



ARE Telecom +
Broadband

Slip-Joint Pole Assembly Guidelines

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General Guidelines for Slip-Joint Pole Assembly

This information cannot be comprehensive enough to cover all situations or the details of all structures. Therefore it is essential that the owner and contractor carefully plan all aspects of the installation process, not relying only on these guidelines to determine the steps to be followed.

1. Leveling nuts should be adjusted in the horizontal plane before installing the pole onto the anchor bolts (Detail B).
2. (For tilt-up poles only) hinged base section should be installed onto the foundation prior to assembling the upper tower sections (Figure 1). Upper pole sections can be installed as one complete unit on the ground and then assembled onto the horizontal upper base section or each pole section can be assembled in succession beginning at the hinged upper base section.
3. Where space near the foundation and lifting capabilities permit, it is preferable to assemble the complete structure on the ground and erect it as a single unit (Figure 2).
4. Tower section/s should be lifted or supported at its center of gravity during assembly.
5. The sections of the pole should be aligned on the ground and supported, typically with wood blocks (Figure 2), in such a manner that they will readily fit together. Care should be taken to prevent dirt, stones, etc. from getting trapped between the mating surfaces. Remove any burrs and galvanized coating buildup on the inside of the female end and the outside of the male end.
6. If the structure is assembled vertically, extra care may be needed to assure that all joints are properly assembled as indicated in the following paragraphs.
7. Proper alignment of pole sections is facilitated by one of three ways depending upon the structures design details.
 1. Collinearly aligning the welded identification tags on each pole section.
 2. Collinearly aligning the jacking nuts or other ancillary features such as climbing peg lugs or ladder brackets.
 3. Collinearly aligning the longitudinal weld seams.
8. Using a tape measure to measure the pole ends, verify that the roundness does not deviate by more than 25mm. This can be done by taking multiple measurements and subtracting the smallest value from the largest value. If the pole is out of round by more than 25mm a bottle jack with wood block supports can be placed inside the pole, near the edge, to bring the pole back to round (Contact ARE for more details).
9. To facilitate the assembly, mating surfaces may be lubricated. Care should be taken not to use a lubricant that will later leak from the joint and stain the pole. Soapy water has been used successfully for this purpose.
10. Minimum slip distance is 1.5 times the diameter of the female end. This distance should be marked on the male end of the pole. Anywhere beyond minimum slip is considered an acceptable joint provided the joint is tight. A final check should be made to assure that the specified minimum overlap has been achieved.
11. A number of methods may be considered for applying the necessary force to achieve a tight joint (Figure 4). The method selected may depend upon the size of the pole sections, the type of pole design, and the equipment available to the contractor.

The two most common methods use two ratchet chain hoists or similar devices on opposite sides of the pole tube.

 - a. For pole sections without jacking nuts use cables or synthetic straps wrapped and secured to the pole sections with a choker type hitch. Make sure chokers do not interfere and prevent the minimum slip from being achieved.
 - b. Jacking nuts welded to pole sections use M24 bolts to secure jacking bracket (Figure 3). Additional washers shall be used to prevent bolts from extending into pole ID.
12. Equal forces should be applied by the two hoists simultaneously. Forces should be applied at a slow and steady pull rate.
13. Joint tightening will be facilitated by oscillating the advancing section with the supporting crane or by striking the pole in the joint area with a hammer using a cushioning block of wood. The open end edge of the pole section can also be struck using a cushioning block of wood to protect the pole from successive hammer blows. These forces should be applied until the joint is tight with no more than small gaps (which can sometimes be caused by a slight mismatch in the shapes of the mating sections).
14. Prior to lifting the structure, any slipover joint below the crane attachment point should be securely lashed to prevent any possibility of separation during lifting. For additional safety, a hook capable of supporting the entire weight can be attached to the handhole opening and connected to the crane attachment point.

Tilt-Up (Hinged) Pole

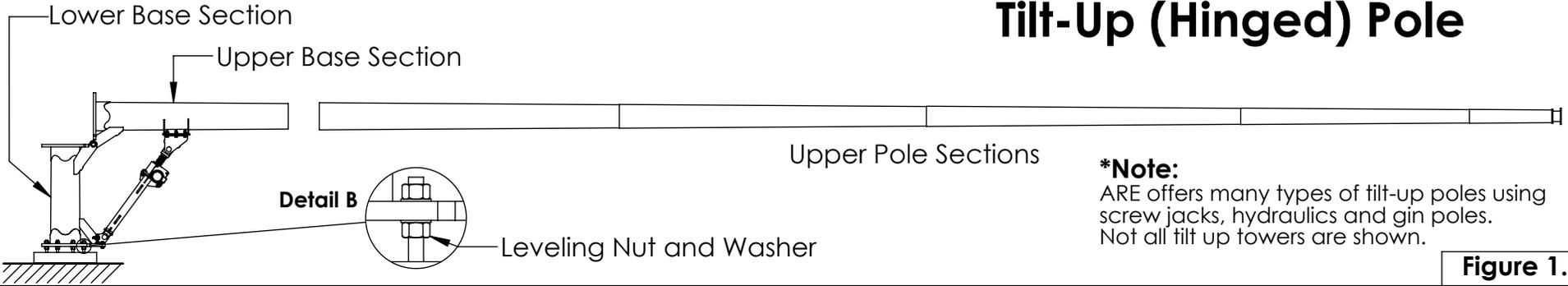


Figure 1.

Fixed Pole

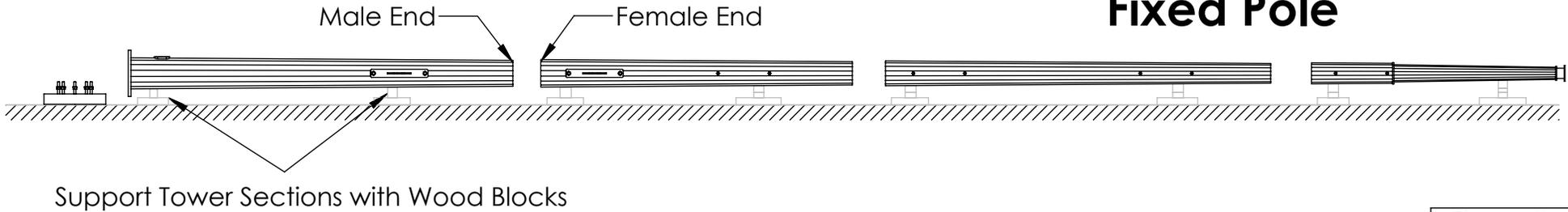


Figure 2.

#	Description
1	Jacking Bracket
2	M24x3 x 45mm
3	Washer

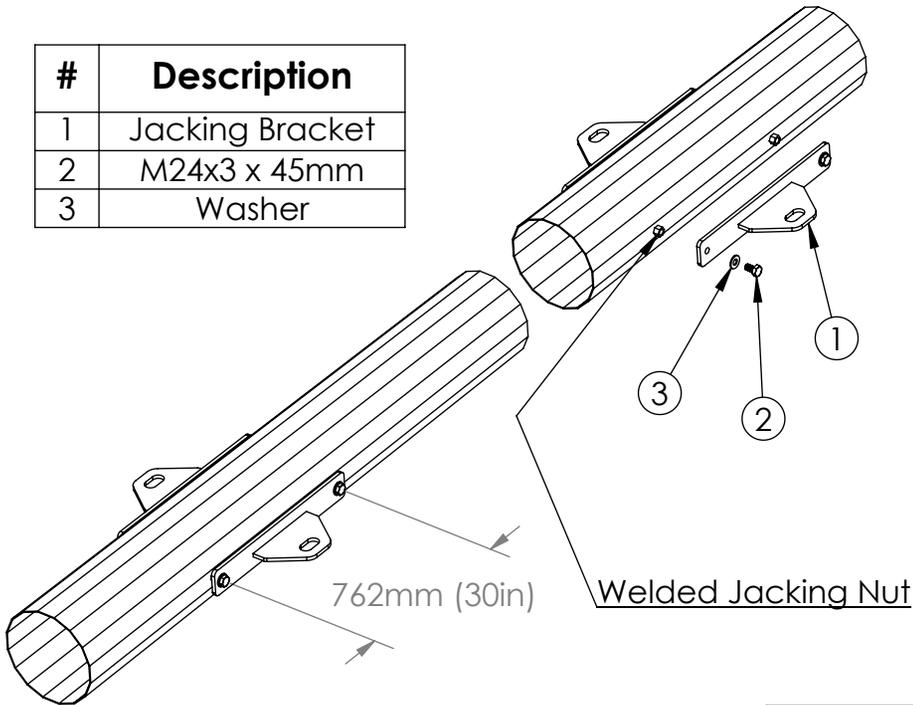


Figure 3.

Pull Force Requirement	
Inner Flat to Flat Diameter of the Female End (mm)	Minimum Pull Force "A" Per Side (kN)
<300	20
300-500	30
500-700	40
700-900	50
900-1200	60
1200-1400	80
1400-1600	100
1600-1800	120
1800-2000	150
>2000	200

Note: It is up to the installer to determine the appropriate device (i.e., ratchet chain hoist, ratchet binder, cable hoist, etc.) for achieving the minimum pull force requirement.

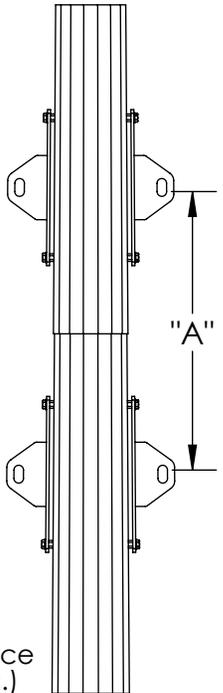


Figure 4.