CUSTOM SOUND for the 'Janus'

PAUL CHETTER looks at both ends of the Golden Valley Hobbies 'Janus' shunting locomotive to explore the potential for digital, sound and other enhancements.

I'VE BEEN INTRIGUED by these compact but powerful locomotives since being invited to the then TATA steelworks site in Scunthorpe to record the Yorkshire Engine Co 'Janus' 0-6-0 operated by the Appleby Frodingham Railway Preservation Society which makes use of this very extensive private rail system. My first cab ride included a full rail tour of the site, which I wholeheartedly recommend to everyone.

I was, therefore, delighted by the announcement of the ready-to-run YEC 'Janus' by Golden Valley Models a few months later, eagerly awaiting its release. I created my custom sound project during the interim so that by the time I received my model, only some minor tweaking was required to optimise it for this model.

The narrow spaces available within each engine room dictated that a Zimo MX648 would be the appropriate sound decoder and one of the Zimo 10mm x 15mm 'sugar cube' versions would be perfect for the speaker. These components are what this installation is built around.

The model is very well done, utilising basic but tried and tested technology which facilitates simple conversion, and which for some, like me, will encourage something more adventurous.

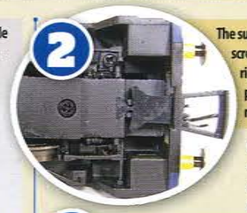
This guide offers several variations of the installations possible, from simple to more complex, so you can decide which will be appropriate to your skills and experience. Please also note that your warranty may be affected if you modify your model. »

Golden Valley Hobbies' new 'Janus' 0-6-0 diesel shunter is a great addition to the range of industrial locomotives. With sound installed it develops an enjoyable character with plenty of driving potential.

STEP BY STEP **INSTALLING DCC SOUND AND LIGHTS IN A 'JANUS' 0-6-0 IN 'OO'**

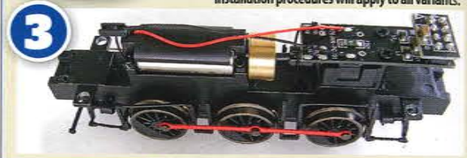
Intermediate
Beginner — SKILL LEVEL — Advanced

1 This guide offers several variations of the installation possible, from simple to complex, so you can decide which will be appropriate to your skills and experience. This is the inside view of the model showing the spaces available for sound installation. Please also note that your warranty may be affected if you modify your model.



2 The superstructure is fixed to the chassis with four screws, two of which can be seen next to the brake rigging at each end of the chassis. The couplings pass through each buffer beam, so must be removed before the body can be lifted clear.

With the body removed the general layout and Printed Circuit Board (PCB) with 8-pin DCC socket and blanking plug can be seen. The same installation procedures will apply to all variants.



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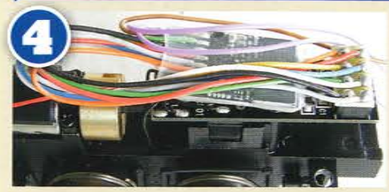
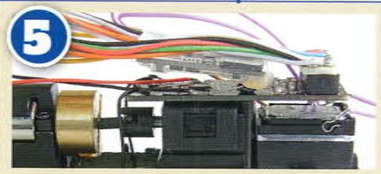
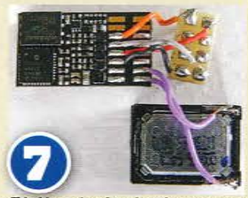


4 The installation of a non-sound decoder simply requires the removal of the blanking plug and the insertion of the 8pin plug of a suitably sized decoder before refitting the body.



5 A simple sound installation can be achieved with only a little more work by using a sound decoder and installing a low profile 'sugar cube' speaker below the main PCB. Care will need to be taken to ensure the loose and unused wires cannot entangle with the flywheel or cardan shaft.

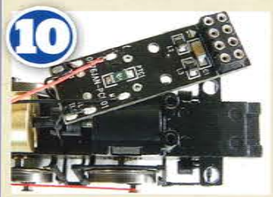
6 To avoid these potential problems the unused wires have been removed from the Zimo MX648, and the remainder have been shortened to the bare minimum reducing the amount of space required inside the 'Janus'.



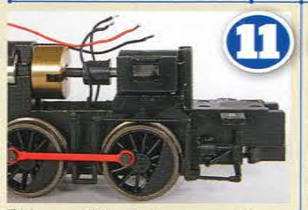
7 This side-on view shows how the components will be deployed in the model and how little space they require once installed too.

8 Close proximity to PCB components means that the decoder will require adequate insulation. I used Kapton tape around the decoder and on the metal parts of the speaker. This prevents any potential for short circuits in the close confines of the locomotive's bonnets.

9 The deeper version of the speaker will give a useful increase in performance, but there is not sufficient space under the locomotive PCB to fit one here. Removing the PCB and hard wiring is an alternative which would release sufficient space. The two locating screws are arrowed.

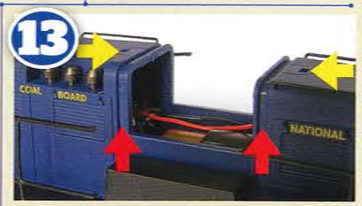


10 Releasing these will allow the PCB to be removed after the track and motor wires have been disconnected.



11 This leaves a well shaped and generous space for decoder and deeper speaker to be allocated – the PCB opens up a surprising amount of space.

12 Moving onto the next stage, fitting a cab light requires access to the interior, shown here with the chassis in situ. Release all the handrail to cab push-fit connections before pulling the cab moulding upwards to remove it.

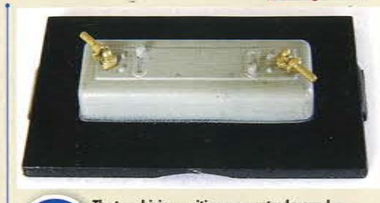


13 The cab is held in place by six tabs, two slots for which are at each side as indicated by the red arrows and one each at the base of the exhaust stack moulding, arrowed in yellow.

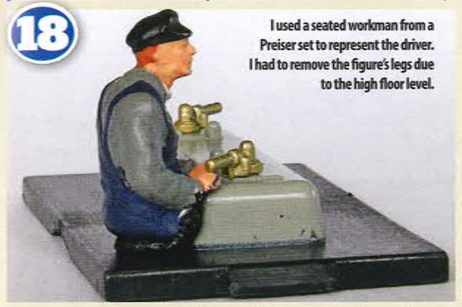
14 The plastic sand pipes are vulnerable with the chassis removed, so I worked with it in situ whenever possible to avoid accidentally damaging them.

15 The cab moulding is not glued in place so only requires a firm pull to release the tabs shown - indicated with similar coloured arrows.

16 The driving desk is included as part of the black moulding as seen from below. Gently pulling the outer sides of the cab will reveal tabs on each short side of the interior moulding. No adhesive had been applied so it can be flipped out.



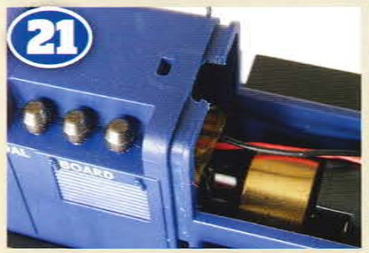
17 The two driving positions are centred around an island driving desk which, on the real thing, has unhindered space to walk around to obtain the most convenient driving position.



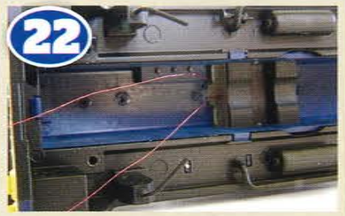
18 I used a seated workman from a Preiser set to represent the driver. I had to remove the figure's legs due to the high floor level.

19 With the moulding removed, the inner roof can be seen. Note the end of a rectangular section channel in the cab bulkhead next to the glazing.

20 By carefully prising the centre of the glazing strip I was able to feed a DCC Concepts wired 'Nano LED' through the channel which I fixed with cyano adhesive to the roof. Make sure the green 'T' motif is the face fixed to the panel.



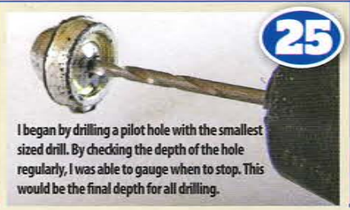
21 To provide clearance for the single strand lacquered wires I cut a notch in the mating channel at the rear of the forward engine room - compare with Step 13.



22 The cab was refitted and the wires fed through to the inside of the engine room moulding. These wires are fragile so will need to be supported and protected from physical damage. I usually fix them in place with cyano adhesive when all work is completed and they have been electrically tested.

23 These are the three pin vices and drill bits I used in preparing the headlamps to be fitted with LEDs. Bit sizes are: top 2.0mm, middle 1.5mm and bottom 0.6mm.

24 These are the plastic moulded headlamps from a model 'vintage car', before work left, and after right.



25 I began by drilling a pilot hole with the smallest sized drill. By checking the depth of the hole regularly, I was able to gauge when to stop. This would be the final depth for all drilling.

26 Using the pilot hole as guide I increased the diameter of the hole with a larger drill to open out the headlamp.

SUB-ASSEMBLIES

The model consists of four sub-assemblies, chassis, footplate casting, the cab moulding and a moulding comprising of two engine rooms. These are held together with screws or tab-in slot fixings with adhesive used only for some of the glazing plus the handrails. Dismantling for access is, therefore, virtually stress-free.

The cutaway picture shows the spaces available in the model as delivered and how much more which could be released by the removal of some internal components if required. The cab is fixed to the engine room moulding with tabs alone, as is the latter to the footplate casting. Chassis and footplate are fitted together with four screws. Please note that the sanding tubes are plastic and become very exposed to potential damage when the chassis is not in place and during reassembly.

The entire superstructure can be removed from the chassis after the securing screws have been released. For a simple DCC installation or basic sound installation, no further disassembly is required beyond removing the 8-pin blanking plug. This is covered by the first four steps in this issue's guide.

It is worth noting that owners have reported several variations of motor orientation and flywheel deployment in what would otherwise be identical models (see the differences in cutaway images in HM122 and HM124). With minor adaptations to suit, the installations in this guide are usable for all variants except the double flywheel version which will preclude fitting the speaker in the rear engine room.

However, the orientation of the motor has an unexpected impact on DCC. If your model's motor has the flywheel between it and the gearbox it will run in the opposite direction to that expected. This can be cured by either reversing the connections of the track pick up wires on the PCB or by changing the direction with CV29 Bit 0. In layman's terms this means that you should add '1' to the value already in CV29, so you will need to read this value before re-programming.

INTERIOR ACCESS

To gain access to the cab interior the cab assembly slides upwards as soon as the grip of the fixing tabs has been defeated. This reveals the lower side of the driving desk moulding which is clipped into the sides of the cab with small tabs. These tabs are not visible until the cab sides are gently prised outwards. I used a scalpel blade to flick out the moulding.

To represent a driver, I removed the legs of a seated Preiser model workman and fixed it into place next to the driving desk. Pushing this moulding back into place later is all that's required for refitting the cab interior.

Before that, however, I eased the glazing from the front of the cab. This is also just an interference fit, so no glue to disturb. The side glazing is fixed with adhesive which serves to retain the ends of the front and rear windows. There is a rectangular section channel which I used as conduit to pass the wires from a 'nano LED' from DCC Concepts invisibly from the inner cab roof to the engine room moulding. The nano LED was fixed to the middle of the cab roof with cyano adhesive, and I cut a small notch in the engine room moulding to allow the wires to pass safely into the interior.

After pushing the driving desk into place until it clicked home, I refitted the cab ensuring that all tabs were firmly in place.

From my spares box I retrieved a pair of chromed plastic headlamps originally fitted to a cheap 'vintage' toy car. These were solid dummy lamps so I set about removing the centres to leave a hollowed shell. After making a pilot hole to establish the centre point and the maximum depth to which it would be safe to remove material, I used progressively larger drill bits to fashion the inner surface of the lamp 'bowl'. A small hole was drilled in the base of each lamp to provide an exit point for the LEDs' wires.

The inner surface of each lamp was then brush painted with silver enamel to represent the reflector before being fitted with a nano LED. I used cyano adhesive to fix the LED in the correct position and orientation. When cured, I added more layers to represent the lamp lenses. PVA glue might work as a substitute for this as it normally becomes clear when dry.

The lamps of many real 'Janus' 0-6-0s were fitted to the front handrails in various positions, but this model represents a specific locomotive in preservation, which featured, at least for part of its life, bonnet mounted lamps. I used the small drill in a pin-vice to pierce the body moulding immediately adjacent to the radiator cap at each »

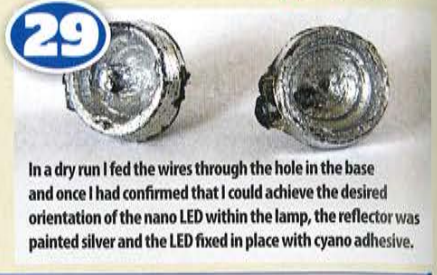
STEP BY STEP

INSTALLING DCC SOUND AND LIGHTS IN A 'JANUS' 0-6-0 IN 'OO'

Beginner — Intermediate — Advanced — SKILL LEVEL

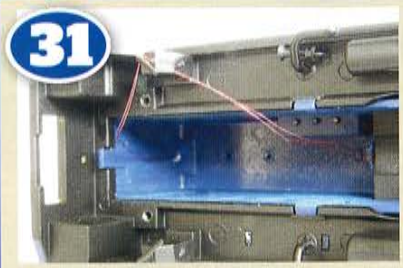
27 I completed the hollowing-out of the lamp with a 2mm drill. This will allow the fitting of a DCC Concepts ProtoWhite Nano LED to convert the dummy lamps to working representations.

28 Using the smallest 0.6mm drill I created a route for the wiring to pass out of the lamp bowl immediately behind the fixing bracket.

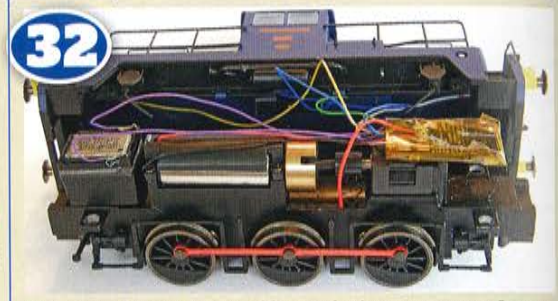


29 In a dry run I fed the wires through the hole in the base and once I had confirmed that I could achieve the desired orientation of the nano LED within the lamp, the reflector was painted silver and the LED fixed in place with cyano adhesive.

30 Using the smallest drill I pierced the body mouldings as close as possible to the radiator caps. I passed the lamp wires through these and with a little cyano adhesive secured the wires and lamp brackets to the body.



31 The wires from the front lamp and the cab light can be seen here. Each single strand wire was soldered to an appropriately coloured insulated wire and then fixed in place with cyano adhesive to prevent accidental damage. Insulated wire is much more robust so this was used as the flexible connection to the decoder.



32 Having removed the rear extension of the motor bracket to create space to fit a stay alive capacitor which I then found to be un-necessary, I fitted a larger speaker to the rear. There is sufficient space next to the decoder to fit a capacitor or a second speaker in future. The final connections for the lighting consist of yellow to one lamp, white to the other, green to the cab light and blue for the common return.

33 Driver and working lamps can be seen here, though I'm not sure whether to leave the lamps 'chromed' or to paint them black or body coloured. For now though this 'Janus' is ready for action and really sounds the part.

WHAT WE USED

PRODUCT	SUPPLIER	PRICE
Golden Valley 'Janus' 0-6-0	www.goldenvalleyhobbies.com	£99.95
Zimo MX648R Sound Decoder	www.digitrains.co.uk	£99.00
Zimo LS15x11x08mm speaker	www.digitrains.co.uk	£9.00
Zimo LS15x11x11mm speaker	www.digitrains.co.uk	£9.00
Nano LEDs (six-pack)	www.digitrains.co.uk	£13.00

end, through which I passed the single strand, lacquer coated LED wires. Cyano adhesive was used to fix these wires and the mounting brackets of each lamp to the top of each engine room.

Working inside the model, I shortened each of the LED wires from the cab and external lamps before soldering them to appropriately coloured insulated wires, with suitable series resistors fitted to the negative (originally, shorter) LED wires. This provides over-current protection and reduces the brilliance of the LED. I used 1k Ohms resistors for each of the headlamps and 10k to reduce the cab light to a realistically dim glow. I used cyano adhesive to fix these joints and the single strand wires to the body. This provides both strength and additional insulation to these fragile wires. Fitted in this way the insulated wires form the flexible link to the decoder without transmitting the strain to the single strand wires.

Refitting the superstructure is straightforward, but take care not to trap the sand pipes or to allow them to locate themselves between wheel spokes during the process.

With a custom sound project (available from Digitrains) including two separate engine start ups, five engine power levels, 16 sound functions, progressive working brakes and Speed Lock feature which allows the throttle to be used to select any of the engine power levels at any fixed road speed this 'Janus' now has a great deal of new operational value on board and with the addition of lighting it really comes to life. 16mm

WORTH THE TRIP

- Find out more about the Appleby and Frodingham Railway Preservation Society. at *www.afrps.co.uk*.