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**Operations & Maintenance Manual
For Commercial Use Only**



**DUAL SPEED FLOOR MACHINES
17" and 20" MODELS
MODEL NO: 98476 and 98484**



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

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1-800-VACUUMS

Over 90 Years of Cleaning Innovation

A Tacony Company

NOTES

Write your machine serial number here: _____

MODEL NO.	98476	98484
VOLTS	115	115
SERIES	R	R

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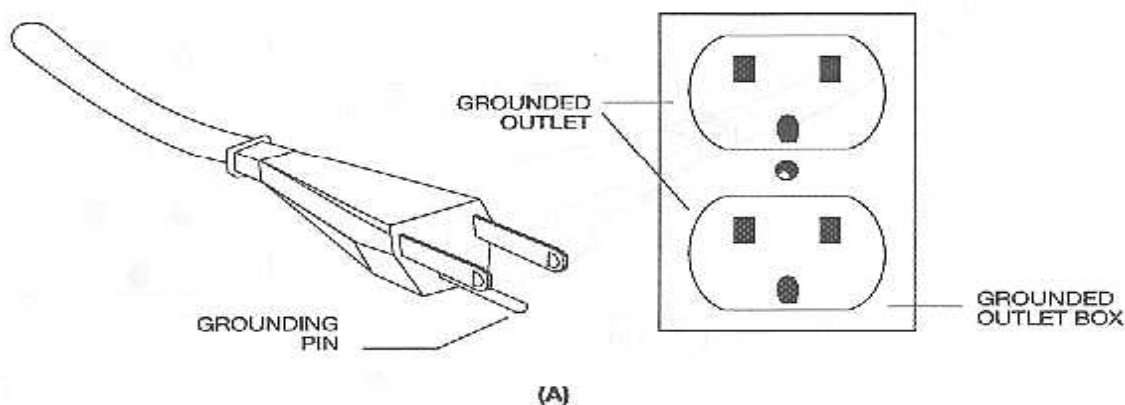
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GROUNDING INSTRUCTIONS

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.



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.

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.

WARNINGS

READ THIS OPERATOR'S MANUAL!

WARNING: You must have training in the operation of this machine before using it.

WARNING: Machines can burn flammable materials and vapors. Do not use this machine with or near fuels, grain dust, solvents, thinners or other flammable materials.

WARNING: Do not operate this machine unless it is completely assembled.

WARNING: Do not use this machine as a step or to move furniture.

WARNING: When disconnecting power cord from electrical outlet, grasp the plug. Pulling it out by the cord itself can damage cord insulation and internal connections to the plug. To prevent electric shock, always remove the electrical plug from the electrical outlet before doing any repairs or maintenance to this machine.

WARNING: To prevent injury, always remove the electrical plug from the electrical outlet before changing the polishing pad and before leaving the machine.

WARNING: To prevent injury, keep hands, feet, and loose clothing away from the rotating pad.

WARNING: Maintenance and repairs must be done by authorized personnel only.

WARNING: Keep all fasteners tight. Keep adjustments according to specification.

WARNING: Keep the electrical parts of the machine dry. For storage, keep the machine in a building.

WARNING: Always use a three-wire electrical system connected to the electrical ground. For maximum protection against electric shock, use a circuit that is protected by a ground fault circuit interrupter. Consult with your electrical contractor.

WARNING: To prevent damage to the power cord, do not let the pad, pad driver or wheels touch the power cord when the machine is running. Always lift the power cord over the machine.

WARNING: Make sure all labels, decals, warning, cautions and instructions are fastened to the machine.

WARNING: To avoid fire, do not use unit with a flammable or combustible liquid to clean floor.

UNCRATING

Your Tornado Floor Machine was protectively packed to prevent damage in shipment. We suggest that upon removing the unit from its carton you carefully inspect it for any possible damage in transit. If damage is discovered, immediately notify the transportation company who delivered your machine. As a manufacturer, we are unable to accept upon any claim for concealed damage: you must originate the claim.

IMPORTANT SAFEGUARDS

This machine is designed to be safe when used to perform the functions specified in this Operator's Manual. Should damage occur to electrical or mechanical parts, the machine should be repaired by the manufacturer or competent service center before using in order to avoid further damage to the machine or physical injury to the user. Your floor machine is equipped with a safety switch lockout device designed for your safety. Do not attempt to bypass or defeat the safety lockout device. Never use any device to lock the power switch in the ON position.

APPLICATIONS OF DUAL SPEED FLOOR MACHINE ON HARD FLOORS

Spray buffing the red spray buff pad and spray buff chemical.

Dry buffing a buffable finish with a tan, beige, or white pad or brush.

Scrubbing with green or blue pad or scrubbing brush.

Stripping with a black pad and a stripping chemical.

APPLICATIONS OF DUAL SPEED FLOOR MACHINE ON CARPET (LOW SPEED)

Bonnet cleaning with a yarn bonnet and carpet maintainer chemical.

Shampooing using a shower feed shampoo brush and solution tank mounted to the handle tube containing carpet shampoo.

APPLICATIONS OF DUAL SPEED FLOOR MACHINE (LOW SPEED)

Scraping with an attachment tool to remove heavy industrial deposits and residue or to prepare a foundation for installation or carpet

Wire brushing or concrete floors

Sanding with very aggressive sandpaper or sand scree discs

Carpet restoration where shampooing & pile lifting require very stiff brush bristles.

WARNING

To prevent injury, always remove the electrical plug from the electrical outlet before changing the polishing pad and before leaving the machine.

PREPARE THE MACHINE FOR OPERATION

To attach the drive block or brush or other attachment, be sure the handle is "locked in the upright position (see figure #1). Lay the floor machine on its back with the handle lying on the floor, this exposes the driving plate on the underside of the floor machine. Holding the drive block, brush or attachment in both hands and straddling the motor with your back to the handle box. Bend over and fit the three slots to the clutch plate (built into the back of the brush) over the three lugs of the driving plate. Turn the drive block, brush, or other attachment counter-clockwise as far as it will go until it is seated in the ready-to-use position (see figure #2). **CAUTION:** This is the only proper way to install a drive block, brush, or other attachment. NEVER put a drive block, brush or attachment on the machine by placing it on the floor and moving the running machine over it, or by placing the machine over the block or attachment and then starting the motor.

Return the floor machine to the upright position and adjust the handle to an operating position. Recommended handle position is close the waist with arms extended down. Lock the cam release lever into position. NOTE: *The hardened steel cam release lever does not require extreme tightening to effectively hold the handle in position. Over-tightening the cam release lever will shorten the functional life of the lever. To remove drive block, brush or attachment: Lay the floor machine on its back again and disengage clutch plate slot from driving plate lugs by turning it clockwise.*



Figure #1



Figure #2

HOW TO OPERATE THE MACHINE

First, install the pad driver and pad, brush, or other attachment to be used. Plug the machine in as directed and lower the handle to the desired operating height and lock in place using the cam lever handle. Push the safety switch forward (see figure #3) and squeeze the switch triggers beneath the handle grips. This activates the motor and starts the block, brush or attachment in operation. Each time you release the triggers the safety switch will reset. You will need to follow the direction above to restart the machine. **CAUTION:** *When leaving the machine unattended, disconnect the wall plug and return the handle to the "locked" upright position to prevent accidental starting.*

TO GUIDE YOUR FLOOR MACHINE

To the Right: raise the handle slightly. The higher the handle is lifted, the faster the machine will move to the right. To the Left: lower the handle until the machine moves to the left. The more the handle is lowered the faster the machine will move to the left.

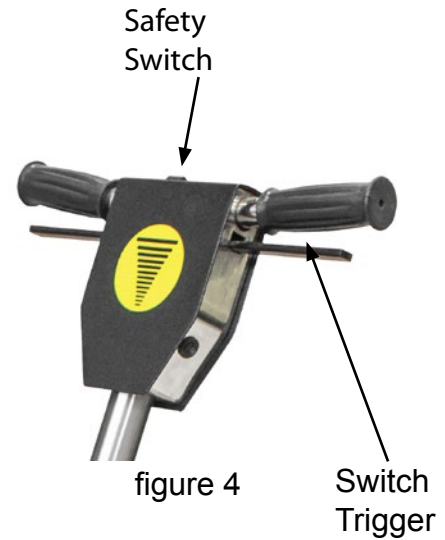


figure 4

Safety Switch
Switch Trigger

TO INSTALL THE OPTIONAL SOLUTION TANK

Mount the solution tank to the front of the handle and attach with mounting brackets and knobs. Position the solution tank control handle horizontally and below the switch lever of the machine and adjacent to the right handle grip. Remove the plug from the motor housing and insert the (long) extension tube adaptor and secure at bottom of machine with the retainer. The solution tank should be used only with a shower feed drive block or bush.

TRANSPORTING THE MACHINE

Place the handle in the upright position. Lock the handle cam release lever. Tip the machine back and transport on the wheels.

MAINTENANCE

Once a month remove the motor cover and vacuum out any dust or debris which has accumulated on the motor. Replace the motor cover by setting it over the holes in the housing and replace all of the screws. Check and maintain the tightness of all the fasteners.

WARNING: Do not over-tighten the switch housing screws.

Keep the machine clean especially at the handle tube and collar so the handle tube will move freely through the collar. Inspect the cord for cuts, gashes, or loose prongs; replace as needed. Disassembly of this motor voids the warranty. Improper disassembly and assembly of this motor can permanently damage the field or rotor.

TROUBLESHOOTING

Problem	Possible Cause
Machine will not start	Circuit breaker has tripped (Allow the circuit breaker 2 minutes to cool before resetting). Circuit breaker will not reset. Replace. Switch is defective. Replace. Cord is damaged. Replace. Plug is broken or has a loose contact. Replace.
Machine will not reach operating speed	Over drawn circuit. Unplug anything other than the machine from the circuit or locate another circuit.
Motor runs but pad or brush does not turn	Coupling is broken. Replace.



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? ☐ Contacted by local dealer ☐ Previous experience with Tornado products ☐ Reputation/Recommendation ☐ Advertising ☐ Direct mail ☐ Website: _____ ☐ Blog: _____ ☐ Other	You can complete this form online at www.tornadovac.com/services/warranty-registration-form.aspx This form may also be returned to : Tornado Industries 3101 Wichita Court Fort Worth, TX 76140 Fax: 817-551-0719
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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.