

MALKY'S N-SCALE S.A.R. MODELS

Modification of TM-13R Mechanism for use with 2000 Jumbo

This kit is intended to use a modified Tomytec TM-13R 19m chassis. The kit contains a chassis extension piece and an underfloor detail piece which together will join the divided Tomytec chassis ends and form a rigid underframe for the railcar.

Note that some of the illustrations here show the modification of the chassis for the Bluebird railcar. The process is exactly the same, just the extension piece is longer and the underframe detail different. The initial test chassis for the Jumbo was extended using a different method and hence does not show the extension piece.

Modifications to Chassis: Figure 1 shows the unmodified TM-13R chassis.

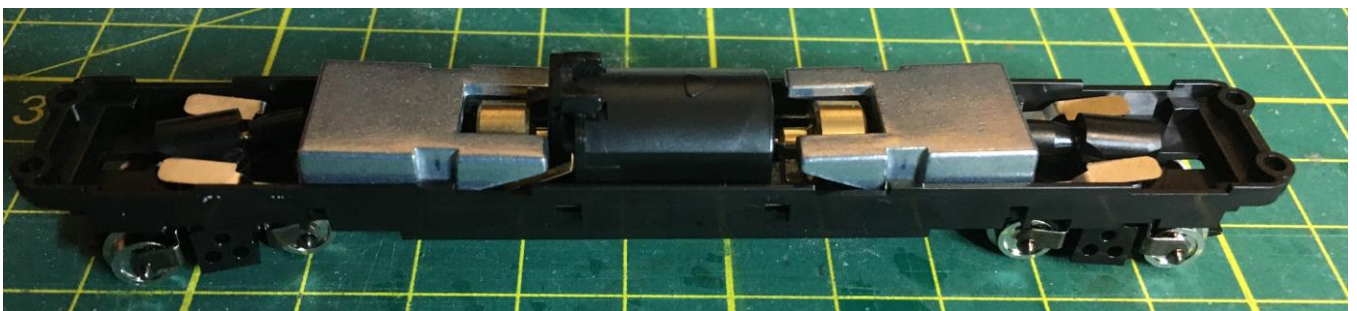


Figure 1 Unmodified Tomytec TM-13R mechanism

Firstly, disassemble the chassis by removing the weights and the motor complete with drive shafts. Then remove the two horizontal bars which hold the metal contact strips in place along the sides. Finally remove the weight in the bottom of the centre block. Store these components carefully – they will all be reused.

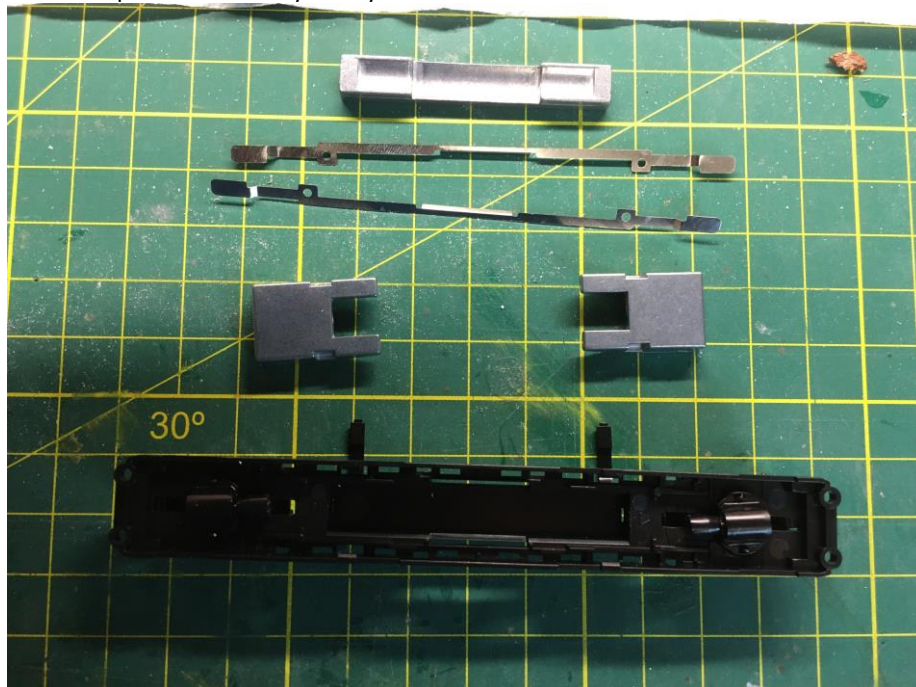


Figure 2 Chassis stripped of all components except bogies

The chassis needs to be cut to allow the introduction of the 25 mm lengthening piece. The cut should be made 13 mm from the rear end of the block in the middle of the chassis, as shown in Figure 3. Note that the upper side of the chassis has a small arrow indicating the direction of forward travel. This becomes visible when the weights are removed.

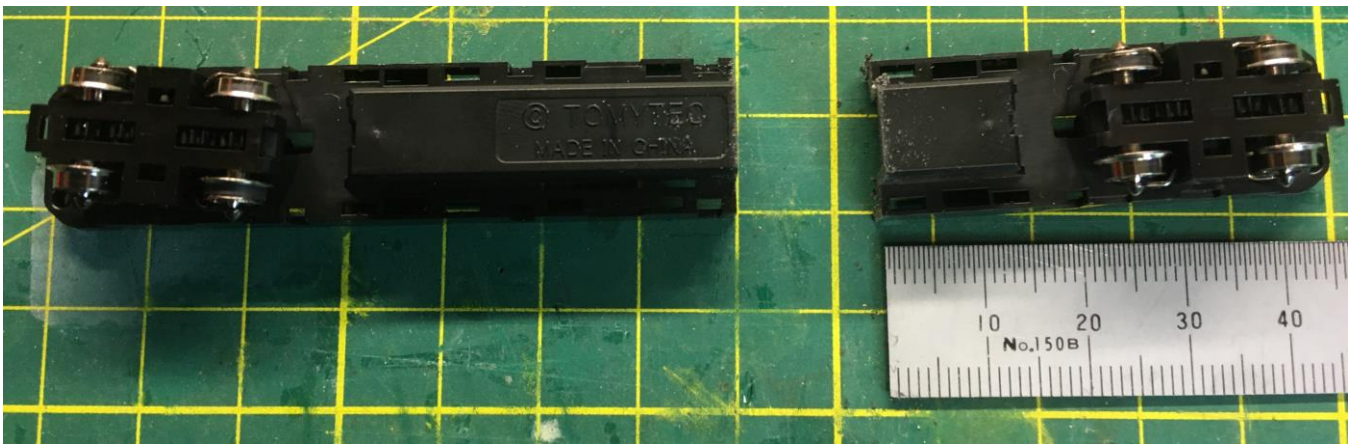


Figure 3 Showing location of cut – 13 mm forward of rear end of central chassis block, just behind the Tomytec logo

The cut should be made carefully with a razor saw in a mitre box to ensure a square cut. Clean up the edges with a fine file.

Next fit the chassis extension piece so that it aligns with the upper edge of the chassis, and also with the lower chassis block. Note that to achieve this, the chassis should be located upside down on a piece of 1 mm styrene or similar, so that you can press down firmly on the upper edge of the chassis, without interfering with the worm drives on the bogies. When satisfied with the fit, apply cyanoacrylate superglue to one end of the extension and join it to one end of the chassis. When cured, apply glue to the other end and join to the remaining chassis end. See Figure 4.



Figure 4 Extension piece glued into chassis halves – note support on 1 mm spacer to clear bogie worm boxes

When the joints have cured, check the fit of the underframe detail piece over the central block and ensure that it sits up snugly under the chassis top plate. **Noting that the large battery box is on the left hand side**, apply cyanoacrylate glue to the upper edge of the piece and locate it over the chassis – see Figure 5. Note that the Tomytec chassis has a small arrow to indicate the direction of forward travel, as does the motor.



Figure 5 Underfloor detail in place

At this stage, check the fit of the extended chassis into the body. Then spray the chassis matt black, masking the bogies to prevent paint entering the mechanism.

It is now time to commence reassembling the lengthened chassis. Replace the weight inside the centre box, at the front, so that the motor and flywheels clear the weight as in the original. It is possible to add another piece of weight in the space behind the original. This can be up to 24L x 6.5W x 4D.

Next locate the two side contact strips. They should be cut at a point approximately 10 mm behind the front of the extension piece – see Figures 6 & 7. This is appropriate if you intend to fit a DCC chip to the model. If you intend to run it on DC, then the cut should be made 5 mm or so further to the rear, so that the original motor contact arms can land on the flat strip portion.

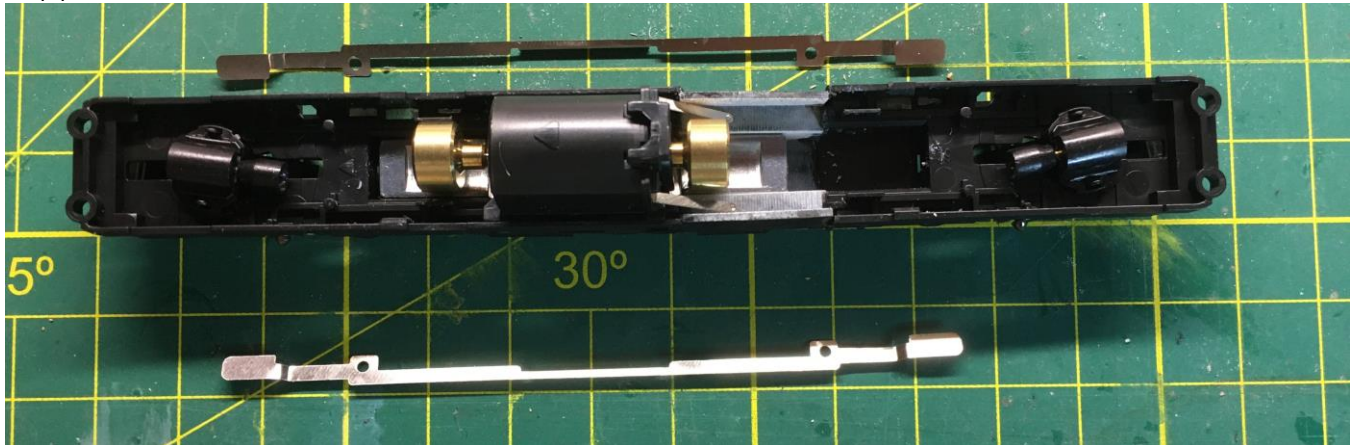


Figure 6 Side contact strips laid out with the front portions at their original locations

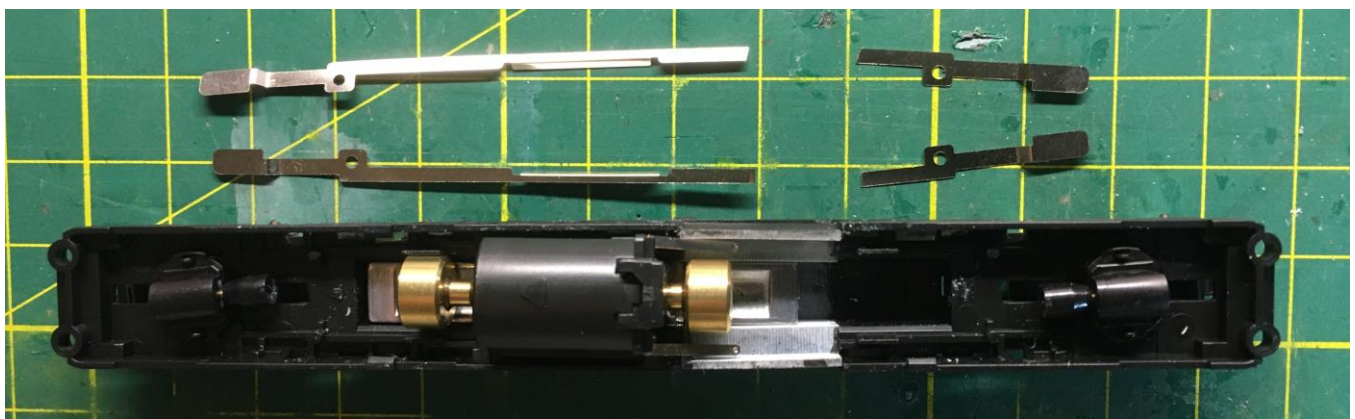


Figure 7 Strips cut approximately 10 mm behind the front of the extension piece

Then tin the ends of the strip halves. Cut two pieces of wire about 32 mm long, strip and tin each end. Solder the wires to the shorter, rear portions of the contact strips. Then fit the contact strip portions into their original locations on the front and rear chassis portions, and secure in place by replacing the two black retainer pieces. It would be possible to use flat phosphor bronze strip instead of wire, particularly if you are planning a DC model. Then solder the wires to the forward portions of the contact strips.



Figure 8 Contact strips reinserted and held in place by retainer pieces, final solder joint of wire to forward portions made inside the extension piece

Next it is necessary to extend one of the two motor drive shafts to suit the rear end of the mechanism. It is necessary to increase the length between the universal joints from 20 mm to 45 mm. To achieve this, one of the original drive shafts is cut in half. The halves are then pushed into a 35 mm piece of styrene tube, which has been bored out to 1.5 mm diameter to take the drive shafts. The tube used was Evergreen 223 3/32" OD, which is about 2.5 mm OD with about 1 mm bore. Note that it is important to maintain the relative orientation of the two universal joints at each end of the shaft.

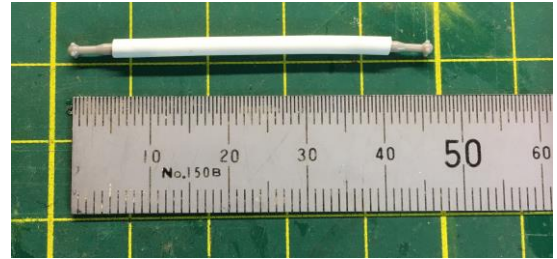
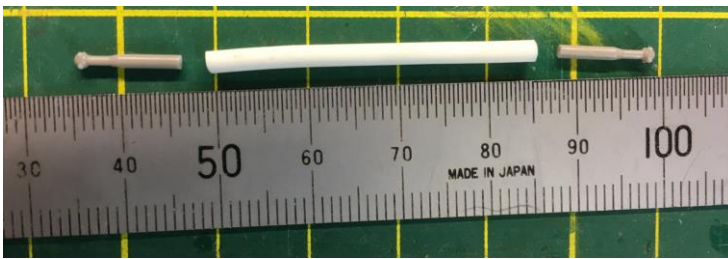


Figure 9 Drive shaft components and completed shaft assembly

With the extended shaft at the rear and the original shaft at the front, the motor can be reinserted into its location.

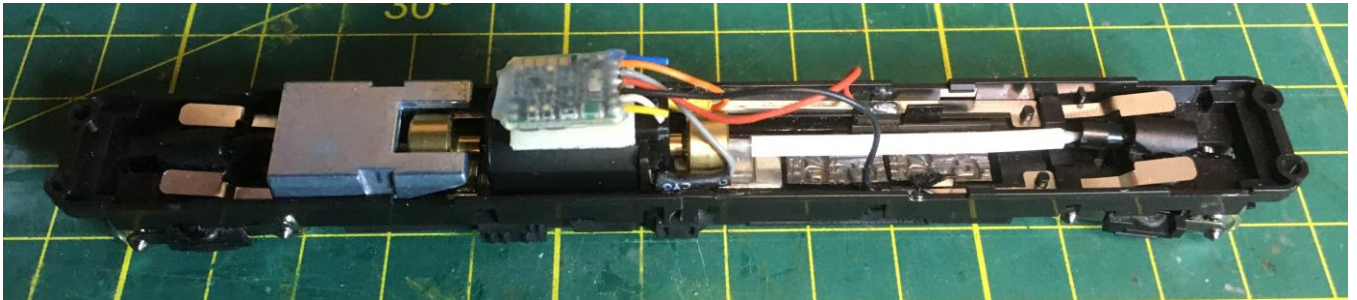


Figure 10 Chassis reassembled with extended drive shaft

If it is intended to run the chassis on DC, ensure that the two motor contact arms make good contact with the contact strips on each side. If it is intended to fit a DCC decoder, the easiest way is to trim the two motor contact arms, leaving approximately 5 mm as shown in Figure 13. This effectively isolates the motor from the track contacts, and provides a convenient location to solder the two motor leads (grey and orange) from the decoder. The red and black leads should be soldered to the side contact strips towards the rear.

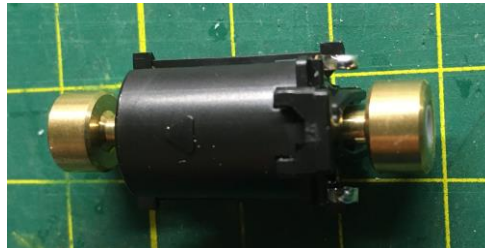


Figure 11 Motor contact arms trimmed and tinned

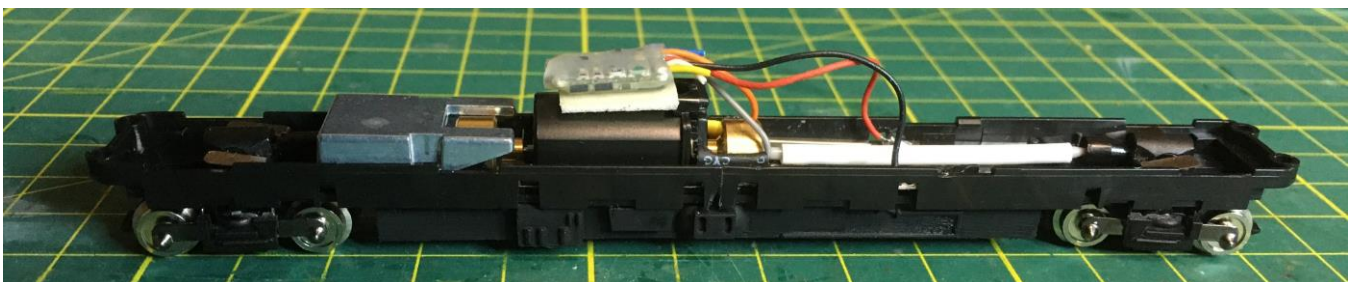


Figure 12 Completed chassis with underframe and bogie sideframe details in place

Test run the chassis. If all works well, replace the weight at the front of the motor. The chassis assembly is completed by adding the bogie sideframes which are designed to plug into the three holes on the Tomytec bogies. Note that the large wedge-shaped component goes to the inboard side of the bogie.

