

### 3 Spoke tension

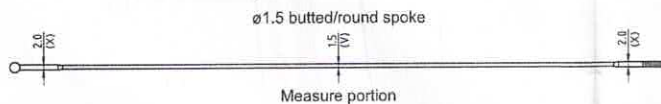
Correct spoke tension is essential in order for a wheel to be reliable and durable. A wheel with an optimally high spoke tension is more stable than a wheel with lower spoke tension. Too low spoke tension has a negative influence on the lifespan of the spokes. But too high tension can result in deforming and/ or cracks near the nipple holes of the rim.

There is no reference value for spoke tension on wheels, as the spoke tension depends on the rim, the spoke type and the number of spokes. The recommended tension for spokes in bicycle wheels is between 80 to 130 kilograms force [kgf]. As a rule of thumb, it is best to set tension as high as necessary to prevent spoke slackness in use. However, to obtain a spoke tension recommendation for a specific wheel, it is best to contact the rim manufacturer.

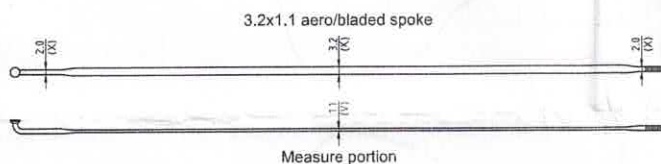
Relative tension is the tension of a spoke in comparison to the tension of one or more other spokes. The spokes on one side of a wheel may be tensioned differently than the spokes on the opposite side as the wheel is built to install with other components, such as break disc or freewheel. Therefore, it is also important for all tension of spokes in the same side of the wheel approximately the same relative tension.

### 4 Measure portion of spoke

1. With butted/round spokes, ex:  $\varnothing 1.5$



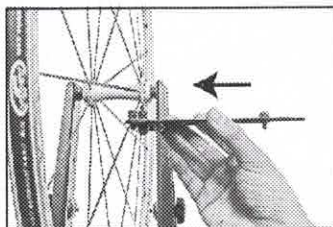
2. With aero/bladed spokes, ex:  $\varnothing 3.2 \times 1.1$



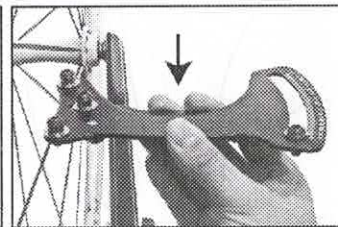
### 5 Measurement of spoke tension

1. To determine absolute tension of spoke

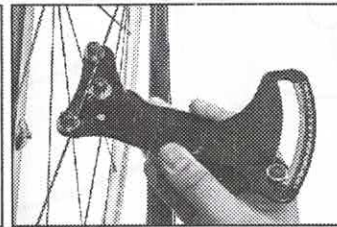
- Hold spoke tension meter horizontally (see picture 1).
- Compress at the handle grips (4) (see picture 2).
- Put the spoke between two fixed supporting studs (3) and the movable supporting stud (2) (see picture 3).
- Release the handle grips (4) gently and get pointed number from the reading scale (6) (see picture 4).
- Get spoke tension from the intersection of spoke size and measured reading on attached convertible table, the tensions listed are in kilograms force [kgf].



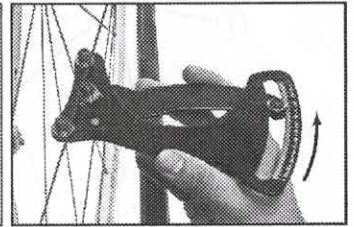
( picture 1 )



( picture 2 )



( picture 3 )



( picture 4 )

2. To determine relative tension of spoke

A wheel with spokes that are within plus or minus 20% of the wheel's average spoke tension is generally considered to have acceptable relative tension.

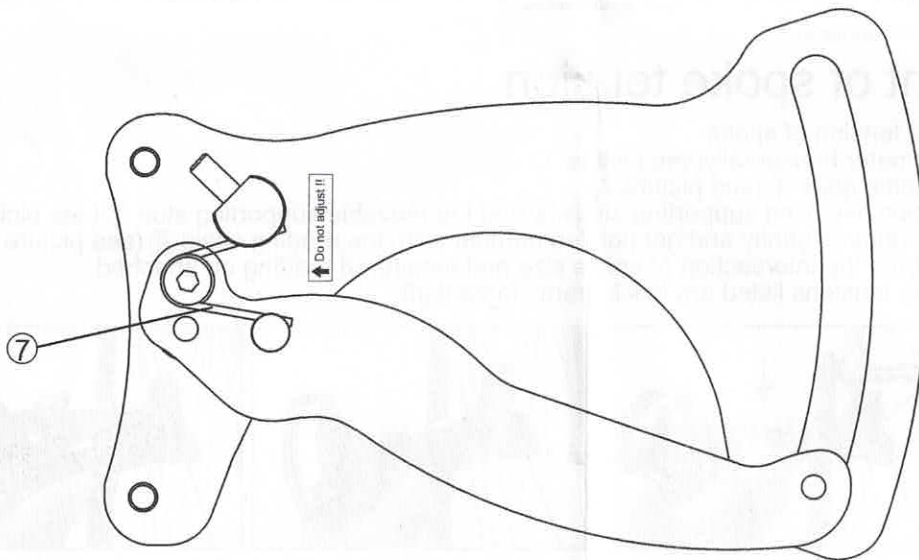
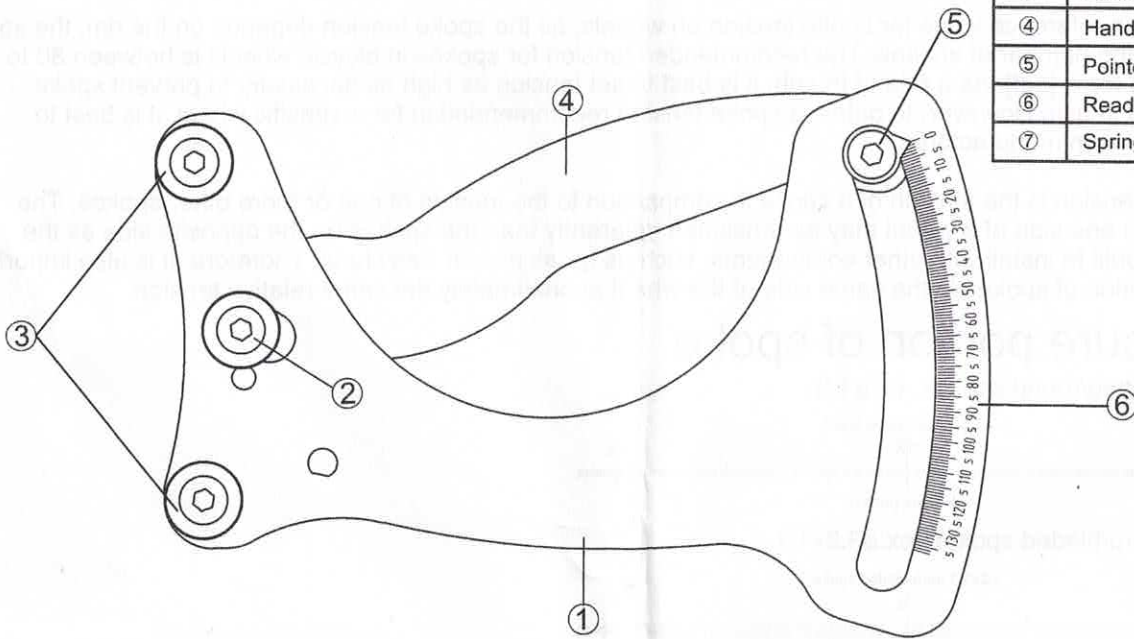
- Determine the average tension of the spokes on the right side of the wheel.
  - Repeat above instruction 1-a to 1-d to get the readings of all spokes on the right side of the wheel and record these numbers.
  - Sum all numbers and divide the qty of measured spokes to get the average number.
  - Get the average spoke tension as instruction 1-e.
- The acceptable relative tension range would be between average tension  $\times 0.8$  and  $\times 1.2$ .
- Use the spoke tension meter to check if the individual spoke tension measurements falls within the acceptable relative tension range.
- If the spokes are not within the acceptable range of relative tension, adjustments will be necessary to be made to the tension of the spokes.
- Repeat above instruction 2-a to 2-d to determine relative spoke tension on the left side of the wheel.

# Spoke tension meter

Instruction

## 1 Parts description

NO	PARTS
①	Body
②	Movable supporting stud
③	Fixed supporting stud
④	Handle grip
⑤	Pointer
⑥	Reading scale
⑦	Spring



## 2 Note

Note:



1. Please contact dealer for any problem or calibration demand. Dealer will recalibrate and charge for a reasonable cost.
2. Do NOT disassemble the tool or adjust the spring, screw or any other parts.
3. The tension meter should be used and stored with care. To avoid damage, it's recommended to suspend on a bench hook and always keep the tool clean and dry.