

SDS 900972A  
\$1.00

**DIAGNOSTIC PROGRAM MANUAL**  
**SIGMA 5 AND 7**  
**RELOCATABLE DIAGNOSTIC**  
**PROGRAM LOADER**

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**LIST OF EFFECTIVE PAGES**

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LIST OF RELATED PUBLICATIONS

The following publications contain information not included in this manual, but necessary for a complete understanding of this diagnostic program loader.

<u>Publication Title</u>	<u>Publication No.</u>
SDS Sigma 7 Computer Reference Manual	900950
SDS Sigma 5 Computer Reference Manual	900959
SDS Sigma Card Reader Model 7120 Reference Manual	900970
SDS Sigma Paper Tape Model 7060 Reference Manual	900983
SDS Sigma SYMBOL and METASYMBOL Reference Manual	900952

## SECTION I INTRODUCTION

### 1-1 SCOPE OF MANUAL

1-2 This manual describes the Relocatable Diagnostic Program Loader used to load I/O diagnostic programs into SDS Sigma 5 and Sigma 7 computer memories. The manual includes loader specifications, detailed setup and loading procedures, loading options, and a detailed description of loader operation.

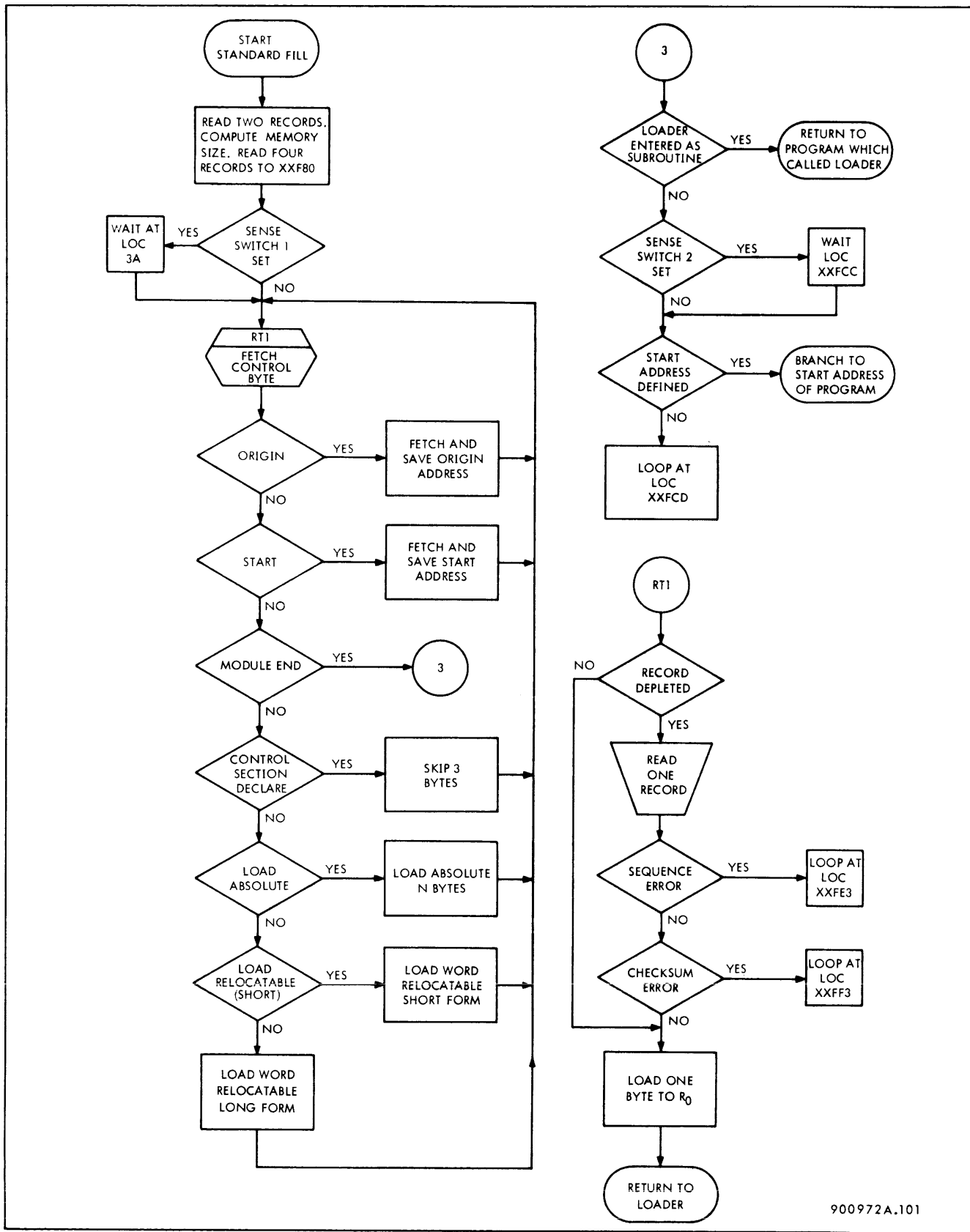
1-3 Figure 1-1, a detailed flow chart of loader operation, appears on page 1-2.

1-4 A list of related publications at the front of this manual lists documents that provide additional information related to the operation of relocatable loader. The manual concludes with a complete program listing.

### 1-5 PROGRAM OBJECTIVES

1-6 The Sigma 5/7 Diagnostic Program Relocatable Loader is provided to load relocatable or absolute object programs generated by the Sigma METASYMBOL Assembler and presented to the loader on 80-column punched cards or 8-level paper tape. This loader will load any object program generated by the Sigma METASYMBOL Assembler except one containing external references or definitions. The object program to be loaded must be presented to the loader in the object program format employed by the Sigma METASYMBOL Assembler. (See figure 1-2, Object Program Record Format.)

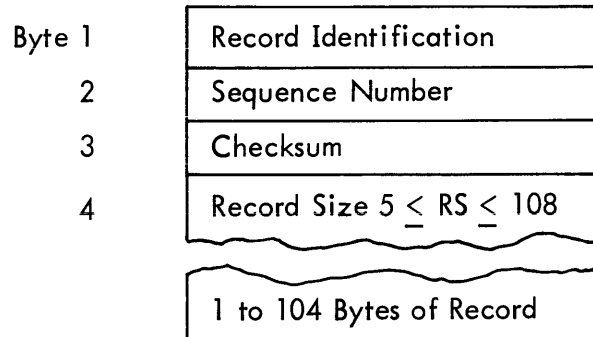
1-7 The loader is loaded into memory by executing the Standard Load Procedure and is automatically relocated to high order memory (the last 128 memory locations -  $XXF80_{16}$  through  $XXFFF_{16}$ ). The bootstrap for the loader utilizes memory locations  $20_{16}$  through  $5D_{16}$ . During the loading of the object program memory locations  $20_{16}$  through  $3F_{16}$  are used as the input buffer. Thus the object program being loaded cannot be stored below  $40_{16}$ . (See figure 1-3, Main Memory Map Allocation.)



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Figure 1-1. Relocatable Diagnostic Program Loader Flow Chart

The first part of each record contains control information. This information is in the first four bytes of each record as follows



Record Identification

The record identification byte is identical for all records,  $39_{16}$  (00111001) with exception of the last record which has a record identification of  $19_{16}$  (00011001)

Sequence Number

The sequence number is zero (0000 0000) for the first record and monitonically increases for each record thereafter. After 255 ( $FF_{16}$  - 1111 1111) it recycles to 0. The object program records must be in correct sequential order to successfully load the object program

Checksum

A checksum which is computed as the sum of the bytes comprising the active record not including the checksum itself. Carries out of the most significant bit are ignored, and if the checksum in the record contains all ones the checksum will not be verified

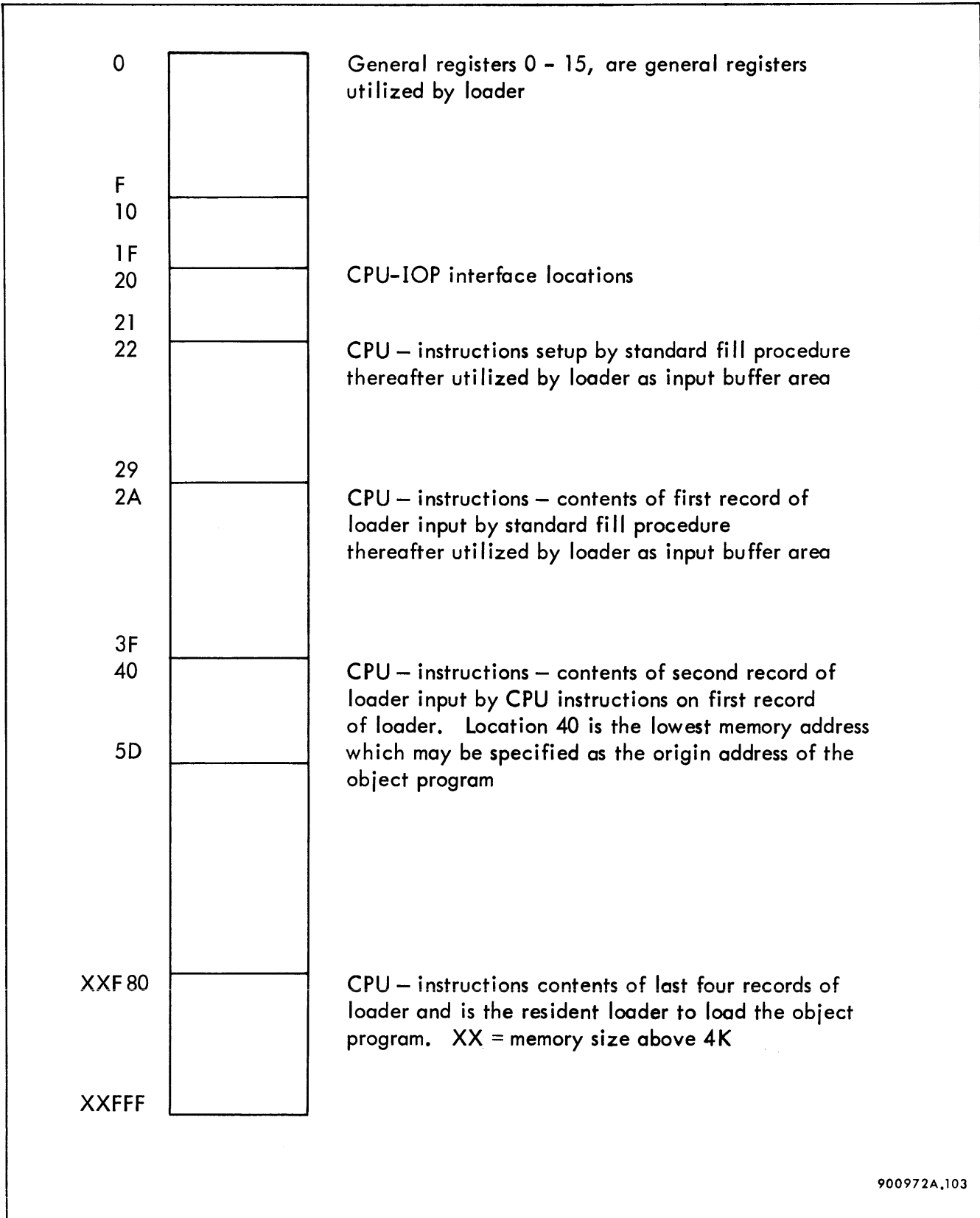
Record Size

The record size is the number of bytes (including the record control byte) which comprises the active record. All excess bytes will be ignored, the record size range is  $5 \leq \text{Record Size} \leq 108$

Record Body

The second part of the record is the record body, which is essentially a string of items that control and define the object program data included in the record body.

Figure 1-2. Object Program Record Format



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Figure 1-3. Main Memory Map Allocation



1-8 GENERAL SPECIFICATIONS

1-9 Table 1-1 lists general specifications for the relocatable loader.

Table 1-1. General Specifications

Computer Configuration	Sigma 5 or Sigma 7 computer, with 4K memory
Required Equipment	Card reader or paper tape reader as program media input device
Optional Equipment	None
Prerequisites	Sigma 5 or Sigma 7 computer, main memory, I/O system, and input device (card reader or paper tape reader) must be operational
Storage	The Standard Load Procedure utilizes memory locations 20 <sub>16</sub> through 5D <sub>16</sub> . The main loader utilizes memory locations 20 <sub>16</sub> through 3F <sub>16</sub> as the input buffer area, with the main loader residing in the last 128 <sub>10</sub> memory locations, XXF80 <sub>16</sub> through XXFF <sub>16</sub>
Source Language	Sigma METASYMBOL (see SDS Sigma 5/7 SYMBOL and METASYMBOL Reference Manual, No. 900952)

SECTION II  
OPERATING INSTRUCTIONS

2-1 PROGRAM LOADING PROCEDURES

2-2 The following paragraphs contain a detailed setup procedure for the loader and program media input device (card reader or paper tape reader), and operator-initiated action via the processor control panel.

2-3 INPUT DEVICE

2-4 Card Reader (See SDS Sigma Card Reader Model 7120 Reference Manual, No. 900970)

2-5 Operate the card reader according to the following steps:

a. Ensure power is applied by usually checking the OPER'L/POWER indicator switch on the operator control panel. Lighting of the OPER'L/POWER switch and audible mechanical operation indicates ac and dc power are applied and the read station and transport mechanism are operative. Power is applied by depressing the OPER'L/POWER indicator switch.

b. Remove the card weight (and cards, if present) from the input hopper. Press the FAULT/RESET indicator switch to feed the card (if present) from the card read platform into alternate stacker 2. Remove all cards (if present) from the output card stackers.

c. Place the six card loader in front of the object program card deck to be loaded.

d. Place the program deck to be read into the input hopper, face down, row 9 away from the operator), with the card weight on top of the cards.

e. Press the START switch to feed the first card of the program deck from the input hopper to the card read platform. Lighting of the START indicator switch indicates that the card reader is ready-automatic.

2-6 Paper Tape Reader (Reference SDS Sigma Paper Tape Reader Model Reference Manual)

2-7 Operate the paper tape reader according to the following steps:

a. Ensure power is applied by visually checking the POWER indicator switch on the operator control panel. Lighting of the POWER switch and read station lamps and visible detection of mechanical rotation of the reader device capstan indicates ac and dc power are applied and the read station and transport mechanism are operative. Power is applied by pressing the POWER indicator switch.

b. Place the object paper tape program and/or loader on the paper tape input spooler, press the LOAD-RUN bar, insert the loader to the read station, and elevate the mechanical LOAD-RUN bar.

c. Press the START switch to automatically locate the paper tape to the first clock-sprocket hole. Lighting of the START switch indicates the paper tape reader is ready-automatic.

## 2-8 CONSOLE

2-9 (See SDS Sigma 5 or 7 Computer Reference Manuals, ) The operator may initiate a loading operation either from the Processor Control Panel (with the CONTROL MODE switch in the LOCAL position) or from the free-standing console (with the CONTROL MODE switch in the REMOTE position).

2-10 The following procedure outlines the steps to be followed to initiate a LOAD operation from the Processor Control Panel.

a. Set the COMPUTE switch to the IDLE position

b. Press the CPU RESET/CLEAR switch

c. Press the I/O RESET switch

d. Press the CPU RESET CLEAR and SYSTEM RESET CLEAR switches simultaneously to clear main memory

e. Set the UNIT ADDRESS switches to the address of the desired input peripheral device, card reader or paper tape reader

f. Set the WATCHDOG TIMER switch (on Processor Control Panel) to the NORMAL position

g. Set the INTERLEAVE SELECT switch to the desired position – NORMAL or DIAGNOSTIC

- h. Set the PARITY ERROR MODE switch to the CONT position
- i. Set the CLOCK MODE switch to the CONT position
- j. Set the ADDR STOP switch to the off position
- k. Set or reset SENSE Switches 1 and 2 for desired control (see table 2-1, SENSE Switch Options)
- l. Press the LOAD switch
- m. Set the COMPUTE switch to the RUN position

2-11 After the COMPUTE switch is set to the RUN position, the following actions occur: The first two cards (records) are read into memory locations  $2A_{16}$  through  $5D_{16}$ . Memory size is computed in 4K increments, high to low. The remaining four cards (records) are read into the last (highest memory address)  $128_{10}$  memory locations  $XXF80_{16}$  through  $XXFFF_{16}$ . SENSE Switch 1 is interrogated for option of specifying program relocation bias in general register 0 or to facilitate loading object program into paper tape reader if the loader is not supplied as a physical part of the object program paper tape. Control is passed to the main loader located in high order memory to load the object program. Upon successful completion of loading the object program SENSE Switch 2 is interrogated for option to Wait prior to passing control to the program just loaded. Control is passed to the program previously loaded.

2-12 LOADING OPTIONS

2-13 Table 2-1 lists the Diagnostic Program Relocatable Loader SENSE switch options.

Table 2-1. Sense Switch Options

Switch	Status	Function
SS 1	Set	Wait at location $3A_{16}$ after loading loader to input program relocation bias to general register 0 or to facilitate loading object program on paper tape into paper tape reader. Clear Wait to resume load process

Table 2-1. Sense Switch Options (Cont.)

Switch	Status	Function
	Reset	Bypass Wait at location $3A_{16}$ , program relocation bias equals 00000
SS 2	Set	Wait at location $XXFCC_{16}$ upon completion of successful load prior to passing control to program just loaded Clear Wait to start program just loaded
	Reset	Bypass Wait at location $XXFCC_{16}$ Start execution of program just loaded
SS 3	Set	No action
	Reset	No action
SS 4	Set	No action
	Reset	No action

2-14 SUCCESS/ERROR INDICATIONS

2-15 A successful or unsuccessful load operation is dependent upon the loading options selected by the operator, such as setting of SENSE switches. The following paragraphs describe the possible error indications and program recovery procedure.

2-16 Program Waits

2-17 Table 2-2 lists program Waits.

Table 2-2. Program Waits

Location	Indication	Description
0003A	SS 1 set and 6-card (record) loaded successfully	Sense Switch 1 set specifying to Wait to permit entry of program relocation bias to general register O or Wait to facilitate additional loading operations. Clear Wait to proceed

Table 2-2. Program Waits (Cont.)

Location	Indication	Description
XXFCC	SS 2 set and program successfully loaded	Sense Switch 2 set specifying to Wait prior to initiating execution of program just loaded. Clear Wait to initiate execution of program just loaded

XX = Memory Size above 4K

2-18 Program Loops

2-19 Table 2-3 lists program loops.

Table 2-3. Program Loops

Location	Indication	Description
28-29 <sub>16</sub>	Input device malfunction during input of first record of loader	Input device malfunctioned – failure to successfully input record or input device is not in automatic mode
2C-2D <sub>16</sub>	Input device malfunction during input of any of remaining five records	Failure to successfully input any of remaining five records of loader, or input device is not in automatic mode
XXFCD <sub>16</sub>	No program start address	Program was successfully loaded, but no program start address was specified. The program just loaded must be manually started by setting the starting address into the PSW
XXFDD-XXFDE <sub>16</sub>	Input device malfunction	Failure to successfully input any record of the object program, or input device is not in automatic mode
XXFE3	Sequence error	The object media input is not in correct sequence. No recovery is possible
XXFF3	Checksum error	A checksum error exists on the current object program media record. No recovery is possible

2-20 Program Printouts

2-21 This program does not print out success/error indications.

### SECTION III PROGRAM LISTING

#### 3-1 GENERAL

3-2 The program listing that appears on the following pages details the contents of the Diagnostic Program Relocatable Loader. It contains a list of memory locations, the contents of the register at each location, and an explanation of the directive called forth by each register code.

3-3 A sample printout of a line from a program listing, with an explanation of what each column represents follows. (There may be as many as nine columns, but not every column will appear in every listing.)

#### EXAMPLE:

1118	1	003FC	75D2058D	A	ZBTH	STB, R13	ZTEMP1+1, X1	STORE BYTE
a	b	c	d	e	f	g	h	i

- a. Line number
- b. Indication of memory protection key (applies only to Sigma 5 and 7)
- c. Memory address
- d. Routine instruction and data
- e. Indication whether of absolute origin or not
- f. Tag
- g. Operation
- h. Operand
- i. Comments



\* CATALOG NO. 704356 SIGMA 5/7 DIAGNOSTIC PROGRAM RELOCATABLE LOADER  
 SYSTEM SIG7FDP  
 SOCW  
 \*  
 \* CONTENTS OF CARD ONE LOADED BY STANDARD FILL PROCEDURE  
 \*

7*	00000001	X	EQU	1	
8*	1 0002A		ORG	X*2A*	
9*	1 0002A	2200001E	START	LI,0	DA(10C1)
10*	1 0002B	CC000025 A	P1	SI0,0	*37 READ
11*	1 0002C	CD000025 A		TI0,0	*37 LOADER
12*	1 0002D	69C0002C		BCS,12	\$-1 CARDS
13*	1 0002E	68000041	P2	B	P10 *AWM,2 10C1*
14*	1 0002F	6430002B		BDR,3	P1
15*	1 00030	32300025 A		LW,3	37 SAVE READER
16*	1 00031	35320003 A		STW,3	3,X ADDRESS
17*	1 00032	6632005C		AWM,3	R0CA,X
18*	1 00033	6632005D		AWM,3	R0CB,X
19*	1 00034	66120004 A		AWM,X	4,X SAVE LOADER BIAS
20*	1 00035	22000000 A		LI,0	0 RELOCATION BIAS
21*	1 00036	22B00000 A		LI,11	0 LOAD MODE
22*	1 00037	6C000000 A		RD,0	0 SS 1 SET
23*	1 00038	6880003A		BCR,8	P3
24*	1 00039	2E000000 A		WAIT	
25*	1 0003A	68020004 A	P3	B	4,X ENTER RELOCATION BIAS
26*	1 0003C			BOUND	8 TO LOADER
27*	1 0003C	020C0100 A	10C1	DATA	X*02000100* COMMAND
28*	1 0003D	0E000078 A		DATA	X*0E000078* PAIR
29*	0000000A			D0	START-\$+30 ZERO FILL CARD 1
30*	1 0003E	00000000 A		DATA	0
31*				FIN	
30*	1 0003F	00000000 A		DATA	0
31*				FIN	
30*	1 00040	00000000 A		DATA	0
31*				FIN	
30*	1 00041	00000000 A		DATA	0

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31*			FIN	
30*	1	00042	DATA	0
31*			FIN	
30*	1	00043	DATA	0
31*			FIN	
30*	1	00044	DATA	0
31*			FIN	
30*	1	00045	DATA	0
31*			FIN	
30*	1	00046	DATA	0
31*			FIN	
30*	1	00047	DATA	0
31*			FIN	

			PAGE			
32*						
33*			*			
34*			* CONTENTS OF CARD TWO INPUT BY CARD ONE			
35*			*			
36*	1 00040		ORG	64		
	1 00040					
37*	1 00040	0F000050	L0C40	XPSD,0	P40	
38*	1 00041	22120F80 A	P10	LI,1	X*20F80*	COMPUTE
39*	1 00042	3810004E	P11	SW,1	P19	MEMORY
40*	1 00043	B510C001 A		STW,1	*1	SIZE
41*	1 00044	32200001 A		LW,2	1	INITIALIZE
42*	1 00045	25200002 A		SLS,2	2	INPUT BYTE
43*	1 00046	7230003C		LB,3	I0C1	ADDRESS
44*	1 00047	75300002 A		STB,3	2	FOR LOADER
45*	1 00048	3520003C		STW,2	I0C1	
46*	1 00049	3220004F		LW,2	P20	RESET
47*	1 0004A	3520002E		STW,2	P2	BRANCH
48*	1 0004B	22200078 A		LI,2	120	BYTE
49*	1 0004C	22300004 A		LI,3	4	CARD
50*	1 0004D	6800002A		B	START	COUNT
51*	1 0004E	00001000 A	P19	DATA	4096	
52*	1 0004F	6620003C	P20	AWM,2	I0C1	
53*	1 00050			B0UND	8	
54*	1 00050	00000000 A	P40	DATA	0	XPSD
55*	1 00051	00000000 A		DATA	0	AREA
56*	1 00052	00000042		DATA	P11	
57*	1 00053	00000000 A		DATA	0	
58*		0000000A		D0	L0C40=S+30	ZER0 FILL CARD 2
59*	1 00054	00000000 A		DATA	0	
60*				FIN		
59*	1 00055	00000000 A		DATA	0	
60*				FIN		
59*	1 00056	00000000 A		DATA	0	
60*				FIN		
59*	1 00057	00000000 A		DATA	0	
60*				FIN		
59*	1 00058	00000000 A		DATA	0	

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60*			FIN	
59*	1 00059	00000000 A	DATA	0
60*			FIN	
59*	1 0005A	00000000 A	DATA	0
60*			FIN	
59*	1 0005B	00000000 A	DATA	0
60*			FIN	
59*	1 0005C	00000000 A	DATA	0
60*			FIN	
59*	1 0005D	00000000 A	DATA	0
60*			FIN	

```

61*                                     PAGE
62*                                     *
63*                                     * CONTENTS OF CARD THREE THROUGH CARD SIX INPUT VIA CARD ONE AND TWO
64*                                     *
65*                                     * CONTENTS OF CARD NUMBER 3
66*                                     *
67* 1 00000                                ORG          0
68* 1 00000                                00000022      L2IN      EQU      X'22'      INPUT ADDRESS
69* 1 00000 02000088 A                      I8CA      DATA  X'02000088'  INPUT AREA
70* 1 00001 0E000078 A                      DATA      DATA  X'0E000078'  LOC 22-3F
71* 1 00002 00000000 A                      BIAS      DATA      0      PROGRAM RELOCATION BIAS
72* 1 00003 00000000 A                      ADDR      DATA      0      READER ADDRESS
73* 1 00004 22100000 A                      L1        LI,1      0      LOADER RELOCATION BIAS
74* 1 00005 35020002                        STW,0     BIAS,X
75* 1 00006 22D00000 A                      LI,13     0      SEQUENCE NUMBER
76* 1 00007 22E00000 A                      LI,14     0      START ADDRESS
77* 1 00008 6AF2005A                        BAL,15    R0C,X     READ ONE CARD
78* 1 00009 6802000B                        B          S+2,X
79* 1 0000A 6AF20058                        L1A      BAL,15    F0B,X
80* 1 0000B 21000004 A                      CI,0      4      FETCH ONE BYTE
81* 1 0000C 6832003C                        BCR,3     L3,X     ORIGIN
82* 1 0000D 2100000D A                      CI,0      13     START
83* 1 0000E 68320041                        BCR,3     L5,X
84* 1 0000F 2100000E A                      CI,0      14     MODULE END
85* 1 00010 68320046                        BCR,3     L6,X
86* 1 00011 2100000C A                      CI,0      12     CONTROL SECTION DECLARATION
87* 1 00012 6832002D                        BCR,3     L10,X
88* 1 00013 32200000 A                      LW,2      0
89* 1 00014 2520007C A                      SLS,2     -4
90* 1 00015 21200004 A                      CI,2      4      LOAD ABSOLUTE
91* 1 00016 6832004F                        BCR,3     L7,X
92* 1 00017 32C20002                        LW,12     BIAS,X
93* 1 00018 21200008 A                      L1B      CI,2      8      LOAD RELOCATABLE
94* 1 00019 69420023                        BCS,4     L8,X
95* 1 0001A 32200000 A                      LW,2      0      FIND RELOCATION FOR
96* 1 0001B 4B220069                        AND,2     R0C2,X   BYTE OR
    
```

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97*	1	0001C	25C00002 A	SLS,12	2	HALF WORD OR
98*	1	0001D	3A200002 A	LCW,2	2	WORD OR
99*	1	0001E	25C40000 A	SLS,12	0,2	DOUBLE WORD
100*				*		
101*				*		
102*				*		
103*	1	0001F	4B020018	AND,0	L1B,X	
104*	1	00020	69320022	BCS,3	S+2,X	
105*	1	00021	6AF20058	BAL,15	F0B,X	
106*	1	00022	6AF20058	BAL,15	F0B,X	
107*				*		
108*				*		
109*				*		
110*	1	00023	2560007E A	L8	SLS,6	-2
111*	1	00024	223FFFFC A		LI,3	-4
112*	1	00025	6AF20058	L81	BAL,15	F0B,X
113*	1	00026	75060006 A		STB,0	6,3
114*	1	00027	65320025		BIR,3	L01,X
115*	1	00028	3050000C A		AW,5	12
116*	1	00029	355C0000 A		STW,5	0,6
117*	1	0002A	33100006 A		MTW,1	6
118*	1	0002B	25600002 A		SLS,6	2
119*	1	0002C	6802000A		B	L1A,X
120*				*		
121*				*		
122*				*		
123*	1	0002D	33300007 A	L10	MTW,3	7
124*	1	0002E	6802000A		B	L1A,X
125*				*		
126*				*		
127*				*		
128*	1	0002F	22500000 A	EXPR	LI,5	0
129*	1	00030	6AF20058	EXPR1	BAL,15	F0B,X
130*	1	00031	21000002 A		CI,0	2
131*	1	00032	E830000C A		BCR,3	*12
132*	1	00033	21000001 A		CI,0	1
133*	1	00034	68320037		BCR,3	EXPR2,X

\* CONTENTS OF CARD NUMBER 4

\* L O A D R E L O C A T A B L E

\* D E C L A R E C O N T R O L S E C T I O N

\* E X P R E S S I O N P R O C E S S O R

FETCH 4 BYTES

ADD BIAS WORD

SKIP 3 BYTES

FETCH 1 BYTE

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134* 1 00035 6AF20058 BAL,15 F0B,X
135* 1 00036 68020030 B EXPR1,X
136* 1 00037 223FFFFC A EXPR2 L1,3 -4 FETCH 4 BYTES
137* 1 00038 6AF20058 BAL,15 F0B,X
138* 1 00039 75060006 A STB,0 6,3
139* 1 0003A 65320038 BIR,3 EXPR2+1,X
140* 1 0003B 68020030 B EXPR1,X
141*
142* * CONTENTS OF CARD NUMBER 5
143*
144* *
145* * DEFINE LOAD COUNTER
146* 1 0003C 6AC2002F L3 BAL,12 EXPR,X FETCH EXPRESSION
147* 1 0003D 32620002 LW,6 BIAS,X
148* 1 0003E 25600002 A SLS,6 2
149* 1 0003F 30600005 A AW,6 5
150* 1 00040 6802000A B L1A,X
151*
152* * DEFINE START ADDRESS
153*
154* 1 00041 6AC2002F L5 BAL,12 EXPR,X
155* 1 00042 2550007E A SLS,5 -2
156* 1 00043 30520002 AW,5 BIAS,X
157* 1 00044 3550000E A STW,5 14
158* 1 00045 6802000A B L1A,X
159*
160* *
161* * MODULE END
162* 1 00046 6AF20058 L6 BAL,15 F0B,X FETCH SEVERITY BYTE
163* 1 00047 21800000 A CI,11 0 LOADER CALLED
164* 1 00048 E930000B A BCS,3 *11 AS LOAD SUBROUTINE
165* 1 00049 6C000000 A RD,0 0 TEST SS 2
166* 1 0004A 6842004C BCR,4 $+2,X
167* 1 0004B 2E000000 A WAIT
168* 1 0004C 21E00000 A CI,14 0
169* 1 0004D 6832004D BCR,3 $,X NO START ADDRESS
170* 1 0004E E800000E A B *14 *TO START PROGRAM*

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```

171*
172*
173*
174* 1 0004F 48020077 L7 AND,0 R0C5,X GET
175* 1 00050 69220052 BCS,2 S+2,X BYTE
176* 1 00051 22000010 A LI,0 16 COUNT
177* 1 00052 32300000 A LW,3 0
178* 1 00053 6AF20058 L71 BAL,15 F0B,X
179* 1 00054 750C0000 A STB,0 0,6
180* 1 00055 33100006 A MTW,1 6
181* 1 00056 64320053 BDR,3 L71,X LOOP
182* 1 00057 6802000A B L1A,X
183*
184*
185*
186* 1 00058 31700009 A F0B CW,7 9 LAST BYTE
187* 1 00059 69320075 BCS,3 R0C4A,X
188*
189*
190*
191*
192*
193* 1 0005A 32000001 A R0C LW,0 1
194* 1 0005B 2500007F A SLS,0 -1
195* 1 0005C 4C000000 A R0CA SI0,0 0 READ ONE CARD
196* 1 0005D 4D000000 A R0CB TI0,0 0 WAIT FOR
197* 1 0005E 69C2005D BCS,12 S-1,X READY
198* 1 0005F 7280C022 A LB,8 L2IN
199* 1 00060 227000C1 A LI,7 1
200* 1 00061 720E0022 A LB,0 L2IN,7
201* 1 00062 3100000D A CW,0 13
202* 1 00063 69320063 BCS,3 S,X *SEQUENCE ERROR*
203* 1 00064 3080C000 A AW,8 0
204* 1 00065 331000C7 A MTW,1 7
205* 1 00066 720E0022 A LB,0 L2IN,7
206* 1 00067 210000FF A R0C1 CI,0 255 BYPASS CHECK SUM
207* 1 00068 68320074 BCR,3 R0C4,X
    
```

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```

208* 1 00069 22700003 A R0C2 LI,7 3
209* 1 0006A 731E000D A MTB,1 13,7
210* 1 0006B 729E0022 A LB,9 L2IN,7
211* 1 0006C 72AE0022 A R0C3 LB,10 L2IN,7
212* 1 0006D 3080000A A AW,8 10
213* 1 0006E 48820067 AND,8 R0C1,X
214* 1 0006F 33100007 A MTW,1 7
215* 1 00070 31700009 A CW,7 9
216* 1 00071 6932006C BCS,3 R0C3,X
217* 1 00072 31000008 A CW,0 8
218* 1 00073 69320073 BCS,3 S,X
219* 1 00074 22700004 A R0C4 LI,7 4
220* 1 00075 720E0022 A R0C4A LB,0 L2IN,7
221* 1 00076 33100007 A MTW,1 7
222* 1 00077 E800000F A R0C5 B *15
223* END
    
```

\*CHECK SUM ERROR\*

LOAD BYTE

RETURN

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