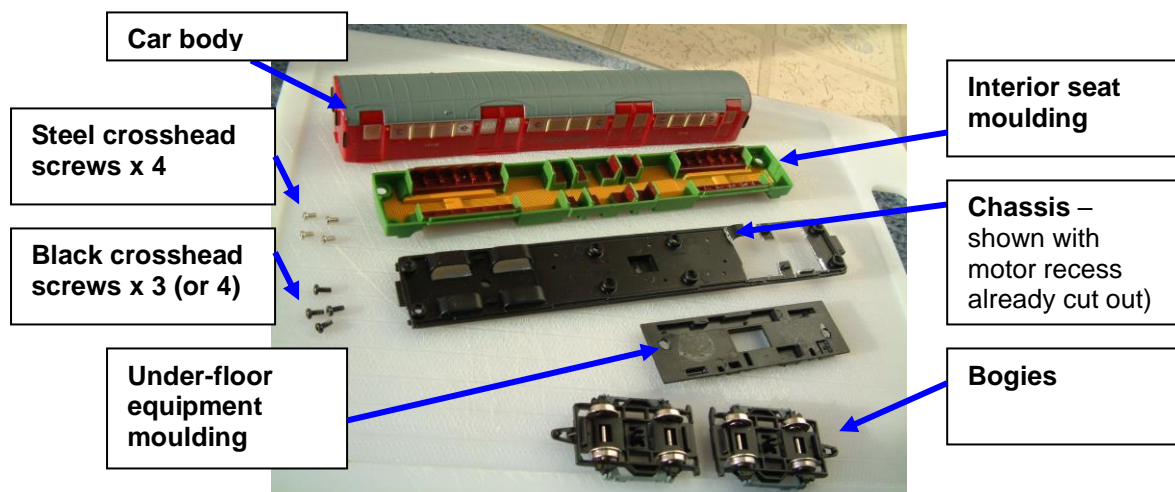


Metromodels - EFE '00' scale tube stock models – motorising instructions

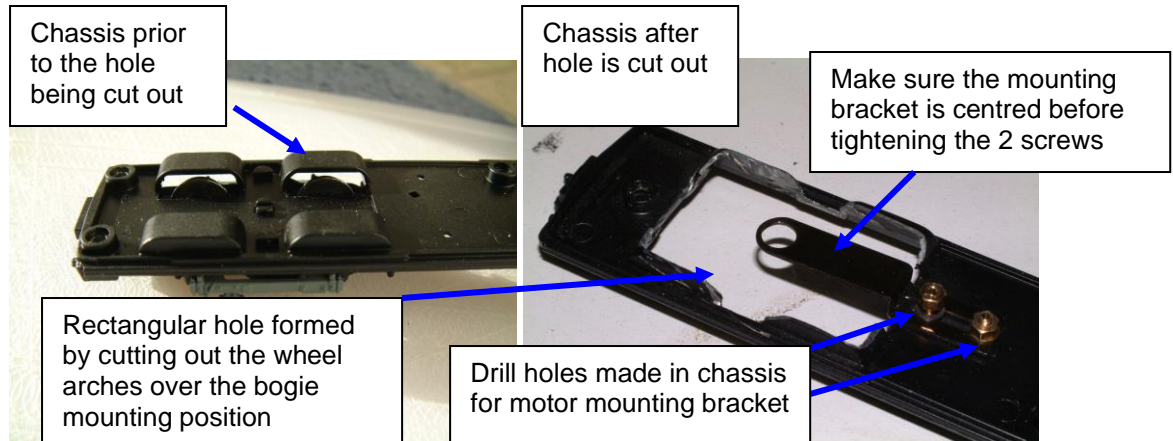
1. Before you can start work on motorising your EFE train car it needs to be dismantled into the main component parts.
2. Unpack & remove the car from the cardboard and plastic packaging. Separate the car from the plastic plinth by unscrewing and removing the two black screws from the underside of the plinth.
3. Turn the car upside down whilst resting it on a soft surface (to prevent damage to the car roof & body) with the underside of the chassis & bogies/wheels facing you.
4. Remove both of the bogies from the chassis. To do this, wedge a small flat head screwdriver into the gap between the top of each bogie & the underside of the chassis then prise each bogie away from the chassis.(images 1,2, 3 & 4)
5. Remove the black crosshead screws that hold the body to the chassis. There are 3 screws on DM cars & 4 screws on centre NDM/Trailer cars. Retain these screws for re-assembly. Carefully remove the car body from the chassis by gently pulling the car body away from the chassis. Do not remove any of the other components such as the clear window glazing or interior roof mouldings from within the car body.
6. Separate the black plastic under-floor equipment moulding from the die-cast chassis. Carefully prise the plastic under-floor equipment moulding away from the chassis using a Stanley knife or a modellers knife. Slip the blade into the fine gap between the chassis and the plastic under-floor equipment moulding and prise it away. Be very careful when doing this so as not to damage the chassis or the under-floor moulding. The plastic under-floor moulding is held in place by adhesive and it should come away easily. Once removed put the under floor equipment moulding to one side. Remove any excess adhesive remaining on the underside of the die cast chassis.
7. Once the under-floor moulding is removed you will notice 4 steel crosshead screws exposed on the underside of the chassis. Unscrew and remove each of these screws and retain them. The plastic interior seating moulding will now separate from the chassis. Retain this.



Car parts shown dismantled (1938 stock trailer car shown)

8. The chassis now requires modification. Cut a rectangular hole into the chassis at the end where you intend to locate and install the power bogie (if a DM car then locate the motor at the rear/non cab end of the car). This hole will accommodate the Tenshodo motor unit and the mounting bracket. You will need to secure the chassis in a suitable vice before cutting commences. Drill a series of holes using a suitable metal drill bit & then use a diamond disc cutter to cut through the metal between the drilled holes. Cut out the wheel arches and the chassis floor as shown in the picture below. Discard the removed metal parts. Be extremely careful not to damage, bend or break the chassis when cutting away these parts. Once you have cut the hole out file down any remaining rough edges.

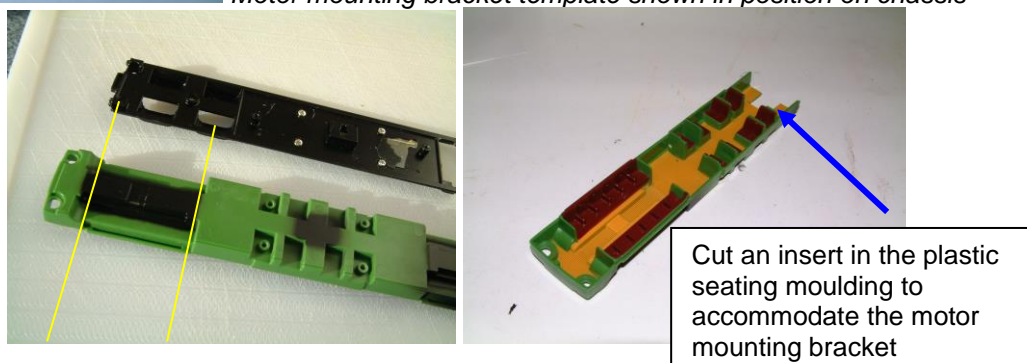
Metromodels - EFE '00' scale tube stock models – motorising instructions



9. Now you need to make two holes in the chassis to enable the motor mounting bracket to be fitted to the chassis. A template is attached to make it easier for you to drill the two holes in the correct locations on the chassis. Drill two 1.9 mm diameter holes into the chassis floor at the points marked on the template provided. (The centre line for the location of the two holes is at 14mm from each side raised edge of the chassis.)
10. Push each of the two miniature cross head screws supplied through the drilled holes from the underside of the chassis. Use one of the brown rectangular fibre washers as a spacer by fitting it over the two screws on the top side of the chassis. Locate the motor mounting bracket in place over the fibre washer and then secure it by fitting the two nuts to the screws. Do not fully tighten the nuts at this point. Fit the Tenshodo motor unit to the motor mounting bracket using the black brass headed screw fitted to the top centre of the motor unit. Adjust the motor mounting bracket to ensure that it is clear of any obstruction and that it is centrally located within the recess made. Tighten the nuts. Check again for clearance and adjust as required.
11. To provide clearance and to accommodate the motor mounting bracket use a fine modellers saw or a suitable miniature steel cutting disc to cut away the plastic seating moulding as shown in the picture. Cut across the moulding where indicated by the 2 yellow lines in the right hand picture below. The plastic seating moulding as removed from between the two yellow lines, can be discarded. Now cut away a small part of the floor area (as shown in the right hand picture below) to enable the seating moulding to clear the motor mounting bracket and the two retaining screws.

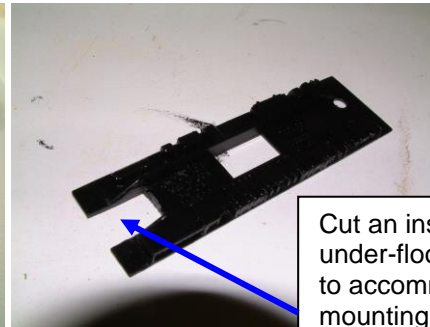


Motor mounting bracket template shown in position on chassis



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12. To accommodate the motor mounting bracket and the retaining screws, use a fine modellers saw or a suitable miniature steel cutting disc to cut away a section of the plastic under-floor equipment moulding as shown in the images below.
13. Re-fit the modified interior seating moulding to the chassis using the 4 steel crosshead screws
14. Re-fit the under-floor equipment moulding to the underside of the chassis using suitable adhesive



Cut an insert into the plastic under-floor equipment moulding to accommodate the motor mounting bracket

Fitting the Tenshodo motor bogie

(Refer to the images attached to the Trailing bogie DIY upgrade pack instructions)

15. For each motor bogie you need to fit a pair of the existing EFE bogie side-frames to the bogie 'collar' which sits on the axles of the Tenshodo motor bogie. Use a mini saw or side snippers/cutters to cut the two bogie side-frames away from the EFE bogie. (see images 9 & 10)
16. File down & remove 1mm depth of the surface plastic from the rear face of each of the bogie side-frames. When the plastic has been removed use a small file to ensure that the surface is smooth & flat. Next, drill two 2.5mm holes in the rear face of each of the side-frames. Use the template provided to determine the correct position of these holes. This will allow the side-frame to correctly fit onto the pinpoint bearings moulded onto the sides of the 'collar' bogie. Do not worry if you drill straight through the EFE bogie side-frame into the front face. This is easily done as the side-frame is not very thick. Just use filler or plastic cement to fill the hole. Paint the filler with black enamel paint when dry. (see images 11, 25-29)
17. Glue the EFE side-frames onto the sides of the 'collar' bogie. Make sure that you fit the side-frames correctly the right way up/round! Ensure that they are firmly located before gluing them into place. (see images 30-32)
18. Re-fit the 'collar' bogie onto the axles of the Tenshodo motor bogie
19. Fit the Tenshodo motor bogie to the motor mounting bracket using the location screw fitted to the top of the motor bogie. Check for clearance & adjust as required.
20. If you are fitting a single motor to your car then re-fit the trailing bogie to the chassis. If you are not fitting upgraded trailing bogies & are retaining the original EFE bogie then remove the steel spring (see top of image 4). If not removed, this spring will prevent the wheels from turning.
21. Fit car body to chassis using the 3 or 4 black cross head screws

Should you have any further enquiry or are unsure of anything, please contact us. Do not worry, if you are not confident in completing the work, send your model to us and we will do it for you! Contact us with your requirements and for details of our charges.