Updated 8/11/2022

http://www.kayakbuddys.com

Please subscribe to our YouTube channel for current videos and build information.

These notes are gone over in a video format on our YouTube channel.

Link: https://www.youtube.com/watch?v=_zIW656pWRU&t=1s

*** Powerhead and Clutch Housing Maintenance:** https://youtu.be/zyLj3b1yI0c

PLEASE READ:

Kayakbuddys has been in business for over 6 years and has built/sold 100's of systems through the US and many countries around the world. We would not be successful without consistent customer support and the ability to troubleshoot and customize these simple outboards for clients.

With that being said, I must address the novice users who purchase a system with little knowledge of outboards and the service required to keep these systems in perfect working order. I can only write notes and create video to help with general questions and maintenance of these systems. I have put together a list of the most common helpful hints when using these systems on your craft.

Helpful Hints:

Prop Height:

The prop and cavitation plate should be sitting at a max of a few inches below the lower hull. This prevents cavitation and drag on the system.

Water Penetration:

The drive should never be placed so low to the water line that water is dripping down the engine and into the clutch housing. Taking side waves up into the clutching system will seize the bearing and prevent the drive from rotating. Lack of maintenance and attention to critical height settings to the water line is the leading cause of clutch bearing failure and ***this voids the drive warranty due to the customer's negligence***.

This will require the client to dismantle, lube the clutch housing, clean and grease the driveshaft, and change the gearbox oil. The clutch housing will most likely need to be replaced. These are a sealed system, but water can and will drip into the upper bearing and rust this component if the system is not taken apart and cleaned after the water intrusion. **This is not a complicated fix and all repair parts are easily obtainable**.

If you are not sure about engine/prop height just simply ask. Every craft is different and gas systems require a bit of simple maintenance to prevent drive issues. Saying "I didn't know" just complicates the situation.

Oil Level:

Honda engines require 4.0 oz of 30-weight oil. The manual states this and I have written this numerous times in this set of notes. More is not better and will lead to an oil-flooded carb, hard starts, and smoking through the exhaust. Changing the oil in intervals of 20-30 hours is recommended. Always check your oil levels.

Air Filter:

If you happen to get the filter wet or full of oil due to much oil in the crankcase, replace it. The part # is **17211-Z3F-000.**

Gearbox Oil:

Gearbox oil should be replaced every 30-40 hours of run time**.** It requires 90-weight gearbox/transmission oil and needs to be filled with the engine standing vertically. Only add enough into the filler until it begins to weep out. Add RTV sealant to the bolt threads and only snug the fitting. When I get to this point of doing engine maintenance I disconnect the clutch housing from the drive tube, and clean the driveshaft and grease. This makes filling the gearbox easier.

Cleaning the Powerhead:

The YouTube link on Page 1 of these notes goes over the process of cleaning the engine if you get salt spray or heavy water penetration down the outboard. Please make sure you use quality lubricants and do not wait weeks to service your system. Having fun is what it is about, but just like traditional outboards, maintenance is required.

Throttle Adjustments:

Please note that all upgraded drives have 3 washers used to take out any slack in the throttle wire. All RTR systems come already adjusted so the throttle plate opens right at the first click. One washer sits under the barrel nut attachment to the carburetor. The remaining 2 sit above the plastic bracket. A tie wrap and Loctite are used to keep the throttle in place and aligned. The Shimano shifter moves from 6 to 1 having 4-speed variations from the idle position. The twist knob at the twist throttle can also be used to refine the throttle position if you choose.

Drop-in Models:

Clients of the shorter Drop-in and POD-based drives need to be mindful of water intrusion due to the proximity of the system to the water. These systems require more safeguarding when it comes to keeping the water out.

A few add-ons that clients have used to help with keeping the water out.

1. A small rubber mat can be placed around the drive tube sitting above the FPV mount to prevent any splash-up.
2. Creating a small shield much like a hat can be fitted over the engine preventing large waves from penetrating the system. Just be careful of the exhaust port.

Prop Removal:

The prop has a small Allen bolt that sets inset on the output drive. All systems come with a 3.75mm shear pin that gives a small amount of rotational space to allow the system to absorb a hit

More items will be added as needs arise.

Kayak Buddys thanks you for your business. As an avid kayaker, it is my pleasure to produce propulsion systems for various paddle watercraft. The standard/upgraded engine drive system you have purchased is outfitted with all stainless and aluminum hardware. You will need to mount the unit using either a custom-made mount or a purchased unit from a supplier. Please remember the propeller needs to be fully underwater and below the hull in the non-turbulent water when mounted, so an adjustable custom mount is recommended. The waterline in which the drive system is mounted is crucial, so please make sure you check the prop height as compared to the bottom of the kayak. It should sit lower than the deck bottom, otherwise, it will cavitate much like any other outboard engine. The engine drive system's height can be adjusted over 6 inches vertically in either direction to accommodate the different styles of watercraft.

Remember the unit weighs roughly 23lbs. with a standard engine mounted (12lbs by itself), so you will need a float on the engine side or a weighted ballast on the other to have optimum balance if you are not rear mounting. The notes are broken down by section, so they are easy to follow.

***SEE THE LAST PAGE FOR THE VISUAL IMAGE WITH NOTES.**

Opening the box and exploring the parts.

1. Remove all parts from the box and make sure nothing is damaged from shipping first.
2. If you purchased a **standard non-upgraded drive**, you will be assembling the bracket and tiller handle along with adding 80-90 weight gear oil to the lower gearbox and aligning the collars on the drive tube. It comes standard with a 3-blade prop and twist throttle.
3. If you purchased an **upgraded drive**, it comes built for you outside of the bracket attachment. The oil has been added and the collar alignments have been completed. You will need to adjust the vertical height since every kayak is a bit different. The prop, twist shifter, and wire harness for a Honda powerhead have been added already.
4. On both versions, the main bracket needs to be assembled and attached with the stainless through bolt, washers, and a nut. It is always wise to add a bit of marine grease to any part that rotates. You will be mounting this through the rear bolt holes in the bracket. The front 2 were meant for a tilt lock, but have been removed and are used if you want to run unlocked. More will be mentioned about this below.
5. *** As of June 1, 2020**, all non-RTR drives will ship with the clutch housing detached from the top of the drive tube. You will notice a black that protects the driveshaft from coming out. Please remove the cap and slide the clutch housing on the tube and into the driveshaft. You want this to fit easily without force. You do not want to push the driveshaft too tight from the clutch housing side or it will affect the rotation of the gearbox. This is greased for you already. Make sure the splines are fully seated before you tighten the 2 bolts. Do not overtighten since this is aluminum. The center bolt on the clutch housing is an alignment bolt and the larger outer bolt is for the clamp on the drive tube.

Running the drive unlocked.

6. In case you would like the drive to pivot upward, there is a clamp at the mid-section of the drive tube that can rotate 180 degrees. This allows the drive to move on an angle if something is struck underwater. It is advised that you make sure you snug the bracket bolt up to allow a bit of tension on the drive. This will prevent the engine from rotating all the way around. A bungee cord can be used at the forward 2 ears located at the top/front of the bracket to help the system return to its normal resting position on the bracket.

Collar adjusting.

7. The collars that sit above and below the bracket can be loosened to adjust the vertical height. This is usually completed on the mount to get the ideal depth of the prop. 3 Allen keys come with the kit to help with the adjusting.

Tiller arm placement and adjustment.

8. On the upgraded versions the tiller arm is installed on the right side of the drive but can be flipped and rotated based on operational preference. You can loosen the clamp and rotate as needed and adjust this vertical angle as well. Inside the tiller handle clamp, there is a spring that should be coated with marine grease along with the clamp post that screws into the bracket. On certain models that are built for tiller extensions and have tight angles, the tiller is shortened or pushed back through the clamp to address the angle needed.

Kill switch placement.

9. **The upgraded drive has the kill switch in the optimum location.** Of course, this can be repositioned. The drive systems control position is up to the operator, rotating the throttle so the cable is under the tiller arm and the kill switch facing upwards is usually what most people prefer. On the upgraded drive, it comes with a waterproof harness attached to the kill switch already. The harness has an eyelet on the red wire and a bullet connector on the black. The eyelet will need to be attached under the closed bolt when the engine is attached and the black wire with the bullet gets crimped to the black wire on the Honda. You will need to strip a bit of the black wire on the Honda engine. Please heat the end to help keep water out.

Engine installation.

10. Take the engine out of the box and make sure the pull cord is facing toward the passenger before placing it on the drive system. Please make sure you have a mount or stand for assembly and tighten the mounting clamps on the bracket, so the engine does not fall or slide off.

* On all current builds RTV gasket sealant is being used between the clutch housing and engine block to try to prevent any water intrusion that will occur if the engine takes water over the top and drips down past the cylinder. WD-40 and light anti-corrosion marine grease is applied to the clutch bearing to prevent any corrosion of the bearing. This can be added through the holes found in the clutch bell.

11. Once you have the engine set in place, you can add 3 of the 4 mounting bolts and leave the one closest to the carburetor off for the moment. This is the bolt that the eyelet from the kill switch goes under. Snug the bolts up. Please do not overtighten stainless bolts into aluminum.

Throttle cable attachment and shifter adjustment.

12. On both versions of the drive, the throttle cable mounts the same. You will begin routing the throttle cable up to the threaded adjustment plate up under the carburetor and behind the air cleaner. On most non-Honda engines, you can screw the threaded end of the cable right up underneath the attachment plate and place the lock nut on the barrel nut to secure the position. On Honda engines, you will need to pop the front cover off of the air cleaner to access the plastic cable lock. This plastic lock is open-ended so you can loosen the barrel nut and attach the lock nut. I Loctite the threads of the barrel nut and place a small tie wrap around the barrel nut and plastic mount just as a second attachment safety.* **Make sure when you attach the throttle cable you rotate the butterfly of the carburetor downward and place the soldered end in the conical shaped opening on the adaptor that is attached to the butterfly. One side has the grove and the cable feeds right through.** If there is a bit of extra length in the cable you can adjust the twist shifter at the shifter side to pull the cable back a bit. On all the drive builds

starting in May 2020, a set of 3 stainless washers come on the barrel nut to help give a bit more adjustment on the cable. You can place these on either side of the barrel nut as needed. The Shimano shifters are quick shifters and only use 4 out of the 5/6 click settings on the shifter. 5 and 6-speed shifters are used in the production. Think of it as a neutral, low, medium, and high setting. All numbers are not used and rotate from the highest number toward 1.

13. Starting in April 2022, abrasion sheath and tie wraps will be included in each build. This gets installed from the waterproof plug below the engine and routes back toward the cable attachment on the tiller. This needs to hold the throttle cable and kill switch together inside. The sheath overlaps and keeps the wire/cable in position and protects the area from abrasions and binding. Use 3 tie wraps provided to secure the cables inside. You add the ties to the ends and one in the middle. The cables should wrap under and around the tiller clamp upward toward the carburetor smoothly.

Greasing cable.

14. If this is a standard drive, you should add grease to the cable end because it is galvanized and will bind if grease is not applied periodically. This is very important for optimal operation. Make sure you set the open and close of the throttle with the barrel nut adjuster and shifter. I usually set the system to start opening after 1 click. It should idle with the prop not turning. Pay attention to the cable since it is very easy to tighten the cable too much and have it bind or idle too high. Spray and grease the cable with a marine-grade spray lubricant.

The upgraded drive systems cable sheath is Teflon lined with a stainless cable, so you do not need an internal lubricant, just a bit of grease on the end connector and throttle cable. Use good marine grease due to exposure.

Trim and angle adjustments.

15. From this point make sure you adjust the trim bolts as needed. I usually run with about 7 degrees rise on the prop to slightly lift the bow under power, otherwise, you will bury the nose. This is not a bad thing since kayaks are water displacement and drive smooth when the nose digs in.

Adding oil to the Honda engine.

16. First, please read the manual. This is where most operators fail to realize how little oil goes in these small engines. Fill your crankcase oil with the engine on its side with the filler cap pointing up and the prop facing downward unless it is a drop-in drive. Most Honda versions take about 4 ounces of oil depending on whether it is a 35 or 50cc engine. Measure it, do not guess. 35cc engines require a different measurement of oil.

DO NOT FILL THE ENGINE IN THE VERTICAL POSITION. PLEASE REVIEW THE ENGINE MANUAL IF YOU HAVE ANY QUESTIONS.

Any more will get sucked up into the carburetor through the breather and bog the ignition down and the engine will not start correctly. 30-weight non-synthetic is what I use, but some people have used synthetic with great results, Honda engines have tight tolerances.

Starting the engine.

17. Now, you are ready to add gas, choke and prime the bulb to fire it up. Make sure you do not overfill the oil, otherwise it will end up in the carburetor.

*** I would use a high-grade non-ethanol fuel such as TruFuel.**

18. Grease all rotational parts and spray all surfaces with CRC marine for the utmost protection from saltwater if you are using it in that environment.

19. Please run the carb dry if it will sit for an extended amount of time.

Prop removal.

20. The standard drive has a 3-blade prop that is attached with a 4mm shear pin and a cotter pin to hold the prop to the output shaft. This can be removed and replaced if it gets damaged.
21. The upgraded drive system has the 2-blade prop with a 3.75mm stainless pin installed to take the shock out of any grounding and a stainless collar attached with Loctite on the collar attachment bolt threads to prevent the prop from loosening up. Check occasionally to make sure it remains secure. Removal is not needed unless a fin is sheared from hitting an obstruction. A spare shear pin is available if needed and the original prop and shifter are included in the package contents. All components are in separate plastic bags.

Break-in.

Once you have started the engine and all throttle adjustments are made, let it thoroughly warm up (5 minutes) and begin to cycle the throttle up to half throttle to check the throttle response. You may need to adjust the throttle if it idles too high or if it takes 2 clicks to see the prop rotating. I then let it idle for another 5 minutes. Let it completely cool and complete the procedure again. Ring seating is not necessary but completing a few heat cycles ensures everything breaks in as normal. Being that these engines are air-cooled it is vital to check the oil every trip and change the crankcase oil every 20-30 hours of use. These do not have low oil shut-off switches, so please check accordingly. Coat all engine surfaces after use with a good WD-40 or corrosion block to keep all metal surfaces clean of oxidation.

If you need any assistance, feel free to access the website and use the contact page to drop a note to us here at **KAYAK BUDDYS, LLC**. Please include all relevant information, so we can further assist you. If you need more immediate help, please call 305 926-2937.

AREAS THAT NEED TO BE ASSEMBLED BY THE CUSTOMER.

Clutch housing attaches with 2 bolts. The center bolt is the alignment bolt. Please snug bolts and do not overtighten.

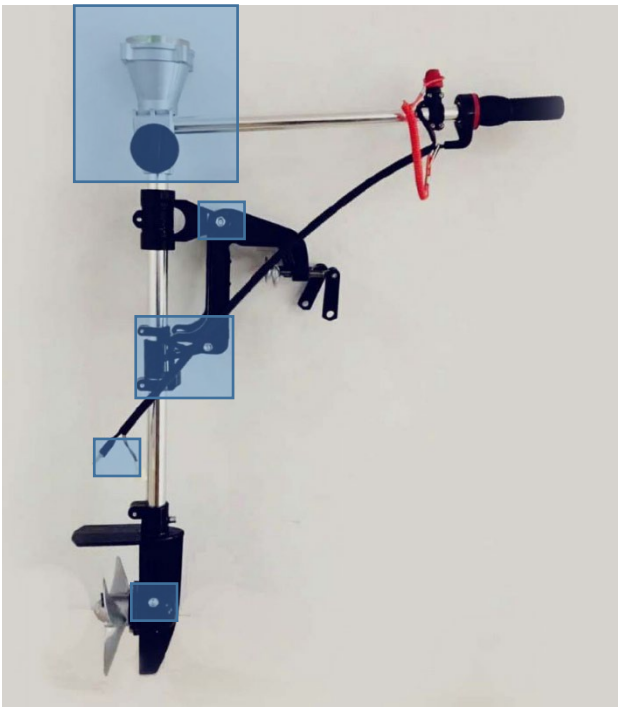
The tiller arm needs to be positioned inside of the clamp. Do not overtighten

Bracket assembles with 2 bolts. The upper through bolt connects to the upper bracket attachment. The front ears can be used for a bungee cord attachment.

Throttle cable and kill switch wiring needs to be connected.

Gear oil needs to be added to the gearbox and sealant applied to the filler bolt on the standard legs. The upgraded legs have break-in oil already installed.

*80-90 weight traditional gear oil is recommended.



Standard Drive

*All RTR and upgraded drives already have this completed.

Sheath placement example for upgraded and RTR builds.

Drop-in Notes:

The RTR drop-in only requires 4.0 oz of good 30-weight oil. Do not add more than what is recommended in the manual.

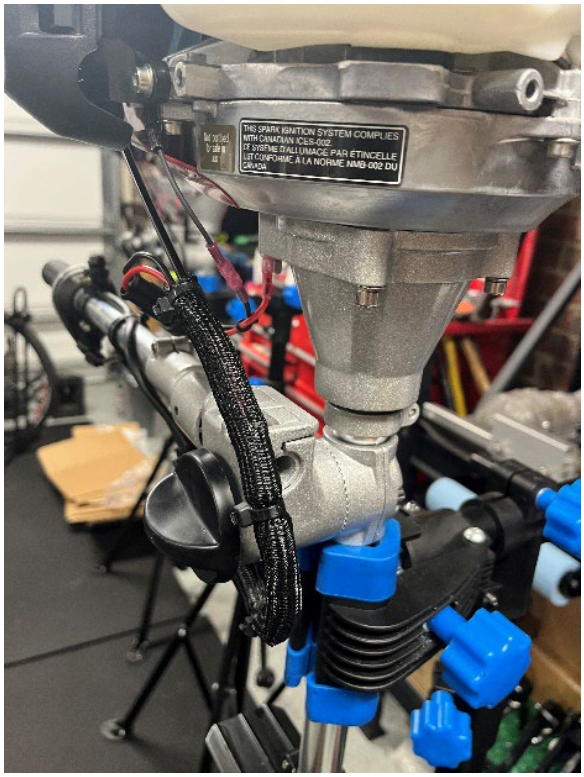
When the unit ships, the tiller arm is laid vertically to ship. When the unit is placed inside the Hobie locks you can loosen the FPV to rotate the mount 180 degrees if needed depending on whether you have alignment notches in the well. Some older systems do not and require that a piece of wood or other material is used to keep the system from rocking within the well. All newer systems have alignment notches built into the hull design.

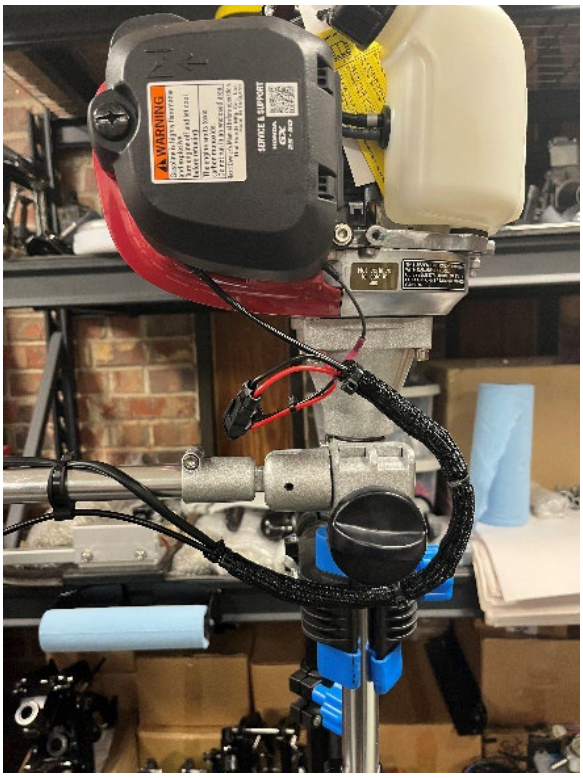
All FPV mounts have wingnuts to tighten the drive tube to the mount. It is always recommended to apply Loctite once you have the desired height. Most kayaks run the mount all of the way down the drive tube resting just above the gearbox giving you the maximum height available. These systems are meant to be locked straight ahead and be steered by the OEM rudder system. The strap that comes installed wraps around the drive tube to allow for a bit of backward lift in case an object is struck underwater.

The following pictures show how the throttle cable wraps around the tiller adjustment knob. It is vital to have a clean bend on the throttle and sometimes during shipping the throttle cable needs to be slightly configured to maintain the bend. You simply need to straighten the bend so you have a clean 4 clicks on the 5-speed shifter. Remember the numbers are backward starting with 6 and moving toward the number 1. 6 is neutral.

FPV Mount

Throttle cable placement images for all RTR systems.

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