Fitting sound in a 'N' gauge 'Spamcan'

PAUL CHETTER explains how to fit sound to the newly released and finely detailed 'N' gauge 'Merchant Navy' from the Bachmann Graham Farish range using readily available decoders and speakers.

There is no external hint that sound has been fitted, but pressing F1 on the controller will confirm that this locomotive is definitely in steam!

THE IMPROVEMENT in quality and detail of British outline 'N' gauge models has exploded recently. By a happy coincidence, the tenders of steam locomotives have become less cluttered internally – and that gives us some real opportunities for Digital Command Control (DCC) in the smaller scale. Though not yet a simple plug and play solution, installing sound in Farish's original condition 'Merchant Navy' is now a viable option providing suitable components are selected.

The miniature Zimo MX648 decoder is the obvious choice since it fits the available space, whilst still allowing room to install a full size 10mm x 15mm cube speaker. This combination results in smooth motor control with a surprisingly loud sound output.

WHAT WE USED

PRODUCT	SUPPLIER	PRICE
Bachmann Graham Farish 'Merchant Navy'	*www.bachmann.co.uk*	£159.95
Zimo MX648 sound decoder	*www.digitrains.co.uk*	£90.00
Zimo 8mm x 12mm miniature speaker	*www.digitrains.co.uk*	£7.00

INSTALLATION

The complete installation is contained within the tender so there is no need to separate the locomotive body from its chassis. Make no mistake though - this is a compact installation and good dexterity and soldering skills will be required to complete it successfully. You may feel the work is not for you, but the step by step guide shows that it can be done.

The tender body is held in place with four 'pips' in the chassis which locate into four tiny holes in the lower tender sides. Remove by gently prising the top away from the chassis. To create as much space as possible, some minor modifications will need to be made to the tender chassis and bunker which may affect your warranty. For the same reason I removed the very thick shrinkwrap insulation from the decoder, disconnected several wires and soldered the model's motor wires direct to the decoder. If you damage the decoder by doing this the warranty will be void. Zimo, however, will repair out of warranty or user-inflicted damage for a fixed fee of £15.

The cutaway picture shows the general layout but not the coal space that reduces the vertical space available. The lower portion of this was removed to provide the necessary clearance using a minidrill fitted with a burr bit. Sufficient of the bunker remains to support the dummy coal load casting. A replacement false floor could be made if you wanted to go ahead and add a 'real' coal load in place of the metal casting.

The tender has a split chassis design, with each side electrically isolated from the other. This is used to pass power from the track pick-ups to the decoder. It is important to note the screws which fix the 6-pin socket printed circuit board (PCB) to the chassis also complete the electrical connections.

This PCB must be removed and the supporting towers reduced in height a little so an alternative way to maintain these connections is required. I made some small eyelets from scrap capacitor leads which could be soldered to the decoder red and black wires and held tight against the chassis halves by the screws.

The inverted cube speaker fits snugly below the rear of the tender top. Unfortunately, there is a raised centre section on the chassis which will partly impinge on the speaker enclosure. One solution would be to reduce the depth of the speaker enclosure entirely. I decided to cut a recess into the enclosure which would then fit around the potential obstruction. Any resulting gaps were sealed with black mastic.

The chassis also has a raised longitudinal moulding along each side to support the tender lower edges. This marginally reduces the width of the space available for the speaker enclosure. To overcome this restriction I tapered the shorter sides of the enclosure with a file, removing just enough material to ensure a flush but firm fit.

With the components correctly wired up and the decoder fully insulated using Kapton tape the tender body was clipped into place on the chassis.

The sound is provided by a custom project I created for Digitrains originally designed for the Hornby 'West Country' – HM71. It incorporates automatic wheelslip sounds if you try to pull away too briskly with a train, realistic levels of inertia and momentum, depending on whether you are in 'light engine' or 'heavy train' mode and a progressive brake force feature which realistically simulates the way in which real locomotive brakes operate. HGM

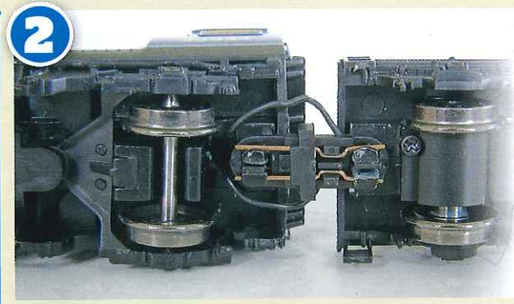
STEP BY STEP INSTALLING DCC SOUND IN AN 'N' GAUGE 'MERCHANT NAVY'

Intermediate
Beginner SKILL LEVEL Advanced

1

It might not offer the greatest space for a sound installation, but the new 'Merchant Navy' for 'N' gauge isn't as difficult as you might think to work on.

2

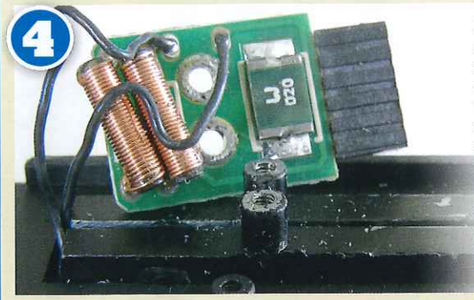


The drawbar detail shows how the track power is connected between locomotive and tender with brass strips. The black wires are from the decoder socket to the motor.

3

These screws, shown released, hold the 6-pin connector printed circuit board (PCB) to the chassis and also provide the track pick-up connections. This PCB will be removed to release space and the decoder hard-wired into the chassis for compactness.

4

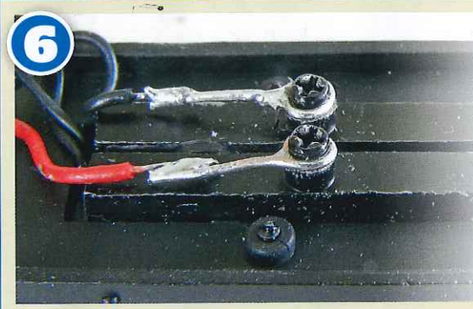


Remove the PCB and detach the (black) motor wires ready to solder to the decoder. The supporting towers should be shortened to about 2mm high with a fine file. Be careful not to remove too much as there needs to be enough thread remaining for the screws to tighten correctly.

5

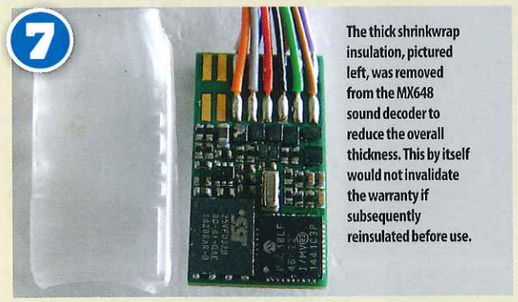
I made some eyelets from scrap capacitor leads to form the new connections for track power. These represent the five stages of production, the final of which was soldered for strength.

6



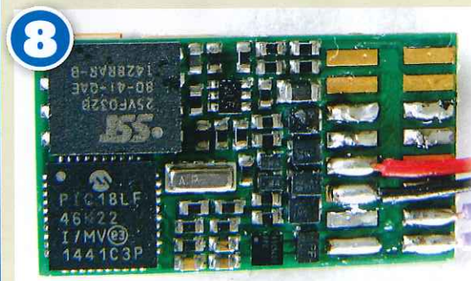
The wire used for the eyelets takes solder readily whilst the screws hold them tightly against the chassis halves. This arrangement provides good electrical continuity for the decoder to access track power. Note the fixing 'pip', the chassis internal side rails and the central raised area.

7



The thick shrinkwrap insulation, pictured left, was removed from the MX648 sound decoder to reduce the overall thickness. This by itself would not invalidate the warranty if subsequently reinsulated before use.

8



I removed all unnecessary wires to reduce bulk being careful to avoid damaging the insulation on those which are to be kept. As the 'Merchant' only requires motor, pick up and speaker connections only six wires need to be connected to the decoder.

9

I re-orientated the purple speaker wires to protect them from breakage and soldered on the motor wires where the orange and grey wires from the decoder were once fitted. These are optional steps as joining the locomotive and decoder wires would be an alternative, though with slightly more bulk to accommodate.

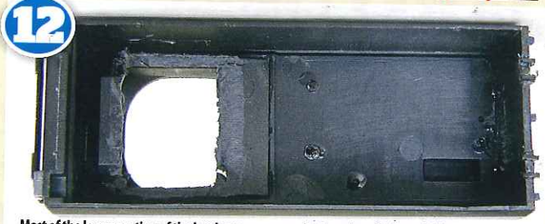
10

The finely detailed tender body has the cast metal coal load removed to show bunker detail. If you were planning to add a 6-pin standard motor decoder this area could be loaded with real coal.

11

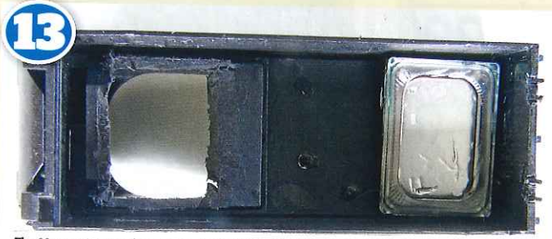
This is the bunker moulding seen from below. The base of the bunker takes up a substantial amount of space inside the tender, particularly when it comes to installing sound.

12



Most of the lower portion of the bunker was removed using a burr bit in a minidrill. A lip was left at the front and rear to support the metal coal load. An alternative would be to create a false floor from plastic sheet and cover it with crushed coal.

13



The 10mm x 15mm cube speaker, shown here without its enclosure, fits transversely below the tender top.

14

Using a fine file I tapered the shorter sides of the speaker enclosure to fit tightly between the chassis internal rails.

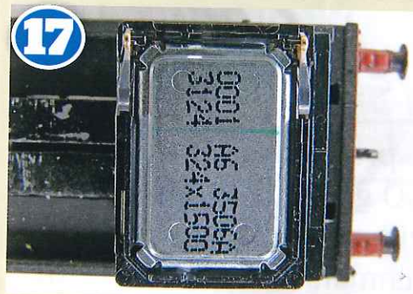
15

I made a recess to allow most of the enclosure to fit flush to the chassis floor by cutting out a section as shown here.

16

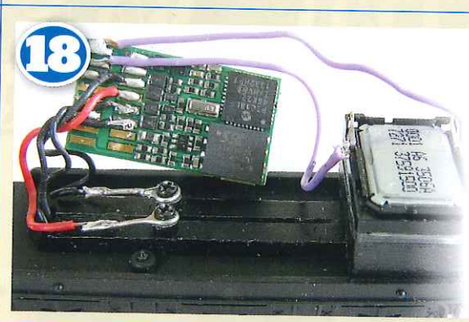
I carefully split the enclosure from the speaker then fitted the enclosure to the chassis. Any gaps were sealed with black mastic to create an airtight speaker enclosure – essential for best performance.

17



I reattached the speaker to its enclosure using cyano (super) glue. The distortion in this extreme close up makes it look as if the speaker is too big to fit, but it does.

18



This is a view of the fully wired components prior to insulation.

19

The decoder is wrapped in Kapton tape for insulation in this view showing the general disposition of components before reassembly. I also added some insulation to the tops of the screws and the eyelets for safety.

20

The decoder can be seen through the bottom of the bunker. If necessary use this access to manoeuvre it into the best position to allow the tender body to be refitted correctly. Then gently but firmly press the tender top back into position until it positively locates on the fixing 'pips' completing the installation.