

Rob's Briefings : Bicycle Renovation & Refurbishment



A series of easy-to-understand guides to help enthusiasts repair or rebuild bicycles

Frame spreading - STEEL ONLY - *not for the faint-hearted!*

THIS SHEET CARRIES A HEAVY DISCLAIMER - UNDERTAKE AT YOUR OWN RISK!

I have altered (so far) about 5 frames to widen the rear stays/dropouts to accept the wider modern wheels (from 120 to 135 mm OLN) with no problems. Care must be taken not to unbalance the alignment of the frame - and minimise any variation of angle of the inner faces of the dropouts.

This sheet only applies to steel frames - aluminium or other materials cannot be altered in this way.

Firstly a definition and a few points :

The width between the rear drop-outs on a frame is normally expressed as *N* mm OLN (Over Lock Nuts - that is the width of the wheel hub measured from the outside of the lock nuts on the cones)

Older frames can be as narrow as 120 mm - modern frames measure 130 or even 135 mm. The width has increased to accommodate wheels with more sprockets. Front forks have remained the same OLN width.

In order to accommodate modern (wider wheels) the frame may need to be "spread" or "opened up" to allow the axles to fit in the dropouts.

In order to reduce the amount by which the frame has to be spread it may be possible to reduce the wheel's OLN measurement by adjusting the cone spacers and the length of the axle (if QR) - BUT make sure that the hub is not reduced in width to the point where the sprockets or chain foul the frame.

From my experience there have been no major issues with the chain-line - it is always advisable to avoid gear ratios with extreme chain alignment (e.g. largest chain-ring and smallest sprocket, and vice versa)

There are alternatives :

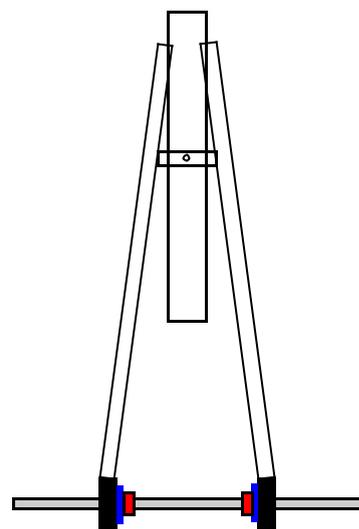
1 Sheldon Brown (*qv*) describes the use of a piece of 2x2 wood as a lever

2 It is possible to simply pull the dropouts apart (with the frame on its side on the ground, placing a foot on the lower dropout and pulling the upper stay, and vice versa.

Both methods risk an uneven spread and misalignment

Frame viewed from the rear showing the rear stays and drop-outs

M8 Studding rod
M8 Nuts
Large washers



Method

Fit the M8 studding with the washers and nuts as illustrated (ideally with the frame held in a work-stand (or a large vice would do) take up the tension on the nuts on the inside of the dropouts.

Measure the distance between the dropouts, and also ascertain the OLN of the wheel that it is intended to use. [A Vernier calliper is a useful tool]

Wind the nuts (with an M13 spanner) on the inside of the dropouts so that they gently spread the dropouts, measuring frequently as you progress, until the dropouts are the correct distance apart when the nuts are undone and the studded rod removed.

It will be necessary to open the dropouts a little wider than the ultimate measurement required as the frame will have some "spring" and close up a little when the rod is removed - trial-and-error is required at this stage.

Always err on the narrow side to avoid excess spread on the frame, it will be possible to use a small amount of the "spring" in the frame to retain the wheel axle.

Any slight variation to the dropout face angles should have no material effect when the wheel is in place and the QR or nuts tightened.

If you have any ideas or tips that you would like to share then e-mail : cyclebriefings@beewee.co.uk

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