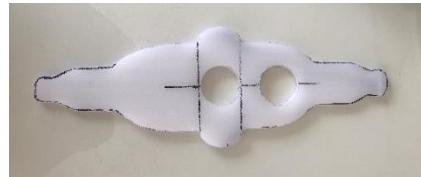




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Build Notes for Drop-in Drive – Modification of your standard-length unit. (See below for the expanded version with more detail on the build.)



When the unit arrives, your drive is fully assembled, but in need of your cassette to mount the system. In the following numbered outline below, are the instructions with images to finish the drilling portion of the cassette and lock pin.

Please make sure the cassette is the standard 4 inches. This is measured vertically on the cassette. The 6 inch can be used, but the lower extra clamp will need to be removed to gain the additional space on the drive tube.

Starting at the top, this is the order of the parts in case you take it completely apart.

*When you work on the clamps and bushings on the tube, you will notice it is a bit greasy. I use a coat of marine grease on the tube to slide the components and to not scratch up the drive tube. WD-40 works as well. If you scratch it, do not worry, it is coated aluminum and will withstand the elements. **Do not sand or try to buff it out.** It will get scratched from usage. I do paint some setup for clients.

1. Clutch housing (2 bolts) – if the drive shaft comes out, do not worry. When you reassemble it, the assembly will go right back in the tube through the bushings. Keep it greased.
2. Large upper collar
3. 2 bushings
4. Smaller plastic clamp
5. Larger lower clamp – this clamp is flipped with the lock shield facing down. This can be removed if more space is needed for the cassette,

Disassembling the drive.

1. Find an area to disassemble the drive, so it will not tip over as once you pull the clutch housing and driveshaft, the gear oil can leak out. Not a big deal if it does, since it can be easily refilled. It is 80-90 weight gear oil.
2. Unbolt the clutch housing with the 2 bolts that hold this housing in place. The middle is the retaining hole and left side bolt is for the clamp. Neither bolt needs to fully come out.
3. Pull the housing off part off so you have access to the tube and plastic bushings. If the driveshaft comes out that is perfectly fine as it is meant to be serviceable. It sets back in. (2nd image on first row of images above.)
4. Loosen the upper collar and slide it off to get to the bushings. The bushings will be inserted into the cassette once the holes are drilled. It is very important to make a mockup of where you want the holes to be located. I used a cutting board to practice the cut when choosing the ideal location. DO NOT place them in the direct center of the cassette. **The pin runs across the center.**

Drilling the vertical holes in the cassette.

5. You will drill 2 holes running through the same location on each side of the cassette. Mark and measure accurately. I measured my mirage cassette and found 2.75 inches was center on one side. This measurement was from the cross pin toward one side of the cassette. You can adjust accordingly depending on where you want the drive in the cassette. The driveshaft tube is 28mm, but you will be making a slightly larger hole the size of the plastic bushings. The size of the bushing hole is 35mm. You want this snug. Do not force the bushings. It may split the casting of the cassette if you apply to much force. Measure from the casting marks equally on both sides. Measure 3 times and cut once. I use blue tape to get a perfect measurement and plan the cut.
6. You will always have options to create a custom mount if you choose.

Drilling the side pin holes.

7. The ears that lock the drive in need to be ground off and drilled with a ½ hole to utilize the stainless pin. I Dremel tool tends to work great since you have more control. The pin pushes right through. I fasten the pin with heavy-duty tie wraps from the inside to keep the pin from shifting. The wraps are not necessary, but I use them. (3rd image on bottom row.)
8. The pin is solid stainless at 6 inches in length. I slightly grind the sharp edge on each side to help the pin lock. Now, you may need to sand/grind a bit depending on the factory locks. Some locks are a bit warped from the mold and are tight. The pin can be easily sanded to create a snug fit. Since I do not have your cassette in front of me, I have chosen to not rip a substantial amount of metal from the pin. If I ground to much off, it would have to much side to side movement.

Adjusting prop height.

9. You can set the prop height by moving the collars up and down. The cassette is held in place with these collars. (The 4 in. cassette heights are ideal. The 6 in. tend to be almost impossible to adjust vertically without removing the extra clamp on the bottom.)
10. When I reassemble, I use my Hobie to place the drive and attach the clutch housing back on. From here you can attach the Honda engine with the pullcord facing you. Use the 4 stainless bolts supplied. (2nd image on the second row of images.)
11. With the drive out of the drive hole from within the kayak you can attach the throttle cable through the lower stop/adjuster behind the air cleaner. It slides into the throttle plate. I usually push the throttle plate down and drop the lead stop on the cable in the channel. A few stainless

washers are included on the aluminum barrel stop end to help with the cable opening and closing adjustment.)

12. Adjust the opening and closing with the threads on the barrel nut. This is where you can use the washers if you need to. I place these on the back of the plastic cable bracket. There should only be 4 increments on the twist shifter being used. Honda does not use all 6. If you need to adjust more of the cable, the twist shifter has a rotatable adjuster near the shifters base,
13. The Shimano shifter has more increments than you will need to get your range of throttle. I remark my positions with a silver permanent marker just for a visual if you feel you need to.

Adding the oil in the crankcase.

14. The Honda engine takes a straight 30 weight oil and only fill it with the engine on its side with the filler pointing upward toward the sky. The prop will be facing the sky as well. Only fill to the first thread at the top of the crankcase when you look down into the filler tube. Otherwise, it will send oil into the carburetor when it is running. (4 oz. of oil, but please check your manual since 2 engine options are available.)

Kill switch connections.

15. The waterproof plug has a red wire with a round connector. This attaches to one bolt under the clutch housing. The black attaches to the black from the Honda engine. You need to cut the end of the black wire. Then crimp and heat the heat shrink the connector to keep water out.

General maintenance.

16. Make sure you grease the driveshaft if you pulled it out. The gearbox has 80-90 weight gear oil and should be drained and changed every 40 hours of use. You can stretch it to 50 with no problem.
17. The prop is locked with the collar and requires no service unless you shear a blade from hitting something. The set screw has Loctite on it to prevent loosening. The shear pin is stainless, so you will not have an issue with corrosion. Extra shear pins are included.
18. It is essential to spray lubricant on all the metal surfaces, once the engine is clean, to preserve the finish. WD-40 works great.



The shifter on this build is on top of the tiller. This was a client's request.

Normally I run the cable from under and it loops up to the carburetor.

Instructions for cassette modification in detail. (Some steps are repeated from above.)

1. With the cassette free from the hull, you are to find the plastic ears on both sides of the cassette. These are where the locks hold the cassette in place. These need to be cut off and drilled.
2. On Revo models, you can snip both ends off with simple cutters and drill the $\frac{1}{2}$ in. opening for the stainless pin. **The 50cc is not recommended with the black cassette.** On PA, Outback, and other models, you will need to drill a $\frac{1}{2}$ in. hole replacing where these plastic ears were located. The cassette is hollow so go slow when drilling this out. The plastic on the Revo cassette is soft, where the PA and Outback tend to be harder and can be brittle. Drill slowly with a good bit. The pin comes with slight rounded edges to help with the locking and the removal of the cassette. You can grind any amount off the pin if needed since it is solid. Some kayaks have warped locking areas and the pin will need adjusting.
3. Once drilled, you can slide the lock pin through the cassette. There should be a little friction to ensure a snug fit. **Some people tend to drill the hole too large.** Tie wraps can be used on the pin from the inside once the other 2 holes are cut. I place each wrap closest to the inside edge of each side to keep the pin from shifting.
4. Now, the second part of cassette modification is essential and should be measured accurately to the use of the drive system optimally. You will be cutting 2 vertical holes on either side of the cassette. Each side is identical to the other, so make sure you measure multiple times before you cut. As a rule, either make a template or use tape as a straight line to identify the center of the cassette, which is right above the lock pin.
5. I measure on one side 2.75 inches from the center pin. Tape and mark the casting line with a permanent marker. This is done on both sides. The hole in which the bushing fits is 35mm. I do use a metric hole cutter for this part. So, once you have the marks in place drill out the holes on both sides.
6. On the drive itself, you will see 2 plastic bushings that will be used on the cassette. You will need to unbolt the clutch housing, slide it off, unbolt the tiller arm and throttle cable, take off the upper clamp, and slide the bushings off the drive tube.
7. Now, you are to place each bushing on one side of the cassette and then proceed to slide the cassette down the drive tube. Tighten the upper clamp for a snug fit and place the clutch housing back on noting the hole for the smaller bolt. Proceed to bolt the tiller arm back in place. You will still need to make slight adjustments later.

Instructions for engine attachment and throttle cable.

1. In this step, I would advise completing with the drive inserted into the locks or clamped vertically, so the engine can be inserted into the drive. Make sure the pull cord is facing the driver with the tiller handle and prop facing the same direction.
2. Once the Honda or other engine is unboxed, place the engine on the clutch housing and secure it with 3 of the 4 bolts and washers. Leave the 1 bolt closest the carburetor off. Take off the air cleaner cover for the next step.
3. Open the tiller arm up to a 90-degree position and place the throttle cable through the carburetor bracket with a few turns only. Now guide the cable end into the channel on the butterfly on the carburetor. You will need to rotate the butterfly clockwise most likely. The cable end should slide in and down. Let go of the butterfly and proceed to either screw in or out the cable barrel nut so the carburetor is not opening at all. Tighten the barrel nut and this part is done. The washers can be used to move back the cable off for adjustment purposes. Please do

not forget you can also adjust cable positioning at the twist shifter. You can unscrew the cable adjuster to push the cable farther back eliminating any extra space in the throttle cable as it opens and closes.

4. You can move the throttle cable around your tiller arm to suit your preference.

Kill switch connection.

You will notice one black and one red end on the kill switch wiring. Black needs to be crimped to black and the heat shrink connector closed with a heat source for a waterproof connection. The red eyelet then gets placed under the 4th engine mounting bolt and snugged up. You are about ready to add oil.

Adding oil and filling the crankcase.

With the engine laying on its side, and the pull cord facing upward, use a good 30 weight oil and fill up the crankcase to the lower thread on the filler plug. (4 oz. is the standard on the 35cc engines.) Do not overfill. This will cause the oil to be sucked into the carburetor. Please follow all startup procedures in the Honda manual.

*Please see the website for larger outback or PA version cut down images.

<https://kayakbuddys.com/hobiedropinmount.html>