

The GER Diagram 15 Van

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The Prototype

The model is of a 16ft 2ins (over body corner posts) timber-framed ventilated van to Great Eastern Railway diagram 15. 1,990 vans to this diagram were built between 1888 and 1903 in both ventilated and non-ventilated versions and some were even vacuum brake fitted for working in express goods trains.

This article describes the first of a batch of GER vans that I have built. This particular van was built for display at the Mid-Suffolk Light Railway Museum (www.mslr.org.uk) and the version I chose to model is a non-fitted van in 'as-built' condition, with grease axleboxes and single-side hand brake. The model is based upon a drawing which appeared in the *Railway Modeller* for February 1976 and the photo of No.20880 (built in 1902) which appears on page 48 of *L.N.E.R. Wagons Before 1948 Volume 1* (Cheona Publications). The model is finished in the GER livery of 'French grey' sides with 'slate grey' ends and black lettering, which is correct for ventilated vans (non-ventilated van bodies were entirely slate grey with white lettering). In the post-grouping period the body would have been LNER wagon grey.

Vans of this type remained in revenue-earning service with the LNER until the late 1930's, many serving much longer as 'departmental' and 'internal user' vans with several surviving in preservation. A large number of the non-ventilated type ended their days as 'grounded' bodies, serving as stores on station platforms, in station yards and other locations around the GER section of the LNER..

The Model

The model is cast from polyurethane resin (body sides and ends) and whitemetal (underframe) with a plastic card roof and other details in plastic and brass.

Why go to the trouble of making master patterns and moulds to make castings? I tend to batch-build and casting is considerably quicker (and less tedious) than fabricating numerous identical parts! To date, I have produced six wagons from this set of moulds.

The master patterns for producing the moulds are fabricated in plastic card, supplemented by various sizes of plastic and brass rod, wire and other channels and 'sections' for detailing.

For a van such as that constructed here, the sides and ends are cut from plastic card and the planks scribed using a 'board scraper', steel rule and a 'depth gauge' (essential to ensure correct/even spacing). Detail such as doors and strapping are added in more layers of plastic card, then rivet and bolt heads are added (employing combinations of plastic rod / brass wire inserted into holes drilled into the plastic card or using brass rivets and cast dummy 'bolt heads' available from specialist suppliers). When making the master it is important to avoid incorporating any detail which requires a deep 'undercut' since it will be difficult to remove a casting without damaging the mould and/or casting. Any such details must be made separately and attached to the finished resin or whitemetal casting. Avoiding any gaps beneath added detail is essential or the mould will be impossible to remove without damage.

The mould is made of rubber which comes in various types and grades. For cold (resin) castings a soft and flexible silicon rubber is used but for hot castings (metal) a harder, more rigid, 'Room



Temperature Vulcanizing' (RTV) rubber is used. The 'tricky' part of pouring the rubber is ensuring that no voids are left and that air bubbles are not trapped. After pouring, the mould is tapped sharply onto the bench a few times : This releases trapped air which will be seen rising to the surface as bubbles. The ideal method is to employ a vacuum chamber to remove air but, unless you are going into production on a large scale, the cost makes production uneconomic.

The first photo illustrates a master pattern and moulds.

When the rubber has set (it takes a few hours) the mould is carefully removed from the master and may require a little careful trimming with a VERY sharp knife to remove any excess rubber (it can seep beneath detail if there is the smallest of voids beneath strapping, etc. on the master pattern).

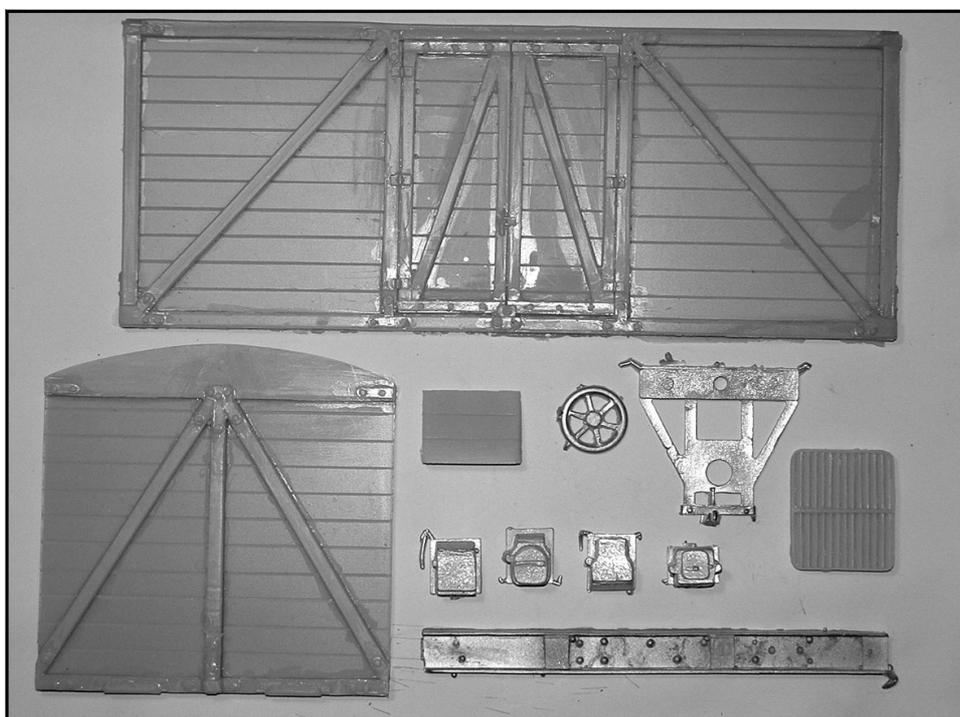
The moulds are then left for a day or two to fully 'cure' before making the first casting (especially those to be used for whitemetal where the heat will damage a 'green' mould).

Casting in resin requires care when pouring to ensure that air is not trapped in the detail of the mould : I always gently 'work' the resin into the detail with a smoothed/rounded end of a brass

rod. The resin starts to set within a few minutes of pouring so you need to work quickly. Resin becomes firm enough to remove from the mould in less than an hour but will then take several more hours to fully cure and harden. The finished casting will probably require a little cleaning up to remove any 'flash'.

White metal is a different matter. The finished mould needs to have breather channels carefully cut to allow air to be released as the molten metal enters the mould from the top. These channels must allow air to vent from the lowest point of the mould and from the top of any detail which 'branches' from the main core of the casting but these channels need to exit at the top of the mould otherwise the metal will flow out before it cools. It is much more difficult to achieve satisfactory results from complex shapes than with resin but, after a little practice, it is a simple matter to produce details such as solebars, axleboxes, brake parts and buffers.

I was apprehensive when first using these techniques but it is in fact quite easy to get good results, with only the occasional failure (and with whitemetal one can of course melt down a faulty casting and reuse the metal).



The second photo shows an assortment of resin and white-metal castings before fettling and the third, the completed van.

Late News

I have it on good authority that a kit for the GER diagram 15 van is soon to become available in Gauge '3'

Reference material for GER dia.15 van :

Railway Modeller February 1976 (drawings with inaccuracies).

LNER Wagons Before 1948 (Vol 1) (Cheona Publications) Ex-works 1902 photo.

LNER Wagons Volume 1 (Peter Tatlow / Wild Swan Publications) drawing and photo.

Paints Used : 'French Grey' - Humbrol No.40 & Slate Grey - Humbrol No.67

Transfers : Produced on PC using image editing and DTP software and laser printed.