

Guidance on the technical requirements for trials of longer articulated goods vehicles

General guidance

In order to be used on the roads in Great Britain vehicles and vehicle combinations must comply with certain regulations, including:

- [The Road Vehicles \(Construction and Use\) Regulations 1986](#)ⁱ (C&U) (original version)
- [The Road Vehicles Lighting Regulations 1989](#)ⁱⁱ (RVLR) (original version)

The revised lengths for Articulated Goods Vehicles are based on the existing provisions of Regulation 7 of the current C&U regulations.

As vehicles or vehicle combinations used in the trial will not meet the current requirements of Regulation 7 of C&U the vehicle combination will need to be covered by a special authorisation under Section 44 of the Road Traffic Act 1988. This is known as a 'Vehicle Special Order' (VSO) and is granted by VCA (on behalf of the Secretary of State). Some general details about VSOs can be found at;

- <http://www.dft.gov.uk/vca/vehicle-special-orders/vehicle-special-orders.asp>

The terms and conditions under which the VSO is granted will require vehicles and vehicle combinations taking part in the trial to comply with all of the regulations contained in RVLR (as amended) and, with the exclusion of the length restriction in Regulation 7, all of the remaining regulations contained in C&U (as amended). Additionally, certain of the requirements of Regulation 7 of C&U and other technical provisions will apply and so will be included in the terms and conditions of the VSO.

Longer trailers must comply with the physical turning circle provisions set out in, or referenced under, the technical provisions for the trial.

Manufacturers and operators should not rely upon the calculation referred to in Directive 97/27/EC and also in C&U R13A (4) implying "compliance". Trailers which do not also comply with the physical manoeuvre will not comply with the terms of the VSO.

The VSO will include terms and conditions which address the technical requirements specified for semi-trailers and vehicle combinations used in the trial. This is to help ensure that other road users, and in particular vulnerable users, are not put at undue additional risk and that the road infrastructure is protected from damage.

ⁱ Statutory Instrument 1986 No. 1078 - this is the original as made, if the link above does not work you can locate for this document (and any other UK Statutory Instrument) at the following URL: www.legislation.gov.uk

ⁱⁱ Statutory Instrument 1989 No. 1976 - this is the original as made

Guidance on the Technical Requirements

The technical requirements that shall apply to the trials on roads of longer articulated vehicles for general haulage are stated below (*shown in italics*), guidance on each requirement follows immediately after;

1. The overall length of the vehicle combination shall not exceed 17.5m or 18.55m respectively, according to whether the 1.0m or 2.05m additional length allowance is used

The current provisions of C&U regarding the overall length of certain articulated vehicle combinations limit the overall length of the combination to 16.5mⁱⁱⁱ.

As the trial will permit an additional length for a semi-trailer, of either 1m or 2.05m rearward of the kingpin, it is necessary to take account of the increase of the permitted overall length of the combination accordingly.

To both accommodate and limit this extra overall length allowance VSOs will include a condition which limits the overall length of the combination to 17.5m or 18.55m respectively according to whether the 1m or 2.05m additional length allowance is used.

2. The longitudinal distance from the axis of the king pin to the rear of the semi-trailer shall not exceed 13m or 14.05m respectively, according to whether the 1.0m or 2.05m additional length allowance is used

Whereas the current provisions of C&U regarding length set out a limit of 12.2m for some semi-trailers, they do not stipulate an overall length for certain other semi-trailers. However, in this latter case the current requirements do set a limit of 12m^{iv} for longitudinal distance measured from the axis of the king pin to the rear of the semi-trailer.

The increase in length of up to 2.05m permitted in the trial is added to this dimension to give a maximum of up to 14.05m from the axis of the king pin to the rear of the semi-trailer.

To both accommodate and limit this allowance, the VSO will include a condition which limits the maximum longitudinal distance measured from the axis of the king pin to the rear of the semi-trailer to 13m or 14.05m respectively, according to whether the 1m or 2.05m additional length allowance is used.

3. No point in the semi-trailer forward of the transverse plane passing through the axis of the king pin shall be more than 2.04m from the axis of the king pin

ⁱⁱⁱ Refer to C&U Regulation 7(1), Table, Item 3A - this provisions was introduced by [SI 1990 No 317](#) (and came into force 19th March 1990, the 'Explanatory Note' can be found at; <http://www.legislation.gov.uk/ukSI/1990/317/note/made>) and to Regulation 3 for the definition of 'overall length'

^{iv} Refer to C&U Regulation 7(6)(a)(ii) - this provision was introduced by [SI 1990 No 317](#) (into force 19th March 1990)

Similar to item 2 above, the current provisions of C&U do not limit the overall length of certain semi-trailers. However, in this case the current requirements do set a limit, in that no point of the semi-trailer shall be more than 2.04m^v in front of the axis of the king pin (sometimes referred to as 'swing radius').

For the purpose of the trial there is no intention to increase the distance to any point forward of the transverse plane passing through the axis of the king pin (e.g. the relationship of the position of the king pin to the front of the trailer will not be increased). The increase in the length of semi-trailers shall be achieved by extending the longitudinal distance from the axis of the king pin to the rear of the semi-trailer to a maximum of 14.05m. However, ancillaries such as refrigeration units mounted in front of the king pin are not to be included in the "loading length" measurement but they must fit within the current 2.04m swing radius. The interpretations are to be used solely for the purposes of this trial and shall not prejudice current provisions or any further revisions introduced during or post trial.

For the avoidance of doubt the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

4. The maximum distance measured parallel to the longitudinal axis of the semi-trailer from the foremost point of the loading area to the rear of the trailer shall not exceed 15.65m

The current provisions of C&U effectively set out a limit on the length of the loading area for motor vehicles and full or centre axle trailers (i.e. rigid vehicle and drawbar trailer combinations) of 15.65m^{vi}

For the purpose of the trial there is no intention to increase the available length of the loading area for a semi-trailer over that allowed for rigid vehicle and drawbar trailer combinations. The definition of '*the foremost point of the loading area*' will include the thickness of the walls of the semi trailer. However, where a semi-trailer is refrigerated and incorporates a refrigeration unit this will be taken to be auxiliary equipment and will not be included in the consideration of this distance.

For the avoidance of doubt the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

5. The semi trailer shall be equipped with 3 axles

The provision for 3 axles is intended to minimise risks related to vehicle stability and to protect the road infrastructure. The increased mass associated with a third axle will also help to reduce sensitivity to crosswinds. However, lift

^v Refer to C&U Regulation 7(6)(b)(ii) - this provision was introduced by [SI 1990 No 317](#) (into force 19th March 1990)

^{vi} Refer to C&U Regulation 7(5XA) and 7(5A)(a) - these provisions were introduced by [1998 No 1188](#) (into force 1st June 1998) and [SI 1991 No 2125](#) (into force 17th October 1991) respectively

axles which automatically deploy when adjacent axles approach their load capacity (provided that they comply with current legislation for such axles and meet turning circle provisions in the deployed state) will be permitted.

To ensure that the risks to other road users are not unduly increased the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that the semi-trailers shall be equipped with 3 axles.

6. Any semi-trailer equipped with axles that employ a steering arrangement shall be constructed such that the steering system is locked in the straight ahead position at speeds exceeding 31 mph or be designed in such a way that locking is unnecessary

This requirement is to help ensure the stability of vehicle combinations at higher road speeds. The benefits of steering systems which are useful in low speed manoeuvres are negated at higher speeds and therefore it is prudent to ensure that these systems are locked out of use at a certain speed.

For the purpose of the trial, for a system to be considered as being '*designed in such a way that locking is unnecessary*' it must meet the test performance specification as described in paragraph 6.3.1. of United Nation Economic Commission for Europe (UN ECE) [Regulation 79.01](#)^{vii} (see below) and be supported by a technical justification from the steering system or semi-trailer manufacturer.

To ensure that the risks to other road users are not unduly increased the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

7. Any semi-trailer equipped with a steering arrangement shall satisfy the relevant technical provisions of UN ECE Regulation 79.01

This requirement is based on the UN ECE Regulation 79.01 which sets out uniform provisions for the layout and performance of steering systems fitted to vehicles used on the road.

For the purpose of the trial the "*relevant technical provisions*" can be found at paragraphs 5 and 6 of UNECE Regulation 79.01 (see also paragraph 2 for definitions).

Initially, in the context of the trial, it will not be necessary to hold a type approval for UN ECE R79.01 until such time as a type approval becomes mandatory for new vehicles; in the mean time a test report or similar evidence can be accepted. The requirement to hold a type approval will apply to new trailers as they come under the scope of the requirements of

[The Road Vehicles \(Approval\) Regulations 2009](#)^{viii} (a.k.a. 2009 Approval Regs)

^{vii} Note there is an official correction to this document - at Page 11, paragraph 4.2., line 2; For 02) read 01)

^{viii} Statutory Instrument [2009 No. 717](#) - this is the original as made

To ensure that the risks to other road users are not unduly increased the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

8. Any semi-trailer equipped with a steering arrangement controlled by a complex electronic system shall satisfy the technical provisions of Directive 72/245/EEC as amended by Directive 2006/28/EC and the special requirements of Annex 6 of UN ECE Regulation No.79.01

There are existing international standards which set out requirements to control both environmental and safety aspects of electronic systems used on vehicles.

Undesirable Radio Frequency (RF) energy can cause electrical and electronic equipment to malfunction or even fail. The aim of the Directive 72/245/EEC is to keep emitted RF energy below specified levels and for equipment to maintain a high level of resistance to RF energy. It applies to vehicles and parts of vehicles or electrical and electronic devices that are to be fitted to or used in vehicles.

As well as meeting the limits regarding the emission of RF energy there must be no adverse effects on the direct control of the vehicle and no effects that could mislead other road users.

For the purpose of the trial the ‘technical provisions of Directive 72/245/EEC as amended by Directive 2006/28/EC’^{ix} can be found at paragraph 6 (of the document at the link indicated by the footnote below).

Additionally Annex 6 of UNECE Regulation 79.01 (see above for a link to this document) sets out requirements relating to the safety aspects of complex electronic vehicle control systems.

To ensure that the risks to other road users are not unduly increased the VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

9. A semi-trailer shall be equipped with an on-board weighing device, where the wheelbase of the semi-trailer, as defined in paragraph 7.6.1.2 of Annex I to EC Directive 97/27/EC, does not exceed the result of the equation listed in that paragraph. The weighing device shall be capable of indicating any overload of the trailer axles or axle groups.

Directive 97/27/EC^x sets out provisions for the masses and dimensions of vehicles and also certain requirements relating to manoeuvrability. In the case of some semi-trailers the manoeuvrability requirements will be deemed to be met by virtue of their dimensions. Generally speaking this is for semi-trailers with a ‘short wheelbase’. For example, for a 2.55m wide semi-trailer this can be taken as where the measurement from the axis of the kingpin to the centre of a non steering bogie is not more than 8.135m.

^{ix} <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1972L0245:20060327:EN:PDF>

^x <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1997L0027:20030415:en:PDF>

For some of these 'short wheelbase' semi-trailers there is a requirement to have an on-board weighing device fitted to ensure that the permitted axle weights of these semi-trailers are not exceeded when in use.

The requirement for an on-board weighing device states that this must "be capable of indicating any overload of the trailer axles or axle groups".

For the avoidance of doubt, this is to be interpreted as meaning that the weighing device must be capable of indicating any overload, both of an axle group and of an individual axle, whether or not it forms part of an axle group. However, where axle load compensation is provided for (e.g. load is evenly distributed to axles) a system that indicates any overload of the axle group rather than each axle would be accepted.

The purpose of this requirement with regard to the trial is to ensure that the risks to other road users are not unduly increased to reduce the risk of damage to the road infrastructure.

The VSO will include a condition which, irrespective of whether the 1m or 2.05m allowance is used, specifies that this technical requirement is met.

10. The requirements of paragraph 9 shall not apply where the maximum permitted gross weight of the vehicle combination does not exceed 38 tonnes.

See the notes for paragraph 9 above.

11. Until further notice, the vehicles must comply with the above requirements and shall comply in all other respects with the Road Vehicles (Construction and Use) Regulations 1986 S.I. 1986 No 1078, as amended, and the Road Vehicles Lighting Regulations 1989 S.I. 1989 No 1796 as amended.

Without appropriate terms and conditions, one of the consequences of a VSO would be to provide a complete exemption from all of the relevant technical regulations. To operate the trial in this way would cause an undue increase in the risks to other road users and of damage to the road infrastructure.

As mentioned in the General Guidance above the VSOs will have appropriate terms and conditions applied. One of the most important conditions of the VSO will be to re-apply all of the regulations of C&U and of RVLR which would otherwise have no effect - thus minimising any additional risks as a result of a vehicle combination participating in the trial.