

COMET GARDEN WINDMILLS

3FT D PATTERN

PARTS LIST

&

ERECTING INSTRUCTIONS

WWW.COMETGARDENWINDMILLS.COM.AU

The following instructions are a guide to the final assembly of your scale Comet Windmill unit. Take note that the windmill once erected can pose a threat to injury under certain weather conditions and as such all care and planning should be taken to choose a safe position for the windmill to be permanently erected
PER OUR RECOMMENDATIONS!



PARTS LIST

- Leg 1 Qty 4 (flat pack) 1200mm
- Leg 2 Qty 4 (flat pack) 1245mm
- Anchor Post Qty 4 with Qty 8 steady bolts/nuts base of concrete piers
- Rail 1 Qty 4 295mm
- Rail 2 Qty 4 445mm
- Rail 3 Qty 4 595mm
- Brace 1 Qty 8 (flat pack) 645mm
- Brace 2 Qty 8 (flat pack) 710mm
- Brace 3 Qty 8 (flat pack) 795mm
- Platform/Rails assembled Qty 1
- Wheel Arms Qty 4 with tabs x 2
- Outer Rims rolled Qty 4
- Inner Rims rolled Qty 2
- Tail Assembly – vane sheet, vane sheet brace 3 hole, vane sheet brace 4 hole, upper/lower main tail braces, small cross tail brace, upper mount, lower mount, M4 x 10 Qty 2, M4 x 16 Qty 9, M4 x 20 Qty 2, M4 Nyloc Nuts Qty 13, TAIL PIN Bolt/Nut
- Sails Qty 12
- Inner Sail Brackets Qty 12 (small)
- Outer Sail Brackets Qty 12 (large)
- Tower Cap with bearing race Qty 1
- Turntable Bearing Qty 1 (in bag greased)
- Main Head assembly with upper turntable race/ driveshaft/hub split pin Qty 1
- Mast Pipe Guide Qty 1
- Mast Pipe locking split pin Qty 1
- Wheel Hub with bolt and lock nut Qty 1
- M4 Nyloc Nuts Qty 200
- M4 x 10 Qty 100 (sails to sail brackets, sail brackets to rims)
- M4 x 16 Qty 17 (wheel arms to hub, inner rims/outer rims laps to arms)
- M4 x 16 Qty 60 (tower legs, brace, rail & tower leg laps, mast pipe guide to tower legs, tower cap to tower legs)
- M4 x 20 Qty 17 (tower legs, braces x 2, rail)

ABOVE QTY INCLUDES SPARES

TOOLS REQUIRED

7mm combination spanner

7mm socket & socket wrench ¼" drive

Cordless Drill and 4.5mm drill bit (supplied) to drill out all holes of galvanising during assembly

Cordless Impact Wrench with socket adapter (not essential but helps with assembly time)

Rapidset Concrete Qty 4 bags minimum

Allen Key included

WHEEL ASSEMBLY GUIDELINES

Please be aware that during the assembly process of your wheel that the tolerances we use are very similar to that of our full-scale working mills and all bolt holes where you have joints/overlaps etc are of tight fit and may require slight manoeuvring of parts during assembly.

DO NOT tighten any of the bolts fully other than the 4 bolts that locate in the OUTER holes of the outer rim lap joints with wheel arms once you have all the outer rims assembled per the diagram in correct orientation.

1. Lay all the wheel parts out on a flat clean surface so you can clearly see all of the required parts that form the complete wheel.
2. Next it is time to attach the wheel hub to the wheel arms. Ensure orientation of the hub is per pictures below. Again, you will need to manoeuvre the wheel arms into place to get the holes to locate for the bolts. **ENSURE BOLT HEAD IS ON BACK SIDE OF HUB**



3. Starting with the outer rims (qty 4), start by joining the first two rims at the three-hole lap joints of each rim taking note of the orientation to be followed by subsequent rims per the bolts list size. Note that the CENTRE lap hole is also where the wheel arm attaches . Continue this process until the complete outer rims and wheel arms (qty4) is assembled.
Outer Rim Lap Joints – Ensure ALL lap the same for all for joints on the wheel. M4 x 16 outer holes. Where the red arrow points ensure that the rim that is attached to the outside on this wheel arm is attached on the inside on the next wheel arm and so on . Outer rims attach on outside of wheel arm tab. DO NOT TIGHTEN BOLTS



4. Next, lay the inner rims on the inside of the wheel arm tab. Attach the first rim at the centre hole then move to the first lap joint opposite the outer rim lap joint making sure the orientation of both outer and inner lap joints is the same (see diagram). Inner Rims to wheel arms – ensure correct side (inner rims on inside of tab) Do not tighten bolts.



5. Next, it is time to attach the sail brackets to the sails per below. Do NOT tighten



6. Now it is time to attach the sail and sail bracket assembly to the wheel rims per above with the sail bracket being on the INSIDE of each rim. Do NOT tighten until all sails are fitted.
7. Now you can go around and tighten all of your bolts and nuts up. Note during the assembly as mentioned due to tolerances it may have been necessary to screw the actual bolts through some joint holes so be sure to screw the bolt entirely through before trying to tighten the nut. DO NOT OVERTIGHTEN THE NYLOC NUTS. Only a gentle amount of pressure is required when tightening.
8. Trim sharp excess tab off the inner sail bracket with tin snips / side cutters if desired
9. Your wheel is now complete!!
Imagine doing that at 40FT in the air working off a wooden platform with a safety harness on.
Congratulations and you can now see how the cordless wrench comes in handy if you had one.

TAIL ASSEMBLY

Top tail vane brace – 665mm flat bar (1)

Top vane mount bracket (7)

M4 x 20 Qty 2

Bottom tail vane brace – 700mm angle steel (2)

Bottom vane mount bracket (8)

M4 x 16 Qty 2

Vane sheet brace 3 hole – 155mm (4)

M4 x 16 Qty 3

Vane sheet brace 4 hole – 125mm (5)

M4 x 16 Qty 4

Vane Brace – 90mm flat bar (3)

M4 x 10 Qty 2

Vane Sheet (6)

Tail Vane Bolt (9)

Tail Chain (10)

Diagram 1

1. Lay all of the tail assembly parts out on a flat area.
2. Lay top brace (1) and bottom brace (2) out and attach small 90mm vane brace (3) per diagram 1. Do not tighten



Diagram 1

3. Attach vane sheet brace 3 hole (4) top/bottom holes and vane sheet brace 4 hole (5) top & bottom holes only to vane sheet (6) per diagram 1 noting orientation of bolts, do not tighten.
4. Now attach vane sheet (6) to braces (4,5), tail top brace (1) and bottom brace (2) with remaining bolts per diagram 1 and then tighten ALL bolts/nuts.

Diagram 2

5. Attach top vane mount bracket (7) M4 x 20 and bottom vane mount bracket (8) M4 x 16 per diagram 2 taking SPECIAL note of upward direction of the parts where vane bolt (9) goes through mount bracket and bolt (9) MUST be installed this way. Now tighten all bolts/nuts

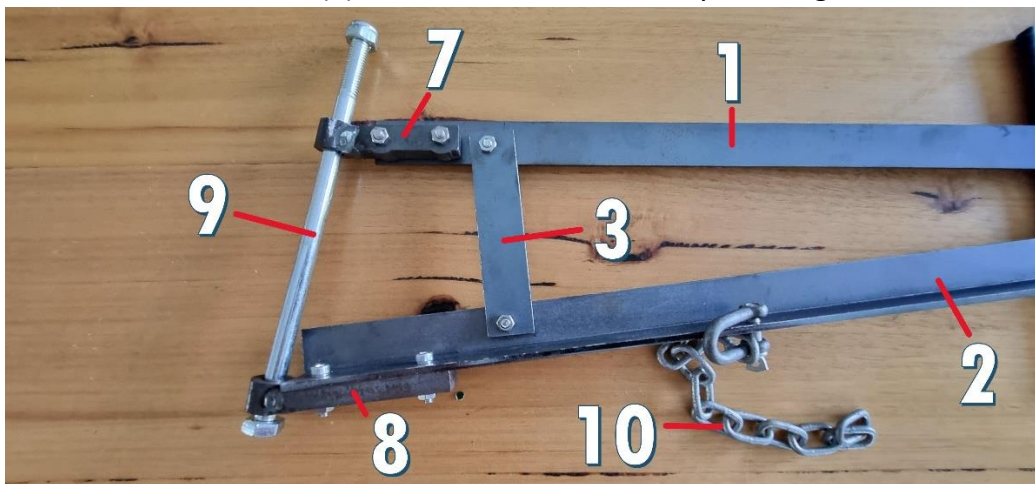


Diagram 2

6. Finally ensure that the bolt (9) can slide easily up and down through both mounts.
7. Now do a test and attach the completed tail to the main head assembly per diagram 3 and again ensure that the tail can slide up and down on the bolt. If not you may need to loosen the tail mount brackets and adjust. Also note connection of the chain (10) from tail to the head



Diagram 3



Next onto the **TOWER ASSEMBLY**

10. We recommend that you firstly build two sides of tower but it is up to you. ENSURE you get the correct orientation of LEG 2 to make sure the anchor posts attach correctly per diagram 7 with the lap of the anchor on the outside. Leg 2 overlaps leg 1 on the outside so the bolt holes align. TOP TOWER LEG ONLY HAS ONE BOLT HOLE WHERE TOWER CAP WITH BEARING RACE bolts on.

NOTE THAT ANCHOR POST IN DIAGRAM 7 HAS BEEN SUPERCEDED AND NO LONGER HAS THE BASE PLATE

11. Rails attach on the inside of tower legs. Braces attach on the outside of tower legs. Diagram 8



Diagram 7



Diagram 8

12. M4 x 16 bolts are used for tower cap to tower, mast pipe guide to tower diagram 9

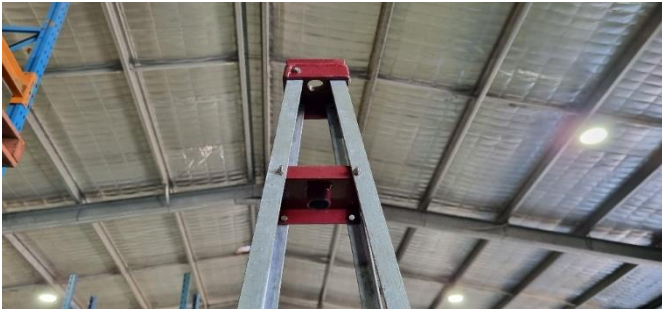


Diagram 9

13. M4 x 16 bolts are used for all holes where rail/brace/tower leg bolt together.
14. M4 x 20 bolts are used for all holes where rail/brace/brace/tower leg bolt together
15. Once you have the two sides built you can then insert another rail between the two legs and then another rail between the legs on the opposite side. Do not tighten bolts until you have the complete tower assembled with tower cap and mast pipe guide and platform in place. Take note that the braces going up to the legs at the platform locate on the INSIDE of the tower legs per picture. Tighten all bolts from the TOP DOWN.



INSTALL TOWER INTO FOOTINGS PRIOR TO STEPS 12 to 16

16. Check to confirm that the turntable ball race is still in place in the tower cap and on the underside of the main head assembly. Now place the ball bearing turntable race on top of the ball race in the tower cap prior to lowering the head assembly into position.



17. Once you have tightened up all the tower bolts you are now ready to drop the preassembled main head into the tower. You will need a small step ladder to complete the assembly of the main head, wheel and tail assemblies. Lower the main head through the tower cap down through the mast pipe guide and then insert the mast pipe split pin through the drilled hole in the bottom of the mast pipe tube.
18. Slide the assembled wheel/hub onto the end of the driveshaft fully and insert the split pin and secure with the M6 bolt and locking nut.
19. Locate the assembled tail between the upper and lower fixing points on the main head and slide the tail vane hinge pin from the bottom through the tail points and then through the upper fixing

point ensuring that the bolt hex head is fully up against the bottom main head bracket and tighten the nyloc nut on the top until it is fully down and seated on the top main head bracket.

20. Attach the check chain from the tail to the main head through the end loop per diagram 10



Diagram 10

21. Take note of the two grease nipples on the main head bearings for future lubrication maintenance.

NOW FOR THE FOOTINGS

We strongly recommend that as a MINIMUM you follow the below for correct and safe installation using the supplied anchor posts.

Stand your fully assembled tower in the desired location and mark the four proposed leg holes on the ground with a spray paint or similar.

Dig four pier holes approximately 250mm deep and 200mm diameter. And then level the bottom of each hole. Now place the tower into the four pier holes ensuring that you place a spirit level across the top of the tower cap to confirm the tower is level.

Now pour a bag of Rapidset Concrete per directions into each pier hole ensuring the tower remains level whilst doing this. Finish of the concrete is at your own discretion. Some people may wish to use form work to construct a full concrete pad under and around the four legs.