CONNOISSEUR MODELS

- 0 Gauge -

Great Eastern Railway & LNER Locomotive Depot Sand Wagon

Wagons of this type were built by the Great Eastern Railway to convey dry sand for use in locomotive sand boxes. They would travel from a main locomotive depot that had a sand drying furnace to outlying depots and country engine sheds. Here the wagon would be parked on shed to act as a store for dry sand until it had been used and then the wagon would return to the main depot for refilling.

These wagons had remarkably long lives in service. The prototype that the kit is based upon was built in 1873 and was still in regular use at Ipswich in 1959. Still painted in LNER departmental blue livery and supplying sand for the diesel fleet that worked the quay side lines.

Construction of this kit is quite involved and produces a very detailed model as I have envisaged that it will be required to provide a set piece model for the loco shed on your layout and complement your pride and joy locomotives as they are admired by your friends.

Wheels, 3’1”, 8 Split Spoke (7120) are required to complete, Available from Slater’s, Temple Road, Matlock Bath, Derbyshire, DE4 3PG,Telephone 01629 583993.

Connoisseur Models, 33 Grampian Road, Penfields, Stourbridge, DY8 4UE, Telephone 01384 371418

GENERAL INSTRUCTIONS

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, available from Branchlines, 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.

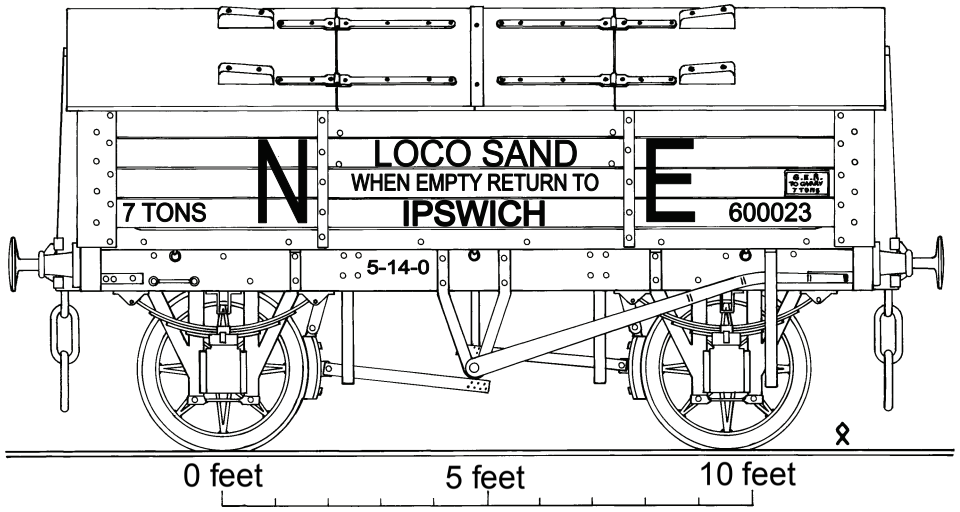
Other useful tools include a bench vice, a good pair of tweezers, a set of Swiss files (get a full set of cheap ones and then buy quality replacements for the three that you use the most), a pin vice with a selection of drills from 0.5mm to 2.1mm plus a few larger sizes that you use regularly (2.6mm 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.

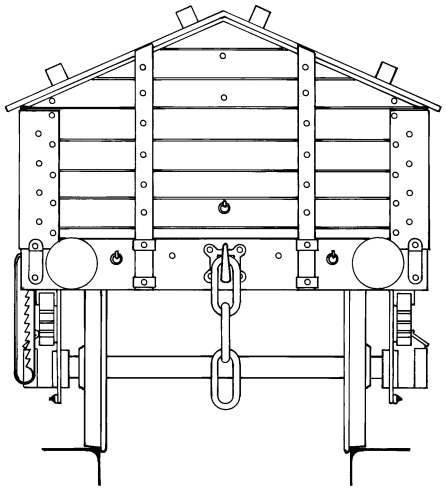
Try to complete all high-temperature soldering before attaching any of the cast whitemetal parts. These can be attached with two-part epoxy resin such as Devcon or Araldite Rapid. Ensure the surfaces to be glued are clean and free of grease.

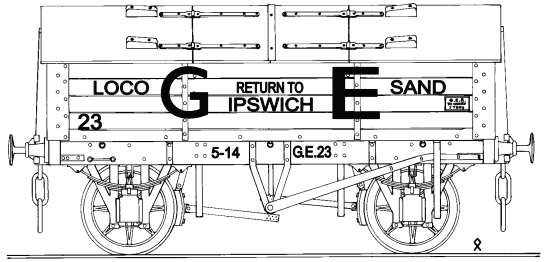
A better alternative is to solder your white metal castings using Carrs 70 degree low melt solder and Carrs red label white metal flux. The iron should be run at a much lower heat so that you do not melt the castings. I have a domestic light dimmer switch and plug socket fixed to a piece of wood, wired 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.

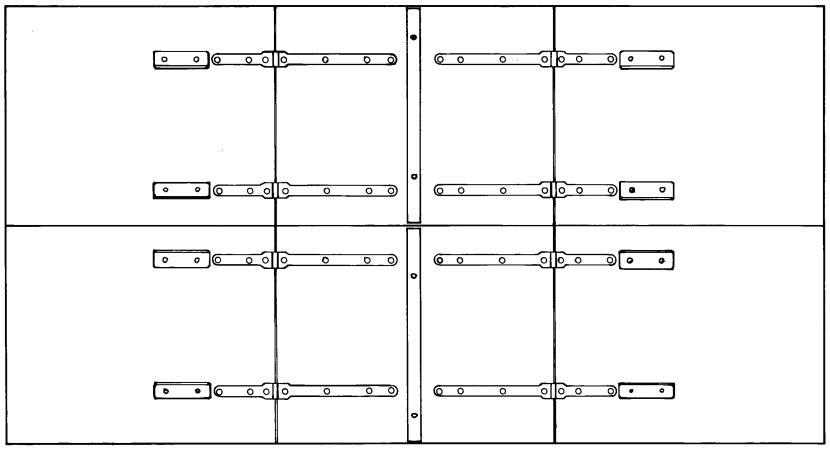
Great Eastern Railway Locomotive Depot Sand Wagon







GER Period lettering



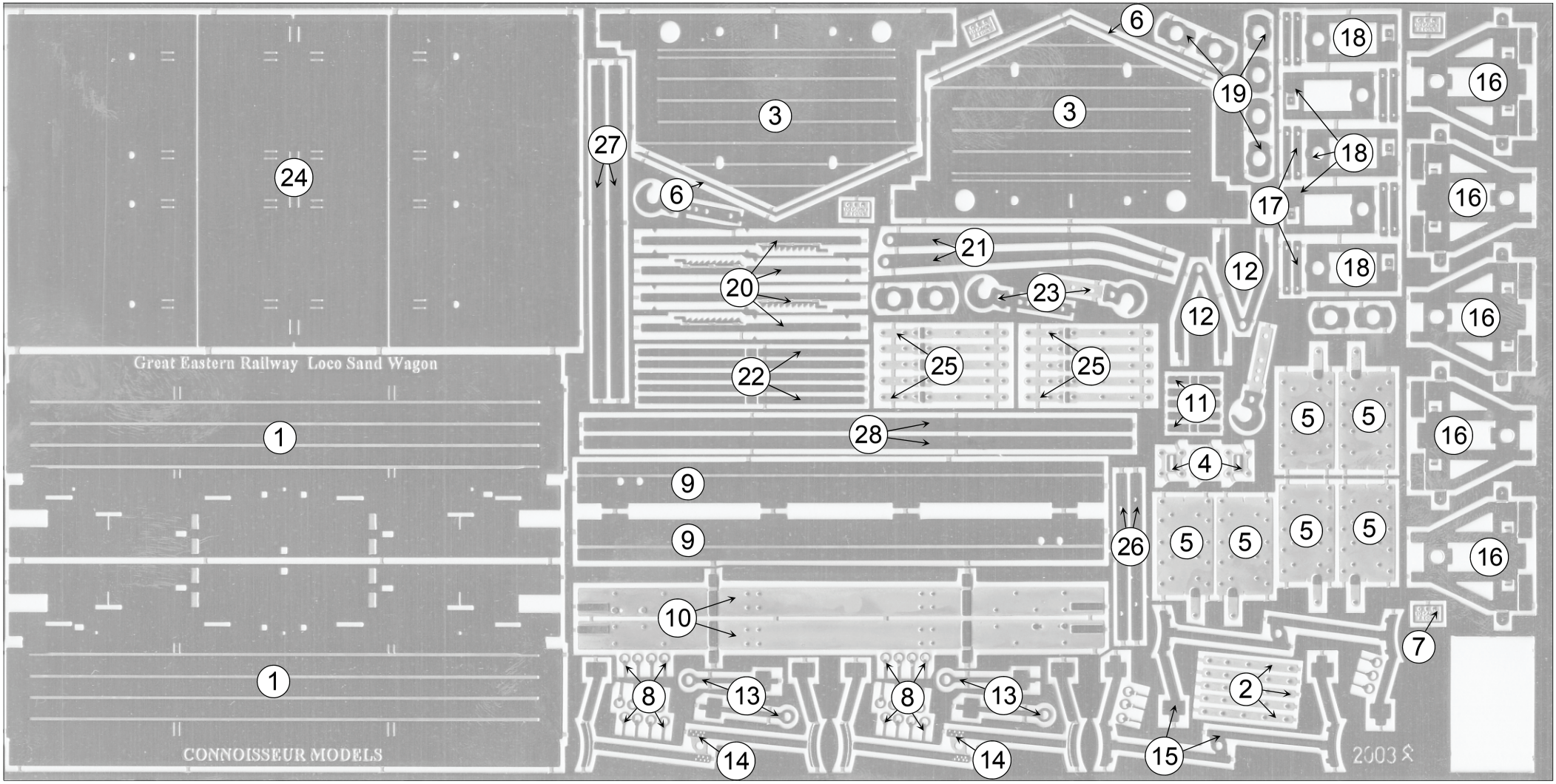
LNER Livery, Body and solebars-departmental stock blue (Oxford blue). Below solebar metalwork and buffers-black. Roof including hinges-grey. Lettering-white. I would recommend the HMRS transfers as the sheet contains made up lettering for a sand wagon.

BR Livery, The prototype wagon was still in LNER livery in 1959 even though it was then providing sand for the diesel fleet. I have seen a published photo of a sand wagon at March in the 1950s painted grey with lettering on black patches.

GER Livery, Woodwork and the vertical body side strapping-mid green. Roof-grey. All ironwork and strapping including roof hinges-black. Lettering-white. You will have to hand letter the G & E as I don't know of any GER transfer sheets.

Transfers for lettering are available from the Historical Model Railway Society, 8 Gilpin Green, Harpenden, Herts, AL5 5NR. You will require sheet number 12, LNER goods vehicle insignia. They are also stocked by some specialist model shops.

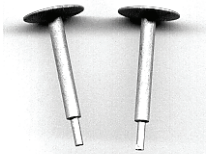
Great Eastern Railway Locomotive Depot Sand Wagon Etched Parts Identification and Assembly Order



Casting Identification and Parts Check List

1 X 5” length of 0.7mm brass wire, 1 X 4” length of 1.4mm copper rod, 1 X 6” length of spring steel wire (may be tarnished black)

I try to include extra castings when I make the moulds for a kit to cover failures so hopefully you will have some spare castings.

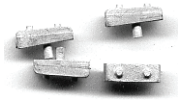

4 X Buffer Heads/Shanks

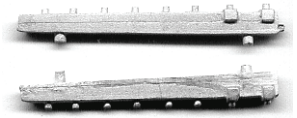

4 X Buffer Retaining Collars


4 X Buffers

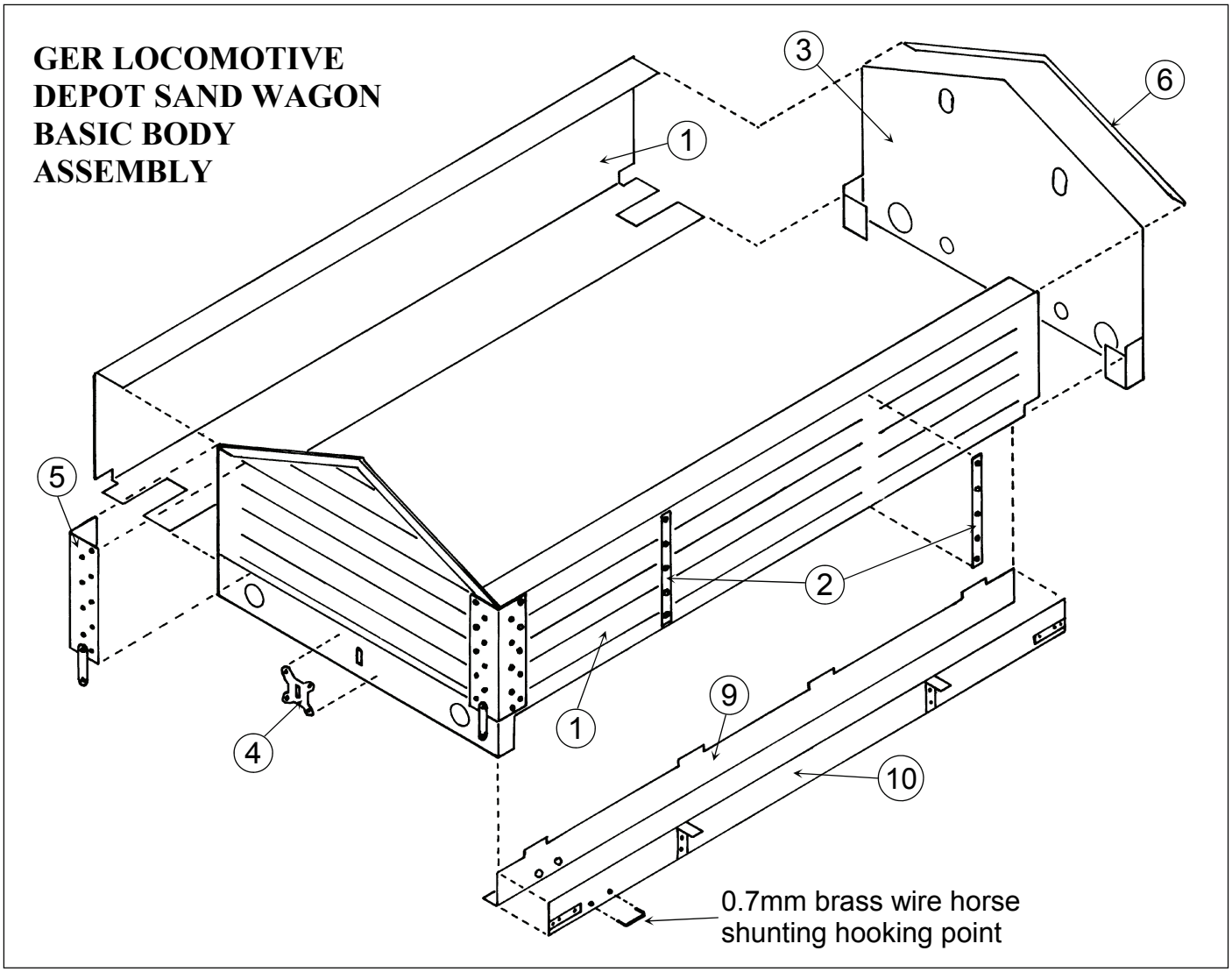

4 X Springs


4 X Axleboxes


8 X Roof Hinge Stops


4 X End Stanchions


6 X Coupling links



1. Emboss the ten bolt heads on each of the main body sides (parts 1). The bolt heads on this kit are best embossed with a rivet-forming tool. Alternately you can use 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. Then fold the top and bottom edges of the sides through 90 degrees and solder the two vertical strapping plates (parts 2) to each side. There are etched marks to help with positioning and the bolt head spacing is such that they will be in the centre of the planks. So get the two bolt heads that are spaced closer together at the bottom.

Emboss the six bolt heads on each of the ends (parts 3) and then fold around the ends of the buffer beams. Fit the coupling plates (parts 4) so that their slots correspond with the coupling slot in the buffer beam but ensure that the slot remains free of solder. I also opened up with a tapered reamer the buffer holes to take the buffer castings.

Now solder the sides and ends together to form up the basic box of the wagon. I soldered each side to one end first and then fitted the other end. The fold around buffer beam ends will help with location and positioning. I tack soldered the joints first and then checked everything for square before soldering the joints solid.

2. Take the wagon corner plates (parts 5) and emboss the single bolt head on each one. Then fold each plate through 90 degrees. There are etched notches on the plates to mark the centre bending point and you may wish to lightly scribe a line between these (I prefer to tin the backs of the plates first) to help with making the bend. I lined one jaw of my vice with a couple of layers of masking tape and then clamped the plate in the vice jaws so that the bolt heads pressed into the

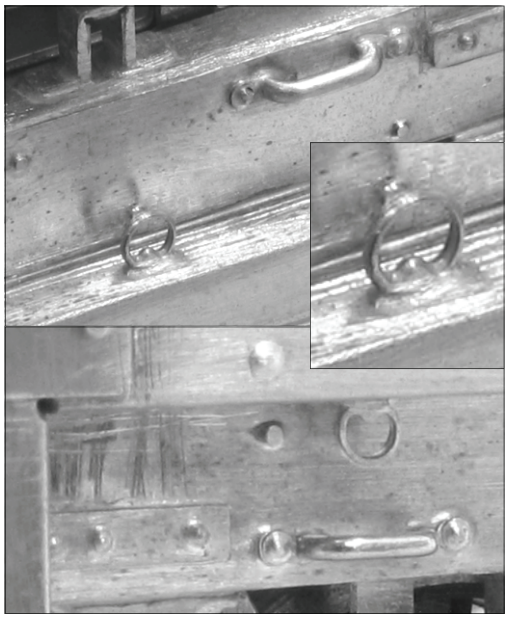
tape and the fold line was slightly proud of the jaws. I then folded the plate through 90 degrees and then by placing a block of softwood on top of the fold I gently tapped the wood with a hammer to tighten up the corner. I have included a spare set of corner plates in case of accidents (you will find spares for a number of the smaller parts in this kit).

Note how the buffer beam folds around and how the corner plate is positioned relative to plank lines.

Then solder the corner plates into position (just below the forth main plank line on the ends). Before fitting check with a buffer casting to see if a slight nick needs filing at the bottom of the corner plates. Then fit the beading strips (parts 6) flush with the top of the ends. There are some etched plates (parts 7) that can be fitted to the body side now or glued into place after painting.

3. I then preferred to fit the sheet lashing rings (parts 8) before fitting the solebars as I found it easier to hold them and then clean off solder without the solebars getting in the way, however they are a little vulnerable until the solebars are fitted.

There are two types of etched lashing rings one with a plain tail to be fitted along the underside of the body and one with an etched fold mark on the tail to be folded at 90 degrees and fitted to the ends. Hold the side rings in self locking tweezers or miniature electrical crocodile clip and insert the tail into the slot. Then place a generous spot of liquid flux into the slot and using a hot iron with a small amount of solder on the bit touch the tail from the inside of the body The flux should draw the solder through the slot and neatly encapsulate and reinforce the base of the lashing ring on the outside leaving just a little cleaning up of solder with a sharp knife blade on the outside face. This is the sort of job that would be really easy if you had three hands but if you secure the wagon body upright onto a heavy off cut of soft wood by using drawing pins through the buffer holes in the ends you should be able to work with precision.



Then fit the end rings. These need folding through 90 degrees before fitting and I found that it was a good idea to reinforce the fold with a spot of 60/40 solder before passing the tail through the slot in the end. I used a small piece of thin card between the ring and wagon end to space it slightly proud of the surface. I found that I could hold the ring securely in place with my finger nail as I soldered it into place (**Risk of burn)**. Again soldering from the inside using plenty of flux to draw the solder through the slot.

If you have wenches fingers that can not stand a little heat then you could always try holding the rings in place using the old blob of Blue Tack trick. This is where you place a blob of blue tack onto the wagon end below the ring and mould it with your finger so that its edge encapsulates the ring to hold it solid (but don't cover the area that the solder will be drawn into). Then solder from the rear as before. The Blue Tack will react to the soldering iron heat like chewing gum on a school radiator but should still keep the ring in place until the solder has set. But unlike the school radiator if you get a small ball of fresh Blue Tack you can keep pressing it over the ring until it has neatly lifted away all the melted Blue Tack. To leave a neat and clean ring. I have included plenty of spare lashing rings on the etch.

4. Take the solebars (parts 9) and fold the edge through 90 degrees. Emboss the twelve bolt heads into each solebar overlay (parts 10) then fold the tops of the two brackets through 90 degrees and then laminate to the solebar. Ensure that the top edges are flush and dress the bottom edge with a flat file to blend it in with the bottom folded section.

Fit the solebars to the underside of the body. You may need to file the ends slightly to get a snug fit between the buffer beams. Push the solebar tabs hard to the back of their slots (to get the distance between the solebars as narrow as possible). Soldering from the inside tack solder at the tabs first and then check that the solebars are square and upright. Then run some flux along the joint between the outside face and underside of the wagon. Then with a hot iron and working the joint in four sections solder a solid seem joint along the inside. In this way the flux should pull the solder underneath the solebar and flash along to give a neat joint with no gaps. By working the joint in four sections you should avoid the build up of heat that could unsolder the lashing rings.

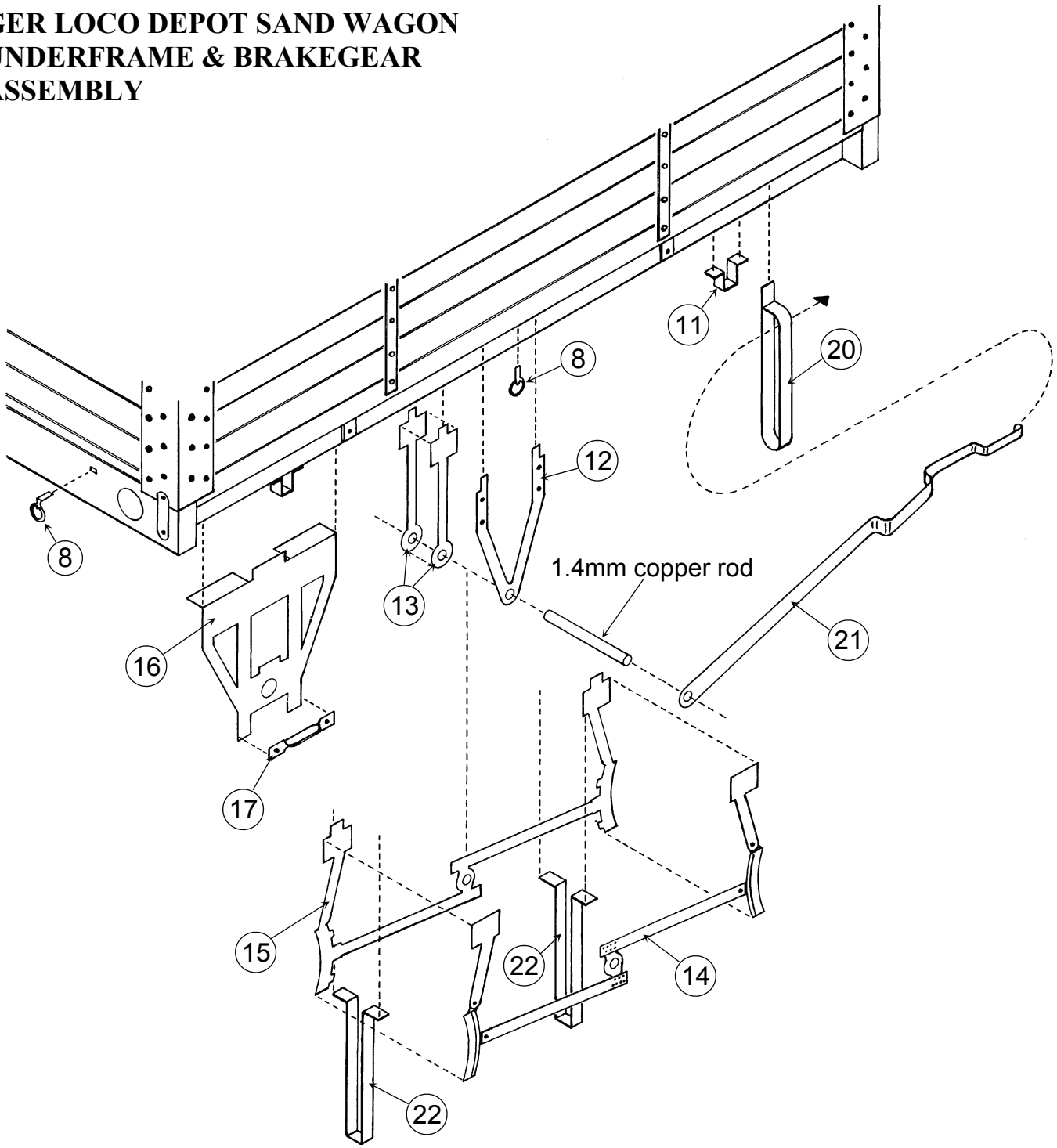
Fit the hooking handle for horse shunting made from 0.7mm brass wire. Fold up the spring stops (parts 11) and fit into the rebates on the underside of the solebar.

5. Brakegear. When originally built these wagons had lever and brakes on one side only as this was the common practice at this time. Later legislation required wagons to have brakes that could be applied from both sides of the wagon and the common practice was to fit a second set of brakes on the other side. As the sand wagon was a departmental vehicle this may not have been done and I have been unable to find any certain information. I have included two sets of brakegear in the kit and have fitted both to my model because it looks right.

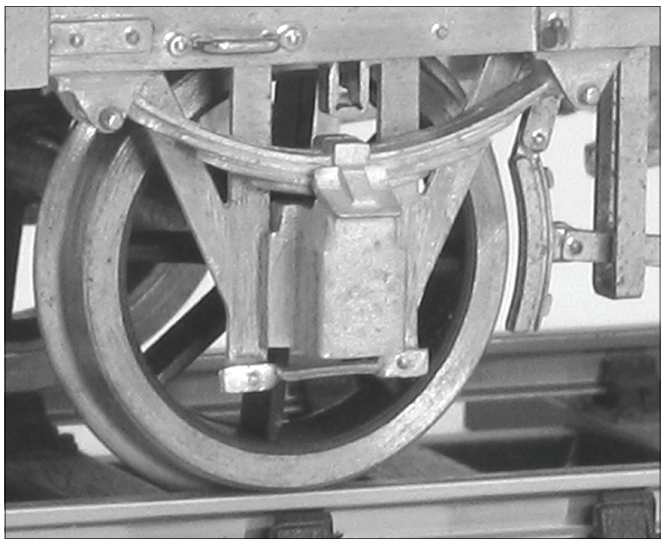
Fit the vee hangers (parts 12) using the location holes in the underside of the body. Solder together the two parts of the inner brake rod supports (parts 13) and fit their bases loosely into the inboard holes on the underside of the wagon. Pass the length of 1.4mm copper rod through the vee hangers and supports and this will help to line everything up. Then solder the bases of the supports and then withdraw the rod.

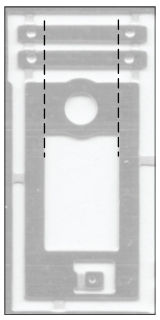
Emboss the four bolt heads into each of the brake blocks/push rod detail overlays (parts 14) and then laminate them to the backing hangers/ push rods (parts 15). Locate the bases of the brakegear into the holes in the underside of the wagon and again pass the copper rod through the vee hangers to help line everything up. Then tack solder the bases of the brakegear to the underside of the floor. I would suggest soldering everything solid and completing the brakegear after the wheels are fitted. In this way you can make any slight adjustments to the brake block positions to match the wheels.

GER LOCO DEPOT SAND WAGON
UNDERFRAME & BRAKEGEAR
ASSEMBLY



5. Make up the etched W irons. My original intention was to improve the appearance of my wagon kits by having simple etched W irons with separate cast axle box and spring rather than a one piece casting of over scale thickness. Then as I was designing the W irons it occurred to me that with a few additions and modifications it would be possible to make them so that those who wished to could modify them for a fully sprung wagon. First I will describe how to make up the W irons as intended to give a rigid wagon (I expect that this is what most customers will wish to do).



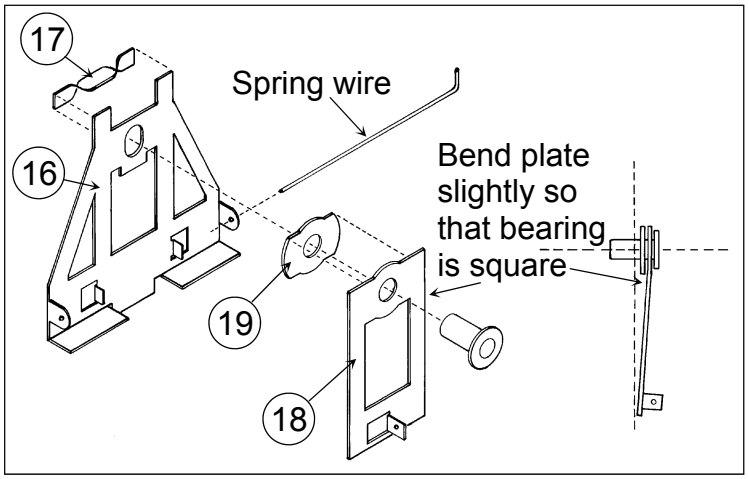


Remove the W iron (part 16) from the fret and note that the plain side is the outside face and the side with half etched fold lines is the inside face. Fold the top plates of the W iron through 90 degrees to give a flat surface for mounting onto the underside of the wagon. Then before removing the axle box keeper plates (parts 17) from the fret lightly scribe some guidelines using part 18 as a reference. Then remove from the fret and fit the strengthening plate (part 18) to the rear face of the W iron. Make sure that the axle bearing holes line up. Then fit spacing washer (part 19) over the bearing hole. These spacing washers are required to reduce the side play of the wheels/end float of the axle and I found that I only needed one on each side when I built my model but there are extras and you may find that you need to use two. Make sure that a brass axle bearing will fit snug and square into the hole (gently open out with a round file if necessary).

Now fit the axle box keeper plates (parts 17). Most railway companies fitted a flat plate but the Great Eastern wanted to make life difficult for modellers by twisting the centre section through 90 degrees. Take a keeper plate and grip one end in the jaws of a pair of flat nosed pliers so that the scribed line is level with the end of the jaws. Then with a pair of long nosed pliers grip the centre section of the keeper plate so that there is just over 1mm gap between the two pairs of pliers and twist through 90 degrees. Repeat for the other end of the keeper plate and then emboss the bolt heads. Then gently straighten up the keeper plate and solder it to the ends of the W iron legs. There are plenty of spare keeper plates and if you are like me you will probably form up eight and then use the best four.

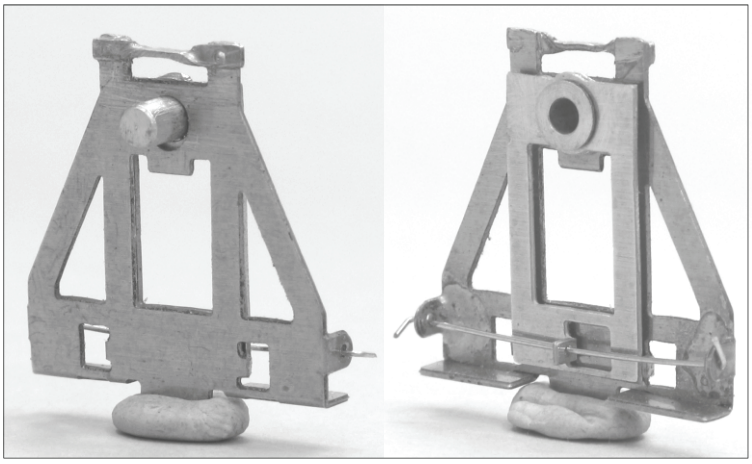
Fit axle bearings (unsoldered) into W irons and with a wheel set between fit the W irons between solebars (this is the point to check if you require extra spacer washers to reduce wheel side play). I would recommend temporarily fitting each W iron with a single tack solder joint so that adjustments can be made if required. Push the W iron tab hard against the outside of the slot to be as close to the back of the solebar as possible. The W iron slot and tab and the brake blocks will help to position the wheel sets at the correct distance apart but as there is some adjustment check by eye that the axles are parallel and square to the wagon ends. Place the wagon on a flat surface and check that the wagon sits without rocking. If you have built the body slightly twisted you may have to adjust two of the W irons with a piece of shim brass between its base and the underside of the wagon. Once you are happy solder the base of the W iron solid to the underside of the wagon. Then place the wagon back onto a flat surface and with a quick touch of a hot iron solder the bearings into the W irons. Then solder the brakes solidly into place so that they line up nicely with the wheels.

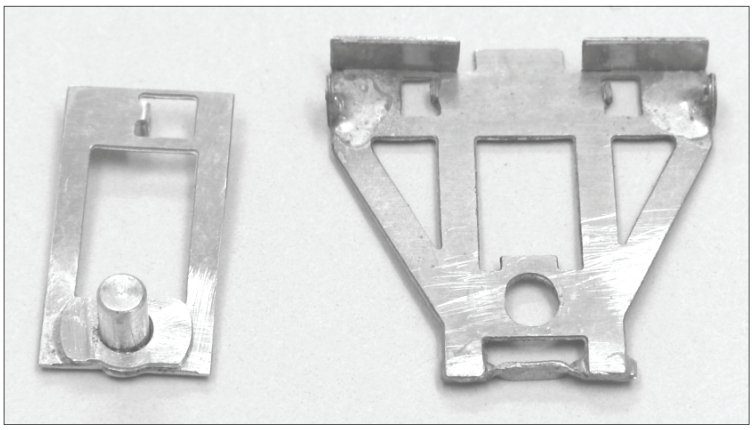
If you would like to try springing the W irons then this modification was not intended as part of the kit but as something of an optional extra. First file the axle-bearing hole on the W iron (part 16) into an oval hole that the bearing will slide in freely (half etched marks to help with this). Then fit the axle box keeper plates (parts 17) . Then fold out at 90 degrees the four lugs at the top of the W iron and fold the top mounting plates through 90 degrees.



Then take the strengthening plate (part 18) and fold the small lug at the centre of the top through 90 degrees. The side that this projects from will be the inside face (nearest the wheel) and the other side will be the outside face that slides against the W iron. Place an axle bearing onto a flat surface and place the bearing hole of part 18 (inside face down) over it and then the spacing washer (part 19) and solder solid (note that the spacing washer is now on the opposite face to that for the rigid wagon). Clean up and check that part 18 will slide freely (about 1mm movement) up and down the back face of the W iron, with the axle bearing in the oval hole and the top guided by the two central fold out lugs (a little dressing with a file may be required to achieve this). The spacing washer (part 19) will keep the two plates slightly apart and help to prevent paint creeping between and making everything solid. Bend a slight angle in part 18 so that the bearing is square in the W iron hole and the top edge lies against the inside face of the W iron.

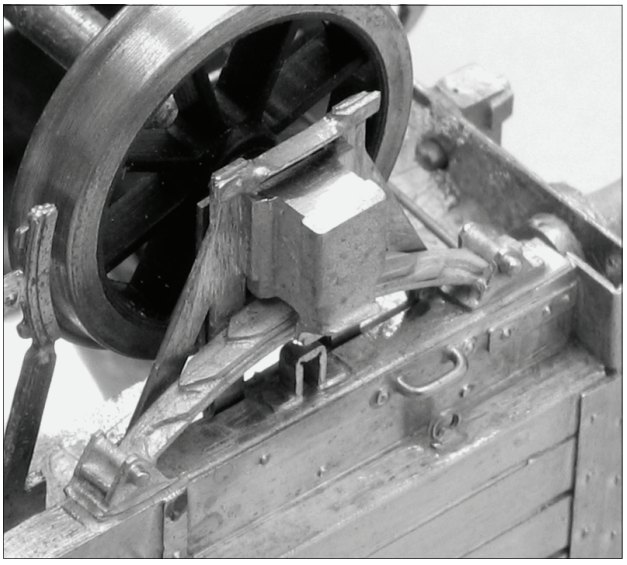
Springing can then be achieved by passing spring wire through the lugs of the W iron and through the central lug of part 18. It may be necessary to clear the holes in the lugs with a fine drill (0.5mm). For the spring wire I used steel guitar strings. This is a wonderful material and can be purchased from musical instrument shops. It is sold in small packets in thousands of an inch sizes and I would recommend that all modellers would find a selection of sizes an essential addition to their materials box. I used 0.013" wire and found that it gave a very soft spring but if you used 0.015" wire this would give a harder ride. If you only tack the W irons into place first you can experiment with the wire thickness until you achieve the ride that you desire. If you bend the ends of the wire through 90 degrees before sniping off this will retain the wire with no need to solder it into place.

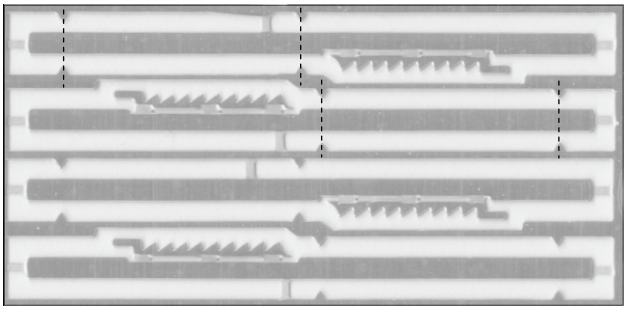




I had room on the etch to include an extra W iron and I would recommend that you make this up first to evaluate the system and if you don't like it you can use the other four as solid W irons. If you do have a go at springing then I would be most interested in what you thought of it.

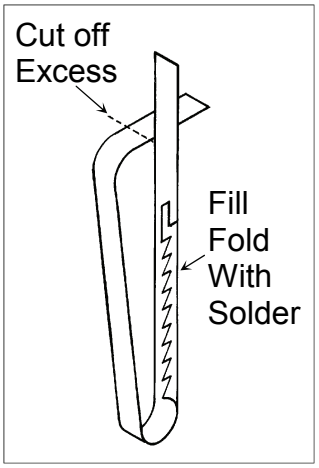
I then fitted the cast spring and axle box. Have a dry run on each W iron first to check that the spring will not prevent the axle box from sitting down flush onto the face of the W iron. If this is the case you can file the central strap of the spring or deepen the step in the axle box. Then solder the ends of the springs to the underside of the solebars using the spring stops as a guide to centre them. Then fit the axle boxes. There are two lugs on the back that locate onto the W iron and these will set the position. Fitting the castings now means that you must take care not to melt them when you complete the brake gear but access would be difficult if fitted later.





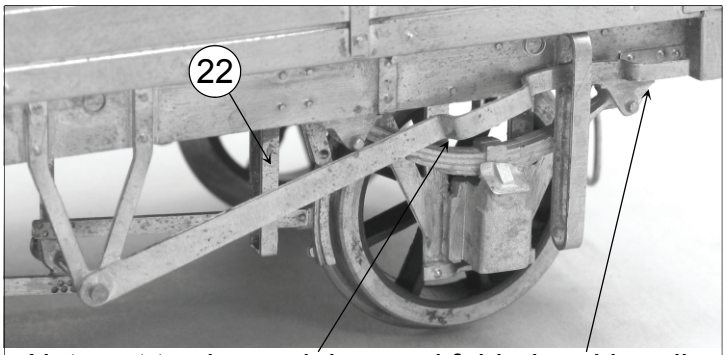
6. Make up the brake pin guides (parts 20). Again the Great Eastern wanted to make life difficult for modellers and unlike other companies that used a simple guide that a pin could be passed through to hold down the brake lever. The Great Eastern used a toothed ratchet with curved bends at the top and bottom of the guide. First before removing the pin guides from the fret you will note some etched arrows either side of them. Use these to lightly scribe some guide lines that will mark the centre point of the bottom 180 degree bend and the finishing point of the top 90 degree bend.

Remove the pin guides from the fret and fold the toothed ratchet through 90 degrees. I held the guide in flat jawed pliers and folded the ratchet by pressing it over with a flat needle file. Flow a small amount of solder into this fold using flux on the outside face so that the solder will be drawn through and help to square off the outside corner. I then made the bottom 180 degree curved bend using round nosed pliers. I gripped the guide in the jaws at the scribed centre mark and folded each side through 45 degrees. I then reversed the pliers to hold at the same point but from the other side and folded each side through a further 45 degrees to make the full 180 degree bend. As the jaws of the pliers are tapered by reversing them half way through you will get an even bend each side. You will also get an idea of whether the radius of the bend will be too tight or shallow and be able to make adjustment by gripping the part further up or down the jaws. The pin guide should be about 3mm deep from front to back but this is something better determined by eye referring to the photos rather than measuring.



Then make the top 90 degree bend but this time gripping at the scribed line that marks the end point and then bending through 45 degrees and then 90 degrees only on one side of the jaws. The top will then be over long and overlap the back of the guide. Snip off the excess with flush cutting side cutters so that the front and back of the guide are parallel. Then solder the top joint with 60/40 solder to give a strong joint. I then dressed off the etching cusp from each side of the guide to give it a cleaner and more delicate appearance. This also squares off and blends in the toothed ratchet fold. Then solder the pin guide to the solebar. There is an etched hole on the underside of the body to help locate it but be careful not to damage the cast spring.

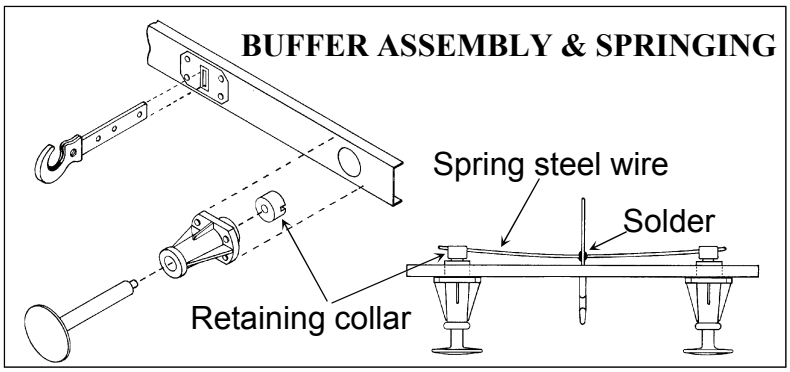
Fold up the brake levers (parts 21) to form the end handle and stepped set that clears the axlebox (note etched marks on the back to help locate the folding points). Then pass handle end of brake lever through pin guide and bottom end over copper rod at vee hanger. Solder brake lever at pin guide and copper rod. Then solder all remaining joints of copper rod and brake gear solid. Trim the copper rod and dress square the ends to be 1mm proud of the brake lever at the vee hanger and flush with the inner supports.

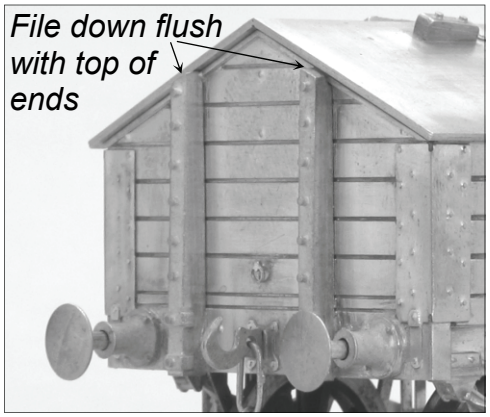


Note set to clear axlebox and folded end handle

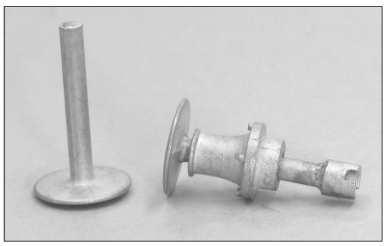
Fold up the brake push rod safety loops (parts 22) and reinforce all folds with 60/40 solder. Then dress the cusp from each side to give a more delicate appearance. Then fit the safety loops locating their feet into etched rebates on the underside of the wagon.

7. Fit the cast end stanchions. The masters for these were made slightly over length to allow for shrinkage in the mould (they only shrunk about half the length that was allowed for). File a slight rebate on the backs to clear the beading on the top of the wagon ends. Then fit stanchions to wagon end using the location holes (the peg in the bottom hole will set the position) and then file down the tops to be flush with the top of the ends.





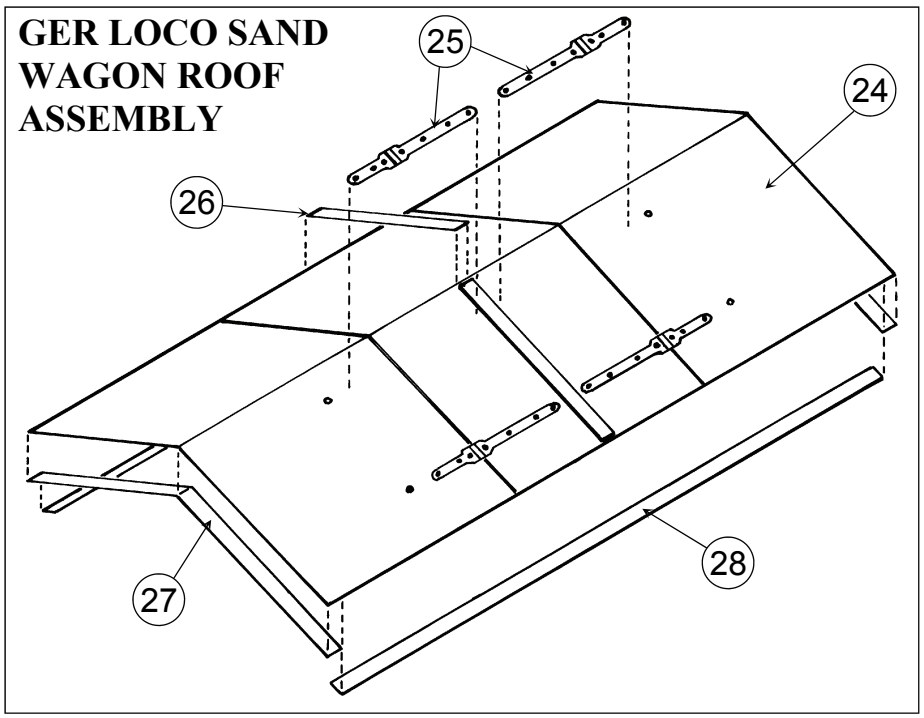
Make up and fit the buffers. Drill out the buffer bodies with a 2.1mm drill to take the cast buffer head/shank. Hold the drill in a hand pin vice (chuck) and grip the buffer body between finger and thumb. Drill through the body from each end so that the hole breaks through in the middle. Use a little spot of spit on the end of the drill (some more technical people have a block of furniture polishers bees wax that they smear on the drill end) and this will help prevent the drill wandering in the white metal and breaking through the side of the buffer. Then cut off flush the thin stepped end of the buffer head/shank. Pass the shank through buffer body and slip a retaining collar onto the end so that the shank stops at the slots in the retaining collar. If you gently crimp the retaining collar onto the shank with a pair of pliers this will hold the collar in position while you low melt solder it to the shank. (this arrangement is slightly different to what you may have come across in most of my kits. This is because the GER buffer bodies are very short and by fitting the collar over the main shank this reduces the amount the buffer head projects through)



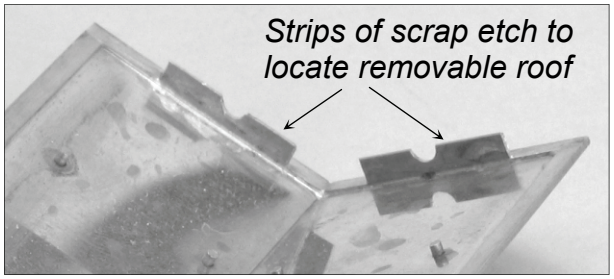
Laminate together both halves of the coupling hook (parts 23) and make up the links. I close up the links by holding the curved end in the jaws of a pair of round-nosed pliers in one hand and squeeze the flat parts of the link parallel with long-nosed pliers (angled long-nosed pliers with serrated jaws 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.

8. Take the roof (part 24) and with it flat fit the hinge detail (parts 25) noting the etched marks to help with location. Emboss the two bolt heads on each of the door weather strips (parts 26) and then fit to the roof noting the etched location marks (note that the strips don't quite meet at the centre). Then fold the roof to match the angle of the wagon ends. There is then narrow strips to be soldered around the underside edge of the roof to double up the thickness of the visible edges to better represent the thickness of the roof boards. Fit the end strips (parts 27) first and then the side strips (parts 28) between them. Then being generous with the flux work all four sides with the iron so that a thin fillet of solder is pulled to the outside edge of the joint. Then dress all four sides with a old flat file to blend the two parts together and give a crisp square edge. You can then file some shallow notches into the edge with a triangular file to continue the door joint lines.



The roof can be soldered into place or you can fit four strips of scrap etch to the underside of the ends so that it can be removable like an English snuff box lid and then glued into place after painting using Evostick as a contact adhesive. Fit the eight cast door hinge stops into their location holes.



9. 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 water, as hot as your hands can bear, 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 day, avoid cold, damp or humid days. 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.

Make a floor from the quality card that the etch was packed onto and glue inside the body with Evostick. I prefer a card floor as this helps to deaden the rattling empty box noise that you can get when the wagon is running on a layout.

Prototype Reference. This kit was developed from an article and drawing by J. Watling in February 1959 Model Railway News.

I hope that you have enjoyed building this wagon. Construction has been a little complex and involved but I feel that the effort is rewarded by a nice set piece model of an unusual prototype. I think that this is about as sophisticated as want to get with a wagon kit.

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 and 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