper legform impactor shall be mounted and propelled as specified in paragraphs 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or subsystem shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or sub-system shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the bonnet leading edge, between the 'corner reference points' to locations defined in point 3.2.

3.4.2.3. The upper legform impactor shall be aligned such that the centre line of the propulsion system and the longitudinal axis of the impacting upper legform impactor are in the fore and aft vertical plane of the section of the vehicle to be tested. The tolerances to these directions are ± 2°. At the time of first contact the impactor centre line shall be coincident with the bonnet leading edge reference line with a ± 10 mm tolerance (see Figure 5), and laterally with the selected impact location with a tolerance of ± 10 mm.

3.4.2.4. The required impact velocity, the direction of impact and the upper legform impactor mass shall be determined as specified in points 3.4.2.6 and 3.4.2.7. The tolerance to the impact velocity is ± 2 % and the tolerance to the impact direction is ± 2°. The effect of gravity shall be taken into account when the impact velocity is obtained from measurements taken before the time of first contact. The upper legform impactor mass should be measured to an accuracy of better than ± 1 %, and if the measured value differs from the required value then the required velocity should be adjusted to compensate, as specified in point 3.4.2.7.

3.4.2.5. Determination of vehicle shape:

3.4.2.5.1. The position of the upper bumper reference line shall be determined as defined in point 2.5.1 of Part I.

3.4.2.5.2. The bonnet leading edge reference line shall be determined as defined in point 2.9.2 of Part I.

3.4.2.5.3. For the section of bonnet leading edge to be tested the bonnet leading edge height and the bumper lead shall be determined as defined in points 2.9.3 and 2.6 of Part I.

3.4.2.6. The required impact velocity and the direction of impact shall be determined from Figures 6 and 7 with reference to the values of bonnet leading edge height and bumper lead determined in point 3.4.2.5.

3.4.2.7. The total mass of the upper legform impactor includes those propulsion and guidance components which are effectively part of the impactor during the impact, including the extra weights.

Calculate the value of the upper legform impactor mass from:

$$M = 2E / V^2$$

where

M = Mass [kg]

E = Impact Energy [J]

V = Velocity [m/s].

The required velocity shall be the value derived in point 3.4.2.6 and the energy shall be derived from Figure 8 with reference to the values of bonnet leading edge height and bumper lead determined in point 3.4.2.5.

The upper legform impactor mass may be adjusted from the calculated value by up to ± 10 %, provided the required impact velocity is also changed using the above formula to maintain the same impactor kinetic energy.

3.4.2.8. Fit the required extra weights to give the calculated value of upper legform impactor mass, determined in point 3.4.2.7, to the rear of the rear member as shown in Figure 4b, or to components of the guidance system which are effectively part of the impactor during the impact.

4. **Upper legform impactor**

4.1. The total mass of the front member and other components in front of the load transducer assemblies, together with those parts of the load transducer assemblies in front of the active elements, but excluding the foam and skin, shall be 1,95 ± 0,05 kg.

4.2. The foam shall be two sheets of 25 mm thick Confor™ foam type CF-45. The skin shall be a 1,5 mm thick fibre reinforced rubber sheet. The foam and rubber skin together shall weigh 0,6 ± 0,1 kg (this excludes any reinforcement, mountings, etc. which are used to attach the rear edges of the rubber skin to the rear member). The foam and rubber skin shall be folded back towards the rear, with the rubber skin attached via spacers to the rear member so that the sides of the rubber skin are held parallel. The foam shall be of such a size and shape that an adequate gap is maintained between the foam and components behind the front member, to avoid significant load paths between the foam and these components.

4.3. The front member shall be strain gauged to measure bending moments in three positions, as shown in Figure 4b, each using a separate channel. The strain gauges are located on the impactor on the back of the front member. The two outer strain gauges are located 50 ± 1 mm from the impactor's symmetrical axis. The middle strain gauge is located on the symmetrical axis with a ± 1 mm tolerance.

4.4. The torque limiting joint shall be set so that the longitudinal axis of the front member is perpendicular to the axis of the guidance system, with a tolerance of ± 2°, with the joint friction torque set to a minimum of 650 Nm.

4.5. The centre of gravity of those parts of the impactor which are effectively forward of the torque limiting joint, including any weights fitted, shall lie on the longitudinal centre line of the impactor, with a tolerance of ± 10 mm.

4.6. The length between the load transducer centrelines shall be 310 ± 1 mm and the front member diameter shall be 50 ± 1 mm.

Figure 4b

Upper legform impactor

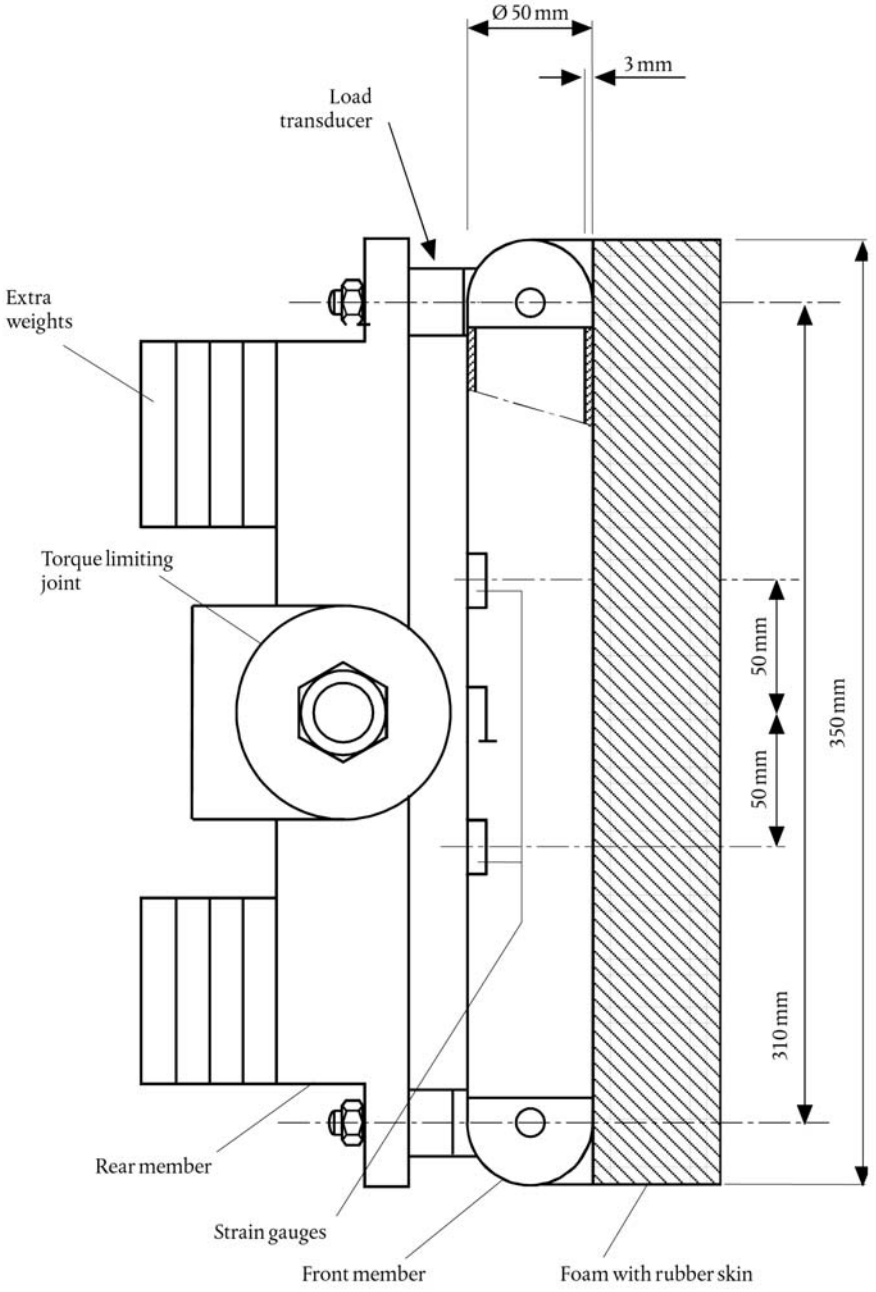


Figure 5

Upper legform to bonnet leading edge tests

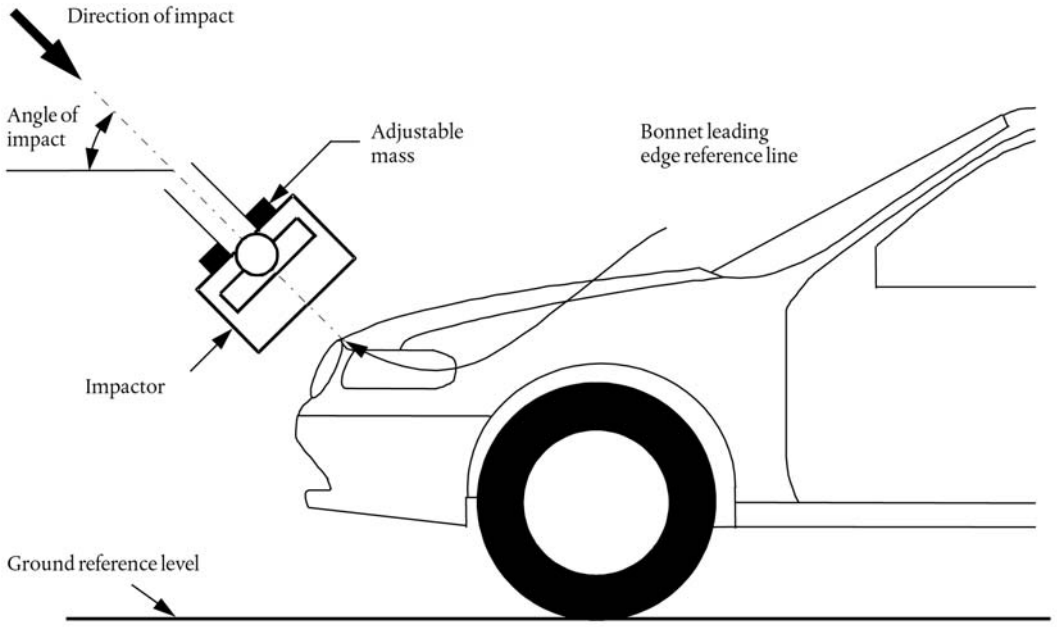
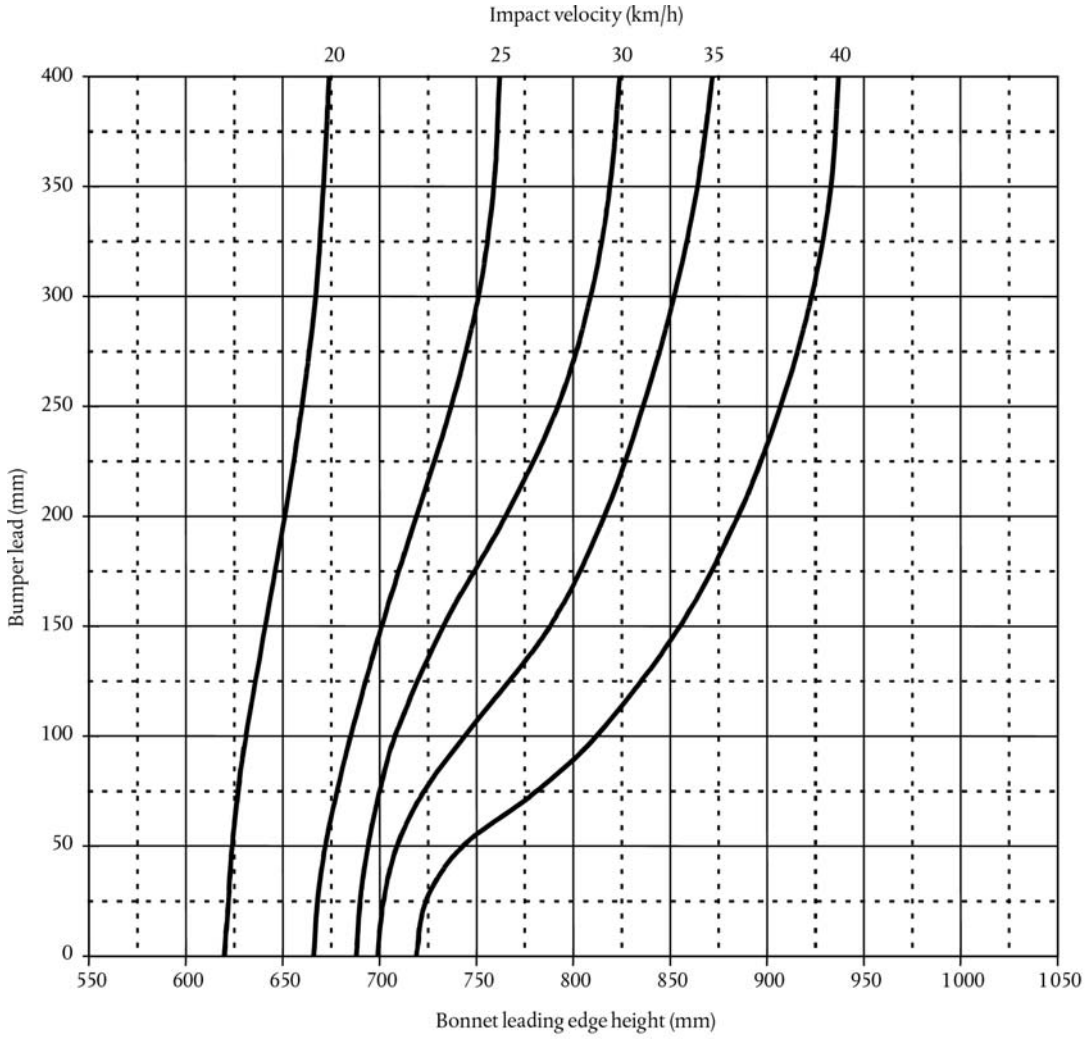


Figure 6

Velocity of upper legform to bonnet leading edge tests with respect to vehicle shape

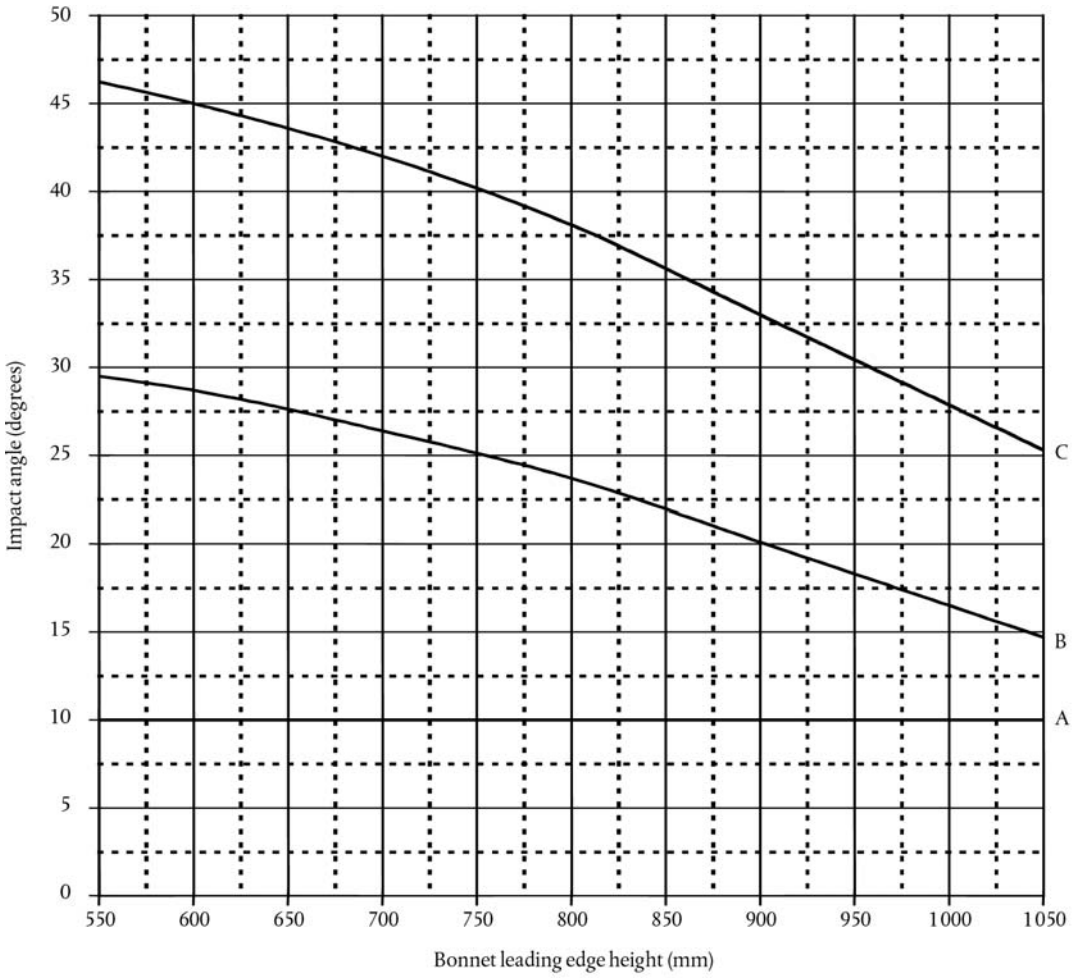


Notes:

1. Interpolate horizontally between curves.
2. With configurations below 20 km/h — test at 20 km/h.
3. With configurations above 40 km/h — test at 40 km/h.
4. With negative bumper leads — test as for zero bumper lead.
5. With bumper leads above 400 mm — test as for 400 mm.

Figure 7

Angle of upper legform to bonnet leading edge tests with respect to vehicle shape



Key:

A = 0 mm bumper lead

B = 50 mm bumper lead

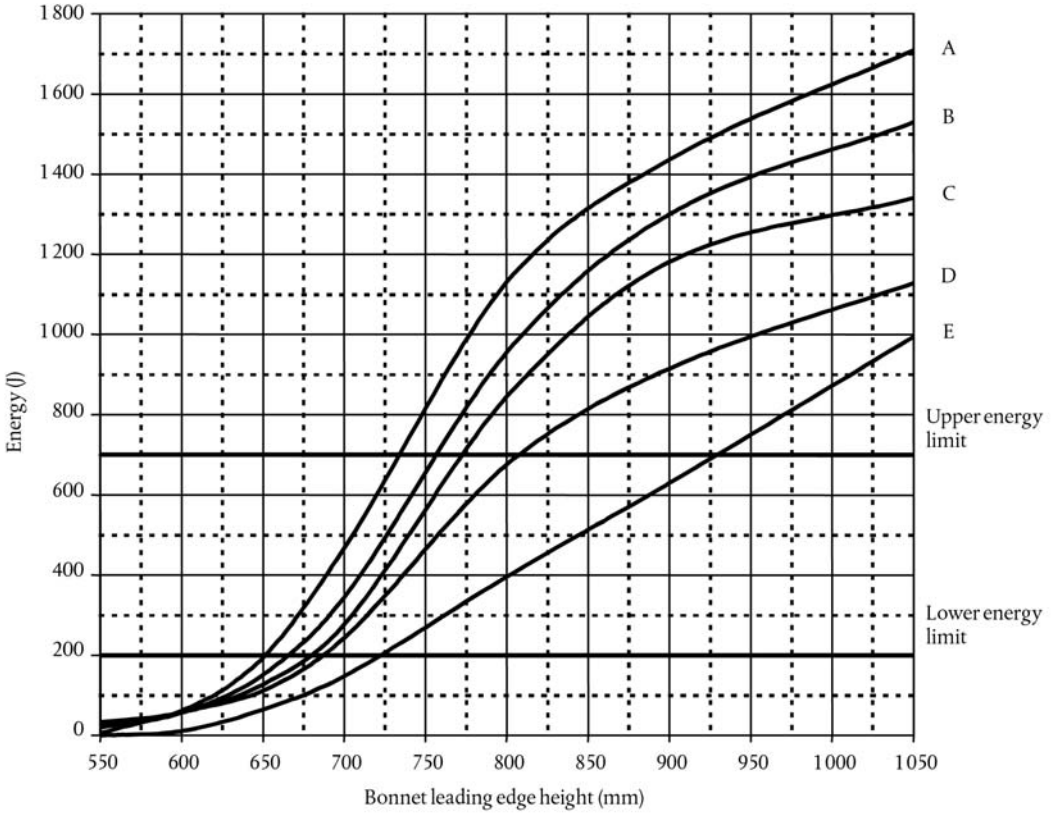
C = 150 mm bumper lead

Notes

1. Interpolate vertically between curves.
2. With negative bumper leads — test as for zero bumper lead.
3. With bumper leads above 150 mm — test as for 150 mm.
4. With bonnet leading edge heights above 1 050 mm — test as for 1 050 mm.

Figure 8

Kinetic energy of upper legform to bonnet leading edge tests with respect to vehicle shape



Key:

A = 50 mm bumper lead

B = 100 mm bumper lead

C = 150 mm bumper lead

D = 250 mm bumper lead

E = 350 mm bumper lead

Notes

1. Interpolate vertically between curves.
2. With bumper leads below 50 mm — test as for 50 mm.
3. With bumper leads above 350 mm — test as for 350 mm.
4. With bonnet leading edge heights above 1 050 mm — test as for 1 050 mm.
5. With a required kinetic energy above 700 J — test at 700 J.
6. With a required kinetic energy equal to or below 200 J — no test is required.

CHAPTER V

Child/small adult headform to bonnet top tests

1. **Scope**

This test procedure is applicable to the requirements of Section 3.1 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The headform impactor for the bonnet top test shall be in 'free flight' at the moment of impact. The impactor shall be released to free flight at such a distance from the vehicle that the test results are not influenced by contact of the impactor with the propulsion system during rebound of the impactor.

2.2. The impactor may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in point 3.1.2 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. Headform impactor tests shall be to the bonnet top as defined in paragraph 2.9 of Part I. A minimum of eighteen tests shall be carried out with the headform impactor, six tests each to the middle and the outer thirds of the bonnet top, as described in point 2.9.8 of Part I, at positions judged to be the most likely to cause injury. Tests shall be to different types of structure, where these vary throughout the area to be assessed.

Among the minimum of eighteen tests, at least twelve tests shall be carried out with the headform impactor within the 'Bonnet Top Zone A' and a minimum of six tests shall be carried out within the 'Bonnet Top Zone B' as defined in paragraph 3.3.

The test points shall be located so that the impactor is not expected to impact the bonnet top with a glancing blow and then impact the windscreen or an A pillar more severely. The selected test points for the child/small adult headform impactor shall be a minimum of 165 mm apart, a minimum of 82,5 mm inside the defined bonnet side reference lines, a minimum of 82,5 mm forwards of the defined bonnet rear reference line. Each selected test point for the child/small adult headform shall also be a minimum of 165 mm rearwards of the bonnet leading edge reference line, unless no point in the bonnet leading edge test area within 165 mm laterally would, if chosen for an upper legform to bonnet leading edge test, require a kinetic energy of impact of more than 200 J.

These minimum distances are to be set with a flexible tape held tautly along the outer surface of the vehicle. If a number of test positions have been selected in order of potential to cause injury and the test area remaining is too small to select another test position while maintaining the minimum spacing between tests, then less than eighteen tests may be performed. The positions tested by the laboratories shall be indicated in the test report.

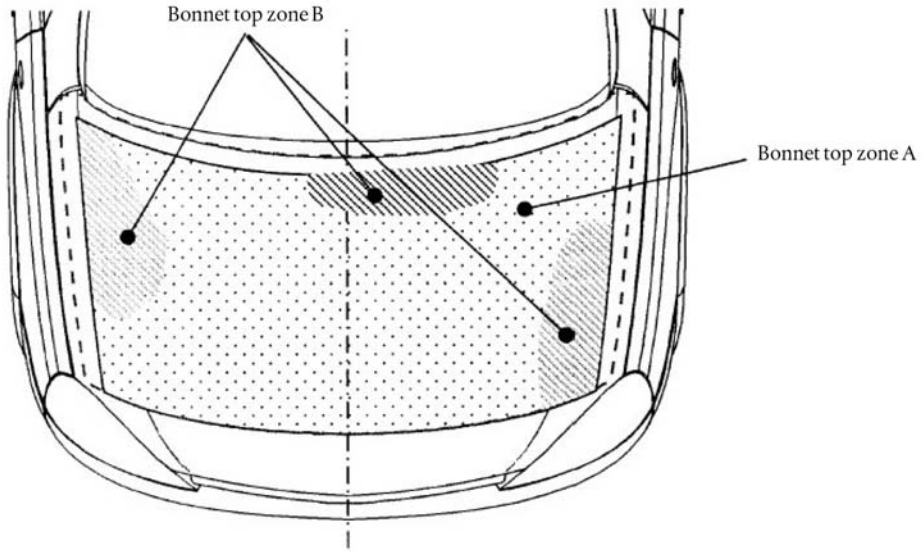
However, the technical services conducting the tests shall perform as many tests as necessary to guarantee the compliance of the vehicle with the head protection criteria (HPC) limit values of 1 000 for 'bonnet top zone A' and 2000 for 'bonnet top zone B', especially in the points near to the borders between the two types of zones.

3.3. 'Bonnet top zone A' and 'bonnet top zone B'

3.3.1. The manufacturer shall identify the zones of the bonnet top where the head protection criterion (HPC) must not exceed 1 000 (bonnet top zone A) respectively 2000 (bonnet top zone B), according to the technical requirements set out in paragraph 3.1.2 of Annex I of the Directive (see Figure 9).

Figure 9

Bonnet top zone A and bonnet top zone B



3.3.2. Marking of the 'bonnet top' impact area as well as 'bonnet top zone A' and 'bonnet top zone B' will be based on a drawing supplied by the manufacturer, when viewed from a horizontal plane above the vehicle that is parallel to the vehicle horizontal zero plane. A sufficient number of x and y coordinates shall be supplied by the manufacturer to mark up the areas on the actual vehicle while considering the vehicle outer contour in the z direction.

3.3.3. The areas of 'bonnet top zone A' and 'bonnet top zone B' may consist of several parts, with the number of these parts not being limited.

3.3.4. The calculation of the surface of the impact area as well as the surface areas of 'bonnet top zone A' and 'bonnet top zone B' shall be done on the basis of a projected bonnet when viewed from a horizontal plane parallel to the horizontal zero plane above the vehicle, on the basis of the drawing data supplied by the manufacturer.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The child/small adult headform impactor shall be a rigid sphere fitted with a synthetic skin and shall comply with Section 4 of this Chapter and Figure 10 of this Part. The diameter shall be 165 ± 1 mm as shown in Figure 10. The total impactor mass shall be 3,5 ± 0,07 kg.

3.4.1.2. One triaxial (or three uniaxial) accelerometer shall be mounted in the centre of the sphere.

3.4.1.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 1 000. The CAC response value, as defined in ISO 6487:2000, shall be 500 g for the acceleration.

3.4.1.4. The child/small adult headform impactor shall meet the performance requirements specified in Section 4 of Appendix I. The certified impactor may be used for a maximum of 20 impacts before re-certification. The impactor shall be re-certified if more than one year has elapsed since the previous certification or if the transducer output, in any impact, has exceeded the specified CAC.

3.4.1.5. The headform impactor shall be mounted, propelled and released as specified in paragraphs 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or subsystem shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or subsystem shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the bonnet top within the boundaries as defined in points 3.2 and 3.4.2.3.

For tests at the rear of the bonnet top the headform impactor shall not contact the windscreen or A pillar before impacting the bonnet top.

3.4.2.3. A child/small adult headform impactor as defined in paragraph 3.4.1 shall be used for tests to the bonnet top, with the points of first contact lying between boundaries described by a wrap around distance of 1 000 mm and by the bonnet rear reference line as defined in paragraph 2.9.7 of Part I.

The direction of impact shall be as specified in point 3.4.2.4 and the impact velocity as specified in point 3.4.2.6.

3.4.2.4. The direction of impact shall be in the fore and aft vertical plane of the section of the vehicle to be tested. The tolerance for this direction is ± 2°. The direction of impact of tests to the bonnet top shall be downward and rearward, as if the vehicle were on the ground. The angle of impact for tests with the child/small adult headform impactor shall be 50° ± 2° to the Ground Reference Level. The effect of gravity shall be taken into account when the impact angle is obtained from measurements taken before the time of first contact.

3.4.2.5. At the time of first contact, the point of first contact of the headform impactor shall be within a ± 10 mm tolerance to the selected impact location.

3.4.2.6. The impact velocity of the headform impactor when striking the bonnet top shall be 9,7 ± 0,2 m/s. The effect of gravity shall be taken into account when the impact velocity is obtained from measurements taken before the time of first contact.

4. **Child/small adult headform impactor**

4.1. The child/small adult headform impactor is a sphere made of aluminium and of homogenous construction.

4.2. The sphere shall be covered with a 13,9 ± 0,5 mm thick synthetic skin, which shall cover at least half of the sphere.

4.3. The centre of gravity of the child/small adult headform impactor, including instrumentation, shall be located in the centre of the sphere with a tolerance of ± 5 mm. The moment of inertia about an axis through the centre of gravity and perpendicular to the direction of impact shall be 0,010 ± 0,0020 kg/m^2.

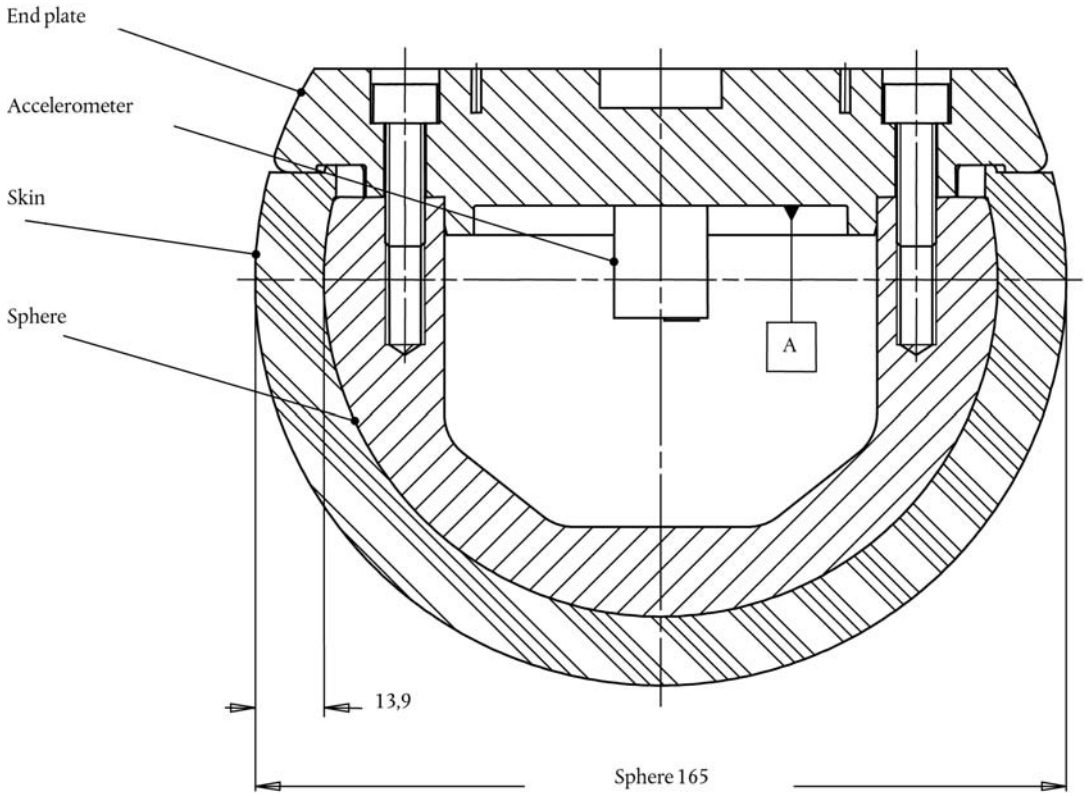
4.4. A recess in the sphere shall allow for mounting one triaxial or three uniaxial accelerometers. The accelerometers shall be positioned according points 4.4.1 and 4.4.2.

4.4.1. One of the accelerometers shall have its sensitive axis perpendicular to the mounting face A (Figure 10) and its seismic mass shall be positioned within a cylindrical tolerance field of 1 mm radius and 20 mm length. The centre line of the tolerance field shall run perpendicular to the mounting face and its mid point shall coincide with the centre of the sphere of the headform impactor.

4.4.2. The remaining accelerometers shall have their sensitive axes perpendicular to each other and parallel to the mounting face A and their seismic mass shall be positioned within a spherical tolerance field of 10 mm radius. The centre of the tolerance field shall coincide with the centre of the sphere of the headform impactor.

Figure 10

Child/small adult headform impactor (dimensions in mm)



CHAPTER VI

Adult headform to windscreen tests

1. **Scope**

This test procedure is applicable to requirements under Section 3.1 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The headform impactor for the windscreen top test shall be in 'free flight' at the moment of impact. The impactor shall be released to free flight at such a distance from the vehicle that the test results are not influenced by contact of the impactor with the propulsion system during rebound of the impactor.

2.2. The impactor may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in point 3.1.4 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. The adult headform impactor tests shall be to the windscreen. A minimum of five tests shall be carried out with the headform impactor at positions judged to be the most likely to cause injury.

The selected test points for the adult headform impactor to the windscreen shall be a minimum of 165 mm apart, a minimum of 82,5 mm inside the windscreen limits as defined in Directive 77/649/EEC and a minimum of 82,5 mm forwards of the rear windscreen reference line as defined in point 2.11.1 of Part I (see Figure 11).

These minimum distances are to be set with a flexible tape held tautly along the outer surface of the vehicle. If a number of test positions have been selected in order of potential to cause injury and the test area remaining is too small to select another test position while maintaining the minimum spacing between tests, then less than five tests may be performed. The positions tested by the laboratories shall be indicated in the test report.

3.3. Within the area described in point 3.2 all areas are to be considered in the same manner.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The adult headform impactor shall be a rigid sphere fitted with a synthetic skin and shall comply with Section 4 of this Chapter, and Figure 12 of this Part. The diameter shall be 165 ± 1 mm as shown in Figure 12. The total impactor mass, including instrumentation, shall be 4,8 ± 0,1 kg.

3.4.1.2. One triaxial (or three uniaxial) accelerometer shall be mounted in the centre of the sphere.

3.4.1.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 1 000. The CAC response value, as defined in ISO 6487:2000, shall be 500 g for the acceleration.

3.4.1.4. The headform impactors shall meet the performance requirements specified in Section 4 of Appendix I. The certified impactor may be used for a maximum of 20 impacts before re-certification. The impactor shall be re-certified if more than one year has elapsed since the previous certification or if the transducer output, in any impact, has exceeded the specified CAC.

3.4.1.5. The headform impactors shall be mounted, propelled and released as specified in points 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or sub-system shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or sub-system shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the windscreen within the boundaries as defined in point 3.2.

3.4.2.3. An adult headform impactor as defined in point 3.4.1 shall be used for tests to the windscreen, with the points of first contact lying between boundaries described in point 3.4.2.2.

The direction of impact shall be as specified in point 3.4.2.4 and the impact velocity as specified in point 3.4.2.6.

3.4.2.4. The direction of impact shall be in the fore and aft vertical plane of the section of the vehicle to be tested. The tolerance for this direction is ± 2°. The angle of impact shall be 35° ± 2° to the Ground Reference Level. The effect of gravity shall be taken into account when the impact angle is obtained from measurements taken before the time of first contact.

3.4.2.5. At the time of first contact, the point of first contact of the headform impactor shall be within a ± 10 mm tolerance to the selected impact location.

3.4.2.6. The impact velocity of the headform impactor when striking the windscreen shall be 9,7 ± 0,2 m/s. The effect of gravity shall be taken into account when the impact velocity is obtained from measurements taken before the time of first contact.

4. **Adult headform inpactor**

4.1. The adult headform impactor is a sphere made of aluminium and of homogenous construction.

4.2. The sphere shall be covered with a 13,9 ± 0,5 mm thick synthetic skin, which shall cover at least half of the sphere.

4.3. The centre of gravity of the adult headform impactor, including instrumentation, shall be located in the centre of the sphere with a tolerance of ± 5 mm. The moment of inertia about an axis through the centre of gravity and perpendicular to the direction of impact shall be 0,0125 ± 0,0010 kg/m^2.

4.4. A recess in the sphere shall allow for mounting one triaxial or three uniaxial accelerometers. The accelerometers shall be positioned according to points 4.4.1 and 4.4.2.

4.4.1. One of the accelerometers shall have its sensitive axis perpendicular to the mounting face A (Figure 12) and its seismic mass shall be positioned within a cylindrical tolerance field of 1 mm radius and 20 mm length. The centre line of the tolerance field shall run perpendicular to the mounting face and its mid point shall coincide with the centre of the sphere of the headform impactor.

4.4.2. The remaining accelerometers shall have their sensitive axes perpendicular to each other and parallel to the mounting face A and their seismic mass shall be positioned within a spherical tolerance field of 10 mm radius. The centre of the tolerance field shall coincide with the centre of the sphere of the headform impactor.

Figure 11

Windscreen impact area

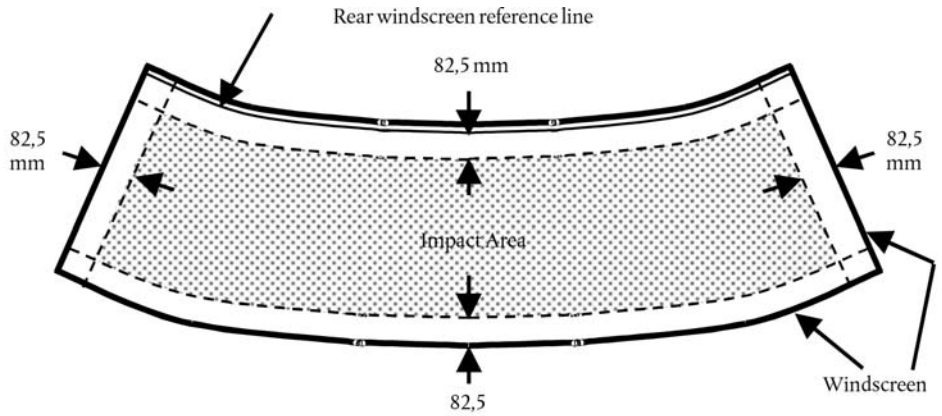
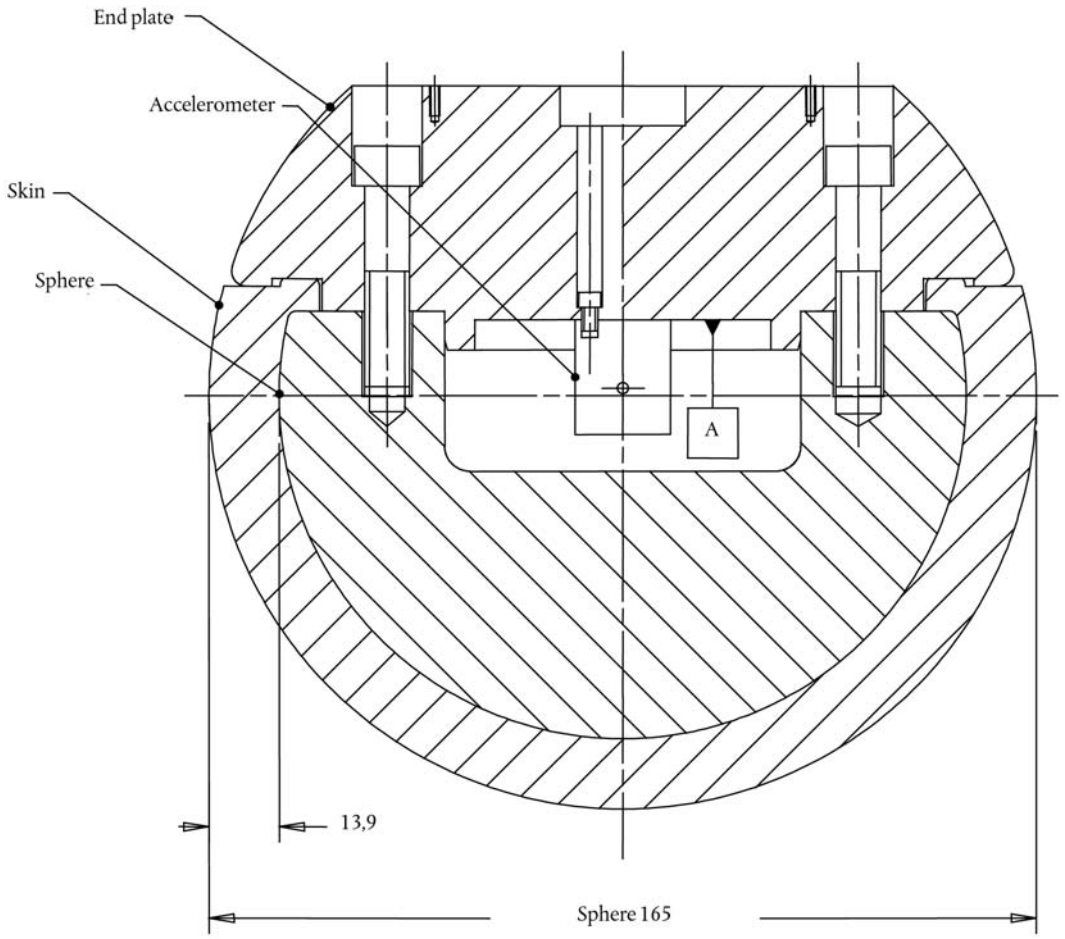


Figure 12

Adult headform impactor (dimensions in mm)



CHAPTER VII

Child and adult headform to bonnet top tests

1. **Scope**

This test procedure is applicable to Section 3.2 of Annex I of the Directive 2003/102/EC.

2. **General**

2.1. The headform impactors for the bonnet top tests shall be in 'free flight' at the moment of impact. The impactors shall be released to free flight at such a distance from the vehicle that the test results are not influenced by contact of the impactors with the propulsion system during rebound of the impactors.

2.2. The impactors may be propelled by an air, spring or hydraulic gun, or by other means that can be shown to give the same result.

3. **Specification of the test**

3.1. The purpose of the test is to ensure that the requirements given in points 3.2.2 and 3.2.4 of Annex I of the Directive 2003/102/EC are fulfilled.

3.2. Headform impactor tests shall be to the bonnet top as defined in point 2.9 of Part I. Tests to the forward section of the bonnet top defined in point 3.4.2.3 shall be with a child headform impactor defined in point 3.4.1.1. Tests to the rearward section of the bonnet top defined in point 3.4.2.4 shall be with an adult headform impactor, defined in point 3.4.1.1. A minimum of nine tests shall be carried out with each headform impactor, three tests each to the middle and the outer thirds of the forward and rearward bonnet top sections, as described in point 2.9.8 of Part I, at positions judged to be the most likely to cause injury. Tests shall be to different types of structure, where these vary throughout the area to be assessed.

3.3. The selected test points for the adult headform impactor shall be a minimum of 165 mm apart, a minimum of 82,5 mm inside the defined bonnet side reference lines and a minimum of 82,5 mm forwards of the defined bonnet rear reference line. The test points shall be located so that the impactor is not expected to impact the bonnet top with a glancing blow and then impact the windscreen or an A pillar more severely. The selected test points for the child headform impactor shall be a minimum of 130 mm apart, a minimum of 65 mm inside the defined bonnet side reference lines, a minimum of 65 mm forwards of the defined bonnet rear reference line. Each selected test point for the child headform shall also be a minimum of 130 mm rearwards of the bonnet leading edge reference line, unless no point in the bonnet leading edge test area within 130 mm laterally would, if chosen for an upper legform to bonnet leading edge test, require a kinetic energy of impact of more than 200 J.

These minimum distances are to be set with a flexible tape held tautly along the outer surface of the vehicle. If a number of test positions have been selected in order of potential to cause injury and the test area remaining is too small to select another test position while maintaining the minimum spacing between tests, then less than nine tests may be performed. The positions tested by the laboratories shall be indicated in the test report.

3.4. *Test method*

3.4.1. Test apparatus

3.4.1.1. The adult and child headform impactors shall be rigid spheres fitted with a synthetic skin and shall comply with Section 4 of this Chapter and with Figures 13 and 14 respectively of this Part. Diameters shall be 165 ± 1 mm for the adult headform and 130 ± 1 mm for the child headform respectively, as shown in Figures 13 and 14. The total impactor masses, including instrumentation, shall be 4,8 ± 0,1 kg for the adult headform and 2,5 ± 0,05 kg for the child headform impactor.

3.4.1.2. One triaxial (or three uniaxial) accelerometer shall be mounted in the centre of the sphere for both child and adult headform impactors.

3.4.1.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 1 000. The CAC response value, as defined in ISO 6487:2000, shall be 500 g for the acceleration.

3.4.1.4. The headform impactors shall meet the performance requirements specified in Section 4 of Appendix I. The certified impactors may be used for a maximum of 20 impacts before re-certification. The impactors shall be re-certified if more than one year has elapsed since the previous certification or if a transducer output, in any impact, has exceeded the specified CAC.

3.4.1.5. The headform impactors shall be mounted, propelled and released as specified in paragraphs 2.1 and 2.2.

3.4.2. Test procedure

3.4.2.1. The state of the vehicle or subsystem shall comply with the requirements of Chapter I of this Part. The stabilised temperature of the test apparatus and the vehicle or sub-system shall be 20 °C ± 4 °C.

3.4.2.2. Tests shall be made to the bonnet top within the boundaries as defined in points 3.2, 3.4.2.3 and 3.4.2.4.

For tests at the rear of the bonnet top the headform impactor shall not contact the windscreen or A pillar before impacting the bonnet top.

3.4.2.3. A child headform impactor as defined in point 3.4.1 shall be used for tests to the forward section of the bonnet top, with the points of first contact lying between boundaries described by wrap around distances of 1 000 mm and 1 500 mm or by the bonnet rear reference line as defined in point 2.9.7 of Part I.

The direction of impact shall be as specified in point 3.4.2.5 and the impact velocity as specified in point 3.4.2.7.

3.4.2.4. An adult headform impactor as defined in point 3.4.1 shall be used for tests to the rearward section of the bonnet top, with the points of first contact lying between boundaries described by wrap around distances of 1 500 mm and 2 100 mm or by the bonnet rear reference line as defined in point 2.9.7 of Part I.

The direction of impact shall be as specified in point 3.4.2.5 and the impact velocity as specified in point 3.4.2.7.

3.4.2.5. The direction of impact shall be in the fore and aft vertical plane of the section of the vehicle to be tested. The tolerance for this direction is ± 2°. The direction of impact of tests to the bonnet top shall be downward and rearward, as if the vehicle were on the ground. The angle of impact for tests with the child headform impactor shall be 50° ± 2° to the Ground Reference Level. For tests with the adult headform impactor the angle of impact shall be 65° ± 2° to the Ground Reference Level. The effect of gravity shall be taken into account when the impact angle is obtained from measurements taken before the time of first contact.

3.4.2.6. At the time of first contact, the point of first contact of the headform impactor shall be within a ± 10 mm tolerance to the selected impact location.

3.4.2.7. The impact velocity of the headform impactors when striking the bonnet top shall be 11,1 ± 0,2 m/s. The effect of gravity shall be taken into account when the impact velocity is obtained from measurements taken before the time of first contact.

4. **Headform impactors**

4.1. *Adult headform impactor*

4.1.1. The adult headform impactor is a sphere made of aluminium and of homogenous construction.

4.1.2. The sphere shall be covered with a 13,9 ± 0,5 mm thick synthetic skin, which shall cover at least half of the sphere.

4.1.3. The centre of gravity of the adult headform impactor, including instrumentation, shall be located in the centre of the sphere with a tolerance of ± 5 mm. The moment of inertia about an axis through the centre of gravity and perpendicular to the direction of impact shall be 0,0125 ± 0,0010 kg/m^2.

4.1.4. A recess in the sphere shall allow for mounting one triaxial or three uniaxial accelerometers. The accelerometers shall be positioned according points 4.1.4.1 and 4.1.4.2.

4.1.4.1. One of the accelerometers shall have its sensitive axis perpendicular to the mounting face A (Figure 13) and its seismic mass shall be positioned within a cylindrical tolerance field of 1 mm radius and 20 mm length. The centre line of the tolerance field shall run perpendicular to the mounting face and its mid point shall coincide with the centre of the sphere of the headform impactor.

4.1.4.2. The remaining accelerometers shall have their sensitive axes perpendicular to each other and parallel to the mounting face A and their seismic mass shall be positioned within a spherical tolerance field of 10 mm radius. The centre of the tolerance field shall coincide with the centre of the sphere of the headform impactor.

4.2. *Child headform impactor*

4.2.1. The child headform impactor is a sphere made of aluminium and of homogenous construction.

4.2.2. The sphere shall be covered with a 11,0 ± 0,5 mm thick synthetic skin, which shall cover at least half of the sphere.

4.2.3. The centre of gravity of the child headform impactor, including instrumentation, shall be located in the centre of the sphere with a tolerance of ± 5 mm. The moment of inertia about an axis through the centre of gravity and perpendicular to the direction of impact shall be 0,0036 ± 0,0003 kg/m^2.

4.2.4. A recess in the sphere shall allow for mounting one triaxial or three uniaxial accelerometers. The accelerometers shall be positioned according to points 4.2.4.1 and 4.2.4.2.

4.2.4.1. One of the accelerometers shall have its sensitive axis perpendicular to the mounting face A (Figure 14) and its seismic mass shall be positioned within a cylindrical tolerance field of 1 mm radius and 20 mm length. The centre line of the tolerance field shall run perpendicular to the mounting face and its mid point shall coincide with the centre of the sphere of the headform impactor.

4.2.4.2. The remaining accelerometers shall have their sensitive axes perpendicular to each other and parallel to the mounting face A and their seismic mass shall be positioned within a spherical tolerance field of 10 mm radius. The centre of the tolerance field shall coincide with the centre of the sphere of the headform impactor.

Figure 13

Adult headform impactor (dimensions in mm)

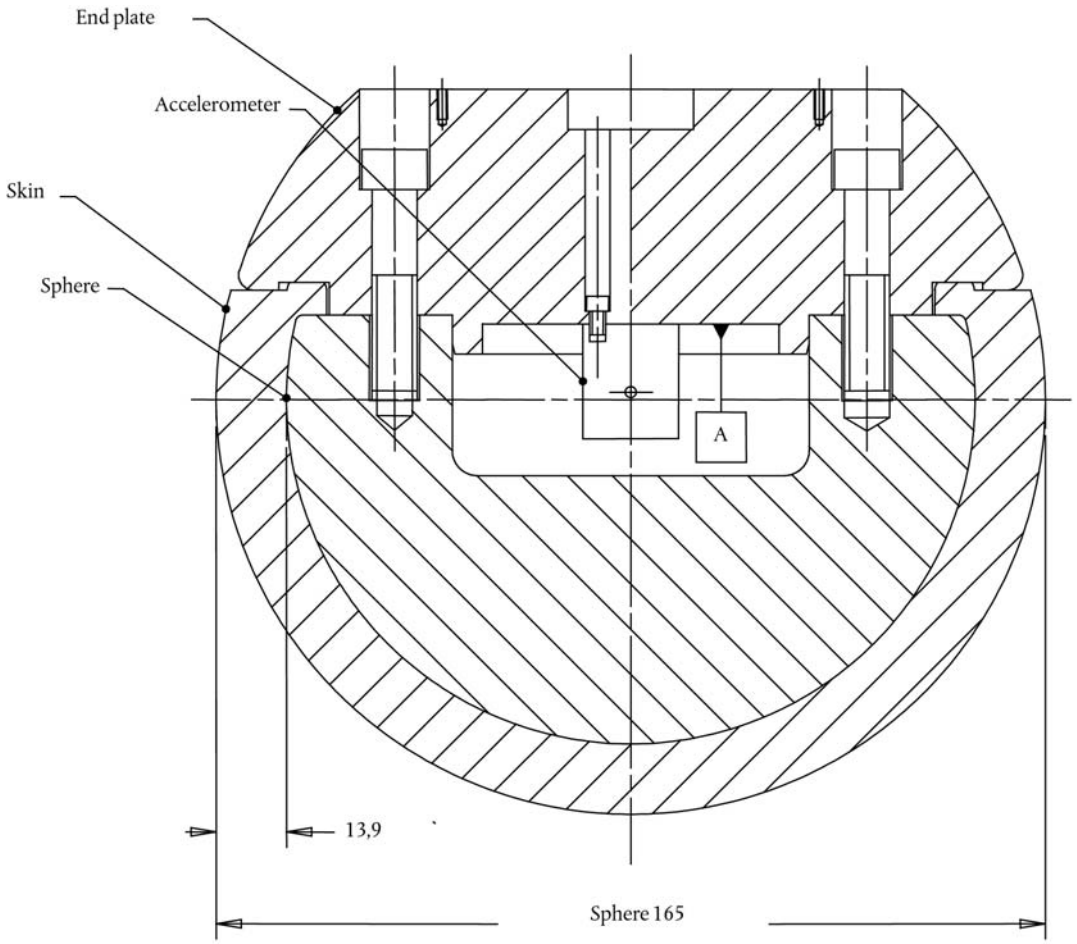
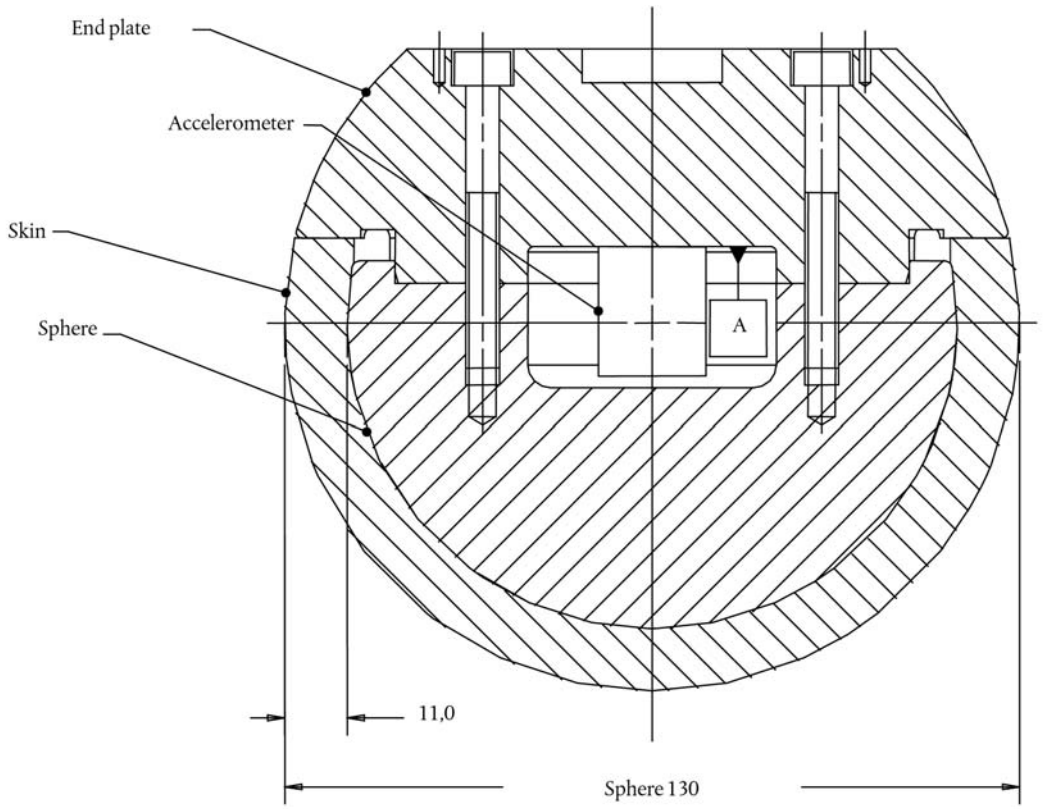


Figure 14

Child headform impactor (dimensins in mm)



Appendix I

CERTIFICATION OF IMPACTORS

1. **Certification requirements**

1.1. The impactors that are used in the tests detailed in Part II are required to comply with appropriate performance requirements.

The requirements for the lower legform impactor are specified in Section 2; the upper legform impactor requirements are specified in Section 3 and the adult, child and child/small adult headform impactor requirements are specified in Section 4.

2. **Lower legform impactor**

2.1. *Static tests*

2.1.1. The lower legform impactor shall meet the requirements specified in point 2.1.2 when tested as specified in point 2.1.4 and the impactor shall meet the requirements specified in point 2.1.3 when tested as specified in point 2.1.5.

For both tests the impactor shall have the intended orientation about its longitudinal axis, for the correct operation of its knee joint, with a tolerance of ± 2°.

The stabilised temperature of the impactor during certification shall be 20 °C ± 2 °C.

The CAC response values, as defined in ISO 6487:2000, shall be 50° for the knee bending angle and 500 N for the applied force when the impactor is loaded in bending in accordance with point 2.1.4, and 10 mm for the shearing displacement and 10 kN for the applied force when the impactor is loaded in shearing in accordance with point 2.1.5. For both tests low-pass filtering at an appropriate frequency is permitted, to remove higher frequency noise without significantly affecting the measurement of the response of the impactor.

2.1.2. When the impactor is loaded in bending in accordance with point 2.1.4, the applied force/bending angle response shall be within the limits shown in Figure 1. Also, the energy taken to generate 15,0° of bending shall be 100 ± 7 J.

2.1.3. When the impactor is loaded in shearing in accordance with point 2.1.5, the applied force/shearing displacement response shall be within the limits shown in Figure 2.

2.1.4. The legform impactor, without foam covering and skin, shall be mounted with the tibia firmly clamped to a fixed horizontal surface and a metal tube connected firmly to the femur, as shown in Figure 3. To avoid friction errors, no support shall be provided to the femur section or the metal tube. The bending moment applied at the centre of the knee joint, due to the weight of the metal tube and other components (excluding the legform itself), shall not exceed 25 Nm.

A horizontal normal force shall be applied to the metal tube at a distance of 2,0 ± 0,01 m from the centre of the knee joint and the resulting angle of knee deflection shall be recorded. The load shall be increased until the angle of deflection of the knee is in excess of 22°.

The energy is calculated by integrating the force with respect to the bending angle in radians, and multiplying by the lever length of 2,0 ± 0,01 m.

2.1.5. The impactor, without foam covering and skin, shall be mounted with the tibia firmly clamped to a fixed horizontal surface and a metal tube connected firmly to the femur and restrained at 2,0 m from the centre of the knee joint, as shown in Figure 4.

A horizontal normal force shall be applied to the femur at a distance of 50 mm from the centre of the knee joint and the resulting knee shearing displacement shall be recorded. The load shall be increased until the shearing displacement of the knee is in excess of 8,0 mm or the load is in excess of 6,0 kN.

2.2. *Dynamic tests*

2.2.1. The lower legform impactor shall meet the requirements specified in point 2.2.2 when tested as specified in point 2.2.4.

The stabilised temperature of the impactor during certification shall be 20 °C ± 2 °C.

2.2.2. When the impactor is impacted by a linearly guided certification impactor, as specified in point 2.2.4, the maximum upper tibia acceleration shall be not less than 120 g and not more than 250 g. The maximum bending angle shall be not less than 6,2° and not more than 8,2°. The maximum shearing displacement shall be not less than 3,5 mm and not more than 6,0 mm.

For all these values the readings used shall be from the initial impact with the certification impactor and not from the arresting phase. Any system used to arrest the impactor or certification impactor shall be so arranged that the arresting phase does not overlap in time with the initial impact. The arresting system shall not cause the transducer outputs to exceed the specified CAC.

2.2.3. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 180 for all transducers. The CAC response values, as defined in ISO 6487:2000, shall be 50° for the knee bending angle, 10 mm for the shearing displacement and 500 g for the acceleration. This does not require that the impactor itself be able to physically bend and shear to these angles and displacements.

2.2.4 Test procedure

2.2.4.1. The impactor, including foam covering and skin, shall be suspended horizontally by three wire ropes of 1,5 ± 0,2 mm diameter and of 2,0 m minimum length, as shown in Figure 5a. It shall be suspended with its longitudinal axis horizontal, with a tolerance of ± 0,5°, and perpendicular to the direction of the certification impactor motion, with a tolerance of ± 2°. The impactor shall have the intended orientation about its longitudinal axis, for the correct operation of its knee joint, with a tolerance of ± 2°. The impactor must meet the requirements of point 3.4.1.1, Chapter II of Part II with the attachment bracket(s) for the wire ropes fitted.

2.2.4.2. The certification impactor shall have a mass of 9,0 ± 0,05 kg, this mass includes those propulsion and guidance components which are effectively part of the impactor during impact. The dimensions of the face of the certification impactor shall be as specified in Figure 5b. The face of the certification impactor shall be made of aluminium, with an outer surface finish of better than 2,0 micrometers.

The guidance system shall be fitted with low friction guides, insensitive to off-axis loading, that allow the impactor to move only in the specified direction of impact, when in contact with the vehicle. The guides shall prevent motion in other directions including rotation about any axis.

2.2.4.3. The impactor shall be certified with previously unused foam.

2.2.4.4. The impactor foam shall not be excessively handled or deformed before, during or after fitting.

2.2.4.5. The certification impactor shall be propelled horizontally at a velocity of 7,5 ± 0,1 m/s into the stationary impactor as shown in Figure 5a. The certification impactor shall be positioned so that its centreline aligns with a position on the tibia centreline of 50 mm from the centre of the knee, with tolerances of ± 3 mm laterally and ± 3 mm vertically.

3. **Upper legform impactor**

3.1. The upper legform impactor shall meet the requirements specified in point 3.2 when tested as specified in point 3.3.

The stabilised temperature of the impactor during certification shall be 20 °C ± 2 °C.

3.2. *Requirements*

3.2.1. When the impactor is propelled into a stationary cylindrical pendulum the peak force measured in each load transducer shall be not less 1,20 kN and not more than 1,55 kN and the difference between the peak forces measured in the top and bottom load transducers shall not be more than 0,10 kN. Also, the peak bending moment measured by the strain gauges shall not be less than 190 Nm and not more than 250 Nm on the centre position and not less than 160 Nm and not more than 220 Nm for the outer positions. The difference between the upper and lower peak bending moments shall not be more than 20 Nm.

For all these values the readings used shall be from the initial impact with the pendulum and not from the arresting phase. Any system used to arrest the impactor or pendulum shall be so arranged that the arresting phase does not overlap in time with the initial impact. The arresting system shall not cause the transducer outputs to exceed the specified CAC.

3.2.2. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 180 for all transducers. The CAC response values, as defined in ISO 6487:2000, shall be 10 kN for the force transducers and 1 000 Nm for the bending moment measurements.

3.3. *Test procedure*

3.3.1. The impactor shall be mounted to the propulsion and guidance system, by a torque limiting joint. The torque limiting joint shall be set so that the longitudinal axis of the front member is perpendicular to the axis of the guidance system, with a tolerance of ± 2°, with the joint friction torque set to a minimum of 650 Nm. The guidance system shall be fitted with low friction guides that allow the impactor to move only in the specified direction of impact, when in contact with the pendulum.

3.3.2. The impactor mass shall be adjusted to give a mass of 12 ± 0,1 kg, this mass includes those propulsion and guidance components which are effectively part of the impactor during impact.

3.3.3. The centre of gravity of those parts of the impactor which are effectively forward of the torque limiting joint, including the extra weights fitted, shall lie on the longitudinal centreline of the impactor, with a tolerance of ± 10 mm.

3.3.4. The impactor shall be certified with previously unused foam.

3.3.5. The impactor foam shall not be excessively handled or deformed before, during or after fitting.

3.3.6. The impactor with the front member vertical shall be propelled horizontally at a velocity of 7,1 ± 0,1 m/s into the stationary pendulum as shown in Figure 6.

3.3.7. The pendulum tube shall have a mass of 3 ± 0,03 kg, an outside diameter of and a wall thickness of 3 ± 0,15 mm. Total pendulum tube length shall be 275 ± 25 mm. The pendulum tube shall be made from cold finished seamless steel (metal surface plating is permissible for protection from corrosion), with an outer surface finish of better than 2,0 micrometers. It shall be suspended on two wire ropes of 1,5 ± 0,2 mm diameter and of 2,0 m minimum length. The surface of the pendulum shall be clean and dry. The pendulum tube shall be positioned so that the longitudinal axis of the cylinder is perpendicular to the front member (i.e. level), with a tolerance of ± 2°, and to the direction of impactor motion, with a tolerance of ± 2°, and with the centre of the pendulum tube aligned with the centre of the impactor front member, with tolerances of ± 5 mm laterally and ± 5 mm vertically.

4. **Headform impactors**

4.1. The child, child/small adult and the adult headform impactors shall meet the requirements specified in point 4.2 when tested as specified in point 4.3.

The stabilised temperature of the impactors during certification shall be 20 °C ± 2 °C.

4.2. *Requirements*

4.2.1. When the child headform impactor is impacted by a linearly guided certification impactor, as specified in point 4.3, the peak resultant acceleration measured by one triaxial (or three uniaxial) accelerometer in the headform shall be not less than 405 g and not more than 495 g. The resultant acceleration time curve shall be uni-modal.

4.2.2. When the child/small adult headform impactor is impacted by a linearly guided certification impactor, as specified in point 4.3, the peak resultant acceleration measured by one triaxial (or three uniaxial) accelerometer in the headform shall be not less than 290 g and not more than 350 g. The resultant acceleration time curve shall be uni-modal.

4.2.3. When the adult headform impactor is impacted by a linearly guided certification impactor, as specified in point 4.3, the peak resultant acceleration measured by one triaxial (or three uniaxial) accelerometer in the headform shall be not less than 337,5 g and not more than 412,5 g. The resultant acceleration time curve shall be uni-modal.

4.2.4. The instrumentation response value CFC, as defined in ISO 6487:2000, shall be 1 000. The CAC response value, as defined in ISO 6487:2000, shall be 1 000 g for the acceleration.

4.3. *Test procedure*

4.3.1. The headform impactors shall be suspended as shown in Figure 7. The headform impactors shall be suspended with the rear face at an angle between 25° and 90° with the horizontal, as shown in Figure 7.

4.3.2. The certification impactor shall have a mass of 1,0 ± 0,01 kg. This mass includes those propulsion and guidance components which are effectively part of the impactor during impact. The linear guidance system shall be fitted with low friction guides which do not contain any rotating parts. The diameter of the flat impactor face shall be 70 ± 1 mm, while the edge shall be rounded by a 5 ± 0,5 mm radius. The face of the certification impactor shall be made of aluminium, with an outer surface finish of better than 2,0 micrometers.

4.3.3. The certification impactor shall be propelled horizontally at a velocity of 7,0 ± 0,1 m/s into the stationary child and child/small adult headform impactors and at a velocity of 10,0 ± 0,1 m/s into the stationary adult headform impactor. The certification impactor shall be positioned so that the centre of gravity of the headform impactor is located on the centre line of the certification impactor, with tolerances of ± 5 mm laterally and ± 5 mm vertically.

4.3.4. The test shall be performed on three different impact locations on each headform impactor. Previously used and/or damaged skins shall be tested in those specific areas.

Table 1: Summary of response requirements for headform impactors

Impactor and mass	Certification velocity [m/s]	Lower Boundary [g]	Upper, Boundary [g]
Child 2,5 kg	7	405	495
Child/small adult 3,5 kg	7	290	350
Adult 4,8 kg	10	337,5	412,5

Figure 1

Force versus angle requirement in static lower legform impactor bending certification test

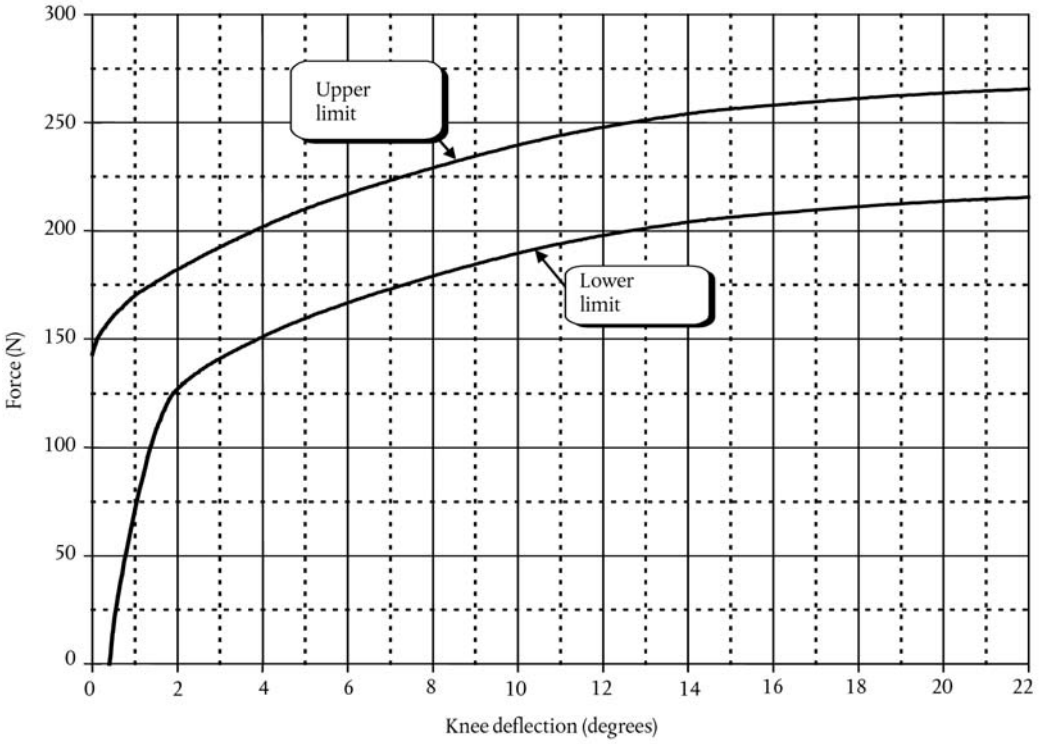


Figure 2

Force versus displacement requirement in static lower legform impactor shearing certification test

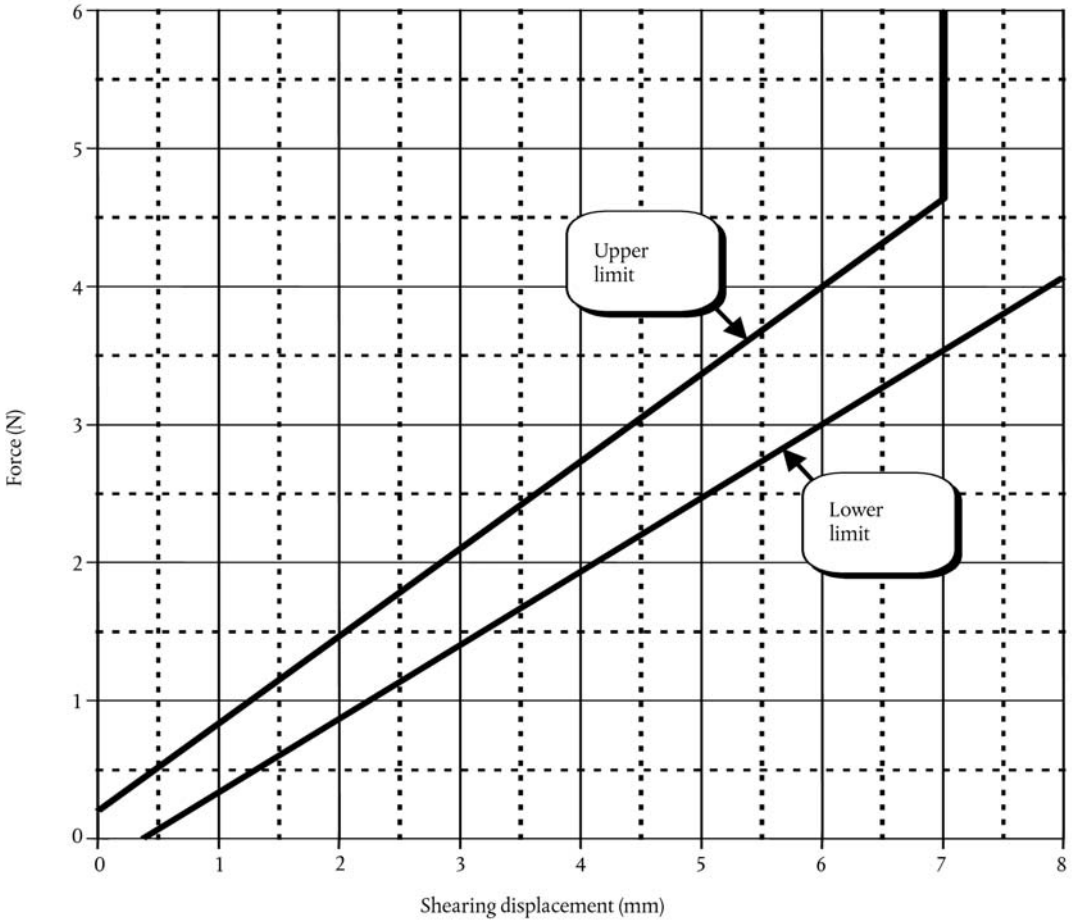


Figure 3

Top view of test set-up for static lower legform impactor bending certification test

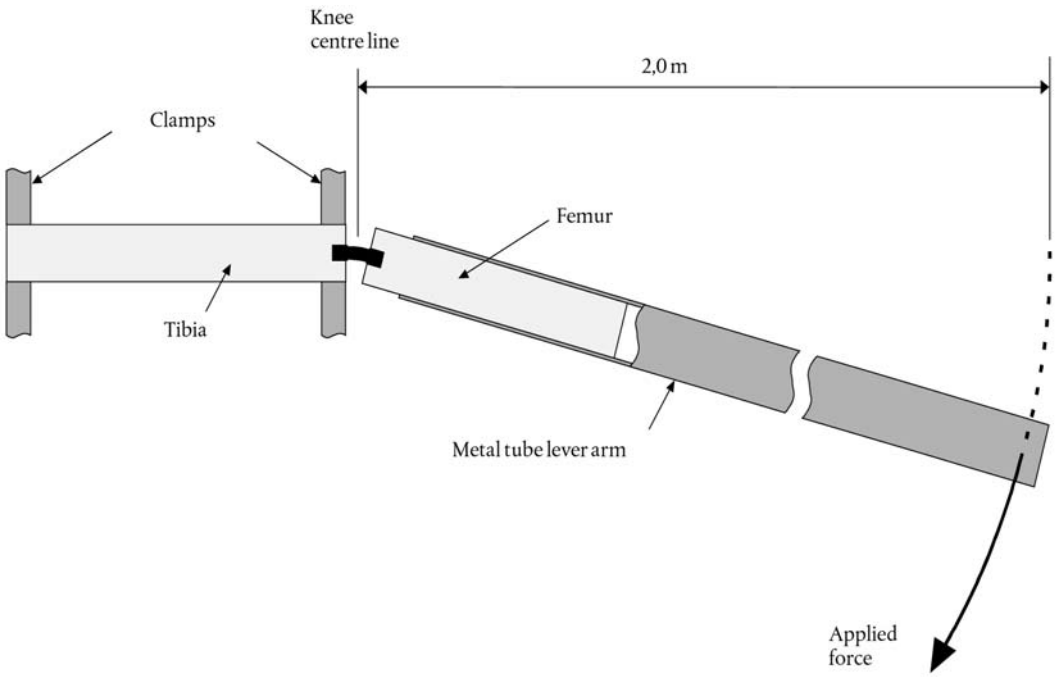


Figure 4

Top view of test set-up for static lower legform impactor shearing certification test

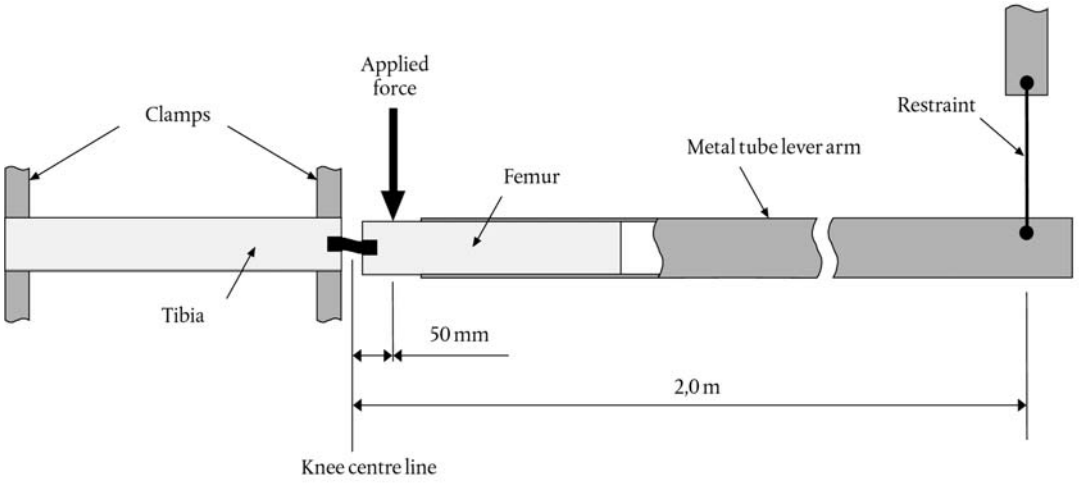


Figure 5a

Test set-up for dynamic lower legform impactor certification test (side view top diagram, view from above bottom diagram)

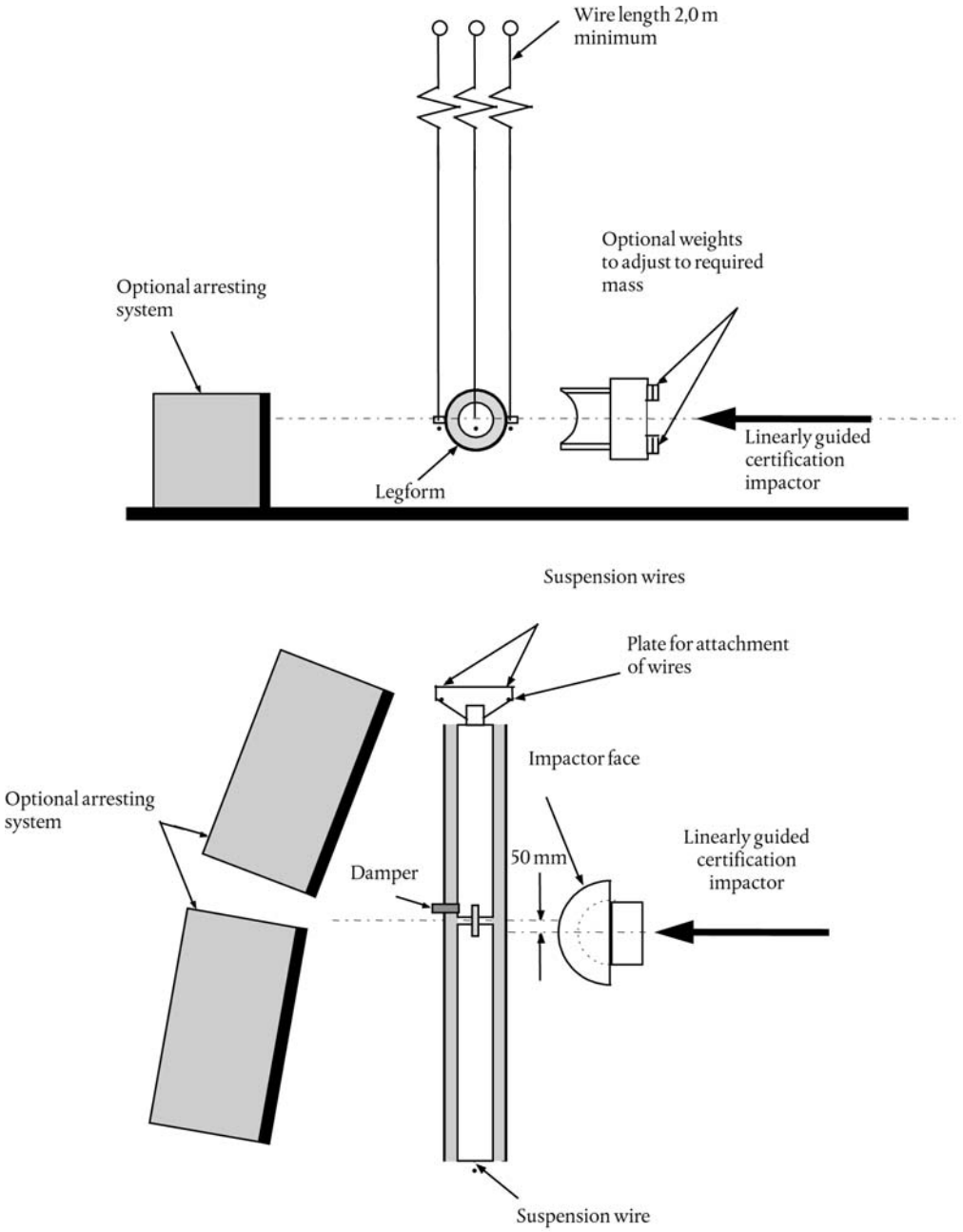
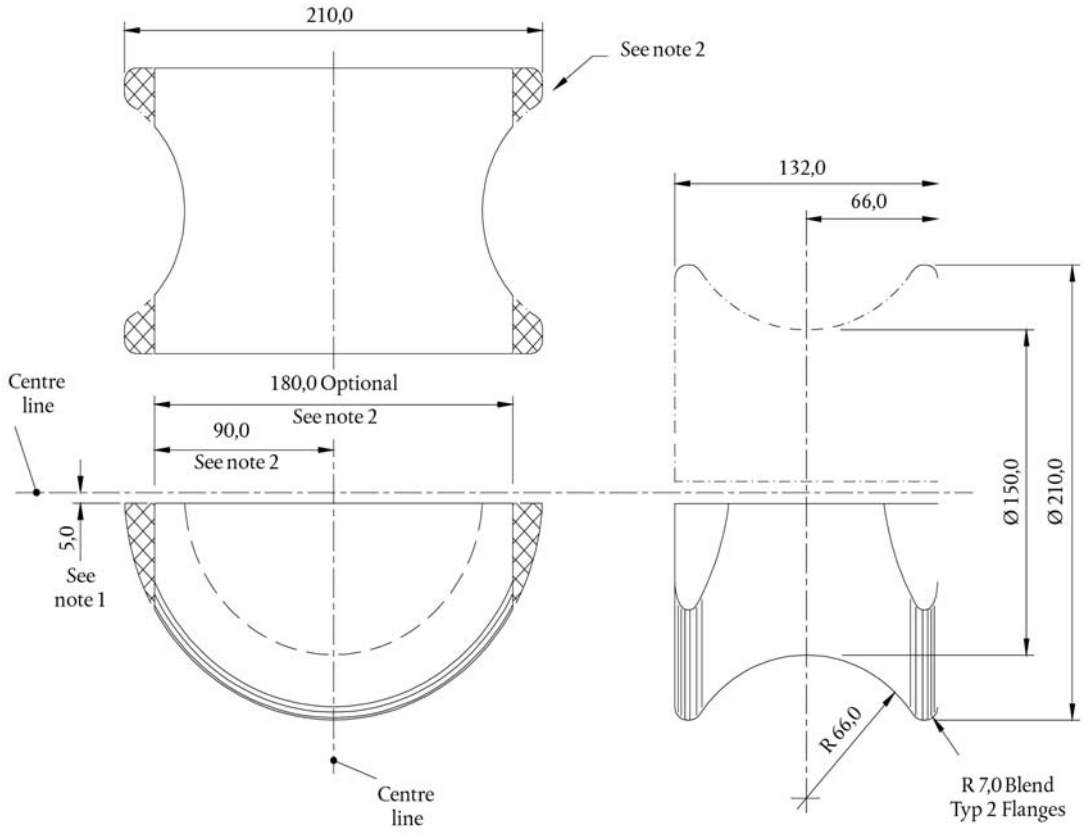


Figure 5b

Details of dynamic lower legform certification impactor face



Notes:

1. Saddle may be made as a complete diameter and cut as shown to make two components.

2. The shaded areas may be removed to give the alternative form shown.

3. Tolerance on all dimensions is ± 1,0 mm.

Material: aluminium alloy

Figure 6

Test set-up for dynamic upper legform impactor certification test

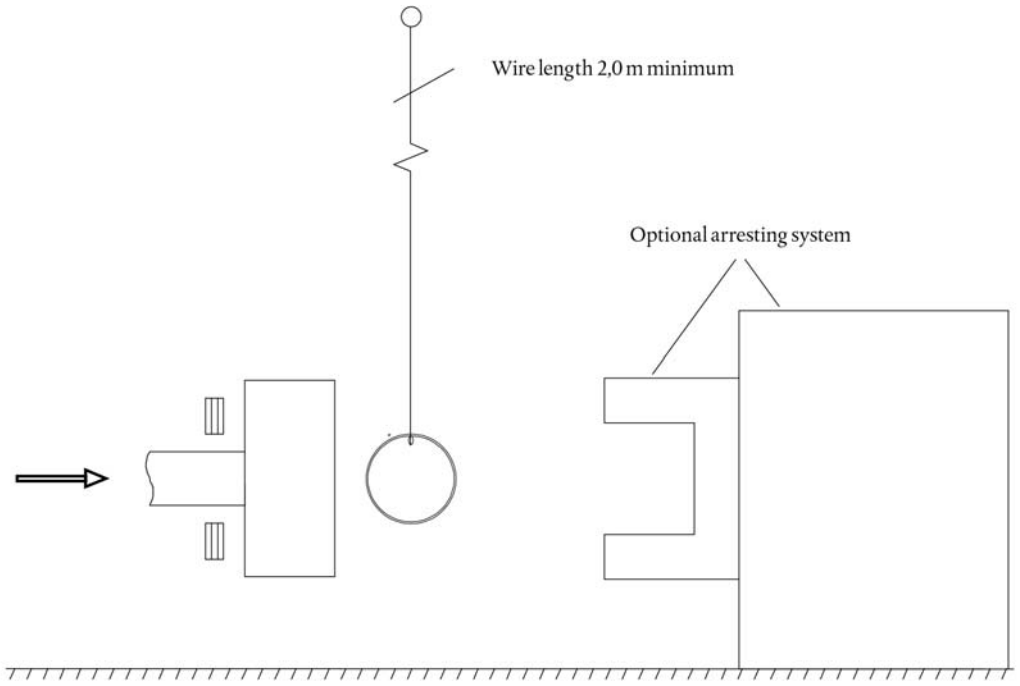


Figure 7

Test set-up for dynamic headform impactor certification test