

TWS-210 TORQUE WRENCH INSTRUCTIONS

Accuracy & General Care

1. The Excel torque wrench is a precision instrument. Keep it stored in the protective plastic case when not in use to protect it from damage, dirt, and moisture.
2. Calibration accuracy is pre-set at the factory to function at a performance level of + or – 2% under normal use. During storage, you should always reset the torque setting to zero to release tension on measurement spring to ensure accuracy and performance. Abuse, using excessively high settings or improper operation can result in calibration errors. Periodic recalibration by a professional calibration facility is recommended to maintain accuracy.
- ▲ **3. Warning** - The torque wrench is designed to set final spoke nipple tension. **DO NOT** use the torque wrench to disassemble or true wheels. Use the Wrench Handle (TWW-001) or standard nipple wrench for those jobs.



Use the Torque Wrench Handle to seat and unseat nipples

- ▲ **4. Warning – DO NOT** turn the small set screw at the bottom of the wrench. This will affect the calibration factor.

It is assumed that the purchaser of this tool understands how to use a torque wrench correctly and has experience building and maintaining motorcycle wheels.

Inserting and Removing Wrench Heads



1. There are several wrench heads included with your new torque wrench set. Before using the wrench, insert the head you are using into the top of the torque wrench. There is a small indentation in each head and a mating lock ball in the wrench. Make sure the lock ball is in line with the indentation in the head by rotating the head till it clicks into place.
2. To easily remove the wrench head turn the head clockwise or counter clockwise to unlock the wrench head from the lock ball and then pull the wrench head out of the torque wrench or wrench handle.

Tension Adjustment

1. The Excel Torque Wrench has a “Newton Meters” (N-m) and “Pounds Inch” (Lb.in.) tension scale. Setting adjustments can be made by twisting the adjustment knob to the appropriate tension mark.
2. General recommendation for most motocross & off-road wheels is 45-50 Lbs in (5.1 to 5.6 N-m). Excel Pro Series wheels are built to 48 Lbs in (5.5 N-m). Be sure to check the manufacturer’s specification for your make and model of motorcycle. Use the quick reference torque conversion chart below for N-m or Kg-cm readings.
- ▲ **3. Warning** – Setting the tension at higher levels transfers more stress on the hub, spokes, nipples, and rim. Setting the tension at lower levels transfers less stress, but requires more frequent maintenance and increases the chance of spokes becoming excessively loose.
4. When using the torque wrench the head will “pop” sideways when the desired spoke tension is reached. Stop tightening immediately after the pop, continuing to tighten the nipple after the torque wrench has “popped” will result in more pressure on the nipple than what is set on the torque wrench. And could damage the rim and/or nipples.



Turn the adjustment knob to the appropriate tension mark.

TWS-210

Checking Wheel Torque

When tightening spoke nipples, you must move around the wheel in a pattern. Otherwise the wheel will lose it's trueness and be out-of-round.

There are four spoke sections:

1. Brake Inner= Spokes that are more toward the center of the wheel than others on the brake side are called Brake Inner.
2. Non-Brake Inner= Spokes that are on the non-brake side and are towards the inside of the hub.
3. Brake Outer= Spokes that are on the brake side and are on the outermost part of the hub.
4. Non-Brake Outer= Spokes that are on the non-brake side and are on the outermost part of the hub.

Inch Pounds	Newton Meters	Kilogram Meters
Lb.in.	N.m.	Kg.m.
30	3.4	0.35
32	3.6	0.37
34	3.8	0.39
36	4.1	0.41
38	4.3	0.44
40	4.6	0.46
42	4.8	0.48
44	5	0.51
46	5.2	0.53
48	5.4	0.55
50	5.6	0.58
52	5.9	0.6
54	6.1	0.62
56	6.3	0.65
58	6.6	0.67
60	6.8	0.7

The pattern used is: Brake inner - Non-Brake inner - Brake outer - Non-Brake outer

If the spokes are loose but the nipples are hard to turn, remove the nipple, clean and oil the spoke and nipple threads, then try again.

Procedure

1. Set the torque wrench to the proper setting and use the proper sized wrench head. Using an incorrect head may damage the nipple and result in over or under tightening.
2. Position the wheel so that it will turn forward or backwards. Look at the right side of the hub. Some spokes are more toward the center of the wheel than others. These are "Brake Inner" spokes.
3. Tighten the nipple of this spoke no more than ¼ turn. Do the same to every Brake Inner spoke. Full engagement of the wrench head to the nipple is mandatory for accurate torque settings.
4. Tighten all the Non-Brake inner spokes.
5. Tighten all the Brake outer spokes.
6. Tighten all the Non-Brake outer spokes.
7. Repeat the entire procedure again tightening only ¼ turn.
8. Do step 7 as many times as necessary (tightening only ¼ turn each time around) until the spoke wrench clicks on each nipple. The spoke nipples are now tightened to the value you set in step 1.
9. Check that the wheel is still true.
10. It is good to re-check the spoke tension after each ride.

If the wheel is NOT true

If your wheel is not true after tightening the nipples as described above, it is recommended that you take the wheel to an authorized mechanic for proper truing. A mechanic will be able to identify and correct straightness and out-of-round locations using a dial indicator.



PLEASE REMEMBER TO RESET THE TORQUE SETTING BACK TO ZERO BEFORE PLACING THE TORQUE WRENCH BACK IN STORAGE BOX!



This should read zero before you put the torque wrench back in the storage box after use.