

Palatine Models

The Palatine Models Alex Jackson ‘Turner’ Bending Jig

Introduction

This jig was designed by Graham Turner and written about in the book ‘Alex Jackson—The Man and the Coupling’ by Dave Booth, Tony Williams et al. The book is available online from the Scalefour Society (www.scalefour.org). The jig has been designed to enable the user to produce Alex Jackson couplings with consistent accuracy. To achieve this accuracy care must be taken in its assembly. For ease and speed of coupling construction it is strongly recommended that this jig is used in conjunction with the Palatine Models 180° Bending Jig. Soldered construction is recommended but glue (either cyanoacrylate or epoxy) could be used with care. You will need 12BA nuts and bolts and some wire to complete construction.

If soldered construction is used the sweating together of parts is not recommended as this may result in solder straying into the half etched slots on the edge of Plate 3. This jig can be constructed with a 25w iron and 145° solder.

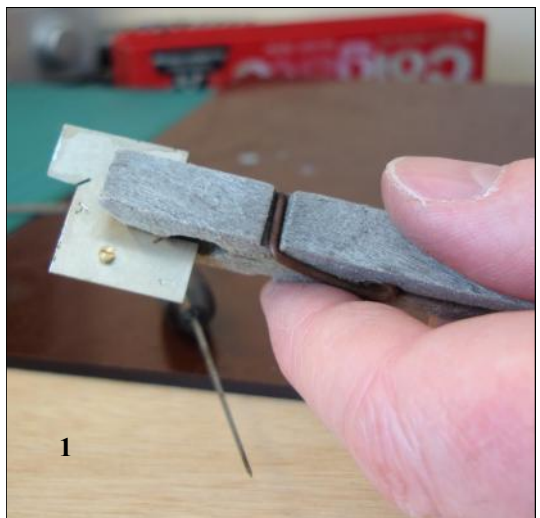
The jig is designed with each layer contributing to the manufacture so that the final assembly produces a plate of the correct dimensions in accordance with Graham’s drawing in the book. As such it is essential that the instructions are followed carefully. This does not mean the construction is difficult but providing care is taken in its construction the use of this jig will make the production of the AJ couplings a simple operation.

Construction

There are 7 steps in construction and these start with 1) Fixing plates 1 & 2 together; 2) Fixing plate 4 to 5; 3) Add plate 3 to 4 & 5; 4) Cutting the slot; 5) Fixing plates 1+2 to 3+4+5; 6) Making the prodger; 7) Making the bridge.

Before cutting the parts from the fret carefully clean with a fibreglass pencil or appropriate liquid cleaner. This will assist with soldering the parts together.

Carefully cut out all the parts from the fret and remove any tags. Each of the plates has two holes to take 12BA bolts. Carefully open up these holes (a broach is ideal for this task) until a 12BA bolt will just pass through. **DO NOT INCREASE THE HOLES**



TOO MUCH AS THIS WILL RESULT IN A SLOPPY FIT OF THE BOLTS AND THE PLATES MAY NOT BE IN EXACT ALIGNMENT.

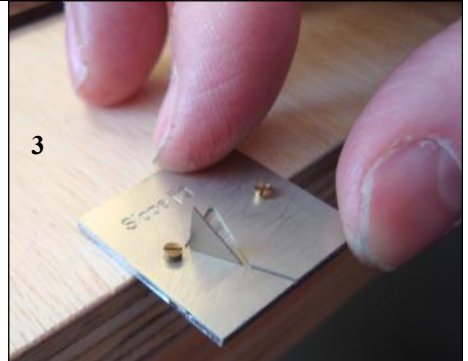
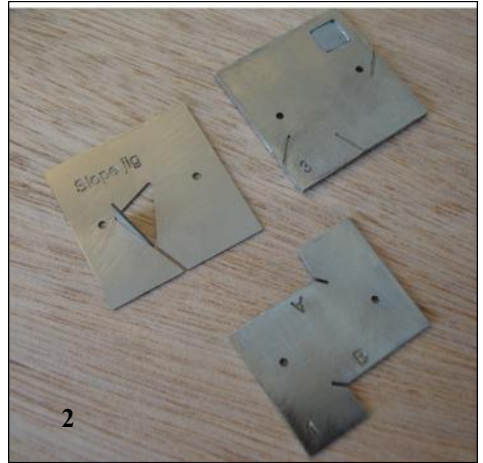
Take each plate and carefully remove any burrs or lips created by the broach. Ensure any remaining burrs are removed from the edges of the plates.

1). Taking Plates 1 and 2 ensure both are the same way round with the numbers etched in the bottom left hand corner. Carefully apply flux close to the edges around the top face of plate 2 ensuring there is NO flux close to the etched slots. This procedure only applies if you are using a paste flux. If using a liquid flux this can be done after screwing the plates together. Place Plate 1 over Plate 2 and screw together using 2 12BA nuts and bolts. Apply solder to the fluxed edges. When cool remove the screws and clean any solder from the faces of the plates. (Photo 1).

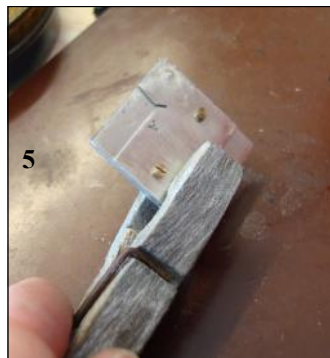
2). Now take Plate 5, turn it over so that the writing is on the bottom of the jig and flux the edges following the same procedure as for Plates 1 & 2. Place Plate 4 on top remembering to keep the etched number in the bottom left hand corner. Screw together using the 2 12BA nuts and bolts and solder the edges. You can also solder the square holes in this layer and when you put in layer 3 if you wish.

3). When attaching Plate 3 extra care has to be taken when fluxing as it will be noticed that this plate has two fully etched slots in it. These slots are for the first bend of the wire. **IT IS IMPORTANT TO KEEP ANY FLUX AND SOLDER AWAY FROM THESE SLOTS.** Apply flux close to the edges in the same manner as before, attach Plate 3 to Plates 4 & 5 using the 12BA nuts and bolts and **carefully** solder together ensuring no solder enters the etched slots. **MAKE SURE THAT THE NUMBER 3 IS ON THE TOP SURFACE DIRECTLY ABOVE THE FIGURE 4.**

4). Now comes the cutting through of Plates 3, 4 & 5 at the correct angle. This is the most critical stage in the construction of the Jig which, if done incorrectly, will render it



useless as it will only be able to produce an incorrectly formed Alex Jackson coupling. However, a Slope Jig is provided for this purpose and the first task is to fold up the central part of the Jig to form a right angle. Next, attach the Slope Jig to Plate 3 of the 3 soldered-up plates using the nuts and bolts. Hold the unit firmly on the workbench (or place the unit in a vice) and with a razor saw carefully cut through the plates using the half etched line on the top surface of layer 3 as a guide, which should be in exact alignment with the Slope Jig. Do ensure that the sawcut is at 90° (perpendicular) to the unit. **ALSO ENSURE THAT SAWING IS COMPLETE WHEN THE SAW TEETH ARE TOUCHING THE FOLD UP PART OF THE SLOPE JIG THROUGHOUT ITS LENGTH.** Failure to achieve the correct angle here will result in the tail of the AJ coupling being formed at the wrong angle. This newly created slot may need to be opened out a little to accommodate the prodder. This can be achieved using a very thin file or appropriate wet and dry paper. **IF OPENING UP THE SLOT ENSURE THAT THE ANGLE CREATED BY THE SLOPE JIG IS MAINTAINED AT ALL TIMES.** After making your cut remove the slope jig, it is no longer required.

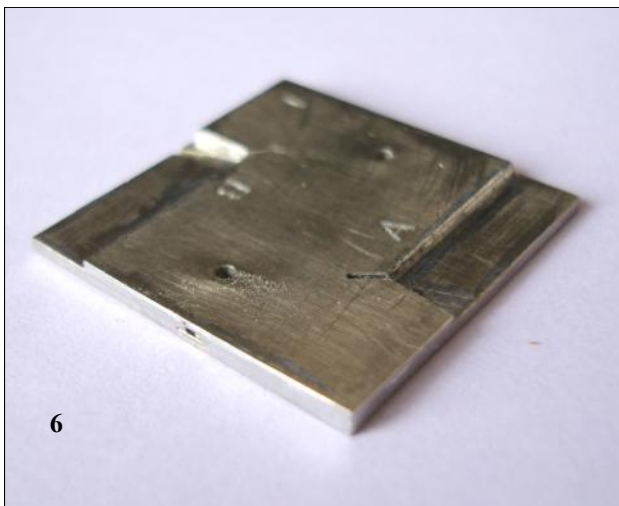


5). The final task in construction of the main jig is to join together the two components, that is layers 1 & 2 to layers 3, 4, & 5. Carefully apply flux to the appropriate edges i.e. not the etched cut-outs on Plates 1 & 2 or near the slots on Plate 3, screw together using the nuts and bolts and apply solder to the fluxed edges. (Photo 5). Once the jig has cooled down remove all traces of flux and any traces of superfluous solder. This is the main jig complete; the only remaining tasks are to construct the prodder and the bridge.

6). Take the 3 parts of the prodder and sandwich the longer piece between the two smaller pieces with angled end protruding. Hold together with a clamp – a wooden clothes peg is ideal for this – apply flux to the edges, and solder up.

7). Form the bridge by folding over the two outer ‘wings’ through 180° with the half etched line on the inside and solder flat.

*Photo 6 right—completed jig
Note hole on side for making the first bend of the coupling.*



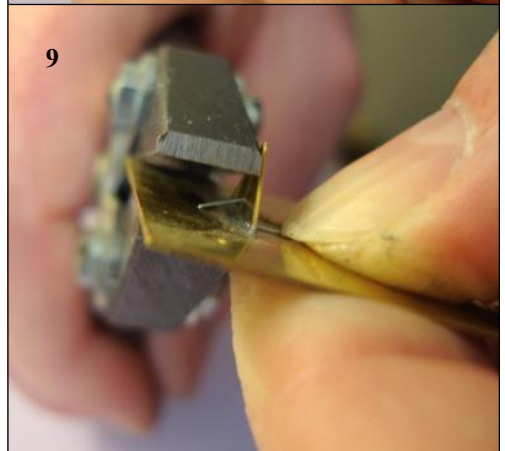
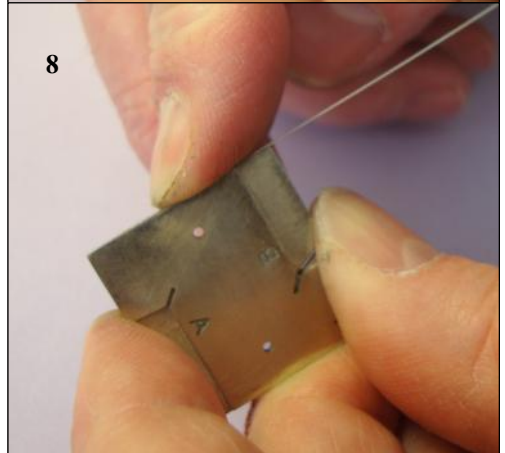
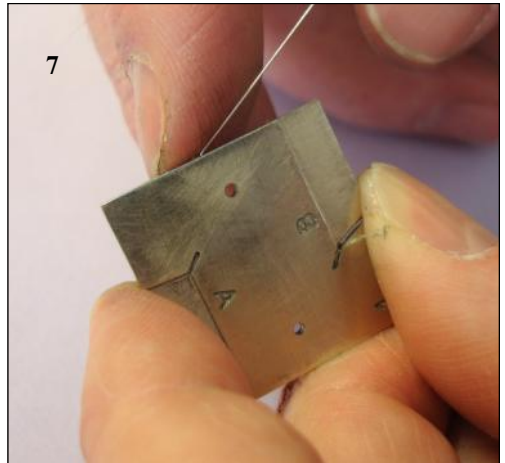
FORMING THE COUPLING

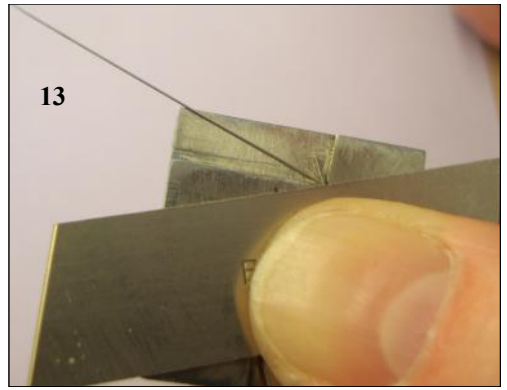
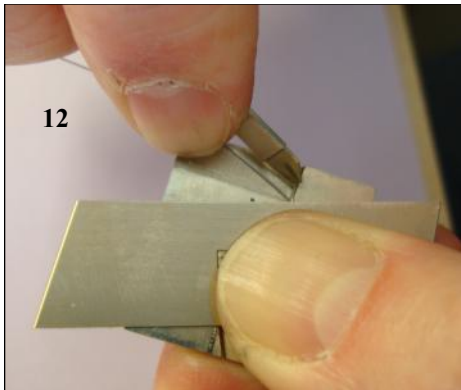
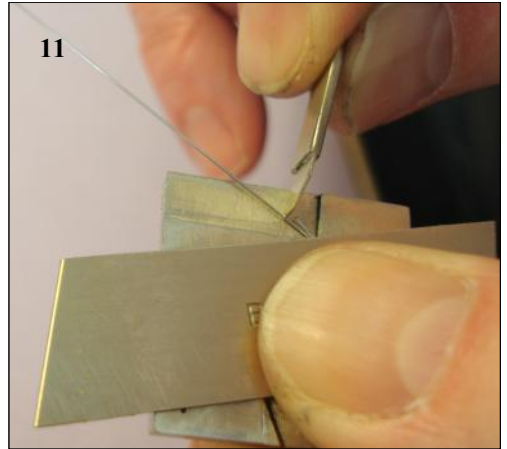
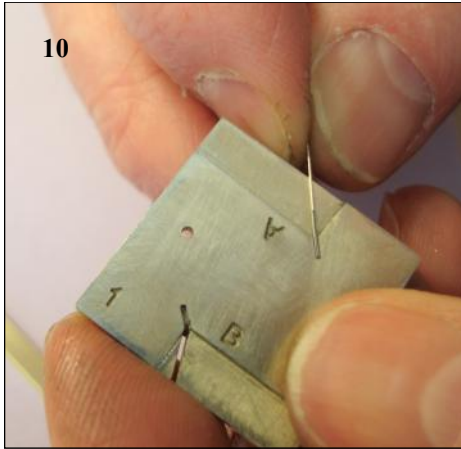
Using 11thou springy wire (guitar wire is perfect) cut off a piece about 4 inches long. Use a stone to remove any burrs from the end. Push the deburred end as far as it will go into one of the holes on the side of the jig on layer 3, and bend down creating an acute angle in the wire. (Photo 7).

You now need to ensure that the wire is folded back on itself completely in a really tight 180° bend (Photo 8). This can be achieved with pliers, but use of the Palatine 180° Jig is highly recommended for this. (Photo 9).

Place the folded wire into the slot marked A on the jig. (Photo 10). The wire must have the 5mm folded part on the top. Using the bridge to hold the wire in the slot use the prodder to push the lower part of the wire hard up along the long edge of the cut out. Use the prodder to ensure that a crisp bend is achieved at the start of the slot. (Photo 11). **PLEASE NOTE THAT THE WIRE WILL SPRING AWAY FROM THE LONG EDGE – IT IS MEANT TO AND THIS HAS BEEN TAKEN INTO ACCOUNT IN THE DESIGN OF THE JIG. DO NOT ATTEMPT TO TWEAK THE WIRE AFTER REMOVAL FROM THE JIG.** Using the prodder bend the upper part of the wire hard up against the short edge, again making sure that a crisp bend is achieved at the slot. (Photo 12). **AGAIN THE WIRE WILL SPRING BACK BUT THIS HAS ALSO BEEN TAKEN INTO ACCOUNT.** (Photo 13).

Remove the wire from the jig and place it in the slot marked 'B', again with the short part uppermost. (Photo 14). Using the

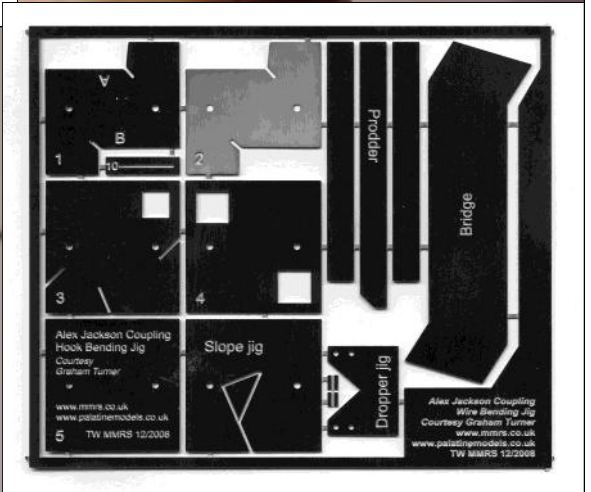
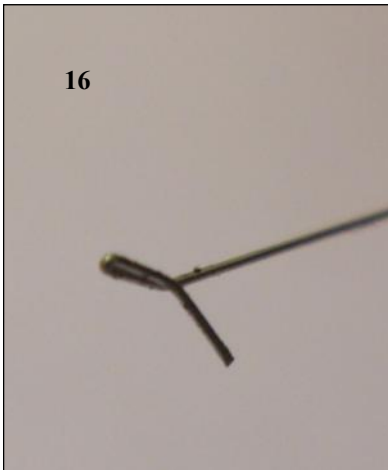
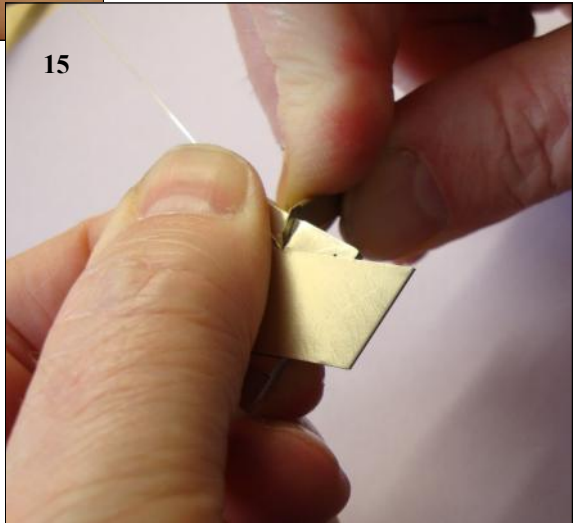
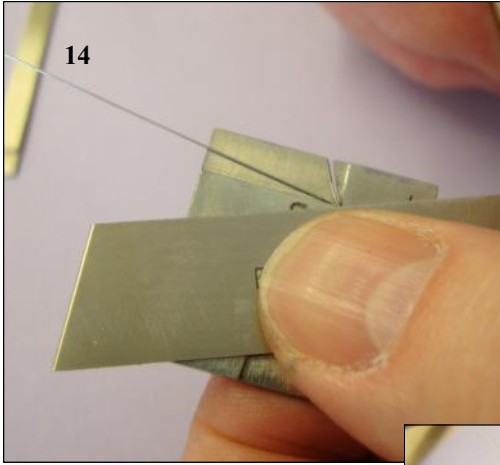




prodger push this short part through the slot cut previously into the jig. Again make sure a really crisp bend is produced. (Photo 15).

Remove the wire from the jig. Provided the jig has been made correctly, and the wire bent correctly, you should now have your first perfectly formed Alex Jackson coupling. (Photo 16). If you have, then your jig is now ready to produce another identical coupling, essential for its effective operation.

If you have the 180 jig you can check the angles using the angle checking portion of that jig. The coupling can now be trimmed to length and mounted using your preferred mounting method. We also produce components to help make this easier based on the hinge or pivot plate method, see our website or the AJ book for more information.



The Palatine Models Alex Jackson ‘Turner’ Dropper Jig

Introduction

The purpose of this simple jig is to enable a dropper (armature) to be held in correct location, and at the correct angle, allowing it to be soldered more easily to the coupling wire. It is equally effective in use on the original type of Alex Jackson coupling and the hinged version. It may also be suitable for other types of Alex Jackson coupling but this information is not known. The jig has been designed for use on vehicles using P4 wheels. It can be filed for use with EM wheels but it is not really suitable for use with OO wheels.

To complete this jig you will need a 50mm (approx) length of 0.6mm brass or nickel silver straight wire and a short length of springy wire (the 11thou wire used for making the coupling is suitable). Also a 50mm length of rail or straight scrap etch. Please note that this may need to be longer depending on the wheelbase of the vehicle that droppers are being fitted to.

Also note that this jig has been designed for use on parallel 2mm axles. If non parallel axled wheelsets are being used, and/or wheels that have a boss on the back of them (such as those by Exactoscale) this jig will require modification before use.

Construction

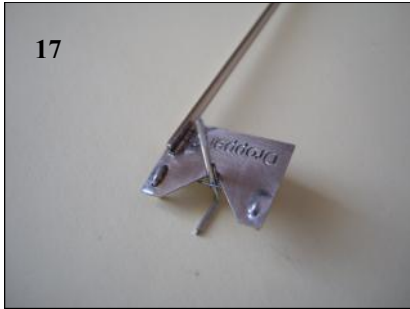
Before cutting the parts from the fret carefully clean with a fibreglass pencil or appropriate liquid cleaner. Cut approximately two 25mm lengths of 0.6mm wire and bend each into a U shape so the sides are parallel with each other and are a smooth fit through the two holes on each side of the jig. The two prongs of each wire should now be 2mm apart and a sliding fit over a standard wagon axle. If all is well solder the wire in place from the top of the jig making sure everything is square and parallel.

Please note that if you bent the 0.6mm wire into a V shape the ‘prongs will splay out once they are fed through the holes and will have to be tweaked to ensure they are the correct distance apart. It is therefore recommended they are bent correctly prior to fitting!

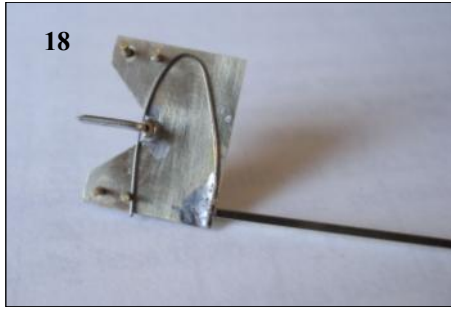
Take the small keeper plate and bend in a vertical plane, **with the half etched line to the outside**, so it fits into the V of the jig using the cross etched line to locate its position. Ensure the keeper plate is at 90° to the jig and solder in place.

To hold the dropper in place a spring will now need to be fabricated. To do this, curve a length of the springy wire and solder one end to the jig in a position where the wire can pass in front of the keeper plate and lock into place (see photo 18).

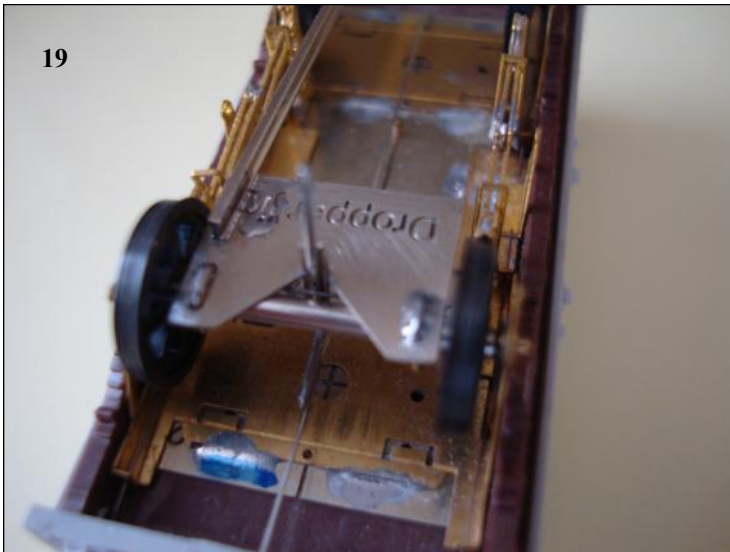
Finally solder a piece of rail or scrap etch to the top of the etch on the other side to where the spring has been soldered. This will act as a bridge so that it balances on the other axle and keeps the jig parallel whilst the dropper is soldered in place. If you angle this piece inwards a little it should rest near the central point of the axle which will assist if fitting droppers to wagons with compensation. It should also keep it away from any underframe parts such as vacuum brake cylinders.



Top view with dropper



Bottom view showing spring holding the dropper in place



In use on wagon to hold dropper securely for soldering

Please note that the '10' part of the fret is there for the etchers use only. It is not part of the jig.

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