

Single and double paddle "El-Bug" keys without bearings

by the late TONY WILKES ZL3SLH

MY interest in CW has been rekindled by various "Morseman" articles in *Break-In*, and from an introduction by ZL1AN to an extremely versatile keyer in kit form, the CMOS Superkeyer from Idiom Press. This has led me to dig out my old "el-bug" keys which I fabricated 20 years ago. The design of these keys allows for simple home construction.

The keys do not have bearings as such and operate by pivoting on a triangular-shaped brass plate held against three sharp points by spring pressure, thus reducing the problems of friction and the alignment of bearings. The points consist of hardened steel 4BA sharp-pointed grub screws set in countersunk, tapped, holes in an aluminium block and locked in position by 4BA half nuts. In both keys adjustment of the top screws will alter the operating height of the paddle. The adjustable tension for operating the paddle is obtained by screwing a knurled collar on a $\frac{1}{8}$ " diameter threaded bolt against a spring. The bolt and $\frac{1}{8}$ " rod are fixed in their holes using "Loctite". In the twin paddle key each paddle is independently adjusted for tension, travel and height whilst the space between pad-

dles can be altered to suit individual operators. Although my proficiency on the key leaves a lot to be desired I am informed by more expert "Keymen/women" that this type of key is very smooth and capable of high speeds when adjusted for that particular operator.

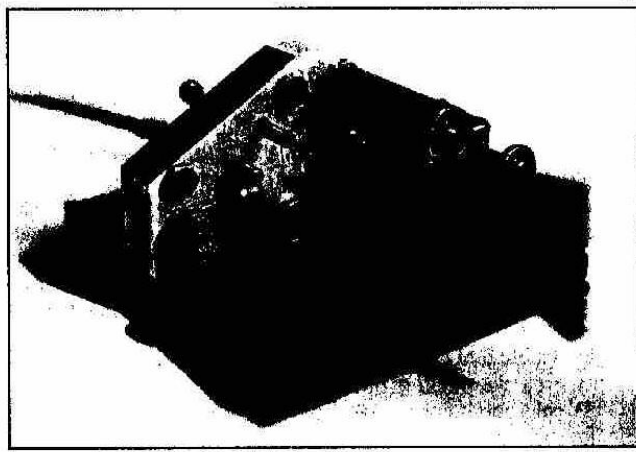
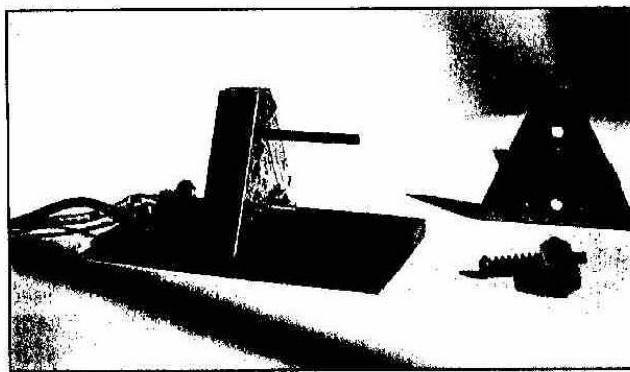
The construction of the paddles is shown in the photographs and the dimensions of the keys are shown in the Figures. The overall dimensions are not critical but trial and error has shown that the dimensions given in the sketch and the positions of the grub screws will yield acceptable results; obviously symmetry is important. The only part of the construction that cannot be carried out with simple hand tools is the silver soldering of the $\frac{1}{8}$ " \times $\frac{1}{4}$ " brass handle to the brass triangle. The handles are

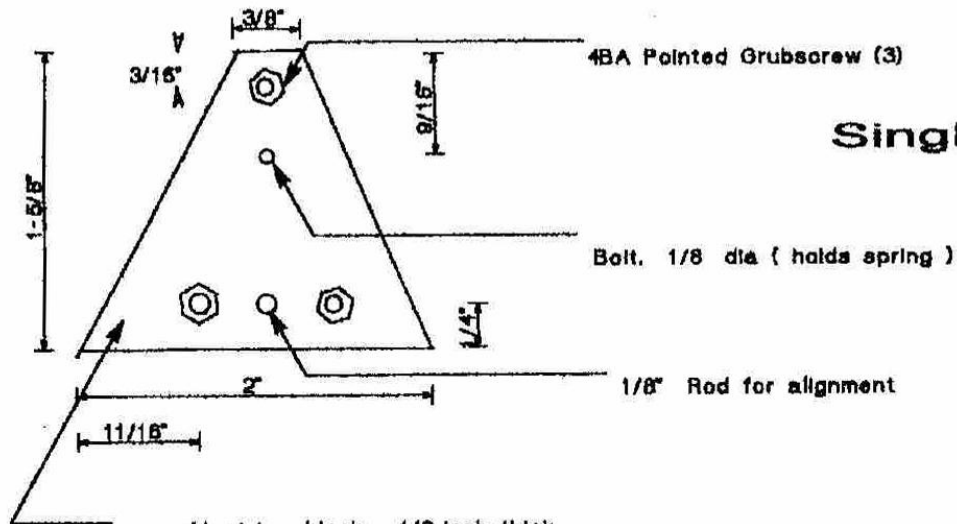
$1\frac{1}{2}$ " long. The contacts are 4BA screws, with spring tensioners (although 4BA locknuts could have been used) mounted with tapped holes in half inch hex or square bar. The mild steel base is fastened to the acrylic top plate with countersunk 4BA screws. The single paddle key is on a $2\frac{1}{2}$ " \times $3\frac{1}{2}$ " base and the twin paddle key is on a $3\frac{1}{2}$ " \times $3\frac{1}{2}$ " base.

In both keyers the half inch aluminium block could have been made in brass and could have been rectangular which would have given more weight to the key and would have reduced the amount of cutting and filing. All the holes are drilled in the aluminium block and then this is used as a template to drill the holes in the brass triangles. The holes in the brass triangles started at $\frac{1}{8}$ " and were reamed out just enough to allow the pivoting action of the triangles. The brass triangles have their bottom edges filed down to give clearance to the base. Next the bolt and rod are fixed in the

aluminium block together with the grub screws. The brass plate is then placed on the protruding grub screws and given a sharp tap with a hammer. Made this way the indentations for the grub screws are quite small but are sufficient to locate the triangles. The grub screws were renewed after marking the brass triangles to ensure that the points were still sharp. In the original the brass parts were nickel-plated but this is not essential. The knurled collars for adjustments (as shown in the photographs) could be replaced with washers and 4BA nuts. The mild steel bases have thin rubber feet.

Today's constructor will use metric dimensioned stock but for assured results the layout of the 4BA grub screws, $\frac{1}{8}$ " diameter bolt (which I think is in fact M3 size) and the $\frac{1}{8}$ " rod should be followed fairly closely since they are the result of many "trials and errors" and a stock of scrap metal! [B]

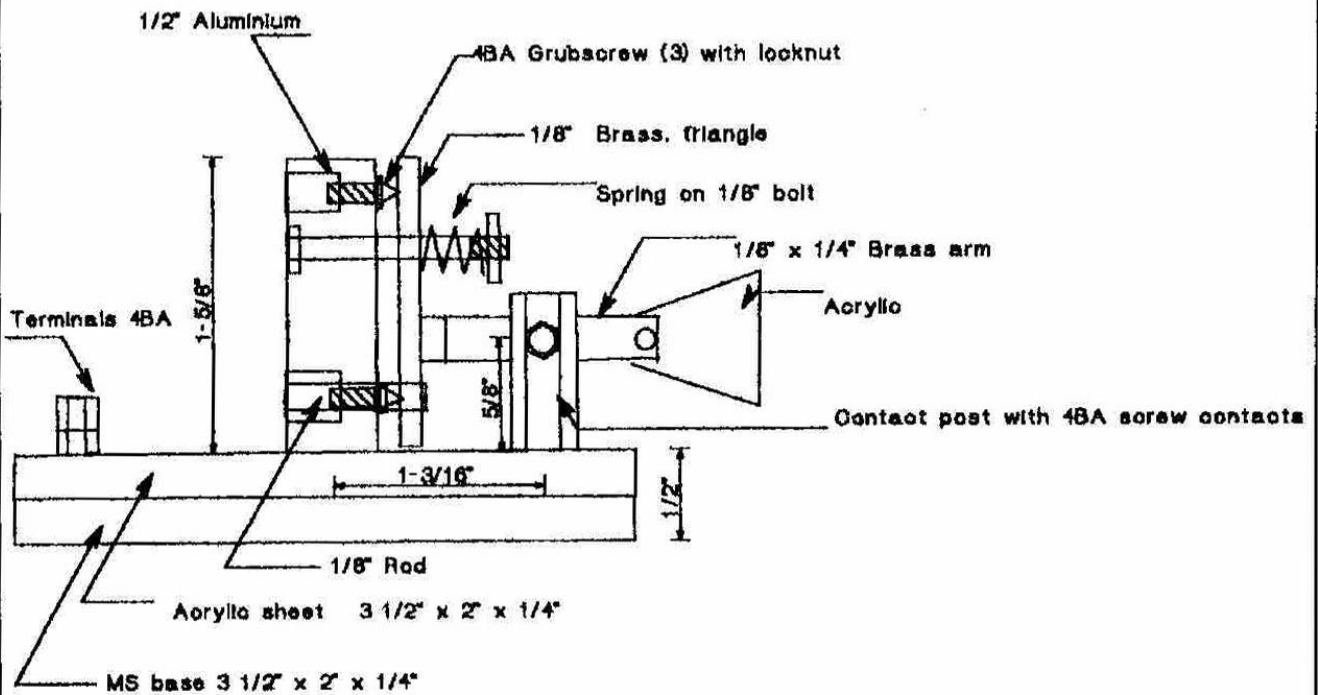




Single Paddle

Aluminium block 1/2 inch thick

Brass triangle is the same shape but has only holes for rod and bolt



TWIN PADDLE

