

LMS 0-6-0 Diesel hydraulic No 1831

7mm scale - Etches Only

Etched in nickel silver and brass

**Wheels, motor & gears and various bits
required to complete.**

**Fineline Kits
The Spinney, Low St.
Beckingham, Doncaster,
South Yorkshire, DN10 4PW**

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LMS 1831 0-6-0 DH

LMS 1831 was built in 1932 from the chassis of a Midland Railway 0-6-0T.

A 400 HP Paxman engine drove a hydraulic motor supplied by Haslam & Newton of Derby. The motor suffered many failures presumably 400hp through 4'6" wheels was more than it could cope with. It remained in use until 1939 when it was converted to a mobile generator set and survived in this form until at least 1949. For more details see LMS Journal Vol 2.

When built there were only 5 radiators on the roof but later a sixth was fitted in the space between the last two. How the pipework was altered is not known but a reasonable guess would be that the extra radiator was for oil cooling and the pipe between the outer parts of the rear radiator was moved to the back., the two rear radiators were piped together and the inlets to the central manifold were fitted from underneath.

Also when built the oval windows in front of the cab doors were absent. Were these cut out at the same time as the extra radiator was fitted?

Required

Hobby Holidays can supply all the items in black, but not the items in red

Engine block, 2 halves resin

Sandboxes, resin

6 axle bushes

2 x 6BA 12mm screws, 6 x 12BA screws, 6x 12BA nuts, 2 x 10BA nuts

2 x 10BA screws

40 mm 1/8 bore Tube

40mm 3mm nickel silver rod

50mm 1.6mm wire

1.2mm wire 1 ½ lengths

1mm wire 1 length

0.7mm wire 2 lengths

16 handrail knobs

100 mm rail

2 x 40mm x12mm dowel for water tanks

Whistles x 2

Buffers 1 set

Vacuum pipes

Wheels

4'6" x 19 spoke driving wheels 12" crankthrow. Slaters Ref 7855

Motor & Gearbox

These have changed over the years. Using the drawing supplied please make sure it fits

The etches

There are 5 sheets of etchings.

Sheets A & B hold the major parts for the loco.

Sheet C has the roof parts, steps, brake rodding and other detail parts.

IGNORE parts 24 & 52 on this sheet, use parts 24 from sheet X

Sheet X has the roof radiator parts and several alternative parts. Parts 24 from this sheet should be used. Parts 30 & 40 have the correct rivet pattern and should be used also. Use the coupling rods from this sheet soldered to the parts on sheet A & B with the boss thickenings from this sheet. The lampirons on this sheet are more accurate and easier to fold. There are also extra manifold flanges.

The final sheet has the manifold flanges

Notes Written by the designer – Nick Easton

There are a lot !! of rivets on this loco. They are half etched into the etching and will require punching out. I use a gramophone needle in a press but a hard pin in a pin vice will also work

The front of the loco is the end with the hydraulic motor

No provision has been made for compensation. This would be difficult as the drive from the hydraulic motor is via a yoke in the coupling rods. In the prototype the drive cranks had a “flexible crankpin” whatever that might be. One could joint the coupling rods behind the centre axle and allow some movement in the rear axle.

I would suggest that the motor drives the centre axle with the motor forward. This allows space for an engine block casting to be fitted.

For the inexperienced modeller I can do no better than refer you to Connoisseur Models where Jim McGeown produces an excellent booklet of advice

I would suggest that you build the footplate and body BEFORE the chassis

Do not solder the footplate and body together until you have fitted the lampirons

FOOTPLATE

- 1 Punch out the rivets on the buffer beams (20) and solder on the overlays (23). Fit one beam to the recess on the footplate (21).
- 2 Fit the valances (22) on both into the recess on the footplate. Make sure that they are vertical and then fit the other buffer beam assembly.
- 3 Fit the valance overlays (24) at each end. Fit the buffers.
- 4 Make handrails from 0.7mm wire and fix into holes in valances.
- 5 Solder 6BA nuts over the holes to the front and the rear.

DO NOT FIT THE STEPS YET

SUPERSTRUCTURE

If you are going to build the loco as originally built with five radiators and without the oval windows before riveting the sides, fill in the windows with the blanking plates (59) and sand smooth.

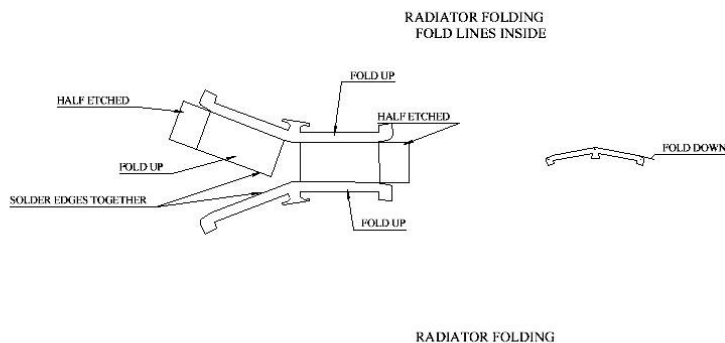
- 1 Punch out the rivets and the sides (25) and ends (28 & 29). Try to keep as much of the fret around them together as you do the riveting this helps prevent distortions.
- 2 Punch out the rivets on the doors (26) and fit to the sides using the handrail knobs to ensure alignment also fit the handrails from 0.7mm wire at this stage. The door handles are to the ends of the loco, I flattened the end of a piece of 7mm wire to make these. Fit them also at this time. Clean up the back of the door to give a good surface for the glazing. Solder the frames for the sliding windows, (46) behind one of each pair of the windows to the rear of the body side. It matters not which window is used.
- 3 Grease or blacken around the small holes on the body floor (27) on one side only. Bolt to the footplate using 12BA screws and nuts in the central holes only. Carefully adjust to give equal clearances at each end. One side will be nearer the edge of the footplate than the other so that when a body side is fitted the footplate is just wider than the body.
- 4 Solder one side to the edge of the base nearest the footplate edge making sure it is flush with the ends. File the ends equally on both sides so that they are just a little narrower than the footplate. I found that about 54.5 mm is about the right width. Solder the ends to the base and erected side. Part 27 is the front. Now solder the other side to the ends but **NOT THE BODY BASE**. Check that there is just a small amount of footplate showing on each side of the body and adjust if necessary. Remove the body from the footplate. Take a piece of straight scrap from the etch, and solder the edge to the “loose” side towards the middle. Using a straight edge line the side up against the ends and solder the scrap to the body base. Fold the two spacers (54) to an L shape and solder just between the sides just below the roof line.
- 5 Punch out the rivets on the roof (30), roll to radius and check the fit against the body. Because of the rivets it will take a little patient bending to fit well.
- 6 Check the fit of the cab floors (56) in the body and file a 12BA nut over the holes. Check that the cab backs (55) fit inside the body and match the roof profile of the ends. File to size if necessary. Solder the backs to the back edge of the cab floors.
- 7 Fit the footplate and body together using 12BA screws thro' all holes fitting in place the cab floor assembly. It will be necessary to open up some of the holes to get the best fit.
- 8 Now fit the roof in place soldering it **ONLY TO THE CAB BACKS**. It is now possible to remove the screws and you will have the roof, body and footplate as separate assemblies. The cab floor will now require trimming to make sure it clears the glazing.
- 9 Separate the body from the footplate. Fold the lampirons (36) and fit to the body. The lampirons on sheet A are thicker but harder to fold. I used those from sheet X which are thinner and also more accurate. Fold up and fit the whistle brackets (37)
- 10 Fit the body and footplate together again carefully aligning them. You can now solder them together.
- 11 Make up the steps (38, 39 & 40). The steps on sheet X have the correct rivet detail but are less robust. Solder a piece of 1mm wire behind them to stiffen them. Solder the steps to the footplate in line with the doors. **NOTE THAT THE STEPS ARE SET BACK FROM THE VALANCE BY ABOUT 1.5MM. THE FOLD IN THE TOP OF THE STEP WILL SET THIS.**

- 12 Fold up the outer fold of the ladder (40) so that the sides face each other. Solder 0.7mm wire across the holes. Trim off clean up the sides. Remove the ½ etched area at each end. Solder the tabs to the rear of the loco body in line with the handrails on the roof. Make up the rear steps (41) and solder them behind the buffer beam in line with the ladder
- 13 Punch the rivets in the vent top (30) and roll to radius along with the thickener (31). Solder together along the edges and then carefully file the sides to a gentle radius without damaging the rivets. Solder the strap (37) down the midline Fix a scrap piece of brass underneath to provide spacing from the roof and fit to the roof. Solder a piece of 1mm wire in the hole to the rear of the vent and fit the water filler parts (33 & 34) over it. Trim back the wire to leave a tiny amount protruding. Fit handrails made from 0.7mm wire to the holes nearest the rear of the roof to line up with the ladder.
- 14 Fix in place the window frames (43, 44 & 45) and the louvre panels (47). I prefer to use superglue for this.

RADIATORS

Depending on whether you are building the 5 or 6 radiator version and how you think the pipework was there will be some different ways of doing this. This is a guide for my 6 rad version

- 1 Before removing the etches from the fret open up the holes to 1.4mm. Do the same for the pipe flanges parts 35.
- 2 Remove and fold up the radiators, strengthen the folds with a fillet of solder before shaping the half etch over the ends. Fit the radiator centre covers, 64. in place having first put a slight bend in the along the etched line. Be sure to file away the etching cusp on the radiators to get the best fit.
- 3 Cut three pieces of 1.2mm wire and pass thro' 2 prepared radiators. Carefully line them up with the guide marks on the roof, keep one at the front of the roof and one to the rear. When happy with the alignment solder the REAR radiator to the roof. Remove the front radiator and solder the wires into the fixed radiator. The outer wires are not passed through the rear holes.
- 4 Solder pipe flanges, 35, to each of the wires in front of the radiators. Jig part 65 is slotted to help get the correct spacing.
- 5 Slide the next radiator on and using part 66 (folded to a W shape) to guide the spacing between the radiators. Solder in place. Again solder on pipe flanges.
- 6 Continue in this manner until all the radiators are fixed. The outside wires should not protrude through the front holes of the front radiator.
- 7 Bend up the pipes to go across the front and rear of the radiator stack from 1.2mm wire and add pipe flanges as appropriate. It helps to soften the wire first.
- 8 Solder together manifold flanges in pairs and clean up. Now solder them in place on the radiators. It is important to get them lined up as well as possible. I soldered one to the front and rear radiators and the used a straight edge to line up the intermediate ones. There are four on each radiator block.
- 9 Finally there are rainstrips on the roof just outside the line of the radiators. Material is not supplied to fit these. Best material is 0.5mm L shape from Hobby Holidays, expensive and requires nifty soldering to fit, or if you are concerned about soldering fit with superglue. For a cheap alternative a couple of strips of thin plasticard.



CHASSIS

- 1 Remove the chassis sides from the frets and carefully open the axle holes to take the axle bushes which should then be soldered in place. Open up the holes for the drive shaft so that they will JUST accept the 1/8 id tube.
- 2 Remove the end frame spacers (2) from the fret and fold. Solder into the ½ etched lines on the frames one on each frame. Solder the engine frame space (3) to one frame so that the cut out faces the centre axle. Solder the other frame spacer (6) to the other frame.
- 3 Solder the frames together making sure that they are flat and square to each other. Use straight rod thro' the axle holes and a flat surface (e.g. a piece of plate glass) to ensure this
- 4 Solder together the motor plates (4) to the overlays (5) and solder the assemblies to the spacer. If you are going to use PCB for pickup fix it to the frame spacers now.
- 5 Cut a piece of 1/8id tube about 34mm long into the drive shaft holes making sure that it projects by equal amounts on each side
- 6 Fit the brake shaft brackets (8) and guard rail overlays (57&58) to the frames.
- 7 Solder brake bracket (14) butting up to the rear guard supports and solder a short piece of 1mm wire thro' the hole so that about 1mm projects on each side. Fit about 36mm of bullhead rail between the supports. Solder lengths of 1mm wire thro' the holes to take the brakes.
- 8 Solder together the brake parts (8 & 9) remembering that you need three of each hand. Using the wheels as a guide solder to the wires passing the hanger brackets (13) over them with the open end facing the wheels. Fit 0.7mm wire across the bottom holes and the fit pull rods (10) making sure that they clear the wheels. Trim back the wires
- 9 Fit a piece of 1.6mm wire thro' the brake shaft brackets fitting the lever (12) between the frames. The longer arm is to the rear. Fit the levers (11) to the end of the lever (12) making sure that it is just below the top of the frames.
- 10 Drill out the sandboxes 1mm for the sand pipes .Fit the body and chassis together and glue on the sandboxes in line with the cut outs in the steps. Fit the sand pipes and solder to the brake gear where possible for added security.
- 11 Now is a good time to paint the chassis BEFORE fitting the wheels
- 12 Fit the wheels, motor and gears. I would suggest that you should drive on the centre axle. Decide what you are going to use for pickups and fit.
- 13 Solder the coupling rods (15) together back to back. Use one thickness from the main sheet B and the other from the sheet X. Test on the chassis and ease as required. Solder the thickenings (16 & 17) to each end and the centre on the outside of the rods.
- 14 Very carefully open up the large holes in the cranks to tight fit onto the 1/8" rod. Solder together the cranks (17 & 18) to make three layers using this hole as a datum not the edges of the parts.
- 15 Open up the other hole in the crank so that it just takes a 10BA bolt, you can solder this in place or use a tapped crankpin bush. Trim the nickel silver rod to about 37mm and force on the cranks, quartered to each other. Put a washer between the crank and the rod. DO NOT SOLDER YET. Try the coupling rods on the chassis and test for binding. If there is

binding opening up the holes in the coupling rods may help the problem but there are one or two other tricks to try:-

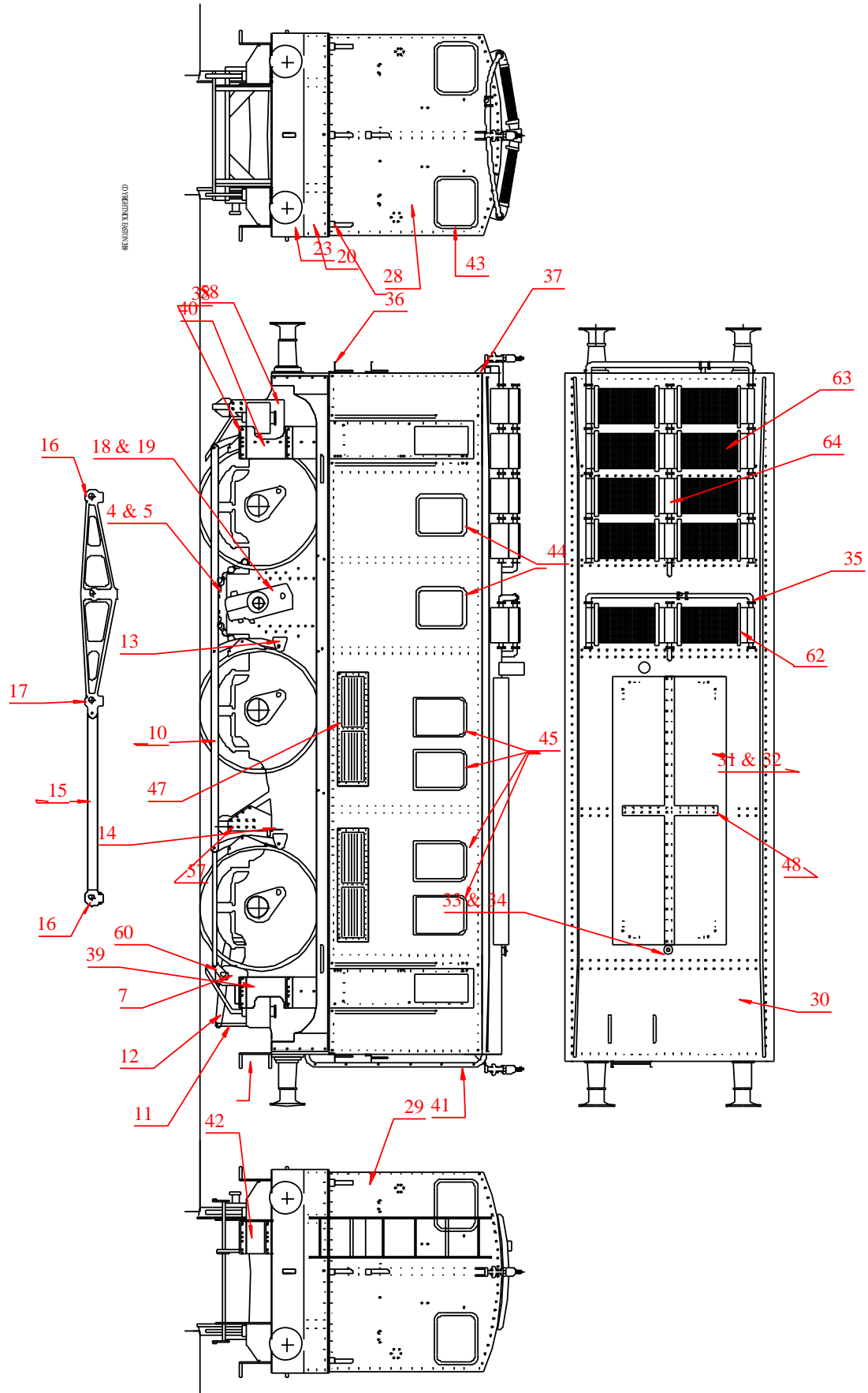
- The hole in which the 10BA runs in the crank can be slotted lengthways
- The crankshaft can be cut in two if you doubt your quartering
- Make sure that the cranks are at right angles to the shaft
- When happy solder the cranks to the shaft

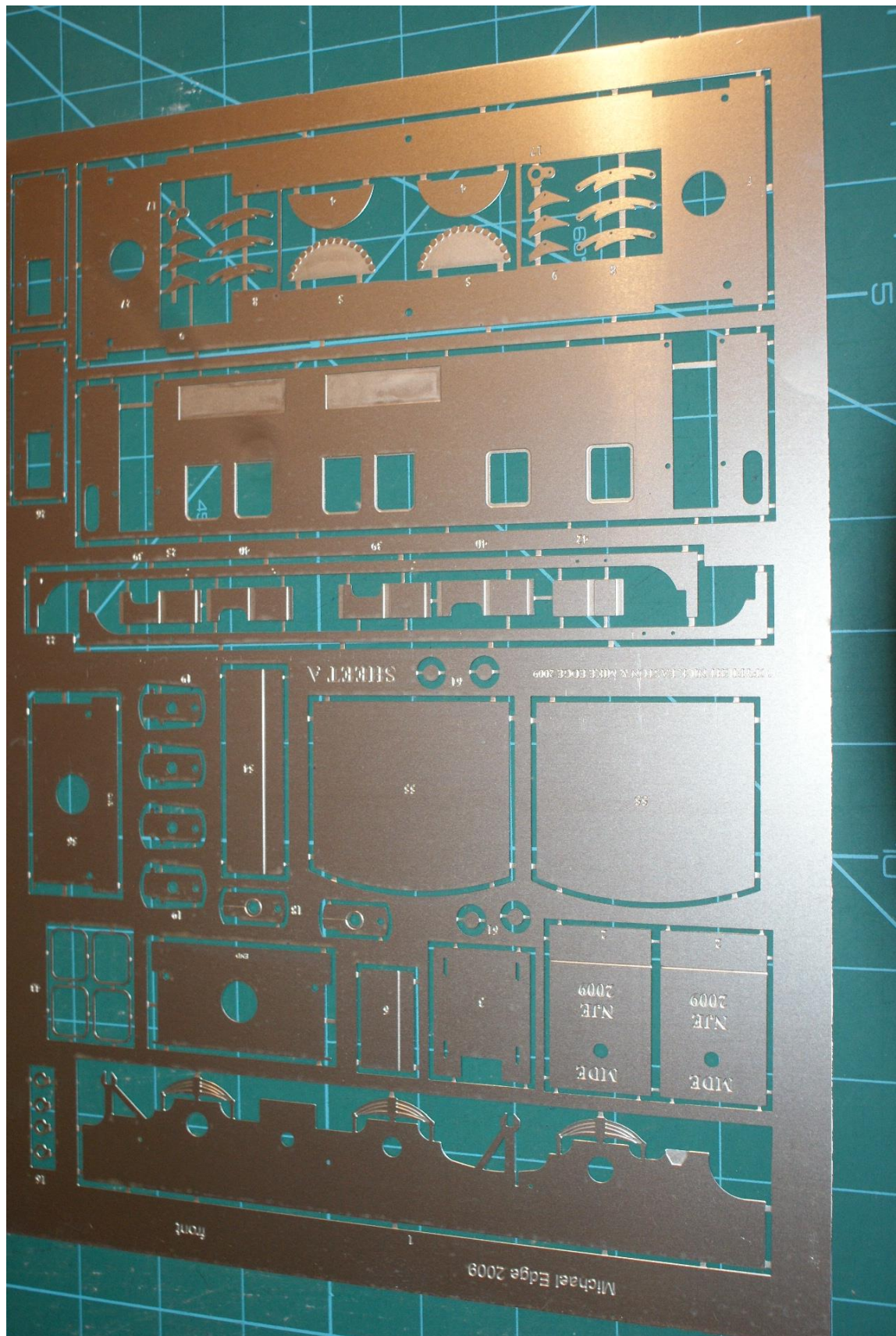
- 16 Solder the brake crank (60) to the end of the shaft and fit onto the pull rods at the other end. Fit the levers (11) to the end of the lever (12) making sure that it is just below the top of the frames. Trim back all the wires.
- 17 Solder the engine floor (53) with the wide part to the rear about 27mm from the rear of the chassis. Glue two pieces of 12mm dowel about 40mm long vertically to the rear of this plate. Glue the two halves of the engine block together and fit to the front of the plate. It may be necessary to cut away some of the underside of the engine block to clear the gears
- 18 PCB and phosphor bronze wire is supplied for the pickups. I use one piece on the frame spacer for the hydraulic motor part(3) and one piece on the vertical frame spacer (6)

Alternative method using a Master Chassis. By Phil Atkinson of Hobby Holidays

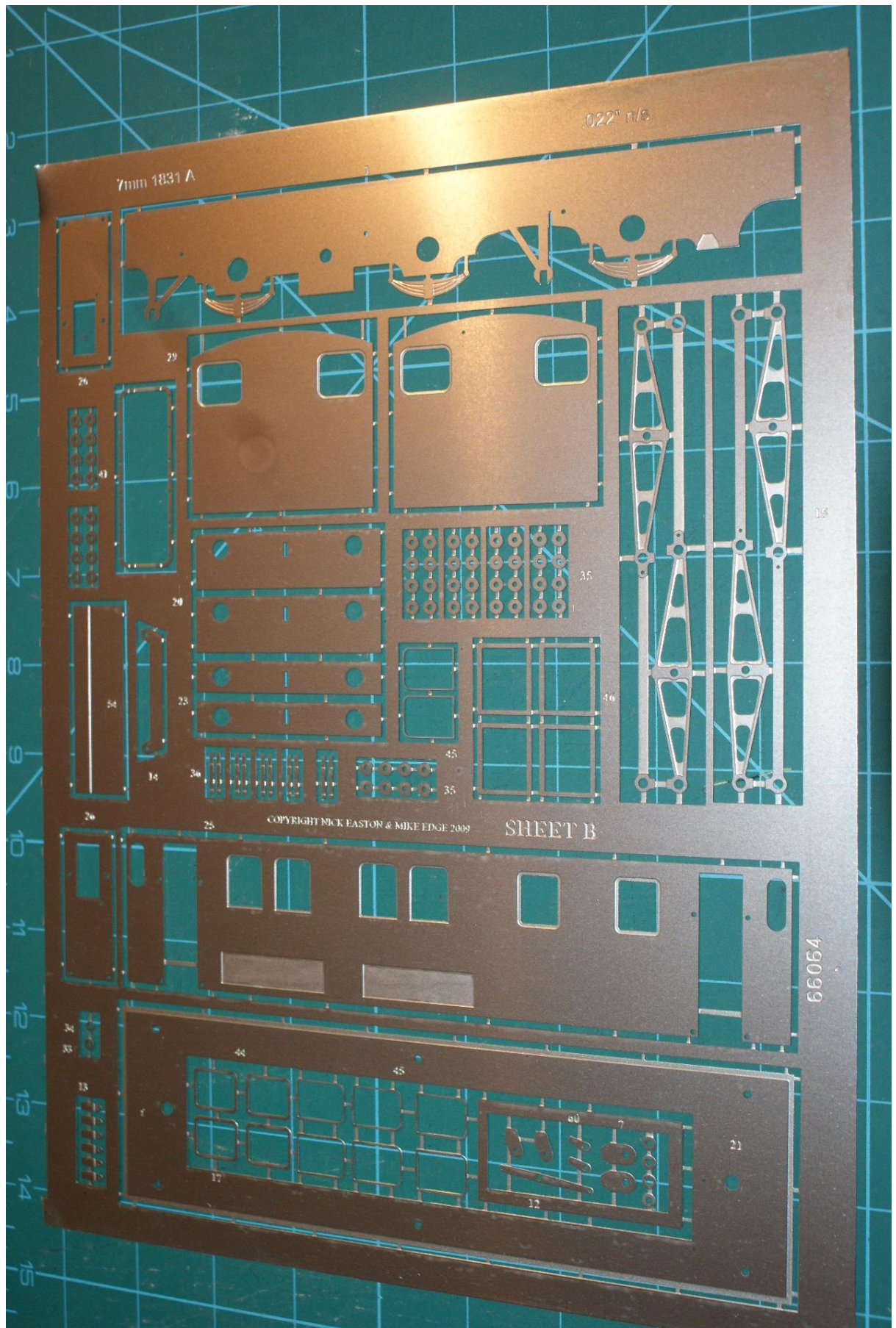
- 19 Before building the chassis, Broach out the holes in the coupling rods(15) to fit the axle spigots of the "Msater Chassis" (MC), make sure to file off any burr created by the broach. Set up the spacing of the MC axles to suit the coupling rods, being careful to keep the straight. Clip together 1 set of coupling rods and solder together, including the extra parts (16) & (17). Make second coupling rod, inc thickenings (bosses) on the correct side. using the same setting of the MC. You now have a matched pair.
- 20 Open out the bearing holes in the chassis to accept the wheel bearings. Place bearings and chassis side onto MC, opening out the main bearing holes so it slides on easily, same with other side. Solder chassis together with its spacers, and finally solder the bearings in place on the MC.
- 21 If using hornblocks follow (19) above, Cut slots for hornblocks and again assemble on the MC, making sure everything slides on and off without any strain.

Part No	Description	Sheet	Part No	Description	Sheet
1	Frames	A & B	2	End frame spacers	A
3	Engine frame spacer	B	4	Motor plate	A
5	Motor overlay	A	6	Frame spacer	A
7	Brake rod support	B	8	Brake Shaft Bracket	A
9	Brake Shoes	A	10	Brake rods	C
11	Brake rods	C	12	Brake lever	B
13	Brake hanger brackets	B	14	Brake stretcher	B
15	Coupling rods	B & X	16	Boss	A & X
17	Centre boss	A & X	18	Crank top layer	A
19	Crank lower layers	A	20	Buffer beam	B
21	Footplate	B	22	Valances	A
23	Buffer beam overlay	B	24	Valance overlays	X
25	Body side	A & B	26	Doors	A
27	Body floor	A	28	Body front	B
29	Body rear	B	30	Roof	C
31	Vent top	C	32	Vent layer	C
33	Water Filler top	B	34	Water filler bottom	B
35	Pipe flanges	B	36	Lampirons	X
37	Whistle brackets	C	38	Steps	C
39	Rear step	A & X	40	Front step	A & X
41	Ladder	B	42	Back step	A
43	Front & rear window frames	A	44	Window frames	B
45	Window frames	B	46	Sliding window frames	B
47	Louvres	C	48	Vent detail	C
49	Middle balance weights	C	50	Leading balance weights	C
51	Leading balance weights	C	52	NOT USED	C
53	Engine floor	C	54	Spacer	A
55	Cab back	A	56	Cab floor	A
57	Rear guard overlays	C	58	Front guard overlays	C
59	Window blanking plates	C	60	Brake crank	B
61	Sandbox lids	A	62	Manifold flanges	
63	Radiators	X	64	Radiator centres	X
65	Spacing jig	X	66	Spacing jig	C

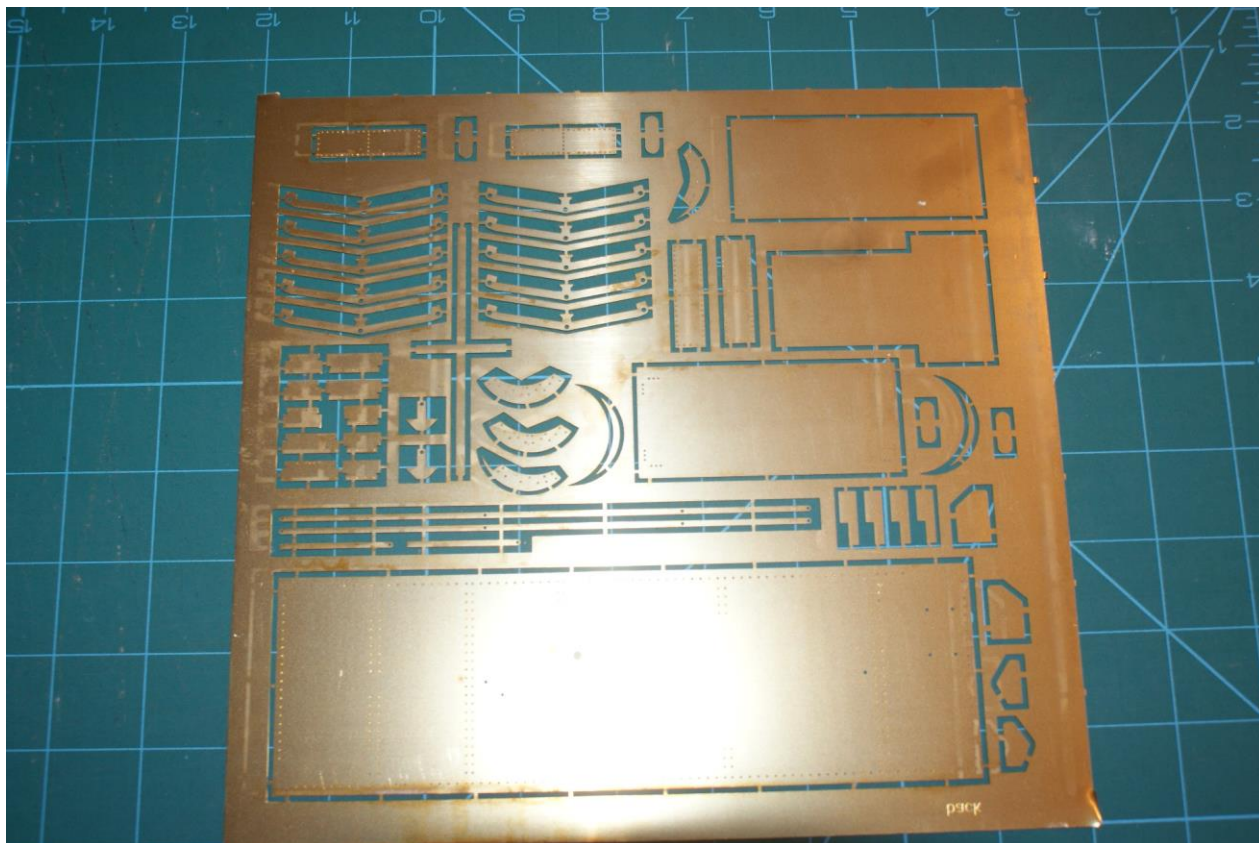




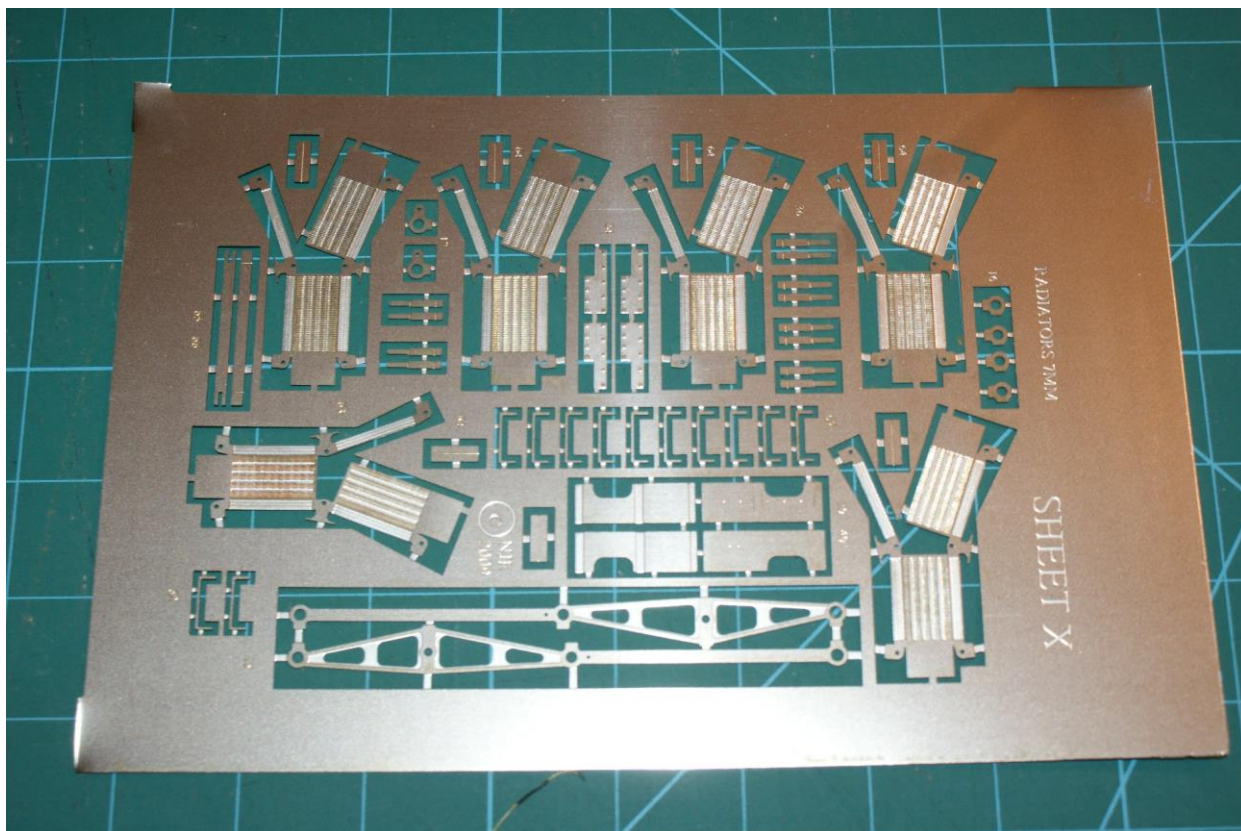
Etched Nickel Silver Sheet A



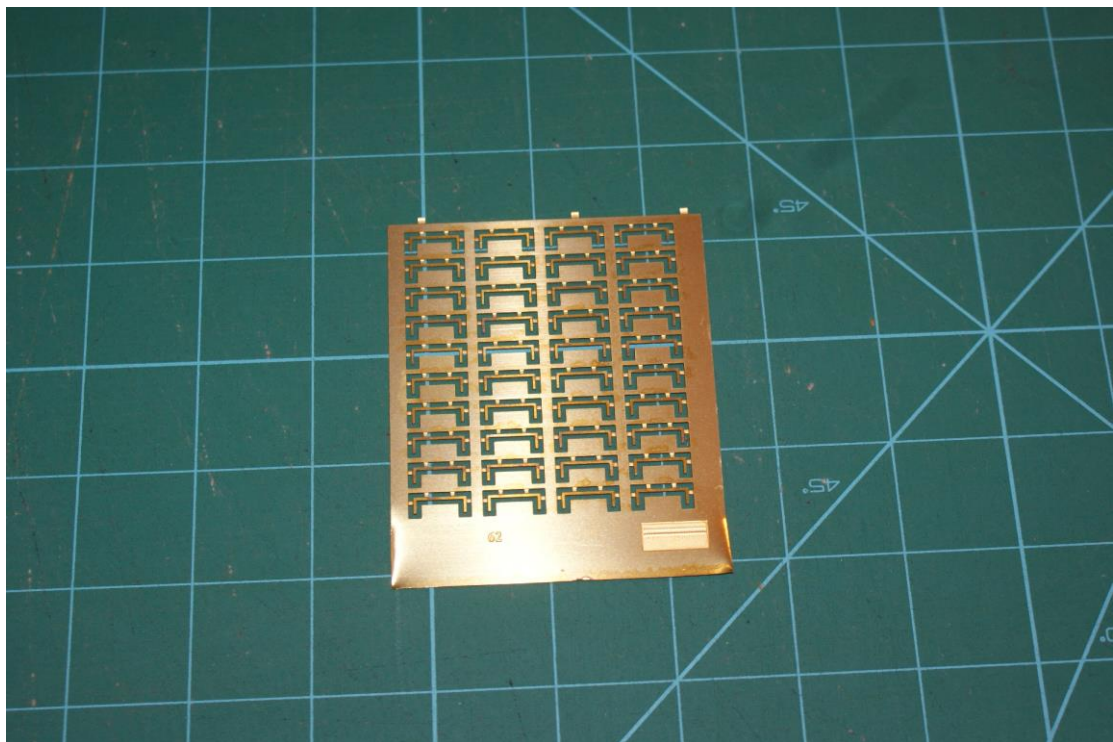
Etched Nickel Silver Sheet B



Etched Brass Sheet C



Etched Nickel Silver Sheet X



Etched Brass Manifold Flanges