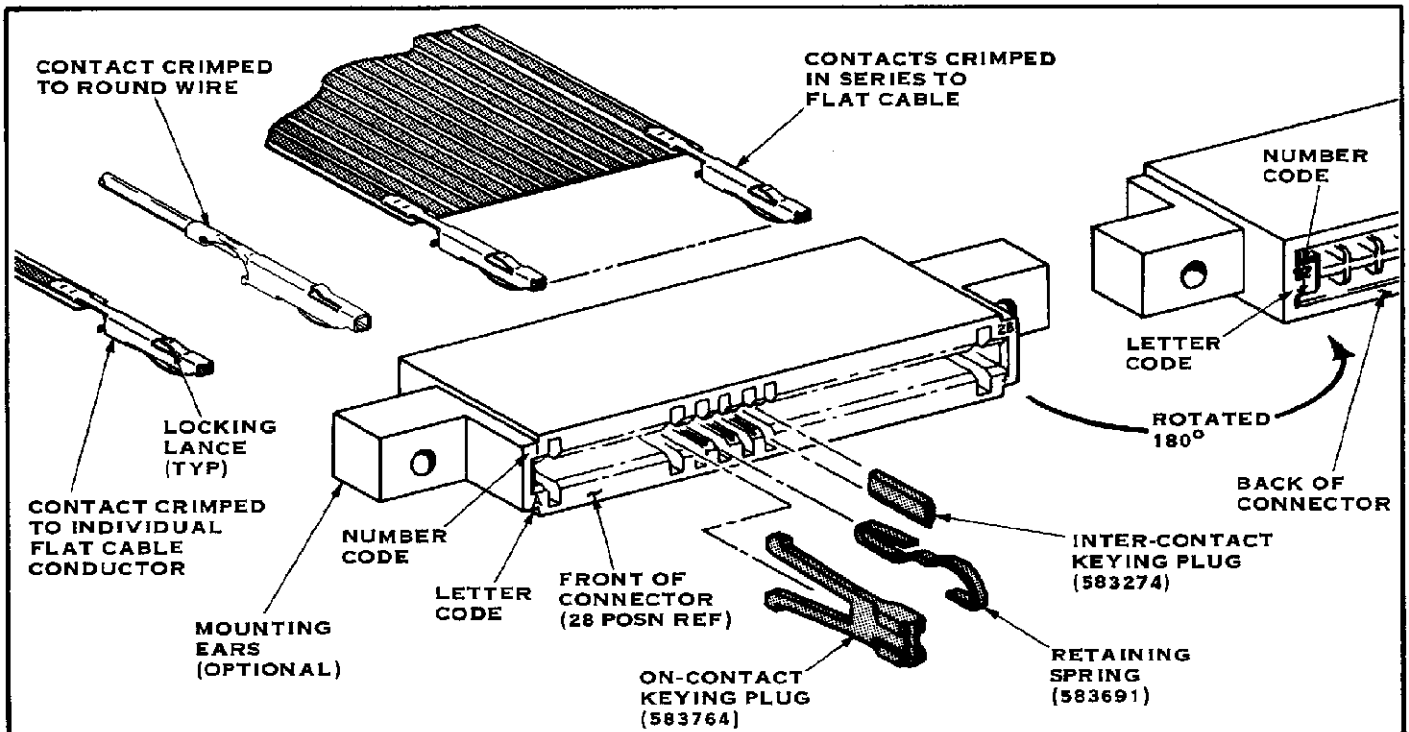
AMP INCORPORATED
HARRISBURG, PA. 17105

AMP★ FLEXIBLE FLAT CABLE (FFC) PRINTED CIRCUIT BOARD EDGE CONNECTORS

Instruction Sheet
IS 7665
RELEASED 3-12-74



NO. OF DUAL POSN	HOUSING NO. W/MTG EARS	HOUSING NO. W/O MTG EARS	EXT TOOL NO.
9	86743-9	86792-1	91089-1
10	86743-1	86792-3	91089-6
15	86743-3	86792-5	91089-7
17	1-86743-9	1-86792-9	91089-2
19	86743-5	86792-7	91089-8
20	1-86743-5	1-86792-5	91089-3
21	2-86743-1	2-86792-1	91089-4
22	1-86743-7	1-86792-7	91089-5
25	2-86743-3	2-86792-3	1-91089-2
28	1-86743-3	1-86792-3	1-91089-1
29	1-86743-1	86792-9	1-91089-0
33	86743-7	1-86792-1	91089-9

FLAT CABLE DIMENSIONS				FFC CONTACT NO.		HAND CRIMPING TOOL	FFC TERMN MACH
CABLE THKNS	CONDUCTOR WIDTH	CONDUCTOR THKNS	CONDUCTOR SPACING*	LP	STRIP		
.015 max	.059 to .065	.003 to .005	.100	86797	86742	90273-1 or 90273-2	455942-1

*BETWEEN CENTERS ±.005 (TOLERANCE NON-ACCUMULATIVE)

RD WIRE SIZE (AWG)	INSUL DIA	RD WIRE CONTACT NO. LP	RD WIRE CONTACT NO. STRIP	HAND CRIMPING TOOL	MACH APPL
28 to 24	.035 to .055	583616-4, -5, -9, and -11	583616-2, -3, -6, -7, -8, -10, -12, and -13	90268-1	Mintr Appl or Stpr-Crmpr

FIGURE 1

1. INTRODUCTION

This instruction sheet (IS) covers AMP FFC edge connector housings which accept: (1) contacts crimped in series to flat cable, (2) contacts crimped to individual flat cable conductors, (3) contacts crimped to round wire, and (4) retaining springs and/or keying plugs. To meet specific circuit requirements, empty housings are supplied so various contact applications can be installed and/or mixed, and retaining springs and keying plugs added as needed. See Figure 1.

Read these instructions, and those referenced for specific procedures, before assembling the connector.

NOTE

All dimensions presented on this instruction sheet are in inches, unless otherwise stated.

2. DESCRIPTION

Connector housings are available with 9 through 33 dual contact positions on .100-in. centers — with or without mounting ears. Housings are made of glass-filled nylon material, with end cavity identification molded on the upper (numbered) and lower (lettered) rows — FRONT and BACK. See Figure 1.

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Connectors may be FRONT or BACK panel mounted, and will accept single or double-sided printed circuit (pc) boards.

3. CONTACTS

Selection — Refer to the chart in Figure 1, and then select: (1) flat cable within the specified dimensions, and/or (2) round wire within the specified size and insulation diameter.

When using flat cable, select FFC contacts in loose piece (LP) form for hand tool crimping, or in strip form for machine crimping.

When using round wire, select round wire contacts in loose piece (LP) form for hand tool crimping, or in strip form for machine crimping.

Crimping — FFC contacts in loose piece form are designed to be crimped by AMP Hand Crimping Tool Assemblies 90273-1 or 90273-2. Refer to AMP Instruction Sheet IS 7537 packaged with tool assembly 90273-1, or IS 7637 packaged with tool assembly 90273-2, for specific crimping procedures.

FFC contacts in strip form are designed to be crimped by the AMP-O-MATIC★ Flexible Flat Cable Terminating Machine 455942-1. Refer to AMP Customer Manual CM 5292 packaged with the machine for specific crimping procedures.

Round wire contacts in loose piece form are designed to be crimped by AMP Hand Crimping Tool 90268-1. Refer to AMP Instruction Sheet IS 7531 packaged with the tool for specific crimping procedures.

Round wire contacts in strip form are designed to be crimped by semi-automatic or automatic machines. Consult your local AMP representative regarding the machine that will best suit your needs.

Insertion — No special insertion tool is required for inserting contacts into these housings. However, a contact depressor (portion of a pc board) is recommended to apply uniform pressure on a series of contacts. To insert a series of contacts, or an individual contact, proceed as follows:

1. Place the housing on a flat surface with the BACK (cable/wire side) facing UP, as shown in Figure 2.

2. Align each contact with the applicable contact cavity. Make sure the locking lances are facing the outer wall and start the contacts into the cavities. Insert the contacts only far enough to hold them upright (see Figure 2).

3. Place a contact depressor (portion of a pc board) against the contacts and hold the housing firmly. Push DOWN on the depressor until it bottoms on the housing — a slight side-to-side motion may be required. Remove the depressor and complete insertion by hand until the contacts bottom.

4. Pull back lightly to be sure the locking lances have locked in the cavities.

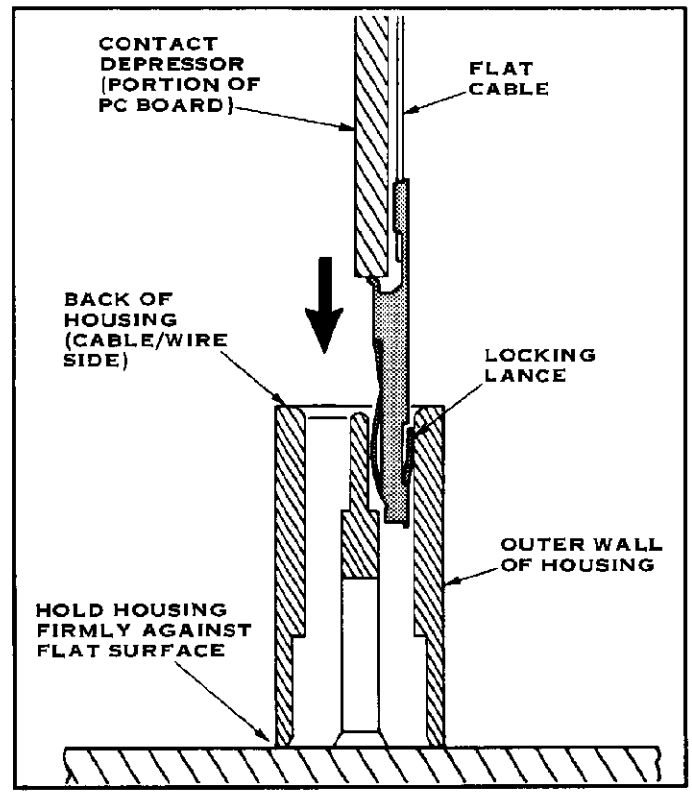

FIGURE 2

Extraction — Refer to the chart in Figure 1, and then select the appropriate extraction tool according to the number of dual contact cavities in the connector. Refer to AMP Instruction Sheet IS 7629 packaged with the tools for specific extraction procedures.

4. RETAINING SPRINGS

Retaining springs are designed for use in single-sided pc board applications. They are inserted in the unused side of the connector to provide (and balance) the necessary board retention capabilities. The recommended ratio for balanced retention is one retaining spring to six contacts.

NOTE

Retaining springs can be placed opposite a contact or an empty cavity, but are NOT to be placed on the same side of the connector with the contacts.

To insert a retaining spring proceed as follows:

1. Align the short end of the spring with the FRONT of the applicable contact cavity.

2. Push the spring straight in until the short end snaps in place behind the cavity ridge (see Figure 3).

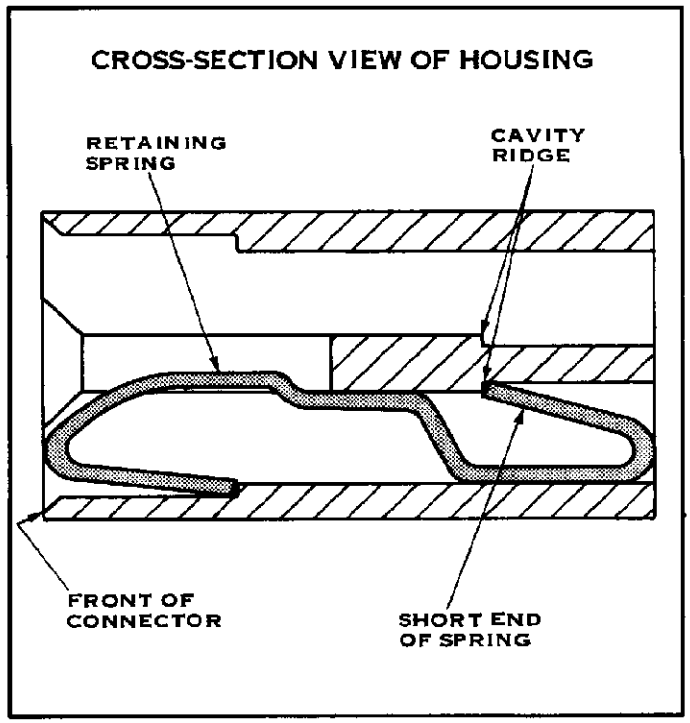

FIGURE 3

5. KEYING PLUGS

Connectors can be polarized with inter-contact keying plugs — designed to fit into slots between contact cavities, or on-contact keying plugs — designed to fit into two empty contact cavities that share a dual position in the connector (see Figure 4).

To insert an inter-contact keying plug, align the beveled corners with the "V" notches of an upper and lower rib on the FRONT of the connector. Insert the plug straight into the connector until it bottoms. See Figure 4.

To insert an on-contact keying plug, align it with two empty (dual) contact cavities on the FRONT of the connector. Insert the plug straight into the connector until the locking tabs snap over the BACK edge of the connector. See Figure 4.

A slot must be cut in the pc board to accept the inter-contact or on-contact keying plug. A slot must also be cut in the flat cable when an on-contact keying plug is used.

Note that the slot for the inter-contact plug must be located between the circuit pads of the pc board, and the slot for the on-contact plug must be located on a circuit pad area of the pc board and on a conductor area of the flat cable. Refer to Figure 4 for the recommended cutout dimensions.

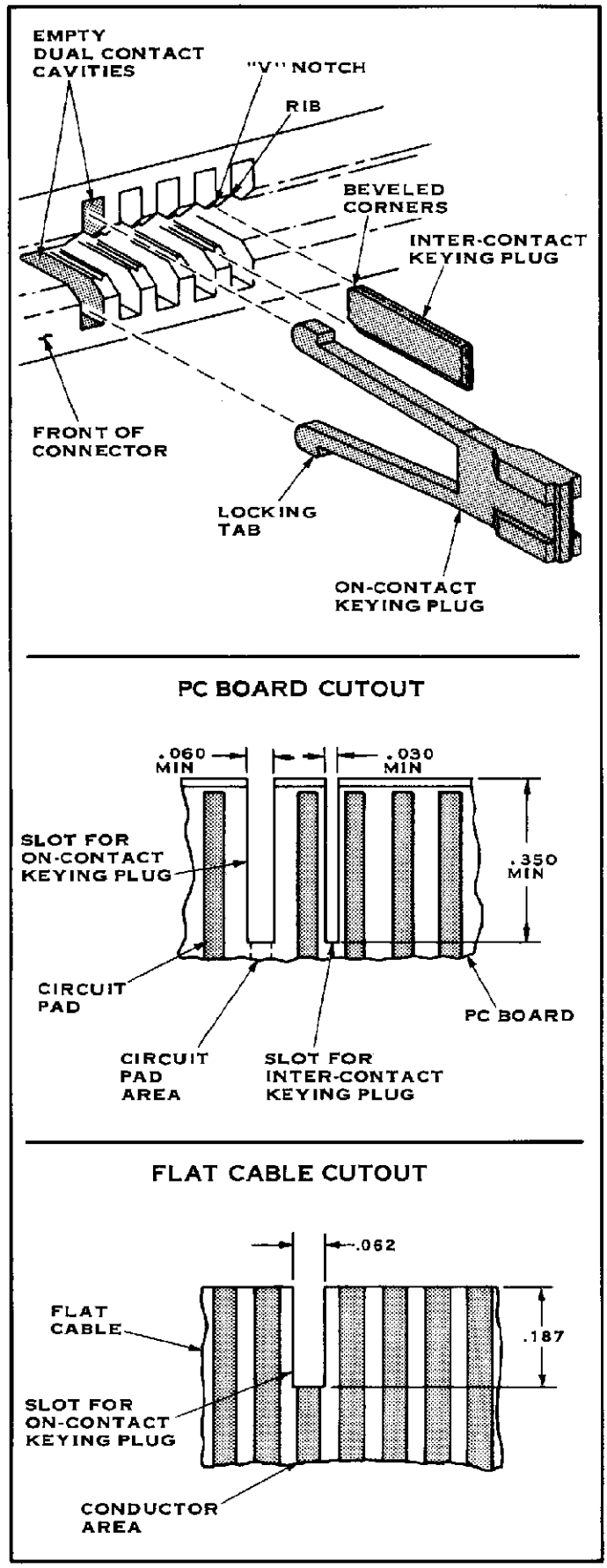

FIGURE 4

6. PANEL CUTOUT

Connectors with mounting ears are designed to be FRONT or BACK panel mounted. Refer to Figure 5 for the recommended panel cutout dimensions.

Note that the cutout for BACK panel mounting is larger than the cutout for FRONT panel mounting. After making the cutout, position the connector on the panel and secure it with No. 4-40 screws, lockwashers, and nuts.

NOTE

The cutout shown in Figure 5 is for a connector with 9 dual contact positions. Add .100 in. for each additional dual contact position. For example, if using a 15 dual contact position connector, add .600 in. to the FRONT or BACK panel dimension (depending on the application being used), and .600 in. to the dimension for the mounting holes.

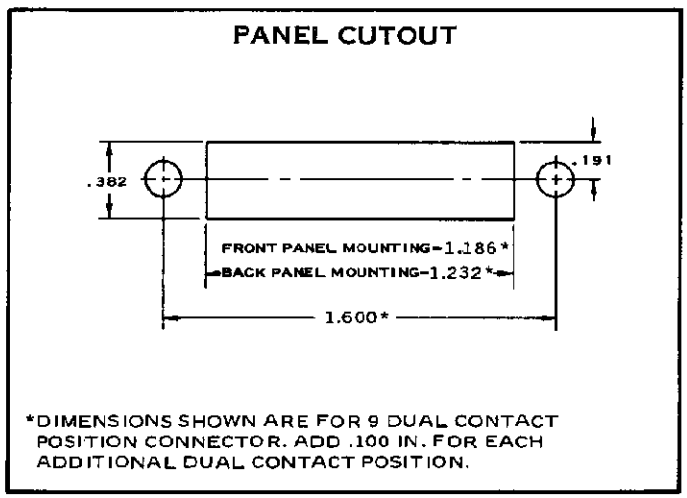

FIGURE 5

7. PRINTED CIRCUIT BOARD LAYOUT

These connectors are designed to accept .055 to .070-in. thick pc boards. The overall width of the pc board must be within .005 in. to ensure alignment between the circuit pads and the contacts.

When using a pc board that is wider than the entry slot of the connector, a notch must be cut in the board to provide the proper engagement. The engagement depth must be a minimum of .350 in. Refer to Figure 6 for the recommended pc board layout dimensions.

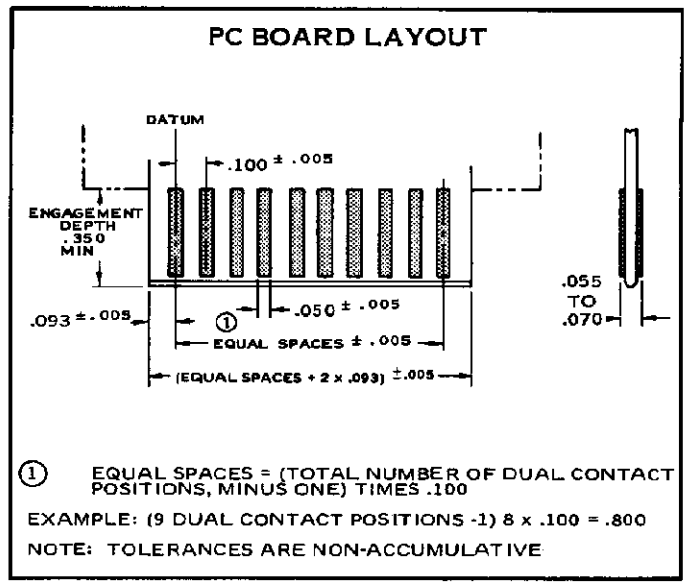

FIGURE 6