Manor/Grange /Hall solid brass chassis kit – Overview Document

This kit was originally designed for the Ixion Manor and the instructions concentrate on that version. However, it has been found that it fits the later Dapol version, and the Dapol Hall and Grange models with appropriate spacers and just a little judicious filing.

While not strictly part of the kit, a method is shown to convert the early version of the tender where the pick-up frames of phosphor bronze are formed into cups. The later versions of the tender have pick up strips with circular holes. The early versions will be fitted with solid wheels and pin-points, while the later versions have spoked wheels and parallel axle extensions. The method shown in the instructions needs to be modified for these later types and it is anticipated that the Association will manufacture suitable axle sets in due course as they are similar to the Farish 4F requirements. A slightly cruder alternative would be to use the Association turning service to adapt the spoked Dapol wheels.

From current experience, that means that the Ixion Manors, very early Dapol Manors with solid tender wheels and the Dapol Halls can all use the extended axle pinpoint method, but please check your tender before ordering tender wheels.

As for gears, this will determine the performance of the locomotive.

Using a combination of 16 tooth and 22 tooth gears will give a scale top speed of around 35 mph using the standard motor with the 16 tooth gear mounted on the lay shaft with the 30:1 primary wheel. The loco will also crawl extremely well taking 3 seconds to cover one sleeper space. This is great for sheds, but a bit limited on the main line.

Swapping the gears will give the highest scale top speed of between 65 and 70mph. This still gives excellent slow speed control and is probably the most appropriate arrangement for the majority of layouts.

A combination of 18 and 20 tooth gears will give top speeds of approximately 45 or 50mph, so gives an intermediate option which may appeal to some users.

Ixion Manor Replacement Chassis instructions. *Please read Overview document first.*

Parts List

Included in the kit you should find the following:

A 1 x Left side chassis plate.

B 1 x Right side chassis block.

C 2 x Insulating separator flat plates

D 2 x insulating bushes

E 2 x 14BA screws

F 2 x 7.5cm lengths of 0.5mm brass wire

G 5 x 12BA bolts

H 2 x 12BA nuts

J 1 x Etched sheet

K 1 x piece copper clad board

L 2 x Plasticard stepped retainers (long and short)

Shopping list from the Association Shop3 is as follows

3-060 6mm spoked bogie wheels (2 pairs)

3-011 11mm spoked Driving wheels 3 pairs (12mm for a Hall) or other sizes by personal choice.

3-020 8mm Extended axle spoked driving wheels 3 pairs (see note in Overview document)

3-113 Axles bearings (2packs required for kit 14 actual bearings)

3-364 30:1 gear and worm set

Choose from: (See Overview document)

Either 3-389 22t M04 Metric gear plus 3-386 M04 16t gear

Or 3-387 18t M04 Metric gear plus 3-388 M04 20t gear

3-101b Gear muffs (pack of 2)

3-100 Drive axle muffs (2 required from pack of 10)

3110- Axle steel (1 required for kit but 3 recommended for alignment during build)

3-260 Flexible wire (or similar)

Other items needed to complete the conversion

Epoxy glue (such as 2 part 10 minute Araldite)

Cyanoacrylate (Superglue) adhesive

Undercoat paint (such as Halfords grey primer spray)

Matt black paint (either spray or brush paint). Halfords spray cans are recommended.

Small piece of either 20thou or 30thou plasticard

Solder, flux, scrap paper and card, masking tape. A couple of other items crop up as used in some techniques, but are suggestions only.

Tools required

Scalpel

Small pliers

Small side cutters

Flat needle file

Tweezers

Soldering iron

Plain blade micro screwdriver suitable for 12BA and 14 BA bolts

Some MDF offcuts are recommended

Small reamers (including one c. 1.5mm diameter and another c.2.5mm)

Electric drill and sensible method of holding this on a bench. A lathe is a luxury alternative.

Small hacksaw or fretsaw

Foam Loco cradle is useful

Back to back gauge

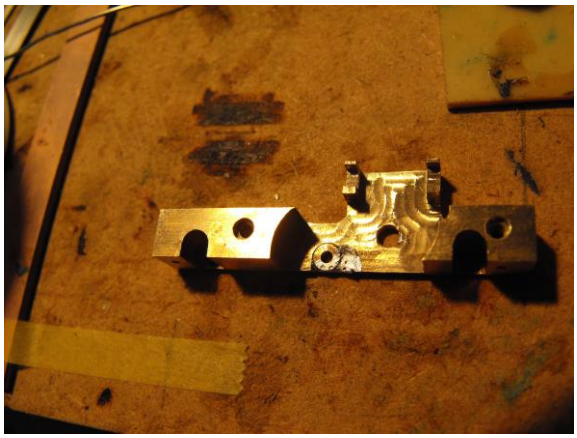
Optional : Association quartering tool and press.

Method

The first part of these instructions deals with fitting bearings, adding the power connection wires, bonding the two parts together and ensuring all is square.

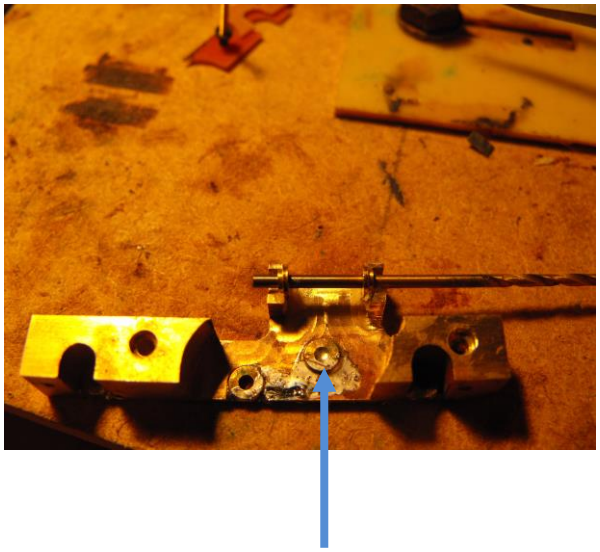
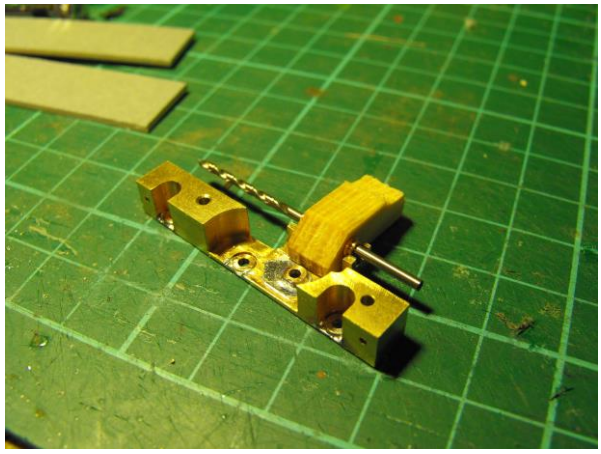
1.1

Check for clearance within the U shapes ensuring that bearings slot neatly into the holes. Solder association axle bearings to the inside faces. Eight of these will be needed for the driven axles and for the first stage gear axle. Ensure that axle steel will pass each bearing and gently ream if needed.




1.2

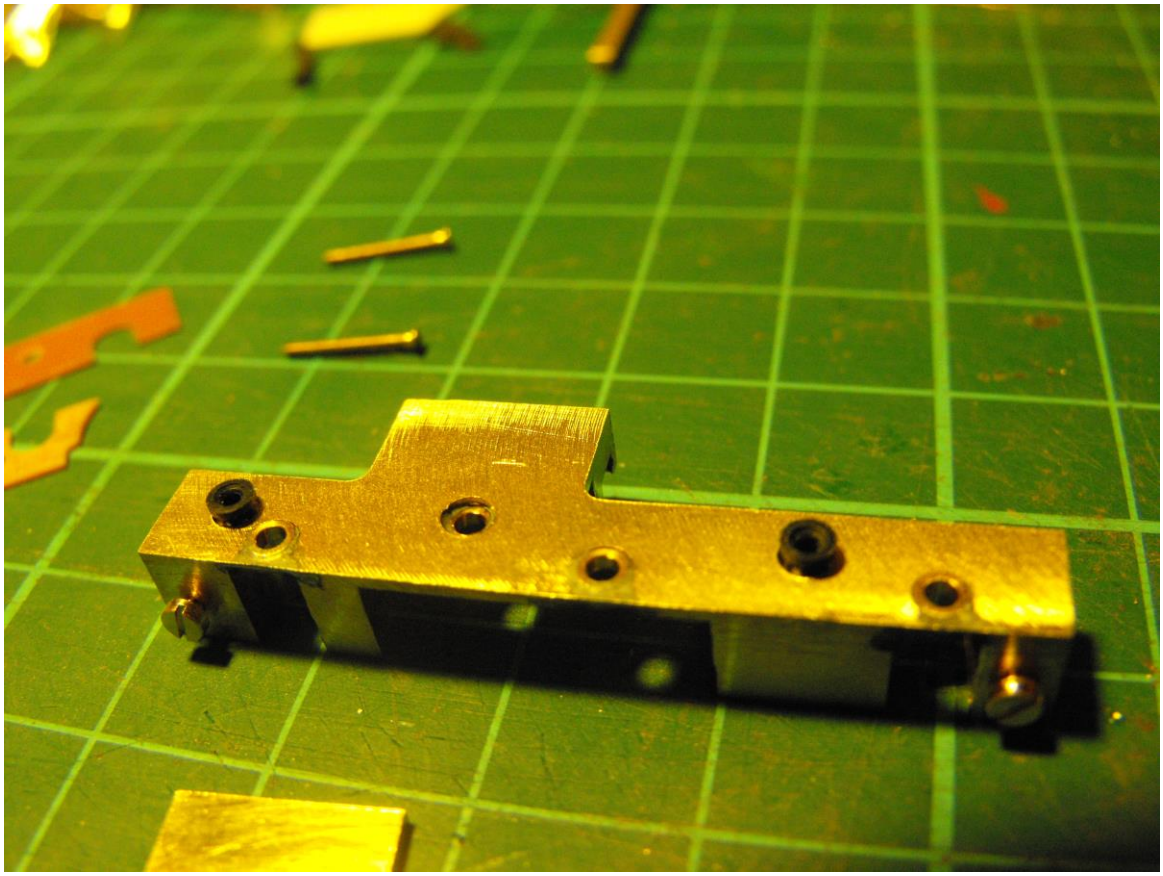
On the larger part, solder two bearings into the slots shown on the upper extension. The stepped side of the bearings will rest at three points in the squares. A 1.5mm drill will keep the bearings square. A wooden or MDF jig can be made by drilling a 1.5mm hole through a 7mm wide piece. Place the drill bit in the jig and put the bearings either side on the drill bit with the full faces towards the former. This holds everything square whilst the soldering take place. Once soldered, remove the drill bit and the jig. Ream the bearings and check with a piece of axle steel that all is square.

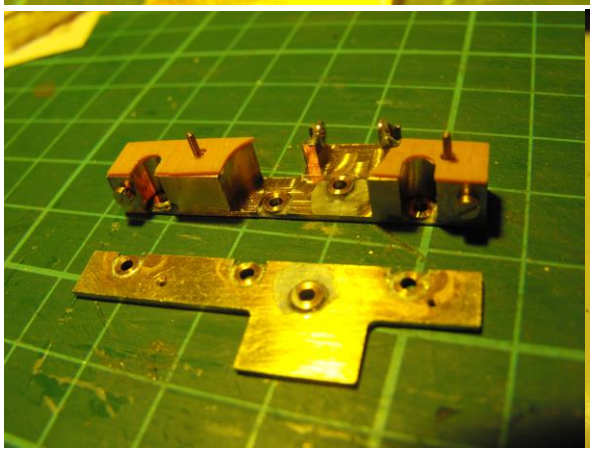



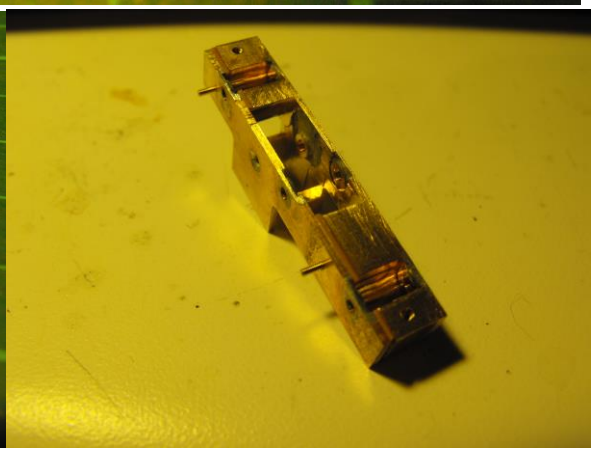
File the bearing marked here as flush as possible to the face of the block as possible.

1.3

Place the insulator flat pieces on the larger part and ensure the alignment is OK. Put the 14BA bolts through the insulator bushes and fit these into the recesses from the outside edge in the larger part so that the screws protrude. Place the flat insulators over the screws and place the other chassis side adjacent, feed the screws into the threads on the thin chassis side and pull the two sides together. Place axle steel through each pair of bearings so that the chassis is central. If the steel won't pass through both bearings, gently ream until they do. Tighten the screws gently and ensure the axle steels can move gently.



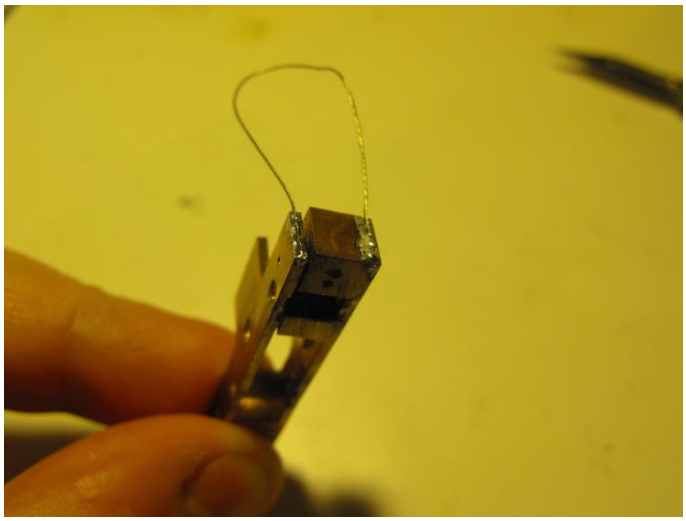




1.4

After this dry run, dismantle the bolts and remove the bushes to prevent melting. Using a small file, make a narrow groove on the outer edge of the large block on the rear face and again on the rear edge of the plate side. Apply some flux to these grooves on the rear edges of the chassis. Do ensure that solder will not bridge the insulation. Particularly on the wider side, ensure plenty of heat allows the solder to really adhere. Tin some thin bare wire and form a loop approximately 2 inches long. This wire will form the electrical connection to the tender. It could be two short lengths, but the loop comes in handy at the painting stage.

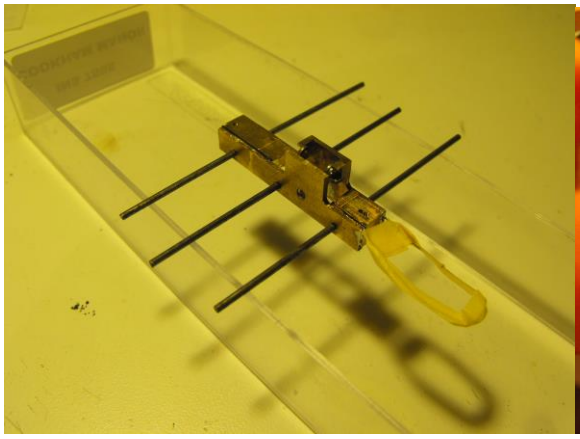
You may find your own way to attach connections and thin brass or phosphor-bronze sheet to replicate the original set up is one possibility. Wire done in this manner, however gives flexibility later in the build. You will need plenty of heat on the larger block, so keep the metal as clean and possible and use appropriate flux.

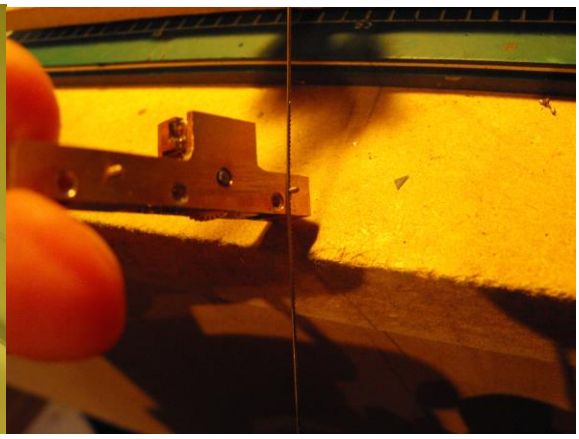


1.5

Mix up some epoxy glue, take the two chassis sides apart and put a thin coating of glue onto the larger chassis block face and stick on the flat insulators. Leave the other faces of the insulators clean then screw the plate back on and allow the glue to dry completely while the plate keeps everything flat. Then undo the plate and take a scalpel and trim the insulators to the shape of the recesses in the chassis.

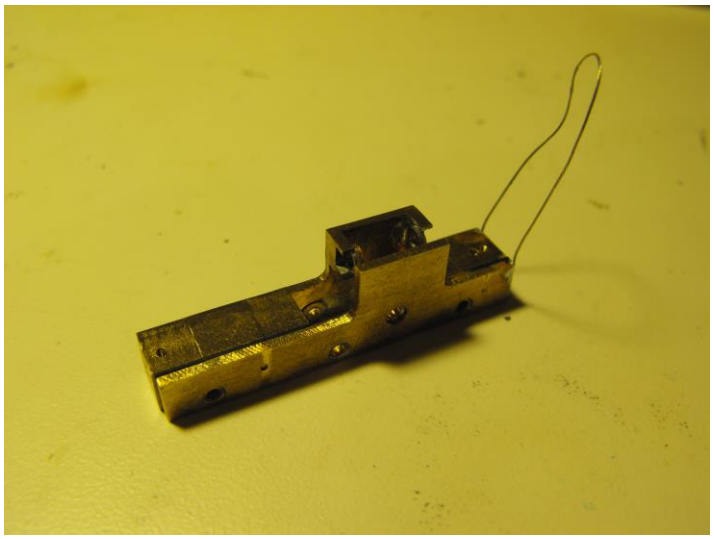
Then put a thin layer of fresh epoxy on the upper faces of the insulators. Screw everything loosely back together and insert the axle steels. Place the assembly on a known flat pair of risers. The box lid of the Manor is ideal when placed on a known flat surface. Push gently on the steels so that they all line up square and there is no “rock”. Once at this stage fully tighten the screws and keep checking for rock. When happy, ensure screws are tightened and leave glue to cure fully. If using 10 minute epoxy, it is recommended to leave it a couple of hours to really set.





1.6

Once the glue has cured, cut off the end of the protruding screws and file back flush.



1.7

Check that the axle steel passes through every bearing pair, for the wheel axles, the intermediate gear and the worm. Ream if necessary

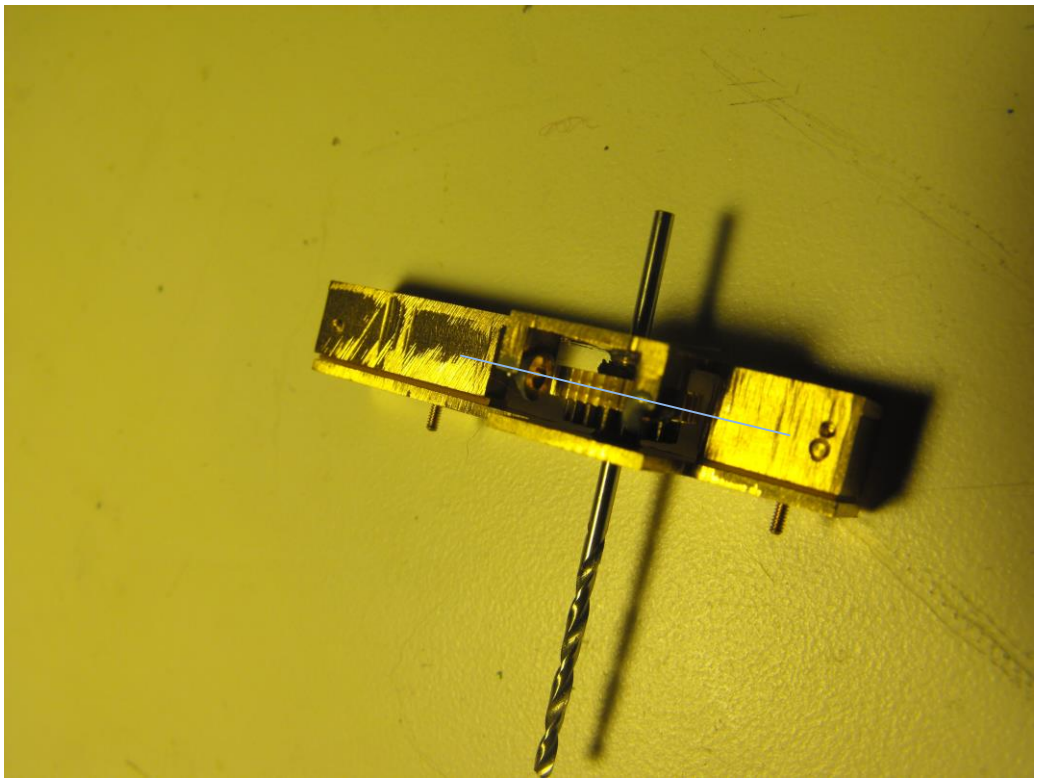
That completes the block assembly and we now move on to the mechanical elements.

Gear Train Preparation

2.1

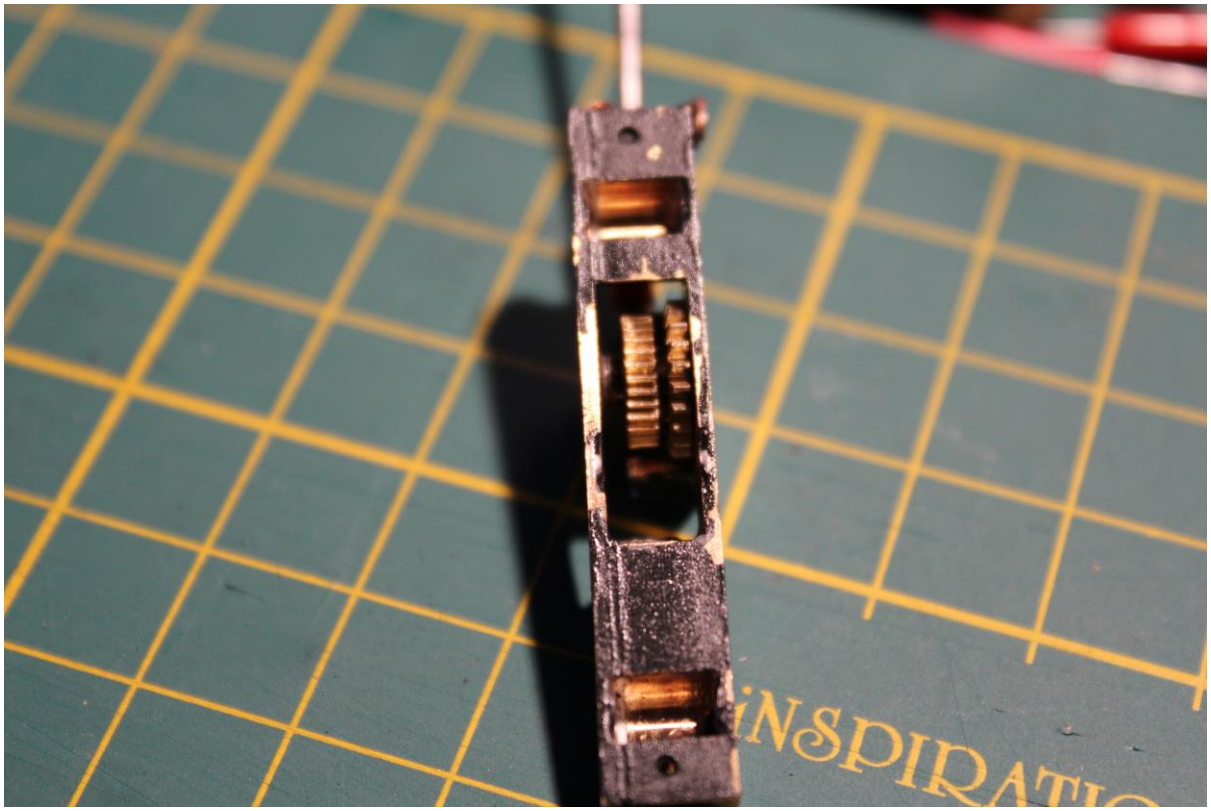
Having first ensured that the bearings for the primary shaft have been filed back as in part 1.2, measure the width available between the bearing faces and cut a gear muff to be a loose fit but without any real slop.

Take the scew-cut worm wheel and mount this on the gear muff, pushing it up so that it lines up with the centre-line of the worm when offered up within the chassis. This will put it slightly closer to one end of the muff than the other. The picture here shows the principle, but ignore the small gear here as the design changed slightly. A 1.4 mm drill is used to slip into the muff but lines things up sufficiently to prove the point.



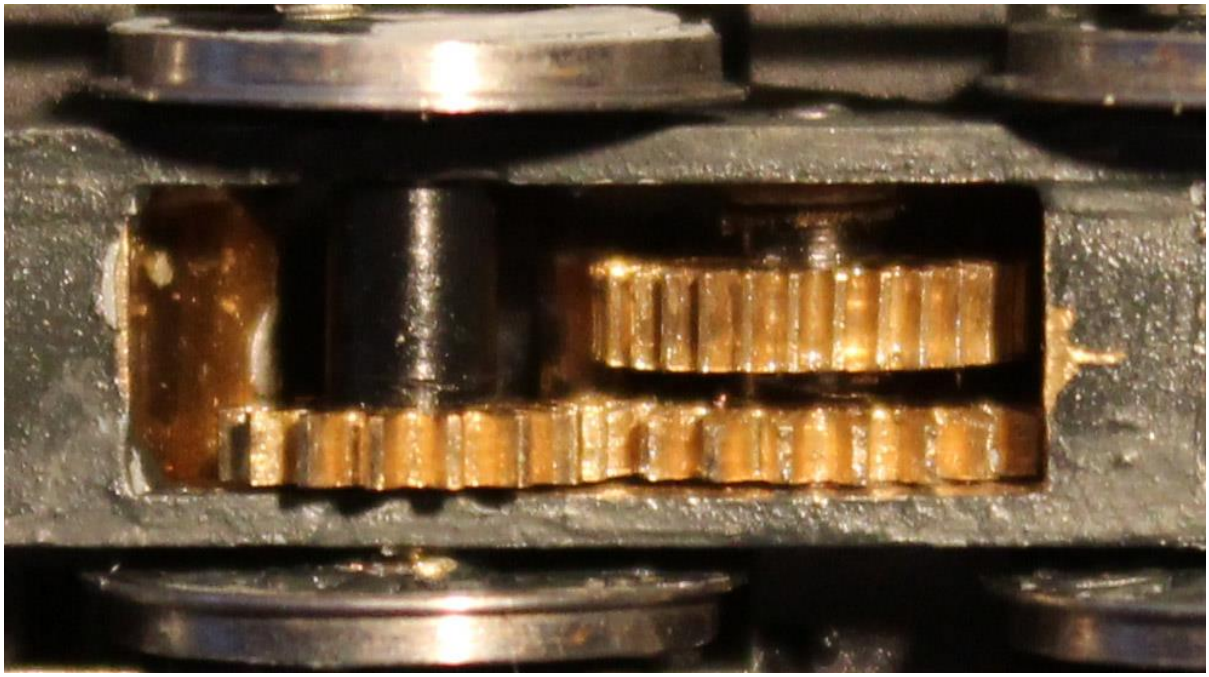
Then select your chosen primary spur gear (22tooth for 70 mph, 20t for 50mh, 18t for 45mph and 16t for 35mph approximately). If using either the 22 or 20 tooth gears, it will help to bevel the edge on one side to avoid any risk of the gear catching the worm as these gears are larger than the primary worm wheel. A small flat diamond file can be used for this. Just place the gear face down and draw the file outwards and downwards from the centre simply to take the square edge off the teeth on one side. The picture below shows that the bevel doesn't have to be a lot.

Then take this gear and fit it on the longer side of the muff, with the bevelled side towards the scew gear. Push it onto the muff only up to the end of the muff, leaving as much of a gap as possible between the gears.

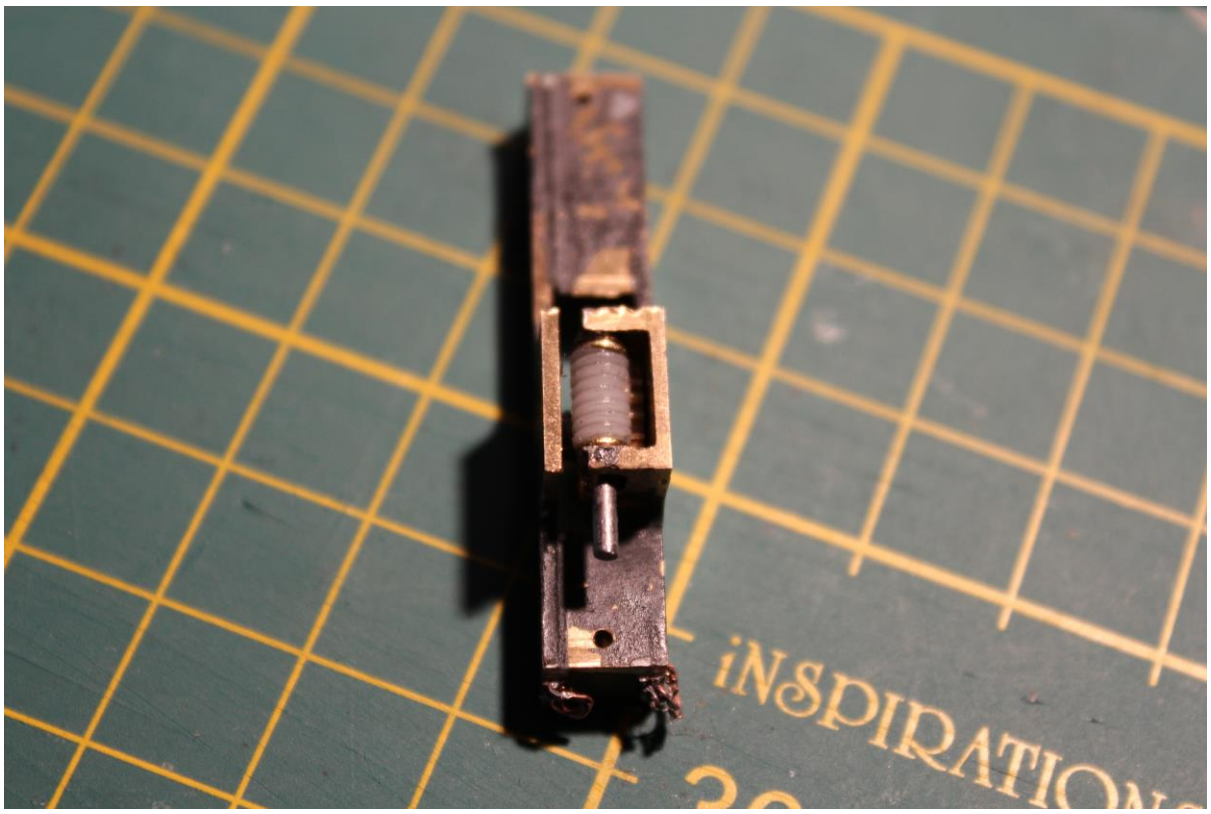


The photo above shows the alignment and the slight bevel of the right hand gear. The flat un-bevelled face of the gear is against the face of the bigger block. In this instance, the right hand gear is the 22 tooth version.

Take the other gear muff and again measure and cut it so that it is a loose fit between the centre axle wheel bearings. Note that the two muffs will not be the same length as the wheel axle bearings are recessed on both sides. Then take the secondary gear and fit to the very end of the muff. Again use a 1.4mm drill and ensure that the gears mesh, spinning freely and without wobble.

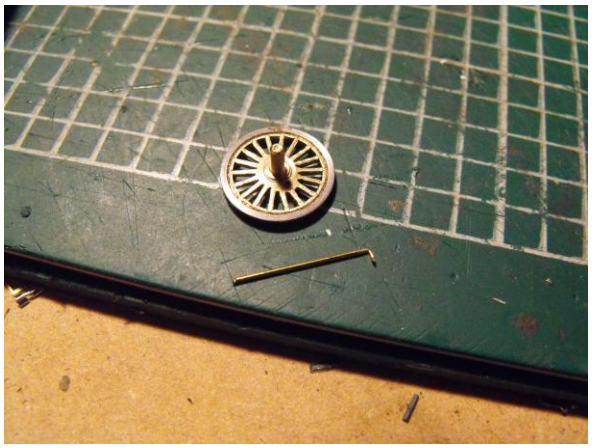


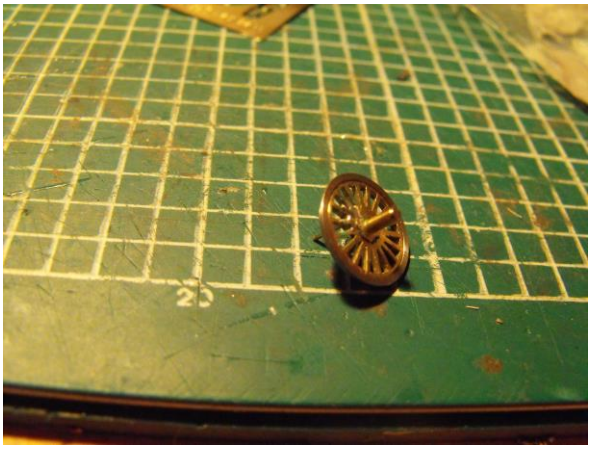
Cut the worm to 6.9mm long using a scalpel ensuring that it fits between the worm bearings. Alternatively, cut it slightly shorter and add washers at either end as shown here. Either way, ensure that the worm can spin freely between the bearings with a 1.4mm drill to check alignment.



2.2

Take the brass wire and cut 6 x 10mm lengths. Take some small pliers and bend over the very end of the wire (less than 1mm) to a right angle. Take a file and flatten the inside edge of the hook to give a sharper crisper turn.





Place the wire into the crank holes of the driving wheels. Place the bent part along the line of a wheel spoke and, using some flux, solder to the back of the wheel. File the whole thing flat as close as possible to the back of the wheel.

Take the centre driver balance weights and fold and solder (or glue if preferred).Note that all folds are half etched on the inside of the fold. Take all the balance weights and use epoxy glue to attach them to the wheels. Two types of outer driver balance weights are included in the kit, so refer to photographs for type and positioning on your prototype.



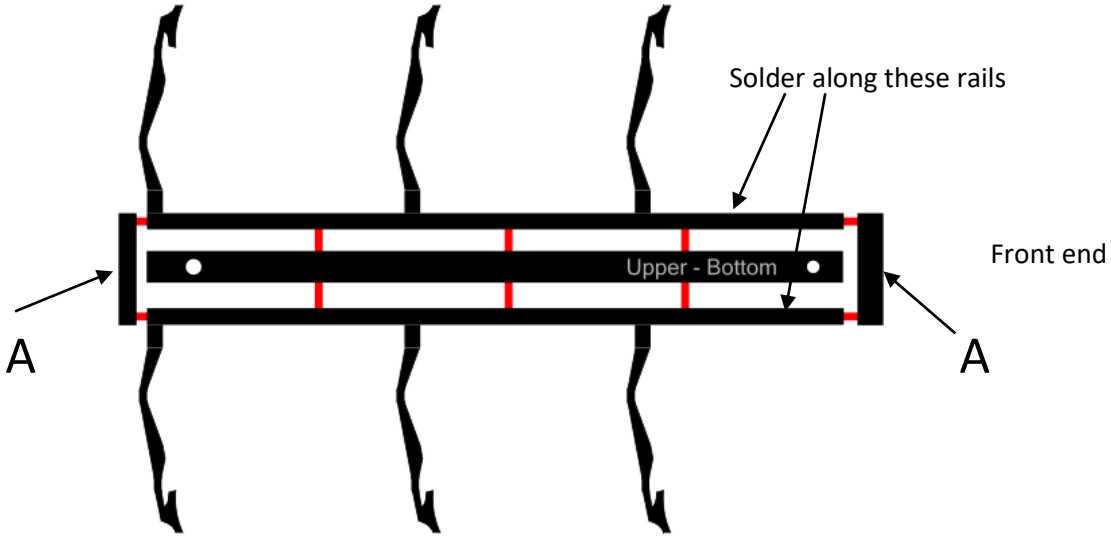
The centre axle weight is folded and attached with the plain side towards the wheel. The two types of outer driver weight are also shown in outline here.



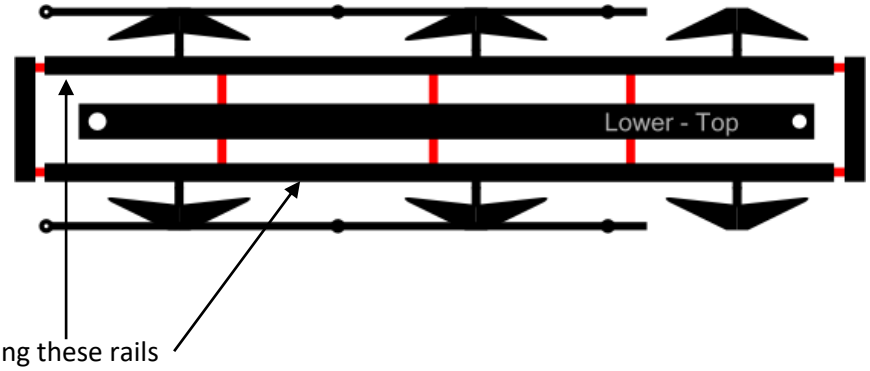
2.3

The brake gear is very delicate during the assembly stage and has been designed to work in a very specific order with the support parts of the etch. Do not cut out in any other manner as the support will not work keeping things aligned.

Take the brake gear etch and cut out only the complete part shown here. Ensure the two end bridge pieces are still attached marked A.

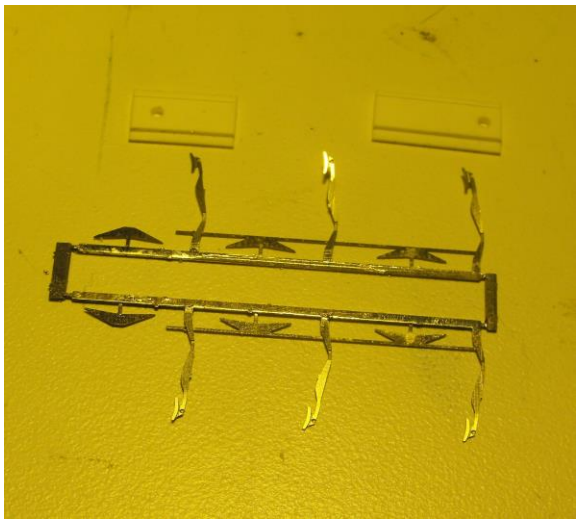


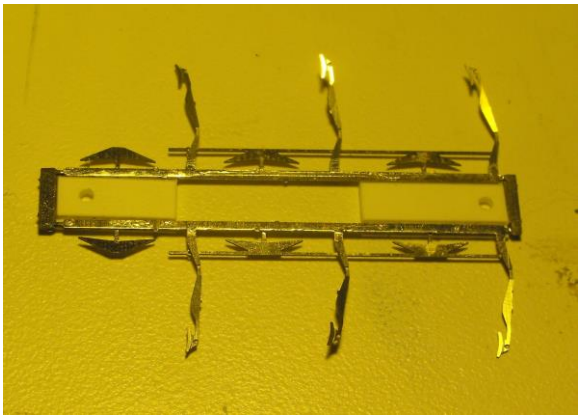
Take the spring and brake rodding etch, again ensuring that the whole of the shape shown is intact.



Tin very lightly with solder along the long thin runs on the respective faces marked Upper bottom and Lower top. Place the two layers together and sweat them together so the solder layer is minimal. Alternatively use epoxy glue. Place them as shown in the picture with the type written areas directly facing each other.

Cut away the two layers of central etch (with the holes) leaving just the end bridge pieces (A in the diagrams) in place to keep things aligned. Ensure that the spring etch is on the bottom and glue onto the stepped plasticard (step facing upwards as per the picture) using epoxy glue. Ensure the ends of the plastic are placed up against the bridge pieces. The thinner areas of plastic go between the etch rails and the wider part glue to the etch rails. The shorter stepped piece goes to the rear and the longer one to the front (please note that the photos below show these at the wrong ends). The ends with the holes will be outermost. Check the distance between holes using the central etch part just removed.



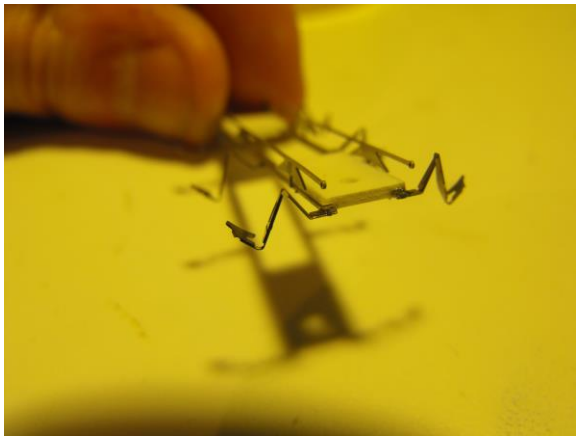


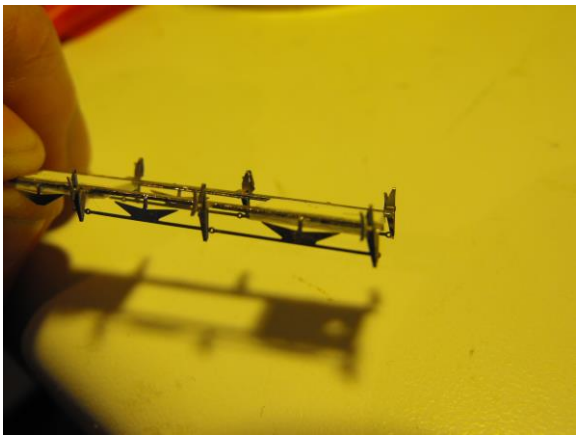
Turn the unit over leaving the brake shoes and arms part flat on the work surface, gently fold up the spring and rodding areas to right angles. Put a fillet of glue on the inside corner to strengthen against the plastic.

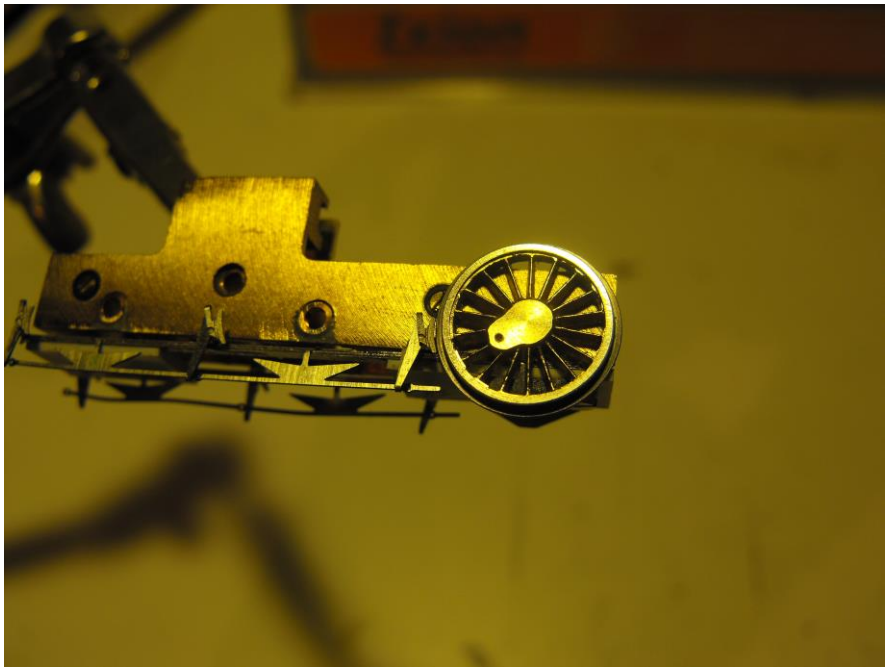
Once the glue is set, remove the end bridge pieces. This ensures that there is no electrical link side to side on the chassis.

Gently bend up the brake arms as shown in the photo below. Fold back the longer part of the arms but don't quite fold the flat folds back on themselves at this stage. Now take the chassis and screw the brake etch assembly gently to the bottom of the block. Do not over tighten the screws.

Finally, slot a driving wheel into the axle hole and fold over the brake shoes and line these up with the wheel tyres, doing one wheel at a time. Glue with epoxy when happy with the alignment. Ensure that the outside faces are flush or inset from the wheel faces and won't catch the coupling rods.





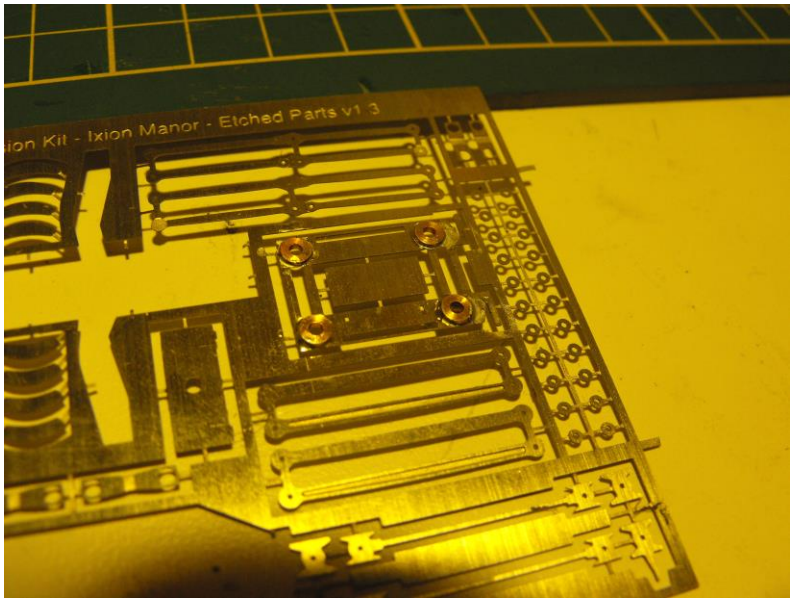


Once all six shoes are in place an option is to fit the transverse wires from the rods to the brake levers on the two axles with holes on the rods. In practice these are not visible from normal distance, so components for this are not included. Thin plastic rod could be glued, or wire used. Just ensure that a short is not formed between the two side of the chassis.

Unbolt the brake assembly and set aside for painting.

2.4

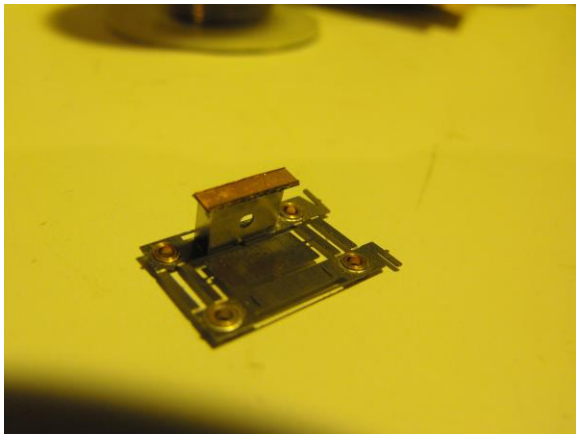
Take the front bogie etch and first fit the bearings. These are fitted face out and ideally should be soldered, but could be fixed with epoxy as no electrical connection is made.

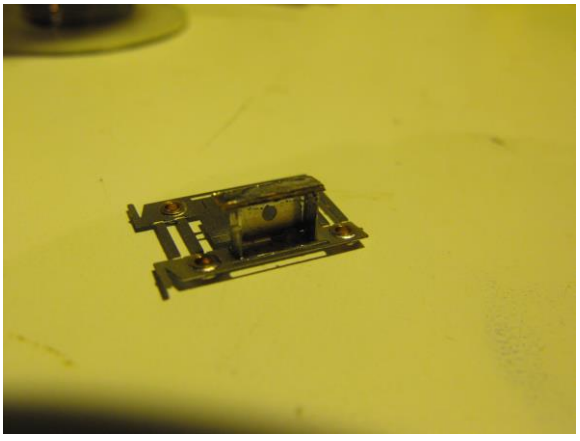


Once the bearings are fixed, remove the bogie form the rest of the etch and also remove the bearing piece (to the left of the bogie etch in the picture above). File the remains of the etch tabs, but ensure the location tabs remain on the bearing piece. Fold the bearing (half etched line on the inside) and offer up to the bogie. The location tabs will fit on one side of the bogie only, the holes in the other side won't accept the tabs and are there to show the area for soldering or glueing. With the bogie face down (the half etched lines on the brifge pieces upwards, fix the bearing box as per the picture. Then attach the PCB to the box section and tin the top side if soldering.

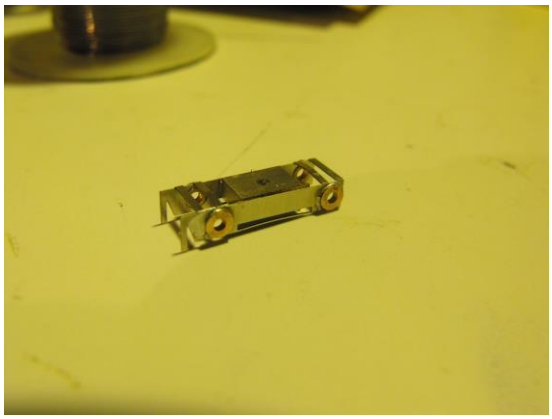
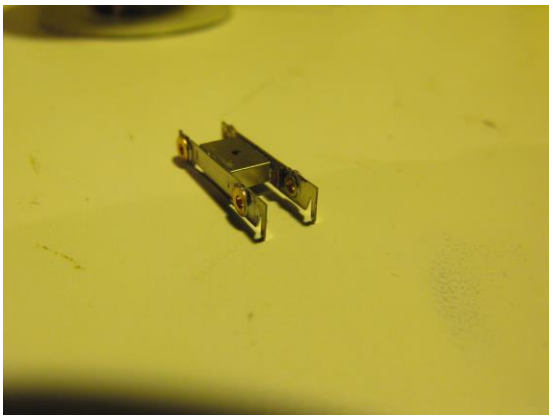
Next remove the central rectangle from the bogie etch and fold the bogie so that it is square and lines up. Fix the other side of the bogie face to the PCB.

Ream the bearings if needed and ensure axle steel can be fitted and turns freely.

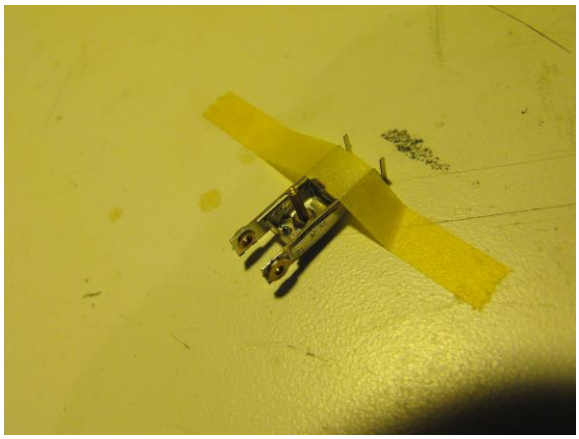




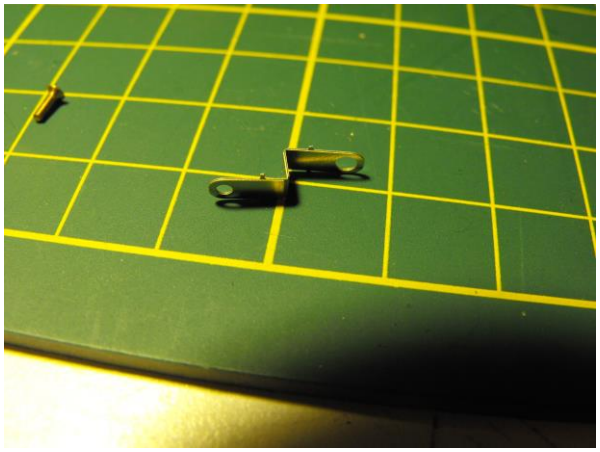
When everything is straight, true and secure, cut the spreaders front and rear and ensure that no short is present side to side.

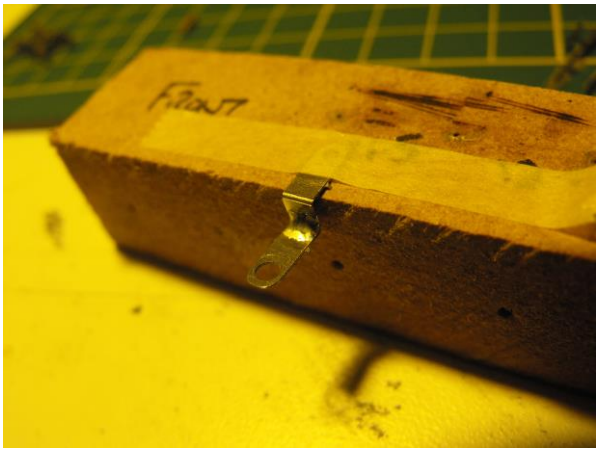



Take one of the 12BA screws and put this in from the top of the bogie and put the nut on inside the box section of the bogie. Secure the screw tight. Either solder or add epoxy around the nut, but ensure that the screw is not affected and can be undone, so try without flux. Once this is secured, undo the screw. Fill the box section around the nut with lead shot or other appropriate ballast. Fix the ballast in whatever way you prefer and allow to set.




Take the bogie pivot arm and bend to the shape shown. Then add some solder fillets or a wedge of epoxy to keep the shape.



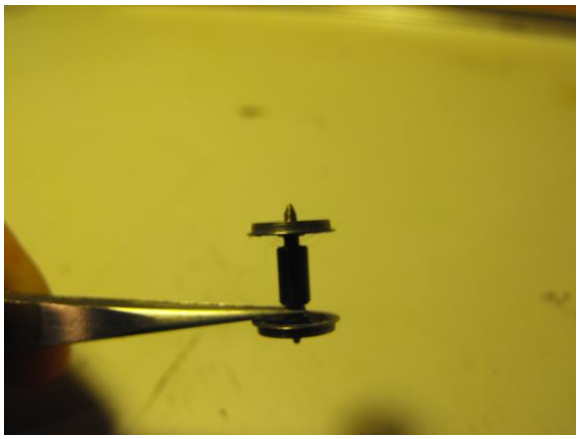


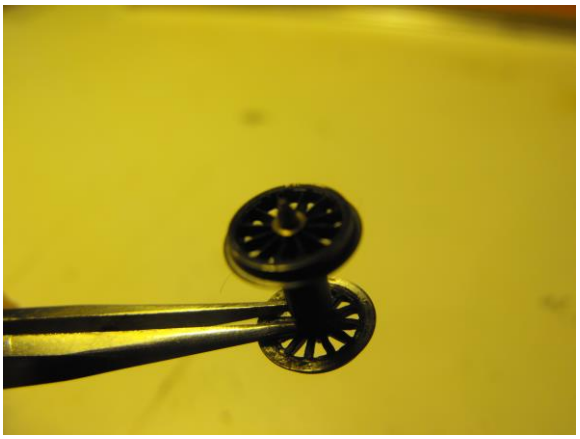
At this stage set aside the bogie, pivot arm and bogie wheels for painting.

2.5

Take the extended axle wheels and cut the extensions back to approximately 2mm proud of the wheel faces. Place the stub axle into a drill chuck or lathe.

With the wheels spinning use a flat file to put a cone end onto the axle. Be careful and keep checking the length of the axle . Aim for 1.5mm proud of the face at the very tip of the cone.



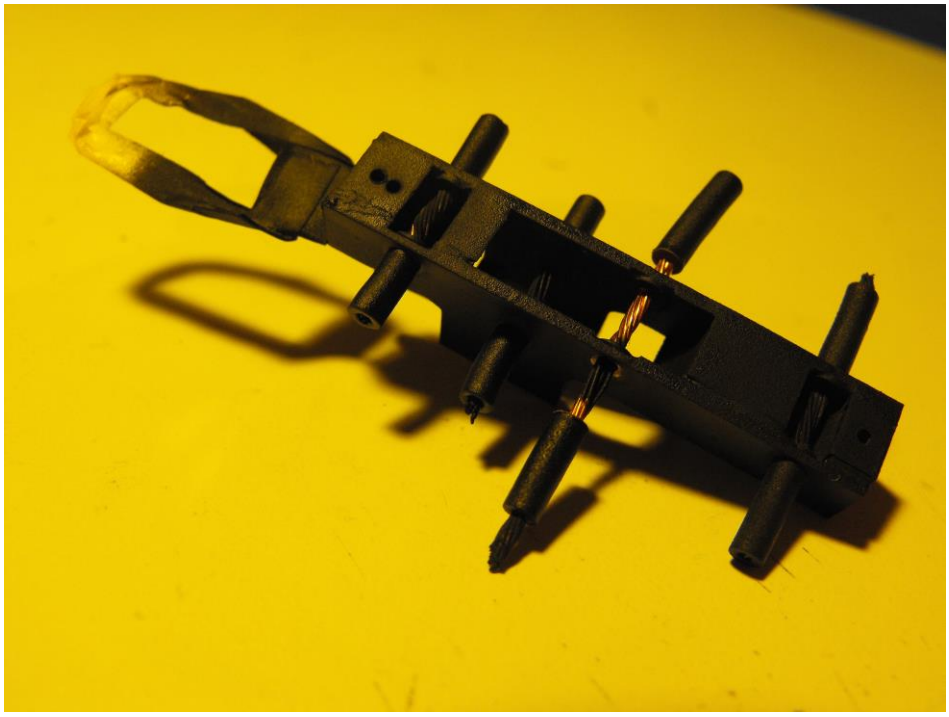


The first will take a while, so don't worry, take it easy. The sixth will seem easy!

Place two wheels against a back to back gauge and measure the axle length over points. The target is 14.3mm over points and this should match the original wheelset. If you have a point with a shorter face to point measure, pair it with a longer one to get the overall length right. The actual shape of the cone is not too critical as the pickups on the tender are fairly generous.

3.1

Now is the time to paint everything. Remove any axles, gears and wheels. Mask up the connection wire and the bearings. A suggestion here is to use multicore insulated cable. Remove the insulation, take a few strands out, put the wire through the bearings and re-fit the insulation. This covers up the appropriate faces of the bearings. A simpler but slightly less effective alternative is rolled up paper. On the wheels, insulation from different wire sizes can be used over the stub axles and crank pins. Spray undercoat then matt black or whatever chassis colour you prefer. Wire or paper in the threads at front and rear of the chassis would also help.





Also paint the front bogie, bogie arm, brake gear and wheels. One tip for the wheels is to use a strip of card with 1.5mm holes drilled through it. Mount the wheels in this and cover the stub axles with the wire insulation (also the points on the tender wheels).

Once dry, remove all masking, ensure bearing surfaces are clean (gentle use of a reamer may be needed but don't over do it. Clean up all wheel treads and axles.

4.1

Take some axle steel and cut two lengths 3mm long. Put the muff with two gears into position with the bearings higher up the chassis. The scew cut gear needs to be as close to the centre-line as possible. Insert the axle steel from either side and push home. A toffee hammer can be used here.

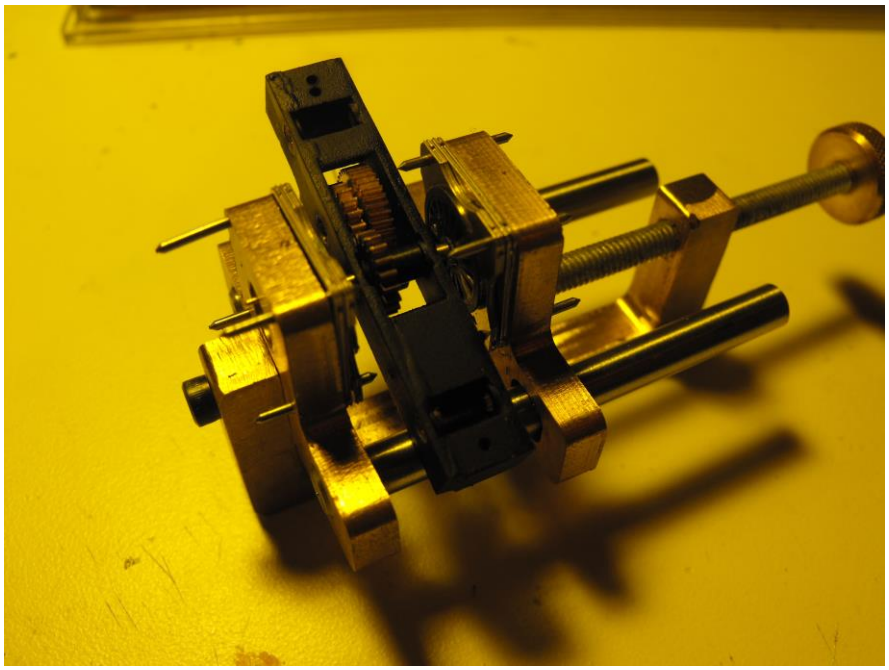
4.2

Take the main coupling rods, fold up and laminate with solder. Once you have laminated, ensure that the crank holes fit over the crank pin wire and ream a little if required.

4.3

Cut two plain axle muffs to 5.2mm length using a scalpel.

Take the second gear muff along with the central driving wheels and mount the gear in the central bearings, ensuring the mesh with the primary gear. If using the association quartering tool, it will look like this.

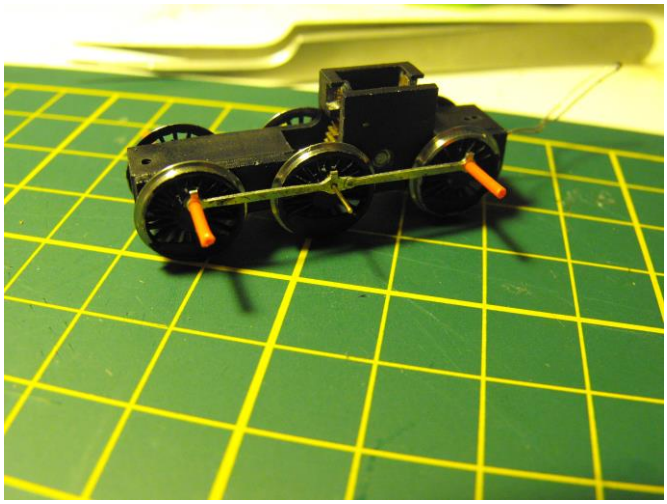


Having set the centre drivers at 90 degrees and checked the back to back, fit one side of the front axle, pushing the wheel into a muff. Then hold the appropriate coupling rod over the crank pins of the two axles using wire insulation. Line up the wheels so both are at either 12 o'clock or 3 o'clock and push in the front driver on the other side so that the crank positions are the same. Use the other coupling rod to ensure that the position is the same.

It isn't vital that the cranks are 90 degrees off side to side, but the relative positions of front and rear axles to the centre axle is the priority. Do not adjust the centre axle, but twist the position of the front axle to line up with the existing work.

Once you have four wheels accurately aligned, start on the rear axle and use the same technique. You should have a chassis with six wheels which rotate with coupling rods attached. If you have an Association quartering tool, use it in the prescribed manner. It is shown in the pictures but is not essential.

Check the back to backs using an association gauge and keep tweaking until all axles are to gauge and successfully quartered. The chassis should then roll in both directions with coupling rods fitted with insulation retainers.



There should be a little side play on each axle. Ensure that muffs are central and side play is even.

5.1

To solder up the coupling rods and valve gear is the only part where gluing is not an option. If you are not very experienced with this, a tip is to get an off cut of wood or mdf to use as your soldering base. Use masking tape to hold the parts to the board and to separate bits where you don't want the solder to go. Read through the instructions first to see where you need to end up and follow carefully cleaning up each stage before moving on to the next.

Take the cross slide etch and fold in half to form the long piston rod and inner part of the slides. Solder the two parts together but leave the larger cross slide outer parts free to fold back over. A piece of masking tape can help here. Ensure that the two holes line up. If needed, clear the holes with a 0.5mm drill. Then fold over one of the outer parts and solder that, again aligning holes and clearing as needed. Finally fold over and solder the last part. Solder to the rest then clear the holes, ensuring that some 0.5mm brass wire is a loose fit.



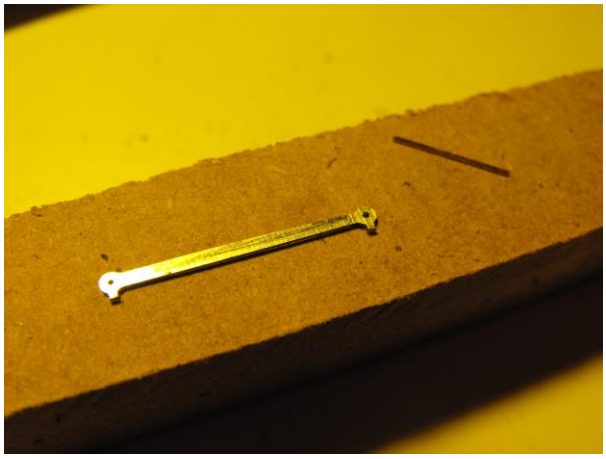




Do this for both sides, remembering that the extension on one of the cross slides will be the outer part of the right hand side valve gear. The extension needs to be formed into an S-bend in order to slide behind the vacuum pump moulding, but this can be adjusted later.

5.2

Take the connecting rod, fold up and laminate with solder in the normal way. Take a scrap of wood or MDF and drill a 0.5mm hole at right angles to a flat face. Take a 10mm length of brass wire, drop in into the hole so that it sticks up vertically. Place the thin end of the connecting over the wire face down so that the plain side is uppermost. Solder the wire into the hole. Remove from the block and file back the wire and solder so that the rear face of the connecting rod is flush, but still has a length of wire protruding from its front fluted face. Complete both connecting rods in this way.

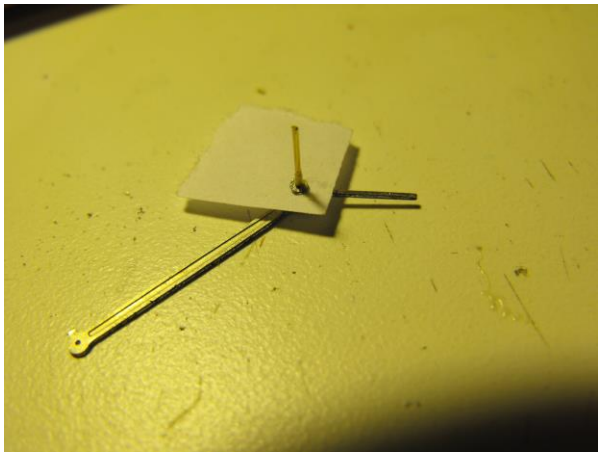


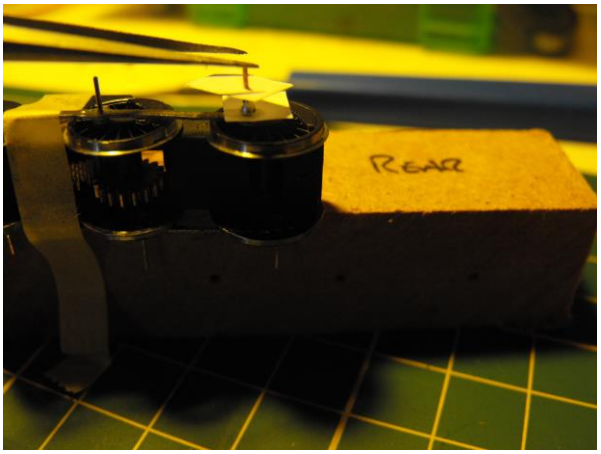


5.3

Tape a connecting rod to a flat surface (preferably the scrap wood or MDF) with the wire sticking up. Place a cross slide onto the wire and ensure it can rotate on the wire and is not stiff. Ream if needed. Take a small piece of paper and either drill of push a hole in it so that it is a snug fit on the wire. Place on top of the cross slide. Take one of the crank pin discs and place on top of the paper. Get some flux and solder the disc to the wire.

A tip here is to get the disc close to flush, but not quite home. Get another piece of paper, place It on the wire above the disc and take some tweezers. Place the soldering iron briefly on the solder on the disc, remove the iron and immediately push the paper down with the tweezers. This gives a snug flat solder joint. The picture below right shows the concept, but using the rear driver.





Gently remove both paper layers (pulling sideways for the interleaved piece). Cut back the wire and gently clean up the disc as flush as possible with the needle file.

You should have two connecting rods with cross slides attached which are free to pivot.

5.4

Place a crank pin washer on the centre and rear drivers. Push a piece of paper onto the front driver crank pin but do not fit a washer. This ensures clearance behind the cylinders but means a very slight bend in the coupling rods. The coupling rods have a half etch on the front journal and should be put on the pins now. Solder crank pins onto the front and rear drivers, using paper separators as before.Place the appropriate connecting rod on each centre driver. On top of the rods, push paper over the pins, then washers and solder using the same technique as on the cross slides.

You should now be able to check free movement of wheels and rods.

5.5

The final part of the gear train is to fit the worm. Cut a piece of axle steel to 15mm length and push through the worm and leave the excess to the rear end of the chassis. If using the washers, it can be easier to fit if this axle is cut into two pieces, one 3.5mm long and the other 11.5mm. Fit the short axle at the font and the longer one to the rear. Keep the connecting rods out of the way and use a solid block to rest the worm tower on as the axle is pushed home.

You should now have a rolling chassis. Try putting a piece of tube (wire insulation) over the worm shaft and turning the worm to ensure everything moves sweetly.

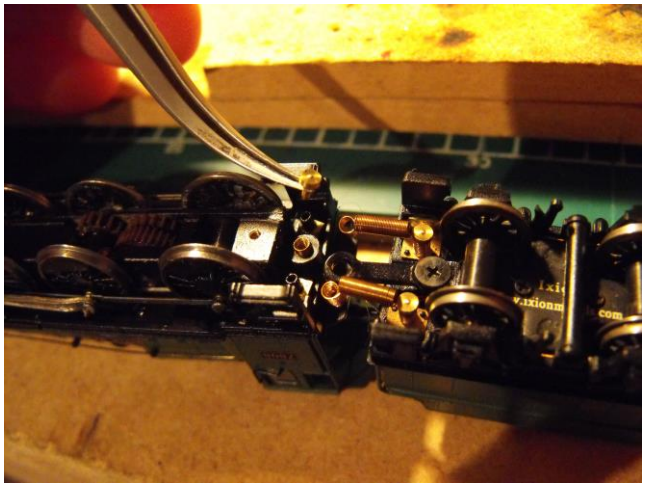
6.1

Take the locomotive and support it upside down, preferably in a loco cradle. Unscrew the front bogie using the screw behind the bogie, not the one going through the bogie.

Note that the pictures below are for the Ixion version of the Manor. You may find that the later versions, the Hall and Grange are slightly different, but only small allowances are needed to enable a fit.

There are two types of tender electrical connection. The first locos used springs, the later ones have soldered wires. If you have the spring type, take the brass pins on the loco and pull upwards. They are just a push fit into a plastic sleeve. Small pliers are required. The springs can now be released.

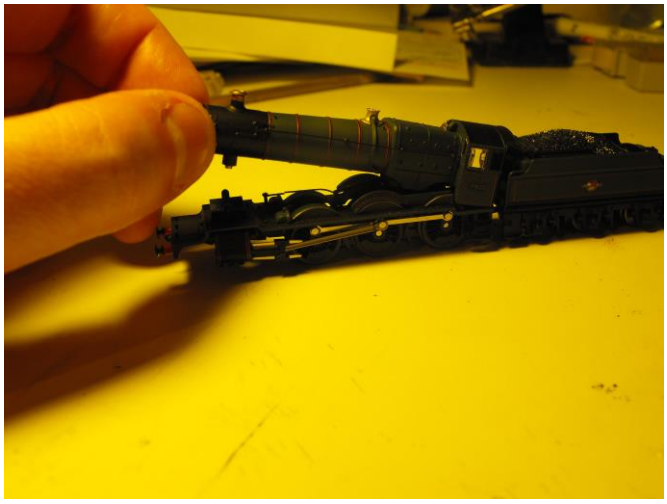
If you have the wire type, take a small solder tip, briefly touch the solder area and use tweezers to move the wire.



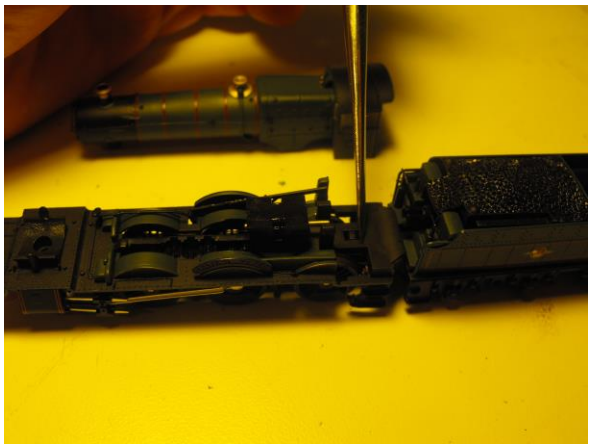
Undo the tender connecting screw on the locomotive end of the drawbar and draw the tender away, checking that the drive shaft isn't lost.

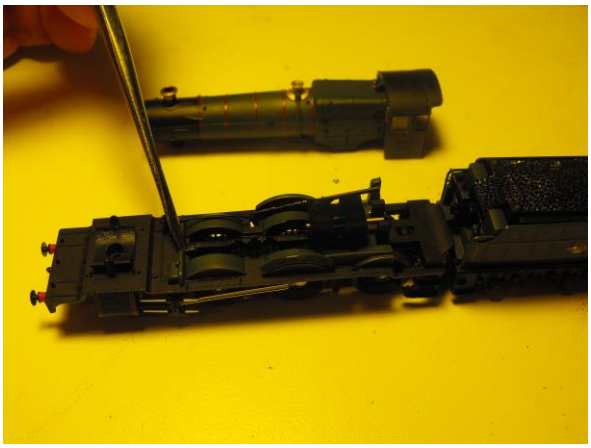
6.2

Undo the screw at the front of the chassis revealed by removing the front bogie. Turn the locomotive up the correct way. Lift the smokebox end of the boiler and rotate around the cab end to release the boiler and cab from the footplate. Set this aside and be careful with the smokebox saddle and steam pipes moulding as it is loose now.



Use a small screwdriver and push the retaining tag at the front of the chassis. Gently do the same at the rear, but don't pull the chassis away just yet.



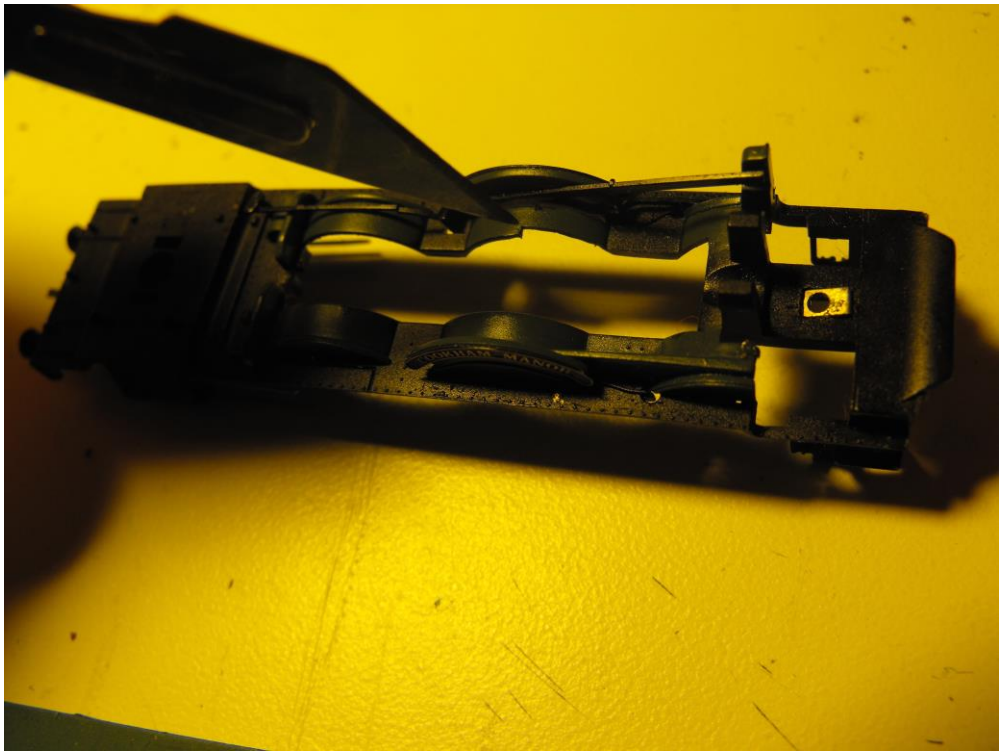


Turn the loco over and use a small screwdriver or tweezers to lift the small phosphor bronze pads over the plastic tubes. Gently ease these at the same time as removing the chassis block from the footplate. Leave the cylinder assembly on the footplate but remove the cross slides from the slide bars. Set aside the chassis in case you feel an N gauge conversion coming on!!

6.3

The new chassis is slightly wider at the worm tower and part of the inner edges of the rear splashers have to be carved away using a sharp scalpel. This area is invisible when the boiler is fitted. Aim for an overall width of 7mm but ensure that the footplate will fit over the gear tower. Keep shaving and trial fitting rather than going for one large lump of plastic in one go. The footplate plastic is fairly soft so just take it gently- it doesn't take long. This is the only non-reversible part of the conversion, but

as stated is invisible to the outside.



6.4

Once sufficient clearance has been created, slot the cross slides into the slide bars and bend the vacuum pump extension if required. Rest the foot plate on top of the chassis in the same position as the original.

Take the retainer clips from the etch and fold in half. The smaller ones are for the rear and fit in the hole in the firebox area. The longer ones sit at the front of the chassis simply hook over the top of the footplate in the natural slot.

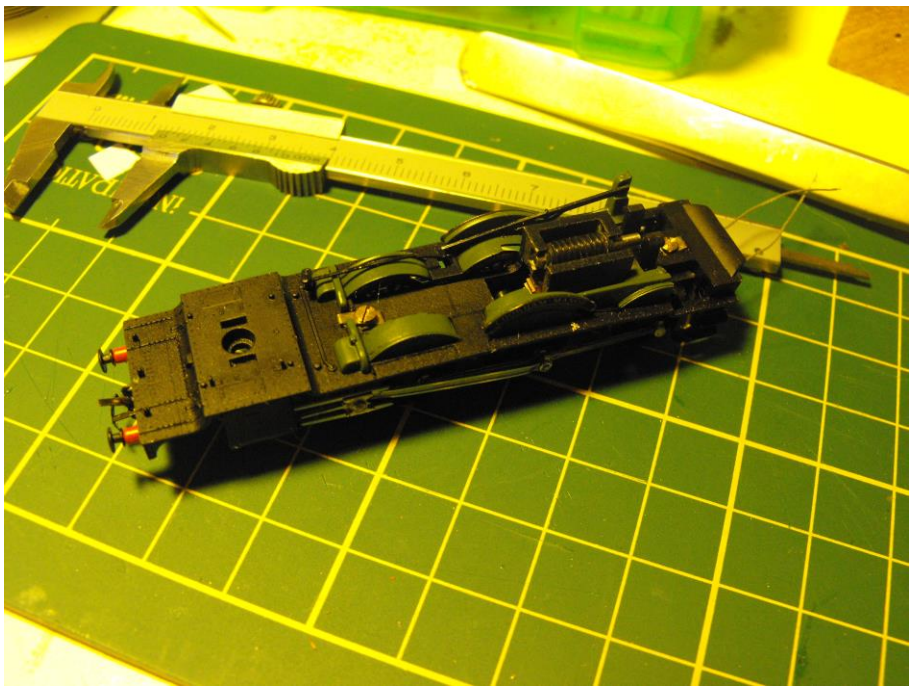


Front Bogie pivot arm

Rear and front retaining clips

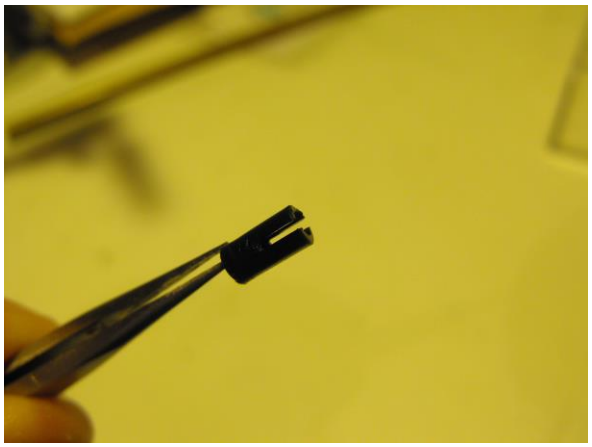
Take a 12BA screw and thread the supplied spare nut all the way to the head of the screw. Cut the screw to about 4mm of threaded length using an appropriate small saw and clean the end of the screw with a file. Try to file a gentle bevel around the edge. Undo the nut so that it cleans the thread at the end of the screw. You may need to tighten the nut again, file a bit more and then actually remove the nut in order to get a clean end that will thread into the chassis. Do this for all 5 12BA screws.

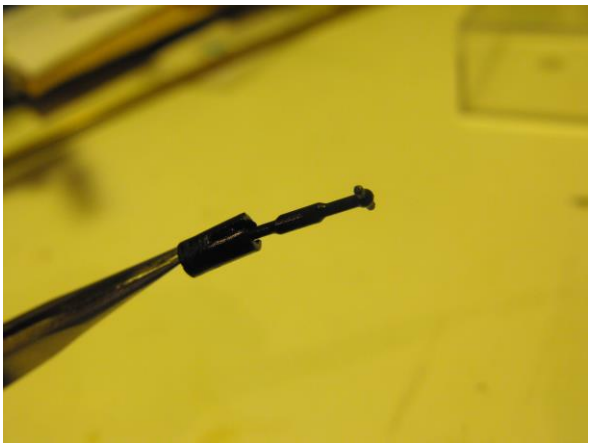
Use one screw each for the footplate retaining clips. Put the other screws aside for the brake gear and the front bogie. Just check that the wires at the back of the chassis are not trapped, but sit next to the tubes where the tender connections go.



6.5

Take a normal muff and cut a slot directly across at one end. The slot needs to be approximately 1mm wide, so one junior hacksaw pass or equivalent should do. Take the drive shaft and ensure that the muff will accept the ball end and the drive lugs have sufficient but not excessive play.





Push the muff onto the end of the worm shaft to mimic the original on the Ixion chassis.

It is possible now to put a small screwdriver in the slot on the muff and rotate everything and check for free movement.

Take the cab and boiler assembly and re-fit to the footplate by dropping the cab end and rotating it into its retained position. Ensure the saddle is in place under the smoke box. Invert the loco and re-fit the retaining screw.

6.6

Cut the bare wire loop at the rear of the chassis and wind it around the plastic tubes at the rear of the footplate. Cut the wire to appropriate length if too long.

Take the tender wheels and mount onto muffs. After checking the back to backs and that the point to point distance matches that of the N gauge wheels in the tender, replace the original axles.

6.7

Mount the locomotive and tender in the cradle again. Attach the drawbar and refit the screw. If you have link springs, place these over the patristic tubes making contact with the wire already would round. Refit the retaining pins.

If you have link wires, carefully solder the link wire to the chassis wire. It may be easier to unwind the wire from the tube, solder the wires and re-wind around the tube.

Refit the brake assembly and secure with the last two 12BA screws.

Fit the wheels to the bogie using muffs cut to length, ensuring the back to backs are set.

Take the screw and attach the pivot arm using the end with the smaller hole. Do leave a bit of slack in the pivot so that the bogie is not held tight to the arm.

Now use the original screw to attach the pivot arm to the original boss in the footplate.

Turn the loco up the right way, ensure that the drive shaft sits correctly between the tender and locomotive. The conversion is complete.

Place a little oil on the gears and gently test on track.

The loco can be a little noisy initially as the gears bed in and the solid chassis transfers the sound. On test locos, lubrication makes a big difference to noise levels and they certainly quieten down with gentle running in.

6.8 Which way does it go?

As this chassis has one less gear in the train than the original, the model now goes in the opposite direction under power. Connecting the motor to the opposite pick-ups on the tender chassis will get this back to “Normal”. If fitting DCC, the connections can be reversed while fitting the chip, or simply selecting reverse direction when programming the chip.



I hope you now have a working finescale Manor and you enjoyed building it. Thanks need to go to Alan Smith who did the production machining and Richard Benn who drew the etch to my requirements.

If you have any questions, please email me nigel.ashton@tiscali.co.uk and I will try to help.