



# **Tornado®**

## **Operation & Maintenance Manual**

For Commercial Use Only



## **Marathon 2000 Forward Only Extractor**

**CATALOG NO.**

**98190 (115V, 60 HZ)**

For parts list see L8190GHP

**Effective 12/19/2005**

## NOTES

Write your machine's serial number here: \_\_\_\_\_

***This illustrated instruction book covers:***

|                    |         |
|--------------------|---------|
| <b>CATALOG NO.</b> | 98190   |
| <b>SERIES</b>      | H       |
| <b>SIZE</b>        | 22"     |
| <b>CAPACITY</b>    | 20 Gal. |
| <b>VOLTS</b>       | 115V    |
| <b>AMPS</b>        | 15      |

All specifications are subject to change without notice.

**TABLE OF CONTENTS:**

|                                   |    |
|-----------------------------------|----|
| Warranty                          | 4  |
| Safety Instructions               | 5  |
| Preparation & General Precautions | 6  |
| Cleaning Tips                     | 9  |
| Machine Specifications            | 11 |
| Operation Instructions            | 12 |
| Maintenance Issues                | 14 |
| Troubleshooting Table             | 16 |

Long-term buyer protection warranties

| <b>Tornado® Standard Warranty Program*</b>   |   |
|--|---|
| <p><b>Warranties do not cover components subject to normal wear or abuse and misuse, and have other limitations not specified here. For full details, contact your Authorized Tornado Distributor, Service Center, or the Tornado Technical Service Department.</b></p> <p><b>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.</b></p> | <p><b>10 Years:</b><br/><i>All plastic tanks and rotationally-molded bodies<sup>1)</sup></i></p>  |
|  | <p><b>2 Year:</b><br/><i>Parts on all Tornado and Tornado/Karcher cleaning equipment<sup>1) 2) 3)</sup></i></p>   |
|  | <p><b>1 Year:</b><br/><i>Labor on all Tornado and Tornado/Karcher cleaning equipment<sup>2)</sup></i></p>   |
|  | <p><b>1 Year:</b><br/><i>Warranty on batteries and chargers, one year pro-rated.</i><br/><i>**6 Month Warranty on Gel Batteries</i><br/><b>All battery warranties are handled by the battery manufacturer, please call customer service for more information.</b></p> |

Thank you for choosing Tornado products. We are proud to offer the most complete line of commercial and industrial cleaning equipment in the industry. Our reputation for quality, innovation and durability is unsurpassed.

\* Effective January 1<sup>st</sup>, 2005. Terms subject to change without notice.

- 1) Windshear™ Blower-Dryer, Insulation Blowers, T191, T201, T12/1, CV 30, CV 38, CW 50, CW 100, Pro PAC Vacs, Duo-Upright Carpetkeepers™, and all chargers are warranted for 1 (one) year for both parts and labor.
- 2) Warranties on all riding sweepers including the ICC1, KM 100/100 R, KMR 1250, and KMR 1700 are 24 months parts/6 months labor OR 1000 hours of operation, whichever comes first. Warranties on the 75/140 & 90/140 are 24 months parts/12 months' labor OR 1,000 hours of operation whichever comes first.
- 3) All non-wear item parts purchased after warranty expiration are warranted for 90 days.
- 4) Warranty starts from the date of sale to the consumer or, at Tornado's discretion, 6 months after dealer purchased the unit from Tornado, whichever comes first.

Note: Tornado, The Latest Dirt, Floorkeeper, Carpetkeeper, Carpetrinser, Carpetrinser/Dryer, Headmaster, Taskforce, PAC-VAC, T-Lite, Glazer, Windshear, Max-Vac, CV 30, CV 38, and Trot-Mop are trademarks of Tornado Industries.

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# **IMPORTANT SAFETY INSTRUCTIONS FOR COMMERCIAL USE**

**WHEN USING AN ELECTRICAL APPLIANCE, BASIC PRECAUTIONS SHOULD  
ALWAYS BE FOLLOWED INCLUDING THE FOLLOWING:  
READ ALL INSTRUCTIONS BEFORE USING THIS MACHINE**

## **WARNING: TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY:**

1. Do not leave machine when plugged in. Unplug from outlet when not in use and before servicing.
2. Use indoors only. Do not use outdoors and do not expose to rain.
3. Do not allow to be used as a toy. Close attention is necessary when used by or near children.
4. Use only as described in this manual. Use only manufacturer's recommended attachments.
5. Do not use with damaged cord or plug. If machine is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, return it to a service center.
6. Do not pull or carry by cord, use cord as a handle, close a door on cord, or pull cord around sharp edges or corners. Do not run machine over cord. Keep cord away from heated surfaces.
7. Do not unplug by pulling on cord. To unplug, grasp the plug not the cord.
8. Do not handle plug or machine with wet hands.
9. Do not put any object into openings. Do not use with any opening blocked; keep free of dust, lint, hair, and anything that may reduce air flow.
10. Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
11. Turn off all controls before unplugging.
12. Use extra care when cleaning on stairs.
13. Do not use to pick up flammable or combustible liquids, such as gasoline or use in areas where they may be present.
14. Connect to a properly grounded outlet only. See Grounding Instructions.

## **SAVE THESE INSTRUCTIONS**

### **BEFORE OPERATING THE MACHINE**

Read the manual carefully and completely before attempting to operate the unit. This manual has important information for the use and safe operation of the machine. Keep this manual on file and handy. This machine will assure years of satisfactory service if operated and maintained according to recommendations in the manual. If additional information is needed, please contact your local distributor or call:

**TORNADO INDUSTRIES, INC.**  
7401 W. LAWRENCE AVE.  
CHICAGO, IL 60706  
708/867-5100  
FAX: 708/867-6968

All information and specifications printed in the manual and parts list are current at the time of printing. However because of Tornado's policy of continual product improvement, we reserve the right to make changes at any time without notice.

This machine was shipped with window washer antifreeze, during the winter months, in the solution line system to protect the pump and valves from freezing during transportation and storage. Before you use the unit, rinse the solution line system with clean water (refer to Protect From Freezing).

### **WARRANTY**

*To protect your investment, promptly fill out the required information on the warranty card that comes with the unit and mail it back to Tornado Industries*

## **GENERAL PRECAUTIONS**

- Make sure the machine is plugged into an electrical outlet with the same voltage and frequency rating as shown on the nameplate of the machine. Do not attempt to plug a 115-volt machine in a 230-volt outlet.
- Disconnect power cord from the outlet before attempting maintenance or repair work. Do not leave machine connected to an electrical outlet when unattended.
- Don't abuse power cord. Never pull the machine by the cord or yank plug from the receptacle. If this machine is operated on a wet carpet a potential shock hazard can be caused by a damaged cord. Replace a damaged cord immediately.
- Do not immerse this machine in standing water. Such use can cause electrical shock.
- Do not use volatile substances such as gasoline or kerosene in the machine, on or near the surface to be cleaned. The use of such materials could cause an explosion and fire.
- If an extension cord is necessary, use a 3 conductor grounding cord, 12-gauge wire to prevent motor burnout, overheating of the wiring.
- To avoid electrical shock, do not expose to rain and store indoors.

## **WARNING**

***The machine was designed for use on carpeted floors as per instructions and recommendations written in this manual. Any deviation from its proper use or purpose and the consequential damage that may occur is the sole responsibility of the end user.***

- Do not use the machine for **dry** vacuuming. This machine is not fitted with a dry filter.
- Use defoamer in the recovery tank at all times to prevent damaging the vacuum motor.
- Do not use water in excess of 140 degree F (62 degree C).
- Use only commercially available **low** foaming carpet cleaners and defoamers intended for machines of this type. Do not use dyes, bleaches, ammonia or other additives. The use of powdered cleaning solution if not diluted properly many result in the intake screen clogging or damage to the pump.
- Do not expose machine to freezing temperatures.
- Do not attempt to repair warranted machines. All repairs must be done by a qualified and authorized repair center. Non warranted repairs will be billed back to the owner of the unit.
- Do not use any replacement parts except those specified in the parts list. Unauthorized parts will void the warranty and could cause the unit not to function properly.

**FAILURE TO COMPLY WITH THE ABOVE WARNING INSTRUCTIONS  
WILL VOID THE WARRANTY**

## **ELECTRICAL**

This machine operates on a standard, 15 AMP, 115 volt AC circuit and has a grounded plug.\* Make sure the machine is connected to an outlet having the same configuration as the plug. **No ungrounded adapter should be used with this machine.**

\*Special voltage models available.

## **GROUNDING INSTRUCTIONS**

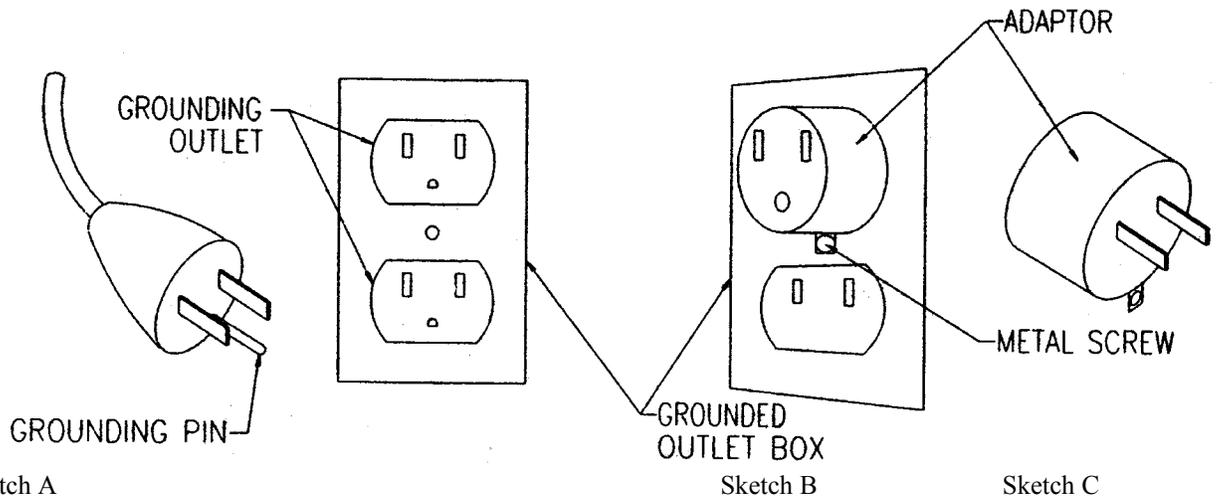
This machine must be grounded. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk electric shock. This machine is equipped with a cord having an equipment - grounding conductor and grounding plug. The plug must be inserted into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

### **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 machine is for use on a nominal 120-volt circuit, and has a grounding plug that looks like the plug illustrated in sketch A. A temporary adapter that looks like the adapter illustrated in sketches B and C may be used to connect this plug to a 2-pole receptacle as shown in sketch B if a properly grounded outlet is not available. The temporary adapter should be used only until a qualified electrician can install a properly grounded outlet (sketch A). The green-colored rigid car, lug, or the like extending from the adapter must be connected to a permanent ground such as a properly grounded outlet box cover. Whenever the adapter is used, it must be held in place by a metal screw.

**NOTE: In Canada, the use of a temporary adapter is not permitted by the Canadian Electrical Code.**



## STRAIN RELIEF

Attaching the strain relief/cord retainer to the 50' power cord.

1. Make a loop in power cord approximately 12" from receptacle end.
2. Slide cord loop through slot in retainer and over retainer arm.  
Pull slack cord back through slot to secure. Attach retainer to handle.

## EXTENSION CORD

If an extension cord is used, the wire size must be at least one size larger, (12-3) than the power cord on the machine.

## REQUIRED CLEANING CHEMICALS

Use only commercial low foam cleaning chemicals that are designed for carpet extraction.

1. General carpet extraction cleaner added to the solution tank.
2. Traffic lane per-spray usually applied with spray wand.
3. Defoamer only goes into the recovery tank.

**CAUTION:** Use as directed. Do not over use the cleaning chemicals.

## CLEANING TIPS

- Check the condition of the carpeting. If the carpet is loose, heavily soiled, stained, spotted or badly worn, point this out to the person in charge.
- Locate an inconspicuous spot on the area to be cleaned. Test carpet for colorfastness before proceeding. Pour the concentrated cleaning solution on the spot, cover with a white towel and place a heavy object on top to absorb the cleaning solution. Wait 10 minutes for any reaction to take place. Remove weight. If there is no color transfer, it should be safe to clean.
- Remove the furniture from the area to be cleaned. Large pieces can be moved to opposite end of the room from where you start cleaning and replace when it is completed. After cleaning carpet, place a small square of aluminum foil or 6-mil poly square under the furniture legs to prevent moisture from damaging the finish or rusting the metal glides.
- Clean the area first with a Clean-Air Carpetkeeper, upright vacuum. **Do not use the Marathon 2000 as a dry vacuum!** Heavily soiled carpet or areas of concentrated foot traffic should be treated with recommended pre-spotting or pre-spray chemicals, using a hand spray trigger bottle or pump up sprayer. Do not allow any spotter or pre-spray to dry on the carpet.
- Identify the type of carpet fiber to be cleaned. Most commercial carpet fibers in use are nylon or acrylic based. Best results in cleaning would be obtained if hot water is used to clean these types of fibers. On the other hand, hot water could shrink natural fiber carpeting, like wool and cotton in particular. Exercise caution when cleaning natural fibers. Use cool water test for colorfastness and apply the least amount of cleaning solution possible.
- Plan your cleaning route. Always try to have the cord to the right of the Marathon 2000 extractor so you are working away from the cord. Operate the extractor in parallel passes. Clean the perimeter last. Turn "off" spray switch in turns to conserve cleaning solution.
- To decrease dry time, go over the carpet without pressing carpet spray switch. To further decrease the drying time, use the Windshear 3000 Carpet Blower.
- When running the Marathon 2000 extractor, do not overfill the recovery tank. Do not allow the water level to rise above the clear dome on top of the recovery tank.
- If the spray jets become clogged, remove the spray bar assembly or the individual spray tips and soaks them in a mild acid or anti-browning chemical to dissolve normal alkaline chemical buildup.
- When the Marathon 2000 extractor runs out of cleaning solution, as noted by streaking or incomplete cleaning, turn off the machine and drain the recovery tank. Refill as needed and continue cleaning.

## **MACHINE SPECIFICATIONS**

- *ELECTRICAL: 115 V, 15 A, 60 HZ.*
- *DURABLE EXTENSION CORD: 75'*
- *DRIVE SYSTEM: TRANSAXLE W/ VARIABLE SPEED, (0-100 FT/MIN)*
- *VACUUM MOTOR: 3 STAGE, 1 HP., 120 CFM*
- *VACUUM SHOE: 22" WIDE, CAST ALUMINUM, ADJUSTABLE, FLOATING ARM*
- *BRUSH: 19" LONG*
- *BRUSH SPEED /HP: 1000 RPM / 1/4 HP*
- *SOLUTION PUMP: 100 PSI, DIAPHRAGM STYLE W/ VARIABLE FLOW  
(0.2GPM/2.0 GPM)*
- *SOLUTION CAPACITY: 20 GALLONS*
- *RECOVERY CAPACITY: 20 GALLONS*
- *WHEELS: FRONT (4" DIA.), REAR (10" DIA.)*
- *SPRAY SYSTEM: (4) QUICK CHANGE JETS, LEVER TRIGGER SPRAY WAND*
- *EMPTY WEIGHT: 190 LBS.*
- *FULL WEIGHT: 350 LBS.*
- *LENGTH: 51"*
- *HEIGHT: 37.5"*
- *WIDTH: 22"*

## **OPERATION INSTRUCTIONS**

### **Main Controls:**

Your Marathon 2000 extractor is equipped with (4) main switches, which control the spray bar, the brush motor, the vacuum motor and the main power. The main switch must be activated before operating the transaxle drive. The machine will glide easily across the floor when pushed forward (without power). The machine will also be able to be pulled back easily when the power is on or off. The pump spray and brush will only be activated when the deadman switch is squeezed.

### **WARNING:**

***In order to avoid injury, it is recommended that the Marathon 2000 extractor be pulled in the reverse direction (without power) in emergency situations only.***

In addition, there is (1) main circuit breaker, (located on the front of the main control panel):

- (20 amp) circuit breaker – main power

## Set Up and Operation:

Your Marathon 2000 is shipped complete and ready for carpet cleaning. This style of machine is sometimes referred to as a self-contained extractor, since everything is included in the body of the Marathon 2000 extractor.

1. Install recovery tank cover to the top of the tank and connect the suction hose to the cover.
2. Important! – Prior to first use: The unit has been tested with window washer fluid at the factory, and a small amount of this fluid may remain in the system as a precaution against freezing. Prior to first use, flush the tank and pump system with a half-gallon of plain water.
3. Open filler door at the front of the tank and fill with hot water. Add liquid cleaning solution to proper dilution ratio.
4. Use separate buckets to fill and empty extractor. Avoid using undissolved soap or chemicals that could potentially plug the spray jets.
5. Attach a 12-gage extension cord to the pig tail plug on the machine.

## **WARNING:**

***To avoid serious injury: Plug into a grounded (earth) outlet only. Do not use an adapter or remove ground pin on plug. Do not use a damaged cord.***

6. Activate the main power switch. The LED light will be lit.
7. Lower the manual release lever and allow the brush assembly to rest on the floor. The height of the suction nozzle may need to be adjusted using the turn knob.
8. Activate the vacuum motor switch.
9. Activate the brush motor switch.
10. Activate the spray bar switch. Remember to turn off this switch about 6" from the end of each cleaning pass.
11. Squeeze the trip lever on the main handle to move the extractor forward. The machine has a powered transaxle, so forward movement will be quick and easy. Turn the variable speed control clockwise to increase the forward speed. Note that the pump or brush will not operate until the machine is in motion and the spray and brush switches are turned on.
12. As you are cleaning, monitor the water level in the recovery tank cover. An overflow of water in the recovery tank can damage the vacuum motor. Always be aware of this water level.
13. The recovery tank can be drained by removing the drain hose from its support clip and removing the drain plug. The standpipe in the recovery tank is equipped with a metal screen cap. This cap is accessible by removing the clear dome on top of the unit. It is recommended that this cap be cleaned after every machine use.
14. The solution tank has a clear see through drain hose, which tells the operator the tank level. The water in the solution tank can be drained using this hose.

15. While cleaning, pre-spray traffic areas and spots using the spray wand. The spray wand is attached to a quick disconnect and is pressurized when the MAIN SWITCH is turned on.

### **WARNING:**

**To avoid serious injury: Disconnect power before servicing. Electrical service must be performed by an authorized service station or electrician. Use only nonflammable commercial chemicals intended for machine application. Do not use where explosive vapors or dust are present in the air. Disconnect power if the machine is left unattended. Do not allow machine to freeze. Do not expose to rain, store machine indoors.**

### **Daily Maintenance:**

1. Rinse out the recovery tank and clean the recovery dome. In addition, remove and clean the recovery screen cap.
2. Drain the solution tank and clean with water.
3. Remove any debris in either the recovery or solution tank.
4. Flush the pumping system with clean warm water or white vinegar.
5. Remove lint or debris from the vacuum shoe or brush. Hint: if heavy lint build-up is present, use a hacksaw blade with teeth down to remove the lint.

### **Periodic Maintenance:**

- It is highly recommended that once a month you flush the Marathon 2000 out with a 8 to 1 ratio of water to white vinegar or anti-browning solution through the Marathon 2000 extractor. This will help to prevent the build up of alkaline residue.
- If the spray jets become clogged, remove and wash them thoroughly and blow dry. Do not use wire or pins to clean the nozzles as this will cause the spray pattern to become distorted, thereby creating a streaking pattern on the carpeting.
- If the spray jets drip after the pump is turned off, the solenoid valve may need to be cleaned.
- Once a month, inspect all electrical cables, hoses, filters and connections in the Marathon 2000. If you see something that should be repaired or replaced it should be reported and repaired. Little things are easy to forget about, but as these little things add up, you end up with a cluster of problems that will cost you in the long run.

**CAUTION:** When opening the Marathon 2000 for service and/or inspection, be sure that the recovery hose is in its proper position. If not, the hose can become crushed and you will not get good airflow from the vacuum nozzle.

- Be sure to use Tornado genuine parts and service is provided by an authorized Tornado Service Center. Use of non-O.E.M. parts will void the warranty.

### **PROTECT FROM FREEZING - Caution!**

If it becomes necessary to store in temperatures that could drop below 40 degrees F, the pumping system, hoses and valves must be protected from freezing with a methyl hydrate window washer antifreeze solution. **Do not use ethylene glycol or cooling system antifreezes.**

Whenever unit will be stored in temperatures below 40 degrees F, empty the solution tank, and then pour a half-gallon of pre-mixed window washer antifreeze into the tank. The windshield washer fluid must not be diluted with water or solution already in the tank. Turn on the brush switch and press the spray switch until the unit runs completely dry.

Before returning the unit back to service, allow it to reach room temperature first. Then add a half-gallon of plain water to the solution tank and flush the system using the spray switch.

The unit has been tested at the factory with windshield washer antifreeze solution. A small amount of this solution may remain in the system and must be flushed out prior to first use.

## Troubleshooting Table:

| Problem                            | Solution   |
|------------------------------------|--|
| No Power, Nothing Works            | * Plug in Cord, Check Circuit Breakers                     |
|                                    | * Activate Main Power Switch                               |
|                                    | * Check For Loose Wiring                                   |
|                                    | * Call Service   |
| Machine Will Not Move Forward      | * Reset Circuit Breaker                                    |
|                                    | * Turn Speed Control Knob Clockwise                        |
|                                    | * Call Service   |
| Brush Does Not Rotate              | * Reset Circuit Breaker                                    |
|                                    | * Activate Brush Switch                                    |
|                                    | * Check For Loose Wiring                                   |
|                                    | * Call Service   |
| Poor Water Spray                   | * Spray Jets Clogged-Remove Spray Bar and Clean Spray Jets |
|                                    | * Check Pump-Remove Spray Bar And Check water Flow         |
|                                    | * Call Service   |
| Vacuum Motor Runs But Poor Suction | * Remove Debris From Vac Shoe                              |
|                                    | * Recovery Tank Too Full-Drain Tank                        |
|                                    | * Remove Debris From Suction Hose                          |
|                                    | * Call Service   |
| Vacuum Motor Will Not Run          | * Activate Vacuum Switch                                   |
|                                    | * Reset Circuit Breaker                                    |
|                                    | * Check For Loose Wiring                                   |
|                                    | * Call Service   |