

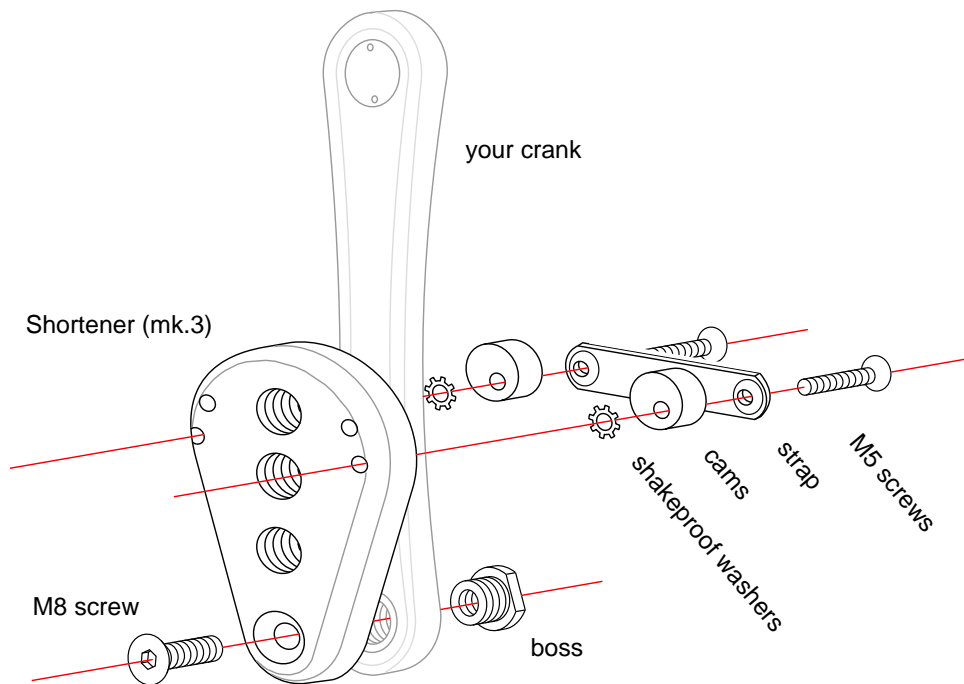
## *Pulse* Universal Crank Shorteners

Pulse Crank Shorteners adapt cranks to provide extra positions for your pedals. Two versions are available:

- Standard Crank Shorteners have 3 pedal holes and shorten cranks by 27, 50 or 70mm. They are suitable for most able-bodied adults and children, and are ideal for use by children on low-back tandems.
- Long Crank Shorteners have 4 pedal holes and shorten cranks by 27, 50, 70 or 88mm. The extra position is for riders with serious mobility problems.

Both are supplied with a selection of fittings, allowing them to be fitted to most cycles:

- Left cranks up to 41mm wide
- Right cranks up to 41mm, with removeable chainrings
- Standard pedals which can be tightened with a spanner



### Important

- **Your safety depends on the correct fitting of this item. SEEK PROFESSIONAL HELP IF NECESSARY.**
- The Shortener and Boss are marked L or R for fitting to a Left or Right crank respectively.
- The thread of your Pedal must not be longer than 12mm. Add pedal washers if your's is too long.
- Some cheap cranks are sheathed in plastic. The Shortener may fit better if this is cut away.
- **After fitting, periodically check the tightness of everything.**

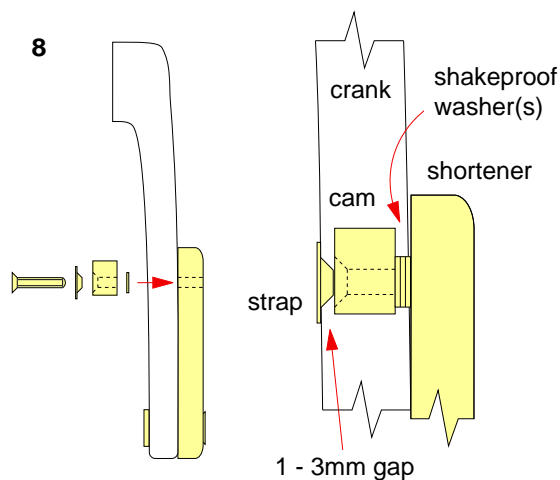
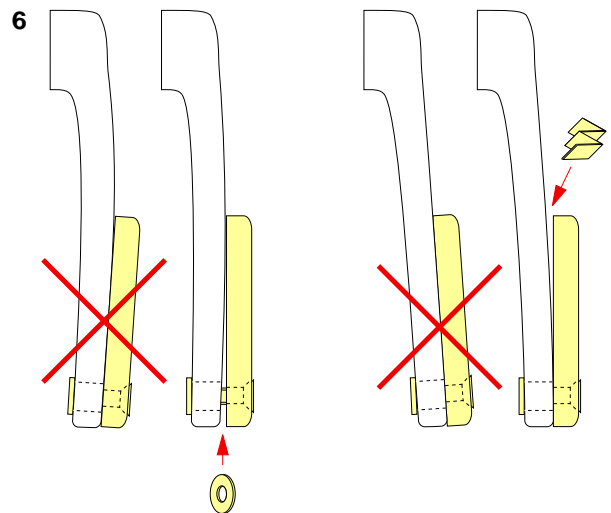
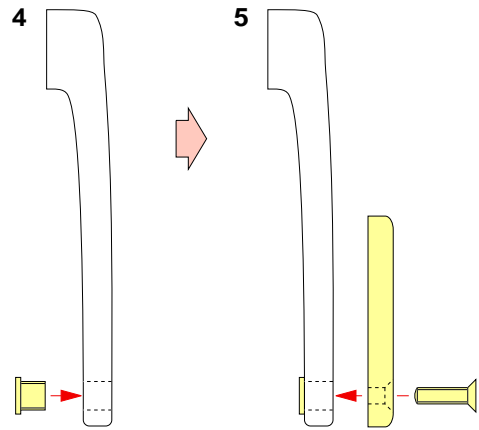
## Fitting Instructions

### Before you start

- 1 Remove the Crank from your cycle.  
Remove any Chainrings from your Crank.  
Remove the Pedal from your Crank (*turn Left pedals clockwise and Right pedals anticlockwise*).
- 2 File away any burs around the pedal hole in your Crank.
- 3 Lightly grease all threads before assembly.

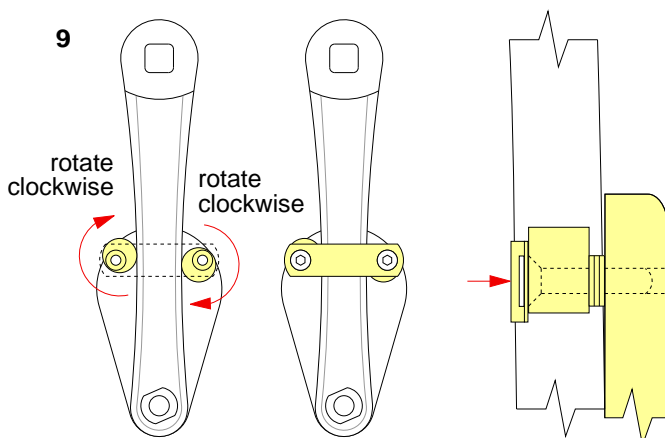
### Fit the Boss and Shortener

- 4 Screw the Boss into the back of the pedal hole in your Crank and tighten it with a 15mm spanner.
- 5 Attach the Shortener to the front of the Crank with the M8 Screw. Align the Shortener and then tighten the Screw with a 5mm hexagon key.
- 6 Check that the Shortener is vertical. If not, add washers and/or packing in the positions shown. (*Strips of metal packing can be cut from tin cans with scissors - but be careful not to cut yourself!*)
- 7 Make sure the Boss and M8 Screw are really tight.



### Fit the Cams, Strap and Shakeproof Washers

- 8 Select the pair of holes in the Shortener that best suit your Crank. Select the corresponding Strap.  
Use sufficient Shakeproof Washers to leave a 1 to 3mm gap under the Strap. You must use at least one Shakeproof Washer on each side.
- 9 Insert the M5 Screws and rotate both Cams in a clockwise direction (looking from the back).  
Hold the Cams firmly against your Crank and tighten the M5 Screws with a 3mm hexagon key, pulling the Strap all the way into the Cam recesses. Make sure they are really tight.



### Finally

- 10 Replace the Crank on your cycle.
- 11 Screw your Pedal into one of the pedal holes in the Shortener and tighten it with a pedal spanner.

### CHECK CAREFULLY

**The Boss and the Screws are really tight.  
The Cams touch the Crank and can't move.**