Trailer Driving Guidance

Row Safe Further Guidance

It is your own best interests that you read this booklet and keep it as a reference. If you are the driver of a vehicle carrying boats or towing a trailer, then YOU are responsible by law for ensuring compliance with all road transport legislation. Should an infringement occur the club (usually in the person of the Secretary) may also have to answer charges. Therefore the club should produce a system that will ensure safe and legal movement of boats by road.

HITCHING UP

Do not give yourself a hernia by lifting the trailer nose up and aiming it toward the tow ball!

- Raise the coupling above the tow ball by winding the jockey wheel down.
- Persuade some trusting individual to stand by the trailer coupling and hold his/her hand above the coupling at a height that is visible through the rear window and reverse slowly to get the tow ball close to the coupling.
- Swing the trailer front to align the two parts and wind the jockey wheel up to engage and lock. It is good practice to wind the jockey wheel down to lift the rear of the car up a little to check that the coupling is fully engaged and locked.
- Now wind the jockey wheel fully up and re-clamp the unit as far up as possible.
- Attach the breakaway chain or wire. There is a safety chain attached to the hand brake and in the event of the trailer becoming uncoupled it will apply the hand brake.
- Attach the chain/wire to the tow bracket or to the hook (if fitted) but not round the tow ball neck. This is not a secure fixing. If the coupling has a hand operated reversing catch, make sure this is not engaged before you drive off. Modern couplings are automatic.

ON THE ROAD

TOWING SPEED

A trailer being towed by a passenger or goods vehicle combination must not exceed 7.5 tonne.

Speed Limits: Motorway/Dual carriageway - 60 mph
Other roads - 50 mph

Do remember - a trailer MUST NOT be towed in the outer (overtaking lane) of a three or four lane motorway.

- Be considerate of other road users; do not drive close to traffic in front, leave ample room for faster vehicles to overtake and pull safely in front of you.
- When towing, everything takes longer, allow more time for accelerating, overtaking and braking, whilst making more use of your mirrors.
- If you overtake a slower moving truck, you may notice that the driver flashes his headlights when you are safely in front. This is to indicate that you are clear to return to the inner lane. The polite response is to flash your tail lights. This form of signalling is not found in the 'Highway Code' but is normal practice for heavy vehicle drivers. Extend the same courtesy when you are overtaken by an HGV.
- Read the road ahead and behind, look out for the effects of side winds from overtaking vehicles (a large vehicle will first push the combination to the left and then as it gets to half way past will suck it right). Do not over react! Do not brake suddenly! Keep a firm grip of the steering wheel and concentrate on holding the vehicle straight. Do not wrench at the wheel as this is likely to set up a 'snaking effect'. If the rig is inherently stable the effect will go in a few seconds.
- Try and not be caught unawares by using your mirrors to monitor vehicles coming up from behind. If you see a large vehicle coming up to overtake, it would be good practice to ease the rig to the left and thus reduce the side wind effect.

- Cross winds from bridges etc on exposed roads (particularly on motorways) can also cause problems. In severe cases it has been known for thermally created side winds to be so strong that a boat trailer would only stay upright when tethered to a tree.

- Do not let the speed build up when going down hills; this will help to reduce the possibility of snaking. If the combination does snake, ease off (i.e. lift your foot off the accelerator), try not to brake and slow down gently. Do not accelerate, be very careful about trying to control the snake by 'steering into the skid': most drivers are too enthusiastic with the steering wheel movement. In a snaking situation the stabiliser would pay dividends.

- Road hazards such as roundabouts should be taken at a slower speed, remember that the centre of gravity of the trailer will be higher above the ground than a conventional car and this means it is less stable and more liable to overturning if you treat the roundabout as a Brands Hatch chicane.

- Ensure that all braking is done in a straight line, ie. do not go into a corner then brake, estimate the required speed and complete your braking before the actual corner.

- Going round corners, roundabouts etc, keep in mind the much greater length of the combination and allow a greater turning circle since the trailer will tend to follow a tighter curve than the tow vehicle.

- Practice smooth safe driving, this is the real key. For example, if you decide to overtake and swing out too far, then there is every possibility of a degree of swing appearing. You must take the move slower and ease the vehicle out as opposed to swinging it out

WHAT WEIGHT CAN I TOW?

This is an easy question to ask but one which unfortunately does not have a simple answer. We will now consider cars and vans/minibuses separately. (Where unusual names of weight types appear, refer to the appendix for definitions.)

CARS

There are several methods of computing the possible tow weight.

1. Use the figures quoted in your vehicle handbook; most manufacturers now issue maximum tow weight values calculated using industry standards. These calculations allow the combination to be started from rest on a gradient of 12% (approx 1 in 8.3) when carrying two passengers (assuming 68kg each).

   Each additional passenger or piece of luggage must be subtracted from the quoted figure.

   Examples;

   - A Rover Montego 2.0 DLX has a kerbside weight of 1150kg and a maximum tow weight of 1070kg.
   - Ford use an 8% gradient and for a Ford Granada 2.0 EFi 5 speed manual, the kerbside weight is 1265kg, tow weight of 1750kg;
   - Ford Sierra LX 1.8 Cfi 5 speed manual has a kerbside weight of 1070 a tow weight of 1350kg. The quoted weights are 'maximum recommended' by the manufacturer.

2. Take the caravanning approach and use a tow weight of 85% of the vehicle kerbside weight. It is possible to increase this to 100% providing the car engine is capable of towing the extra load. Allow 36 BHP/tonne of Gross Train Weight.
3. Use the tow car tables and ready reckoner published in a magazine such as 'Practical Caravan'. These tables could well use units of 'hundredweights', remember 1cwt = 112lb = 51kg.

VANS/MINIBUSES

As with cars the first approach is to look at the vehicle handbook or the information plate that should quote the following weights: Kerbside Gross Vehicle, Front & Rear axle, Gross Train and Tow.

If you subtract the tow weight from the gross train weight you get the gross vehicle weight. If the tow vehicle is not fully loaded then it should be possible to tow a heavier trailer and still stay within the Gross Train Weight limit. The only problem with this assumption is that there appears to be no precise legislation other than The Goods Vehicle (Ascertainment of Maximum Gross Weight) Regulations 1976, which states that the maximum possible tow weight is 1.5 times the kerbside weight.

However the Gross Train Weight must not be exceeded.

For example, A Talbot Express 350 has the following -

Kerbside weight	1610 kg
GVW	3500 kg
GTW	4700 kg
Max. tow weight	= 1.5 x 1610
	= 2415
Calculated train weight	= 1610 + 2415
	= 4025 kg

This will allow a maximum of 4700 - 4025 kg or 675 kg for the drive and any additional vehicle weight to stay within the permitted GTW.

Leyland Daf 400 Minibus with either 2.5l diesel or 2.0l petrol engine, is:

Kerbside weight	1906 kg
GVW	3300 kg
GTW	4600 kg

In this case the calculated maximum tow weight of 1.5 x 1906 gives 4765 kg, i.e. it is greater than the specified GTW. Therefore the max. possible tow weight would be 4600 - 1906 - weight of driver luggage etc., say 2626 kg for driver only.

As you can see it starts to get rather complicated. It may be simpler to start from the other end, i.e. what is the weight of the laden trailer? Can I tow it?

To work out trailer weight there are two stages:

1) Weight of unladen trailer should be shown on the trailer plate.

2) Weight of boats and oars etc.

If the boats are not marked with the weight use the table below, it should give a good approximation. Otherwise weigh the individual sections. Add the two parts together to get the total weight.

For guidance, the FISA minimum boat weights are:

Boat Type	8+	4x	4+	4-	2+	2x	2-	1x

Weight (kg)	93	52	51	50	32	27	26	14

Expect club boats to be slightly heavier, eg. 4+ @ 55kg and 8+ @ 100kg

For instance a possible trailer load may consist of two eights (six sections) and three one piece coxed fours. From the table the boat weight would be 353kg. If the boats are fairly old then the total weight may be as much as 403kg. A wooden oar can weigh 4.1kg and a pair of sculls 4.0kg. This would give a possible load of the order of 468 to 518kg.

Modern boats and carbon oars/sculls will give a lighter result; a typical carbon fibre oar can weight 3.3kg (can be 10% heavier for heavy type or 31% lighter for the ultra light type) and expect a pair of carbon fibre sculling blades to weight 3.6kg. Thus the same load of modern carbon types boats and oars could be 431lg (this is excluding spare oars, trestles, coaches, bikes etc).

Add the load weight to the trailer weight to give the total tow weight.

It would be advantageous to do some trail calculations on typical trailer loads before you are actually conned into ‘volunteering’ to act as trailer driver.

LOADING THE TRAILER

- It is (or should be) the collective responsibility of the individual crew who load their boat on to the trailer to ensure it is correctly loaded and secured.
- The driver should the check the loading of the trailer before he/she sets off.
- Put the heavier sections on the lower racks e.g. centre sections of a three piece eight, and lighter boats on the higher racks. This will help to keep the centre of gravity as low as possible. Where boats such as one piece fours can only be put on the uppermost racks, a trailer loaded in this fashion should be driven with greater care because a higher centre of gravity and increased windage. If you look at the sample figures for a loaded trailer in the previous section the three one piece fours on the top constitute close on 50% of the total boat weight.
- Consider the low weight of carbon oars on the bottom of the trailer and basic physics will suggest a centre of gravity somewhere close to the vertical centre of the trailer. Oil companies have produced some excellent films for use in petrol tanker driver training and they emphasise the care needed when changing direction, particularly at roundabouts where 1mph can make the difference between a successful circuit. Too high a speed will increase balancing on the outer wheels, meaning it will be ready to flip at the slightest increase in speed. BE WARNED there is very little margin for error if you attempt a high speed swerve towing a trailer with a high centre of gravity.
- Some club trailers have an elevated front rack to allow one piece fours to protrude over the top of the tow vehicle. Here remember the possibility of increasing windage with speed. The angle of the boats may produce a lifting force, which could reduce the nose weight and affect stability.
- When you first set off on the journey it is good practice to stop after a mile or two and check the security of the load. It is surprising how ties and fastenings loosen off with the vibration of the journey. Any adjustment made usually solves a problem and you will see truck drivers re-checking their loads before starting the next leg of the journey. If the professionals do it, why not you?

FORWARD AND REARWARD PROJECTION

Use the diagrams at the back of the booklet on projection, but please note that these only apply to Great Britain.

Where the projection exceeds 1.00m, it MUST BE MARKED i.e. visible from the side and rear in case of rear projection and side or front in the case of front projection.

- In daylight attach coloured rag or red/white plastic warning tape to the end of the boats. If there are several boats projecting, tie a length of tape on to each, so if one is blown off the others will mean you are street legal). Or make a small red/white warning triangle to display.

- During the hours of darkness the rear projection requires a red rear tail light and a rear-reflecting device with 1.00m of the end of the rear projection.

In the case of a front projection exceeding 1.00m a white light and white reflecting device within 1.00m of the extreme end of the projection.

Front projection is not usually a problem since it is over the top of the towing vehicle. Some boat builders and boat accessory suppliers can provide suitable lights and clamps.

- With a sculling boat on top of a car, a lamp and flex long enough to plug into the cigarette lighter socket will suffice. With a trailer it may be that the club has to arrange a special socket on the trailer to plug in the extra tail light.

- Some boat trailers come with the rear light board on an extension frame, which can extend the ‘trailer’ and eliminate or reduce the projection to the required amount.

NOSE WEIGHT

For stable towing, nose weight is very important (see diagrams at the end of the booklet).

- A loaded trailer should be nose heavy ie. it should exert a downward force on the tow ball of the towing vehicle of 35-100 kg. The exact recommended weight for your vehicle can be obtained from your handbook, the manufacturer's information, a caravan magazine or the Caravan Club, who publish a data list that includes 'nose weights'.
- To check the actual trailer nose weight, use the bathroom scales (protected by a piece of wood, unless you like greasy feet) under the trailer coupling. Not under the jockey wheel which will give a false reading. Alternately use a proprietary nose weight indicator obtainable from a caravan dealer.
- Some boat trailers have the recommended nose weight shown on the information plate.

TOW VEHICLE - REAR SUSPENSION

Excessive deflection can affect stability and create problems such as headlamp alignment. Some vehicles have a lever adjustment to help overcome of rear end squat when towing and correct the headlamp problem; other vehicles have self levelling suspension.

This deflection can be caused by:

1) Low rear spring rate
2) Overloading of the towing vehicle
3) Excessive nose weigh of trailer
4) Large vehicle tail overhang (the distance between the rear axle and the tow ball).

There are a number of proprietary rear spring stiffening aids on the market where excessive rear deflection is caused by 1) or 4); consult your friendly caravan dealer. For 2) and 3) take the necessary steps to correct the problem.

STABILISERS

The problem of snaking has been mentioned and one method of reducing the tendency of the trailer to swing is to use a ‘stabiliser’.

- This is a friction device between the tow vehicle and the trailer and whilst this is not enough to interfere with the normal turning of the combination provides a degree of damping to control any tendency to snake created by too sudden a steering manoeuvre.

There are several other devices available such as the ‘lever arm/friction damper’ or the ‘grip the tow ball’ type. Visit to your friendly caravan dealer to get advice on the most suitable device for your vehicle and use.

LIGHTS

When the trailer is coupled, check the correct operation of the lights; remember that all lights ‘must be clean and in good working order’ (Red 13 (1) RVL).

It is good practice to carry replacements to replace blown bulbs in an emergency.

INSURANCE

This can be considered in three parts; Tow vehicles, trailers and boats.

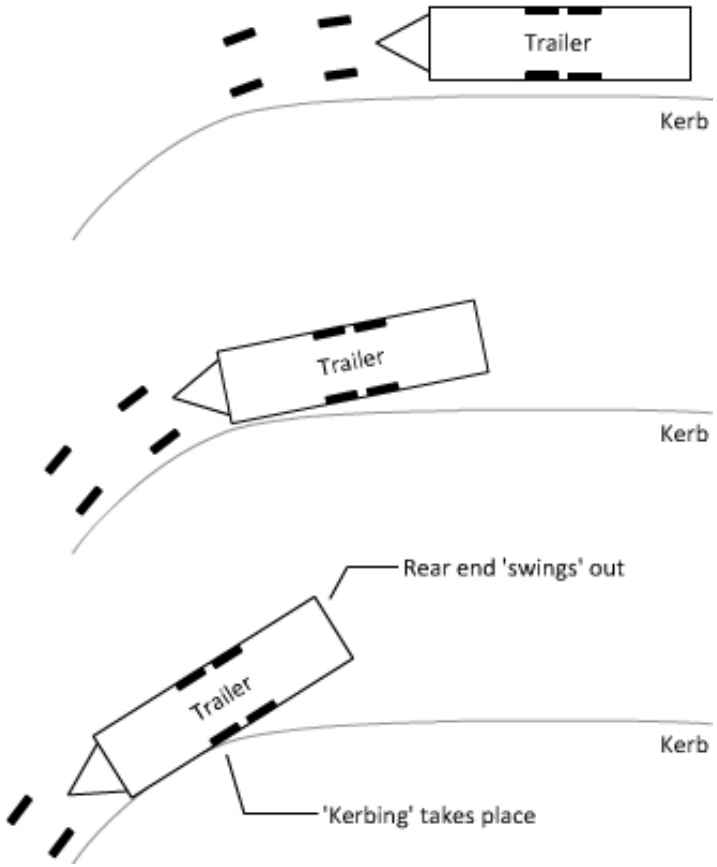
Tow vehicles	Make sure that your standard insurance is valid for trailer towing, if necessary check with your broker. The towing of a caravan or trailer is an offence if the policy expressly excludes their use (Robb v McKechnie 1936). If the vehicle belongs to the club it would be good practice to place a photocopy of the insurance certificates in a plastic envelope in the vehicle.
Trailer	The insurance would normally be covered by the club: the minimum cover being 'Third Party'. This will provide cover against damage to another person or property i.e. The third party. It would be good practice where several people may be towing the trailer to place a photocopy of the certificate on the club notice board or some other prominent place so that everyone concerned is aware that the insurance is current.
Boats	As with the trailer this will fall into the club area of responsibility. This is a specialised area where boats can be insured at different levels e.g. Written down value, river and boathouse use only; agreed valuation as per club schedule; replacement value. I would expect that most clubs would have a flexible approach to their fleet with boats being insured according to the value to the club. Whilst one hopes that accidents will never happen it is bad practice and poor stewardship to under insure the boat fleet, particularly those in regular transit to regattas.

The driver of the tow vehicle is held responsible for the insurance of the road vehicle - in this context the combination is the tow vehicle and trailer. The club, usually in the person of the Secretary, may also appear in court should the law be broken.

The onus in on the driver to produce any documents and prove to the Police that the insurance is in force.

APPENDICES

KERBING DIAGRAM AND BASIC DEFINITIONS



BASIC DEFINITIONS

Kerbside weight – Weight of vehicle with full tank of petrol but with no passengers or luggage. Can be found in your drivers' handbook or from the vehicle information plate.

Tow weight – The gross weight of a braked trailer, ie. the trailer and its load.

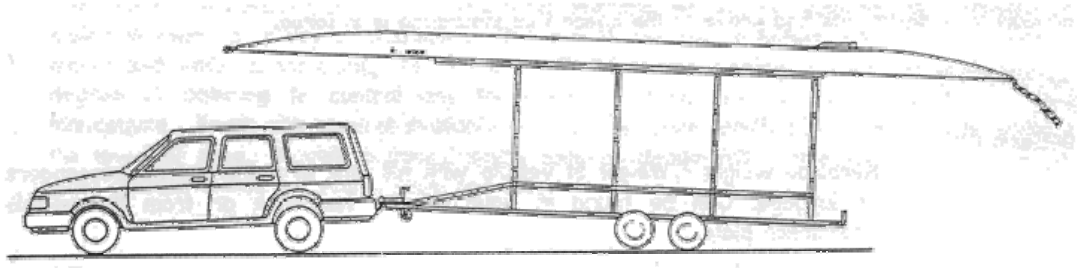
Gross train weight – Total weight of laden vehicle and trailer.

Gross vehicle weight – Maximum total weight of laden vehicle.

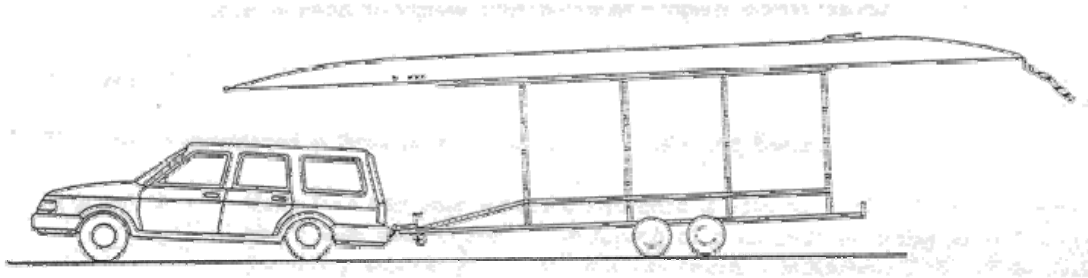
Trailer Driving Guidance

Row Safe Further Guidance

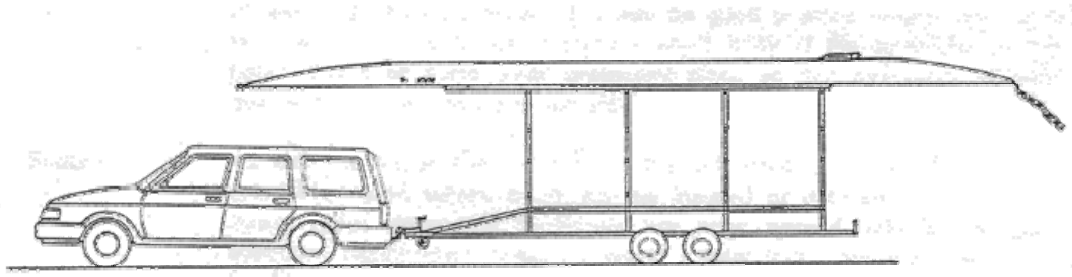
CAR/TRAILER BALANCE



Insufficient Nose Weight



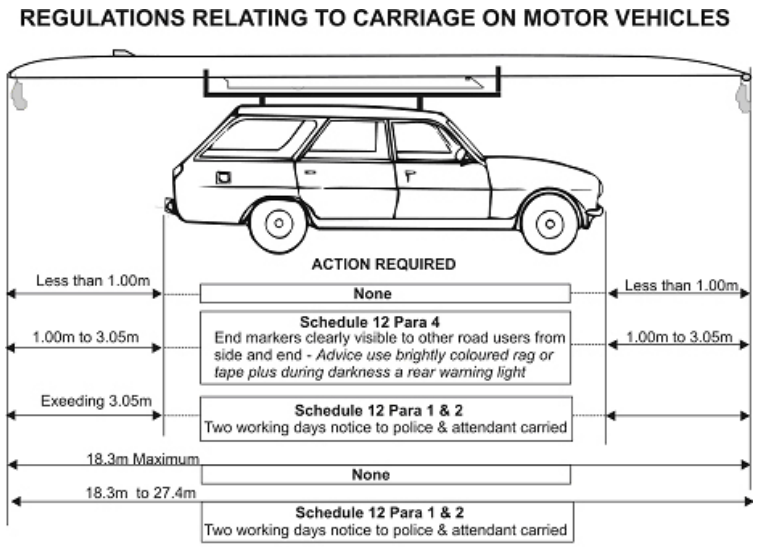
Excessive Nose Weight

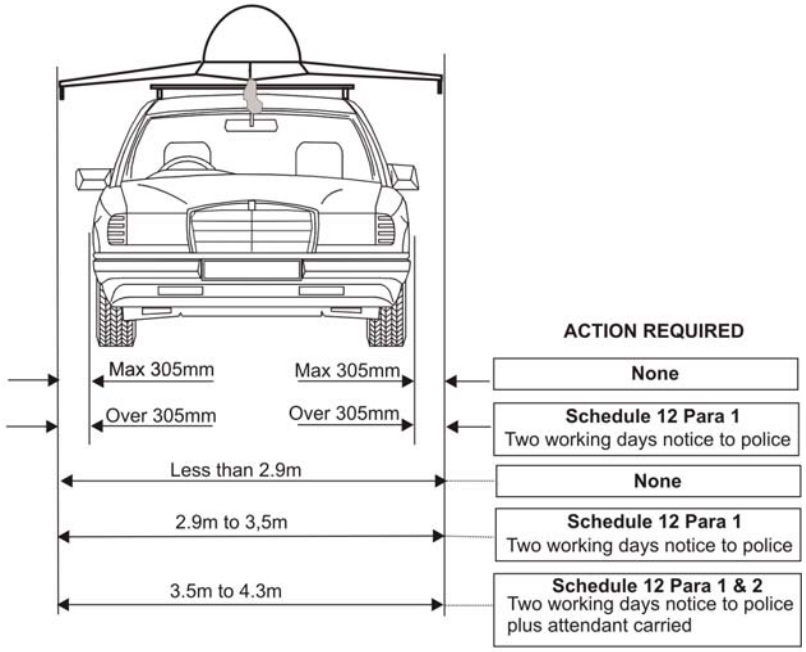


Correct Car/Trailer Balance

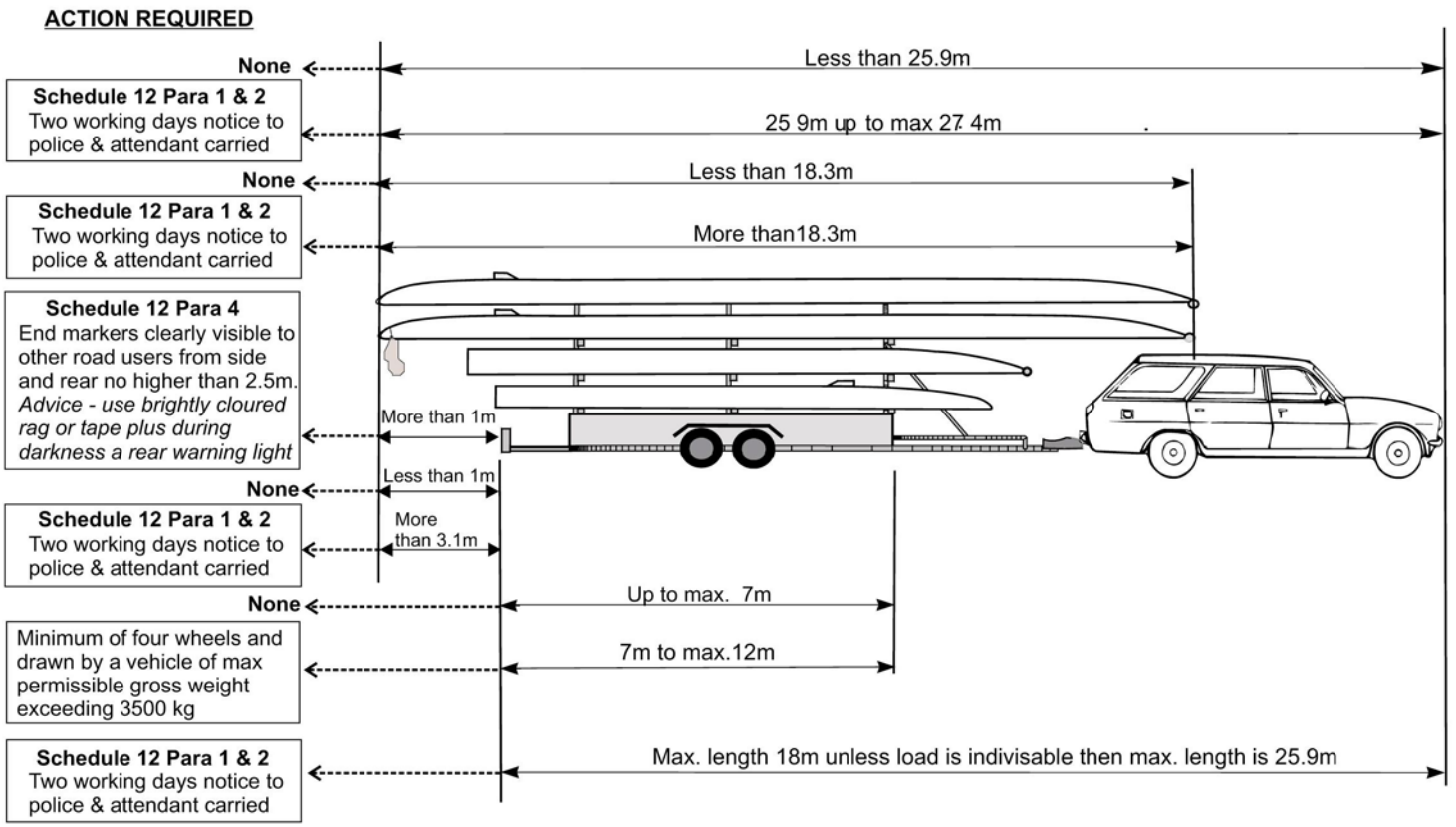
PROJECTIONS

The latest regulations are contained in the Road Vehicles (Construction & Use) Regulations 1986: coded '1986 No 1078'. The relevant projection information appears on pages 109 – 113 covered by Regulations 81 & 82 and Schedule 12.





REGULATIONS RELATING TO CARRIAGE ON TRAILERS



Note - Lateral dimensions and projections are the same as those for carriage on motor vehicles

Notes:

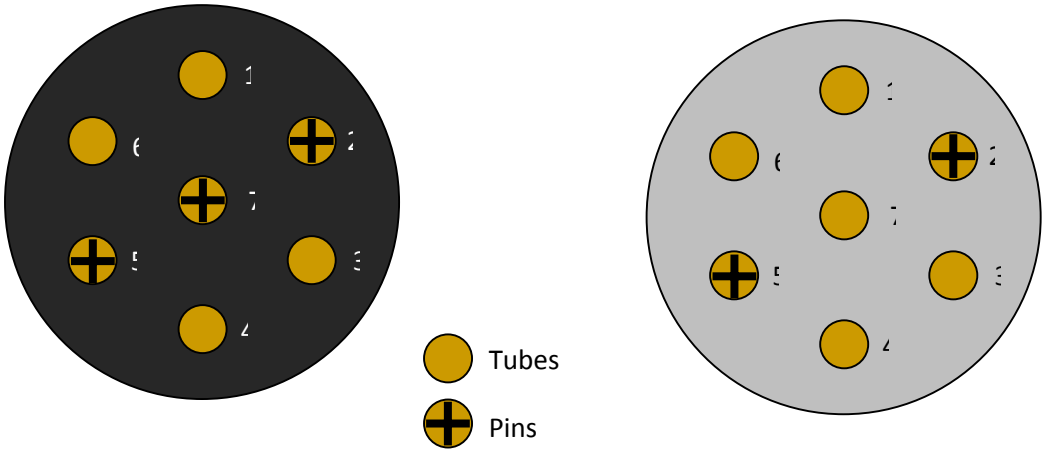
All the sketches apply to the allowance in the regulations for “if the load consists of a racing boat propelled solely by oars”. If the trailer is classed as a ‘special type for the transport of indivisible loads of exceptional length’ then other legislation applies.

There is a ‘grey area’ when considering trailer length. Shown in the sketch is the exact method disregarding the ‘A’ frame (towing device) and measuring the load supporting section. However in the case of a trailer, such as might be used to transport a sail or power boat, consisting largely of an ‘A’ frame type shape, then the theory of measuring from the end of the tow hitch to the rear would seem sensible. A case for common sense needs to be applied.

In addition, other regulations may apply; for instance in Central London, where Police permission is required for the movement between 10 a.m. and 7 p.m. on weekdays of loads exceeding 10.98m (36ft) in length or one and three quarter times the length of the carrying vehicle. This also applies if the rear projection exceeds 2.6m (8ft 6in).

ELECTRICAL CONNECTIONS

View on rear of 7-pin plugs



Black 12N Plug

Terminal		Colour	Function
1	L	Yellow	Nearside Indicator
2	54G	Blue	Rear Fog Light
3	31	White	Earth
4	R	Green	Offside Indicator
5	58R	Brown	Offside Roadlights

Grey/White 12S Plug

Terminal		Colour	Function
1	L	Yellow	Nil
2	54G	Blue	Nil
3	31	White	Earth
4	R	Green	Internal Lights etc.
5	58R	Brown	Nil

6	54	Red	Brake Lights
7	58L	Black	Nearside Roadlights & No. Plate Light

6	54	Red	Refrigerator
7	58L	Black	Nil