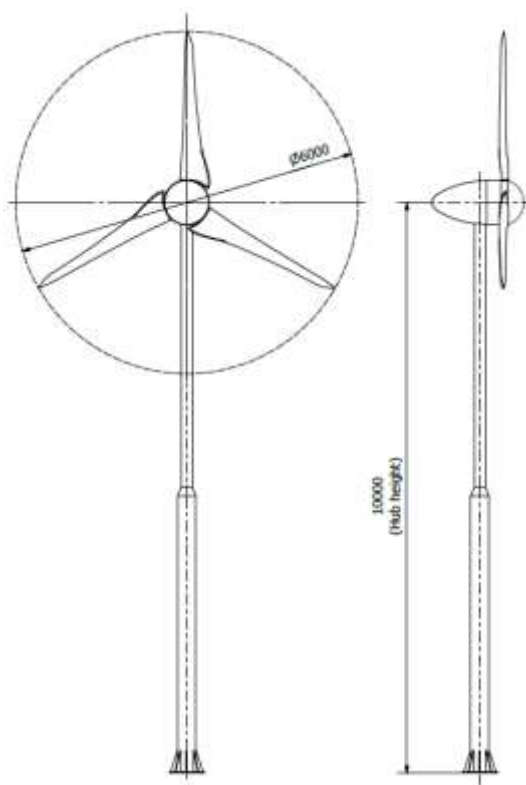


my!Wind Ltd

10 kW wind turbine

10m Tower Installation Manual



Contents

Contents	2
General remarks	3
1. Introduction.....	4
2. Prior to installation.....	4
2.1 Important safety instructions	4
2.2 Building permits and zoning requirements.....	5
2.3 Siting	5
3. Parts list.....	7
4. Tools.....	8
5. Erection the of tower	9
Step 1: Placing the tower base plate	9
Step 2: Placing the tower 1 st segment.....	10
Step 3: Placing the tower 2 nd segment.....	11
Step 4: Placing the gin-pole.....	12
Step 5: Placing the gin-pole cables	13
Step 6: Connecting the lifting equipment.....	14
Step 7: Test lifting the tower	14
Step 8: Levelling the tower	16
Step 9: Lowering the tower.....	16
6. Assembling the turbine.....	17
Step 1: Placing the generator	17
Step 2: Repositioning the tower	18
Step 3: Placing the cover holders.....	19
Step 4: Placing the blades.....	20
Step 5: Placing the blade cover	20
Step 6: Placing the nacelle cover	21

7. Erection of the turbine	22
Step 1: Lifting the tower.....	22
Step 2: Disconnecting the lifting equipment	23
Step 3: Placing the tower junction box	23
Annex 1 – Levelling the tower with ITS-2-45 dual axis inclinometer	25
Annex 2 – Tower verticality	26

General remarks

Please **read this manual thoroughly through before beginning the assembly**. No guarantee is assumed by my!WIND for the correct interpretation and application of the information by the customer. In case any incomplete, incomprehensible or erroneous information is detected, the circumstances must be clarified immediately my!WIND representative or local dealer.

This document supersedes any previously released version.

1. Introduction

Overview of the my!Wind 10 kW turbine installation with a 10 m self-standing mast on a foundation block is given in this document. The manual is solely intended to be used for a tower corresponding with appendix 01 and for a foundation corresponding with appendix 02. Please DO NOT attempt to use the manual for any other configuration of my!Wind products or for any products provided by other suppliers. This can result in serious harm or loss of life.

Carefully read and understand the disclaimer at the beginning. While simple in concept, the installation requires basic mechanical knowledge and attention to detail. Tools listed to erect the turbine are readily available in most parts of the world or can be obtained from a distributor. When even remotely possible use a my!Wind distributor who has received a corresponding training to carry out the installation for you.

2. Prior to installation

2.1 Important safety instructions

- 1) Read, understand and follow all warnings.
- 2) Install foundation and tower in accordance with the electric code used in your country or region and all local building and zoning codes and requirements.
- 3) Obtain building and construction permits prior to starting the installation.
- 4) Make sure that you have enough space for the erection before installing the foundation.
- 5) Foundation concrete must be completely cured prior to installing tower (Minimum 20 MPa, 28 day strength).
- 6) my!Wind uses high voltage and is potentially dangerous. Follow all safety precautions at all times.
- 7) Remain at a safe distance when rising and lowering tower. NEVER stand or walk under tower while it is being raised or lowered.
- 8) Be aware of overhead power lines.
- 9) Do not attempt to raise tower on a windy day (maximum wind speed 5 m/s).
- 10) Always wear personal protection equipment – closed toe shoes, work gloves, safety glasses and hardhat.

2.2 Building permits and zoning requirements

Building codes and installation requirements may vary greatly depending on state, city and local townships. Be sure to obtain all required building permits BEFORE beginning the installation.

Be sure you understand all the installation and inspection requirements. Many localities require inspections at key phases of the installation before next steps can be taken.

! IMPORTANT: Do not pour concrete before all required permits are obtained, inspections complete and you are authorized to proceed.

2.3 Siting

The best location to install a wind turbine is often a compromise. Local building restrictions, the height of surrounding structures, length of power cables and available open area may require the my!Wind to be installed in a less than optimum location. In general my!Wind will produce more power if installed on a taller tower. However, towers are expensive so it is important to balance performance to installation costs, in order to achieve the lowest cost of energy and the quickest payback.

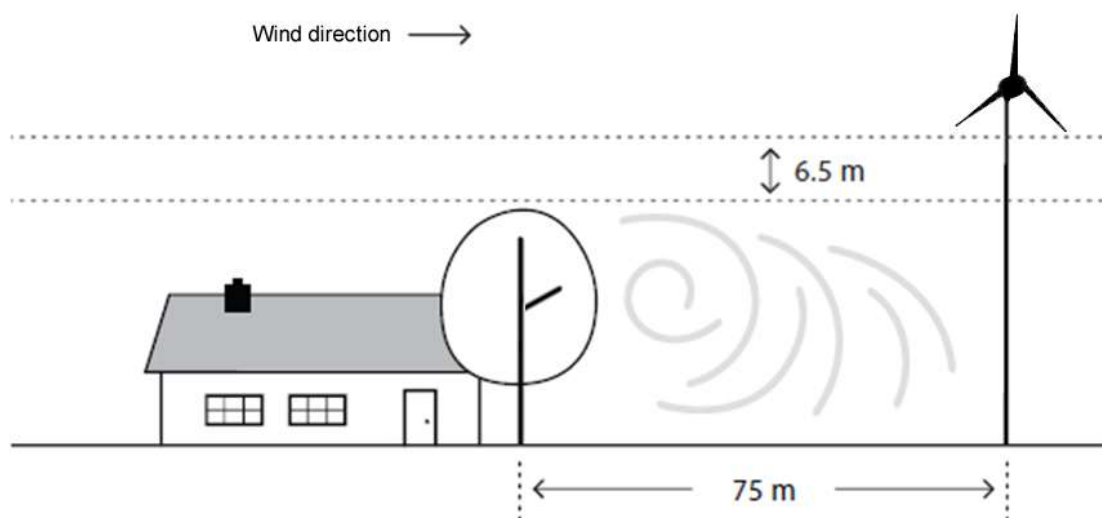


Figure 1 – Optimal location for the turbine

For optimal performance, install my!Wind in such a manner that blade tip at its lowest position is 6.5 m above any surrounding object within a 75 m radius (see Figure 1). For example in case a 10 m tower is used, there should be no objects in a 75 m radius, as the tip of the 3 m blade is located at 7 m above the ground.

In addition keep in mind where you plan to install the inverter system and gain access to the grid if it planned to have a grid connected turbine. Lengthy power cables can substantially contribute to the installation costs and generate higher losses in the energy conversion process. If a long distance is

required between your turbine and the connection point, it will be necessary to use heavy gage wire to reduce the resistance of the wire.

When raising the 10 m tower using the gin-pole kit, a minimum open area with approximately 32 m length is required (see Figure 2). Slightly less than 14 m are required on one side of the foundation (measured from the centre of the foundation) for the tower and turbine. Depending on the length of the vehicle and the method used to raise the tower, over 18 m might be required on the other side of the foundation for the vehicle, lifting cable and gin-pole. For an easier and safer assembly, this area should be 7 m wide over the entire length, having 3,5 m to either side in order to accommodate the turbine blades. Narrower area on the gin-pole and the lifting cable side might be sufficient dependant on the used vehicle width.

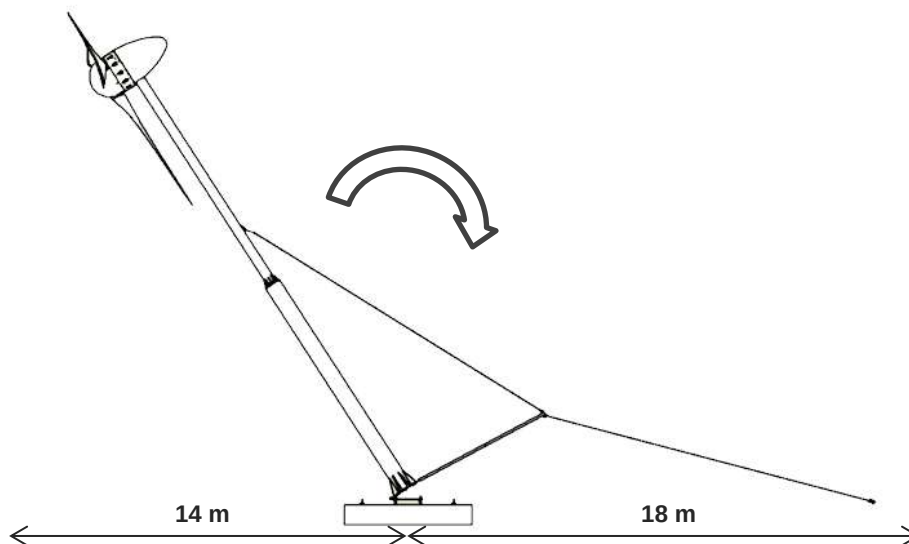


Figure 2 – Required area for erection

If the tower is being erected on the side of a hill it will be much easier to raise the tower if it is assembled to the uphill side of the base.

3. Parts list

After purchasing my!Wind 10 kW turbine the client shall receive following items for the installation:

QTY	Part number	Description
1	5KW-MD-01.01.00.00.00	Generator
3	5KW-MD-01.01.04.00.00	Blade
1	5KW-MD-01.01.00.00.01	Blade cover
3	5KW-MD-01.01.00.00.02	Blade cover holder
1	5KW-MD-01.01.00.00.03	Nacelle cover
1	08 VBS 30 B9/T	Junction box
1	5KW-MD-01.02.01.00.00	Tower 1st segment
1	5KW-MD-01.02.02.00.00	Tower 2nd segment
1	5KW-MD-01.02.03.00.00	Tower base
2	DIN 912 – M5 x 16 - Zn	Cylinder Head Cap Screw
20	ISO 7380 - M8 x 20 - A2	Hexagon Button Head Screw
24	DIN 912 - M10 x 35 - Zn	Cylinder Head Cap Screw
6	DIN 933 - M16 x 40 - Zn	Hex-Head Bolt
16	DIN 933 - M20 x 45 - Zn	Hex-Head Bolt
2	DIN 975 - M27 x 500 - Zn	Threaded Bar
6	DIN 127 - A 8 - Zn	Spring Washer
20	DIN 125 - A 8,4 - A2	Washer
48	DIN 125 - A 10,5 - Zn	Washer
6	DIN 127 - A 16 - Zn	Spring Washer
6	DIN 125 - A 17 - Zn	Washer
16	DIN 127 - A 20 - Zn	Spring Washer
16	DIN 125 - A 21 - Zn	Washer
12	DIN 125 - A 28 - Zn	Washer
24	DIN 985 – M10 – Zn	Nylock hex Nut
16	DIN 934 - M27 - Zn	Hex Nut

! IMPORTANT: Inspect and unpack all the parts included in your installation kit besides the generator and make sure that nothing is missing or damaged. Leave the generator in its transportation box for easier assembly. Use the *Parts List* and this manual for assistance in identifying parts as you unpack the shipment. In case some parts turn out to be missing or damaged, do not continue the assembly and contact your local distributor or my!Wind representative for assistance.

4. Tools

Dependant on the installation method and desired installation speed a certain tool nomenclature is necessary.

QTY	Description	Notes
1	Spirit level	At least 300 long
1	41 mm wrench	
2	30 mm wrench	
2	24 mm wrench	
2	17 mm wrench	
2	8 mm hex key	
2	5 mm hex key	
1	4 mm hex key	
1	Socket wrench set	30, 24 and 17 mm sockets
1	Torque wrench	Up to 1080 Nm
1	Hammer	Big size
1	Crowbar	
1	Pliers	Flat nose
1	WD 40 oil	200 ml
10	Cable ties	200 mm length
2	Lifting sling	Rated at least 400 kg
1	11 m rod or 12 m strong blank cable	For pushing the wires through the tower
1	Fork lifter, tractor, crane	At least 400 kg of lifting force, at least 3000 kg of pulling force
1	Truck with a winch (optional)	At least 3000 kg of pulling force
10	Wooden pallets or mast tripods (2 pcs)	To support the tower segments
1	Gin-pole	
3	Shackle Us. Std M16	Rated at least 2000 kg
1	Cable 6x19-FC 8 x 6655 mm	rated at least 3800 kg, 2 x thimble ends
1	Cable 6x19-FC 8 x 6655 mm	rated at least 3800 kg, 1 x thimble end, 1 x hook end
1	6 m ladder (optional)	For removing the connection cable
1	ITS-2-45 Dual axis inclinometer (optional)	For levelling the tower according to <i>Annex 1</i>
2	M4x10 screws (optional)	For fixing the inclinometer
1	3 mm hex key (optional)	For fixing the inclinometer

5. Erection the of tower

Before starting the tower erection, following steps must be completed:

1. The foundation has been manufactured according to appendix 02 and has had at least 28 days to cure.
2. All the parts have been inspected and unpacked and deemed to be of right quantity and quality.
3. All the tools have been acquired and their presence has been verified.

Step 1: Placing the tower base plate

1. Place four pairs of M27 nuts onto the M27 threaded bars and place A 28 washer on top of each pair (see Figure 3). Adjust the upper nut surface to roughly 95 mm from the foundation surface. Use WD-40 oil to lubricate the nuts before placing them on the bars.
2. Place the tower base plate onto the washers and use a spirit level to level the base plate in the horizontal plane. Do so by turning the upper M27 nuts up and down as far as needed.
! HINT: Do not push the bottom nuts against the upper nuts before levelling out the base plate. This will make the adjustment process faster. Take not of the base plate placement in terms of lifting equipment to have enough space available at the right sides.
3. Place A 28 washer onto each threaded bar and on top of the base plate.
4. Place M27 nuts onto each threaded bar and fix them cross wise with a torque of 1080 Nm, going first 50% and then 100%.
5. Push the bottom counter nuts against the upper nuts and fix them with a torque of 540 Nm.

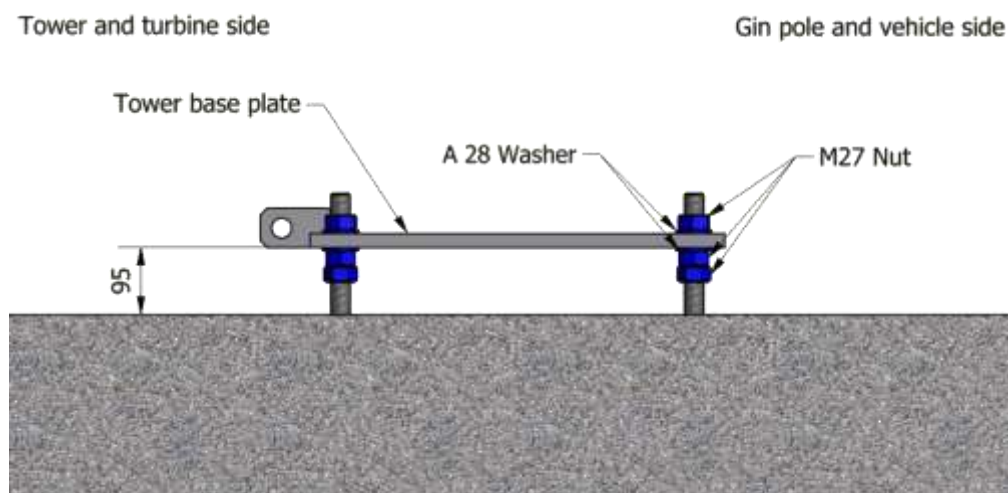


Figure 3 – Placing the base plate

Step 2: Placing the tower 1st segment

1. Place the tower 1st segment hinge between base plate hinges (see Figure 4). The 1st segment weighs about 285 kg, therefore a lifting aid in form of a tractor, fork lifter or a crane is necessary to perform the operation. Use synthetic lifting slings to make contact with the tower 1st segment in order not to damage the zinc layer. **! IMPORTANT:** Make sure you DO NOT place any body part underneath the lifted object while it is being lifted.
2. Once the tower segment hinge and base plate hinges are coaxial, place the M27 x 500 threaded bar through the hinges.
3. Place A 28 washers onto both ends of the threaded bar.
4. Place M27 nuts onto both ends of the threaded bar and fix them by hand only.

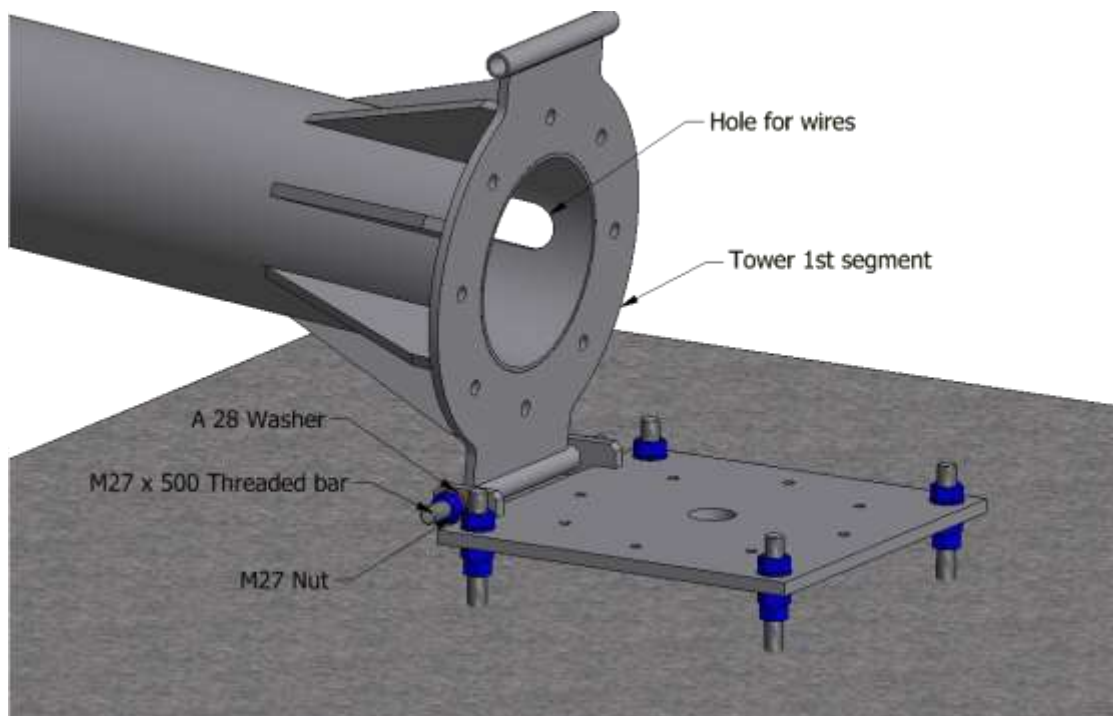


Figure 4 – Placing the 1st segment

5. Place the mast tripod or wooden pallets with a height of 0,7 m underneath the 1st segment approximately 2,6 m from the foundation edge (see Figure 5).
6. Lower the tower 1st segment onto the tripod or pallets and release the lifting equipment.
! IMPORTANT: Make sure that the segment is securely supported and shall not fall over.

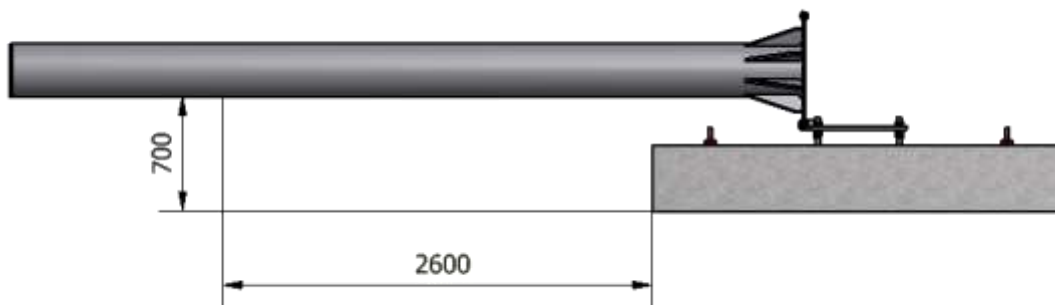


Figure 5 – Supporting the 1st segment

Step 3: Placing the tower 2nd segment

1. Place the tower 2nd segment bottom against the 1st segment top (see Figure 6). The 2nd segment weighs about 145 kg, therefore a lifting aid in form of a tractor, fork lifter or a crane is necessary to perform the operation. Use synthetic lifting slings to make contact with the tower 2st segment in order not to damage the zinc layer. ! **IMPORTANT:** Make sure you DO NOT place any body part underneath the lifted object while it is being lifted. Make sure that the segment lifting eye is facing upward direction.
2. Fit eight M20 x 45 bolts with a spring washer and then a regular washer and place the bolts to join the two segments. Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts cross wise with a torque of 434 Nm, going first 50% and then 100%. ! **TIP:** When having trouble getting bolts into threads, rock the segment slightly up and down.

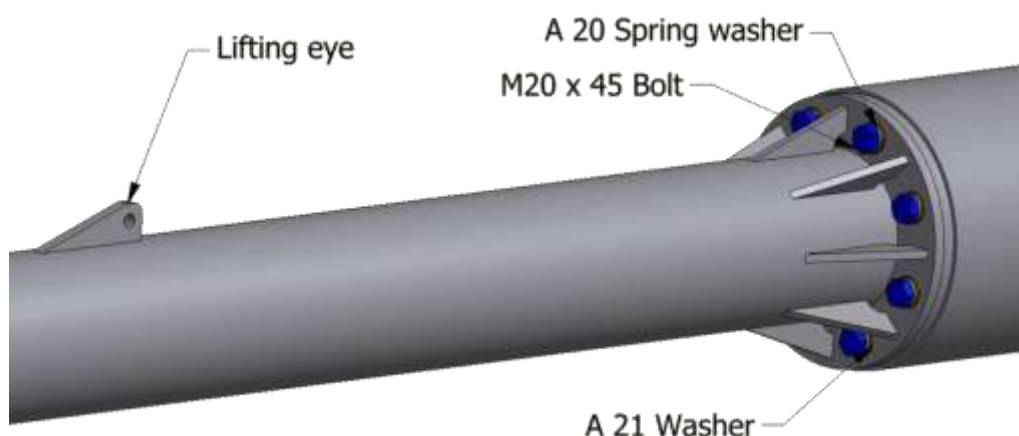


Figure 6 – Placing the 2nd segment

3. Place the mast tripod or wooden pallets with a height of 0,75 m underneath the 2nd segment approximately 4,5 m from the foundation edge (see Figure 7).
 4. Lower the tower 2nd segment onto the tripod or pallets and release the lifting equipment.
- ! IMPORTANT:** Make sure that the segment is securely supported and shall not fall over.

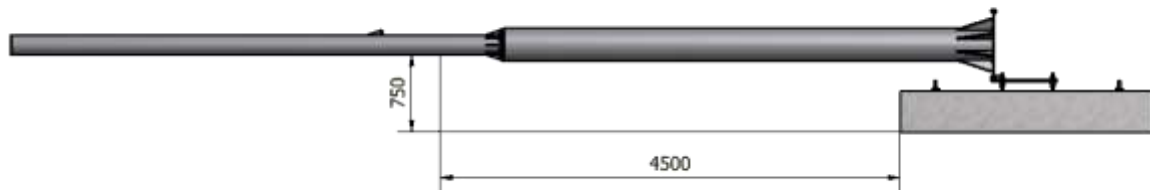


Figure 7 – Supporting the 2nd segment

Step 4: Placing the gin-pole

1. Place the gin-pole hinge pipes between tower 1st segment hinge (see Figure 8).
2. Once the gin-pole hinges and tower 1st segment hinge are coaxial, place the M27 x 500 threaded bar through the hinges.
3. Place A 28 washers onto both ends of the threaded bar.
4. Place M27 nuts onto both ends of the threaded bar and fix them by hand only.
5. Lay the gin-pole a rest on the tower 1st segment.

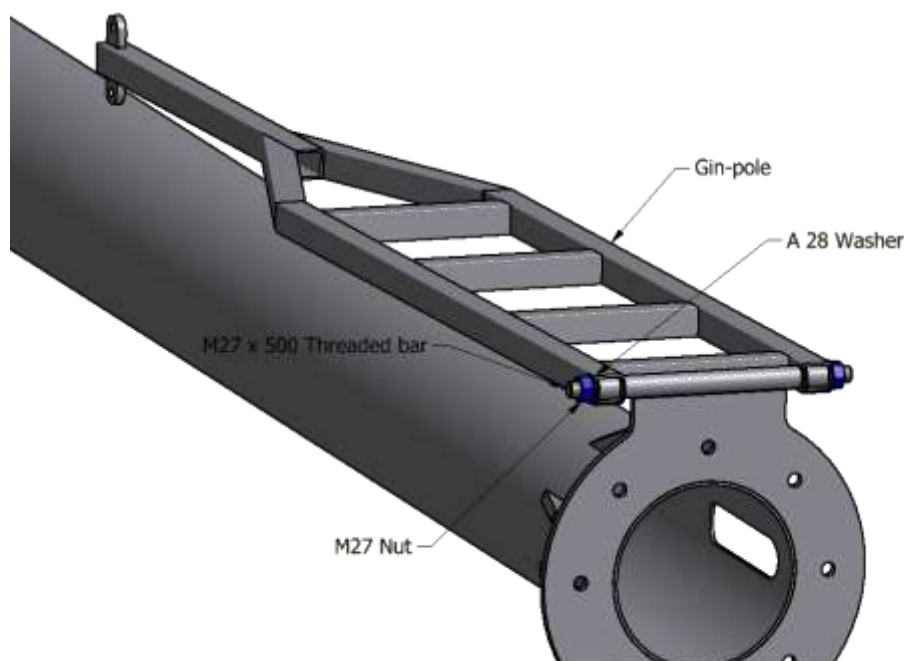


Figure 8 – Placing the gin-pole

Step 5: Placing the gin-pole cables

1. Take the 6x19 8 mm cable (connection cable) with thimbles at each end and connect it with M16 shackles to the 2nd segment lifting eye (pos 1) and the gin-pole lower lifting eye (pos 2) (see Figure 9 and 10).
2. Take the 6x19 8 mm cable (lifting cable) with thimble at one end and a hook at the other end and connect the thimble end with a M16 shackle to the gin-pole upper lifting eye (pos 3).
3. Make sure that all the shackles are securely fastened and that the cables do not have knots or twists in them.

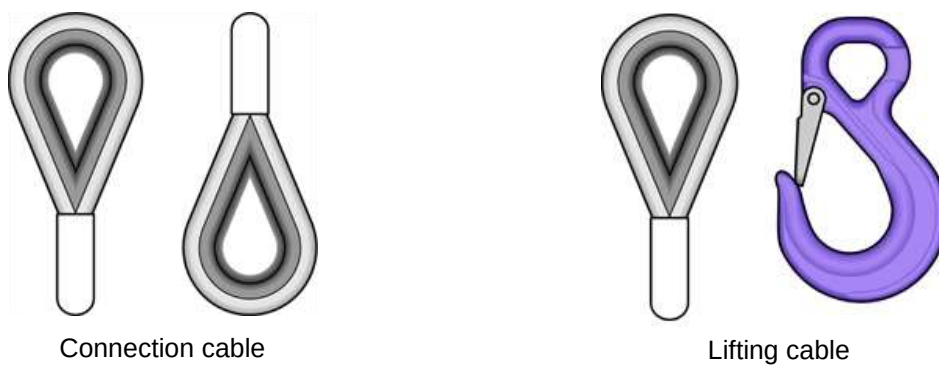


Figure 9 – Cable ends



Figure 10 – Placing the gin-pole cables

Step 6: Connecting the lifting equipment

1. Lift the gin-pole up into a vertical position as much as the connection cable allows it.
2. Take the cable end with the hook and connect it to a lifting equipment. A tractor or a car with a winch can be used in order to achieve at least 3000 kg of pulling force (see Figure 11). If you are using a car with a winch, make sure that the car has all the brakes applied at all times and is anchored to a strong point. The winch on the car must have a functional brake.

! IMPORTANT: Keep the lifting cable under pressure all the time to prevent the gin-pole from falling down.

In this manual two different tower levelling techniques are presented. In *Step 8* of this chapter, a technique with the simple spirit level is presented. In case you have acquired or your distributor possesses ITS-2-45 dual axis inclinometer, please follow the guideline in *Annex 1* before proceeding to *Step 7* and in that case skip *Step 8*.

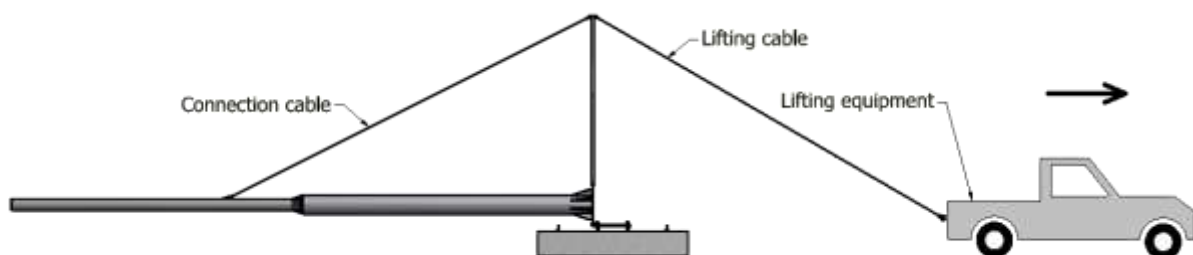


Figure 11 – Connecting the lifting equipment

Step 7: Test lifting the tower

1. Check that all the tower segments are firmly connected together and to the base plate. Check that the gin-pole is connected to the 1st segment. Check that all the shackles and cables are firmly secured to the segments, gin-pole and lifting equipment. Clear all the uninvolved persons from the area. **! IMPORTANT:** DO NOT raise the tower with a turbine until you have raised and lowered the tower without a turbine. Never stand near or under the tower or gin-pole when raising or lowering the tower.
2. Raise the tower slowly – carefully observing the tension in the cables. If your lifting equipment does not have enough power or begins to slip, stop the lifting process immediately and gently lower the tower back to the ground. DO NOT perform any pumping movement to gain more power.
3. Raise the tower until nearly vertical but with tension still on the lift cable (see Figure 12). Second person can now catch the gin-pole and lower it gently to the ground by applying downward pressure. DO NOT allow the gin-pole to crash to the ground, this will but serious strain on the system. **! IMPORTANT:** Continue applying pressure on the gin-pole, till at least 2 tower bolts are fixed.



Figure 12 – Catching the gin-pole

4. Fit eight M20 x 45 bolts with a spring washer and then a regular washer and place the bolts to join the 1st segment to the tower base plate (see Figure 13). Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts cross wise with a torque of 434 Nm, going first 50% and then 100%. ! **TIP:** When having trouble getting bolts into threads, move the mast via gin-pole left to right or front to back. If necessary loosen slightly pressure on the lifting cable but DO NOT relieve the downward pressure on the gin-pole.

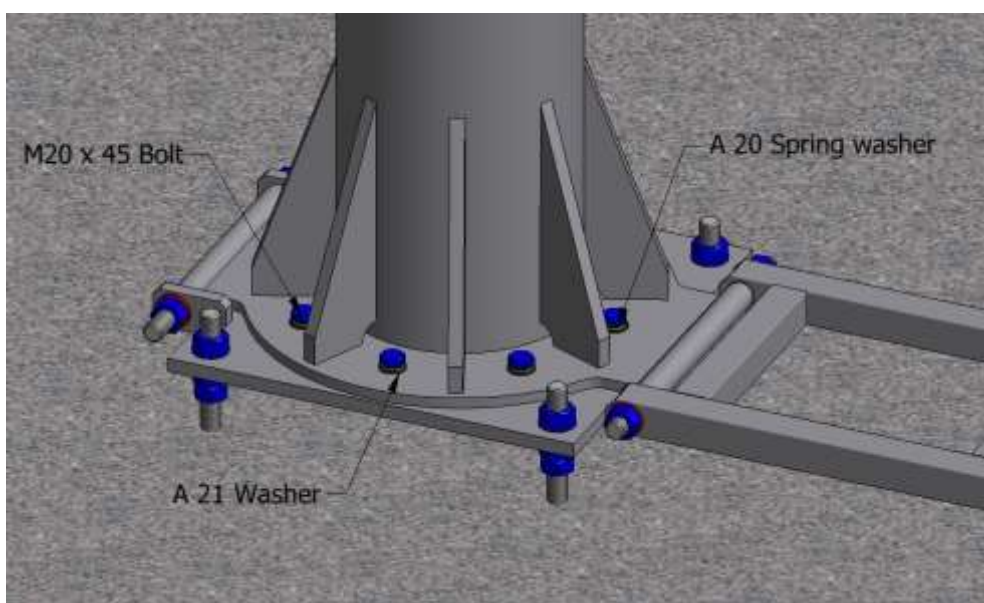


Figure 13 – Fixing tower bolts

Step 8: Levelling the tower

1. Unhook the lifting cable from the gin-pole to avoid any influence of side pressure.
2. Take a spirit level and place it against tower 1st segment to observe the tower verticality. This must be done at two sides of the tower, 90 degrees from each other. **TIP:** Using magnetic pullet level will make the observation process easier.
3. Adjust the tower vertical by turning the M27 nuts supporting the base plate up and down as necessary (see Figure 14). Lower the bottom nuts away from the upper nuts before levelling out the tower. **! IMPORTANT:** Do the adjustment incrementally, 1 nut turn at the time. Never remove the upper M27 nuts from the threaded bars, this could result in the tower falling down.
4. Once the tower is vertically levelled fix the M27 nuts cross wise with a torque of 1080 Nm, going first 50% and then 100%.
5. Push the bottom counter nuts against the upper nuts and fix them with a torque of 540 Nm.

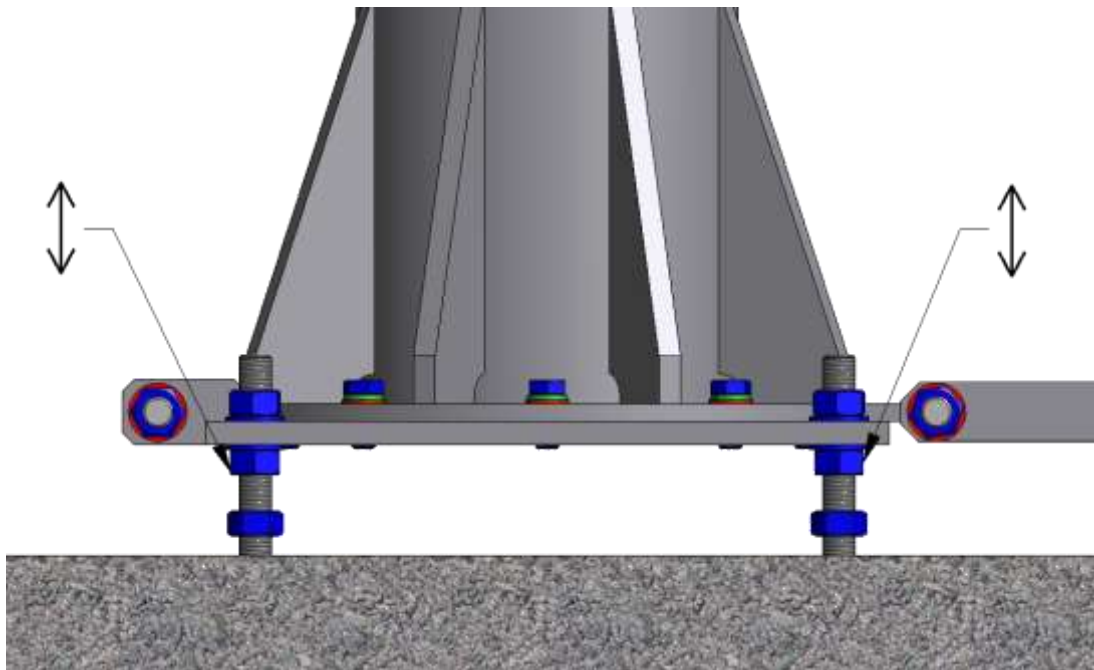


Figure 14 – Levelling the tower

Step 9: Lowering the tower

1. Take the cable end with the hook and connect it to a lifting equipment. If you are using a car with a winch, make sure that the car has all the brakes applied at all times and is anchored to a strong point. The winch on the car must have a functional brake.
2. Use the lifting equipment to put slight pressure on the lifting cable and gin-pole.
3. Remove 6 of the M20 x 45 bolts connecting the tower base and 1st segment. Second person can now catch the gin-pole and apply downward pressure. **! IMPORTANT:** DO NOT allow the tower to start lowering by itself. This will put serious strain on the system.

4. Remove the last 2 of the M20 x 45 bolts connecting the tower base and 1st segment.
5. Place a crowbar between the tower base plate and tower 1st segment on the gin-pole side and apply slight pressure to lift the tower out of the stable position. Second person must stabilize the tower from the gin-pole until the lifting equipment is able to hold the tower on its own. After this do not stand near or under the tower or gin-pole lowering the tower.
6. Lower the tower slowly on to the tripods or pallets.
7. Keep enough pressure on the lifting cable to prevent the gin-pole from falling down.

6. Assembling the turbine

Step 1: Placing the generator

1. Remove lid and yaw system flange side of the generator transportation box (see Figure 15).
2. Place the generator package near the tower 2nd top, leaving approximately 1 m distance. The generator package weighs about 230 kg, therefore a lifting aid in form of a tractor, fork lifter or a crane is necessary to perform the operation. Use the strong base of the box to do the lifting.
! IMPORTANT: Make sure you DO NOT place any body part underneath the lifted object while it is being lifted.

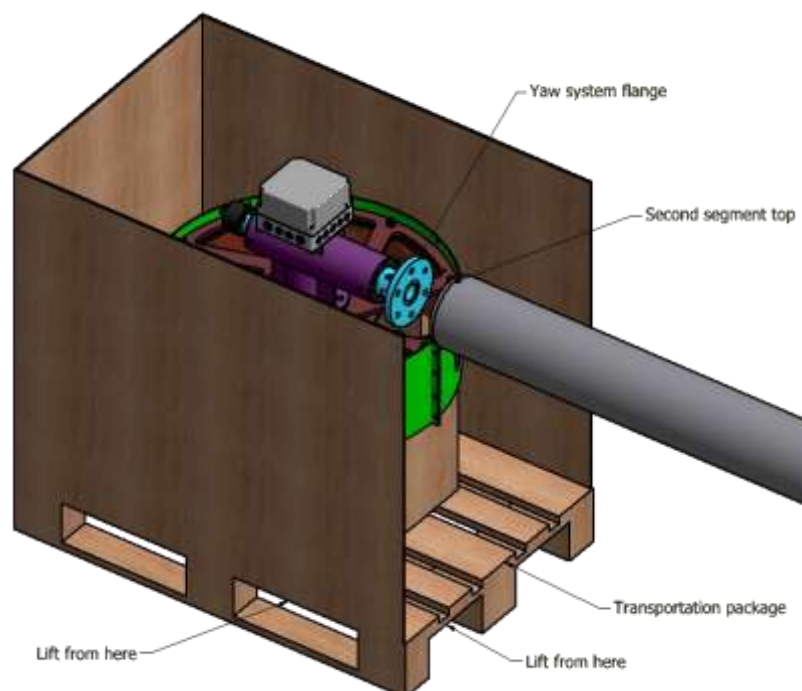


Figure 15 – Placing the generator

3. Run the two wires coming out from the yaw system through the mast and out of the 1st segment hole for wires (see Figure 4). **! TIP:** Use a long rod or a strong blank cable to perform the operation.

4. Push the yaw system flange against the tower 2nd segment top by moving the transportation box. Make sure that holes in the yaw system flange align with the holes in the tower 2nd segment top and that the flanges are approximately parallel to each other. If necessary adjust the height of the transportation box or the tower according to the tower erection sequence.
5. Fit six M16 x 40 bolts with a spring washer and then a regular washer and place the bolts to join the yaw system flange to tower 2nd segment top (see Figure 16). Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts cross wise with a torque of 222 Nm, going first 50% and then 100%.

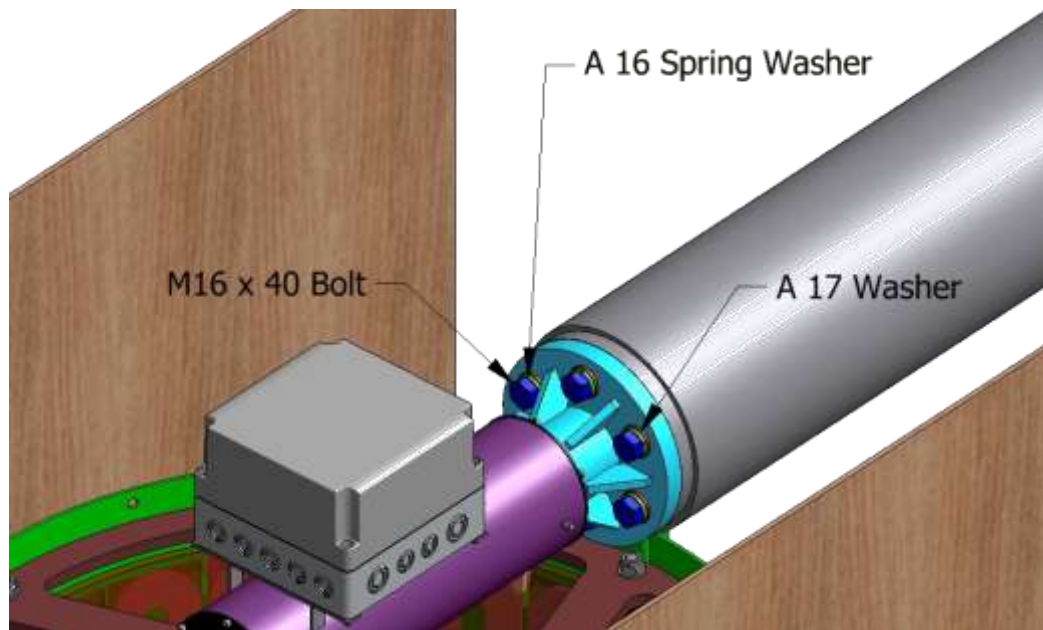


Figure 16 – Fixing the generator

Step 2: Repositioning the tower

1. Use the lifting equipment according to the tower erection chapter to lift the generator out of the transportation box and remove the box.
2. Place the mast tripod or wooden pallets with a height of 1,3 m underneath the 2nd segment approximately 4,5 m from the foundation edge (see Figure 17).
3. Lower the tower 2nd segment onto the tripod or pallets. ! **IMPORTANT:** Make sure that the segment is securely supported and shall not fall over.
4. Keep enough pressure on the lifting cable to prevent the gin-pole from falling down.

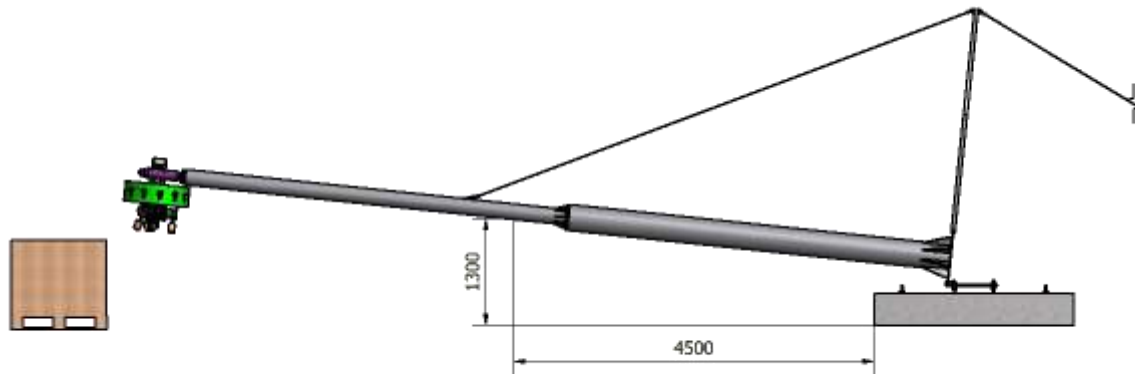


Figure 17 – Repositioning the tower

Step 3: Placing the cover holders

1. Fit six M8 x 20 bolts with a spring washer and then a regular A2 washer and place the bolts to join the three blade cover holders to the blade holder back flange (see Figure 18). Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts with a torque of 27 Nm. **TIP!** Use the holes in the blade holder front flange to do the initial fixing with a hex key.

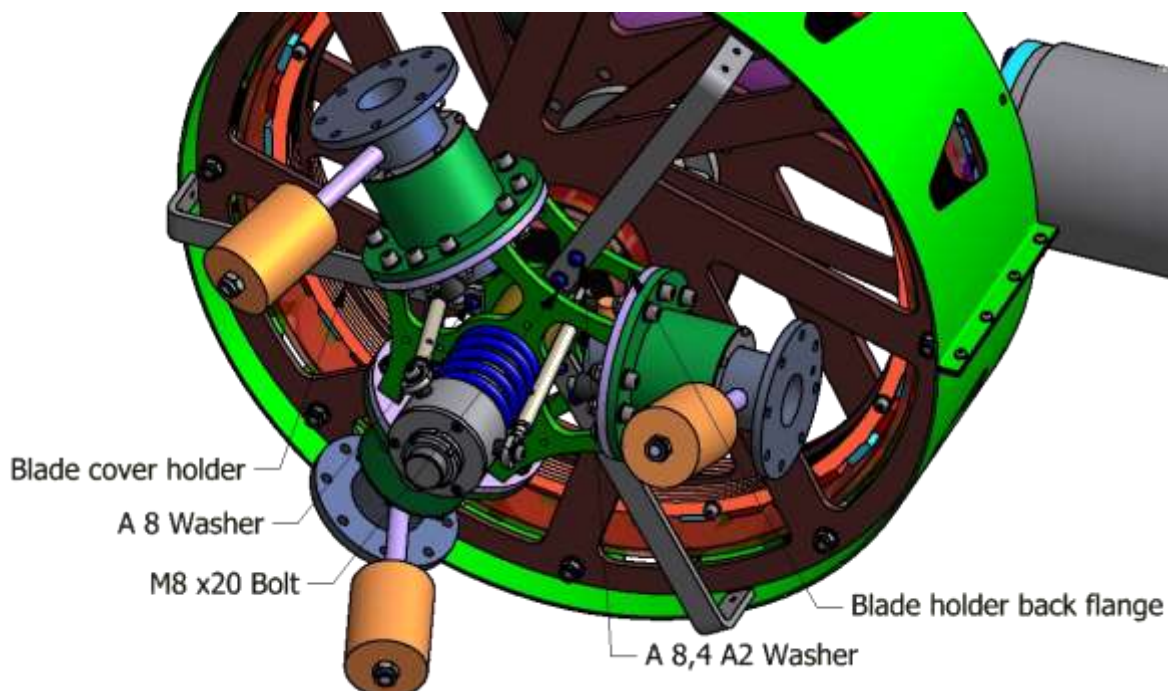


Figure 18 – Placing cover holders

Step 4: Placing the blades

1. Take a my!Wind blade and place it against the root tube flange. Align the 8 mm fitting holes in the blade flange and the root tube flange to achieve the right position for the blade (see Figure 19). NO BOLTS shall go through these holes.
2. Take 24 M10 x 35 bolts and fit them with A 10,5 washers and place the bolts to join the blade flange to the root tube flange. Place A 10,5 washers to the end of the bolts and fix the bolts with M10 nylock nuts. Use WD-40 oil to lubricate the bolts before placing nuts onto them. Fix the bolts cross wise with a torque of 53 Nm, going first 50% and then 100%. **TIP:** Fix at first two bolts with a small torque and then place to others. This will make the bolt placement easier.
3. Once the blade is fixed, place a support under the blade tip or have another person hold it to prevent the generator turning on the yaw axis. DO NOT allow the blade tip to be turned against the ground.
4. Repeat the process for the other two blades.

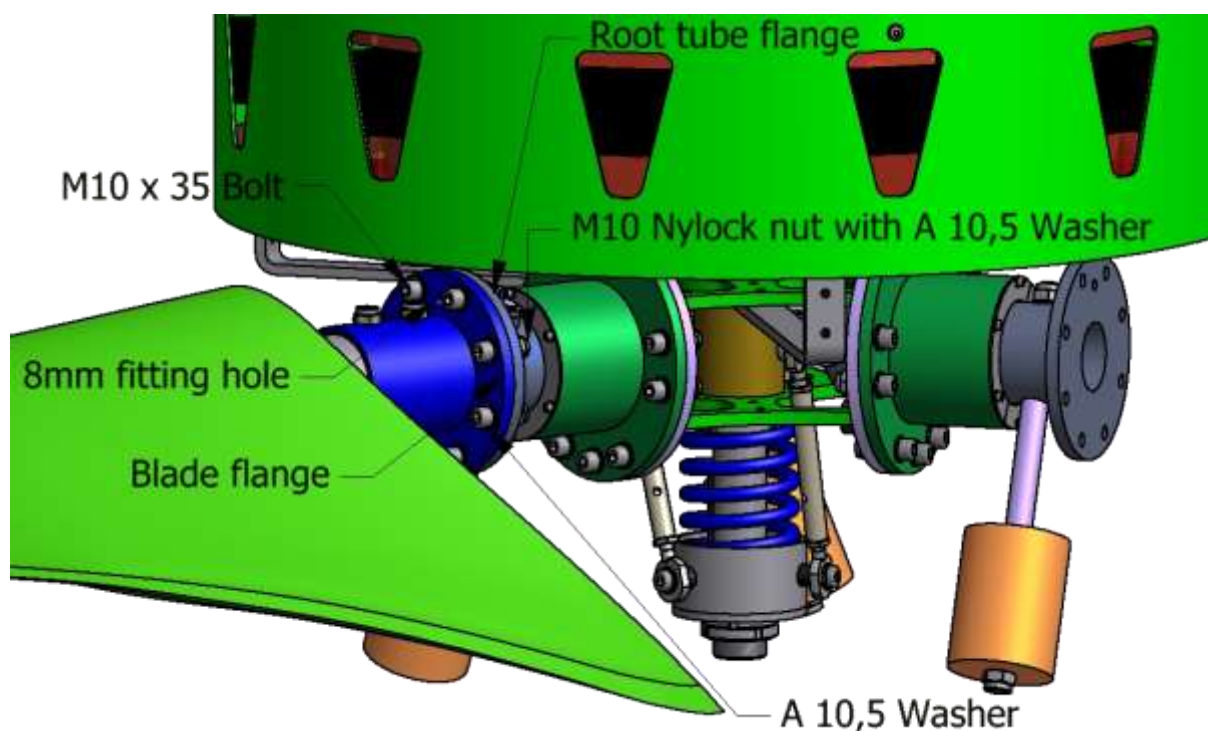


Figure 19- Placing the blades

Step 5: Placing the blade cover

1. Take the my!Wind blade cover and place it from underneath onto the cover holders in a way that the blades pass through the hole for blade (see Figure 20). Align the six fixing holes in the cover and in the blade holders. Use two person to perform this job.
2. Take six M8 x 20 bolts and fit them with A 8,4 A2 washers and place the bolts to join the blade cover to the cover holder flanges. Use WD-40 oil to lubricate the bolts before placing

them into the threaded holes. Fix the bolts cross wise with a torque of 14 Nm.

HINT: At first place all the bolts and then perform the final fixing operation.

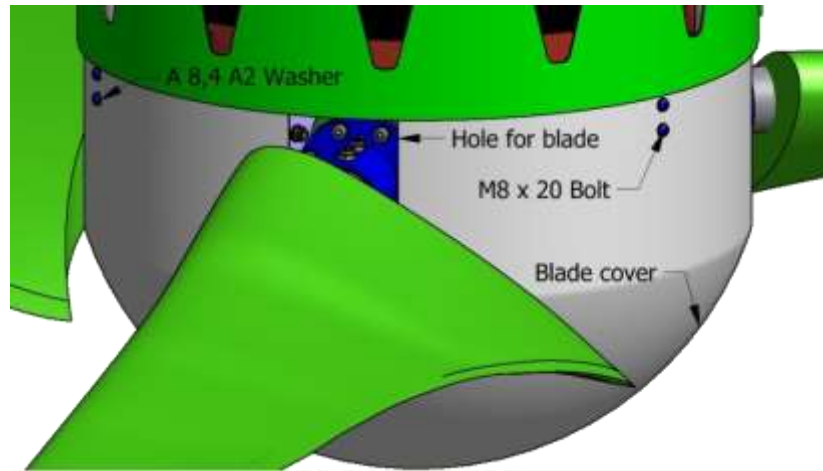


Figure 20 – Placing the blade cover

Step 6: Placing the nacelle cover

1. Take the my!Wind nacelle cover and place it on top and inside of the cooling ring in a way that the tower passes through the hole for tower (see Figure 21). Align the eight fixing holes in the cover and in the cooling ring.
2. Take eight M8 x 20 bolts and fit them with A 8,4 A2 washers and place the bolts to join the cooling ring to the nacelle cover. Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts cross wise with a torque of 14 Nm. **TIP:** At first place all the bolts and then perform the fixing operation.

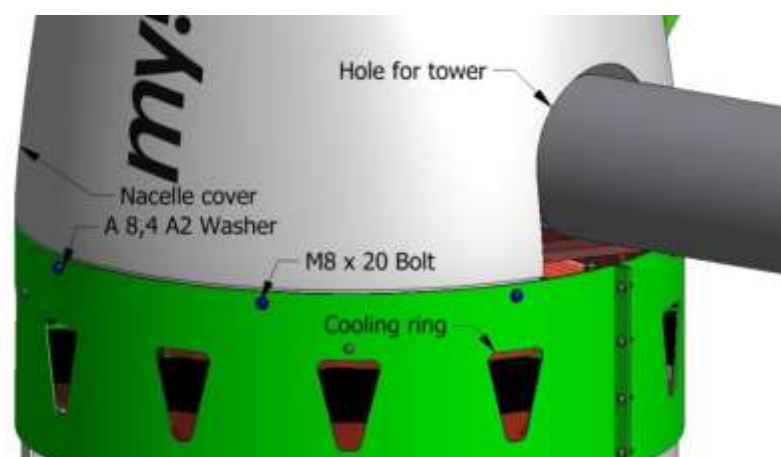


Figure 21– Placing the nacelle cover

7. Erection of the turbine

Step 1: Lifting the tower

1. Check that you have performed all previous steps and that all the parts are firmly connected together. Check that the gin-pole is connected to the 1st segment. Check that all the shackles and cables are firmly secured to the segments, gin-pole and lifting equipment. Clear all the uninvolved persons from the area. **! IMPORTANT:** Never stand near or under the tower or gin-pole when raising or lowering the tower.
2. Make sure that the wires are ran through the hole for wires and that during lifting they cannot move between the tower 1st segment and the base plate.
! HINT: Fix the wires with the cable ties to one of the M27 threaded bars.
3. Raise the tower slowly – carefully observing the tension in the cables. If your lifting equipment does not have enough power or begins to slip, stop the lifting process immediately and gently lower the tower back to the ground. DO NOT perform any pumping movement to gain more power.
4. Raise the tower until nearly vertical but with tension still on the lift cable (see Figure 22). Second person can now catch the gin-pole and lower it gently to the ground by applying downward pressure. Do not allow the gin-pole to crash to the ground, this will put serious strain on the system. **! IMPORTANT:** Continue applying pressure on the gin-pole, till at least 2 tower bolts are fixed. Remember that now more pressure is required, as the system is much heavier with the turbine.



Figure 22 – Catching the gin-pole

5. Fit eight M20 x 45 bolts with a spring washer and then a regular washer and place the bolts to join the 1st segment to the tower base plate (see Figure 13). Use WD-40 oil to lubricate the bolts before placing them into the threaded holes. Fix the bolts cross wise with a torque of 434 Nm, going first 50% and then 100%. **! TIP:** When having trouble getting bolts into threads, move the mast via gin-pole left to right or front to back. If necessary loosen slightly pressure on the lifting cable but DO NOT relieve the pressure on the gin-pole.

Step 2: Disconnecting the lifting equipment

1. Unhook the lifting cable from the gin-pole and the lifting equipment.
2. Unhook the gin-pole from the connection cable.
3. Remove the M27 nuts and A 28 washers from the M27 threaded bar connecting the gin-pole to the tower 1st segment and remove the gin-pole (see Figure 8).
4. Place the A 28 washers and M27 nuts back onto the M27 threaded bar to be used again for the gin-pole if necessary.
5.
 - a. Use a 6 m ladder to climb up onto the tower and remove the shackle and the connecting cable from position one (see Figure 10). **IMPORTANT:** Never perform this job while the turbine is switched on.
 - b. Leave the connection cable onto the tower and fix it with rope or cable ties to the tower. This will avoid the connection cable being get caught in the blades or producing noise when vibrating against the tower with strong winds.

Step 3: Placing the tower junction box

1. Take the B9/T tower junction box, remove the lid and push two M5 x 16 screws through the soft component at the slotted fixing holes (see Figure 23). The screws have to be approximately 75 mm apart.
2. Place the junction box onto the tower 1st segment above the hole for wires and fix it with the screws to the tower 1st segment and attach the junction box lid.

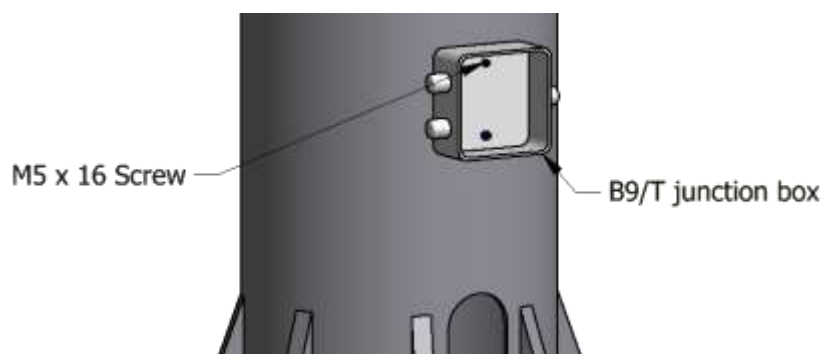


Figure 23 – Placing the junction box



Figure 24 – Completed erection

Thank you for purchasing my!Wind turbine. We appreciate your support of our company and products.

Follow the *Electrical connection manual* on how to connect the turbine to the controller and after that you are ready to begin harnessing power from the wind.

If you have any further questions after reading this manual, please contact your local dealer or my!Wind Ltd and we shall do our best to assist you.

Annex 1 – Levelling the tower with ITS-2-45 dual axis inclinometer

1. Place the dual axis inclinometer on top of the tower 2nd segment top and fix them together with two M4 x 10 screws placed into the threaded holes in the 2nd segment top (see Figure 25). ! **IMPORTANT:** Make sure that no small objects get caught between the sensor and the 2nd segment top. This will considerably alter the measurement results and turbine performance.
2. Take the wire coming from the sensor and fix it with cable ties to the generator wires coming out from the hole for wires in the tower 1st segment (see Figure 4).
3. Perform Step 7 of the *Erection of tower* chapter.
4. Unhook the lifting cable from the gin-pole to avoid any influence of side pressure.
5. Take the dual axis inclinometer display and take the reading from the device. If the X and Y axis readings on the display are more than $\pm 0,5^\circ$ from the 0° , perform next steps of this Annex.
6. Adjust the tower vertical by turning the M27 nuts supporting the base plate up and down as necessary (see Figure 14). Lower the bottom nuts away from the upper nuts before levelling out the tower. ! **IMPORTANT:** Do the adjustment incrementally, 1 nut turn at the time. Never remove the upper M27 from the threaded bars, this could result in the tower falling down.
7. Stop the adjustment procedure once you have reached a vertical levelling of $\pm 0,5^\circ$ for both axes from the 0° position. ! **TIP:** After turning the nuts, wait for the measurement to stabilize, before going forward.
8. Once the tower is vertically levelled, fix the M27 nuts cross wise with a torque of 1080 Nm, going first 50% and then 100%.
9. Push the bottom counter nuts against the upper nuts and fix them with a torque of 540 Nm.

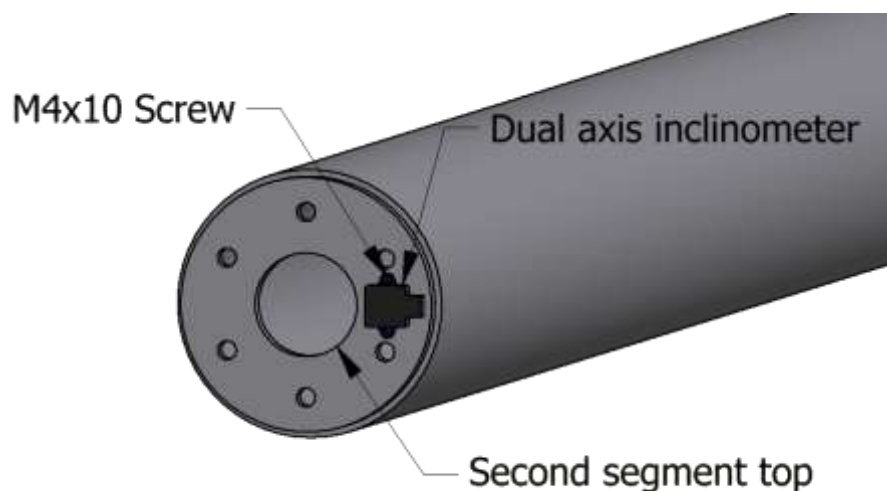


Figure 25 – Placing the inclinometer

Annex 2 – Tower verticality

Due to the turbine having a passive yaw system and being a downwind machine, a level tower is of great importance. A out of plumb tower can have a significant influence on the energy production of the machine. Therefore, it is recommended to check the tower status at times to make sure that you are getting the best out of your product.

Observe the position of my!Wind on calm days. If the turbine seems to favour a single position with no wind, the tower may require fine tuning even if it appears to be level using the spirit level technique presented in *Chapter 5, Step 8*. Be aware, that levelling the tower may require some trial and error adjustments – even though the base is level, the upper tower flange may be off level due to manufacturing tolerances.

When you observe that the turbine has a strong tendency to gravitationally orient in one particular direction, that is contrary or irrespective to apparent wind direction, a fine tuning is necessary. This indicates that the tower must be adjusted in a direction to opposite from which the turbine is self-orienting. In this case the turbine blade cover is pointing at the direction which needs to be lifted.

Use the technique described in *Chapter 5, Step 8* to level the tower even with the turbine on top. Perform this operation only during days with calm wind. Disregard the reading on the spirit level and concentrate on the behaviour of the turbine. Its ability to orient easily on the yaw axis in response to the wind direction is far more important than any other secondary references.

While moving the M27 nuts up or down observe if the turbine has oriented away from its specific or particular direction and is responding to the subtle changes in wind direction. If this is accomplished, stop the levelling process, if not, continue to incrementally tip the tower with the nuts. As you will determine, this is a trial and observation process and the tower can be out of plumb in more than one axis.

The tower may also slightly lean to one side under the influence of bright sunlight. The sun heats one side of the tower and it expands, flexing the tower and the tower remains tilted until the sun is no longer shining on the tower. This follows a very regular pattern throughout the day if the sun is shining. In this case the adjustment is not necessary.

After adjustment, DO NOT forget to fix all of the M27 nuts with appropriate torque.