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Operations Manual
For Commercial Use Only



DUAL AND QUAD AIR INTERNAL FILTER JUMBO VACUUMS (WET-ONLY)
MODEL NO: 95961 (DUAL) 98450 (QUAD)



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

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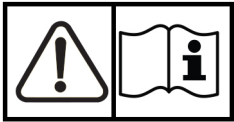
NOTES

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.



WARNING: Failure to read and understand these instructions could result in serious bodily injury or property damage

SAFETY INSTRUCTIONS

When using this unit, basic precautions should always be followed. Read all instructions before using this unit.



WARNING: To reduce the risk of fire, electric shock or injury:

- Do not leave machine unattended when running. Turn off when not in use.
- Before attempting any maintenance or adjustment, disconnect air lines.
- 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.
- If machine is not working as it should, has been dropped, damaged, left outdoors, or dropped into water, return it to a service center.
- Keep hair, loose clothing, fingers, and all parts of body away from openings and moving parts.
- Turn off all controls before disconnecting air lines.
- Do not put any object into openings. Do not use with any opening blocked. Keep openings free of dust, lint, hair, and anything that may reduce air flow.
- Do not pick up anything that is burning or smoking, such as cigarettes, matches, or hot ashes.
- Do not pick up flammable or combustible liquids, such as gasoline, or use machine where they may be present.
- Do not use without filters in place.
- Use extra care when cleaning on stairs.
- Always replace worn or torn filters immediately. This will prevent possible injury due to flying objects.
- Never operate with intake unguarded. Strong suction will pull fingers and/or clothing into hose and other parts. Always wear safety glasses when in vicinity of this unit.
- Never operate above 100 p.s.i. (8 BAR) pressure.
- Always turn off your air line supply at the drop before disconnecting the air line.

Features.

- Ideal for materials from water to heavy oils, ink and sludge.
- 3/16" (5 mm) jets installed on Dual, 1/4" installed on Quad. 7/32" (5.5 mm) and 1/4" (6 mm) jets are included for heavier debris.
- 90 p.s.i at the gauge (valve fully open) allows for maximum pickup power.
- 60 p.s.i. at the gauge (valve fully open) allows for lighter liquid pickup power.
- Never operate above 100 p.s.i. (8 BAR) pressure.
- An air compressor, air line, and Ine couplings are required for operation and are not available from Tornado.

General Specifications

The Internal Wet Jumbo Air Vacuum units create waterlift substantially beyond that found in traditional wet vacuums. They come with a 55- gallon rolled top steel drum (Tornado # 95944) for volume pick-up with maximum efficiency. They are designed for wet recovery applications requiring aggressive pick-up power. These compressed air vacuums have no moving parts and tremendous suction for a portable unit. All recovered products go into the drum, therefore maintaining peak performance. The included liquid shut off attachments prevent over filling of the drum. Use for volume pickup of heavy oils, liquid sludge, and many other liquids. Designed to perform at maximum efficiency with 2" hoses and attachments.

Unit Specifications

95961 DUAL INCLUDES	
95952	Venturi Powerhead (Internal Filter) (2)
95000	Jumbo Cover
90442	Deflector
90569	Liquid Shut Off (2)
95944	55-Galon Drum
98088	4-Wheel Dolly
90332	2" Hose Adaptor

98450 Quad INCLUDES	
95952	Venturi Powerhead (Internal Filter) (4)
95000	Jumbo Cover
90442	Deflector
90569	Liquid Shut Off (4)
95944	55-Gallon Drum
98088	4-Wheel Dolly
90332	2" Hose Adaptor

	95961	98450
HORIZONTAL RECOVERY (reach)	50 ft.	100 ft.
VERTICAL RECOVERY (lift)	25 ft.	50 ft.
REQUIRED COMPRESSOR	25 h.p.	50 h.p.
AIR LINE AND COUPLINGS	3/4" (minimum), quick-connect, chicaoq, or fixed	1" (minimum), quick-connect, chicaoq, or fixed
HOSE ADAPTOR	2" Included	2" Included
WEIGHT	146 lbs.	164 lbs.
CFM (2" Orifice)	160	258
Waterlift	242"	200"

Head Assembly Setup and Operation

ASSEMBLY OF HEAD UNIT AND DRUM STARTING/STOPPING MACHINE

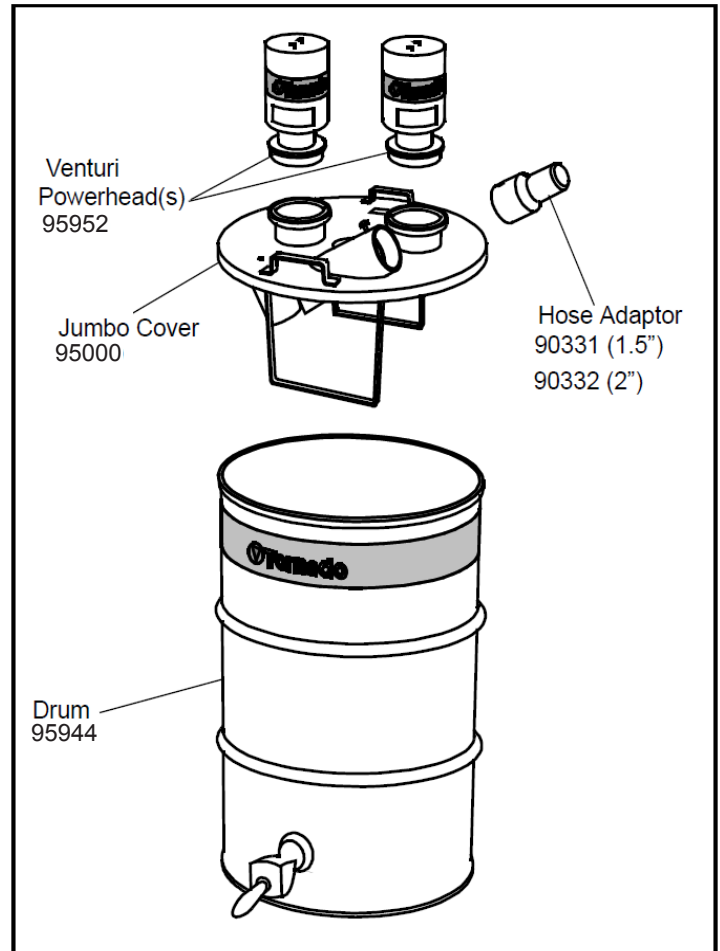
1. Remove all components from package.
2. The Venturi Powerhead(s) come already attached to the Jumbo Covers. To detach, remove the air connector, then turn powerhead(s) counterclockwise and they will unlock from the Jumbo Cover.
3. Install hose adaptor onto Jumbo Housing. Lock in place by lining up adaptor indent with lock screw and tightening lock screw.
4. Place head unit onto drum. The weight and suction power of the head unit will form a seal on the drum.

1. Connect air supply line to head line connector.
2. Start vacuum by turning air valve located on line connector to its ON position.
3. Stop vacuum by turning air valve located on line connector to its OFF position.

NOTE: Empty and clean vacuum and attachments after each days use for maximum performance.

OPERATING RULES

Use 1.5" to 2" I.D. hoses and attachments.
Use 3/4" for Dual and 1" for Quad air line hose and flow-through quick connects (do not use ball style fittings). 90 p.s.i. (7 BAR) at gauge (valve open) for maximum pickup power, 60 p.s.i. (5 BAR) at gauge (valve open) for lighter debris recovery. Use to recover water, heavy oils and sludge. IMPORTANT: The internal air vacuums do not have internal filters for dry recovery. They are assembled with silencers built inside the venturi powerhead and are designed for wet application only. Tornado does offer an optional internal filter kit that will convert this unit to a dry and moist pickup vacuum. Please note that if this conversion is done, it will be considered a dry/moist pickup vacuum only, and cannot be used for any wet/liquid pickup of any kind. Contact Tornado for more information on this conversion kit.



Problem	Remedy
Machine does operate	<p>Make sure air line valve is in ON position.</p> <p>Inspect air regulators for interference of air flow.</p> <p>Inspect air compressor for adequate size and that proper air pressure is available (60 to 90 p.s.i.).</p> <p>Inspect air line for proper size and/or damage.</p> <p>Always use flow through connectors.</p>
Machine stops running	<p>Inspect drum level.</p> <p>Inspect air line for damage.</p> <p>Inspect air pressure.</p>
Machine has no suction	<p>Inspect for clogged or collapsed hose</p> <p>Defective drum seal.</p> <p>Material too heavy for unit.</p>
Air pressure drops at gauge	<p>Inspect air compressor for proper free air consumption and resistance in air line size or connections.</p>
Machine has poor recovery	<p>Inspect for correct size hose and attachments.</p> <p>Defective drum seal.</p> <p>Material too heavy for unit.</p> <p>Inspect drum cover gasket.</p> <p>Ensure venturi powerheads are properly locked into Jumbo cover.</p> <p>Inspect all seals for wear and/or damage.</p>

Things To Know

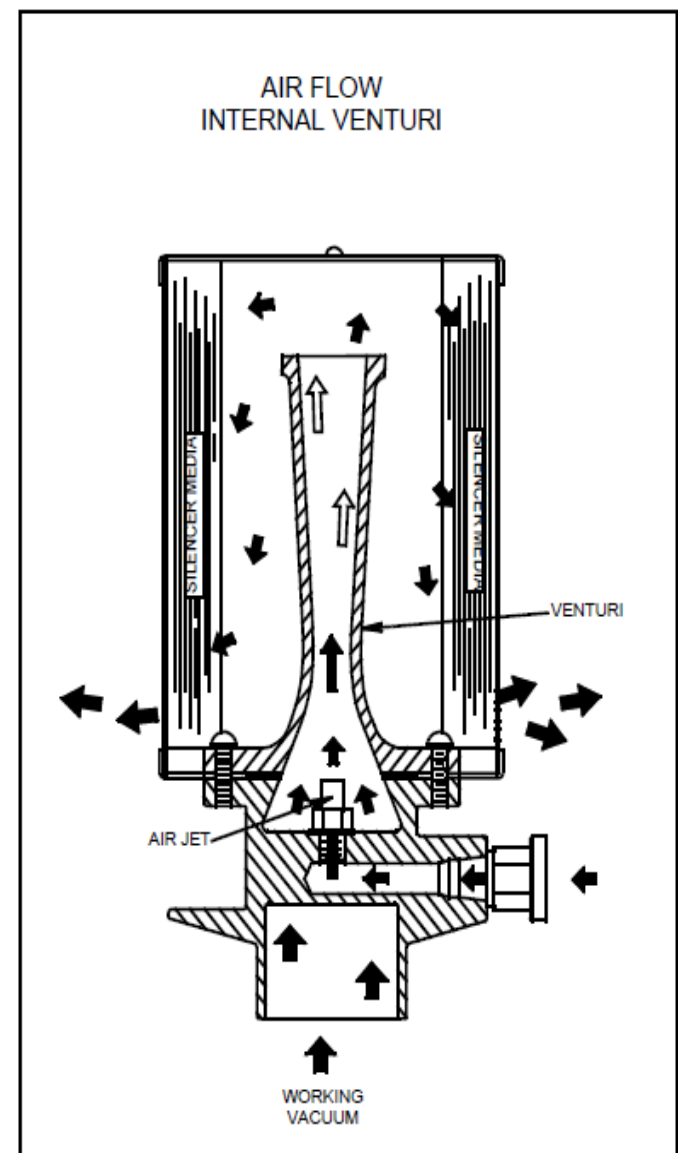
COMPRESSED AIR VACUUM FACTS

1. Use the smallest air jet possible to do the job. The smaller the jet, the lower the compressed air C.F.M. required.
2. Use a single venturi unit where liquid recovery is the primary application. A single venturi will recover liquids as fast as a double venturi will, yet consumes only one half as much compressed air.
3. Use a double venturi or quad venturi unit where higher volume of vacuum air is required. Remember, compressor overload is more likely to occur with a quad than a double venturi.
4. Use the lowest air line pressure possible per the given jet size to do the job. The lower the line pressure, the lower the compressed air consumption.
5. Air line **must** be maintained at the valve of the venturi unit. If pressure is not maintained at the unit, vacuum performance **will not** be reached. Be sure to use low line pressure for light liquid recovery, and high line pressure for liquids, sludge, and other heavy debris.
6. The air line hose should be as short as possible, and of maximum inside diameter (single 1/2", double 3/4", quad 1" recommended). Line air losses that occur are related to hose length and diameter, thus reducing performance.
7. Any air line moisture (condensation) should be eliminated. Using a water trap in the air line to the venturi unit will help maintain peak performance.
8. Air line components can reduce performance. Quick disconnect couplings and line filters, for example, may reduce compressed air delivery.
9. Factors that affect compressed air supply are compressor horsepower rating, compressor C.F.M. rating, and system resistance of installed air lines.

AIR COMPRESSOR EVALUATION

Independent of high horsepower or high compressor C.F.M. rating claims made by individuals, the final evaluation in determining if a compressor is capable of supplying enough compressed air, is to demonstrate the air vacuum with a pressure gauge at the venturi unit. This will show the actual pressure being maintained while the unit is operating (refer to fact #5). This approach will also compensate for air line system resistance losses. If the compressor cannot maintain the free air consumption necessary, the line pressure will drop. Consequently, the compressed air C.F.M. will also drop, thus reducing the vacuum or suction performance.

NOTE: The compressed air C.F.M. is not the same as the vacuum air C.F.M.



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
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 or online at
www.tornadovac.com