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3mm SCALE ETCHED BRASS WAGON KIT WITH WHITEMETAL FITTINGS

GWR CROCODILE H. DIA C23

Parts to complete:

brass wire (see instructions)
9mm 3 hole disc wheels and bearings
couplings
paint and transfers



Kit by arrangement with Jim McGeown Connoisseur Models

GENERAL INSTRUCTIONS.

Please read this section carefully especially if this is your first etched kit. Many modellers fall shy of working in this medium, but once a few simple skills are acquired you will find the sky's the limit.

First, you are employing many of the skills the scratch builder uses, with the exception that most of the fretting out of the parts is done for you but some cutting and trimming of parts will become necessary from time to time. Where this is the case we have tried to highlight this in the instructions.

We have been constructing etched Brass kits for a number of years, so here is a list of tips hopefully, of some use to the novice and expert alike.

To cut parts from fret use jeweller's snips [The Acme railcutter {with orange handles} is ideal] for the large parts and a Stanley Knife and a piece of softwood for the small detail parts. [Although Jim likes softwood for 0, with our thinner frets, I prefer to cut using a craft knife, just past its prime, onto something quite firm, either a melamine offcut or a sheet of aluminium]. Remove the tabs and burrs using a sharp Swiss file. Generally, it is better to leave bits on the fret, near their identification, until you are ready for them, but a pot to keep small bits in when the phone rings is useful.

You will need a soldering iron of at least 40 Watts for 0 gauge. A Weller 40 Watt is ideal, a 25 Watt iron is adequate for 3 mm; Weller and Antex both do something suitable. Some people prefer a Resistance Soldering Unit [RSU] such as the London Road Models version [from Fourtrack models], which can make overlays, and very small parts using minute amounts of solder, easier to apply. A supply of square cornered brass lumps to lean/balance parts against is useful with an RSU. Don't take the probe off the brass until your foot is off the pedal unless you want very 'distressed' models.

145 solder (such as Carrs) which melts at 145 degrees C, and Carrs Green label Flux [weak phosphoric acid] is adequate; some people distort the etch using higher melting temperature flux cored electrical solder whereas others get away with it. Solder paint may also be found useful, and come in a selection of melting points, use the higher temperature ones first so that small details can be added later using the lower temperatures. Do not worry if you make a mistake, Brass (and Nickel Silver) is very forgiving, just unsolder, clean off parts and try again. A desoldering tool is useful here, a spring loaded piston in a metal cylinder that sucks melted solder away from the iron [avoid the cheap rubber bulb variant]. Remember you are not soldering electrical joints, first you run flux with an old brush onto area to be soldered then carry some solder on the iron to joint. Do not dwell iron to long

on one spot otherwise the metal will distort, practise on some scrap first. A glass fibre brush available from draughtsman's shops or model suppliers should be used to burnish the metal along the joint and then with the aid of scrapers and sharp scalpel, remove solder afterwards. Beware that the brush sheds very irritating and invisible glass splinters, clean them away as you go and keep them away from your finger tips.

Strapping and small details are best applied using solder paint. This can avoid clogging up plank detail etc. with solder. Apply a thin coat of solder paint to the back of the component, [Sometimes it helps to tin it by melting the solder at this stage and adding a little more before fixing to the kit] place in position and hold in place with a thin knife point. Run a little liquid flux along edge of component, and then apply clean iron with excess solder removed from tip [That's what the damp sponge on your soldering iron stand is for], to the top of the component until molten solder (not just the flux) is seen bubbling (or just peeping) from the edges.

Folds in Brass are usually made with half etched lines on the inside. You will need bending bars for long folds, but a good 3" smooth jawed vice and a pair of blunt nosed pliers {smooth jaws, not serrated for better grip} should suffice for most models. Sometimes, the bend is easier to form after running a craft knife along the inside of the fold's half etch, but don't go through. You need to decide whether to form rivets before bending if they will become unreachable, or leave until later to avoid flattening them in the bending process. You will find it easier to solder if you burnish the Brass with a fibre brush and keep iron bit clean.

Where you need to fit layers of Brass together referred to as laminating in the main instructions i.e.: coupling rods, you may find it easier to align the parts together (a rod through the hole helps), then carefully clamp in the jaws of a vice. [This is where the RSU is easier, at least in 3 mm]. Run solder around edges, then file and clean up. Some holes in such components may have shrunk so far that you would prefer to reinforce them with small brass washers such as 12/14/16 BA from Suppliers such as Eileen's Emporium.

Other useful tools include a good pair of tweezers, a pin vice with a selection of drills from 0.3 mm to 2 mm, a small sharp screwdriver, some very fine pointed nosed pliers and some Broaches. The Broaches are used to open up holes. For larger holes for bearings, some people prefer a reamer, but a broach which will go a little over 1/8" (~3.2 mm) is OK. All rivets are either left proud on a half etch (requiring no more effort) or half etched on the rear waiting to be pushed out by you. A rivetting tool is useful for consistent rivets {commercially available from London Road Models [very simple], Dick Ganderton [more sophisticated] and George Watts (GW Models) [Rather

sophisticated, but could be useful if you want to do variants or things not available as kits}}, but some people manage with a blunt darning needle.

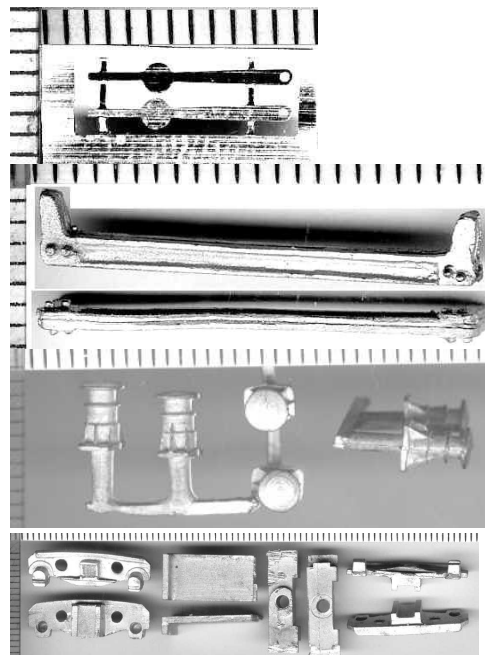
DO NOT rush the construction and clean up as you go. If you do not regularly wash your model the flux will soon turn everything Green, and if you try to glue any small parts they WON'T. In our kits all the White Metal castings can be glued if you desire. If using super glue use a good brand, and make sure surface to be glued is clean. It will help to polish castings with your glass fibre brush or an old suede brush

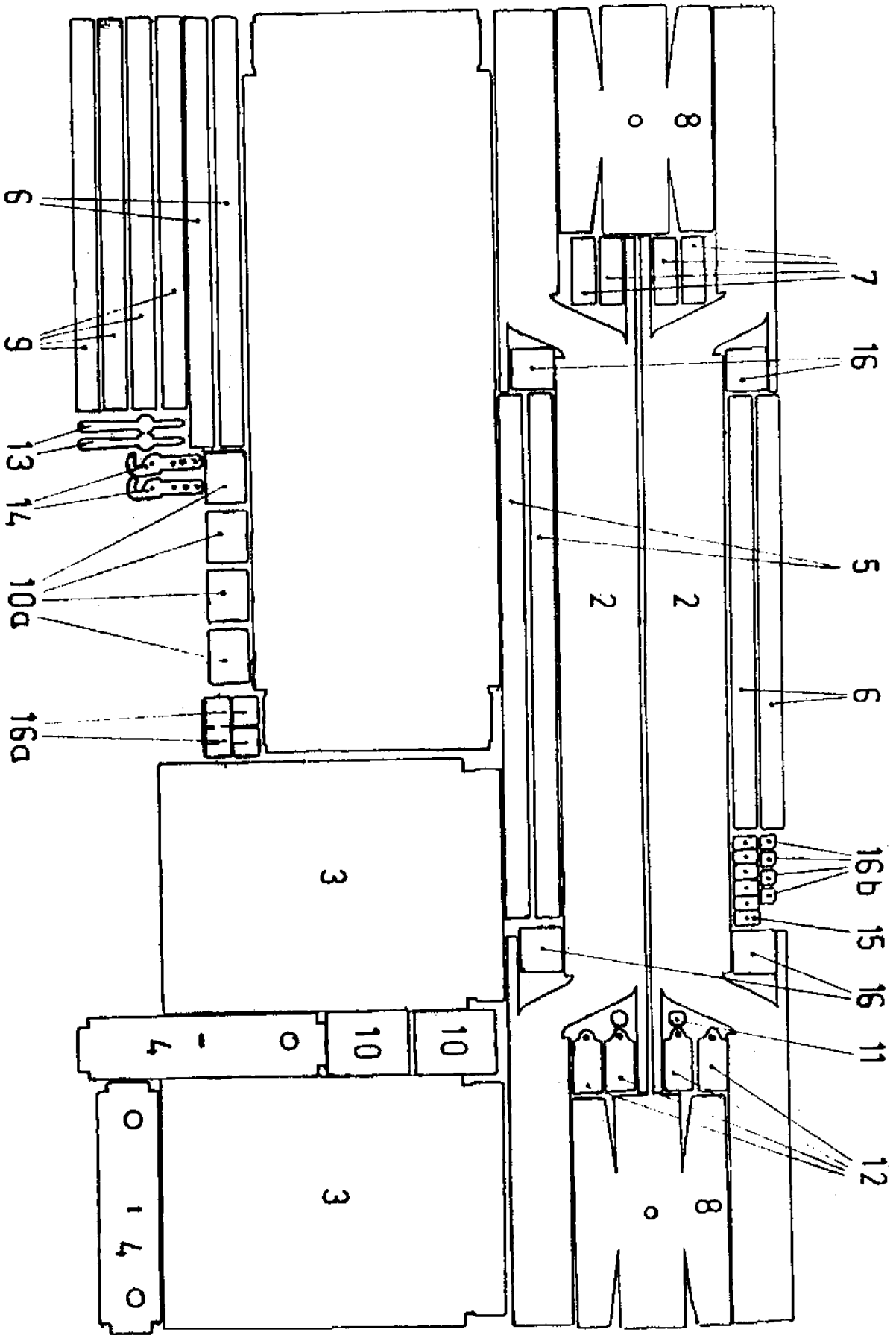
An alternative is to solder your White Metal castings together using Carrs 70 Red Label 70^o Low Melting Point solder and flux. The iron should be run at a much lower heat so you do not melt the castings, this being achieved by using a domestic light dimmer switch, wired up the same as for a light, but substituting a plug and the iron for the light and lamp holder {I have a dimmer extension flex}. 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 on 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). When attaching White Metal fittings to Brass, the surface of the Brass must be tinned with 145 solder, (or alternatively Carrs 188 solder paint), to allow the 70 solder to grip. The casting can then be soldered in place and fillets of 70 solder run into place with no risk of melting the casting.

Try to complete all time high temperature Brass soldering before you attach the delicate White Metal fittings!

CASTINGS

DC Brake lever etch	1
CROCODILE H Cross Girder	6
GWR Self Contained Buffers	4
GWR 5' 6" Plate Freight bogie, round top axle box	Pair





NB. Folds lines are to the inside of folds

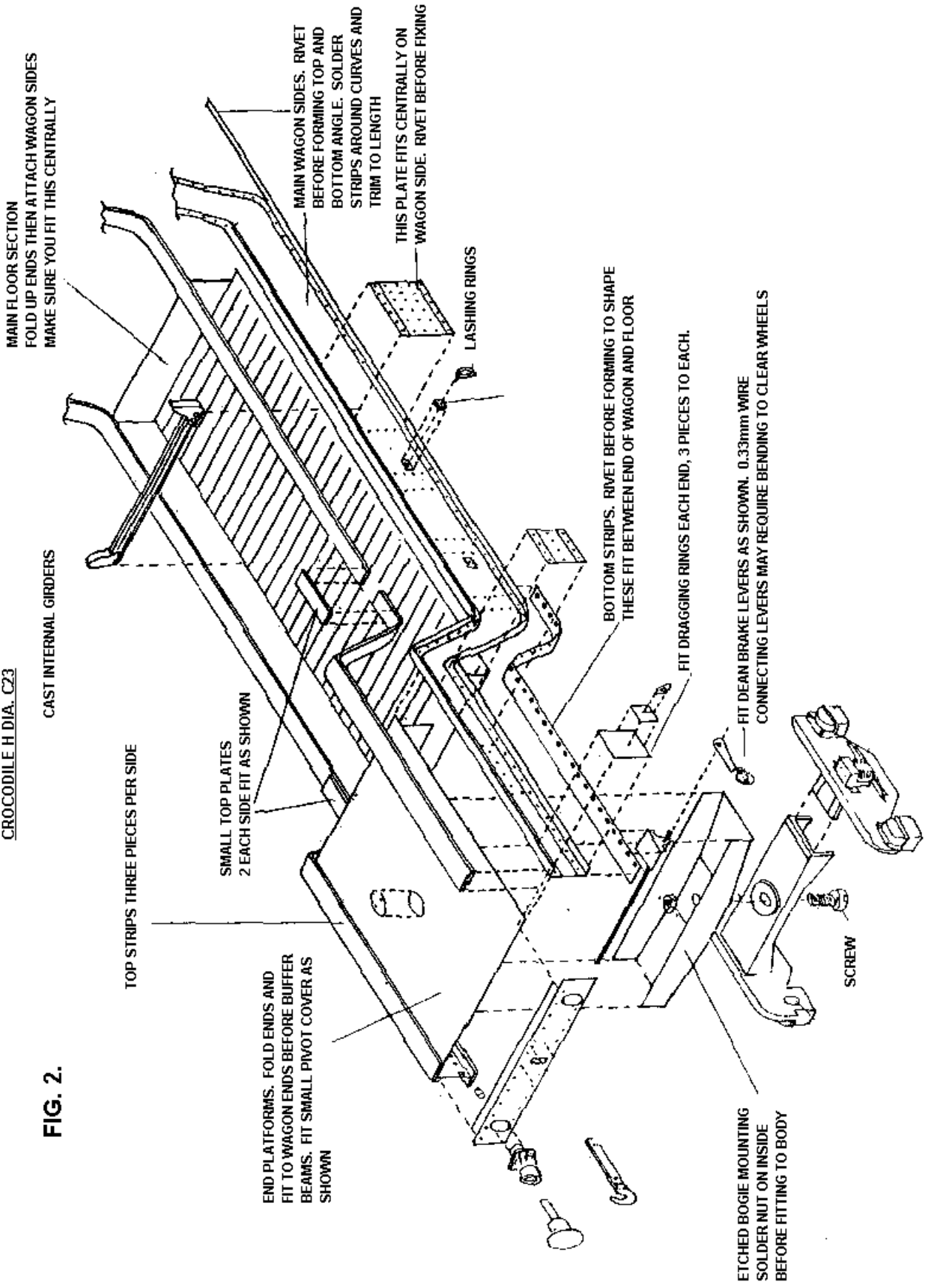
Parts are numbered in recommended assembly order.

PARTS IDENTIFICATION AND SUGGESTED ASSEMBLY ORDER.

1. Main floor. fold up ends 90D to floor.
2. Main body sides. Punch out all rivet detail and then carefully fold up edges form curved edges, trim to length, and solder In correct position.
Position floor centrally along one side with bottom of side resting on floor and ends of floor resting in 1/2 etch lines, repeat with second side (it is important at this stage to ensure floor is central in relation to sides).
3. End platforms. Fold to shape, and fit to each
4. Buffer beams. Form rivet detail fold and fit to each end of wagon.
5. Central top girders.
6. End top girders.
7. Top support plates. Fit these as shown on drawing. Top support plates will hide joins.
8. Bogie mounting plates. fold to shape, solder nut inside using screws as guide, a drop of oil on screw threads should stop all soldering up solid. Fit these to underside using 1/2 etch lines as a guide.
9. Bottom, girders. Punch out rivets, and fit to underside of wagon as shown on drawing.
- 10&10A. Body side strengthening plates. Punch out rivet detail and fit to body sides.
11. Bogie pivot plates. Punch out rivets and fit to end platforms.
12. Brake lever brackets. form and fit to each end of wagon.
13. Brake levers, form to shape and fit to end of 0.4mm wire passed through brackets.
14. Coupling hooks.
15. Lashing ring plates. Punch out rivet detail and fit in 1/2 etch recesses in sides, ensure holes are free from solder.
- 16.16A.16B. Drag plates. Make up as shown on drawing and fit to end of wagon.
Form lashing rings from wire wrapped around needle file handle pass through split pin. Solder into holes in solebars per side.
Fit buffers. Fit bogies. Fit 6 internal cast girders-to well of wagon.
These/e line up with external rivet detail.

CROCODILE H DIA. C23

FIG. 2.



The history of the GWR Crocodile wagons is too complex to list here and reference to the history of Great Western Wagons Vol II is recommended. Our kit depicts the 5 wagons of DIA C23. Running numbers 41900, 41947, 41973-5. Numbers 41900 and 41947 were fitted with extra internal girders for transportation of transformers.

