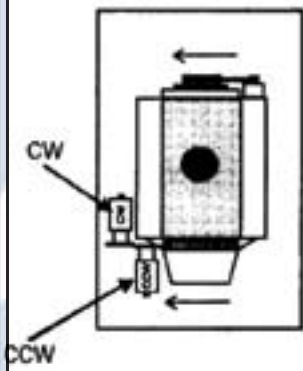
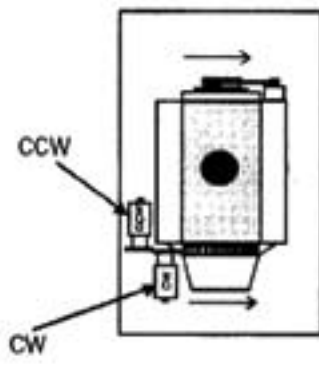


### HOW TO DETERMINE STARTER ROTATION



**Left Hand Engine Rotation**  
 This is the most common engine rotation found on today's marine engines. This is the same rotation as automotive engines. Use these charts to determine the correct starter rotation needed.



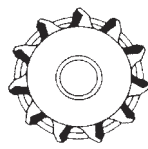
**Right Hand Engine Rotation**  
 This is not very common on today's marine engines. This is the opposite rotation of automotive engines.

Engine rotation viewed from the flywheel end

Engine rotation viewed from the flywheel end



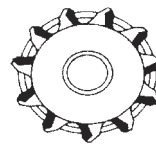
Another way to determine the starter rotation is to inspect the chamfer on the starter drive gear. The bevel will always be on the trailing edge.



Clockwise Rotation



\*\*courtesy of ARCO MARINE\*\*



Counter Clockwise Rotation

### \*\*IMPORTANT CHECK POINTS\*\*



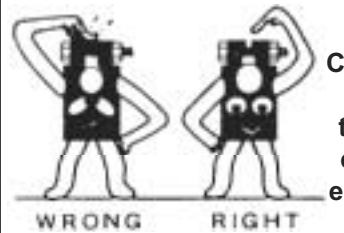
**WORN OUT BATTERY**  
 Batteries cause more trouble than any other component in a marine electrical system



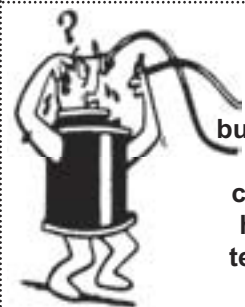
**HIGH RESISTANCE**  
 This is a very common problem found in marine electrical systems. Corrosion, undersized wire, or bad connections will cause low voltage to the electrical components. Low voltage causes high heat and will destroy electrical devices. Be sure to check for voltage drops



**LOOSE CONNECTIONS**  
 Be sure you check all the terminals and connections and make sure they are clean and tight



**LOOSE BATTERY CLAMPS**  
 Cable terminals must be tight. If the ends of the clamps touch at the top, disconnect cable clamps and shave the ends of the clamp jaws with a file so there is a gap



**INCORRECT WIRING**  
 Incorrect wiring can cause burnouts. Always tag wires when removing an electrical component. If you are not sure how to connect wires call our technical department toll free at 800-382-9335 or visit us at [www.PARTMAN.com](http://www.PARTMAN.com)