

UGE-9M Owner's Manual



Version 1.2

INTRODUCTION

Dear UGE-9M Owner,

Congratulations on purchasing your UGE-9M wind turbine and welcome to our family.

Enclosed in this manual is information regarding installation, operation and maintenance of your new turbine. Please read through it before installing and using your turbine.

These installation and maintenance instructions contain important information for the safe installation and maintenance of the UGE-9M vertical axis wind turbine. The turbine should only be installed by qualified personnel such as an employee of a UGE distributor, licensed contractor or certified electrician. Yearly maintenance checks should be performed by a person with similar qualifications. The owner should retain a copy of this manual for reference and to give to future maintenance personnel.

This manual should be used in conjunction with electronics installation manuals, tower installation manuals, and the UGE Electrical Supplement. These manuals can be found on the website of the tower and electronics suppliers respectively or can be provided by your UGE distributor.

In this manual you will see several checklists to guide you through the installation of the turbine. You will be able to follow these step-by-step instructions to insure your installation is completed correctly.

To activate your warranty, please fill out the online form at www.urbangreenenergy.com/warranty_form.php

We would like to hear from you with any questions or comments that you have. Please contact us during working hours (Monday-Friday 9:00am to 6:00 pm - US Eastern Time) at:

Telephone: +1 (917) 720-5685

Website: www.urbangreenenergy.com

Email: techsupport@urbangreenenergy.com

Sincerely,



SAFETY INSTRUCTIONS

CAUTION: PLEASE READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

1. The conditions of your warranty are dependent upon proper installation
2. If the wind turbine is allowed to spin at high speeds without electrical resistance, such as when the electronics are not completely and properly installed, the turbine may be “free-spinning” which can lead to extremely dangerous operation. ALLOWING YOUR WIND TURBINE TO FREE SPIN WILL VOID YOUR WARRANTY.

A turbine with no load on it may overspin even in very low wind conditions. Keep in mind that if you use an unauthorized controller or program a low MPPT table there may not be sufficient resistance on the turbine, indeed allowing it to overspin and voiding your warranty. Always check with a UGE engineer before making such changes.

For grid tie systems, not using an inverter, or using an inverter that is not connected to the grid, will also allow the turbine to behave dangerously. Allowing the turbine to behave in such a way will also void your warranty. Please make sure that unless the turbine is fully operational, it is completely stopped either through electrical or mechanical means.

3. The UGE wind turbine system uses high voltage electricity and is potentially dangerous. The electronics associated with the UGE wind turbine must be installed by a certified electrician in accordance with the National Electric Code (NEC) and/or local electrical codes as applicable. Installation personnel shall employ safety precautions for high voltage equipment at all times. The turbine, tower, and electronics shall be properly grounded as established by the NEC and/or local electrical code.
4. This wind generator complies with international safety standards that must not be compromised. Opening the generator cover may compromise the safety and efficiency of the generator. Furthermore, opening the generator cover without manufacturer authorization will void the warranty.
5. During installation some components must be sealed to prevent water seepage. Failure to do so may lead to premature wear of your product and would compromise the warranty.
6. UGE turbine and tower shall be assembled and installed only by qualified personnel such as an employee of a UGE distributor, licensed contractor, or certified electrician.
7. Some components of the turbine are very heavy. Do not attempt to lift or move them without a proper hoist or suitable machine. Doing so may result in personal injury.
8. Register your warranty online at http://www.urbangreenenergy.com/warranty_page.php

SPECIFICATIONS

GENERAL

Axis	Vertical	
Height	9.6 m	[33'-10"]
Width	6.4 m	[21'-0"]
Swept Area	61.4m ²	[661 ft ²]
Blade Materials	Fiberglass with Steel Reinforcement	

PERFORMANCE

Rated Power	10000W	
Cut-in Wind Speed	3.5 m/s	[7.83 mph]
Cut-out Wind Speed	30 m/s	[67.1 mph]
Rated RPM	55 RPM	
Survival Wind Speed	50 m/s	[110 mph]
Annual Energy at 5 m/s (11.2 mph)	14750 kwh	
Noise at 12 m/s (26.8 mph)	38 db	

WEIGHT OF PARTS

Blade	372kg (/pc)	[749 lb/pc]
Generator and axis	3192kg	[7022 lb]
Connecting arm	108kg (/pc)	[238 lb/pc]
Turbine total	4950kg	[10,900 lb]

ELECTRIC GENERATION

Generator Type	Three-phase Permanent Magnet
Drive System	Direct Drive
Rated Output	530 V _{dc} equivalent

PRE-INSTALLATION CHECKLIST

SHIPPING CONFIRMATION:

- Turbine and tower delivery location and time confirmed.
- Equipment available on-site to unload towers and/or turbine from delivery truck.
- Open crate(s) and confirm all turbine components have arrived
- Confirm no turbine components have been damaged during shipping.
- Open crate(s) and confirm all specialty electrical components have arrived (see wiring diagrams for specialty components)
- Confirm no specialty electrical components have been damaged during shipping.

PERMITTING:

- Signed and sealed foundation and/or tower drawings obtained (if required, check with your local department of buildings).
- Building permit obtained for turbine, tower, and/or foundation (if required, check with your local department of buildings).
- Grid interconnect permit obtained from local utility

PRE-INSTALLATION:

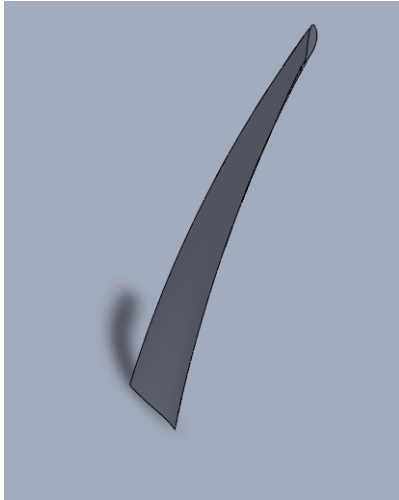
- Wind Assessment performed (if required).
- Foundation installed per UGE sample foundation drawings or per a design approved by a licensed Professional Engineer.
- Verify all installation personnel have read through this installation manual.
- Verify project electrician has purchased off-the-shelf products (conduit, wires, switches, etc.). See the UGE Electrical supplement for more information on these items.
- Check weather for day of installation.

INSTALLATION EQUIPMENT:

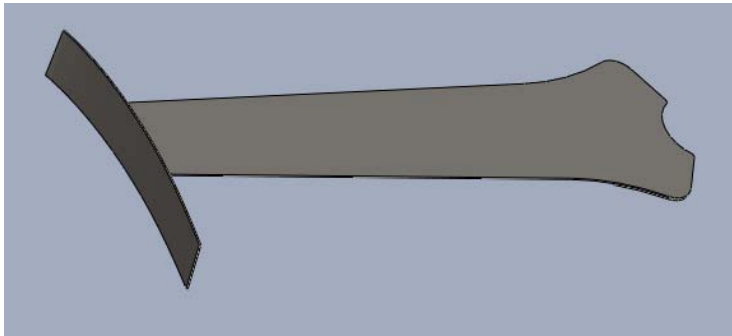
- Verify qualified personnel are scheduled to be on site to assemble the turbine.
- Verify project electrician is scheduled to be on site to wire electronics and connect turbine system to grid.
- Reserve crane or boom truck
- Reserve man-lift, bucket truck or ladder
- Turbine working platform (stand) available.
- Verify all tools required for assembly and installation will be on site.

PARTS LIST

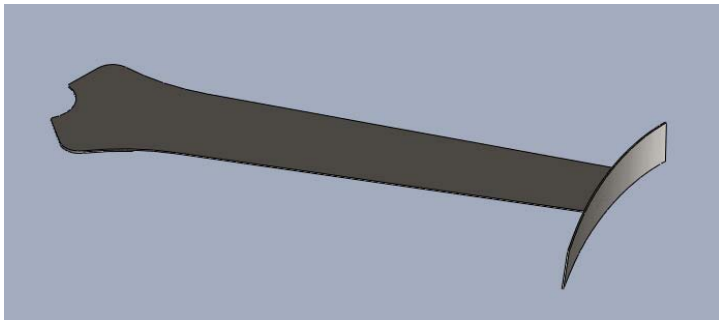
Blades (3x)



Upper Connecting Arms (3x)



Lower Connecting Arms (3x)



Generator and axis (1x)



Blade connection plates (6x)



Black rubber Gaskets (12x)

Loctite

Bolts:

Generator to Tower – M20 x 100 (12x)

Arm to Axis – M20 x 80 (24x)

Blade leading edge – M16 x 240 (12x)

Blade middle – M16 x 250 (6x)

Blade trailing edge – M16 x 200 (12x)

Eye Nuts – M16 (3x)

Guy wires & Turnbuckles (3x)

GETTING STARTED

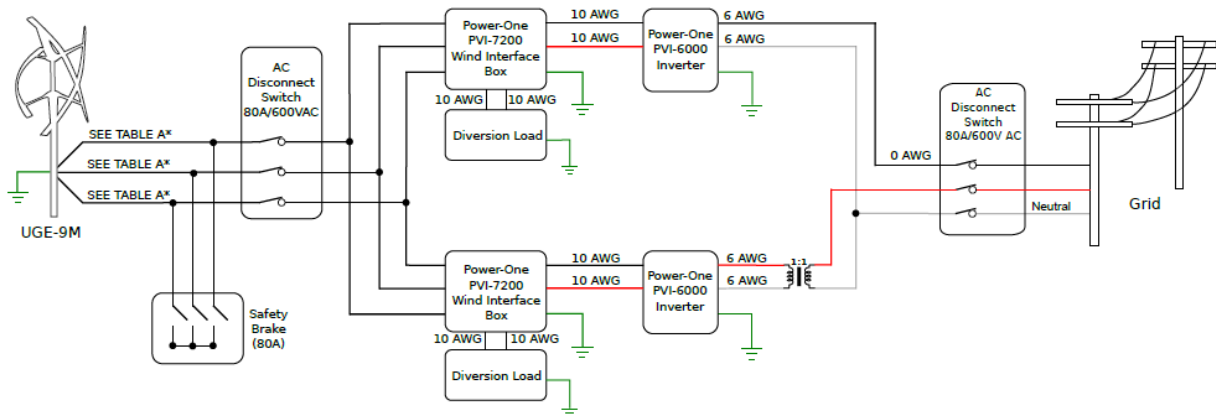
ELECTRICAL SYSTEM OVERVIEW

For Grid-tie systems, it is the duty of the customer to contact their utility company and grid operator and order the appropriate meters for exporting excess electricity to the grid.

Detailed Wiring Diagrams are available from the UGE website or your UGE distributor

UGE-9M Grid-Tied Wiring Diagram

Length	5% Voltage Drop AWG
10m [32'-10"]	12
50m [164'-00"]	12
100m [328'-01"]	10
150m [492'-02"]	8



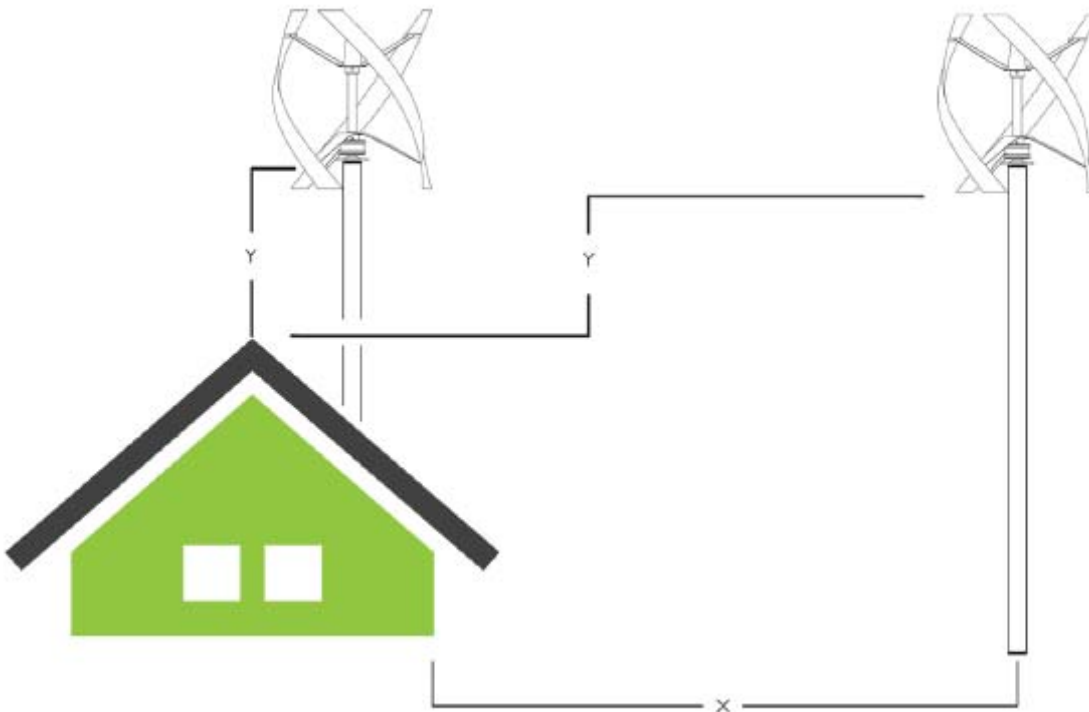
- Notes:
- * Wire length should not exceed 150m, maximum voltage drop is 5%
 - 1. Wire gauge recommendations based on stranded copper wire
 - 2. Each electronic component shall have its own grounding wire and connect at a common earth ground
 - 3. See "Parallel Usage of Aurora PVI-Series Transformerless Inverters" for additional information on isolation transformers

POSITIONING YOUR TURBINE

Selecting the optimal location for UGE-9M is crucial to capturing the wind power required to generate electricity. Several factors must be taken into account while selecting your location:

- Surrounding Structures
- Wire Length
- Tower Height
- Available Space

The taller the tower the higher quality the wind, however towers can be expensive so it is important to balance performance with cost to achieve the quickest payback. If it is one of your first installation, ask the UGE engineers for the minimum value of X and Y to have a good performance. It is also necessary to adhere to local building restrictions.



TOWER AND SUPPORTING STRUCTURE

FOUNDATION

Properly installing the tower and supporting structure for the turbine is essential to proper operation of your wind turbine.

Urban Green Energy turbines can be roof mounted or be supported by a tower on a stand-alone foundation. Sample foundation drawings for reinforced concrete foundations are available from your UGE distributor. If required, Urban Green Energy can also provide copies of these drawings that have been signed and sealed by a professional engineer. For projects that opt for a different foundation, the foundation should be designed by a professional engineer. Contact Urban Green Energy technical support for foundation design criteria. Keep in mind that depending on local building code, concrete foundations can take up to 28 days to cure before the tower can be installed on it.

For projects that call for a roof mounted turbine, the interface between the tower and the building structure should be designed by a professional engineer. The loads going from the tower to the building are shown on the UGE load tables which are available through your UGE distributor. Contact UGE technical support if you or the engineer has any questions on this connection.

TOWERS

Towers can be purchased through Urban Green Energy or manufactured elsewhere. Towers not purchased through Urban Green Energy shall be designed by a professional engineer. Contact Urban Green Energy technical support for tower design criteria.

For projects using towers purchased through UGE, please see the “Tower Assembly Instructions” manual published by American Resource and Energy and which is available from your UGE distributor. This document explains the proper tower installation procedure as well as safety precautions to be taken when erecting the tower. Also see the tower design drawings for minimum slip overlaps between tower sections. We recommend measuring and marking these distances directly onto the outside face of the tower prior to tower installation to confirm adequate overlap of tower sections.

The tower shall be leveled after installed. Towers purchased through Urban Green Energy are designed to be installed with a gap between the bottom plate of the tower and the top of the foundation or existing building. Leveling nuts placed in this gap allow for proper leveling of the tower during installation and during the annual maintenance check. The tower shall be leveled such that the top plate of the tower is within 1 degree of horizontal.

WIRE SIZING

The wire sizing directions listed in the ELECTRICAL SYSTEM OVERVIEW section are for SINGLE UGE-9M turbine installations. DO NOT attempt to use these wire sizing instructions for multiple UGE-9M turbines connected to a single controller or wind interface box. Please ensure all power is turned off before working on any electrical connections.

Wire gauge recommendations are based on NEC 310.16 for THHW copper wire below 100°F (A certified electrician shall verify wire gauge meets local electrical code). Wire length should not exceed 150m. Each electrical component shall have its own grounding wire and connect to a common earth ground. For projects where the turbine and tower are supported by a reinforced concrete foundation, the project electrician may opt to use the rebar in the foundation as the grounding electrode for the turbine and tower, per NEC article 694.40C.

ASSEMBLY REQUIREMENTS

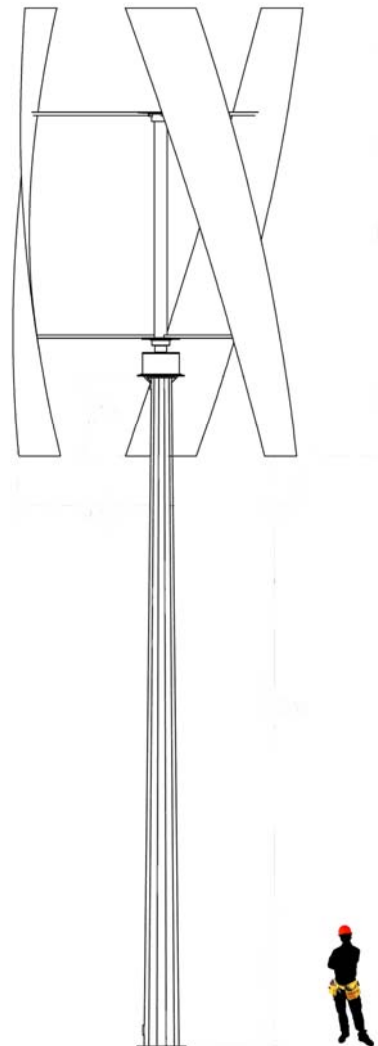
Before proceeding to installation, the following tools will be needed to conduct safe and efficient assembly of the UGE-9M:

- Torque Wrenches
- 2 (or more) adjustable wrenches
- Electric Drill, Drill Bolts (Various)
- Safety Harness
- Safety Helmet
- Level
- Crane and lifting straps

Urban Green Energy turbines are available with several different mounting options. A crane is required for installing the tower and turbine. Choose a crane which can safely lift the UGE-9M (4.5 Tons) at least 12 m [39 ft.] above the height of your tower.

It is compulsory that all personnel involved in the construction and/or maintenance of the turbine wear appropriate personal protective equipment at all times; including, but not limited to, a high visibility jacket, hard hat, gloves, safety glasses and safety boots.

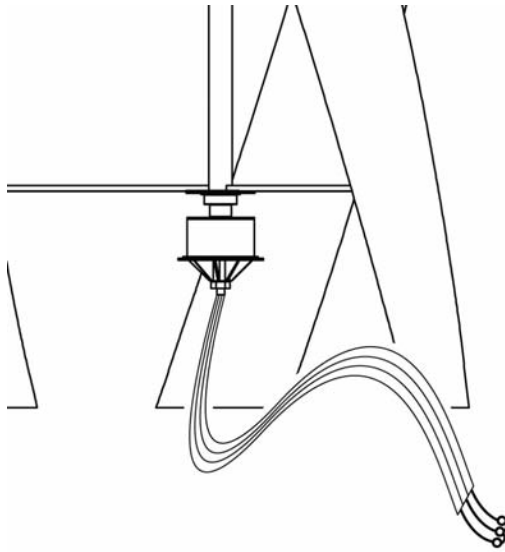
Do not attempt to ascend the turbine tower and/or work on the turbine should wind speeds exceed a value of 12 meters per second.



IMPORTANT CONSIDERATIONS

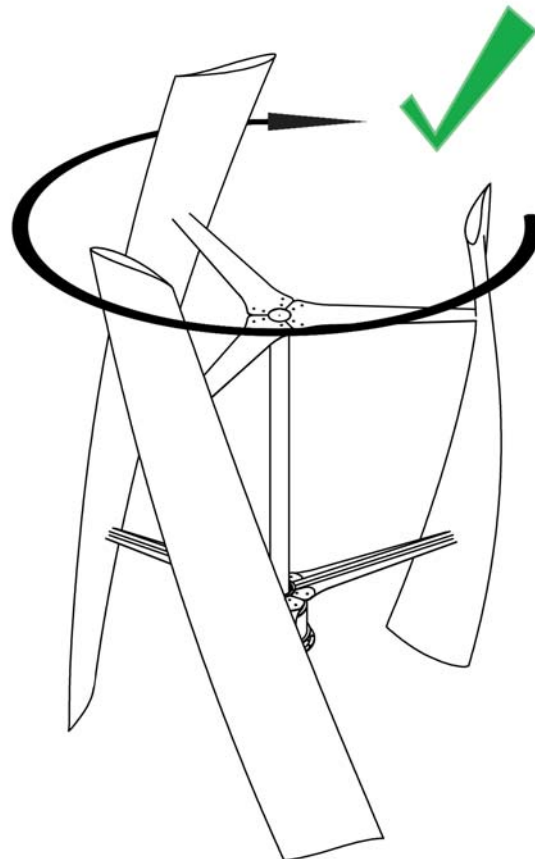
Before installing the turbine, the three wires need to be shorted out to act as a brake to the turbine. This will prevent free spinning of the turbine during installation steps, which can cause severe injury or failure of the turbine. Simply short the three wires by connecting all three leads together. This is the same as connecting the safety brake and positioning it in the ON position (see ELECTRICAL SYSTEM OVERVIEW DIAGRAM).

CAUTION: AVOID ELECTRIC SHOCK BY NOT TOUCHING OPEN WIRES WHILE SPINNING THE GENERATOR

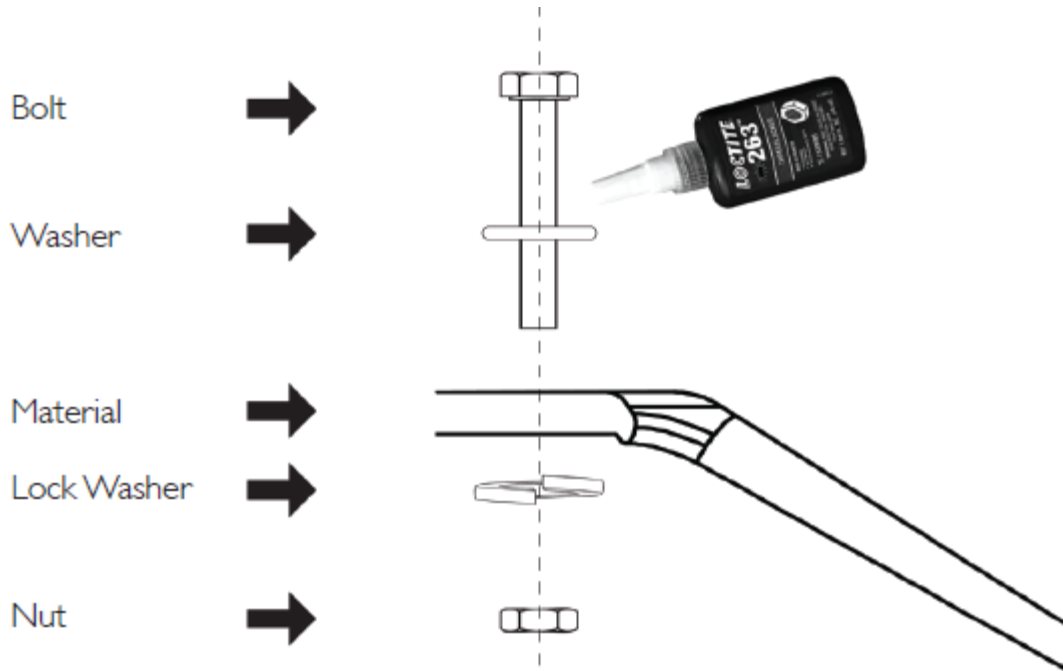


SPIN DIRECTION

When uncertain of the orientation of the blades, along with corresponding upper and lower connecting arms, check with the diagram above to confirm that all parts oriented to have the leading edge rotate in clockwise direction upon final assembly. The leading edge is the thicker edge of the blade.



BOLT INFORMATION



The order of bolt, washer, material, lock washer, and nut should be observed during installation of every bolt.

Loctite sealant should be applied on every bolt

Torque values should be observed when tightening all bolts. See chart for torque values at each component.

MINIMUM TORQUE VALUES

Generator to Tower	210 Nm	[155 ft*lb]
Arm to Axis	425 Nm	[314 ft*lb]
Blade to Arm		
Leading Edge	48 Nm	[36 ft*lb]
Middle	48 Nm	[36 ft*lb]
Trailing Edge	35 Nm	[26 ft*lb]

INSTALLATION

PREP STAND INSTALLATION

The UGE-9M requires a preparation stand or other suitable means to support the axis and generator during assembly. This allows accessibility to all components during install at a lower height. The stand should be hollow or otherwise accommodate the stiffener structure and wires below the base plate of the generator.

GENERATOR AND AXIS ASSEMBLY

The generator and axis of the UGE-9M turbine are shipped preassembled. The generator and axis should be lifted as one unit and placed on the prep stand, allowing the wires to fall to the bottom of the prep stand. It is recommended that the generator and axis be lifted from the top of the axis either by placing eyebolts through the bolt holes in the top flange or by “choking” the axis with a lifting strap placed just below the top axis. Bolt the generator to the prep stand. Verify that the axis is within 1 degree of vertical.



Figure 1: Lifting Axis and Generator

BLADE AND ARM ASSEMBLY

Place the blades on a non-scratch surface inside face up. Using spray adhesive attach one of the black rubber gaskets to the connection plate on the blade end of the connecting arm making sure that the bolt hole locations in the gasket match the plate. Attach another gasket to the inside face of the rhombus shaped blade connection plate (the inside face is the concave side of the plate).

Position the connecting arm vertically onto the top of one of the blade so that the connection plate with an airfoil profile is touching the blade and the side of the arm that will connect to the axis is pointing up. Position one of the rhombus shaped steel blade connection plates on the opposite side of the blade. Line both parts up with the 5 bolt holes in the blade and through bolt to complete the connection. The head of the bolt should be on the outside face of the blade. The bolt lengths for these 5 bolt holes vary by location. The two bolts on the leading edge of the blade are M16x240, the one bolt in the middle of the connection is an M16x250, and the two bolts on the trailing edge of the blade are M16x200. See the table above for minimum torque values for each location.

Repeat for 2nd and 3rd blades.

BLADE AND ARM INSTALLATION

Use a lifting strap to “choke” one of the blades just below the connection to the upper connecting arm and a tag line at the connection of the blade to the lower connecting arm (a shipping blanket or other means may be required to prevent the straps from damaging the painted finish of the blade).



Figure 2: Lifting connecting arms and blades

Lift the blade/arm assembly to an elevation where the lower connecting arm is just above the lower flange. Move the blade laterally and then down so that the lower connecting arm sits on the lower flange. Use a spud wrench or other means to hold the lower connecting arm to the lower flange. Move the crane to swing the upper connecting arm into position on the upper flange. Bolt both connecting arms to their respective flanges using M20x80 bolts. Bolt heads should be on top and nuts below the flanges. Disconnect the arms and blade from the crane.

Repeat for 2nd and 3rd blade/arm assemblies.

GUY LINE INSTALLATION

Attach the eye nut to one of the interior two bolts of each arm to axis connection (you may need to remove the nut and use the eye for the nut at this location). Attach the eye nut on the end of one of the guy wire / turnbuckle assemblies to the center bolt in each of the lower connecting arm to blade assemblies. The eye nut will act as a jamb nut and not the primary nut at these locations.

Hook the far end of the guy wire / turnbuckle assembly to the eye nut at the upper connecting arm to upper flange connection. The guy wire should stretch from the blade to lower connecting arm connection to the upper connecting arm to upper flange connection for the arm that's attached to the same blade. Tighten each of the turnbuckles so all of the bottom connecting arms are within 1 degree of horizontal when the crane has been separated from the blades and the weight of the each blade is being supported by the connecting arms and guy wire only.



Figure 3: Upper Guy Wire Connection

MAIN LIFT

Connect the crane to the turbine either using eye nuts on the bolts in the upper connecting arm to axis connection or by using a lifting strap to “choke” the axis just below the top flange. Unbolt the turbine from the prep tower. Lift the assembled turbine and connect it to the permanent tower. Bolt the turbine into place on the permanent tower using M20x100 bolts.

Connect the wires from the turbine's junction box to the down tower wires and the electronics.



Figure 3: Completed Turbine

COMMISSIONING CHECKLIST

WITH THE SYSTEM PROPERLY WIRED PER THE SUPPLIED WIRING DIAGRAM, ENGAGE THE SAFETY BRAKE AND OPEN THE AC DISCONNECT SWITCHES #1 AND #2 BEFORE RUNNING THE FOLLOWING TESTS

Safety Brake Switch

- Confirm the resistance between each phase is 0 Ω

AC Disconnect Switch #1

- Confirm a switch is present between the turbine and inverter
- Confirm the switch rating meets or exceeds the recommended values as shown in the supplied wiring diagram

Protection Box

- Confirm model
- Confirm continuity across all three fuses inside the protection box

Diversion Load

- Confirm the resistance of the diversion load

Inverters

- Confirm model for all inverters
- Using the Aurora Installer software, confirm the correct MPPT is programmed to the inverter AND that the “Vin Start” input is set appropriately.
- Confirm on the LCD screen that the nominal grid voltage is correct, and that the inverter to grid connection is wired per the inverter manual.

AC Disconnect #2

- Confirm a switch is present between the inverter and the main panel
- Confirm the switch rating meets or exceeds the recommended value

Grounding

- Confirm the resistance between all grounding conductors is 0 Ω

WITH THE SYSTEM PROPERLY WIRED PER THE SUPPLIED WIRING DIAGRAM, CLOSE THE AC DISCONNECTS #1 AND #2 AND DISENGAGE THE SAFETY BRAKE

Safety Brake Switch & AC Disconnect #1

- Confirm a voltage exists between each phase with turbine spinning at the input terminals. (If there is no wind present, the turbine can be manually spun by hand to confirm voltage presence).

Inverters

- Confirm the inverter turns on at 50 Vdc, shows no errors and successfully connects to the grid.

OPERATION

Your UGE turbine is designed to operate with minimum action required on the part of the owner. If wired correctly, the controller or wind interface box / inverter combination will keep the turbine spinning at an optimum and safe RPM regardless of the wind speed. Please see the installation and/or owner's manuals for the turbine's electronics for more information on the proper operation of that equipment.

Please follow the instructions below to ensure proper function of your wind turbine:

- Unless the safety break is engaged, AC disconnect switch #1, the switch between the turbine and the controller or wind interface box, must be in the closed (on or engaged) position. This switch should be locked in the closed position with a combination lock, key lock, or zip tie. Locking this switch is a requirement for the activation of the warranty. Leaving this switch in the open position with the safety break not engaged can lead to a free-spinning situation, potentially damaging the turbine, and voiding the turbine's warranty.
- The covers of all electronic components shall remain on those components unless maintenance is being performed on the turbine or electronics. These covers shall only be removed by qualified personnel such as a UGE distributor, licensed contractor, or certified electrician, or by an individual under the direct supervision of UGE technical staff.
- The safety break may be engaged and disengaged at the owner's discretion. During times of high wind, the turbine may spin slowly even with the safety break engaged. This is normal. If the turbine is rotating when the safety break is engaged, the turbine should coast to a stop or very low RPM within 5 seconds. It is not recommended that the owner regularly engage the safety break when the turbine is rotating quickly.
- The axis bearings require lubricating on an annual basis. Bolts holes are located immediately above both the upper and lower axis bearings for this purpose.
- If the turbine appears to be spinning off balance or begins to emit a noticeable sound, engage the safety break and contact UGE technical support at (917) 720-5685 ext. 6 or at techsupport@urbangreenenergy.com



WARRANTY INFO

This Agreement (“Agreement”) is between you and Urban Green Energy, Inc. (“UGE”) and applies to UGE branded products (“Product”) and services purchased by you from UGE or any of its subsidiaries or affiliates or a UGE authorized reseller (“Reseller”), unless you enter into a separate written agreement with UGE. **BY PURCHASING A UGE PRODUCT YOU AGREE THAT THIS AGREEMENT APPLIES TO YOU.**

YOU MUST REGISTER THIS LIMITED WARRANTY AGREEMENT AND RECEIVE ACCEPTANCE BEFORE YOU TURN ON YOUR WIND TURBINE.

The term of this Limited Warranty is three (3) years (the “Limited Warranty Period”). For the UGE-600, UGE-1K, UGE-4K, UGE-9M vertical axis wind turbine;

Serial number_____

Vertical axis wind turbine model type_____

Vertical axis wind turbine is grid tie or off grid?_____

Customer Name_____

Customer Phone Number_____

Customer Email_____

Turbine Installation Site Address_____

The Limited Warranty Period begins on the date of product installation. The installation must be performed by qualified personnel, such as a certified electrician, an employee of a licensed contractor or an employee of an UGE distributor, this list is exemplary and by no means limiting. The date of installation may occur in the 12 month period following the delivery date of the product to the distributor. The warranty must be registered within ten (10) business days from the date of installation. The unit should be installed but not turned on prior to registering the warranty. The warranty registration period will expire at midnight (local time of installation location) on the tenth (10th) day following the installation date. The expiration of the warranty registration period terminates all rights covered in this Limited Warranty Agreement.

Date of delivery to Distributor (if applicable) _____

Date of installation_____

1. Registration of Limited Warranty.

- i. Complete the online warranty registration form at http://www.urbangreenenergy.com/warranty_form.php with the serial number, unit type, date of delivery to distributor, date of installation, customer information and installation location.
- ii. Submit End-Users Agreement Statement signed and dated by the End-User.
- iii. Take the following photographs:-

Grid Tie Units

- Wind Interface Box wiring
- Inverter wiring
- Diversion Load wiring
- Safety break and Disconnect switch wiring (3x)
- Locked AC disconnect switch #1
- Overall electrical assembly picture showing all components and conduits in between the electrical boxes and showing a zip tie or other means of ensuring the AC disconnect switch between the generator and the wind interface box cannot be opened accidentally.

Off Grid Units

- Controller wiring
- Diversion load wiring
- Safety break and Disconnect switch wiring (3x)
- Locked AC disconnect switch #1
- Overall electrical assembly picture showing all components and conduits in between the electrical boxes and showing a zip tie or other means of ensuring the AC disconnect switch between the generator and the controller cannot be opened accidentally.

iv. In the event the product is not installed using a tower supplied by UGE, you must submit professional technical design drawings of the tower and calculations of strength, deflection and vibrations. UGE will store this information on record. Please note that UGE will not review this information. For non-UGE supplied towers not installed with a standard foundation, you must submit drawings of any mounting provisions. For installations using UGE supplied towers but not our foundations, you must submit drawings of any mounting provisions. Please note that it is not the responsibility of UGE to review these drawings, and they will only be kept on record if needed for future troubleshooting.

UGE does not accept responsibility for damage to UGE manufactured products resulting from the use of non-UGE supplied towers, roof mounts or electronics. Please note that if you choose to use non-UGE supplied parts you should ensure that the towers are designed adequately for the loads the turbine will experience and that all other parts are suitable for the installation.

- v. Email the photographs and tower design, as applicable per iv. above, to warranty@urbangreenenergy.com.
- vi. You will receive confirmation within two (2) business days of submitting the required images via email.
- vii. Once you have received approval by way of a UGE Warranty Certificate you will not invalidate the warranty by turning your installed turbine on.

2. Maintenance. To qualify for the full Limited Warranty period, the product must undergo full maintenance once within the first month of installation and following the first full maintenance, once every 12 months. Product maintenance should be registered by downloading the maintenance form from the UGE website. The form should be filled in and submitted to techsupport@urbangreenenergy.com. The form should be submitted not more than 2 months from the date of installation and within ten (10) days from the date maintenance is performed. Then annually thereafter maintenance should be performed in no more than 13 month increments. All maintenance forms must be submitted in not more than ten (10) days following the date the maintenance is performed. Annual maintenance must be performed until the life of the general or extended warranty has terminated. Please note that failure to submit annual maintenance reports will invalidate the warranty.

3. Product Limited Warranty. UGE warrants that its Products will be free from defects in materials and workmanship, under normal use for which it is intended, for the Limited Warranty Period. During the Limited Warranty Period, UGE may, at its option: (i) provide replacement parts necessary to repair the Product, (ii) repair the Product or replace it with a comparable product, or (iii) refund the amount you paid for the Product, less depreciation of ten percent (10%), upon its return, provided that UGE may, at its sole option, attempt to remediate any defects via technical support through telephone or electronic communication prior to taking any actions outlined in items (i) through (iii) listed above. It is hereby agreed and understood that UGE shall not be responsible for the installation of replacement parts or replacement products. Replacement parts and products shall be shipped at no cost to you and shall be new or serviceably used, comparable in function and performance to the original part and warranted for the remainder of the Limited Warranty Period.

4. Warranty Limitations. This limited warranty does not cover misuse or minor imperfections in units that meet design specifications or imperfections that do not materially alter functionality. This limited warranty does not cover and UGE is not responsible for (1) damages caused by misuse, abuse, accidents, fire, acts of God, theft, disappearance, misplacement, power surges, viruses, reckless, willful, or intentional conduct, including, without limitation, damages caused by tampering with or dismantling any portion of the Product including its generator, (2) damages caused by servicing not authorized by UGE, (3) damages caused by usage that is not in accordance with Product instructions, (4) damages caused by failure to follow the Product instructions, (5) damages caused by the combination of Products with other non-UGE branded products, accessories, parts or components, (6) any equipment or components that were not included in your Product as originally sold to you, (7) normal wear and tear, (8) cosmetic damage that does not affect functionality or (9) damages or loss of function sustained as a

result of wind speeds exceeding 55 m/s, lightening or hail or any other insurable loss under standard fire and extended coverage policies generally available for endorsement to you (10) re-configuration or re-connection of the electronics by a non-UGE authorized distributor, (11) units which have been turned on with out approval, wherein approval is granted by way of a UGE Warranty Certificate corresponding to the unit serial number, (12) units which have been allowed to free spin. Note that if the turbine is installed first and not tied down or short circuited while the electronics are being installed and the warranty approved, the unit can still free spin and damage the blades, bearings and other parts. **DAMAGE INCURRED DUE TO FREE SPINNING IS NOT COVERED BY THIS OR ANY OTHER WARRANTY.** (13) **If a non-UGE authorized distributor configures, re-configures or re-connects the electronics for any UGE product this will automatically void the warranty on all components of the product; this includes the turbine.**

5. Services and Service Limited Warranty. Any services provided to you by UGE that are not within the scope of the Limited Warranty also are governed by this Agreement. For a period of ninety (90) days after services are performed, UGE warrants that services provided by it were performed in a professional and workmanlike manner. If your problem recurs within the 90 day service warranty period, UGE will, at its option, (1) re-perform the services, (2) replace the Product pursuant to the terms of this Agreement, or (3) permit you to return the Product and issue a refund pursuant to the terms of this Agreement. If you purchased an extended warranty, such as the UGE Extended Warranty Plan, please refer to the service plan for the coverage, duration and terms of service.

6. Instructions for Warranty Service. To obtain warranty service you must (1) notify UGE within ten (10) days of knowledge of any defect in Product, or any failure of the Product to function properly, (2) assist UGE in diagnosing issues with your Product and follow UGE's warranty processes and (3) obtain warranty service from UGE or an authorized service provider specified by UGE. UGE will not reimburse you for service performed by others.

7. Implied Warranties. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED IN DURATION TO THE DURATION OF THIS WARRANTY.

8. Limitation of Liability. UGE SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY. UGE'S MAXIMUM LIABILITY TO YOU IS LIMITED TO PURCHASE PRICE YOU PAID FOR PRODUCTS OR SERVICES PLUS INTEREST ALLOWED BY LAW. UGE IS NOT LIABLE TO YOU IF IT IS UNABLE TO PERFORM DUE TO EVENTS IT IS NOT ABLE TO CONTROL, SUCH AS ACTS OF GOD, PROPERTY DAMAGE, LOSS OF USE, INTERRUPTION OF BUSINESS, LOST PROFITS, LOST DATA OR OTHER CONSEQUENTIAL, PUNITIVE OR SPECIAL DAMAGES, HOWSOEVER CAUSED, WHETHER FOR BREACH OF WARRANTY, CONTRACT, TORT (INCLUDING NEGLIGENCE), STRICT LIABILITY OR OTHERWISE.

9. Dispute Resolution. If a dispute or claim is not resolved by you and UGE, then it shall be finally settled by arbitration in accordance with the then current rules of arbitration of the

American Arbitration Association by three (3) arbitrators, one selected by each party and the third selected in accordance with such rules. Such arbitration shall be held in New York, New York, and the proceedings and all pleadings, filings, written evidence, decisions and other relevant documents shall be in English. Any final decision issued in the arbitration shall be in writing, and binding and conclusive upon the parties to this Agreement and may be entered as a final judgment by any court of competent jurisdiction. Each Party shall bear its own costs in connection with the foregoing arbitration. This agreement shall be governed by the laws of the state of New York, without regard to conflicts of laws rules.

10. General. UGE may assign this Agreement and/or any associated service plan without your consent and without notice to you. If UGE does assign this Agreement and/or any associated service plan, the assignee will assume all obligations to you, UGE will be released of all obligations, and you agree to look solely to the assignee for the performance of all obligations under this Agreement and/or any associated service plan. UGE and its subsidiaries and affiliates are intended beneficiaries of this Agreement. If there is any inconsistency between this Agreement and any other agreement included with or relating to Products or services purchased from UGE, this Agreement shall govern. This Agreement may not be modified, altered or amended without the written agreement of UGE. Any additional or altered terms shall be null and void, unless expressly agreed to in writing by UGE. If any term of this Agreement is illegal or unenforceable, the legality and enforceability of the remaining provisions shall not be affected or impaired.

11. Modifications. UGE reserves the right to change the terms of this Limited Warranty in the future. UGE reserves the right to make design changes, improvements and/or additions to its products without obligation to install such in products previously manufactured.

MAINTENANCE

After 1 month, and every year on the anniversary of the turbine's installation, it is required that your UGE-9M undergo a checkup. Although there is no routine or service requirement beyond this you should be aware of any unusual behavior or sounds. If this occurs it is best to utilize the safety brake to stop the turbine and then contact your distributor or the service center.

CAUTION:

The maintenance check should be performed on a day with calm winds, 5m/s [11mph] or less. Prior to performing any maintenance on the turbine, engage the safety brake to prevent the turbine from spinning.

Equipment that you will need for the maintenance check includes:

- Ohm meter
- Volt meter
- Digital level
- A bucket truck or other man lifting device may be needed to clean the turbine.
- Bearing Lubricant

The routine checkup of your turbine should include:

- Clean the blades so that they are free of dust or bug matter
- All bolts tightened to required torque values
- Blades are free of defects
- Connecting arms are free of defects
- No abnormal noises from spinning turbine
- Tower is free of rust or other visible defects
- WIB/Controller functional
- 3 Fuses in WIB show continuity (if applicable)
- Inverter functional and displays no error messages (if present)
- Verifying the resistance of the diversion load
- Voltage produced when spinning turbine
- All wires securely attached to ports
- No rust exists on electrical connection points or inside enclosures
- Turbine, tower, and all electrical components are still properly grounded
- Batteries are within operable life
- Top plate of tower is plumb within 1 degree of horizontal
- Verify guy wires are sufficiently tight such that lower connecting arms are within 1 degree of horizontal
- Apply lubricant to upper and lower axis bearings

Release the safety brake after the maintenance check is complete.



TECHNICAL SUPPORT

If your product requires troubleshooting or warranty service, contact your merchant. If you are unable to contact your merchant, or the merchant is unable to provide service, contact Urban Green Energy directly at:

Urban Green Energy

330 West 38th Street
Suite 1103
New York, NY 10018

Tech. Support Phone: +1 (917) 720-5685

Email: techsupport@urbangreenenergy.com

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