

**TCN 006 – 2016****Work Instruction:  
Re-tightening of Slip Base Pole Flange Bolting****Re-tightening of Bolting (bolt, nuts and washers) at  
Flange plates of slip base pole installations  
(without lifting pole)****1. Scope**

This work instruction provides a process for tightening of nuts, at public lighting slip-base pole bolting assemblies, during maintenance inspections carried out by a contractor.

**Note:**        **The process steps must only be carried out on one bolt assembly at a time.  
The pole does not require to be lifted.**

This work instruction is intended for use during maintenance inspections.

**2. Reference Drawings**

(Available at <https://www.vicroads.vic.gov.au/business-and-industry/technical-documents>)

VicRoads Standard Drawing TC-1065 Slip Base Pole Assembly Ground Set Mounted  
VicRoads Standard Drawing TC-1066 Transition Base Assembly for Slip Base Pole - P.S Mounted

**Note:**        **These drawings detail the pole base and the installation torque.**




### 3. Operators: Qualifications and Competencies

A minimum of two operators are required to carry out this work instruction, and at least one operator (employee or contractor) must be qualified and competent in the following skills:

- a) "Safe to touch pole" safe operating procedure – for operational poles, and
- b) Demonstrated competence in the conduct of this work instruction.

### 4. Tools

The following information and tools are required to carry out this procedure.

- (a) VicRoads Standard Drawing TC – 1065C (2008) or later version if applicable
  - (b) A copy of, or access to, this Work Instruction TCN 006 (2016)
  - (c) Traffic management equipment, as appropriate
  - (d) Wind speed meter
  - (e) Voltage tester and independent earth; for example, Special Haycolec Leakage Current Detector (PLCD) Electric Asset Inspection Tester
  - (f) Low voltage mat and low voltage gloves
  - (g) Excavation tools – shovel, crow bar, rake, brush, etc)
  - (h) One 46 mm spanner to fit M30 Grade 4.6 bolt head
  - (i) One 46 mm spanner to fit M30 full nut, for loosening
  - (j) One 46 mm open-ended spanner to fit M30 half nut
- 
- (k) 46 mm socket drive and load arm to fit M30 property class (PC) 5 nut, to fit torque wrench
  - (l) Torque wrench, with certificate of calibration, covering the range of 0 to 200 Nm
- 
- (m) Three G-clamps, each certificated to a minimum SWL of 30 kN, manufactured as a steel forging, and with a swivel loading foot.
- 
- (n) Personnel protective equipment, including but not limited to: Safety helmet, Safety glasses, Work gloves, High visibility jacket, Steel cap safety boots, Kneeling mat or knee protectors.

## 5. Components for one slip-base pole bolt assembly

A slip base pole includes three M30 Grade 4.6 bolt assemblies. Each assembly includes:

- one M30 Grade 4.6 bolt, to AS/NZS 4291.1, 120 mm long,
- two flat rectangular 60 x 100 mm Grade 250 steel washers, 8 mm thick with 33.0 mm hole,
- one M30 Grade B half nut, 15 mm high, to AS 1112.4, and
- one M30 Grade C full nut, 26 mm high, to AS 1112.3.



## 6. Re-tightening process

The following process does **not** require the pole to be lifted. At each slip-base pole:

- Step 1. Confirm the identity and location of the pole;
- Step 2. Establish appropriate traffic management controls for the work site.
- Step 3. Complete the Safe Work Method Statement (SWMS) form for the pole, including verifying that wind speed is within the safe operating procedure requirements.
- Step 4. Carry out a de-energized asset test using the Leakage Current Detector. If the pole is safe to touch, continue the procedure at Step 5. If the pole is not safe to touch, report on SWMS form, notify supervisor, then go to Step 17.
- Step 5. Inspect the pole for the presence of three bolt assemblies complying with Drawing TC – 1065C.
- Step 6. Ensure clearance of bolts from soil and vegetation, using excavation tools as appropriate to remove soil; and debris. A minimum clearance of 50 mm below the lower base plate is required to fit the spanner to the bolt head.
- Step 7. Clamp the pole flange plates using the three G-clamps (as specified in the Tool list). Each clamp is to be located centrally between adjacent bolts, and at the same pitch circle diameter of the bolts. The clamps must be tightened to the full force exerted by a person, tightened so that the clamp is not dislodged by knocking or during the work, but **not** excessively tightened with large spanners. This step is required to simulate the clamping force that is slightly less than that applied when the bolt assembly is tightened to 90 Nm.
- Step 8. Select one bolt assembly for re-tightening. (Each bolt is to be loosened and re-tightened individually)



## Loosening:

- Step 9. Fit the open-ended spanner to the half nut, and  
 Step 10. Fit the spanner to the M30 full nut, and  
 Step 11. Fit the spanner to the M30 Grade 4.6 bolt head

- Step 12. Loosen the M30 full nut  
 Step 13. Loosen the half nut  
 (Hold the bolt head spanner firm while loosening the nuts.)

- Step 14. Check that the nut threads are not damaged, and that the washers are flat



## Tightening the half nut:

- Step 15. Hold the spanner firm on the bolt head while applying the required torque to the half nut.  
 Step 16. Tighten the half nut as follows:
- Ensure that the washer is centred over the opening of the flange
  - Ensure that the torque wrench is set to the correct torque (40 Nm).
  - Fit the socket of the torque wrench to the half nut.
  - Apply the appropriate torque, 40 Nm, to the half nut.
  - Cease applying the torque when the wrench trip indicator operates.



**Do not** exceed the required torque value of 40 Nm.

## Tightening the full nut (locking nut):

- Step 17. Hold the spanner firm on the bolt head while applying the required torque to the full nut.  
 Step 18. Tighten the full nut as follows (with second operator):
- Fit the open-ended spanner to the half nut, hold this spanner firm without movement until the tightening is complete.
  - Ensure that the torque wrench is set to the correct torque (90 Nm).
  - Fit the socket of the torque wrench to the full nut.
  - Apply the appropriate torque, 90 Nm, to the full nut.
  - Cease applying the torque when the wrench trip indicator operates.
  - The bolt and half nut must not move during this tightening.



**Do not** exceed the required torque value of 90 Nm.

- Step 19. Repeat Steps 8 to 18 at each bolt position (three in total) on the pole.
- Step 20. Where it is suspected that the bolt assembly may be over-tightened or under-tightened, carry out full re-tightening of the assembly in accordance with this Work Instruction.
- Step 21. The clamps may be removed after tightening of all bolts is completed.
- Step 22. Complete SWMS / quality standard requirements.
- Step 23. Re-instate work site, clean up and pack away tools and equipment.
- Step 24. Remove traffic management as required and move to next location (end of process).
- Step 25. If a hazard is identified and for any reason the procedure has not been carried out or the work has not been completed, notify supervisor through normal reporting processes.

## 7. **Reporting**

- (a) Location and identification of the pole, and date and time of tightening or re-tightening, and
- (b) Statement that tightening or re-tightening was carried out in accordance with this procedure TCN-006 (2016) and that all records are linked to the contractor job worksheet identification.