Channel Tunnel Reference Document for cross-acceptance of rail vehicles

Unified (national) rules relating to authorisation of rail vehicles

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This document supersedes the document "Channel Tunnel reference document for cross-acceptance" published on IGC's website on 29 July 2013.

Version	Description
09/01/2018	APPROVED following IGC's meeting October 2017

Ref. and title of parameter in accordance with Decision 2015/2299/EU		Description	Unified (national) rule for Channel Tunnel network
4.5.1	Emergency braking performance	Requirements concerning the emergency braking performance, e.g. response time, deceleration, stopping distance, modes to be considered (normal/degraded). Excluded: exploitation of wheel rail adhesion (see parameter 4.6.1).	**Passenger vehicles**: With all braking equipment operational, a normally laden train running at 160 km/h which makes an emergency brake application must be able to stop within a distance of 900 m on dry rail without activating the wheel slide protection. **Freight vehicles**: With all braking equipment operational, a train running as MA100/ME100/ME120 which makes an emergency brake application must be able to stop within a distance of (respectively) 1040m/900 m/1070m on dry rail without activating the wheel slide protection.
4.5.4	Parking brake performance	Requirements concerning the parking braking performance, e.g. load condition, ruling track gradient.	**All vehicles**: Immobilise the train on an 11‰ gradient with an adverse 70m/s wind (piston effect) in the Tunnel and 45m/s wind gusts on Terminals.
5.1.2	Boarding aids	Refers to technical specifications of equipment which may be on board to facilitate the access/excess for passengers to/from the vehicle.	**Passenger vehicles**: For the purpose of ensuring steps and ramps are suitable for an in-tunnel evacuation, passenger trains must respect the dimensions of the channel tunnel evacuation step and walkway relative to the running line as follows: Height from rail head: - To evacuation step : 530 mm - To evacuation walkway: 810 mm Horizontal distance from track centre: - To evacuation step : 1861 mm - To evacuation walkway: 2197 mm
5.2	Interior	Availability of wheelchairs adapted to the evacuation walkway	**Passenger vehicles:** For evacuation purposes, evacuation wheelchairs adapted to the specificities of the Tunnel evacuation routes must be present on board in sufficient number to allow evacuation of all PRMs on board. Volume G of Eurotunnel Safety Arrangements: the Running Tunnel walkway is 800mm wide (at its narrowest point).

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5.6	Heating, ventilation and air conditioning systems	E.g. internal air quality, requirement in case of fire (switch off).	**Passenger vehicles:** To ensure a sufficient level of safety on board, passenger trains must have systems in place to provide ventilation capable of ensuring CO2 levels remain under 10,000ppm for at least 90 minutes in the event of a failure of traction systems
6.1.2.2	Maximum pressure variation in tunnels	Impact due to rapid changes in pressure by entering, running in or leaving tunnels.	**Freight vehicles**: Wagons must be designed to withstand peak pressure of ±1000 pascals without sustaining damage. For the purpose of design, this should be taken over the full height of the wagon and over any 3m length.
10.1	Fire protection concept and protection	E.g. fire category, classification, protection measures for vehicles and parts of the vehicle (e.g. driver's cab), material properties, fire barriers, fire detectors (including ionisation detectors) and fire extinguishing equipment.	**Passenger vehicles**: Passenger rolling stock intended to be operated in the Channel Tunnel shall be of category B, considering the length of the tunnel. Due to the lack of firefighting points with safe area (see TSI SRT, clause 4.2.1.7) amendments to the following clauses apply: — clause 4.2.10.4.4 (3): The running capability of a Passenger rolling stock intended to be operated in the Channel Tunnel shall be demonstrated by application of the specification referenced in Annex J-1, index 63, in which the system functions impacted by a 'type 2' fire shall be braking and traction; these functions shall be assessed in the following conditions — for a duration of 30 minutes at a minimum speed of 100 km/h, or — for a duration of 15 minutes at a minimum speed of 80 km/h (according to clause 4.2.10.4.4) under the condition specified in the national rule notified by the Channel tunnel safety authority for this purpose. — clause 4.2.10.3.4 (3) & (4): Where the running capability is specified for a duration of 30 minutes according to the point above, the fire barrier between the driver's cab and the compartment to the rear of it (assuming the fire starts in the rear compartment) shall satisfy requirements for integrity for a minimum of 30 minutes (instead of 15 minutes). Where the running capability is specified for a duration of 30 minutes according to the point above, and for passenger vehicles that do not allow the exit of passengers at both ends (no through route), measures to control the spread of heat and fire effluents (full cross section partitions or other FCCS, fire barriers between combustion engine/electrical supply/traction equipment and passenger/staff areas) shall be designed for a minimum of 30 minutes fire protection (instead of 15 minutes).

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			For passenger trains of 15 minutes' running capacity, a further risk assessment will be required. This will demonstrate that using them maintains or improves the level of safety in the Channel Tunnel. This further risk assessment will have to analyse the consequences for passengers of not having enough running capacity to exit the tunnel. The applicant will supply this assessment. The analysis must guarantee evacuation of the train into the service tunnel in less than 15 minutes from detection of the fire. It will consider the operating rules defined in paragraph 4.4 of the tunnel safety TSI (except clause 4.4.1.c), the features of the passenger train (layout and number of passengers) and the criteria specified by the IGC (see annex 2 of http://www.channeltunneligc.co.uk/spip.php?action=acceder_document&arg=386&cle=3657b4c58662ecdb3bafcfec819ecfee&file=pdf%2F150703_Invitation_15min_rule_annexe.pdf .) The applicant will have to draw up this analysis using the information supplied by the manager of the Channel Tunnel infrastructure. It will undergo verification by an accredited/appointed third assessment body, as defined in. the MSC, for risk assessment and appraisal. The IGC will examine the safety assessment report during the authorisation process. Due to the specific risks relating to trains which carry both road vehicles and passengers, the current national rule does not apply to them.
12.2.1	National on-board signalling systems	Requirement to have national on-board train protection systems installed on-board (such as EBICAB) and corresponding functional requirements.	**All vehicles:** Traction units are to be fitted with TVM 430 system parameterised for Channel Tunnel infrastructure