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BRL-10000 Class 10000

Building Instructions



**SCALE MODEL PRODUCT FOR ADULT MODELLERS ONLY.
WHITE METAL CONTAINS LEAD WASH HANDS AFTER USE.
MAY CONTAIN SMALL PARTS. ETCHED BRASS HAS FUNCTIONAL
SHARP EDGES - HANDLE WITH EXTREME CARE**

Thank you for purchasing this kit.

This instruction pack should provide an easy to follow guide for building this model given some experience of soldering and the basics of etched kit construction.

Drawings and photos are essential for builders to acquaint themselves with the prototype they wish to model.

For builders of modern image in 7mm, consider joining MIGO+1, the Modern Image Gauge 0/1 organisation. For more details see the MIGO+1 website at www.migo.org

10000 | 1



10000 | 2

Bonnet Tops



10000 | 3

Hans x 2



10000 x 4

Use Cylinders x 4



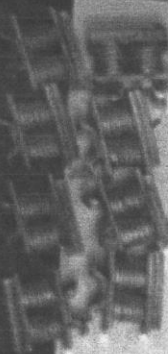
10000 | 5

Bogie Sides x 4



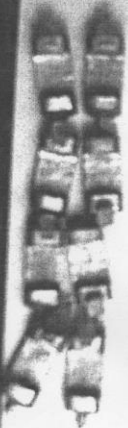
10000 | 6

Coil Spring Units x 8



10000 | 7

Sand Boxes x 8



10000 | 8

Buffer Springs x 4



Screws/Nuts/TAS

x 2



STEAM HEAT PIPES

x 2



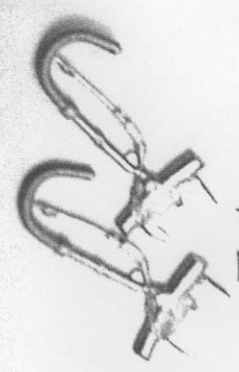
CAB SEAT SUPPORTS

x 4



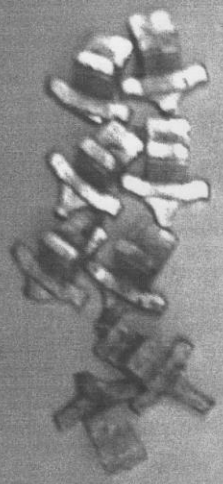
UAC PIPES

x 2



10000/611

Boyle Leaf Springs x 8



10000/a
Roof fangs x 2



Mu knuckles
x 8



Buffers locs dual
x 4



FRAM Bushes
x 12



3 1/4
Guard Irons x 4



Screw Couplings
x 2



Nylon Screws
x 2



Identification of Parts

1. The Etches.

Etch A The Main Body Etch
Etch B Locomotive Detail
Etch C The Power Bogies

2. The White Metal Castings.

3. The Miscellaneous Parts.

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LOCOMOTIVE CONSTRUCTION

Soldering

The Etches

The Castings

The Motor Bogies

Side Frames and Bogie Castings

Body Construction

Soldering

Much has been written on the subject of soldering and the basics remain unchanged. Cleanliness, well fluxed, plenty of heat and a good joint should result.

After soldering, it is advisable to scrub the model clean using an old toothbrush in a container of warm water and cream cleaner. This will prevent harmful fluxes damaging subsequent surface coatings. Although adhesives may be used to join some parts together, soldering is by far the strongest and neatest way of making this model.

Irons.

For soldering in the channels or angles, a 75w iron is advisable, which in conjunction with a soldering iron controller (a dimmer switch is a cheaper alternative) can be used for most of the remaining brass work. One drawback with the 75w is its tip size, and the most common iron in use for 7mm working is the 40w, however for the white metal work a 25w iron should be used. A recent addition is the Resistance Soldering Unit (RSU) which is very useful on the smaller brasswork as it develops localised heat very quickly.

Flux.

La-Co is a non-corrosive flux for use on most metals including brass or the phosphoric acid/water liquid flux can be used to provide more 'bite' if necessary and is particularly effective for white metal. When operating the RSU, solder paint is generally used.

Solder.

For all general work with nickel silver and brass use electricians multi-core which is available in large reels. For white metal use the 73 degree low-melt variety. As mentioned above, solder paint, which is a combination of flux and solder is effective with the RSU on thin brass overlays and the smaller parts where localised heat is required.

Three tips for soldering:

- a) A damp sponge kept in a plastic margarine (or similar) container is useful for keeping the tip of the iron clean.
- b) If the solder paint thickens over time, then adding a little water should restore it to use again.
- c) The sequence of soldering the body reinforcement strip as illustrated below may help to prevent distortion.

The Etches.

Study the identification pages to familiarise yourself with the many parts and push through any rivets represented by half etch holes on the rear of the fret. Separate the etches with a pair of small snips, finishing off with files, remembering to file along the etch and not across which may distort it.

When forming the etches, unless otherwise instructed, the fold lines are on the inside. A pair of bending bars or a vice with lengths of angle iron may be found helpful with these operations.

The Castings.

Flash on the castings will need removing with a coarse file and sand-paper.

MOTOR BOGIES.

Introduction.

The motor bogies in this range of models are of a standard type with an inner 'U' section chassis and outer cosmetic sideframes. The steel wheels have a small nylon bush at one end of the axle to allow pick up via the live chassis.

The model will run on one motor but for increased traction and better adhesion, the use of two motors plus a Delrin chain set is recommended.

When assembling the bogies remember the following points:

Although the motors as supplied have fixing screws, the motor body may not be tapped to take them. See Motors, Gears and Delrin.

Ensure that the insulated wheels and fibre washers on bogie one are opposite to those on bogie two.

Whilst the wheelbase is 56mm from middle to outer axle centre and 54 mm from the middle to inner, check the wheel centres against the bogie sideframes.

The sideframes have to be the same length as the chassis to couple with the crossbraces and when placed back to back, the ends of the castings will be found to be unequal in length. File square, and place the side frame against the chassis e38 before cutting it to length.

Construction.

The Chassis.

Bearings and Wheels

Motors, Gears and Delrin

Sideframes and Castings.

The Chassis.

When happy with the sideframe to chassis length cut e38 as marked. The chassis can now be folded along with the saddles e36 & e37 which determine the wheelbase.

Solder in the saddles followed by the bulkheads e33 ensuring the cut-outs for Delrin are in line. The pivot overlay e42 can now be folded and soldered on the top as shown, however it may be necessary to omit this item from the assembly if the body sits too high. The key to deciding this is that the buffers are at the correct height above rail.

Bearings and Wheels.

For the wheels to be true and level, the top hat bearings must be soldered in on a flat surface such as a piece of plate glass. The bearing holes may need enlarging and a tapered reamer is ideal for this. Whilst the outer bearings are

soldered to the chassis, the middle ones are left to float and the etched washers e34 are soldered on the inside of the bearing instead.

Fit the bearings and wheels and when happy that everything is true and square, solder the outer bearings in place followed by the middle ones. The pin points on the axles have to be removed until they are flush with the wheels. Remember when fitting wheels that the fibre washers are placed at the insulating wheel end to prevent shorting.

Motors, Gears and Delrin. (Not supplied in kit)

The can motors as supplied have fixing screws but the motor body may not be tapped to take them. Dismantling them is an easy task as described below.

Simply remove the brushes and springs from top of motor and prise back the two securing lugs. Pull up the motor top and remove the armature noting the number of packing washers under it. Tap the holes 2.5mm and be sure to remove all the swarf.

Re-assembly is the reverse of above.

Now check that the fixing holes in chassis top line up with motor and enlarge if necessary. Referring to page 16, the brass sleeve m9 fits inside the steel worm m10 ensuring that it is proud by 2.5mm at the shouldered end. For the worm to grip onto the motor shaft, use a 3/32 drill and bore a hole through the brass sleeve in the side of the worm and tap 6BA.

By enlarging the hole in the chassis top, the motor complete with worm can be fitted or removed with ease. Fit the motor followed by driving axle and brass gear m11 adjusting as necessary to produce a good mesh. Sometimes, inserting a shim of scrap brass between one end of the motor and saddle can improve this. Fix solder tags m2 to inside ends of chassis. Before continuing it is advisable to test the bogies.

Fit wheels, attach wires and couple up to a nylon terminal block. If the motors turn in different directions swap the motor wires on one bogie.

Note : Do not fix the Delrin cogs at this stage as once in place they are not easily removed. The chassis can now be dismantled and along with the wheels, painted before final assembly. If fitting Delrin note:

- that the cogs are in line with the bulkhead cut-outs
- they are fitted to the outer axles
- you may have to file the shank of the cog if there is insufficient room on the driving axle.

The bogies can now be reassembled.

Useful Tip : Use Loctite Lock 'n' seal to prevent the wheels unscrewing.

Sideframes and Bogie Castings.

Solder the transverse and coil springs c2 & c3 and the sandboxes c5 to the bottom and back of the sideframes. Carefully fold and solder the two parts of the etched bogie step e7 & e14 together and fit onto the sideframe ensuring they line up with the cab door.

There are several ways of fixing the side frames:

Build up with the crossbraces and solder in as one unit

Solder an additional brace to the ends of the chassis, drill and secure with nuts and bolts

Fix crossbraces to ends of chassis then couple to the side frames.

Note:

The inside face of the sideframe will need a considerable amount of white metal removed as the springs and sandboxes will foul the wheels.

Before spraying, add a spot of maskol where you intend to solder to keep that area clean. Ensure the side frames are horizontally and vertically central before fixing.

Finally fit the life guard irons c10 at the front of the bogies

Now the completed bogies can be laid to one side until the body construction is complete. When they are fitted, the following points should be noted:

Before fitting the nylon bogie attachment screws m5, it may be necessary to enlarge the hole in the top of the chassis. To ensure the thread in the pivot nuts is clear, tap 4BA.

Ensure the bogie does not foul on the coupling hook, if it does you may have to remove a section of the chassis front with a cutting disc on a mini-drill.

It may be necessary to omit the pivot overlay if the body sits too high. The key to deciding this is that the buffers are at the correct height above rail.

Body Construction.

When the roof and tumblehome have been shaped, cut the brass reinforcement strip to 292mm and fold to a right angle. This is soldered above the tumblehome between the cab doors as shown on page . Note that both the right angle strip and body must be well supported whilst soldering.

Roof Fan Assembly.

Solder in the grille e9 over hole in roof, bending slightly to accept curvature. The fan blades e6 should be bent as shown. The roof fan top e5 includes strips on each side that should be bent down and out to pass under opposite blades of the fan and the two soldered together. The completed assembly is positioned centrally under the roof grille with the ends of strips soldered to each side of the roof.

The radiator shutter panels e26 can now be folded as shown. The flaps can be bent to 30 degrees if required and the unit soldered on the inside of the body.

Bogie Mounting Stretcher Assembly.

Laminate e35 and e41 together noting that the sides of e35 are folded up. Solder nut m4 onto the inside of the pivot box e32, the fold and solder this to e35. Trim the ends of the assembly and note that as the bogie pivot hole is off centre, remember to add or subtract this from the bogie to bogie measurement of 246mm. To ensure the bogies look and sit square, be certain to keep the bogie stretchers parallel and true before and during soldering.

Solder the stretchers into place before attaching the insulated pad m13 (this insulates the body from the chassis). Now run a 4BA tap through the pivot nut to clear the thread.

Underframe Assembly.

Fold up the underframe assembly e11, and solder the girder units e12 into the slots provided. The battery boxes e17, have the longitudinal bottom flanges attached and are soldered to e11 and e12. Fit the vacuum cylinder linkages e21 and the cylinders c12. Finally solder the finished assembly centrally into the body.

Cab Ends.

Noting that the body narrows at the ends, form the front ends e22 using the bonnet c11 as a guide and solder both to the body.

Some degree of fettling may be required to get the castings to fit.

Now fit the cab roof c4, the gangway door and centre strip e28 & the buffer beam e24.

Now the body is rigid, the rest of the detail can be soldered on.

The Body Detail.

The detail can now be added. Solder on the engine access doors e13 and exhaust outlets e 20. The cast roof fairings c16 and roof panels e18 and e19 are next noting that they are placed at the no. 2 end. Now solder the horns c7 and the cab vent hoods c8 into place, this completes the roof detail.

The cab handrails are of three different lengths e15, e27 and e31, and holes are provided in the body to allow soldering from the inside. The door handles, windscreen wipers and nose grab handles can be made from wire. Depending on your choice of livery you may wish to fit the nose grab handles after lining out.

Nose Detail.

The cast buffer bodies c9 are drilled out firstly to the diameter of the shank and then to a suitable depth and diameter of the oleo section (this is best done after the castings have been soldered in). The buffer steps e16 sit on top of these castings.

The loop provided on the buffer M1 may need carefully drilling out, these are provided to accept a wire passed through the hole in the coupling hook and running to each buffer loop. Solder in drawbar plate e 23 and coupling banger plate e25 on the buffer beam followed by m.u. sockets c13, vacuum pipes c14 and steam heat pipe c15.

Any holes or imperfections can be filled with low melt solder or car body filler. Interior detail can be built using plasticard for both bulkhead and cab floor and using seat parts c6 and e10 and handbrake wheels e8. After painting your model use scrap pieces of card as templates for the glazing before final fixing with blu-tack and epoxy.

Paint the brass numerals/ letters as appropriate and glue in place.

Please note : Not all parts are grouped together or on the same etch.

ETCH A

1. Loco Numbers	4	6. Roof Fan	1
2. LMS lettering for 10000	2	7. Bogie Steps	2 + 2 on etch B
3. Main Body	1	8. Handbrake Wheels	2
4. Cab Windows	2	9. Roof fan grille	1
5. Fan Top	1	10. Cab Seats	4

ETCH B

11. Underframe assembly		22. Front End	2
12. Longitudinal girder units	2	23. Drawbar plate	2
13. Engine access doors	4	24. Buffer Beam	2
14. Bogie steps (2 on etch A)	2	25. Coupling banger plate	2
15. Cab handrail (short)	4	26. Radiator shutter panel	2
16. Buffer steps	4	27. Cab handrail - medium	4
17. Battery box	2	28. Gangway door centre strip	2
18. Roof panel - small	2	29. Lamp brackets	12
19. Roof panel - large	1	30. Windscreen wiper arms	4
20. Exhaust Outlets	4	31. Cab handrails, long	4
21. Vacuum cylinder linkage	4		

ETCH C

This bogie etch is one of two

32. Pivot Box	2	38. Chassis	2
33. Bulkhead	4	39. Crossbrace outer	2
34. Centre axle washer	4	40. Crossbrace Inner	2
35. Folding bogie mtg stretcher	2	41. Bogie mtg. Stretcher	2
36. Saddle, motor end	2	42. Bogie pivot overlay	2
37. Saddle, outer end	2		

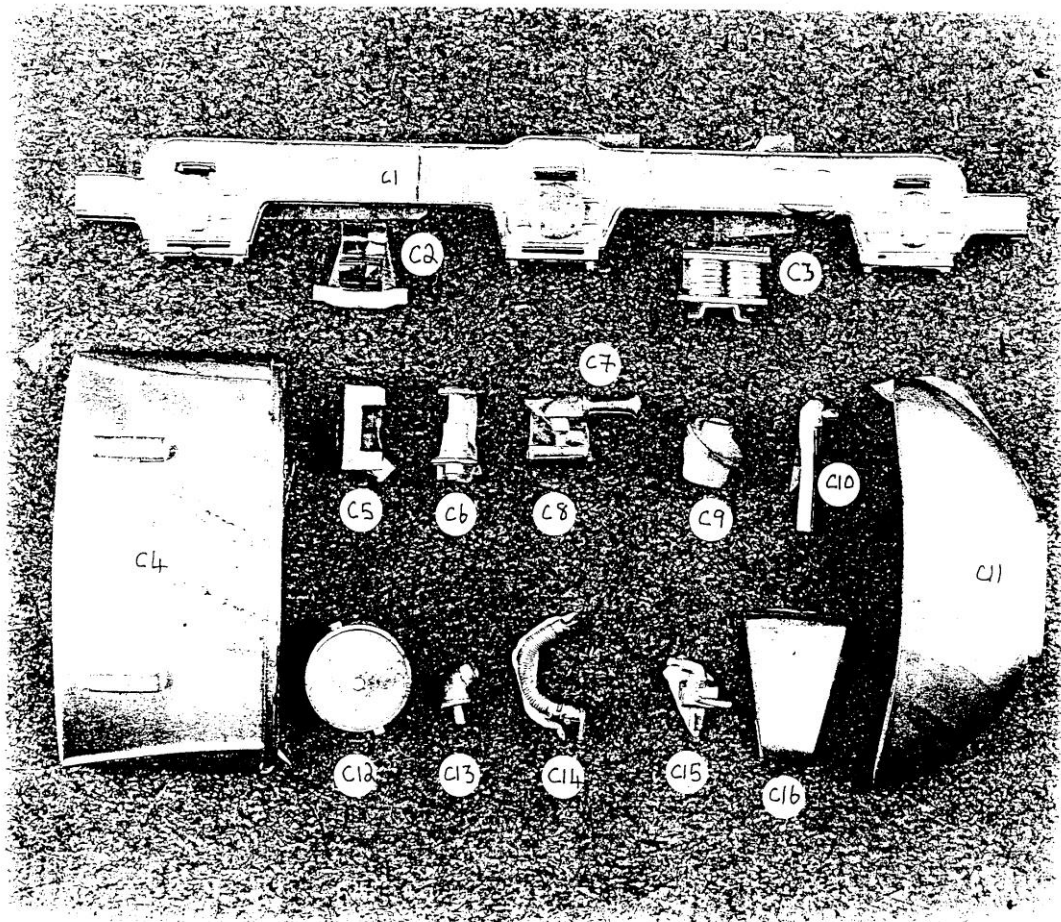
The White Metal Castings

C1	Sideframe	4	C9	Buffer	4
C2	Leaf Spring	8	C10	Guard Iron	4
C3	Coil Spring	8	C11	Bonnet	
2					
C4	Cab Roof	2	C12	Vac. Cylinder	4
C5	Sandbox	8	C13	M. U. Socket	8
C6	Cab seat support	4	C14	Vac. Pipe	2
C7	Horn	2	C15	Steam heat pipe	2
C8	Cab Vent Hood	2	C16	Roof Fairing	2

Miscellaneous Parts for 10000

M1	Lost wax buffer with spring	4	M9	Steel Worm	
M2	Solder Tag	2	M10	Brass Gear	
M3	Nut & Bolt for above	2	M11	Delrin chain (extra to	
	kit)				
M4	Pivot Box Nut		2	M12	Delrin Cog (extra
	to kit)				
M5	Nylon screw	2	M13	Insul Pad	
M6	Brass wheel bearing	12	M14	Steel Wheel 3'7"	
M7	Can Motor	2	M15	Axle with ins. Wheel	
M8	Brass sleeve	2			

Not illustrated: Brass strip, clear plastic fibre washers, motor fixing screws, worm & gear screws, screw couplings.

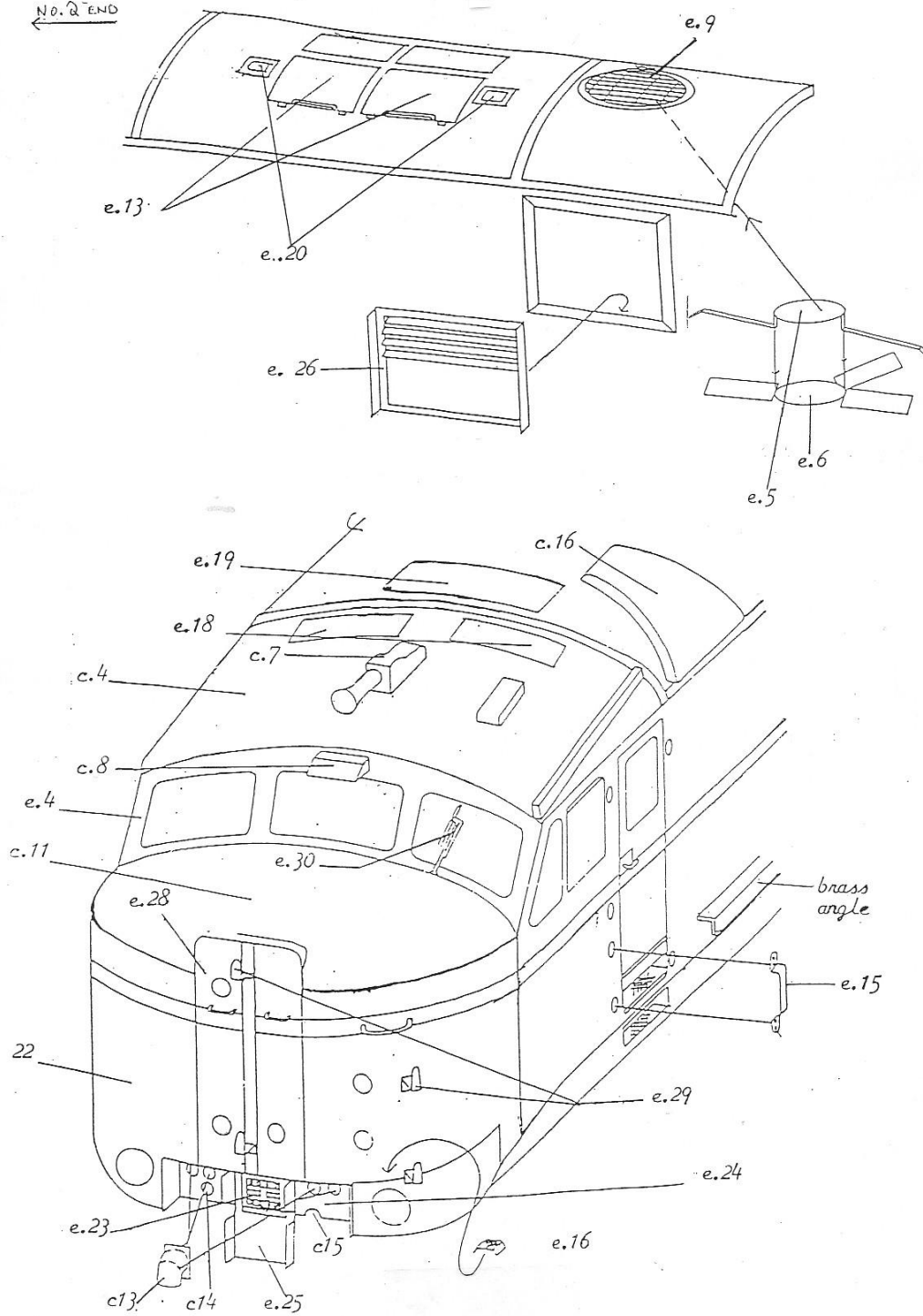


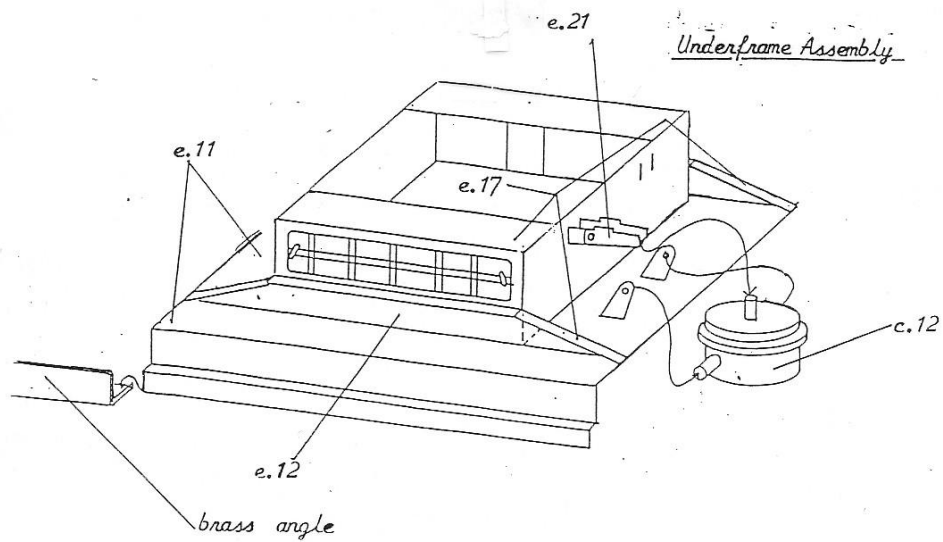
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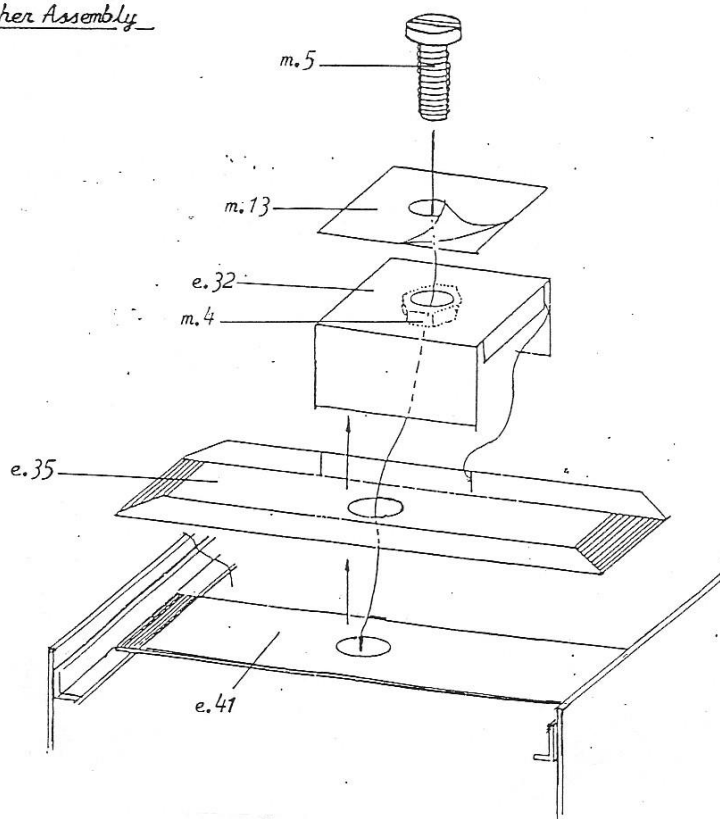
e. = etched, c. = cast

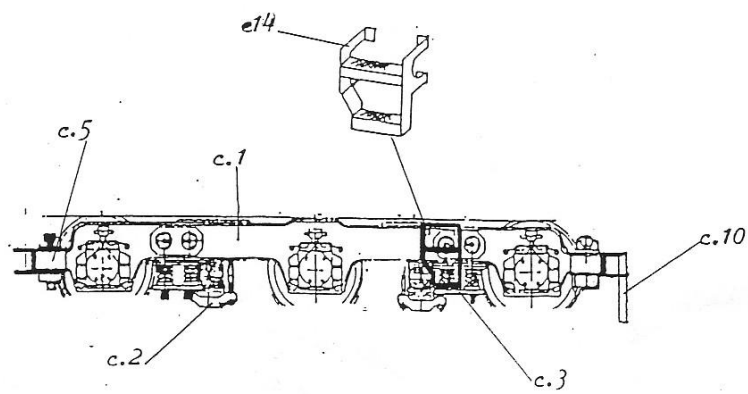
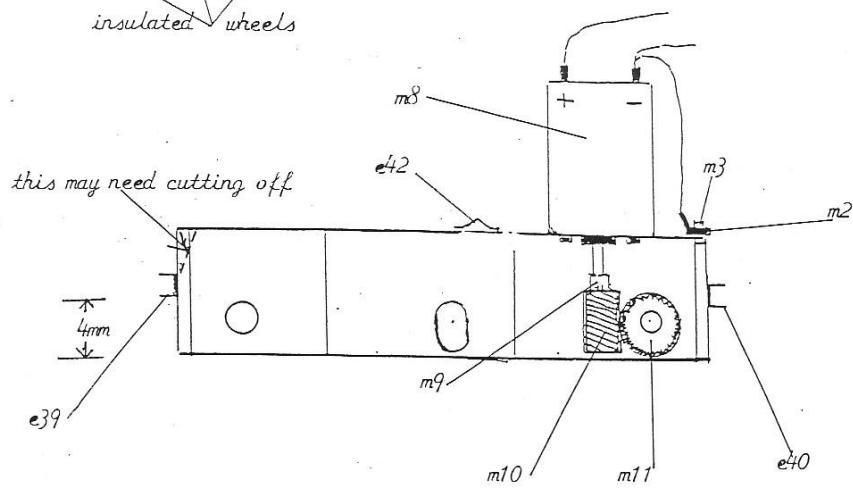
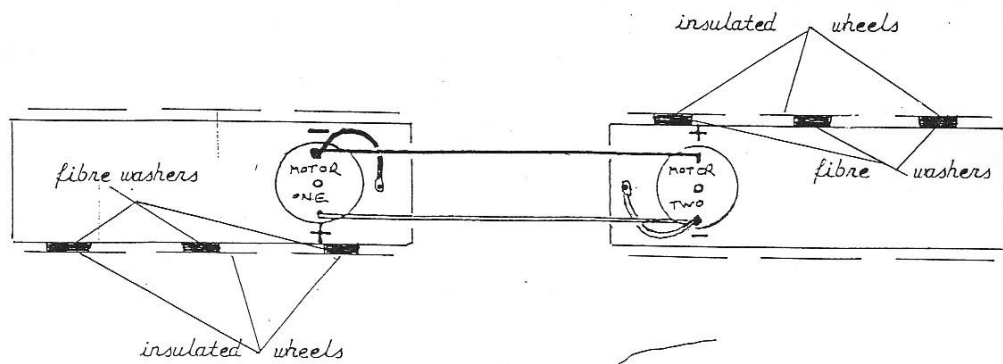
NO. 2 END

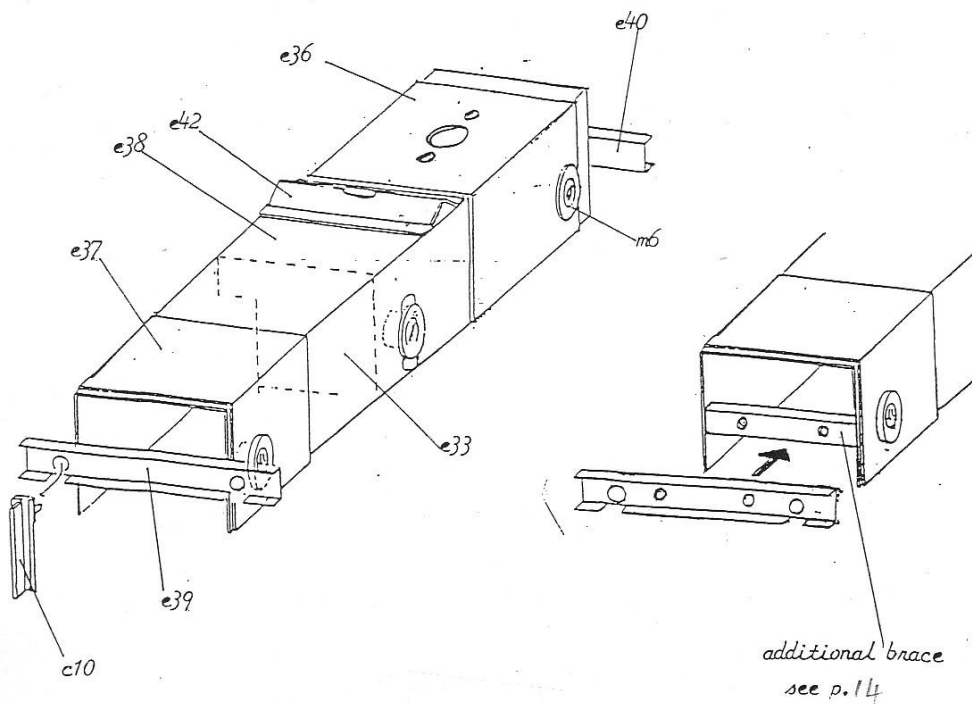
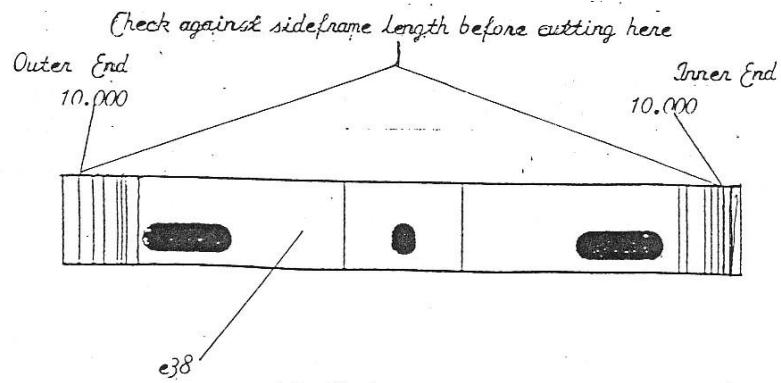


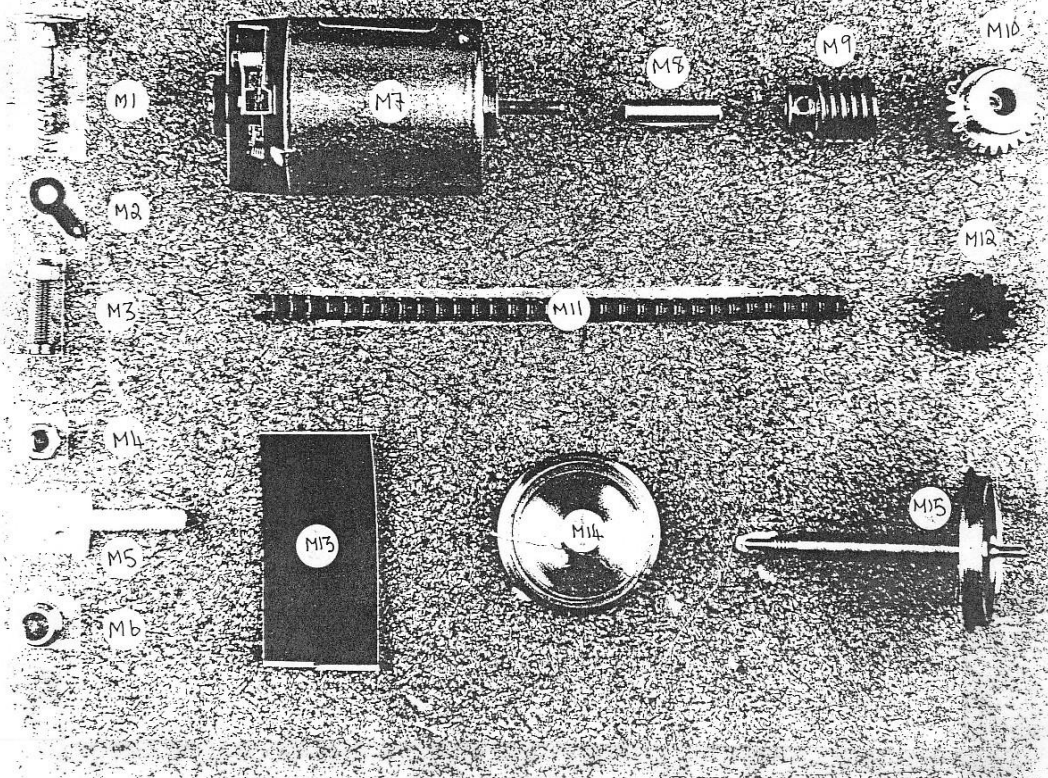


Bogie Mounting Stretcher Assembly





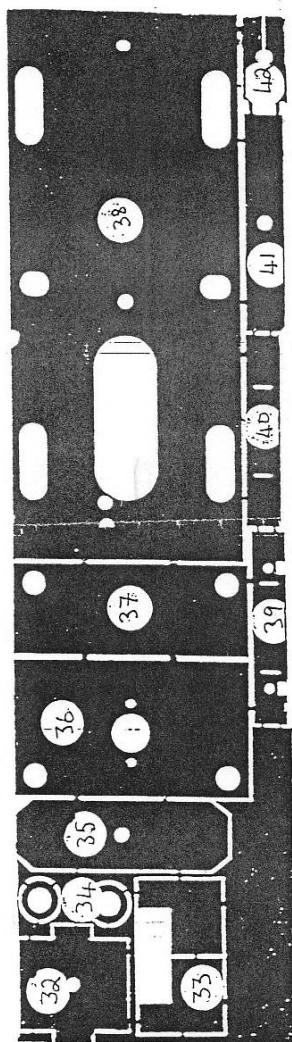




Miscellaneous Parts for 10000

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M2	Solder Tag	2	M10	Brass Gear (extra to kit)
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M4	Pivot Box Nut	2	M12	Delrin Cog (extra to kit)
M5	Nylon screw	2	M13	Insul Pad
M6	Brass wheel bearing	12	M14	Steel Wheel 3'7" (extra to kit)
M7	Can Motor	2 (extra to kit)	M15	Axle with ins. Wheel (extra to kit)
M8	Brass sleeve	2 (extra to kit)		

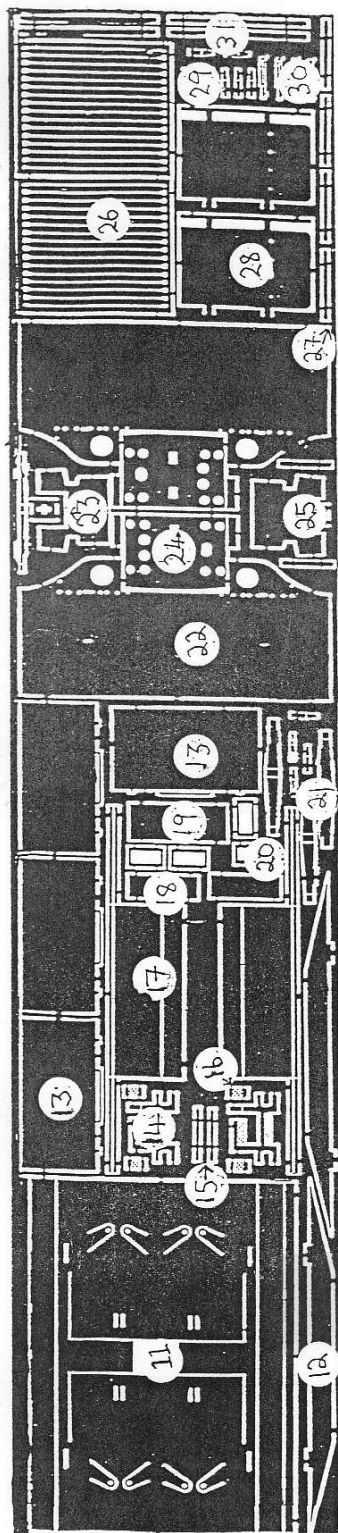
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ETCH C

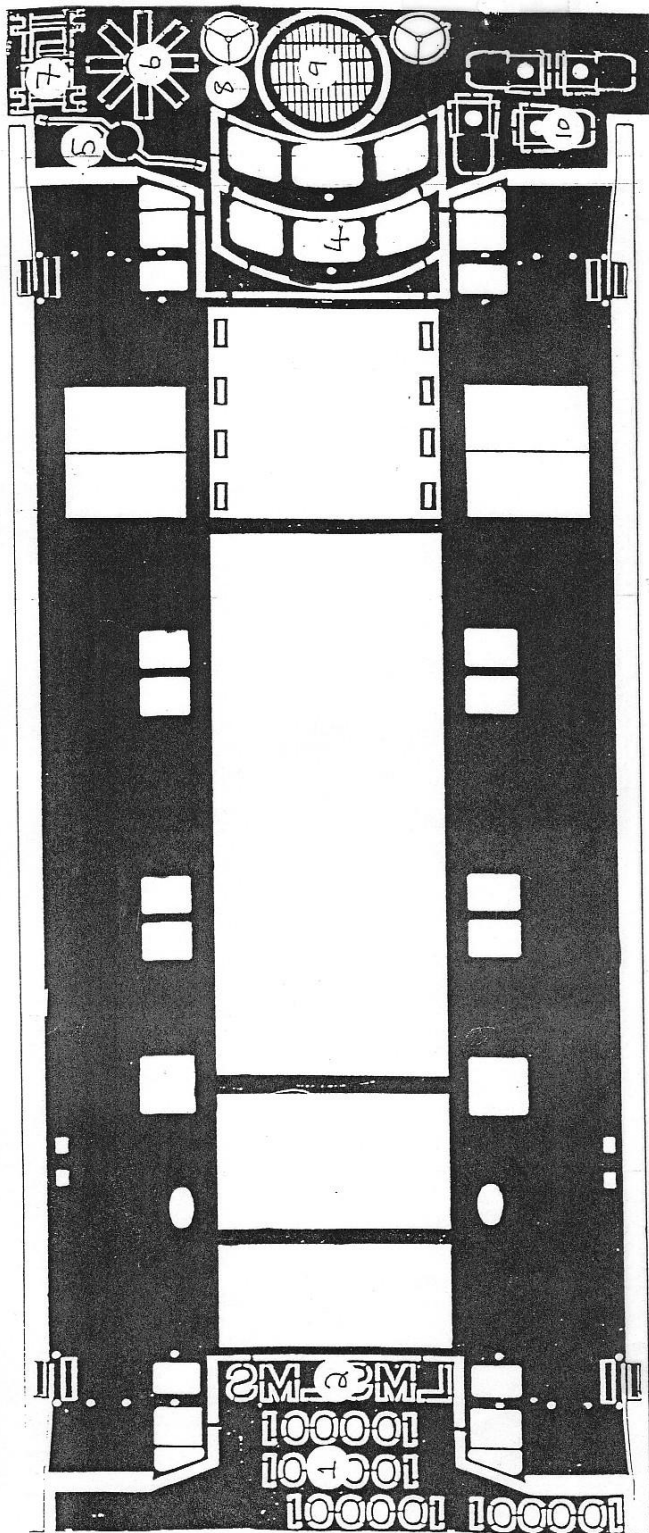
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36. Saddle, motor end	2	42. Bogie pivot overlay	2
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ETCH B

11. Underframe assembly	
12. Longitudinal girder units	2
13. Engine access doors	4
14. Bogie steps (2 on etch A)	2
15. Cab handrail (short)	4
16. Buffer steps	4
17. Battery box	2
18. Roof panel - small	2
19. Roof panel - large	1
20. Exhaust Outlets	4
21. Vacuum cylinder linkage	4
22. Front End	2
23. Drawbar plate	2
24. Buffer Beam	2
25. Coupling banger plate	2
26. Radiator shutter panel	2
27. Cab handrail - medium	4
28. Gangway door + centre strip	2
29. Lamp brackets	12
30. Windscreen wiper arms	4
31. Cab handrails, long	4



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ETCH A

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