

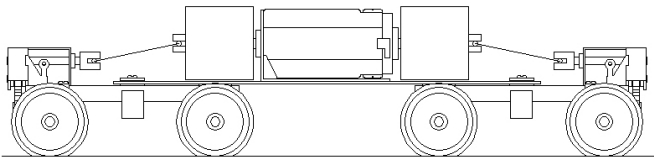


## Fitting the Cardan Shafts to Models

Make up the chassis first to hold the drive bogies. A chassis can be made of metal, say 1mm thick brass or aluminium. Another good material to use is 1.6mm fibre-glass reinforced printed circuit board, usually called FR4. It is extremely strong and quite easy to work or machine.

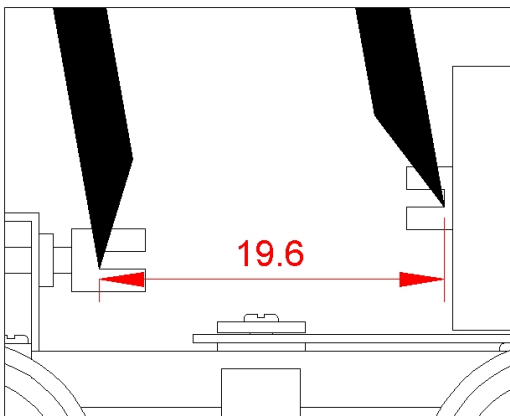
Mount the bogies first and make sure they rotate correctly and can pivot not only around the centre mounting bolster, but also have a slight amount of rock back and forth.

Mount the motor in the centre with its flywheels and universal joint cups fitted. It is wise to place the motor on a thin piece of Hush Paddy or silicone sheet to absorb sound. You should then end up with something like this:



The next task is to correctly determine the length of the shafts connecting the universal joint cups on the flywheel to those on the bogies.

Measure the distance between the far end of the slot in each UJ cup using a set of callipers or similar, as shown below.



In the example shown above, the distance is 19.6mm, so you then take half a millimetre off that to arrive at the correct length for the shaft, or 19.1mm.

Cut the shaft to length, and remember, measure twice, cut once! Now create a small flat area on the end of each shaft to take the D recess in the UJ horned ball section. This flat area is best made using an abrasive cut-off disc in a Dremel tool, or more laboriously, by filing it. It is best to keep the flats on either end of the shaft in the same plane for best performance.

Fit the horned ball to each end with a little Loctite to make sure it holds in place. Now fit the shaft to the model, it should have enough clearance to move back and forth in the cups slightly.