

FREQUENTLY ASKED QUESTIONS (FAQs)

RAILWAY CHALLENGE 2019

- 1. Is it acceptable for the 'lineside distance marker, provided by the team' (Rules 2019, clause B6.2) to be positioned between the rails, provided it is outside of the gauge? The wording in B6.2 states that the marker 'will be positioned adjacent to the track', however we were told that placing it between the rails would be fine?**

A: Yes, it is perfectly acceptable for the team's distance marker to be positioned between the rails, provided it is outside the structure gauge. The lineside distance marker referred to in the Tech Spec is a location marker set up by the IMechE. Tech Spec section 5.5 states: "Teams will be expected to provide and temporarily fix a detectable location device of their choice at the location of this marker. This device will be designed such that it is entirely outside the structure gauge limits (Drawing RC02 refers)"

- 2. A recently answered FAQ states, with regard to the maintainability challenge, that 'The wheelset when removed must consist only of the wheels and axle plus axle boxes, brake disks and the final part of the traction drive for example a gear/pulley or sprocket where attached to the wheelset. Other parts of the traction drive including the traction motor must be disconnected from the wheelset.' Our team have designed a gearbox where the motor and axle are integral parts, making detaching the motor from the axle impossible outside of a workshop. The motor would be disconnected electrically and removed with the wheelset for the maintainability challenge.**

A: It is not acceptable for the traction motor to be part of the wheelset removed in the maintainability challenge. The only non-rotating parts of the wheelset permitted are the axlebox casings (including bearing outer race, etc.).

Separate note to this team on this point: Separate note to teams on this point: The application of this rule has not changed and no previous team has been permitted to remove a traction motor together with the wheelset as one part. Where the design of

locomotives has required the removal of a traction motor initially, such as the removal of a bogie which contains an integrated traction motor, then a driven wheelset has still needed to be removed from the bogie before the time is stopped.

3. For the Ride Comfort Challenge, what piece of equipment do you use to test the ride comfort? I assume it is an accelerometer, but I was wondering which one so that I could use the same for our testing?

A: The ride comfort challenge will be run in accordance with the rules for that challenge. In theory at least, the result should not depend on the test measurement equipment used if specified and configured according to those rules. Test results will also be dependent on other factors (e.g. track characteristics) which may render results from a team's own testing different to those obtained at the competition. However, we can confirm that a Larson Davis HVM100 meter is normally used for this challenge in conjunction with a Larson Davis SEN027 tri-axial accelerometer. The organisers cannot guarantee that this equipment will be used in 2019, however.

4. For the technical specification point 5.7 a new requirement has been added stating: "Tractive effort applied". Is this to be a continuous quantification of the amount of tractive effort applied similar to that of the energy storage indicator, or a binary indicator showing when traction is being applied regardless of the amount of tractive effort.

A: The tractive effort indicator needs to indicate whether the primary power source of the locomotive is providing traction or not. It is not necessary to indicate the amount of traction being applied. This is related in particular to rule B2.5 which states '...the primary power source of the locomotive must be disengaged from the drive wheels...'

5. "Clause 4.2.3 states that the team shall demonstrate 95% of components by mass can be disposed of in such a way that facilitates recycling" does this include reusability (reduce reuse recycle)? Our batteries powering our locomotive are borrowed from an electric train company, who we plan on giving them back to afterwards, they won't be recycled.

A: All you have to do is show that they can be recycled, not will be. You need to research what happens to batteries of the type proposed when disposed of – land fill always (not ok) or potentially broken down and elements salvaged (ok)

6. As part of the Auto-Stop Challenge where we have to place a lineside marker on point A and 25 m further bring the loco to a stop - are we allowed to place a sign on Point B (where the loco has to stop) too? Or is there at Point B no detectable marker provided/allowed? I couldn't find some information how Point B should be designed.

A: All lettered points according to the rules, including point B, will be indicated by the organisers using a board adjacent to the track. For the auto-stop challenge, teams are required to provide the marker to be detected by the locomotive at point A, which will also be indicated by the organisers using a board. The board at point B will only be for reference, and the locomotive's braking system should be designed to enable it to automatically stop as close to this point as is possible without intervention from the team in line with rule B6.5.

7. For the Auto- Stop Challenge how will the lineside distance marker for each team be positioned?

A: Each team provides their own location marker device. A nominated team member (not one of those on board their train) will position this at Point A (as indicated by a lineside marker provided by the challenge management team) when instructed by the IMechE judge / marshal. Positioning of the device (and fastening if required) shall be completed within 3 minutes. Removal, after the train has passed, must be completed in no more than 2 minutes.

8. Is it acceptable for the final drive chain to remain around the final drive sprocket, which is on the wheelset axle, when the wheelset is removed, provided that the chain is not too long?

A: Yes, there would be no objection to this as long as the chain does not in any way cause a hazard.