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Operations & Maintenance Manual
For Commercial Use Only



BRUTE FORCE SERIES BURNISHERS
1600 RPM, 2000 RPM, 2000 RPM DUST CONTROL
MODEL NO: 98458, 98482, 98486



Long Term Buyer Protection Limited Warranty

Tornado Industries, LLC. (Tornado) 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 by you. 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. Except all Windshears™ Blowers, Storm, TV2SS, Side and Dowlraft, Insulation Blowers, CV 30, CV 38, CK14/1 PRO, CK 14/2 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 the date of sale to the consumer or, at Tornado's discretion, 6 months after the dealer purchased the unit from Tornado, whichever comes first.
4. The EB 30 is warranted for a period of 90 days for both parts and labor.
5. The warranty on engines used on propane powered equipment is limited to motor manufacturer's warranty.
6. Ride-on Scrubbers are warranted for 24 months, parts, 6 months labor or 1,000 hours, whichever occurs first.

Note: Tornado, The Latest Dirt, Floorkeeper, Carpetkeeper, 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

Write your machine serial number here: _____

MODEL NO.	98458	98492	98486
VOLTS	115	115	115
SERIES	R	R	R
CERTIFICATIONS	cETLus	cETLus	cETLus

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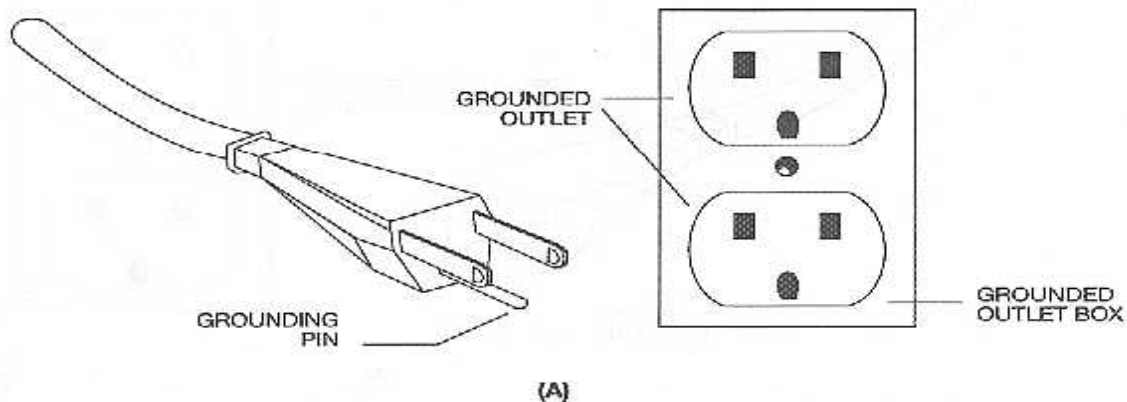
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GROUNDING INSTRUCTIONS

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 Brute Force Series Burnisher 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 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.

APPLICATION

The Brute Force Series Burnishes are used to achieve and /or maintain a high gloss appearance on an established floor finish. The high pad revolution of the floor burnisher combined with a good polishing pad will turn properly established cleaned floor finish into a high gloss, hardened finish known as the 'wet look shine'. Recommended pads are beige or white synthetic pads, or the natural hogs hair blended pads.

Preparation of the Surface

Before each use of this machine, the floor must be dust mopped with a treated mop and if necessary clean the floor with a damp mop using a solution of water and neutral cleaner.

PREPARE THE MACHINE FOR OPERATION

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

With the handle locked, tip the machine back until the handle is lying flat on the floor

To remove the pad-lock pad holder from the flexible pad driver, grasp the center support with your thumb and forefinger and turn the collar counter-clockwise (see figure 1).

Place a clean or new 20" buffing pad over the alignment ring on the pad holder

Replace the collar by turning clockwise until snug (see figure 2).

Step back and tilt the burnisher to the upright position.

Connect the power cord into a grounded, 3-wire outlet.

The Brute Force Series Burnishers should be operated with the handle in the unlocked "floating" position to provide excellent maneuverability and automatic pad contact. The units are designed for maintenance of large, open areas. To prevent excessive pad drag or uneven burnishing where tight, repetitive turns are necessary, lock the handle for manual control of pad contact.

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 (see figure 3).*

CAUTION: Do NOT operate the dust control burnisher (Model 98486) without a dust skirt.



figure 1



figure 2



figure 3

HOW TO OPERATE THE MACHINE

Plug the machine in as directed and lower the handle to the desired operating height. Push the safety switch forward (see figure 4) and squeeze the switch triggers beneath the handle grips. This activates the motor and starts the pad 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.*

Push the machine forward in a straight line, at a slow walking speed. Overlap each pass by about 1 inch (25mm).



figure 4

Switch
Trigger

AFTER USING THE MACHINE

Upon completion, dust mop with treated mop to pick up all burnishing residue.

The condition of the floor pad has a direct effect on the performance of your burnisher. When the pad becomes dirty, turn it over and use the other side. When finished, wash the pad out and allow it to dry completely before using again.

TRANSPORTING THE MACHINE

Use the rear wheels for transporting the Brute Force Burnishers. This will insure that the operating wheels remain clean and smooth for use on clean floor surfaces (see figure 5).



figure 5

MAINTENANCE

Once a month remove the motor cover of the unplugged Brute Force Series Burnishers by removing the motor cover screws.

Vacuum out any dust or debris which has accumulated on the motor (see figure 6).

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 burnisher 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.

The length of the carbon brushes should be inspected annually. If they are no longer extended past the holder window, they should be replaced.

Replacement of carbon brushes should be done only by a qualified service technician.

Disassembly of this motor voids the warranty.

Improper disassembly and assembly of this motor can permanently damage the field or rotor.



figure 6

Drive Belt Adjustment (see figure 7)

1. Remove the three (3) Phillips head screws holding the pad center grip
 2. Remove four (4) large, slot head screws holding the drive pad.
 3. Loosen pulley mount bolts (A) with a 9/16" deep socket wrench.
- Do not remove the bolts.**
4. Using a 1/2" box wrench, turn adjustment nut (B) until it touches the adjustment bolt head. Turn the adjustment bolt to tighten or loosen the belt tension.
 5. Correct belt tension allows belt (C) no more than 1/4" of side movement.
 6. Tighten the four (4) pulley mount bolts with the 9/16" socket.
 7. Loosen the adjusting bolt (D) until it is snug against adjustment stop molded in housing and turn adjustment nut against pulley mount bracket.
 8. Replace pad driver and pad center grip

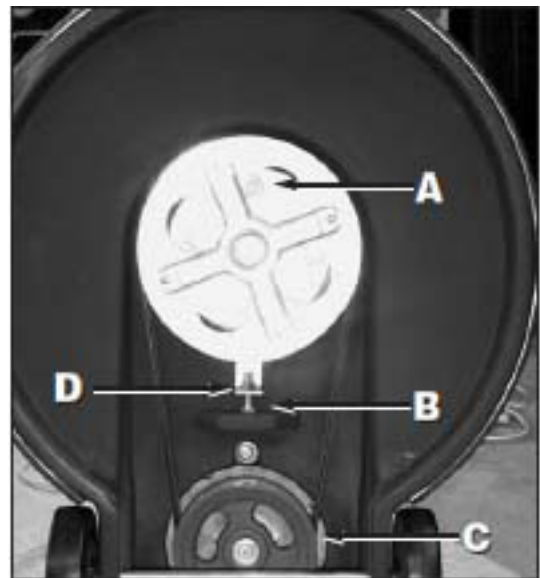


figure 7

TROUBLESHOOTING

Problem	Possible Cause
Burnisher will not start	Rectifier is defective. Replace. Switch is defective. Replace. Cord is damaged. Replace. Plug is broken or has a loose contact. Replace. Circuit breaker has tripped (2000 RPM and 2000 RPM Dust Control ONLY)*
Burnisher tends to move to the right	Do not lift up on the handle while operating the unit. Do not operate the unit with the handle set too high. (Recommended handle height is from your waist with your arms extended forward.)
Motor runs but pad does not turn	Belt is broken. Replace.
* To prevent circuit overload <ul style="list-style-type: none"> • Do not spray buff with the Brute Force Series Burnishers • Check pad and change if dirty or rough • Check area being burnished for cleanliness, area should be damp mopped, scrubbed or swept with treated broom. • Operator should not try to operate the burnisher in a side to side motion. • Operator should not continually force the machine with handle pressure. • Eliminate any extension cord that is smaller than 12/3 wire or greater than 25 feet in length. • The Dust Control unit will draw high Amps (20A+) without the dust skirt on the unit. Never run the unit without the dust skirt in place. 	

Warranty Registration Form

Please provide additional information on
Tornado equipment: (Check choices below)

- | | |
|---|---|
| <input type="checkbox"/> Automatic Scrubbers | <input type="checkbox"/> Sweepers |
| <input type="checkbox"/> Propane Floor Machines | <input type="checkbox"/> Rotary Floor Machine |
| <input type="checkbox"/> High Speed Burnishers | <input type="checkbox"/> Carpet Vacuums |
| <input type="checkbox"/> Carpet Extractors & Spotters | <input type="checkbox"/> Wet/Dry Vacs |
| <input type="checkbox"/> Steam Cleaners | <input type="checkbox"/> Jumbo Vacs |
| <input type="checkbox"/> Ride-On Equipment | <input type="checkbox"/> Pressure Washers |

See complete product info at www.tornadovac.com

Selling Dealer: (Required) _____

Please Print Clearly

Company/Institution	
Contact Name	Title
Address	City/State/Zip Code
Phone	Fax
Date of Purchase	Email

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	9. Hospital	17. U.S. Govt.
2. Retail Store	10. Nursing Home	18. Other Govt.
3. Restaurant	11. Religious Institution	19. Auto Service
4. Office Building	12. Airport	20. Airport
5. Contract Cleaning	13. Warehouse	21. Non-Profit
6. Light Manufacturing	14. Apartment/Condo	22. Other (specify)
7. Heavy Manufacturing	15. Warehouse	
8. College/University	16. Supermarket	

How did you first learn about Tornado cleaning and maintenance equipment?	In square feet (<i>meters</i>)	
	Total Hard Floor Area	Total Carpeted Area Square feet (square meters)
<input type="checkbox"/> Contacted by local dealer <input type="checkbox"/> Previous experience with Tornado products <input type="checkbox"/> Reputation/ Recommendation <input type="checkbox"/> Advertising <input type="checkbox"/> Direct mail <input type="checkbox"/> Internet <input type="checkbox"/> Other	<input type="checkbox"/> 0-10,000 (0-930) <input type="checkbox"/> 10-50,000 (930-4,650) <input type="checkbox"/> 50-250,000 (4,650-23,250) <input type="checkbox"/> Over 250,000 (over 23,260)	<input type="checkbox"/> 0-10,000 (0-930) <input type="checkbox"/> 10-50,000 (930-4,650) <input type="checkbox"/> 50-250,000 (4,650-23,250) <input type="checkbox"/> Over 250,000 (over 23,260)

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, the warranty is voided if service is attempted by non-Authorized Tornado Service Centers.



Return to :
Tornado Industries
3101 Wichita Court
Fort Worth, TX 76140
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or online at
www.tornadovac.com