

**Technical Note TN200**

# **Slip base pole clamping bolt tethering system installation**

**July 2022**

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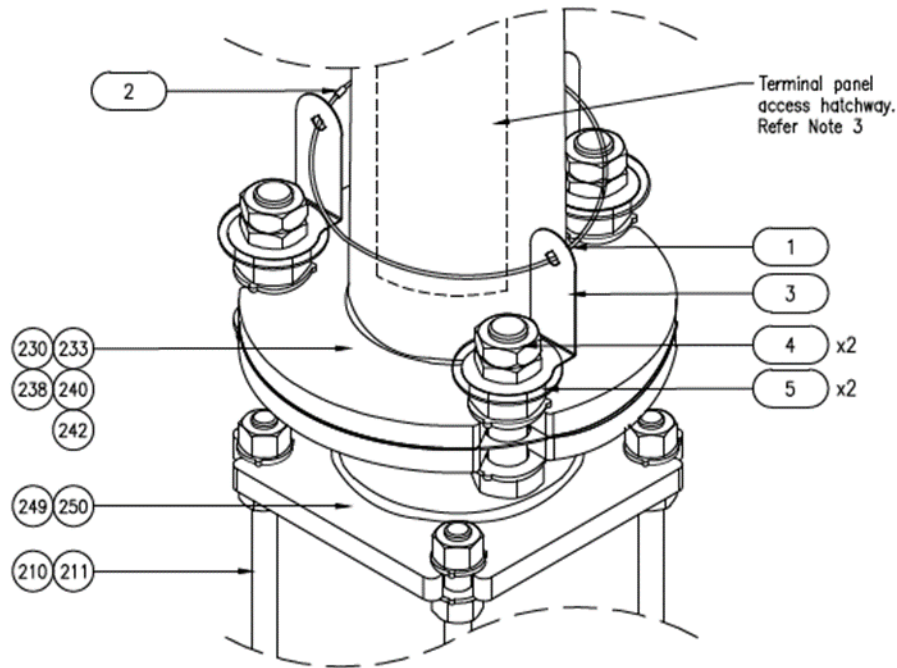
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## 1 Purpose of Technical Note

This Technical Note provides guidance on the step-by-step instruction for the installation of slip base pole clamping bolt tethering system. The tethering system is being implemented to minimise the risk of the clamping bolt being thrown out of the slip base pole if it is accidentally hit by a vehicle and which could potentially cause harm to other road users and damage vehicles and other road infrastructure.

**Figure 1 – Slip Base Pole Clamping Bolt Tethering System Installation**



## 2 Preparing for slip base pole clamping bolt tethering system installation

Following are the steps to be take before, during and after the installation of the slip base pole clamping bolt tethering system.

Obtain all documents, materials, and tools required for the installation of the slip base pole clamping bolt tethering system as listed following.

Note: The following lists are non-exhaustive and may require more documentation, and tools, to perform the installation work safely, accurately, and efficiently.

### 2.1 Tools






The following tools are required as a minimum to perform the clamping bolt tethering system installation for each slip base pole:

- 2 off adjustable wrench (recommended part #OX-P324612)
- 1 off swage crimping pliers (recommended part #HIT CT600/5)
- 1 off wire rope cutter (recommended part #HIT W16)
- 1 off brake and parts cleaner (recommended part #CT-BCNF-400)
- 1 off M36 x 130 mm bolt, and
- 1 off spring clamp.

## 2.2 Materials

The following materials detailed in Table 2.2 are required to perform the slip base pole clamping bolt tethering system installation for each slip base pole.

**Table 2.2 – Materials details and illustrations**

| Material                                                                                                              | Illustration                                                                          |
|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1 off 7 x 7 Grade 316 stainless steel 4 mm diameter wire report (recommended Part #WR-4M77316), cut length is 1450 mm |     |
| 1 off 4.0 nickel-plated copper, thick-walled swage (recommended Part #MFWCM04N).                                      |   |
| 3 off Grade 304 stainless steel 0.7 mm tear washer.                                                                   |  |
| 6 off M36 18 mm thick galvanised half nut (recommended Part #Hobson NL08GCM36)                                        |  |
| 6 off 0.25 mm thickness, 36 mm inner diameter and 80 mm outer diameter Mylar® washer                                  |  |

### 2.3 Documents

The following documents are **required** as a minimum to perform the slip base pole clamping bolt tethering system installation:

- Transport and Main Roads Technical Note TN200 *Slip Base Pole Clamping Bolt Tethering System Installation* (this document), and
- Transport and Main Roads [Standard Drawing](#) SD1755 – Road Lighting – Slip Base Tethering system for Transport and Main Roads Rate 3 Lighting Poles.

The following documents are **referenced** to perform the clamping bolt tethering system installation:

- Transport and Main Roads Standard Drawing SD1380 – Road Lighting – Slip Base Pole and Footing Installation Details for No Crossfall
- Transport and Main Roads Standard Drawing SD1699 – Traffic Signals / Road Lighting / ITS – Parts List (Item 379), and
- [Australian Standard](#) AS 1275 *Metric screw threads for fasteners*.

### 3 Cleaning and clearing half nuts

Before starting the assembly, obtain a M36 x 130 mm bolt and run all half nuts at least 50 mm down through the bolt one by one. Repeat the process several times to clear up the nuts. A non-flammable brake and parts cleaner (recommended brand is AutoChem™) should be used to clean the threads of half nuts.

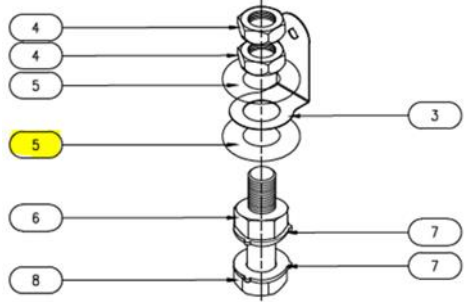

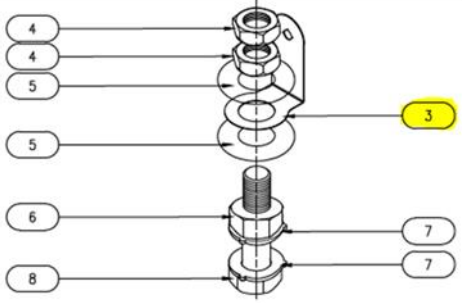

### 4 Locating slip base pole and clamping bolts

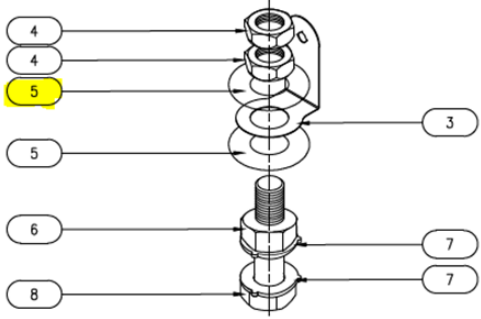

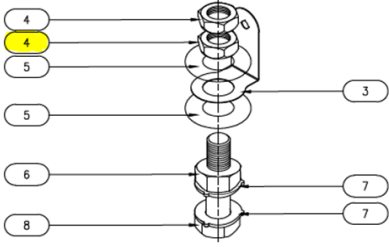


Locate the slip base pole and check slip base assembly is in good order. Clean up the surrounding area if required for any overgrown grass or weeds covering the clamping bolts.

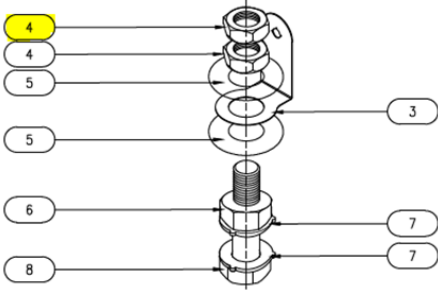


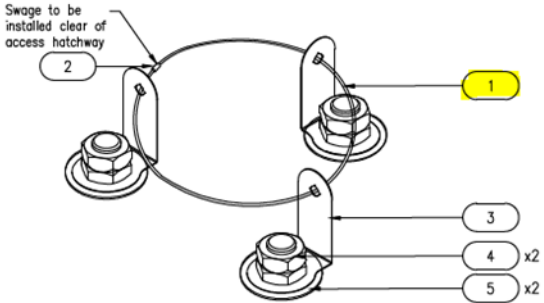
### 5 Assembly and installation

See Table 5 for steps of assembly and installation with illustrations and photographs.

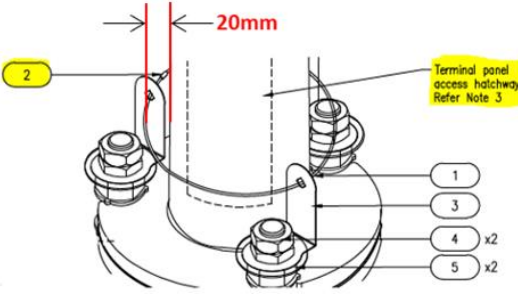

**Table 5 – Assembly and installation**


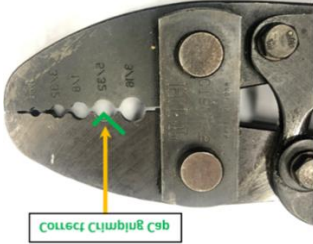

| Step No.                            | Step title                   | Description                                                                                                                                                              | Illustration                                                                         | Photograph                                                                           |
|-------------------------------------|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| 1.                                  | First Mylar® washer assembly | Place the first Mylar® washer over one of the M36 clamping bolt nuts.                                                                                                    |   |   |
| <i>First Mylar® washer assembly</i> |                              |                                                                                                                                                                          |                                                                                      |                                                                                      |
| 2.                                  | Tear washer assembly         | Place a tear washer over the Mylar® washer and orientate the tab to ensure the tear washer is clear of terminal panel access hatchway to ensure good access to hatchway. |  |  |
| <i>Tear washer assembly</i>         |                              |                                                                                                                                                                          |                                                                                      |                                                                                      |





| Step No.                             | Step title                    | Description                                                                                                                                                                                                                                            | Illustration                                                                         | Photograph                                                                                                                                                                    |
|--------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.                                   | Second Mylar® washer assembly | Place the second Mylar® washer over the tear washer.                                                                                                                                                                                                   |   |                                                                                            |
| <i>Second Mylar® washer assembly</i> |                               |                                                                                                                                                                                                                                                        |                                                                                      |                                                                                                                                                                               |
| 4.                                   | First half nut assembly       | <p>Place the first half nut over the Mylar® washer and finger tighten. Reorientate the tear washer as needed.</p> <p>Loosen the half nut one-quarter to one-third of a full turn to let the tear washer move freely and leave it in that position.</p> |  | <br> |
| <i>First half nut assembly</i>       |                               |                                                                                                                                                                                                                                                        |                                                                                      |                                                                                                                                                                               |





| Step No. | Step title                                                                                                                       | Description                                                                                                                                                                         | Illustration                                                                          | Photograph                                                                          |
|----------|----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 5.       | Second half nut assembly                                                                                                         | Place the second half nut while holding the other half nut with an adjustable wrench (spanner) at its desired position.                                                             |     |  |
|          |                                                                                                                                  | Tension the top half nut using the second adjustable wrench (spanner) until the bottom half nut is sufficiently bound. Always check to ensure that the tear washer can move freely. |    | <p><i>Second half nut assembly</i></p>                                              |
| 6.       | Repeat Steps 1 to 5 for the other two clamping bolts and ensure the tear washer is well clear of terminal panel access hatchway. |                                                                                                                                                                                     |                                                                                       |                                                                                     |
| 7.       | Wire rope assembly                                                                                                               | Feed the wire rope through tear points of the tear washers and hold the ends together.                                                                                              |  | <p><i>Wire rope assembly</i></p>                                                    |
|          |                                                                                                                                  |                                                                                                                                                                                     |                                                                                       |                                                                                     |



| Step No. | Step title         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Illustration                                                                       | Photograph                                                                                                                                       |
|----------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 8.       | Swage installation | <p>Get a swage and pass one end of the wire rope through one hole of the swage and the other end through the second hole of the swage from the opposite direction.</p> <p>During this process, make sure the swage is remote from the terminal panel access hatchway.</p> <p>Adjust the wire rope overlap to ensure that the spacing between the wire rope and the pole is 20 mm all the way around the pole. The tear washer may be bent to ensure 20 mm wire spacing; however, the tear washers are not to be in contact with the pole.</p> |  |  <p style="text-align: center;"><i>Swage installation</i></p> |

| Step No. | Step title     | Description                                                                                                                                                                                                | Illustration                                                                         | Photograph |
|----------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|------------|
| 9.       | Swage crimping | Place the swage into the pliers' jaws <b>vertically aligned and never horizontally.</b>                                                                                                                    |   |            |
|          |                | Select the correct crimping cap marked "4" or "5/32" to match the 4 mm wire rope diameter.                                                                                                                 |   |            |
|          |                | With the swage in the proper position and holding the overlapping wire rope with a spring clamp, make the first crimp by squeezing the swage pliers handles together until the jaws are completely closed. |  |            |

| Step No. | Step title | Description                                          | Illustration                                                                          | Photograph |
|----------|------------|------------------------------------------------------|---------------------------------------------------------------------------------------|------------|
|          |            | Swage needs to be crimped three times evenly spaced. |    |            |
|          |            |                                                      | <i>Swage crimping sequence</i>                                                        |            |
|          |            |                                                      |    |            |
|          |            |                                                      | <i>Swage crimping sequence 1 at the centre</i>                                        |            |
|          |            |                                                      |    |            |
|          |            |                                                      | <i>Swage crimping sequence 2 at the outer</i>                                         |            |
|          |            |                                                      |  |            |
|          |            |                                                      | <i>Swage crimping sequence 3 at the opposite outer</i>                                |            |

| Step No. | Step title         | Description                                                                                                                                                                                             | Illustration                                                                        | Photograph                                                                          |
|----------|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 10.      | Wire rope trimming | Ensure both ends of the wire roper are sticking out by 10–20 mm from each end of the swage and keep the swage well clear of terminal panel access hatchway.                                             |  |  |
|          |                    |                                                                                                                                                                                                         | Wire rope trimming                                                                  |                                                                                     |
|          |                    | Trim the excess wire rope 10–20 mm way from the edge of the swage by using the wire rope cutter from one end only as required. Use appropriate wire rope cutter to trim: <b>do not use bolt cutter.</b> |  |  |
|          |                    |                                                                                                                                                                                                         | Wire rope trimming                                                                  |                                                                                     |

## 6 Site clean-up

After completing the installation of slip base pole clamping bolt tethering system, clean up the site and make sure that no scrap materials or tools are left behind and leave the assembly area as safe and tidy as reasonably practicable.

