T 3.20.1

All non-crushable objects (e.g. pedals, master cylinders, hydraulic reservoirs) must be rearward of the rear most plane of the front bulkhead and at least 25 mm behind the AIP at any time, except for environment perception sensors, aerodynamic devices and their mountings.

T 4.2.1

The cockpit must provide a free internal cross section sufficient for the template shown on the right in figure 11 to pass from the cockpit opening to a point 100 mm rearwards of the face of the rearmost pedal in an inoperative position. The template may be moved up and down. Adjustable pedals must be in their most forward position.

T 4.3.4

* The figure has to be positioned in the vehicle as follows, see figure 13:
* The seat adjusted to the rearmost position
* The pedals adjusted to the frontmost position
* The bottom 200 mm circle placed on the seat bottom. The distance between the centre of the circle and the rearmost actuation face of the pedals must be minimum 915 mm.
* [DV ONLY] The distance from centre of circle and pedals, as mentioned above, may be reduced to 865 mm but only for placement of automated brake, steering or clutch actuators in front of the pedals.
* The middle circle positioned on the seat back
* The upper 300 mm circle positioned 25 mm away from the head restraint.

T 6.1.8

The brake pedal and its mounting must be designed to withstand a force of 2 kN without any failure of the brake system or pedal box. This may be tested by pressing the pedal with the maximum force that can be exerted by any official when seated normally.

T 6.1.9

The brake pedal must be fabricated from steel or aluminium or machined from steel, aluminium or titanium.

T 6.1.10

[EV ONLY] The first 90 % of the brake pedal travel may be used to regenerate brake energy without actuating the hydraulic brake system. The remaining brake pedal travel must directly actuate the hydraulic brake system, but brake energy regeneration may remain active.

T 6.2.1

A brake pedal over-travel switch must be installed on the vehicle as part of the shutdown circuit, as in EV 6 or CV 4.1. This switch must be installed so that in the event of a failure in at least one of the brake circuits the brake pedal over-travel will result in the shutdown circuit being opened. This must function for all possible brake pedal and brake balance settings without damaging any part of the vehicle.

T 6.2.2

Repeated actuation of the switch must not close the shutdown circuit, and it must be designed so that the driver cannot reset it.

T 6.2.3

The brake over travel-switch must be a mechanical single pole, single throw switch, commonly known as a two-position switch, push-pull or flip type, it may consist of a series connection of switches.

**T 11.8 Accelerator Pedal Position Sensor (APPS)**

T 11.8.1

T 11.8 only apply for electric vehicles, see chapter EV, or internal combustion vehicles using Electronic Throttle Control (ETC), see CV 1.6.

T 11.8.2

The APPS must be actuated by a foot pedal.

T 11.8.3

Pedal travel is defined as percentage of travel from fully released position to a fully applied position where 0 % is fully released and 100 % is fully applied.

T 11.8.4

The foot pedal must return to the 0 % position when not actuated. The foot pedal must have a positive stop preventing the mounted sensors from being damaged or overstressed. Two springs must be used to return the foot pedal to the 0 % position and each spring must work when the other is disconnected. Springs in the APPS are not accepted as return springs.

T 11.8.5

At least two separate sensors must be used as APPSs. Separate is defined as not sharing supply or signal lines.

T 11.8.6

If analog sensors are used, they must have different, non-intersecting transfer functions, . A short circuit between the signal lines must always result in an implausibility according to T 11.8.9.

T 11.8.7

The APPS signals are SCSs, see T 11.9.

T 11.8.8 If an implausibility occurs between the values of the APPSs and persists for more than 100 ms

* [EV ONLY] The power to the motor(s) must be immediately shut down completely. It is not necessary to completely deactivate the tractive system, the motor controller(s) shutting down the power to the motor(s) is sufficient.
* [CV ONLY] The power to the electronic throttle must be immediately shut down.

T 11.8.9

Implausibility is defined as a deviation of more than ten percentage points pedal travel between any of the used APPSs or any failure according to T 11.9.

T 11.8.10

If three sensors are used, then in the case of an APPS implausibility, any two sensors that are plausible may be used to define the torque target and the 3rd APPS may be ignored.

T 11.8.11 It must be possible to separately disconnect each APPS signal wire to check all functionalities.

T 11.8.12 A fully released accelerator pedal must result in:

* [EV ONLY] A wheel torque of ≤0 Nm
* [CV ONLY] An idle position or lower throttle set-point. This may only be exceeded during a gearshift for a maximum of 500 ms.

**CV 1.4 Throttle**

CV 1.4.2

The throttle must be actuated mechanically by a foot pedal, i.e. via a cable or a rod system, see CV 1.5, or by an ETC system, see CV 1.6.

**CV 1.5 Mechanical Throttle Actuation**

CV 1.5.1

CV 1.5 only applies if no ETC system is used.

CV 1.5.2

The throttle actuation system must use at least two return springs located at the throttle body, so that the failure of any one of the two springs will not prevent the throttle returning to the idle position.

CV 1.5.3

Each return spring must be capable of returning the throttle to the idle position with the other disconnected.

CV 1.5.4

Springs in the Throttle Position Sensor (TPS) are not acceptable as return springs. CV 1.5.5 Throttle cables must be located at least 50 mm from any exhaust system component and out of the exhaust stream.

CV 1.5.6

Throttle cables or rods must have smooth operation and must not have the possibility of binding or sticking. They must be protected from being bent or kinked by the driver’s foot during operation or when entering the vehicle.

CV 1.5.7

A positive pedal stop must be incorporated on the accelerator pedal to prevent over-stressing the throttle cable or actuation system.