

## 2.1. REPLACING A SPOKE ON ELLIPSE, COSMIC ELITE, COSMIC CARBONE SL, KSYRIUM ELITE AND DEEMAX UST WHEELS

### Tools needed

- 1 spoke wrench (Ellipse and Cosmic Elite wheels)
- 1 alu spoke wrench M40494 or M40652 (Ksyrium Elite and Deemax UST wheels)
- 1 spoke wrench M40001 (Cosmic Carbone SL wheel)
- 1 tensiometer + tension-reading conversion chart adapted to the tensiometer used

**The references and lengths of spokes to be used are given in the product pages (page 6 to 16).**

- For the Cosmic Carbone SL wheel you must remove the tire and rim tape.
- For Ellipse and Cosmic Elite wheels, if you also have to replace the spoke nipple, you must remove the rim tape beforehand.
- For Ksyrium Elite and Deemax UST wheels, if you have to repair a wheel with at least 3 broken spokes, we recommend that you reduce the tension of the entire wheel by loosening every nipple to the limit of the brake ring before replacing the broken spokes.

1. Loosen the spoke nipple using the appropriate spoke wrench to reduce the tension;

2. Take the spoke out of its slot:

- For Ellipse and Ksyrium Elite front wheels and Cosmic Carbone SL front and rear wheels, non-drive side, the axle must be removed beforehand (see product sheets for axle removal procedures);
- For Cosmic Elite front and rear wheels, non-drive side, the hub caps must be unclipped beforehand;

3. Put the new spoke in its slot and make sure the cross pattern is correct;

4. Tighten the spoke nipple to set the tension (refer to product pages for the tension adapted to each wheel);

5. Refit the axle or hub cap as necessary (the tension of the replaced spoke must be sufficient to prevent trapping the spoke head in the free play adjustment nut);

6. Check the lateral and radial truing of the wheel.

**The nipples of Ellipse, Cosmic Elite, Cosmic Carbone SL, Ksyrium Elite and Deemax UST wheels are of the ABS type or integrate a brake ring, and therefore do not require thread lock.**

**Aerodynamic spokes can be locked using a special spoke wrench for aerodynamic spokes, which prevents them turning when being tightened.**

**WARNING: Manipulating spoke nipples on Ksyrium Elite and Deemax UST wheels greatly affects the spoke tension and consequently the wheel adjustment. In the final phase of adjusting the tension, a 1/4 turn of the nipple corresponds to about 0.3 mm of lateral rim movement.**