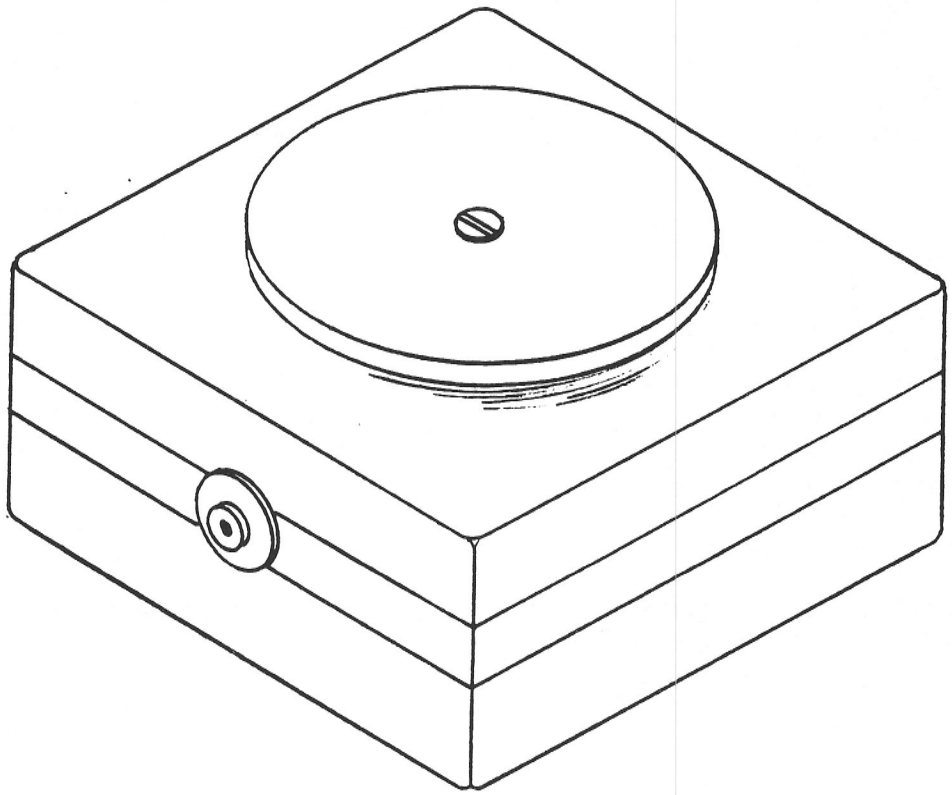
ROUND SWITCH

There is always a need for a rugged, smaller switch that requires the very lightest touch to make it operate. Like other Lekotek switches (see the first volume of the Lekotek Plan Book of Adaptive Toys), this one is used with a connecting cord that has a plug on each end. One plug goes in the switch jack and the other goes in the toy jack.

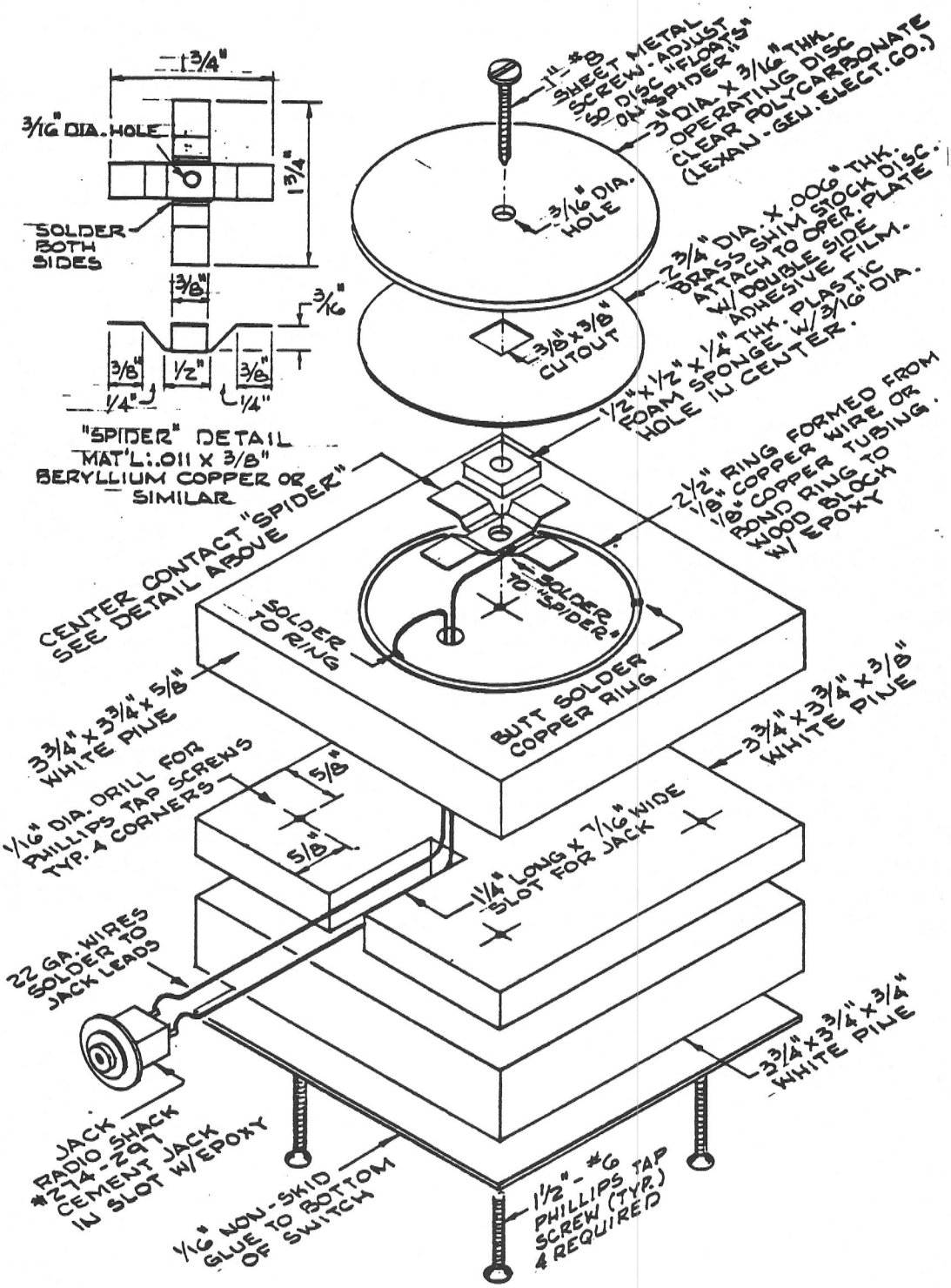


Materials needed:

- Two white pine 3 3/4" x 3 3/4" x 5/8"
- One white pine 3 3/4" x 3 3/4" x 3/8"
- Four flat head Phillips tapping screws 1 1/2" x #6
- One sheet metal screw, pan head 1 1/2" x #8
- Brass shim stock .003" x .006"
- Lexan disc cut from 3/16" Lexan or Polycarbonate
- One piece 1/8" copper tube or copper wire, 10" long
- Two pieces Beryllium copper 2 1/4" x 3/8" x .010"
- One piece 22 guage stranded copper wire
- Jack, Radio Shack #274-297
- One 1/4" plate washer
- One 3/16" plate washer
- One piece non-skid material for bottom
- Contact cement for non-skid material
- Epoxy glue
- Rosin core solder
- One piece 1/2" x 1/2" x 1/4" thick plastic foam sponge
- Small tacks or escutcheon pins
- Paint for underside of disc
- Brightly colored paint for body of switch

Tools needed:

- Table saw
- Sandpaper
- Metal cutting shears
- Drill and bits
- Fine tooth hacksaw or tubing cutter
- Small soldering iron
- Wire cutters
- Knife or wire stripper
- Hammer
- Phillips screwdriver and flat blade screwdriver
- Ruler, straight edge
- Paintbrush


1¾"
3/16" DIA. HOLE
1¾"
SOLDER BOTH SIDES
⅜"
3/16"
⅜"
½"
⅜"
¼"
¼"
"SPIDER" DETAIL
MAT'L: .011 X ⅜"
BERYLLIUM COPPER OR SIMILAR
1" #8 SHEET METAL SCREW - ADJUST TO DISC "FLOATS" ON "SPIDER"
3" DIA. X 3/16" THK. OPERATING DISC CLEAR POLYCARBONATE (LEXAN - GEN. ELECT. CO.)
3/16" DIA. HOLE
2¾" DIA. X .006" THK. BRASS SHIM STOCK DISC. ATTACH TO OPER. PLATE W/ DOUBLE SIDE ADHESIVE FILM.
⅜"x⅜" CUTOUT
½"x½" x ¼" THK. FOAM SPONGE W/ 3/16" DIA. HOLE IN CENTER.
2½" RING FORMED FROM ⅛" COPPER WIRE OR ⅛" COPPER TUBING. BOND RING TO WOOD BLOCK W/ EPOXY
CENTER CONTACT "SPIDER" SEE DETAIL ABOVE
SOLDER TO "SPIDER"
SOLDER TO RING
BUTT SOLDER COPPER RING
3¾"x3¾"x⅝" WHITE PINE
3¾"x3¾"x⅜" WHITE PINE
1/16" DIA. DRILL FOR PHILLIPS TAP SCREWS TYP. 4 CORNERS
⅝"
⅝"
1¼" LONG x 7/16" WIDE SLOT FOR JACK
22 GA. WIRES SOLDER TO JACK LEADS
JACK RADIO SHACK #274-297 CEMENT JACK IN SLOT W/EPOXY
1/16" NON-SKID GLUE TO BOTTOM OF SWITCH
3¾"x3¾"x¾" WHITE PINE
1½" - #6 PHILLIPS TAP SCREW (TYP.) 4 REQUIRED

Construction suggestions:

The operating plate is a disc of clear or colored plastic, preferably Lexan or polycarbonate, as it is durable and easy to work with. If clear plastic is used, paint the underside of the disc a bright color. Bond a disc of brass shim stock, .006" or thinner, and somewhat smaller diameter to the painted surface with double adhesive film.

The switch action is accomplished when the disc, supported by the "spider" in the center, is depressed. This makes contact with the "spider," the disc and the copper ring on the base. The center hole in the "spider" and the brass shim disc must have center holes large enough to clear the support screw. The "spider" must be made of material that has a bit of spring to it.

The base construction as shown may be revised by using only the upper and lower wood pieces, if tools are available to slot the top piece to accommodate the jack. Shorter screws (1") can then be used to assemble the unit. The 2 1/2" copper ring of wire or tubing can be formed around a suitable cylindrical object and then cut to form a butt-end solder connection. Make sure the ring is flat after soldering. The connecting wire is to be soldered on to the ring opposite the butt joint to prevent disturbing that joint. To bond the ring to the block, form a circle of epoxy glue on the block and gently place the copper ring in it. Press in place, centered on the block, and place a sheet of wax paper over the ring. Place weights on the paper, large enough to cover completely and wait for the epoxy to set. The wax paper prevents any epoxy from bonding to the weights. For weights, two or three heavy bricks should be sufficient. The wire attached to the ring should be run through the hole and out the slot before bonding the ring.

When the ring is bonded in place, the block can be painted the desired color. Mask the ring and spider for painting.

The wire from the spider is also run through the hole and out the slot to be attached to the jack. The jack, as shown in the drawing, has a 1/4" plate washer and a 3/16" plate washer attached to provide a flat surface to the block and additional support. After soldering the two wires to the jack, a small amount of epoxy will hold it in place.