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Convention on Road Traffic (1968):

Automated driving.

Remote Control Parking systems in the 1949 Convention on Road Traffic and in the 1968 Convention on Road Traffic

Submitted by Belgium, Canada, Germany, Finland, France, Japan, Luxembourg, the Netherlands, Spain, Sweden, United Kingdom, European Commission (DG MOVE), European Organization of Suppliers (CLEPA) and International Organization of Motor Vehicle Manufacturers (OICA)

1. This document was prepared by the WP.1 Informal Group of Experts on Automated Driving (IGEAD). The experts, members of this informal group, came to a unanimous agreement within the group on the contents of this text. IGEAD members represent the following countries or organizations: Belgium, Canada, Germany, Finland, France, Japan, Luxembourg, the Netherlands, Spain, Sweden, United Kingdom, European Commission (DG MOVE), European Organization of Suppliers (CLEPA) and International Organization of Motor Vehicle Manufacturers (OICA).

2. It shows how RCP in vehicles which normally are operated by a human driver in the driving seat is guided under the Geneva and Vienna Conventions (GC and VC), and how the requirements of both are met. The articles in the conventions that could be relevant for RCP are set out below.

Introduction

Remote Control Parking (RCP) is a functionality that is available on the market. A driver can use a type approved RCP when they are located in close proximity to the vehicle¹. RCP does not replace the driver; rather this functionality enables them to exercise proper control of a vehicle when they are not inside the vehicle. This paper shows how RCP in vehicles which normally are operated by a human driver in the driving seat is guided under the Geneva and Vienna Conventions (GC and VC), and how the requirements of both are met. The articles in the conventions that could be relevant for RCP are set out below.

Requirements placed on the driver

Wearing of safety belts:

Article 7, paragraph 5 VC states:

”The wearing of safety belts is compulsory for drivers and passengers of motor vehicles, occupying seats equipped with such belts, save where exceptions are granted by domestic legislation.”

1. There is no GC matching provision.
2. “... occupying seats...” implies that the driver is deemed to occupy the seat for complying with this provision. In the case of RCP, the driver does not occupy the seat, this provision hence does not apply.

The need for a driver:

Article 8, paragraph 1, VC and GC provides: that every moving vehicle shall have a driver. This requirement is met when using RCP although the driver and driving position are outside the vehicle. The driver is still driving the vehicle, just using the remote control to do so.

Exercising control of the vehicle:

Article 8, paragraph 5, VC and GC states that every driver shall at all times be able to control his vehicle. This requirement is also met when using RCP, since the driver controls the vehicle using a remote device. While using the functionality, the driver can stop the vehicle. Should the driver drop the remote control device, the vehicle will come to an immediate halt, until the driver resumes exercising control.

Minimising non-driving activities, and using a hand-held mobile phone as the remote control:

Article 8, paragraph 6, VC states:

“A driver of a vehicle shall at all times minimize any activity other than driving. Domestic legislation should lay down rules on the use of phones by drivers of vehicles. In any case, legislation shall prohibit the use by a driver of a motor vehicle or moped of a hand-held phone while the vehicle is in motion.”

¹ Proposal for Supplement 6 to the 01 series of amendments to Regulation No. 79 (Steering equipment), adopted in March 2017 session of WP.29 (ECE/TRANS/WP.29/2017/10).

1. The driver should focus their attention on the parking task, and in doing so, minimise any non-driving task. In this regard, they should have sufficient situational awareness, and conduct the remote control parking manoeuvre in the way intended by the manufacturer. This may be done using a dedicated remote control device, provided by the manufacturer, or using a dedicated application on a smartphone.

2. As the dedicated remote control device can only be used for that purpose, the driver minimises non-driving activities when using it to park their vehicle by remote control.

3. The VC requirement not to use a hand-held phone aims to reduce the risk of the driver being distracted by phone calls or texting, or other phone activities that are not related to driving.

4. However, this does not prevent a smartphone application being used as the remote control for RCP. The application is used to drive/control the vehicle, provided that it excludes the possibility of the phone being simultaneously used for any activities other than driving (i.e. no remote control parking while talking or texting)

5. Given the above considerations, article 8.6 does not block the use of RCP. There is not an exact match for the GC but:

(a) Article 7 GC requires a driver [and others] to ‘conduct himself in such a way as not to endanger or obstruct traffic; he shall avoid all behaviour that might cause damage to persons, or public or private property.’ A driver can observe this requirement with a remote control device just as s/he can in the driving seat.

(b) RCP indeed permits a higher degree of safety since the driver can walk around the vehicle for checking there is no obstacle in close proximity; this is fully in compliance with Article 10 which requires the driver to drive prudently.

Exercising due and proper care / driving prudently:

Article 13, paragraph 1, VC provides:

“1. Every driver of a vehicle shall in all circumstances have his vehicle under control so as to be able to exercise due and proper care and to be at all times in a position to perform all manoeuvres required of him. He shall, when adjusting the speed of his vehicle, pay constant regard to the circumstances, in particular the lie of the land, the state of the road, the condition and load of his vehicle, the weather conditions and the density of traffic, so as to be able to stop his vehicle within his range of forward vision and short of any foreseeable obstruction. He shall slow down and if necessary stop whenever circumstances so require, and particularly when visibility is not good.”

1. These requirements do not prevent RCP provided the driver is within close proximity of the vehicle (currently 6 meters according to type approval requirements set forth in UN-R 79) and therefore has constant situational awareness due to an overview of the traffic, road, vehicle (etc.) situation. It is possible that in some circumstances, the driver may have better situational awareness than if they were in the vehicle.

2. The remote control allows the driver to use their situational awareness by enabling them to perform all the elements of the parking manoeuvre.

3. Article 10 GC requires the driver to drive prudently, and there is no reference to manoeuvres, but once again the situational awareness afforded by not being in the vehicle supports the driver in using the remote control to drive prudently.

4. A continuous actuation of the remote control device by the driver is required during the parking manoeuvre (paragraph 5.6.1.2.2. of UN R79)

Performing a manoeuver:

Article 14, paragraph 1, VC provides:

“Any driver wishing to perform a manoeuvre such as pulling out or into a line of parked vehicles.... shall first make sure that he can do so without risk of endangering other road users travelling behind or ahead him or about to pass him, having regard to their position, direction and speed.”

1. This requirement does not prevent the use of RCP because the driver is within close proximity of the vehicle. Therefore the driver can observe other road users (i.e. has good situational awareness) and can ensure that performing the parking task will not endanger them.
2. There is no exact match in the GC but Article 12 GC requires the driver to take precautions to avoid accidents. Similar comments to the above apply here.

Indicating intent to manoeuvre:

Article 14, paragraph 3, VC states:

“Before turning or before a manoeuvre which involves moving laterally, the driver shall give clear and sufficient warning of his intention by means of the direction-indicator or direction indicators on his vehicle, or, failing this, by giving if possible an appropriate signal with his arm.”

1. This does not prevent RCP provided the direction-indicator works properly when using RCP.
2. Article 12 GC requires the driver to give “adequate notice of intention to turn”.

Avoid behaviour likely to endanger pedestrians:

Article 21, paragraph 1, VC states:

“Every driver shall avoid behaviour likely to endanger pedestrians.”

1. This requirement does not prevent the use of RCP because the driver is within close proximity of the vehicle. Therefore the driver can observe other road users (ie has good situational awareness) and can ensure that performing the parking task will not endanger them. RCP can in some case be even safer than conventional driving since the driver has a better vision of the vehicle close proximity, additionally the RCP is designed to incorporate sensors to detect obstacles at close proximity.
2. There is no exact match in the GC but Article 12 GC requires the driver to take precautions to avoid accidents. Similar comments to the above apply here.

Leaving the vehicle in a safe and secure position:

Article 23, paragraph 4, VC states:

”A driver shall not leave his vehicle or his animals without having taken all suitable precautions to avoid any accident and, in the case of a motor vehicle, to prevent its unauthorized use.”

1. This requirement does not prevent RCP with a driver outside the vehicle. The driver has not left his vehicle during the use of RCP as they are in close proximity. After parking, the motor has to be switched off and locked properly. That can also be done by the remote control, or manually if necessary.

2. RCP is a good example of an automatic system performing better than the human being.
3. There is no matching provision in the GC.

Technical requirements for the vehicle

Both the Vienna and Geneva Conventions contain sets of technical requirements. However, these requirements do not, in and of themselves, do not present a barrier to the use of RCP.

Loading of the vehicle:

Article 30.b states:

“Every load on a vehicle shall be so arranged and, if necessary, stowed as to prevent it from:

- (a) Endangering persons or causing damage to public or private property, more particularly by trailing on or falling on to the road;
- (b) Obstructing the driver’s view”

1. This provision does not prevent RCP, as this relates to loading of the vehicle. Using RCP, the driver should usually have an even better view compared to sitting inside of the vehicle, when it comes to performing the parking manoeuvre.

2. There is no matching provision in the GC.

Braking

Annex 5, point 4(c) states:

“The term “parking brake” means the device used to hold the vehicle stationary in the driver’s absence”

1. This is a definition for a technical requirement for a vehicle, and does not constitute an obligation for the driver. As long as the vehicle that is equipped with RCP has a parking brake, it is deemed to be in conformity with this annex.

2. The same rationale applies to matching provision in Annex 6.1 of GC.

Annex 5, point 5 states:

“Every motor vehicle other than a motorcycle shall have brakes which can be easily operated by the driver when in his driving position.”

1. This is a technical requirement for a vehicle. As long as the vehicle that is equipped with RCP has brakes that can be operated by the driver when in their driving position, it is deemed to be in conformity with this annex.

2. GC Annex 6.1 requires brakes, but makes no reference to the driver operating the brake. Thus, if the vehicle with RCP has brakes, it is in conformity with this annex.

Windscreen and wiper:

Annex 5, point 49 states:

“Every motor vehicle having a windscreen of such dimensions and shape that the driver cannot normally see the road ahead from his driving position except through the transparent part of the windscreen, shall be equipped with at least one efficient and strongly built windscreen-wiper in an appropriate position, the functioning of which does not require constant action by the driver”

1. This is a technical requirement for a vehicle. As long as the vehicle that is equipped with RCP has a windscreen-wiper that can be operated by the driver when in his driving position, it is deemed to be in conformity with this annex. The intention appears to be to

make sure that the field of vision from the typical driving position, i.e. inside of the car, is clear in all weather conditions.

2. GC Annex 6.III.d and e set the technical requirement for a vehicle to have a windscreen and wiper, but makes no reference to the driver or driving position.

3. For both VC and GC, when using RCP the driver is in close proximity of the vehicle, and should have even better view compared to sitting inside of the vehicle when parking.

Reversing device

Annex 5, point 52 states:

“Every motor vehicle shall be equipped with a reversing device controlled from the driving position.”

1. This is a technical requirement for a vehicle. As long as the vehicle that is equipped with RCP has a reversing device that can be controlled from the driving position, it is deemed to be in conformity with this annex. The provision does not mean that, when reversing the driver has to be sitting in the driving seat. .

2. The same rationale applies to the similar provision in GC Annex 6.III.f, which requires the fitment of a reversing device that can be controlled from the driver’ seat.

Field of vision

Annex 5, point 59(c) states:

“Every motor vehicle shall be so constructed that the driver’s field of vision ahead, and to both right and left, is sufficient to enable him to drive safely”

1. This is a technical requirement for a vehicle. As long as the vehicle that is equipped with RCP has sufficient field of vision, it is deemed to be in conformity with this annex. The intention behind this is quite clear in that the vehicle is manufactured in such a way that field of vision for normal driving tasks should be sufficient.

2. There is no matching provision in the GC.

Conclusion:

Based on this analysis, a following conclusion is suggested by the authors: Remote Control Parking is compatible with both the Vienna and Geneva conventions.
