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COUNCIL DIRECTIVE

of 27 March 1991

on the approximation of the laws of the Member States relating to the spray-suppression systems of certain categories of motor vehicles and their trailers

(91/226/EEC)

(OJ L 103, 23.4.1991, p. 5)

Amended by:

		Official Journal		
		No	page	date
►**M1**	Council Directive 2006/96/EC of 20 November 2006	L 363	81	20.12.2006
►**M2**	Commission Directive 2010/19/EU of 9 March 2010	L 72	17	20.3.2010

Amended by:

►**A1**	Act of Accession of Austria, Sweden and Finland	C 241	21	29.8.1994
	(adapted by Council Decision 95/1/EC, Euratom, ECSC)	L 1	1	1.1.1995
►**A2**	Act concerning the conditions of accession of the Czech Republic, the Republic of Estonia, the Republic of Cyprus, the Republic of Latvia, the Republic of Lithuania, the Republic of Hungary, the Republic of Malta, the Republic of Poland, the Republic of Slovenia and the Slovak Republic and the adjustments to the Treaties on which the European Union is founded	L 236	33	23.9.2003

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COUNCIL DIRECTIVE

of 27 March 1991

on the approximation of the laws of the Member States relating to the spray-suppression systems of certain categories of motor vehicles and their trailers

(91/226/EEC)

THE COUNCIL OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Economic Community, and in particular Article 100a thereof,

Having regard to the proposal from the Commission ([1]),

In cooperation with the European Parliament ([2]),

Having regard to the opinion of the Economic and Social Committee ([3]),

Whereas it is important to adopt measures with the aim of progressively establishing the internal market over a period expiring on 31 December 1992; whereas the internal market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured;

Whereas the technical requirements which certain categories of motor vehicles and their trailers must satisfy pursuant to national laws relate, *inter alia*, to the spray-suppression systems of such motor vehicles;

Whereas these requirements differ from one Member State to another; whereas it is therefore necessary that all Member States adopt the same requirements in order, in particular, to allow the implementation for each type of vehicle of the EEC type-approval procedure which was the subject of Council Directive 70/156/EEC of 6 February 1970 on the approximation of the laws of the Member States relating to the type-approval of motor vehicles and their trailers ([4]), as last amended by Directive 87/403/EEC ([5]);

Whereas, with a view to improving road safety, it is important that all commercial vehicles in higher weight categories and with a certain minimum design speed should be equipped with efficient spray-suppression systems in order to retain water;

Whereas it is desirable to establish a single performance test for systems of this type on fitting to the various types of vehicles as a means of markedly improving the situation; whereas for the EEC component type-approval of devices of this type account has been taken of the two types of devices currently on the marked, i.e. the energy-absorption type and the air/water separator type; whereas it has been necessary to provide for two different tests depending on the type of device to be approved;

Whereas, in the light of the studies, research and tests currently in progress, a performance test on the types of vehicles fitted with these devices will be established as soon as possible;

Whereas Member States should pay attention to the fact that the formation of spray depends also on the characteristics of the road

([1]) OJ No C 203, 14. 8. 1990, p. 16.
([2]) OJ No C 96, 17. 4. 1990, p. 92 and Decision of 13 March 1991 (not yet published in the Official Journal).
([3]) OJ No C 62, 12. 3. 1990, p. 2.
([4]) OJ No L 42, 23. 2. 1970, p. 1.
([5]) OJ No L 220, 8. 8. 1987, p. 44.

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surface, the tyre-tread configuration and the speed and aerodynamic characteristics of the vehicle;

Whereas the approximation of national laws relating to motor vehicles entails the mutual recognition by Member States of the inspections carried out by each of them on the basis of common requirements,

HAS ADOPTED THIS DIRECTIVE:

Article 1

1. Member States shall grant EEC component type-approval for any type of device, hereinafter referred to as 'spray-suppression device', intended to reduce the projection of spray from tyres of moving vehicles, if it satisfies the requirements regarding design and testing set out in Annex II and taking into account the definitions given in Annex I.

2. A Member State which has granted EEC component type-approval shall take the measures required to verify, in so far as is necessary and, if need be, in cooperation with the competent authorities of the other Member States, that production models conform to the approved type. For this purpose the Member State shall apply the requirements of Annex IV.

Article 2

Member States shall, for each spray-suppression device which they approve pursuant to Article 1, issue to the manufacturer or to his authorized representative an EEC component type-approval mark conforming to the model in Annex II, Appendix 3.

Member States shall take all appropriate measures to prevent the use of marks liable to create confusion between spray-suppression devices which have been approved pursuant to Article 1 and other devices.

Article 3

No Member State may prohibit the placing on the market of spray-suppression devices on grounds relating to their construction and performance if they bear the EEC component type-approval mark.

Nevertheless, this provision shall not prevent a Member State from taking such measures with regard to spray-suppression devices bearing the EEC component type-approval mark which consistently fail to conform to the approved type.

The Member State concerned shall forthwith inform the other Member States and the Commission of the measures taken, specifying the reason for its decision. The provisions of Article 5 shall also apply.

Devices shall be deemed not to conform to the approved type, within the meaning of the second paragraph, if the requirements of Annex II have not been respected.

Article 4

The competent authorities of each Member State shall, within one month, send the competent authorities of the other Member States copies of the EEC component type-approval certificates issued for each type of spray-suppression device which they approve or refuse to approve.

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Article 5

1. If the competent authorities of a Member State which has granted EEC component type-approval find that spray-suppression devices accompanied by certificates of conformity to a single type do not conform to the type approved by that Member State, they shall take the necessary measures to ensure that the conformity of production models to the approved type is restored. They shall advise the competent authorities of the other Member States of the measures taken, which may extend to withdrawal of EEC component type-approval.

The said authorities shall take the same measures if they are informed by the competent authorities of another Member State of such failure to conform.

2. The competent authorities of the Member State shall, within one month, inform each other of a withdrawal of EEC component type-approval, by forwarding a copy of the component type-approval certificate, signed and dated and bearing in large letters the words 'EEC TYPE-APPROVAL WITHDRAWN', and adducing reasons for any such measure.

3. If the Member State which has granted the EEC component type-approval challenges the alleged lack of conformity, the Member States concerned shall endeavour to settle the disagreement. The Commission shall be kept informed. Where necessary, it shall arrange for appropriate discussions with a view of arriving at a solution.

Article 6

Any decision taken pursuant to the provisions adopted in implementation of this Directive to refuse or withdraw EEC component type-approval for spray-suppression devices or prohibit their placing on the market or use shall set out in detail the reason on which it is based. Such decision shall be notified to the party concerned, who shall at the same time be informed of the remedies available to him under the laws in force in the Member States and of the time limits laid down for availing himself of such remedies.

Article 7

For the purposes of this Directive, 'vehicle' means any motor vehicle in category N and any trailer in category O as defined in Annex I to Directive 70/156/EEC.

Article 8

No Member State may refuse to grant EEC type-approval or national type-approval for vehicles, or refuse or prohibit their sale, registration, placing in service or use on grounds relating to their spray-suppression system if these are fitted in accordance with the requirements of Annex III and if the spray-suppression devices with which the vehicles are equipped bear the EEC component type-approval mark.

Article 9

Any amendments necessary in order to adapt the requirements of the Annexes to this Directive to take account of technical progress shall be adopted in accordance with the procedure laid down in Article 13 of Directive 70/156/EEC.

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Article 10

1. Member States shall bring into force the provisions necessary in order to comply with this Directive by 10 April 1992. They shall forthwith inform the Commission thereof.

2. Member States shall communicate the main provisions of national law which they adopt in the field covered by this Directive to the Commission.

3. When Member States adopt the provisions referred to in paragraph 1, they shall contain a reference to this Directive or be accompanied by such reference on the occasion of their official publication. The methods of making such a reference shall be laid down by the Member States.

Article 11

This Directive is addressed to the Member States.

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LIST OF ANNEXES

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ANNEX I

DEFINITIONS

For the purposes of this Directive, the following definitions apply:

1. *Spray-suppression system*

   'Spray-suppression system' means a system intended to reduce the pulverization of water thrown upwards by the tyres of a vehicle in motion. The spray-suppression system is variously made up of a mudguard, rain flaps and valances equipped with a spray-suppression device.

2. *Mudguard*

   'Mudguard' means a rigid or semi-rigid component intended to trap the water thrown up by tyres in motion and to direct it towards the ground. Mudguards may entirely or partially form an integral part of the vehicle bodywork or other parts of the vehicle such as the lower part of the load platform, etc.

3. *Rain flap*

   'Rain flap' means a flexible component mounted vertically behind the wheel, on the lower part of the chassis or the loading surface, or on the mudguard.

   The rain flap must also reduce the risk of small objects, in particular pebbles, being picked up from the ground by the tyres and thrown upwards or sidewards towards other road users.

4. *Spray-suppression device*

   'Spray-suppression device' means part of the spray-suppression system, which may comprise:

   4.1. *Air/water separator*

   This is a component forming part of the valance and/or of the rain flap through which air can pass whilst reducing pulverized water emissions.

   4.2. *Energy absorber*

   This is a component forming part of the mudguard and/or valance and/or rain flap which absorbs the energy of water spray, thus reducing pulverized water spray.

5. *Outer valance*

   'Outer valance' means a component located approximately within a vertical plane that is parallel to the longitudinal plane of the vehicle. It may form part of a mudguard or of the vehicle bodywork.

6. *Steered wheels*

   'Steered wheels' means the wheels actuated by the vehicle's steering system.

7. *Self-tracking axle*

   'Self-tracking axle' means an axle pivoted about a central point in such a way that it can describe a horizontal arc. For the purpose of this Directive, a self-tracking axle of the 'pivot steering' type is considered to be, and treated as, an axle fitted with steered wheels.

8. *Self-steered wheels*

   'Self-steered wheels' means wheels not actuated by the vehicle's steering device, which may swivel through an angle not exceeding 20° owing to the friction exerted by the ground.

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9. *Retractable axle*

   'Retractable axle' means an axle as defined in Annex I point 2.15 to Directive 97/27/EC.

10. *Unladen vehicle*

    'Unladen vehicle' means a vehicle in running order as defined in point 2.6 of Annex I to Directive 2007/46/EC of the European Parliament and of the Council ([1]).

([1]) OJ L 263, 9.10.2007, p. 1.

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11. *Tread*

'Tread' is the part of the tyre as defined in point 2.8 of Annex II to Directive 92/23/EEC.

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12. *Type of spray-suppression device*

'Type of spray-suppression device' means devices which do not differ with respect to the following main characteristics:

— the physical principle adopted in order to reduce emissions (water-energy absorption, air/water separator),

— materials,

— shape,

— dimensions (in so far as they may influence the behaviour of the material).

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13. *Semitrailer towing vehicle*

'Semitrailer towing vehicle' means a towing vehicle as defined in point 2.1.1.2.2 of Annex I to Directive 97/27/EC.

14. *Technically permissible maximum laden mass*

'Technically permissible maximum laden mass' means the maximum mass of the vehicle as defined in point 2.6 of Annex I to Directive 97/27/EC.

15. *Type of vehicle*

'Type of vehicle' means, in relation to spray suppression complete, incomplete or completed vehicles, which do not differ with respect to the following aspects:

— type of spray suppression device (installed on the vehicle),

— manufacturer's spray suppression system type designation.

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ANNEX II

REQUIREMENTS RELATING TO THE EEC COMPONENT TYPE-APPROVAL OF SPRAY-SUPPRESSION DEVICES

0. **General specifications**

0.1. Spray-suppression devices must be constructed in such a way that they operate properly when used normally on wet roads. Moreover, they must incorporate no structural or manufacturing defect detrimental to their proper functioning or behaviour.

1. **Tests to be carried out**

1.1. Depending on their physical operating principle spray-suppression devices are subjected to the relevant tests as described in Appendices 1 and 2 and must deliver the results required in item 4 of those Appendices.

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2. **Application for EC component type-approval**

2.1. The application for EC component type-approval pursuant to Article 7 of Directive 2007/46/EC of a type of spray-suppression device shall be submitted by the manufacturer.

2.2. A model for the information document is set out in Appendix 3.

2.3. The following shall be submitted to the technical service responsible for conducting the type-approval tests:

Four samples: three of which for tests and a fourth to be kept by the laboratory for any subsequent verification. The test laboratory may require further samples.

2.4. **Markings**

Each sample must be clearly and indelibly marked with the trade name or mark and an indication of the type and include a space that is large enough for the EC component type-approval mark.

3. **Granting of EC component type-approval**

3.1. If the relevant requirements are satisfied, EC type-approval pursuant to Article 10 of Directive 2007/46/EC shall be granted.

3.2. A model for the EC type-approval certificate is set out in Appendix 4.

3.3. An approval number in accordance with Annex VII to Directive 2007/46/EC shall be assigned to each type of spray-suppression device approved. The same Member State shall not assign the same number to another type of spray-suppression device.

3.4. Any spray-suppression device in conformity with a type approved pursuant to this Directive shall bear an EC component type-approval mark, so affixed as to be indelible and easily legible even when the device is fitted to the vehicle.

3.5. A symbol ‘A’ for devices of the energy-absorption type or ‘S’ for devices of the air/water separator type shall be added to the approval mark in accordance with point 1.3 of the Appendix of Annex VII to Directive 2007/46/EC.

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Appendix 1

Tests on spray-suppression devices of the energy-absorber type

1. *Principle*

   The aim of this test is to quantify the ability of a device to retain the water directed against it by a series of jets. The test assembly is intended to reproduce the conditions under which the device is to function when fitted to a vehicle as regards the volume and speed of the water thrown up from the ground by the tyre tread.

2. *Equipment*

   See Figure 8 in Annex V for a description of the test assembly.

3. *Test conditions*

3.1. The tests must be carried out in a closed room with a still-air environment.

3.2. The ambient temperature and the temperature of the test pieces must be 21 (± 3) °C.

3.3. De-ionized water is to be used.

3.4. The test pieces must be prepared for each test by wetting.

4. *Procedure*

4.1. Secure a 500 (+ 0/– 5) mm wide 750 mm high sample of the equipment to be tested to the vertical plate of the testing equipment, making sure that the sample lies well within the limits of the collector, and that no obstacle is able to deflect the water, either before or after its impact.

4.2. Set the water flow rate at 0,675 (+/– 0,01) l/s and direct at least 90 l, at most 120 l on to the sample from a horizontal distance of 500 (+/– 2) mm (Figure 8 of Annex V).

4.3. Allow the water to trickle from the sample into the collector. Calculate the percentage of water collected versus the quantity of water sprayed.

4.4. Carry out the test five times on the sample according to points 4.2 and 4.3. Calculate the average percentage of the series of five tests.

5. *Results*

5.1. The average percentage calculated in point 4.4 must be 70 % or higher.

5.2. If within a series of five tests the highest and lowest percentages of water collected depart from the average percentage by more than 5 %, the series of five tests must be repeated.

   If within a second series of five tests the highest and lowest percentages of water recovered again depart from the average percentage by more than 5 % and if the lower value does not satisfy the requirements of point 5.1, type-approval shall be refused.

5.3. Test whether the vertical position of the device influences the results obtained. If it is the case, the procedure described in points 4.1 to 4.4 must be repeated in the positions giving the highest and lowest percentage of water collected; the requirements of point 5.2 remain in force.

   The mean of the individual results shall then be taken to give the average percentage. this average percentage must be 70 or higher.

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Appendix 2

Test on spray-suppression devices of the air/water separator type

1. *Principle*

This test is intended to determine the effectiveness of a porous material intended to retain the water with which it has been sprayed by means of a pressurised air/water pulveriser.

The equipment used for the test must simulate the conditions to which the material would be submitted, with regard to the volume and speed of the water sprays produced by the tyres, if it were fitted to a vehicle.

2. *Equipment*

See figure 9 in Annex v for a description of the test assembly.

3. *Test conditions*

3.1. The tests must be carried out in a closed room with a still-air environment.

3.2. The ambient temperature and the temperature of the test pieces must be 21 (± 3) °C.

3.3. De-ionized water must be used.

3.4. The test pieces must be prepared for each test by wetting

4. *Procedure*

4.1. Secure a 305 × 100 mm sample vertically in the test assembly, check that there is no space between the sample and the upper curved plate and that the tray is properly in position. Fill the pulveriser tank with 1 ± 0,005 litres of water and place this as described in the diagram.

4.2. The pulveriser must be regulated as follows:

pressure (at pulveriser): 5 bar + 10 %/– 0 %

flowrate: 1 litre/minute ± 5 seconds

pulverisation: circular, 50 ± 5 mm in diameter at 200 ± 5 mm from the sample, nozzle 5 ± 0,1 mm in diameter.

4.3. Pulverise until there is no more water mist and note the time taken. Let the water flow out of the sample on to the tray for 60 seconds and measure the volume of water collected. Measure the quantity of water left in the pulveriser tank. Calculate the percentage by volume of water collected versus the volume of water pulverised.

4.4. Carry out the test five times and calculate the average percentage of the quantity collected. Check before each test that the tray, pulveriser tank and measuring vessel are dry.

5. *Results*

5.1. The average percentage calculated in point 4.4 must be 85 % or higher.

5.2. If within a series of five tests the highest and lowest percentages of water collected depart from the average percentage by more than 5 %, the series of five tests must be repeated. If within a second series of five tests the highest and lowest percentages of water recovered again depart from the average percentage by more than 5 %, and if the lower value does not satisfy the requirements of point 5.1, type-approval shall be refused.

5.3. Where the vertical position of the device influences the results obtained, the procedure described in points 4.1 to 4.4 must be repeated in the positions giving the highest and lowest percentages of water collected; the requirements of point 5.2 remain in force.

The requirement of point 5.1 remains in force in order to give the results of each test.

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Appendix 3

Information document No … relating to the EC component type-approval of spray suppression devices (Directive 91/226/EEC)

The following information, if applicable, must be supplied in triplicate and include a list of contents. Any drawings must be supplied in appropriate scale and in sufficient detail on size A4 or on a folder of A4 format. Photographs, if any, must show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance must be supplied.

0. GENERAL

0.1. Make (trade name of manufacturer):

0.2. Type:

0.5. Name and address of manufacturer:

0.7. In the case of components and separate technical units, location and method of affixing of the EC approval mark:

0.8. Address(es) of assembly plant(s):

1. DESCRIPTION OF THE DEVICE

1.1. A technical description of the spray-suppression device indicating its physical operating principle and the relevant test to which it must be subject:

1.2. The materials used:

1.3. Drawing(s) in sufficient detail and to an appropriate scale to enable this (or these) to be identified. The drawing must show the space intended for the EEC component type-approval mark:

Date

Signed

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Appendix 4

MODEL

(maximum format: A4 (210 × 297 mm))

EC TYPE-APPROVAL CERTIFICATE

Stamp of type-approval authority

Communication concerning:

— EC type approval

— Extension of EC type approval

— Refusal of EC type approval

— Withdrawal of EC type approval

of a type of a vehicle/component/separate technical unit (1) with regard to Directive 91/226/EEC, as last amended by Commission Directive 2010/19/EU (2)

Type-approval number:

Reason for extension:

SECTION I

0.1. Make (trade name of manufacturer):

0.2. Type:

0.3. Means of identification of type if marked on the vehicle/component/separate technical unit (1) (3)

0.3.1. Location of that marking:

0.4. Category of vehicle (4)

0.5. Name and address of manufacturer:

0.7. In the case of components and separate technical units, location and method of affixing of the EC approval mark:

0.8. Address(es) of assembly plant(s):

SECTION II

1. Additional information (where applicable): *see Addendum*

2. Technical service responsible for carrying out the tests:

3. Date of test report:

4. Number of test report:

5. Remarks (if any): *see Addendum*

6. Place:

7. Date:

8. Signature:

9. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

(1) Delete where not applicable.

(2) OJ L 72, 20.3.2010, p. 17.

(3) If the means of identification type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this type-approval certificate such characters shall be represented in the documentation by the symbol: "?" (e.g. ABC??123??).

(4) As defined in Annex II A to Directive 2007/46/EC.

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Addendum

to EC type-approval certificate No … concerning the component type-approval of spray suppression devices with regard to Directive 91/226/EEC as last amended by Directive 2010/19/EU

1. Additional information

1.1. Operating principle of device: energy-absorption/air/water separator ([1]):

1.2. Characteristics of spray-suppression devices (brief description, trademark or name, number(s):

5. Remarks (if any):

([1]) Delete where not applicable.

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ANNEX III

REQUIREMENTS RELATING TO THE EEC TYPE-APPROVAL OF A TYPE OF VEHICLE WITH REGARD TO THE FITTING OF SPRAY-SUPPRESSION SYSTEMS

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SCOPE

0.1. Category N and O vehicles, with the exception of off-road vehicles as defined in Annex II to Directive 2007/46/EC, shall be constructed and/or fitted with spray suppression systems in such a way as to meet the requirements laid down in this Annex. In case of chassis/cab vehicles, these requirements may only be applied to the wheels covered by the cab.

For vehicles of category N1 and N2 with a permissible maximum laden mass not exceeding 7,5 tonnes, the requirements of Directive 78/549/EEC [1] may be applied as alternative to the requirements of this Directive at the request of the manufacturer.

0.2. The requirements of this Annex relating to spray-suppression devices, as defined in point 4 of Annex I, are not mandatory for categories N, O_1 and O_2 vehicles with a permissible maximum laden mass not exceeding 7,5 tonnes, chassis/cab vehicles, unbodied vehicles or vehicles on which the presence of spray-suppression devices would be incompatible with their use. However, if such devices are fitted to those vehicles, they must conform to the requirements of this Directive.

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APPLICATION FOR EEC TYPE-APPROVAL

1.1. The application for EEC type-approval of a vehicle type with regard to the fitting of a spray-suppression system must be submitted by the vehicle manufacturer or by his authorized representative.

1.2. It must be accompanied by the following documents in triplicate, and by the following particulars:

1.2.1. a technical description of the spray-suppression system and one or more sufficiently detailed drawings on a scale suitable for identification.

1.3. A vehicle representative of the vehicle type to be approved, fitted with its spray-suppression system, must be submitted to the technical service conducting the approval tests.

EEC TYPE-APPROVAL

2. A certificate conforming to the model shown in the Appendix must be attached to the EEC type-approval certificate.

GENERAL REQUIREMENTS

3. **Axles**

3.1. *Lifting axles*

Where a vehicle is fitted with one or more lifting axles, the spray-suppression system must cover all the wheels when the axle is lowered and the wheels in contact with the ground when the axle is raised.

3.2. *Self-tracking axles*

Where a vehicle is fitted with a self-tracking axle, the spray-suppression system must satisfy the conditions applicable to non-steered wheels if mounted on the pivoting part. If not mounted on that part it must satisfy the conditions that are applicable to steered wheels.

[1] OJ L 168, 26.6.1978, p. 45.

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4. **Position of outer valance**

The distance ‘c’ between the longitudinal plane tangential to the outer tyre wall, apart from any tyre bulge near the ground, and the inner edge of the valance must not exceed 100 mm (Figures 1a and 1b of Annex V).

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5. **State of vehicle**

For the checking of compliance with this Directive the vehicle must be in the following state:

(a) it must be unladen and with the wheels in the straight-ahead position;

(b) in the case of semi-trailers, the loading surfaces must be horizontal;

(c) the tyres must be inflated to their normal pressure.

6. **Spray-suppression systems**

6.1. The spray-suppression system must meet the specifications set out in item 7 or 9.

6.2. The spray-suppression system for non-steered or self-steered wheels that are covered by the bodywork floor, or by the lower part of the load platform, must meet either the specifications set out in item 7 or 9 or else those in item 8.

SPECIFIC REQUIREMENTS

7. **Requirements concerning energy-absorption spray-suppression systems for axles fitted with steered or self-steering or non-steered wheels**

7.1. *Mudguards*

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7.1.1. The mudguards must cover the zone immediately above, ahead and behind the tyre or tyres in the following manner:

(a) in the case of a single or multiple axle, the forward edge (C) must extend forwards to reach a line O-Z where θ (theta) is no more than 45° above the horizontal.

The rearmost edge (Figure 2 of Annex V) must extend downwards in such a way as not to be more than 100 mm above a horizontal line passing through the centre of the wheel;

(b) in the case of multiple axles the angle θ relates only to the foremost axle and the requirement relating to the height of the rearmost edge applies only to the rearmost axle;

(c) the mudguard must possess a total width ‘q’ (Figure 1a of Annex V) at least adequate to cover the width of the tyre ‘b’ or the entire width of two tyres ‘t’ in the case of twin wheels, account being taken of the extremes for the tyre/wheel unit specified by the manufacturer. Dimensions ‘b’ and ‘t’ shall be measured at hub height, excluding any markings, ribs, protective bands, etc., on the tyre walls.

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7.1.2. The front side of the rear part of the mudguard must be fitted with a spray-reduction device complying with the specifications set out in Appendix 1 to Annex II. This material must cover the inside of the mudguard up to a height determined by a straight line running from the centre of the wheel and forming an angle of at least 30° with the horizontal (Figure 3).

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7.1.3. If the mudguards are made up of several components, when fitted, they must not incorporate any aperture enabling spray to exit while the vehicle is in motion. This requirement is deemed to be met if, when the vehicle is either laden or unladen, any radial jet running outwards from the wheel centre over the entire width of the tyre running surface

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and within the range covered by the mudguard always strikes against a part of the spray suppression system.

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7.2. *Outer valances*

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7.2.1. In the case of single axles, the lower edge of the outer valance may not be situated beyond the following distances and radii, as measured from the centre of the wheel, except at the lowest extremities that may be rounded (Figure 2 of Annex V).

Air suspension:

(a) Axles fitted with steered wheels or self-steering wheels: From the front edge (towards the front of the vehicle) (tip C) To the rear edge (towards the rear of the vehicle) (tip A)	$R_v \leq 1{,}5\ R$
(b) Axles fitted with non-steered wheels: From the front edge (tip C) To the rear edge (tip A)	$R_v \leq 1{,}25\ R$

Mechanical suspension

(a) general case } $R_v \leq 1{,}8\ R$

(b) non-steered wheels for vehicles with a technically permissible laden mass more than 7,5 t } $R_v \leq 1{,}5\ R$

where R is the radius of the tyre fitted to the vehicle, and Rv the distance, expressed as a radius, at which the lower edge of the outer valance is situated.

7.2.2. In the case of multiple axles the requirements laid down in point 7.2.1 do not apply between the vertical transversal planes passing through the centre of the first and the last axles where the outer valance may be straight in order to ensure the continuity of the spray suppression system. (Figure 4 of Annex V).

7.2.3. The distance between the uppermost and the lowermost points of the spray suppression system (mudguard and outer valance) measured in any cross section perpendicular to the mudguard (see figures 1b and 2 in Annex V) must extend to not less than 45 mm at all points behind a vertical line passing through the centre of the wheel or the first wheel in the case of multiple axles. This dimension may be gradually reduced in front of this line.

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7.2.4. No openings enabling spray to emerge when the vehicle is moving are allowed in the outer valances or between the outer valances and the other parts of the mudguards.

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7.2.5. The requirements of points 7.2.3 and 7.2.4 may not be respected locally when the valance is composed by different elements with relative movement.

7.2.6. Tractors for semi-trailers with a low chassis (defined in point 6.20 of standard ISO 612 of 1978), namely those which may have a coupling pin height in relation to the ground equal to or less than 1 100 mm, may be designed in such a way as to be exempted from the requirements of points 7.1.1.a, 7.1.3 and 7.2.4. In this regard, mudguards and valances may not cover the area immediately above the tyres of the rear axles, when these tractors are coupled to a semi-trailer, in order to avoid the spray-suppression system being destroyed. However, the mudguards and valances of these vehicles must conform to the requirements of the above points, in sectors more than 60° from the vertical line passing through the centre of the wheel, in front and behind these tyres.

▼M2

Those vehicles must therefore be designed in such a way as to meet the requirements set out in the first paragraph when they are operated without a semi-trailer.

In order to be able to meet those requirements, mudguards and valances may, for example, comprise a removable part.

▼B

7.3. *Rain flaps*

▼M2

7.3.1. The width of the flap must fulfil the requirement for 'q' in point 7.1.1(c), except where the flap is within the mudguards, in which case it must be at least equal in width to the tread of the tyre.

The width of the part of the rain flaps positioned beneath the mudguard must satisfy the condition laid down in this paragraph with a tolerance of 10 mm at each side.

▼B

7.3.2. The orientation of the flap must be basically vertical.

▼M2

7.3.3. The maximum height of the bottom edge must not exceed 200 mm (Figure 3 of Annex V).

This distance is increased to 300 mm in the case of the last axle where the radial distance of the lower edge of the outer valancing, Rv, does not exceed the dimensions of the radius of the tyres fitted to the wheels on that axle.

The maximum height of the bottom edge of the rain flap in relation to the ground, may be raised to 300 mm if the manufacturer deems it technically appropriate with regard to the suspension characteristics.

▼B

7.3.4. The rain flap must not be more than 300 mm from the rearmost edge of the tyre, measured horizontally.

7.3.5. In the case of multiple axles where distance 'd' between the tyres on adjacent axles is less than 250 mm, only the rear set of wheels must be fitted with rain flaps. There must be a rain flap behind each wheel when distance 'd' between the tyres on adjacent axles is at least 250 mm ►M2 (Figure 4 of Annex V) ◄.

7.3.6. Rain flaps must not be deflected by more than 100 mm towards the rear under a force of 3 N per 100 mm of flap width, applied to a point located 50 mm above the lower edge of the flaps.

7.3.7. The whole of the front face of the part of the rain flap having the minimum dimensions required must be fitted with a spray-suppression device that meets the specifications set out in Annex II, Appendix 1.

7.3.8. No openings enabling spray to emerge are allowed between the lower rear edge of the mudguard and the rain flaps.

7.3.9. Where the spray-suppression device meets the specifications relating to rain flaps (item 7.3), no additional rain flap is required.

8. **Requirements relating to spray-suppression systems fitted with energy-absorption spray-suppression devices for certain axles that are fitted with non-steered or self-steering wheels** ***(see item 6.2)***

8.1. *Mudguards*

8.1.1. Mudguards must cover the zone immediately above the tyre or tyres. Their front and rear extremities must extend at least to the horizontal plane that is tangent to the upper edge of the tyre or tyres (Figure 5). However, the rear extremity may be replaced by the rain flap, in which case this must extend to the upper part of the mudguard (or equivalent component).

8.1.2. All of the inner rear part of the mudguard must be fitted with a spray-suppression device that meets the requirements set out in Annex II, Appendix 1.

8.2. *Outer valances*

8.2.1. In the case of single or multiple axles where the distance between the adjacent tyres is at least 250 mm, the outer valance must cover the

▼B

surface extending from the lower to the upper part of the mudguard up to a straight line formed by the tangent to the upper edge of the tyre or tyres and lying between the vertical plane formed by the tangent to the front of the tyre and the mudguard or rain flap located behind the wheel or wheels (Figure 5b).

In the case of multiple axles an outer valance must be located by each wheel.

8.2.2. No openings enabling spray to emerge are allowed between the outer valance and the inner part of the mudguard.

8.2.3. Where rain flaps are not fitted behind each wheel (see item 7.3.5), the outer valance must be unbroken between the outer edge of the rain flap to the vertical plane that is tangent to the point furthest to the front of the tyre (Figure 5a) of the first axle.

8.2.4. The entire inner surface of the outer valance, the height of which must not be less than 100 mm, must be fitted with an energy-absorption spray-suppression device complying with the requirements of Annex II.

8.3. *Rain flaps*

These flaps must extend to the lower part of the mudguard and comply with items 7.3.1 to 7.3.9.

9. **Requirements concerning spray-suppression systems fitted with air/water separator spray-suppression devices for axles with steered and non-steered wheels**

9.1. *Mudguards*

9.1.1. Mudguards must comply with the requirements of item 7.1.1 (c).

9.1.2. Mudguards for single or multiple axles where the distance between the tyres on adjacent axles exceeds 300 mm must also comply with item 7.1.1 (a).

9.1.3. In the case, of multiple axles where the distance between the tyres on adjacent axles does not exceed 300 mm the mudguards must also conform to the model shown in Figure 7.

9.2. *Outer valances*

9.2.1. The lower edges of the outer valances must be fitted with air/water separator spray-suppression devices complying with the requirements of Annex II.

9.2.2. In the case of single or multiple axles where the distance between the tyres on adjacent axles exceeds 300 mm, the lower edge of the spray-suppression device fitted to the outer valance must have the following maximum dimensions and radii, starting from the centre of the wheel (Figures 6 and 7):

(a) Axles fitted with steered wheels or self-steering wheels: from the front edge (towards the front of the vehicle) (tip C at 30°) to the rear edge (towards the rear of the vehicle) (tip A at 100 mm)	Rv ≤ 1,05 R
(b) Axles fitted with non-steered wheels: from the front edge (tip C at 20°) to the rear edge (tip A at 100 mm)	Rv ≤ 1,00 R

where R = is the radius of tyre fitted to the vehicle;

Rv = the radial distance from the lowest edge of the outer valance to the centre of the wheel.

9.2.3. In the case of multiple axles where the distance between the tyres on adjacent axles does not exceed 300 mm, the outer valances located in the inter-axle spaces must follow the path specified in item 9.1.3, and must extend downwards in such a way as not to be more than 100 mm

▼B

above a horizontal straight line passing through the wheel centres (Figure 7).

9.2.4. The depth of the outer valance must extend to not less than 45 mm, at all points behind a vertical line passing through the centre of the wheel. This depth may be gradually reduced in front of this line.

9.2.5. No openings enabling spray to emerge are allowed in the outer valances or between the outer valances and the mudguards.

9.3. *Rain flaps*

9.3.1. Rain flaps must:

(a) comply with item 7.3 (Figure 3); or

(b) comply with items 7.3.1, 7.3.2, 7.3.5, 7.3.8 and 9.3.2 (Figure 6).

9.3.2. Spray suppression equipment complying with the specifications set out in Annex II, Appendix 2, must be fitted to the rain flaps referred to in item 9.3.1 (b), at least along the full edge.

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9.3.2.1. The lower edge of the spray-suppression device must be not more than 200 mm from the ground.

The maximum height of the bottom edge of the rain flap in relation to the ground, may be raised to 300 mm if the manufacturer deems it technically appropriate with regard to the suspension characteristics.

▼B

9.3.2.2. The spray-suppression device must be at least 100 mm deep.

9.3.2.3. Apart from the lower part, which includes the spray-suppression device, the rain flap as referred to in item 9.3.1 (b) must not bend by more than 100 mm towards the rear under the effect of a force of 3 N per 100 mm of width of the rain flap measured at the intersection of the rain flap with the spray-suppression device in its working position, applied at a distance of 50 mm above the lower edge of the rain flap.

9.3.3. The rain flap must not be more than 200 mm from the rearmost edge of the tyre, measured horizontally.

▼M2

10. **In the case of multiple axles, the spray-suppression system of one axle, which is not the furthest back, may not need to cover the entire width of the tread of the tyre when there is, locally, the possibility of interference between the spray-suppression system and the structure of the axles or of the suspension or of the undercarriage.**

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Appendix 1

INFORMATION DOCUMENT No … RELATING TO EC TYPE-APPROVAL OF A VEHICLE WITH RESPECT TO THE FITTING OF SPRAY-SUPPRESSION SYSTEMS (DIRECTIVE 91/226/EEC, AS LAST AMENDED BY DIRECTIVE 2010/19/EU) [1]

(For the Explanatory notes please refer to Annex I to Directive 2007/46/EC)

The following information, if applicable, must be supplied in triplicate and include a list of contents. Any drawings must be supplied in appropriate scale and in sufficient detail on size A4 or on a folder of A4 format. Photographs, if any, must show sufficient detail.

If the systems, components or separate technical units have electronic controls, information concerning their performance must be supplied.

0. GENERAL

0.1. Make (trade name of manufacturer):

0.2. Type:

0.2.1. Commercial name(s) (if available):

0.3. Means of identification of type, if marked on the vehicle ([b])

0.3.1. Location of that marking:

0.4. Category of vehicle ([c]):

0.5. Name and address of manufacturer:

0.8. Address(es) of assembly plant(s):

1. GENERAL CONSTRUCTION CHARACTERISTICS OF THE VEHICLE

1.1. Photographs and/or drawings of a representative vehicle:

1.3. Number of axles and wheels:

1.3.1. Number and position of axles with twin wheels:

1.3.2. Number and position of steered axles

2. MASSES AND DIMENSIONS ([f]) ([g])

(in kg and mm) (Refer to drawing where applicable)

2.1. Wheelbase(s) (fully loaded) ([g]) ([l]):

2.6. Mass in running order (maximum and minimum for each variant)

Mass of the vehicle with bodywork and, in the case of a towing vehicle of category other than M_1, with coupling device, if fitted by manufacturer, in running order, or mass of the chassis or chassis with cab, without bodywork and/or coupling device if the manufacturer does not fit the bodywork and/or coupling device (including liquids, tools, spare wheel, if fitted, and driver and, for buses and coaches, a crew member if there is a crew seat in the vehicle) ([h]) (maximum and minimum for each variant):

2.6.1. Distribution of this mass among the axles and, in the case of a semi-trailer or centre-axle trailer, load on the coupling point (maximum and minimum for each variant):

2.8. Technically permissible maximum laden mass stated by the manufacturer ([i]) ([3]):

9. BODYWORK

9.20. Spray-suppression system

9.20.0. Presence: yes/no/incomplete ([1])

9.20.1. Brief description of the vehicle with regard to its spray-suppression system and the constituent components:

([1]) For vehicles of category N1 and those of category N2 with a technically permissible maximum laden mass not exceeding 7,5 tons using the derogation of point 0.1 of Annex III to this Directive, the information document set out in Annex II to Directive 78/549/EEC may be used.

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9.20.2. Detailed drawings of the spray-suppression system and its position on the vehicle showing the dimensions specified in the Figures in Annex V to Directive 91/226/EEC and taking account of the extremes of tyre/wheel combinations:

9.20.3. Approval number(s) of spray-suppression device(s), if available:

Date, File

▼M2

Appendix 2

MODEL

(maximum format: A4 (210 × 297 mm))

EC TYPE-APPROVAL CERTIFICATE

Stamp of type-approval authority

Communication concerning:

— EC type approval (1)

— Extension of EC type approval (1)

— Refusal of EC type approval (1)

— Withdrawal of EC type approval (1)

of a type of a vehicle/component/separate technical unit with regard to Directive 91/226/EEC, as last amended by Directive 2010/19/EU (1)

Type-approval number:

Reason for extension:

SECTION I

0.1. Make (trade name of manufacturer):

0.2. Type:

0.3. Means of identification of type if marked on the vehicle/component/separate technical unit (1) (2)

0.3.1. Location of that marking:

0.4. Category of vehicle (2) (3)

0.5. Name and address of manufacturer:

0.7. In the case of components and separate technical units, location and method of affixing of the EC approval mark:

0.8. Address(es) of assembly plant(s):

SECTION II

1. Additional information (where applicable): See Addendum

2. Technical service responsible for carrying out the tests:

3. Date of test report:

4. Number of test report:

5. Remarks (if any): See Addendum

6. Place:

7. Date:

8. Signature:

9. The index to the information package lodged with the approval authority, which may be obtained on request, is attached.

(1) Delete where not applicable.

(2) If the means of identification type contains characters not relevant to describe the vehicle, component or separate technical unit types covered by this type-approval certificate such characters shall be represented in the documentation by the symbol: "?" (e.g. ABC??123??).

(3) As defined in Annex II A to Directive 2007/46/EC.

▼M2

Addendum

TO EC TYPE-APPROVAL CERTIFICATE No … CONCERNING THE TYPE APPROVAL OF A VEHICLE WITH REGARD TO DIRECTIVE 91/226/EEC AS LAST AMENDED BY DIRECTIVE 2010/19/EU

1. Additional information

1.1. Characteristics of the spray-suppression devices (type, brief description, trade mark or name, component type-approval number(s):

5. Remarks (if any):

▼B

ANNEX IV

CONFORMITY OF PRODUCTION

CESSATION OF PRODUCTION

1. **Conformity of production**

1.1. Any spray-suppression device bearing the EEC component type-approval mark must conform to the type that has been approved. The authority issuing the EEC type-approval mark keeps one sample which, together with the EEC component type-approval certificate, may be used to establish whether the devices marketed which bear the EEC component type-approval mark meet the stated requirements.

1.2. A type of device is defined by the model and descriptive documents lodged at the time of application for EEC component type-approval. Devices whose characteristics are identical to those of the pattern device and whose other components do not differ from those of the pattern device except for variants not affecting the properties referred to in this Annex may be considered as belonging to the same type.

1.3. The manufacturer carries out routine checks in order to guarantee the conformity of production of the type that has been approved.

To this end the manufacturer must:

— either have available a laboratory which is sufficiently well-equipped for the execution of the essential tests, or

— have the production-conformity tests carried out by an approved laboratory.

The results of the production conformity checks are made available for inspection by the competent authorities for at least one year.

1.4. The competent authorities may also conduct spot checks.

1.5. Conformity of production with the type of device that has been approved must be checked under the conditions and in accordance with the methods provided for in Annex II.

At the request of the authorities which have granted component type-approval, manufacturers shall provide them with devices of the type previously type-approved for the purpose of tests or conformity checks.

1.6. Devices are deemed to conform if 9 out of 10 samples chosen at random satisfy the requirements of section 4 of Annex II, Appendices 1 and 2.

1.7. If the condition specified in item 1.6 is not satisfied, a further 10 samples chosen at random must be examined.

The average of all measurements taken must be in conformity with the specifications of item 4 of Annex II, Appendices 1 and 2, and no individual measurement must be less than 95 % of the value specified.

2. **Cessation of production**

An EEC component type-approval holder ceasing production must forthwith inform the competent authorities of that fact.

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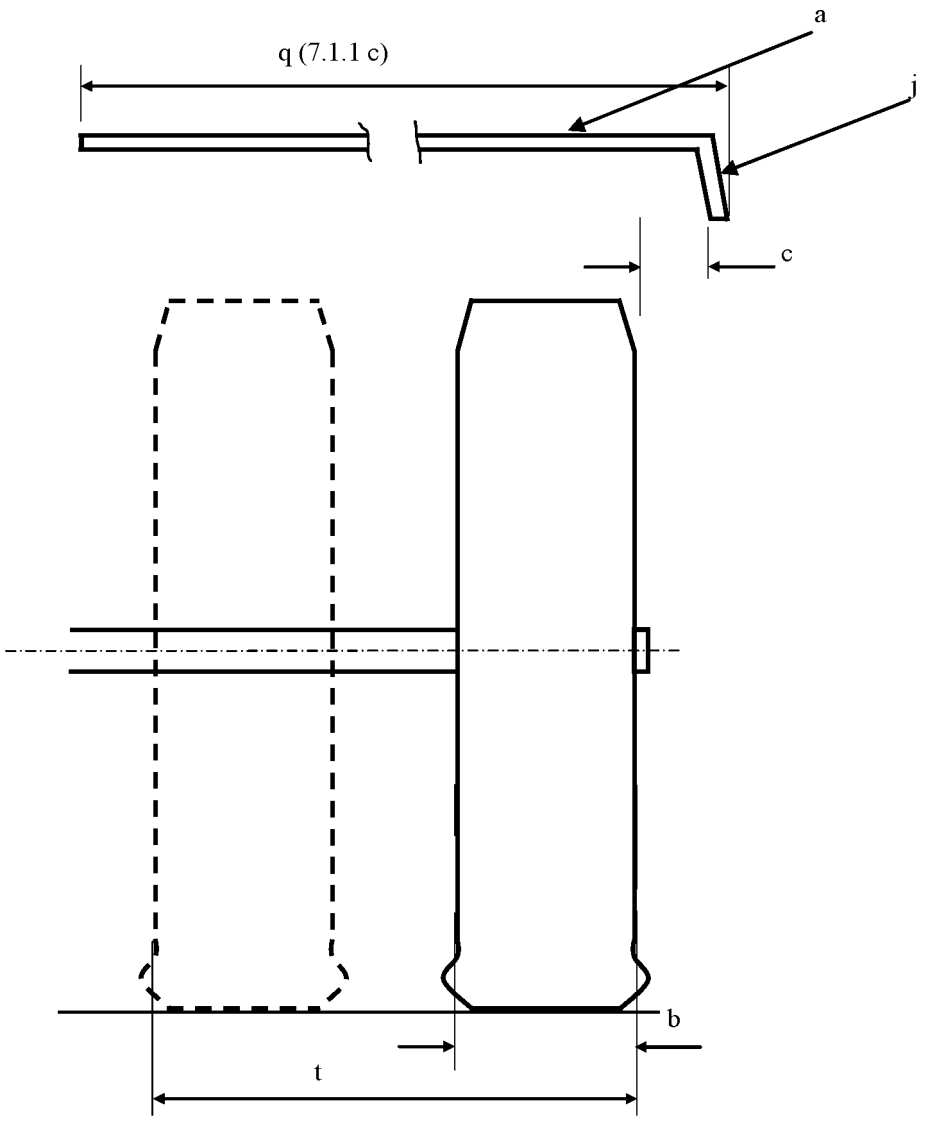
ANNEX V

FIGURES

Figure 1a

Width (q) of mudguard (a) and position of valance (j)



Note: The figures refer to the corresponding items in Annex III.

Figure 1b

Example of measurement of the outer valance

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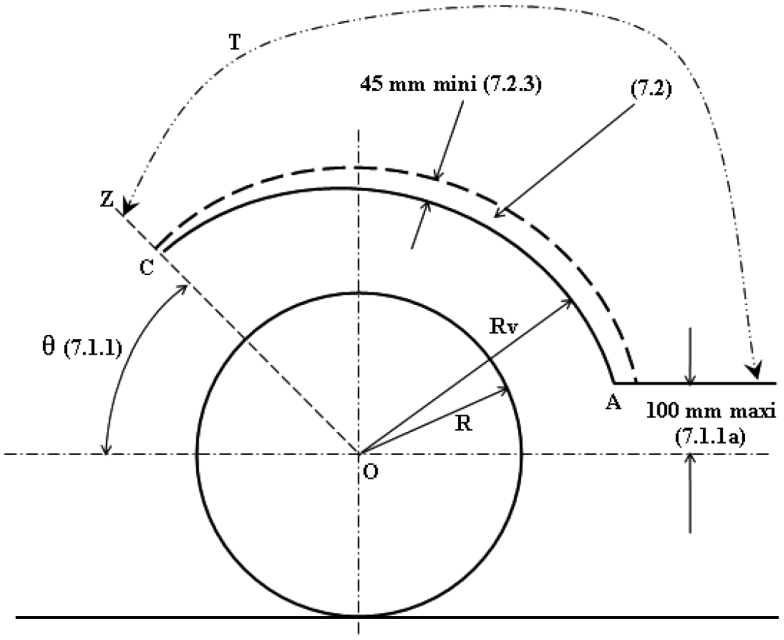
Figure 2

Dimensions of mudguard and outer valance

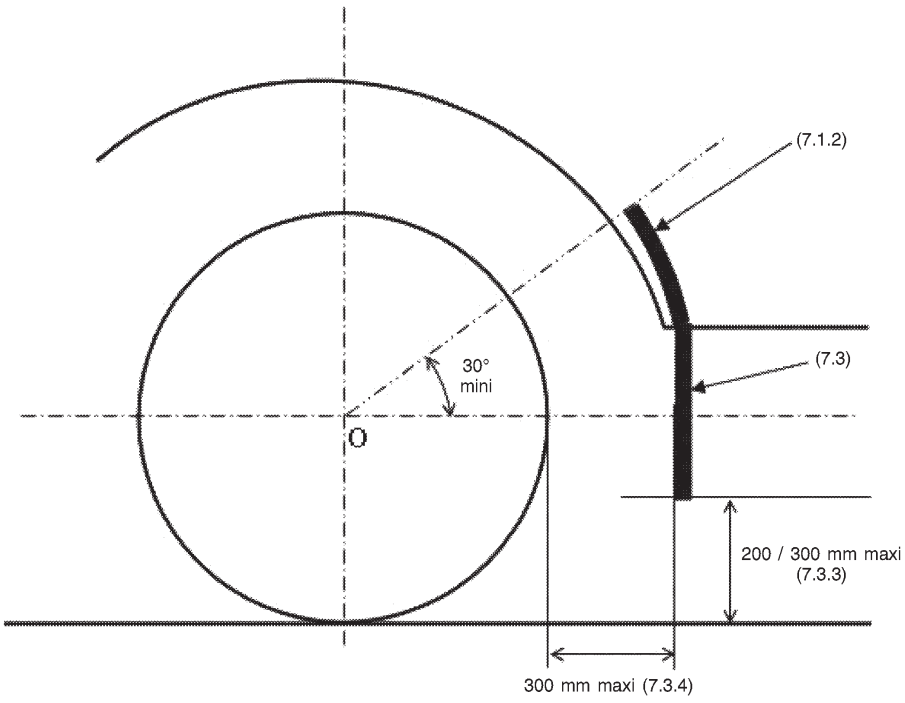


Note

1. The figures quoted relate to the corresponding items in Annex III.
2. T: extent of mudguard.

Figure 3

Position of mudguard and rain flap

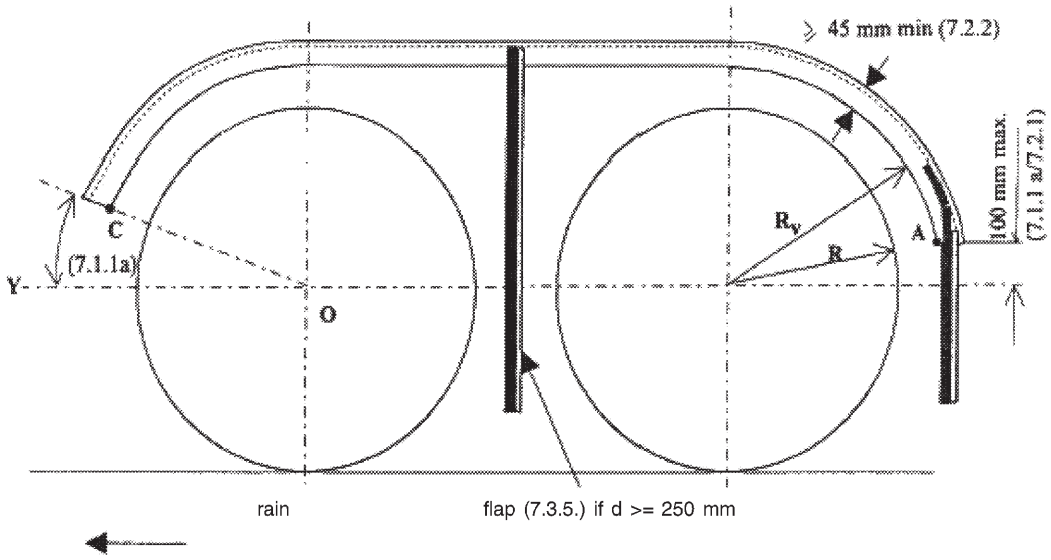


Note: The figures quoted relate to the corresponding items in Annex III.

▼M2

Figure 4

Diagram showing assembly of a spray-suppression system (mudguard, rain flap, outer valance) incorporating spray-suppression devices (energy absorbers) for multiple axles

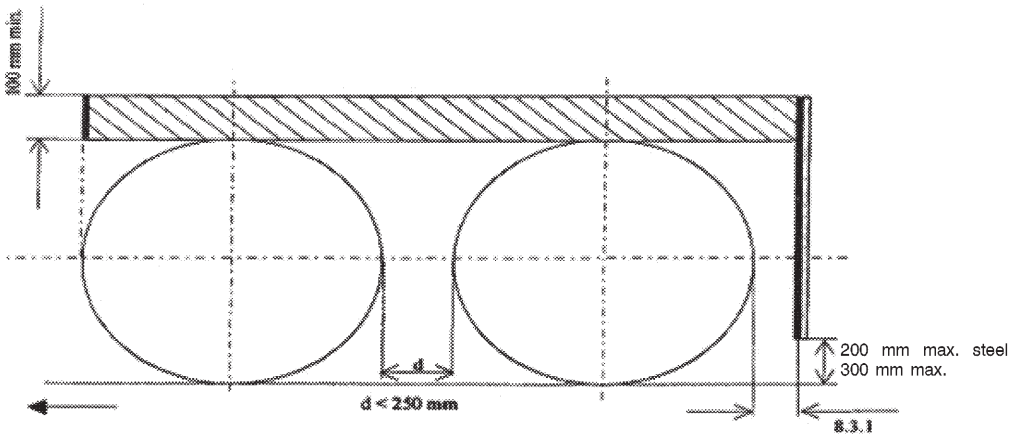


▼M2

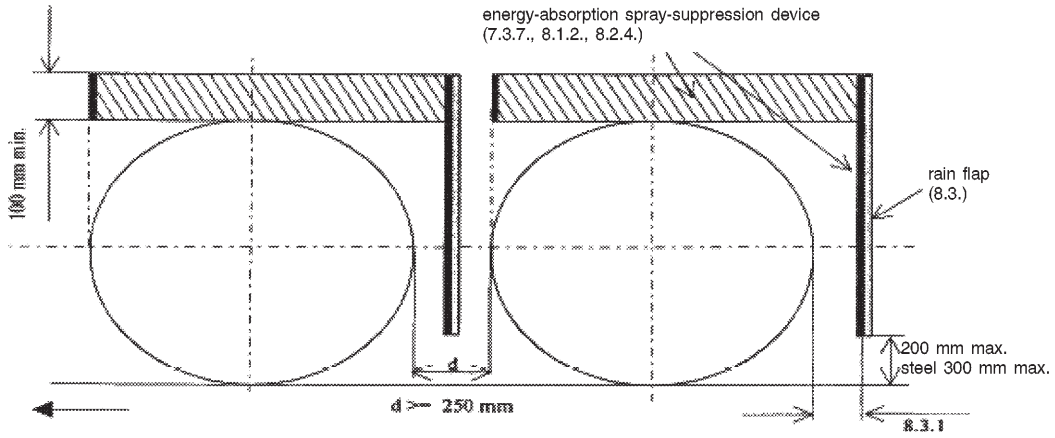
Figure 5

Diagram showing assembly of a spray-suppression system incorporating spray-suppression devices (energy absorbers) for axles fitted with non-steered or self-steering wheels

(Annex III — items 6.2 and 8)



(a) Multiple axles where the distance between the tyres is less than 250 mm.

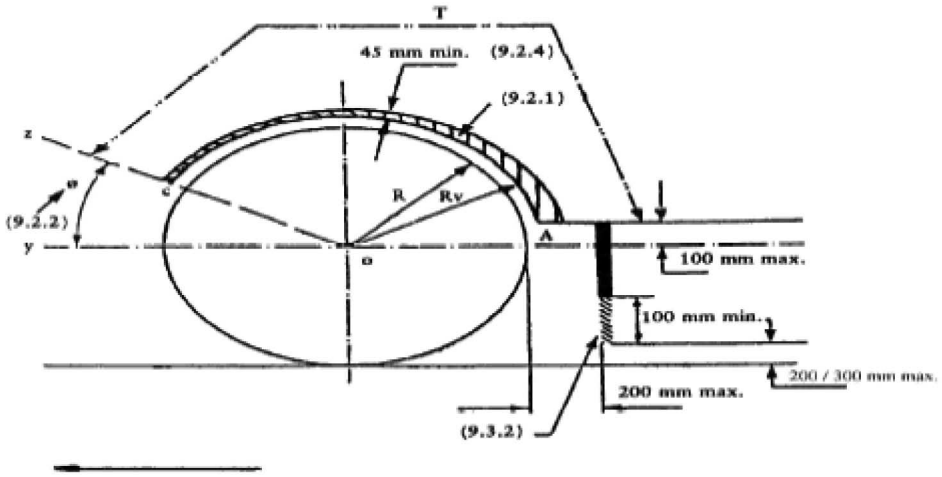


(b) Single axles or multiple axles where the distance between the tyres is not less than 250 mm.

▼M2

Figure 6

Diagram showing assembly of a spray-suppression system incorporating spray-suppression devices fitted with air/water separators for axles fitted with steered, self-steering or non-steered wheels



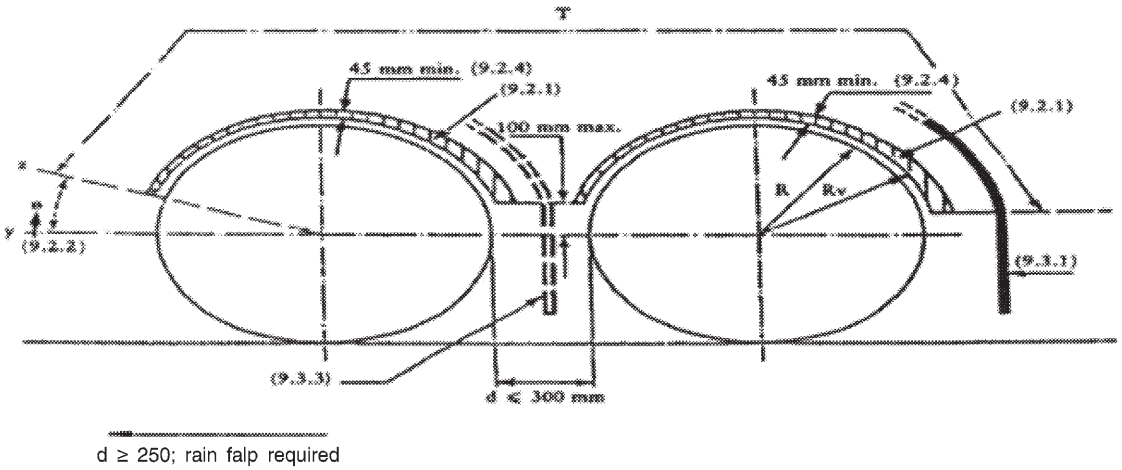
Note

1. The figures relate to the corresponding items in Annex III.

2. T: extent of mudguard.

Figure 7

Diagram showing assembly of a spray-suppression system incorporating spray-suppression devices (mudguard, rain flap, outer valance) for multiple axles where the distance between the tyres does not exceed 300 mm



Note

1. The figures relate to the corresponding items in Annex III.

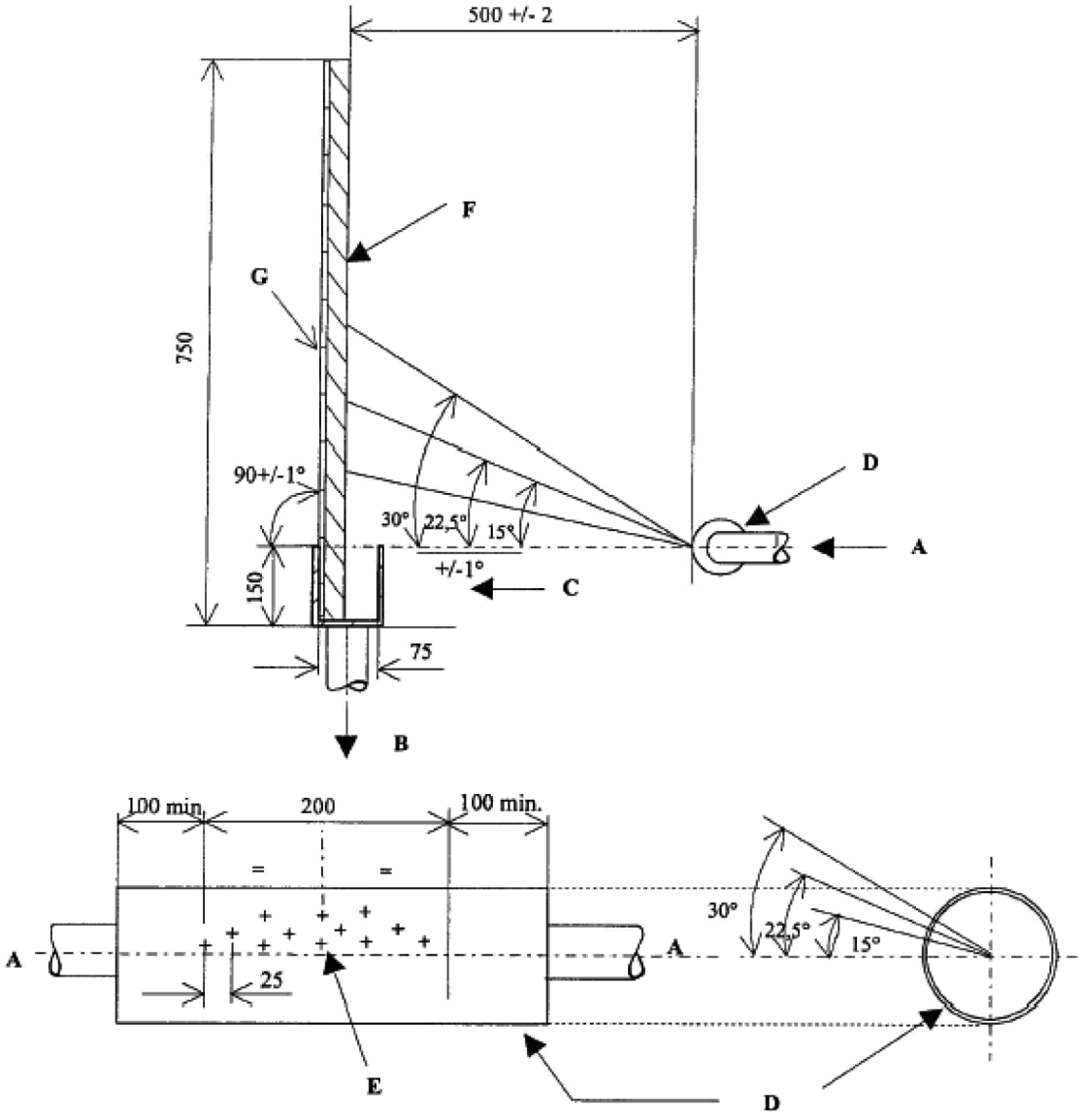
2. T: extent of mudguard.

▼M2

Figure 8

Test assembly for energy absorption spray-suppression devices

(Annex II, Appendix 1)



Note

A = water supply from pump

B = flow towards collector tank

C = collector with inside dimension of 500 (+ 5/– 0) mm length and 75 (+ 2/– 0) mm width

D = stainless steel pipe, external diameter 54 mm, wall thickness 1,2 (+/– 0,12) mm, inside and outside surface roughness Ra between 0,4 and 0,8 μm

E = 12 cylindrical radially drilled holes with burr-free square edges. Their diameter, measured on the inside and on the outside of the tube, is 1,68 (+ 0,010/– 0) mm

F = 500 (+ 0/– 5) mm-wide sample to be tested

G = rigid flat plate

All linear dimensions are shown in millimetres.

▼M2

Figure 9

Test assembly for air/water separator spray-suppression devices

(Annex II, Appendix 2)