

Sentinel SOUNDS

Hornby's new Sentinel 0-6-0DH sounds just like the real thing with the addition of a ZIMO chip and Digitrains sound file. Stanton No. 57 takes up its new role as shunter on West Coast Cement moving PCA wagons through the loading shed.

Hornby's new Sentinel 0-6-0DH was a sound installation project too challenging to resist for **MIKE WILD**. In this step-by-step guide, he explains how he fitted a ZIMO decoder, Rail Exclusive speaker and Digitrains stay-alive into this compact shunter.

TOOLS

- » Crosshead screwdriver
- » Craft knife
- » Small scissors
- » Wire strippers
- » Tweezers
- » Soldering iron

THERE is a great deal of satisfaction in a digital sound project, but I find the most rewarding to be small shunting locomotives. Faced with limited space, a desire to add stay-alive for reliable consistent running and a want for the best possible driving experience they make enjoyable projects.

My immediate thought on seeing the new Hornby Sentinel 0-6-0DH was "that needs sound", and almost as immediately on removing the body I had decided on the route I wanted to take.

Previously I had added ZIMO sound to one of the four-wheel Sentinel shunters from Hornby following the methods outlined by Paul Chetter in HM81 – that feature is also available online at www.keymodelworld.com/digital-sound – but I had also found a way to add a large stay-alive capacitor pack for onboard energy storage.

The new 0-6-0DH Sentinel offered a little more internal space which meant a larger speaker and a totally hidden stay-alive could be added – the stay-alive in the four-wheel version was housed in the cab.

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The reason for the stay-alive in a locomotive like this is to help it to keep moving in the most challenging of model railway situations – a shunting yard. There's still no excuse for not keeping the track and locomotive wheels clean, but a stay-alive means it won't stall when crawling through points and sidings or when it is buffering up to wagons at speed step one.

The decoder of choice is a ZIMO MS480F – one of the latest

generation ZIMO sound decoders which have a higher powered microcontroller and much greater memory space – loaded with Digitrains' Active Drive Sentinel sound project and partnered to a Rail Exclusive 15mm x 11mm x 9mm cube speaker as well as a compact 871007 stay-alive pack chosen to fit the space available in the rear compartment behind the cab.

Installation took around 45 minutes from start to finish with

the most important consideration being to minimise wire lengths in order to fit all the components inside. Fortunately there is ample space ahead of the motor to add

WHAT WE USED

PRODUCT	SUPPLIER	CAT NO.
ZIMO MS480F 6-pin sound decoder	www.digitrains.co.uk	MS480F
Rail Exclusive 15mm x 11mm x 9mm cube speaker	www.digitrains.co.uk	SP15x11x9
Sentinel Active Drive sound file	www.digitrains.co.uk	ZS01A
Stay-alive lite, 14mm x 9mm x 9mm	www.digitrains.co.uk	871007

the speaker while the decoder can be positioned at the top of the engine compartment with the stay-alive located at the rear behind the cab in the empty bonnet.

The following step by step guide goes through the Sentinel sound installation process from start to finish and you can watch a full sound demonstration online at www.keymodelworld.com during June where we will demonstrate the finished models capabilities and functions.

Completion of this installation coincided with the Market Deeping Model Railway Club's exhibition in Stamford where *Hornby Magazine* displayed West Coast Cement on May 14/15. This provided the perfect testing ground for the newly equipped Sentinel. We did find it needed adjustment of its pick-ups (some were mis-shapen on this sample and not touching the wheels) and a thorough wheel clean, but after that the model performed faultlessly throughout the weekend shunting cement wagons around the works and was a pleasure to operate.

We are looking forward to more running sessions with the Sentinels - and if you are considering a sound upgrade we can highly recommend taking the time to add a stay-alive to get the best value from this attractive and useful shunting locomotive. **HM**

● Visit www.keymodelworld.com/digital-sound to read more sound installation guides.

SOUND FUNCTIONS

F0	Lights on/off (if fitted)
F1	Sound on/off
F2	Active brakes
F3	Long horn
F4	Twin horn
F5	Light engine mode
F6	Coasting
F7	Speed lock
F8	Buffer up to wagons
F9	Wagons clashing
F10	Brake release
F11	Brake squeal
F12	Buffering and coupling
F13	Flange squeal (variable)
F14	Flange squeal (short)
F15	Sandbox
F16	Windscreen wipers
F17	Hiss
F18	Long hiss
F19	Fade all sounds
F27	Volume down
F28	Volume up



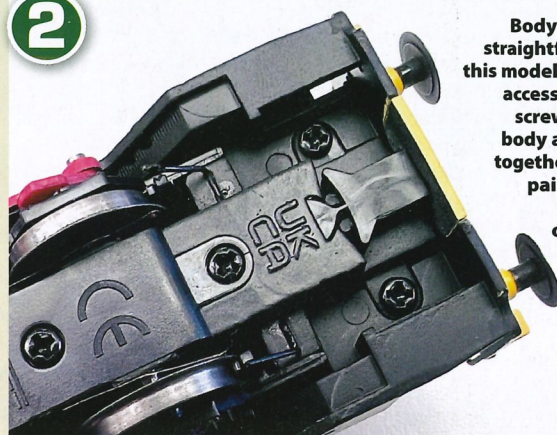
STEP BY STEP INSTALLING ZIMO SOUND IN A HORNBY SENTINEL 0-6-0DH

1



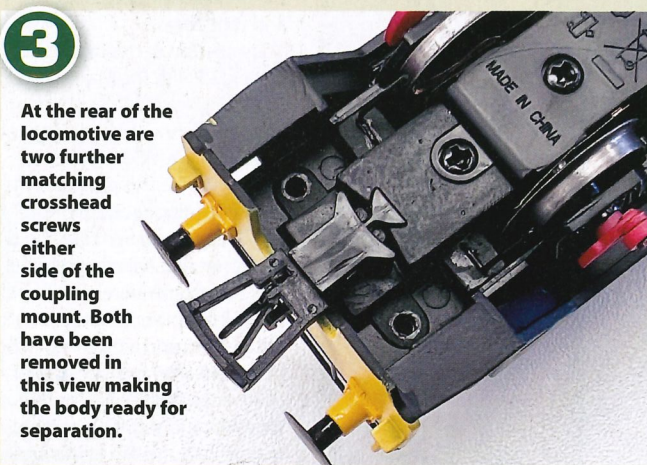
Hornby's new Sentinel 0-6-0DH is a prime candidate for digital sound installation as it will give this useful shunting locomotive a realistic 'voice'.

2



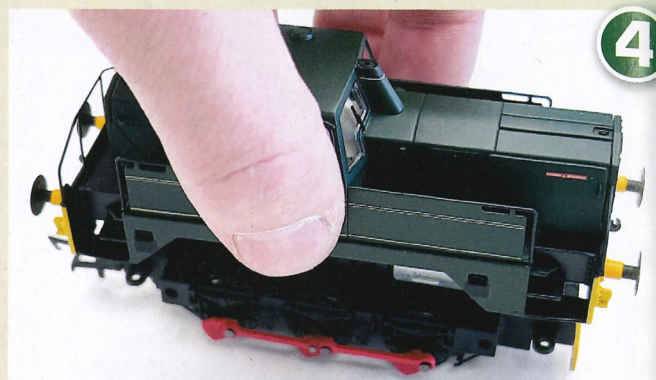
Body removal is straightforward on this model. Four easy access crosshead screws hold the body and chassis together. The first pair is located either side of the front coupling mount.

3



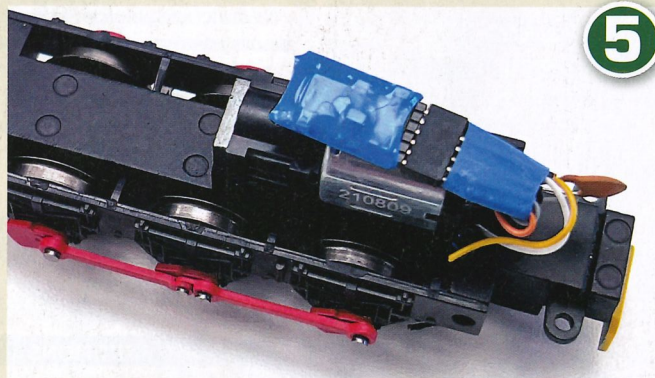
At the rear of the locomotive are two further matching crosshead screws either side of the coupling mount. Both have been removed in this view making the body ready for separation.

4



Once the securing screws have been removed, the body lifts straight up from the chassis to reveal the internal workings. Keep the screws safe for reassembly.

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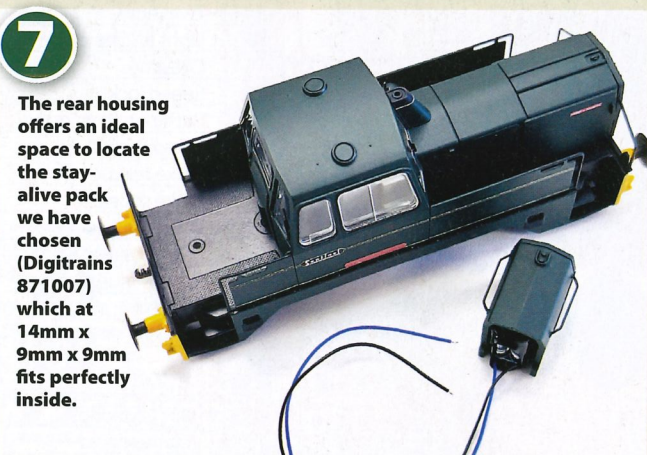
The chassis in the Sentinel is a simple affair with a compact three-pole motor positioned towards the front to drive the centre axle. A 6-pin socket is fitted to which we had previously added a 6-pin decoder for testing.

6



Our first port of call is to install the stay-alive in the rear housing behind the cab. This is held in place with a small crosshead screw – the rearmost of the three under the body.

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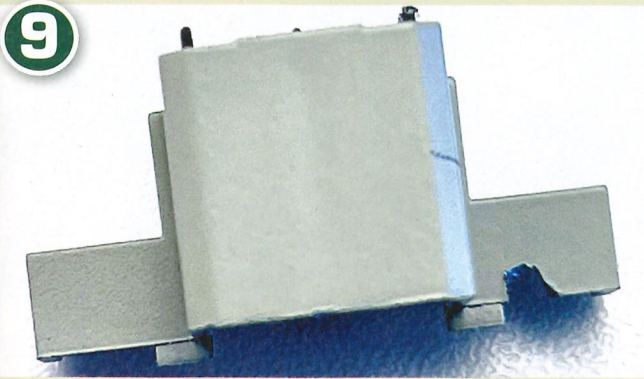


The rear housing offers an ideal space to locate the stay-alive pack we have chosen (Digitrains 871007) which at 14mm x 9mm x 9mm fits perfectly inside.

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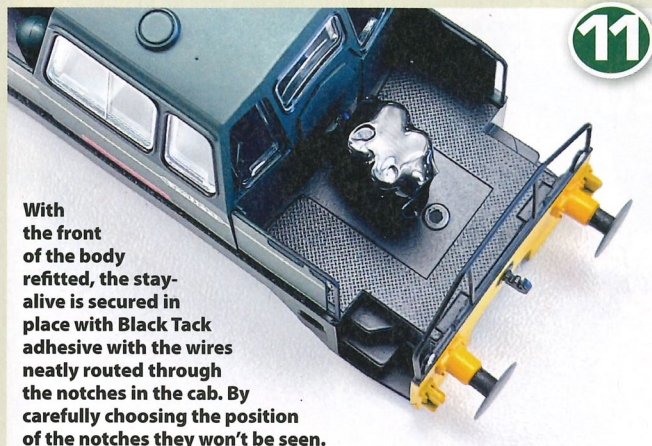
We need a route for the wires to pass through to the main engine compartment. To do this, release the two screws under the cab to lift the front of the body and extract the control desk.



9 To allow the stay-alive wires to reach the front engine compartment we cut a notch into the bottom of the cab control desk – it's not the neatest, but it won't be seen from the outside.



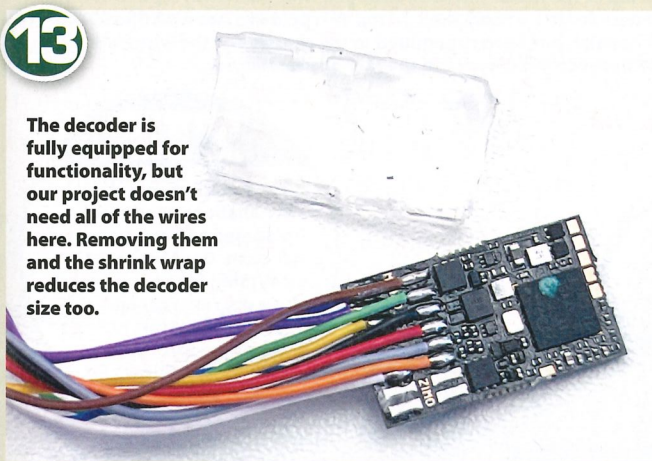
10 A second notch was cut into the bottom of the cab moulding next to the fixing point to allow the stay-alive wires to pass through the back of the cab, under the control desk and into the front compartment.



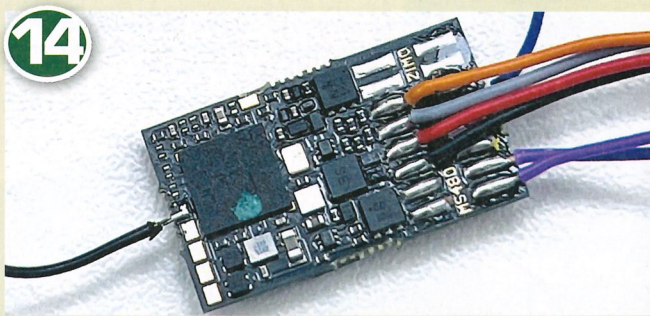
11 With the front of the body refitted, the stay-alive is secured in place with Black Tack adhesive with the wires neatly routed through the notches in the cab. By carefully choosing the position of the notches they won't be seen.



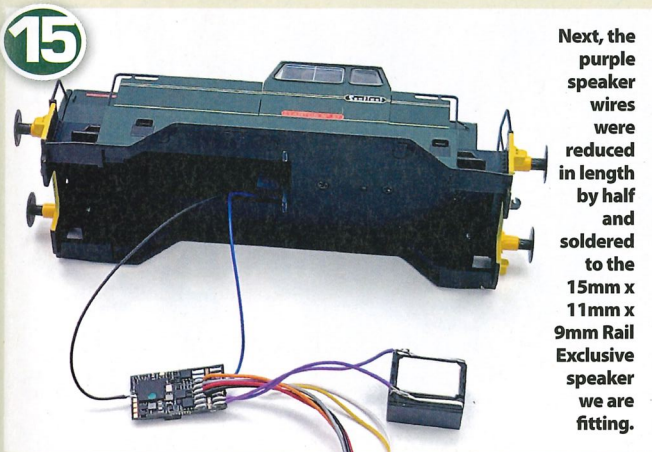
12 The rear housing is then refitted to the model and its fixing screw replaced underneath to complete installation of the stay-alive in the Sentinel. Now we need to connect it to the decoder.



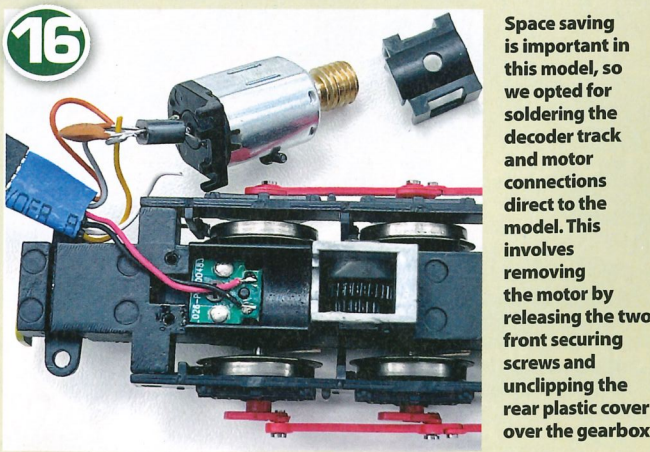
13 The decoder is fully equipped for functionality, but our project doesn't need all of the wires here. Removing them and the shrink wrap reduces the decoder size too.



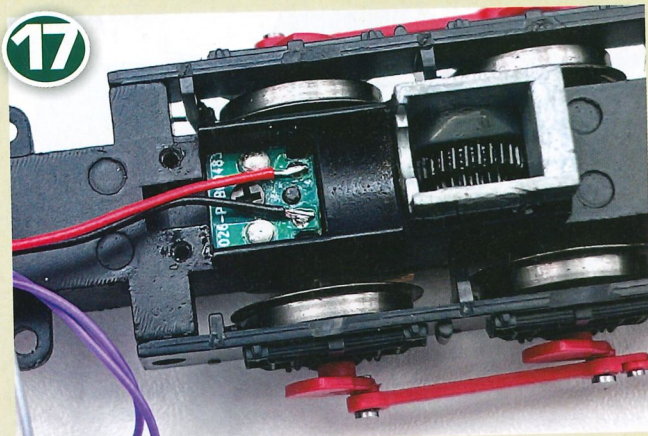
14 We cut away all the spare wires (yellow, white, green, blue and brown) to reduce the amount of space needed for the chip. We have also now soldered the stay-alive connections to the decoder with the blue positive wire going to the fourth tab down on the right and the black negative wire going to the GND terminal on the left. Adding these wires direct to the decoder must be done very carefully to avoid overheating the chip.



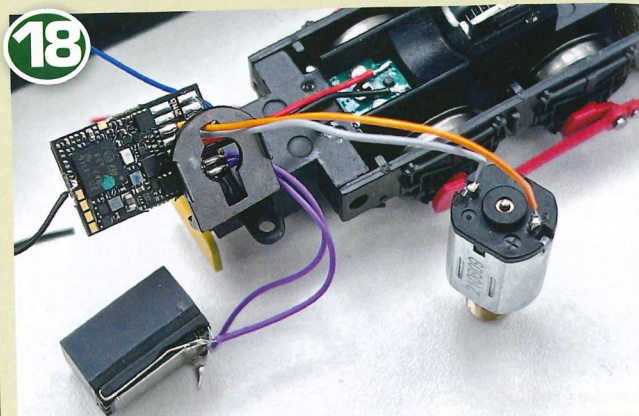
15 Next, the purple speaker wires were reduced in length by half and soldered to the 15mm x 11mm x 9mm Rail Exclusive speaker we are fitting.



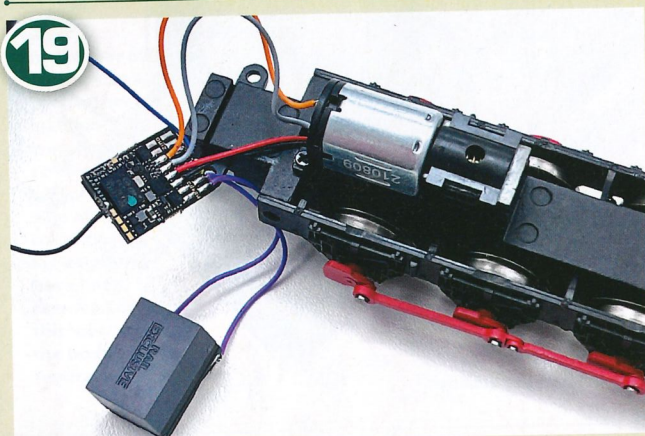
16 Space saving is important in this model, so we opted for soldering the decoder track and motor connections direct to the model. This involves removing the motor by releasing the two front securing screws and unclipping the rear plastic cover over the gearbox.



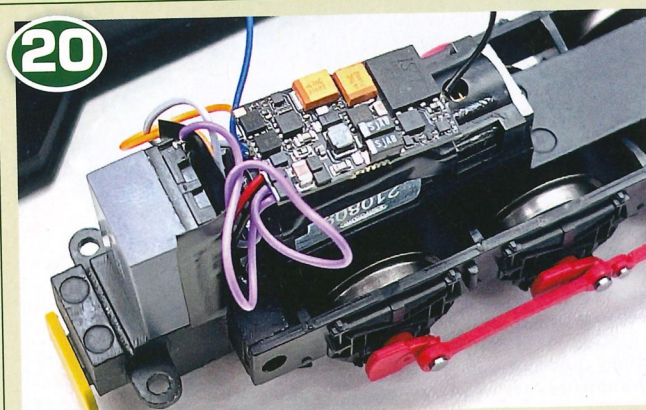
17 The red and black pick-up wires from the decoder were cut down 45mm in length then soldered to the pick-up tabs on the chassis after baring and tinning their ends.



18 The suppression capacitor has been removed from the motor as the decoder has circuits to do the same job and the orange and grey motor wires have now been connected to the connection tabs on the motor after threading them through its front mount.



19 The motor has now been refitted using all its original hardware. Take care to ensure the motor is seated correctly and that the gearbox cover has been fitted the correct way round – if it isn't, it won't fit.



20 The top of the motor has been wrapped with insulation tape to allow the decoder to be positioned on top. It is held in place with Black Tack. The speaker has been superglued to the chassis and the wires will now tuck between the motor and speaker on reassembly.



21 Care is needed to ensure everything fits back inside the Sentinel without trapping any wires. Stanton No. 57 is now ready for testing which showed it needed adjustment of its pick-ups for the best running qualities as well as a thorough wheel clean.

TIP

Compact sound installations need careful planning and component selection. Double check that everything fits as you expect with a dry run first, especially if you need to start making body modifications or cutting wires.