'SCOTSMAN' Sound

The National Collection's famous Gresley 'A3' became a must-have addition to the roster for our modern era layout, West Coast Cement. **MIKE WILD** explains how he installed a Zimo sound decoder, stay alive, speaker and firebox flicker into the popular Hornby 'Pacific'.

TOOLS
SOUND DECODER INSTALLATION

- » Flat blade screwdriver
- » Crosshead screwdriver
- » Soldering iron
- » Insulation tape
- » Superglue
- » Liquid Gravity
- » Plastic cement

Note: Liquid Gravity and Roket Superglues are produced by Deluxe Materials. Visit www.deluxematerials.co.uk for more information.

FOR ME THE GRESLEY 'A3s' looked at their best when they had German style smoke deflectors and the lower numberplate position, and I've admired the recent restoration of the National Collection's sole-surviving 'A3', 60103 *Flying Scotsman* in this guise. There is something about the livery combination and those front-end details that just fit together, although I know that plenty of enthusiasts will disagree with me.

This sound project started following requests to see *Flying Scotsman* running on our exhibition layouts at recent events. With the impending Hornby Visitor Centre Open Day on August 17/18, I thought it only right to have this famous 4-6-2 running on our modern era West Coast Main Line layout at the head of a charter train. To start the ball rolling I picked up Hornby's most recent version of 60103 in BR lined green and started work.

This current model (Cat No. R3508TTS) comes factory fitted with a Hornby Twin Track Sound decoder connected to a 28mm round speaker in the tender. It offers out of the box sound for an excellent price, but we knew we could raise the game for this 4-6-2 by upgrading the decoder and speaker to top of the line products from Zimo and Rail Exclusive. As usual we have tried to keep physical modifications to the minimum, though in this case we have removed the internal moulding for the coal space. If you prefer not to cut this section away you could retain the original tender weight and a 28mm round speaker with the MX645R decoder and still have space for the stay alive capacitor pack, though the sound quality won't be as good as the larger speaker we have used.

The method shown in this guide is applicable to all Hornby 'A3' models with a tender mounted

Following its return to main line condition in early 2016, 60103 *Flying Scotsman* strides north at Burn with the 7.40am London King's Cross-York charter on February 25 2016 under the wires, just as our model will be seen on West Coast Cement. Gordon Edgar.

8-pin decoder socket, so even if you don't have or want 60103 in your collection you can make the same upgrades to other 'A3s'. You may need to change the speaker type to fit inside a lower profile coal rail tender, as supplied with some Hornby 'A3s', but if you have a full height corridor or non-corridor tender the following step by step guide will explain all.

For this project we selected the Zimo MX645R with Digitrains Active Drive sound file which has been produced by Paul Chetter. Our primary reasons for choosing this decoder are the added value of realistic braking and the second sound set that these files offer to allow the model to reflect the locomotive with a heavy or light load. We combined this with a Digitrains stay alive pack which offers between six and 20 seconds of on-board charge should it be needed while our speaker this time is the impressively capable Rail Exclusive 'Boom Box' 50mm x 20mm x 10mm design. To take the project a step further we added a glowing firebox LED and paired this to work with the coal shovelling sounds activated by F6 on a digital handset – a simple adjustment of two CV values is all that was required to do this to put these elements together and create the flickering effect.

The result is an 'A3' which looks and sounds just like the real thing. The locomotive is now fit for service at the head of an eight-coach set of Mk 1 carriages on West Coast Cement where its modern livery elements fit in perfectly.

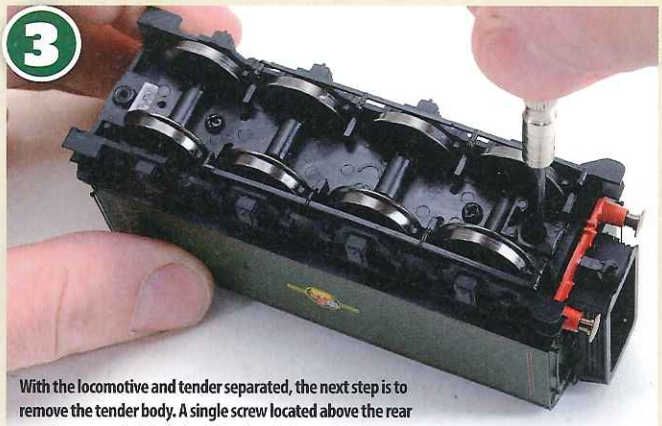
The following step by step guide shows how we installed a Zimo MX645R decoder, stay alive, speaker and firebox flicker LED into the Hornby Gresley 'A3' 4-6-2. HMRI

60103 thunders through Topley Dale on test at the head of a rake of BR Mk 1 stock. It will be hauling the same load on West Coast Cement at exhibitions.

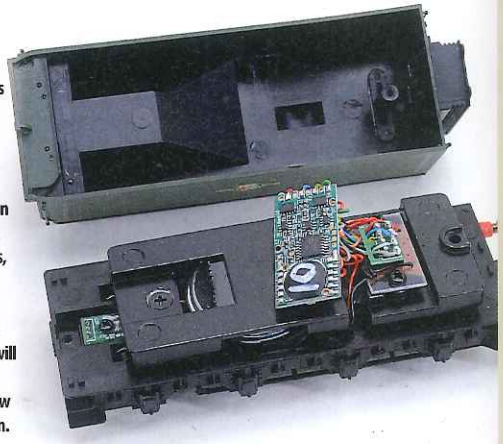
INSTALLING SOUND IN HORNBY LNER 'A3' 4-6-2

1 Our project locomotive is Hornby's latest version of the National Collection's famous 'A3' 60103 *Flying Scotsman*. This particular model comes with a Twin Track Sound (TTS) chip installed, but the methods are identical (except for removal of the TTS decoder) for all recent Hornby 'A3s' with a tender mounted decoder socket.

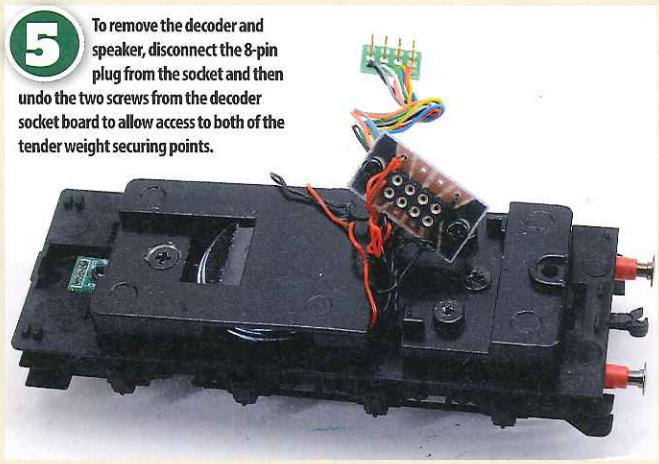
2 To begin, we are going to separate the locomotive and tender as the majority of the work will be on the latter. Disconnect the four-wire plug from the tender socket using Hornby's X6468 plug removal tool then release the single slotted screw which secures the drawbar to the tender.



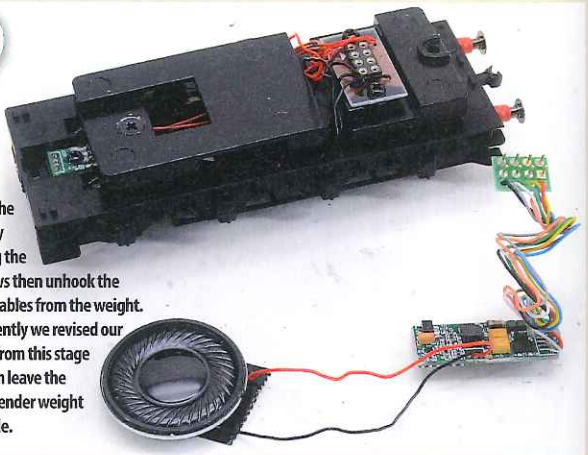
3 With the locomotive and tender separated, the next step is to remove the tender body. A single screw located above the rear coupling mount holds the body in place. It is a crosshead screw.



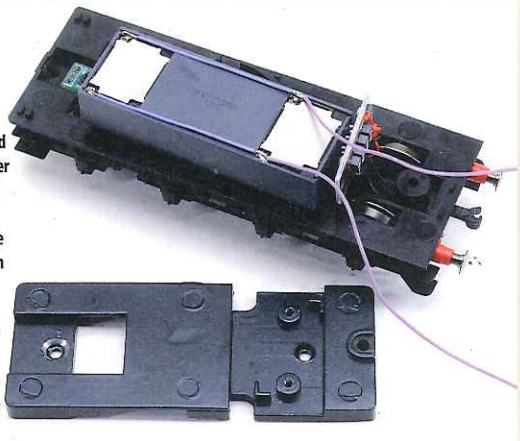
4 Inside the tender of this model is a Hornby TTS sound decoder plus a 28mm round speaker. The sound from this is good value and offers an ideal starting point for digital sound modellers, but it doesn't have the sophistication or synchronisation of the Zimo decoder that we will replace it with nor the sound quality of the new speaker we have chosen.



5 To remove the decoder and speaker, disconnect the 8-pin plug from the socket and then undo the two screws from the decoder socket board to allow access to both of the tender weight securing points.



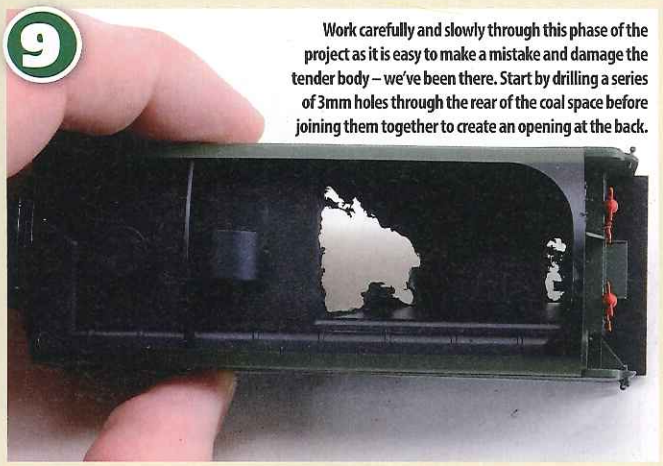
6 Release the weight by removing the two screws then unhook the speaker cables from the weight. Subsequently we revised our method from this stage so you can leave the original tender weight to one side.



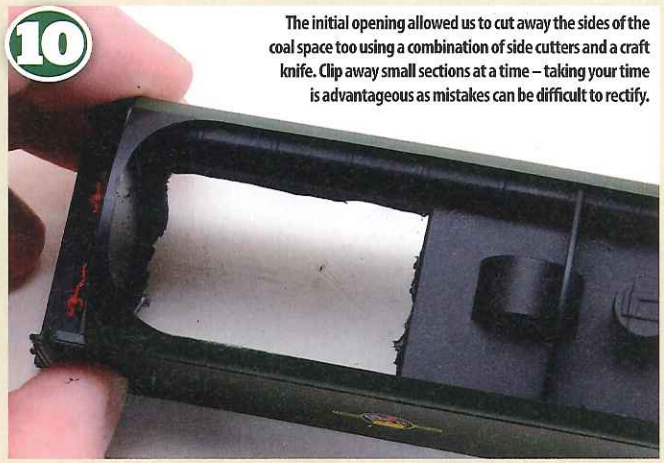
7 With the tender weight out we found that we could relocate the decoder socket to a vertical alignment while still allowing ample space for the 50mm x 20mm speaker, MX645R decoder, stay alive pack and all the necessary wiring. The tender weight is no longer required.

8 To make space for all this in the tender body, the coal space needs to be cut away from underneath the removable plastic load. Handily, the plastic load can be used to conceal the opening once it has been made.

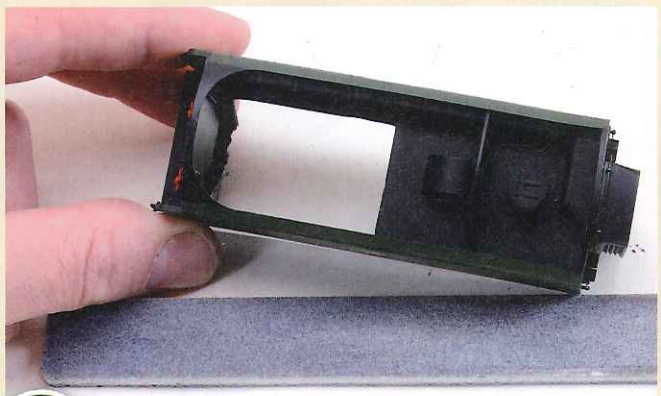
Intermediate
Beginner SKILL LEVEL Advanced



9 Work carefully and slowly through this phase of the project as it is easy to make a mistake and damage the tender body – we've been there. Start by drilling a series of 3mm holes through the rear of the coal space before joining them together to create an opening at the back.



10 The initial opening allowed us to cut away the sides of the coal space too using a combination of side cutters and a craft knife. Clip away small sections at a time – taking your time is advantageous as mistakes can be difficult to rectify.



11 To clean up the new opening we used an Albion Alloys coarse sanding stick which made light work of the remaining rough edges.

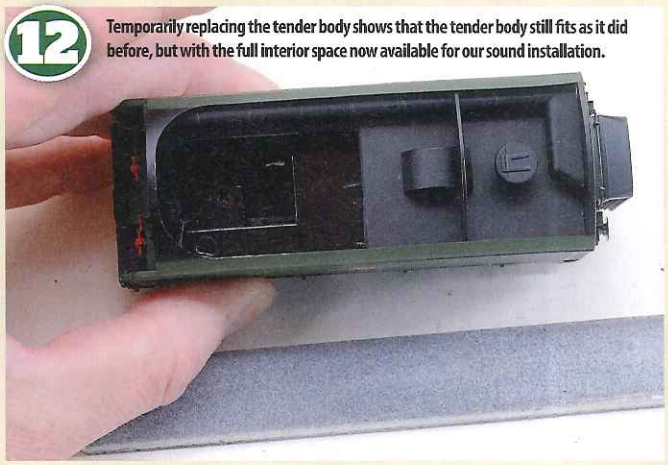
TECHNICAL DETAILS

Hornby LNER 'A3' 4-6-2

Manufacturer:	*www.hornby.com*
First released:	2005
Description:	LNER 'A3' 4-6-2 60103 *Flying Scotsman*
Gauge:	'OO'/16.5mm
Scale:	4mm:1ft
Length (over buffers):	293mm
Price:	£220.99 (R3508TTS)
Era:	11 (60103, as featured)
Couplings:	Small tension locks
DCC:	DCC ready, 8-pin socket
Speaker space:	28mm round
Exterior lights:	None
Interior lights:	None
Motor type:	Five-pole, skew wound
Flywheel:	None
BR power classification:	7P/6F
Wheel arrangement:	4-6-2
Purpose:	Express passenger
Haulage capacity (expected):	Eight-ten carriages
Haulage capacity (actual):	12 carriages

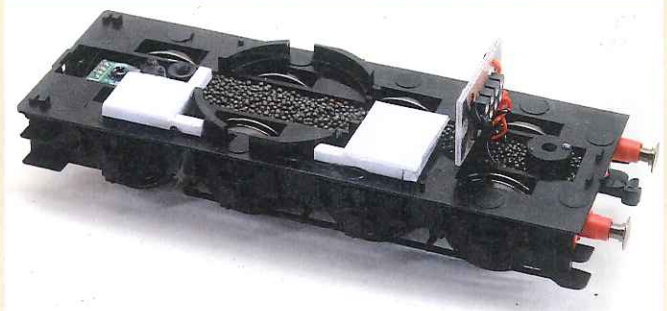
WHAT WE USED

PRODUCT	SUPPLIER	CAT NO.
Zimo MX645R 8-pin sound decoder	*www.digitrains.co.uk*	MX645R
Zimo LNER 'A3' 4-6-2 sound file	*www.digitrains.co.uk*	ZS005A
'Boom Box' 50mm x 20mm speaker	*www.digitrains.co.uk*	SP50x20x10
Stay alive pack (up to 20 seconds)	*www.digitrains.co.uk*	860009
Orange 3mm LED	*www.rapidonline.com*	55-0095



12 Temporarily replacing the tender body shows that the tender body still fits as it did before, but with the full interior space now available for our sound installation.

13 Now the tender chassis has no metal weight, we need to reinstate mass to keep it reliable on the track. We covered the electrical connections with Black Tack and then filled the void in the centre of the chassis with Deluxe Materials Liquid Gravity. This was fixed in place with the same manufacturer's Roket Hot – a very thin, fast acting superglue which flows into the metal balls to secure them in place in seconds.



14 To provide a solid base for the speaker, strips of 2mm plastic and 1mm plastic sheet were glued together to match the height of the original speaker housing. This provides a firm base on which to mount our powerful new speaker. The 8-pin socket has been glued to one of the spare mounting points for the original tender weight.

Intermediate
Beginner SKILL LEVEL Advanced

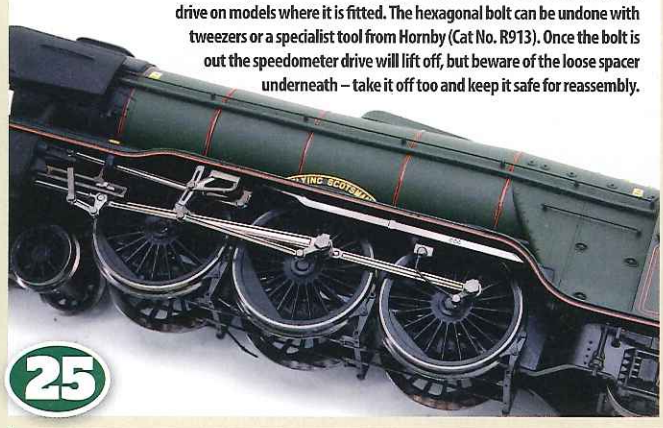
23

Replacing the plastic coal load conceals the new internals of the tender. We may replace this with a flat section of plasticard at a later date with a real crushed coal load on top.

24

To finish the installation we need to remove the locomotive body. One slotted screw holds the body in place at the front above the bogie.

SOUND FUNCTIONS	
F0	Lights on/off (if fitted)
F1	Sound on/off
F2	Brakes
F3	Long whistle
F4	Short hard whistle
F5	Heavy/light load selection
F6	Coal shovelling
F7	Injector
F8	Blower
F9	Flange squeal
F10	Safety valve
F11	Westinghouse pump
F12	Handbrake
F13	Buffering up
F14	Coupling
F15	Drain cocks
F16	Water filling
F17	Station ambience
F18	Guard's whistle
F19	Fade all sounds
F20	Shunt mode
F27	Volume down
F28	Volume up



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Before removing the locomotive body, be sure to disconnect the speedometer drive on models where it is fitted. The hexagonal bolt can be undone with tweezers or a specialist tool from Hornby (Cat No. R913). Once the bolt is out the speedometer drive will lift off, but beware of the loose spacer underneath – take it off too and keep it safe for reassembly.

26

Now that the body is off, we can make a 3mm hole through the firehole door for the LED. Start by making a pilot hole with a 1mm drill in a pin vice for control. Open this out with a 3mm drill and, if necessary, use a round file to increase its diameter if the LED won't fit.

27

Reattach the locomotive chassis to the tender so that the wires for the LED can be routed through the chassis. Then solder the wire from the blue common positive to the positive leg of the LED (the longer leg) and the wire from the brown negative control wire to the negative leg of the LED. Finally cut away the excess length of the LED legs.

28

The LED can now be pushed into the opening in the firehole door with its legs bent at 90 degrees. Black insulation tape secures the LED in place and prevents short circuits between the legs and other internal components of the 'A3' chassis.

29

Finally, refit the locomotive body and fix it in place with the front screw. Take care during reassembly not to trap the new wires to the LED and take any excess wire back into the tender body. Reassemble the speedometer drive and the 'A3' is now ready for testing.

30 As a final step for this project, we need to remap the function output for the firebox flicker to operate with the coal shovelling sound on F6. To do this place the model on a programming track and use your DCC handset to set CV40=8 and set CV128=8 to create the flickering effect. Address your locomotive as per your own system, and your 'A3' is ready to roll.

15 The Rail Exclusive 50mm x 20mm 'Boom Box' speaker fits perfectly along the length of the tender chassis. We offset it to one side to leave space for the stay alive and decoder on the other.

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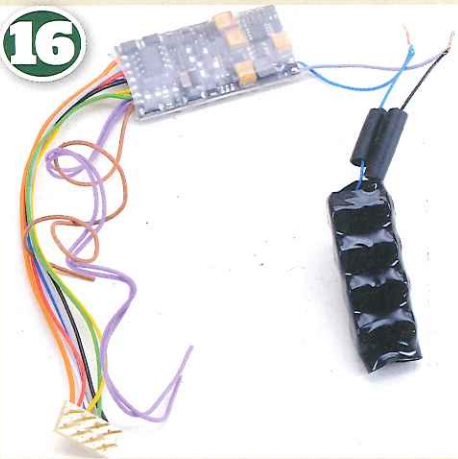
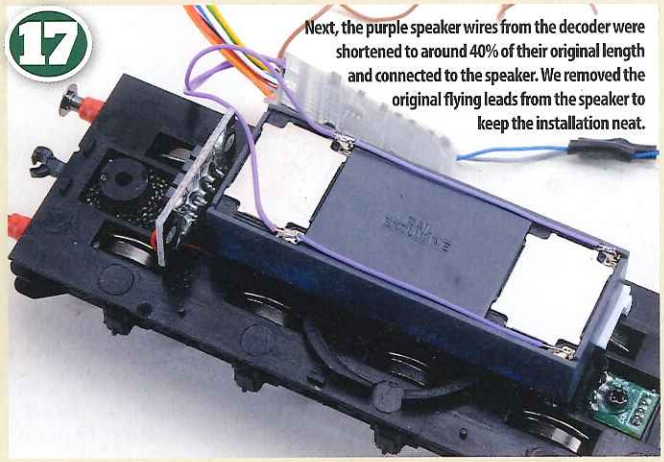
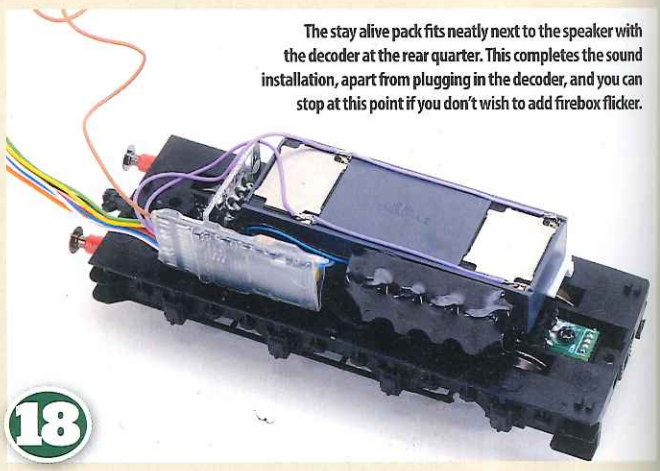


Following our usual method, the Digitrains 860009 capacitor pack was joined to the blue (+ve) and grey (-ve) stay alive connections on the MX645R decoder. The wires were cut to length, twisted together then soldered. The final step was to cover the joins with heatshrink insulation.

17 Next, the purple speaker wires from the decoder were shortened to around 40% of their original length and connected to the speaker. We removed the original flying leads from the speaker to keep the installation neat.





18 The stay alive pack fits neatly next to the speaker with the decoder at the rear quarter. This completes the sound installation, apart from plugging in the decoder, and you can stop at this point if you don't wish to add firebox flicker.

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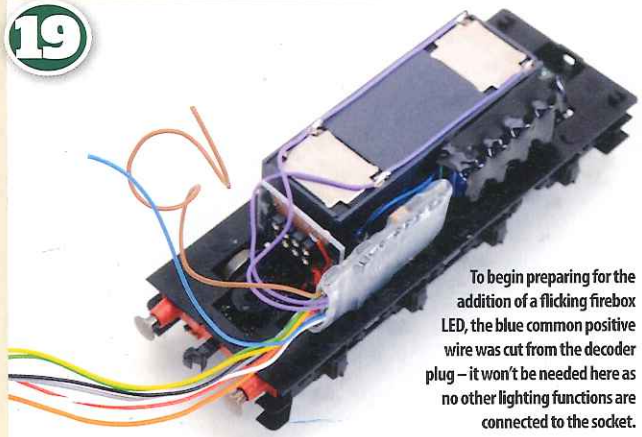

To begin preparing for the addition of a flicking firebox LED, the blue common positive wire was cut from the decoder plug – it won't be needed here as no other lighting functions are connected to the socket.

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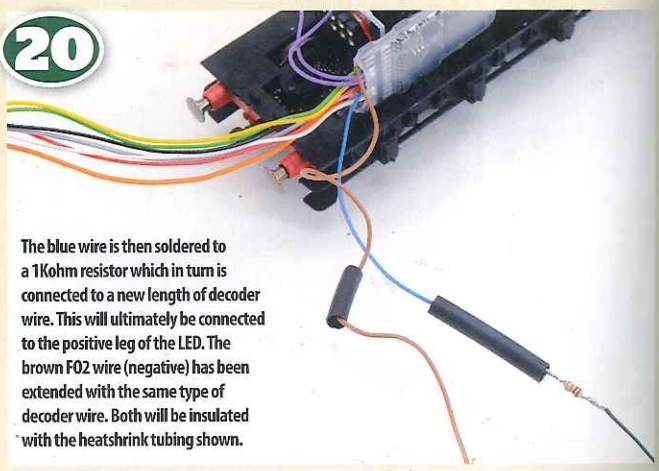
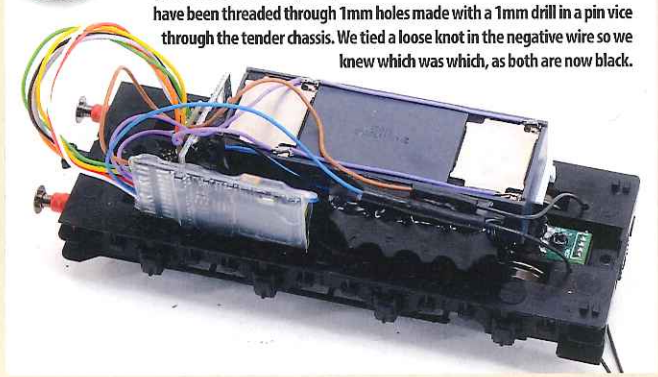


The blue wire is then soldered to a 1Kohm resistor which in turn is connected to a new length of decoder wire. This will ultimately be connected to the positive leg of the LED. The brown F02 wire (negative) has been extended with the same type of decoder wire. Both will be insulated with the heatshrink tubing shown.

21 The 8-pin plug is now connected to the socket (aligning the orange wire with Pin 1 on the socket) and the blue and brown wires have been tacked in place on top of the stay alive pack with black tack. The new leads for the LED have been threaded through 1mm holes made with a 1mm drill in a pin vice through the tender chassis. We tied a loose knot in the negative wire so we knew which was which, as both are now black.



22 The tender body can now be refitted. Everything fits comfortably inside with space to spare above the speaker. The new LED leads have been made with black wire to help disguise their appearance between the locomotive and tender.