



Operations & Maintenance Manual
For Commercial Use Only



BR 13/1 MULTIWASH
Model No. 99410

Table of Contents

Warranty	3
Important Safety Instructions	5
Electrical Connection	6
Machine Parts	9
How it Works	10
Preparing for Use	10
Unpack	10
Assembly	11
Controls	11
Operating the Machine	12
Cleaning the Machine	14
Maintenance	14
Accessories	10
Transport Trolley	15
Side Brush	15
Technical Specification	16
Accessories	16
Brush Selection Guide	16
Warranty Registration	17



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 Downdraft, 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

**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:**

Do not leave machine unattended when plugged in. Unplug from outlet when not in use and before changing pads or attempting any maintenance or adjustment. If handle switch lever is activated accidentally, high starting torque will cause machine to move and may cause damage or injury.

To avoid electrical shock, Use indoors only. Do not use outdoors and do not expose to rain.

Do not allow to be used as a toy. Close attention is necessary when used by or near children.

Use only as described in this manual. Use only manufacturer's recommended attachments.

Do not use with damaged cord or plug. If machine is not working properly, if it was dropped, damaged, left outdoors, or dropped into water, return it to a service center.

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. Do not unplug by pulling on cord. To unplug, grasp the plug not the cord.

Do not handle plug or machine with wet hands.

Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts. Turn off all controls before unplugging.

Connect to a properly grounded outlet only. See Grounding Instructions.
Do not put hands under base - rotating parts could cause injury.

Always keep hands feet and loose fitting clothing away from moving parts to prevent possible injuries.

Use care to keep electrical supply cable from contacting moving parts, such as floor brushes or pads.

Risk of explosion: Floor sanding can result in explosive mixture of fine dust and air. Use this machine only in a well-ventilated area, free from any flame or match.

Do not use machine in areas where flammable and/or explosive vapors or dusts are present.

To avoid fires do not use with a flammable or combustible liquid to clean a floor.

Make sure voltage and frequency at the wall receptacle correspond with that indicated on nameplate before plugging in machine.

Use only a 12 Ga. three-wire extension cable, which have 3-prong grounding type plugs and 3-prong receptacles that accept the plug of the machine.

SAVE THESE INSTRUCTIONS

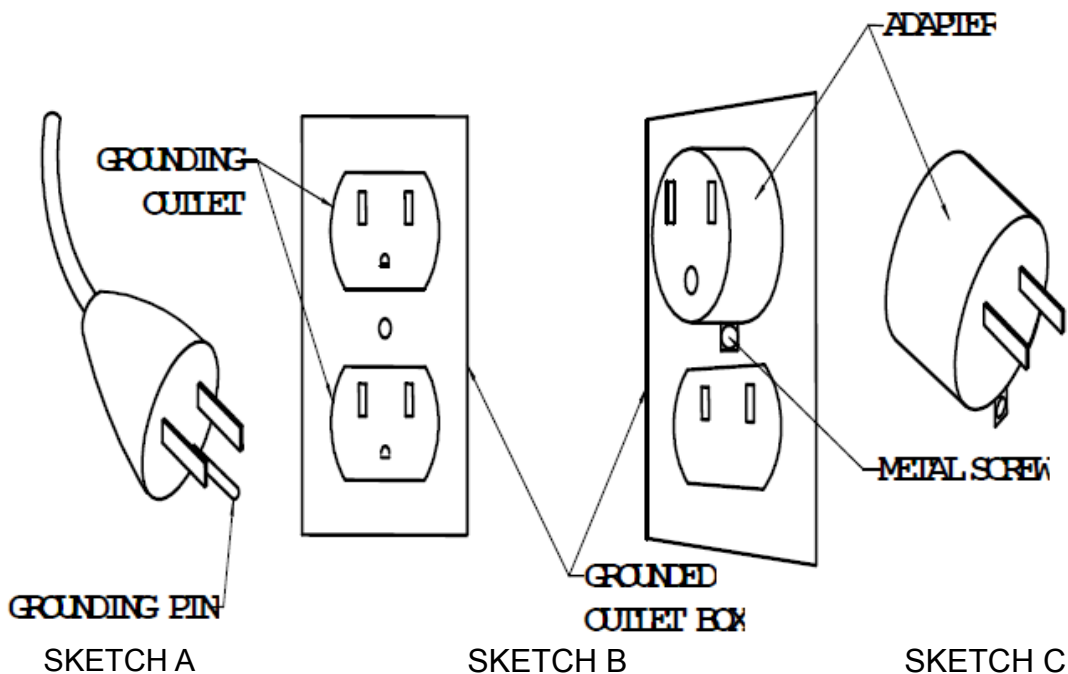
GROUNDING INSTRUCTIONS

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 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 ear, 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.



WHEN THE MACHINE IS DELIVERED

Check the carton carefully for signs of rough handling. Remove the machine from the carton and look for concealed damage. If the machine is damaged, notify the carrier immediately and request an inspection. Be sure to keep the carton, packing inserts, packing lists, and carrier's receipt until the inspector has verified your claim.

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. **FAILURE TO ADHERE TO THESE INSTRUCTIONS COULD RESULT IN SERIOUS BODILY INJURY OF PROPERTY DAMAGE.** 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 write to:

TORNADO INDUSTRIES

3101 Wichita Court
Fort Worth, TX 76140
1-800-VACUUMS

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.

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

Note: Service repair and warranty work is not normally handled at the factory.

WARNING

The machine was designed for use on 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.

GENERAL PRECAUTIONS

- You must be trained in the operation of this machine before use. Please read this manual carefully and obtain operation instructions from your safety director or your authorized Tornado distributor.
- Always operate this machine with all of the cable removed from the handle. Failure to do so will upset the precision balance of the machine.
- Do not use the Floor Machine for scarifying or sanding.
- Care should be taken to keep cable away from rotating brush.
- 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 could cause the unit to malfunction and will void the warranty.

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

Introduction

This Tornado floor cleaning machine is designed to be used on smooth, even floors indoors. They can be used on most floor surfaces including carpet, wood, PVC, rubber and stone.

We are confident the machines will give years of trouble free service, coupled with ease of use and minimum maintenance.

The following instructions contain important information about the machine and safety advice for the operator.

To save space and to protect the machine during transit, it is supplied with its handle disassembled. Follow the simple assembly instructions.

Warning: The machine must be fully assembled in accordance with these instructions before connecting to the electric supply.

Important Safety Advice

When using electrical equipment, basic safety precautions should be followed:

- Read all instructions carefully before use.
- The machine must be unpacked and assembled in accordance to the instructions given.
- Keep children and unauthorized persons away from the machine when in use.
- Unplug the machine when not in use.
- Switch off the machine before removing the plug.
- When unplugging the cord, pull the plug and not the cord.
- Keep the power supply cord away from moving parts. Do not run the machine over the cord.
- Do not operate the machine with a damaged supply cord or plug, or after the machine malfunctions or is damaged in any way. Contact an authorized Service Center for repair or adjustment.
- When cleaning or performing maintenance to the machine, make sure that it is unplugged.
- Regularly inspect the power supply cord. If it is damaged, it needs to be replaced.
- Be careful when using the machine near the top of stairs.

Guidelines for the Operator

- Operators must be fully trained in the use of the machine in accordance with these instructions.
- Operators should be physically able to maneuver, transport and operate the machine.
- Operators should be able to recognize abnormalities in the machine.
- This machine should always be connected to a fully earthed power supply of the right voltage and frequency.
- Let the machine do the work. Grip the handle as lightly as possible.
- Wear suitable footwear to avoid slipping.
- Wear suitable clothing to keep dry and warm.
- Do not smoke when using the machine.
- Do not run the machine dry, as this could damage the floor surface or the machine.
- Do not use excessively foaming or highly corrosive cleaning solutions. If operating on a flooded floor, ensure that water depth does not exceed 6mm (1/4 inch).
- Do not operate the machine on rough surfaces, explosive atmospheres, slopes, near flammable liquids and where hazardous dusts are present.
- Only use brushes and accessories per the instruction manual. The use of other brushes and accessories may cause safety problems.

Electrical Connection

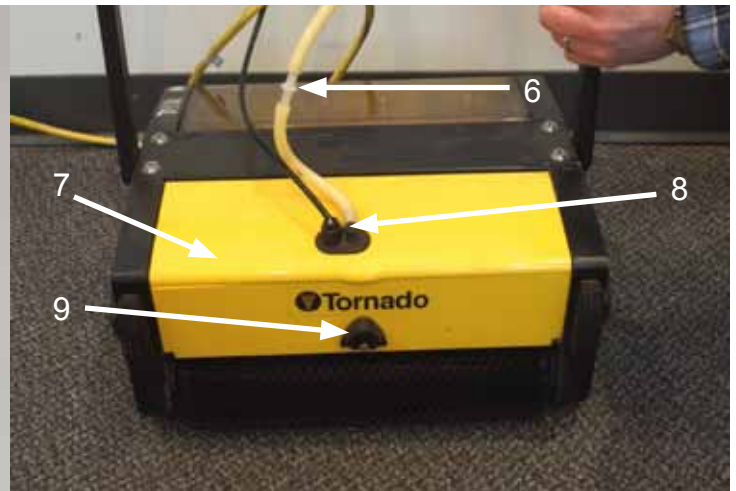
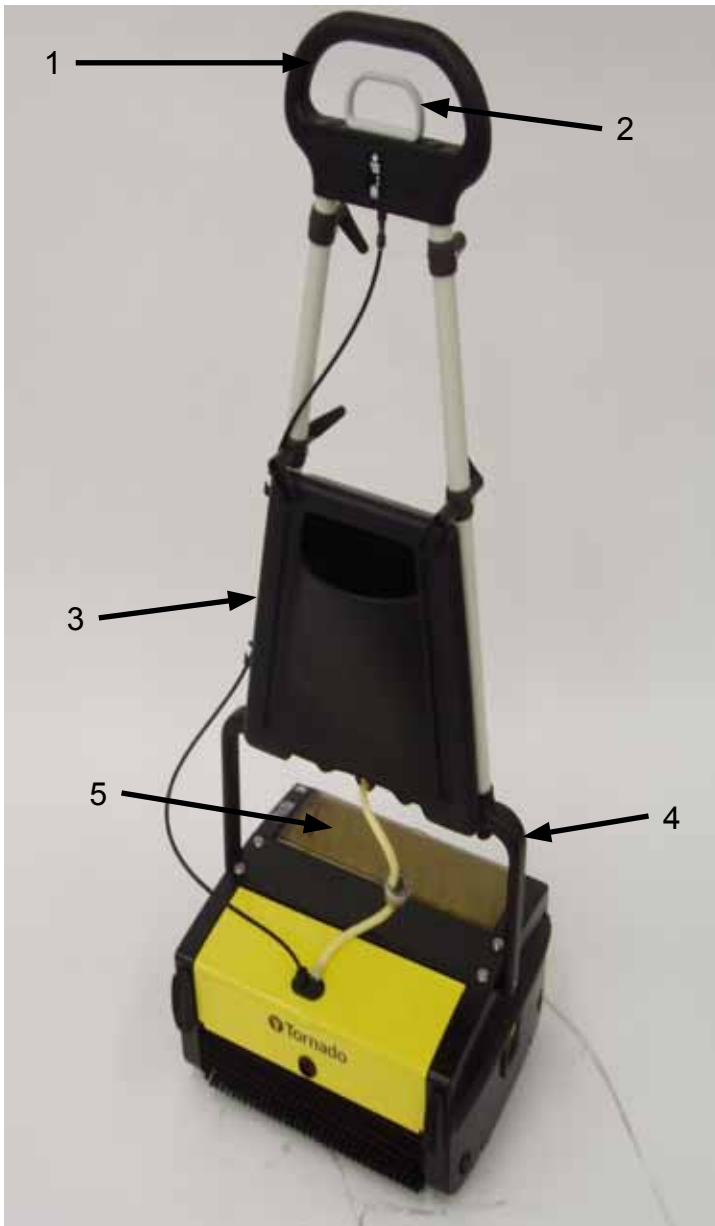
Before connecting the machine to the power supply, check that your supply voltage corresponds with the rating label on the body of the machine.

Important: If the supply cord is damaged, it must only be replaced by a cord from the manufacturer or an authorized service agent.

Transporting the Machine

Caution: This machine is heavy. Do not attempt to lift the machine without assistance. Incorrect lifting techniques may cause injury.

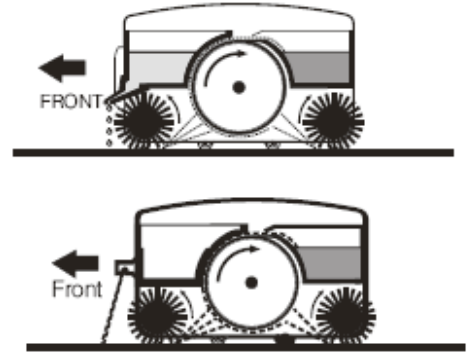
Machine Parts



1. Top Handle
2. Liquid Discharge Control Handle
3. Solution Tank
4. Bottom Handle
5. Recovery Tank
6. Filter
7. Lid Cap
8. Boot
9. Nozzle
10. Conveyor Drum
11. Brush
12. Pedal

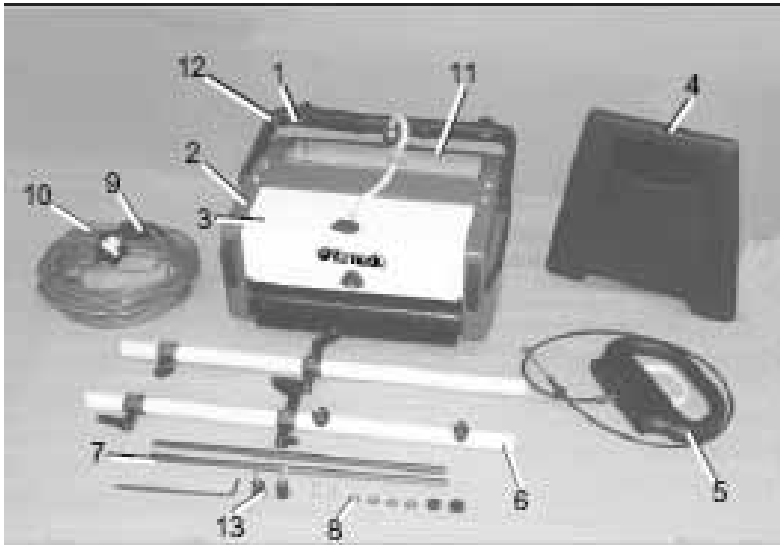
How it Works

1. Cleaning liquid in the solution tank is sprayed to the floor. The counter rotating brushes scrub the floor and also throw the dirty water on the conveyor drum. The front brush does most of the scrubbing and drying. The rear brush completes the scrubbing and collects the remaining water off the floor.
2. A blade fitted to the recovery tank wipes the drum and collects the dirty water.



Preparing for Use

Unpack



1. Bottom Handle
2. Machine Body
3. Pump Housing
4. Solution Tank
5. Top handle & Cable Pull
6. Handle LH & RH
7. Brush Shafts (2)
8. Screws & Washers
9. Cable Retainer
10. Power Cord
11. Recovery Tank
12. Hook
13. Knob



The purpose of these caps is to distinguish between different brushes when the machine is used in different area. This just helps the operator easily identify the brushes to avoid cross contamination.

Assembly

1. Insert the two tubular handles into the bottom handle and secure them using the knob by tightening lightly. Make sure that the handles are assembled according to their marked position and the cable holding hooks are pointed towards the rear.
2. Slide the electric cable retainer into the top portion of RH handle.
3. Fit the top handle over the tubular handles and secure them with washer and screw (2 sets). Make sure that the label on the top handle is facing the front of the machine. Now firmly tighten both knobs and screws. Insert the plastic caps provided to cover the screws in the top handle.
4. Pass the free end of the pull cable through the plastic guide in the RH Handle. Press and twist clockwise to firmly secure the cable end to the lid pump housing.
5. Fix the solution tank firmly into the bottom handle by holding the top handle.
6. Rotate the knob to hold the solution tank.
7. The brushes are loosely packed in the machine for transit; therefore the brush shafts must be fitted before operating the machine. Push the shafts through the brushes from the side of the machine. To remove brushes, push the brush shaft out from the side of the machine using your fingers and pull it from the other side.

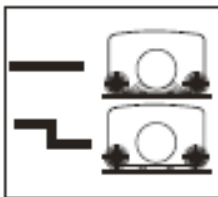


Controls

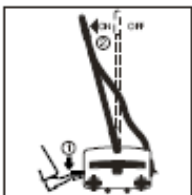
Transport/Working Mode Control

Slide the knob to the TOP position (Working Mode) to operate the machine. Slide the knob to the BOTTOM position (Transport Mode) to move the machine and/or park the machine. The machine will not turn on in this mode.

Warning: Keeping the knob in the top position and moving the machine will damage the brushes.



On/Off Control



Press the pedal lightly with your foot, then pull back the handle a little to start the motor. Pulling the handle further without pressing the pedal lowers the machine and engages the rotating brushes onto the floor. To turn the machine off, return the handle back to the vertical position.

Brush Pressure Controls

The control is located on the left side of the machine and has 4 positions: MINIMUM pressure when the knob is all the way down and MAXIMUM pressure when the knob is all the way up. This allows you to compensate for brush wear and to control the brush pressure.

Liquid Discharge Control



By pulling the liquid discharge handle up, the cleaning liquid is sprayed onto the floor in front of the machine. The flow ceases when the handle is released.

Pull Cable Connect/Disconnect Control

Insert the free end of pull cable into the valve body fitted in the cap base switch. Press and twist clockwise to secure the cable end. Similarly, press and twist counter-clockwise to disconnect the cable end.

Motor Overload Cut-Out



In the event of the motor getting overloaded due to improper power supply or unexpected obstruction to the brush or drum rotation, the overload protector trips and protects the motor from damage. If this happens, identify the cause, correct it and reset the protector button after a minimum of 30 seconds from the tripping. After this, you may continue working.

Important: Should the machine fail to operate, contact your dealer.

Operating the Machine

Before the Washing Operation Starts

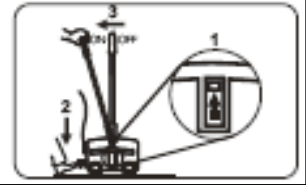
Warning: Pre-sweep the floor to remove debris before using the machine.

1. Ensure that the brushes are fitted properly.
2. Fill the solution tank with cleaning liquid.
3. Insert the plug into the electrical outlet.

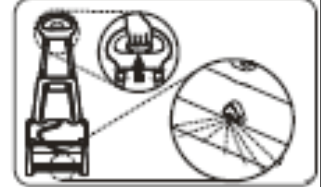


Recommended Washing Sequence

1. Start the machine by pressing the foot pedal and pulling the handle back.

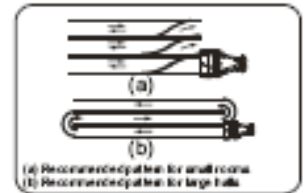


2. Move forward while occasionally pulling the solution discharge control handle. The handle should not be kept pulled constantly. The duration and frequency of pulling and releasing must be adjusted to the type of floor and amount of soil. For stone floors, apply very little solution. The spray pattern can be adjusted by the user. Adjust the spray to prevent solution being dispensed onto areas that have already been cleaned.



3. Release the solution discharge handle approximately 12 inches before the wall or other obstacle. Continue to move the unit forward up to the wall without pulling the solution release handle.

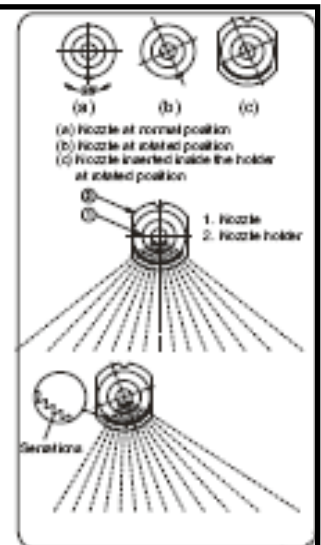
4. Pull the machine backwards in the same path, but without pulling the solution release handle. When you reach the starting point, change the path and repeat steps 2-4. When you are changing paths, allow some overlap onto the previously cleaned area. In the case of large halls make a U-turn and move forward. If quicker drying is required, go over the same area without discharging any solution.



5. Clean the blades.

Warning: Avoid touching the sharp edges of the recovery tank.

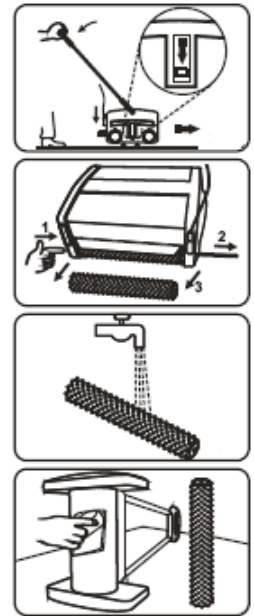
Note. The spray pattern is adjusted by using the serrations in the spray nozzle and holder. Each serration allows a 4-degree change in the spray pattern.



Cleaning the Machine

Warning: Switch off the machine and unplug the electric supply before performing any cleaning operations.

1. Move the Transport/Working Mode control to the BOTTOM (Transport) position to move the brushes off of the floor.
2. Unplug the machine and wrap the supply cord around the hooks on the handle.
3. Remove the recovery tank, wash thoroughly and refill.
4. To prevent possible clogging of the solution lines in the solution tank, empty any unused solution from the tank.
5. Remove the brushes by pushing out the brush shafts. Wash the brushes thoroughly in clean water.
6. Lay the machine on its side and wipe clean the rubberized drum and machine body with a damp cloth.
7. Reinstall the brushes after washing. It is easier to push the brush shaft from the right hand side (identified by the electrical cable).
8. Store the machine in a dry indoor area only.



Maintenance

Warning: Before undertaking any maintenance operations or adjustments, switch off the machine and unplug from the electrical supply.

To get the maximum life of the machine, do the following:

- **Supply Cord**

Regularly inspect sheath, plug and cord anchorage for damage or loose connection. Replaced if damaged.

- **Brushes**

Wash the brushes regularly. Make sure that the machine is in Transport Mode when not in use. Store additional brushes in a vertical position to avoid bending the bristles. Check for permanent bending of bristles in a particular direction. This may occur if the machine is operated for several days without removing the brushes, which is not recommended. If this occurs, reverse the brush so that the bent bristles are straightened.

- **Wiper Blade**

If the wiper blade wears out, the water collection performance will decrease. It should be replaced by an authorized service agent.

- **Solution Feed Filter (Pump)**

The filter should be periodically cleaned. Use pressurized air/water for cleaning.

- **Nozzle Maintenance (Pump)**

If the spray nozzle is blocked, slide the nozzle cover off and remove the nozzle. Clean it with clean water and use a pin to unclog, then reinstall.

Accessories

Transport Trolley

The easily fitted trolley provides for ease in movement when transporting the machine.



Using the Trolley

1. Empty all liquid from the machine.
2. With the machine handle in the upright position place the trolley in the middle alongside the machine.
3. Hold the machine firmly, strap the Velcro with the machine to fix the trolley.
4. Make sure that the Velcro strap is securely wrapped around the bottom handle.
5. The trolley is ready for use. The machine can be maneuvered easily while holding the top handle.

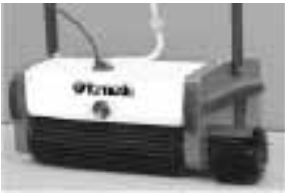
Side Brush

The side brush can be used to clean corners near the walls. Switch off and unplug the machine before fitting the side brush.

Warning: Do not use side brush in a room with no mop boards, otherwise, the wall may get dirty.

Fitting the Side Brush

1. Remove the front brush and brush shaft.
2. Fix the shield assembly on the side plate
3. Insert the side brush through the shield and main brush.



Using the Side Brush

1. Tilt the machine at an angle that will allow the rear brush to collect the dirty water.
2. Use side brush only for washing the edges.

Technical Specification

Cleaning Width	13.5 Inches
Body Height	8.5 Inches
Handle Height	44 Inches
Width	17.5 Inches
Length	15 Inches
Weight	55 lbs...
Motor Power	1 HP
Brush Speed @ 110V 60Hz	820 RPM
Solution Tank Capacity	1 Gallon
Noise Level	69dB

Accessories

Item	Part Number
Standard Brush (1 Pair)	33855
Soft Brush (1 Pair)	33856
Hard Brush (1 Pair)	33857
Side Brush	33858
Escalator Brush	33859
Trolley	05-3395-0000

Brush Selection Guide

Type of Floor	First Time Cleaning	Maintenance Cleaning
Granite, Ceramic, Vinyl	Standard	Standard/Soft
Mosaic	Hard/Standard	Standard/Soft
Marble	Standard	Soft
Smooth Concrete	Hard	Standard
Wood, Rubber	Standard/Soft	Standard/Soft
Carpet	Soft	Soft
Others	To suit individual floor conditions	

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 (meters)	
	Total Hard Floor Area	Total Carpeted Area Square feet (square meters)
<ul style="list-style-type: none"> <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"/> Internet <input type="radio"/> Other 	<ul style="list-style-type: none"> <input type="radio"/> 0-10,000 (0-930) <input type="radio"/> 10-50,000 (930-4,650) <input type="radio"/> 50-250,000 (4,650-23,250) <input type="radio"/> Over 250,000 (over 23,260) 	<ul style="list-style-type: none"> <input type="radio"/> 0-10,000 (0-930) <input type="radio"/> 10-50,000 (930-4,650) <input type="radio"/> 50-250,000 (4,650-23,250) <input type="radio"/> 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
Fax: 817-551-0719
or online at
www.tornadovac.com

