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Operations & Maintenance Manual
For Commercial Use Only



OZONE GENERATOR
MODEL NO: 77011, 77012, 77013

READ ALL INSTRUCTIONS BEFORE OPERATING

OZONE IS A POWERFUL OXIDIZER AND MUST BE USED WITH CARE



Long -Term Buyer Protection Limited Warranty

Tornado Industries, LLC. warrants to the end user/ customer that the Tornado product(s) will be free from defects in material and workmanship for the duration(s) described below. This limited warranty DOES NOT cover machines and/or components subject to normal wear and tear, damage that occurs in shipping, failures resulting from modification, accident, unsuitable operating environment, misuse, abuse, **neglect, or improper maintenance**. For full details, contact your Authorized Tornado Distributor, Service Center, or the Tornado Technical Service Department. Tornado sales and service representatives are not authorized to waive or alter the terms of this warranty, or to increase the obligations of Tornado under the warranty.

10 Years*

Plastic water tanks and Rotationally-molded bodies

2 Years*

Parts on all Tornado cleaning equipment

1 Year*

Labor on all Tornado cleaning equipment

1 Year*

Warranty on batteries, one year prorated

All battery warranties are handled directly by the battery manufacturer, on a one year prorated basis

Terms subject to change without notice

1. All Windshear™ Blowers, Storm, TV2SS, Side and Dowlndraft, Insulation Blowers, CV 30, CV 38, CK14/1 PRO, CK 14/1 BSE, CK14/2 PRO, SWM 31/9, CK LW13/1, CK LW 13/1 ROAM, CV 38/48 Dual, PV6, PV10, PV6 ROAM, Wall Mount Vacuum and all chargers are warranted for 1 (one) year for both parts and labor.
2. All non-wear item parts purchased after warranty expiration are warranted for 90 days.
3. Warranty starts from either: The date of sale to the consumer, or 6 months after the dealer purchased the unit from Tornado (at Tornado's discretion), whichever comes first.
4. The EB 30 is warranted for a period of 90 days for both parts and labor.
5. Propane-powered equipment engines are limited to the engine manufacturer's warranty.
6. Ride-on Scrubbers are warranted for 24 months parts, and 6 months labor, or 1,000 hours, whichever occurs first.

Note: Tornado, The Latest Dirt, Floorkeeper, Carpet-keeper, Carpetrinser, Carpetrinser/Dryer, Headmaster, Taskforce, PAC-VAC, T-Lite, Glazer, Windshear, Max-Vac and Trot-Mop are trademarks of Tornado Industries

Website: www.tornadovac.com

Phone 1-800-VACUUMS

Fax 817-551-0719

Address 3101 Wichita Court
Fort Worth, TX 76140

NOTES

Serial Number

The serial number of the machine is located on the nameplate, located next to pressure regulator. This information is needed when ordering parts or scheduling repairs. Fill in the information below for future reference:

Serial Number _____

Part Number _____

Purchase Date _____

Your new Tornado unit is a high quality, precision-made product. All parts used in the manufacturing of this unit have passed rigid quality control standards prior to assembly. Please safeguard the original receipt / invoice. If you experience any problems with your unit during the warranty period, the original receipt / invoice will act as proof of purchase. Contact Tornado for any warranty inquiries.

Tornado® Ozone Generator – the Professional Odor Neutralizer

Not a simple cover-up or ionizer, the Tornado ozone generator unit is an economical environmental odor neutralizer that actually destroys the source of the odor and leaves pure, fresh oxygen in its place. This large-capacity ozone generator is ideal for commercial use, eliminating odors in any indoor location and in vehicles. It is excellent for removing odors caused by smoke damage, mold, mildew, pets and other sources commonly encountered in building maintenance and refurbishing. Use the unit in basements, kitchens, bathrooms, and any room with an odor problem. It also provides rapid deodorizing of hotel/motel rooms, meeting rooms and vehicles such as automobiles, buses, boats and aircraft.

Your Tornado ozone generator is complete and ready to operate.

Model	77011	77012	77013
Input Voltage	115 VAC	230 VAC	230 VAC
Plug Type	US	Euro	AUS
Air Movement	1.5 grams/hr., 7 p.p.m.	1.5 grams/hr., 7 p.p.m.	1.5 grams/hr., 7 p.p.m.
Machine Dimensions	12" x 11" x 12" 30 cm x 28 cm x 30 cm	12" x 11" x 12" 30 cm x 28 cm x 30 cm	12" x 11" x 12" 30 cm x 28 cm x 30 cm
Weight	7.3 lbs./3.3 kg	7.3 lbs./3.3 kg	7.3 lbs./3.3 kg
Electrodes	Gas Filled Arc Module	Gas Filled Arc Module	Gas Filled Arc Module
CFM	100	100	100
Max Effectiveness	60,000 cu.ft./1,699 cu.m.	60,000 cu.ft./1,699 cu.m.	60,000 cu.ft./1,699 cu.m.

To calculate the time to remove the odor or to purify an area:

$(x \text{ cubic feet} \div 100 \text{ CFM}) \times 2 = \text{time setting}$

example:

$(1000 \text{ cubic foot room} \div 100) \times 2 = \text{time setting}$

$10 \times 2 = \text{time setting}$

20 minutes = time setting

IMPORTANT SAFETY INSTRUCTIONS

READ AND UNDERSTAND ALL INSTRUCTIONS BEFORE USING THIS UNIT

Read and understand this owner's manual and all labels on the unit before operating. Safety is a combination of common sense, staying alert and knowing how your unit works. Use this unit only as described in this manual. Use only manufacturer's recommended attachments. To reduce the risk of personal injury or damage to your unit use only Tornado recommended accessories.

WARNING: USE IN UNINHABITED AREAS ONLY. Ozone attacks organic matter. Limited exposure can cause nausea. Prolonged exposure, more than 48 hours, can be hazardous. Do not get machine wet. Consult SDS sheet, which can be found at Tornadovac.com, before use.

SAFETY PRECAUTIONS

Do not operate equipment before reading and understanding all instructions, procedures and warnings.

Do not use this product near water or in a moist environment.

Operate equipment only with the correct electrical power.

Do not attempt to service this product yourself as opening or removing the enclosure may expose you to dangerous voltage or other hazards.

Do not put foreign objects inside the equipment.

Do not operate equipment with a damaged cord or plug, if fans fail to rotate, after the equipment malfunctions or if it has been dropped or damaged in any manner. Return equipment to manufacturer for examinations, electrical or mechanical adjustment or repair.

Do not block air flow through equipment. Set equipment at least 6 inches from walls or any structure that could block the air intake.

Do not use equipment in a flammable or explosive atmosphere.

OZONE IS A POWERFUL OXIDIZER THAT REACTS WITH ORGANIC SUBSTANCES AND IS CLASSIFIED BY OSHA AND EPA AS AN UPPER RESPIRATORY IRRITANT. OSHA SETS THE ALLOWABLE EXPOSURE LIMITS AT .05 PPM TO .1 PPM. ALL SAFETY PRECAUTIONS HEREIN MUST BE ADHERED TO AND COMMON SENSE PRACTICED.

The ozone produced by the ozone generator is above the allowable exposure limit as set by OSHA for inhabited areas. Therefore, no person or animal should remain in an area being treated by these units. The treated area should be aired out or given enough time for the ozone to dissipate to a level below .1 PPM before people or animals are allowed to re-enter. Ozone has an average half-life of 20 minutes, so one hour should be sufficient time for an un-vented room to return to normal. If ozone odors are noticeable and irritating, the area should be vented longer until the level is reduced. The average person can detect ozone at levels as low as .003 PPM.

Symptoms of prolonged or excessive exposure to ozone are: burning, watery or irritated eyes, nose, and throat, nausea, headache, difficult in breathing, dry cough, irritation to nasal passages, throat, bronchial and pulmonary membranes.

Caution:

Prolonged exposure can also affect certain organic materials such as rubber, plastic, wire insulation.

Only qualified personnel should operate the ozone generator.

As with all electrical devices this equipment should not be operated in a wet or damp environment.

This equipment should only be operated using a properly grounded electrical outlet.

All precautions must be taken to prevent over exposure of ozone gas to occupied areas.

Do not disassemble the equipment, there are no user serviceable items inside and this will void the warranty.

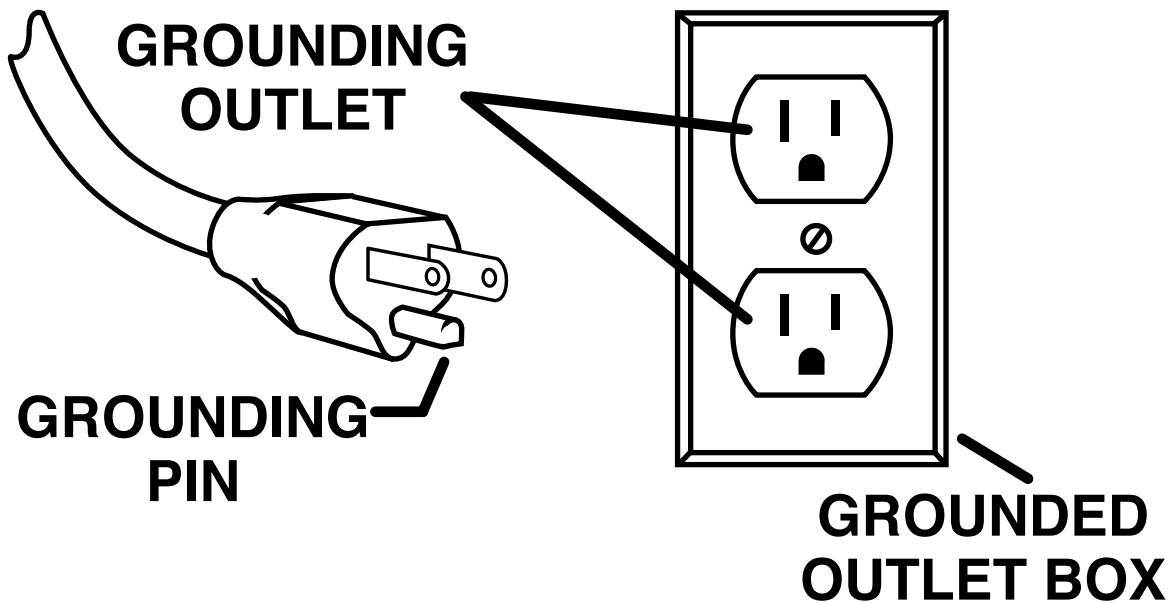
Tornado assumes no liability for damages or injuries incurred by the misuse of this equipment.

GROUNDING INSTRUCTIONS

This appliance must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk electric shock. This machine is equipped with a cord having an equipment -grounding conductor and grounding plug. The plug must be inserted into an appropriate outlet that is properly installed and grounded in accordance with all local codes and ordinances.

WARNING: Improper connection of the equipment-grounding conductor can result in a risk of electric shock. Check with a qualified electrician or service person if you are in doubt as to whether the outlet is properly grounded. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

This appliance is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in sketch A.



A

GENERAL INSTRUCTIONS

Prior to using the Tornado® Ozone Generator, determine the source of the odor and remove any odor causing substance that can be found. If the odor is from a wet or flooded situation, dry the entire area well before starting the ozonation procedure.

1. Make certain all people, pets and plants are out of the area. Close all windows and doors. Place a safety sign on the door to the location warning of Ozone use – *DO NOT ENTER*.
2. Place the Tornado® Ozone Generator unit on a shelf or tabletop as high in the area to be treated and if possible, near the AC return.

NOTE: Ozone is heavier than air and will fall to the bottom of the room. For best results place an air mover at a 45° angle, pointed towards the wall to create a circular air movement.

3. Set the air conditioning thermostat on constant fan and adjust the temperature control to a low (cold) setting. If AC is not available, use air movers for more effective treatment.

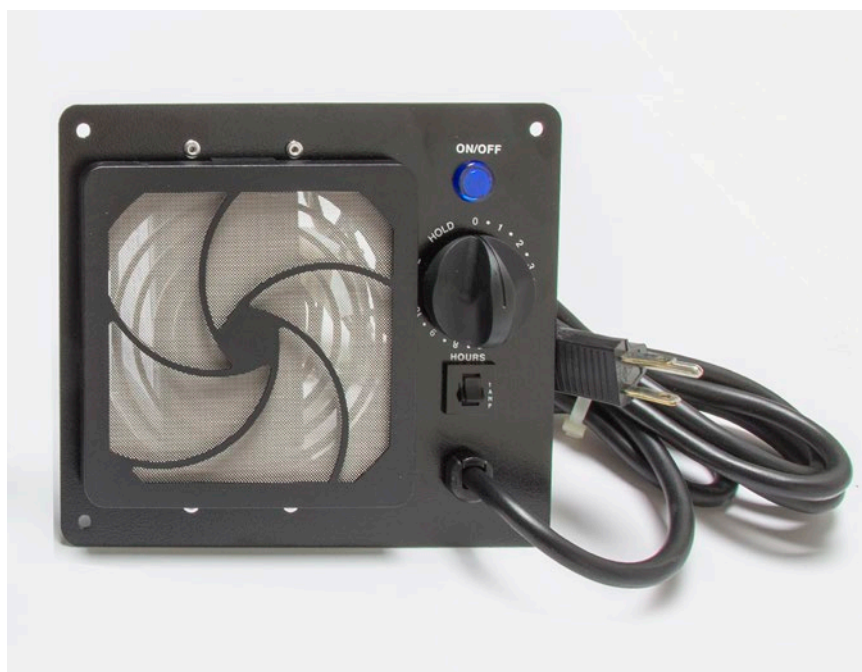
NOTE: Ozone generators work best in a cool, low humidity environment. With the AC on, you also receive a secondary benefit of purifying the inside of the ductwork. This is also true for ozoning automobiles. Smoke and stale odors will stay in a car's AC ducts if you do not run the AC during ozoning.

4. Plug the power cord into a grounded, 3-prong outlet.
5. To set the timer, turn the dial to "12" and then back to desired length of time.
6. Leave the area immediately. Do not return until set time plus 20 minutes has expired.
7. After time has expired, open all windows or doors to air out for 20 minutes.

NOTE: Ozone destroys odor-causing molecules. The length of time this process takes will vary depending on variables such as pollutant load, temperature, humidity, etc. and the amount of area being treated. The ozone process can produce a haze in the air within the area being treated.

CAUTION

DO NOT BREATHE HIGH LEVELS OF OZONE. OZONE IN CONCENTRATIONS ABOVE 0.04 PPM IS CLASSIFIED AS AN UPPER RESPIRATOR IRRITANT AND MAY BE CONSIDERED UNHEALTHY IN OCCUPIED AREAS. THIS MODEL OZONE GENERATOR IS INTENDED FOR USE IN UNOCCUPIED AREAS ONLY. THIS OZONE GENERATOR SHOULD BE TIMED TO TURN OFF AT LEAST 20 MINUTES PRIOR TO REENTRY OF TREATED AREA. TREATED AREA SHOULD BE AIRED OUT PRIOR TO REENTERING TO PREVENT EXPOSURE TO HIGH LEVELS OF OZONE.

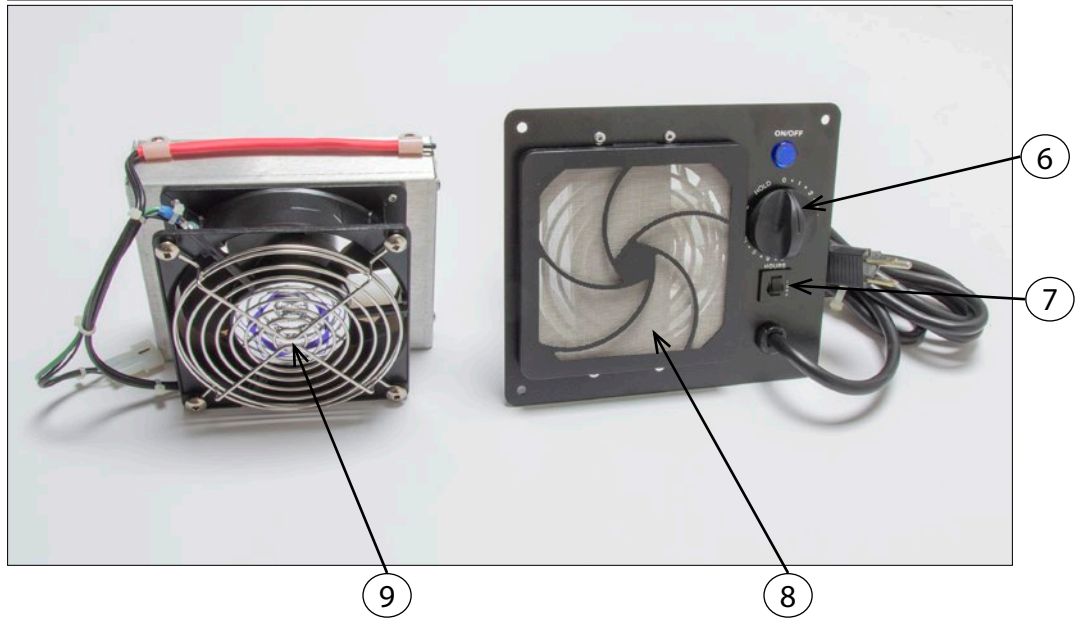


TROUBLESHOOTING

Problem	Possible Cause	Solution
Unit does not turn on	Power cord not plugged in.	Plug power cord into suitable outlet with correct voltage.
	Circuit breaker is tripped.	Reset circuit breaker at panel box.
	Faulty power outlet.	Try another outlet.
	Fuse is blown on back of unit.	Replace fuse.
Unit keeps blowing fuses	Too small amperage fuse is being used.	Replace fuse with correct rated (1A) fuse.
	Electrical short circuit.	Return unit to manufacturer for repair.
Unit does not produce ozone	Damage to unit.	Return unit to manufacturer for repair.

Part Listing

Ref No.	Part No.	Qty	Description
1	X9227	1	Housing
2	X9229	1	Component Kit (110 VAC)
2	X9229-2	1	Component Kit (220 VAC)
3	X9241	1	Ozone Tube w/Cables
4	PD3C	4	Black Rubber Foot
5	72387A	8	Tapping Screw #8 x 5/8"
6	X9248	1	Timer w/Knob
7	X9249	1	Fuse Holder w/Fuse
8	X9246	1	Intake Filter
9	X9245	1	Fan Grill
Not Shown	X9235	1	Time Chart Label





TORNADO®

Warranty Registration Form

Please Print Clearly

Company/Institution	
Contact Name	Title
Address	City/State/Zip Code
Phone	Fax
Date of Purchase	Email
Selling Dealer: (Required) _____	

See white metal plate or sticker on unit for this information.

MACHINE TYPE/MODEL NUMBER:	MACHINE SERIAL NUMBER:
1.	1.
2.	2.
3.	3.
4.	4.

Facility Description (please circle all that apply)			
1. School 2. Retail Store 3. Restaurant 4. Office Building 5. Contract Cleaning	6. Manufacturing 7. College/University 8. Hospital 9. Nursing Home 10. Religious Institution	11. Airport 12. Warehouse 13. Apartment/Condo 14. Supermarket 15. U.S. Govt	16. Other Govt. 17. Auto Service 18. Non-Profit 19. Other (specify)

How did you first learn about Tornado cleaning and maintenance equipment? <input type="radio"/> Contacted by local dealer <input type="radio"/> Previous experience with Tornado products <input type="radio"/> Reputation/Recommendation <input type="radio"/> Advertising <input type="radio"/> Direct mail <input type="radio"/> Website: _____ <input type="radio"/> Blog: _____ <input type="radio"/> Other	<p style="text-align: center;">You can complete this form online at www.tornadovac.com/services/warranty-registration-form.aspx</p> <p style="text-align: center;">This form may also be returned to : Tornado Industries 3101 Wichita Court Fort Worth, TX 76140 Fax: 817-551-0719</p>
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Damage or defect arising from abuse, neglect or other misuse is excluded from this warranty. Other items may or may not apply based on your specific machine. If any defect occurs, and service is attempted by non-Authorized Tornado Service Centers, the warranty will be void.