

# Roundhouse Darji C review

by ALAN REGAN

Following his article on the production of Roundhouse Engineering's Darji C locomotive in Issue 185 of *16mm Today*, ALAN REGAN was asked to do a review of this impressive loco.

Photos by Alan Regan.



It's strange how one thing leads to another. My mate and fellow footplate volunteer Simon is making a replacement steam turret for his model of Countess. I knew that Roundhouse had an odd noggin end of 1 ½ inch brass bar so a week before Christmas, I phoned to ask for it to be sent to Simon. At the end of the conversation Alex Sawford, to whom I'd been speaking, casually asked if I'd like to review their Darjeeling C Class, as a conclusion to my article on its development, which was carried in November 2022 *16mm Today* (*SMT*). I jumped at the opportunity, as a work colleague used to say, like a big dog.

## Sea of worms

Four days later, *SMT* Editor Gareth having confirmed that he'd find room for the review if I could get it to him

by mid-January, a big box arrived. It contained the production prototype, the one depicted (along with designer Rob's arm), in the picture on page 31 of November *SMT*. Inside, in one box, was the loco and in another, the tender, both surrounded by a sea of worms. Elsewhere in the worm sea was the transmitter wrapped in bubble wrap. All securely wrapped but not the way the first owners of this loco will have received theirs. Some little while later, the box had been unpacked, the contents inspected and the loco set on a length of track. In all the time I spent in the factory gathering material for the earlier article, I never really had time to gaze at the loco and take it in as a whole. The first thing that struck me was the length, needing three 300mm lengths of track to stand it on. The second though was

would it fit on the head shunt which leads from the steaming up bay on my railway. It does, just.

## Re-gauging

The next thing was to set it to 45mm gauge, it having been displayed at the National Garden Railway Show in June 2022, set to 32mm gauge. This took longer than I'd expected, partly because the wheels hadn't been moved for months, probably since assembly in May, but also because I was conscious that I was handling someone else's loco. ►

## Photos:

**1 and 3** – The tender is 2/3rds the length of the loco! Visible between engine and tender are the two servo leads either side of the drawbar. Blackening the gas valve would make it less visible.



**Photos:**

**2** – This emphasizes the substantial nature of the frames and the high, inclined position of the cylinders with their new, more detailed covers. Note also the neat lost wax cast coupling head.

**4** – Annotated cab fittings and controls shown with the roof removed.

**5** – The mounting for the rear light has been changed on production models – as you see it’s angled up slightly on the prototype. I temporarily replaced the rear coupling head with an Accucraft coupling head for compatibility with my stock.

The brake stand is higher than the sides of the tender, so I needed a flat piece of board to invert it onto, an offcut of 20mm MDF in my case. I needed two strips to support the loco, one across the top of the cab, just inside the front, and the other under the chimney, to stop the cap getting scratched. I’ve turned the loco upside down many times since that first day and will be retaining these bits for when I receive my own loco, in February. As an aside, I have a set of blocks for most of my locos so that I can invert them securely for maintenance.

**High production standard**

There are a very small number of differences between the production prototype and the first 40 locos to have been built and supplied to customers, but one thing it does share with its later siblings is the same finish and standard of assembly. If the loco had been mine, I’d have been happy with it on both counts.

I mentioned in my earlier article that the loco had a new, slim displacement lubricator on the left-hand side of the cab. It really does sit well into the corner and is hardly noticeable behind



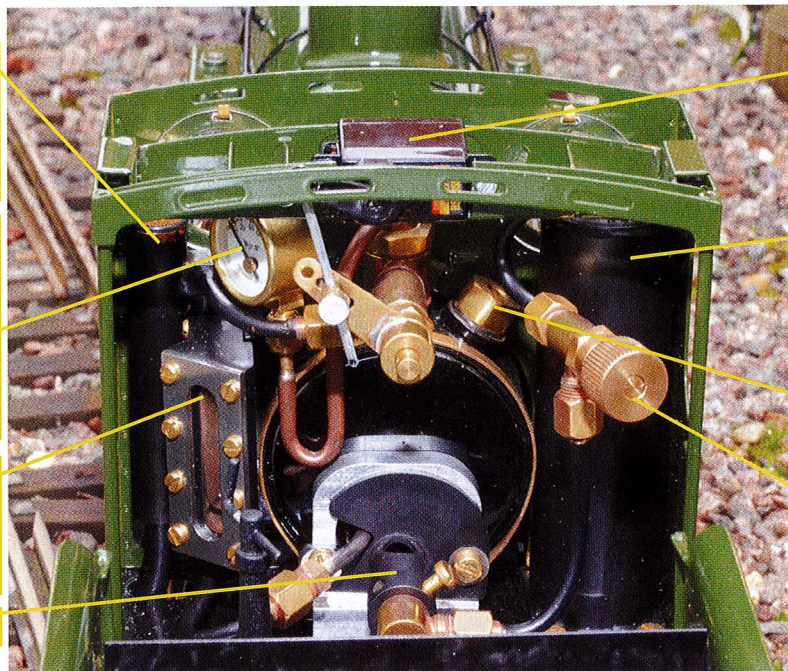
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New slim displacement lubricator running full height of cab

Standard Roundhouse ½ inch pressure gauge, need to bob your head down to see this clearly

Gauge glass, tucked into cab but still readily visible

FG gas burner



HS-5055MG regulator servo in bracket integral to roof

Standard Roundhouse circular gas tank

Water filling point

Gas control valve, readily accessible with cab roof on

the sight glass, which is adequately visible but still set back somewhat. The standard Roundhouse tubular gas tank is in the right-hand corner and a little more visible but not obtrusive. The tiny HS-5055MG (metal geared) regulator servo in its bracket underneath the cab roof is only visible from rail height, or if you remove the cab roof, which is secured in place with tabs and magnets

on either side of the cab. It's very easy to take off and put back on – I found the coal load in the tender a safe place to store it when I was preparing the loco (so much better than leaving it in the ballast!). Being an open-backed cab, the controls are very accessible, but also very visible. I can see me either blackening or painting mine. Once the loco is prepared, the tender needs to be

coupled up and the two servos wired up to the receiver, which is in the tender under the coal load, along with the battery. This is a little fiddly and I will be storing my loco in a loco box and cradle.

It's a long lean racehorse of a locomotive, impressive from all angles. The question was, would it run as well as it looks? ►



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### In proportion

Have there been any compromise during design and manufacture of this loco, which might leave owners feeling disappointed? The only plans I have access to are those in Terry Martin's authoritative book on the Darjeeling Himalayan Railway, "Halfway to Heaven" (thanks Tony, for letting me borrow it). There are few dimensions, but one that's easy to verify is the width

of the tender over the flare, which matches the drawing. The front apron, above the front buffer beam, is also to scale. Everything else looks to be in proportion. I know that Rob used drawings supplied by the Darjeeling Himalayan Railway Society to design the loco and it does look just like the excellent colour side view on page 211 of Terry Martin's book. The frames are further apart, to accommodate 45mm

### Photos:

**6** – Coming across the line down to the lower station in winter sunshine. It's on a diamond crossing on a curve, the construction of which I'll describe in a future issue.

**7** – Entering the through station. The lubricator drain plug can be seen beneath the cab – the condensate drops nicely clear of the locomotive.



gauge, and the bogie and pony truck frames are correspondingly wider than scale, but this is only really apparent if you look at the tender from the back. The gap between loco and tender is also greater than scale, though not I suspect by much. A fall plate is provided which hinges off the footplate on the loco and rests on the floor of the tender. A gap is visible when viewed from the side, but how much time do we spend looking at our locos in this manner? Overall, this loco looks right, at least to my eyes. One final point – the prototype's centre driver was flangeless too.

### Test run

A few days passed and a weather window opened, on 22nd December, so that I could test it. A weather window means that it wasn't freezing, nor was it pouring with rain, but the drizzle would normally have kept me off the track. I'd spoken with Alex and confirmed that the loco had hardly been run since the testing as part of manufacture, so I assembled a modest train for my first runs, just six good wagons, 14 axles and 3.4kg. My main objective was to find out how long the gas would burn for and how much of that time could be used for running. I had two runs, with half an hour between runs, using the same train. The answer is, in a damp 10 degrees celsius, the gas will burn for a little over 30 minutes, but that it takes a good

ten minutes to warm all that metal up and start any useful running. I started each run on  $\frac{3}{4}$  glass of water and got nowhere near needing to top up. The loco also pulls off very smoothly. You open the regulator a little, wait for steam pressure to build in the cylinders and off she plods. This is as satisfying as it is realistic. On later runs I got the loco into steam, turned the gas off, topped it up and relit. I then got at least 30 minutes of running time, 36 minutes when it was a mild 11 degrees. By starting with  $\frac{3}{4}$  glass of water I didn't need to top the boiler up, so I could concentrate on enjoying the sight and sound of the run. This is an easy loco to manage and use.

### Gradient testing

My line is a folded figure of eight. It was originally level but driving round and round became boring. A later part of the line spurs off the old and descends down 60 feet of 1 in 50 to cross under the level line and into a passing loop with a platform. It then climbs back up another 60 feet, again at 1 in 50, but around a six-foot six-inch radius curve which eases after an S-bend, to return to the main circuit. Double the length of run and at least double the interest. This part of the line will always uncover any light footedness on the part of a loco unless it's perfectly dry or the loco is very heavy. When we have open days, some drivers have to leave a coach in the station as

### Photo:

*8 – Climbing through the reverse curves on the 1 in 50 with four L&B Accucraft coaches on the hook, slowly and (you'll have to take my word for it) without a hint of slipping. The winter pansies are doing their best to brighten the garden.*

the afternoon wears on and the rails become slippery. However, some locos are immune, like the Roundhouse Fairlie and Darj D. The Darj C isn't. As the drizzle turned to rain and the steam oil emitted from the loco's exhaust mixed with the water, the rails became slippery and I had to control the slipping on the bank (though I got to the top each time). This is a Pacific tender loco, so without the additional weight benefit from side tanks (even if they are just cosmetic) over the driving wheels and also having a heavy tender to pull. This loco, I thought, was not going to like wet and slippery conditions on gradients, especially around curves.

### Boxing Day filming

The next few days were very cold, even for normally temperate North Buckinghamshire, but Boxing Day was dry and bright, albeit only 6 degrees. I cleaned the rails on the bank but left the rest of the track as it was and assembled a heavier test train, one which would exceed the 6.7kg used in haulage tests in the factory ►

during manufacture. Our son Rob, who is a professional cameraman and video editor, had brought some of his gear, so we filmed the afternoon's steaming, including a run of a Roundhouse Vale of Rheidol tank, to contrast it with the lighter Darj C. The VoR is 5.5kg with all the weight over the driven axles. The Darj C is 4.2kg and has a 1.8kg tender to pull before it starts on the train itself. The results were captured in this video: <https://youtu.be/yhLXMUWiE60>.

Those active on the Association Facebook page may already have seen it. What the runs confirmed was that the Darj C would more than handle a train weighing more than the factory test weight and up a taxing gradient. Feedback from another owner, via Facebook, corroborated that in the dry, the loco will handle good long trains, perhaps longer than most passing loops will accommodate. The heaviest train lifted up the bank was 7.2kg (9.0kg if you add on the weight of the tender), much more than the factory test 6.7kg, which remember is on the flat.

I had three more runs with the loco before writing this article. Unfortunately, all were on wet, slippery days and on no occasion was I able to pull the length of train that I'd been able to pull on that dry, cold Boxing Day. I related this to a 16mm friend who wondered whether

undue weight was being carried by the substantial bogie ahead of the cylinder and the pony truck to the rear. No, this isn't the case. Both bogie and pony truck have very slight springing. They are not only heavy enough to stay on the track on their own, but the front bogie will trail through sprung points. So probably would the pony truck, but the tender gets there first. The conclusion I came to is that, as a Pacific with a heavy tender, if you want to pull long trains, keep to primarily level track or track with easy gradients. If you've got a railway which abounds with fierce gradients, content yourself with light trains, unless the rail head is clean and dry. The loco was after all designed for the "iron-flat plains of West Bengal", to quote Terry Martin's book. I am very aware that I've probably tested this loco in conditions where most owners would find some indoor modelling job with which to keep themselves busy and wait for better weather. The deadline for February *SMT* left me chasing weather windows which on the one hand enabled me to see, and to share with you, where the loco's limits lie, but at the same time shine a light on its potential.

So, I look forward to the phone call that tells me that my own loco is ready for collection. I plan various embellishments, one of which I've

already prototyped to facilitate testing. I use Accucraft chopper couplings on the majority of my stock. The lost wax couplings fitted to the loco will couple to an Accucraft chopper at the normal 25mm above rail height, but I prefer the more positive coupling of two choppers, each engaging the adjacent coupling head. It's a relatively simple matter to make a new bar (mine is an offcut of 2mm stainless steel) with a 3mm hole where the bar attaches to the loco or tender and a 2mm hole to attach the chopper head to the bar (I separate the coupling from the oblong pocket). 2mm needs taking of the head, at the attachment point, then a 2mm machine screw inserted and secured with a nut at the bottom, and that's it. Plus, I retain the very nice original couplings for a future owner, though I doubt it will be me selling it on. Yes, I look forward to owning and running this loco. Reviewing it has only reinforced the feeling. If I make changes that might be of benefit to other, editor permitting, I'll share them with you. Until then, roll on February! ■

**Below: 9** – Coming off the climb back up to the level part of the line. Even on a 10-foot radius curve the buffer overhang is noticeable, emphasising the length of this loco.

