

# Make Your Own Bike Trailer Kitset Instructions

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## Introduction

Take a look at my website [www.cyclingchurch.org.nz](http://www.cyclingchurch.org.nz) for details of the hilarious book I have written called PROSACC – Profound Revelations of Sunday Afternoon Cycling Church. Articles on bike trailer design, bike trailer workshops and supermarket challenges are also available there as well as a half hour interview of me on Radio New Zealand. The kitset bike trailer is designed to carry two bins, or can be fitted with a deck or hammock, depending on the loads that you wish to carry. Maximum loading is approximately 40-50 kg.

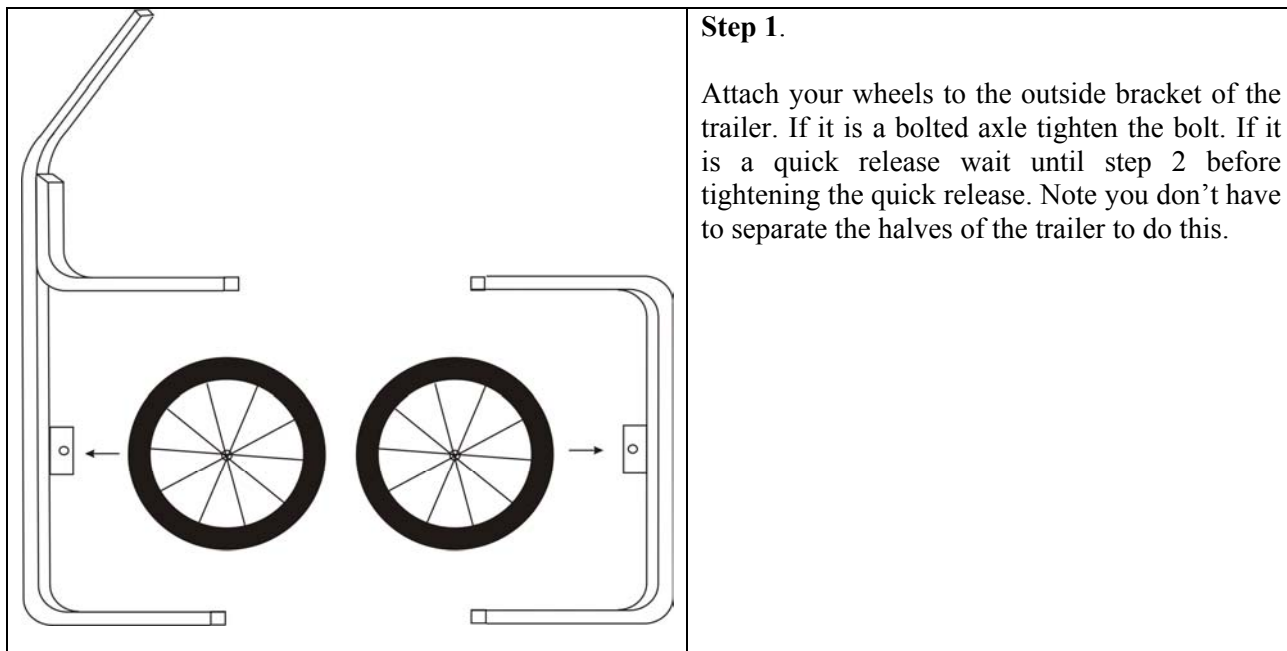
## Preliminaries

- Decide whether you want to use bins, a deck, or a hammock to place loads in/on. Two bins approximately 420 mm wide are an easy option. Christchurch recycle bins (available for \$12 each from the Council) are by far the cheapest, strongest and best fitting option available. You could however try Perroplas bins from plastic box or The Warehouse (but they break easily) or apple crates from Stowers around (\$31 each).
- If you haven't purchased new wheels, find a set of two wheels. 20" wheels are very good stability wise, but if you use bins it will require a piece of wood screwed to the side of the bin or on the inner strut of the trailer to raise the bin up, so the bins don't scrape on the ground going over curbs. 26" wheels are ideal for giving clearance for the bins but the trailer will tend to wobble a bit more (still acceptably stable though). Front wheels are narrower (which is good), but one front and one rear are quite acceptable. Removing gear clusters is recommended if possible. Avoid 27" 10 speed wheels as the wobble becomes unacceptable.

## Assembly

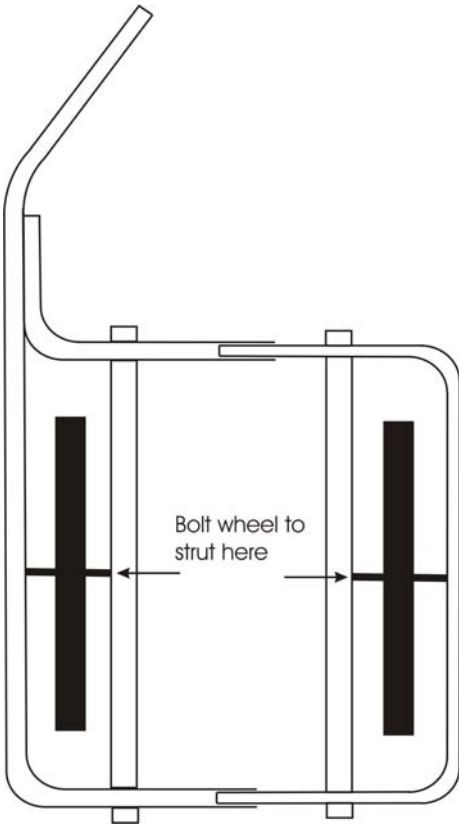
Follow the instructions below. Please note the following:

- You are responsible for the safety of the finished trailer. While I endeavour to provide parts of good quality that should perform well for many years, you are the one to put it together and make sure it operates in a safe manner.
- The nuts provided are nylocks and should not vibrate loose. Do not over-tighten them. If you notice the aluminium tube bending significantly under the pressure of the nut, you have made it too tight.
- The wheel axles go through a hole in the inner and outer struts to be held into place. The only way of changing a tyre or tube is to unbolt the inner strut from the trailer frame. If you prefer a faster method of changing tyres or tubes you can make the hole into a slot into the strut by cutting it with a hacksaw. This makes tyre changing easier but will weaken the angle a little and could increase the chance of the aluminium developing metal fatigue. How significant that weakening will be over time is anyone's guess.



### Step 2.

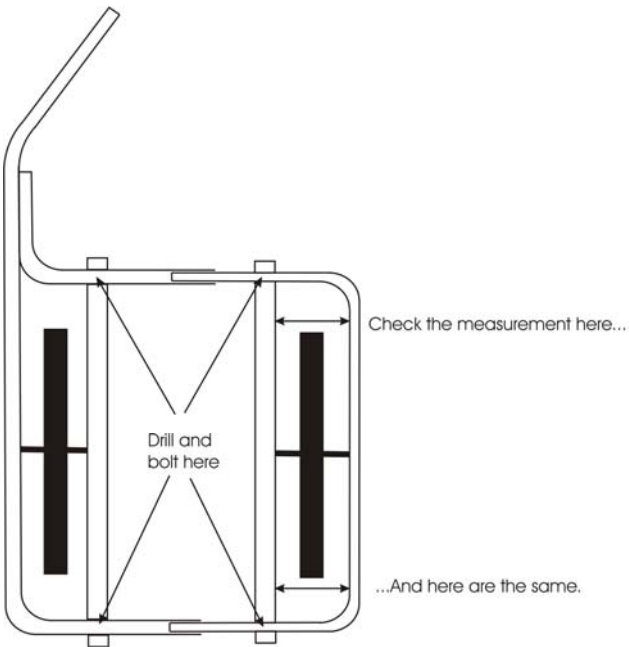
Attach the inner strut (800mm length of 30mm angle aluminium) to the wheel using the hole provided. The strut goes underneath the trailer frame at each end. Tighten up the bolt or quick release.

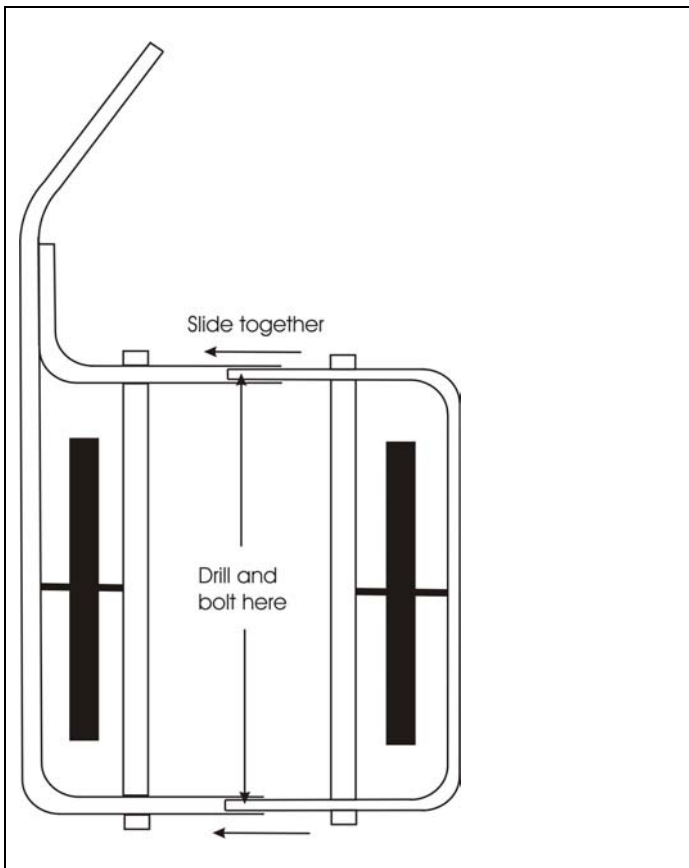


### Step 3.

Check the wheel is straight by measuring from the edge of the frame to the inner strut at each end of the trailer as shown in the diagram. If possible, clamp the strut in place or get help to make sure it doesn't move out of position, then drill a 6mm hole through the strut and frame.

Note that it may be easier to turn the trailer upside down and drill the strut first.

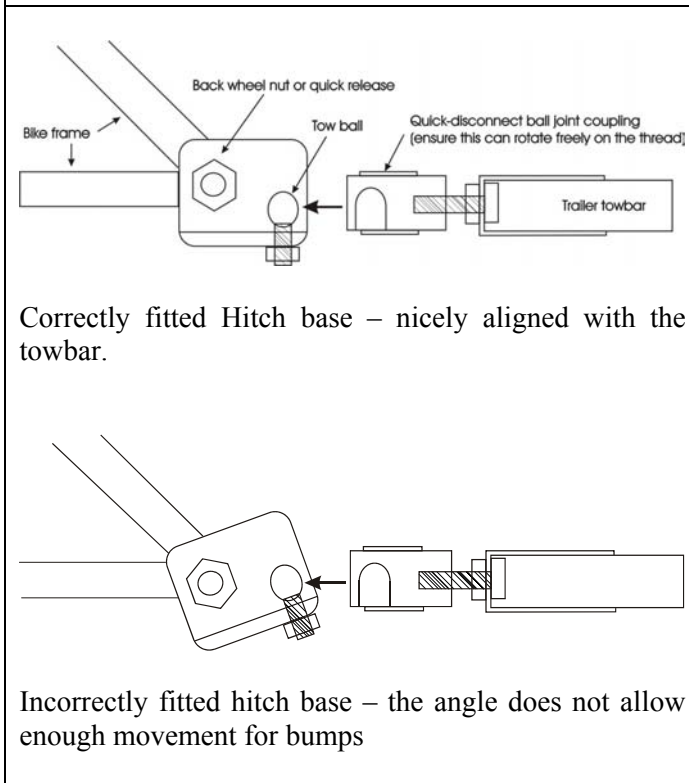




#### Step 4.

If using bins, place the bins into the trailer and slide the two halves of the trailer in or out to get a snug fit of the bin between the struts. Otherwise slide the two halves of the trailer in or out to set whatever width you wish to obtain. Note the maximum width between struts is around 550mm. There needs to be at least 150mm overlap to maintain the strength of the frame.

Drill a 6mm hole through both tubes at the front and rear of the trailer (vertically). Bolt the two halves together.



#### Step 5.

Attach the hitch base to your bike underneath the rear wheel nut or quick release lever (left hand side). It stays on your bike all the time. It is important to align the tow ball with the tow bar and quick disconnect ball joint coupling to allow up/down movement over bumps. If there is a permanent angle on the tow ball there may not be enough play and the ball joint may bend or break.

It is also important to make sure the quick disconnect ball joint coupling can rotate at least 90° on the bolt thread in both directions. It would pay to get in the habit of checking this every time you connect the trailer on as it can tighten up over time and will damage the ball joint if it cannot rotate freely.

### **Finishing touches**

- Foam or rubber glued to the top edge of the trailer will stop bins from rattling when unloaded (this can be very noisy).
- Placing some bolts or self tapping screws around the trailer for attaching bungies to is very useful. Small holes drilled on the underside can also be used as bungee attachment points.
- An additional deck on top of the two bottom bins means you can put two additional bins on top of the deck. They'll need to be well secured of course.
- To carry a bike on top of the trailer, use a bent piece of 10mm threaded rod with 4 nuts. Clamp it to the front of the trailer and use it to bolt the front forks of a bike onto – very useful for taking kids bikes out to the park etc.
- A flag, reflector and reflective tape are very good additions to make the trailer more visible.
- Attaching a rear light is highly recommended so you can use it for night trips. UFO lights (topeak) mounted on a flagpole are very good for sideways as well as rear visibility.

### **Safety Information**

- Don't overload the trailer. 40-50 kg is about the limit.
- Don't use the trailer with disc brakes without thoroughly testing the towbar doesn't bend the disc under all turning/falling over movements.
- Check the bolts every few months to make sure they are all tight. Also check the aluminium every year or so, particularly around the wheel axle to make sure it's not developing metal fatigue and cracking.
- Be careful when going up curbs particularly with an unloaded trailer. If you get a wheel hitting the square edge of the curb they will flip very easily.
- Watch your load doesn't shift. Anything that touches the moving wheel spokes will be ruined very quickly. Consider fitting guards if this is a problem.
- Be careful on sharp right hand turns as the tow bar can rub against the back wheel of the bike putting a huge strain on the tow ball. Most corners are fine but do any U-turns to the left.
- Some bins (e.g. peroplas ones) bend when loaded and can slip off the rails that they sit on. If this is the case, a strut or two across the middle of the trailer is recommended to prevent the bins from bowing.
- Light weight road racing frames can apparently bend if you try towing a heavy load, so mountain bikes are more suitable for a towing vehicle.