

NBS-Tiltmast Installation Guide

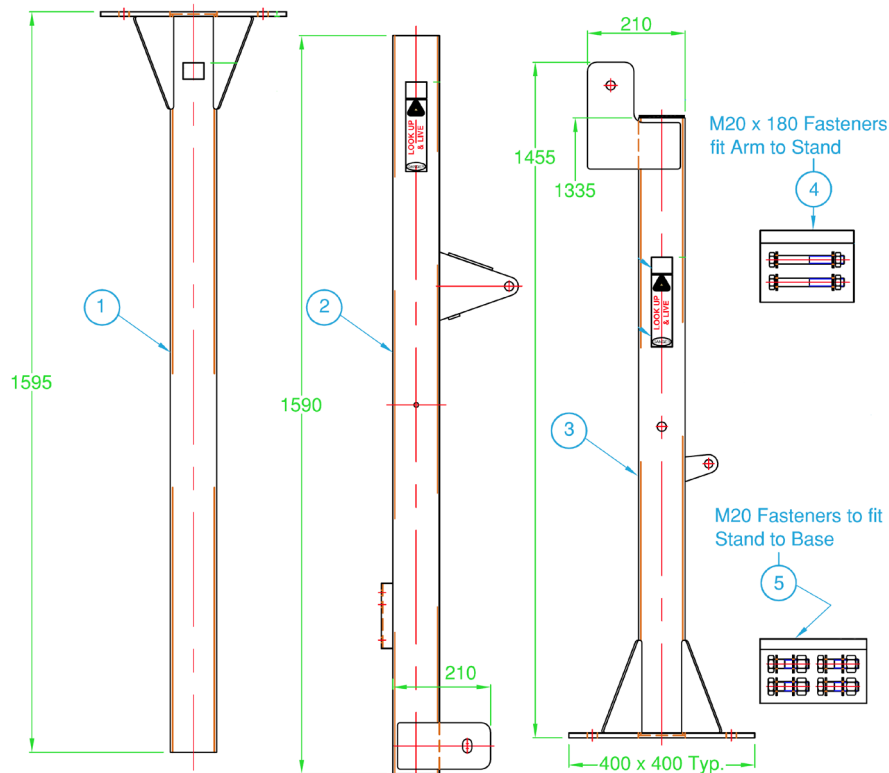
Ground Preparation - Base Section fitment - Arm and Accessories Fitment

This is a step by step guide to install your NBS-Tiltmast.

Please abide by all regulations and permits relevant to your location.

Prior to any digging please reference BYDA (Before you dig Australia) www.byda.com.au to gain plans for any underground services or infrastructure or equivalent authority.

		No. on below drawing
Included in kit (as standard, no accessories)	• In-ground galvanised base assembly	• No.1
	• Tilt-arm Assembly	• No.2
	• Above-ground mount base	• No.3
	• 2 x M20 x 180mm 8.8 grade bolts + washers + nuts	• No.4
	• 4 x M20 x 75mm 8.8 grade bolts + washers + nuts	• No.5



Installation Tools/Equipment required (2 person required for assembly)	<ul style="list-style-type: none"> • Post hole digger with at least 1.8m x 600mm diameter auger • Spirit level • Minimum 25mpa concrete x volume to suit hole • Formwork for above ground concrete + appropriate concrete tools • 13mm spanners / adjustable spanner • 30mm spanners / adjustable spanner • Torque wrench • Needle nose pliers • Mallet / soft hammer • Appropriate PPE
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Step 1.

Foundation/Ground preparation

Using an appropriate auger or post hole digger (minimum 1.8m capability) drill your mounting hole 1.8 metres deep x 600mm diameter. Ensure the bottom of your hole is flat.

Apply formwork around hole and elevate the gusseted base so approximately 240mm of the in-ground base is exposed above the ground. Once formwork in place and base elevated as stated above, ensure plate top face is level - use spirit level, adjust to ensure level, secure to formwork supports to minimise base movement during pour (see below images).

Additional Information

If your soil test for pier presents clay soil, diameter of your hole can be reduced to 450mm. Please consult an appropriate structural engineer for detailed analysis if in doubt.

IMPORTANT: Ensure your concrete is minimum 25mpa.

Step 2.

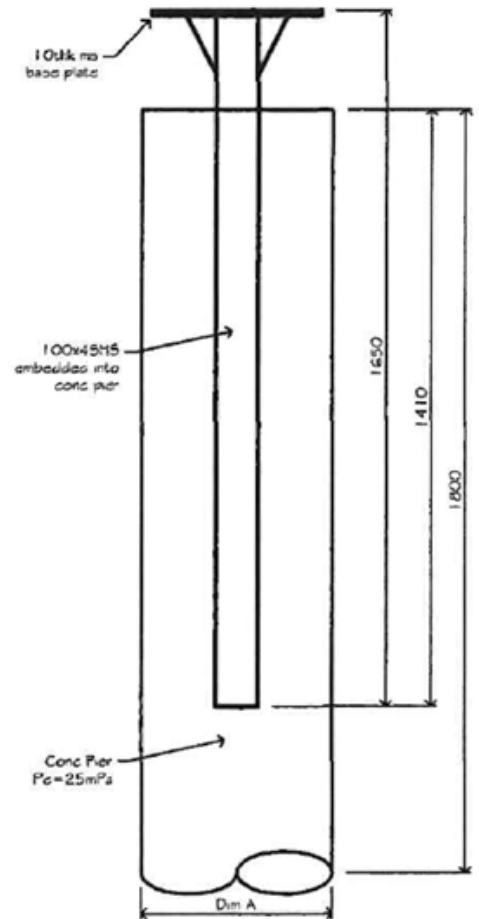
Foundation/Ground Securing

Mix minimum 25mpa concrete and ensure the base is entirely encase with concrete. Fill the centre of the mast level to the joining plate to stop water ingress (Do not exceed with plate face as this will cause fitment issues).

Step 3.

Foundation/Ground Curing

Your minimum 25mpa concrete must be allowed to cure for a **minimum 7 days** before removing formwork and/or attaching above-ground base and arm.



Dim A : Sandy Soil (cohesionless soil) 600Ø pier
Clay Soil (cohesive Soil) 450Ø pier



Appropriate hole with formwork and base elevated approx 240mm above ground.

Formwork shown is approx 1.0m x 1.0m above ground



Base concreted in (min. 25mpa) with formwork in place and base elevated 240mm above ground.

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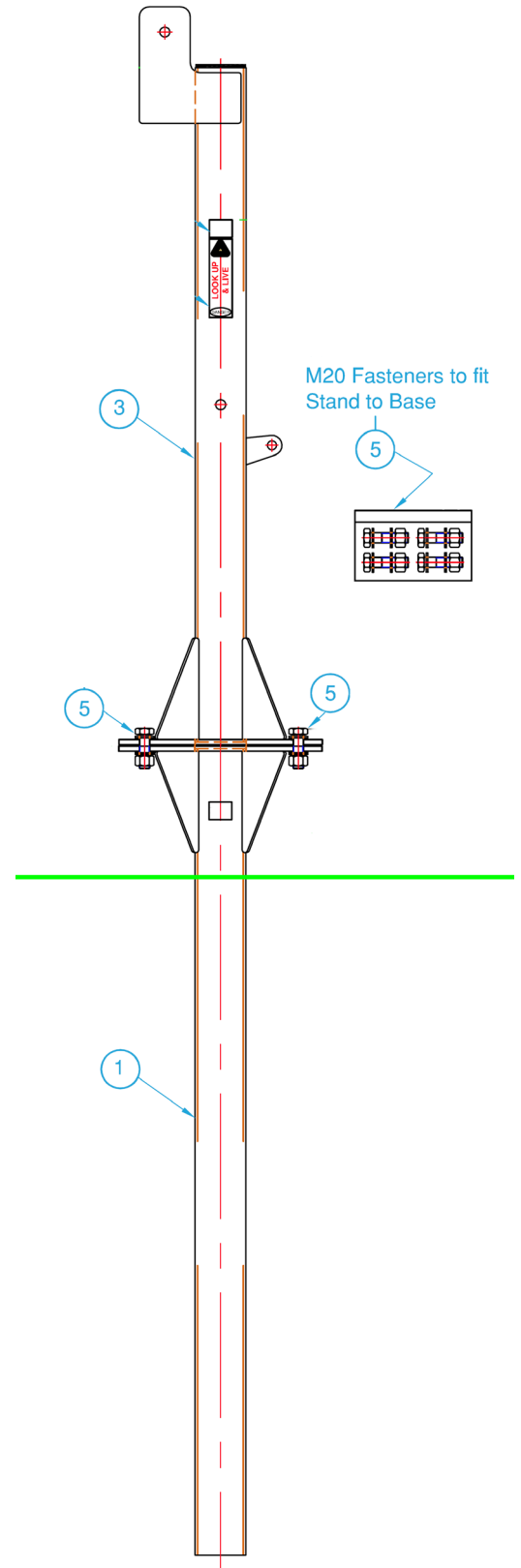
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Step 4.

In-ground to mast base assembly (2 persons required)

Remove formwork and plate supports from in-ground concrete base and ensure adequate curing has occurred on concrete. Align the above-ground base (No. 3) onto your in-ground mount base (No.1) - check alignment of above-ground base (No. 3) for tilt-arm fall-over, adjust 90 degrees if required.

Using the supplied 4 x M20 x 75mm 8.8grade bolts + flat washers + nuts (No.5) secure your above ground mount base to your in-ground mount base (No. 1). Tighten all 4 bolts (No. 5) ensuring no movement of base.



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Step 5.

Tilt-arm to mast base assembly (2 persons required)

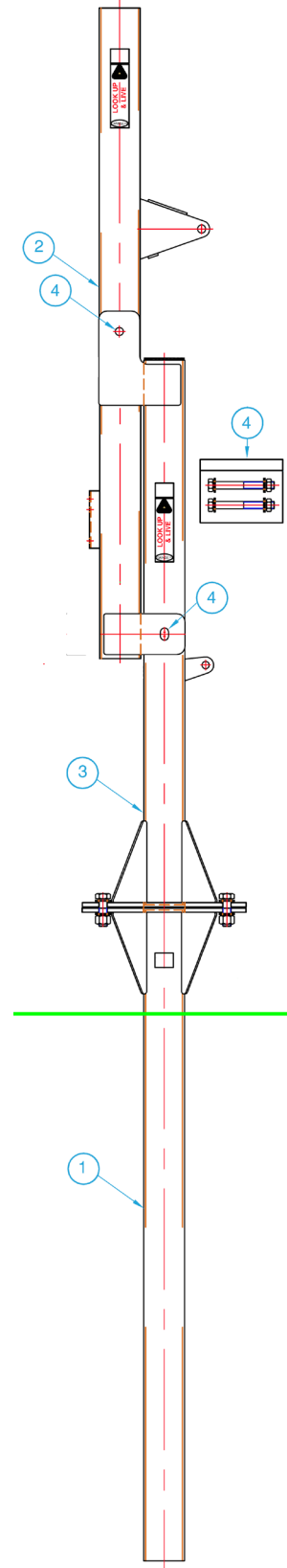
Lift the tilt-arm assembly (No.2) up and align the pivot mount holes on the above-ground base (No.3) and insert 1 x M20 x 180mm 8.8 grade bolts (No.4) into the upper hole (elbow bracket hole), this will allow the arm to sit without the need of assistance. Slide the washer and screw the nut onto the bolt. **This bolt should not be removed from this point on.**

Now insert the lower 1 x M20 x 180mm 8.8 grade bolt (No.4) through the tilt arm bracket and slide the washer on then screw the nut. This is the locking bolt and nut for when the tilt arm is in the vertical position.

Final Step - Mast Structure Assembly

Ensure all base to in-ground bolts (No.5) are tight and no movement occurs. Check the Pivot bolt (No.4) is tight, but still allows smooth movement of arm - Not so tight as to bend the 'L' brackets.

Mast Structure Assembly is now complete.



Following pages:

The following pages are the how-to guide on fitting the following:

- Hydraulic ram for lifting/lowering arm
- Hand-crank winch
- Top pulley
- Rotor carriage

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Hydraulic Ram Installation - 2 person install

Remove the hydraulic ram, 2 x retaining pins, 2 x Lynch pins and 1 x crank pole from the packaging. Align the lower pin hole with the bracket on the base section of the mast. Insert pin through bracket and hydraulic ram base mount and secure pin using 1 x lynch pin (ensure spring loop rotated ensure retention).

Holding the hydraulic ram extended upright, using the crank pole, extend the hydraulic ram central piston arm up until the top fixing hole aligns with tilt-arm attachment bracket. Insert pin through bracket and hydraulic ram piston arm and secure using 1 x lynch pin (ensure spring loop rotated to ensure retention).

Recommendations.

The hydraulic ram should only be utilised for extending and lowering the tilt arm into location, do not use the ram to extended hold the arm (+ extension arm if attached). The lower locking bolt hole is the recommended long-term tilt arm locking mechanism to be used. Removal of Hydraulic ram when not required is recommended to reduce maintenance and security.



Hand-crank winch Installation - 1 person install

Remove the hand-crank winch and fixing bolts from the packaging. The mounting plate already comes included (as standard) with the fixing plate and mounting threads.

Align the hand-crank winch mounting plate to the tilt-mast fixing plate and using the supplied M8 mounting bolts, fix the winch into place. Mount so the cable and reel are at the top (bolt holes will line up). The handle should be on the right-hand side.

Hand-crank winch mount plate is fitted as standard to all NBS-Tiltmast. Includes threaded mount holes for NBS-RBW series.



NBS-RBW series of hand-crank winches fit directly onto NBS-Tiltmast mount bracket using supplied M8 mount bolts.



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Extension SHS tube Installation - 2 person install

Requires NBS-BJack

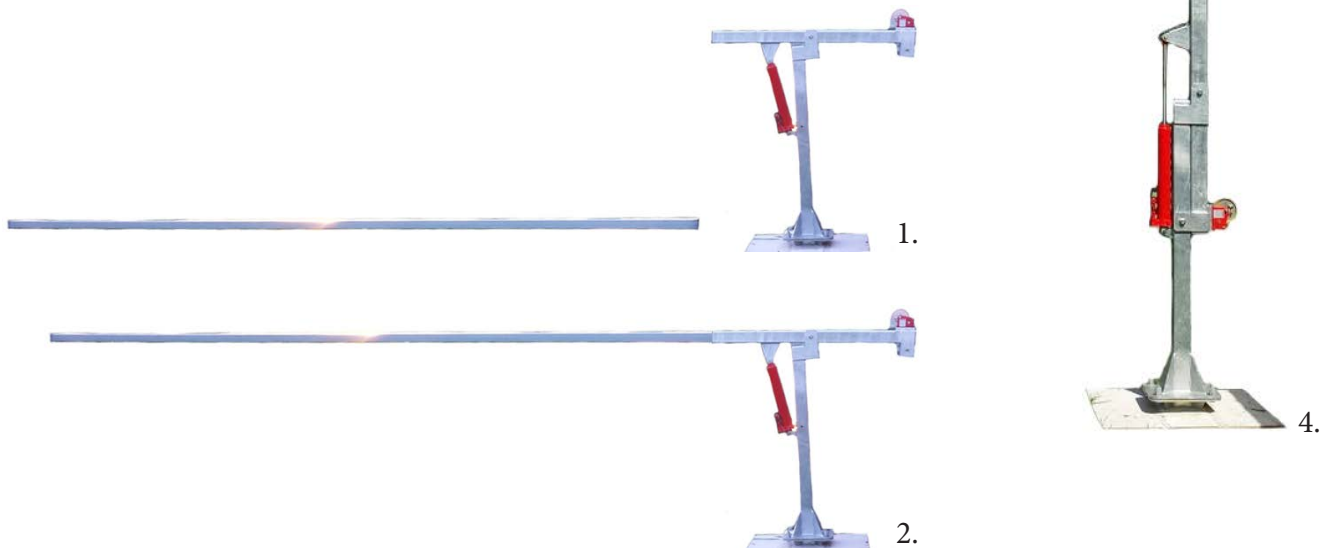
If you wish to extend the overall height of your NBS-Tiltmast you will need to source locally 89mm SHS x 3.5mm W.T. x maximum 9.0 metres in length galvanised tube to fit inside the tilt arm. Please note: non securing hole is present in the tilt arm, the extension tube will be held in place by the shear weight when in the upright configuration.

If you wish to secure the SHS tube, a hole can be drilled through the tilt arm and SHS tube, coldgal spray will be required to ensure the drilled hole does not rust.

1. Lower your NBS-Tiltmast arm down to the lowest level using the NBS-Bjack hydraulic ram. The arm should be parallel with the ground.
2. Using multiple people lift your galvanised steel 88.9mm SHS extension tube and slide inside the lowered tilt arm until the SHS tube hits the pivot bolt.
3. We recommend until raised into the vertical orientation the unsupported end of the galvanised steel 88.9mm SHS tube be safely supported to reduce any stress on the tube/tilt-arm or mount base.
4. When the extension arm is ready to be raised into the vertical orientation, ensure the NBS-Bjack hydraulic ram lowering screw is closed to ensure the arm safely raises.
5. Once in vertical orientation, insert 1 x M20 x 180mm bolt into the lower locking hole and secure using washer and nut. Slowly remove pressure from hydraulic ram - remove if long term requirements.

Lowering:

1. When lowering of your NBS-Tiltmast with extension arm, Ensure the hydraulic ram is installed, ensure hydraulic ram has weight of arm.
2. Remove the M20 bolt and slowly open the pressure screw on your NBS-BJack and control lower the extension arm, allowing the hydraulic ram to slowly lower the arm. DO NOT open then screw all the way, this will cause your arm to uncontrolled lower which can cause damage to your extension arm, NBS-Tiltmast and hydraulic jam.
3. Re-instate the extension arm unsupported end support to reduce possible strain on NBS-Tiltmast.



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Rotar Carriage Installation - 1 person install

Requires SHS extension tube + NBS-RBW series

For extended height access to your antenna/equipment you will require the NBS-Rotarcarrige, which allows ease of access via the NBS-RBW series hand-crank automatic brake winch. Simply wind up/down the winch to access your antenna/equipment.

The rotar carriage should be installed so the mounting brackets are orientated to the right if looking from the NBS-Bjack side. This will allow the winch cable to freely lower and raise without conflicts. No greasing of the rotar carriage and/or extension SHS tube is required, the NBS-Rotarcarrige is designed to slide freely over the 88.9mm x 88.9mm SHS tube.

Recommendations.

A yearly inspection of the hand-crank winch cable and winching mechanism should be undertaken to ensure working condition of the mechanism.

SPECIAL NOTE: Your antenna/equipment + NBS-Rotarcarrige should be lowered to the lowest possible level during any adverse weather/wind/conditions so as to ensure no excessive strain is applied and failure does not occur of the winch/winch cable.

Installation of NBS-Rotatorcarriage

1. Ensure your NBS-Tiltmast and extension 89mm SHS tube are in the lowered position.
2. Slide the NBS-Rotatorcarriage onto the top of your SHS tube and down to the lowest point of SHS extension tube (resting on NBS-Tiltmast pivot arm). Ensure top of NBS-Rotatorcarriage is towards the open end of SHS tube.
3. Ensure the SHS tube allows for free sliding of the NBS-Rotatorcarriage along the entire length, any obtrusions will cause the carriage to possibly catch, causing excess strain on the NBS-RBW winch cable and reduce full extension of your equipment/antenna.
4. Install your NBS-Toppulley mount / NBS-RC Mount Kit / NBS-RC Bush Kit whilst NBS-Tiltmast and extension SHS are in the lowered position.



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Top Pulley Mount Installation - 1 person install

Requires SHS extension tube + NBS-RBW series

The NBS-Toppulleymount is designed for usage with an extension SHS tube, hand-crank winch (NBS-RBW series) and NBS-Rotarcarriage for ease of access to your antenna/equipment without the need to lower the tilt-arm for maintenance or upgrades.

The NBS-Toppulleymount is designed to slide onto the top of your 88.9mm x 88.9mm SHS extension tube.

ENSURE the pulley wheel is aligned to the same face as the NBS-RBW series hand crank winch of the mast to allow free operation of the pulley wheel to raise and lower your NBS-Rotarcarriage.

NOTE: If you are installing a NBS-Rotarcarriage, install this onto 89mm SHS tube prior to top pulley mount onto SHS extension tube.



3. Pulley wheel retaining bolt loosened to allow winch cable routing



4. Winch cable inserted into pulley groove



6. Pulley wheel retaining bolt tightened to retain winch cable

Installation of NBS-Toppulleymount

1. Ensure your NBS-Tiltmast and extension 89mm SHS tube are in the lowered position.
2. Slide the NBS-Toppulleymount onto the top of your SHS tube, ensuring in correct orientation - Same face as NBS-RBW hand crank automatic brake winch.
3. Loosen Pulley retaining bolt until sufficient space to route NBS-RBW cable around pulley wheel.
4. Insert NBS-RBW winch cable into pulley groove and connect safety hook onto NBS-Rotarcarriage to maintain tension on cable whilst tightening pulley retaining bolt.
5. Ensure rear cover still aligns with alignment spigot on mount - this will ensure correct securing of pulley wheel and reduce rattles/wobbles.
6. Tighten pulley retaining bolt to retain NBS-RBW series winch cable in pulley wheel channel. DO NOT overtighten to crush pulley wheel bearing.
7. Ensure free movement of pulley wheel

Installation is complete.

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NBS-TEM Fixed top equipment mount assembly

The NBS-TEM is designed for fixed equipment mounting on the top of your NBS-Tiltmast in situations where wind-up and down access is not required or where high winds are located.

The NBS-TEM is designed to slide onto the top of your 88.9mm x 88.9mm SHS extension tube and be secured using the supplied M20 bolt through your SHS tube.

ENSURE the bolt is aligned to match the tilt-arm securing bolt.

NOTE: We recommend fitting your 88.9mm SHS extension into your NBS-Tiltmast prior to fitment of your NBS-TEM.

Installation of NBS-TEM

1. Ensure your NBS-Tiltmast and 88.9mm SHS extension tube are in the lowered position as this will give easiest access for fitment.
2. Slide the NBS-TEM onto the top of your SHS extension tube, ensuring bolt holes in correct orientation (*horizontal*) and assembly entirely home on extension pole (*cannot be inserted any further, the internal gussets will sit on top of your extension tube*).
3. Using a drill and 21mm drill bit, use each side hole as a guide and drill the securing hole for your supplied M20 bolt + washer/nut
4. Once hole drilled, insert bolt through holes and secure using washer + nut supplied, tighten so no movement occurs - Please note: *Any internal drill debris will fall through unit once tilted into upright position.*
5. Install your equipment/antenna/mounting hardware onto the 48mm O.D. mounting section pole and secure in correct direction.
6. Follow instructions above to raise arm into vertical orientation.

Installation is complete.

