

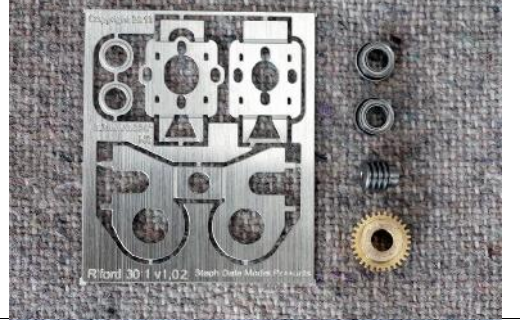

Instructions for Mkits 40:1, 12mm Gearbox

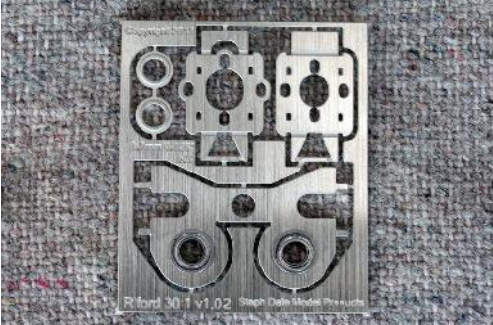



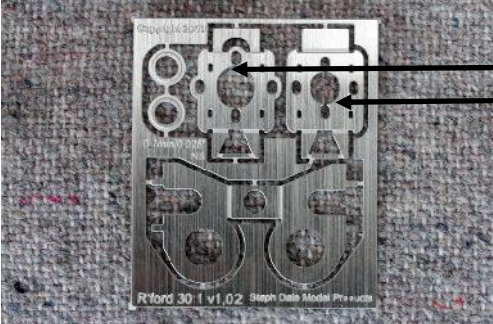




Introduction

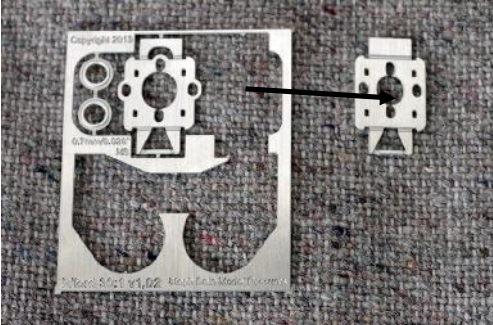







1. These gearboxes are much more closely toleranced than typical 'fold-up' types and care is required in their assembly. Taking a little care and time will result in an exceptionally quiet, smooth and long-lasting gearbox.
2. Failure to follow this procedure is likely to result in a gearbox that will not run (or not run well) – this is not a warranty issue although I will happily provide replacement frets or other components (at cost) should you run into difficulties.
3. 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.**
4. Twisty-tabs. These components use twisty-tabs to position and secure the components before soldering. Twisting the tabs approximately 90degrees will hold the parts firmly relative to each other in preparation for soldering.


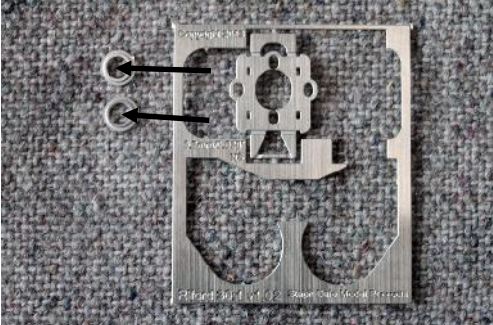



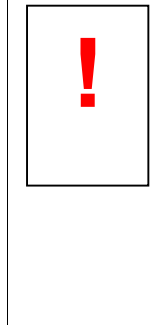


Additional items








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

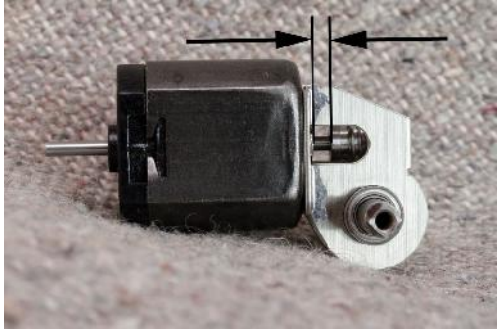

No.	Illustration	Symbols	Text
1			<p>First job is to check you have everything:</p> <p>Fret x1 (30:1 fret shown) FR156zz 3/16" id bearings x2 Gearset x1 (30:1 gears shown)</p>
2			<p>Check you have the correct gears:</p> <ol style="list-style-type: none"> 1. 30:1 gearset (use with R'ford 30:1 fret) or; 2. 40:1 gearset (use with R'ford 30:1 fret) or; 3. 54:1 gearset (use with R'ford 54:1 fret).

3			<p>The bearing holes have been reamed for you.</p> <p>Test fit the bearings in the holes as shown.</p> <p>Do not fix at this stage.</p>
4			<p>Test fit the bearings on to the axle you'll be using.</p> <p>If it's too tight then you can polish the axle with emery paper until they just fit.</p> <p>Do not fix at this stage.</p>
5			<p>Select which backplate you wish to use to mount your motor.</p>
6			<p>Cut the main part of the gearbox from the fret.</p>
7			<p>Bend up the two sides, each to 90 degrees. The half-etched lines are on the inside of the fold.</p>

8			<p>Cut your chosen back plate for the gearbox from the fret.</p>
9			<p>Check that the sideplate and the main part of the gearbox fit together easily. Test the tabs and slots carefully, one set at a time. If you find that any of the tabs are too tight they can be eased now.</p> <p>Twist the tabs on the gearbox to hold everything in position.</p> <p>Do not solder at this stage.</p>
10			<p>Bend the top tab of the gearbox down by 90 degrees.</p> <p>On the 30:1 and 40:1 gearboxes snap off the bottom tabs, as shown here.</p> <p>On the 54:1 gearbox bend the bottom tabs to 90 degrees.</p>
11			<p>The joints and all other bend lines can now have solder run in.</p> <p>Take care to ensure that solder does not get on to the surfaces that seat the bearings.</p> <p>On the 54:1 gearbox cut out the bar across the bottom tabs.</p>
12			<p>Rub down the back of the gearbox on a flat surface.</p>

13			<p>You should now have a frame like this, with a smooth back.</p>
14			<p>Remove the two shaped washers from the fret.</p>
15			<p>Carefully de-burr the back of the washers.</p>
16			<p>Note: The washers always fit with the gear in this position. The shaped sides of the washers should always be away from the gear.</p>
17			<p>Test fit the axle, gear, washers and bearings into the gearbox.</p> <p>Note: These bearings fit with the flanges on the inside of the gearbox.</p> <p>At this stage test that the axle turns smoothly.</p> <p>Do not fix at this stage.</p>

18			<p>Fix the bearings with retaining compound. I use Loctite 603. Carefully 'pinch' the bearings on to the washers and gear to reduce the sideplay on the axle to a minimum; this will help when meshing the gears.</p> <p>Take care not to get any of the retaining compound 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 I can supply replacements for a nominal fee.</p>
19			<p>Tissue away any excess retaining compound and then leave to cure as directed by the manufacturer.</p> <p>Remove the screws from the motor (if fitted).</p>
20			<p>Thread the worm gear on the motor shaft as the gearbox is mated with the front of the motor.</p> <p>Note: The axle, washers and gear may need removing depending upon which back plate/motor combination you are using.</p>
21			<p>Loosely fit both motor screws to attach the motor to the gearbox. Gear mesh can be adjusted at this time moving the motor/screws up and down in the slots on the backplate. Test that the motor still turns over smoothly and that the gears mesh smoothly; it may take several goes to get this absolutely perfect.</p> <p>Note: The axle, washers and gear may need removing depending upon which back plate/motor combination you are using.</p>

22		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;"> <p style="text-align: center; color: red; font-size: 2em;">!</p> </div> <p>A further adjustment is the gap between the motor boss and the worm gear.</p> <p>If it is desired the gap can be maintained with washers or a short length of tube (not provided).</p> <p>Note: The motor will need removing from the gearbox to place the washers/tube. See steps 19, 20, 21 for re-attaching the motor.</p>
23		<p>At this stage I lubricate the gears with a little gear lubricant.</p> <p>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).</p> <p>The bearings are lifetime lubricated and will need no further lubrication.</p>