

# SERVICE OF ELECTRIC BUMPER BOAT MOTOR BRUSH ASSEMBLY (Pacific Scientific)

## STEP 1



Remove acorn nuts that hold terminal cover

## STEP 2



Remove 1/4 -20 nuts that hold wire terminals, note that WHITE wires go to terminal marked A2

## STEP 3



Remove 1/4-20 “knurled” nuts that hold end plate to motor, note the bolts are Phillips head and run completely through motor. Nut will normally spin free once loosened but if bolt turns you may have to install two “jam” nuts to hold bolt while removing “knurled” nut, some penetrating oil would be advisable here. If this is not successful the motor will have to be removed to gain access to Phillips head end of through bolts.

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## STEP 4



Carefully pry up end plate in an even sequence around motor.  
NOTE: The index tabs must be aligned when you reassemble the unit..

## STEP 5



Be careful to locate “wavy” thrust washer and set aside, when you reassemble use a small amount of grease to hold washer in end plate during the process.

## STEP 6



Loosen the terminal stud which will free the corresponding brush terminal, it is not necessary to remove stud entirely unless you wish to remove the brush holder from the end plate in which case you would also remove the corresponding Phillips head screw that secures holder to plate. It is not necessary to remove brush holder from end plate to service motor brushes.

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## STEP 7



To remove brush from holder, push brush away from center of end plate and pull back coil spring to allow brush to slide by end of spring. Reassemble in reverse order making sure that groove in top of brush faces coil spring

## STEP 9



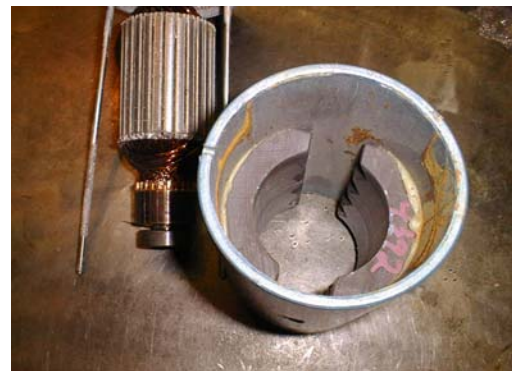
Products that are made to help seal electrical parts can be used to help prevent brushes from sticking. Read and follow manufactures recommendations.

## STEP 8



During the assembly process a dielectric compound such as those found at auto parts stores can be used to help seal the holder assembly from corrosion. Spray compounds like those shown in the next step may be easier to use.

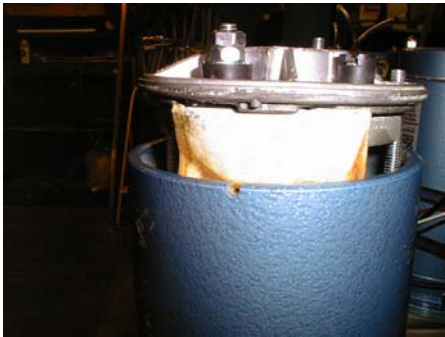
## STEP 10



If motor permanent magnet housing is removed make sure, upon assembly, that magnets are in the down position (toward the output shaft) and housing is indexed to end plate.

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## STEP 11



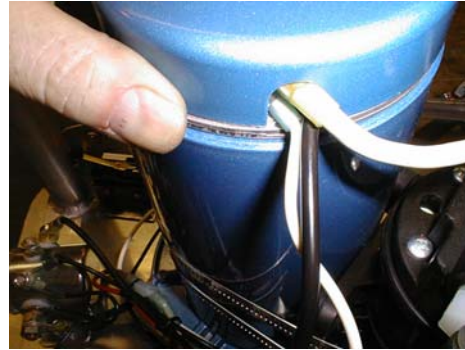
During assembly carefully line up end plate to housing and make sure paper “brush wire isolators” are in place,

## STEP 12



Align through bolts and using finger push back brush in holder to clear bearing and motor comutator. Slide end plate down to motor housing. **DO NOT FORCE.**

## STEP 13



Secure all fasteners and wire terminals, install terminal cover being careful not to pinch wires in exit slot. Hook to battery pack and verify motor performs properly, make sure propeller is turning in correct direction, if not, the wire terminals on motor have been installed improperly.

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