

‘EASY-BUILD’ POWER BOGIE ASSEMBLY INSTRUCTIONS.

WHEN USING VOLATILE SUBSTANCES & SUPERGLUES ALWAYS FOLLOW THE MANUFACTURERS INSTRUCTIONS AND ENSURE ADEQUATE VENTILATION. YOU WILL BE USING SHARP TOOLS AND THE EDGES OF THE ETCHED PARTS CAN ALSO BE VERY SHARP SO TAKE CARE WHEN HANDLING THESE ITEMS.

READ ALL THE STEPS BEFORE PROCEEDING.

All the photographs referenced in these instructions will be found at the end of these instructions.

IMPORTANT: Before removing the main stretcher plate from the fret please use the images ‘[Bogie Fret TOP](#)’ & ‘[Bogie Fret BOTTOM](#)’ to identify the top and bottom faces. This is very important because the outline of the stretcher plate is symmetrical, but there is a top and bottom. The bottom is most easily identified by the balance beam pivot groove, shown circled in red on the image. Mark the underside of the plate so that you know which way up you've got the stretcher plate when assembling.

- 1) Remove the Main Stretcher Plate (E1) and Strengthening Channel (E2) from the fret and remove all burrs.
- 2) Fold up the Strengthening Channel into a channel shape and fold down the end piece to meet the edges of the channel.
- 3) Lay the Main Stretcher Plate on a flat surface with the underside uppermost and position the Strengthening Channel on the centreline using the holes as guides. *Tip: insert the bogie pivot bush into the centre hole first and then align the position of the channel using the second hole.* Ensure the channel is straight and square to the edges of the Main Stretcher Plate. Tack solder in place.
- 4) Once happy with the position of the Strengthening Plate, solder in place securely. Clean up any excess solder.
- 5) Solder a length of 0.9mm wire into the balance beam pivot groove ensuring it is flat to the face of the Stretcher Plate. Clean away any excess solder.
- 6) Fold down the balance beam securing tabs at each end of the balance beam pivot (see [Bogie 1.jpg](#)) and test fit the Balance Beam (E9), which is held in place by sliding a length of wire through the holes in the tabs. Carefully reduce the height of the pivot if required until the balance beam securing wire can be slid in place without difficulty without bending. The balance beam should rock easily with the wire in place, but it shouldn't be able to lift off the pivot. If you take too much material off the pivot, remove it and try again. Remove the balance beam.
- 7) At the front of the stretcher plate the end is folded down at 90° and then lowered using the other half etched grooves (on the top and bottom of the part) to form a joggle. The exact shape will be determined by the front channel later.

See Photo: [Bogie 1](#) & [Bogie 2](#) to see how the stretcher plate should look at this stage.

- 8) Remove the Sideframe Mountings (E3 & E4) from the etch, clean the edges and fold 90° along the half etched grooves.
- 9) Take the two sideframe mouldings and clean off any flash. Attach a sideframe to each of the mountings using the moulded pins as locators and noting that the folded sides of the mountings hang downward. Secure with superglue. See Photo: [Bogie 3](#).

The bogie uses miniature ball races rather than pinpoint bearings you must be very careful completing the next step as not enough care could result in permanent damage to the ball races. Unfortunately we cannot offer our usual no quibble replacement guarantee for the ball races in the event of damage during fitting, but replacements can be purchased from our [Camelford address](#).

- 9.1) The ball race is simply dropped into the rebate in the rear of the plastic sideframe, however it needs retaining. To retain the ball race run a very small amount of superglue around the edge of the outer race; try using a knife blade to

apply the superglue. If you would rather keep away from the actual bearing whilst applying the glue, cut a small groove away from the hole at each side of the bearing insert the bearing and let the glue run to the edge of the bearing down the groove. See Photo: [Bogie Ball Race](#) This photo shows where to make the small gluing grooves as a pair of red lines.

10) Clean up as required two centre bolster mouldings and attach to the rear of the sideframe mouldings. The bottom of the square section should be level with the underside of the sideframe moulding and the horizontal position should be central between the axle boxes. See Photo: [Bogie speedo drive](#)

11) Use the supplied nuts and bolts to (loosely) affix the sideframe mountings to the underside of the main stretcher plate. The mountings butt up to each side of the strengthening channel. Insert the drive axle in place and tighten the bolts. If required use the supplied small fibre washers to reduce axle end float.

12) Remove the Rear End Channel With Location Lugs (E6) from the etch, clean the edges and fold into a channel along the half etched grooves. Attach to the end of the strengthening channel by first locating the lugs into the grooves in the back of the bogie sideframe moulding. See Photo: [Bogie 4](#) & [Bogie 5](#)

13) Remove the Front End Channel With Guard Iron Slots (E5) and two Guard Irons (E10) from the etch, clean the edges and fold into a channel along the half etched grooves and affix the guard irons into the slots ensuring they are kept tight into the etched grooves.

14) Attach the front channel to the previously folded joggled mounting (Step7). The exact position of the folds can now be adjusted so that the channel is level with the outer edges of the moulded sideframes.

15) Insert the Balance Beam Assembly making sure the chain sprocket is on the same side as the drive axle and secure in place with a wire retainer. See Photo: [Bogie 6](#)

16) Fabricate pickups from the supplied wire and copper-clad components. Fitting the pickups is a bit tricky with this new arrangement as there's a lot of stuff to get around, but it can be done!

17) Fit the motor in place and attach the drive worm. Ensure the worm and worm-wheel are centered together. Fit the drive chain ensuring it is not too tight as that will cause poor running, noise and excessive wear and chain stretch.

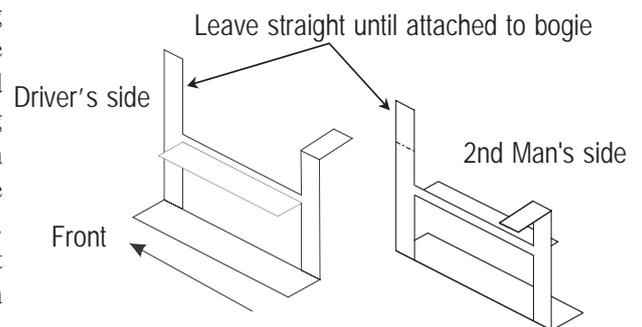
FINAL DETAILS Single Car Units Only...

18) Glue the speedo drive mounting (E11) to the front left axle box with the spike facing right and down when fitted in place. Attach the large square casting from the speedo castings details over the etched part.

See Photo: [Bogie speedo drive](#)

19) Fold up the bogie step tread supports and mounting brackets (E5).

20) Glue the bogie step mountings in place. The front mounting is in line with the front spring hanger and the bottom step tread should be (approximately) level with the large spring mounting bobbin. The step mounting legs have a half etch fold line on the back about 2mm from the top. Fold only one of these 90° and make a right and left hand pair - reinforce the fold. The straight leg is bent over to the front bogie channel once the step mounting is in place - reinforce with epoxy resin. Keep the steps parallel to the side frame and attach the rear mounting to the top of the side frame. See Photo: [Bogie step and speedo drive](#), but note the front mounting leg has yet to be bent down to meet the bogie frame in the photograph.



FINAL DETAILS ALL UNITS...

21) The guard's door have additional steps fitted to the rear of the bogie, align the steps with the guard's door. Fold the step mounting as shown in the diagram above, but fold over the top of both mounting legs. See Photo: [Bogie Showing Guard Steps](#)

22) There are two different types of axle box covers supplied in the kit, use the slightly domed Timken covers.

23) Cut step treads 15mm long from the supplied 5mm wide styrene strip. Sand the edges of the treads to a slightly rounded shape and fix to the step supports as required.

24) Secure the bogie in place using the M4 cap head bolt and the bogie pivot bush.

GEAR NOISE

We have had some modellers complain of excessive gear noise, which is hard to explain as the gears are very good quality and so should perform very well. So here are a few tips on how to get the best out of the components:

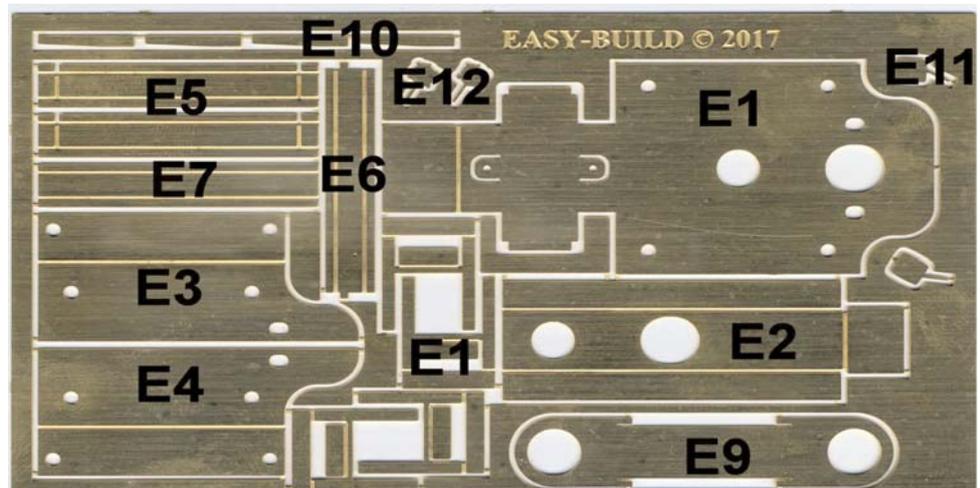
- 1) Once the motor bogie has been assembled, check the mesh of the worm and gear wheel. The worm should sit in the centre of the gear wheel (horizontally) and that there should be very little backlash. If you can rotate the gear back and forth so that the teeth rattle against the worm, elongate the motor mounting holes (including the central hole) slightly towards the drive gear and test again. You don't want the worm and gear to be hard against each other, but a snug fit with minimal backlash.
- 2) Mount the worm in a rotary tool (or cordless drill with speed control) and turn it slowly in both directions applying a metal polish (such as Brasso) with a cloth. You must get the polish right into the groove of the worm and apply pressure to both surfaces of the groove. Do this several times back and forth, but you probably won't be able to tell you've done it enough just by looking, so give it one more go! Polish off the abrasive.
- 3) Re-mount the worm and now make sure the worm is in the centre of the gearwheel VERTICALLY, i.e. the gear meshes with the centre of the worm in length. If the worm sits too high, or too low, the start of the worm groove can clip the gear teeth in one direction, or the other adding more noise. Turning the motor by hand and watching how the worm and gear interact is the only way to be sure you've got it right.
- 4) Run the motor at a low speed and apply a small amount of abrasive paste (toothpaste is a favourite, or even brasso again - sparingly) and apply light pressure to the drive wheels so that the gears have some work to do. Repeat in both directions for some time. If you use brasso, or something similar, adding drops of light oil onto the gears will keep the polishing action going longer.
- 5) Clean off all traces of the polishing compound and apply a light grease to the gears.

Take your time and you will be rewarded with a quiet and reliable power unit

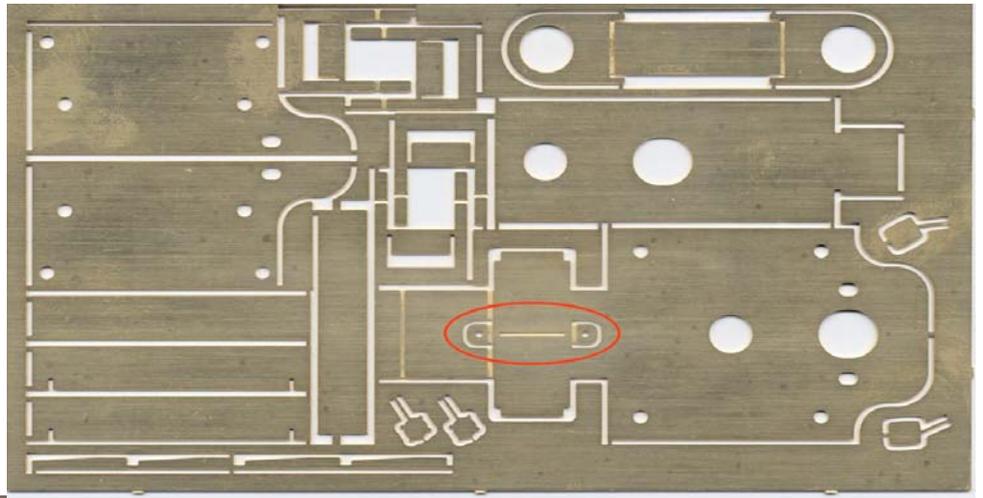
This bogie offers a significant improvement in in every department over our previous power bogie designs, we hope you agree it was worth the effort!

IMAGES:

Bogie Fret TOP



Bogie Fret BOTTOM



Bogie 1

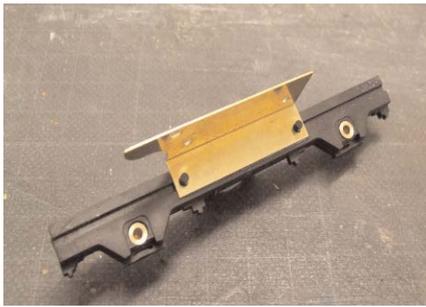


Bogie 2

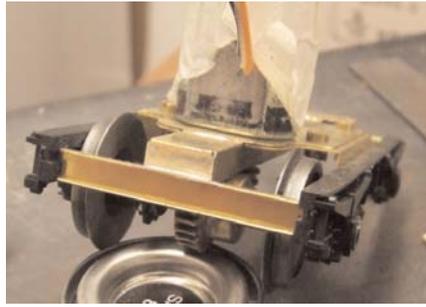
Bogie 3

Bogie 4

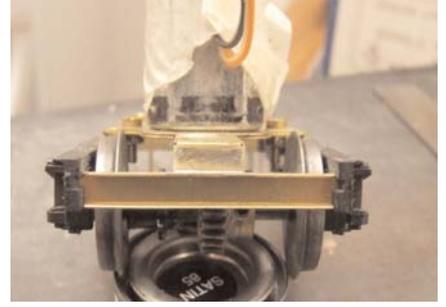
Bogie 5



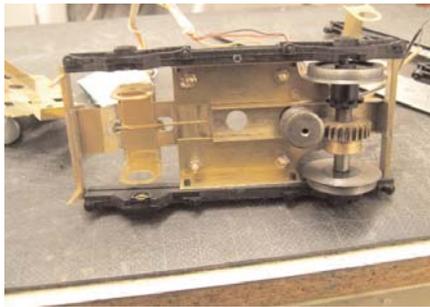
Bogie 6



Bogie Showing Guard Steps



Bogie speedo drive



Bogie step and speedo drive



Bogie Ball Race

