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SPUNLITE POLES



## Design & Assembly

# Spunlite Design

## - a general guide



### General Notes: Design

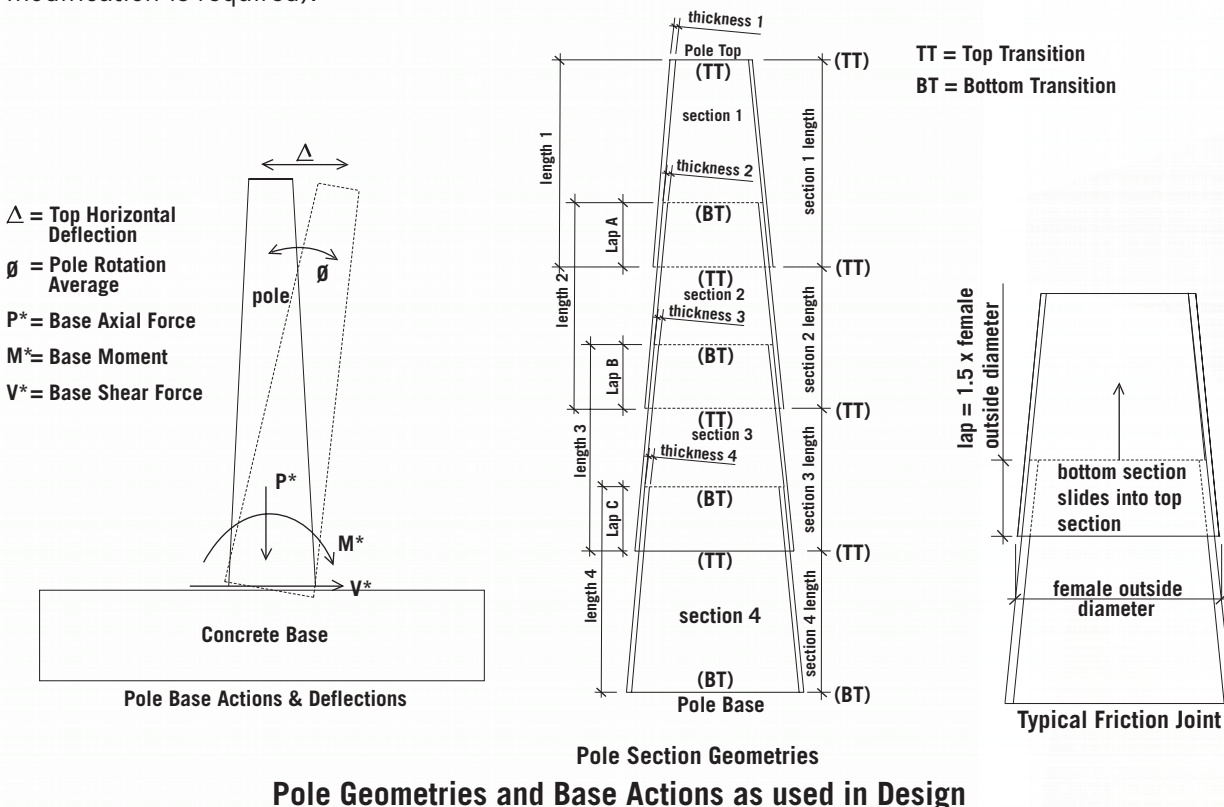
Every pole we make not only meets the high standards we set for ourselves, but also meets New Zealand and Australian design and construction standards as follows:

- AS/NZS 1170:2002** - Structural Design Actions
- NZS 3404:1997** - Steel Structures Standard
- NZS 3101:2006** - Concrete Structures Standard
- AS/NZS 4680:2006** - Hot-dip Galvanised Coatings on Fabricated Ferrous Articles Standard
- AS/NZS 4677:2010** - Steel Utility Services Poles
- TNZ M/19:1994** - Specification For Tubular Steel Lighting Columns
- AS/NZS 4676:2000** - Structural Design Requirements For Utility Services Poles
- AS 4100:1998** - Steel Structures

(If required, BS EN 40-3-3-2000 can also be accommodated by design)

### General Notes: Foundations

The foundation design is dependent on site ground conditions, therefore Spunlite Poles Ltd cannot accept any legal liability for the use of this information. It is intended as a guide only. If requested, we will design specific foundations for each project. To verify all foundation designs, a geotechnical site evaluation is to be undertaken and an interpretive report issued by a competent Chartered Engineer to determine the suitability of a specific foundation design. The interpretive report should contain details of the site, interpretation of the ground investigation factual report, geotechnical design recommendations (i.e. bearing resistance and characteristic values of soil parameters for ULS and SLS conditions) and advice on any supervision (i.e. during excavation, the site should be checked by a competent engineer to judge that the soil conditions are appropriate and no modification is required).



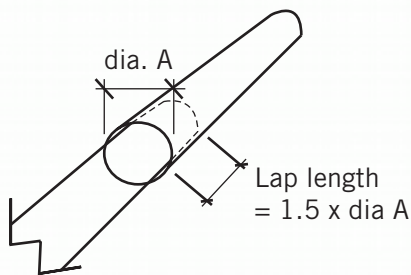
# Spunlite Assembly

## - a general guide

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### General Information:

Sectional steel poles are designed to join using a 'friction joint' method. This system works on the basis that a tapered 'male' section end (top of larger section) is compressed into another tapered 'female' section (bottom of smaller section) forming a rigid pole. The **lap length** when tight should be approximately **1.5 times** the 'across flats' for octagonal and multi-sided pole sections, and **1.5 times** the diameter of the round pole sections, this measurement is taken from the outside diameter at the **bottom of the female section**. It is important that all sections are lapped to a point where no further movement is able to be achieved.



### Preparation:

Before attempting to assemble your pole, check that all surfaces are free from any matter that may impede friction joining the lap length.

Select a level area to assemble each pole near to its intended installation location.



Full photo guide at the end of this section.

### Your nominated delivery site:

Poles will be delivered on truck to your nominated address. The pole sections are typically 'nested' with the smaller sections slipped inside the larger and secured onto a pallet. This provides an economic and tidy bundle for transport.

**At time of accepting delivery, ensure you check the bundle is still tidy, intact but more importantly, during transport, there has been no damage to the product. If any damage has been sustained, prior to signing for delivery, endorse the consignment note as 'damaged', point out the damage to the delivery driver and immediately call our office.**



### Assembly Equipment

#### **General**

- \* Wire cutters
- \* Timber bearers
- \* Sledgehammer or wooden maul
- \* Tape measure and marker pen

#### **Streetlighting Columns**

- \* Steel wire rope (only required for winch method)
- \* 2-tonne 'Tirfor' Winch (only required for winch method)
- \* Ratchet Tie Down (Ratchet Tie Down method)

#### **All other columns (above 12m mounting height)**

- \* Steel wire rope (length of column + 3m)
- \* One or two 5-tonne 'Tirfor' Winch (two required for 30m or higher poles)
- \* 'Tirfor' frame



# Spunlite Assembly

## - the method



Please familiarize yourself with the following methods of assembly and choose the most appropriate for the pole type. Generally street lighting poles under 12m in height and flood lighting poles under 10m in height can be assembled using the **Knock On** method. All other poles would typically use the **Winch Method**. If in doubt, call our office for advice.

**Please contact our office for specific assembly instructions for the Spunlite 'Swing Wing' pole.**

### Initial Setup

- [A] Lay all sections on your nominated flat surface in order, ensuring the pole base is as close to the prepared foundation as possible.
- [B] Mark a line down from the top of each male section, 1.5 times the A.F. or diameter of the bottom connecting female section. Also make an additional mark below this mark, 100mm on smaller poles and 200mm on larger poles. This is to be used as a reference point should the lap mark be exceeded. **The minimum allowable lap (unless specified by Spunlite Poles Ltd) is 1.25 x A.F. or diameter.** Please contact Spunlite Poles Ltd if this cannot be achieved.
- [C] Support all of the sections on the timber bearers throughout the entire assembly process.
- [D] Ensure that all seam welds are orientated at 90 or 180 degrees from each other. This minimises the 'banana effect'. Outreach arm sections are exempt from this requirement.

### Knock On Method

The following procedure is suggested for Spunlite columns or poles of up to approximately 12m in mounting height manufactured in 2mm steel. For floodlighting columns, steps F and G are not relevant. Start assembly at the bottom section.

- [A] Ensure the **initial setup** as mentioned above is complete.
- [B] Place the bottom end of the bottom section against a firm support (perhaps kerbing or your truck wheel) and use a timber bearer to act as a packer between if the pole **is not** flange or shear based. Hammer on the next section also using a timber packer (taking care not to damage the ends of any or all sections). **Do not strike the end of the column sections directly with the sledge hammer or maul as this may cause damage or weaken the seam welds.**
- [C] As the female section slips further over the male, tapping around the lap area with a sledge hammer may be required to create vibration to achieve the required mating lap.
- [D] Ensure the required lap is achieved.
- [E] Repeat steps A through D for the remaining sections taking particular care to ensure the cable entry hole (for ground planted columns) and fuse panel entry (door) are correctly orientated for when the pole is lifted into place.
- [F] Place the outreach arm section against multiple firm supports (on timber bearers **as shown in photo 4**) ensuring the bottom opening of the arm is as close to the top of the assembled column sections as possible. Slide the assembled column into the bottom of the outreach arm section as far as possible ensuring the outreach arm and column are aligned straight.
- [G] Hammer the bottom of the column using a timber packer ensuring at the same time the outreach arm is being held firmly against the supports. This will prevent any movement or mis-alignment of the outreach arm during the hammering of the assembled sections on to it. Remember to ensure the overlap of the outreach arm onto the column is 1.5 times the A.F. of the bottom of the outreach arm section.
- [H] The floodlighting cross arm (if applicable) is to be attached last.

# Spunlite Assembly

## - the method continued

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### **Ratchet Tie Down Method**

The ratchet tie down method is an alternative method to the knock on method and can also be used for attaching the outreach arm to the fully assembled streetlight column.

- [A] Attach the ratchet end of the ratchet tie down to the bottom of the base section.
- [B] Align the next section ready to overlap the lower section.
- [C] Attach the hook of the ratchet tie down to the top of the next section and offer up to the top of the base section ensuring the seam welds are either 90 or 180 degrees apart.
- [D] Start using the ratchet device to pull the sections together to the lap mark. During this (as per the **Knock On Method**) the lap area may need to be tapped with a sledgehammer and bearer to create vibration to assist achieving the required lap.
- [E] Repeat the above steps for the remaining sections.
- [F] Once the pole is assembled, release the top hook. Leaving the bottom hook attached to the base section, offer the outreach arm section up to the top pole section. Once in place, tightly wind the upper end of the ratchet tie down 2 or 3 times around the vertical section of the outreach arm section and proceed to use the ratchet to pull the arm onto the pole to the desired lap.

### **Winch Method**

This method applies to most Spunlite columns. Street lighting columns can be assembled using this method however the outreach arm will need to be applied using the **knock on or ratchet tie down method**.

- [A] Assemble the 'Tirfor' and frame at the base of the bottom section (Photo 1). Feed the wire rope through the centre of the base section and the next section up attaching the eye loop to the 'Tirfor' pulling bar and square washer (Photos 2 & 3).
- [B] Placing packers at the top end of the pole section to rest the pulling bar on, take the slack of the wire rope through the winch unit. Packers may also be required at the base of the pole if the pole is not flange based.
- [C] Winching the sections together may require the lap area to be tapped with a sledgehammer and bearer to create vibration to assist achieving the required lap.
- [D] Continue winching until the lap is tight and cannot close any further. Ensure however that the required lap is achieved. **Stop further winching if the column starts to bow which can occur with smaller slimmer columns.**
- [E] Continue with this process for the remaining sections until the column is fully assembled.
- [F] Attach the outreach arm, cross arm or head frame last (Photo 4).



Photo 1



Photo 2



Photo 3



Photo 4