



## **STURMEY ARCHER: parts for axle and cable entry.**

### **Notes regarding compatibility of parts.**

1. If this set includes any nuts for the axle, note that these must only be used on **Sturmey Archer** rear axles. Their thread is not the same as for other (non-Sturmey) rear axles, but similar enough to permit them to be fitted to the wrong axle, for instance on the Brompton 2-sp'd axle (where thread engagement would be poor, and the thread would strip). So do not use any nuts in this set with Sram 3-sp'd or BBL 2-sp'd.

2. If this set includes a 3-sp'd chain-tensioner nut, note that

- the axle on pre-2003 Sturmey hubs (with *steel-shell*) is shorter than on later hubs, and calls for a short nut (length 16.9mm), whereas
- later hubs (almost invariably with *alloy-shell*) call for a long nut (length 19.5mm):

Although the difference may seem small, it is **essential** that you fit the correct nut. Note also that, for Sturmey Archer, a chain-tensioner nut should have a step at the inner end, and an inspection hole (whereas for Sram there is no step or hole).

3. If this set includes a gear-indicator chain, once again, it's **essential** that it's right for the hub in question:

- 3-speed, rod diameter 4mm,
  - o with **one** mark, for pre-2003 hubs with a "wide" driver and with a steel-shell
  - o rod diameter 4mm, with **two** marks, for post-2004 hubs with a narrower driver and almost invariably with an *alloy-shell*.
- 5-speed, rod diameter 2.5mm,
  - o with blue mark, for "ball-locking" hubs made after March 2000 (they are distinguished by a generous chamfer at the LH end of the axle),
  - o rod diameter 2.5mm, with red mark, for earlier non-ball-locking hubs.

4. Torque-reaction tab-washers, under the wheel-nuts: if the axle-drop-out slots on the rear-frame are 8mm wide, use sintered tab-washers (fig W1). But if the slots (post-2003) are 10mm wide, use the pressings (marked SA), fitted the correct way round with the end marked TOP upwards (on the unfolded bike).

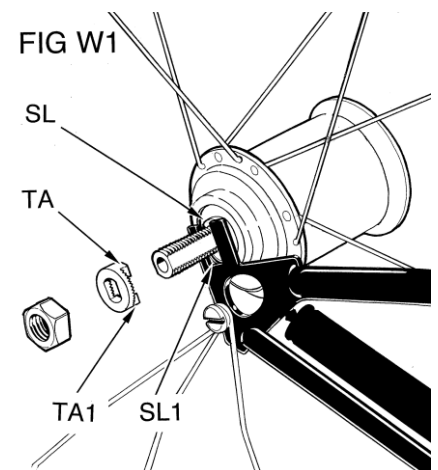
### **Securing a chain tensioner with the special nut & washer.**

[If you are fitting a new 3-sp'd chain-tensioner nut to replace one that was broken, note that the reason for its breaking was probably either that it was done up too tight, or else that the tab-washer was not assembled right.]

Any tab washer under the wheel nut must be seating correctly, with the axle correctly positioned in the axle-plate-slots. On pre-2003 Sturmey bikes, make sure that tab-washers are fitted as per fig W1: the tabs must engage in the slot, and the face TA1 must be in contact with the end of the 8mm slot SL1 in the frame.

The correct torque for the main wheel nuts is a firm 22NM, but the chain tensioner nut, in contrast, should not be done up nearly as tight:

- On a Sturmey 3 sp'd, *don't exceed a torque of 5NM* (just more than hand-tight). A low torque must be used because the chain tensioner nut engages on only 3 or 4 threads at the end of the axle.
- On a Sturmey 5-sp'd, torque 8-12NM (take care with the alignment of the outer tab washer: the guide-roller when fitted must align with the cable).



subtext gadj hub (SA only)

### **Hub-Gear adjustment.**

Adjustment of the gear control must be carried out with the bike fully unfolded (i.e NOT parked), and with the indicator rod screwed **fully home** into the hub (and backed off not more than half a turn to align with the cable). The aim is to make sure that the indicator rod & chain down at the the rear axle moves to the correct position in response to moving the trigger. For this the cable has to be running well: it must be free of kinks or sharp radii, with the cable pulley rolling freely.

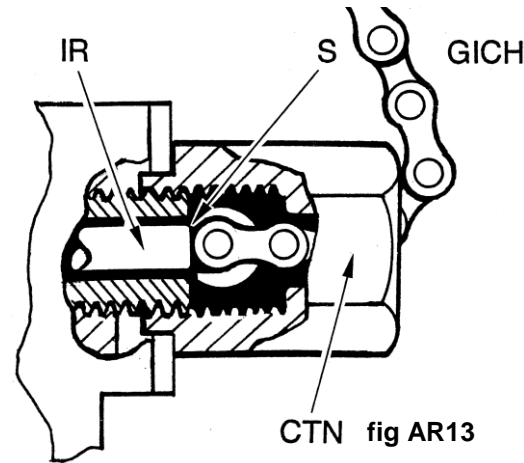
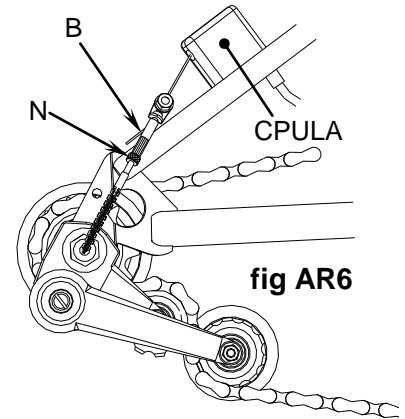
While setting gears, you should ensure that the gear you select by moving the control trigger has indeed engaged in the hub, and to this end, each time you are moving the trigger, keep the wheel spinning forwards, and pedal back and

forwards, to ensure the gear engages. It's easiest, when actually altering the setting, to have the cable slack: so select top gear and back and forward pedal a bit first.

If you cannot obtain a satisfactory setting, then the most likely cause is either the cable not running freely, or damage to the indicator chain itself, where it runs into the axle end. Otherwise, the fault may be with the hub internals.

**STURMEY ARCHER 3-spd & 5-spd adjustment:**

Adjustment is carried out by slackening the lock nut N, turning the barrel B to obtain correct setting, and relocking the nut N. Ensure the indicator rod is the correct length for the hub-type.



**3-speed.** Engage top gear, then move the control trigger to the middle position: the step, S, towards the end of the indicator rod, IR, should be level with the end of the axle, visible through the hole in the CTN. Next, select bottom gear, then middle, then top, and check that all three are engaging correctly.

**5-speed, fig AR15** (Note: the GRA must be aligned with the cable/indicator-chain, fig AR12). Engage top gear, then move the control trigger to position 2 (2nd bottom gear): the annular groove, SR, coloured red or blue, towards the end of the indicator rod, should lie

level with the end of the axle. Next change down and then up through all the gears, and check that all gears engage cleanly, fine tuning the setting if needed. In practice, you may find that, with the gears functioning correctly, the groove SR lies (when in 2nd gear) somewhere between the end of the axle and 1.5mm out from the end of the axle (i.e. a slightly tighter setting): but bear in mind that, when in top, the indicator chain, GICH, should be just slack. Next, test the gear selection under load by riding the bike, again changing down and up through all the gears.

