W04 Wind Turbine Generator

Installation and User Manual

Model SR-W04 | English edition

This manual covers assembly, tower preparation, electrical connections, operation, maintenance and warranty records. Read the complete manual before installation and keep it with the equipment for future reference.

USER'S MANUAL



W04 wind turbine generator

Before you begin

Model rating requires confirmation. The supplied filename identifies a 600 W manual, but the source specification table lists 400 W rated power and 440 W maximum power. The original values are retained in this edition. Confirm the correct model and rating with the supplier before installation.

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1 Safety and assembly requirements

Follow these instructions and all applicable local laws and installation requirements. Contact the supplier or an authorized service provider if the equipment malfunctions.

General precautions

- Read this manual before assembly or maintenance. Do not disassemble the equipment without authorization.
- Do not alter the structure, safety features or performance design without authorization.
- Do not install the turbine during rain or when the wind reaches force 3 or above, as specified in the source manual.
- Prepare the lightning protection and grounding system before installing the turbine. Select the arrangement for the site and soil conditions using applicable standards. Section 2 reproduces the source reference data.
- After unpacking, short together the three turbine output leads by twisting their exposed copper ends together. Keep the leads shorted during assembly and tower erection. Do not force the rotor blades to turn.
- Remove the temporary short circuit only after installation and inspection are complete and the installation crew is clear. Connect the battery to the controller before connecting the turbine.

Fasteners and tightening values

Use the fasteners specified below. Values are reproduced from the source manual; a dash means no torque was stated.

Fastener	Size	Qty	Torque N·m	Notes
Flange bolt	M12 × 55	4	—	Galvanized
Flat washer	D12.2	8	—	Galvanized
Spring washer	D12.2	4	—	Galvanized
Flange locknut	M12	4	≥ 58	Single use
Blade bolt	M6 × 40	6 / 10	—	3 / 5 blades
Blade locknut	M6	6 / 10	≥ 13.6	Single use
Shaft locknut	M16	1	≥ 68	Single use

Warning. Do not loosen and reuse a locknut after tightening. Secure the main shaft locknut correctly to prevent the hub and blades from detaching.

Failures caused by assembly or installation that does not follow the manual are excluded from the source warranty.

2 Grounding reference

The original Chinese grounding table is reproduced below in English. It is reference data; the grounding arrangement must suit the installation site and applicable requirements.

Electrode materials and dimensions

Original material description	English specification
Round steel	20 mm diameter
Steel pipe	50 mm diameter
Angle steel	50 × 50 × 5 mm
Flat steel bonding strip	40 × 4 mm

The source sketch shows a 2.5 m vertical electrode with its top 0.6 m below ground level. Multiple electrode sketches indicate 5 m spacing. Material lengths are in metres.

Power frequency grounding resistance

Resistance values are in ohms (Ω), at soil resistivities of 100, 250 and 500 Ω·m respectively.

Electrodes	Material	Total length m	Flat strip length m	100 Ω·m	250 Ω·m	500 Ω·m
1	Round steel	2.5	—	30.2	75.4	151
1	Steel pipe	2.5	—	37.2	92.9	186
1	Angle steel	2.5	—	32.4	81.0	162
2	Steel pipe	5	2.5	10.0	25.1	50.2
2	Angle steel	5	2.5	10.5	26.2	52.5
3	Steel pipe	7.5	—	6.65	16.6	33.2
3	Angle steel	7.5	—	6.92	17.3	34.6
4	Steel pipe	10	7.5	5.08	12.7	25.4
4	Angle steel	10	7.5	5.29	13.2	26.5
6	Steel pipe	15	25	3.58	8.95	17.9
6	Angle steel	15	25	3.73	9.32	18.6

A dash indicates a blank entry in the source table. The grouped resistance values are listed in the same material order as the original table.

Source detail to verify. The bonding strip lengths do not consistently correspond to the 5 m electrode spacing shown in the sketches, and the three electrode row does not specify a strip length. Confirm the layout and quantities before fabrication.

3 Product overview and specifications

The SR-W04 uses a three phase permanent magnet synchronous generator and moulded nylon fibre blades. The source describes low starting speed, low vibration, an aerodynamic blade profile and a stator design intended to reduce resistance torque. The turbine is designed for installation, maintenance and repair using the procedures in this manual.

Parameter	Source specification
Model	SR-W04
Rated power	400 W
Maximum power	440 W
Rated voltage	12 / 24 V
Start up wind speed	2.5 m/s
Rated wind speed	13 m/s
Operating wind speed	2.5–25 m/s
Survival wind speed	40 m/s
Turbine assembly net weight	6 kg
Rotor diameter	1.4 m
Number of blades	3 or 5
Blade material	Nylon fibre
Generator	Three phase permanent magnet synchronous generator
Control system	Electromagnetic / yaw
Speed regulation	Automatic adjustment of wind angle
Operating temperature	−40 °C to +80 °C
Tower type	Guyed tower

Rating discrepancy. The 600 W designation in the supplied filename is not supported by the 400 W / 440 W values in the source table. These figures have not been changed or independently verified.

4 Tower and foundation preparation

The source recommends a tubular steel tower with an outside diameter of 48 mm and a wall thickness of 2.5 mm. Select the tower height for the local wind conditions and terrain.

Required accessories include the upper tower section, guy wires, tensioners, anchors, wire hooks, tower base and corrosion resistant coatings. The tower and accessories may be supplied separately on request.

Provide sound, continuous welds with no gaps. Weld a clearly visible grounding lug 200 mm above ground level and connect it to the lightning protection grounding system.

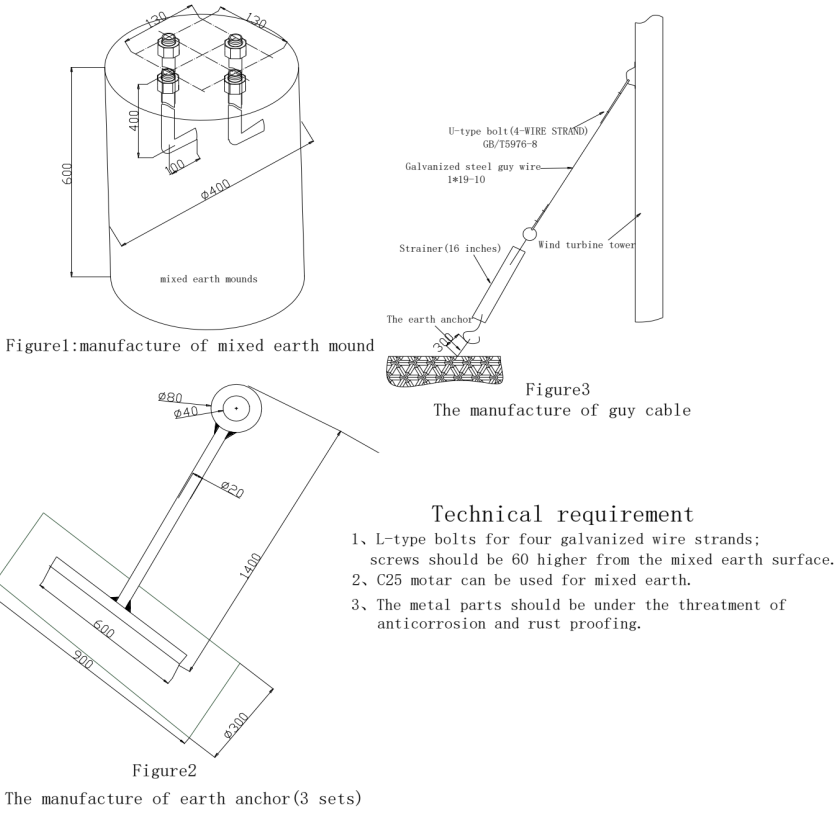


Figure 1 Foundation anchors and guy wire arrangement from the source manual

The source drawing specifies three ground anchors, metal corrosion protection, a 16 inch tensioner and anchor bolt projection of 60 above the foundation surface. It also identifies a C25 foundation material. Confirm the material and drawing units before construction.

Tower dimensions require confirmation. The source text specifies a 48 × 2.5 mm tower, while Figure 2 contains different pipe dimensions. Confirm the intended tower, flange and foundation design with the supplier before fabrication.

Tower fabrication drawing

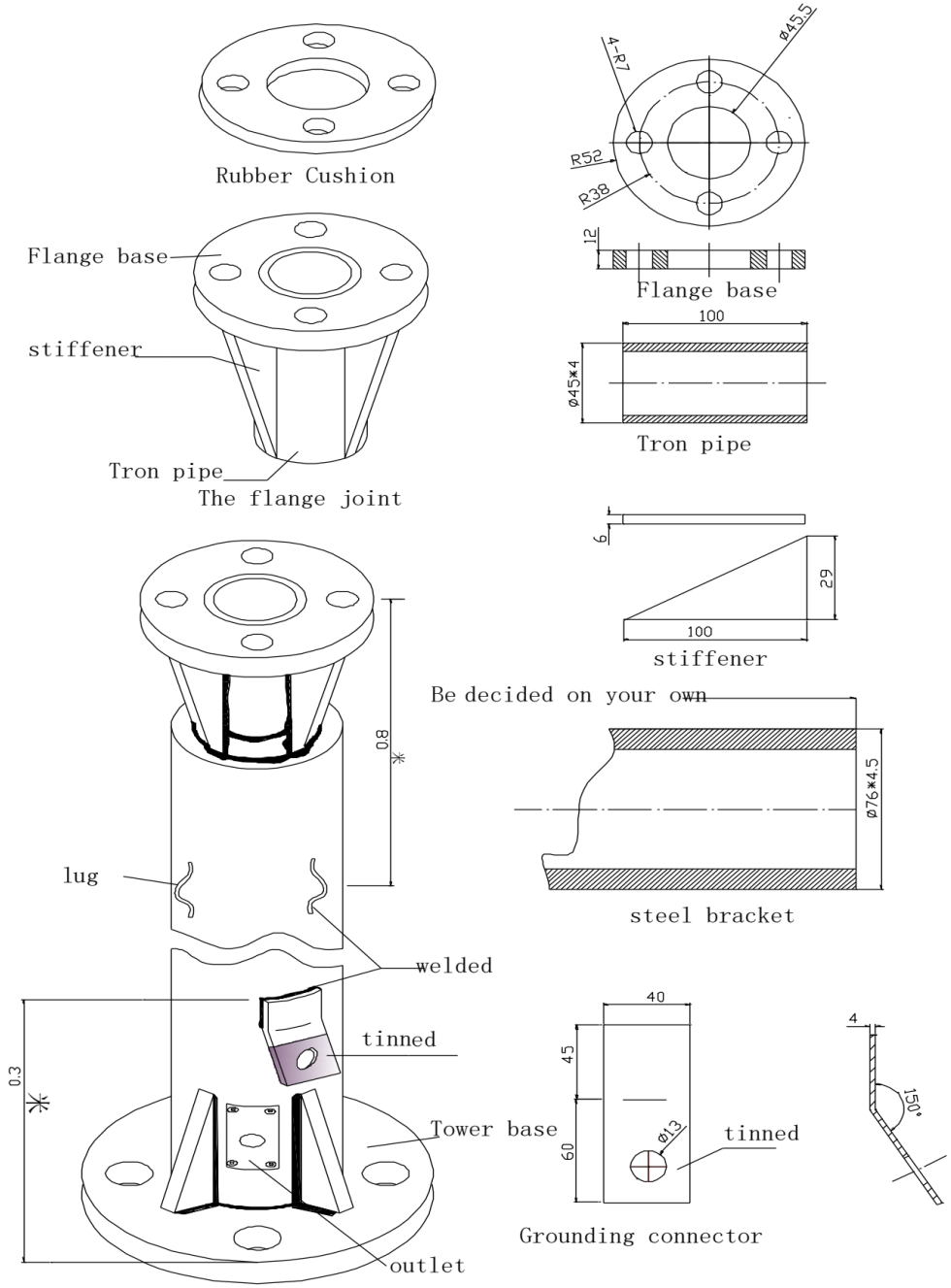


Figure 2 Flange connection and tower details from the source manual

Drawing terminology: rubber cushion means the flange gasket; stiffener means reinforcing rib; grounding connector means the grounding lug; outlet means the cable exit. Retain the original drawing dimensions when obtaining supplier confirmation.

5 Installation procedure

Prepare the tower wiring

Route the insulated turbine cables inside the steel tower. Bring the upper ends through the centre of the flange and the lower ends out through the cable opening 300 mm above ground. Protect the cable from this opening to 600 mm below ground with steel conduit of 17–21 mm outside diameter. Route the underground cable to the controller in steel or plastic conduit.

Assemble the turbine and tower

1 Support the tower. Lay the tower on the ground and support the flange connection 1.3 m above ground level.

2 Join the turbine leads. Connect each of the three turbine leads to one tower cable. For the twisted splice method described in the source, provide at least 30 mm of joined conductor, wrap each joint with three layers of acetate cloth tape and cover it with varnished fibreglass sleeving. Support the cable approximately 100 mm below the joints with adhesive tape and secure it inside the pipe so the joints do not carry the cable weight.

3 Maintain the temporary short circuit. Strip approximately 10 mm of insulation from the three cable ends that will connect to the controller. Twist the exposed copper ends together before raising the tower.

4 Secure the flanges. Align the turbine and tower flanges. Fit a flat washer to each M12 × 55 bolt and insert the bolt from above. Fit the lower flat washer, spring washer and locknut. Tighten all four connections to the value in Section 1.

5 Install the blades. Align the two holes in each blade with the matching holes in the hub recess. Insert the M6 × 40 bolts through the blade and hub, fit the M6 locknuts and tighten to the value in Section 1. Repeat for each blade. Do not loosen or reuse the locknuts.

6 Fit the hub to the shaft. Place the larger end of the M16 locknut in the central hexagonal recess of the hub. Position the hub on the threaded generator shaft. Hold the nut in place and rotate the rotor clockwise as described in the source. Use the extended hex wrench to complete tightening to the value in Section 1. Do not back off the locknut.

7 Fit the nose cone. Align the nose cone notches with the blades and press the cone onto the hub until it is seated at the hub seam. The source illustration shows the three blade version.

8 Raise and secure the tower. Use skilled lifting personnel and suitable safety measures. Erect and secure the tower in accordance with the requirements for the permanent installation.

9 Check insulation. After tower installation and lightning protection are complete, keep the turbine cable ends shorted together and disconnected from the controller. Use a 500 V insulation resistance tester to measure between the grouped conductors and earth. Resistance must be at least 5 MΩ. If lower, check for crushed, damaged or damp insulation and correct the fault before proceeding.

Turbine assembly reference

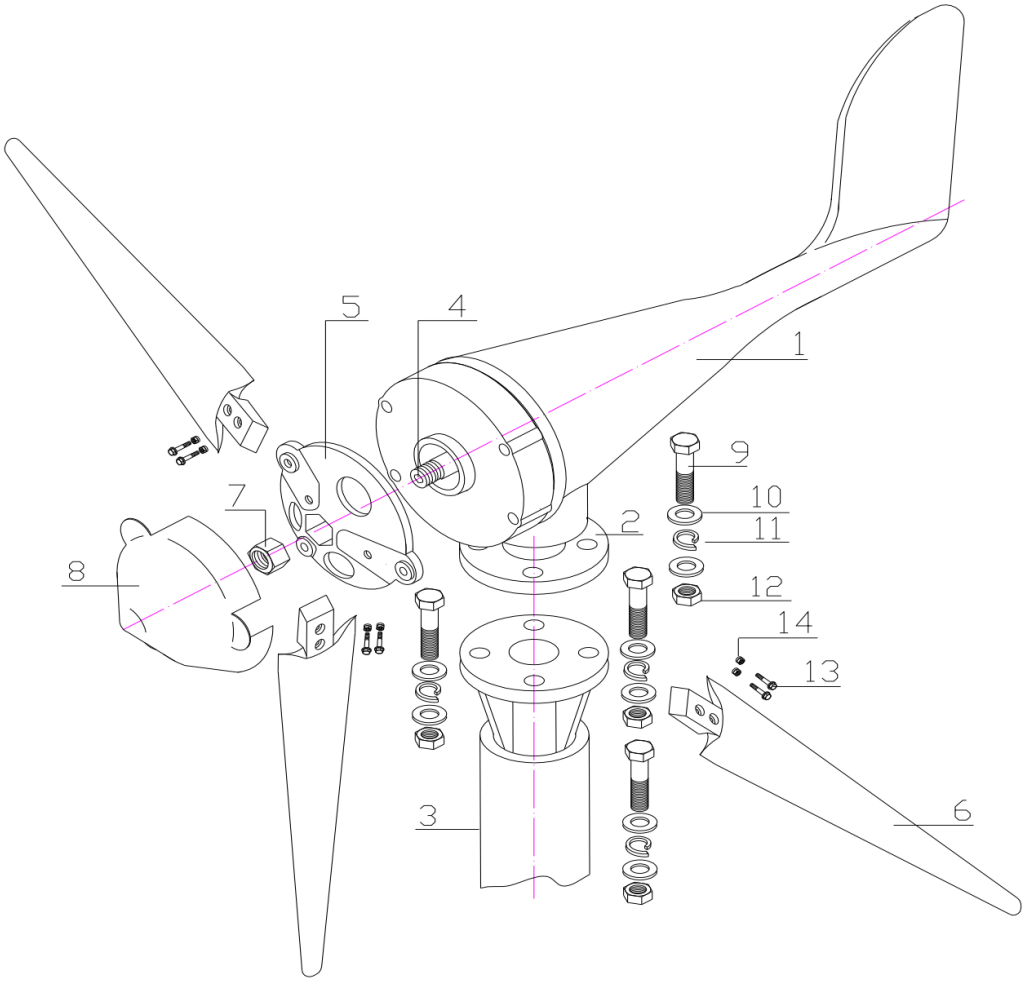


Figure 3 Exploded turbine assembly from the source manual

No	Component	No	Component
1	Turbine body	8	Nose cone
2	Turbine flange	9	Flange bolt
3	Tower	10	Flat washer
4	Generator shaft	11	Spring washer
5	Rotor hub	12	Flange locknut
6	Blade	13	Blade bolt
7	Shaft locknut	14	Blade locknut

Final assembly check. Confirm that all fasteners are secure, the hub locknut is fully tightened, the nose cone is seated and the installation crew is clear before electrical commissioning.

6 Electrical connections and commissioning

Connection order. Connect the battery to the controller before connecting the wind turbine. Refer to the supplied controller or inverter manual for terminal identification and detailed wiring instructions.

Do not perform initial commissioning in heavy rain. The source recommends a wind speed of 5–13 m/s for initial operation.

1 Connect the battery. Connect battery positive and negative to the corresponding terminals on the wind or wind and solar controller/inverter. Check polarity. The solar input is reserved for an optional solar panel.

2 Connect the load circuit. Connect the load to the controller/inverter output using the specified fuses, switches and plugs, as described in its manual.

3 Connect the turbine. When installation and inspection are complete and personnel are clear, remove the temporary short circuit from the turbine cables. Connect the three cables to the three turbine input terminals on the controller/inverter.

Battery selection

The source generally recommends lead acid batteries and gives the following capacity ranges. Confirm compatibility with the actual system voltage and controller.

Turbine power range	Battery capacity in source
100–300 W	100–200 Ah
300–600 W	200–400 Ah

The controller/inverter regulates the upper and lower charging voltage limits. Float charging current depends on the battery condition.

Equipment location

Install the controller in a dry, well ventilated location protected from moisture and dust. Ground the inverter enclosure. Keep the controller/inverter more than 1.5 m from the batteries to reduce exposure to corrosive battery gases.

Keep batteries in a dry, ventilated location that remains cool in summer and warm in winter.

Diagram scope. Figure 4 reproduces the source system illustration, including its 220 V AC output label and battery arrangement. Confirm the actual inverter output voltage and battery configuration against the supplied equipment before making connections.

7 Maintenance and inspection

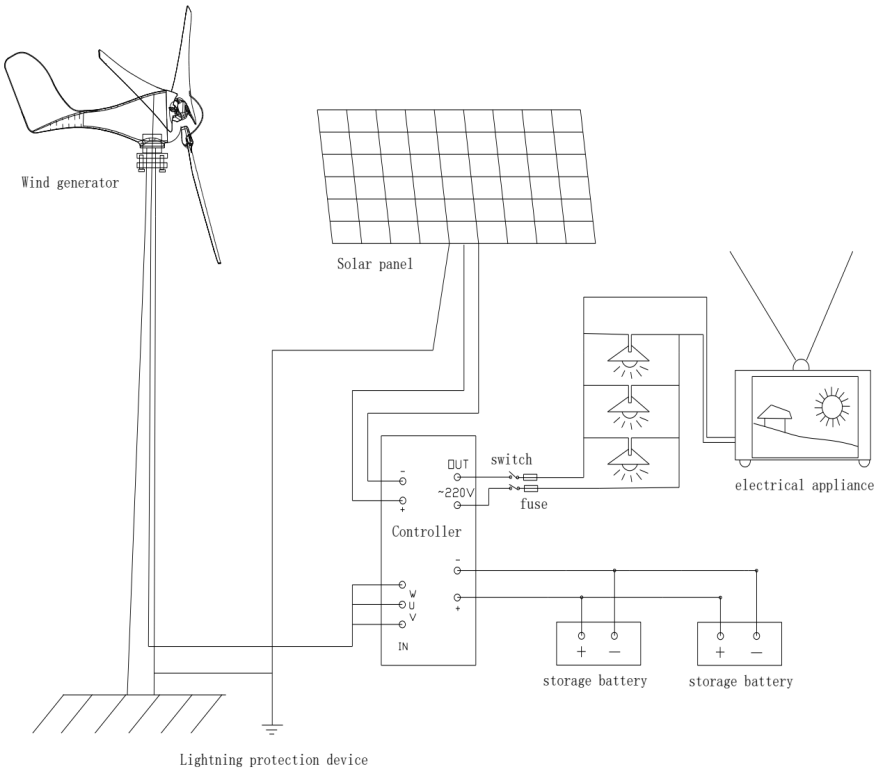


Figure 4 Turbine and optional solar system connection diagram from the source manual

Routine checks

- Inspect the turbine regularly by sight and sound. Check for tower movement, loose guy wires and unusual operating noise. Binoculars can help with observations from the ground.
- Inspect promptly after a severe storm. If a fault is found, arrange for the tower to be lowered carefully for service. For pole mounted streetlight installations, use a qualified electrician, short the turbine output leads as specified and put the necessary access and safety measures in place before work begins.
- Keep the outside of maintenance free batteries clean.
- Do not disassemble the turbine without authorization. Contact the supplier or service department if the equipment fails.

Record inspections using the schedule at the end of this manual. Check the blades, main shaft fastener, turbine, tower and accessories for looseness or damage. Inspect the yaw mechanism and connections for friction or wear.

8 Packing list

Check the contents against the supplied configuration. Blade and blade fastener quantities vary between three blade and five blade models. Optional items may not be included.

No	Item	Quantity	Notes
1	Wind generator	1	
2	Rotor hub	1	
3	Blades	3 / 5	Configuration dependent
4	Shaft locknut M16	1	
5	Blade bolt M6 × 40	6 / 10	Configuration dependent
6	Blade locknut M6	6 / 10	Configuration dependent
7	Flange bolt M12 × 55	4	
8	Flange nut M12	4	
9	Flat washer	8	
10	Spring washer	4	
11	Blade bolt M6 × 40	1	Optional extra in source
12	Blade locknut M6	2	Optional extra in source
13	L shaped spanner	1	Optional
14	Hex wrench	1	Optional
15	Controller / inverter	1	Optional
16	Tower	1	Optional

Items 11 and 12 repeat blade fasteners already listed in items 5 and 6. Their separate quantities are retained from the source packing list; confirm the supplied extras with the seller.

9 Warranty and service records

The manufacturer states that each generator is inspected before dispatch to confirm product quality, operation and completeness.

The source warranty covers the wind generator for one year and the controller for one year from the date of sale. Damage caused by unauthorized disassembly or operation that seriously violates the instructions is excluded.

Keep this manual and the purchase record as the product warranty documentation.

Owner and purchase details

Seller _____

Purchaser _____

Purchase date _____

Model _____ Equipment serial number _____

Contact person _____

Telephone or other contact _____

Postal code _____

Service history

Date	Service type	Work performed	Technician

Use additional sheets as needed and keep them with this manual.

Scheduled maintenance record

At each inspection, check the blades and main shaft fastener, turbine and tower for loose or damaged parts. Inspect the yaw mechanism and connectors for friction and wear, and check all accessories. Record findings and corrective work in the service history.

Visit	Time after installation	Date	Technician or record reference
1	3 months		
2	6 months		
3	1 year		
4	2 years		
5	3 years		
6	3 years 6 months		
7	4 years		
8	4 years 6 months		
9	5 years		
10	5 years 6 months		
11	6 years		
12	6 years 6 months		
13	7 years		
14	7 years 6 months		
15	8 years		
16	8 years 6 months		
17	9 years		
18	9 years 6 months		
19	10 years		

After the final scheduled visit, perform a complete inspection and any necessary repairs, then begin a new maintenance record.

Warning. The main shaft nut is self locking. Keep it securely tightened to prevent the hub and blades from detaching.