The Riverdale coal-fired Darjeeling 'B' class conversion

by STEVE HERRING

Riverdale Locomotives have offered coal-firing conversion kits for the Roundhouse Lady Anne, Katie and Billy for a few years now. A recent addition to the range has been a coal-firing conversion kit for the Roundhouse Darjeeling 'B' Class. STEVE HERRING reflects on his experience of making this conversion.

Photos by Steve Herring

I've always been a Darjeeling Himalayan Fan so naturally my locos included the Roundhouse 'B' and 'D' class locos with stock to match. Then the coal-firing bug bit and left me wondering, what next?

This was where Riverdale Locomotives, a Dutch Company, did the best thing that they could have ever done, for me at least. At Peterborough 2016 they announced a coal-fired conversion kit for the Roundhouse Darj 'B' Class. Riverdale have been around for a few years now and have introduced conversion kits for the 'Lady Anne', 'Katie' and 'Billy'. But the Darj is the first of an actual prototype.

Riverdale have introduced some innovations in their builds, in particular their damper system which reduces blowing off of steam. Water is not carried on the loco but topping up is by the 'squirty bottle' method. I won't go fully into the system as an excellent article appeared in *SMT* 150, written by Brian Wilson. This says it all, and of course Riverdale's website is available too.

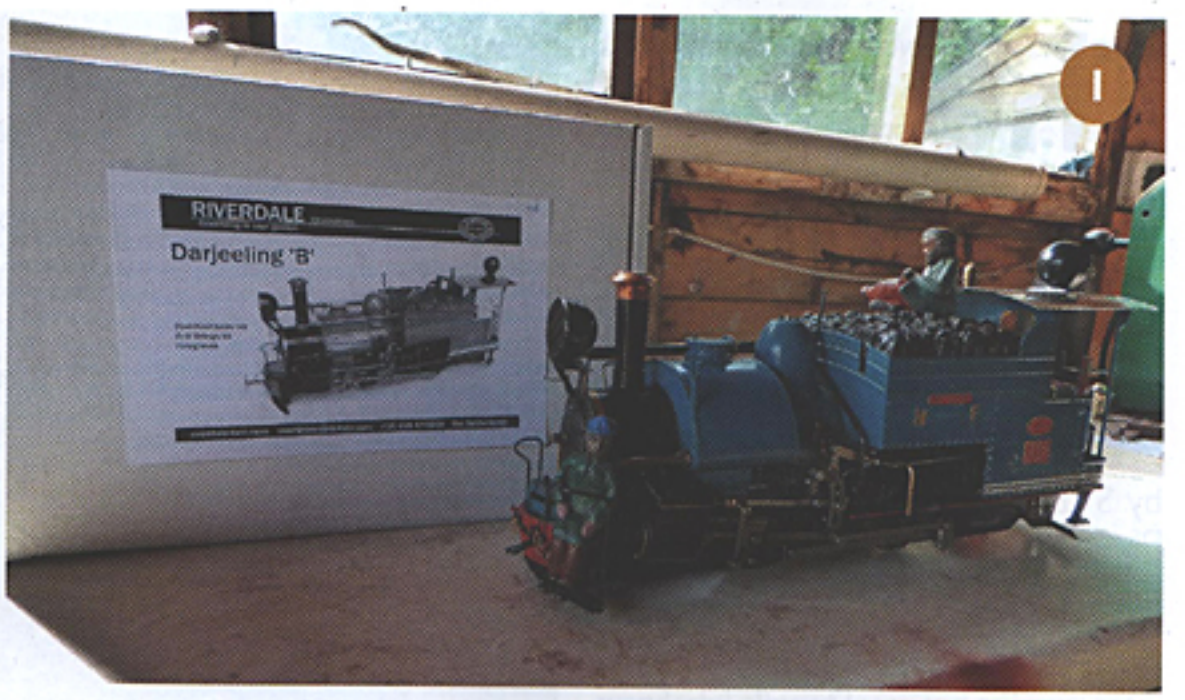
So after thinking about it for a while ▶

***Below:** The completed loco at work with a DHR train.*

(no need really!) I contacted Joep Janssen of Riverdale and after a short flurry of emails clarifying a couple of points I put my order in; no deposit required! Joep gave me a delivery date of March 2017 and that was when Joep contacted me to say it was ready.

Rather than having it shipped I opted to wait a couple of weeks and collect it direct from Joep at Peterborough. This gave us the chance to discuss one or two or the finer engineering points but also to reminisce a little as remarkably at one time many years ago Joep and I had lived in the same small town in Holland!

Now before I start, I should point out that this is not an instruction manual; you get one of those with the kit. And yes, of course it's translated from the Dutch! Also these remarks of mine only refer to the manual (burnt fingers) version although a R/C version is also available.

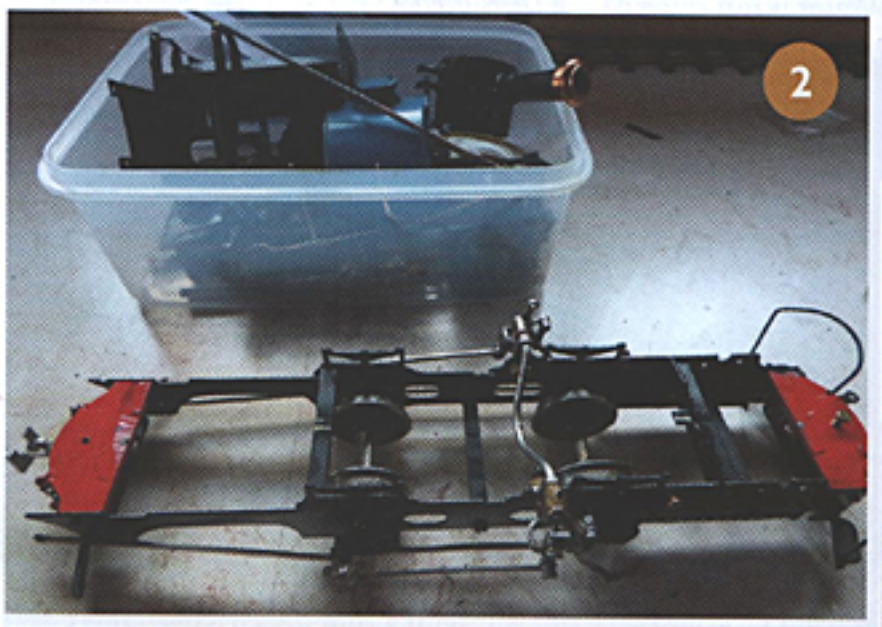


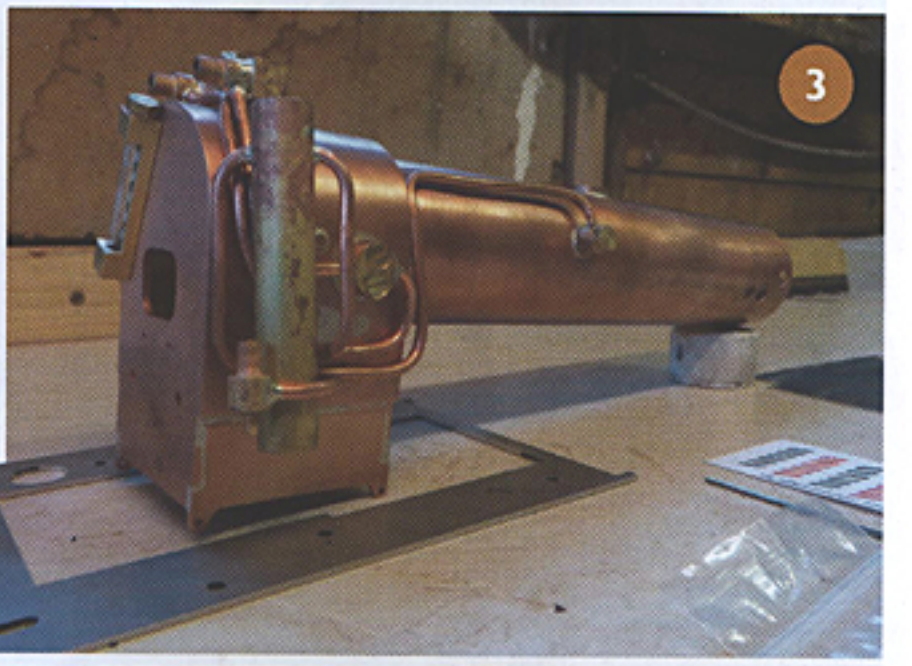
Nice big box

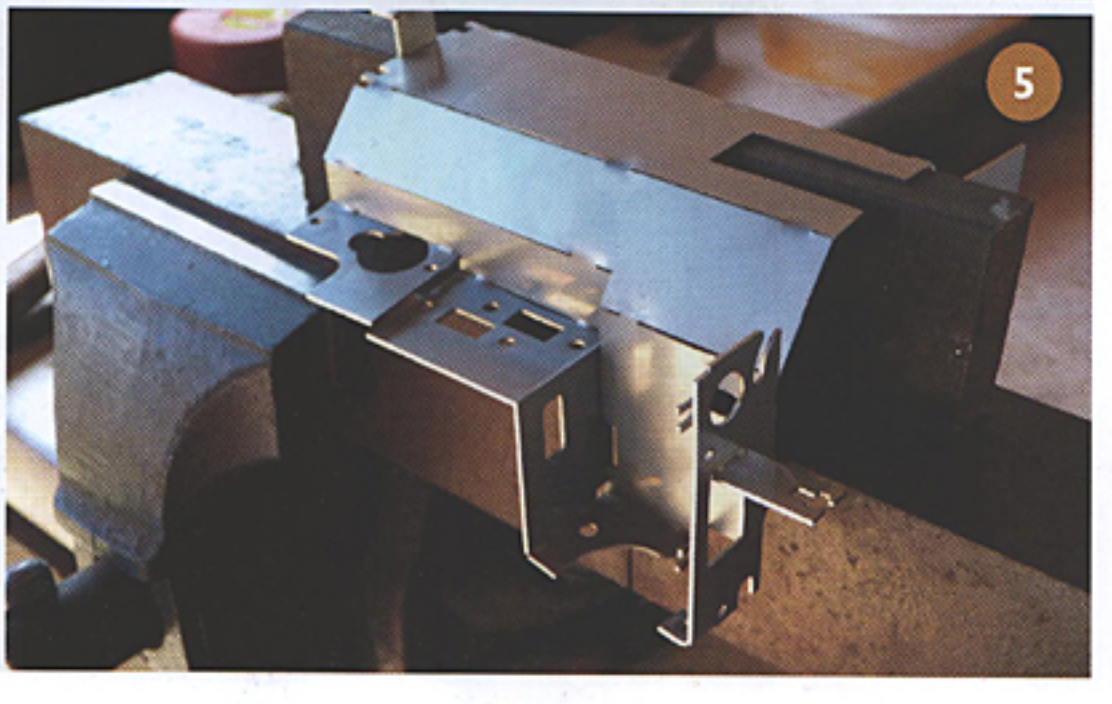
So what do you find when you open that nice big box from Riverdale? First a Jackson 'super squirty bottle' is the first to catch the eye, but then the bit you've been looking for, your coal-fired boiler. First impressions are of a very workmanship like piece of engineering. In particular, I thought the silver soldering looked very neat.

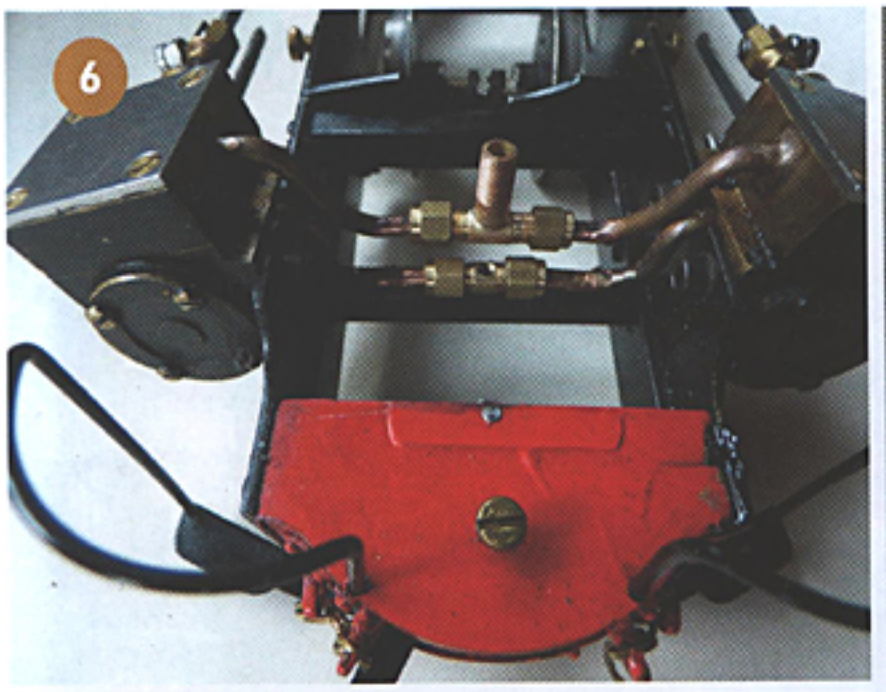
At the front end the boiler tube is extended beyond the front tube plate to form the smokebox. Later this will have the original Roundhouse smokebox with chimney mounted on it. Peering inside the smokebox you will see the main steam-pipe and blower pipe already correctly positioned. The blower has its nozzle already fitted. The hole is only 0.3mm but it does pull the fire up well.

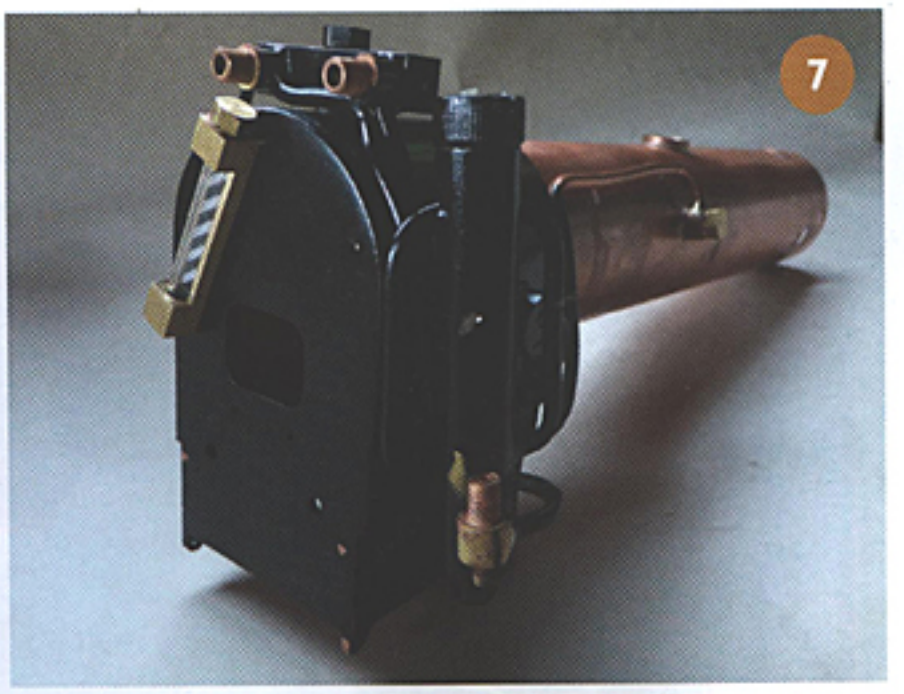
The other end of the boiler carries the dry-backed firebox, and some of the plumbing, such as the steam manifold with the steam and blower pipe leading off from it. For the benefit of my fellow boiler testers the back-head is clearly

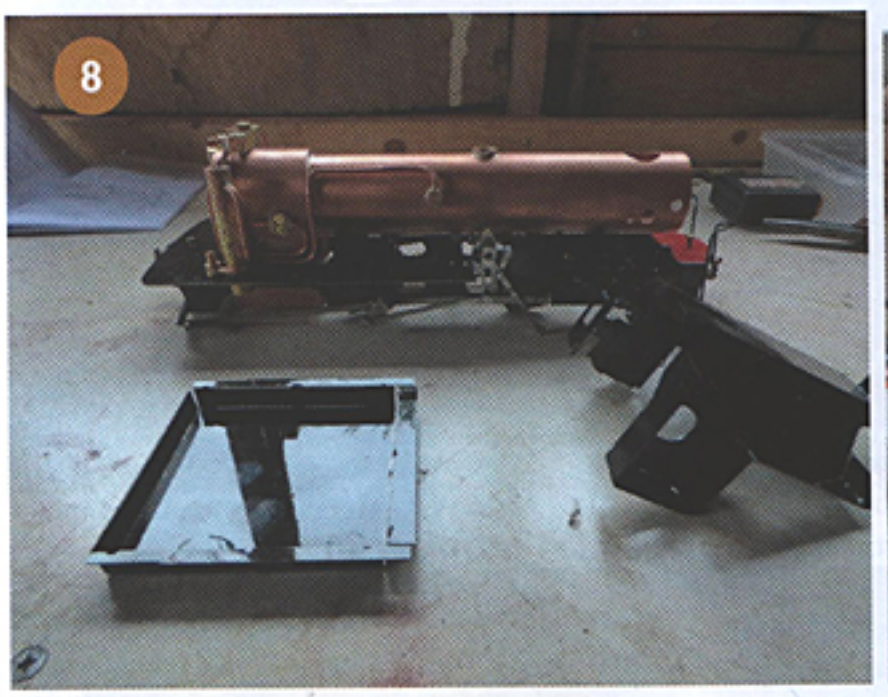


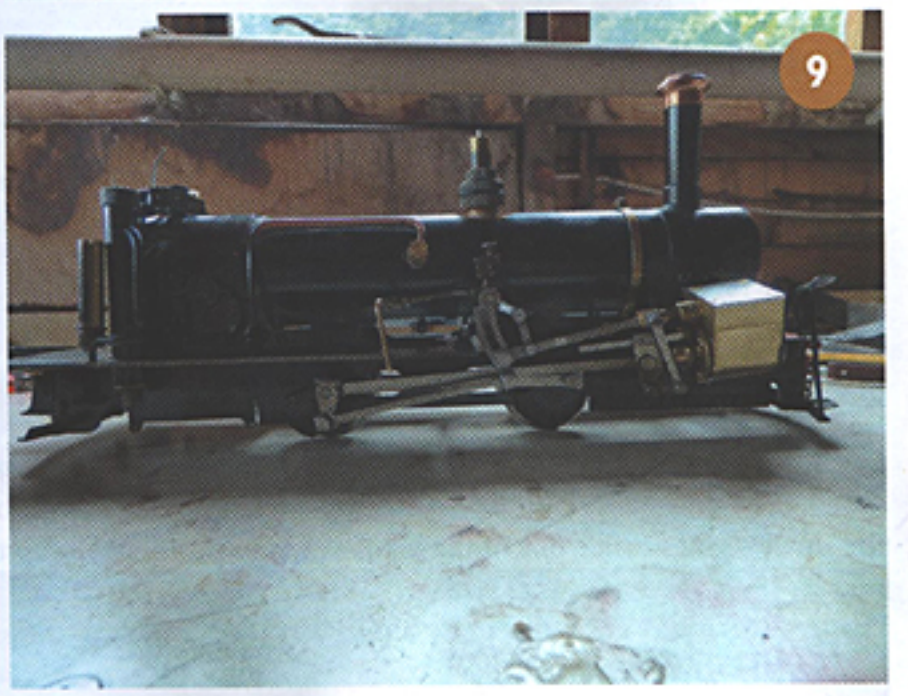












Photos on this page and opposite:

***1** – The starting point: Roundhouse locomotive and the kit of parts from Riverdale.*

***2** – Down to the basics - stripping down the locomotive.*

***3** – The coal-fired boiler and footplate.*

***4** – The fire-box. Note the serial number stamped on.*

***5** – Get the bends in the right order and you end up with this.*

***6** – The new front-end plumbing in place. New blast pipe not yet screwed in.*

***7** – The painted firebox end. (Missed a bit!).*

***8** – Trial fit up of boiler.*

***9** – The new boiler fitted.*

stamped with the boiler serial number. A certificate is also supplied of course. Working pressure is 4 bar (58psi).

Stainless steel parts

Delving back into the box, the next out are a collection of laser-cut stainless steel parts. The biggest is the new footplate which only needs painting. Then there is another flat and you will notice lots of laser cut slots in it. This is to allow you to bend it up to make the new inner support for and bunker and it also carries some of the R/C gear. It looks like an exercise in stainless steel origami but if you follow the instructions in the manual it is quite straightforward. Intrigued, I decided to tackle this first, bending it up on a piece of angle-iron clamped in the vice. Twenty-two bends and I got the very last one wrong!

A more straightforward piece of folding results in you ending up with a tray which sit in the bunker and holds the coal.

What is now left in the box is a collection of clear plastic bags containing all the smaller parts including the firebox door and the parts for the opening smokebox door. Each bag is labelled as to the part's function and cross referred to a parts list in the manual.

So now we are ready to get going and naturally we first need a 'B' class. Some of you will get a brand-new model from Roundhouse or one of the suppliers. In this case you can do a deal with Roundhouse for the return of some of the parts you won't need providing they are unused. Further details on this from Doncaster of course. My well used veteran did not come into this category!

Stripping down

Stripping down your loco is the first job and Joep takes you through this in the manual although it's quite straightforward. In no time at all you are left with a running chassis; frames, wheels, cylinders and valve gear. At this stage I also took the opportunity to polish the valve faces and slide valves. Always worth it on an older locomotive.

The next step is to modify the front end plumbing. As we have to have a blast pipe, a tee fitting has to go between the exhaust pipes and similarly another tee has to go between the main steam-pipes to allow them to connect to the steam-pipe from the boiler. The important thing here is to ensure you bend the pipes sufficiently to allow this tee to sit at its correct height so that when the boiler is positioned, the main steam-pipe enters into the tee by 2 to 3mm.

Testing on air

After this stage please do as Joep suggests and give the chassis a test on air. Then if, like me, you manage to push one of ▶

Photo: *The loco ready for test steaming.*

the small 'o' rings inside one of the pipes it won't cause too much grief!

Then I decided to do a few more bits of metal-work. The opening smoke box door is fairly straightforward. Just remember to make the cut in the vertical bar below the top hinge and bend it forward. This enables the smokebox door to slot onto the hinges.

The grate and ash pan are two stainless steel plates separated by wide and narrow strips. Be sure you get these in the right order then rivet the whole lot together.

The last big fabrication job is on the original boiler wrapper. Firstly it has to be reduced in length and then has to have a hole cut in it to allow the water feed pipe and banjo fitting to sit in place. Of course the wrapper needs to be supported inside to prevent it collapsing. By sheer chance I found in the garage an old silicon sealant tube whose content had gone off rock hard. If you are a mm or two off with your marking out or drilling then no worries, the bunker goes over and covers these areas so nobody will ever know!

Nozzle check

Now the boiler goes inside the wrapper, the old Roundhouse smoke-box wrapper, complete with chimney is put in place and we are ready for the marriage of boiler to chassis. The new footplate goes on first and then you can drop the boiler into position. Do up the main steam-pipe first, then the rear mounting bolts. After fitting the blower lever and regulator to the manifold, again put the airline on again. Check that the chassis is running but also that you get a good blast from the blower nozzle up the chimney. The hole in the nozzle is only 0.3mm so best to check that it's clear now, not when you want to raise steam. Then you can fit the smoke-box door and inner frame. (That's the thing with all the folding you did earlier).

Fire-box and damper

The fire-box door and damper mechanism come next. It's a bit of a fiddle but since it is what a Riverdale boiler is all about, do persevere. If done correctly operating the damper lever should allow the fire-box door to open 3-4mm at the top but also the use of a finger-tip should be able to drop the door fully open to allow you to shovel the coal in.

Then with the ash pan and grate in place it's time for a quick fire up to make sure all is working as it should. (I'll go into firing in a moment or two). The remainder of the bodywork can then be added and it's time to admire your handiwork; your own coal-fired 'B' Class! I just love that open and uncluttered footplate with plenty of room for the crew.

A proper run

Now it's time for a proper run. First, and always first, is the water level, which is easy to read as it is backed by 'stripes'. Then fill the lubricator and have an oil round.

Half a dozen shovelfuls of paraffin soaked charcoal then go in the fire-box, a light is applied as the electric blower is turned on and the engine starts to come to life. After a minute or two a couple of shovelfuls of coal go in and then leave things alone as the pressure rises. At about 30psi the loco blower replaces the electric blower and you can start to build the fire up. It's a deep firebox and you can build it up to the bottom edge of the firebox door. Then when the safety lifts you can work at getting the boiler topped up.

Once moving then you can start experimenting with the damper. With the loco blowing off open the damper and the pressure will drop quite quickly. When it drops below about 40psi it's time to close the damper and let the pressure come up again. However most people will develop their own technique. For example I find that with the damper open about 1.5mm I can happily let my 'B' class do about 4 laps of my 65 yard circuit before I need to pull the pressure back up.

A word of caution; if you let the pressure drop to below 30psi you will find

it very difficult to pull the fire back up. Riverdale also mention this in the manual.

Riverdale say that if you start will a full fire-box and full boiler, then with judicious use of the damper you should be able to get 20 minutes running time without touching the loco. After gaining experience I am now close to that figure. However, I prefer to see to the fire and water a little more often than that, but that's just personnel preference.

Loco disposal

Disposing of the loco after a run is straightforward. Pulling out two pins enables the grate and ash pan to drop out. There are only two tubes to put the brush through and both can be reached through the firebox door. As for emptying the smokebox, Riverdale say this that may be only as infrequent as one or twice a year. However old habits die hard and mine does get done a lot more often than that.

In one of my emails to Joep of Riverdale he mentioned that my particular conversion is the first to run in the UK, and only the second ever, (bragging rights here!) so one or two minor tweaks were suggested. Where appropriate Joep has amended the manual. I must add that Joep was always very prompt in replying to my calls for help although I think I may have tested his patience a little at times!

Overall impressions

So what is my overall impression of this conversion? It's certainly well designed, using a CAD package, and the workmanship looks first-rate. All the bits fit together properly and where tiny items like 2.4mm nuts and 'O' rings are used a few spares are included. Assembly is not that difficult for anyone with some basic mechanical aptitude, and if you've assembled a Roundhouse kit then you're ahead of the game.

Cost-wise it just has to be good value for money. After buying your Roundhouse and the Riverdale kit you must be at least £1k in pocket compared to having a bespoke loco built. And of course the figures look even better if you consider Roundhouse will buy-back some of the new unused parts.

I know some people raise their eyebrows at the damper system but this has been around for a while now. (My kit was No. 116) So it is proven technology. I am certainly happy to run it along side my conventional John Shawe coal-fired Locomotive.

Did I think it was a good plan to do this conversion? Certainly, and that boiler does steam very well. Do I enjoy running it? Most definitely! And I have the satisfaction of knowing I put it together myself. All I need now is a bit of 'ordinary' coal so I can replicate the dark clouds of smoke which emerge from the real thing! Anyone got a lump of nutty slack? ■

Supplier contact details

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Photo: *Completed – and look at that empty cab space*