5.7 FCN INSTALLATION

The purpose of this section is to recommend a procedure to expedite wiring changes when installing FCN's and to explain the new "B" size Circuit List Transcription Form (EDD 1760).

EXPEDITING FCN INSTALLATION

In order to eliminate clerical errors, the circuit list change sheets are not modified from the original engineering instructions. Therefore, the add/delete sequence indicated on the change sheet is not always the most convenient. The following procedure is recommended to expedite wiring changes:

- 1. Remove all access wires (code 6 in column 71).
- 2. Remove all level "2" deletes (code 1 in column 71). Levels are encoded in column 25.
- 3. Remove all level "1" deletes (code 1 in column 71).
- 4. Add all level "1" adds (code 4 in column 71).
- 5. Add all level "1" to level "2" adds (code 4 in column 71).
- 6. Add all level "2" adds (code 4 in column 71).
- 7. Add all access wires (code 6 in column 71).

When making wire changes which require a wire to be removed and then replaced on the same pin, (status 6, column 71) do not rewrap previously wrapped wire. If length permits, clip off the previously wrapped part and then wrap. If length does not permit clipping, replace the wire.

CIRCUIT LIST TRANSCRIPTION FORM (EDD 1760)

- 1. The circuit list will consist of a B size sheet as shown one-half scale in Figure 5.7-1.
- 2. The Circuit List Transcription Form EDD 1760, is a hand prepared document. It is a vellum 17 inches wide and 11 inches in length. The working area of the document is comprised of 34 horizontal rows, each row contains 80 character positions. One (1) character is the maximum allowed in any one character position.
- 3. The 80 character positions are divided into 21 vertical column increments, each increment is separated by a thick vertical partitioning line (Figure 5.7-1).
- 4. The usage of the 80 character positions is as follows:

CHARACTER POSITIONS

EXPLANATION

1 → 10

Circuit Number (Single Origin)

A circuit number is derived from the location of the circuit origin on the logic schematic and is comprised of the page number, horizontal row and vertical column of the logic schematic from which the circuit originates. It is thus possible to read the circuit number directly from the schematic.

The illustration (Figure 5.7-2A and 5.7-2B) shows how the circuit numbers of single origin circuits are determined on the logic schematic and transcribed onto the transcription form (Figure 5.7-2C).

Circuit Number (Multiple Origins)

The circuit number of a circuit with multiple origins (if on the same page) is derived from the origin within the circuit which has the lowest horizontal row number and vertical column number on the logic schematic. If the origins are on more than one page, the circuit number is derived from the lowest page number.

The illustration (Figure 5.7-3) shows a circuit with three origins, and how the circuit number is depicted and transcribed.

11 → 14 Circuit Continuity Number

Each wire within a circuit is identified by a continuity number. A continuity number is comprised of four $(\mbox{$\mu$})$ numeric characters. All continuity numbers are assigned in a numerical sequence which allows for the future insertion of additional wires.

The continuity field indicates the order in which the individual wires within a circuit appear on the circuit list.

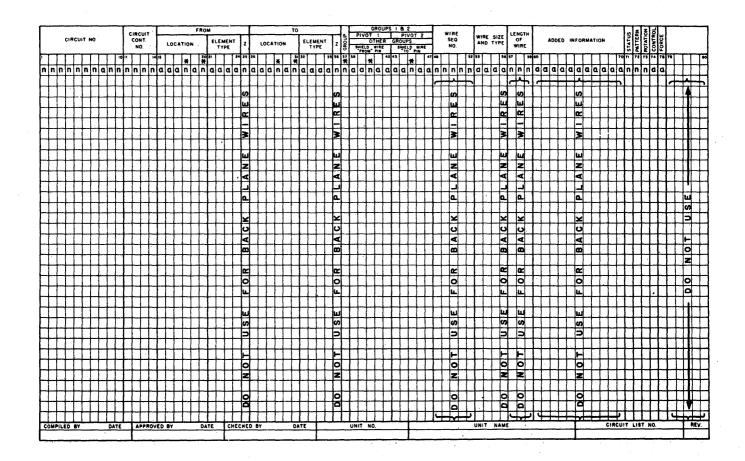
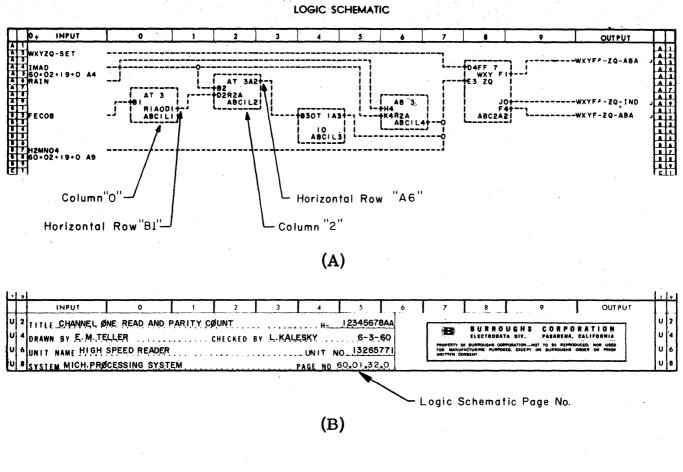


FIGURE 5.7-1. CIRCUIT LIST TRANSCRIPTION FORM, EDD 1760

- a denotes use of alpha character
- n denotes use of numeric character
- * denotes that an alpha character may be used for Non Back Plane wires



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6	0	oli	3	3	2	o	в	1	o	I	T	Ι	I	I	I			I	Ι	I	Ι	I	Ι	I				L	Ι	I	Ι	1	Ι					Ι	L	I	Ι		I							I	Ι	Ι		I	I		I		I.	Ι	L	L	L		L	L	Г	I	I	Ι	I	I	Ι	Ι	I			\Box		L			
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1	1	T	T	1	1	1	T	1	T	T	T	T	T	T	1			Τ	T	T	T	1	T	1				Γ	Τ	T	T	T	T	1			1	Γ	T	T	1	T	T	T					T	T	T	T	T	T	T	T	T	T	T	T	T	Τ	T	Τ	Τ	T	Τ	Τ	T	Т	T	T	T	Т	T	П	П	П	Γ		П	П	
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FIGURE 5.7-2. DETERMINATION AND TRANSCRIPTION OF THE ORIGIN OF SINGLE CIRCUIT

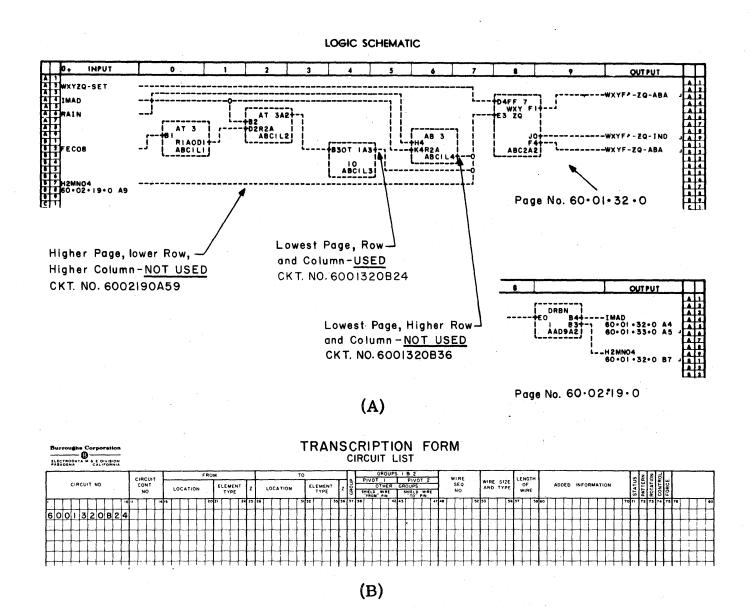


FIGURE 5.7-3. DETERMINATION AND TRANSCRIPTION OF CIRCUIT NUMBER FROM A CIRCUIT WITH MULTIPLE ORIGINS

CHARACTER POSITIONS

EXPLANATION

15 → 20

Location (FROM)

The location of an Element is depicted in character positions 3 thru 6 on the bottom row of an element box, Figure 5.7-4, and is comprised of the Rack (3), Panel (4), Connector Block Row (5) and Connector Block Column (6). The 'From' or 'To' pin designations are depicted in character positions 1 and 2 for a line entering an element box or character positions 7 and 8 for a line leaving an element box. Figure 5.7-5 gives examples of the above.

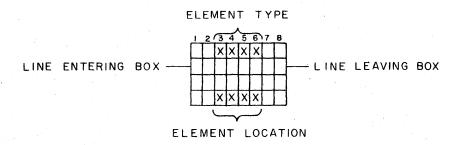
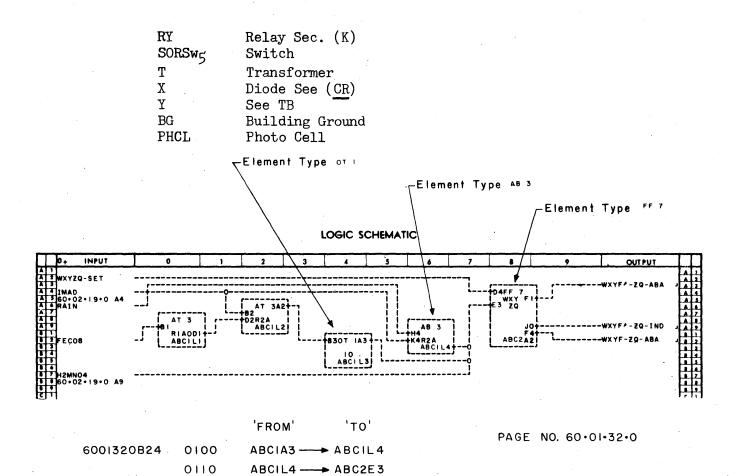


FIGURE 5.7-4. ELEMENT LOCATION AND TYPE DESIGNATION

21 ⇒ 24 Element Type (FROM)

The Element Type is depicted in character positions 3 thru 6 on the top row of an element box (Figure 5.7-4). The Element Type transcription for 'From' pins appears in Vertical Columns 21 thru 24 and for 'To' pins, in Vertical Columns 32 thru 35, (Figure 5.7-5B). These character positions contain abbreviations which indicate the type of elements connected together. Most of the abbreviations may be found in the Design Automation Element representation book. The following list contains additional abbreviations that may appear in these columns:

P	Plug
J	Jack
TB or Y	Terminal Bd.
C	Capacitor (also used as connector)
DS	Buzzer or bell
HS	Heat Sink
\mathbf{L}^{-}	Choke
M	Meter
NE	Neon



(A)

TRANSCRIPTION FORM CIRCUIT LIST CIRCUIT NO CIRCUIT N

FIGURE 5.7-5. 'FROM' AND 'TO' PIN LOCATIONS

CHARACTER	and the second
POSITIONS	EXPLANATION
200	MAN (EDOM)
25	"Z" (FROM)

The 'Z' Level (Figure 5.7-6) depicts the physical location of the wire wrap on a connector block pin. Two wire wraps are permitted to one pin. The 'Z' Level is applicable to Back Plane wires only. Vertical Character Position 25 is used to designate the 'From' pin 'Z' Level, and Vertical Character Position 36 is used to designate the 'To' pin 'Z' Level. The ground strip pins are allowed one (1) wrap only; the level is assigned as Zl automatically.

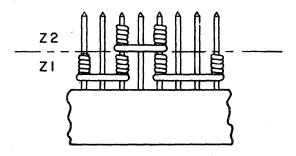


FIGURE 5.7-6. 'Z' LEVELS

26 \Rightarrow 31 Same as 15 \Rightarrow 20 except this is the "TO" location.

32 \Rightarrow 35 Same as 21 \Rightarrow 24 except this is the "TO" location.

37 Group

Group denotes the type of connection and method of wiring used. Five Groups exist. The character used to denote the Group is transcribed into Vertical Column 37.

The five Groups refer to connections as defined below:

- (0) Between two pins not on a wire wrap frame.
- (1) Between two pins on the same wire wrap frame (machine installation).
- (2) Between two pins on the same wire wrap frame (manual installation).
- (3) Between two pins on the same frame non-wire wrap connection such as current loops, etc.

- (4) Manual calculation of Gardner-Denver installed wires which cannot be handled through the normal Back Plane processing, specifically ground wires along the 'M' or 'R' pin columns of a connector block. The cards for these wires are entered directly into the Circuit List. No wire entered through the normal Back Plane processing may carry this group number. At present this group is special for the B 5000 System.
- (5) Between two pins of different frames of the same rack (Inter-Frame Jumpers and Cables).
- 38 ⇒ 47 Gardner Denver Wire Wrap Information

If the wire is a twisted pair, columns 38 thru 42 are used to identify the return "FROM" pins. If the wire is a twisted pair, columns 43 thru 47 are used to identify the return "TO" pins.

48 ⇒ 52 Wire Sequence Number

The Wire Sequence Number indicates the order in which wires are installed on frames and is applicable to Back Plane wires only.

53 ⇒ 56 Wire Size and Type

Gage size 12 ⇒ 36

Type - TW - Thin Wall

BS - Buss

TP - Twisted Pair

CX - Coaxial Cable

SD - Solid Wire

57 ⇒ 59 Length of Wire

Gardner Denver Wire Wrap Information

The length of wires between "FROM" and "TO" pins is measured in increments of two tenths of an inch, which is the approximate physical distance between two wire wrap pins. A figure of 2μ in character positions $57 \gg 59$ indicates the length of wire in terms of 2μ wire wrap pins resulting in 2μ 2." or 4.8 inches.

60 ⇒ 70 Added Information

Used for Engineering Project Information or specific information on a given connector.

71		Status		
		STATUS CODE	NAME	DESCRIPTION
		1	Wire	Physically remove this wire from the equipment. (Also delete from C/L).
		4	Wire Add	Physically add this wire to the equipment. (Also add to C/L).
	•	5	Clerical	Delete this wire from the C/L only. This change does not affect the wiring in any way.
		6	Access Wire	This wire must be removed with the deletes and added with the adds to facilitate adding or deleting a wire underneath it.
		8	Clerical Add	Add this wire to the C/L only. This code will always have a matching wire listed under code 5.
72		Pattern		
		Gardner De	nver Wire Wrap F	atterns for wires.
73		Garnder De	nver Wire Wrap R	Couting for wires.
74		Control		
		a. A "bla	nk" denotes that	the wire is under Schematic Control.
		"P" mu	st be carried or	e wire is under Project control. A all wires whose pins are not on the carried on other schematic wires.
		pin is		produced by the Program whose front rom the schematic but from a "TO" pin wire.
75		Force		
			ted because the	in column 75 indicates that a wire has routing assigned automatically is
76 → 8	o ,,,	Undefined.		