

# **SANTANA SERVICE UPDATE**

## *Shimano Sweet-16 tandem wheelset*

*f.k.a. Shimano Dura-Ace WH TD-77 tandem wheelset*

### **SPOKES and TENSION**

- 1). Per Shimano's original instructions (supplied with every set of wheels), Sweet-16 tandem wheels require an initial retensioning after 1000km—or earlier if the wheel makes noise. While many owners or their mechanics have guessed that the nipples somehow loosened, the drop in tension is instead the normal-and-expected result of the seating of the spokes, and rims. Until the revised Sweet-16 wheels were upgraded with lighter rims (wheels built after August 2005), many customers skipped this important service. With the current lighter rims this required initial service will be harder to ignore.
- 2). Even when they have a tensiometer, veteran wheelbuilders may disbelieve the very high tension requirements of these wheels. If the spokes are tightened to a normal "racing wheel" tension (which is about half the recommended tension), the nipples will work loose, which can damage the rim. If spokes are tightened to 80% of the recommended tension, the wheels may perform fine, but the spokes will fatigue prematurely.
- 3). Although repeated service or premature spoke breakage are known results of the failure to fully re-tension the wheels after the initial seating, some wheelbuilders and/or their customers wrongly believe that these tandem-specific wheels are "high-maintenance," "fussy" or "weak." Actually, as long as these wheels properly retensioned per Shimano's original instructions (after 1000km or as soon as they make noise), Sweet-16 tandem wheels will generally remain tight. Laboratory fatigue tests that simulate years of demanding use demonstrate that a properly tensioned Sweet-16 rear wheel will outlast traditional 160mm tandem wheels with 40 spokes (and 145mm wheels with 48 spokes).
- 4). What is the proper spoke tension? When using a Park tensiometer the recommended average tension for all spokes is "26." With WheelSmith's tool the equivalent reading is "95." Loc-tite is unnecessary.
- 5). Unfortunately, some wheelbuilders and most customers don't have access to an accurate spoke tensiometer. If there is any question as to adequate tension of a Sweet-16 wheel, anyone with a good ear and a piano (or a small "G" tuning fork like those sold at music stores for \$15) can make an accurate assessment by plucking spokes. While not every spoke of a true and properly-tensioned wheel will vibrate at the same pitch, a plucked spoke that sounds a note lower than an F-sharp signifies low tension. (Among a trio of black keys, the F-sharp is the one on the left). If the wheel is also untrue, it should be taken to a professional. If, on the other hand, the wheel is perfectly true, a conscientious amateur can carefully tighten all sixteen spokes by one-quarter turn. After rechecking for trueness, if the tension is still low this process can be repeated.

OVER

## **SPOKE SPACERS**

6). A combination of rainy-day grit, hard use and/or low tension has been known to "saw through" the plastic "frisbees" that separate the spokes. Because the wheels perform equally well with or without them, this need not be a cause for immediate concern.

## **FREEHUBS**

7). For years Shimano has used a lightweight proprietary pawl grease that acts as a barrier to prevent the heavier bearing grease from gumming up the mechanism. Exceptionally trouble-free, "pawl skip" will occur when this barrier grease is displaced through EITHER over-packing the axle bearings OR oiling the mechanism. Although the resulting skipping can be cured through cleaning and proper re-lubrication, it is generally cheaper and easier to replace the thread-on mechanism. Formerly a tandem-specific item, for the past four years Shimano has used this same easy-to-replace part on their XT and XTR mountain bike hubs.

## **NOISY FRONT HUBS**

8). Very rarely, an improperly-assembled front hub creates mystifying sounds as a result of a misplaced ball-bearing. The cure is to make sure that there are 10 bearings in each race, and that no bearings are trapped between the races.

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