
Status: Point in time view as at 04/02/2014.

Changes to legislation: *There are currently no known outstanding effects for the Regulation (EU) No 165/2014 of the European Parliament and of the Council, ANNEX I. (See end of Document for details)*

Regulation (EU) No 165/2014 of the European Parliament and of the Council of 4 February 2014 on tachographs in road transport, repealing Council Regulation (EEC) No 3821/85 on recording equipment in road transport and amending Regulation (EC) No 561/2006 of the European Parliament and of the Council on the harmonisation of certain social legislation relating to road transport (Text with EEA relevance)

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ANNEX I

REQUIREMENTS FOR CONSTRUCTION, TESTING, INSTALLATION AND INSPECTION FOR ANALOGUE TACHOGRAPHS

I. DEFINITIONS

In this Annex:

- (a) 'recording equipment' or 'analogue tachograph' means:
equipment intended for installation in road vehicles to show and record automatically or semi-automatically details of the movement of such vehicles and details of certain periods of activity of their drivers;
- (b) 'constant of the recording equipment' means:
the numerical characteristic giving the value of the input signal required to show and record a distance travelled of one kilometre; this constant must be expressed either in revolutions per kilometre ($k = \dots \text{ rev/km}$), or in impulses per kilometre ($k = \dots \text{ imp/km}$);
- (c) 'characteristic coefficient' means:
the numerical characteristic giving the value of the output signal emitted by the part of the vehicle linking it with the recording equipment (gearbox output shaft or axle) while the vehicle travels a distance of one measured kilometre under normal test conditions (see point 4 of Part VI of this Annex). The characteristic coefficient is expressed either in revolutions per kilometre ($w = \dots \text{ rev/km}$) or in impulses per kilometre ($w = \dots \text{ imp/km}$);
- (d) 'effective circumference of wheel tyres' means:
the average of the distances travelled by the several wheels moving the vehicle (driving wheels) in the course of one complete rotation. The measurement of these distances must take place under normal test conditions (see point 4 of Part VI of this Annex) and is expressed in the form: $l = \dots \text{ mm}$.

II. GENERAL CHARACTERISTICS AND FUNCTIONS OF RECORDING EQUIPMENT

The equipment must be able to record the following:

1. distance travelled by the vehicle;
2. speed of the vehicle;
3. driving time;
4. other periods of work or of availability;
5. breaks from work and daily rest periods;
6. opening of the case containing the record sheet;
7. for electronic recording equipment which is equipment operating by signals transmitted electrically from the distance and speed sensor, any interruption exceeding 100 milliseconds in the power supply of the recording equipment (except lighting), in the power supply of the distance and speed sensor and any interruption in the signal lead to the distance and speed sensor.

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For vehicles used by two drivers, the equipment must be capable of recording simultaneously but distinctly and on two separate record sheets details of the periods listed under points 3, 4 and 5 of the first paragraph.

III. CONSTRUCTION REQUIREMENTS FOR RECORDING EQUIPMENT

(a) General points

1. Recording equipment shall include the following:
 - 1.1. Visual instruments showing:
 - distance travelled (distance recorder),
 - speed (speedometer),
 - time (clock).
 - 1.2. Recording instruments comprising:
 - a recorder of the distance travelled,
 - a speed recorder,
 - one or more time recorders satisfying the requirements laid down in point (c)(4).
 - 1.3. A means of marking showing on the record sheet individually:
 - each opening of the case containing that record sheet,
 - for electronic recording equipment, as defined in point 7 of the first paragraph of Part II, any interruption exceeding 100 milliseconds in the power supply of the recording equipment (except lighting), not later than at switching-on the power supply again,
 - for electronic recording equipment, as defined in point 7 of the first paragraph of Part II, any interruption exceeding 100 milliseconds in the power supply of the distance and speed sensor and any interruption in the signal lead to the distance and speed sensor.
2. Any inclusion in the equipment of devices additional to those listed in point 1 must not interfere with the proper operation of the mandatory devices or with the reading of them.

The equipment must be submitted for approval complete with any such additional devices.

3. Materials

- 3.1. All the constituent parts of the recording equipment must be made of materials with sufficient stability and mechanical strength and stable electrical and magnetic characteristics.
- 3.2. Any modification in a constituent part of the equipment or in the nature of the materials used for its manufacture must, before being applied in manufacture, be submitted for approval to the authority which granted type-approval for the equipment.

4. Measurement of distance travelled

The distances travelled may be measured and recorded either:

- so as to include both forward and reverse movement, or
- so as to include only forward movement.

Any recording of reversing movements must on no account affect the clarity and accuracy of the other recordings.

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5. Measurement of speed
 - 5.1. The range of speed measurement shall be as stated in the type-approval certificate.
 - 5.2. The natural frequency and the damping of the measuring device must be such that the instruments showing and recording the speed can, within the range of measurement, follow acceleration changes of up to 2 m/s^2 , within the limits of accepted tolerances.
6. Measurement of time (clock)
 - 6.1. The control of the mechanism for resetting the clock must be located inside a case containing the record sheet; each opening of that case must be automatically recorded on the record sheet.
 - 6.2. If the forward movement mechanism of the record sheet is controlled by the clock, the period during which the latter will run correctly after being fully wound must be greater by at least 10 % than the recording period corresponding to the maximum sheet-load of the equipment.
7. Lighting and protection
 - 7.1. The visual instruments of the equipment must be provided with adequate non-dazzling lighting.
 - 7.2. For normal conditions of use, all the internal parts of the equipment must be protected against damp and dust. In addition, they must be made proof against tampering by means of casings capable of being sealed.
- (b) Visual instruments
 1. Distance travelled indicator (distance recorder)
 - 1.1. The value of the smallest grading on the instrument showing distance travelled must be 0,1 kilometres. Figures showing hectometres must be clearly distinguishable from those showing whole kilometres.
 - 1.2. The figures on the distance recorder must be clearly legible and must have an apparent height of at least 4 mm.
 - 1.3. The distance recorder must be capable of reading up to at least 99 999,9 kilometres.
 2. Speed indicators (speedometer)
 - 2.1. Within the range of measurement, the speed scale must be uniformly graduated by 1, 2, 5 or 10 kilometres per hour. The value of a speed graduation (space between two successive marks) must not exceed 10 % of the maximum speed shown on the scale.
 - 2.2. The range indicated beyond that measured need not be marked by figures.
 - 2.3. The length of each space on the scale representing a speed difference of 10 kilometres per hour must not be less than 10 millimetres.
 - 2.4. On an indicator with a needle, the distance between the needle and the instrument face must not exceed three millimetres.
 3. Time indicator (clock)

The time indicator must be visible from outside the equipment and must give a clear, plain and unambiguous reading.

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- (c) Recording instruments
1. General points
 - 1.1. All equipment, whatever the form of the record sheet (strip or disc), must be provided with a mark enabling the record sheet to be inserted correctly, in such a way as to ensure that the time shown by the clock and the time-marking on the record sheet correspond.
 - 1.2. The mechanism moving the record sheet must be such as to ensure that the latter moves without play and can be freely inserted and removed.
 - 1.3. For record sheets in disc form, the forward movement device must be controlled by the clock mechanism. In this case, the rotating movement of the record sheet must be continuous and uniform, with a minimum speed of seven millimetres per hour measured at the inner border of the ring marking the edge of the speed recording area. In equipment of the strip type, where the forward movement device of the record sheets is controlled by the clock mechanism, the speed of rectilinear forward movement must be at least 10 millimetres per hour.
 - 1.4. Recording of the distance travelled, of the speed of the vehicle and of any opening of the case containing the record sheet or sheets must be automatic.
 2. Recording distance travelled
 - 2.1. Every kilometre of distance travelled must be represented on the record by a variation of at least one millimetre on the corresponding coordinate.
 - 2.2. Even at speeds reaching the upper limit of the range of measurement, the record of distances must still be clearly legible.
 3. Recording speed
 - 3.1. Whatever the form of the record sheet, the speed recording stylus must normally move in a straight line and at right angles to the direction of travel of the record sheet. However, the movement of the stylus may be curvilinear, provided the following conditions are satisfied:
 - the trace drawn by the stylus must be perpendicular to the average circumference (in the case of record sheets in disc form) or to the axis (in the case of record sheets in strip form) of the area reserved for speed recording,
 - the ratio between the radius of curvature of the trace drawn by the stylus and the width of the area reserved for speed recording must be not less than 2,4 to 1, whatever the form of the record sheet,
 - the markings on the time-scale must cross the recording area in a curve of the same radius as the trace drawn by the stylus. The spaces between the markings on the time-scale must represent a period not exceeding one hour.
 - 3.2. Each variation in speed of 10 kilometres per hour must be represented on the record by a variation of at least 1,5 millimetres on the corresponding coordinate.
 4. Recording time
 - 4.1. Recording equipment must be so constructed that the period of driving time is always recorded automatically and that it is possible, through the operation where necessary of a switch device, to record separately the other periods of time as indicated in points (ii), (iii) and (iv) of Article 34(5)(b) of this Regulation.

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- 4.2. It must be possible, from the characteristics of the traces, their relative positions and if necessary the signs laid down in Article 34 of this Regulation, to distinguish clearly between the various periods of time. The various periods of time should be differentiated from one another on the record by differences in the thickness of the relevant traces, or by any other system of at least equal effectiveness from the point of view of legibility and ease of interpretation of the record.
- 4.3. In the case of vehicles with a crew consisting of more than one driver, the recordings provided for in point 4.1 must be made on separate record sheets, each record sheet being allocated to one driver. In this case, the forward movement of the separate record sheets must be effected either by a single mechanism or by separate synchronised mechanisms.
- (d) Closing device
1. The case containing the record sheet or sheets and the control of the mechanism for resetting the clock must be fitted with a lock.
 2. Each opening of the case containing the record sheet or sheets and the control of the mechanism for resetting the clock must be automatically recorded on the record sheet or sheets.
- (e) Markings
1. The following markings must appear on the instrument face of the equipment:
 - close to the figure shown by the distance recorder, the unit of measurement of distance, indicated by the abbreviation 'km',
 - near the speed scale, the marking 'km/h',
 - the measurement range of the speedometer, in the form 'Vmin ... km/h, Vmax ... km/h'. This marking is not necessary if it is shown on the descriptive plaque of the equipment.

However, these requirements shall not apply to recording equipment approved before 10 August 1970.

2. The descriptive plaque must be built into the equipment and must show the following markings, which must be visible on the equipment when installed:
 - name and address of the manufacturer of the equipment,
 - manufacturer's number and year of construction,
 - approval mark for the equipment type,
 - the constant of the equipment in the form 'k = ... rev/km' or 'k = ... imp/km',
 - optionally, the range of speed measurement, in the form indicated in point 1,
 - should the sensitivity of the instrument to the angle of inclination be capable of affecting the readings given by the equipment beyond the permitted tolerances, the permissible angle expressed as:

where α is the angle measured from the horizontal position of the front face (fitted the right way up) of the equipment for which the instrument is calibrated, while β and γ represent respectively the maximum permissible upward and downward deviations from the angle of calibration α .

- (f) Maximum tolerances (visual and recording instruments)
1. On the test bench before installation:

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- (a) distance travelled:
1 % more or less than the real distance, where that distance is at least one kilometre;
 - (b) speed:
3 km/h more or less than the real speed;
 - (c) time:
± two minutes per day with a maximum of 10 minutes per seven days in cases where the running period of the clock after rewinding is not less than that period.
2. On installation:
 - (a) distance travelled:
2 % more or less than the real distance, where that distance is at least one kilometre;
 - (b) speed:
4 km/h more or less than the real speed;
 - (c) time:
± two minutes per day, or
± 10 minutes per seven days.
 3. In use:
 - (a) distance travelled:
4 % more or less than the real distance, where that distance is at least one kilometre;
 - (b) speed:
6 km/h more or less than the real speed;
 - (c) time:
± two minutes per day, or
± 10 minutes per seven days.
 4. The maximum tolerances set out in points 1, 2 and 3 are valid for temperatures between 0 °C and 40 °C, temperatures being taken in close proximity to the equipment.
 5. Measurement of the maximum tolerances set out in points 2 and 3 shall take place under the conditions laid down in Part VI.
- #### IV. RECORD SHEETS
- (a) General points
 1. The record sheets must be such that they do not impede the normal functioning of the instrument and that the records which they contain are indelible and easily legible and identifiable.

The record sheets must retain their dimensions and any records made on them under normal conditions of humidity and temperature.

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In addition it must be possible to write on the record sheets, without damaging them and without affecting the legibility of the recordings, the information referred to in Article 34 of this Regulation.

Under normal conditions of storage, the recordings must remain clearly legible for at least one year.

2. The minimum recording capacity of the record sheets, whatever their form, must be 24 hours.

If several discs are linked together to increase the continuous recording capacity which can be achieved without intervention by staff, the links between the various discs must be made in such a way that there are no breaks in or overlapping of recordings at the point of transfer from one disc to another.

(b) Recording areas and their graduation

1. The record sheets shall include the following recording areas:
 - an area exclusively reserved for data relating to speed,
 - an area exclusively reserved for data relating to distance travelled,
 - one or more areas for data relating to driving time, to other periods of work and availability, to breaks from work and to rest periods for drivers.
2. The area for recording speed must be scaled off in divisions of 20 kilometres per hour or less. The speed corresponding to each marking on the scale must be shown in figures against that marking. The symbol 'km/h' must be shown at least once within the area. The last marking on the scale must coincide with the upper limit of the range of measurement.
3. The area for recording distance travelled must be set out in such a way that the number of kilometres travelled may be read without difficulty.
4. The area or areas reserved for recording the periods referred to in point 1 must be so marked that it is possible to distinguish clearly between the various periods of time.

(c) Information to be printed on the record sheets

Each record sheet must bear, in printed form, the following information:

- name and address or trade name of the manufacturer,
- approval mark for the model of the record sheet,
- approval mark for the type or types of equipment in which the record sheet may be used,
- upper limit of the speed measurement range, printed in kilometres per hour.

By way of minimal additional requirements, each record sheet must bear, in printed form, a time-scale graduated in such a way that the time may be read directly at intervals of fifteen minutes while each five-minute interval may be determined without difficulty.

(d) Free space for handwritten insertions

A free space must be provided on the record sheets such that drivers may as a minimum write in the following details:

- surname and first name of the driver,
- date and place where use of the record sheet begins and date and place where such use ends,

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- the registration number or numbers of the vehicle or vehicles to which the driver is assigned during the use of the record sheet,
- odometer readings from the vehicle or vehicles to which the driver is assigned during the use of the record sheet,
- the time at which any change of vehicle takes place.

V. INSTALLATION OF RECORDING EQUIPMENT

1. Recording equipment must be positioned in the vehicle in such a way that the driver has a clear view from his seat of the speedometer, distance recorder and clock while at the same time all parts of those instruments, including driving parts, are protected against accidental damage.
2. It must be possible to adapt the constant of the recording equipment to the characteristic coefficient of the vehicle by means of a suitable device, to be known as an adaptor.

Vehicles with two or more rear axle ratios must be fitted with a switch device whereby those various ratios may be automatically brought into line with the ratio for which the equipment has been adapted to the vehicle.

3. After the equipment has been checked on installation, an installation plaque must be affixed to the vehicle beside the equipment or in the equipment itself and in such a way as to be clearly visible. After every inspection by an approved fitter or workshop requiring a change in the setting of the installation itself, a new installation plaque must be affixed in place of the previous one.

The installation plaque must show at least the following details:

- name, address or trade name of the approved fitter, workshop or vehicle manufacturer,
- characteristic coefficient of the vehicle, in the form 'w = ... rev/km' or 'w = ... imp/km',
- effective circumference of the wheel tyres, in the form 'l = ... mm',
- the dates on which the characteristic coefficient of the vehicle was determined and the effective circumference of the wheel tyres was measured.

4. Sealing

The following parts must be sealed:

- (a) the installation plaque, unless it is attached in such a way that it cannot be removed without the markings thereon being destroyed;
- (b) the two ends of the link between the recording equipment proper and the vehicle;
- (c) the adaptor itself and the point of its insertion into the circuit;
- (d) the switch mechanism for vehicles with two or more axle ratios;
- (e) the links joining the adaptor and the switch mechanism to the rest of the equipment;
- (f) the casings required under point (a)(7.2) of Part III;
- (g) any cover giving access to the means of adapting the constant of the recording equipment to the characteristic coefficient of the vehicle.

In particular cases, further seals may be required on approval of the equipment type and a note of the positioning of those seals must be made on the approval certificate.

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The seals mentioned in points (b), (c) and (e) of the first paragraph are authorised to be removed:

- in cases of emergency,
- in order to install, adjust or repair a speed limitation device or any other device contributing to road safety,

provided that the recording equipment continues to function reliably and correctly and is resealed by an approved fitter or workshop immediately after fitting the speed limitation device or any other device contributing to road safety or within seven days in other cases. For each occasion that those seals are broken, a written statement giving the reasons for such action must be prepared and made available to the competent authority.

5. The cables connecting the recording equipment to the transmitter must be protected by a continuous plastic-coated rust-protected steel sheath with crimped ends, except where an equivalent protection against manipulation is guaranteed by other means (for example by electronic monitoring such as signal encryption) capable of detecting the presence of any device which is unnecessary for the correct operation of the recording equipment and the purpose of which is to prevent the accurate operation of the recording equipment by short circuiting or interruption or by modification of the electronic data from the speed and distance sensor. A joint, comprised of sealed connections, is deemed to be continuous within the meaning of this Regulation.

The aforementioned electronic monitoring may be replaced by an electronic control which ensures that the recording equipment is able to record any movement of the vehicle, independent from the signal of the speed and distance sensor.

For the purposes of the application of this point, M 1 and N 1 vehicles are those defined in Part A of Annex II to Directive 2007/46/EC of the European Parliament and of the Council⁽¹⁾. For those vehicles that are equipped with tachographs in compliance with this Regulation and are not designed to be fitted with an armoured cable between the distance and speed sensors and the recording equipment, an adaptor shall be fitted as close as possible to the distance and speed sensors.

The armoured cable shall be fitted from the adaptor to the recording equipment.

VI. CHECKS AND INSPECTIONS

The Member States shall nominate the bodies which shall carry out the checks and inspections.

1. Certification of new or repaired instruments

Every individual device, whether new or repaired, shall be certified in respect of its correct operation and the accuracy of its readings and recordings, within the limits laid down in point (f)(1) of Part III, by means of sealing in accordance with point (f) of the first paragraph of point 4 of Part V.

For this purpose, the Member States may stipulate an initial verification, consisting of a check on, and confirmation of, the conformity of a new or repaired device with the type-approved model and/or with the requirements of this Regulation, or may delegate the power to certify to the manufacturers or to their authorised agents.

2. Installation

When being fitted to a vehicle, the equipment and the whole installation must comply with the provisions relating to maximum tolerances laid down in point (f)(2) of Part III.

The inspection tests shall be carried out by the approved fitter or workshop on its own responsibility.

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3. Periodic inspections

- (a) Periodic inspections of the equipment fitted to vehicles shall take place at least every two years and may be carried out in conjunction with roadworthiness tests of vehicles.

Those inspections shall include the following checks:

- that the equipment is working correctly,
 - that the equipment carries the type-approval mark,
 - that the installation plaque is affixed,
 - that the seals on the equipment and on the other parts of the installation are intact,
 - the actual circumference of the tyres.
- (b) An inspection to ensure compliance with point (f)(3) of Part III on the maximum tolerances in use shall be carried out at least once every six years, although each Member State may stipulate a shorter inspection interval for vehicles registered in its territory. Such inspections must include replacement of the installation plaque.

4. Measurement of errors

The measurement of errors on installation and during use shall be carried out under the following conditions, which are to be regarded as constituting standard test conditions:

- vehicle unladen, in normal running order,
- tyre pressures in accordance with the manufacturer's instructions,
- tyre wear within the limits allowed by law,
- movement of the vehicle: the vehicle must proceed, driven by its own engine, in a straight line and on a level surface, at a speed of 50 ± 5 km/h. Provided that it is of comparable accuracy, the test may also be carried out on an appropriate test bench.

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- (1) Directive 2007/46/EC of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (OJ L 263, 9.10.2007, p. 1).

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