



Dive Xtras Annual Service

Revolutionizing the Scooter World

Introduction





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What is covered in this presentation?

Everything you need to know and do to complete an annual service on your scooter.

The class covers all X-Scooter models and will include:

- Complete vehicle check
- Replacement of all seals
- Disassembly/Assembly of propeller components



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Why is the Annual Service important?

Your scooter is an expensive complex piece of equipment. Like any other similar piece of scuba equipment, it benefits from regular maintenance to keep it operating safely and correctly.

- The Seals are not designed to last forever, eventually they will wear out and cause the scooter to leak.
- Saltwater is a corrosive environment, some items benefit from being cleaned or replaced regularly
- Periodically checking and adjusting the operation of items like the trigger ensure safer operation in the future



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How this service will proceed

- Each step is described with photos slides and a video slide
- Some of the video slides combine a number of steps
- Before commencing work on your scooter make sure you understand the details of each step and have watched the corresponding video.
- Each Step can be performed on a CUDA or Sierra, therefore photos are of a Sierra being serviced and the videos are of a CUDA being serviced.



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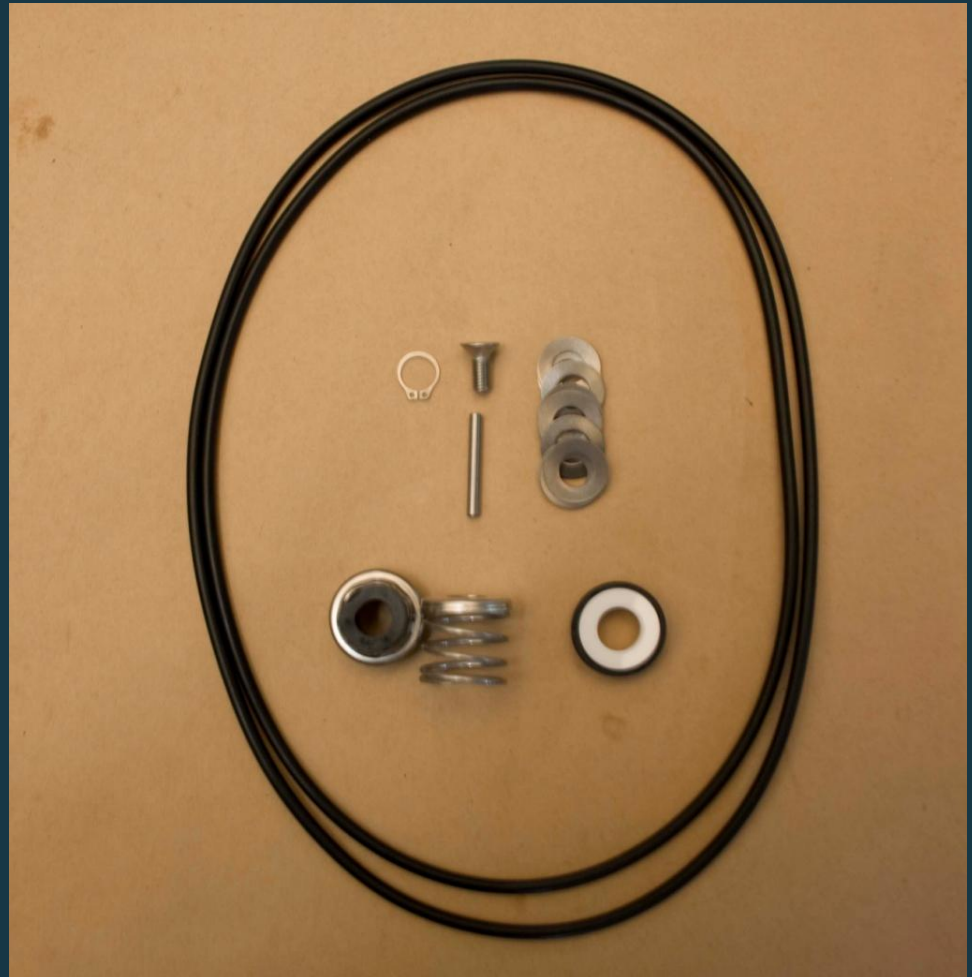
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Parts Needed for Service

Dive-Xtras Annual Service Kit

This kit contains:

- Rear Shaft Seal
- Dowel pin
- Retaining ring
- Clutch spring washers
- O-rings,
- Clutch screw

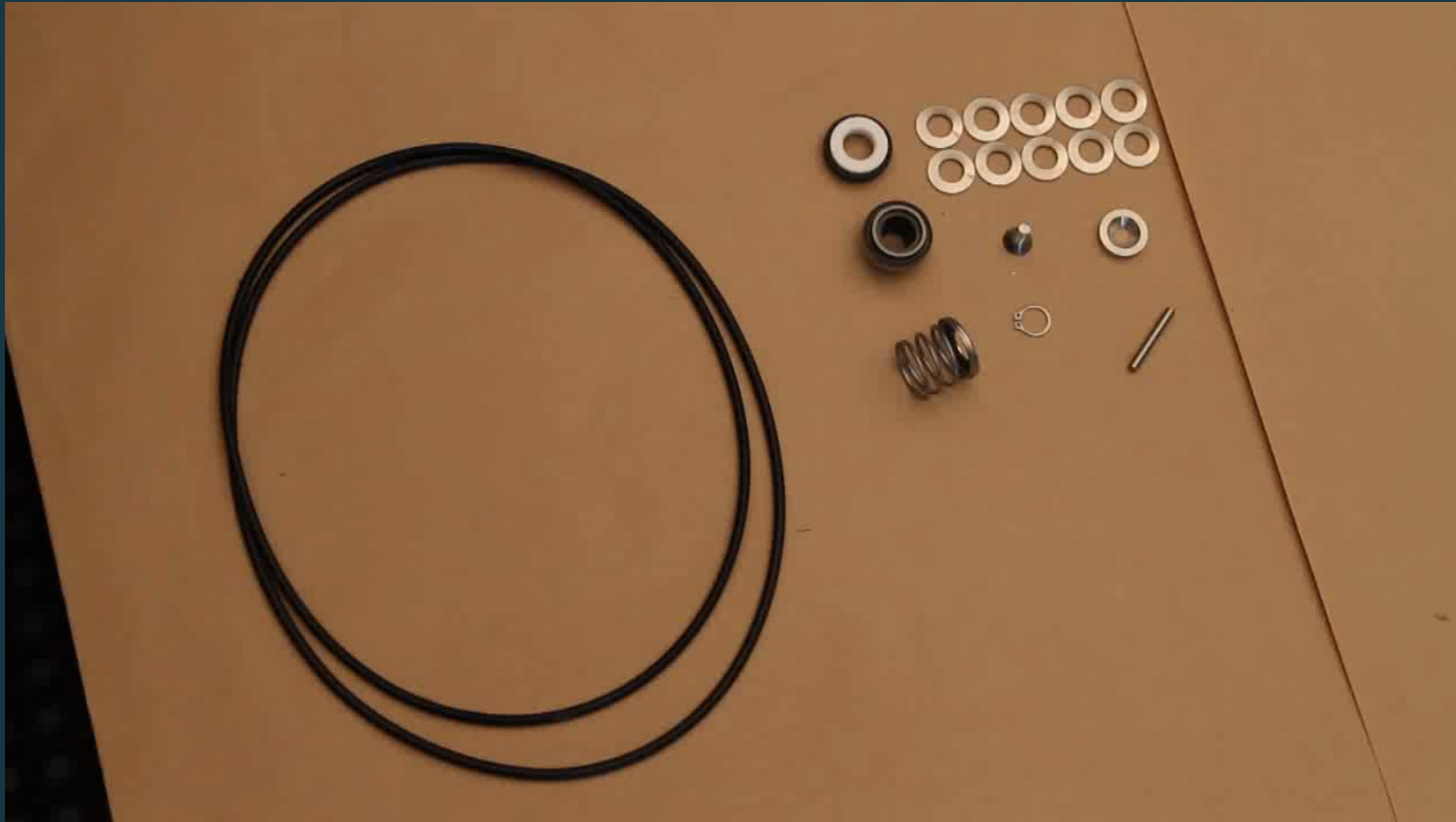




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Parts





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Special Tools Needed

- 6/4/3/2.5mm Allen wrenches
- Screw Driver with Phillips, Flat and Allen heads
- Retaining Ring Pliers

These are available from Dive Xtras as a Kit.





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Tools





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Extras Items and Tools

- Paper Towels
- Blue Lock Tight
- Pliers
- Flat Screwdriver
- Sharpie
- Scotch Brite
- Rubbing Alcohol
- Silicon grease
- Hammer





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Extras Items and Tools





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Step 1 and 2: Check Body and Tail for General Issues

Tail

- Electronic Gears
- Trigger operation
- Velcro
- Weight Pouches
- Cleanliness
- Catches
- Tow Cord
- Sealing Surfaces
- Electrical Connectors

Body

- Zinc
- Strap
- Catches
- Sealing Surfaces
- Weight Pouches
- Velcro

Battery

- Electrical connectors
- Retaining Ring
- Cleanliness
- Damage
- Sealing Surfaces





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Step 1 and 2: General Checks for Body and Tail



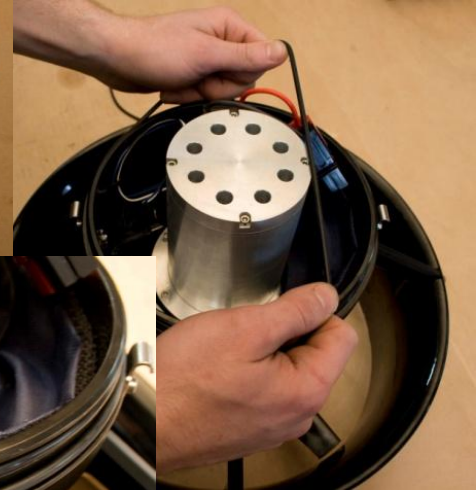
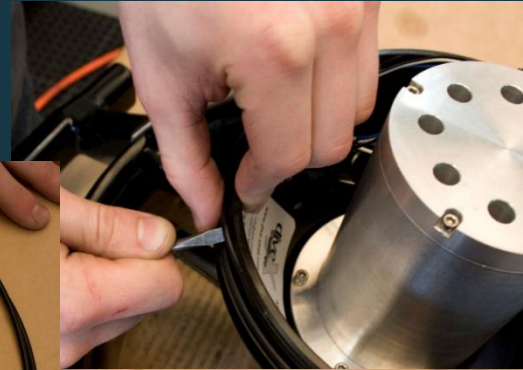
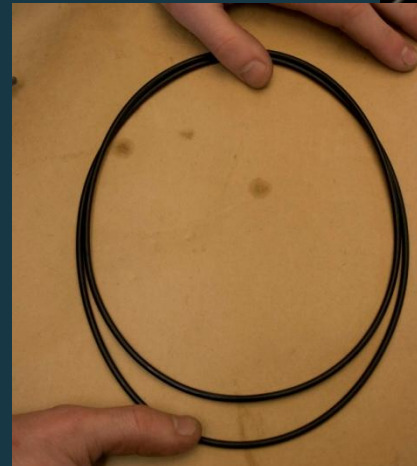


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Step 3: Replace O-Rings

- Remove face and barrel O-Rings
 - Throw those away
- Take new O-Rings and lightly lubricate
- Place the smaller O-Ring on the inside(barrel) and larger on the outside(face)

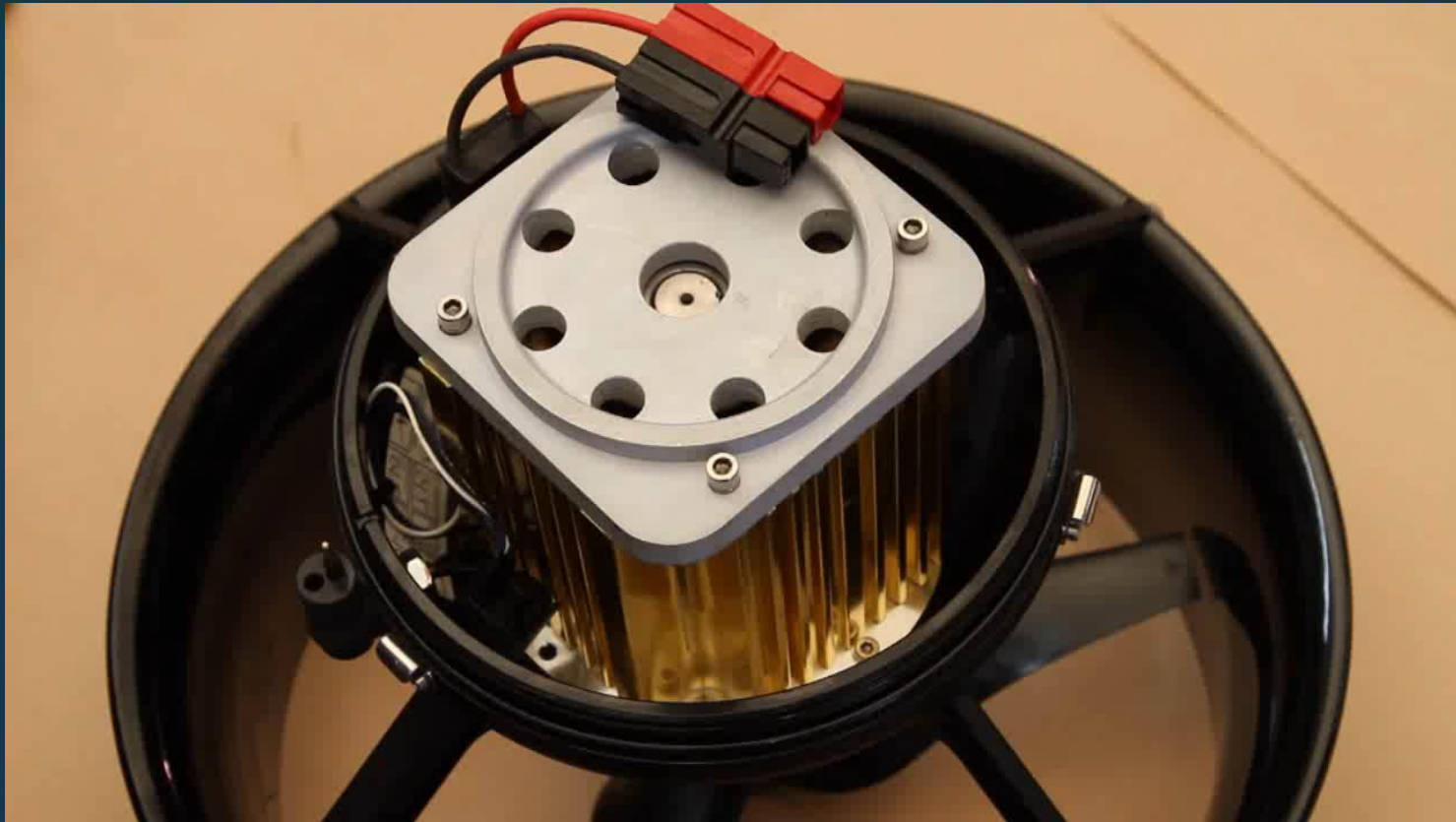




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Step 3: Replace O-Rings



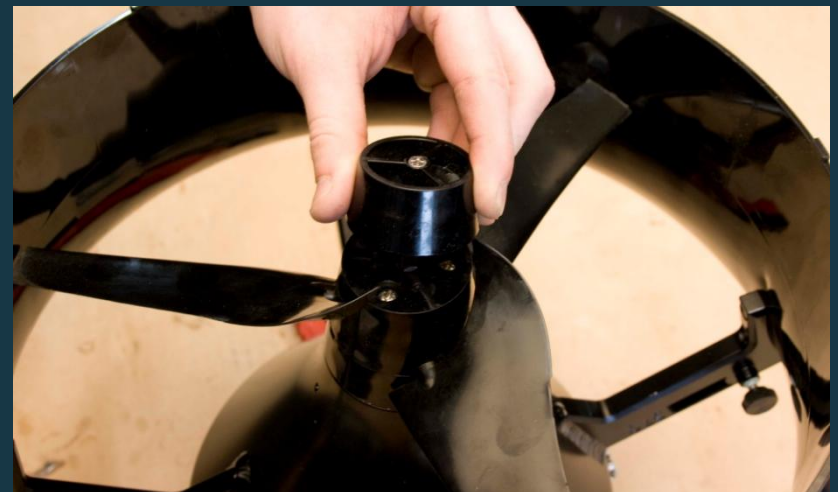


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Step 4: Remove Pitch Adjustment

- Flip X-Scooter to rest on the motor
- Use Phillips head screw driver to release knob
- Remove knob from tail
- Make sure to keep alike parts together





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Step 5: Remove Outer Hub

- Take Phillips head screw driver and remove the 3 screws holding on hub
- Careful when loosening and tightening hub because screws are secured in plastic which can strip easily if not careful
- When removed the whole propeller assembly will be free
- Separate Hub, 3 prop blades, yoke, and yoke shaft





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Steps 4 and 5



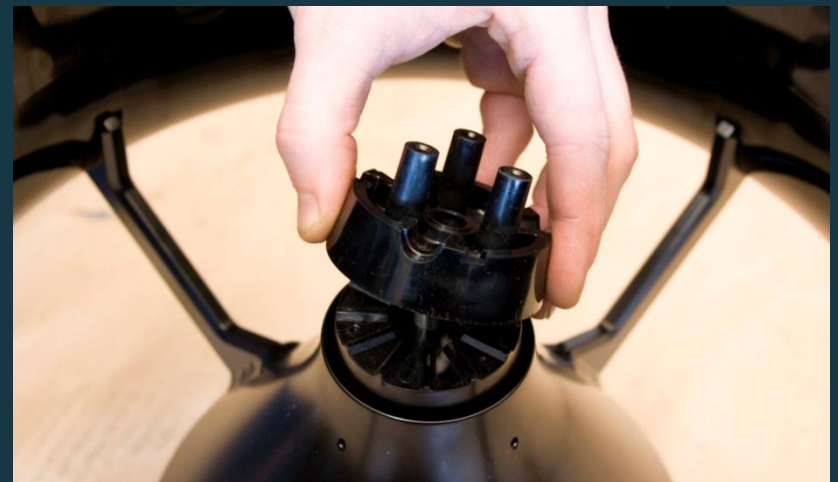


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Step 6: Remove Inner Hub

- Take Allen Wrench and remove screw holding down the clutch springs
- Throw away old small clutch springs and clutch spring screw
 - KEEP THE LARGE THICK CLUTCH WASHER
- Remember to keep parts and their screws close together so assembly is easy

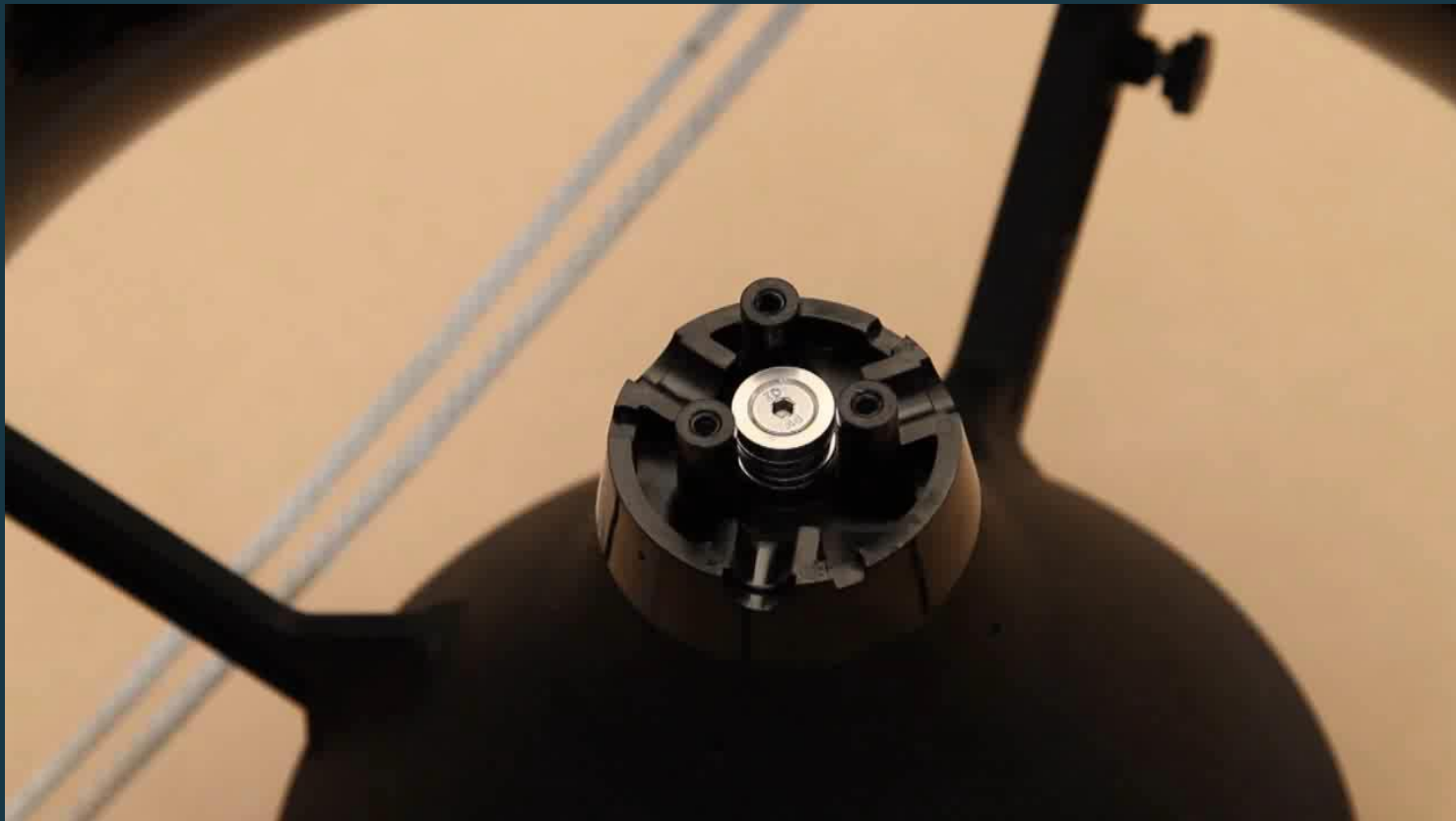




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Inner Hub





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Step 7: Removing Clutch Plate and Dowel Pin

- Remove Clutch Plate by hand or by screwdriver if you need to
- Remove Dowel Pin from the shaft





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Removing Clutch And Dowel Pin





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Step 8: Remove Retaining Ring

- Use special retaining ring pliers to expand the ring and remove
- Remove rear shaft seal spring





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Removing the Retaining Spring





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Optional: Removing Retaining Sleeve

- CUDA models ~350 and up and Sierra Models ~600 and up will have a retaining sleeve instead of a retaining ring.
- When removing, DO NOT THROW OUT THE SLEEVE AND WASHER. You will reuse them.
- To remove, lift up on the washer with a screw driver. Use the same technique on the sleeve, using the feet at the bottom of the sleeve for leverage.





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Optional: Removing Retaining Sleeve





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Step 9: Removing Shaft Seal

- Using a slotted screwdriver and padding, gently pry up the shaft seal
 - Rotate around the seal for best results
 - Use padding to prevent damage to the tail
- Remove lower part of the rear shaft seal using the same method
 - Remember take you time!

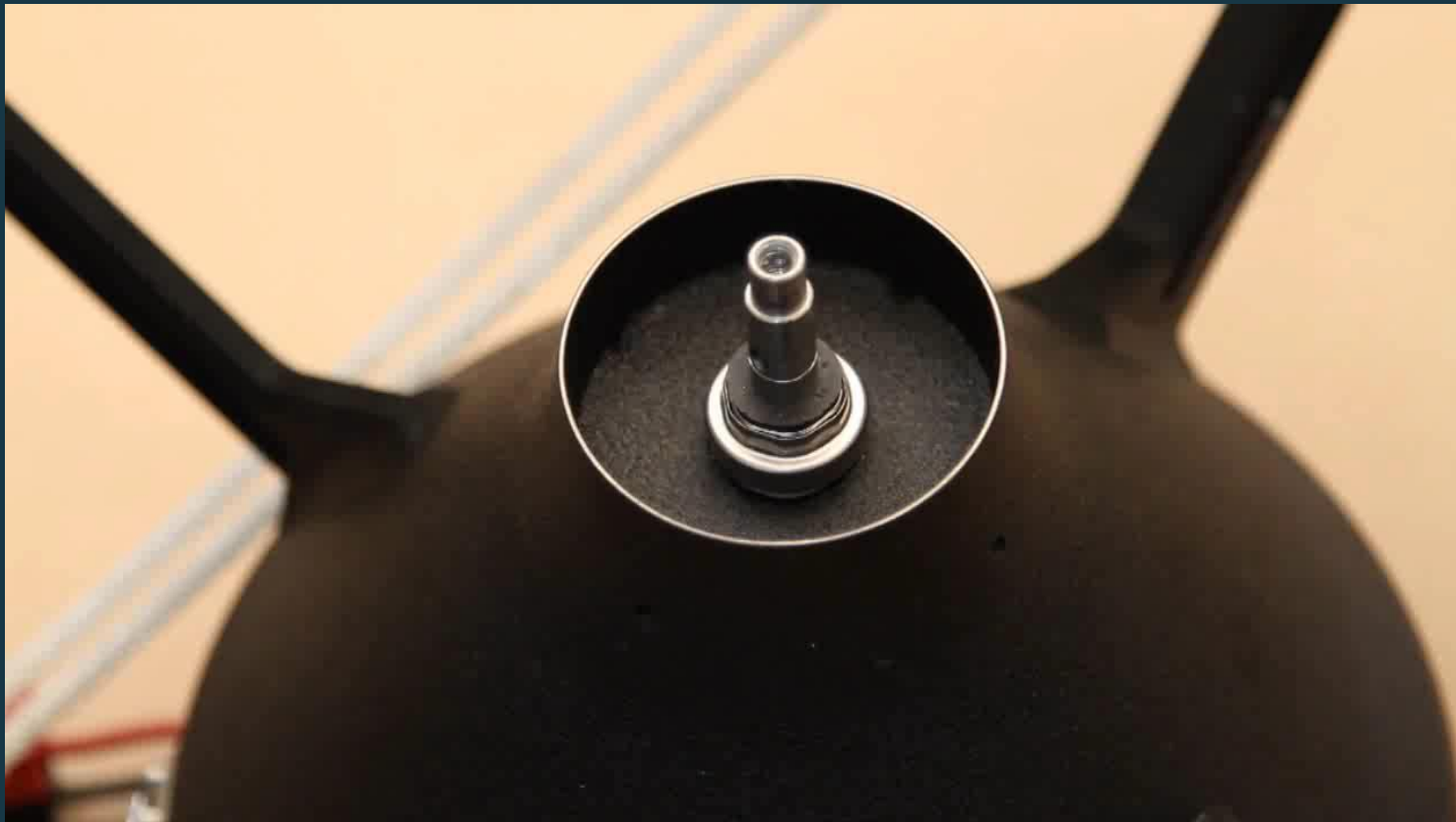




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Removing Shaft Seal





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Step 10: Cleaning Rear Shaft Area

- This area quite often looks bad as there are a lot of dissimilar metals in contact that can cause corrosion.
- Most of it will clean off easily
- Clean motor shaft abrasive scotch bright pad or similar
- Clean tail with a damp paper towel





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Step 10: Cleaning Scooter





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Step 11: Installing New Rear Shaft Seal

- Using your fingers or something soft like the end of a Sharpie slowly push down the lower part of the shaft seal in a circular motion
- Make sure the white part of the seal is facing up and level when fully installed
- Lightly lubricate the shaft with oil and install the second part of the rear shaft seal
- Apply even pressure with your fingers till it touches the lower shaft seal



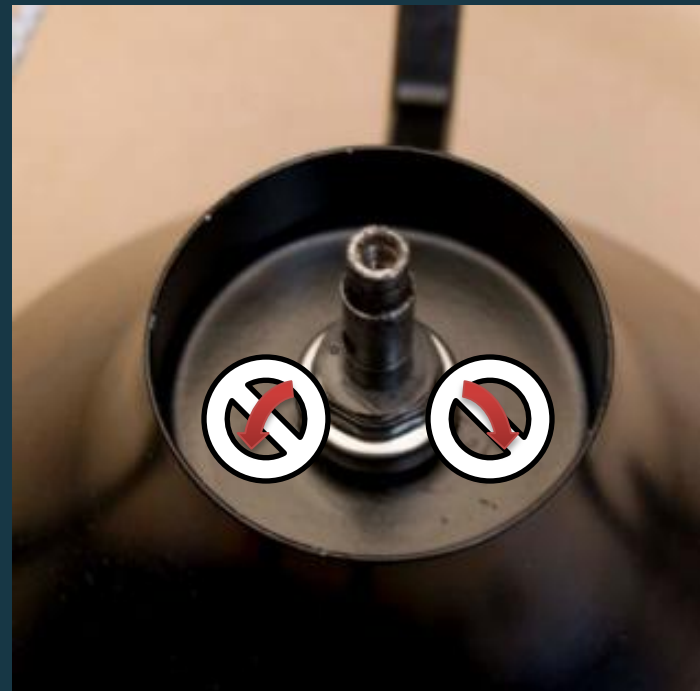


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Checking Rear Seal

- Make sure rear seal is pushed down all the way
- **IMPORTANT:** You should not be able to rock the seal side to side





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Step 12: Installing Retaining Ring

- Install the shaft seal spring
- Using the retaining ring pliers, gently expand the new ring so that it just slides down the shaft
- DO NOT over expand the ring
- Slide ring down shaft until it drops into its groove on the shaft





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Steps 11 and 12





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Optional: Installing Retaining Sleeve

- The sleeve should slide down the shaft until the top of the sleeve fits into the groove in the shaft, expand if needed
- The sleeve should easily be able to spin around the shaft
- Install spring
- Place washer on top of spring, using a 5/8" socket, gently tap the washer down
- Make sure washer is flat for proper operation





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Optional: Installing Retaining Sleeve





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Step 13: Installing Dowel Pin and Clutch Plate

- Insert the dowel pin into the hole in the shaft
 - Make sure it is centered on the shaft
- Place Clutch Plate onto the dowel pin
 - Rotate till the dowel pin is in the plates notches





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Step 14: Installing Inner Hub

- Place Inner Hub on top of Clutch Plate
 - Rotate till the clutch teeth engage





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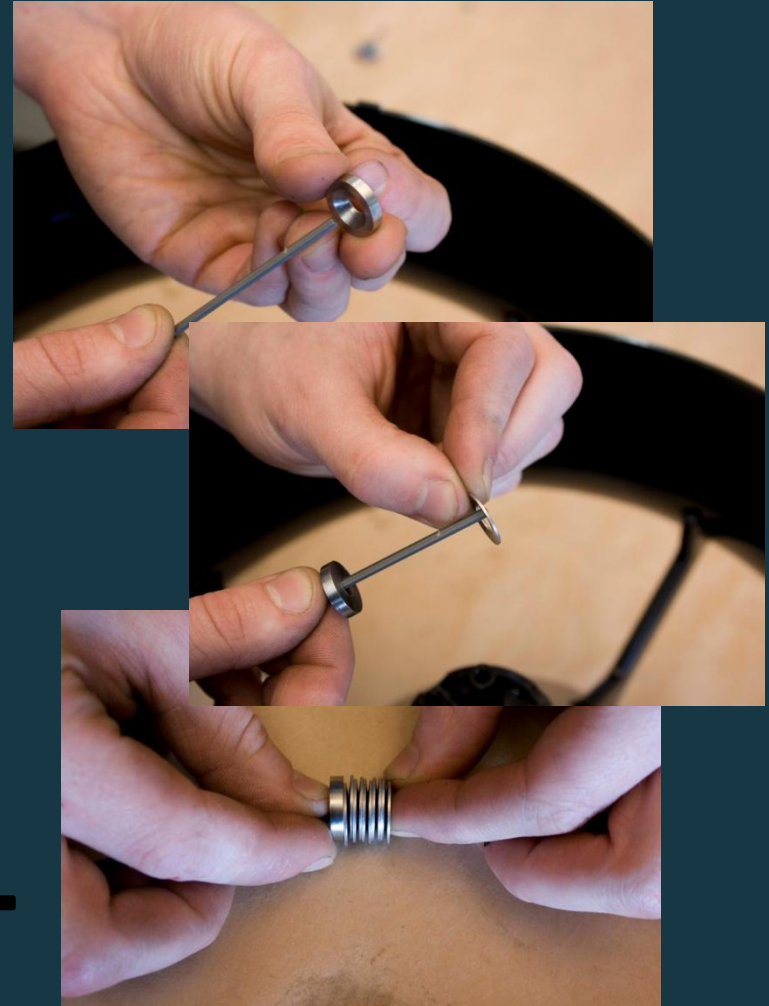
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Step 15: Assembling Clutch Washers

- Assemble the clutch spring stack
 - Using an allen wrench or screw driver , slide the large washer facing down onto it
 - Next take your small spring washers and alternate them face up/down
 - The first washer should face up
- Note: you are building the assembly in reverse to how it will sit on the prop shaft



Inner Hub



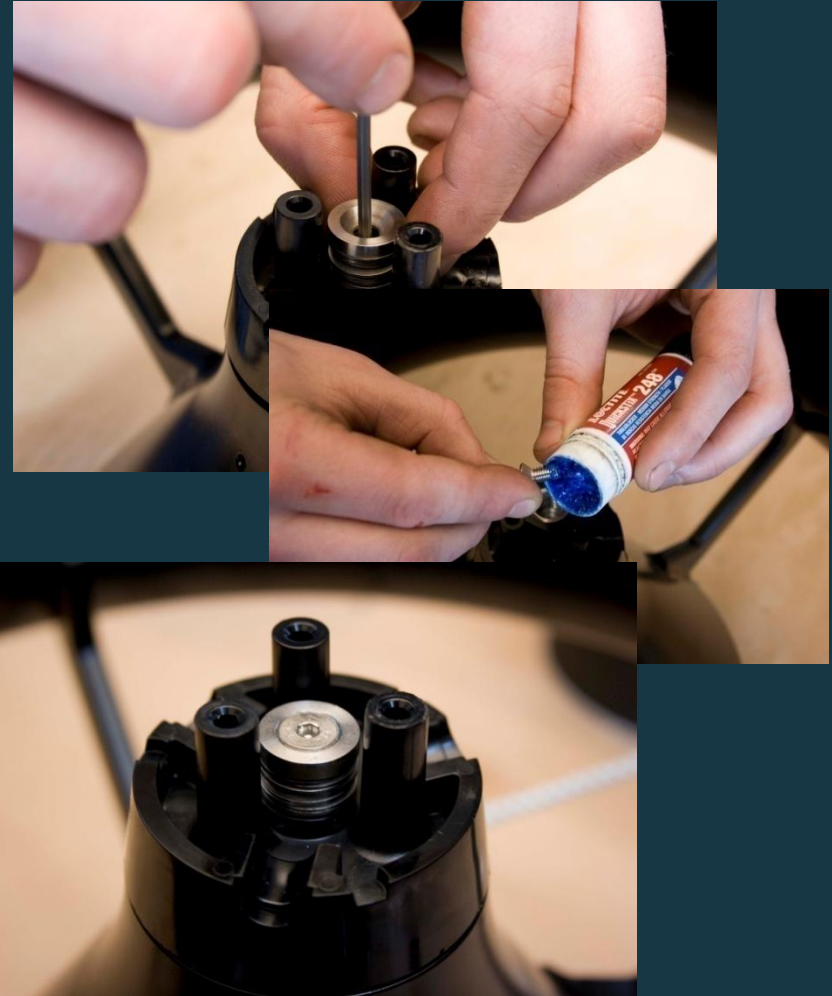


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Step 16: Installing Clutch Washers

- Take your spring stack and put it on top of the prop shaft, allowing the clutch washers to slide into place
- Place blue Loctite on the clutch screw
- Install clutch screw and tighten well





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Steps 13 through 16





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Step 17: Installing Yoke

- Screw the Yoke Shaft into the Yoke
- Place the Yoke on the Inner Hub with the Yoke Shaft pointing up





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Step 18: Installing Propeller Blades

- Lift up the yoke inside the inner hub so you can install propeller blades
- One blade at a time place the blade's pitch adjustment lever onto the Yoke pin
- After all the Blades are installed push the yoke down to secure the blades





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Steps 17 and 18





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Step 19: Installing Outer Hub

- Place outer hub on top of the yoke and blades
- Take the 3 screws and tighten them evenly





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Step 20: Installing Variable Pitch Knob

- Place pitch adjustment knob onto the square end of the yoke screw
- Tighten down the knob with its screw
- Check the operation of the pitch adjustment and set to your normal pitch





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Steps 19 and 20





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Step 21: Check Prop Spins Correctly

Now you have finished the assembly of the prop you need to check it spins ok.

- Spin the prop by hand and see that it spins freely.
- If the blades hit the shroud you can sand them a little to make them clear
- Take adhesive backed sand-paper and stick it to the shroud where the blades hit, spin the blades by hand to remove the majority of the interference, then run the motor to sand the remainder





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Step 22: Leak Test

You now need to check that all the seals were installed correctly and they do not leak.

- Place paper towel or similar inside the scooter so that you will easily see a leak.
- Place some weight in the scooter to make it sink
- Close up scooter and immerse in fresh water for 10min.
- Remove and check for leaks





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Step 21 and 22



Video Placeholder
Your video will display here.



CONGRATULATIONS

You have Completed your Annual Service!!

You are now good for another year of scootering.





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For more support please contact Dive Xtras at:

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