

TORNADO POND PUMP™

Instruction Manual



Operates
IN
the water!



- PAC1500
- PAC2100
- PAC3100

Alpine™
CORPORATION



Thank you for purchasing one of Alpine's Tornado pumps.

At Alpine, our goal is to supply our customers with quality products that provide convenience and value to your life. We hope you enjoy your purchase and thank you for choosing Alpine: *Your One Stop Shop for all your Solar, Gift, Garden and Pond Supplies.*

Our Tornado pumps are ideal for heavy duty waterfall or filter systems, as they have the needed power to move large quantities of water through your water feature. They are designed for continuous operation even in the harshest pond environments.

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LIMITED 3 YEAR WARRANTY

At their own discretion, Alpine Corporation will repair or replace any pump found to have Manufacturer's defects as follows: Pump body, cover, filter and accessories within three years of original purchase. Impeller and internal moving parts are warranted for one year of original purchase. This warranty does not cover any replaceable filtering material supplied with the pump or filter as it is considered expendable. Proof of purchase is required. Warranty does not cover damage resulting from negligent handling, misuse or lack of reasonable maintenance or care. Warranty is valid against defects due to material and the company's workmanship only. The sole obligation is at Alpine's discretion to replace/repair the defective unit with a suitable replacement part. Units should be checked for proper operation prior to returning as defective. No liability for loss or damage of any nature or kind, whether arising out of or from the use of the product, whether defective or not defective, is assumed by Alpine Corporation or its affiliates. Damaging, cutting or altering power cord, removing or defacing product labels voids any warranty consideration. Damages or injuries resulting from negligence or misuse of the product are not covered by warranty.

INTRODUCTION

The Tornado pump is ideal for pond owners looking for energy-efficient performance, flow, and ease of maintenance. The Tornado pumps come with a high-performance, extremely sturdy, asynchronous motor and 33-foot cord. This versatile pump can be used horizontally, in or out of water. The pump features simple maintenance, with a removable rotor assembly, water-resistant ceramic bearings for continuous and trouble-free use. Your Alpine Tornado pump is oil-free, magnetic-driven and is epoxy protected, with a ceramic shaft for long lasting dependable performance. This pump is equipped with a pre-filter cage which handles solids up to a quarter inch in size.

For a car to stay in great condition, proper maintenance is required. Therefore, Alpine suggests that once a week, you verify that the pump is performing satisfactorily. If you detect a drop in pump performance (such as a decrease in water flow from the pump or to the waterfall), first clean the pump's pre-filter cage and the tubing connected to the pump. If the water flow is still not fully restored to its original performance, simply clean the impeller and internal pump body. (See page 6 for maintenance instructions)

SAFETY INFORMATION




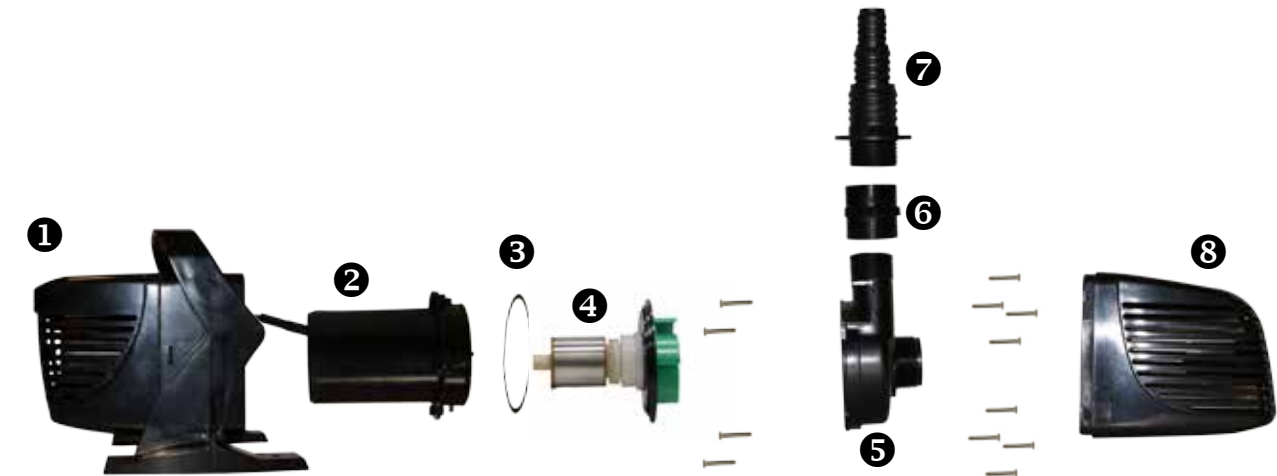
-  **WARNING:** Risk of electric shock – This pump has not been approved for use in swimming pool or marine areas
-  **WARNING:** To provide continued protection against risk of electric shock, connect to properly grounded, ground fault circuit interrupter (GFCI) outlets only, using the following guidelines:
 - (A) Read and follow all safety instructions and all the important notices on the appliance before using the pump. Failure to do so may result in loss of fish life and/or damage to this appliance.
 - (B) Have a qualified electrician install a properly grounded receptacle outlet, acceptable for outdoor use and protected from snow and rain.
 - (C) Any wiring of pumps should be performed by a qualified electrician to ensure code compliance and user safety.
 - (D) This is a pond pump. This pump has been evaluated for use with water only. Do not use this pump for other than intended use (*i.e.: do not use in swimming pools, aquariums, etc. Not to be used as a sump pump.*)
 - (E) Do not use this pump in swimming pools or other situations where people are immersed
 - (F) If an extension cord is necessary, ensure connection is watertight and dust proof. A cord with proper rating should be used. A cord rated for less amps or watts than the appliance rating may overheat. Care should be taken to arrange the cord so that it will not be tripped over or pulled. The connection should be carried out by a qualified electrical installer.
 - (G) Unplug pump at receptacle outlet when not in use or before removal from pond.
 - (H) To reduce risk of electrical shock, all wiring and junction connections should be made per local codes. Requirements may vary depending on usage and location.
 - (I) Inspect the power cable before using. The power cable should be protected at all times to avoid punctures, cuts, bruises and abrasions. Never cut the cord.
 - (J) Never handle power cords with wet hands.
 - (K) To avoid injury, do not touch moving or hot parts.
 - (L) Do not use power cable to lift pump. (*Figure 1.1*)





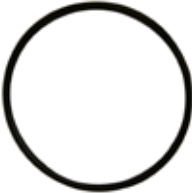





Figure 1.1

-  **IMPORTANT:** Alpine Corporation is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

COMPONENTS AND PUMP PARTS



1 Pump Body		6 1 ¼" Adapter Fitting	
2 Impeller Housing		7 Multi-Hose Adapter- 0.75"-1.25 For Models: PAC1500 PAC2100 PAC3100	
3 O-Ring		8 Pump Pre-filter Cage	
4 Impeller		(Chart 1.1)	
5 Pump Body Cover			

PUMP INFORMATION

ALPINE ITEM #	AMPS (MIN-MAX)	WATTS (MIN-MAX)	MAX FLOW	MAX HEIGHT	OUTLET CONNECTION	CORD LENGTH	GPH FLOW RATE			
							1ft	5ft	10ft	15ft
PAC1500	0.95	114	1500	11'5"	3/4"- 1 1/4"	33'	1485	904	206	--
PAC2100	1.20	144	2100	13'1"	3/4"- 1 1/4"	33'	2000	1458	634	--
PAC3100	1.60	192	3100	16'5"	3/4"- 1 1/4"	33'	3050	2219	1268	317

(chart 1.2)

INSTALLATION

•Only operate the pump when it has water running through it. Failure to do so will overheat the pump and cause it to fail, thus voiding the warranty. **DO NOT OPERATE DRY!** Remember, running a Tornado pump dry voids the warranty!

•Be sure that the pre-filter cage is fully snapped shut. Failure to operate the pump without the pre-filter cage on will allow large debris to enter the pump, causing the pump to fail and voiding the warranty. To protect your fish or other pond wildlife from being sucked into the pump, it is highly recommended to not operate the pump without the pre-filter cage on.

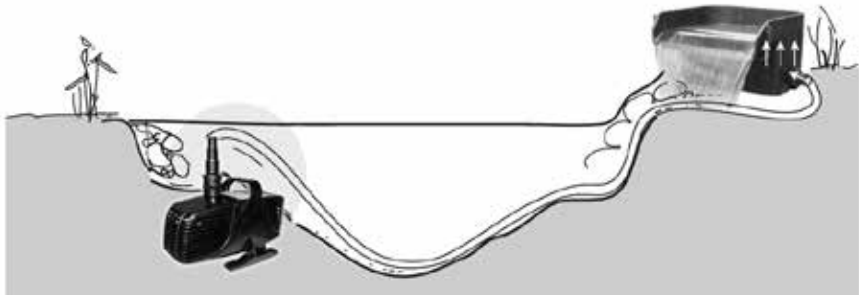


(Figure 3.1)

- Do not wear loose clothing that may become entangled in the impeller or other moving parts during installation.
- Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.
- Do not pump hazardous materials or liquids, such as oil, saltwater or organic solvents.
- Be sure no debris will block or restrict the pre-filter cage from water entering.

TYPICAL INSTALLATION FOR YOUR POND

The Tornado pump is designed to be submerged directly into the pond or out of the pond as long as water is running through the pump.



(Figure 3.2)

It is recommended that the pump is NOT positioned in the deepest area of the pond. This will protect the fish from suffocating by preventing the pond from completely draining in case of a leak in the tubing. Bricks or stones can be used, if needed, to raise the pump up off the bottom of the pond. The pump should be placed a maximum depth of 6.5 feet (2 meters).

<p>1</p> <p>The Tornado pump includes a fitting for all water features.</p>	<p>(Figure 3.3)</p>	<p>5</p> <p>Attach the tubing to the multi-hose adapter. If the tubing is loose on the multi-hose adapter, use a hose clamp (not included) to secure the tubing to the fitting.</p>	<p>(Figure 3.7)</p>
<p>2</p> <p>The threaded collar on all of the fittings enables the Tornado pump to be installed and removed without the need for any tools. Do not use tools to attach the fittings onto the pump discharge as the tool might break the fitting. Fittings need to be hand-tightened only.</p>	<p>(Figure 3.4)</p>	<p>6</p> <p>Connect the other end of the pump tubing to an Alpine pond filter, waterfall, or water feature.</p>	<p>(Figure 3.8)</p>
<p>3</p> <p>Install the right-sized Multi-Hose adapter based on the diameter of the tubing you are using.</p>	<p>(Figure 3.5)</p>	<p>7</p> <p>Place the pump into your water feature. Be sure it is fully submerged before plugging into a GFCI (ground fault circuit interrupter). Once the pump is running and water is circulating through the filter(s) or waterfalls, check for any fitting or waterfall leaks where the external connections are made.</p>	<p>(Figure 3.9)</p>
<p>4</p> <p>If using tubing with a larger diameter than the smaller fittings of the Multi-Hose Adapters, cut off the smaller section to avoid any flow restriction. This way your pump will perform at optimal level.</p>	<p>(Figure 3.6)</p>		

(Chart 2.1)

OPERATION AND MAINTENANCE



WARNING: Always unplug or disconnect all appliances in the pond from the electrical supply before installing, repairing, maintaining or handling the equipment in the water.

To avoid shortening the life of the pump, follow these simple maintenance procedures:

-Once a week, verify that the pump performance is satisfactory. If you detect a drop in pump performance (such as a decrease in water flow from the pump or to the waterfall) first clean the pump's pre-filter cage and tubing. If the water flow is still not fully restored to its original performance, clean the impeller and internal pump body.

-The pump impeller includes a high quality ceramic shaft that provides long-lasting, reliable performance when properly maintained. However, extreme care should be taken when handling the shaft during maintenance. Avoid dropping or pressing too hard on it to avoid breakage or hairline fractures, which may cause the shaft to snap while in operation.

-This pump is suitable for use in water temperatures from 32 degrees Fahrenheit (0 degrees Celsius) to 95 degrees Fahrenheit (35 degrees Celsius).

-To keep the pump in long lasting working conditions, always replace any worn parts.

Pump Pre-Filter Cage

Do not remove the pump's pre-filter cage while operating the pump. Failure to operate the pump without the pre-filter cage or operating the pump with a broken cage will allow large debris to enter the pump causing damage to the pump, thus voiding the warranty.



(figure 4.1)

Pump Pre-Filter Cleaning

We recommend inspecting your pump on a regular basis to ensure it is functioning properly. If you notice the water flow rate diminish, it may be due to the pump's pre-filter cage being blocked with debris. In many cases, the clogged filter cage can be cleaned by reaching into the pond and pulling the pump out of the water to remove the debris from the filter cage.

Important Note: Always disconnect the power before performing maintenance on the pump. Pull off any debris stuck to the pump pre-filter cage and/or use a garden hose to spray off any debris stuck to the filter cage.

REPLACING THE IMPELLER

If you have thoroughly cleaned the pre-filter cage and still have diminished flow rates, then you will need to remove and inspect the impeller and internal pump body.

- 1** Gently pull and remove the pre-filter from the pump.

(Figure 5.1)



- 2** To remove the pump body cover, remove all 8 screws.

(Figure 5.2)



- 3** Pull the pump cover off the impeller housing.

(Figure 5.3)



- 4** Pull the impeller out of the impeller housing.

(Figure 5.4)



- 5** If your impeller and impeller housing have excessive scale build-up, clean with a mild acid, such as white vinegar or non-abrasive calcium, lime and rust remover product using a sponge or soft-bristled brush that won't scratch the stainless steel. Removing scale build-up will allow your pump to run like new again.

(Figure 5.5)



(Chart 3.1)

6 After the impeller and impeller housing are cleaned, place the impeller back into the impeller housing. Twist the impeller to either the left or right until it clicks into place.

(Figure 5.6)



7 There are pins on the impeller housing that the impeller will click into. The impeller has openings on the back for the pins to click into.

(Figure 5.7)



8 Place the pump body cover to the pump body by aligning the screw holes and screw all 8 screws back in to the pump body.

(Figure 5.8)



9 Place the pump pre-filter cage back on to the pump body cover by aligning both parts until the pump pre-filter cage snaps back on to the pump body.

(Figure 5.9)



WINTER PUMP CARE

In cold climates, Alpine highly recommends to store your pump inside during the coldest months of the year. You may still use your Tornado pump during the winter time, but the Tornado pump cannot be used in below freezing temperatures. This pump is suitable for use in water temperatures from 32 degrees Fahrenheit (0 degrees Celsius) to 95 degrees Fahrenheit (35 degrees Celsius).

Please follow the steps below:

1. Disconnect the plug cord from the power supply.
2. Disconnect the tubing connected to the fitting.
3. Clean the pump and pre-filter with fresh water and store the pump in a frost-free location.

TROUBLESHOOTING

Problem	Solutions
1. If your pump has reduced water flow	A. Pump or tubing may be clogged, check area around pump to be sure there is no debris blocking water from entering into the pump. B. It may be necessary to clean the pump pre-filter and impeller. For instructions on how to clean your pump please turn to page 6-8. C. If none of the above solve your issue, the impeller needs to be replaced.
2. If your pump hums and doesn't push water	A. Pump or tubing may be clogged, check area around pump to be sure there is no debris blocking water from entering into the pump. B. It may be necessary to clean the pump pre-filter and impeller. For instructions on how to clean your pump please turn to page 6-8. C. Make sure the pump is receiving the correct voltage. D. If none of the above solve your issue, the impeller needs to be replaced.
3. If your pump has completely shut-off	A. The ground-fault circuit interrupter (GFCI) may have tripped. B. Check the temperature of the water to ensure it's within the working temperatures. C. It may be necessary to clean the pump pre-filter and impeller. For instructions on how to clean your pump please turn to page 6-8. D. If none of the above solve your issue, the impeller needs to be replaced.
4. If your pump turns on and off	A. Pump or tubing may be clogged, check area around pump to be sure there is no debris blocking water from entering into the pump. B. It may be necessary to clean the pump pre-filter and impeller. For instructions on how to clean your pump please turn to page 6-8. C. Check the temperature of the water to ensure it's within the working temperatures. D. If none of the above solve your issue, the impeller needs to be replaced.

(Chart 4.1)

REPLACEMENT PART LIST FOR HURRICANE PUMPS

Alpine Pump SKU#	Alpine Replacement Parts	Description
Impeller		
PAC1500	PAC1500-IMP	Impeller for PAC1500
PAC2100	PAC2100-IMP	Impeller for PAC2100
PAC3100	PAC3100-IMP	Impeller for PAC3100
Fittings		
PAC1500	PAC-FIT	Fittings for PAC Series
PAC2100	PAC-FIT	Fittings for PAC Series
PAC3100	PAC-FIT	Fittings for PAC Series

(Chart 5.1)