GSM-R Bulletin 20

Mod to Handset Base Installation Version 4

AUDIENCE:

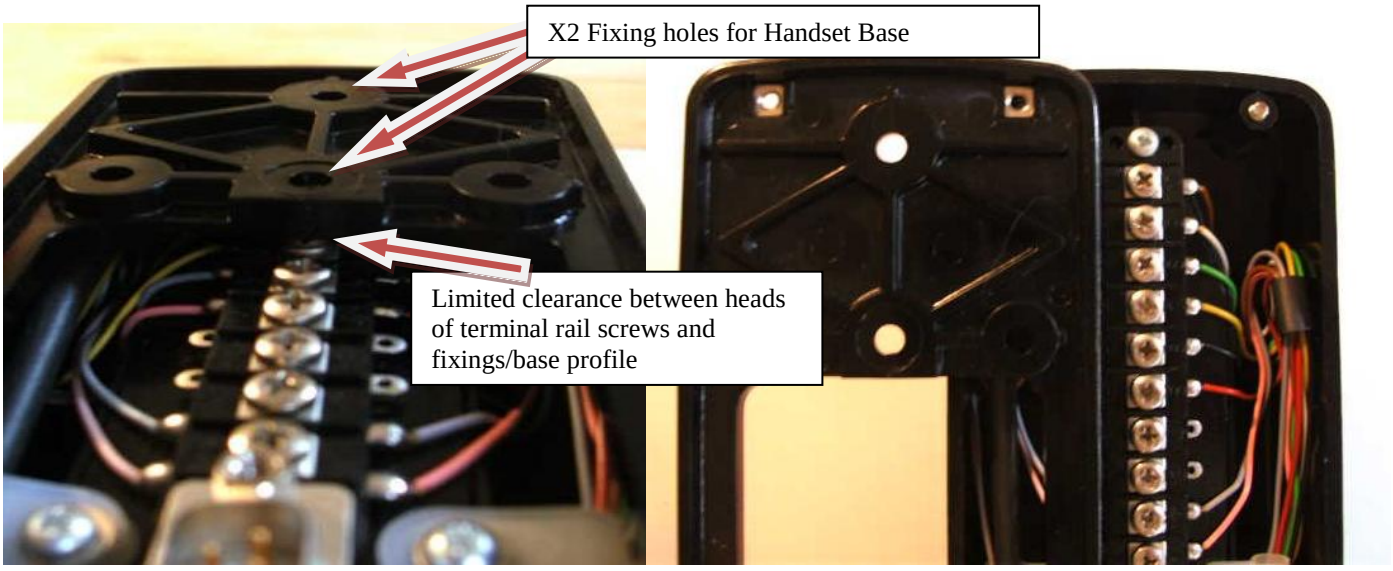
Train Crew	✘	Installation Staff	✔	Signallers	✘	Maintenance	✔

This bulletin is aimed at persons engaged in the installation and maintenance of trainborne GSM-R Cab Radio systems for checking and modifying the GSM-R Handset installation.

BULLETIN INFORMATION

Following a recent failure of a GSM-R Cab Radio in operational service and the issue of NIR 2876, an investigation is being carried out to check and rectify where necessary the fixing arrangements for the GSM-R Handset base.

The symptom of the failure was a loss of voice from the Driver's GSM-R Handset microphone when calling the signaller. The initial investigation on a South West Trains c159 GSM-R installation identified that the fixing arrangement of the Handset Base was as per design, however, it provided a short circuit between the microphone +ve terminal T10 mounted on the Handset Cradle to the vehicle earth via the fixing itself and the metal Handset housing.



A Project review of other GSM-R installation designs has identified that a number of designs specify either the use of M4 spring washers or M4 Form A plain washers under the M4 Pan Head screw which then raises the profile of the fixing above the recess depth and could provide a similar failure mechanism. This does not align with the Siemens Interface Control Document 666/UJ/86001/000 iss 5 which states *"The fixing screws should be Pan Head type and should NOT have a washer fitted under the head."*

The ICD also details that the handset being mounted using qty x4 M5 fixing screws, however, the apertures in the base moulding will not accommodate for M5 fixings. This has been confirmed by Siemens as an error and that M4 fixings should be used.

If only the top fixing is used then the short circuit can appear between the brown wire at terminal T10 (pin 2 on D-type) and vehicle earth.

If the second down fixing is used then the short circuit can appear between terminals T6 (pin 10 on D-type), T7 (pin 4 on D-type) and vehicle earth.

The Project have contracted Interfleet Technology Ltd to carry out an independent design review. This has been completed and a report produced (ref T28659/305 20130104-LET-NR attached) that recommends the use of M4 Pan Head screws, with no washers under the screw head and Loctite 222 applied to the screw threads on installations that use rivnuts/threaded inserts.

Remedial Actions

The action to resolve this issue is to carry out a fleet wide check on GSM-R Handset installations that have been identified as incorporating a washer under the screw head and remove the washer, apply Loctite 222 Threadlocker to the screw thread and refit and undertake a handset test (On DCP press menu button MU, option 5 - Maintenance Menu and then option 2 - Handset Test).

The following list has been compiled after a Project design review and contains comments on the current specifications and if any actions (highlighted in yellow) are required per class.

Vehicle Class	Designer	Comments	Action Required
08	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
09	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
20	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
31	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
37	ESG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
43	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
47	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
56	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
57	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
58	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
59	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
60	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
66	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
67	ESG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
73	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
86	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
90	ESG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
91	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
142	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
143	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
144	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
150/0 & /1	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test

150/2	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
153	TPL	M4 screw only	Fit as per drawing
155	TPL	M4 screw only	Fit as per drawing
156	TPL	M4 screw only	Fit as per drawing
158	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
159	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
165	TPL	BTROS confirm OK	Fit as per drawing
166	TPL	BTROS confirm OK	Fit as per drawing
168	TPL	CACU handset used	Fit as per drawing
170	TPL	CACU handset used	Fit as per drawing
171	TPL	CACU handset used	Fit as per drawing
175	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
180	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
185	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
220	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
221	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
222	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
313	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
314	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	None
315	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
317	TPL	M4 screw only	Fit as per drawing
318	DRG	M4 screw only + Loctite 242	Fit as per drawing
319	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
320	TPL	M4 screw only	Fit as per drawing
321	TPL	M4 screw only	Fit as per drawing
322	TPL	M4 screw only	Fit as per drawing
323	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
325	DRG	M4 screw and nut called up	Fit as per drawing
332	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
333	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
334	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
350	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing

357	TPL	CACU handset used	Fit as per drawing
360	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
365	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
375	TPL	CACU handset used	Fit as per drawing
376	TPL	CACU handset used	Fit as per drawing
377	TPL	CACU handset used	Fit as per drawing
390	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
442 Refurbished	DRG	CACU handset used	Fit as per drawing
444	TPL	Flat washer called up	Remove washer, apply Loctite 222, refit & test
450	TPL	Flat washer called up	Remove washer, apply Loctite 222, refit & test
455	TPL	CACU handset used	Fit as per drawing
455	TPL	Spring washer called up on Porterbrook vehicles	Remove washer, apply Loctite 222, refit & test
456	TPL	CACU handset used	Fit as per drawing
458	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
460	TPL	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing
465/0/1	DRG	CACU handset used	Fit as per drawing
465/2 & 466	DRG	CACU handset used	Fit as per drawing
507	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
508	TPL	Spring washer called up	Remove washer, apply Loctite 222, refit & test
082 DVT MK3	DRG	Flat washer called up	Remove washer, apply Loctite 222, refit & test
082 DVT MK4	DRG	Drawing calls up screw, flat washer and nut. Normal practice would be to place the washer under the nut, not the screw	Fit as per drawing