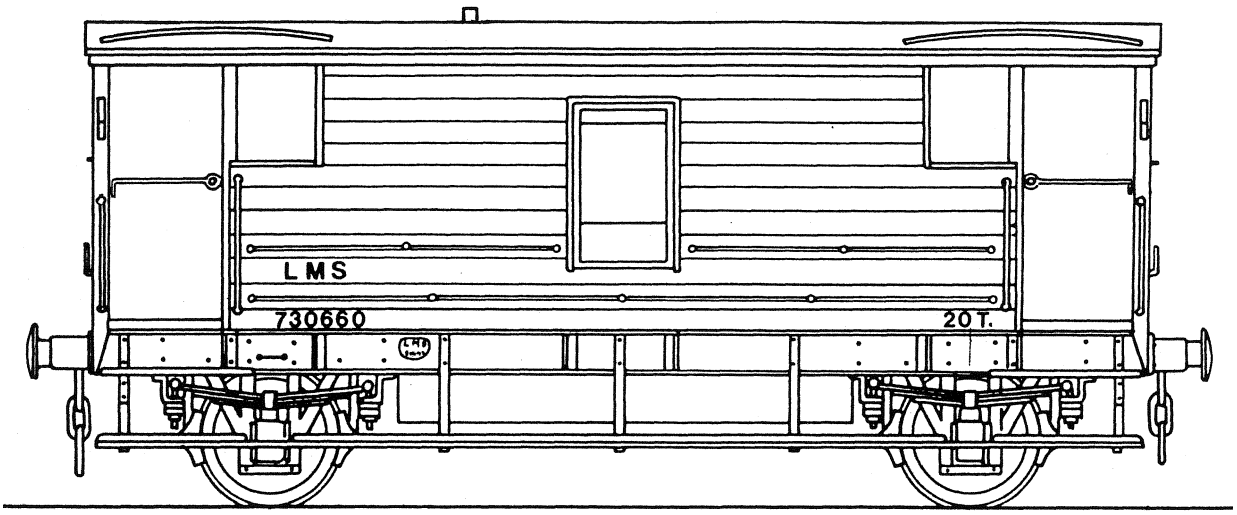
CONNOISSEUR MODELS

- 0 Gauge -

LMS Standard Stanier 20 Ton Brake Van



Prototype. 522 of these vans were built by the LMS during the period 1940/1 to diagram number 2036. They carried running numbers 730670 - 731191. In 1949/50 more virtually identical vans were built to diagram 2068 with the final examples entering service with the 'M' prefix under British Railways ownership. Running numbers were 731192 - 731741, 731746 - 732060, 732096 - 732311, 732321 - 732545. of these 732396 - 732470 were fitted with automatic vacuum brakes, the remainder were hand brake only.

These vans ran in regular service until the early 1980's with a few seeing occasional use or sitting on tucked away sidings into the mid 1990's. No late LMS or early BR layout would be complete without one !

Kit. This is a very straightforward kit to build. The fit of all parts is very good but some of the small components and handrail work are time consuming and require a little patience. This kit would be an ideal next step from a simple four-wheel wagon. A pre-formed brass roof is included, as is straight brass wire for the handrails. The instructions are comprehensive and were produced alongside building a sample model. They include isometric exploded diagrams and scale drawings.

Wheels are required to complete. 3'1", 3 hole disc Wagon Wheels (Slater's Catalogue Number 7122). Available From Slater's Plastikard, Old Road, Darley Dale, Matlock, Derbyshire, DE4 2ER, Telephone 01629 734053.

Connoisseur Models, 1 Newton Cottages, Nr Weobley, Herefordshire, HR4 8QX, Telephone 01544 318263.

Please read this section carefully, especially if this is your first etched brass kit. Many modellers fight shy of working in this medium, but the basic skills are relatively easy to acquire. Once you've learned how to form and solder brass, you'll find all kinds of modelling possibilities will open up for you.

Assembling an etched kit involves exactly the same skills that a scratchbuilder uses – the only difference is that the cutting out of the parts is already done for you. Some filing and trimming will, however, be necessary from time to time. Where this is the case, I have highlighted it in the instructions.

The main skill to master is soldering and I would recommend a Weller 40 Watt soldering iron. This has a 6mm diameter, removable copper bit. The bit is shaped like a screwdriver and has a bright coating of solder (tinned). This combination of iron and bit shape is ideal for running fillet joints and has a good reserve of heat, that is necessary for soldering small parts on to large components. Note the shape and condition of a new bit, as this won't last long and will need restoring back to this condition.

It is important to keep the bit clean and in good condition as you work. Get a soldering iron stand containing a damp sponge; old oxidized solder is wiped off on this before picking up fresh solder for each joint. If you haven't made a joint for some time you may find that a hard black crust has formed on the bit. Remove this with a brass wire brush (suede brush) and then feed some multicore solder onto each side of the bit to restore a bright surface (referred to as wetting or tinning the bit). After about 8 hours use you will find the bit is in poor condition, with holes and a ragged edge. File the bit back to its original shape using a hand bastard file and then polish the surfaces on emery cloth. Coat the bit with Fluxite Soldering Paste (traditionally used by plumbers) and this will prevent the bare copper oxidizing as the iron heats up. Then feed multicore solder onto the bit to form a generous coating and leave to bubble away for a couple of minutes before wiping excess off to give a bit almost as good as new.

A smaller Antex 25 Watt iron with a 3.2mm screwdriver bit is very useful for small assemblies and detail work such as handrails, but will have insufficient heat reserve for main assembly work. The Antex has a plated iron bit, after a little use with 145° solder a grey oxide appears on the bit that will prevent you from picking up the solder. Touch the bit to some multicore solder and it will flash over the bit, wetting it so that you can continue picking up 145° solder. I have found no problems with mixing the two solders in this way.

I use 145° solder for virtually all assembly work. I prefer it in wire form but it is also produced in stick form by Carrs. I find that its lower working temperature helps to give a quick clean joint. Limiting the build up of heat in components, which may cause distortion. I find that I can hold parts together with my finger ends and make a joint before heat reaches my fingers or other etched parts drop off.

I use 60/40, tin/lead, fluxed multicore electrical solder (melting point about 190°) mainly to keep the iron bits in good condition. As it gives a slightly stronger joint than 145° I sometimes use it for small spot joints on handrail wire, lamp brackets etc, but still use extra liquid flux.

For all brass and nickel silver work I use Carrs green label liquid flux. You will soon get the feel for how much to use but more problems are caused by too little flux than too much.

Before soldering components together, thoroughly clean both surfaces along the join line with a glass fibre burnishing brush. Using your tweezers or a knife blade etc, hold the parts together in the correct position and, with an old paintbrush, run some flux along the area to be joined. Still keeping the parts correctly aligned, pick up a small quantity of solder on the tip of your iron and carry it to the joint (unlike electrical soldering, when you feed solder into the joint). Hold the iron against the joint just long enough for the solder to flash between the parts. Don't let go of the parts until the solder has cooled – this takes from five to ten seconds. To run a fillet of solder along a joint, wait until the solder flashes between the parts and then pull the molten solder along

the joint with the iron tip. Don't load the iron tip with a lot of extra solder, but work the joint in 1" lengths, bringing in small quantities of solder. Brass is a very forgiving material and if you get something out of alignment, use heat from the iron to desolder the joint before starting again. For complicated assemblies, it is a good idea to only tack solder parts together. You can then make adjustments by desoldering until you are happy with the location of parts and then solder solid.

When you need to laminate two or more layers of brass together, align the parts and carefully clamp them together, either in the vice or by holding them with miniature crocodile clips. Run flux around the edges, and then go around with the soldering iron. Clean up thoroughly afterwards.

To fit small parts and overlays on to a larger assembly, such as strapping to a wagon side, when you need to prevent finely detailed areas such as planking becoming clogged up with solder. Tin the back of the small component first, then hold in place on the model and apply flux. Carefully wipe the tip of your iron on a sponge to remove any solder from it (dry iron), and then touch it against the parts to be joined. After a few seconds you'll see molten solder bubbling from the edges. Remove the iron, still holding the parts in place, and allow the joint to cool. An alternative is to use solder paint (I would recommend Carrs 188 solder paste). As the name suggests, this is a flux and solder in one. Simply apply a thin coat of solder paint to the back of the component instead of tinning. Still apply a small amount of liquid flux before you solder the part into place.

Any surplus solder should be removed using a craft knife, I find No 10 curved scalpel blades ideal, then burnish clean with a glass fibre brush. With practice, you'll learn how to use the minimum amount of solder to do the job. Flux is corrosive so, after each soldering session, give your model a good scrub with washing up liquid or Jif. After a day or two, any remaining flux residues will show as a green film, which should be washed away.

To cut parts from the fret, use a sharp Stanley knife on a piece of hardboard or a pointed scalpel blade on a block of softwood. Remove tags and burrs with a fine file.

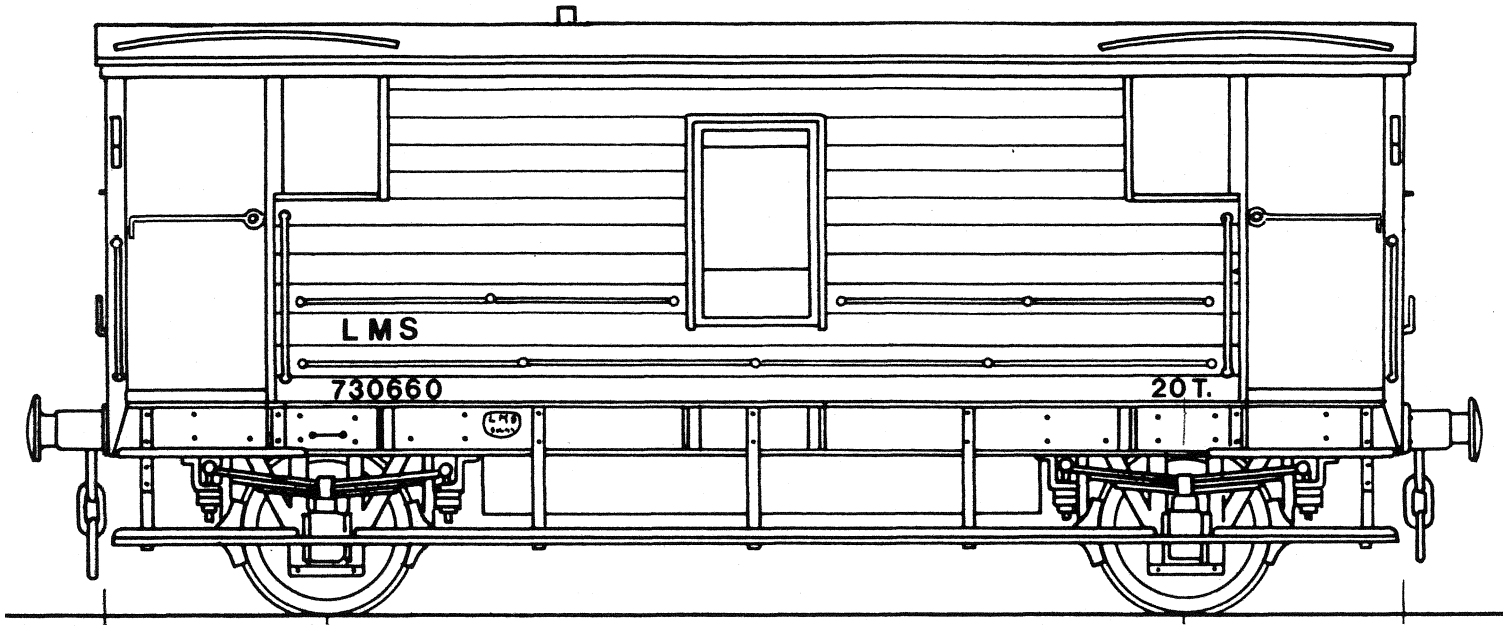
Three-dimensional parts are formed by folding. On an etched brass kit, the fold lines are normally half-etched on the inside of the fold. You'll be able to fold most parts using smooth-jawed pliers. For longer parts folding bars are desirable.

Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm for axle bearings etc), some square-nosed pliers and some very pointed-nosed ones, preferably with smooth jaws. Buy cheap tools first and duplicate the most used ones with quality.

Try to complete all high-temperature soldering before attaching any of the cast whitemetal parts. These can be attached with two-part epoxy resin such as Araldite Rapid. Ensure the surfaces to be glued are clean and free of grease.

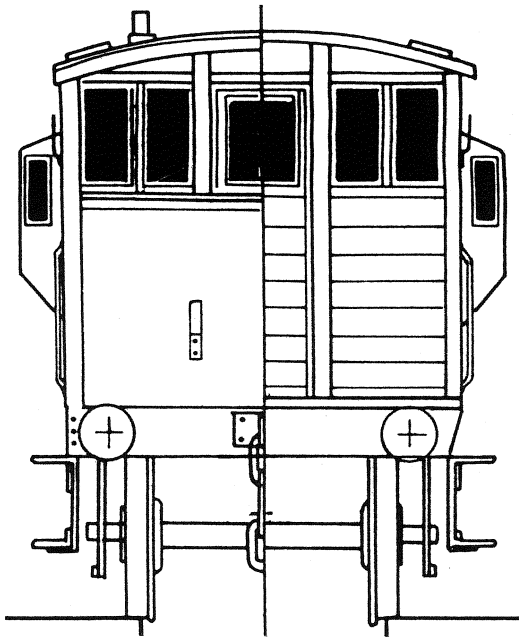
A better alternative is to solder your white metal castings using Carrs 70 degree low melt solder and Carrs red label white metal flux. The iron should be run at a much lower heat so that you do not melt the castings. I have a domestic light dimmer switch and plug socket fixed to a piece of wood, wired up with a lead and 3 amp mains plug to the input side of the dimmer switch and the output of the dimmer switch into the plug socket (remember to continue the earth). Plug your 40 Watt iron (25 Watt iron won't work) with a clean and freshly tinned bit into this and experiment with adjusting the switch until you find the range of temperature at which the solder melts, but a scrap casting does not. **Note** as the iron is running at a lower voltage it will take longer to heat up, so when you think the adjustment is correct do check a few minutes later on another scrap casting to see that it doesn't melt. Then scribe a mark on the switch knob to indicate this position.

When attaching white metal fittings to brass the surface of the brass must be tinned with 145° solder, to allow the solder to grip. The surface of the casting at the joint should be burnished bright. The casting can then be soldered into place with 70° solder and fillets of solder run into any gaps with no risk of melting the casting.



LMS 20 Ton STANDARD STANIER BRAKE VAN

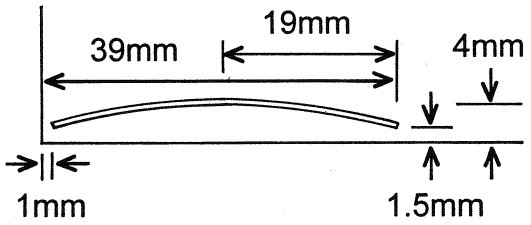
DIAGRAM 2036



LMS Livery. Bodywork including buffer beams and buffer bodies and triangular projections below body side at buffer beams - bauxite (Railmatch No 612 LMS bauxite). Underframe including solebars and footboards, also couplings, plate and buffer heads - black (Humbrol matt black No 33). Handrails and lettering - white (Humbrol matt white No34). Veranda floors - dirty wood (Humbrol No 110 with small amounts of light grey No 64 and gunmetal No 53 or matt black No 33 streaked and blended in to represent the direction of the wood grain). Roof - Grey (Humbrol No 64 with amounts dependent on how weathered you want the roof to be of Tarmac No 112).

BR Livery. As above but for unfitted vans, Bodywork - BR early freight stock grey (railmatch No 322). Lettering on black background patches. Fitted vans - BR early freight stock bauxite (Railmatch No 323). Lettering directly onto body colour.

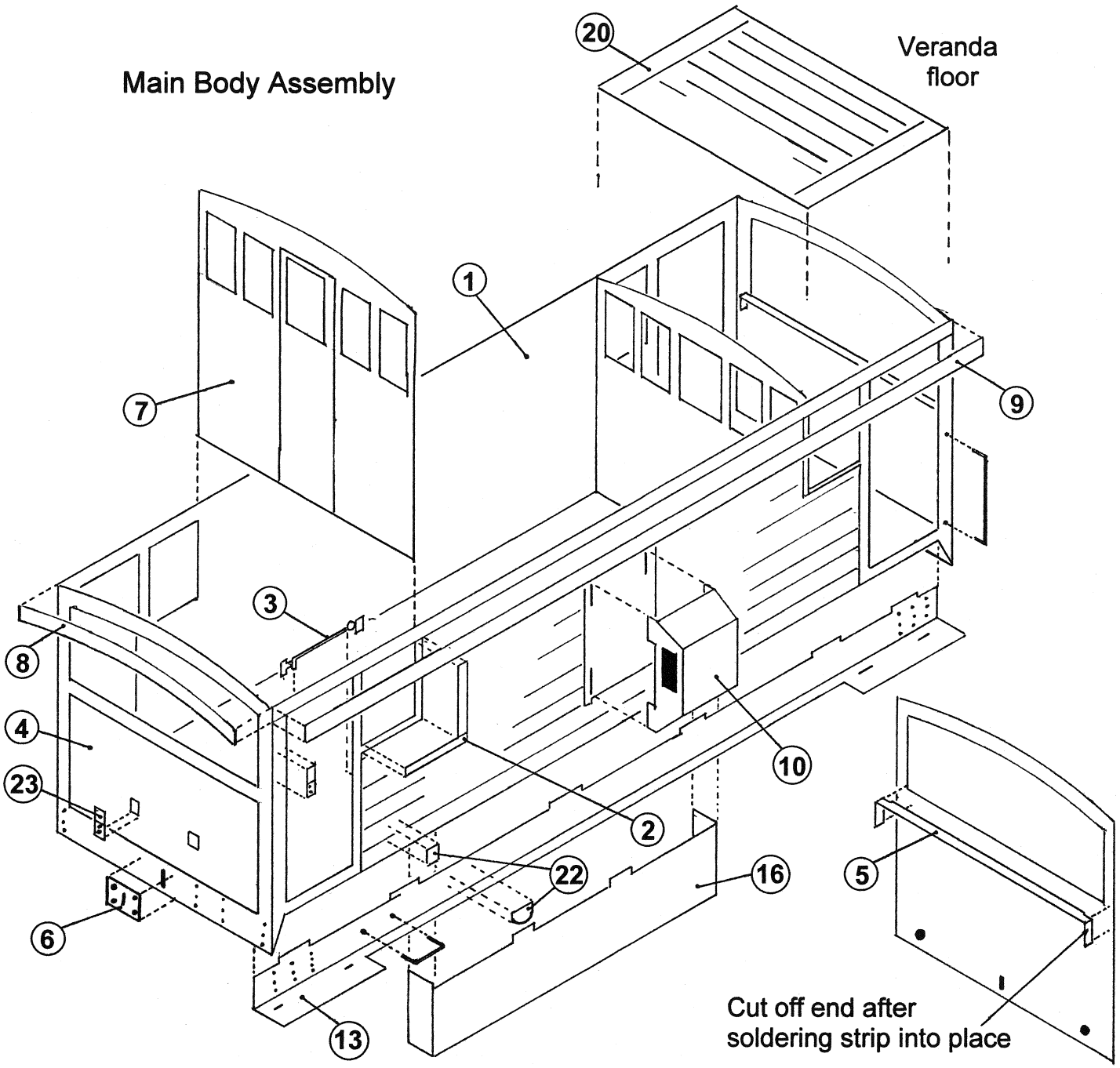
Rain Strip Position



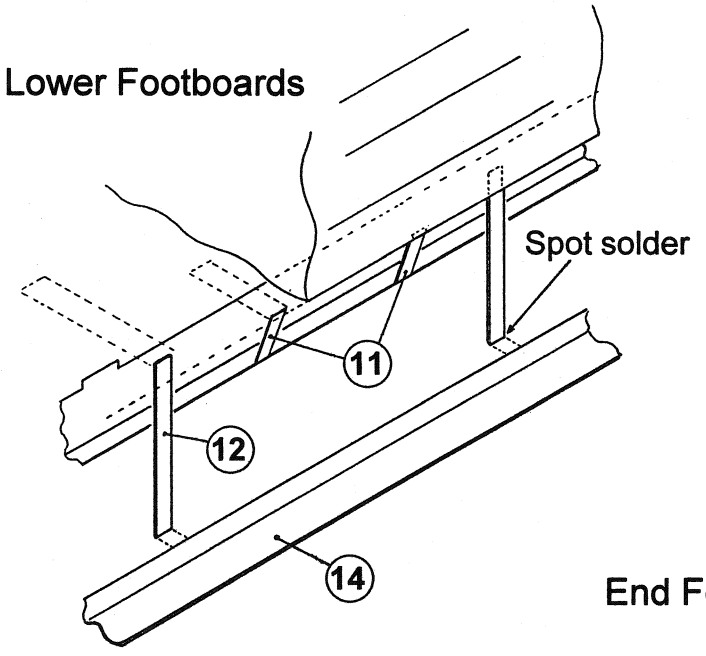
Transfers for lettering are available from HMRS, Volunteer Sales Officer, 8 Gilpin Green, Harpenden, Herts, AL5 5NR, Sheets for LMS or BR period are available in press fix type

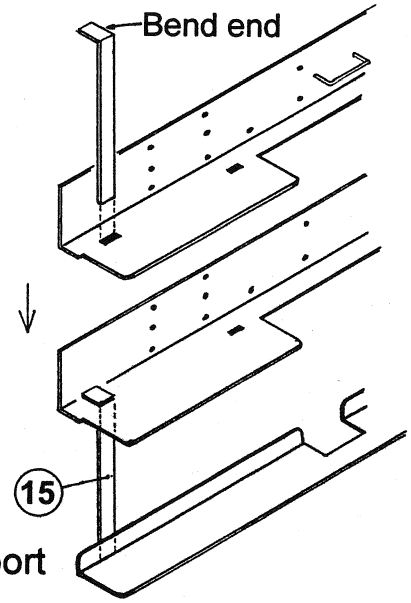
Also available as water slide type from Fox Transfers, 4 Hill Lane Close, Markfield Industrial Estate, Markfield, Leicestershire, LE67 9PN, Tel 01530 245618.

Main Body Assembly



Lower Footboards

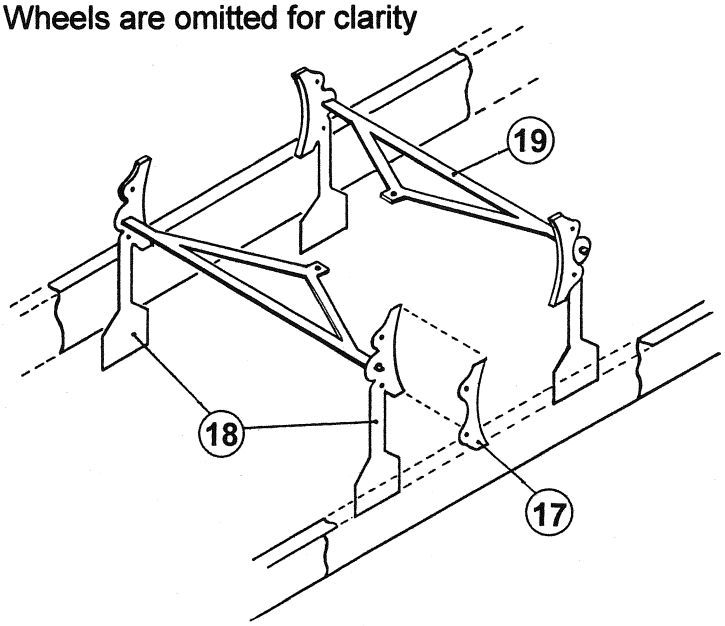




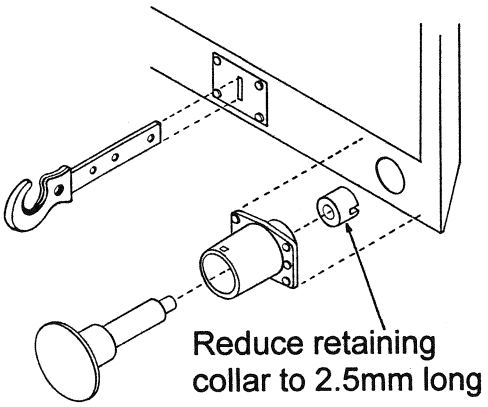
End Footboard Support

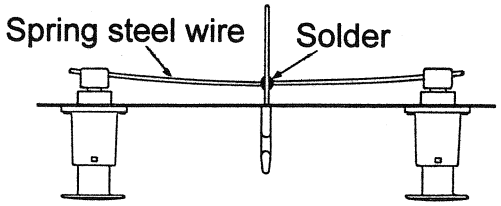
Brake Gear

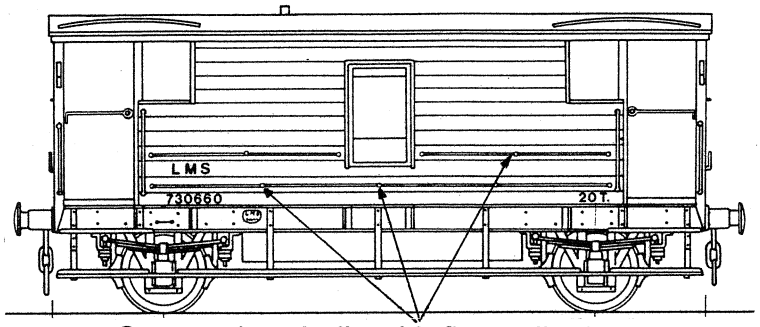
Wheels are omitted for clarity



Buffer Assembly & Springing

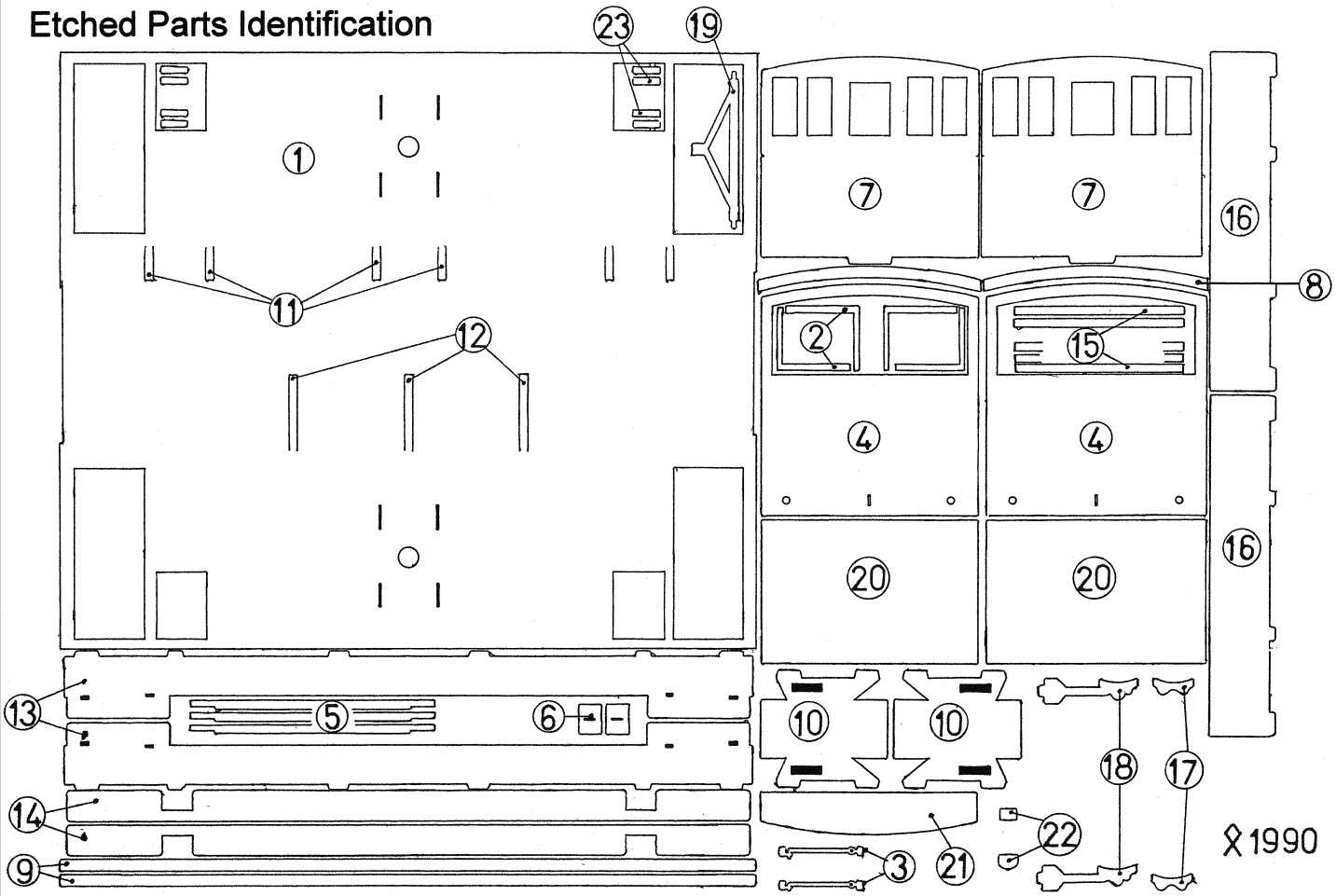






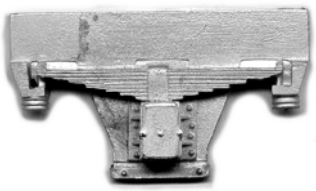
Support handrails with five split pins

Etched Parts Identification



Parts Identification and check list

1 X guillotined brass roof approximately 57mm X 171mm. 5 X 10” length 0.7mm brass wire. 1 X 6” length spring steel wire (may be tarnished black). 1 X 8” length 22 swg soft tinned wire (rainstrips).



4 X Cast Axle Guards/Boxes

4 X Buffer Bodies

1 X Chimney

6 X Coupling links

10 X Split pins

4 X Buffer Heads/Shanks

4 X Buffer Retaining Collars

4 X Coupling Hooks

2 X Vacuum Brake Pipes Optional Some vans were fitted with through pipes

LMS 20 Ton STANIER BRAKE VAN ASSEMBLY INSTRUCTIONS

1. Remove the main body section (part 1) from the fret and cut out and store safely the brake yokes and lamp brackets that are located in the doorways. On the reverse of each side you will find five half etched holes. Drill these through with a 0.8mm drill held in a hand pin vice (chuck). These holes will locate the split pins that will support the horizontal side handrails.

2. Fit the veranda side window beading (parts 2) to the van sides. These are located within one of the ends and I tinned the backs of these components with 145° solder before removing them from the end and cutting them into their individual L shapes. This reduced the amount of solder that I required on the bit of the iron to laminate them into place. This then reduced the risk of solder flowing into the plank lines and clogging them up.

3. Fit the veranda safety rails (parts 3) into the doorways. Solder them to the inside of the door opening level with the top hole for the inboard vertical handrail. Then fold through 90° the floor from the two sides. I used folding bars and clamped at the bottom of the sides and used a 6” long block of wood to help apply an even pressure to the floor as I folded it. Try to get the folds as tight as possible so as to get the body as narrow as possible (this will make fitting the ends easier).

There are brackets and footboard supports located in the floor that will be folded down later. It is a good idea to cut through the tabs at their inboard ends at this point.

4. Remove from the fret the veranda ends (parts 4) and cut out and store safely the footboard supports that are located within one of the ends. Open out the holes in the buffer beam to take the cast buffer bodies (the kit was designed to be produced in different scales and the holes are small enough to take the proportionally smaller pegs on solid buffers in the smaller scales). I opened out the holes with a tapered reamer.

Emboss the bolt heads into the buffer beam. These have been designed to be embossed using a scriber, with the point rounded off slightly on an oilstone. Place the part face down onto a block of softwood and then firmly press down into the half etched hole. This may distort the part so gently correct this by bending back with finger and thumb pressure. If you have a rivet-forming tool, particularly of the drop weight type, you may find that the half etched holes are too large a diameter to form properly. You may be better pushing the spike into the hole with finger pressure.

5. Fit the edge strip (part 5). This has fold down tabs at the ends that should help you to position it at 90°. Once soldered into place snip off these fold down tabs.

6. Fit the coupling plates (parts 6) to the buffer beams so that the coupling hook slots line up but remain clear of solder. I tinned the backs of the plates first and used plenty of flux and a minimum of solder on the iron bit. This should help to solder the plate’s solid but prevent excess solder running into the slots.

7. Solder the cabin ends (parts 7) into the body. Locate the bottom into the slot in the floor and the two sides flush with the edge of the side windows. Take care when soldering the cabin ends into place that the body will be square.

Scribe a guideline on the back of the veranda ends 6.8mm from the bottom of the buffer beam. Place the veranda end face down onto a flat block of wood with the buffer beam projecting over the edge of the block (secure with a drawing pin to prevent the end moving). Place the veranda end of the body over the end so that the buffer beam projects 7mm below the floor (the 6.8mm guide line should just be visible). Then tack solder the buffer beam to the two projecting triangles of the body side. Remove from the block of wood and check that the end is positioned square (don't worry if the top of the end is slightly lower than the top of the side).

Then tack solder from the outside and in about four places, the end to body side corner joint. Work from the bottom to the top. Once you are happy that the end is on square and flush with the sides, run the tack solders into a seam joint. Again working in four sections and at alternate corners to prevent a build up of heat that may cause the end to buckle or bow inwards.

Repeat for the other end of the van and then dress the outside of each corner joint with a flat file to blend in the joint and form a crisp square corner.

8. Fit the end beading (part 8) to the top of the ends. I fitted it slightly proud of the ends so that it continued the roofline into the top of the sides.

9. Fit the side beading strips (parts 9) to the top of the sides. Try to get a blob of solder at the joints with the end beading so that you can blend in and square off the corners.

10. Fold up the lookout duckets (parts 10). Don't make the folds to tight or the ducket wont fit into the slots in the body side. Solder all joints with 60/40 electrical solder and blend the outside edges with a flat file. Fit into slots in body side and run a filet of 145° solder around all edges to fill any gaps and blend the ducket into the body side.

11. Emboss the bolt heads on the solebars (parts 13) and then fold the edge through 90°.

Fit handles (hooking points for horse shunting) made from 0.7mm wire. Dress off the tails of wire so that they are flush with the backs of the solebars. If you wish, solder the wagon plates (parts 22) to the solebars now, or glue them into place later.

Fold down from the floor the solebar brackets (parts 11) and central footboard supports (parts 12). Fit the solebar into the slots in the floor, passing the outer solebar brackets through the slots in the top steps and solder the solebar squarely into place. Press with a knife blade the solebar brackets into the notches on the solebar lip and spot solder into place. Square up the centre footboard supports and spot solder to the lip of the solebar. With a flat file dress the projecting ends of the solebar brackets flush with the underside of the solebar lip.

12. Fold the edges of the footboards (parts 14) through 90°. Place the van onto a flat surface so that its sitting level on the six central footboard supports. Place a footboard flat onto the surface and push the back edge against the footboard supports. Check with a square that the two ends are level with the ends of the top footboards. Then spot solder the footboard to the supports.

Fold the top of the end footboard supports (parts 15) through 90°. Pass through the slot in the top footboard so that the folded end hooks onto the lip of the solebar and spot solder to the underside of the solebar. Then spot solder to the back of the footboard and trim off the excess length. I have included a couple of extra supports just in case you snap off one of the fold down ones.

13. Clean out any casting flash from the cast axle guards with a knife blade. Drill out 2.6mm diameter the hole to take the brass axle bearing. This hole is formed by a rubber peg in the mould which tends to flex as metal flows into the mould cavity and you will probably find that the hole is not quiet square to the back of the axle guard. To correct this use a drill held in a hand pin vice (chuck) and by applying a gentle sideways pressure as you drill out the hole, you will be able to square it up. Then fit the axle bearing into the slightly oversize hole in the axle guard with a small blob of Evostick, as this takes a little time to set you can make adjustments to the axle guards and then leave the wagon on a flat surface for the glue to set.

Slip wheel sets with axle guards on, between the solebars and tack solder each axle guard with low melt solder to the solebar. Check that the axles are parallel and the wheel centres are 112mm apart, there are etched centre marks on the underside of the body that I find useful to eye up to. Place the van onto a flat surface and adjust if necessary, by re-soldering an axle guard until the van sits without rocking, when happy solder solid.

14. Fold up the ballast boxes (parts 16) and fit into slots on the underside of the floor.

15. Solder the brake blocks (parts 17) to the brake hangers (parts 18). Remembering to make up four L/H and four R/H sets. Then solder into slots in the underside of the floor so that the brake blocks are in line with the front of the wheels but just clear of the tread. I found it helpful to hold the brake block with a miniature crocodile clip as I soldered the brake hanger into its slot. Now fit the brake yokes (parts 19) by springing them between the brake blocks.

16. Fit the veranda floors (parts 20). These are a snug fit but it should be possible to twist them around any obstructions so that they will sit down flat. The tabs on the solebars that project through the van floor should space up the veranda floor so that it is just below the level of the doorway.

If you wish, solder the wagon label clips (parts 22) to the body side, 7mm up from the bottom of the side and 6mm in from the edge of the L/H doorway. Or you can glue them into place before painting.

17. Fit the side handrails made from 0.7mm brass wire. I fitted the vertical doorway ones first. I used some pieces of thin card (0.8-1mm) to help space the handrails evenly away from the body. Cut the bent tails of the handrails fairly short, as it's difficult to get in with cutters to remove the excess once they are soldered into place. You should be able to spot solder all the handrails on the inside face if you use a small bit in your Antex iron.

Five split pins support the horizontal handrails. Before using these I close up the heads by sliding onto the wire and gently squeezing the necks with a pair of serrated jawed long nosed pliers.

18. I have included a body strengthener (part 22) that can be soldered mid way along the body just below the roofline. This will give support to the body sides and is a good idea if the wagon is to be handled regularly.

19. Fit the lamp brackets (parts 23). The end four fit on top of the etched rectangles and these will space the bracket tops slightly away from the ends. Etched T's mark the position of the four side brackets. Bend a slight set in the middle of these brackets so that the tops are slightly proud of the body.

20. Drill out the back of the buffer bodies with a 2.6mm drill and insert a buffer head. Check that the head will move and revolve freely in the buffer body. You may have to dress the thick part of the buffer shank with a file or run a drill up the wide hole in the buffer body to achieve this. Solder a retaining collar to the back of the buffer shank with 70° solder. Use plenty of flux so that the solder flows in a ring around the shank/collar to give you the best joint possible. I made a mistake with the length of the retaining collar and they are too long to allow the buffers to depress properly. Cut the spring wire slot in the collar deeper with a razor saw blade until it is just over 1mm from the end of the collar. Then file down the back of the collar until it is 2.5mm long. Fit the buffer bodies into the buffer beam (you may have to file a flat on the back of the buffer body to clear the back of the solebar if it is slightly intruding on the hole) Check that the buffer will depress freely and solder into buffer beam.

21. There are some coupling hooks on the main fret but I was not happy with the shape of these and so I have included some extra hooks. Cut off the shank from one hook to leave just the head and solder this on top of the head of a second hook to double the thickness of the head.

Now make up the coupling links. I close up the links by holding the curved end in the jaws of a pair of round nosed pliers in one hand and squeeze the flat parts of the link parallel with long nosed pliers (angled long nosed pliers with serrated jaws are even better) held in the other hand. Once you have six even shaped closed links, you can open each one slightly with long nosed pliers and thread three together. The last link passes through the hole in the coupling hook. I reinforce the joint of each link with a spot of 60/40 solder.

Pass the coupling hook through the slot and retain it with a length of spring wire. Polish the centre of this wire with emery cloth first so that you can solder it to the coupling hook shank once you are happy that the buffers spring freely.

I have included some vacuum pipes as some of these vans were later fitted with through pipes and a guards brake valve. This was mainly during BR days but check a photo of your chosen prototype. If required fit vacuum pipes on the centre line of the ends.

22. Now for the roof. I have pre-rolled this in my rolling bars but you may have to work it a little with finger and thumb to get it to the exact profile.

Mark out and drill a 2mm hole for the chimney, 61mm from the L/H end and 15mm in from the L/H side. Mark with a pencil the position and centre point of the rain strips. The rain strips are made from soft wire by gently pulling the wire through finger and thumb to curve it and then spot soldered to the roof at the centre point. Trim square the two ends of the wire with side cutters and then holding the wire down with a knifepoint, solder the two ends to the roof. Apply plenty of flux and solder again at the centre point with the iron tip on the inside of the curve. The solder should flash along the wire, soldering it solid to the roof. The wire will tend to expand with the heat but by soldering on the inside it should still keep an even curve. Clean up with knife and fibre brush.

It is intended that after painting the roof is glued into place with Evostick, used as a contact adhesive (follow the instructions on the tube) but if you wish to have a removable roof, solder four tabs made from waste etch to the underside of the roof so that they will clip inside the cabin body.

23. Painting is a vast subject that cannot be covered fully here. The important thing with a metal model is to get a good base coat of primer. Hopefully you have been cleaning up and washing the model at the end of each modelling session, but it will still need thoroughly cleaning before painting.

I give my models a good scrub with a stiff-bristled paint brush in a sink full of hot (as hot as your hands can bear) water and cheap washing up liquid (the expensive stuff that's kind to your hands has an oil in it that will stop the paint keying to the metal). If you know somebody who works in catering and can scrounge you some industrial-strength liquid, this is better still. Then rinse the model a couple of times in clean warm water and place in a dust-free box to dry.

I use car aerosol primer and Halfords grey primer is one of the best. For the best results you want to spray at room temperature (25°C) on a dry (avoid cold, damp or humid) day. I find it helps to warm the model to about 30°C (put it in the airing cupboard overnight) and I warm up the paint tin by putting it onto a radiator (about 40°C, but use your common sense as I don't want anybody blowing themselves up). I find it best to prime the model in two light coats, about 15 minutes apart and then leave for 48 hours to harden off (in the airing cupboard in a dust-free box).

I brush-paint my models with Humbrol enamel. For years I just stirred it up and painted straight from the tin but I was never completely happy with the results. Recently two things have transformed my painting. The first was a copy of Martyn Welch's book, The Art of Weathering, Wild Swan Publications, ISBN 1 874103 11 9. Martyn's basic techniques are very useful and almost foolproof. Martyn's method of mixing coarse talcum powder into the paint to give a textured roof is particularly effective.

The second thing is to mix the paint in the tin and then transfer it to a palette (a sheet of clean plasticard) with blobs of lighter and darker shades of paint surrounding the main colour. Then work the paint with the brush on the palette, slightly varying the tones of the paint. This seems to totally change the texture of the paint and the way it goes on and covers on the model.

For glazing the end windows, you can use clear plasticard, but I prefer to cut flat sheets from the clear blister packs that many items are packaged in nowadays. This has a textured surface probably caused by the moulding process, which gives it a slightly opaque quality that I think represents dirty windows just right.

Prototype Reference

As in all modelling projects a couple of photographs for reference are a very good idea. This is particularly so with a design like this brake van that was built in large numbers over a number of years. There are a number of detail differences between vans particularly with regard to the livery. I would recommend finding a photograph that represents your chosen period and area of modelling and finishing the model to match this. I would recommend one of the following books.

An Illustrated History of LMS Wagons, Volume one, R. J. Essery, OPC, ISBN 86093 127 7

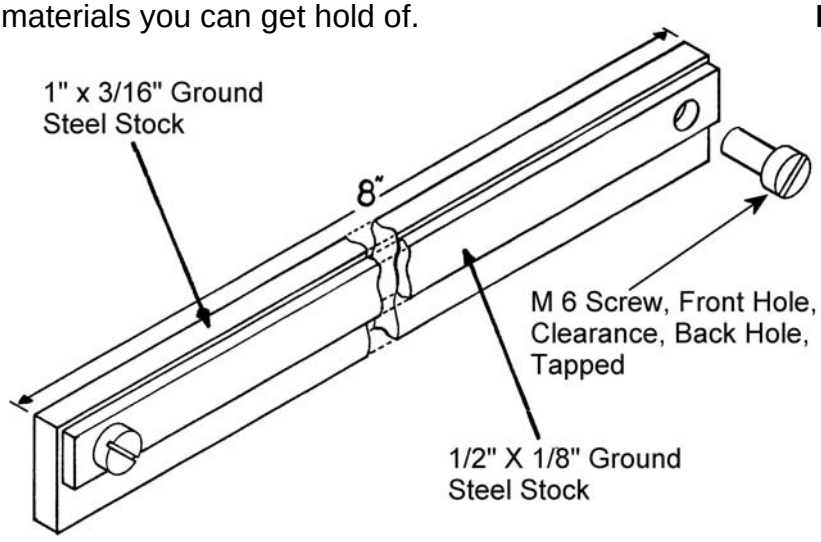
Railways in Profile Series No 5, Cattle & Brake Vans, Cheona Publications,
ISBN 1 900298 05 8

Working Wagons, Volume1 1968-1973, David Larkin, Santona Publications,
ISBN 0 9507960 6 9

Get them from your local library using their book order system.

Folding Bars

You will find a set of these very useful and here are details of the set that I have made for myself, in fact I have made three sets of different sizes. The dimensions or materials are not critical so make yourself a set to suit the materials you can get hold of.



The important thing is that you can clamp the part along its entire length, with the etched fold line just above the front bar. Then clamp the bars in the jaws of your vice, a couple of 1” G clamps are also useful for long folds, and laying a steel rule at the back of the part to help transfer the pressure from your fingers evenly, then pull forward to make the fold.

Once the fold is close to 90° you can finish by pressing down on it with a block of wood and moving the block along the fold with a stroking action or by giving gentle taps with a small hammer on the wood block.

Occasionally it is necessary to emboss bolt heads onto a part before folding, by lining the face of one of the bars with two or three layers of masking tape, you can still clamp the part without crushing the bolt heads but you wont get such a tight fold, so deepen the fold line with a triangular file.

Can You Help Me?

If you have enjoyed building this kit and have been satisfied with the quality, I would be most grateful if you could recommend it to your friends and fellow modellers. Although my kits are not perfect, I try to put a lot of time and effort into producing them. If I can get extra sales of a kit through customer’s personal recommendation, I find that word of mouth is the best form of advertising; this will help me to put extra time and money into developing the next kit. Hopefully this will give me more satisfied customer to recommend my kits to their friends.

If you are not happy with this kit then please tell me. Hopefully I will then be able to help and sort out any problem.

Best Regards And Happy Modelling

Jim McGeown