

**AMP**

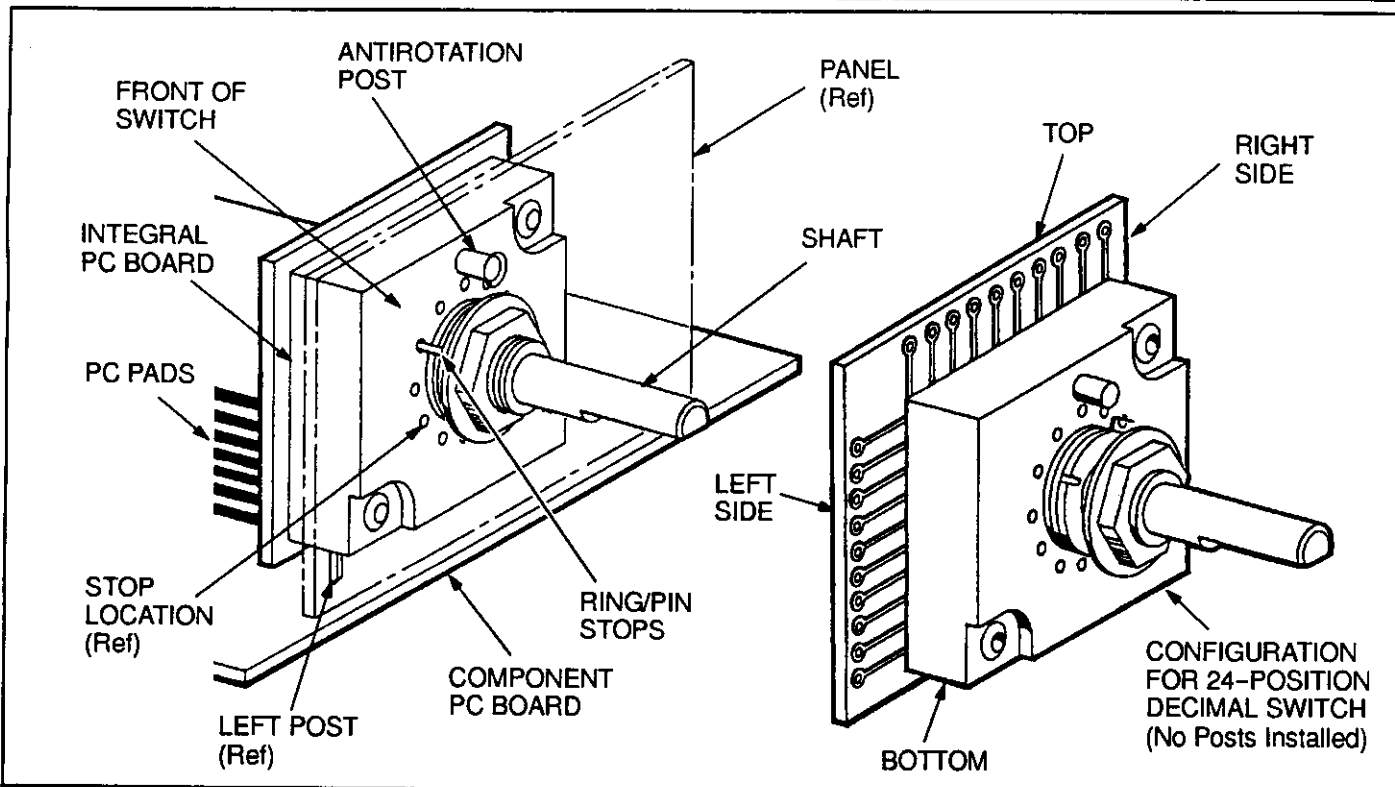
AMP INCORPORATED  
HARRISBURG, PA 17105

**AMP\* ROTARY  
PROGRAMMING SWITCH  
(3100 Series)**

**IS 7936**

TOOLING ASSISTANCE 1 800 722-1111  
AMP FAX/ PRODUCT INFO 1 800 522-6752

RELEASED  
11 NOV 92



**SWITCH DESCRIPTION**

DECIMAL CODED			BINARY CODED DECIMAL (BCD)			BINARY CODED DECIMAL COMPLEMENT		
NO. OF POSN	POST IDENTIFICATION (Left to Right)	PART NO.	NO. OF POSN	POST IDENTIFICATION (Left to Right)	PART NO.	NO. OF POSN	POST IDENTIFICATION (Left to Right)	PART NO.
24	23-22-21-20-19-18-17-16-15-14-13-12† 0-1-2-3-4-5-6-7-8-9-10-11-C‡	436044	10	2-1-C-8-4	435984	10	2-C-1-8-4	436022
			12	8-2-4-1-C	436037	12	C-4-8-1-2	436024
			16	1-2-C-8-4	435986			
			24	C-16-2-4-1-8	436028	16	8-2-4-C-1	435987

† LEFT SIDE - TOP TO BOTTOM  
‡ RIGHT SIDE - TOP TO BOTTOM

**Fig. 1**

92-250A

**1. INTRODUCTION**

This Instruction Sheet (IS) covers the selection and installation of AMP Rotary Programming Switches designated as the 3100 Series. See Figure 1.

Read this material thoroughly before starting.

**NOTE**

*Dimensions are in millimeters [with inches in brackets].*

**2. DESCRIPTION**

The switches described on this sheet are designed for logic level circuitry, but are capable of controlling electrical

circuits with 115 volts of alternating current; 2 amperes continuous and up to 125 millamperes during switching. Coded outputs include decimal, binary coded decimal (BCD), and binary coded decimal complement.

Each switch contains a ball and compression spring system that ensures positive positioning and can easily be detected upon rotation of the shaft.

The throw of the switch between positions can be determined by dividing full rotation (360°) by the number of switch positions. Switch positions can be excluded by limiting shaft rotation using one or both ring/pin stops supplied with the switch.

Switches are supplied as individual units and controlled by a single shaft and detent. Normally the integral pc boards are terminated with commercial interconnect system (CIS) "F" posts (.558 X .635 [.022 x .025]); however, they can be terminated with AMP pc board edge connectors, pc board receptacles, 180° posted contacts, etc. Consult AMP Engineering for specific details.

The switches are designed to be mounted to the back of a panel. The antirotation post helps stabilize and prevent rotation of panel-mounted switches. See Figure 1.

### 3. INSTALLATION

The following procedures apply to switches that have been terminated with "F" posts (see Figure 1). If some other terminating technique (connectors, receptacles,

etc.) is used, contact AMP engineering for necessary mounting requirements.

#### A. Switch Selection

1. Determine the number of switch positions and the output code needed for your application.
2. Refer to the chart in Figure 2 and select the switch description that will suit your needs.
3. Refer to the chart in Figure 1 for the switch base number and select the applicable switch.

#### B. PC Board Layout

1. Determine the number of switch circuit pads on the switch you are using.
2. Make a layout on your pc board using the dimensions shown in Figure 2.

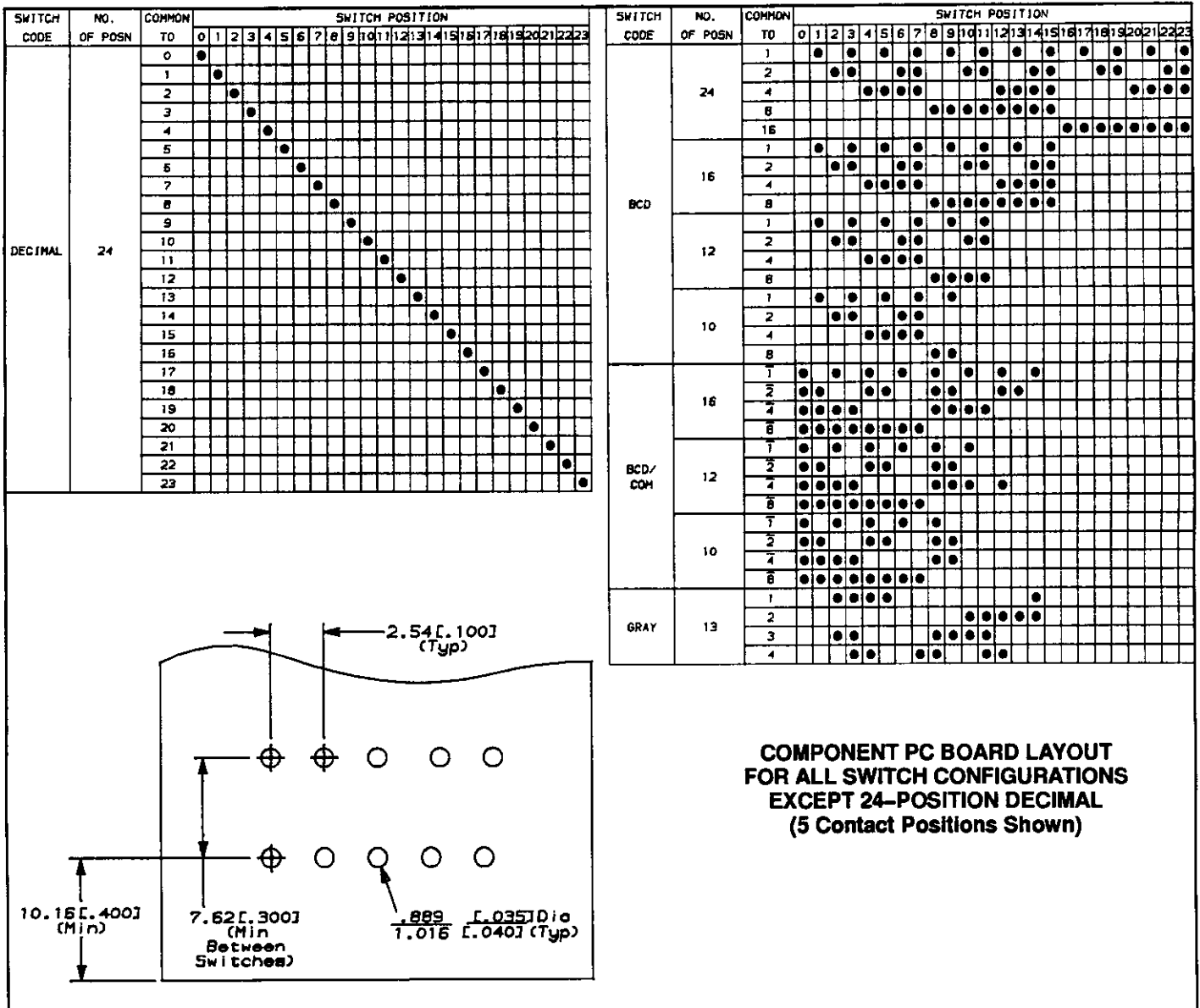


Fig. 2

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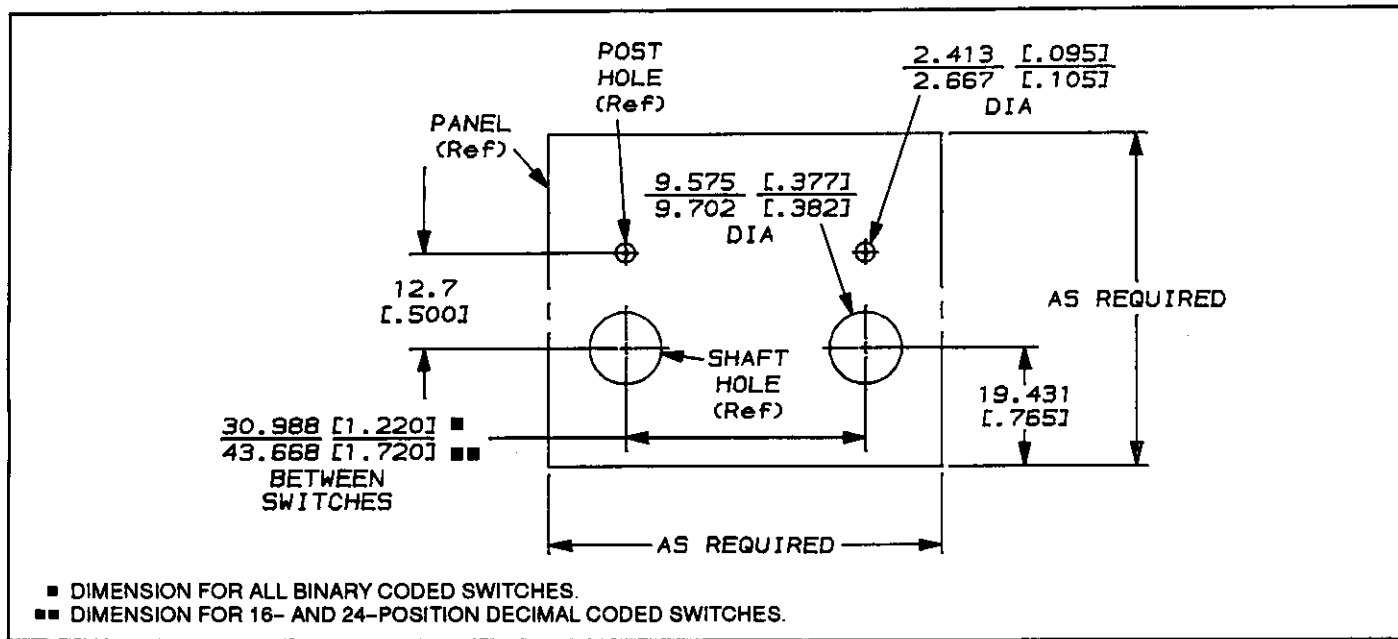


Fig. 3

cad

**NOTE**

The Identity of each circuit pad provided in Figure 1 corresponds to the COMMON TO arrangement in the chart in Figure 2.

- Chlorothane
- Chlorothane VG
- Detergents and water
- Freon TMC●
- Freon TP●
- Isopropyl Alcohol

Do NOT use methods that could damage plastics, solvents contaminated with dissolved flux, or any vapor degreasing system that would submit the switch to solvents that exceed 51°C [125°F].

**C. Soldering**

Insert the contacts of the switch into your component pc board, then solder (wave or hand solder) and clean the assembly as follows:

1. Wave Solder
  - a. Preheat component pc board. Do NOT allow switch housing temperature to exceed 88°C [190°F].
  - b. Apply flux to bottom of pc board and ends of contacts. Do NOT apply flux to top of pc board.
  - c. With the solder temperature at 260°C [500°F] pass assembly over a 63.5mm [2 1/2 in.] wave of solder. The exposure time MUST NOT exceed 5 seconds.
2. Hand Solder
  - a. Obtain a hand soldering iron with a maximum of 37 1/2 watts of power.
  - b. Simultaneously heat the component pc board pad and contact, and apply rosin core solder.

3. Cleaning

Clean the soldered assembly with any good cleaning solution that will NOT affect plastics, such as:

- Alpha 1001
- Alpha 1003
- Freon TE●
- Freon TF●

● Trademark of E.I. DuPont de Nemours & Co., Inc.

**D. Panel Layout**

Make a hole layout in the panel using the dimensions shown in Figure 3. Note that the layout shown provides the minimum distance allowed for switches mounted side by side.

**E. Application of Ring/Pin Stops**

Two ring/pin stops are supplied attached to each switch shaft in a nonfunctional position. They are used to limit rotation of the switch shaft to any desired switch position (see Figure 4). If stops are not used, remove them before panel mounting.

**NOTE**

In Figure 4 the inner circle of numbers represents switch stop positions for CLOCKWISE rotation and the outer circle represents switch stop positions for COUNTERCLOCKWISE rotation.

Install ring/pin stops as follows:

1. Remove nut, lockwasher, and stops from threaded shank.

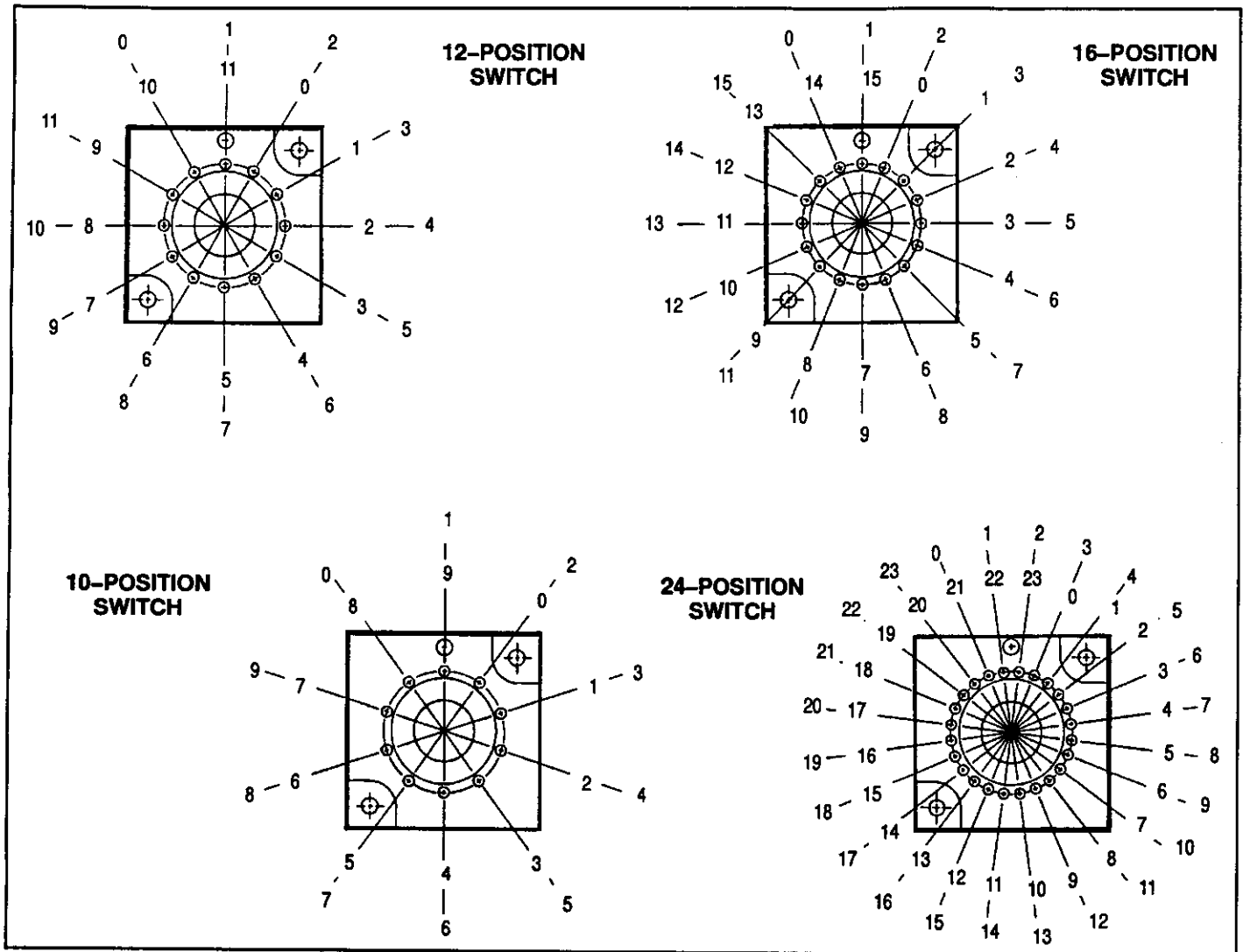


Fig. 4

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2. Rotate shaft until flat is opposite anti-rotation post as shown in Figure 5. This places the switch in the "0" position in accordance with industry standards.

3. Determine the position(s) at which the selector is to stop and, using a scribe or other suitable tool, punch hole(s) in webbing at stop position(s). See Figure 4.

**NOTE**

*The internal stop is located 180° from the flat on the shaft. If stop position is 180° from flat on shaft, rotate shaft one position left or right to permit entry of stop pin.*

4. Install stop(s) as follows:
- a. *One Stop* - Align ring/pin stop with shaft so pin is facing switch, then slide ring over threaded shank and insert pin into stop pin hole. See Figure 5.

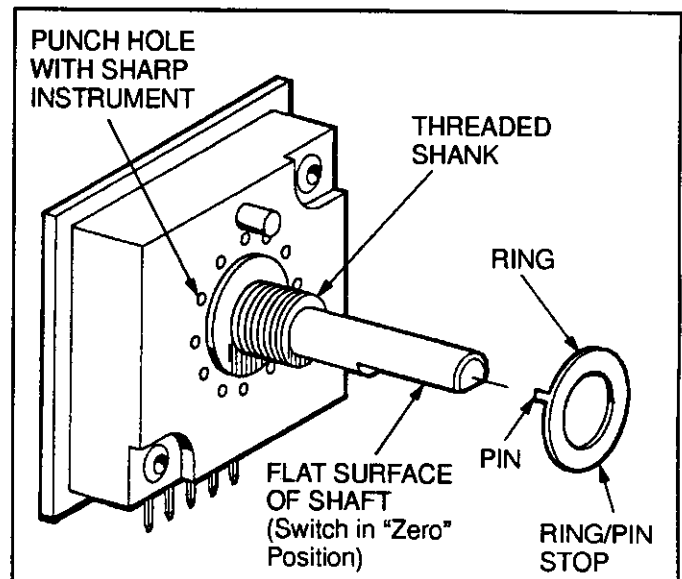


Fig. 5

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b. *Two Stops* - Install first stop (Step a). Rotate shaft toward switch positions that are to be functional until stop pin is engaged. Install second stop (Step a).

#### F. Panel Mounting (Figure 6)

1. Align the switch with the back of the panel

and position the shaft through the shaft hole and anti-rotation post through the post hole.

2. Secure switch to panel with the washer and nut supplied with the switch (maximum torque 15 in. lbs.).

3. Install and secure a commercially available knob to the switch shaft.

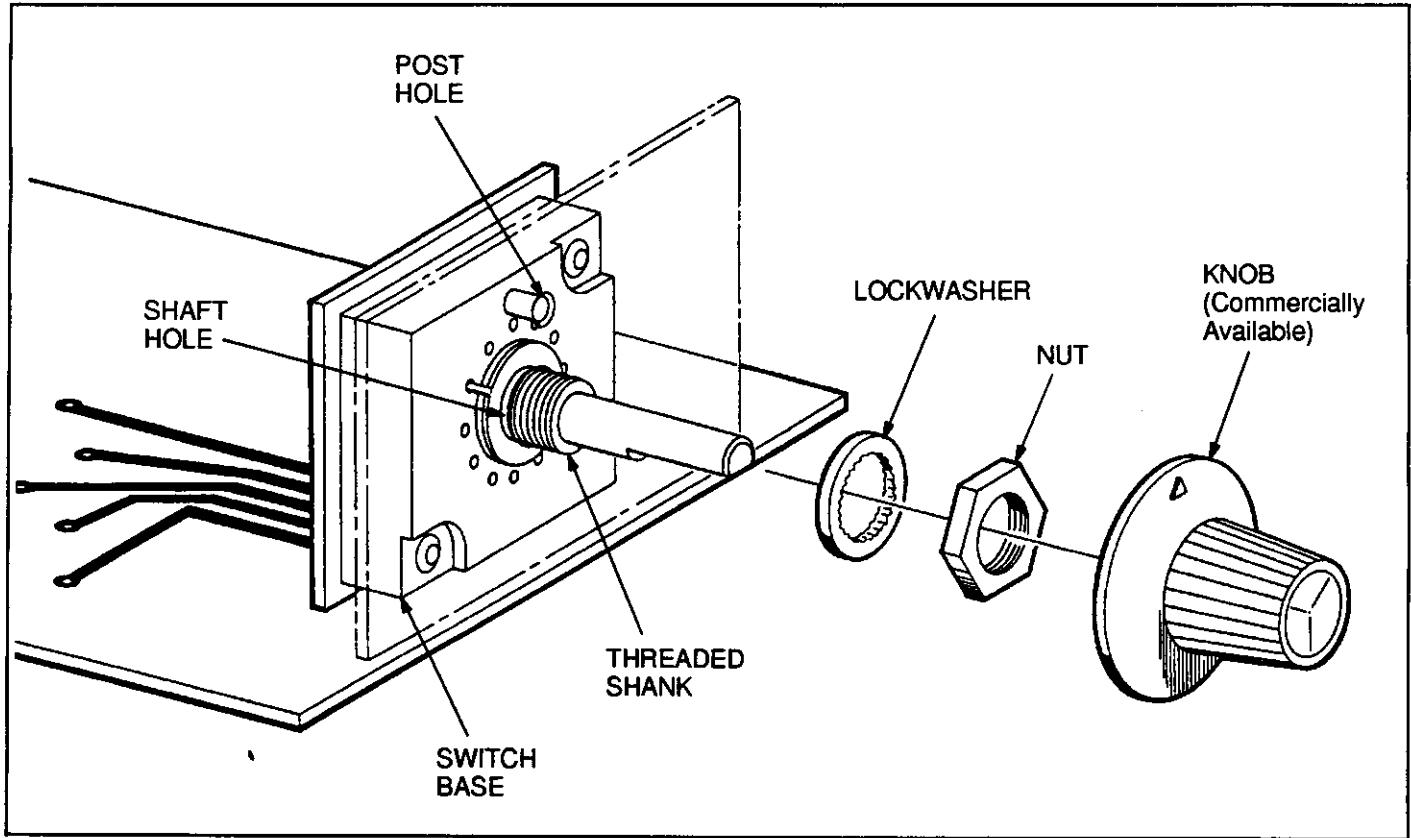


Fig. 6

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