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An inexpensive glass response key

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A clear glass response key, operating as a normally closed switch, may be readily constructed at very low cost. The glass key has the major advantage of superior resistance to scratching, compared to plastic, and requires no special wiring.

The key that is illustrated in Figure 1 has been used successfully with pigeons. Construction is easily derived from the drawing, using the following parts (Letters refer to Figure 1; dimensions are approximate.): "A" is a U-shaped sheet aluminum bracket, 4.5 cm wide X 5 cm long X .7 cm deep. The large hole (2 cm in diam) is made with a chassis punch, and the two small holes in the broad face of the bracket are for mounting screws (K). Two small holes (.1+ cm) in the arms of the U accommodate a wire axle for the key. "B" is a glass plate

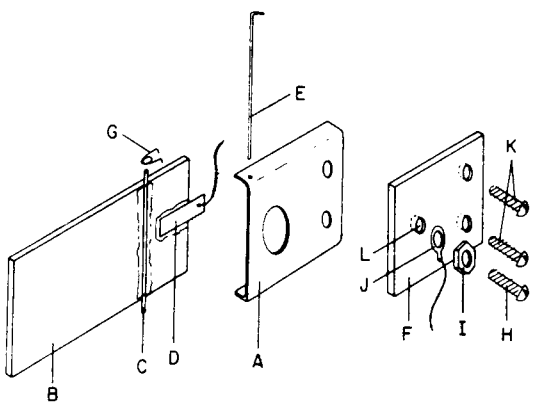

Figure 1. Exploded view of the glass response key. Refer to text for explanation of letter symbols.

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(3.5 X 8 X .3 cm thick) that serves as the transparent key per se. "C" is a small glass tube (.3 cm o.d. X 4 cm long), epoxied across the short dimension of the (B) glass plate, about 2 cm from one end of, and centered on, the plate. The tube serves as a rotation axis for the key. "D" is a small metal plate (.5 X 1.5 cm), epoxied to the glass plate and functioning as one contact of the switch. A lead wire is soldered to this contact. A quick-connect device (e.g., A Nu-Way snap) is desirable on the end of this lead.

A stiff wire (E), .1 X 5 cm long, is the axle for the key and is inserted through the small holes in the arms of the U bracket (A) and through the length of the glass tube (C).

A rectangular piece of clear plastic (F), 5 cm long X 4 cm wide X .3 cm thick, is attached to the metal bracket (A) by means of two key-mounting screws (K). A third hole (L) is drilled and tapped to accept a screw which will serve as the other side of the switch. A lead (J) is held in place by a lock nut (I) on the screw (H); the screw also serves as an adjustment for the switch. A small torsion spring (G) is placed around the glass tube (C) inside the bracket (A) such that tension is maintained against the glass plate (B) to hold the two contacts (D and H) together. The force required to open the switch contacts may be varied by unwinding the spring or by substituting a lighter spring. The key is held on the back side of the response panel by two mounting screws (K) which pass through the matching holes in the bracket (A) and the plastic block (F). The mounting screws may be threaded into holes tapped into the response panel or secured by nuts.

The device described here is reliable and inexpensive and may be built in an hour or so with materials which are readily available. The glass plate may be replaced in a matter of seconds; a new plate can be built in a few minutes, using quick-setting epoxy. The cost of the key unit should be less than $5.

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