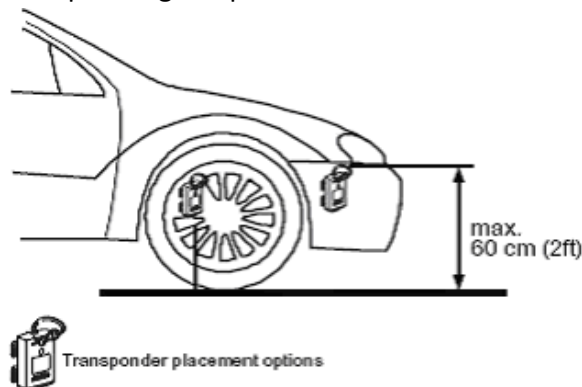


6 Transponders

In ideal situations every passing is perfect and there are no problems. However there are many situations when things can go wrong and we will name those situations that are most common. But first let's see how a transponder should be mounted on a vehicle.

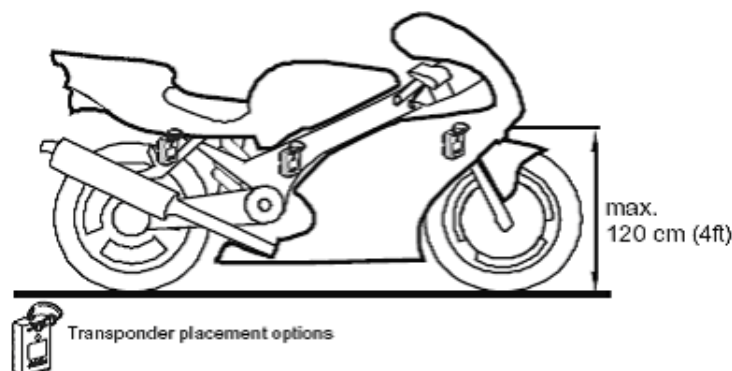
Install a transponder on a car

The mounting position of the transponder of a rechargeable or direct powered transponder is the same. The position must be identical on all cars competing in the race. Fix the transponder vertically, at a maximum of 60cm (2ft) above the track. Make sure that the transponder has a clear view to the track with no metal or carbon fibre underneath. Maximum operating temperature should not exceed 122F/50°C.



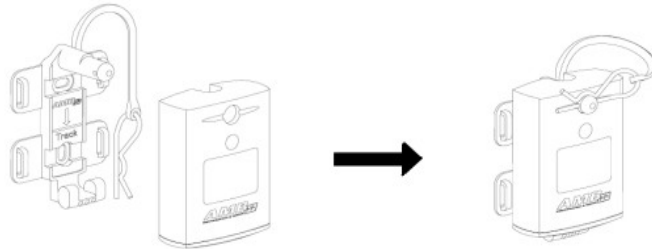
Install a transponder on a motorcycle

The mounting position of the transponder of a rechargeable or direct powered transponder is the same. The position must be identical on all motorcycles competing in the race. Fix the transponder vertically, at a maximum of 120cm (4ft) above the track. Make sure that the transponder has a clear view to the track with no metal or carbon fibre underneath. Maximum operating temperature should not exceed 122F/50°C.



Installation of a rechargeable transponder

Fix the holder on the car or motorcycle with the fixing rod on top by using tie-wraps, screws or rivets. Fasten the transponder using the supplied fixing pin.



Fastening the rechargeable transponder in the holder

WARNING

A detached transponder can be very dangerous! Make sure the transponder cannot get detached. Use additional tie-wraps to secure the pin.

What can go wrong?

One of the most common problems timekeepers face is transponders that do not work during a session. This is often due to the transponder being positioned incorrectly on the vehicle. The participant may not realise the importance of this, and place the transponder anywhere they choose on the car or motorbike, which causes problems when they start racing.

A badly placed transponder can be recognised by the fact that its signal level is very low and also the number of hits are low (this can be seen in the passings list of the Race Manager program). When the number of hits is below 20, the field with the number of hits gets coloured light red. When the number of hits goes below 10, the field gets the colour red. These colours are an indication that the transponders are not in a good place on the vehicle. During the evening, the signal level of transponders generally decreases, due to radiation from the stratosphere. If a vehicle starts with a low value during the day, it will be missed more than once during the evening or night.

One of the most frequent places where drivers fix a transponder is on the roll cage. Quite often they also put the transponder facing towards the inside of the car. The result of this is that the transponder can hardly be detected by a loop and sometimes not detected at all. Thus, as a result the vehicle will not be detected. Normally the driver gets upset and will protest against a poor timekeeping system. However this is 100% caused because he is not mounting the transponder according to the rules.

Other incorrect areas where transponders have been known to be located are on the dashboard, inside the glove box, on the front window, in the boot and even in the pocket of race suit. All of these places are incorrect and will certainly cause problems.

The best places to put a transponder on a car are:

- a. inside the wheel arch of the right (or left) front wheel (vertically)
- b. on the rear (outside) of the car – on the trunk lid (vertically).
- c. If these places cannot be used, then a reasonable place is in the centre on the inside of the rear side window of a car (vertically).

The best places to put a transponder on a motorbike are:

- a. on the side of the bike (vertically)
- b. on the rear of the bike. (horizontally)

Very Important

The best way to place a transponder is vertically, as the transponder signal is at its strongest in this position. A transponder should not be put under an angle of 30 degrees or more, since it will decrease the signal strength drastically. If a transponder needs to be placed horizontally (like on the rear side of a motorbike) then it is important to place it into the driving direction of the vehicle.

Please always remember that **metal** and/or **carbon** will shield the signal of the transponder against being detected by a loop. Carbon will do that even more so than metal. Also, bundles of electric cables will disturb the signal in such a manner that the loop cannot receive the signal.

It is worth noting that all kinds of disturbance can cause the signal to be weak. Examples of known disturbance sources on vehicles are poor ignition coils on old cars or bikes, and neon lights used in endurance races to recognise a vehicle in the dark.

The detection strength of a loop can also be affected. It can be weakened by conductors that are too close to the loop. Known conductors are cables, vehicles with or without transponders, electronic equipment like beacons, transmitters, etc. If there are problems detected, first remove all strange materials within two meters of a loop to see if that solves the problem.