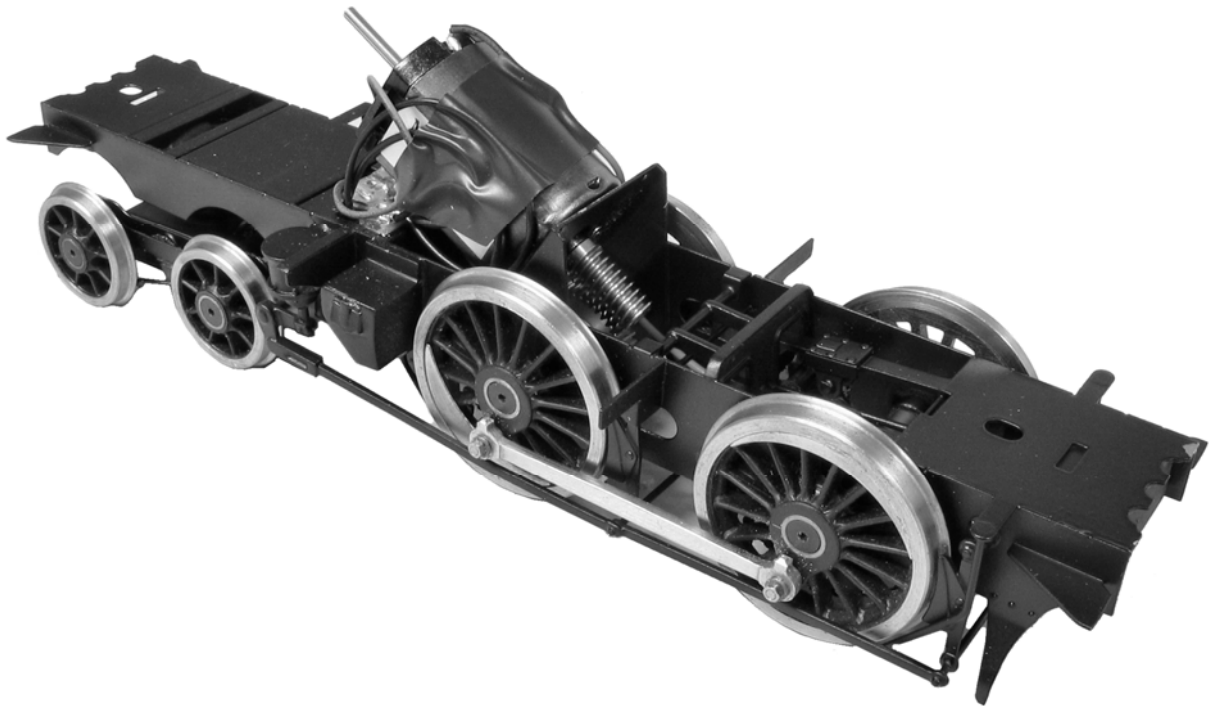


CONNOISSEUR MODELS

- 0 Gauge -

Southern Railway Class 02 Chassis Construction & Parts Identification



I would recommend constructing the body to the fitting of parts 42 before starting chassis construction. As the basic body with boiler & smoke box removable will enable wheel clearances and motor position to be checked and adjusted with ease.

With the basic body available the chassis can be fully completed if desired before returning to body construction. To reflect this I have numbered chassis components from 43 onwards.

Parts Required To Complete

2 Sets 4' 10", 16 Spoke Driving Wheel (Slater's Catalogue Number 7858SW)

2 Sets 3', 9 Spoke Bogie Wheel (Slater's Catalogue Number 7836SW) This wheel uses a smaller diameter axle than standard so if required obtain the appropriate wheel key when ordering.

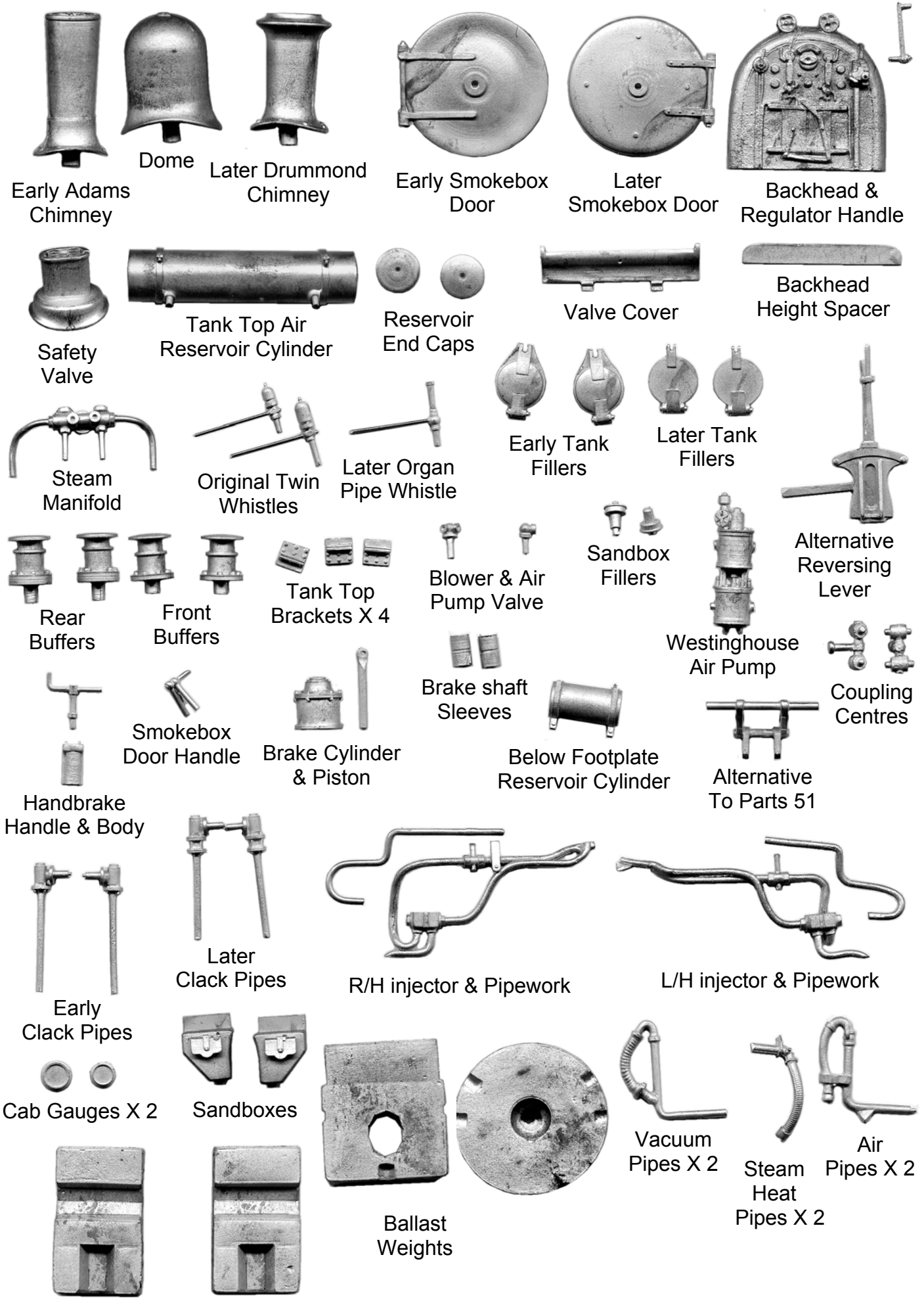
Plunger Pickups if desired (Slater's Catalogue Number 7157)

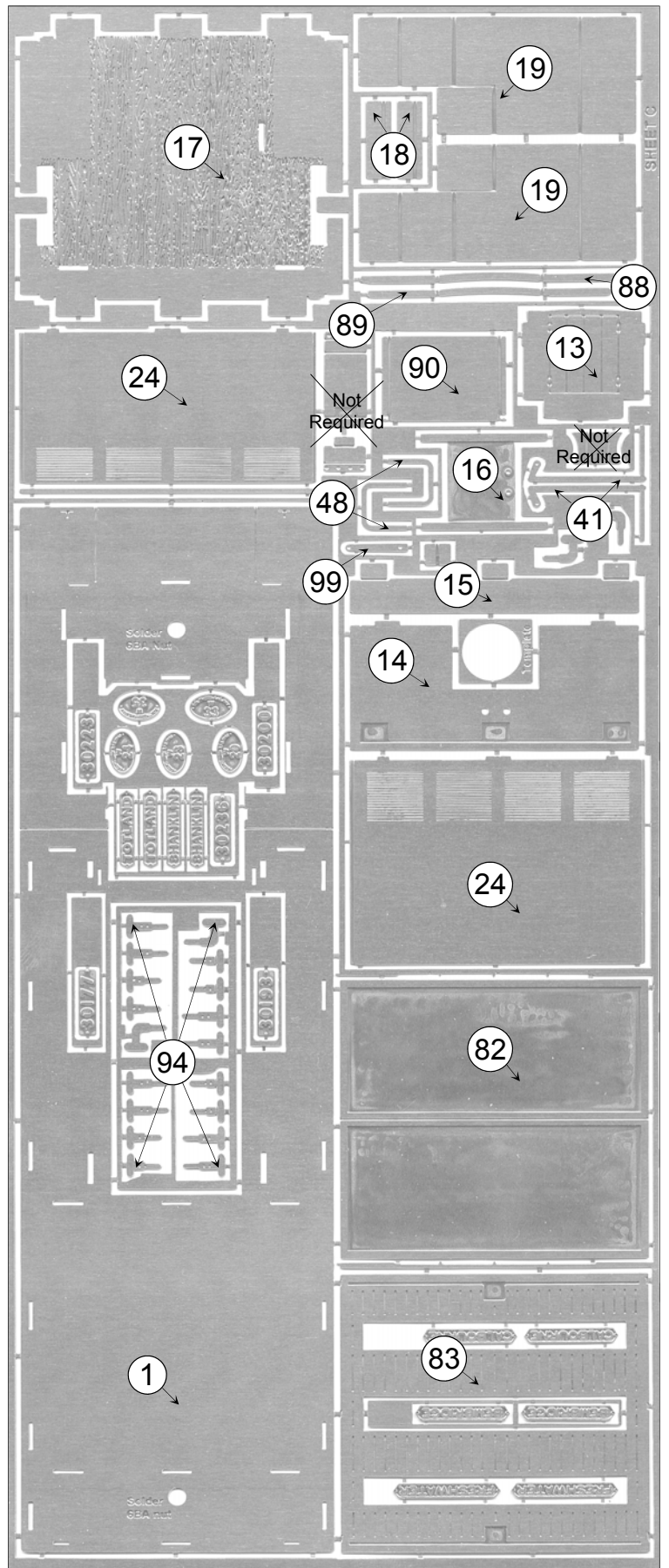
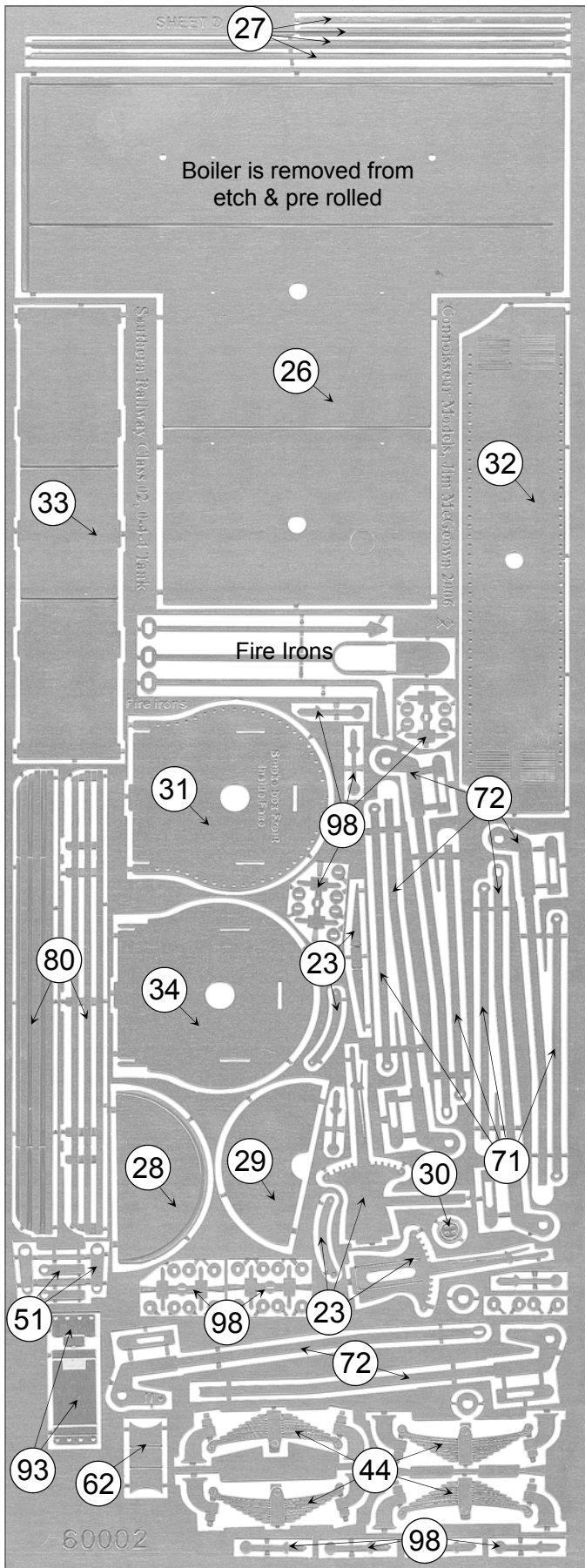
Available From Slater's Plastikard, Old Road, Darley Dale, Matlock, Derbyshire, DE4 2ER, Telephone 01629 734053.

Mashima 1833 Motor and 40/1 Gear set, *available from Connoisseur Models.*

**Jim McGeown, Connoisseur Models, 1 Newton Cottages,
Nr Weobley, Herefordshire, HR4 8QX, Telephone 01544 318263**

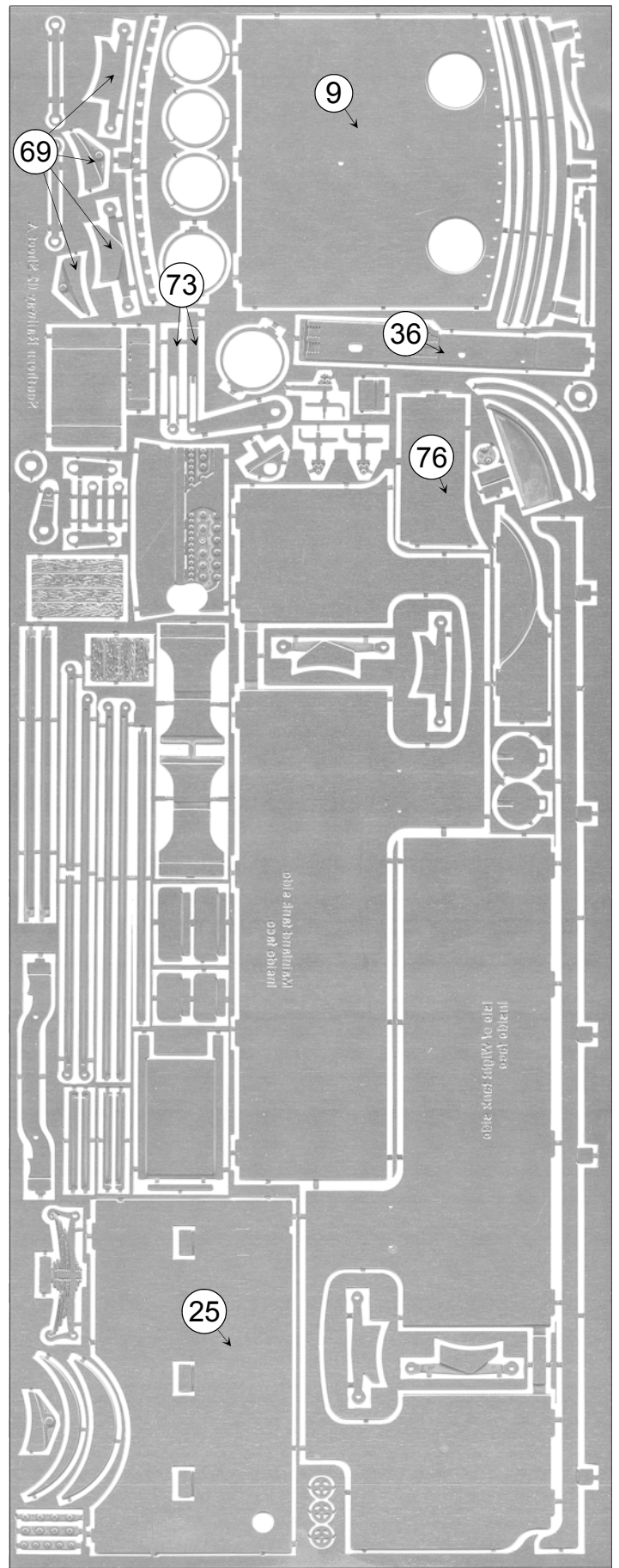
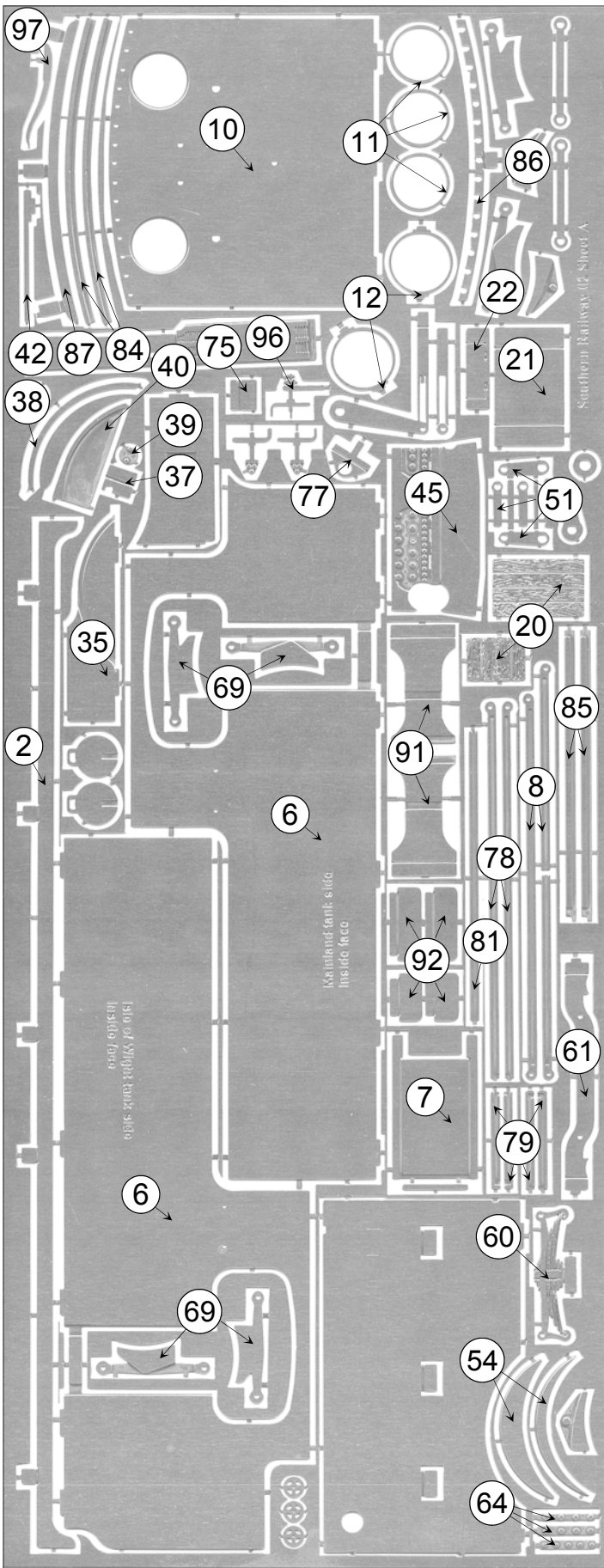
Southern Railway Class 02 Casting Identification & Parts List



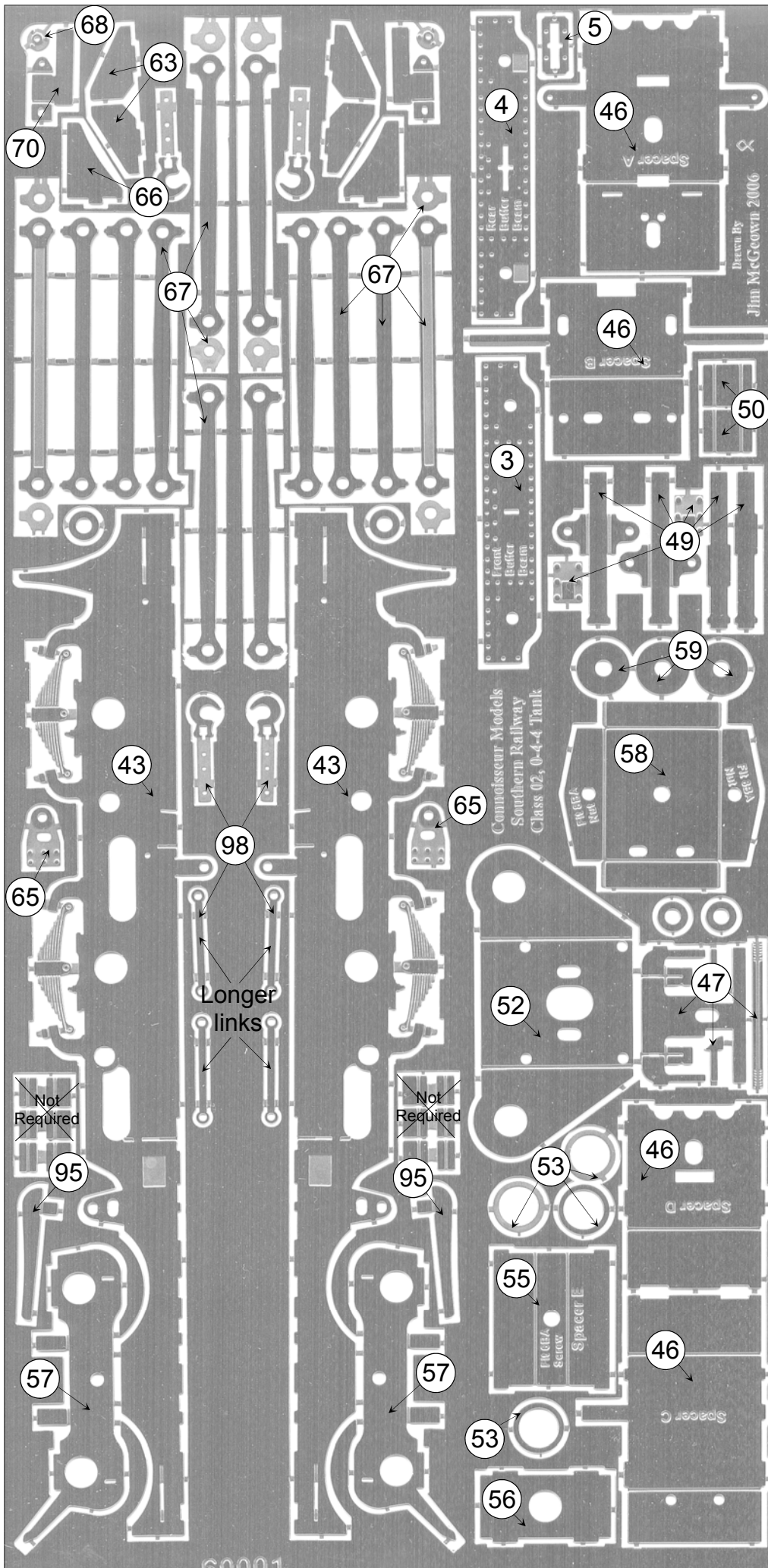


Sundry Parts:- 3 X pieces copper clad PCB & 2 X electrical wire for pickups. 8 X axle bearings. 2 X 6BA short screws, 1 X 6BA long screw, 4 X 6BA nuts, 2 X 8BA screws, 2 X 8BA nuts, 2 X springs. 1 X track pin. 6 X long (3mm) & 10 X short handrail knobs.

Wire & Rod:- 5"X half round wire, 5"X 1.6mm brass rod, 3"X 1.4mm copper rod, 2"X 2.4mm brass rod, 4 X 0.45mm brass wire, 5 X 0.7mm brass wire, 3 X 0.9mm brass wire, 3 X turns 20swg & 2 X turns 24swg tinned copper wire.



This etch is photographically flipped to provide L/H & R/H parts that should correspond exactly



Stage 1

Fit overlays to reinforce springs. As the art work was hand drawn, juggle these about to get the best match

Open out bearing holes

Note etched positioning guide lines for firebox detail.

46

46

44

43

File down to curve

45

Emboss bolt heads for ashpan detail and inset with two 90° folds.

46

Spacer A is folded slightly beyond right angle.

Note etched positioning marks

Solder spacers solid to first side frame.

Tack solder second side frame at tabs only.

Work from alternate ends towards centre

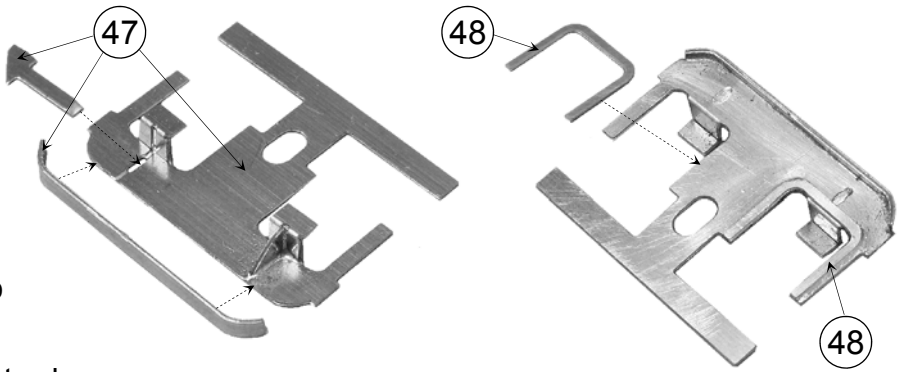
Check that chassis is not twisted or banana shaped and that you are happy with alignment. Then solder solid.

Stage 2

Mock up of inside motion without second side frame to aid photography.

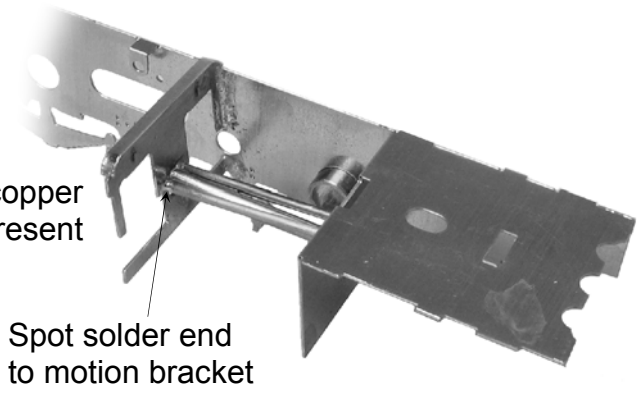
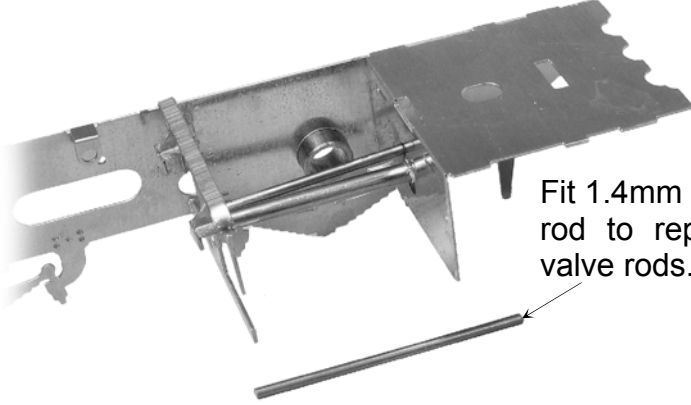
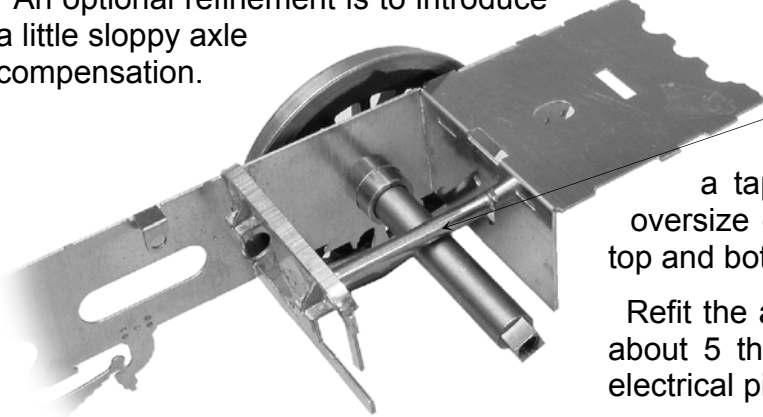
Slide motion bracket between frames until bottom springs into etched location marks.

An optional refinement is to introduce a little sloppy axle compensation.

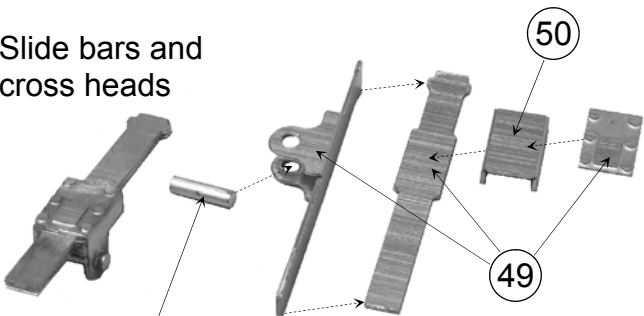


With an axle passing through bearings solder a length of 2.4mm brass rod so that it bears down on the axle. Remove the axle and ream out with a tapered broach the axle holes 10-15 thou oversize or file (use a round or 1/2 round file) the top and bottom of the bearing hole into a slight oval.

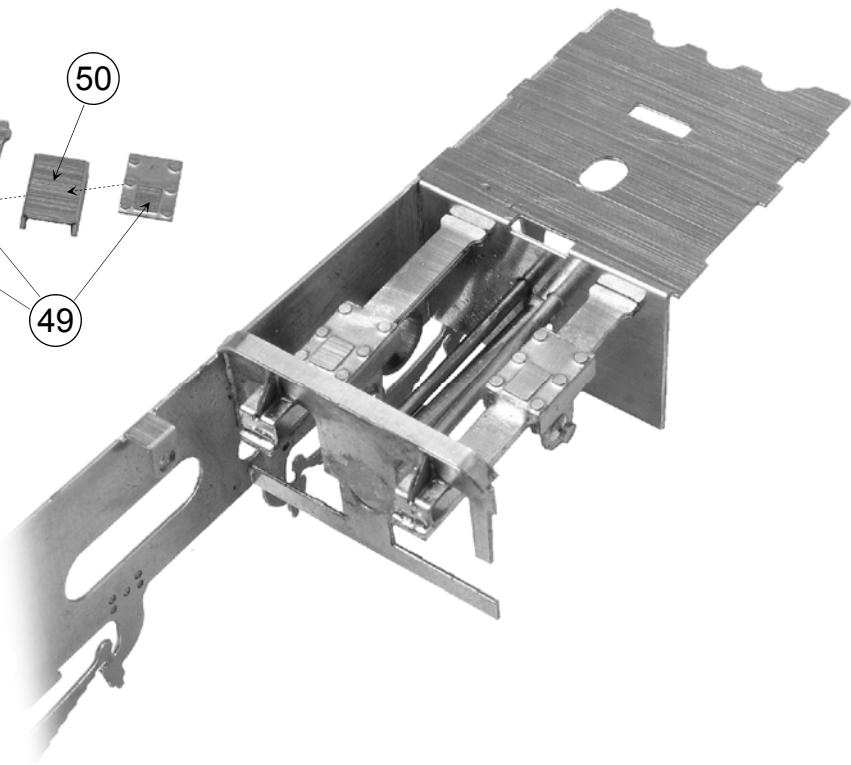
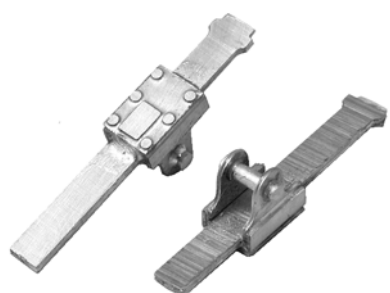
Refit the axle and you should have a slight rock of about 5 thou on each side, this does wonders for electrical pickup.



Slide bars and cross heads

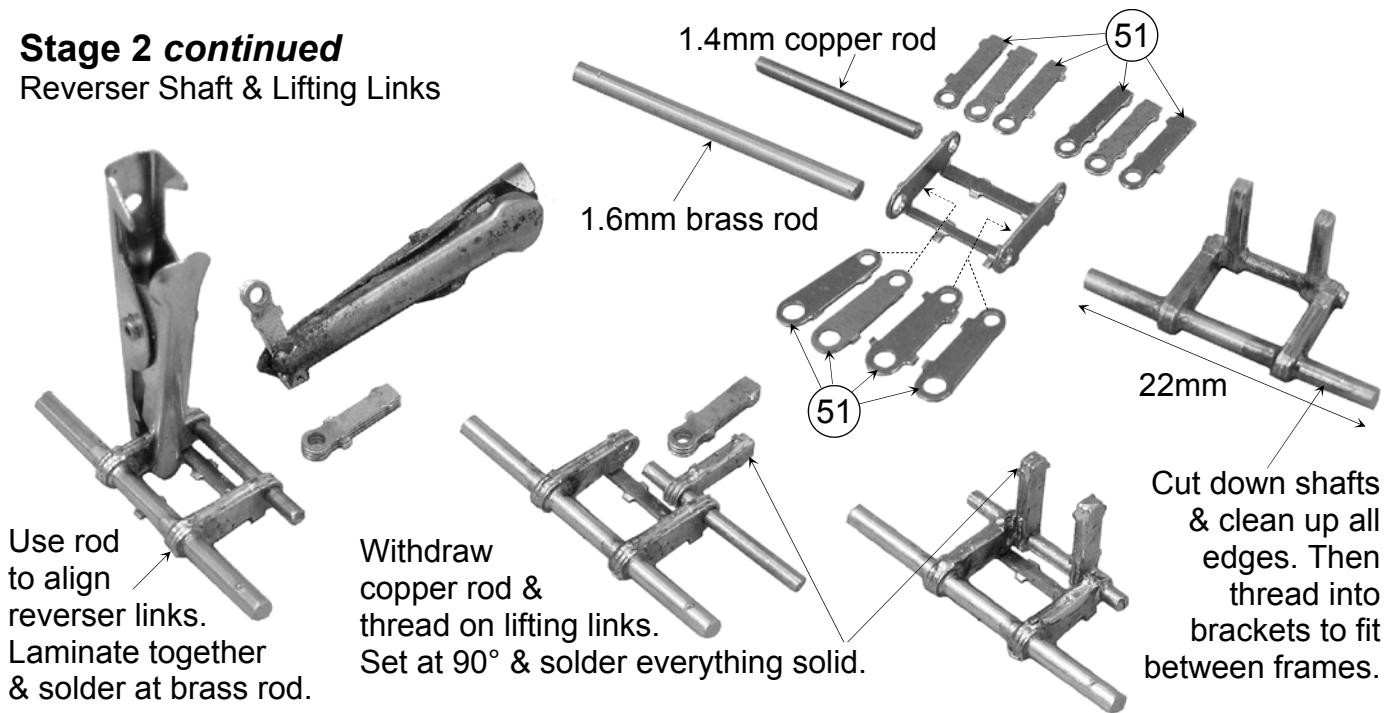


1.6mm brass rod

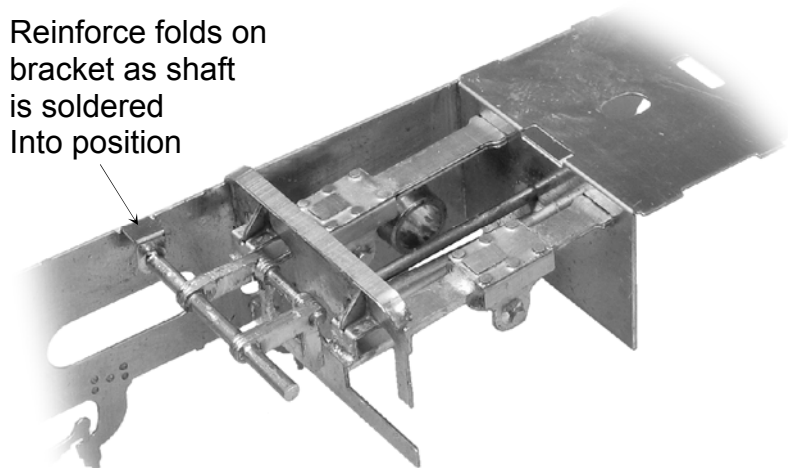


Stage 2 continued

Reverser Shaft & Lifting Links



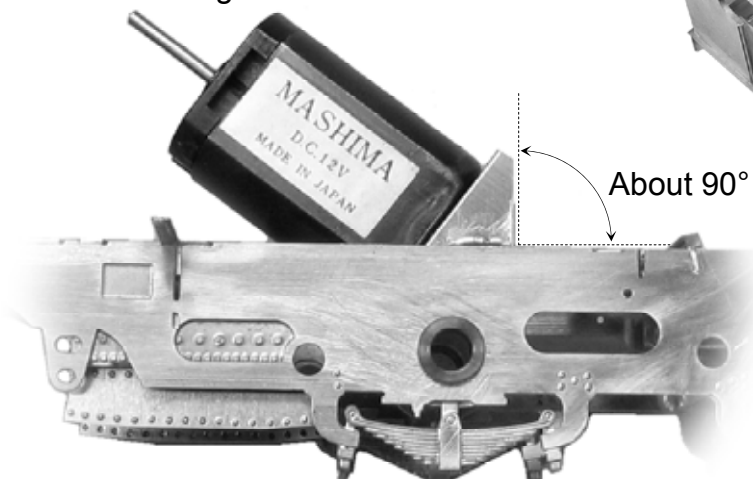
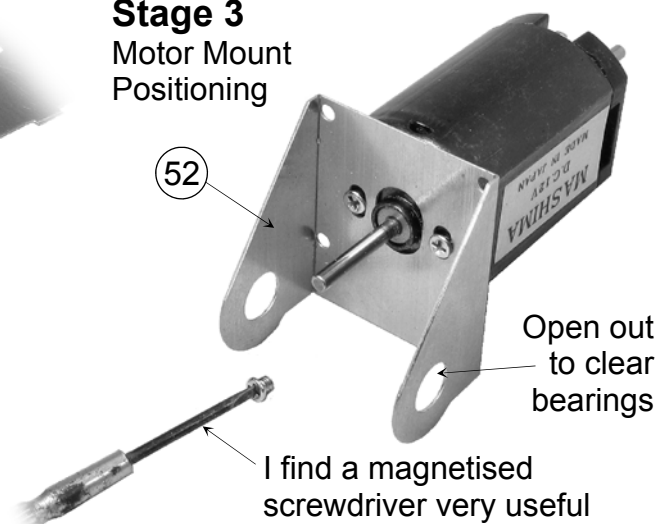
Reinforce folds on bracket as shaft is soldered into position



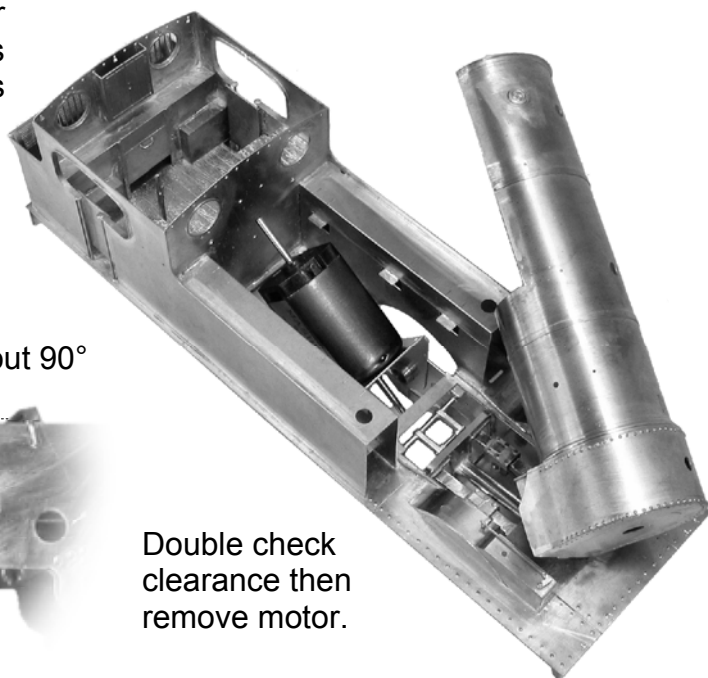
Stage 3

Motor Mount Positioning

Locate motor & mount between frames using loose bearings. Offer to body with boiler removable and rotate until correct position is determined then tack solder to frames. It is just possible to obtain sufficient clearance without needing to cut off the rear shaft.



Double check clearance then remove motor.

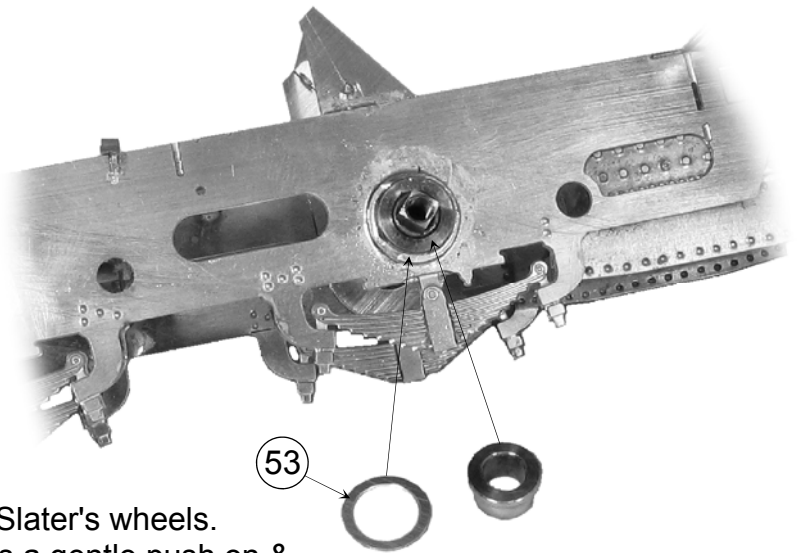


Stage 3 continued

Now fix bearings. It is a good idea to reduce the side play on the driving axle to about $\frac{1}{4}$ - $\frac{1}{2}$ mm. I have included full & half etch packing washers to aid in this. On this test build I found two full metal washers just right. Pass axle through bearings as you do this to determine clearances & aid alignment.

Then solder motor mounting plate to frames at every place possible to achieve maximum strength & rigidity.

Now is also a good point to prepare the Slater's wheels. Dress square axle end so that the wheel is a gentle push on & (*more importantly because of tight brake gear clearances*) pull off fit. Drill countersink hole for crankpin screw head. I fill this hole with Araldite when fitting crankpin so that the screw head is encapsulated.



Front wheels



Driving (motor) wheels

Fit balance weights using a generous application of Araldite. An etched rear rebate should aid positioning just below turned wheel rim.

6BA screw to form bogie pivot. Solder very solidly into spacer then reduce to about 19mm & dress cut end so that locking nuts will be smoothly guided down thread.

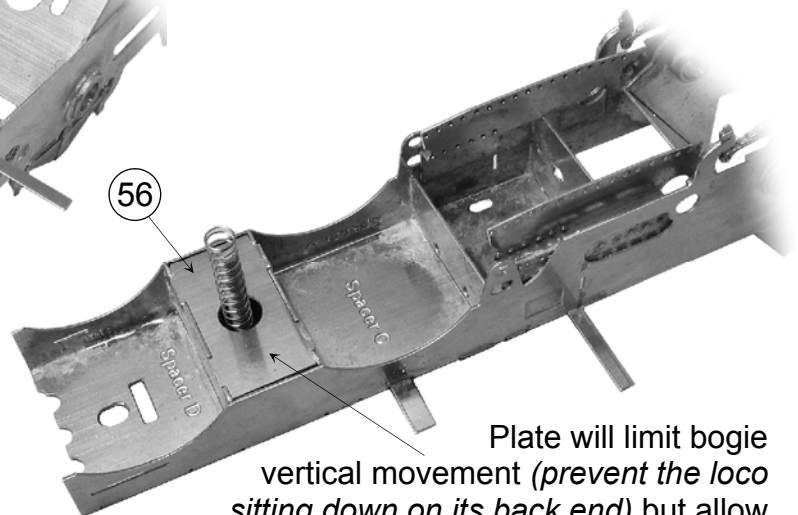
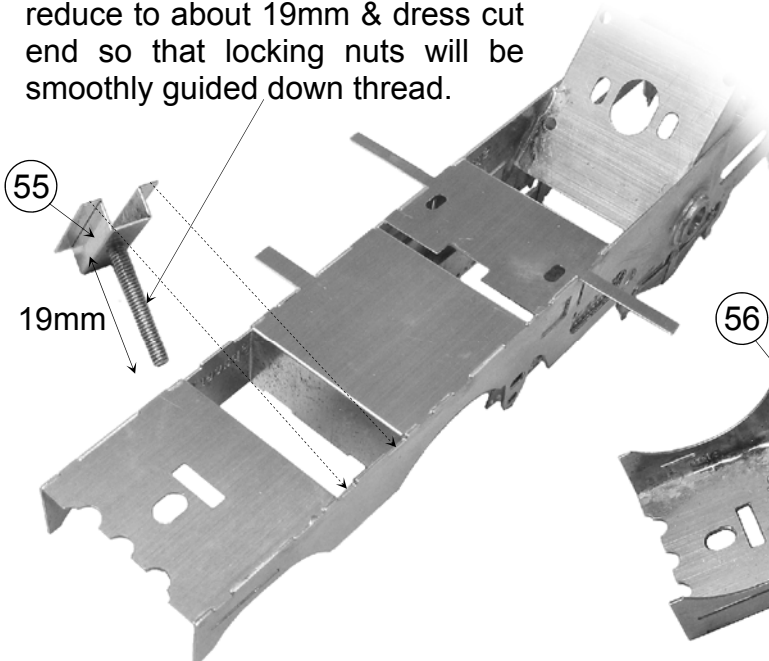
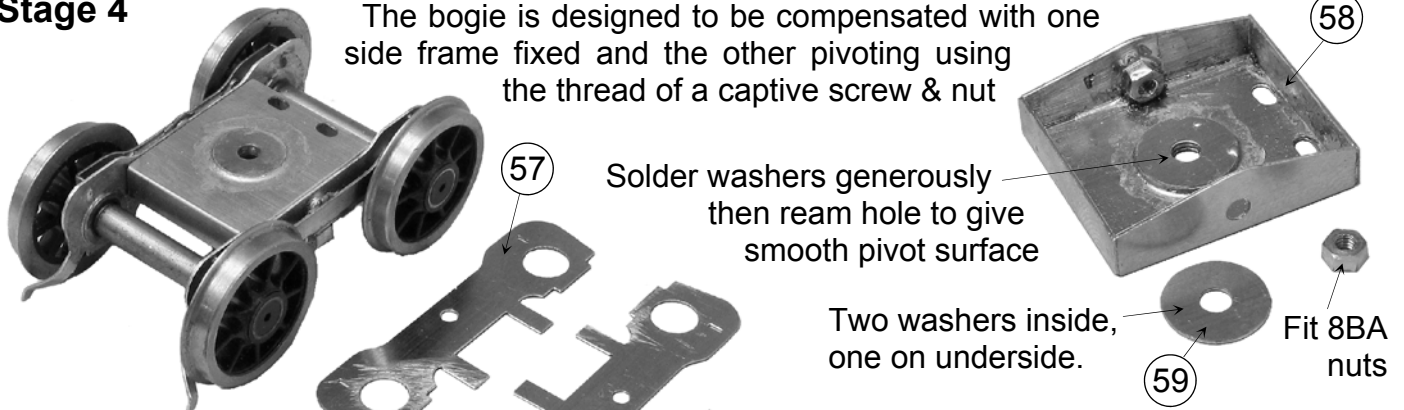


Plate will limit bogie vertical movement (*prevent the loco sitting down on its back end*) but allow maximum spring length for compression.

Stage 4

The bogie is designed to be compensated with one side frame fixed and the other pivoting using the thread of a captive screw & nut



Solder washers generously then ream hole to give smooth pivot surface

Two washers inside, one on underside.

Fit 8BA nuts

Guard irons were originally fitted to rear buffer beam.

In later years they were fitted to bogie side frames, cut off & restore profile if required.

Remove one side frame and apply oil to discourage solder from flowing down screw thread & between parts.

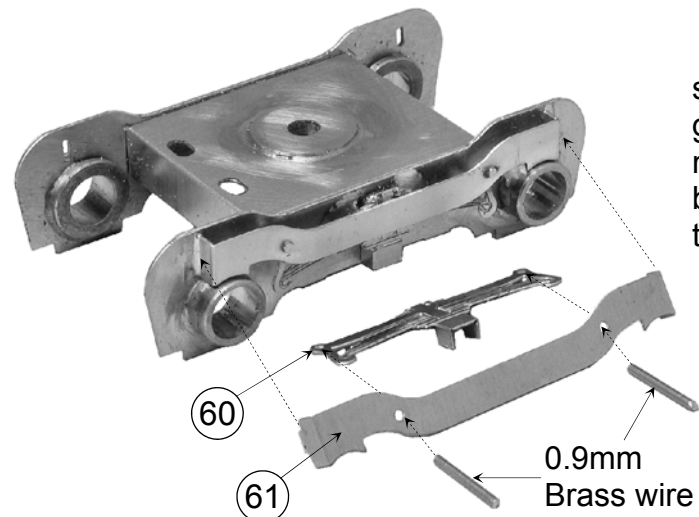
Reassemble & gently tighten screw until it locks side frame.

Back off screw $\frac{1}{3}$ turn & solder head to side frame to capture it. The side frame should now pivot freely turning on the thread of the nut.

I would recommend using a paste flux & 60/40 solder applied either side of the screw head slot. This combination does not have the flow properties of 145° & liquid flux. So this should captivate the screw head nicely but reduce the risk of soldering everything solid.

Temporarily assemble with screws

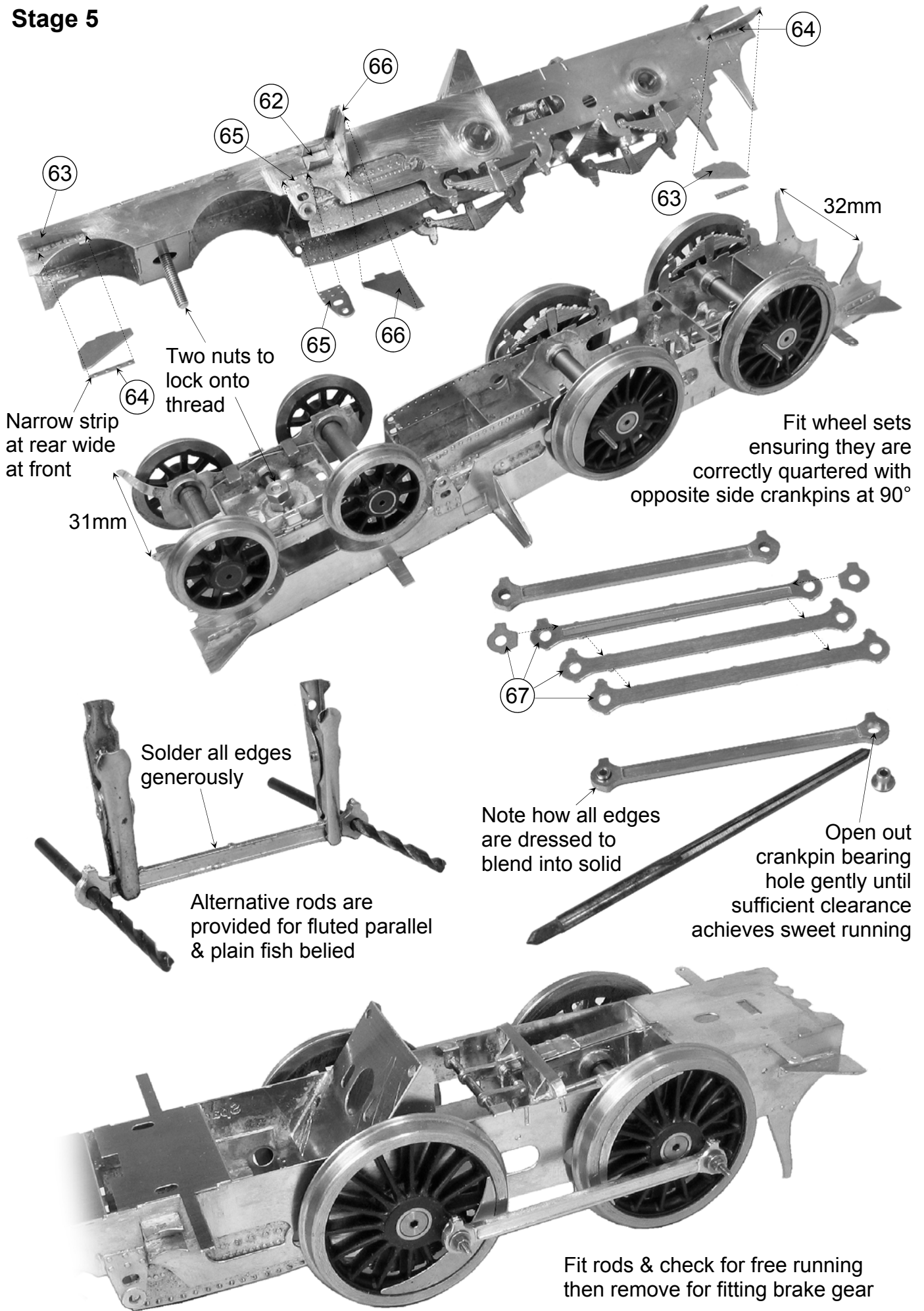
Fit bearings using axles to aid alignment



When happy with pivoting side frame solder second side frame solid. By doing this last it gives you a second chance if you inadvertently make a mess of the pivoting side. Ream out bearings to allow generous clearance for axles to allow free compensation pivoting.

Fit cosmetic compensation beam & spring detail to cover screw head. Screw head may require dressing back with file. Fit axles & wheels. The bogie wheels used in these instruction photos are Slater's General Purpose (7837GP) with $\frac{3}{16}$ " dia axle.

Stage 5



Narrow strip at rear wide at front

Two nuts to lock onto thread

Fit wheel sets ensuring they are correctly quartered with opposite side crankpins at 90°

Solder all edges generously

Alternative rods are provided for fluted parallel & plain fish belied

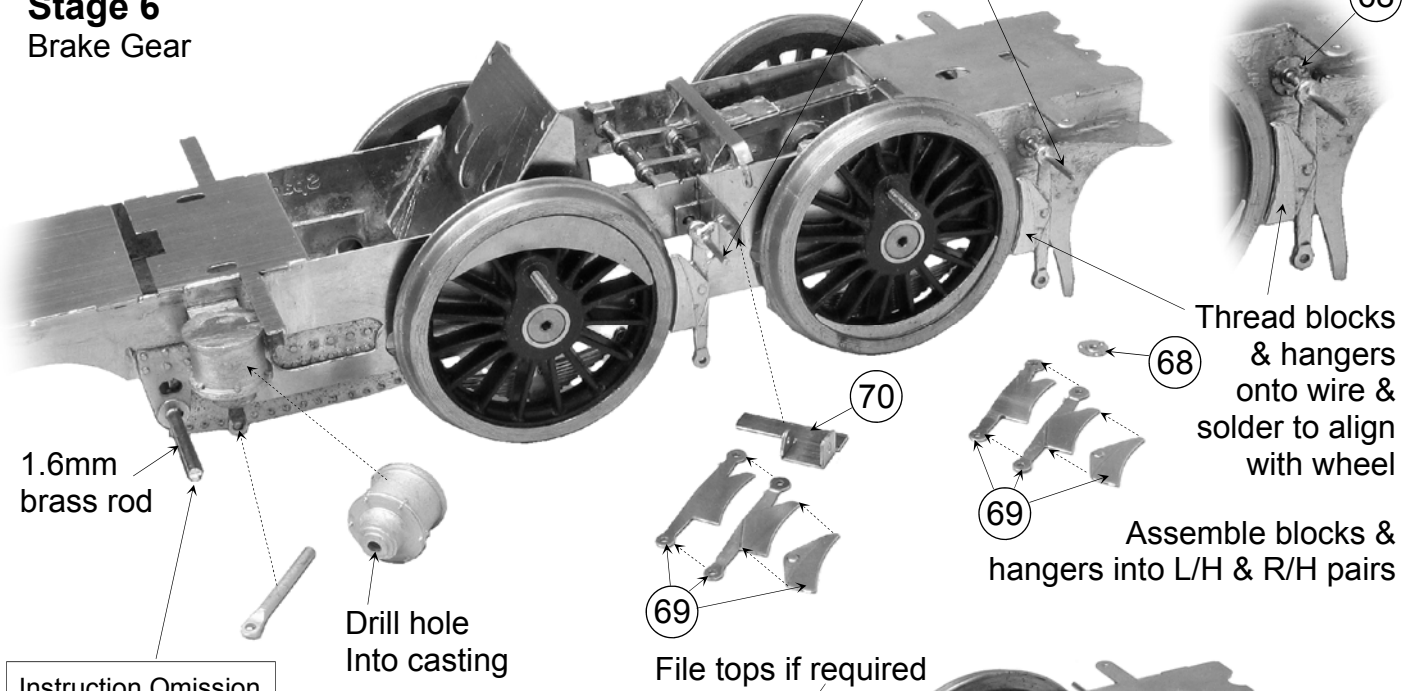
Note how all edges are dressed to blend into solid


Open out crankpin bearing hole gently until sufficient clearance achieves sweet running

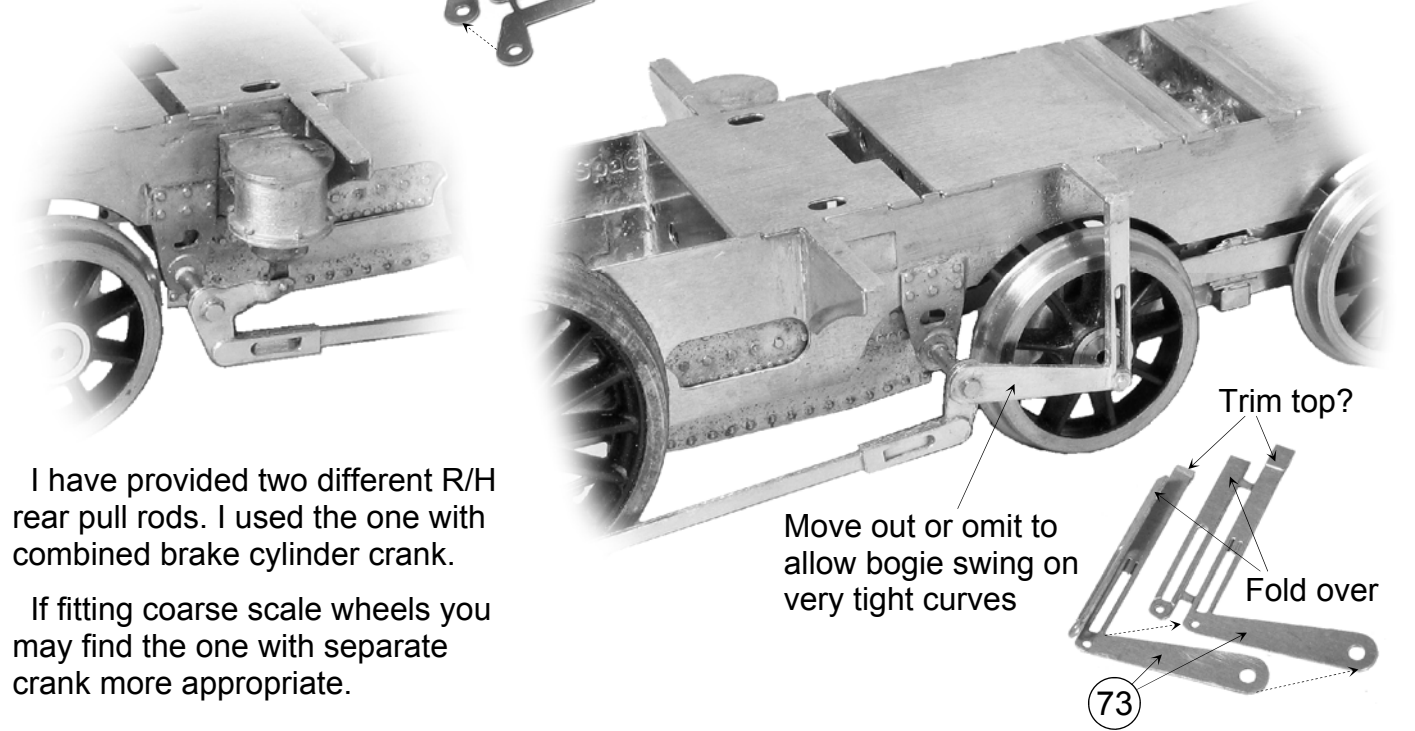
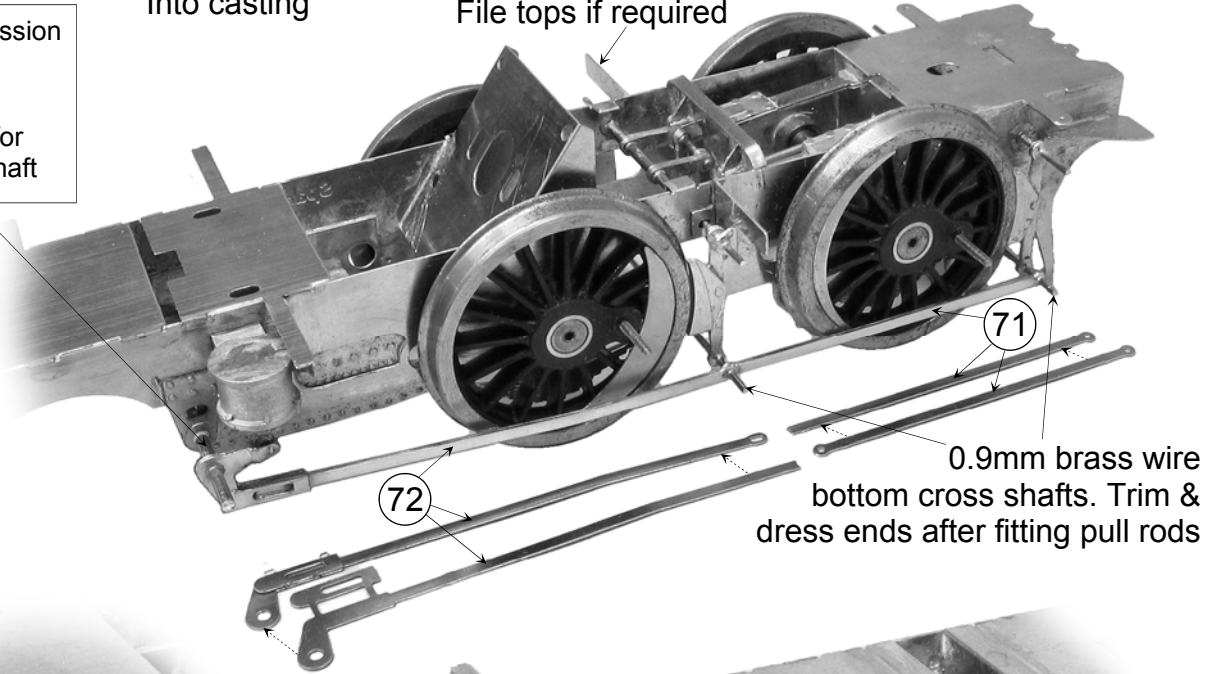
Fit rods & check for free running then remove for fitting brake gear

Stage 6
Brake Gear

Lengths of 0.9mm brass wire fitted across chassis

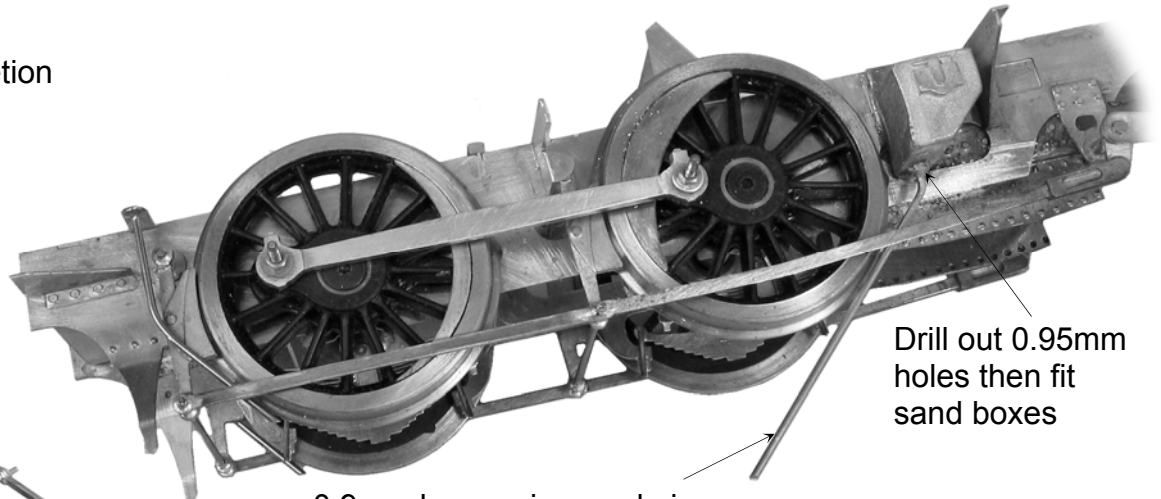


Instruction Omission

 Cast sleeve for Brake cross shaft



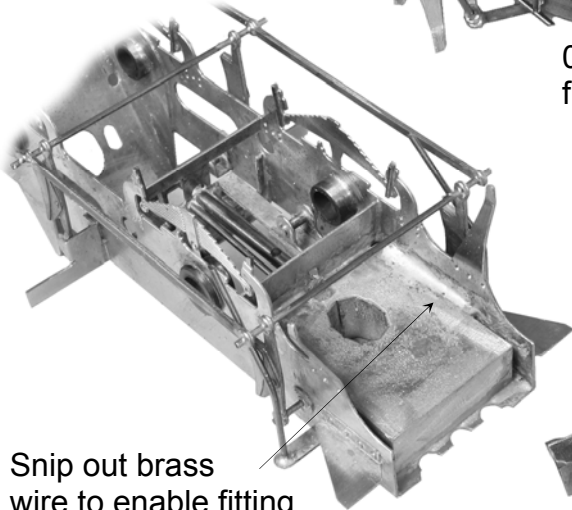
I have provided two different R/H rear pull rods. I used the one with combined brake cylinder crank.
 If fitting coarse scale wheels you may find the one with separate crank more appropriate.

Stage 7
Chassis Completion



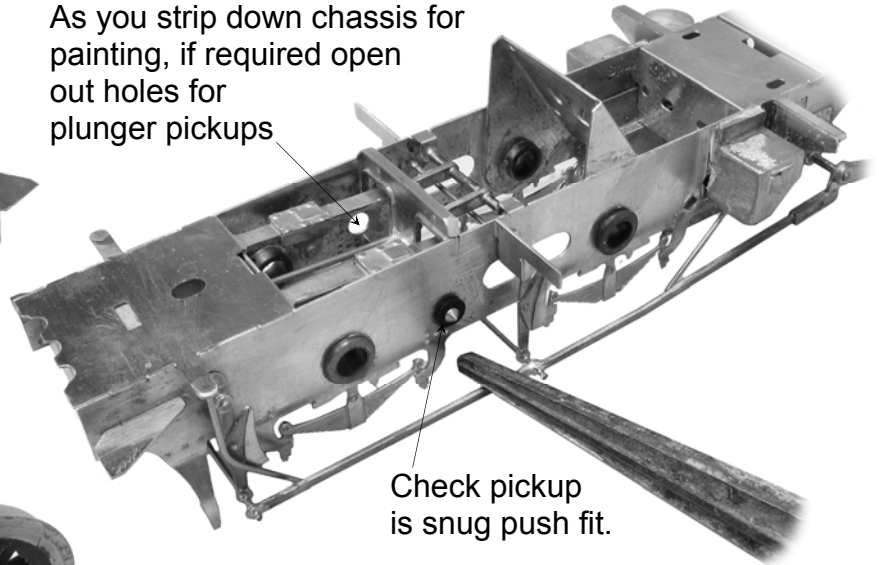
Drill out 0.95mm holes then fit sand boxes

0.9mm brass wire sand pipes fit over length & trim to clear rail top

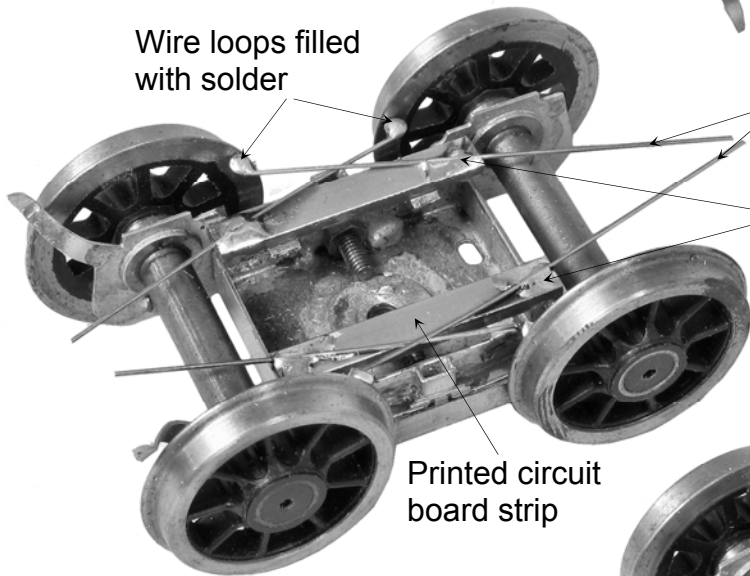


Snip out brass wire to enable fitting of cast ballast weight

As you strip down chassis for painting, if required open out holes for plunger pickups



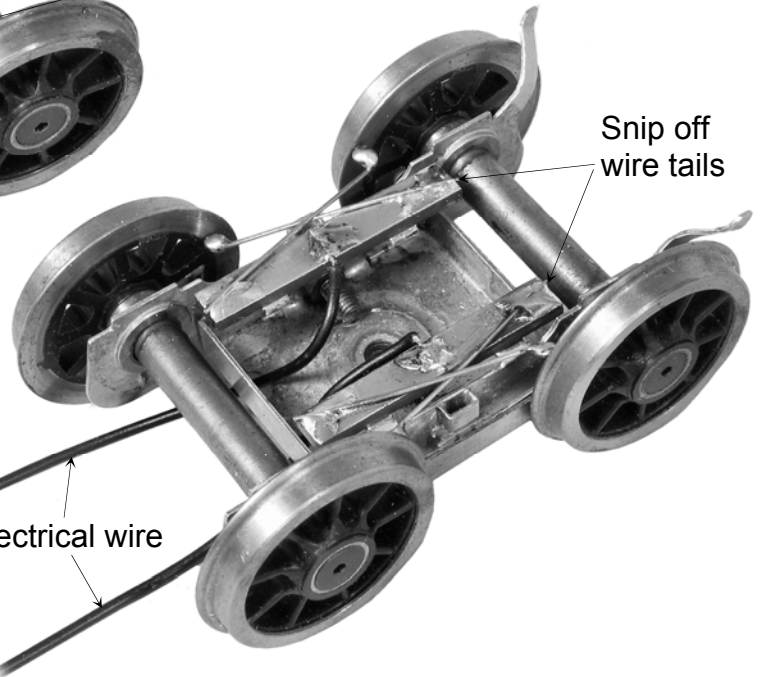
Check pickup is snug push fit.



Wire loops filled with solder

0.45mm spring brass wire. Fit over length to aid positioning & application of slight spring tension on wheel back. Then spot solder into position

Printed circuit board strip



Snip off wire tails

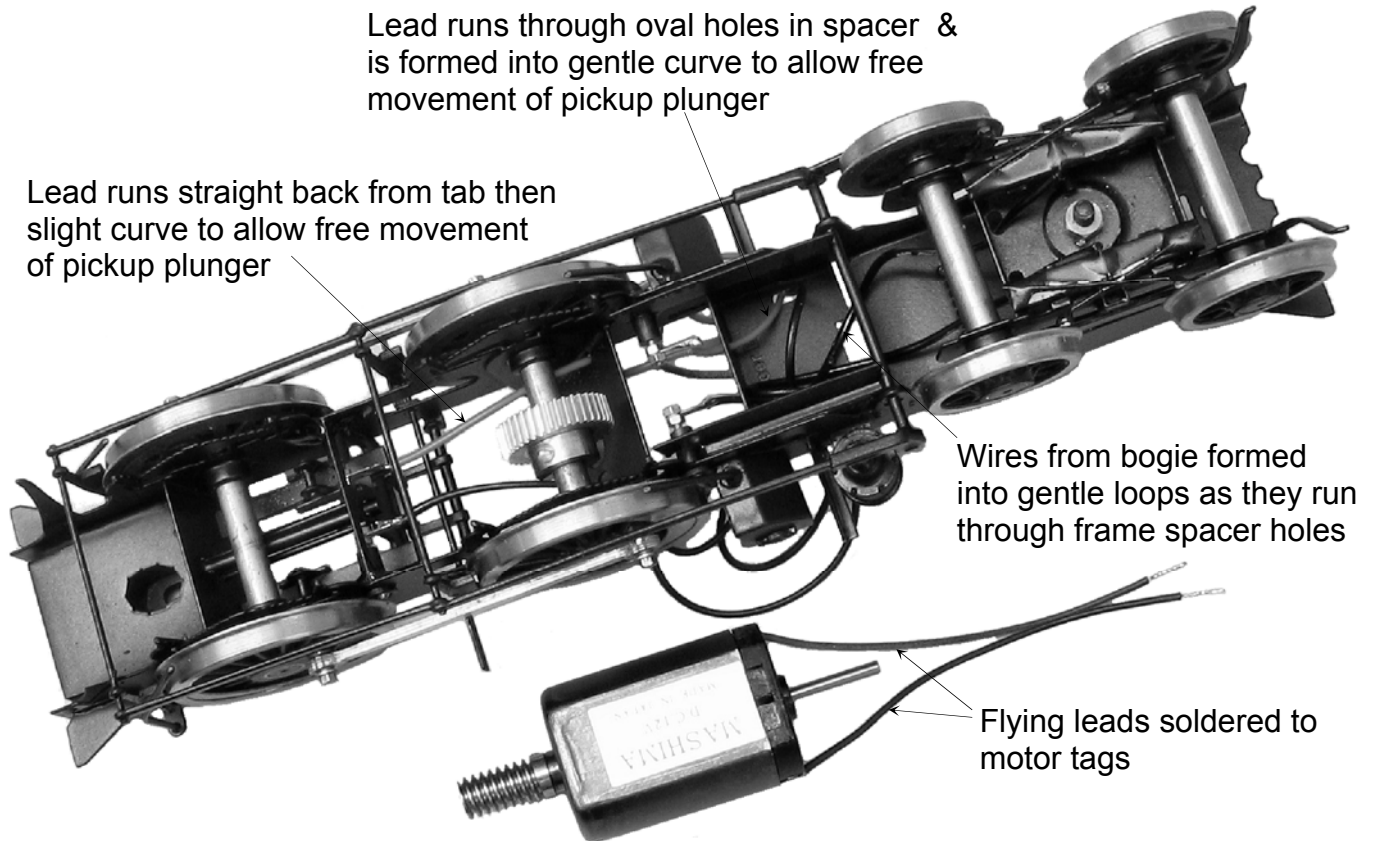
Electrical wire

A refinement that you may wish to consider is the fitting of additional pickups to the bogie wheels. This is how I did it & the fold over tabs on the side frames are provided with this in mind.

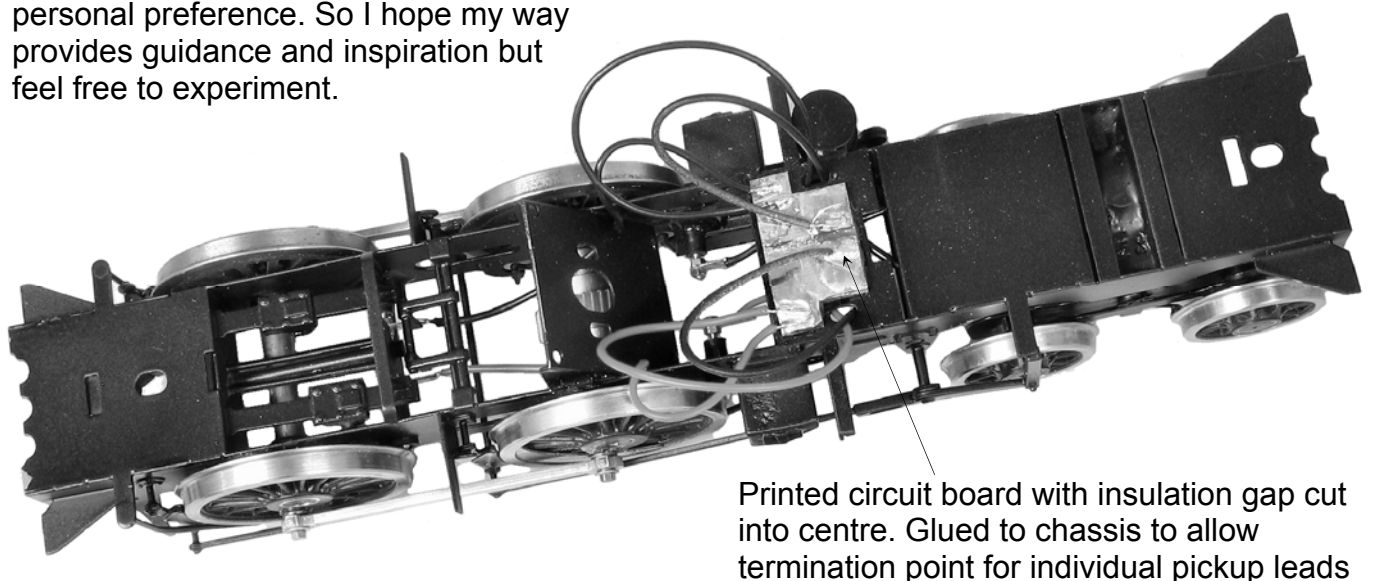
Stage 8

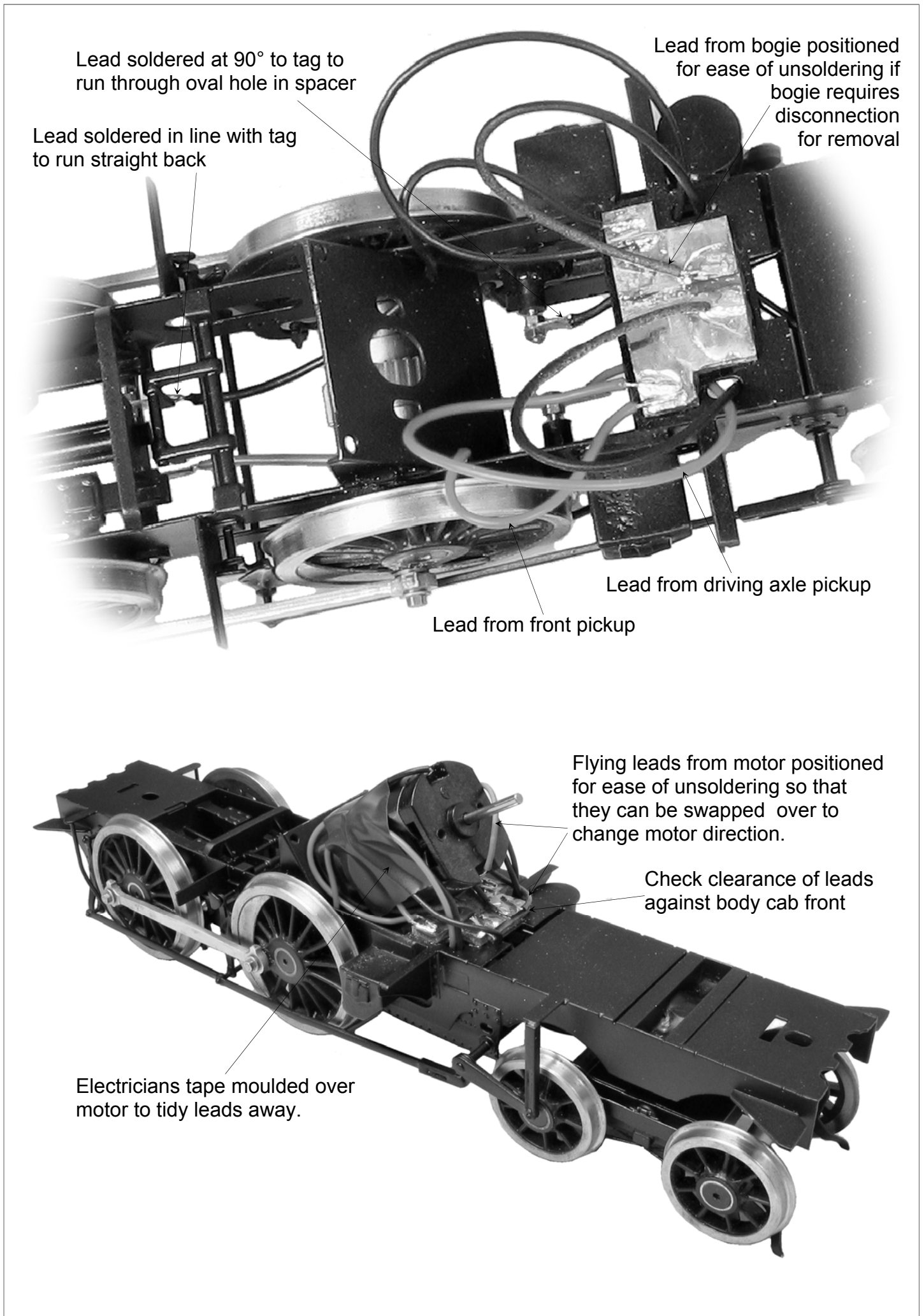
I would now strip down and paint the chassis. During reassembly I would fit the Slater's plunger pickups and wiring. An alternative is to fit wire wiper pickups fabricated from the PCB and the spring brass wire supplied. I have assumed that you are familiar with the techniques for fitting pickups, motor & achieving a sweet running chassis.

If this is your first loco then on my website (www.jimmcgeown.com) downloadable detailed help sheets cover these operations in full detail or please contact me for a free copy of my hints and tips booklet.



This is how I fitted & wired up pickups & motor. But pickups are like gentleman's underwear, very much a matter of personal preference. So I hope my way provides guidance and inspiration but feel free to experiment.





Lead soldered at 90° to tag to run through oval hole in spacer

Lead soldered in line with tag to run straight back

Lead from bogie positioned for ease of unsoldering if bogie requires disconnection for removal

Lead from driving axle pickup

Lead from front pickup

Flying leads from motor positioned for ease of unsoldering so that they can be swapped over to change motor direction.

Check clearance of leads against body cab front

Electricians tape moulded over motor to tidy leads away.

