

Application note for DMU drive system

Introduction

1. This note provides some supporting guidance to fit a DMU with an underfloor drive using the Blines Remote 13:1 gearboxes and a Mashima 1833 in a near-prototypical installation, driving the inner axle of each bogie.
2. The example shown uses a floor made from stock styrene sheet. As there are many different materials used in DMU kits or scratchbuilt models you may have to think a little about the details and dimensions for your model, guidance is provided.
3. These instructions should be read alongside the current set of instructions for the Blines Remote 13:1 gearboxes, the details are not duplicated here.

Items included in the DMU drive set are:

2off 'Blines Remote' 13:1 gearbox kits
1off Mashima 1833 motor
1off set of drive brackets
1off set of motor brackets
2mm and 3mm aluminium tube for the shafts
2off universal joint sets
Approx 30mm neoprene tubing to couple the shafts/motor/etc.

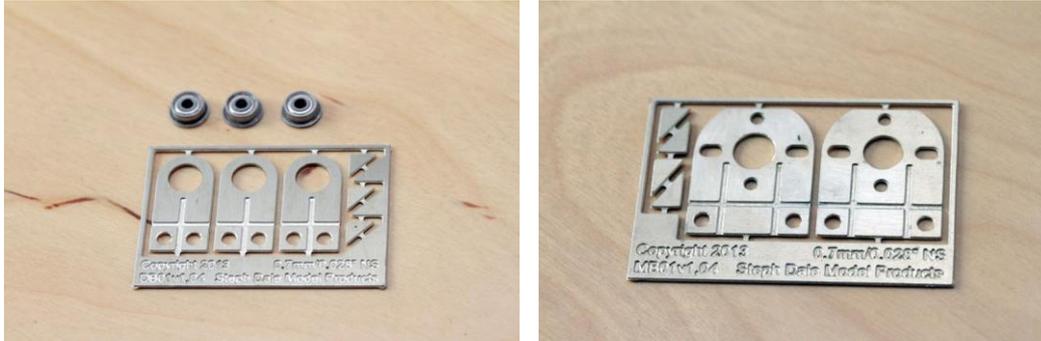
General assembly

1)



First step is to build the gearboxes and assemble them into the bogies. The bogies shown here are by Easybuild, but any bogie could be used. Two things are worth noting; 1, it helps if the torque reaction arm is long and straight, and; 2, there may be a need to put a notch or step in the inner end beam to clear the drive shaft: For first-generation BR DMUs this is prototypical!

2)



These are (on left) the drive bracket and (on the right) the motor bracket. Both are reamed 6mm to take a standard size bearing. If you compare the photographs with the items you have, you'll see that some of the holes need preparing. Depending upon the desired fitting you can drill these clearance for a screw, or tap them and screw through from above the floor – it's up to you and your application. It's also the reason they're not etched through.

3)



This is the fitting for the motor front (left) and rear (right). Some care will be needed for the fitting on to the back boss as this must be tight to prevent the motor vibrating.

4)



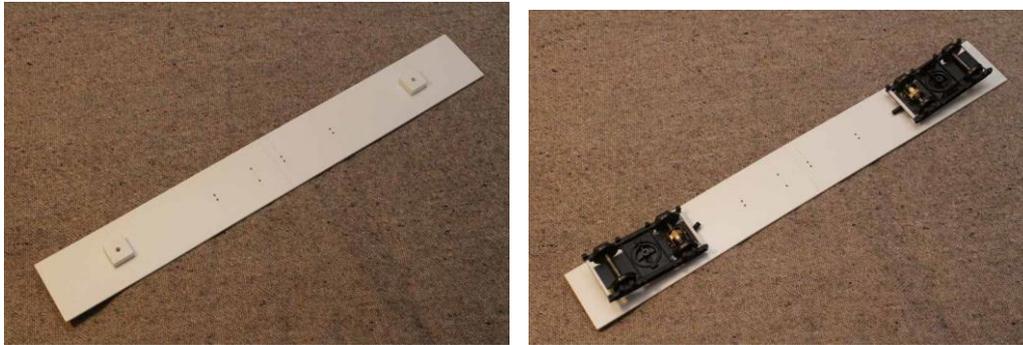
Once the base is folded up and the reinforcing ribs soldered in place the parts can be blackened, and in use look like these pictures.

5)



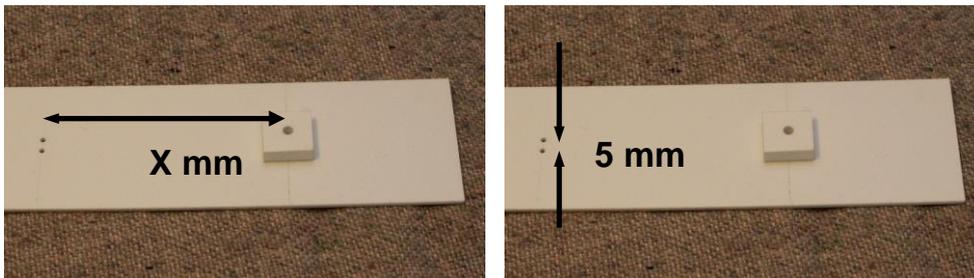
The bearing brackets also need folding, the reinforcing ribs added and can be blackened. The bearings are then fitted with Loctite 603. If you take care to make the items up like this (look at the bearing orientation) then the dimensions quoted later in this note will work for you.

6)



Prepare the underframe material to take the bogies with any bosses or similar. It's worth making sure the floor is as rigid as possible. I quite like using copperclad paxolin or even MDF as a starting point, which can then be reinforced with brass sections. Pay particular attention to getting the ride height of the floor/underframe correct. We can then start laying out the drive.

7)

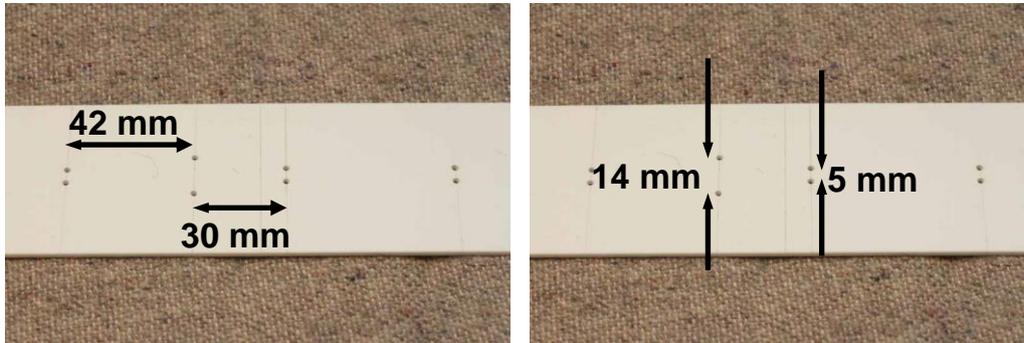


The layout of the drive is worked from the bogie centre. Dimension 'X' should be:

Bogie wheelbase	Scale wheelbase	Dimension 'X'
8ft	56mm	91mm
8ft 6in	59.5mm	93mm
9ft	63mm	95mm
9ft 6in	66.5mm	96mm
10ft	70mm	98mm

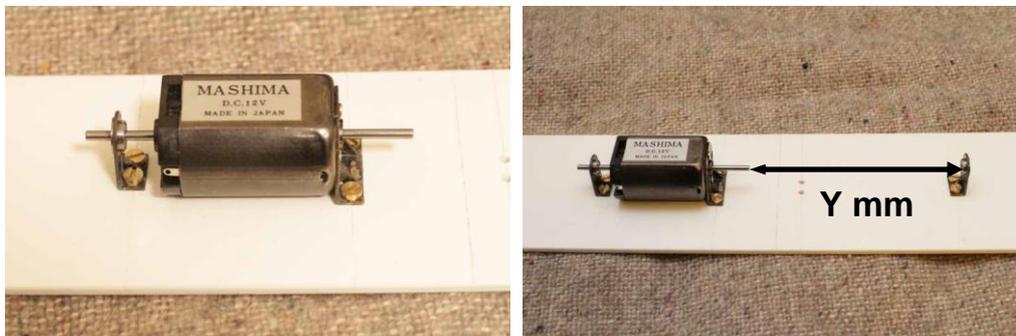
Offset motor

8a)



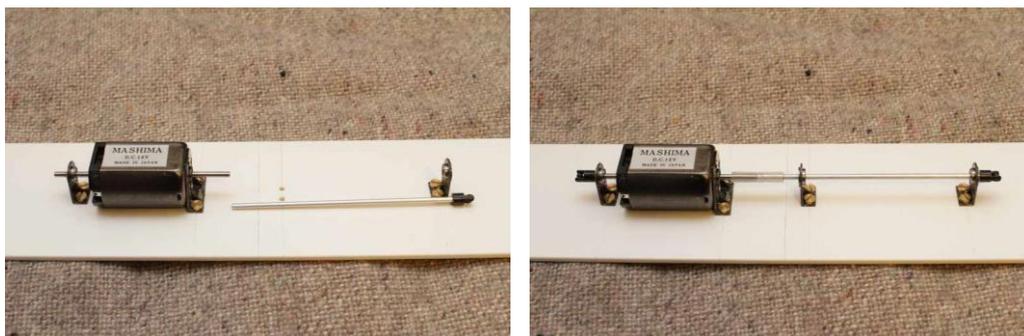
Working from one end the dimensions used for the fixing screws are as above.

9a)



Install the motor as in this picture. Measure the distance from the end of the motor shaft to the inside face of the bearing ('Y') and add 7mm to that length, cut a length to this dimension from the thinner, 2mm dia., aluminium tube provided.

10a)



The length of tube can then have the end of the drive shaft pressed in place and is installed with the additional drive bracket and a 15mm length of neoprene tubing. Another drive shaft end is pressed on to the free end of the motor shaft.

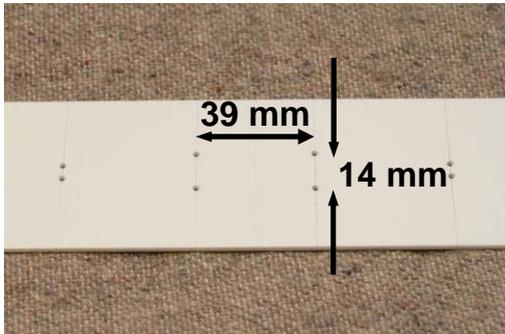
11a)



And with the bogies and drive shafts attached it should look something like this.

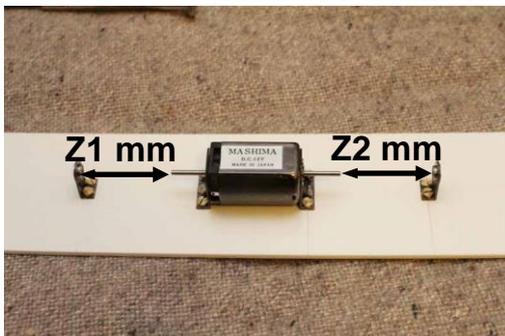
Central motor

8b)



In the centre of the underframe mark out and drill for the fixing screws according to the dimensions above.

9b)



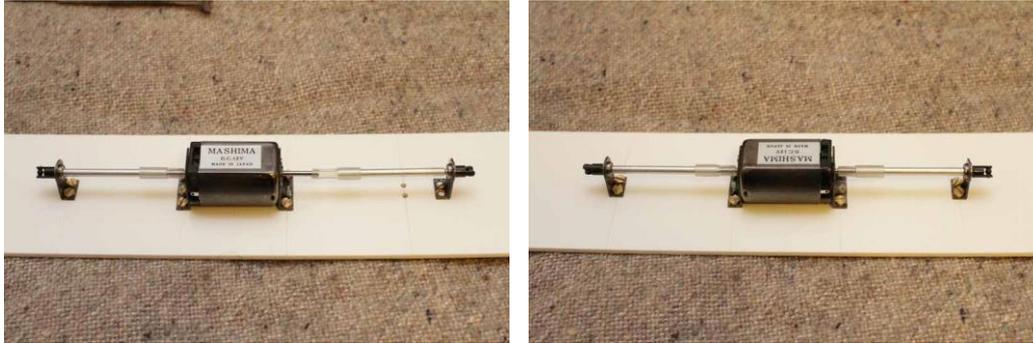
Install the motor as in this picture. Measure the distance from the end of the motor shaft to the inside face of the adjacent bearing ('Z1', 'Z2') and add 6mm to each length, cut a length to this dimension from each of the 2mm dia. and 3mm dia. aluminium tube provided.

10b)



The sections of tube can then be joined, with 7mm of the inner tube protruding. I used Loctite 480, but an epoxy would work as well. Apply the adhesive to the outside of the thin tube as you feed it in – the inside of the larger bore must be clear of any adhesive. Once the adhesive has cured add the drive bracket, drive coupling and a 15mm length of neoprene tubing to complete the assemblies.

11b)



The tubes can then be fed on to the motor shafts and pushed up until the screws fit. Make sure the neoprene tubing doesn't touch the bosses on the ends of the motor or they'll act as a brake.

12b)



And with the bogies and drive shafts attached it should look something like this.