



THE IMPORTANCE OF TORQUE TOOLS IN SOLAR

As the Solar industry matures, installers are under increased pressure to install more inverters faster than ever before. The need for quality installations has never been more important. In meeting the growing demands on installers, greater care is required to maintain safe, productive, and hassle-free installations.

As with all electrical installations, insuring properly tightened terminal connections at all DC and AC terminals is crucial to maintain safe and reliable installations, as many of these components carry up to 1K VDC. Assembly and cover faceplate screws also have proper torque specifications to prevent damage to the components and maintain the NEMA ratings. Faulty or insecure connections can prove costly for all stakeholders in a solar system, from the installer to the solar system owner. Quality tools are necessary to maintain high-quality connections and safe installations.

Torque-limiting screwdrivers can save time and remove any guess work while installing electrical contacts for wire, cable, feed-in and junction connections. Specific features for torque tools are required when working with solar and electrical connections. Torque drivers should be insulated to at least 1000 VDC to protect workers while installing both residential and commercial systems. In addition to insulation, we recommend the torque driver comes equipped with the following:

- / Insulated tool bits
- / Insulated handle
- / Adjustable torque - torques on Fronius inverters range from 1-3Nm (0.8-2.5 ft-lb)
- / A variety of bits to fit all needs
- / Warranty
- / Ability to calibrate the tool regularly

When choosing a torque screwdriver, it is advisable to research and check for online techniques and training videos.

Torque Driver for Solar

Like many other solar energy equipment manufacturers, Fronius products require both wiring terminal and assembly screws be installed at a specific torque setting. This ensures that electrical connections are made and maintained, but not exceeded, potentially damaging equipment. To ensure these torque standards are met, we recommend installers use torque limiting tools when installing Fronius inverters.

The tools listed below are merely examples of torque drivers that fit the recommendations listed above. They are not to be interpreted as endorsements by Fronius in any way.

Wiha

Wiha manufactures a quality torque screwdriver set which may be found online through various retailers.



Insulated Torque Control with Slim Line Blades 16 Piece Set, SKU: 28792

- / EN ISO 6789, BS EN 26789, ASME B107.14M
- / Meets ASTM F1505, VDE 0682/part201, DIN 7437, EN/IEC 60900, NFPA-70E & CSA specification
- / Handle range 20 - 70Inch/lbs. [#28727](#)
- / 10,000 volt tested for a 1,000(AC) 1,500(DC) volt certification, VDE and GS tested
- / Tools marked with serial no. & include calibration certificate
- / Ergonomic multi-component handle, particularly light and compact
- / Handle sizes proportioned to optimize torque range
- / Audible and perceptible click when the pre-set torque has been attained $\pm 6\%$ accuracy
- / Quality & accuracy guaranteed to 5000 cycles or 1 year
- / Secure Torque Setting, requires torque adjustment tool
- / Loosening torque approx. +30% greater than tightening torque
- / Automatically resets for next torque cycle
- / Blades: Slotted 4.0, 5.5, 6.5mm, Phillips #1, #2, Terminal Xeno #1, #2 Torx T8, T10, T15, T20 Square #1, #2
- / 10,000 volt tested for a 1,000(AC) 1,500(DC) Volt Certification, VDE and GS tested
- / Wiha special chrome-vanadium-molybdenum tool steel through hardened for best wear resistance
- / Precision machined exact fit black tips
- / Protective insulation molded directly onto the bit
- / Thanks to SlimLine, there is no higher diameter because of the insulation
- / Insulation does not exceed screw head diameter with SlimLine blade holder

Wera

Wera offers a high quality 15 piece adjustable insulated torque screwdriver set which can be purchased on various online shops.



Wera KK VDE 15 Piece 1.2 - 3.0Nm (10.6 - 25.5 in lbs.) Manufacturer Part #: 05059291001

- / 7441 VDE Krafftform adjustable torque handle
- / Phillips Blade: #1 & #2 x 154mm
- / Pozidriv Blade: #1 & #2 x 154mm
- / Xeno/Terminal Blade (Pozidriv/Slotted): #1 & #2 x 154mm
- / Torx Blade: T10, T15, T20, T25 x 154mm
- / Slotted Blade: 2.5x0.4x154mm, 3.5x0.6x154mm, 4.0x0.8x154mm, and 5.5x1.0x154mm
- / 15-piece set, includes 14 blades, 1 Krafftform torque handle and a durable carrying case
- / Precision: 6% (EN ISO 6789) numerical display torque value. Clicking signal.
- / 1 Series 7441 VDE Krafftform adjustable torque handle (1.2 - 3.0 Nm) for Wera VDE interchangeable blades only VDE interchangeable blades (each 154 mm long) with reduced blade diameter (articles KK 60 i 0,4x2,5 and KK 67 i TX 10 conventional diameter) with integrated protective insulation
- / Torque controlled screwdriver allows repeatable proper installation of electrical components requiring a torque spec.
- / Working range of 1.2 to 3.0 Nm (10.6 to 25.5 in lbs).
- / Tested at 10,000 volts to meet industry requirements of 1000 volts
- / Limited lifetime warranty, German engineered

Please investigate several torque tool sets, as these are an investment in your business, safety, and quality of your work.

If you have any questions about this or if you want to learn more about our solar solutions, do not hesitate to contact us at (219) 734-5500 or PV-Support-USA@Fronius.com. We are happy to help you!