

'Radial' retrofit

Oxford Rail's Adams 'Radial Tank' 4-4-2T is the latest subject for **JEREMY FAIRLIE-SMITH**. He shows how to add a Zimo decoder, speaker and 'stay alive' capacitor pack into this compact 'OO' gauge tank engine.



THIS ADAMS 'RADIAL TANK' was Oxford Rail's first 'OO' gauge ready-to-run locomotive (HM103). Oxford made modifications to the chassis design after the first version modelling 30583 in BR livery was produced, allowing the front bogie more vertical movement, and it has proved to be a reliable and capable locomotive.

However, it has competition as Hornby also

released its version in summer 2016 (HM110) and, considering only three survived into BR ownership on the Lyme Regis branch, there is plenty of choice on the market. This includes London & South Western Railway (LSWR), Southern Railway (SR) and British Railways (BR) liveried examples.

The subject of this project is Oxford Rail's model of preserved locomotive

488 in LSWR green. The real locomotive is based at the Bluebell Railway and is currently on static display at Sheffield Park as the only survivor of the class.

Oxford Rail has produced a factory sound fitted version which included a revised chassis design with changes to the metalwork in the bunker to accommodate a speaker and bigger decoder. However, the speaker enclosure

ZS036A ADAMS RADIAL TANK STEAM LOCOMOTIVE WITH ACTIVE-DRIVE

| | | | |
|------------|-------------------------|------------|-----------------------|
| F0 | Lights if fitted | F12 | Safety valves lifting |
| F1 | Sound on/off | F13 | Buffer up |
| F2 | Brake key* | F14 | Coupling |
| F3 | Whistle one | F15 | Drain cocks |
| F4 | Whistle two | F16 | Water filling |
| F5 | Light loading shift** | F17 | Aux 2 |
| F6 | Coal shovelling + Aux 1 | F18 | Guard's whistle |
| F7 | Injector | F19 | Fade all sounds |
| F8 | Blower | F20 | Whistle |
| F9 | Flange noise | F27 | Volume down |
| F10 | Ejector | F28 | Volume up |
| F11 | Vacuum brake | | |

***F2 Brake key** - When closing the throttle, the locomotive will coast and decelerate very slowly. To slow the train press F2 and the brakes actually work speeding up how fast the locomotive slows down just like a real brake control in the cab. Holding F2 on creates a controlled emergency stop.

****F5 Light load** - This has the effect of reducing the inertia and momentum settings simulating the way a locomotive would respond to the throttle without a heavy train behind it.

TOOLS AND MATERIALS

- » Small crosshead screwdriver
- » Tweezers
- » Fine point soldering iron
- » Flux cored electrical solder
- » Wire cutters
- » Wire strippers
- » Thin heatshrink tube, 1.6mm
- » Black tack or blue tack
- » Insulating tape
- » Hobby drill kit with small drill bits and cutting discs
- » Cyanoacrylate glue
- » Small long nosed pliers
- » Small hooked tool
- » Foam pad or service cradle

The Oxford Rail Adams 'Radial' 4-4-2T made its debut in December 2015 (HM103). Each model has been equipped with an 8-pin decoder socket allowing a decoder to be fitted after purchase. With care full digital sound and 'stay alive' can be added to this compact locomotive.



was small and as a consequence the overall sound was pretty quiet. This version can be improved with a different approach to utilising the space in these models involving replacing and repositioning the speaker in the sound fitted versions which will improve them significantly. The techniques outlined in this step by step guide for the DCC ready version can be applied to the DCC sound

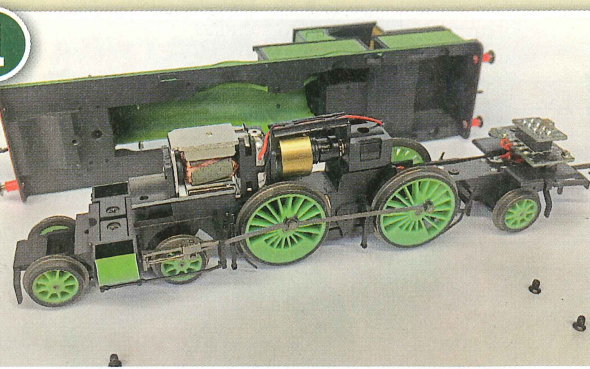
fitted models to reposition the speaker.

In this guide I will be tackling the early, pre-sound, chassis version which is very tight for space being designed for only a very small non-sound 8-pin decoder. To get the results we are looking for with sound and high power 'stay alive' so necessary in small locomotives we'll be using the Zimo MX648R decoder hardwired in, the Lais

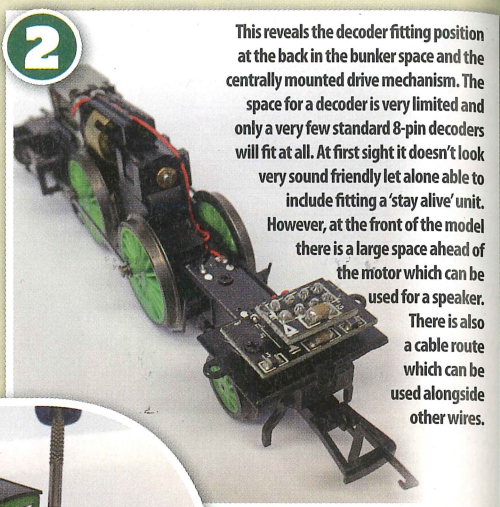
DCC 16V 'stay alive' unit (Cat No. 860009) with onboard charge circuitry and a Zimo 10mm x 15mm x 9mm cube speaker, (Cat No. LS10x155). The sound file we'll use for this project is the Active-drive ZS036A Adams Radial Tank, a generic file created for two cylinder locomotives with early Southern Region whistles in character with this model.

Read on to learn more. [Learn](#)

BY STEP INSTALLING SOUND AND STAY ALIVE IN A OXFORD RAIL ADAMS 'RADIAL' 4-4-2T



The Oxford Rail Adams '0415' 4-4-2T is an easy model to open with two screws at the back and one at the front. The leading screw is accessed through a hole in the front bogie. The body lifts off without any other parts joining it to the chassis - no hidden pipes or wires to catch out the unwary.



This reveals the decoder fitting position at the back in the bunker space and the centrally mounted drive mechanism. The space for a decoder is very limited and only a very few standard 8-pin decoders will fit at all. At first sight it doesn't look very sound friendly let alone able to include fitting a 'stay alive' unit. However, at the front of the model there is a large space ahead of the motor which can be used for a speaker. There is also a cable route which can be used alongside other wires.

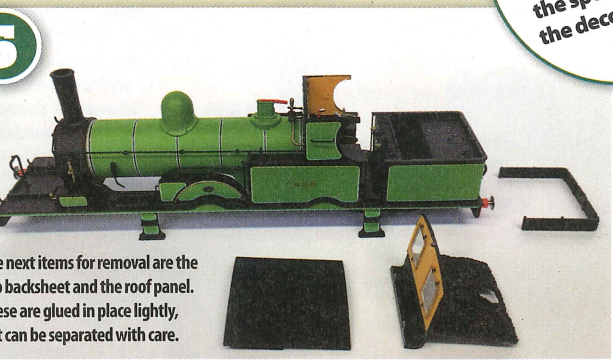


3 At the back of the body we start by preparing for the 'stay alive' and decoder by removing the coal load. The first stage is to firmly, but without squashing, grip, wriggle and pull out the water tank filler neck that protrudes through the coal load. Use some small smooth jawed pliers so as not to mark this part.

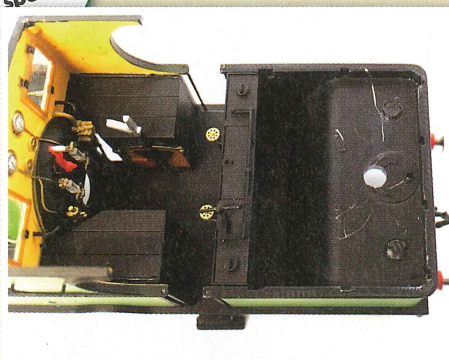


4 Then insert a small hooked tool through the hole you've just revealed to pull and undick the coal. The coal rails themselves often come away too and these two parts can be refitted at the end of the process. All these parts are glued in but not very tightly and the several I've done all come apart with care.

TIP
Always use heatshrink on wire to wire joints, like those used to join the speaker wires to the decoder speaker wire



The next items for removal are the backsheet and the roof panel. These are glued in place lightly, and can be separated with care.



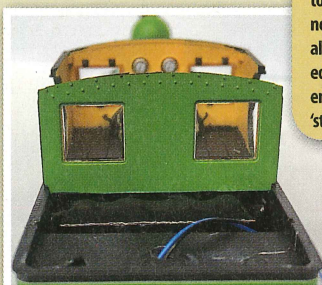
6 This reveals the large sloping transverse void cast into the chassis which is the coal chute in the bunker. This is the new home for the 'stay alive' unit which fits perfectly in there. Drop it in now and secure with Black Tack or similar.



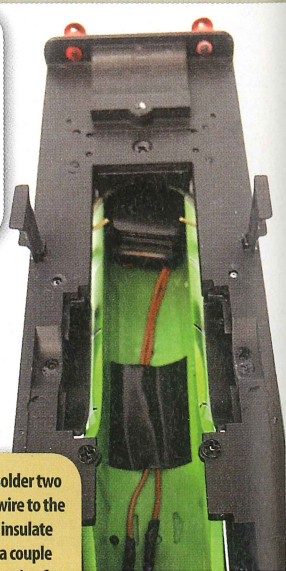
7 You'll be pleased to learn that the only metalwork alteration on the body casting is to drill out one of the water filler mounting holes a little bigger for the 'stay alive' wires to go through.

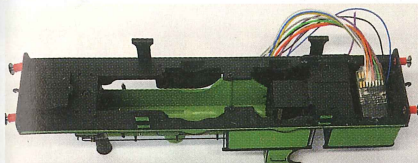


There is a small modification to be made to the cab backsheet that needs doing now. Trim off the lower curved section to allow the small shoulders on the outer edges of the sheet to drop down far enough to fit the body neatly with the 'stay alive' in place.

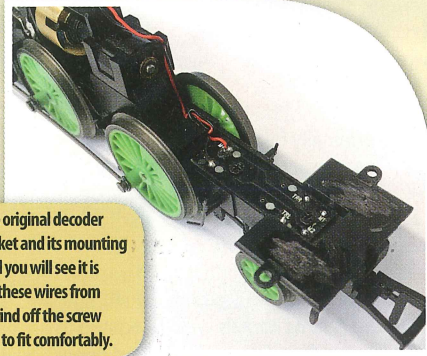


10 Take your speaker and solder two lengths of TCS decoder wire to the speaker terminals. Then insulate them to prevent short circuits. I use a couple





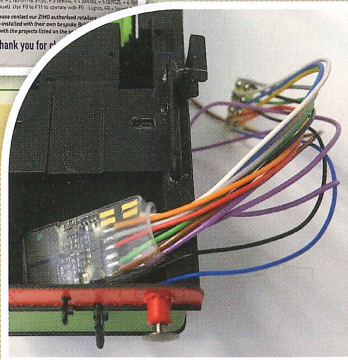
11 The next part of the puzzle is finding space for the Zimo MX648R sound decoder and as we have already seen, decoder space is limited. The Zimo decoder leaflet opens out and has a clear diagram showing the earth (ground) terminal on the decoder to which the black 'stay alive' wire then fits, and the blue wire goes to the terminal where the decoder's own blue wire originally went, or join it directly to the blue wire if you decided to leave it on.



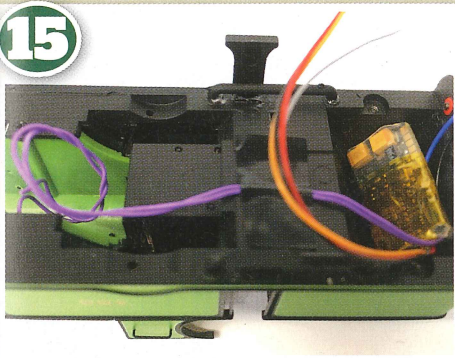
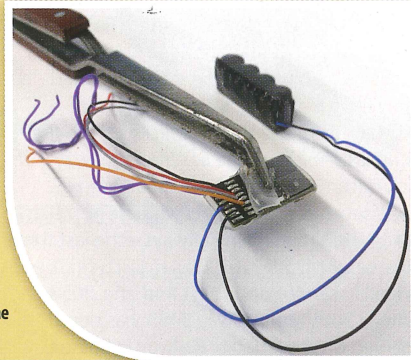
12 The decoder will go in the underside of the bunker in the original decoder space but there isn't enough room to plug it in so the socket and its mounting bosses will need removing. Unscrew the socket plate and you will see it is attached electrically to four solder pads on the circuit board. Unsolder these wires from the lower board and lift them away with the socket attached. Cut or grind off the screw mounting bosses flush with the chassis to create space for the decoder to fit comfortably.



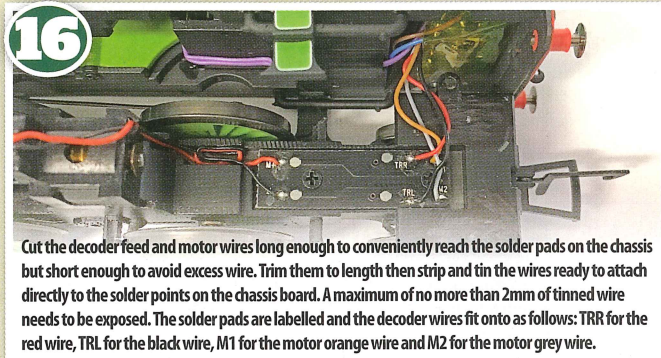
13 Preparing the decoder for hardwiring is the next stage and this could be the trickiest job. It is best to unsolder the unwanted cables from the decoder and then fit the new 'stay alive' wires to it. The connection points are accessible after trimming the sides of heatshrink covering enough to fold it back; it can be put back and secured with tape later to restore the insulation.



14 This picture shows the connections and the 'stay alive' wires fitted. The 'stay alive' wires will be coming through the bunker casting. Remove the wires not needed - brown, green, blue, white and yellow - although you could cut them neatly and secure them tidily away if you prefer. The advantage of removing them completely is that it saves space and reduces the possibility of short circuits against the metal chassis bodysell.

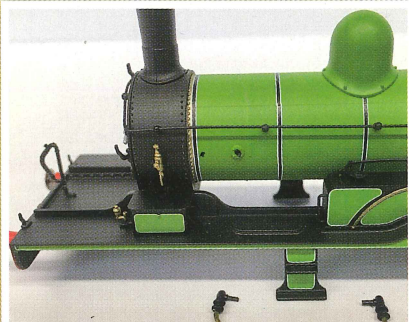


15 This leaves the two purple speaker wires and the track and motor wires in place on the decoder. Connect the speaker wires to those previously fitted in the body but avoid joining them where they run under the cab floor as they'll be too bulky to allow the body to sit level. Instead, join them further forwards in the boiler.

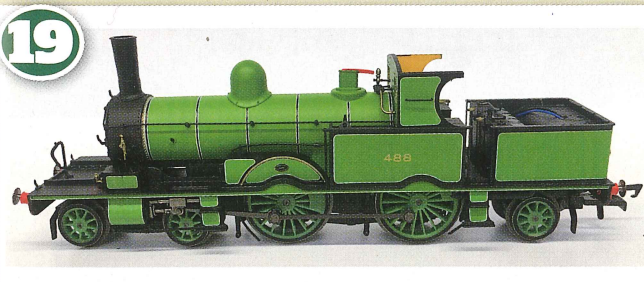
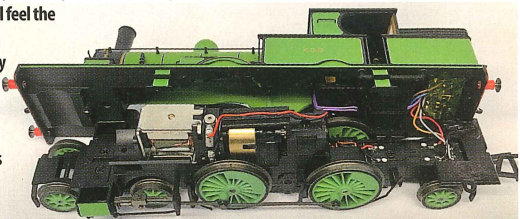


Cut the decoder feed and motor wires long enough to conveniently reach the solder pads on the chassis but short enough to avoid excess wire. Trim them to length then strip and tin the wires ready to attach directly to the solder points on the chassis board. A maximum of no more than 2mm of tinned wire needs to be exposed. The solder pads are labelled and the decoder wires fit onto as follows: TRR for the red wire, TRL for the black wire, M1 for the motor orange wire and M2 for the motor grey wire.

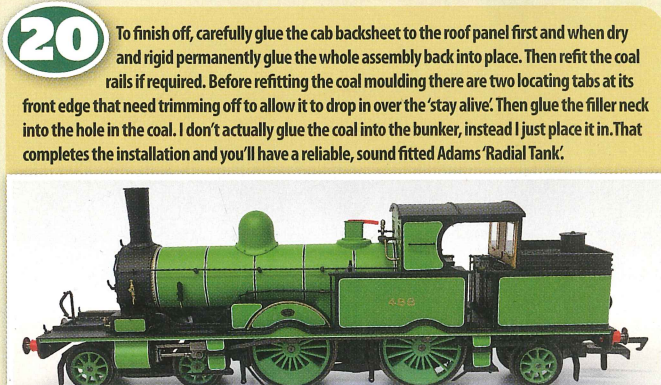
17 The body can now be rested upside-down in a service cradle or rested on a foam pad allowing the chassis to be dropped in for final fitting, but first remove the two small pipes at the front of the boiler on either side so they don't get trapped as the chassis and body go together. They are not glued in and they pull out and refit easily with tweezers.



18 The key thing to look for now is that the speaker wires align with the groove in the chassis for the existing wires under the cab floor. Note the purple speaker wires on the body already positioned to line up with the red and black wires in the locomotive chassis. Lay the body on its back and place the chassis into it checking all wires are tucked neatly inside. You'll feel the chassis see sawing front to back if they aren't located correctly. It will probably take a couple of attempts to get them perfectly aligned.



You can now test your locomotive on address 3 without its cab and bunker parts refitted - these go on last when you're happy it's all working as it should. The 'stay alive' will take a few seconds to charge before its full effects are noticed but performance will be impressive and the sound will be clear and of high quality.



20 To finish off, carefully glue the cab backsheet to the roof panel first and when dry and rigid permanently glue the whole assembly back into place. Then refit the coal rails if required. Before refitting the coal moulding there are two locating tabs at its front edge that need trimming off to allow it to drop in over the 'stay alive'. Then glue the filler neck into the hole in the coal. I don't actually glue the coal into the bunker, instead I just place it in. That completes the installation and you'll have a reliable, sound fitted Adams' Radial Tank.

Radials at work

THE ADAMS '0415' 4-4-2Ts WERE originally built for London suburban passenger duties. The first were completed in 1882 and a total of 71 were built for the London and South Western Railway by outside contractors including Dubs, Neilson and Beyer, Peacock.

With the arrival of the Drummond 'M7' 0-4-4Ts, the Adams Radials were relegated to branch line work and the majority had been withdrawn and scrapped by the 1920s. Only 30 of the fleet passed into Southern Railway ownership in 1923 but ultimately this reduced to just two operating on the steeply graded and twisting Lyme Regis branch line from Axminster. In 1946 a third was added with the purchase of 488 from the East Kent Railway which became 3488. Here the final Adams 4-4-2Ts saw out their careers with the Southern Railway and then British Railways – the last three in service being 30582, 30583 and 30584. These survived in service until 1961 and one, 30583 (formerly Southern Railway 3488) has been preserved on the Bluebell Railway in Sussex.

The arrival of the Oxford Rail and Hornby 'OO' gauge models of these sought after tank engines has presented new modelling opportunities and with the potential for a digital sound conversion their operational value can be increased greatly too. [Hornby](http://Hornby.com)

Right: **Double heading on the Lyme Regis branch was common in the summer. '0415s' 30583 and 30584 head for Lyme Regis with the Lyme Regis portion of the down 'Atlantic Coast Express' on August 8 1959 which they worked from Axminster.** Dave Cobbe/Railphotoprints.uk.

Below: **With a three-coach Bulleid corridor set and a Maunsell 58ft non-corridor carriage behind, Adams 'Radial' 30584 sets back into Axminster with a service from Lyme Regis on August 8 1959.** Dave Cobbe/Railphotoprints.uk.



In October 1958 Adams '0415' 4-4-2T 30583 stands at Lyme Regis after arrival with a service from Axminster. Dave Cobbe/Railphotoprints.uk.

