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1958 Agreement:
Consideration of proposals for new UN Regulations submitted by the Working Parties subsidiary to the World Forum, if any

Proposal for a new UN Regulation No. [183] on Advanced Driver Distraction Warning system

Submitted by the Working Party on General Safety Provisions *

The text reproduced below was adopted by the Working Party on General Safety Provisions (GRSG) at its 130th session (ECE/TRANS/WP.29/GRSG/109, para. 44). It is based on GRSG-130-38. It is submitted to the World Forum for Harmonization of Vehicle Regulations (WP.29) and to the Administrative Committee (AC.1) for consideration at their March 2026 sessions.

* In accordance with the programme of work of the Inland Transport Committee for 2026 as outlined in proposed programme budget for 2026 (A/80/6 (Sect. 20), table 20.7), the World Forum will develop, harmonize and update UN Regulations in order to enhance the performance of vehicles. The present document is submitted in conformity with that mandate.

Regulation No. [183]*

Uniform provisions concerning the approval of a vehicle type with regard to an Advanced Driver Distraction Warning (ADDW) system

Contents

* The Regulation number will be known when this UN Regulation enters into force. [183] will be replaced by the Regulation number once determined.

0. Introduction

0.1. This UN Regulation in its original form (00 series of amendments) is closely aligned with the EU Commission Delegated Regulation (EU) 2023/2590 for advanced driver distraction warning systems, with minor differences including for clarity and/or editorial corrections when relevant. Some reference material also came from the document titled "ADDW Q&A: Answers to the questions raised by Stakeholders on the application of the rules on Advanced Driver Distraction Warning set out in the Delegated Regulation (EU) 2023/2590".

0.2. Distraction is considered a serious and increasing road safety problem across the world. When a driver is distracted, their attention is diverted away from activities critical for safe driving and toward a competing activity, which impairs performance. A driver's state during a distraction event is typically transient, and as such distraction may equally occur upon commencement of driving and/or at any other time during the driving journey.

0.3. A common form of distraction is "visual distraction", for example where a driver is reading a text message on a mobile phone or information on a vehicle console menu or control. In such cases, the visual distraction may be accompanied by "manual distraction", where the driver is holding and/or operating a device or control other than one required for safe driving.

0.4. This regulation targets the detection of relatively long (rather than intermittent) visual distraction events within a specific area of the vehicle cabin. It does not address visual distraction outside of this specific area, intermittent (short duration) distraction, or cognitive distraction. It is anticipated that in future series of amendments of this regulation, the technical requirements will be further developed to account for ongoing developments in driver distraction warning technologies, including to improve the effectiveness of these systems and increase road safety benefits.

0.5. The effects of driver impairment from distraction can include increased reaction times and difficulty maintaining a constant speed and/or lane position. This presents a considerable safety hazard during driving in high density traffic and urban areas, as well as during more open highway type conditions at increased speeds. Further, there is a considerable risk of a distraction event occurring across this spectrum of driving conditions.

0.6. The severity of distraction related crashes can be particularly high, as drivers that are distracted are less likely to react effectively to reduce the severity of an impending impact (e.g. braking, steering to avoid serious impact, etc.).

0.7. An Advanced Driver Distraction Warning (ADDW) system can be used to directly monitor the driver's visual attention (e.g. by use of cameras to determine the direction of the driver's gaze within the vehicle cabin). The system will be able to provide a warning if the driver is assessed as distracted.

0.8. There are some subgroups of vehicles where the benefit of an ADDW system may be more limited because they are primarily used in other conditions than high density traffic and highways (e.g. category G vehicles, construction vehicles, etc.). In some cases (e.g. vehicles of category G, construction vehicles mainly used in off-road areas and gravel tracks, military vehicles) the operating environment and/or manner in which the vehicles are used may lead to either a high number of distraction warnings in situations where the actual safety risk is not significant, or increased difficulty in reliable detection of distraction events. Regardless from the benefit, there may also be some vehicle types for which the installation of an ADDW system would be technically difficult or not feasible (e.g. special purpose vehicles).

0.9. Paragraph 1.2. states that this Regulation is without prejudice to requirements of national or regional laws related to privacy, data protection and personal data processing. This means that any Contracting Party applying this regulation may prescribe any additional such requirements through its laws. Technical Services and Approval Authorities will not assess compliance with any such regional or national laws as part of an application for type approval of a vehicle type with regard to its ADDW system. This is a matter for the relevant regional and/or national authorities, as well as vehicle manufacturers.

For example, an ADDW system may use data from cameras which monitor the vehicle occupants. Contracting Parties may choose to specify requirements in regional or national law to prevent this data from being used to confirm the unique identification of any natural person.

This could be achieved through more general privacy laws, and/or specific technical requirements, including for example to keep any data within a closed-loop system for no longer than is needed for the system to perform its safety function, and to prevent unauthorised access. Contracting Parties should also consider the possibility that biometric personal data, and/or the storage of historical data of a particular driver, could be used to improve the performance of the ADDW system. Such systems could for example seek permission from a driver and this request may be accompanied by explanatory information of the system changes that will be implemented and the reasons for those changes.

0.10. [Reserved].

1. Scope

1.1. This Regulation applies to vehicles of category M and N.[1]

1.2. This Regulation is without prejudice to requirements of national or regional laws related to privacy, data protection and personal data processing.

1.3. This Regulation does not apply to vehicles of category X and Y.[1]

2. Definitions

For the purposes of this Regulation:

2.1. *"Advanced Driver Distraction Warning (ADDW) system"* means a system that assesses the driver's visual attention and warns the driver via the vehicle's Human-Machine Interface when assessed to be distracted.

2.2. *"Approval of a vehicle type"* means the full procedure whereby a Contracting Party to the Agreement certifies that a vehicle type meets the technical requirements of this Regulation.

2.3. *"Biometric personal data"* means data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allow or confirm the unique identification of that natural person, such as facial images or fingerprint data.

2.4. *"Human-Machine Interface (HMI)"* means the user interface of the vehicle that allows the human to engage and interact with the software components of the vehicle, including for observation of their status.

2.5. *"Non-nominal situation"* means a situation where the ADDW system is affected by driver-related, vehicle-related, environment-related or other elements, and which remain within the system boundary limits declared in the manufacturer's documentation package described in Annexes 3 and 4.

2.6. *"Ocular reference point"* means the unique eye reference used in vehicle design.

2.7. *"Trigger behaviour"* means the driver action for which the ADDW system monitors and provides a warning to the driver once this action happens.

2.8. *"Vehicle type with regard to its ADDW system"* means a category of vehicles which do not differ in such essential respects such as:

(a) the manufacturer's trade name or mark;

(b) the type and design of the ADDW system, including but not limited to:

(i) the method(s) used in assessment of a distracted driver;

(ii) the functionality and minimum performance of the sensor(s) used in the ADDW system;

(iii) the warning system methods, strategy and characteristics; and

(c) the vehicle features and systems which significantly influence the functioning or performance of the ADDW system.

[1] As defined in the Consolidated Resolution on the Construction of Vehicles (R.E.3) (document TRANS/WP.29/78/Rev.8, para.2)-https://unece.org/transport/vehicle-regulations/wp29/resolutions

3. Application for approval

3.1. The application for approval of a vehicle type with regard to its ADDW system shall be submitted by the vehicle manufacturer or by its authorized representative.

3.2. The application for approval of a vehicle type with regard to its ADDW system shall be accompanied by the following:

(a) the numbers and/or symbols identifying the vehicle type;

(b) a description of the vehicle type, including in particular with regard to the items mentioned in paragraph 2.8.;

(c) a documentation package detailing how the ADDW system functions, in accordance with Annex 3; and

(d) a documentation package validating the effectiveness of the ADDW system, in accordance with Annex 4.

3.2.1. The documentation packages set out in Annexes 3 and 4 shall be provided to the Approval Authority and Technical Service prior to the execution of the spot-check testing set out in Annex 5.

3.3. A vehicle which is representative of the vehicle type to be approved shall be submitted to the Technical Service responsible for assessing the technical documentation submitted by the manufacturer and conducting the verification tests.

4. Approval

4.1. If the vehicle type submitted for approval pursuant to this Regulation meets the technical requirements of paragraph 5. below, approval of that vehicle type shall be granted.

4.1.1. The conformity of the vehicle type to the technical requirements in paragraph 5. below, shall be demonstrated by the manufacturer through the submission of documentation packages in accordance with Annex 3 and Annex 4.

4.1.2. The Technical Service shall verify the vehicle type submitted for approval pursuant to this Regulation meets the technical requirements of paragraph 5. below and passes the spot-check testing set out in Annex 5.

4.2. An approval number shall be assigned to each approved type in accordance with Schedule 4 of the Agreement (E/ECE/TRANS/505/Rev.3). The same Contracting Party shall not assign the same number to the same vehicle type equipped with another type of ADDW system, or to another vehicle type.

4.3. Notice of approval, extension, refusal or withdrawal of approval pursuant to this Regulation shall be communicated to the Contracting Parties to the Agreement applying this Regulation by means of a form conforming to the model in Annex 1.

4.4. There shall be affixed, conspicuously and in a readily accessible place specified on the approval form, to every vehicle conforming to a vehicle type approved under this Regulation, an international approval mark conforming to the model described in Annex 2, consisting of:

(a) a circle surrounding – the letter "E" followed by the distinguishing number of the country which has granted approval;[2] and

(b) the number of this Regulation, followed by the letter "R", a dash and the approval number to the right of the circle prescribed in this paragraph.

4.4.1. If the vehicle conforms to a vehicle type approved, under one or more other Regulations annexed to the Agreement, in the country which has granted approval under this Regulation, the symbol prescribed in paragraph 4.4. need not be repeated; in this case the Regulation and approval numbers and the additional symbols of all the Regulations under which approval has been granted in the country which has granted approval under this Regulation shall be placed in vertical columns to the right of the symbol prescribed in paragraph 4.4.

4.5. The approval mark shall be clearly legible and shall be indelible.

4.6. The approval mark shall be placed close to or on the vehicle data plate.

5. Technical requirements

5.1. Applicability

5.1.1. Any vehicle fitted with an ADDW system meeting the definition in paragraph 2.1. above, shall meet the requirements set out in paragraphs 5.2. to 5.7. below.

5.2. General technical requirements

5.2.1. An ADDW system shall determine when the driver’s visual attention is not directed towards the driving tasks and alert the driver through the vehicle HMI.

5.2.2. The ADDW system shall be designed to minimize the system error rate (false positive) under real driving conditions.

5.2.3. The ADDW system and any other system which warns the driver when they are drowsy, shall be designed to avoid overlap and not prompt the driver separately and concurrently, or in a confusing manner, where one action triggers both systems.

5.2.4. The effectiveness of the ADDW system shall not be adversely affected by magnetic or electrical fields. This shall be demonstrated by fulfilling the technical requirements and respecting the transitional provisions of the 06 or later series of amendments to UN Regulation No. 10.

5.3. ADDW system control

5.3.1. The ADDW system shall be automatically activated above the speed of 20 km/h, unless specified otherwise by the requirements laid down in paragraphs 5.3.2. to 5.3.6. below. The vehicle manufacturer may choose to set the automatic activation of the ADDW system at a lower speed.

5.3.1.1. A cumulative period of up to 1 minute of driving at speeds ≥ 20 km/h is permitted for the system to begin measuring the driver state and to calibrate itself.

5.3.2. It shall be possible for the driver to manually deactivate either the ADDW system warning or the ADDW system, depending on which of the two possibilities (or both) the vehicle manufacturer chose to make possible.

[2] The distinguishing numbers of the Contracting Parties to the 1958 Agreement are reproduced in Annex 3 to the Consolidated Resolution on the Construction of Vehicles (R.E.3), document ECE/TRANS/WP.29/78/Rev.8 - https://unece.org/transport/vehicle-regulations/wp29/resolutions

5.3.3. Where pre-defined by the manufacturer, the ADDW system may be automatically deactivated in the following situations:

(a) when another system takes over the entire dynamic driving task on a sustained basis;

(b) when a driver-operated vehicle system, assisting a human driver in controlling the longitudinal and lateral motion on a sustained basis, is active and contains a driver monitoring system that will comprehensively assess the driver's visual attention or visual disengagement and warn the driver via the vehicle's HMI when they are assessed to be distracted – for example a driver state monitoring system in accordance with UN Regulation No. 171 (on driver control assistance systems).

5.3.4. The ADDW system shall be automatically reactivated as soon as the conditions that led to its automatic deactivation are no longer present.

5.3.4.1. In the context of paragraph 5.3.3. (a), the dynamic driving task shall include all real time operational functions and tactical functions required to operate the vehicle, excluding strategic functions such as trip scheduling, and selection of destinations and waypoints, and including the following subtasks:

(a) lateral vehicle motion control via steering (operational);

(b) longitudinal vehicle motion control via acceleration and deceleration (operational);

(c) monitoring the driving environment via object and event detection, recognition, classification, and response preparation (operational and tactical);

(d) object and event response execution (operational and tactical);

(e) manoeuvre planning (tactical); and

(f) enhancing conspicuity via lighting, sounding the horn, signalling or gesturing (tactical).

5.3.5. The ADDW system shall not be automatically deactivated under conditions laid down in paragraph 5.7., but the ADDW system's distraction warnings may be automatically deactivated. The distraction warning emission should be automatically reactivated as soon as the conditions that led to its deactivation are no longer present.

5.3.6. The emission of distraction warnings by the ADDW system may be automatically suppressed under conditions in which other driving assistance systems are warning about an imminent danger or a critical situation, but it is not a condition for automatic deactivation of the ADDW system.

5.3.6.1. The distraction warning function should be automatically reinstated as soon as the conditions that led to its suppression are no longer present.

5.3.7. The ADDW system, including HMI warnings, shall be automatically reinstated to normal operation mode at each initiation of the powertrain[3,4]. Other automatic reinstatement conditions may be introduced and added by the vehicle manufacturer.

5.4. Environmental conditions

5.4.1. The ADDW system shall operate effectively during both day and night.

[3] A new engine start (or run cycle) which is performed automatically, for example by the operation of a stop/start system, is not considered as an initiation of the powertrain.

[4] As defined in Mutual Resolution No. 2 (M.R.2) of the 1958 and the 1998 Agreements - Containing Vehicle Propulsion System Definitions, see document ECE/TRANS/WP.29/1121.

5.4.2. The ADDW system shall operate in absence of weather conditions limiting the system's operation. The manufacturer is required to provide documentation that includes the weather and lighting conditions in which the system works effectively, in accordance with Annex 4 paragraph 1. (c).

5.5. Monitoring driver distraction

5.5.1. The presence of the driver's gaze shall be monitored by the ADDW system in the areas of interest referred to in paragraphs 5.5.1.4. to 5.5.1.6.

5.5.1.1. The driver's gaze is considered to start from the ocular reference point defined as follows:

5.5.1.2. For M and N category vehicles, the ocular reference point shall be the centre of the driver's ocular points, as defined in UN Regulation No. 46 (on devices for indirect vision) incorporating the 04 or later series of amendments. The coordinate of the eye point is, therefore, 635 mm vertically above point R of the driver's seat (the "R" point being already established in relation to the fiducial marks defined by the vehicle manufacturer).

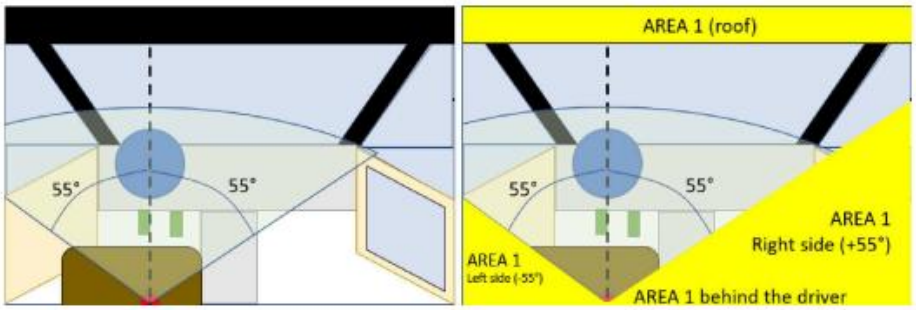
5.5.1.3. Alternatively, for M_2, M_3, N_2, and N_3 category vehicles not based on an M_1 platform, the ocular reference point may be the eye point E2 as defined in UN Regulation No. 167 (on motor vehicles with regard to their direct vision) incorporating the 00 or later series of amendments. Eye point E2 is a point representing the midpoint between the centre of the driver's left and right eye, E2 is defined by an offset from the accelerator heel point of 1163.25 mm in the Z (vertical) axis, and 678 mm rearward in the X (longitudinal) axis. The position of E2 in the Y (lateral) axis is on a vertical plane, parallel to the median longitudinal plane and passing through the centre of the driver's seat.

5.5.1.4. Area 1 is designated as overlap of the following zones (refer to Figure I):

(a) the roof of the vehicle;

(b) any area in the vehicle which is outside (with respect to the forward-looking direction of the driver considered at 0° of orientation) of the two vertical planes, one, rotated +55° (to the right) and one rotated -55° (to the left) in relation to the longitudinal direction of the vehicle, both planes intersecting in the ocular reference point as defined below.

Figure I
Designation of Area 1 (showing left-hand driving situation)

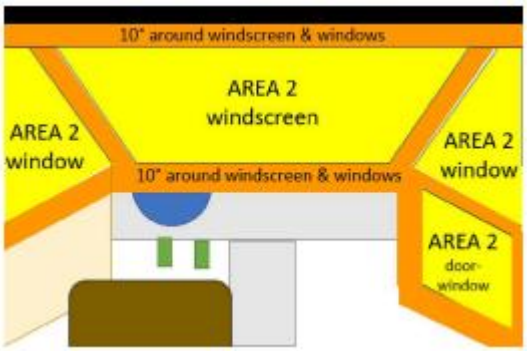


5.5.1.5. Area 2 is designated as union of the zones listed below (refer to Figure II):

(a) the area of the windscreen and windows;

(b) 10° around the area of the windscreen and windows as seen from the ocular reference point.

Figure II
Designation of Area 2 (showing left-hand driving situation)



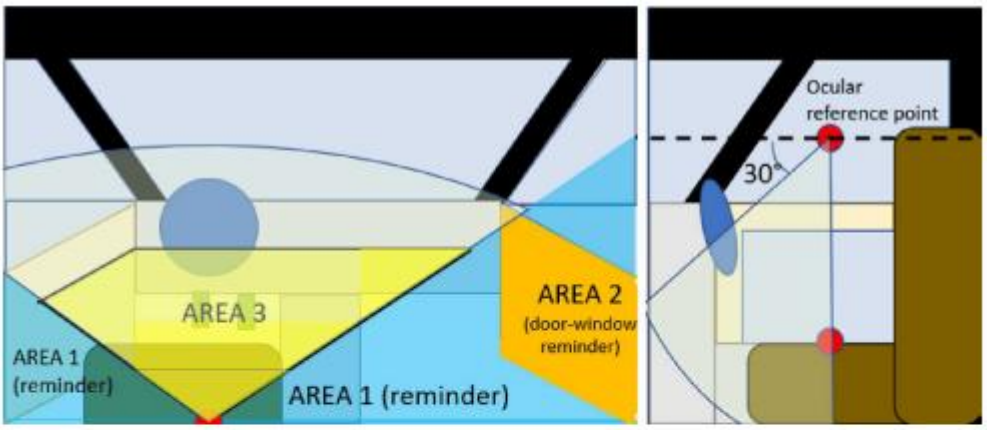
5.5.1.6. Area 3 is designated by any area below a plane, 30° downward from the driver's ocular reference point and by the interaction with Area 1 and Area 2 described hereafter (refer to Figure III):

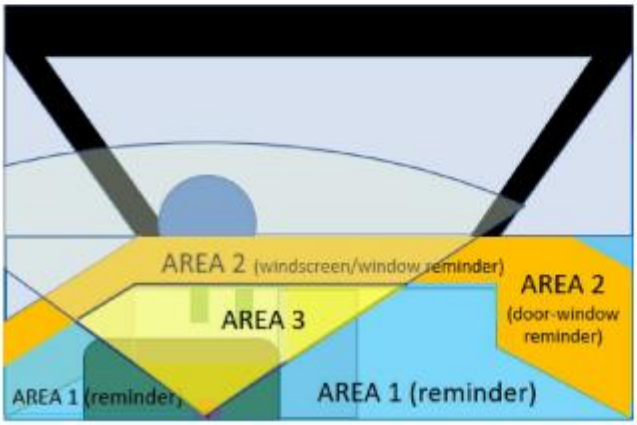
(a) by default, any area considered in Area 1 is excluded from Area 3;

(b) by default, any area considered in Area 2 is excluded from Area 3;

(c) the vehicle manufacturer can choose to include part of the area from Area 1 and/or Area 2 to the Area 3.

Figure III
Designation of Area 3 (showing left-hand driving situation)





Note: the bottom image represents the case when Area 2 (windscreen plus 10°) lowest part is below the 30° vertical view angle.

5.5.1.7. Adding or excluding an area from another is always done from the perspective of the driver's ocular reference point. That means that it is the angular coordinate which must be used when projecting an area onto another one, and not the spatial coordinate.

After the projection is done, the spatial coordinate may be used to describe the resulting area and simplify its description.

5.5.2. Warning triggers and situations covered by the ADDW system

5.5.2.1. A warning shall be provided to the driver as soon as both of the following conditions apply:

(a) vehicle's speed at 50 km/h or above;

(b) the gaze of the driver in the Area 3 lasts for a maximum time of 3.5 seconds in the nominal situation. Non-nominal situations set out in Annex 3, paragraph 1.1., may extend the maximum nominal situation's time limit by an additional 1.5 seconds.

Whenever the conditions listed in (b) are tested, they shall implement an additional buffer time to compensate for the technical measurement uncertainties – refer to Annex 5, paragraph 9.

5.5.2.2. A warning shall be provided to the driver as soon as both of the following conditions apply:

(a) vehicle's speed at 20 km/h or above, and less than 50 km/h;

(b) the gaze of the driver in the Area 3 lasts for a maximum time of 6 seconds in the nominal situation. Non-nominal situations set out in Annex 3, paragraph 1.1., may extend the maximum nominal situation's time limit by an additional 1.5 seconds.

Whenever the conditions listed in (b) are tested, they shall implement an additional buffer time to compensate for the technical measurement uncertainties – refer to Annex 5, paragraph 9.

5.5.2.3. The length of time during which the gaze of the driver is directed at the Area 3 shall be counted when the ADDW system is activated. This length of time is measured regardless of the speed of the vehicle, as long as the ADDW system is activated and able to measure it.

5.5.2.4. The length of time during which the gaze of the driver is in the Area 3 shall not be reset due to possible image processing artefact or a short change of gaze direction "in, out and back in" of the Area 3. The allowed time tolerance for the events described shall be defined by the vehicle manufacturer, with a minimum time tolerance of 50 milliseconds (eye saccades).

5.5.2.5. The vehicle manufacturer may choose to set a lower minimum speed requirement in situations referred to in paragraphs 5.5.2.1. and 5.5.2.2.

5.5.2.6. The vehicle manufacturer may implement additional warning strategies, based on additional input which help the system understand the driver's behaviour, cognitive distraction or immediate environment within the vehicle.

5.6. Human-Machine Interface requirements

5.6.1. Warning nature

5.6.1.1. A visual warning shall be used by the ADDW system to inform the driver and an acoustic and/or a haptic warning shall be used by the ADDW system to alert the driver as soon as possible after occurrence of the trigger behaviour, and may cascade and intensify until the trigger condition set out in paragraphs 5.5.2.1., 5.5.2.2. or 5.5.2.6. cease to be verified.

The warning is considered to start when the audio or haptic warning is presented to the driver.

5.6.1.2. The warning provided to the driver may be adapted to allow a warning strategy based on previous events, driver's behaviour, road conditions, weather and other relevant contextual information. Any adaption to the warning must meet the technical criteria set out from paragraphs 5.6.2. to 5.6.4.1.

5.6.2. Visual Warning

5.6.2.1. The visual warning shall be located so as to be readily visible and recognisable by the driver in daylight, and at night-time can be used for any attentiveness alerts, provided that it will not confuse the driver.

5.6.2.2. The visual warning shall be a steady or flashing indication (e.g. tell-tale, pop-up message, etc.).

5.6.3. Acoustic warning

5.6.3.1. The acoustic warning shall be easily recognised by the driver.

5.6.3.2. A majority of the acoustic warning shall fall within the frequency range of 200–8,000 Hz and the amplitude range of 50–90 dB. The vehicle manufacturer may adjust the amplitude depending on the surrounding noise level.

5.6.3.3. If speech alerts are utilized, the vocabulary used shall be consistent with any text used as part of the visual alert.

5.6.3.4. The audible portion of the alert shall last for at least the duration that allows the driver to understand it.

5.6.4. Haptic warning

5.6.4.1. The haptic warning shall be noticeable by the driver and be provided directly or indirectly through any interface expected to attract the attention of the driver back to the driving task.

5.7. ADDW system failure warning

5.7.1. Permanent failures

5.7.1.1. Upon detection of permanent failure in the ADDW system, a constant visual failure warning signal shall be provided.

5.7.1.2. There shall be at least one ADDW system initial self-check completed before the ADDW system is operational. Subsequently, a failure warning signal shall be indicated to the driver in the case of an electrically detectable failure.

5.7.1.3. The system shall recognise a non-temporary sensor obscuration event and deliver the failure warning signal as laid down in paragraph 5.7.1.1. which shall be displayed. A sensor obscuration event covers at a minimum when no light is measured by the sensor when the ADDW system is activated.

5.7.1.4. Failures that activate the warning signal, but which are not detected when the ADDW system is de-activated, shall be retained upon detection and continue to be displayed from each initiation of the powertrain[3,4], for as long as the failure or defect remains.

5.7.2. Temporary failures

5.7.2.1. Upon detection of a temporary non-electrical failure condition, the failure warning signal as laid down in paragraph 5.7.1. may be displayed.

5.7.2.2. Information shall be provided to the driver concerning the current limitation of the ADDW system and/or typical limitations of the ADDW system. The limitations concerned are the ones causing the ADDW system to temporarily function inadequately because insufficient driver facial features are detectable due to excessive driver-, vehicle-, environment-related or other elements that affect the performance of the ADDW system and which may not be handled as a non-nominal situation. The vehicle manufacturer may use an active approach via an additional visual warning and/or a passive approach via written information.

6. Modification of the vehicle type and extension of approval

6.1. Every modification of a vehicle type, with regard to this Regulation, shall be notified to the Type Approval Authority which approved the vehicle type. The Type Approval Authority shall then either:

(a) Consider that the modifications made do not have an adverse effect on the conditions of the granting of the approval and grant an extension of approval;

(b) Consider that the modifications made affect the conditions of the granting of the approval and require further tests or additional checks before granting an extension of approval;

(c) Decide, in consultation with the manufacturer, that a new type-approval is to be granted; or

(d) Apply the procedure contained in paragraph 6.1.1. (Revision) and, if applicable, the procedure contained in paragraph 6.1.2. (Extension).

6.1.1. Revision

When particulars recorded in the information documents have changed and the Type Approval Authority considers that the modifications made are unlikely to have appreciable adverse effects, the modification shall be designated a "revision".

In such a case, the Type Approval Authority shall issue the revised pages of the information documents as necessary, marking each revised page to show clearly the nature of the modification and the date of re-issue.

A consolidated, updated version of the information documents, accompanied by a detailed description of the modification, shall be deemed to meet this requirement.

6.1.2. Extension.

The modification shall be designated an "extension" if, in addition to the change of the particulars recorded in the information documents,

(a) Further inspections or tests are required; or

(b) Any information on the communication document (with the exception of its attachments) has changed; or

(c) Approval to a later series of amendments is requested after its entry into force.

6.2. Confirmation or refusal of approval, specifying the alterations, shall be communicated by the procedure specified in paragraph 4.3. above to the Contracting Parties to the Agreement applying this UN Regulation. In addition, the index to the information documents and to the test reports, attached to the communication document of Annex 1, shall be amended accordingly to show the date of the most recent revision or extension.

6.2.1. In the case of an extension, the approval authority shall assign a serial number to each extension, to be known as the extension number.

7. Conformity of production

7.1. Procedures for the conformity of production shall conform to the general provisions defined in Article 2 and Schedule 1 to the Agreement (E/ECE/TRANS/505/Rev.3) and meet the following requirements:

7.1.1. A vehicle approved pursuant to this Regulation shall be so manufactured as to conform to the type approved by meeting the requirements of paragraph 5. above; and

7.1.2. The approval authority which has granted the approval may at any time verify the conformity of control methods applicable to each production unit. The normal frequency of such inspections is once every two years, while the minimum frequency shall be once every three years.

8. Penalties for non-conformity of production

8.1. The approval granted in respect of a vehicle type, pursuant to this Regulation, may be withdrawn if the requirement laid down in paragraph 7.1.1. above is not complied with, or if the vehicle or vehicles selected have failed to pass the checks prescribed in paragraph 7.1.2. above.

8.2. If a Contracting Party to the Agreement applying this Regulation withdraws as an approval it has previously granted, it shall forthwith so notify the other Contracting Parties applying this Regulation by means of a communication form conforming to the model in Annex 1 to this Regulation.

9. Production definitively discontinued

9.1. If the holder of the approval completely ceases to manufacture a type of vehicle approved in accordance with this Regulation, they shall so inform the authority which granted the approval, which in turn shall forthwith notify the other Contracting Parties to the Agreement applying this Regulation by means of a communication for conforming to the model set out in Annex 1 to this Regulation.

10. Names and addresses of the Technical Services responsible for conducting approval tests, and of the Type Approval Authorities

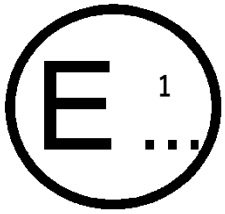
10.1. The Contracting Parties to the Agreement applying this Regulation shall communicate to the United Nations secretariat the names and addresses of the Technical Services responsible for conducting approval tests, and of the Type Approval Authority which grant approval and to which forms certifying approval or extension, or refusal or withdrawal of approval are to be sent.

Annex 1

Communication

(maximum format: A4 (210 x 297 mm))

issued by: Name of administration:
.....
.....
.....



Concerning: [2] Approval granted
Approval extended
Approval refused
Approval withdrawn
Production definitively discontinued

of a vehicle type with regard to the ADDW system performance pursuant to UN Regulation No. 1XX

Approval No. ....

1. Trade name or mark of the vehicle: .....
2. Vehicle type: .....
3. Means of identification of type, if marked on the vehicle/component/separate technical unit[2]: .....
4. Location of that marking: .....
5. Category of vehicle: .....
6. Name and address of manufacturer: .....
7. If applicable, name and address of manufacturer's representative: .....
8. Brief description of vehicle: .....
9. Technical Service performing the assessments and verifications:.....
10. Date of report issued by that Technical Service:.....
11. Number of the report issued by that Technical Service:.....
12. Approval granted/refused/extended/withdrawn: [2] .....
13. Position of approval mark on the vehicle:.....
14. Place:.....
15. Date: .....
16. Signature: .....
17. Any remarks: .....

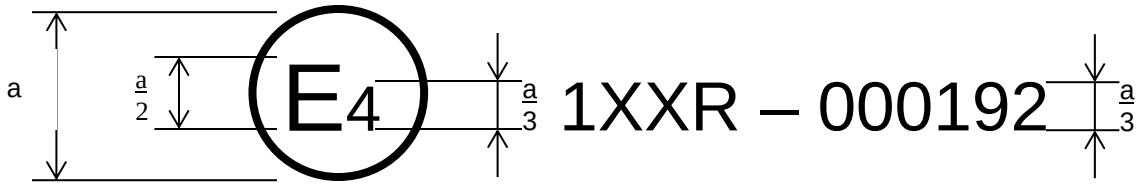
[1] Distinguishing number of the country which has granted/extended/refused/withdrawn approval (see approval provisions in the Regulation).
[2] Delete what does not apply.

18. The list of documents deposited with the Approval Authority which has granted approval is annexed to this communication and may be obtained on request.

Annex 2

Arrangement of the approval mark

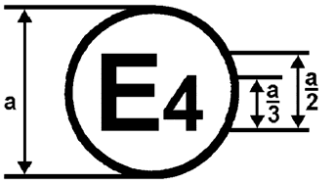
Model A
(See paragraph 4.4. of this Regulation)



a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has, with regard to its ADDW system, been approved in the Netherlands (E 4) pursuant to UN Regulation No. 1XX under approval No. 000192. The first two digits (00) of the approval number indicate that the approval was granted in accordance with the requirements of UN Regulation No. 1XX in its original form.

Model B
(See paragraph 4.4.1. of this Regulation)



1XX	00 0192	a/3 a/2
135	01 1628	a/3 a/2

a = 8 mm min.

The above approval mark affixed to a vehicle shows that the vehicle type concerned has been approved in the Netherlands (E 4) pursuant to UN Regulations Nos. 1XX and 135.[1] The first two digits of the approval numbers indicate that, at the dates when the respective approvals were granted, UN Regulation No. 1XX incorporated the 00 series of amendments and UN Regulation No. 135 incorporated the 01 series of amendments.

[1] The latter number is given only as an example.

Annex 3

Documentation package on the Advanced Driver Distraction Warning system functionality

1. The documentation package provided by the manufacturer to both the Approval Authority and the Technical Service detailing how the ADDW system functions shall include:

   (a) an explanation of the system's activation, reactivation and deactivation functions, including the associated vehicle speed ranges;

   (b) a list of all the system inputs containing all the metrics adopted for measuring driver distraction;

   (c) a description of how the metrics function and monitor the driver and driving behaviour including, if applicable, the relationship between primary and secondary/fall-back metrics;

   (d) a description of the trigger behaviour being monitored by the system;

   (e) a description of the area around the ocular reference possible for the system and, if a reference to a standard is used, the area where the eyes of test driver are expected to be, as set out in paragraph 4.1.1. (b) in Annex 5;

   (f) a description (textual description, illustration, technical drawing or any other sufficient means) of the area within the vehicle cabin that the system considers to be Areas 1, 2, and 3, in accordance with paragraph 5.5.1. in this Regulation, for assessing driver distraction;

   (g) the zone(s) delimiting the placement of each of the gaze fixation points for spot-check testing within the vehicle cabin, in accordance with paragraph 4.2. in Annex 5;

   (h) a document detailing the components of the system's HMI as well as their intended functionality, including the following:

      (i) evidence of compliance with the ADDW system HMI requirements in accordance with paragraph 5.6. in this Regulation, and justifications if the vehicle manufacturer chooses not to follow the recommendation set out in paragraph 5.6.3.2. in this Regulation; and

      (ii) if applicable, a description of the strategy for repetition, cascading or escalation of the warning emission for the cases in which the driver fails to comply with the emitted distraction warnings;

   (i) an explanation how the ADDW system may be tuned if the vehicle is adapted for a driver with special needs; and

   (j) the time tolerance period chosen by the manufacturer to allow for continuous measurement of a driver gaze event within Area 3 and during which possible image processing artefact or a short change of gaze direction occurs (refer paragraph 5.5.2.4. of this Regulation).

1.1. The documentation package shall also include a list with the description of the system limitations, accompanied by evidence on how the system's performance is affected within those limitations.

1.1.1. The limitations may be, but are not limited to driver-, vehicle-, or environment-related elements.

1.1.2. The list shall clearly include identification of non-nominal situations which may cause the ADDW system to have its performance degraded within system boundaries.

1.2. The list of system inputs shall only be provided to the Approval Authority or the Technical Service for the purpose of verifying the ADDW system for the type-approval.

1.3. The list of any secondary metrics shall not be passed on from the Technical Service to the Approval Authority.

2. Provisions for the Periodic Technical Inspection of the system

2.1. For periodic technical inspections, the documentation shall describe how the correct operational status of the system can be confirmed (e.g. bulb check).

Annex 4

Documentation package on the effectiveness of the Advanced Driver Distraction Warning system

1. The documentation package detailing how the ADDW system has been validated within the range of the limitations set out in paragraph 1.1. in Annex 3 shall include the following:

   (a) evidence about the system's performance collected in repeated tests conducted with human drivers, including the information on the number and demographics of test participants assessed, comprising:

      (i) inclusionary and exclusionary criteria that were used when selecting participants, ensuring that the system has been deemed effective, within its limitation ranges, for a representative part of the driving population; and

      (ii) a statement on the adequacy of the participants in respect of the targeted demography for the vehicle (for example, participants with a valid licence to drive the vehicle on which the ADDW system is installed);

   (b) a description of the test conditions assessed, including information on test repeatability and reproducibility; and

   (c) evidence that the system works effectively in weather and lighting conditions not limiting the system's operation.

2. If the validation was performed on another vehicle, the documentation shall contain information linking the validation process to the type-approval requirements for the vehicle.

3. If validation testing was performed in a driving simulator, the vehicle manufacturer shall document its limitations with regard to real-world open-road testing for the purpose of testing the ADDW system. Such documentation shall include the following:

   (a) a comparison of primary input data used for the ADDW system from the simulator and primary input data from the vehicle in real conditions; and

   (b) an analysis of the validity of the simulated validation's results.

4. If the validation was performed as part of research to establish compliance with the technical requirements or to improve the system's performance for type approval, the documentation shall contain information on the parameters, including the acceptance range used by the vehicle manufacturers to assure the Type Approval Authorities that the ADDW system fulfils the requirements set out in this Regulation.

Annex 5

Spot-check testing procedure

1. Purpose

Spot-check testing under real or simulated external environmental conditions to ensure that the ADDW system is operational and able to display all the warnings.

2. Testing apparatus

2.1. Vehicle considered for the type approval set in its default configuration.

2.1.1. In this context, a default configuration applies for vehicle with moving parts (i.e. that the driver can change without need for external help) which can change the driver's visibility or access to more space within the front compartment (including the roof).

2.1.2. The default configuration for the test shall allow the driver to see and interact with the most fixation points in Area 3 as set out in paragraph 4.2. of this annex. and minimize the environmental effect such as sunlight, wind and rain.

2.2. Equipment to determine the displayed speed of the test vehicle (real or simulated) to ± 1 km/h to record and confirm the speeds requirement laid down in paragraph 5.1. of this annex.

2.3. Sufficient number of supplementary cameras that are located such as to provide an overview of the test conditions laid down in paragraph 8. of this annex.

3. Testing sample

3.1. Testing shall take place with at least one test driver in the driver's seat.

The test driver shall present the attributes laid down in paragraphs 3.1.1. to 3.1.4. of this annex.

3.1.1. The test driver must be in a position that allows the driver's eyes, with their normal seat and steering wheel adjustment for driving, to be at the eye point of the ocular reference with a variability of position either, to the choice of the vehicle manufacturer:

(a) ± 100 mm longitudinally and ± 50 mm vertically around the ocular reference point;

(b) Based on a standard relevant for specifying the possible driver's eyepoint position around the ocular reference point, while ensuring coverage of an area of similar or larger size than described in (a) above.

3.1.2. No glasses or head accessory, including hat or mask.

3.1.3. No facial hair other than eyebrows.

3.1.4. The vehicle manufacturer may choose to allow one or more of the attributes set out in paragraphs 3.1.2. and 3.1.3. above for the test drivers.

3.1.5. The vehicle manufacturer may choose to enlarge the zone of possible position of the driver's eyes set out in paragraph 3.1.1. above.

4. Gaze fixation points

4.1. The appropriate location of the fixation points to be tested shall be proposed by the vehicle manufacturer according to the geometrical and design constraints of the vehicle's cabin considered for the type approval.

4.2. Spot-check testing shall include at least one fixation point located in all the following zones, if present in the vehicle, and, when possible, within Area 3 as set out in paragraph 5.5.1.6. of this Regulation:

(a) driver's left knee;

(b) driver's right knee;

(c) driver's lap;

(d) passenger's footwell or similar location looking down toward the front lower area of the vehicle from left or right from the driver's seat;

(e) passenger's seat surface or similar location looking down left or right from the driver's seat toward a surface intended to seat a passenger, store goods or allow passenger's movement in the vehicle;

(f) glove box or similar location at 30° (vertical) from the other side (from the driver's side) of the front compartment of the vehicle;

(g) air vents to the immediate left side of the driver;

(h) air vents to the immediate right side of the driver;

(i) instrument cluster, excluding the heads-up display nor a display crossing the base of the windscreen;

(j) steering wheel, when equipped with buttons for interacting with the infotainment system or assistance systems;

(k) gear shifter;

(l) heating, ventilation and air conditioning controls;

(m) infotainment display;

(n) centre console, consisting of the forward zone near dashboard panel, if not covered by any other fixation point referred to from (a) to (m).

4.3. If the driver's position is at the centre of the front compartment or close to it and the "other side (from the driver's side) of the front compartment of the vehicle" corresponds to two possible zones to the left and to the right of the driver's position, the technical services shall choose one of the following:

(a) to split the gaze fixation into the "left version" and the "right version" of the fixation point;

(b) only if there is more than one fixation point which can be split, to alternate by doing the "left version" for a given fixation point and the "right version" for another fixation point – so as to cover the left side and the right side at least once (for each side).

5. Testing velocities

5.1. All gaze fixation points shall be tested at least once between 20 km/h and 35 km/h, and at least once between 50 km/h and 65 km/h.

6. Environmental conditions

6.1. The tests must be performed on the vehicle under real or simulated external condition of operation for day and night.

Systems not affected by daylight may be tested either in day or night conditions.

6.1.1. Where the testing is executed on a test track road environment:

(a) day: testing shall start after sunrise and before sunset;

(b) night: testing shall start after sunset and before sunrise.

6.1.2. In case of testing executed on a simulated road environment:

(a) day: conditions diffuse with ambient light (ISO 15008:2017);

(b) night: condition of low ambient illumination under which the adaptation level of the driver is mainly influenced by the portion of the road ahead covered by the vehicle's own headlights and surrounding street lights, and display and instrument brightness (ISO 15008:2017).

7. Definition of temporal thresholds for warnings

7.1. Primary threshold for emitting distraction warning:

A warning should be triggered in accordance with the requirements set out in paragraphs 5.5.2.1. and 5.5.2.2. of this Regulation where the gaze fixation points set out in paragraph 4.2. of this annex shall be the monitoring parameters.

8. Procedure for spot-check testing

8.1. The test driver shall be instructed on the functionality of the system. The instruction process shall be clearly documented in the evidence dossier supplied by the vehicle manufacturer to the Type Approval Authorities and Technical Services in accordance with Annex 3.

8.2. If the ADDW system should be calibrated for a period of time after its initialisation, calibration procedures shall take place during a baseline driving situation, with no parallel distracting activities.

8.2.1. The baseline driving situation shall be described by the manufacturer to allow its successful execution, with information including but not limited to the vehicle speed-time profile and specific steps or actions required by the driver.

8.3. Testing of gaze fixation points

8.3.1. Testing procedure shall detect occurrences of single, uninterrupted long-duration gazes by the driver away from the driving situation. Detecting those occurrences shall begin when both of the following conditions are met:

(a) the vehicle registers the velocity to be tested, according to paragraph 5.1. above; and

(b) the ADDW system assesses the driver as not distracted for at least 60 seconds – this minimum 60 second period starts once any necessary calibration of the ADDW system is completed in accordance with paragraph 8.2. of this Annex and paragraph 5.3.1.1. of this Regulation.

8.3.2. The authority responsible for the type-approval may decide the sequence in which the fixation points are tested.

8.3.3. During the test, actions by the driver should be limited to those naturally expected from the fixation points considered.

8.3.3.1. Naturally expected actions by the driver are typically a combined movement of both head and eyes. However, there may be situations in which a behaviour similar to eyes only movement (lizard type) or head only movement (owl type) is observed.

8.3.4. All fixation points assigned to the zones set out in paragraph 4.2. above, and which are located in Area 3, shall be tested.

8.3.5. For the measurement of each individual gaze fixation point, the start of the measurement is triggered as soon as the test driver is assessed by the system as not distracted for at least 15 seconds.

8.3.6. The vehicle manufacturer may provide information via the documentation, referred to in Annex 3, to define the key behaviour/activities which will not be recognised as distracted actions for the purpose of that test.

8.3.7. The test driver is instructed to shift their gaze to one of the fixation points, applying the requirement from paragraph 8.3.3. above as well as possible.

8.3.8. The test driver maintains their gaze focused on the fixation point, until a warning is emitted, or at least 3 seconds after the time a warning is expected to occur.

8.3.9. After the measurement of each individual fixation point, the driver shall be assessed by the system as not distracted for at least 15 seconds before moving on to the next fixation point.

9. Test Results

9.1. Measurements shall be treated as false negative when the driver maintains their gaze focused on a fixation point located inside Area 3 set out in paragraph 5.5.1.6. in this Regulation and under the condition set out in paragraph 5.5.2.1. in this Regulation and no distraction warning is emitted within 4 seconds (which includes a 0.5 second uncertainty buffer).

9.1.1. A measurement may be changed from false negative to "not applicable" if an audio or haptic warning from a different vehicle's system has been triggered, within the expected time for an ADDW system, or is linked to the assessment of the driver's behaviour referred to in paragraph 8.3.6. in this annex.

9.2. Measurements shall be treated as false negative when the driver maintains their gaze focused on a fixation point located inside Area 3 set out in paragraph 5.5.1.6. in this Regulation and under the condition set out in paragraph 5.5.2.2. in this Regulation and no distraction warning is emitted within 6.5 seconds (which includes a 0.5 second uncertainty buffer).

9.2.1. A measurement may be changed from false negative to "not applicable" if an audio or haptic warning from a different vehicle's system has been triggered, within the expected time for an ADDW system, or is linked to the assessment of the driver's behaviour referred to in paragraph 8.3.6. in this annex.

10. Re-test procedure to filter imperfect human behaviour assessment

10.1. The re-test procedure must be performed for a maximum of two times for each fixation point assessed as false negative in accordance with paragraph 9.1. above, which was tested between 50 km/h and 65 km/h, and must be performed for a maximum two times for a fixation point assessed as false negative in accordance with paragraph 9.2. above, which was tested between 20 km/h and 35 km/h.

10.2. The re-test procedure must follow the step of the test procedure set out in paragraphs 8.2. to 8.3.9. above, with the following adaptation:

(a) The fixation point list includes only fixation points previously classified as false negative; and

(b) The test driver must perform a different action, related to a distracted behaviour, for each re-test of a given fixation point.

The technical services may use the same or a different test driver, provided that the test driver fulfils the requirements set out in paragraphs 3.1.1. to 3.1.4. above.

11. Final test results

11.1. Measurements during the re-test procedure shall be treated as "fail" if a fixation point is re-tested and assessed two times as a false negative in accordance with paragraph 9.1. above, if tested between 50 km/h and 65 km/h. A false negative re-assigned as "not applicable" or true positive shall not be considered a false negative anymore and shall not generate a "fail". If a single re-test has been performed and it is a false negative, the second retest of the fixation point shall be performed.

11.2. Measurements during re-test procedure shall be treated as "fail" if a fixation point is re-tested and assessed two times as a false negative in accordance with paragraph 9.2. above, if tested between 20 km/h and 35 km/h. A false negative re-assigned as "not applicable" or true positive shall not be considered a false negative anymore and shall not generate a "fail". If a single re-test has been performed and it is a false negative, the second retest of the fixation point shall be performed.

12. Acceptance criteria

12.1. Verification of the fulfilment of all technical requirements for ADDW systems via spot-check testing.

12.1.1. Fail criterion

The ADDW system shall be considered to have failed the spot-check testing when among all gaze fixation points set out in paragraph 4.2. above, tested in accordance with the procedure set out in paragraph 8. above, and possibly re-tested in accordance with paragraph 10. above, one or more "fail" measure is found, in accordance with paragraph 11. above.

12.1.2. Pass criterion

The ADDW system shall be considered to have passed the spot-check testing when the fail criterion set out in the above paragraph 12.1.1. is not met.