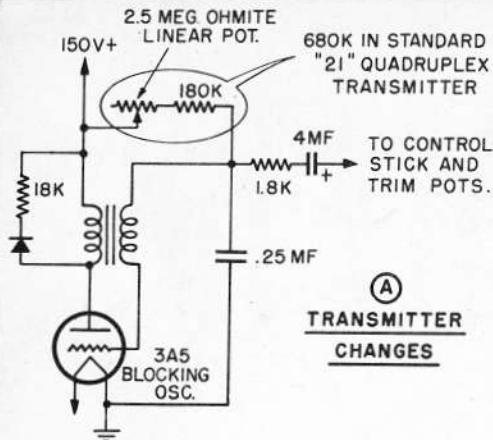


**Propo MC for "21"**. Many users have expressed desire for full proportional motor control operation from Quadruplex 21 control system, normally fitted with trimmable MC. Here's how to do it, as worked out by Dee Bee Engineering Co. (Pitman, N.J.). Change in transmitter is simple; substitute a linear 2.5 meg pot and a 180K fixed resistor for the 680K resistor nor-

*(Continued on page 46)*



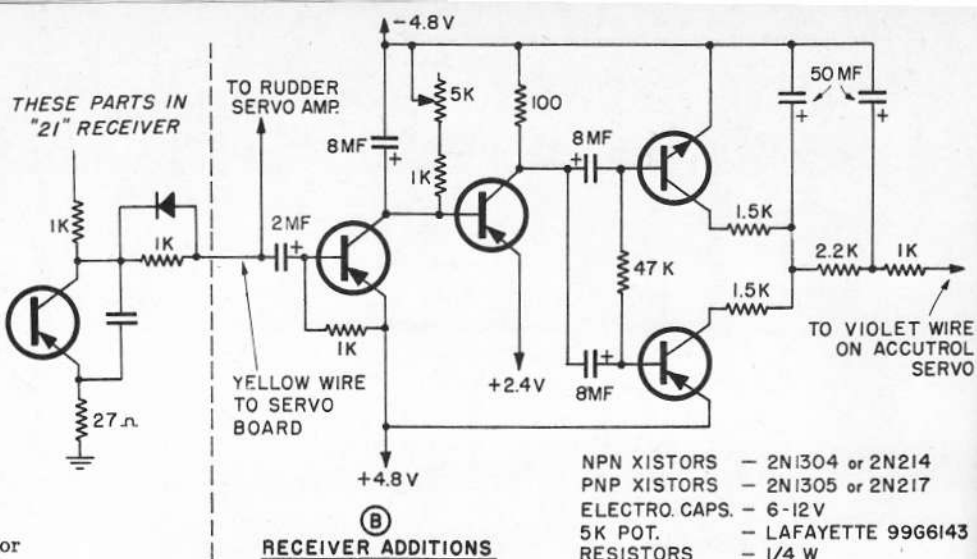
### McENTEE ON R/C, Continued

mally found in the blocking oscillator circuit, per ckt A. Only about 60 degrees of the available rotation of the pot will change the oscillator frequency sufficiently for the job. Don Brown mounts pot on top of case near right rear edge, so lever-type knob may be operated by hand which supports transmitter. Stops limit lever movement to 60 deg. The 680K resistor you remove is behind .25 mf capacitor near red MC button. Brown notes there may be a resistor paralleling the 680K; if so, remove this, too.

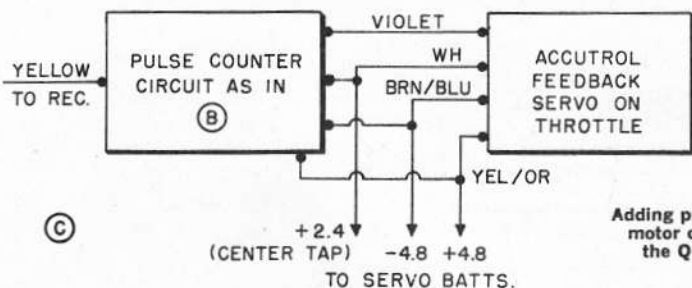
At receiver end, add an entire new rate discriminator circuit, per ckt B, and substitute an Accutrol feedback MC servo for the one you've been using. Parts to left of dotted line in the 21 receiver case are not disturbed. Note that yellow wire still goes to rudder servo amplifier on the servo board, as well as to new rate circuit. Latter is for the 27 mc superhet 21 receiver only; the 6 meter super-regen has an NPN audio detector and while circuit shown will work, pulse "counting" will cause a small "glitch" in the new throttle servo when rudder is moved rapidly. Complete cure is to change PNP transistors in circuit B for NPN, and vice versa, invert electrolytic capacitor polarities, also 4.8 volt battery connections (the plus 2.4 volt lead is actually the servo pack center tap and remains the same). Note that this inversion work is only needed on 50 mc. 21 outfit. Ckt C shows new pulse counter and recommended Accutrol feedback servo. Again, 2.4 volt is battery centertap; plus and minus 4.8 volt leads go to cold side of receiver power switch. Brown notes that such feedback servos as Space Control, Orbit and B&D should work well with this system.

It's preferable to put the throttle lever in low speed (highest resistance) before you turn on transmitter power. Set this pot initially for about same pulse rate as you had with factory-set pulser; high motor will be had with 1½ times this rate, low motor with .6 times the normal factory pulse rate. Pot in the pulse counter circuit is set for half throttle at medium pulse rate. It may be necessary to juggle T and R pots for best results; also the tiny pots that set rudder end position in the transmitter may need touch up, but change latter only if you get a MC servo glitch at extreme rudder positions.

This conversion still allows use of the standard "21" MC servo and transmitter pushbuttons for an auxiliary control. If so utilized, Accutrol MC



NPN XISTORS - 2N1304 or 2N214  
PNP XISTORS - 2N1305 or 2N217  
ELECTRO. CAPS. - 6-12V  
5K POT. - LAFAYETTE 99G6143  
RESISTORS - 1/4 W



Adding proportional motor control to the Quad 21.

servo will go to half position momentarily when a button is depressed, resume previous position upon release. The Accutrol servo costs \$40; if you don't want to tackle the job yourself, tentative arrangements have been made for complete factory conversion of T and R by Dee Bee for \$60. Check with them before you ship equipment back.

**Had to Happen?** We note that LARKS meet in mid-June had events for Class 3 Expert and Class 3 Novice, Proportional; also Class 3 Expert and Class 3 Novice, Reeds. Since propo has been

doing so well in meets for the last year or so, this split might seem inevitable. But what's become of the flyers who've been declaiming for past several years that we should just have "one class—Radio Control, Period"?! Any questions? Comments?

**Float Flying Fanatics.** Exhorting others to join in the fun, Dick Hansen of Sky Knights R/C club (Portland, Ore.) tells of R/C float-plane experiences. He has used a Rebel with Gee Bee floats, OS .19 and R & E, notes that



Top radio contestant at Cape Coral, Fla., invitational meet was Ed Sweeny, 22, Boulder, Colo., seen here with family. Muffler of big S.T. in foreground sounds sweet in the air.