

PRO BOAT

THUNDERcat

ThunderCat 31 Assembly Manual
.32 Size Nitro Powered Catamaran Boat



Specifications

Length.....	31 in (775mm)
Beam	11.5 in (287mm)
Engine.....	DYN .32 Marine w/Tiger Drive and Tuned Exhaust
Radio System	Pro Boat AM 27MHz
Weight	6.3 lb (2.8 kg)
Fuel Tank Capacity	12 oz (0.35 liter)

Introduction

Congratulations on the purchase of your Pro Boat™ ThunderCat™ 31 Catamaran. You are just minutes from one of the most thrilling experiences that the radio control hobby has to offer.

The Pro Boat ThunderCat 31 is a professionally built, ready-to-run Catamaran fiberglass composite model. Powered by the potent Dynamite® .32 marine engine, you will be able to race across the water at scale speeds in excess of 300mph!

Read this owner's manual thoroughly. You also need to read the included Dynamite .32 engine manual, along with the Pro Boat radio system manual.

It is very important that you operate this boat responsibly. With proper care and maintenance, you will be able to enjoy your ThunderCat 31 for many years to come.

Carefully unpack ThunderCat 31 and examine the boat and its contents. The box should contain the ThunderCat 31 RTR with radio installed, a boat stand, and the Pro Boat radio transmitter. If you are missing any of these items or notice any damage, immediately contact the place of purchase.

Warning

This boat is not a toy! It is a high performance RC model boat. Do not take risks that could endanger you or others.

Before operating your model, make sure your frequency is clear. If someone else is operating on the same frequency, both models could go out of control, possibly causing damage to the models, as well as to others.

Be certain to check all of the hardware, exhaust system, and propeller, making sure that all are secure before and after each run.

Always stay clear of the propeller when the engine is running!

When you first begin to run your ThunderCat 31, place it in the water with the engine running at approximately 1/8 throttle. Slowly increase throttle until boat accelerates onto plane. Gradually increase throttle to no more than 1/2 until you become more familiar with the boat.

When operating this model, stay clear of people, full-sized boats, stationary objects, and wildlife. Also, watch out for fishing lines that could get tangled in the propeller. It is preferable to operate the Pro Boat ThunderCat 31 in low wake, low wind conditions. We also suggest that you do not run the ThunderCat 31 in salt water. If at any time while operating your ThunderCat 31 you sense any abnormal function, end your operation immediately. Do not operate your ThunderCat 31 again until you are certain the problem has been corrected.

Service Center Information

If you have any questions regarding the Pro Boat ThunderCat 31, please contact the Horizon Service Center:

Horizon Service Center
4105 Fieldstone Rd.
Champaign, IL 61822
(877) 504-0233

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Additional Required Items

Although the ThunderCat 31 comes fully assembled and ready for action, you will need a few tools to get you ready to run your boat. You will need the following:

- | | |
|--|---|
| Blue Thunder™ 20% Fuel (quart) (DYN2320) | Ni-Cd Glow Driver (DYN1925) |
| 500cc Fuel Bottle (DYN2003) or | 12 “AA” alkaline batteries (8 for the transmitter and |
| Fast Tap™ Quart Bottle Spout (DYN2009) | 4 for the receiver) |
| Glow Plug Wrench (DYN2510) | 7.2V Battery (DYN1000) for electric starter |
| | Battery charger (DYN4051) for electric starter |

Suggested Field Equipment and Supplies

In addition to the items needed to run the ThunderCat 31, we recommend that you carry the following in your field box:

- | | |
|---|----------------------------|
| Engine Tuning Screwdriver (DYN2775) | Clean towels |
| Replacement Glow Plugs (DYN2508 or DYN2500) | “AA” alkaline batteries |
| Hex driver/Allen wrench (2.5 mm) | Adjustable wrench (small) |
| Cable grease to lubricate drive shaft | Extra Propellers (PRAB215) |

Warranty Information

Pro Boat™ guarantees this kit to be free from defects in both material and workmanship at the date of purchase. This warranty does not cover any parts damaged by use or modification. In no case shall Horizon Hobby's liability exceed the original cost of the purchased kit. Further, Horizon Hobby reserves the right to change or modify this warranty without notice.

In that Horizon Hobby has no control over the final assembly, or material used for the final assembly, no liability shall be assumed or accepted for any damage of the final user-assembled product. By the act of using the product, the user accepts all resulting liability.

All warranty questions should be directed to Horizon Hobby, Inc. Please do not contact your local hobby shop regarding warranty issues. This will enable Horizon to better answer your questions and provide service if assistance is needed.

If not prepared to accept the liability associated with the use of this product, the buyer is advised to return this kit immediately, in new and unused condition, to the place of purchase.

If you have any questions regarding the use of this product, concerns regarding warranty, or non-warranty service please contact our Product Support Team toll free at:

(877) 504-0233

or

productsupport@horizonhobby.com

Contents

- Assembled ThunderCat 31 Nitro RTR
- Pro Boat radio transmitter
- Boat stand
- Electric Engine Starter



Section 1: Building the Boat Stand

- 1. There are 4 plywood pieces. The 2 short plywood pieces are the ends of the boat stand.
- 2. Attach the 2 long plywood pieces of the interlocking boat stand to one end of the short plywood pieces. Repeat with the remaining short plywood pieces.
- 3. Secure the interlocking boat stand with thick CA or Epoxy.

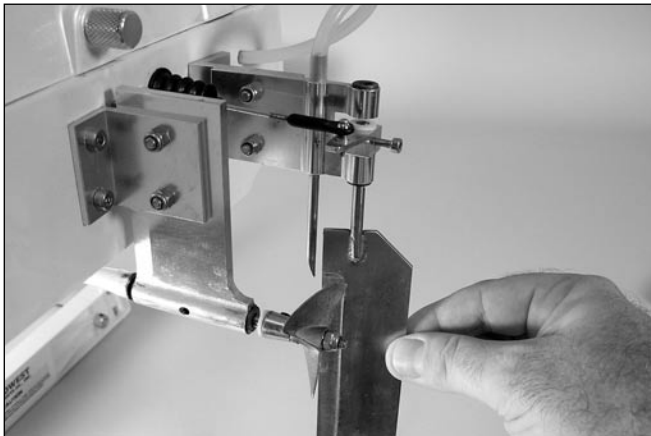


Section 2: Rudder Installation

Parts Needed

Rudder and 2.5mm hex screw

- 1. Locate the stainless steel rudder and 2.5mm hex screw.



- 2. Carefully insert the rudder as shown.



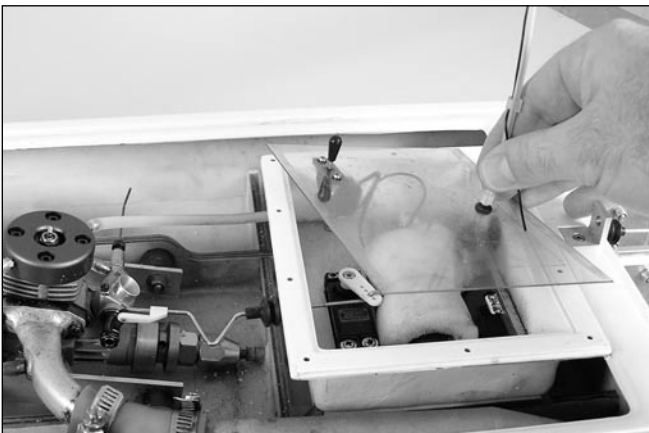
- 3. Find the flat spot on the rudder. Using a 2.5mm hex wrench, tighten the hex screw on the flat spot as shown.

Section 3: Installation of Receiver and Transmitter Batteries

Receiver Batteries



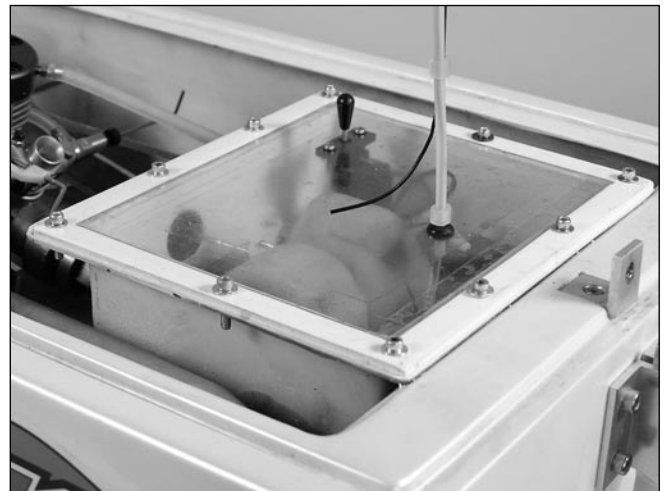
- 1. Remove the knurled aluminum nut securing the cockpit. Pull the cockpit off the boat.



- 2. Remove the hex screws that secure the clear lid on the radio box.



- 3. Remove the dry cell battery holder from the radio box and unwrap the foam from around the dry cell battery holder. Install 4 "AA" alkaline batteries as shown. Note the proper polarity. Wrap the battery box in foam.



- 4. Re-install the battery holder into the radio box and secure the radio box lid with the hex screws. Be sure that the gasket is not pinched. Failure to properly seal the radio box could result in damage to your radio equipment. Insert the receiver antenna into the clear lid.

Section 3: Receiver and Transmitter Batteries (continued)

Transmitter Batteries

- 1. Remove the transmitter from the box.



- 2. Remove the battery cover on the bottom of the transmitter.



- 3. Note the proper polarity and insert 8 “AA” batteries into the transmitter.



- 3. Secure the batteries using the battery cover.
- 4. Turn on the radio and confirm that all LEDs illuminate, indicating proper installation of fully charged batteries.
- 5. Turn the radio off.

Section 4: Range Checking the Pro Boat Radio System

Before the first run of the ThunderCat 31, you should check the radio for proper operation and to ensure proper control movement of the rudder and throttle. Also ensure that the antenna on the boat is extended properly and that all batteries are in working condition.

- 1. With the radio system turned on (transmitter and receiver) and the transmitter antenna down (engine off), walk off 40 to 50 paces from the ThunderCat 31.
- 2. Have an assistant remain with the boat to check for proper control movement of the rudder from your transmitter input.

- 3. If everything appears to be operating correctly, raise the antenna and start the engine (refer to Section 6 of this manual and to the separate DYN .32 engine manual). Place the boat in the water and run it (at about 1/3 throttle) close to the shoreline. If the radio system is operating properly, you can begin to run the boat faster and further away from the shoreline.

Note: It is a good idea to range check prior to operating your boat after any repair, installation of new batteries, or at the beginning of each boating season.

Section 5: Filling the Fuel Tank

We recommend that you use Blue Thunder™ 20% fuel. For maximum performance, we recommend Blue Thunder Race Formula. Blue Thunder fuels are specifically formulated for excellent power and engine protection.

Locate the fuel tank inside the cockpit area and unscrew the lid. Use either the DYN2009 Fast Tap™ quart bottle spout that has been attached

to the quart of fuel or the DYN2003 Fuel Bottle to fill the fuel tank with your selection of Blue Thunder fuel. After you have filled the fuel tank and re-installed the lid, wipe away any excess fuel that may have spilled inside the hull or elsewhere on the boat. Immediately seal the fuel container by putting the lid back on after refueling in order to protect the fuel from moisture.

Section 6: Hull Care

The hull of the ThunderCat 31 is finished using the highest quality paints and the most advanced painting methods available. The base coat/clear cote technique delivers an amazing shine that is as durable as it is beautiful. To keep your ThunderCat

looking new, you should apply a wax coating as used on automotive finishes to prevent oxidation and to further protect against damage caused by fuel and other harmful chemicals.

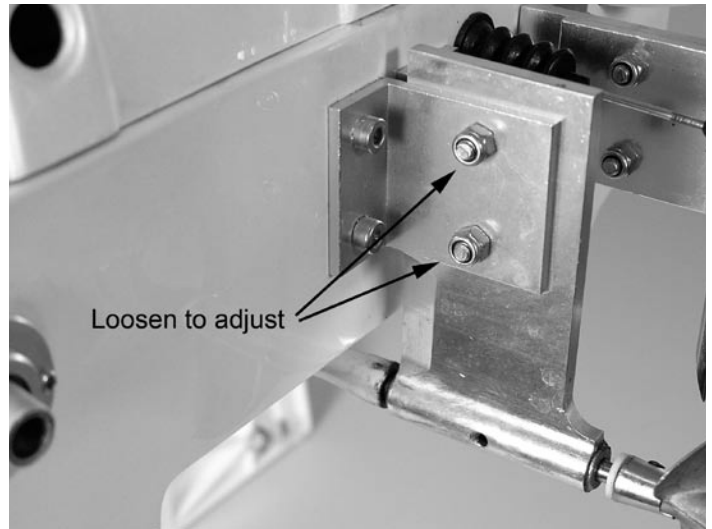
Section 7: Propeller Balancing

For optimum performance, propeller balancing can add several M.P.H. and lower vibration. There are several different propeller balancing tools available. Read the instructions that accompany the propeller

balancing tool as removing material from the correct part of the propeller is crucial. Contact a local hobby retail store for assistance.

Section 8: Handling Adjustments

Operate your ThunderCat in low to medium wake conditions to avoid having problems with the boat overturning. If the conditions are questionable, adjust the prop strut down a bit to reduce the likelihood of having the boat overturn.

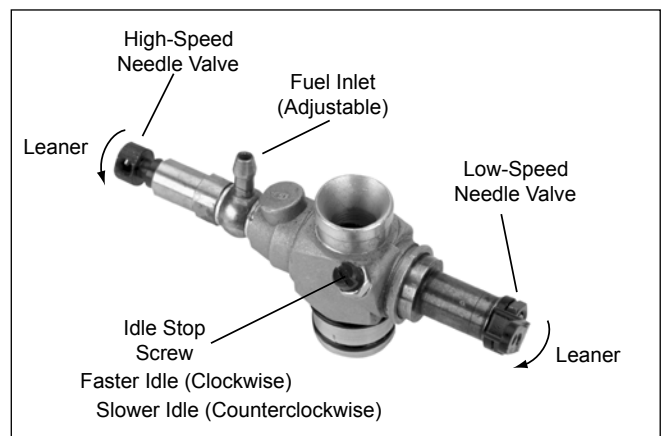


Section 9: The Dynamite .32 Marine Engine

Water-Cooled Engine

Because the Dynamite® .32 engine is water-cooled and not air-cooled, make sure that you do not run the engine for an extended amount of time outside of the water. Continuously monitor the water outlet when the boat is running to make sure that water is flowing through the engine head. If the water does not reach the head to cool it, the engine will overheat and fail. This will cause permanent damage to the engine.

Carburetor



The Dynamite carburetor is adjusted at the factory. This setting should be approximately $1\frac{3}{4}$ – $2\frac{1}{2}$ turns open for the high-speed and $2\frac{1}{2}$ turns open for the low-speed needle. This should give you a slightly “rich” mixture of fuel to the engine. This setting is the safest way to break in your engine. For further details regarding the carburetor, see the Dynamite .32 instruction manual.

Section 10: Starting the Engine

Hand-Held Starter

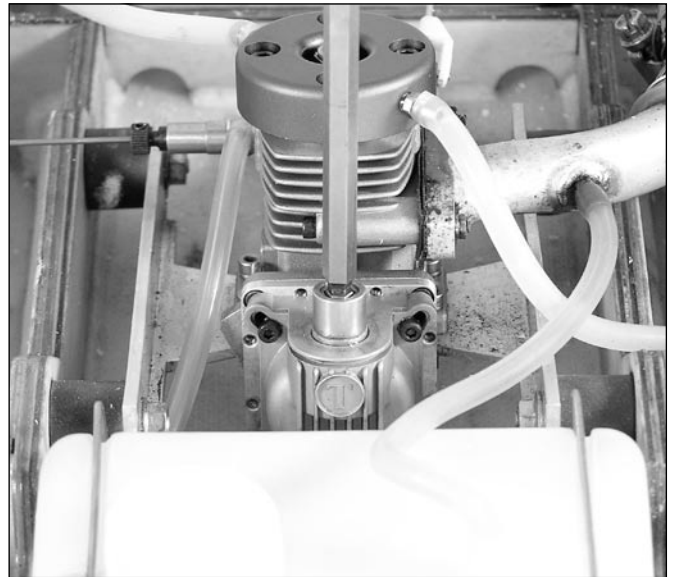


- 1. Fully charge a 7.2V sub-C battery pack and install it in the starter as shown.



- 2. Slide the starting wand (which is stored inside the battery cover) into the end of the starter, then replace the battery cover.

Operation



Fill the fuel tank with 20% glow fuel and attach a fully charge glow driver to the glow plug.

Turn on the radio system and insert the starting wand into the Tiger Drive and actuate the starting switch until the engine begins to run.

Note: Stop operation immediately if the engine enters a hydro-locked condition as serious engine damage may occur if operation is continued. Remove the glow plug, invert the boat and operate starter to remove raw fuel before resuming normal operation.

You may have to “blip” the throttle on the transmitter (applying throttle on/off) while trying to start the engine. New engines are harder to start because of the tight piston/sleeve fit. Never start an engine at 1/2 to full throttle, as this will cause over-revving which may cause premature wear and breakage.

During the first tank of fuel, advance the idle via the idle adjustment screw more than normal to prevent stalling at idle due to the rich fuel mixture for break-in. Pinch the fuel line nearest the carburetor to stop the engine.

Section 10: Starting the Engine (continued)

Breaking in Your Engine

The first start-up of the engine is the most critical moment of the engine's life, dictating how the engine will perform from that time forward. Turn on your radio system and attach a fully charged glow igniter (DYN1925) to the glow plug. Start the engine with the electric starter as described in Section 8.

During break-in, the low-speed needle should be slightly rich and the high speed needle should be very rich. After a few tanks of fuel, begin to lean the engine out. It generally takes about five to six tanks of fuel before you want to lean out the engine until it supplies good power. Do not skip this process of break-in. Failure to follow this procedure could damage your new engine. For further details on breaking in your engine, please see the separate Dynamite .32 instruction manual.

Note: It is common for an ABC engine to go through a glow plug or two during break-in.

Needle Settings

When adjusting the settings, always adjust the needles in small increments, about 1/16 of a full turn at a time. Do not set the engine too lean, as it shortens the reliability of the engine.

After you have attained the correct needle settings, the engine will have a strong sounding, high-pitched whine at full speed, and a thin trail of blue/white smoke will come from the exhaust.

Idle Adjustment

The last setting to set is the idle screw. To obtain a higher idle, turn the idle screw clockwise; for lower idle, turn the idle screw counterclockwise.

Replacement Parts

In the event that you need to replace an engine part, there is a complete parts listing in the Dynamite .32 instruction manual. Exploded views will help you to select the correct parts and make minor repairs.

Head Shims

Several head shims are added at the factory to make the engine easier to start when new. After break-in, you may remove all but one of these shims to increase compression and power.

Maintenance

Lube the gears inside the drive with waterproof grease every 30 hours of use. Check all screws for tightness after each run.

Section 11: Troubleshooting Guide

Problem	Solution
Engine will not start	Engine is not primed: Put a few drops of fuel into the carburetor venturi and restart Out of fuel: fill fuel tank Improper fuel: use 20% Blue Thunder™ Improper glow plug: install proper glow plug Glow igniter not charged: charge igniter Dead glow plug: replace Flooded engine: remove glow plug, invert boat and engage the Tiger Drive to remove raw fuel from the engine
Engine starts, then dies	Pressure line blocked or unhooked: connect or replace fuel line Reset needles to baseline setting: see Section 9
Engine starts and runs for several minutes, then dies	Bad glow plug: replace Idle speed set too low: see Section 9 Improper needle settings: see Section 9 Glow plug failed due to lean engine setting: richen carburetor settings and replace glow plug

Section 12: Maintenance

The Pro Boat™ ThunderCat 31 should provide many hours of exciting high-speed racing fun with just minor maintenance. Preventative maintenance is very important. Taking the time to ensure that all the set screws and bolts are tight before each operation of the boat will prevent many problems.

Before operating ThunderCat 31

Check that all screws and hardware are securely in place. This is very important, as the manifold screws will occasionally vibrate loose during the first initial runs.

Check the propeller for damage in the form of chipping or cracking. If you find any damage, replace the propeller, as the damage will effect the performance of the boat and could also cause safety concerns.

When refueling, always wipe away any excess fuel that may have spilled into or on the boat.

After operating the ThunderCat 31

Wipe off any exhaust residue from the boat. If you operate the ThunderCat 31 in salt water, it is suggested that you thoroughly rinse the deck, hull, and all the metal hardware with fresh water, then dry them with a clean towel. After cleaning, coat all metal parts with a silicone spray lubricant. This will help to prevent corrosion.

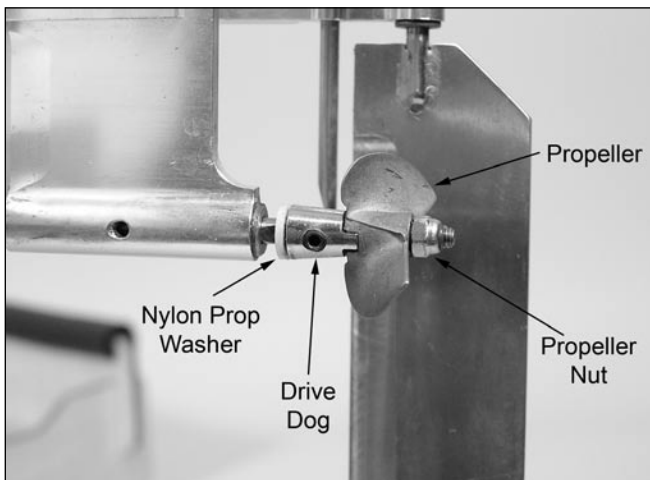
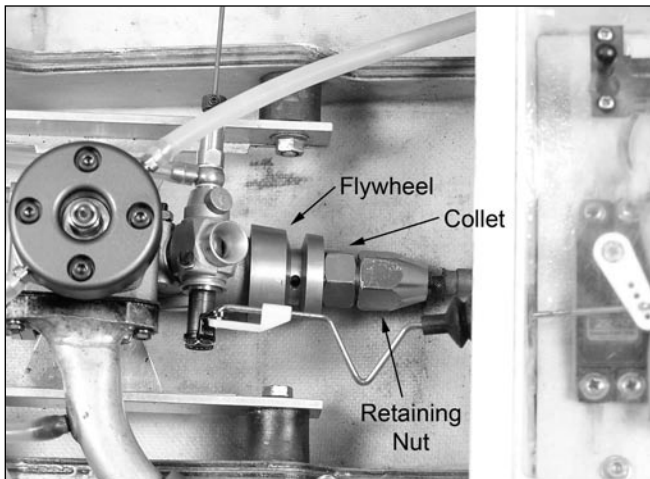
Ensure that the radio box and equipment inside is dry.

Section 12: Maintenance (continued)

Lubrication

It is important to lubricate the flex shaft of the ThunderCat 31 with silicone cable grease after every two hours of operation.

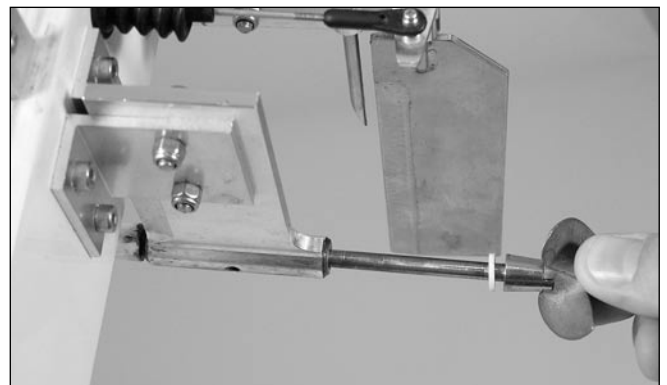
You can purchase this silicone grease at your local hobby store. To lubricate the drive shaft, follow these simple instructions.



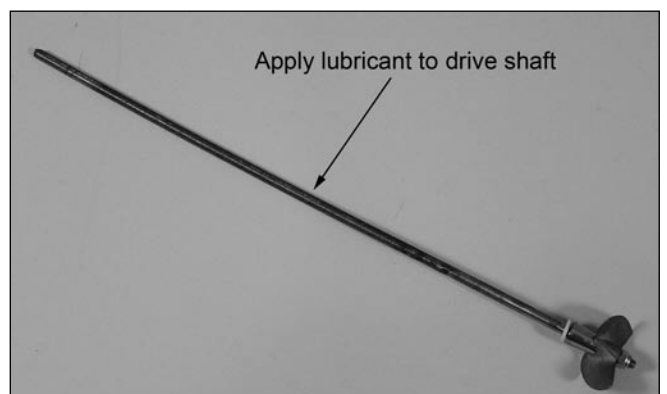
Carefully note how the drive shaft and prop are factory installed. This is important so that when you have finished lubricating the drive shaft, you can correctly re-install the drive shaft.



Loosen (do not remove) the retaining nut by holding the collet with a 17mm wrench and unscrew the retaining nut with another 17mm wrench or crescent wrench.



Carefully remove the drive shaft.



Liberally lubricate the entire length of the drive shaft with silicone cable grease as shown.

Carefully re-install the drive shaft, making certain that you insert the flex shaft $\frac{7}{16}$ " to $\frac{1}{2}$ " into the collet and secure.

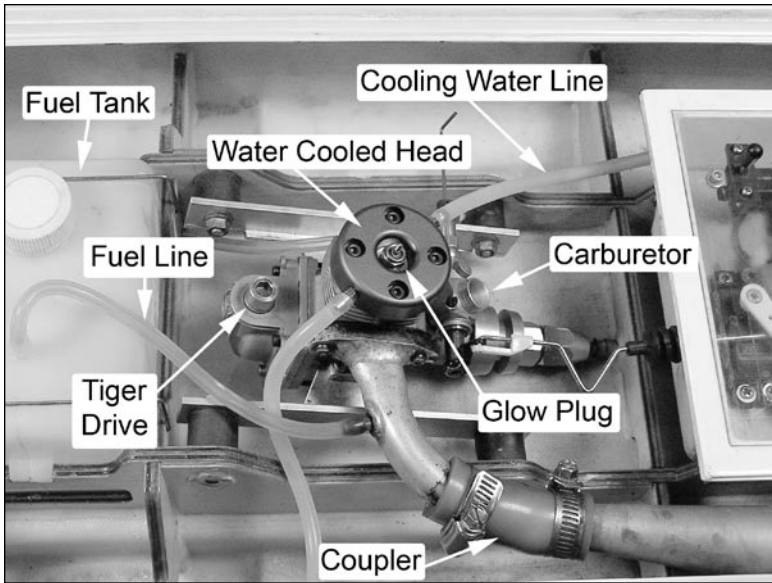
Section 13: ThunderCat 31 Replacement Parts

In the event that you need to purchase replacement parts for your engine or the ThunderCat 31, please see your local hobby store.

You can also purchase them from Horizon Hobby by calling 1-800-338-4639 or shop online @ www.horizonhobby.com

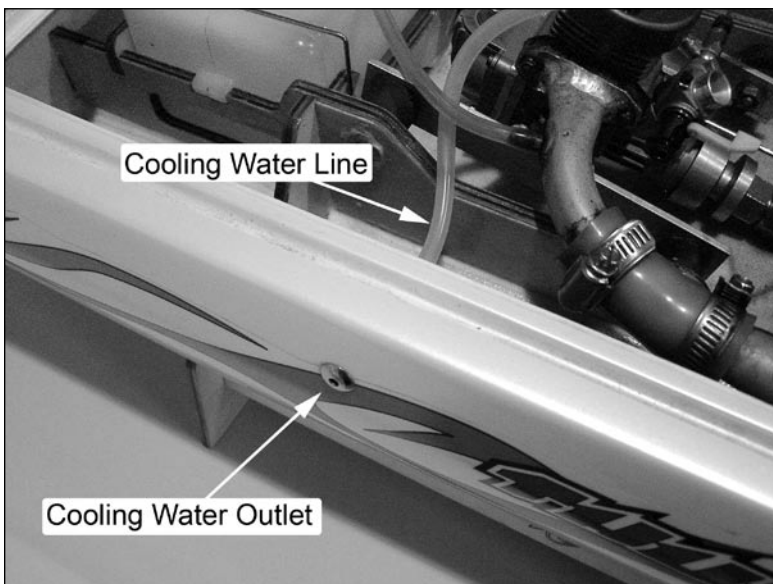
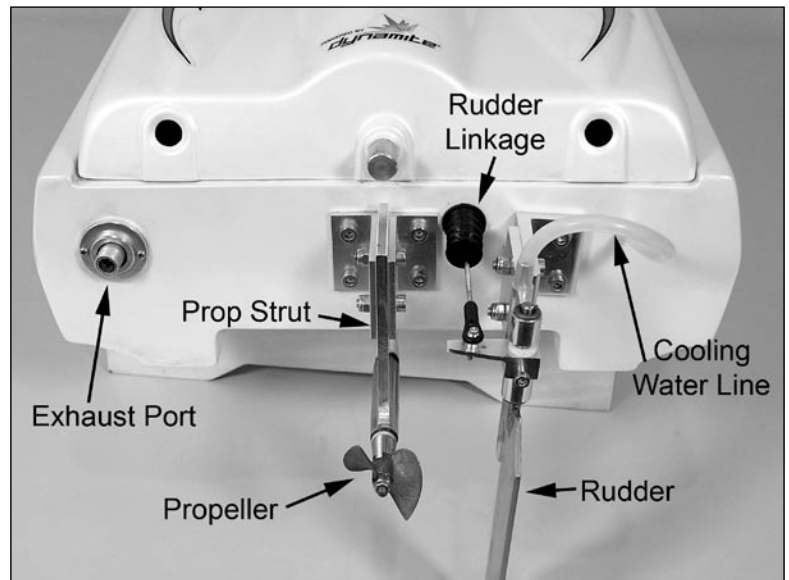
Stock #	Description
PRB2052	Flex Cable:TC3I
PRB2053	Engine Mount:TC3I
PRB2054	Vibration Dampeners (4):TC3I
PRB2056	Tuned Pipe:TC3I
PRB2057	Flywheel:TC3I
PRB2058	Drive Dog:TC3I
PRB2059	Propeller Nut:TC3I
PRB2061	Rudder:TC3I
PRB2066	Receiver Switch Assembly:TC3I
PRB2067	Fuel Tank Complete:TC3I
PRB2068	Water Outlet and Nut:TC3I
PRB2072	Exhaust Coupler:TC3I
PRB2073	Rubber Boot (2):TC3I
PRB2075	Antenna Tube:TC3I
PRB2079	Collet:TC3I
PRB2080	Teflon Liner:TC3I
PRB2083	Cockpit Bolt:TC3I
PRAB215	Propeller 1.60 x 2.5 Bronze:TC3I
PRB2751	Stuffing Box with liner:TC3I
PRB2752	Radio Box:TC3I
PRB2753	Rudder:TC3I
PRB2754	Radio Box Cover Set:TC3I
PRB2755	Manifold:TC3I
PRB2756	Rudder Bracket Set:TC3I
PRB2757	Propeller Bracket Set:TC3I
PRB2758	Exhaust Port:TC3I
PRB2759	Rudder Arm:TC3I
PRB2760	Fuel Tank Strap:TC3I
PRB2761	Throttle Pushrod:TC3I
PRB2762	Rudder Linkage Set:TC3I
PRB2763	Cooling Tubing:TC3I
PRB2764	Servo Tray:TC3I
PRB2765	Hull:TC3I
PRB2766	Cockpit:TC3I
PRB2767	Instruction Manual:TC3I
PRB2768	Decal:TC3I
PRB2769	Boat Stand:TC3I

Section 14: Appendix



Engine compartment and components.

Transom and components.



Engine water cooling lines.



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www.horizonhobby.com