

# Converting A Polarotor II

by JOHN COPELAND

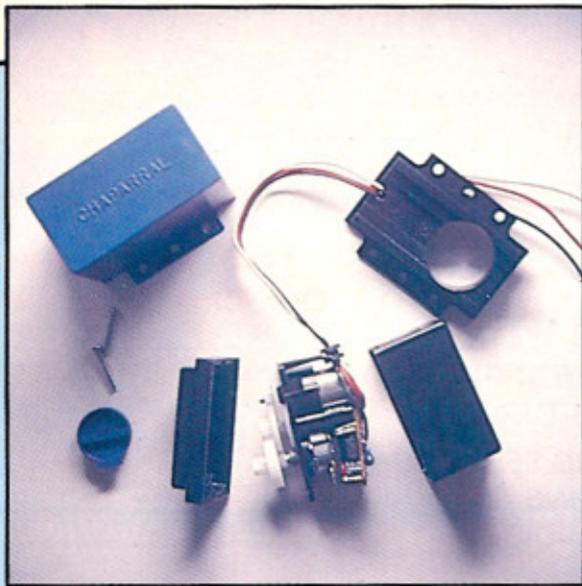
**A**LTHOUGH THE POLAROTOR I HAS become the defacto standard in the industry, the Polarotor II is still found in wide use on many of the early, well-built receivers. Some distributors are telling dealers that the PR-II is no longer available although Chaparral Communications indicates they have an ample supply. Consequently, the servicing dealer is either stocking two incompatible motors or in

short supply of the PR-II. Should a defective PR-II be encountered and no replacement is in stock, a simple conversion can eliminate a costly return trip to the customer's home.

The conversion of a PR-I to a PR-II requires no additional parts other than a good PR-I, but you will need a soldering iron, side cutters, and a small phillips-type screwdriver.

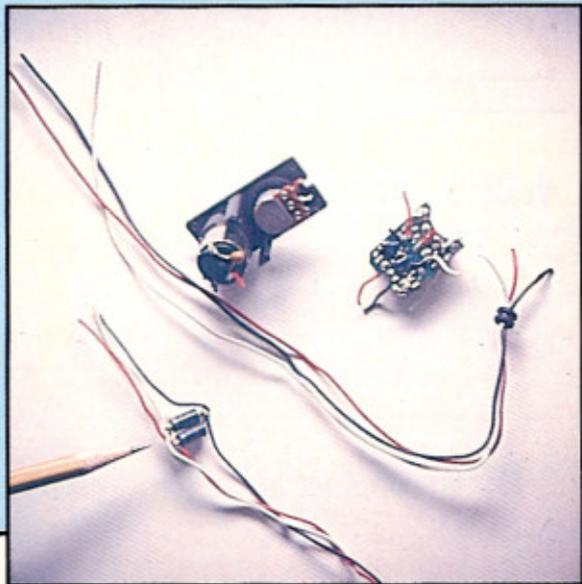
Since the PR-I contains servo electronics that respond to a pulse duration, the assembly must be stripped of all electronics leaving only the DC

motor and gear train. Carefully separate the two outer halves of the motor assembly and remove the internal motor unit. Next, remove the screws and carefully separate the two plastic halves revealing the motor, gears, and circuit board assembly. Being careful not to disturb the gear train, cut all wires connected from the circuit board to the motor and circuit board to the potentiometer. The pot is used in the PR-I for position feedback and although it will not be needed as an electronic part in the conversion, it will be needed



◀ Disassemble the unit, exposing the motor, gears, and circuit board.

Remove the circuit board by cutting all wires. If diodes are in parallel with the leads, they should also be removed. ▶



mechanically as a gear shaft.

Two "stops" are located within the PR-I motor assembly and both must be removed to allow continuous 360 degree operation of the motor in either direction. One is located in the lower half of the plastic case and the other is an internal part of the potentiometer. The stop in the case is easily removed by cutting with a knife or side cutters, making sure that no edges will restrict free movement of the final gear. To remove the stop within the pot requires destroying the pot. Carefully pry the

back plate off the pot exposing the internal wiper attached to the shaft. Next, cut the plastic away from the shaft without removing the innermost area. The final step is to solder two wires to the motor connections. I like to use the original red and black wires but color is not important.

In the event that the PR-I you are converting has two diodes in parallel with the red, black, and white leads, these must be removed or damage to the receiver could result. In this case the PR-I wires will not be long enough and

you may want to use the wires from the defective PR-II.

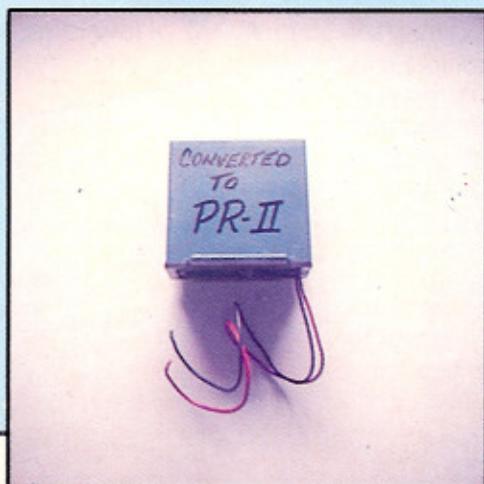
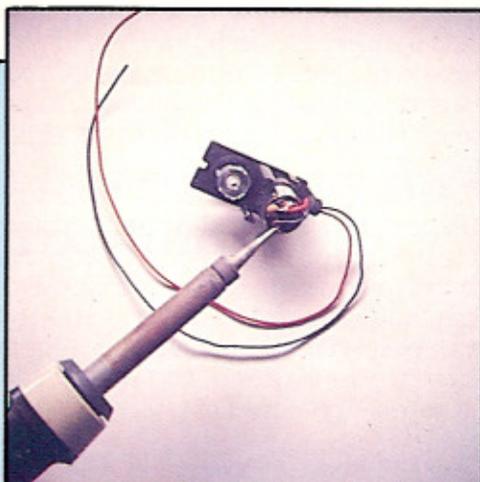
Reassemble the motor housings in reverse order retaining the rubber grommet and good lead dress. The unit is now ready to perform as a PR-II. Although you now have what appears to be a PR-I with only two wires, it is a good idea to mark the unit "PR-II" to eliminate confusion in the future.

The entire conversion from PR-I to PR-II only takes a few minutes and is much more feasible than a return trip to the customer's home.



Solder two leads to motor contact. ▶

◀ Remove back plate from the pot and remove the wiper which will eliminate the internal stop. Also remove the plastic stop from inside the lower case.



◀ It is a good idea to mark the unit after conversion.