

GOING SOLO

DIGITAL SPECIAL

Hornby's Twin Track Sound (TTS) decoders have created a wallet-friendly introduction to the world of digital sound, but until now they have only been available inside a locomotive. **MIKE WILD** selects a group of new solo diesel TTS decoders and shows how to get the very best from them.

THE OLD PROVERB that you get what you pay for is often true, but every now and then a product comes along which bucks that trend and stands out by offering true value for money. Hornby's Twin Track Sound (TTS) decoders, which made their debut in the 2015 catalogue, are a fantastic introduction to the world of digital sound – and more importantly they won't break the bank.

Digital sound can be an expensive pursuit with most high-end decoders having a price tag of around £100 and upwards including a speaker. There are other lower cost options in the Econami range produced by Soundtraxx and distributed by Gaugemaster (HM118 and HM120) as well as the LokSound Select decoders.

The TTS decoders have been designed by Hornby and offer a wide range of programming options as well as a number of features on the diesel decoders which make them a worthy choice alongside higher priced items. Initially they have only been available in a locomotive – usually adding around £25 to the price – but the arrival of the TTS decoders as separate items is opening up new possibilities for further developing a sound fitted fleet while keeping an eye on price. The solo decoders are priced at £39.99 at full retail price – by far the most wallet friendly sound decoder currently available. This is excellent value for money, especially the diesel versions which include manual

notching and superb sound reproduction as well as the full custom setting of sound outputs through Configuration Variables (CVs).

For this feature, we are concentrating on the diesel sound decoders in the TTS range. All are delivered with 8-pin plugs wired to an 8-pin harness and this makes them straightforward to connect to Hornby's own products as well as a range of others including Bachmann, Heljan and ViTrains locomotives fitted with the 8-pin socket. There aren't many Bachmann models with 8-pin sockets on the diesel front, but if you are the owner of an early Class 37 then it is well worth considering this option. Similarly, TTS decoders can be used in Heljan Class 47s, ViTrains Class 37 and 47 models – while at a stretch, Heljan's model of BRCW prototype D0260 *Lion* can be equipped with the Class 47 sound file as a means to introducing sound to this Sulzer powered locomotive which was closely related in terms of engines to the Brush Class 47.

A sound decoder is only ever as good as the speaker it is connected to and this is something I have learnt to my benefit over a number of years of installing decoders into ready-to-run locomotives. The resulting improvement in sound quality by choosing a high-quality speaker can be nothing short of exceptional, bringing clarity to the sounds as well as revealing many hidden details which couldn't be heard previously.

WHAT WE USED

PRODUCT	CAT NO.	MANUFACTURER	PRICE
TTS Class 31 decoder	R8101	Hornby	£39.99
TTS Class 37 decoder	R8102	Hornby	£39.99
TTS Class 47 decoder	R8103	Hornby	£39.99
TTS Class 60 decoder	R8104	Hornby	£39.99
Single cube speaker in 3D enclosure	LS26x20x08	Zimo	£11.00
3D twin speaker, 40mm x 22mm	LS40x22x09	Zimo	£18.00

Hornby's TTS decoders are supplied with either 28mm round or 40mm x 20mm rectangular speakers depending on the locomotive they have been designed to work with, but we thought we could better their sound output by choosing higher priced speakers to suit each installation.

The first step in our process was to install the decoders in a couple of locomotives to see how they sounded straight from the box. All were good, but on some locomotives – notably the Class 47 and Class 60 – some of the more subtle sounds were muffled or impossible to hear with the factory speaker. With this in mind, we made a quick shopping trip to Digitrains to amass a handful of Zimo's high quality cube speakers, including several in the new 3D printed sound enclosures to assess whether we could make them better. The simple answer was "yes" – and in this guide we'll show how we went about installing these decoders – none took more than ten minutes once the speaker had been chosen – in a group of Hornby, Bachmann and ViTrains locomotives. [View](#)

● To hear more of these sound projects with their new speakers visit www.hornbymagazine.com to watch videos of them online.

Four locomotives from three different sources all fitted with Hornby's new Twin Track Sound decoder. A simple change of speaker makes a big difference to how these decoders sound too.

STEP BY STEP INSTALLING HORNBY TTS DECODERS



1 The solo Twin Track Sound (TTS) decoders are supplied with a speaker pre-attached as well as a full manual and suggestions for their installation. The first decoder we are going to work with is the Class 31.

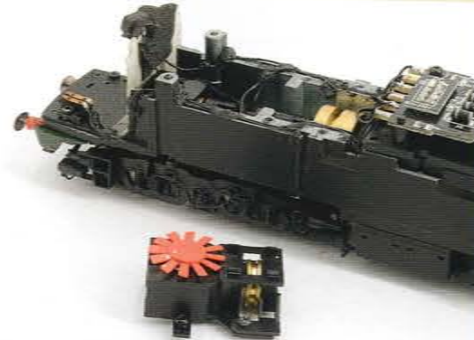
2 Removing the body on the Class 31 is a simple case of releasing the four screws tucked above the bogies. They don't have to be removed completely, so long as the threads have disengaged from the body, it should come apart.



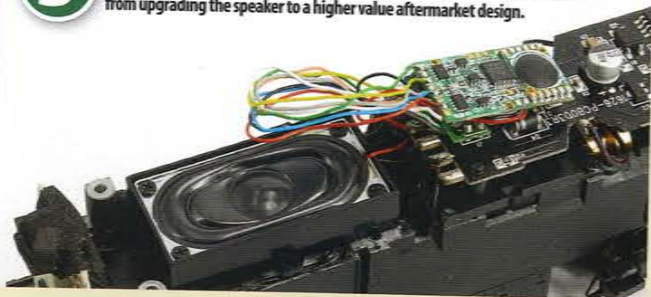
3 With the body removed, the internal space is shown. The decoder socket is positioned to the left on the main printed circuit board, but the prime position for a speaker is currently taken up by the roof fan mechanism.



4 Removing the roof fan opens up a perfect position for a speaker. All that is required to take it out is the release of four small crosshead screws and cutting of the drive band.



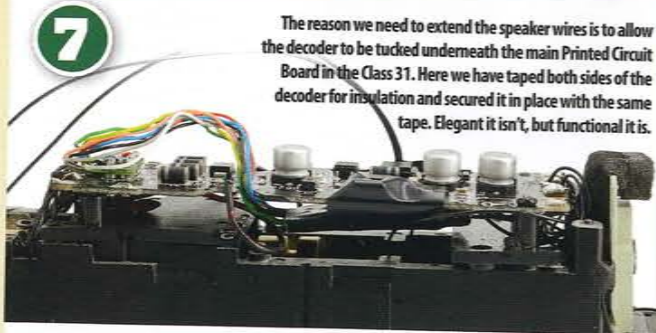
5 Using the decoder as supplied, the 40mm x 20mm speaker is a comfortable fit in the space available, but we think we can gain an improved sound output from upgrading the speaker to a higher value aftermarket design.



6 Replacing the speaker is a simple task, but is complicated slightly by the need to extend the speaker wires from the decoder for this installation. You have two choices: cut the red and black wires from the speaker as close to the chamber as possible to leave the maximum length of lead for connecting to the new speaker and then extend these with suitable decoder speaker cable and insulate the joins before connecting the new ends to the speaker. Alternatively, as here, if you are confident with a soldering iron you can detach the original speaker wires from the decoder and then add your own cut to length.



7 The reason we need to extend the speaker wires is to allow the decoder to be tucked underneath the main Printed Circuit Board in the Class 31. Here we have taped both sides of the decoder for insulation and secured it in place with the same tape. Elegant it isn't, but functional it is.



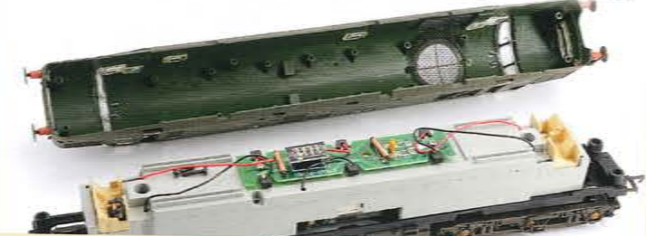
8 Using electrical solder and a quick action, solder the new speaker wires to the new speaker. This is a Zimo LS40x22x09 (40mm x 22mm x 9mm) speaker which has bus wires on each side making for a very simple means of attaching the new cables from the decoder. The body can now be refitted and the locomotive tested and addressed.



9 Moving onto the Class 37, here we are using an early Bachmann model in BR green. It doesn't have lighting fitted and with the body off there is only limited space available for a speaker inside the locomotive.



10 The only space which is available is to roof mount the speaker underneath the fan grille. This does mean sealing the front and rear of the speaker fully and mounting the decoder board to the roof to ensure everything will fit inside. We had already removed the fan moulding from this model prior to starting the sound installation.



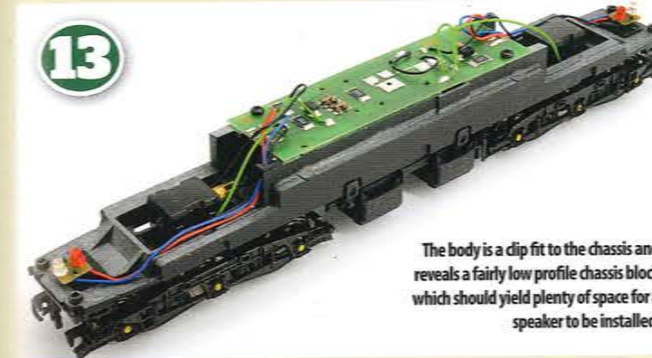
11 Here the original 28mm round speaker has been used - partly for its economic use of space, and partly because with the available space this particular design provided the best sound output for the TTS Class 37 sound. The decoder has been taped to the roof with insulating tape and the body can now be refitted to the chassis and the locomotive addressed ready for service. Simple.



12 ViTrains' Class 47 arrived during 2009 with a wide range of liveries being available. All had 8-pin decoder sockets which makes them a simple conversion to digital sound with a TTS decoder. Our subject choice is 47401 in BR large logo blue.



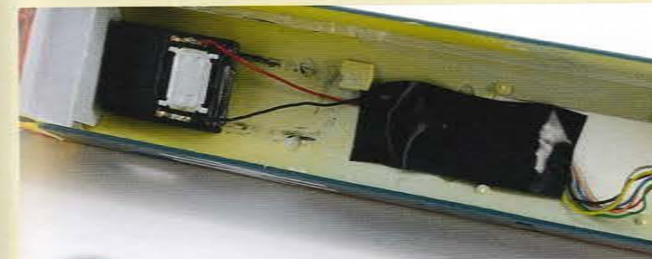
13 The body is a clip fit to the chassis and reveals a fairly low profile chassis block which should yield plenty of space for a speaker to be installed.



14 In the body there are two black plastic mouldings against the roof - one for the roof fans and one to block vision through the engine bay windows. Removing the latter creates a large space for a speaker to be positioned - in this case a Zimo LS26x20x08 single driver speaker with a 3D printed enclosure which has been fixed to the roof with mastic, giving the option for removal later should it be required.



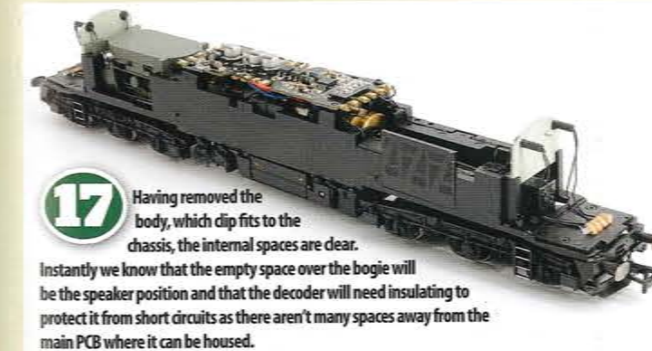
15 To complete the installation, the original speaker wires from the decoder are soldered to the new speaker, the decoder is taped to the roof to keep it away from the PCB on the chassis and it can now be plugged into the 8-pin socket in place of the blank, taking care to correctly align pin 1. Job done.



16 The final locomotive of our quartet is the Hornby Class 60 - widely recognised as one of the best modern ready-to-run locomotives. The real locomotives have a powerful sound, but one which is difficult to replicate in a model.



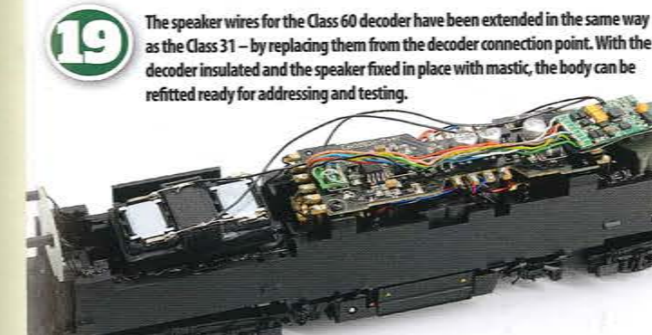
17 Having removed the body, which clip fits to the chassis, the internal spaces are clear. Instantly we know that the empty space over the bogie will be the speaker position and that the decoder will need insulating to protect it from short circuits as there aren't many spaces away from the main PCB where it can be housed.



18 The speaker of choice here is a Zimo LS40x22x09, which is the largest speaker we could physically fit in the space available. It stands on top of the chassis casting over the drive shaft. What we weren't prepared for was just how much of a difference this speaker made to the sound output of the Class 60 TTS chip. It sounds superb.



19 The speaker wires for the Class 60 decoder have been extended in the same way as the Class 31 - by replacing them from the decoder connection point. With the decoder insulated and the speaker fixed in place with mastic, the body can be refitted ready for addressing and testing.



20 The four completed locomotives are all ready for service. The upgraded speakers make a tremendous difference to the sound quality, improving the tone of horns and bringing out detail sounds which otherwise couldn't be heard. Once addressed, we adjusted the CV values for the different sound outputs to tailor each locomotive to our liking before sending them out into service.

