BLINES 13:1 'REMOTE' GEARBOX

These gearboxes are much more closely toleranced than typical 'fold-up' types and care is required in their assembly. Taking a little care and time will result in an exceptionally quiet, smooth and long-lasting gearbox.

Failure to follow this procedure is likely to result in a gearbox that will not run (or not run well) – this is not a warranty issue although we will happily provide replacement frets or other components (at cost) should you run into difficulties.

These gearboxes use the cusps on the fret as a means to control tolerances – DO NOT REMOVE CUSPS FROM ANY OF THE COMPONENTS UNLESS DIRECTED.

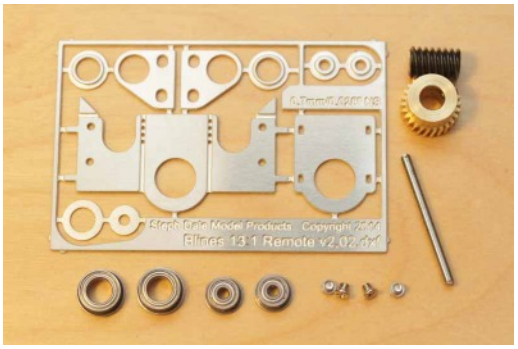
The reamers mentioned in the instructions can be obtained inexpensively from discount tool sellers and even from well-known on-line auction sites. They are recommended for the assembly of the gearboxes as they result in the necessary accuracy in the opening of the critical holes as well as being speedy to use.

Twisty-tabs. These components use twisty-tabs to position and secure the components before soldering. Twisting the tabs approximately 90° will hold the parts firmly relative to each other in preparation for soldering.

Additional items

Axle/wheelset of your choice, on a 3/16" diameter axle. These instructions show a Slater's axle in use.

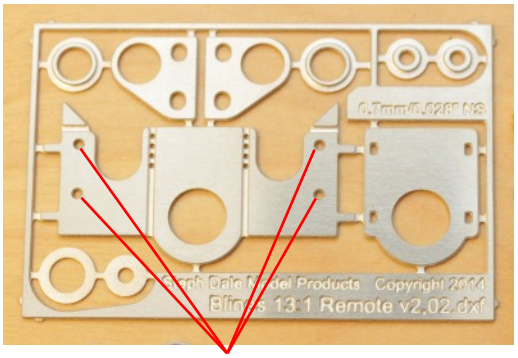
Step 1



First job is to check you have everything:

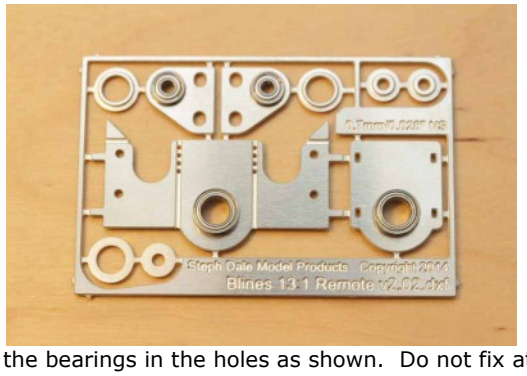
Fret x1
FR156zz 3/16" id bearings x2
MF62zz 2mm id bearings x2
Gearset x1
M2x2mm screws x4
2mm diameter silver steel x1

Step 2



Drill the four fixing holes 1.75mm.

Step 3



Test fit the bearings in the holes as shown. Do not fix at this stage.

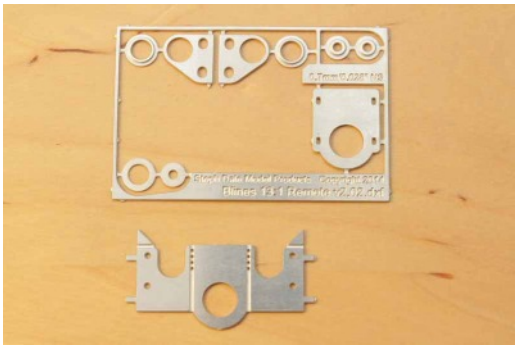
Step 4

Test fit the bearings on the 2mm diameter silver steel shaft. If it's too tight then you can polish the motor shaft with emery paper until it just fits. Do not fix at this stage.

Step 5

Test fit the bearings on to the axle. If it's too tight then, polish the axle with emery paper until the axle just fits. Do not fix at this stage.

Step 6

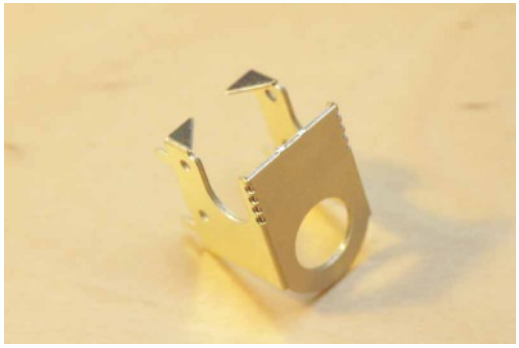


Cut the main part of the gearbox from the fret.

Step 7

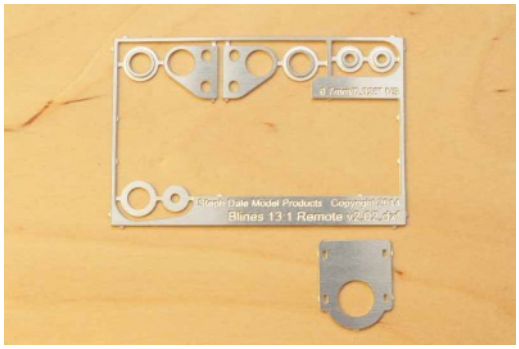
Bend up the front and back to 90°.

Step 8



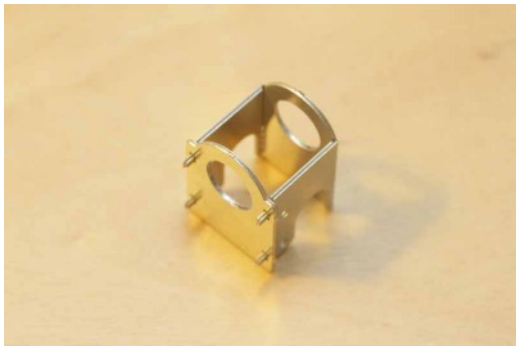
Bend down the two top ears to 90°.

Step 9



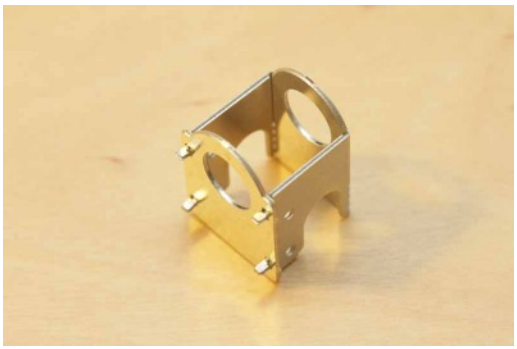
Cut the sideplate for the gearbox from the fret.

Step 10



Check that the sideplate and the main part of the gearbox fit together easily on the tabs. If you find that any of the tabs are too tight they can be eased now. Do not solder at this stage.

Step 11



Twist the tabs to lock the parts together.

Step 12

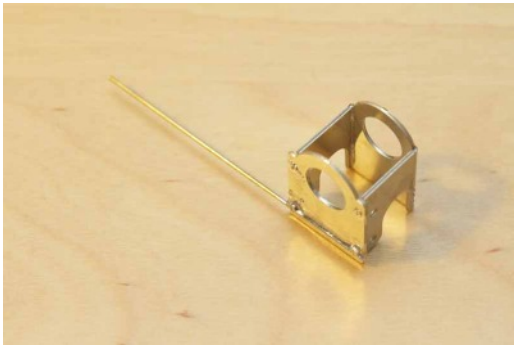
Run solder around the joints and folds.

Note: Do not allow solder to remain around the bearing holes.

Step 13

Tap the holes in the frame M2 for the provided screws.

Step 14



If necessary the tabs can now be trimmed off and/or a torque arm fitted to the gearbox

Note: Do not allow solder to remain around the bearing holes.

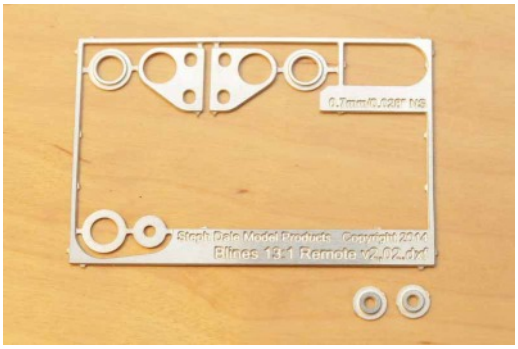
Step 15

Cut the shaft to a suitable size for your application. De-burr both ends

Step 16

Carefully remove the burrs from the end of the worm.

Step 17



Remove the two small shaped washers from the fret.

Step 18

Carefully de-burr the back of the washers.

Step 19

Note: The smaller washers always fit with the worm in this position. The shaped side should always be away from the worm.

Step 20

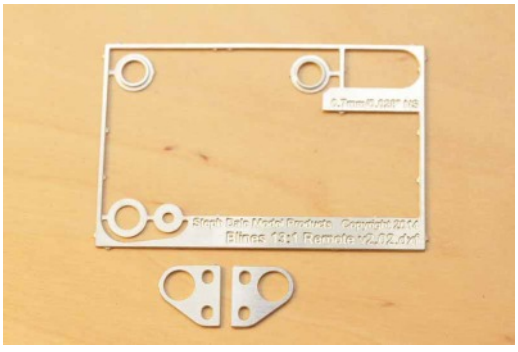
Assemble the washers, bearings and worm on to the silver steel shaft.

Note: These bearings fit with the flanges on the inside of the gearbox.

Step 21

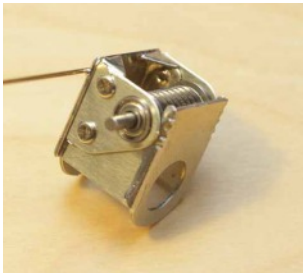
Test fit the worm shaft and bearings in to the gearbox frame.

Step 22



Remove the bearing holders from the fret.

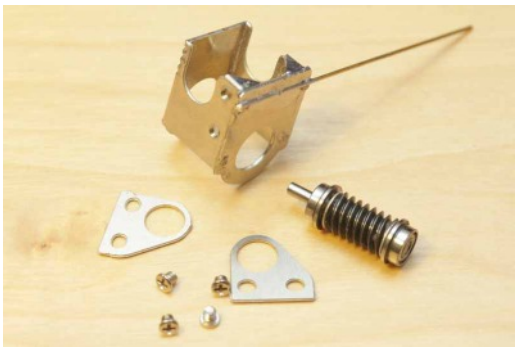
Step 23

Fit the bearing holders to the frame, both front and rear.

At this stage test that the shaft turns over smoothly.

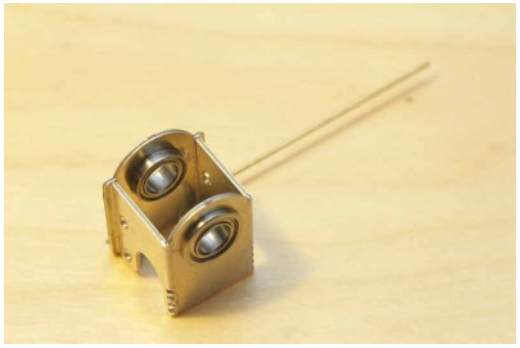
Step 24



Removing the screws will allow this entire assembly to be separated from the gearbox and also provides a means of adjusting the mesh of the gears when finally assembled.

At this stage the gearbox frame and bearing holders may be blackened. Dry completely before continuing.

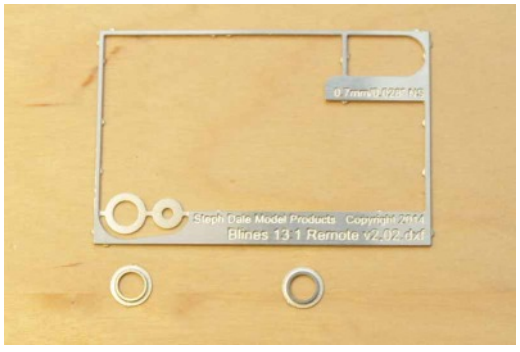
Step 25



Fix the two bearings with retaining compound. Loctite 603 is recommended.

Take care not to get any of the retainer on the faces or races of the bearings – they will seize solid in no time. If you think this has happened remove them from the frame and if found to be seized, we can supply replacements for a nominal fee.

Step 26



Remove the two large shaped washers from the fret.

Step 27

Carefully de-burr the back of the washers.

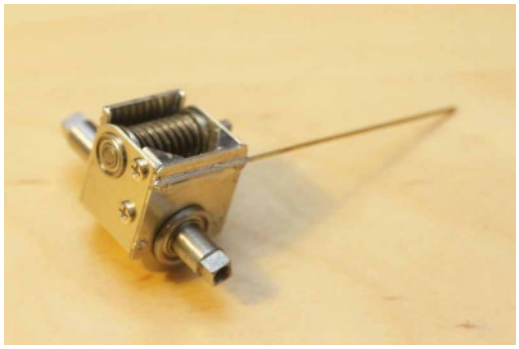
Step 28


Note: The larger washers always fit with the gear in this position. The shaped sides of the washers should always be away from the gear.

Step 29

Test fit the axle, gears and washers into the gearbox. At this stage test that the axle turns over smoothly.

Step 30



Replace the worm unit, bearing holders and screws and adjust the mesh of the gears by sliding the holders up and down in the frame, before locking off the screws.

The screws can be fitted with Loctite 242 or similar if desired.

You should now have a fully functioning gearbox.

Step 30

At this stage I lubricate the gears with a little gear lubricant which must be plastic compatible.

The aim is to get a thin, even coating on both the gear teeth and worm. I use Woodland Scenics Hob-E-Lube 'Gear Lube' (Item WHL655).

The bearings are lifetime lubricated and will need no further lubrication.