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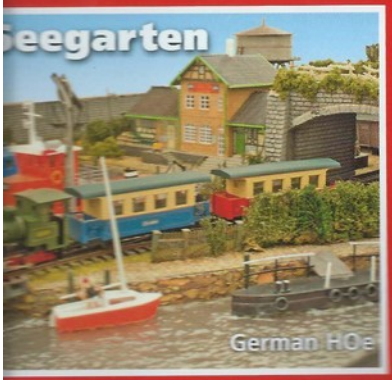

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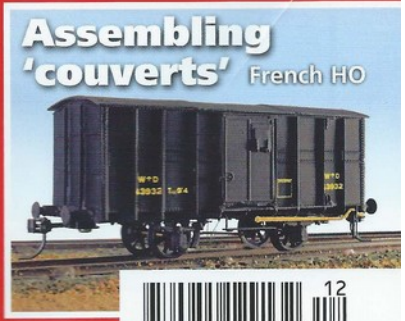

Assembling 'couverts' French HO

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Francis Samish builds kits by AMF87 to represent vans requisitioned by the War Department for feeding the Front during the First World War. *Photographs by the author.*

Constructing couverts

Once the Western Front had stabilised, after the initial German thrust towards Paris had been halted by the British Expeditionary Force, the two sides found themselves in a stalemate, facing each other over a strip of no man's land stretching all the way from the Belgian coast to the Swiss frontier.

Initially it was thought that the French railways would be able to handle the transportation requirements of the British armies, simply by allocating two thousand wagons for their exclusive use. By 1915, however, it was realised that this was insufficient to feed the voracious appetite of the armies at the front for everything from bully beef to barbed wire, Stokes mortars to shovels, and field telephones to tank track oil. By the end of the war, the British Railway Operating Division alone had been supplied with around 24,000 newly-built vehicles in addition to the 31,000 requisitioned from private owners and railway companies in the UK.

Whilst it proved relatively easy to muster enough open vehicles for coal, roadstone, and ballast from home stock, meeting the need for vans was a different matter. With a canny eye towards their subsequent disposal after the war, several long-wheelbase continental types were selected for series production, including a nominally 15 tonne capacity pitched-roof Belgian design, and a 20 ton Nord example — most of which had corrugated iron roofs for protection against shrapnel.

In their HO range, French kit makers AMF87 have a steel-bodied variant of the Nord design, some examples of which lasted until the 1950s. It is relatively straightforward to build, if a bit fiddly in places, on account of the small size of some of the components. However, the instructions include some good isometric diagrams of where everything should go – helpful if you are not fluent in French.

Snipping as you build

Tempting though it might seem just to wade in and spend a happy evening cutting all the parts out of the etch at one sitting, experience has taught me that it is far better to 'snip as you build'.

Tabs securing larger components can be cut with side cutters or at a pinch a pair of nail scissors. Small parts have to be released from the etch with a craft knife blade, cut on a hard surface such as a scrap of formica, all the time being held down to stop them pinging off the workbench. I commend AMF87 for including a number of spares of these most 'at risk' items.

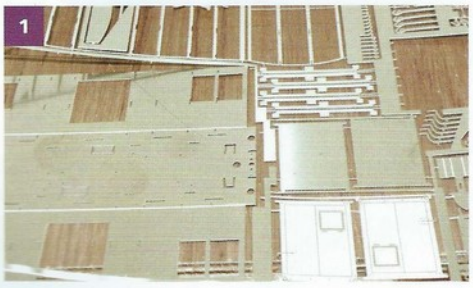


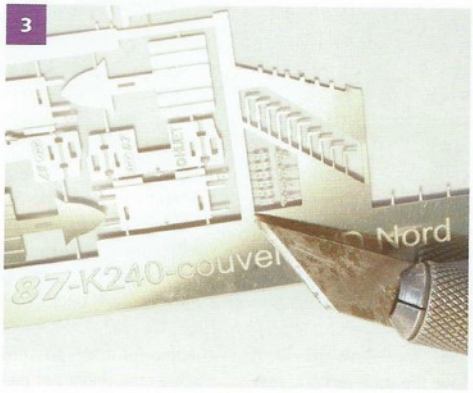
Photo 1
A beautiful set of etchings. The doors are half-etched and need to be treated with care to avoid damaging the integral lower runners.

Photo 2
A couple of indispensable tools for working with etched kits. The pin vice is for holding drills from 1mm down to about 0.5mm – though beware that small pin vice jaws like these may only grip the shank at one point. The drawing pin in the handle allows you to turn the pin vice without wearing a hole in your finger. The other tool is an old junior hacksaw blade ground to an angle point, for opening out slots that are too small for the locating tabs.

Photo 3
Smaller pieces cannot be snipped off but have to be separated with a sharp craft knife, working from one end.

Photo 4
The buffer beams are folded up first, taking care to get the fold as clean as possible to allow the vertical ends to sit flush with the ends of the sides.

Photo 5
Job done.



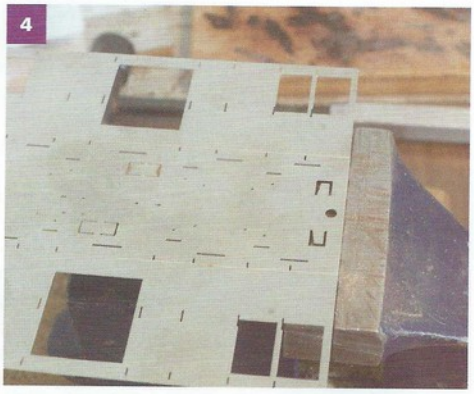
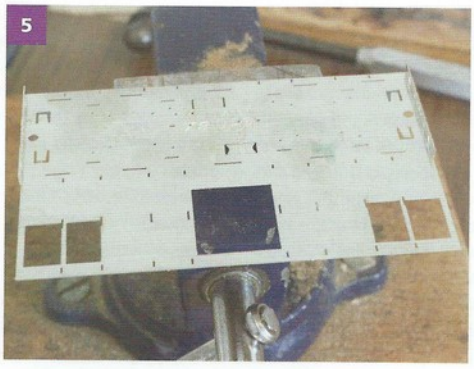
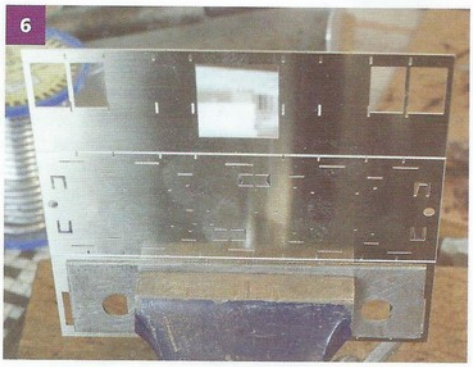


Photo 6
Fold the sides next. Use a stiff flat piece of sheet to extend the jaws of the vice if you cannot support the whole side at one go.

Photo 7
Doing the first side is easy because you can see what you are doing. Making the full U, however, demands that you fold the already folded side up and over the outside of the vice jaws. If the vice is too wide front to back to allow this, the only way to achieve the fold is by extending the jaws upwards with a pair of stout metal strips that are higher than the model's sides.

Photo 8
Checking for squareness. The sides need to be vertical to match with the end pieces that are fitted in between them later.





Sides, floor, and inner buffer beams come all on one piece, which is then folded up to make the basic wagon 'box'. The buffer beams in particular need to be folded quite crisply along the etch line, so that the end sections can sit vertically with no hint of a taper from headstock to roof line. Indeed, were I to build another of these kits, I would probably cut the buffer beams away entirely from their ends, shave about 0.5mm off the tops, and then solder them in separately flush with the ends, after shortening the solebar etches to suit.

Solebar channels are made up from two pieces, a vertical section incorporating the axleguards and a strip to represent the bottom flat of the channel section.

Tabs, slots, and no slots at all

Several of the slots on my kit were tight or otherwise too short to match their respective tabs. Unfortunately I only found this out after I had tried to force the bottom flat 'tight' into position, and ultimately had to unsolder the strip, clean everything up, and try again. I never throw anything away that might at sometime come in useful – it is not junk, I keep telling myself, it is just that I have not found the use for it yet. A piece of broken fretsaw blade clamped in a set of small mole grips was used to extend the offending slots. This technique also works well if you actually need to put in a slot where a kit designer has forgotten one. Drill a 1mm hole and

Photo 9
Often you find that halfway through construction of an etched kit, a part will not fit in the slot it is supposed to. This can be due to a number of factors – a misalignment elsewhere, design tolerances too tight, or simply that there is no hole where there should be. A scrap of broken fretsaw blade held end-on in a pair of small mole grips will allow you to saw your way out of trouble by elongating a drilled hole or extending an existing slot. The other tool seen here is a junior hacksaw blade end ground into a hook shape which can be used to score new fold lines on brass and nickel-silver.

Photo 10
There is not much underneath, just the two coupler mounting pads and a cross shaft for the single wheel brake shoe system. I could not find a second support bracket for the cross shaft on the fret so made one with a bit of scrap brass.

then gently saw away from there. The mole grips hold the blade securely so that you can work it back and forth like a miniature padsaw. If the resulting slot is still too narrow, or you do not have a fretsaw blade any thicker, then a junior hacksaw blade ground to a knife point can be forced along the slot to open it up further.

Of course, it is much easier to sort all these problems out 'in the flat' when the component you are working on can be readily set in the jaws of a vice.

With the solebars in, the next job is to add the lost wax cast brass axleboxes and spring units. These are very delicate, especially around the hanger area, and the safest way to remove these from the casting runners is to saw them off with a piercing saw. The last bit has do be done with great care, as it is still all too easy to have the shoe section break off and shear, if there is too much pressure placed on the saw blade. The shoe castings are too soft – and too small to hold in a vice – so they have to be cut flat first time so as to fit properly up against the bottom of the chassis sides.

No provision is made to locate them positively over the etched axleguards, which are slotted to accept the axle bearings. You cannot put the bearings in at this stage either, as there is no way of checking that the wheelsets would be level and square, not to mention the risk of melting the plastic insulated wheel centres. In the event, I placed the axleguard castings by eye more or less centrally over the axleguard slots, tacked the shoe ends of the springs to the underside of the solebar, and once I was happy with the position proceeded to solder the main axlebox to the axleguard.

Axles within axles

The AMF87 wheelsets for these wagons have a brass axle which is tapered to a cone with a secondary extended smaller diameter axle on the ends, all running in matching bushes. I found that when I had finished the underframes, there was still considerable side play between wheelsets and axleguards, so I fitted Peco 2mm fibre axle washers to the outer ends of the turned axle bushes to pack them out to the correct distance.

I think it is important here to note that building an etched kit – however accurate the parts look on the fret – is never going to result in a 'precision' assembly (and this includes locomotive chassis). For a running, as opposed to a display case, model there will always be the need for easing and adjustment of any mechanical components. To minimise the risk of derailments due to one wheel flange riding up over the rail at points, curves, or low spots in the trackwork, both axles on a four-wheel wagon need to be level. Side play needs to be minimised if you are using automatic couplers, so that their operating faces or hooks will engage reliably. And apart from the question of aesthetics, both ends of the wagon need to be identical in height, for the same reason.

With these vans, I started by trying to ensure that at least one wheelset and its bearings on each of the pair I was building were level crosswise, carefully grinding away with a small spherical dental burr the top of the 'U' shaped slot in the inner axleguard until the axle was parallel with the wagon floor. The second axle was then sprung in and the wagon checked for 'rock' on a true flat surface – not a section of track, as this might not be level, especially if it is already laid on a baseboard. If there is movement, remove the axle, take a bit more off the top of the slot, and check again whether everything is level. If not – repeat!

Using a motor tool and burr for all this is not ideal, as it is difficult to stop the drill 'drifting', especially if material has to be removed from the top of the axlebox casting. In fact, there is a case to be made for leaving off the axlebox and springs until the wagon is sitting level, so that the slots can be deepened using a file in the conventional manner. The axleguards themselves are only cosmetic, and could have just as easily been cast in resin.

Now, as the axleguards are slotted, the bearings – and their respective axle ends – can now drop into any low point that the wagon needs to pass over. Although each wheel is not sprung, if the bearing is free to fall and rise in the slot, this system offers a degree of three-point compensation.

Preventing Kadee coupler knuckle droop

The next step was to check whether there was enough room vertically to mount the Kadee couplers that I was going to use. AMF87 includes a rather clever sprung 'close-coupling' system patterned after the arrangement found on some European stock. Unfortunately, I could not seem to get this to work, so decided to fit some Kadee No.16 knuckles, which are intended for European rolling stock, and consequently have a long shank that operates in a short pocket. They are less obtrusive than the recent click-in NEM type, which has its centring arrangement just behind the knuckle head. However, they do need to have a sliver of plastic strip added to the top of the rear 'U' mount to close up vertical clearances, so as to prevent the coupler head from drooping.

I have a Kadee coupler height gauge, and this quickly showed that there would be enough room vertically to get the No.16s in without having to file anything off the bottom of the buffer beams. As is the way of these things, the 'useful box' failed to turn up anything remotely like the right thickness which might do for the coupler mounting pads. In the event, I just stopped looking after 40 minutes, and set up a piece of 10mm bar in the lathe and went ahead and milled a section down to the required thickness.

I could have used a stack of thick plastic strip or filed down individual pads from brass bar, but as there were four pads to make for these vans, and potentially another four for some AMF87 *fourgons*, I felt it would be time well spent doing the lot in one go.

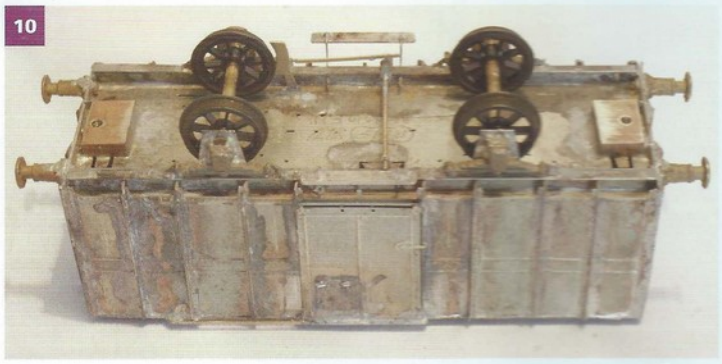


Photo 11
Reducing a section of brass bar to the right thickness for the coupler mounting pads. It was a choice between filing the bar or milling it in the lathe, and the latter seemed like less work, plus promising more uniformity across the eight needed. Note the bar is supported at the rear with a spacing block, so that the jaws only have to exert a clamping force rather than have to contend with the cutter trying to push the bar away from itself as well.

Photo 12
I had two more of these kits to make, so once a section of bar had been milled to the correct height to mount the couplers, I went ahead and marked out centre lines and drilling centre pops for four (plus two spares!), and then drilled and tapped them all in one go.

After cutting off the milled-down section, it was a simple matter to scribe a centre line with odd-leg calipers, mark off each pad, and then add centre-pops for drilling the coupler mounting holes.

Knowing what I know now, I would have left tapping the M2 threads for the mounting screws until after the individual pads had been soldered onto each underframe. The bottoms of the freshly-tapped threads proved to be a magnet for solder, and needed to be carefully re-drilled and tapped all over again once on the wagons.

Why not just use a nut and bolt? Once the roof is on you cannot get at the nut if it works loose, or if for any reason the coupling has to come off. In fact, the couplings are actually glued onto the brass pads with impact adhesive, with the screw tightened up snug but not so much so that it compresses the plastic of the coupler pocket and stops the coupling from centring itself under the action of the tiny spring inside. The M2 screw now only takes the fore and aft buffing and drawing forces, with the glue keeping the coupler pocket correctly aligned fore and aft. If it ever needs to come apart, the screw is removed and the glue film broken with a sharp craft knife.

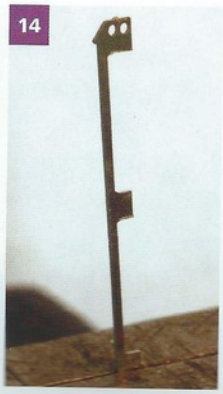
Photo 13
Tapping the coupler mounting holes. The individual pads were cut off the bar only when all operations had been completed.

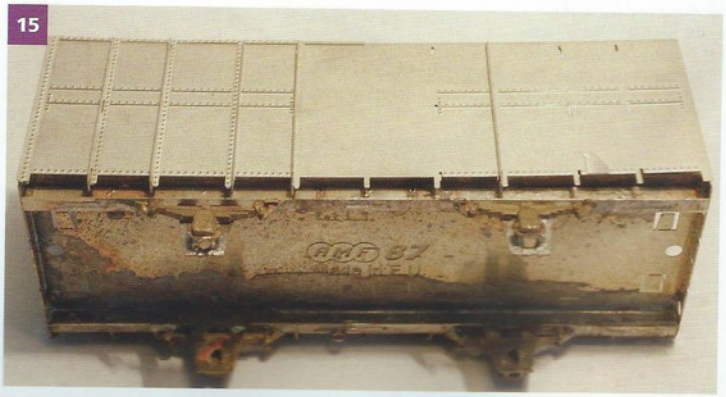
Soldering secrets: get in quick, do not linger

Nickel-silver is quite nice to work with compared to brass if a lot of soldering has to be done, as it does not conduct heat as quickly. I used a 75 watt iron for assembling these kits, not so much on account of its high rating as to allow me to get the heat quicker into a small area.

Even so, I came unstuck when it came to assembling the overlays and ends on these models. The sides are composed of an overlay applied to the body 'box', over which goes a very thin fret that represents the flat part of the exterior angle irons, all in turn slotted and tabbed together in by a series of vertical bars to represent the ribs. My first attempt at this resulted in the verticals popping out of their slots, and the flat fret curling away from the side once it got the first whiff of heat from the iron.

After I had managed to salvage things, closer examination revealed that some of the slots at the base of the sides above the solebar were not long enough to allow individual ribs to seat fully home, and also that things would go better if the flat exterior angle overlay section was cut and dealt with then as two separate sections. I also went through all the ribs, one by one, filing down the bottom tab on each to ensure that they would all sit flush.





hoto 14
elieving the side ribs.

hoto 15
ssembling the ribs nto the side.

Photo 16
An area to watch when soldering the sides onto the folded up wagon structure: the area to the right has warped and bulged out, due to the heat expanding the thin nickel-silver plus the gassing of the liquid flux trying to escape. Thankfully it is not too apparent once the model is finished.

Photo 17
Roofs come pre-bent but require two cross-ribs to be soldered in, near each end. When the time comes for the roof to go on permanently, after checking for fit at the eaves, the edges of these ribs will be liberally coated in contact adhesive and then popped into the body.

Photo 18
Ready for a coat of primer, with all the surfaces either glass fibre burnished or buffed with a brass suede brush. Most of the joints on these models were soldered, though I did resort to superglue for the lower door handrails and parts of the brake gear. If nothing comes off at this paint preparation stage, then it is unlikely to when the model is complete.

Photo 19
Disassembled ready to paint. Just visible on the plastic bags, the underside of the roofs, and the inside of the bodies are the white dots to match up all the components once the final coat of flat varnish is applied. Wheelsets on one van have fewer packing washers than the other.

The sliding doors posed a bit of a problem in that not only are they comparatively thin but the only way of attaching them seemed to be to solder them to the vertical ribs each side of the door opening where the etched-on rollers overlap. On both my vans, there was in fact a gap between the door edge and the vertical ribs so to strengthen the assembly I resorted to soldering the top roller track guide rail – a piece of 0.8 brass wire – right along the door edge, so that this part just tucks under the roof edge.

A similar method of construction is used at the ends, excepting that the delicate overlay for the various joins in the sheet metalwork is located by the buffers when their locating pegs are popped through into the underframe ends. As the kit is designed, it is very difficult to avoid having a gap at each corner of the body, and the only way I could see to get the ends to stand anywhere near vertical was to introduce a thin strip of brass angle on the inside, then solder the sides and ends up to that. Unfortunately this meant that the resulting corners were not as crisp as I would have liked.

Detail decisions

Being something of a glutton for punishment, I then added as many of the detail parts as I could with the soldering iron as well. These included the footsteps and their brackets – fix the latter in first, add the step boards, then tweak everything until it is all level with the bottom of the sides – plus the door catches and stops at the ends of the top and bottom roller tracks. Given the size of these items, superglue applied with the tip of a pin, to tack the parts in place, then more drops added using the same technique to surround the component in question, would have been a lot less trouble. As it was, I spent as much time scraping off solder that had run where it should not have as I did in applying it with the iron.

Some of the finer details such as rope hooks and lamp irons are missing from the models. While shown on the AMF87 built-up sample in the instructions and on the kit packaging, I judged them to be too fine for a working model – which is likely to be repeatedly packed and repacked during the course of its life. In 1:87 scale, they are of a border line size to handle, clean up, and fix. Even modern flexible high-strength plastic parts do not hold up well under real-world model railway conditions.

For the corrugated iron sheet roofing I have used the American firm Campbell's pre-formed aluminium, stuck down with superglue straight onto the roughened pre-curved roof sections supplied. From photographs of a wood-en-bodied example of the British-built vans, this was done in three equal length sections, with the outer ones overlapping the central piece. (In case you are wondering, the untidy 'curl' where the sheets overlap is prototypical!)

Why top coat is never the final coat

Unlike a locomotive, there was not much disassembly required prior to these models going into the paint shop. I first went over everything with a brass suede brush and also with a small fibreglass pencil on various 'hard-to-get' sections of the models, to 'key' the surfaces, followed by each body getting a wash in cellulose thinners. After about an hour this had dried off, and the wagons were given a matt coat of automotive acrylic self-levelling self-etch primer from a simple spray can. I know you are supposed to use a pa

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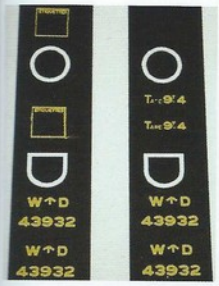

Photo 20
If the model is an awkward shape, dry transfers can be rubbed onto a conventional waterslide decal film then they can be treated just like ordinary transfers.
The black background and white shapes are irrelevant – I was not sure this technique would work so re-used areas of a spare home-made set of transfers for another project.

Photo 22
With the naked eye, as opposed to the cruel enlarging glare of the close-up camera, the model should pass muster as part of a First World War divisional supply train.
The all-over black livery does tend to mask some of the kit's fine detail, though I have tried to provide some subtle definition of the features by dry brushing a bit of dirty black around the bottoms of the sides and around the headstock area to break up the uniformity of the finish.

formulated especially for small scale models but I wanted something with a bit of substance to fill some of the minor gaps between ribs and body which I had spotted under the watchmaker's eyeglass.

Once the solvents from this initial coat had evaporated, everything was placed into a cardboard box and consigned to the airing cupboard overnight. This is perhaps not strictly necessary, but I wanted to be sure that all the nooks and crannies underneath the sides of the wagons especially were really dry.

For a top coat, acrylic matt black, again from an automotive spray can, was applied to the van bodies. Unfortunately, once this had dried, I spotted some rather obvious places where a sliver of daylight could be seen against the unforgiving all-over black.

Naturally, this was really too late to strip everything down and start afresh, so I resorted to fine slivers of Milliput worked into the offending areas with the tip of a craft knife blade and then levelled with a fine brush dipped in water before the putty started to harden. To match as near as dammit the acrylic black of the sprayed top coat, I went over the filled areas with Humbrol hull black – it is not a perfect match, but once the final sealing coat of Humbrol flat varnish was applied, you cannot tell where the shades differ.

No 'Hommes 44 Chevaux 8'? We are British!

Transfers for the vans deserve more than a passing comment. I had these specially made by Blackham Transfers as an alternative to the ink-jet ones that I have been using up to now. These are rub-down transfers rather than waterslide, and are solid colour rather than built up by a dot-matrix print head. For larger scale models and military vehicles with flat sides, the system works fine, and does away with the tell-tale decal film. Unfortunately, try as I might, I could not get the transfer carrier film to sit flat enough in the dips between the ribs of the body sides to get a reliable separation of the lettering.

As I had a number of spare sets, I thought I would have a go and see whether I could make waterslides out of rub-downs. I had some spare areas on a ROD locomotive set that I had made earlier, which whilst not clear, were an overprinted white film in solid black, upon which there was no problem in placing the requisite rub-down wagon numbers, tare weight lettering, and the 'Etiquettes' squares. Just in case you were wondering, it seems that the British ROD wagons did not carry the famous "Hommes 44 Chevaux 8" legend of their French counterparts.

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Photo 21
These (and other ROD) vans were fitted with corrugated iron roofs. Normally at this time the roofs would have been timber, covered with canvas, and then tarred, but the corrugated iron was intended to protect the contents from shell splinters.

Then came the moment of truth – cutting the transfers to size, placing them into water, and anxiously waiting for everything to separate into several irretrievably tiny bits. Much to my surprise, nothing of the sort happened, and once the backing paper had sunk to the bottom, the complete transfer could be lifted up with a brush, carefully placed on the model, and allowed to dry flat for several minutes.

As a matter of course I always use a decal setting solution to get the carrier film to conform to the contours of the underlying surface. This tends to be a long process when riveted surfaces have to be covered, or, as here, the edges of the transfer had to curl up against a rib. In the end, I had to resort to slicing the 'tented' sides of the transfers to give me a sharper edge, bridging the gaps with yellow paint applied with an 00 brush. The same remedial touching up was applied to the yellow 'Etiquettes' squares where the fine lines had not quite separated in line from the rub-down carrier sheet. The trick to this is to draw a line with the brush first on some scrap material to get the hairs to a fine point, and then run this carefully along the line you wish to go. If the result is too thick, no problem, get another fine brush and back-paint with the underlying body colour until you have the required width.

Conclusion

Each of these vans took between seventeen and twenty hours to complete, start to finish, so making up an entire divisional supply train from AMF87 kits is probably going to be only something that a committed First World War modeller would attempt. If they had been made in cast resin, with detail parts supplied as a separate etch, construction might have been quicker – but the resulting wagons would not have the same finesse of detail that formed thin metal sections can offer.

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