

## 0.3IN CONTACT WIRE SWIVEL CLIP

Developed in direct collaboration with Network Rail, the AUS innovation team delivered a modern engineering solution to an obsolete problem, restoring critical rail infrastructure. AUS worked with Network Rail to analyse the existing swivel clip including the loading, geometry and material, whilst also delivering the Network Rail approved product in the time frame required for maintenance. From this, AUS redesigned the existing clip from a new, more modern material, doubling its loading capabilities. This meant it could be used in more situations, reduces the overall cost of the project to the customer and increases safety for rail infrastructure. AUS' manufacturing of this component enabled existing overhead line equipment (OLE) to be taken down and replaced during maintenance. The importance of products like this swivel clip cannot be understated as it reduces the need for full OLE system upgrades and replacements, reducing project costs. The project utilised UK based manufactures to reduce carbon output and reduce lead times. This innovation demonstrates how practical engineering and sustainable manufacturing can align with the rail industry's Net Zero and efficiency goals, setting a new benchmark for performance and responsible design.

### Introduction

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The 0.3in contact wire swivel clip delivers a modern engineering solution to an obsolete problem, restoring critical rail infrastructure

### About the Product

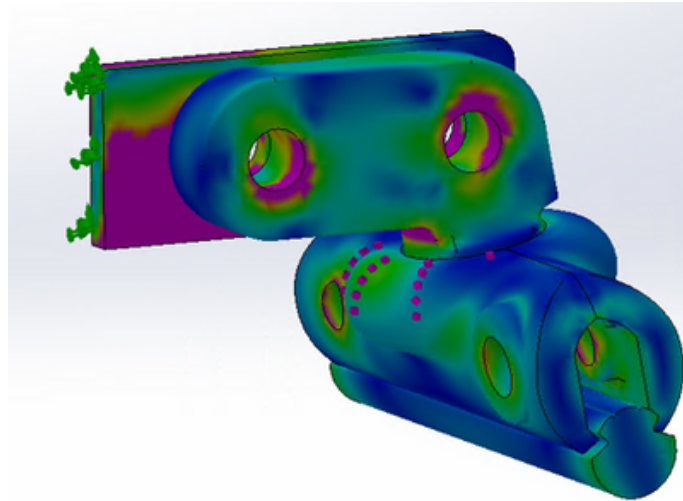
The swivel clip is an assembly used for securing overhead line contact wires in position under tension and applying a stagger to the contact wire to reduce pantograph wear. It is designed for high stress and safety critical applications. The initial problem faced by Network Rail was a dwindling reserve stock level for the 0.3in contact wire swivel clip and some maintenance activities were scheduled to be carried out mid December 2024. During this time Network Rail where unsure if they would have the stock levels to cope with the maintenance. The component had become obsolete and could not be sourced. Network Rail approached AUS to see if we would be capable of designing, testing, manufacturing and supplying a direct replacement for the 0.3in contact wire swivel clip.



The new swivel mechanism allows for faster alignment and secure locking with minimal manual adjustment. The lighter modular components reduce manual handling risk and improve on-site ergonomics, while the robust locking system ensures consistent safety performance across varying site conditions vs the old equipment. From the outset, we worked in partnership with Network Rail engineers to define, prototype, and validate the solution. The result is a product that solves a specific, real-world operational problem, not a hypothetical one. Overall, the material change updated the component to be made from a modern, readily available material. This significantly increased the strength of the assembly meaning it could be used in more extreme load cases and reduced the overall project costs by using Aluminium Bronze rather than Nickel Gunmetal. This resulted in a 4% reduction in the project costs, a 100% British sourced solution and reducing embodied carbon due to local sourcing.

## Project Details

The project started in June 2024 and was successfully completed, with full Network Rail product acceptance, in December 2024. In total, 100 units were supplied and the component can now be readily sourced from AUS. This clearly demonstrates AUS' capabilities for further obsolete component replacements. Throughout the project, AUS worked closely with Network Rail to ensure the voice of the customer was heard and carried forward. This included an initial Finite Element Analysis (FEA) report on the existing clamp with nickel gunmetal as a material and to derive the required loading the clamp must be able to withstand. From this report, AUS suggested that the material could be changed to Aluminium Bronze, which has a similar material composition. Throughout the development of the swivel clip, the customer was kept up to date with the FEA reports, test reports, lead times and delivery times to ensure customer satisfaction is maintained.



## Summary of Product Benefits

Replacing the individual components offers a significant environmental benefit when compared to whole system upgrade or replacement. One reason is for reduced material consumption as only the worn or obsolete assemblies are replaced, resulting in less embodied carbon than that associated with the manufacture and transportation of an entire system upgrade. This also then keeps the existing assets in service for longer and aids Network Rail and the industry by supporting and championing sustainable procurement. From a plant level, the smaller maintenance activities also benefit from requiring smaller plant vehicles to assist with the installation, leading to reduced fuel usage. The process of replacing worn items also reduces the waste generated during the maintenance and installation activities, as entire structure and systems do not need to be replaced, creating fewer and smaller waste streams. From a cost perspective, it reduces the need for large and costly possessions or blockades as the maintenance can be carried out on a 'when needed' basis significantly reducing costs.



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