
Stockists of 7mm Modern Image Kits

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BRL-055 Class 55 DELTIC

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

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 washing up liquid. 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.

This model is in a flat-pack form and is secured to its hardboard backing with clear tape. Care must be taken when removing it. A residue may be left which needs cleaning off with a solvent such as cellulose thinner or similar.

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 on bogie one are opposite those on bogie two. Although the bogie centre to centre measurement is 315mm and the wheelbase is 47.25mm, check the wheel centres against the bogie sideframes.

The chassis and sideframes have to be the same length to couple with the crossbraces but the sideframe castings when put back to back will be found unequal in length. File square, place the sideframe upper c1 against the chassis e41 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 e41 as marked. The chassis can now be folded along with the saddles e39 & e40 which determine the wheelbase.

Solder in the saddles followed by the bulkheads e36 ensuring the cut-outs for Delrin are in line. The pivot overlay e45 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 e37 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 noting that the pin points on the axles have to be removed until they are flush with the wheels.

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. 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 sideframe upper c1 and sideframe lower c2 together. Fit the bogie air cylinders c9 noting their position before soldering. Finally carefully fold and solder the two parts of the etched bogie step e26 & e31 together and fit ensuring that it lines 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

As above, 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:

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 c6 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 nut is clear you may need to run a 4BA tap through.

Ensure the bogies do not foul on the fuel tanks, if so you may have to remove a section at the top and rear of each chassis with a cutting disc on a mini-drill.

You can also avoid shorting out by shaping and sticking pieces of black insulating tape to the ends of the tanks after painting.

It may be necessary to omit the pivot overlay e44 if the body sits too high. The key to deciding this is that the buffers are at the correct height above the rail.

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Body Construction.

Whilst shaping the body the following points should be noted:

The body reinforcement strip is an integral part of the main body etch and should be folded as shown.

The bonnet tops are attached to the main body etch on one side and when forming the nose ends ensure that the assembly tapers in from the cab doors forward.

Fold and solder the three fuel tank stretchers e19 onto the half etched marks inside the body noting that the stretcher with four slots goes in the centre position.

Form the nose ends by soldering the bonnet top, nose top c4 and front end e1 together. The cast windscreen c3 can now be soldered in and some fettling may be required to get a good fit. Fit the cab doors e22 from the inside and cut lengths of wire to make door handles. Cut the engine exhaust and roof grille mesh and solder to the inside of the roof. The fan blades e30 should be bent as shown. The roof fan top e27 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 assemblies are positioned centrally under the roof mesh with the ends soldered to each side of the roof.

Laminate the bogie mounting stretchers e38 and e44 together noting that the sides of e38 are folded up. Solder nut m4 onto the inside of the pivot box e35 and fold and solder this to e38, trimming the ends of the assembly as necessary. The wheelbase is 47.25mm and note that the bogie centre dimensions relate to the middle of the centre axle.

With the pivot holes being off-centre, remember to add or subtract this from the bogie to bogie centre measurement of 315mm.

Solder the assembled bogie mounting stretchers in place before attaching the insulated pad m13, this insulates the body from the live chassis. Now run a 4BA tap through the pivot nut to clear the thread.

Fuel Tanks.

Fold up the tank units e2 noting that the tanks with gauges go to the left (no.1 end) on both sides. The etched brackets e8 (four per tank) fit both to slots in underside of body and the top of the tanks.

Body Detail.

Starting with the roof fans, solder the fan frames e29 in place followed by folding and fitting the fan walkways e25. The roof beading e28 can now be bent and soldered to the roof as illustrated.

Locate and solder in the bodyside window frames e34, small grilles e23, large grilles e33 and cabside window frames e32 in the recesses provided.

Solder the hinges e17 on to the bonnet doors e18 and fix the assemblies onto the top of the bonnets. The marker light panel e7 can now be folded and located on the front panel e1 using the slots provided. An optional headcode number style panel e14 is

included that can be fitted over e7 if desired. Solder the handbrake levers e16 and note that to avoid contact with the live bogie and subsequent shorting out these may have to be bent outward. The cab step backplate e20 fits behind the cut out under the cab door. Fold and fit the buffer beam e3 to tabs on the rear of the front end panel e1. Solder windscreen wipers e11 to front of windscreen making blades from wire.

Nose Detail.

The following parts can now be fitted as illustrated.

Lamp brackets e4, destination board brackets e6, step backplate e9, top lamp brackets e10, these fit into the central hole in the nose top casting c4, corner step e15 that fits behind the front panel and cast marker lamps c7. Note that two train name boards e13 are included if you wish to fit them.

The cast buffer bodies c5 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 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.

The buffer beam detail can now be added by starting with the drawbar plate e5, coupling banger plate e12 (which fits behind the buffer beam), steam heat pipe c13, vac pipe c15, and air pipes c17. The ETH terminals can now be added, ie live socket c10, terminal c11 and dummy socket c12. Screw couplings are extra. If used, the coupling hook is assembled with the spring and split pin behind the buffer beam.

Any holes or imperfections can be filled with low melt solder or car body filler.

Interior detail can be added by using plasticard for both bulkhead and cab floor and using seat parts c18 and e21. The handbrake wheels e24 are fitted on the bulkhead with a pin.

After painting your model use scrap pieces of card as templates for the glazing before finally fixing with blu-tak and epoxy.

DELTIC ETCH A

1. Front end	2	18. Bonnet Door	2
2. Fuel Tank	4	19. Fuel tank stretcher	3
3. Buffer Beam	2	20. Cabstep backplate	4
4. Lamp Bracket	4	21. Cab seat	4
5. Drawbar plate	2	22. Cab door	4
6. Dest. Board bracket	4	23. Bodyside grille, sml,	4
7. Marker light panel	2	24. Handbrake wheel	2
8. Fuel tank bracket	16	25. Fan walkway	4
9. Backplate	2	26. Bogie step - main	4
10. Top lamp bracket	2	27. Fan top	4
11. Windscreen wiper	8	28. Roof beading	4
12. Coupling banger plate	2	29. Fan frame	4
13. Train nameboard	2	30. Roof fan	4
14. Headcode panel	2	31. Bogie step	4
15. Corner Step	4	32. Cabside window	4
16. Handbrake lever	4	33. Bodyside grille - lge	2
17. Bonnet door hinge	8	34. Bodyside window	12

DELTIC ETCH B (one of two)

35. Pivot box	40. Saddle, outer end
36. Bulkhead	41. Chassis
37. Centre axle washer	42. Crossbrace, outer
38. Folding bogie mtg. Stretcher	43. Crossbrace, inner
39. Saddle, motor end	44. Bogie mounting plate
	45. Bogie pivot overlay

DELTIC - the Castings

C1 Sideframe upper	C10 ETH live socket
C2 Sideframe lower	C11 ETH terminal
C3 Windscreen	C12 ETH dummy socket
C4 Nose top	C13 Steam heat pipe
C5 Buffer	C14 Vac pipe rear
C6 Guard Iron	C15 Vac pipe front
C7 Marker lamp	C16 ETH terminal (alt)
C8 Air Horn	C17 Air pipe
C9 Bogie air cylinder	C18 Cab seat base

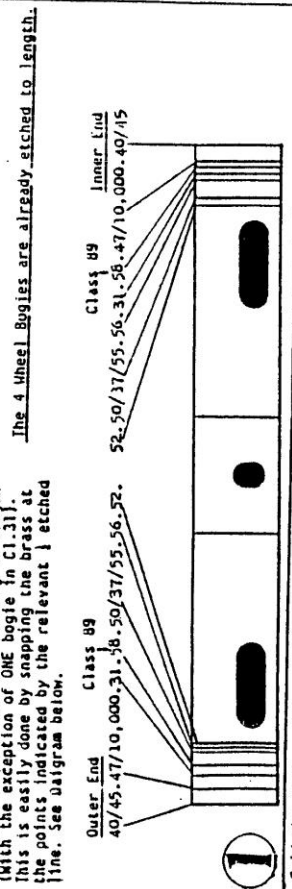
DELTIC - Miscellaneous Parts

M1	Lost wax buffer with spring	4	M9	Steel worm	2
M2	Solder Tag	2	M10	Brass Gear	2
M3	Nut & Bolt for above	2	M11	Delrin Chain	1
	(extra to kit)				
M4	Pivot box Nut	2	M12	Delrin Cog	4
	(extra to kit)				
M5	Nylon Screw	2	M13	Insul Pad	2
M6	Brass wheel Bearing	12	M14	Steel wheel	6
M7	Can motor	2	M15	Axle with ins. Wheel	6
M8	Brass Sleeve	2			

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

4 & 6 Wheel Motor Bogies

Six Wheel Bogies will need cutting to length with the exception of ONE bogie in Cl. 31. This is easily done by snapping the brass at the points indicated by the relevant 1 etched line. See Diagram below.

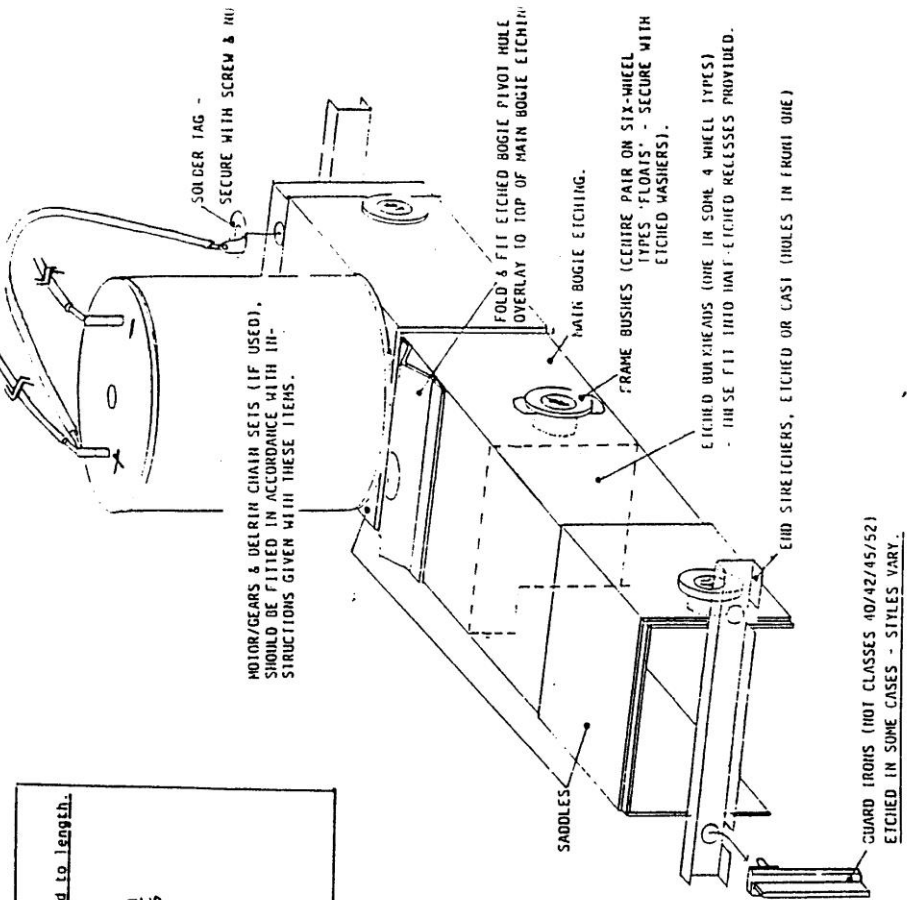


1 Fold the bogie units up into a 'U' section & fold & fit the 'Saddles' over these to give the correct wheelbase. The Wheelbases for the classes are as follows (The figures in brackets are the bogie centres)

- LWS 10,000. - 56mm/54mm. (246mm)
- Class 20. - 59.5mm. (Ready marked in kit.)
- Class 25. - 59.5mm. (196mm)
- Class 26/7. - 70mm. (203mm)
- Class 31. - 49mm/49mm. (202mm)
- Class 33. - 70mm. - (203mm)
- Class 37. - 47.25mm/47.25mm. - (239.75)
- Class 40. - 56mm/56mm. - (239.75)
- Class 42. - 73.5mm. - (264.25mm)
- Class 45. - 56mm/56mm. - (226.5mm)
- Class 47. - 50.75mm/50.75mm. - (259mm)
- Class 50. - 47.25mm/47.25mm. - (298.5mm)
- Class 52. - 42.5mm/42.5mm. - (297.5mm)
- Class 55. - 47.25mm/47.25mm. - (315mm)
- Class 56. - 45mm/49.5mm. (246.25mm)
- Class 58. - 46.5mm/49mm. - (234.5mm)
- Class 73. - 61.25mm. - (224mm)
- Class 59. - 46.5mm/49mm
- Class 73. - 61.25mm. - (224mm)
- Class 81-87. - 75.25mm (B/C's Ready Marked)
- Class 89. - 48.25mm/53mm

NOTE. - The Bogie Centre dimensions relate to the middle of the centre axle in 6 wheel types or a point halfway between the two axles on 4 wheel types. The Bogie Pivot holes are off-centre on ALL bogies and this should be added or subtracted from the bogie centre dimensions when fixing bogie stretcher assys. into body.

TAKE WIRES TO OPPOSITE TERMINALS ON OTHER MOTOR BOGIE. ALSO TAKE A WIRE FROM THE SOLDER TAG TO THE 1 TERMINAL ON ONE MOTOR & THE 1 TERMINAL ON THE OTHER.



3 When Saddles are fixed into place, the Bulkheads should be soldered into place, making sure to get the cut-outs for the Drive Chain Drive Sets in line. (Note - that in some 4 wheel types there is just one bulkhead that folds down from the top of the main bogie etching.)

4 After this the Turned Brass Frame Bushes should be fixed into place & the Solder-tap fixed to the bogie with a screw & nut. The wheels should now be fitted - taking care to get all the Non-Insulated wheels on the same side. The gear wheel should be fitted at this stage & also the Drive Chain & Sprocket Sets - if used. The instructions are included with this item. The Motor should now be fitted with worm wheel (as per instructions with motor), and screwed to the bogie - adjusting gear mesh. At this point a test is advised.

5 Now the etched end stretchers, (Cast in some cases) and the Guard Irons should be fitted. (Note that in Classes 42/52 there are 10 end stretchers and that instead of 10 end stretchers are fitted to the ends of the bogies). The height at which the End Stretchers are fixed depends on the type of side-frame, and this must be determined by offering up the side-frame to the motor-bogie & lining up the wheel centres with axleboxes.

When happy that all is square & true then the sideframes can be fixed into place.

6 The Bogie Stretchers should be laminated as shown, and soldered to loco body at the correct spacing for the class - see above. The Pivot box should then be fixed to the stretcher Assy. and the height adjusted so that loco sits at correct rail height - this will be different in every class. The brass nut should be soldered into the pivot box before fixing. The Black self-adhesive sheet should then be cut in two & the backing paper removed. These should then be stuck to the pivot box & the excess material trimmed with a blade. This sheet insulates the body from the chassis. The bogies are then fixed to the stretchers with the Nylon Screws.

7 Obviously, when the bogies are fixed the Non-Insulated wheels will be opposite those on the other bogie. It is these wheels which act as pick-ups & the two motors must be cross-wired to each other. A Shorter wire must be fixed from opposing terminals on each motor & taken to the Solder tags. With no pick ups to insure drag optimum performance will be realised.

SPECIAL NOTES

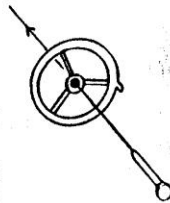
On Class 40/45 - the front bogie should be fixed to the hole in the front of the bogie as shown on the individual instruction sheets. Obviously there are no Guard Irons fitted to these classes.

It is recommended that 12.5:1 Two-Start Norm & Gear Sets are fitted (6:1 4 Start for HST & Class 89 + other High Speed Locos)

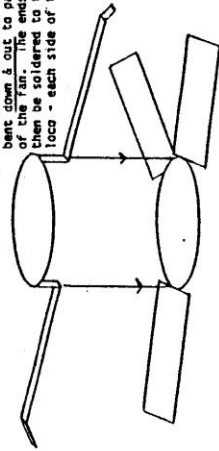
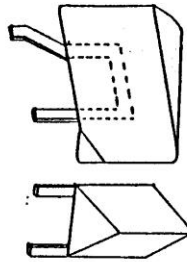
N.B. - STRETCHERS FIT TO BOTTOM OF RUNNING PLATE IN CLASSES 20 & 58.

LOCO KITS ONLY

Some Classes do not have Armrests on the seats, and in these cases they are of course omitted from the etchings.



The Roof Fans are provided with all diesels in the appropriate quantity. The blades of the fans should be bent up as shown. The fan top includes strips on each side that should be bent down & out to pass under opposite blades of the fan. The ends of these strips can then be soldered to the inside roof of the loco - each side of the fan opening.



These only have to be drilled through to the O.D. of the Shank & can be done with a hand-drill. Loops are provided on the rear of the buffers to accept a wire passed through the hole in the Coupling Hook & running to each buffer loop. This will stop head revolving. On some loops (such as 50 & 56), the Buffer has an etched Re-inforcing web on the rear. Where this is the case the web is shown on the individual instruction sheet with a line to the buffer loop. The web should of course be welded over the buffer shank & soldered to the rear of the Buffer head.

General loco assembly.

PREPARATION

Before any parts are cut from the etched frets, push through any rivet holes from the back of the fret. These are represented by half etched holes on the rear of the fret. The same also applies to pre-formed loco

FORMING THE ETCHED PARTS

When forming the etches, unless otherwise instructed, the fold lines are on the inside. A pair of bending bars are ideal for this job or a vice, (without serrated jaws), would suffice.

SOLDERING

The key word for a successfully soldered joint is cleanliness. If the parts to be joined together are clean metal surfaces and are well coated in a good flux and providing the soldering iron tip has sufficient heat, a perfect joint which is also very strong will result.

A good strong joint can be achieved with glues but it is not easy to rework. A soldered joint can be easily undone, altered, corrected etc. by just re applying some flux and heat from the soldering iron. The flux transfers the heat from the tip to the metal surfaces to be joined and stops oxidation at the joint. It allows the multi-core solder to stay molten on the joint and, when the iron is taken away, will cool to form a solid metal joint.

When undertaking any kind of soldering always hold the parts to be joined together securely and comfortably. You will learn with experience how long to hold the iron on and in turn how much pain your fingers can endure. The use of small clamps such as

hair clips, mini G-clamps, (not rubber bands!), a small vice, various pliers etc. will make life easier. A simple jig soldered together out of scrap metal or made from wood may also help for holding parts you find awkward to hold.

You can use the various temperature range solders to your advantage during building. Multi-core for larger pieces will give you the main structure. A solder called Carrs 145 or 177 solder is used to apply the finer etches and laminates. Finally whitmetal solder, Carrs 70 Red Label, is used to fix the castings on.

Remember to take care not to apply too much heat near laminates or castings you have already joined as you may disturb them.

CLEANING UP

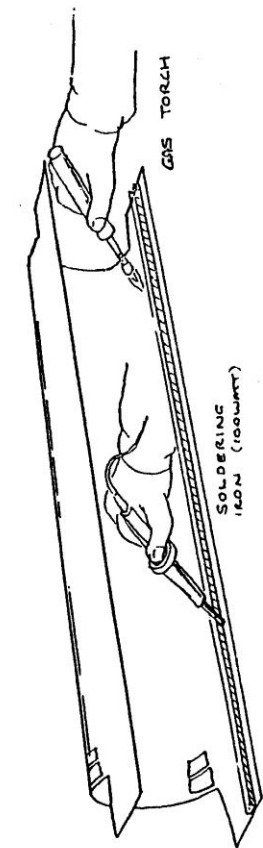
When assembly is finished, all excess solder should be cleaned from the model. Files, small wire brushes, fibre pens and Wet & Dry paper are all useful aids when performing this task.

On your model there are joints between etches and castings that may require some filling. Car body fillers such as Isopon are ideal, (avoid flexible/elastic fillers) When any solder or filler has been cleaned up the body should be washed in warm soapy water to remove any grease or flux that would prevent paint from adhering.

Plastic window boxes sold in the big DIY stores make an ideal size container for washing your models. Rinse the model in clean water and leave to dry naturally overnight.

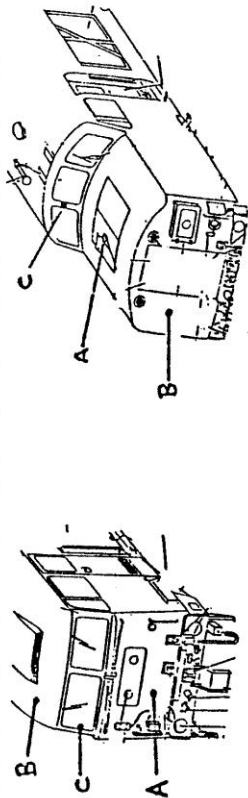
TOOLS

- 1 A soldering iron with range of bits from large to very fine, for example a Weller temperature controlled iron, (60Watt for 0 gauge, 100Watt for gauge 1)
- 2 Multi-core solder, Carrs 'Green label' flux aids the running of the solder.
- 3 18-24" steel rule.
- 4 Folding bars such as those sold by cherry scale models.
- 5 Range of Swiss files.
- 6 Medium cut bench knife such as Stanley knife or short bladed scissors for cutting out etches.
- 7 Evo-stick/superglue and epoxy.
- 8 Good quality side cutters.
- 9 Fine pliers and duck billed pliers.
- 10 Mini drill and a good range of drills.



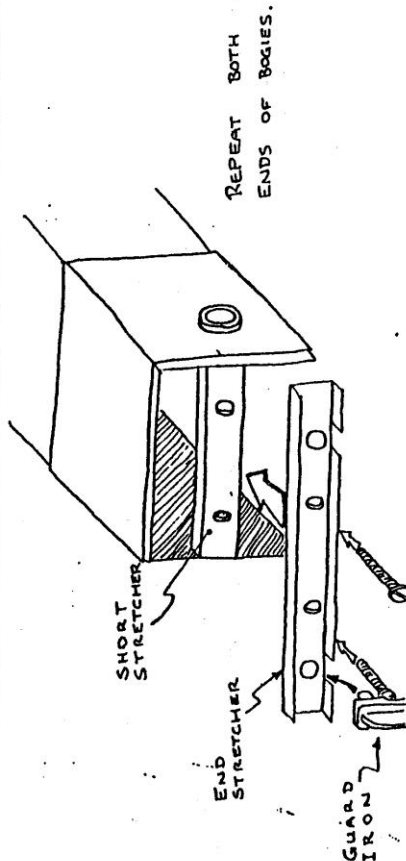
- 1) Solder channel/angle to inside of main body etch, making sure that you preform the channel to the shape of the body if the body width narrows at the ends. You may wish to fit bulkheads cut from scrap brass to strengthen the body, use a scale drawing, remembering to allow for the thickness of brass of the body. (On the class 52 sweat on the main roof etch at this stage)

- 2) The two drawings show the main differences between locos with and without a 'nose'.
- A) Fix cast front/bonnet to hold body shape, (class 52 assemble front etches as sub assemblies then fit to body).
 - B) Fix roof casting/etch front.
 - C) Fit cab windows.
- (fill any gaps with solder or a car body filler such as Isopon).



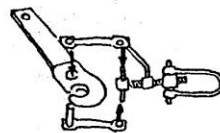
- 3) Assemble the bogies as shown on the 4&6 wheel motor bogies sheet.
- Fitting the sideframes can be done in two ways.

- A) Fit the end stretchers as shown on the motor bogies sheet, (go to C)
- B) Fit shortened stretchers as shown in the accompanying diagram and fit the sideframe end stretchers to these with screws and nuts. This option makes it easy to remove the sideframes for maintenance
- C) Fix the sideframes to the end stretchers and add axleboxes, brake cylinders as shown on the loco sheet.



- 4) This stage covers the various sub-assemblies.

- a) Assemble the fuel tank as shown on the loco sheet, fix to loco body.
 - b) Fit doors & details to the body as shown on the loco sheet.
 - c) Fix buffershanks in position and test fit buffers and coupling hooks.
- Fit the remaining bufferbeam detail. Assemble screw couplings and paint these and the buffers, fit once the model is painted.



Test assemble the model and test run to make sure there are no electrical shorts or tight spots.
Clean the model as described above and it will be ready for painting.

Class 55 'Deltic'

Parts List

Pre-Formed Body.
Etchings.
Nickel-Plated Fret.
4 Buffer Heads/Springs.
Single Strand Wire -
for connecting ETH Terminals.

Mesh.
Glazing.
12 Frame Bushes.
2 Nylon Screws/Brass Nuts.
2 Screws/Nuts/Solder Tags.
Self-Adhesive Sheet.
2 lengths wire (Red/Black)

Castings

4 Upper/4 Lower Bogie Sides.
12 Bogie Air Cylinders.
4 Guard Irons.
2 Nose Tops.
2 Windscreens.
4 Buffers.
4 Marker Lights.
2 Sets ETH Terminals.
2 Steam Heat Pipes.
2 Vac. Pipes.
2 Sets Air Pipes.
4 Air Horns.
4 Cab Seat Supports.

TO FINISH

2 MOTORS
2 SETS 12.5:1 TWO START
WORM & GEAR SETS.
6 AXLES 3 7/8" WHEELS

1 Pr. LOCO SCREW COUPLINGS.
1 DELRIN DRIVE SET FROM
Optional but strongly recommended
for additional traction.

OPTIONAL PACKS - from DE-LUXE

Fittings Range.

1. Working Vac. Pipes.
2. Working Loco Air Pipes.
3. Working Steam Heat Pipes.
4. Working ETH Gear.
5. Speedo Cable.
6. Co-Co Brake Shoes.

Fold & Fit Etched Lamp Brackets as shown.

Fit Backplates behind Step cut-outs.

Fold & Solder Coupling
Banger Plate to rear of Buffer Beam.

ETH Live Socket.

Fold & Fit Etched Destination Board Brackets.

Buffer Casting.

Note that two etched Train Nameboards are included
in case you wish to fit them.

ETH Dummy Socket - connect
using wire to ETH Terminal below Buffer.

Fold & Fit Buffer Beam Units to Tabs on Etched Nose Front.

Vac. Pipes.

Air Pipes.

Steam Heat Pipes.

Fit Etched Corner Steps behind
front casting.

Solder etched doors from inside.

Add etched Window frames

Etched Windscreen Wipers,
make blades from wire.

Cast Windscreen.

Etched Bonnet doors - add hinges
to 1/2 etched recesses

Fold & Fit Marker Light Panel into slots
provided in nose. An optional Headcode
number style panel is included that can be
fitted over the top if desired.

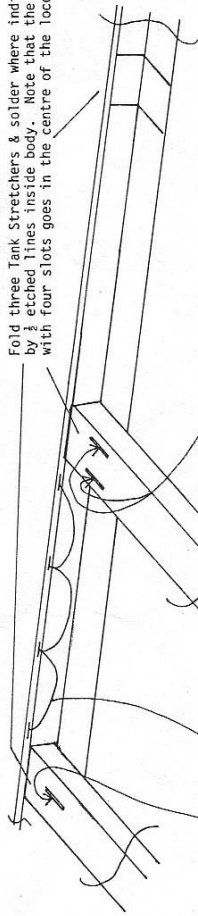
Cast Air Horns.

Join nose tops to body - one side only.

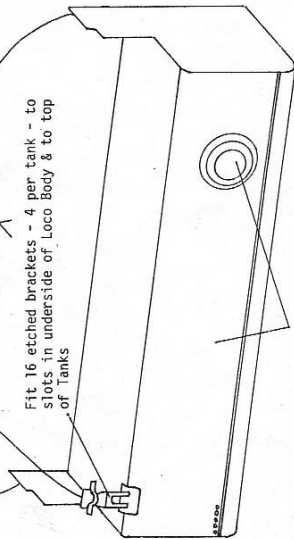
Fold Top etched Lamp Bracket & fit into
hole drilled in bottom centre of Nose Top Casting.

Solder handbrake levers at top
of rebates.

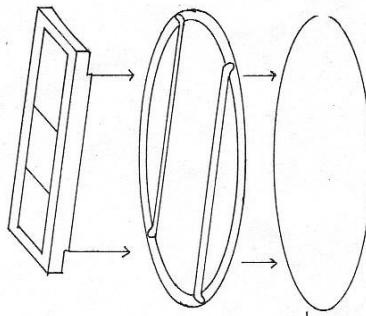
Fold three Tank Stretchers & solder where indicated by \downarrow etched lines inside body. Note that the stretcher with four slots goes in the centre of the loco.



Fit 16 etched brackets - 4 per tank - to slots in underside of Loco Body & to top of Tanks

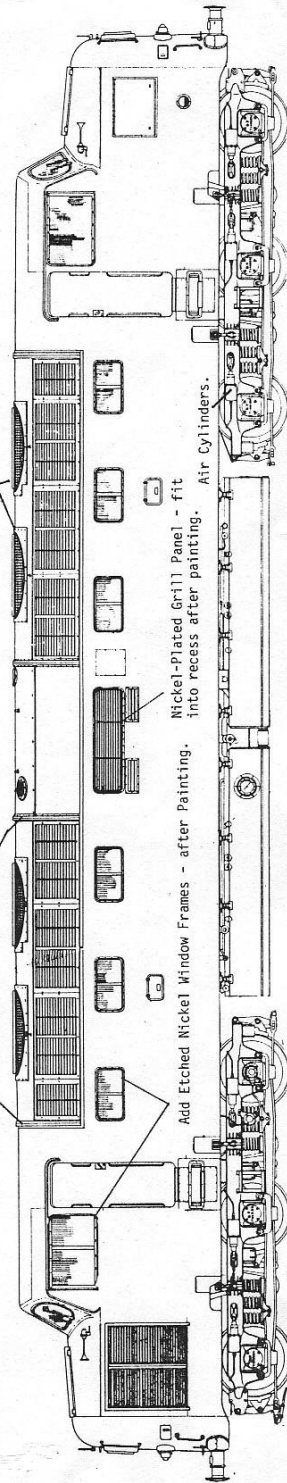


Fold up Tank units and fit into slots in Stretchers - Note that the Tanks with Gauges go to the left on both sides of loco.



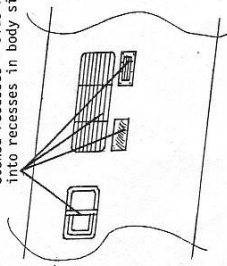
Solder Mesh behind Fan Cut-outs & add etched frames to roof. Fold and add etched Walkways x 4.

Fix Roof Beading - 4 pieces



Add Etched Nickel Window Frames - after painting. Nickel-Plated Grill Panel - fit into recess after painting. Air Cylinders.

Fit Small Grill panels into \downarrow etched recesses + Side window frames into recesses in body side.



Fold & make etched Bogie Steps & fit to Bottom of Upper Bogie Sides - under cab doors.

