

4. Electronic pedometer for joggers

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How to convert a calculator into a pedometer to record distance covered while walking or jogging.

AN INEXPENSIVE pocket calculator can be converted to operate as an electronic pedometer to keep an on-going tally of the number of steps taken while walking and jogging. Then, with a

simple conversion, you can use the calculator to determine the number of yards, meters, miles, or kilometers travelled. Although the conversion described here is "hard wired" into the cal-

culator, you sacrifice none of the calculator's basic built-in capability.

Calculator Conversion. The first thing you must do is determine whether

or not your calculator has a built-in constant function. To do this, press CLEAR, 1, +, 1, =, =. If your calculator has the necessary constant function, the display should read 3 and should increment by 1 for each additional operation of the = key. Having established the fact that your calculator does indeed have the constant function, you can proceed with the conversion.

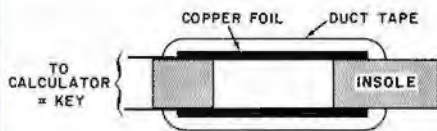
Conversion of the calculator consists in simply wiring a foot-operated switch across the = key. First, carefully open the calculator's case and locate the contacts for the = key. Then solder a 5' (1.5-meter) or so length of 26-gauge flexible stranded wire to each = switch contact. Insulate the soldered connections with a layer of electrical tape.

Now, test your hookups in the following manner. Turn on the calculator and key in 1, +, 1. Touch together and separate the free ends of the wires two times. With the first touch, the display should read 2 and with the second, 3. If the test checks out properly, turn off the calculator and reassemble it, routing the wires out through the side of the case. If necessary, use a sharp knife to cut a slot to allow the wires to exit the case. No other modification is necessary.

Footswitch Fabrication. As shown in the drawing, the footswitch is fabricated from a commercially available "air-pillow" foam insole. Begin by cutting a 1" (25.4-cm) square away from the center of the heel area of the insole. Cement a square of copper-coated Mylar or any other flexible conductive material over the cutout on both sides of the insole, conductive surfaces face-to-face.

Solder the free ends of the flexible wires from the calculator to the conductive material. Then cover the "switch" assembly with duct or other durable tape to keep out dirt and moisture.

Slide the insole into your shoe and put on the shoe. Turn on the calculator and



Place copper foil on each side of insole hole and insulate with tape.

key in 1, +, 1. Now, as you walk around, the display should read 2, then 3, then 4, etc., as you successively put weight on the switch shoe with each step. If you do not obtain these results, turn off the cal-

culator and carefully check out the switch arrangement.

Determining Distance. Every time you use the pedometer, you must first key in 1, +, 1. Thereafter, the calculator increments the display by 1 for each step taken by the shoe in which the switch is installed. To determine how far you have run or walked, you must find out how many steps you take in a given measured distance (mile, kilometer, etc.). You must, therefore, measure off the "control" distance and walk or run it to determine how many steps are required to cover the course.

Let us assume you wish to know how many miles you have walked and have previously determined that it takes you 1056 steps to walk a mile. (Note that a step is two strides. If the switch is in your right shoe, a step is completed every time you set down your right foot.) Now, subtract 1 from the total displayed by the calculator. This is necessary because the first step you take will register 2. If we assume you stopped at 7200 steps, simply divide this number by 1056, your "control" number, using the calculator to obtain the number of miles walked. Therefore, $7200/1056 = 6.82$ miles. ◊