

14 Alcohol Tester

□ It's a curious and unfortunate fact, but many people feel that a drink or two will improve their reflexes. Here's your chance to prove them wrong. Imagine for the moment that S1 is depressed (open circuited), S2 is closed, and C2 has been completely discharged. On command from someone acting as the tester, the person depressing S1 must remove his hand from that switch and use the same hand to open toggle switch S2. When S1 is released, charging current begins to flow into capacitor C2 through R1 and R2. This current is interrupted, however, as soon

as S2 has been opened. C2 will have accumulated a voltage directly proportional to the reaction time, which is the interval between S1's release and the opening of S2. Longer times create high voltages and cause higher-numbered LEDs to light. For example, a sober person might react quickly enough to light LED2 or LED3, while someone truly sloshed will light up LED10. To run another test, discharge C2 with S3, then press S1 and, finally, close S2 once more. R1 should be adjusted so that a sober person lights one of the low-numbered LEDs.

PARTS LIST FOR ALCOHOL TESTER

- C1**—250- μ F electrolytic capacitor, 35 VDC
C2—50- μ F electrolytic capacitor, 35 VDC
IC1—LM3914 LED display driver
LED1 through LED10—light-emitting diode
R1—50,000-ohm trimmer potentiometer
R2—5600-ohm $\frac{1}{2}$ -watt resistor, 10%
R3—33,000-ohm $\frac{1}{2}$ -watt resistor, 10%
R4—47-ohm $\frac{1}{2}$ -watt resistor, 10%
R5—1800-ohm $\frac{1}{2}$ -watt resistor, 10%
R6—1000-ohm $\frac{1}{2}$ -watt resistor, 10%
S1—normally closed SPST pushbutton switch
S2—SPST toggle switch
S3—normally closed SPST pushbutton switch

