

GENERATION GAME

The Stanier 'Duchess' 4-6-2s have been in the news in 'OO' gauge recently with new arrivals in both non-streamlined and streamlined form. **MIKE WILD** investigates installing digital sound in Hornby's models of these outstanding 'Pacifics'.

TOOLS SOUND DECODER INSTALLATION

- » Small crosshead screwdriver
- » Soldering iron
- » Heatshrink tubing
- » Black tack (sourced from Amazon)
- » Insulation tape

Two generations of Hornby 'Duchess' pass on Topley Dale. On the left is one of the last of the previous generation modelling 46233 *Duchess of Sutherland* in preservation era condition while on the right is one of the first of the new breed released in 2017, 46256 *Sir William A Stanier FRS*. The sound installation guide applies to all Hornby 'Duchess' models made since 2011 with tender mounted decoder sockets.



THE 'DUCHESS' – or 'Princess Coronation' if you prefer – is one of the all-time greats. Said by some to be how a locomotive should look, these giant express locomotives used every inch of the loading gauge to deliver raw power to accelerate heavy trains from London to Glasgow via the challenging gradients of Shap and Beattock as well as running at speed on the southern section of the West Coast Main Line.

The first of the class was introduced in 1937 with a streamlined casing as modelled by Hornby's very latest model (see pages 66-69), while the 2017-introduced non-streamlined model captures the 'Duchess' in its purest form to the highest standard we have seen yet.

Hornby has been producing models of Stanier's finest express locomotive since the 1939 introduction of the famous Hornby Dublo model and many versions have come and gone over the years. The first model of the streamlined locomotives came from Hornby in 1970.

The previous generation was the first to be equipped with a Digital Command Control decoder socket, initially in the locomotive though since 2011 the 8-pin socket

has been located in the tender together with space for a 28mm round speaker. This version of the non-streamlined Stanier 'Pacific' was last released in 2014 as 46233 *Duchess of Sutherland* in preservation era BR lined green, but the latest generation of 'Duchess' models uses a near identical internal arrangement in the tender for the decoder socket and speaker. In fact the only differences on the new version are that the full relief coal space takes up some of the space inside the tender body while there are now two screws at the front of the tender chassis to hold the body in place.

For this sound installation guide we are showing how we upgraded a model of 46256 *Sir William A Stanier FRS* with a Zimo MX645R decoder and a 40mm x 22mm twin driver Zimo speaker. Interestingly, the same method can be used for all Hornby 'Duchess' models released since 2011 with a tender mounted decoder socket. Plus, as the new streamlined version shares the same chassis arrangement as 46256, the guide is applicable to the brand new model. It will be slightly easier in the 2011-2014 non-streamlined models as you will be able to keep the tender weight in place as the full depth of the coal space isn't modelled on that generation.

TECHNICAL DETAILS

Manufacturer:	www.hornby.com
First released (standard version):	2017 (HM125)
First released (streamlined version):	2018 (HM140)
Description:	Stanier 'Princess Coronation' 4-6-2
Gauge:	'OO'/16.5mm
Scale:	4mm:1ft
Length (over buffers):	300mm
Price:	£189.99 (streamlined) £204.99 (conventional)
Era:	3-5
Couplings:	Small tension locks in NEM pockets
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:	'8P'
Wheel arrangement:	4-6-2
Purpose:	Express passenger
Haulage capacity (expected):	Eight carriages
Haulage capacity (actual):	Ten Hornby Mk 1 carriages

The Zimo MX645R decoder for this project has been loaded with Digitrains' ZS003A sound file which includes active brakes on F2 – reduce the locomotive speed, then dab F2 on and off to simulate real vacuum brakes bringing the train to a stop. It's an enthralling driving experience alongside

the heavy/light exhaust settings, numerous whistles and ancillary functions built into the sound file.

The step by step guide explains what we did to bring new life to 46256 and you can watch the finished result on the *Hornby Magazine* website in January too. Read on to learn more. [Follow](#)

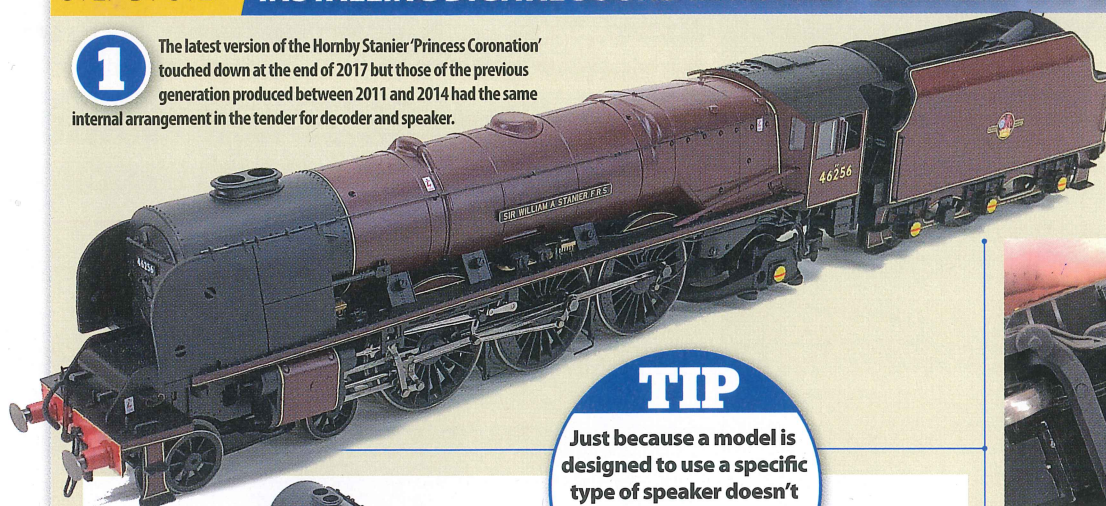


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TO SEE THIS IN ACTION

STEP BY STEP INSTALLING DIGITAL SOUND IN HORNBY 'DUCHESS' 4-6-2s

Beginner **SKILL LEVEL** Intermediate Advanced

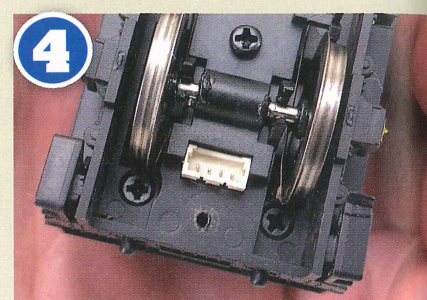
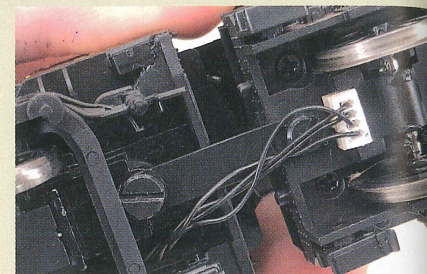
1 The latest version of the Hornby Stanier 'Princess Coronation' touched down at the end of 2017 but those of the previous generation produced between 2011 and 2014 had the same internal arrangement in the tender for decoder and speaker.



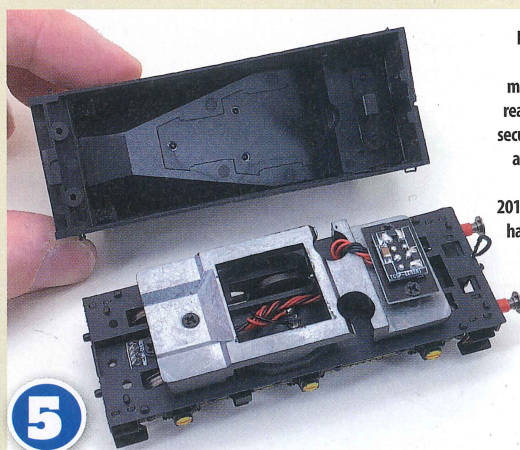
TIP
Just because a model is designed to use a specific type of speaker doesn't mean that alternatives can't be used, as shown in this guide.

2 To make working on the model simpler, we find it helpful to separate the locomotive and tender. The 'Princess Coronation' models all have Hornby's standard arrangement of a drawbar fixed with slotted screws at both ends and a four-wire plug to join the two halves electrically.

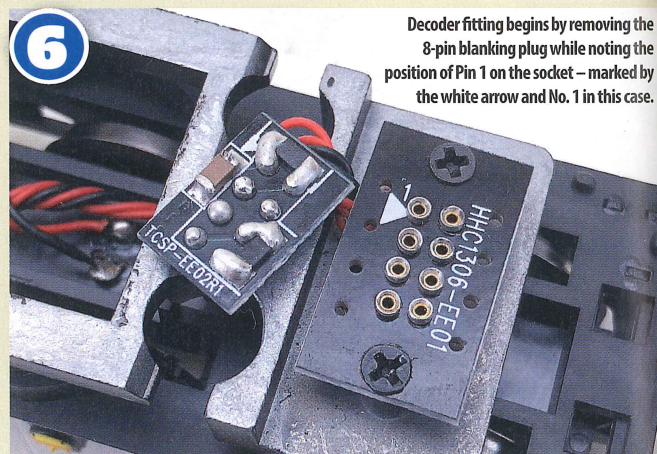
3 Carefully remove the four-pin plug from the tender using a Hornby X9648 tender socket extractor tool and then release the slotted screw at the tender side using an appropriate screwdriver. The locomotive and tender can then be separated.



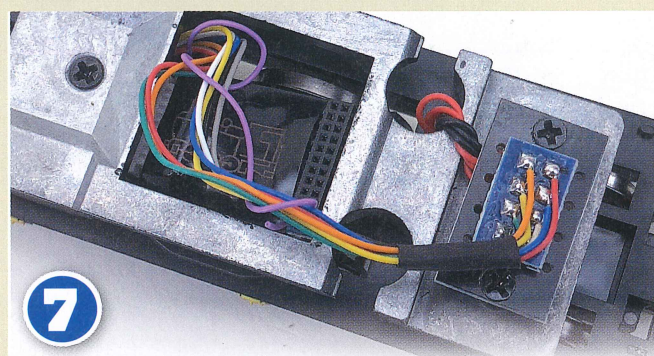
4 On the latest versions, both streamlined and non-streamlined, the tender body is secured to its chassis at the front by two crosshead screws. On the 2011-2014 models only a single screw is included here. Release these with a crosshead jewellers or modelling screwdriver first.



Lift the tender body up with an arcing motion to release the rear plastic lugs which secure the tender body at the rear, the same on all versions from 2011 onwards, and you have full access to the decoder socket and speaker location.



Decoder fitting begins by removing the 8-pin blanking plug while noting the position of Pin 1 on the socket – marked by the white arrow and No. 1 in this case.



7 An 8-pin decoder can be plugged straight into the socket without modification while the speaker well in the tender weight can be used to house the decoder. Here we have installed a Gaugemaster DCC29 21 and 8-pin decoder using the 8-pin connection. If that is far as you want to go you can now replace the tender body and reconnect the locomotive ready to put it into service.



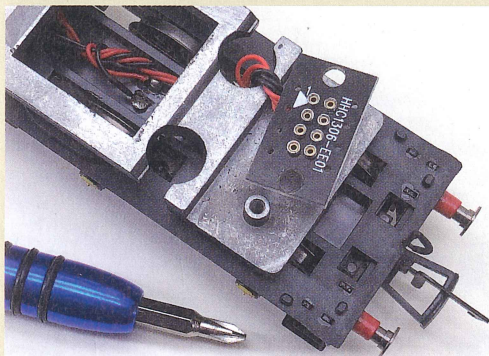
8 To create the ultimate 'Princess Coronation' we are going to add sound using a Zimo decoder loaded with Digitrains' ZS003A sound file, a capacitor for 'stay alive' and a Zimo LS 40mm x 22mm x 9mm twin driver 3D printed speaker.



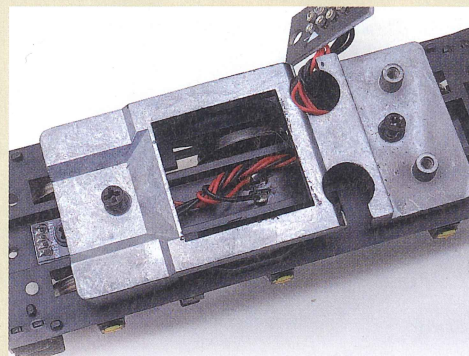
From left is the 2014 model of 46233 *Duchess of Sutherland*, the 2017 model of 46256 *Sir William A Stanier FRS* and the 2018 model of 6221 *Queen Elizabeth*, all of which have a tender mounted 8-pin decoder socket and space for a 28mm round speaker as standard. By removing the metal weight from the tender on the latest versions - not necessary on 46233 - there is ample space for a larger 40mm x 22mm speaker as shown in the step by step guide.

SOUND FUNCTIONS

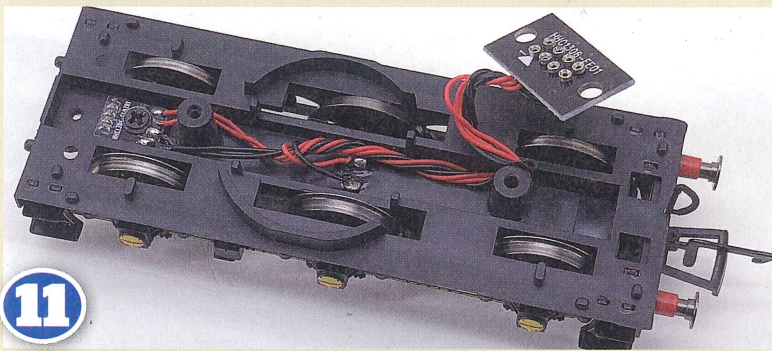
F0	Lights on/off (if fitted)
F1	Sound on/off
F2	Brake key
F3	Long whistle
F4	Short whistle
F5	Heavy/light engine mode
F6	Coal shovelling
F7	Live steam injector
F8	Blower
F9	Flange squeal
F10	Safety valves
F11	Handbrake
F12	Tender water filling
F13	Brake squeal
F14	Buffering up
F15	Cylinder drain cocks
F16	Coupling up
F17	Long whistle
F18	Guard's whistle
F19	Fade all sounds
F20	Shunt mode
F27	Volume down
F28	Volume up



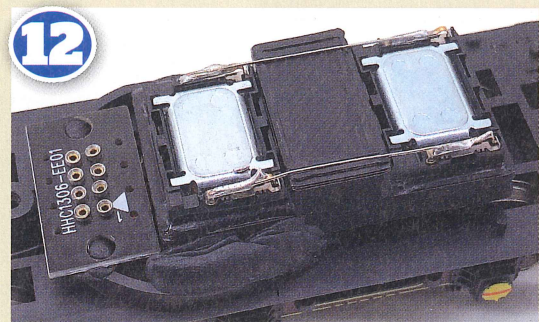
9 To begin this sound installation, we need to remove the tender weight to make space for the speaker. Start by releasing the screws holding the decoder socket in place.



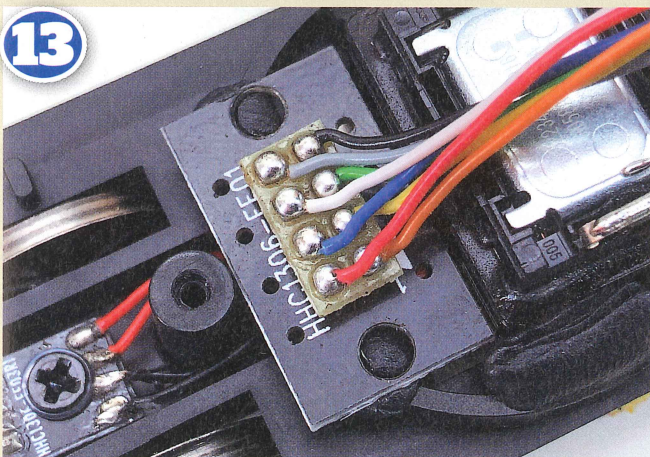
10 Then release the two crosshead screws which hold the metal tender weight in place and remove the weight.



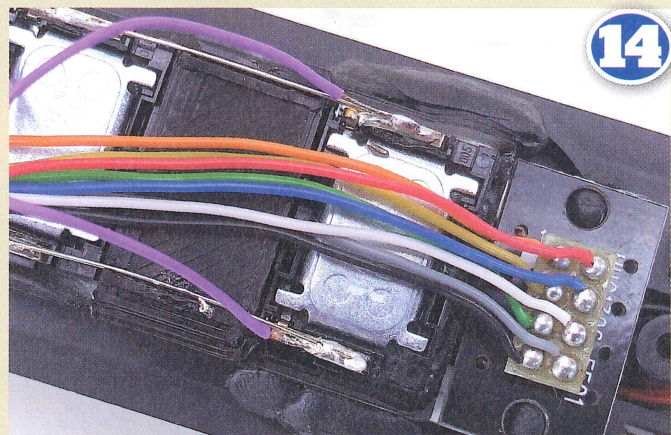
11 Having removed the weight, we have much more space available to create a better sounding 'Princess Coronation'. To add weight back into the tender chassis, Deluxe Materials Liquid Gravity has been used to fill the void in the chassis, being careful to avoid the solder points for the tender pick-ups. It is secured in place with a sparing application of diluted PVA glue.



12 To make way for all the new components, we relocated the decoder socket to the front of the tender, just behind the front support for the tender weight. The 40mm x 22mm speaker is then fixed behind - both held in place with Black Tack - with the decoder socket wires concealed beneath the speaker.



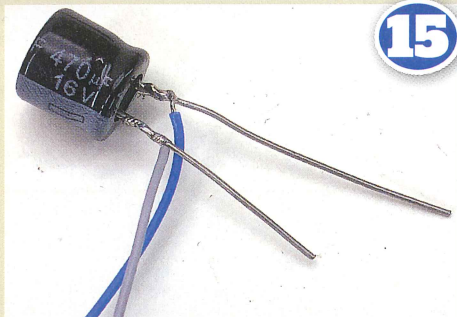
13 The decoder plug can now be connected to the socket, aligning the orange wire with Pin 1 on the socket.



14 The purple speaker wires are shortened to around 50% of their supplied length and then soldered to the connections on top of the speaker.

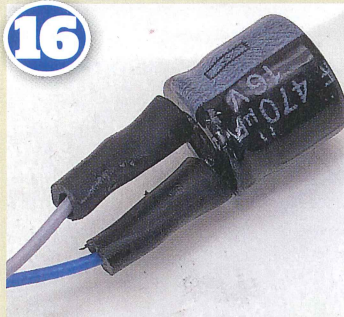
STEP BY STEP INSTALLING DIGITAL SOUND IN HORNBY 'DUCHESS' 4-6-2s

Beginner **SKILL LEVEL** Intermediate Advanced



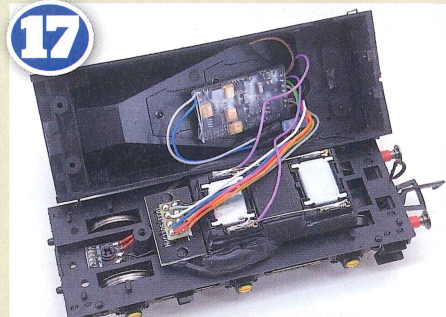
15

To provide 'stay alive' capacity, helping to keep the locomotive moving and the sound on over small spots of dirt, means connecting a supplied capacitor to the blue and grey leads coming from the rear of the MX645R decoder. Solder them to the legs of the capacitor ensuring that the grey wire is connected to the negative side (short leg).



16

To protect the capacitor, the new soldered joints are covered with heatshrink tubing. This was put over the blue and grey wires before soldering them to the capacitor legs then shrunk with the side of a soldering iron.



17

The decoder and capacitor were mounted to the roof of the tender body with Black Tack before it was refitted, taking care to ensure that none of the wires were snagged on reassembly.

18

46256 is now ready for testing and addressing of its decoder before entering service sounding just as good as it looks.



WHAT WE USED

PRODUCT	SUPPLIER	CAT NO.
Zimo MX645R 8-pin 10 function decoder	www.digitrains.co.uk	MX645R
Zimo 40mm x 22mm x 9mm twin speaker	www.digitrains.co.uk	LS40x22x09
LMS two/four cylinder active drive sound	www.digitrains.co.uk	ZS003A

'Princess Coronation' class 'Pacific' 46255
City of Hereford
exerts full power as
it tackles the famous
Beattock Bank
on the West Coast
Main Line with a
northbound express
on August 27 1963.
Dave Cobbe/
Railphotoprints.uk.

Hornby Magazine Locomotive Manual Vol 1



Learn more about the skills and methods required to install digital decoders and sound into ready-to-run locomotives with the first volume of Hornby Magazine's Locomotive Manual. This 132 page publication is dedicated to installing decoders and sound in express locomotives covering Western, Southern, Midland, Eastern and British Railways designs from Bachmann and Hornby.
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