

Risk of air conditioning system electrical fires on buses

The incident

The Office of Transport Safety Investigations (OTSI) recently conducted a preliminary investigation into a bus fire at Macarthur Square on 16 August 2021. The bus operated by Busabout was severely damaged by fire, likely the result of an electrical fault within the air-conditioning (A/C) system.

The bus was a MAN 18-320 model fitted with a CB80 Custom Coaches body manufactured in June 2012. The A/C system on the bus was manufactured by DENSO Automotive Systems Australia and controlled by a Thoreb M2 programmable node.

Preliminary investigations found damage associated with electrical arcing in the vicinity of the A/C Thoreb M2 control node, specifically in the region of the main S2 connector block and its associated wiring harness.

Inspections of other similarly configured buses, within the Busabout fleet, indicated issues with the wiring harness between the main A/C connector blocks, security of terminals and evidence of terminal discolouration within the main S2 connector block.

Key points for operators

Assess the risks (as per your Safety Management System) relative to your specific fleet, to ensure that controls are in place to minimise the risk of electrical fires. The following actions should be considered for all model buses configured with a DENSO A/C system controlled by a Thoreb M2 programmable node:

- Inspect cabling associated with the Thoreb M2 node and ensure wiring is undamaged and secured correctly with adequate clearance of any possible points of contact (*refer to Figure 1 and Figure 2*).
- Inspect the S2 connector block terminals for discolouration, any evidence of heat damage and ingress of contaminants.
- Review maintenance regimes to ensure inspections adequately address and remedy any issues with wiring integrity (including checking shake proof washers have not been removed), security and overall cleanliness of the A/C system.

Safety message

The findings of the preliminary investigation highlight the importance of effective maintenance of critical high amperage electrical systems.

For further information contact: Transport.Safety@otsi.nsw.gov.au

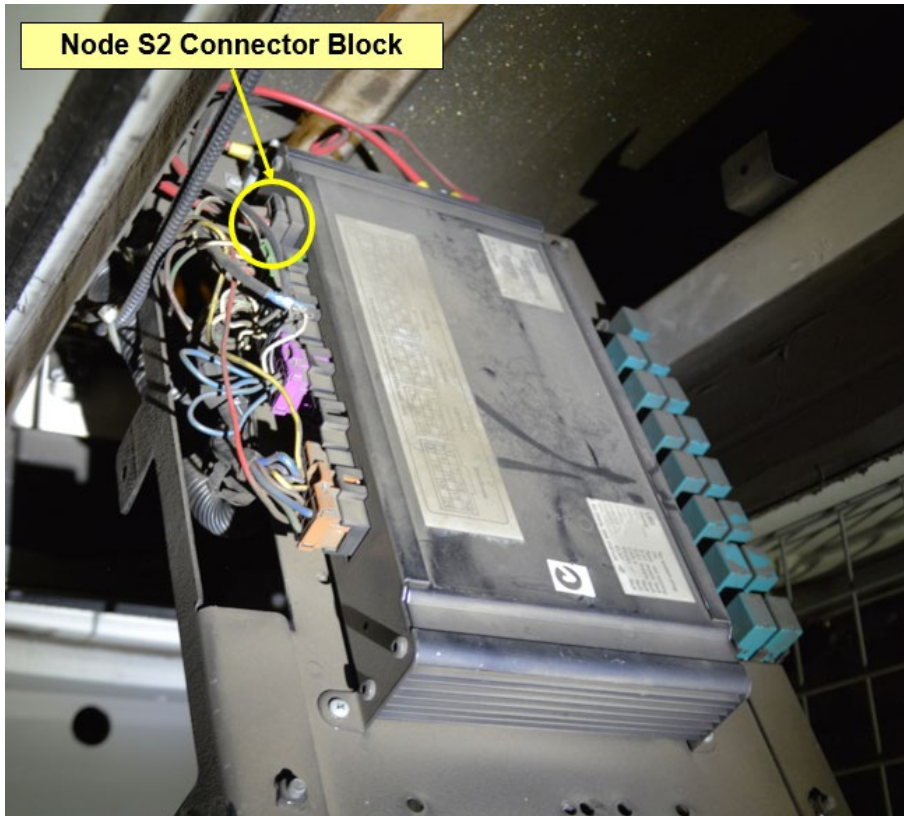


Figure 1: Location of Thoreb M2 Node and S2 connector block in A/C system

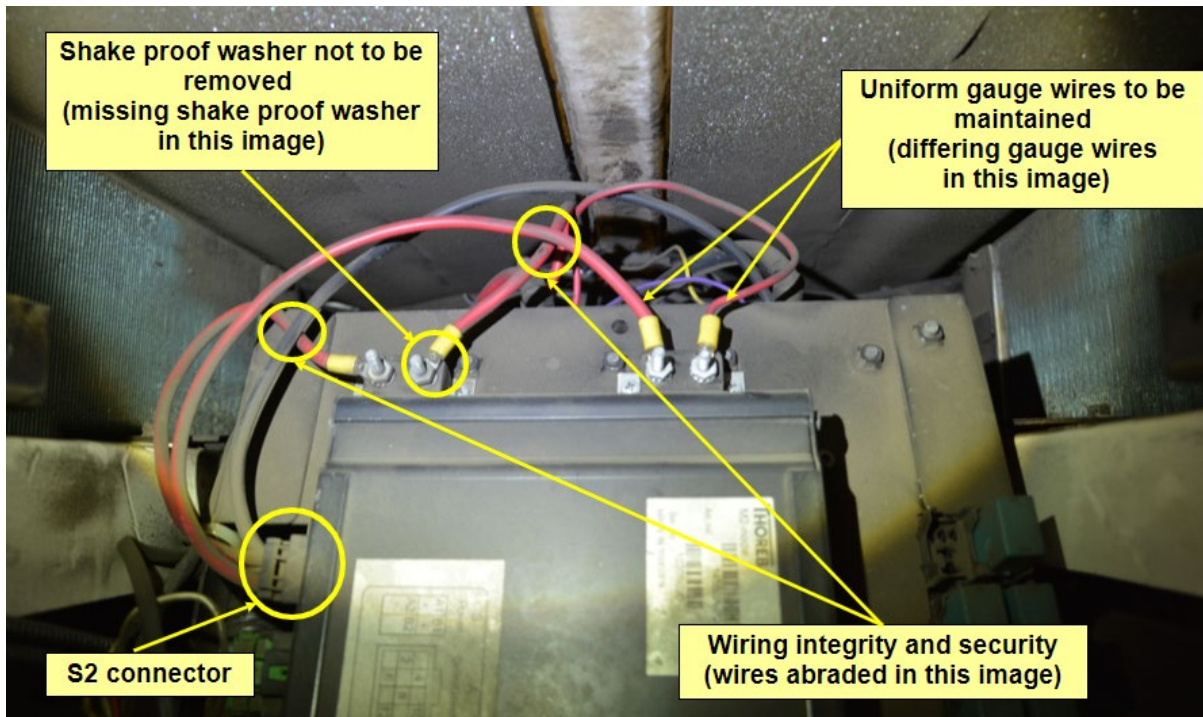


Figure 2: Wiring associated with M2 Node within the DENSO A/C system configuration