

MODEL SIGNAL ENGINEERING



Part of WIZARD MODELS LIMITED
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SCALE	CODE
All	SG90-2



TWIN "RETFORD" SERVO SUPPORT for signal operation (Servos not included)

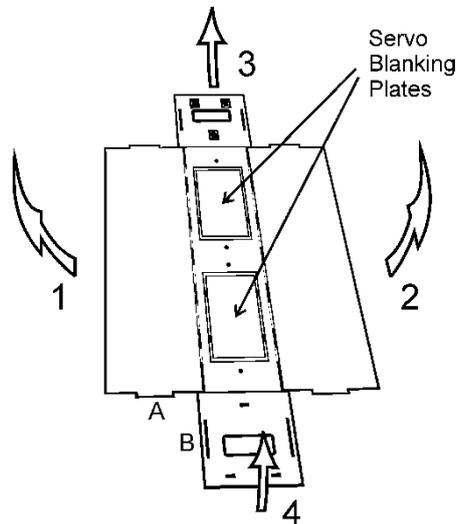
INTRODUCTION

The Retford Servo Support (RSS) was designed by the late Roy Jackson's Retford team for use on his layout. It was considered suitable for a wider audience and is being produced and distributed under licence by MSE. The SG90-2 twin RSS provides a mounting for two or more servos and a platform above it to hold the signal post. The whole assembly can be inserted into a rectangular hole in the baseboard and is designed to be demountable by simply unplugging the servo leads from the operating module and removing a stabilising pin (if fitted).

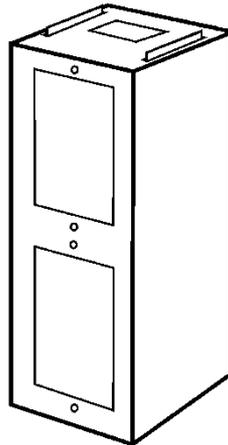
The RSS has been designed to accommodate so-called '9 gram' or '9G' servos, as used in radio-controlled model aircraft. The specific model of servo shown above is TowerPro's SG90. Other 9G servos should fit but have not been tested. **Note that a servo controller is required for operation – do not connect the servo directly to a power supply.**

The RSS has been designed for 4mm scale use, but is applicable to other scales.

ASSEMBLY



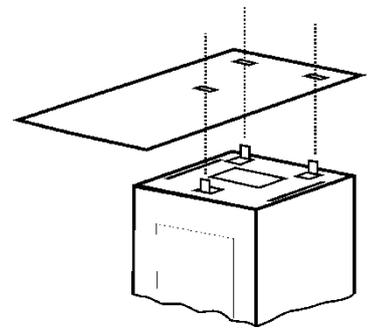
Detach the RSS from the fret. Do not remove the servo blanking plates until after the RSS is folded. Fold up the sides in the order shown (half-etched lines on the inside, two long sides first, to just over 90°, followed by the short sides). Insert tabs (A) into slots (B). Apply pressure to each end in turn and solder the tabs into the slots. Remove the servo blanking plates (from the inside). You should now have a box that looks like this:



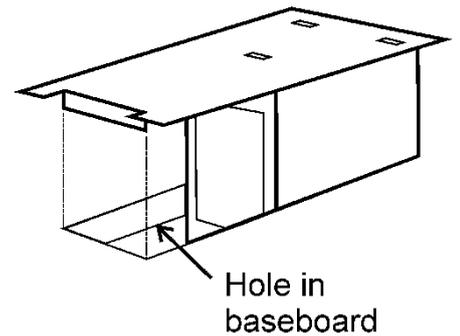
File the tabs flush with the top and bottom surfaces.



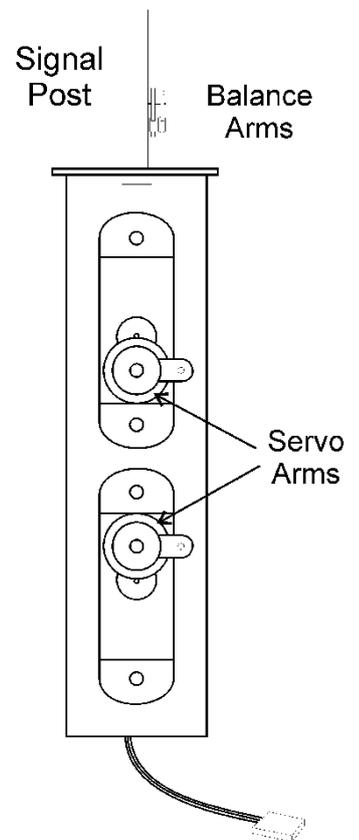
Select the required top plate. The larger top plate provides support all round its circumference (assuming the baseboard hole is cut correctly – 35mm x 20mm) and is thus preferable. The smaller one is for use in more restricted locations, such as between two tracks. The full-width half-etched line provides a fold-down locating tab (see later); the shorter line is the operating rod slot and will need opening out to suit the position of the rods.



Carefully bend up the small tabs up from the inside of the box. Orient the top plate so the half-etched lines are on the bottom, and drop it onto the tabs. Solder in place and file off the tabs flush with the top plate.



If required, cut the top plate at 90° to the front half etched line and fold down the centre section to positively locate the RSS in the baseboard hole.



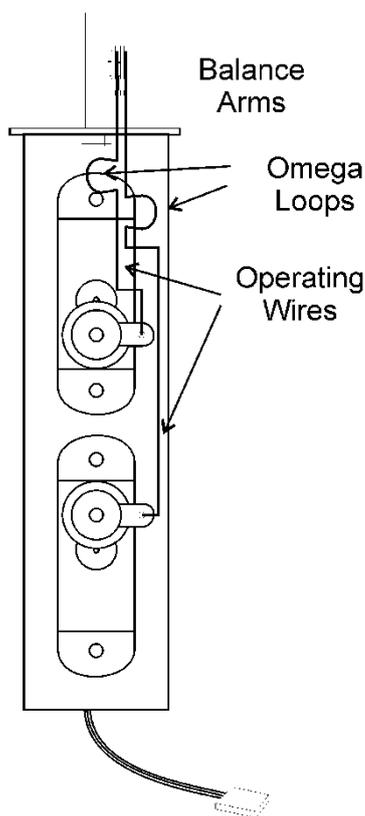
Fit the signal to the RSS so that the operating rod holes in the signal balance arms are directly above the short half-etched line on the top plate. Open out the line to suit.

Install the servos into the RSS. Feed the power wires down through the RSS and out of the hole provided.

Warning: It is essential that the selected servo driver be used to drive the servos to the centre of their travel before the servo arms are attached to their spindles and the signal operating rods are connected. Failure to do this could cause the movement of the servos on initial power-on to damage the signal mechanism. Also, the signal should have been constructed without any form of stop on the arm travel.

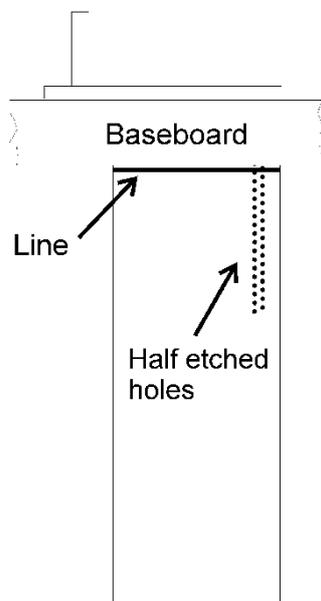
Choose the appropriate servo arms (they will need shortening to remain within the confines of the baseboard hole) and fit them to the servo spigots with the provided screws.

Packing washers are included. These can be placed inside a servo arm socket prior to inserting it onto the spigot to provide horizontal clearance between individual servo arms.



Balance arm pull-rods are normally made from 0.3mm or 0.45mm brass wire in 4mm and 7mm scales respectively. The servo holes suit approx 0.8mm wire. It is recommended that a jointed push rod is constructed, with an omega loop being formed in the smaller diameter section as shown.

Using the controller, the servos should now be adjusted to give the correct range of arm travel.



Half-etched holes are provided in the sides of the RSS to allow a stabilising rod to be inserted. This will prevent it toppling forward when heavy bracket signals or gantries are fitted. Mark a line on the support to represent the bottom of the baseboard. Drill through the first hole below the mark on either side and insert an appropriately sized wire.

This and the *SG90-1* single RSS may be combined to create a 3 or 4 servo assembly by inserting the top tabs of one support into the corresponding bottom holes on another. To avoid linkage problems, it is recommended that a maximum of 4 servos is combined.

Further information on servo operation of signals may be found in an article by Martin Lloyd in MRJ 201, pp249-254.

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