

DHR 'D-Class' Garratt – A Review

David Williams reviews the latest model from Roundhouse



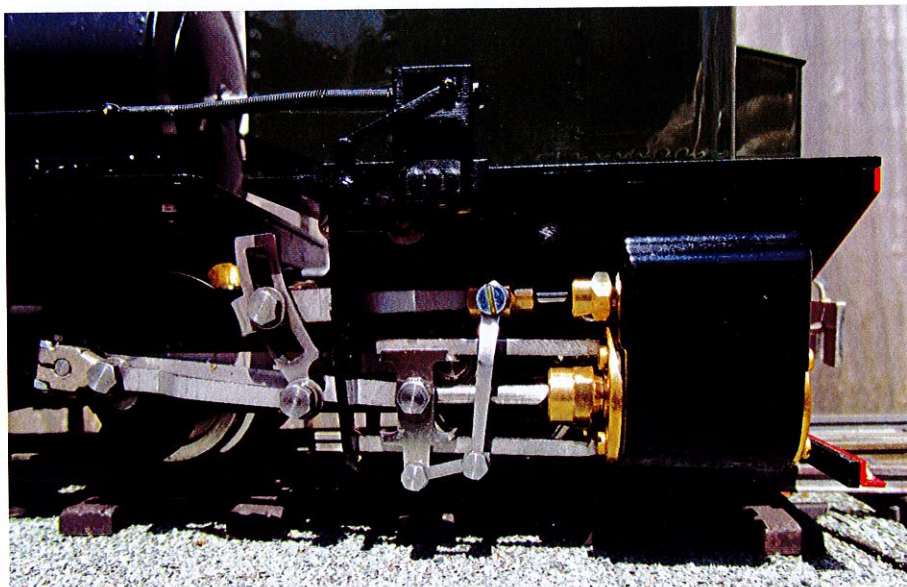
The 'D' class in charge of a train of 1930s DHR stock bursts from Goat Tunnel with steam to spare

From the outset, motive power on the Darjeeling Himalayan Railway was provided by small 0-4-0 tanks, which evolved over time to produce the legendary 'B-Class'. Despite having

proved itself more than capable, the design was considered out-dated by 1910. Having been appraised of the benefits of the new Garratt type locomotives that had just been built for use in Tasmania, the directors of

the DHR were persuaded to sanction a cost of £2,625 for the construction of a similar loco – albeit with various modifications to better suit their requirements.

The new design differed in many respects to its forbear *K1* – perhaps the most significant difference being that it was a simple expansion locomotive as opposed to a compound. In order to accommodate the DHR's significant alterations in rail level that occurred within such short distances, the flat pivot on the front unit was replaced with a spherical design. Meanwhile the rear unit retained its flat pivot, but was provided with two side bearers, mounted off the frames for added stability. The actual pivot centres themselves were also moved closer to the boiler end of each unit providing



A detail view showing the front power unit – note the motion bracket, spring detail and representation of the reversing mechanism.



a radial movement and allowing the loco to better adapt to reverse curves.

Delivered in 1911 the Garratt, (designation 'D-Class') did not prove to be an instant success. It had been intended to be equal to the job of two 'B' class locomotives but on test only managed a load of an additional 60 percent, with a two and half fold increase in coal consumption. It was also dogged by reports of poor steaming and excessive slipping of the front power unit, as well as maintenance issues relating to the reversing linkages and brake gear. Over time various modifications were made, including the new reversing arrangement, best described by the late Terry Martin (Author of *Halfway To Heaven* and *The Iron Sherpa Volumes 1 & 2*) as an 'elongated mangle', which despite its unusual appearance proved to work very well. Other more noticeable features included making the cab more open with a longer roof that was better suited to the hot climatic conditions. However, the

loco eventually found its niche working on the DHRs Teesta Valley Branch. Alas much of this line had been re-gauged and the remainder closed by 1950, rendering the Garratt redundant. It was finally withdrawn from service on November 30th 1954 and scrapped.

An Integral Part

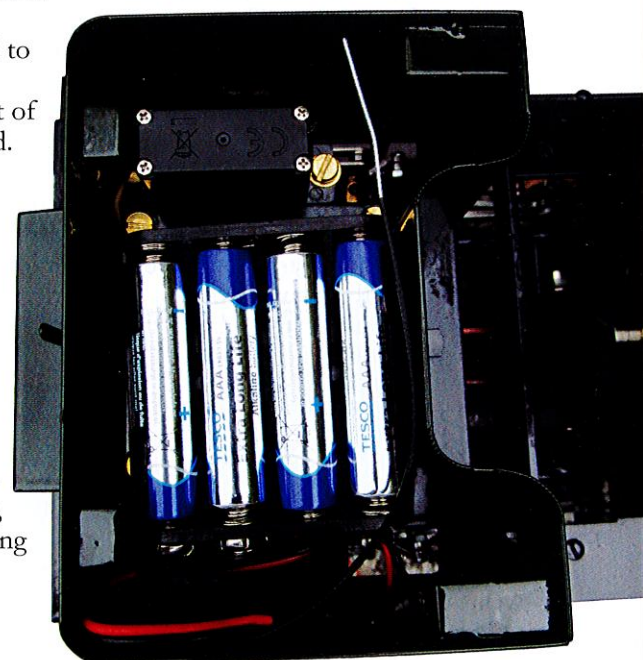
Now, the DHR has always engendered a great deal of interest from 16mm scale modellers. The Roundhouse Engineering 'B' class has proved a very popular model, backed up by a vast range of suitable rolling stock from various suppliers. That is not to mention the smaller and more specialist builders who have created some true master pieces. However, it is Roundhouse Engineering to the fore again with their new release for 2015 and what a cracker it is too. Now normally I would start with the loco itself, but in this instance the packaging forms an integral part of this review. Whilst the loco itself is nowhere near as big as say an NG/G16, it still has the potential to be difficult to handle, especially with its three articulated sections and array of detail.

However, the team at Doncaster has got that sorted too, the loco being supplied in a cleverly designed carrying cradle. Made from laser cut plywood, the centre section comes complete with cut-outs to hold all eight wheels positively in place. Meanwhile the side pieces fold up, with strategically placed foam pieces preventing any damage to the model. The carrying straps are both interlaced and mechanically fixed to the cradle, the sides remaining securely upright under the weight of the loco itself when being carried. Incidentally, the arrangement of foam strips means, if the cradle is used to turn it on its side, the loco is properly supported – thus making re-gauging much easier. Also, production models will be supplied with a polystyrene shell to protect the model during transit.

Anyway, moving on to the loco, which is presented in its rebuilt format with more open cab, longer roof and modified reversing

arrangement. Armed with a copy of Peter Manning's Book *The Anatomy of the Darjeeling Garratt* a quick check around with a rule does show the loco is a bit broad over the cylinders and running plates in order to accommodate 45mm gauge. However, this really isn't noticeable and most, if not all of the remaining dimensions are negligibly close or spot on. This includes the power units, which have the correct profile, spring detail and wheelbase courtesy of newly designed rods. The abbreviated Walschearts valve gear is complete with dummy, double slidebars and crossheads. The cylinders are bolstered by additional overlays, which bring them up to the correct profile. On the outer ends of the power units, the bufferbeams are of the correct profile and neatly finished off with a fine representation of the de-railing bars. The actual pivot centres also appear to be spot on for prototype too.

The couplings are of the standard Roundhouse swivelling variety and are actually a reasonable representation of the prototype and of course there are the usual cheese head screws. Staying below the running board, the side frames of the boiler cradle are accurately defined, and the water balance pipe depicted on the left hand side – the suitably massive wooden re-railing pole being present on the right hand side. The base of the dummy firebox and ashpan, along with the well-tank, are represented by brass etchings, endowed with plentiful rivet and etched line detail. Moving above



The battery pack and receiver as mounted in the front tank.

the running boards, the front and rear aprons carry a large sandbox and two cast white metal re-railing jacks respectively. The boiler cradle frame itself is of open construction as per prototype, and this allows the correct pitch for the boiler centre line, with the bottom of the boiler barrel sitting below the level of the footplating. I am also pleased to say that the unusual reversing linkage has also been cleverly modelled, the universal joints being represented using coil spring. The smokebox and chimney are well defined, with suitable rivet detail as appropriate.

As per prototype, the boiler barrel is lagged out to a slightly larger diameter than the smokebox. It is also endowed with all the relevant details, including dummy feedwater clack valves and pipework, handrails and painted boiler bands. The dome cover is crisply finished and of the correct profile, complete with a pair of scale dummy safety valves – a standard roundhouse valve being fitted beneath. A well finished, representation of the Belpaire firebox is present, complete with dummy washout plugs, and main manifold complete with representative pipe runs for the injector steam feeds. The spectacle plates in the front cab sheet are fully glazed and the cab itself is correctly profiled for the re-built era represented. Both the front and rear power units are embellished with dummy brake cylinders, which are crisply executed, although it would appear the rear one should be slightly offset from centre – I'll put the fine-toothcomb away now. The rear unit also has another well executed casting for the water filler, as well as a fine resin coal load. Yet more excellent detail is present in the form of the two large headlamps, one atop the water tank on the front unit and one atop the cab roof. These are nicely finished and are fully glazed, although sadly the way they have to be positioned means it might be difficult to illuminate them should you wish. As you would expect, the overall paint finish is to the usual Roundhouse standard.

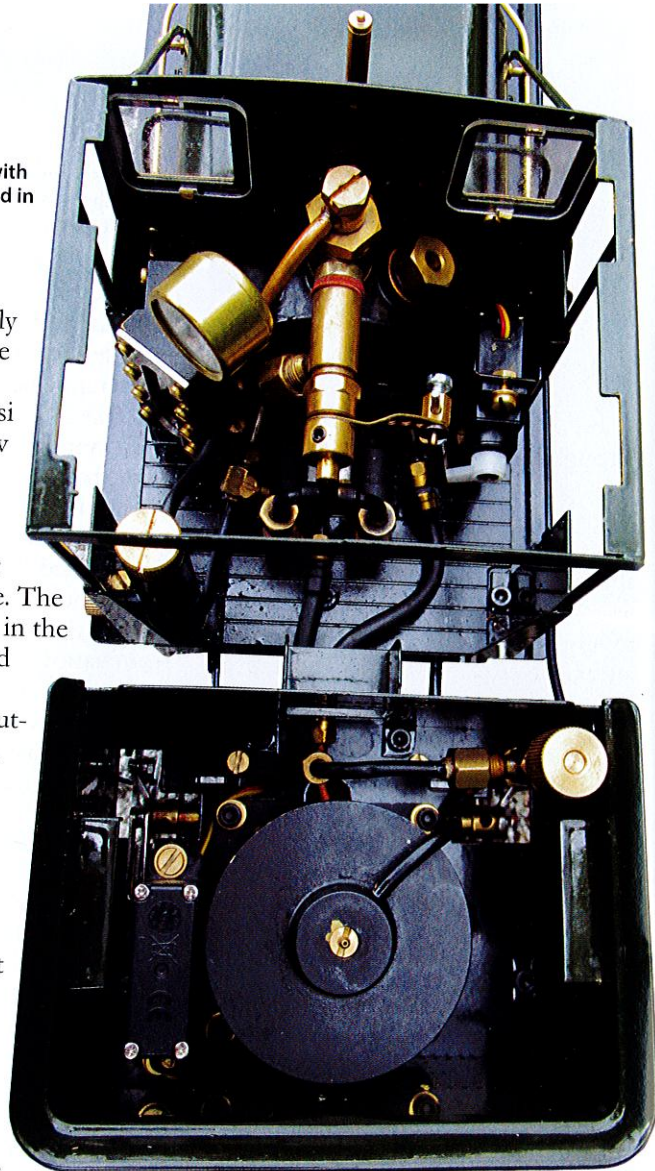
Twin Burner System

So, having looked at the aesthetic aspects, what about the practical ones? Well with twice the number of cylinders requiring steam, the heart of

The cab is neatly laid out, with a capacious gas tank located in the rear tank

this loco is undoubtedly its boiler. This is of the twin flue gas-fired variety, pressed to 40Psi and fired using the new FG2 twin burner system – this is fed from a capacious gas tank located in the rear bunker via flexible pipe. The gas regulator is located in the bunker with the knurled brass gas regulator just protruding through a cut-out in the coal load – a spot of black paint will all but disguise this completely. The cab is laid out with the gauge glass facing out of the left hand cab doorway, then the regulator turret is mounted atop the boiler in its customary position – the pressure gauge being arranged to face out of the left hand doorway as well. The water top-up valve is located on the boiler barrel at about the 'one o' clock' position – a copper swan neck is supplied, which fits over the tube of your water top up bottle and helps to obtain the correct angle without needing to remove the roof. The regulator servo is mounted on the right hand side of the cab floor, and actuates a standard radio control regulator. This supplies steam to the displacement lubricator, which sits in the rear left hand corner of the cab, with the drain valve protruding out through the side sheet. This is perhaps not the most aesthetically pleasing arrangement, but it is probably the most practical way of doing it – a dab of black paint would go a long way to reducing its prominence.

The pipework beyond the lubricator is all neatly executed, although I am not going to attempt a description. Suffice to say that when combined with the articulation it allows the loco to negotiate a radius down to 2ft 6in. The exhaust line from the rear unit is routed so that it can provide an element of warmth to the gas tank, thus helping maintain



gas pressure in cold weather. An exhaust enhancer is fitted, the greatest benefit of which is helping to divert any condensation from being ejected out of the chimney. Each power unit is reversed using substantial servos mounted in the respective bunkers and operated on the same channel. The radio receiver and battery pack are located in the front water tank and can be easily accessed by removing the top cover – the on/off switch for the receiver protrudes unobtrusively from the rear of the tank.

So how did the engine actually perform? The initial trials were undertaken on Pear Tree Light Railway metals with initial preparation following the time honoured routine of first reading the instructions. With the new twin-burner system, there are a number of potential hazards that you need to be aware of – these are not a result of bad design or manufacture, just the nature of gas burners, for instance, how to spot that one burner isn't lit because the jet has become blocked. Seriously... read the instructions.

Once satisfied, it was time for the requisite inspection and lubrication of the moving parts, before adding gas, oil and water. Despite its apparent size, filling this boiler is the same as any other roundhouse boiler – filling to the brim through the safety valve then withdrawing 30ml to leave a steam space. The burners were lit through the chimney, and they immediately popped back with a healthy roar before they were turned down low. With an air temperature of about 20 degrees centigrade, steam was raised in a little under four minutes. The radio control handset and receiver were switched on, the loco put into gear and steam applied. Now with those somewhat long steam passageways it is going to take a minute or so to get rid of all the condensation – this is most prototypical of a Garratt. With some steam appearing from the chimney, the reverser was poled a couple of times before the loco eased smoothly away. It immediately gave the sense of being particularly controllable and in no way inclined to run-away. Now by design, the gas will always outlast the water on this loco, so once happy that I had everything warmed up, I extinguished the burners and replenished the gas tank. I then proceeded to run light engine around the entirety of the PTLR checking all the relevant clearances and overhangs – needless to say that true to Garratt form its overhangs were minimal.

In the first instance I attached the

The cradle also allows the loco to be easily and safely rolled onto its side for inspection – note the neatly laid out pipe work. The condensate drains located between the dummy firebox and well tank will not feature on production models and the underside of the well tank will also have a cover.

The loco sitting in its carrying cradle – simply pull up the sides and lift by the handles for secure movement

standard PTLR test train of four heavy bogie carriages, which were dismissed with contempt. What was clear was that this loco wouldn't run very fast, but fast enough and that should not be confused with lack of power. It also had one of the best exhaust plumes I have ever seen on a 16mm scale loco. The acid test though was the addition of another four hefty bogie carriages making up a total of eight, which would drag significantly in the reverse curves on a 1:72 gradient. This load was also handled competently with more than enough steam being generated, which to my mind sufficiently proved the locos capabilities. However, it should be borne in mind that two sets of cylinders require a lot of steam and hence this loco has a furious thirst for water. On my somewhat demanding circuit with eight carriages on the drawbar I was using a quarter of a glass of water for every 180ft – a Jacksons 'superior top-up bottle' certainly proved useful. Given the locos prodigious ability to make steam, it

was very easy to work on the basis of a little and often – just like the real thing. The gas exhausted after about thirty minutes and it was then simply a case of re-charging the lubricator and gas tank, allowing the running to continue in the same vein until tea-time.

1930s DHR Stock

Well now, I was never going to get away with not taking this loco along to the Wigfa and Llanrwst Light Railway, especially as Dave has a great collection of suitable DHR rolling stock. Again the loco performed faultlessly and with a train of 1930s DHR stock on the drawbar it looked every inch the part, with all observers





This is an impressive beast from any angle, seen here posing in the yard at Bwlch Pennant

present being suitably impressed.

In short, this loco does everything that could be expected of it, balancing a very close to scale model, with a good level of detail and the need for practicality and reliable performance. The new burner system works well and as long as the driver keeps a keen eye on his/her water level, no problems will be encountered. The fact that such a comparatively complex loco can be run and handled so easily means Roundhouse have really raised the bar. Of course there is scope for the would-be purchaser to add some extra detail, but if it were me, I would probably do no more than replace the cheese-head screws. I

would send it along to one of the professional lining services and have the rather attractive DHR livery applied, with a request to give the loco a coat of satin varnish – I am sure it would never have been truly shiny in service. If you aren't of particular DHR persuasion there were numerous Garratts exported around the world, with many built under licence – imagination is your only limit.

Pros;

Excellent model of a recognisable prototype, easy to handle, easy to operate and represents excellent value for money.

Cons

Only minor matters of personal preference, otherwise I don't have a fine enough toothcomb.

Price

Radio Control Only: £3,550.00 inc VAT ■

GardenRail Resource

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*Please mention GardenRail magazine
when contacting suppliers*



The 'D' class awaits departure time at Bwlch Pennant.