Hitachi Rail, Traction Link Fixings

In mid-October 2017 Hitachi Rail commissioned a number of brand new Class 800 trains for Great Western Railway (GWR). These trains replace the aging Class 43 trains.

Recently one of these new trains has been damaged by foreign objects on the tracks. When a train passes along a track at speed a vacuum between the train and the track is created. Any debris on the track then bounces up and down into the underside of the train. In this instance the debris in question caused some damage to the underside of the train including the bogies. The bogie is the assembly to which the axles are attached, each carriage has a pair of bogies, one at each end, each bogie comprises 2 axles and 4 wheels. Depending on location the bogie may additionally be fitted with a drive motor.

Challenge:

Changing a bogie calls for a bogie drop where either the train remains static and the bogie is lowered beneath the train or, the train is raised and the bogie remains stationary on the rails. It can then be wheeled away and a new bogie wheeled in to place ready for fitment.

Bogies are secured by 4 traction link fixings; 2 at each end of the link, these bolts are tightened to 970 N·m. Access to these bolts is significantly hampered by the anti-roll bar (ARB) that runs across the width of the train and is located 50mm in front of the fixings. Hitachi Rail policy dictates that on safety critical components any fixings that are removed, such as nuts and bolts, need to be replaced with new ones.

Removing the ARB becomes not only a time-consuming task but also a costly one. Replacing all the fixings would clearly add significantly to the cost of the task. Subsequently, Hitachi Rail needed a tool that enabled access to the traction link fixings for removal and re-assembly. Typically, the break-off torque required to undo a nut or bolt is approximately double the torque originally applied to the fixing during assembly.

Solution:

The PTS with a special offset drive used in conjunction with a Lubro Control Unit enables accurate setting of the torque for fastening. It also possesses sufficient torque capacity in order to undo the fixings, which necessitates circa 2,000 N·m. A purpose designed double ended reaction plate (see below) allows simple access to the traction link fixings whilst clearing the ARB

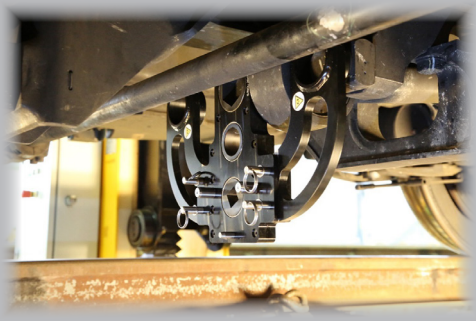
This product combination facilitates a straightforward single tool operation for both removal and re-assembly of the fixings. The solution provided has safety benefits for the Maintenance Engineers performing the task and also achieves a time saving and a cost saving since it eliminates the need to remove the ARB.

Application

Removal and re-assembly of traction link fixings on Hitachi class 800 train

Solution

PTS with a special offset drive used in conjunction with a Lubro Control Unit



Within our family of distributors we share applications and can often recommend solutions that have been tried and tested elsewhere.