

REVISIONS

SYM	DESCRIPTION	APPROVED	DATE
A	Production Release 5485		

DWG NO

J. P. Spencer

J. P. Spencer
Director
Engineering Operations

T. H. Sweere

T. H. Sweere
Director
Systems Engineering

DR	J. Demuzio	
CHK	<i>S. J. Cohen</i>	3/30/71
DSGN	<i>S. J. Cohen</i>	3/30/71
ENGR	<i>E. Ohrenstein</i>	3/29/71
APPD	<i>E. Ohrenstein</i>	3/24/71
APPD	<i>G. Watson</i>	4/7/71



varian data machines / a varian subsidiary
2722 michelson drive / Irvine / california / 92664

TITLE
SOFTWARE PERFORMANCE SPECIFICATION
EBCDIC TO HOLLERITH
HOLLERITH TO EBCDIC
EBCDIC TO ASCII CONVERSION ROUTINES for the
Varian Data Machines 620 Computer System

THIS DOCUMENT MAY CONTAIN PROPRIETARY INFORMATION AND SUCH INFORMATION MAY NOT BE DISCLOSED TO OTHERS FOR ANY PURPOSE OR USED TO PRODUCE THE ARTICLE OR SUBJECT, WITHOUT WRITTEN PERMISSION FROM VDM

CODE 21101	SIZE A	DWG NO. 89A0200	REV A
SCALE		SHEET / OF 24	

96A0153-000B

TABLE OF CONTENTS

<u>SECTION</u>	<u>TITLE</u>	<u>PAGE</u>
1	INTRODUCTION	3
2	SUBROUTINE DESCRIPTIONS	4
	2.1 EBCDIC to HOLLERITH	5
	2.2 HOLLERITH to EBCDIC	13
	2.3 EBCDIC to ASCII	16
3	TEST PROCEDURE AND RESULTS	19
	3.1 Description of Procedure	19
	3.2 Test Program Listing	20
	3.3 Test Results	22
	3.3.1 Test of EBCDIC to HOLLERITH	22
	3.3.2 Test of HOLLERITH to EBCDIC	23
	3.3.3 Test of EBCDIC to ASCII	24



varian data machines
an xerox subsidiary

**CODE
IDENT. NO**

89A0200

REV

A

PREPARED BY

APPR.

SHT **2** OF **24**

SECTION 1

INTRODUCTION

This conversion subroutine package consists of three subroutines which may be run on any Varian Data Machines 620 series computer. These subroutines enable the user to convert from one character code, usually associated with a particular peripheral device, to the character code of a different device. The three subroutines (described in detail in section 2) are:

EBCDIC TO HOLLERITH CONVERSION
HOLLERITH TO EBCDIC CONVERSION
EBCDIC TO ASCII CONVERSION

The EBCDIC TO HOLLERITH conversion subroutine (SA01) converts an 8-bit EBCDIC character in the A-register to its equivalent 12-bit HOLLERITH code in the A-register.

The HOLLERITH TO EBCDIC conversion subroutine (SB01) converts a 12-bit 029 HOLLERITH character in the A-register to its equivalent 8-bit EBCDIC character in the A-register.

The EBCDIC to ASCII conversion subroutine (SC01) converts an 8-bit EBCDIC character in the A-register to its equivalent 8-bit ASCII code in the A-register. If other than 8-bit ASCII code is desired, this routine may be easily modified (see section 2.3.17, comments for SC01).

The user should note the following characteristics of these subroutines:

- 1) Require VDM 620 series computer with a 16-bit word
- 2) Source statements must be assembled with DAS 8A assembler
- 3) The extended addressing option is not necessary
- 4) The multiply/divide option is not necessary

This subroutine package is referenced by the following VDM Software part numbers:

Source Material - 92H0206-001
Object Material - 92U0206-001
Assembly Listing - 92L0206-001



varian data machines
a varian subsidiary

CODE
IDENT. NO

89A0200

REV
A

PREPARED BY

APPR.

SHT 3 OF 24

SECTION 2

SUBROUTINE DESCRIPTIONS

- 2.1 EBCDIC TO HOLLERITH
- 2.2 HOLLERITH TO EBCDIC
- 2.3 EBCDIC TO ASCII



varian data machines
a varian subsidiary

CODE
IDENT. NO

REV

89A0200

A

PREPARED BY

APPR.

SHT 4 OF 24

2.1

1. Title: Convert EBCDIC to Hollerith
2. Symbolic Name: SA01
3. Purpose: To convert an EBCDIC character in bits 0 through 7 of the A register to IBM 029 Hollerith code in bits 0 through 11 of the A register.
4. Description: Index register B and the input value in the A register are saved. An index pointer into the SAT2 table is built by shifting out the least significant bit of the EBCDIC input, saving only the low order 7 bits, and adding the beginning address of SAT2 to the result. The two packed Hollerith characters from SAT2 are then loaded into the B register. The original EBCDIC value is checked and, if even, the left half of the packed Hollerith word is saved or, if odd, the right half is saved. An index pointer into the SAT1 table is then built by saving the least significant 3 bits of the saved Hollerith word and adding the beginning address of SAT1. Rows 12, 11, 0 are shifted to their output position and merged with rows 1-7. The B register is restored and the word with the output positions of rows 12, 11, 0, 1-7 is saved. Rows 8 and 9 are now merged with the other rows into the final output value of the Hollerith code and a return is made to the calling program.



varian data machines
a varian subsidiary

CODE
IDENT. NO

89A0200

REV

A

PREPARED BY

APPR.

SHT 5 OF 24

2.14.1 EBCDIC - HOLLERITH TABLE

EBCDIC Character (Hexadecimal)	Punched Card Code
00	12-0-1-8-9
01	12-1-9
02	12-2-9
03	12-3-9
04	12-4-9
05	12-5-9
06	12-6-9
07	12-7-9
08	12-8-9
09	12-1-8-9
0A	12-2-8-9
0B	12-3-8-9
0C	12-4-8-9
0D	12-5-8-9
0E	12-6-8-9
0F	12-7-8-9
10	12-11-1-8-9
11	11-1-9
12	11-2-9
13	11-3-9
14	11-4-9
15	11-5-9
16	11-6-9
17	11-7-9
18	11-8-9
19	11-1-8-9
1A	11-2-8-9
1B	11-3-8-9
1C	11-4-8-9
1D	11-5-8-9
1E	11-6-8-9
1F	11-7-8-9

EBCDIC Character (Hexadecimal)	Punched Card Code
20	11-0-1-8-9
21	0-1-9
22	0-2-9
23	0-3-9
24	0-4-9
25	0-5-9
26	0-6-9
27	0-7-9
28	0-8-9
29	0-1-8-9
2A	0-2-8-9
2B	0-3-8-9
2C	0-4-8-9
2D	0-5-8-9
2E	0-6-8-9
2F	0-7-8-9
30	12-11-0-1-8-9
31	1-9
32	2-9
33	3-9
34	4-9
35	5-9
36	6-9
37	7-9
38	8-9
39	1-8-9
3A	2-8-9
3B	3-8-9
3C	4-8-9
3D	5-8-9
3E	6-8-9
3F	7-8-9



varian data machines
a varian subsidiary

CODE
IDENT. NO

89A0200

REV

A

PREPARED BY

DATE

SHT 6 OF 24

2.1. 4.1 (Continued)

EBCDIC Character (Hexadecimal)	Punched Card Code
40	No punches
41	12-0-1-9
42	12-0-2-9
43	12-0-3-9
44	12-0-4-9
45	12-0-5-9
46	12-0-6-9
47	12-0-7-9
48	12-0-8-9
49	12-1-8
4A	12-2-8
4B	12-3-8
4C	12-4-8
4D	12-5-8
4E	12-6-8
4F	12-7-8
50	12
51	12-11-1-9
52	12-11-2-9
53	12-11-3-9
54	12-11-4-9
55	12-11-5-9
56	12-11-6-9
57	12-11-7-9
58	12-11-8-9
59	11-1-8
5A	11-2-8
5B	11-3-8
5C	11-4-8
5D	11-5-8
5E	11-6-8
5F	11-7-8

EBCDIC Character (Hexadecimal)	Punched Card Code
60	11
61	0-1
62	11-0-2-9
63	11-0-3-9
64	11-0-4-9
65	11-0-5-9
66	11-0-6-9
67	11-0-7-9
68	11-0-8-9
69	0-1-8
6A	12-11
6B	0-3-8
6C	0-4-8
6D	0-5-8
6E	0-6-8
6F	0-7-8
70	12-11-0
71	12-11-0-1-9
72	12-11-0-2-9
73	12-11-0-3-9
74	12-11-0-4-9
75	12-11-0-5-9
76	12-11-0-6-9
77	12-11-0-7-9
78	12-11-0-8-9
79	1-8
7A	2-8
7B	3-8
7C	4-8
7D	5-8
7E	6-8
7F	7-8



varian data machines
a varian subsidiary

**CODE
IDENT. NO**

89A0200

REV

H

PREPARED BY

APPR.

SHT 7 OF 24

2.1. 4.1 (Continued)

EBCDIC Character (Hexadecimal)	Punched Card Code
80	12-0-1-8
81	12-0-1
82	12-0-2
83	12-0-3
84	12-0-4
85	12-0-5
86	12-0-6
87	12-0-7
88	12-0-8
89	12-0-9
8A	12-0-2-8
8B	12-0-3-8
8C	12-0-4-8
8D	12-0-5-8
8E	12-0-6-8
8F	12-0-7-8
90	12-11-1-8
91	12-11-1
92	12-11-2
93	12-11-3
94	12-11-4
95	12-11-5
96	12-11-6
97	12-11-7
98	12-11-8
99	12-11-9
9A	12-11-2-8
9B	12-11-3-8
9C	12-11-4-8
9D	12-11-5-8
9E	12-11-6-8
9F	12-11-7-8

EBCDIC Character (Hexadecimal)	Punched Card Code
A0	11-0-1-8
A1	11-0-1
A2	11-0-2
A3	11-0-3
A4	11-0-4
A5	11-0-5
A6	11-0-6
A7	11-0-7
A8	11-0-8
A9	11-0-9
AA	11-0-2-8
AB	11-0-3-8
AC	11-0-4-8
AD	11-0-5-8
AE	11-0-6-8
AF	11-0-7-8
B0	12-11-0-1-8
B1	12-11-0-1
B2	12-11-0-2
B3	12-11-0-3
B4	12-11-0-4
B5	12-11-0-5
B6	12-11-0-6
B7	12-11-0-7
B8	12-11-0-8
B9	12-11-0-9
BA	12-11-0-2-8
BB	12-11-0-3-8
BC	12-11-0-4-8
BD	12-11-0-5-8
BE	12-11-0-6-8
BF	12-11-0-7-8



varian data machines
a varian subsidiary

**CODE
IDENT. NO**

89A0200

REV

A

PREPARED BY

APPR.

SHT 8 OF 24

2.1. 4.1 (Continued)

EBCDIC Character (Hexadecimal)	Punched Card Code
C0	12-0
C1	12-1
C2	12-2
C3	12-3
C4	12-4
C5	12-5
C6	12-6
C7	12-7
C8	12-8
C9	12-9
CA	12-0-2-8-9
CB	12-0-3-8-9
CC	12-0-4-8-9
CD	12-0-5-8-9
CE	12-0-6-8-9
CF	12-0-7-8-9
D0	11-0
D1	11-1
D2	11-2
D3	11-3
D4	11-4
D5	11-5
D6	11-6
D7	11-7
D8	11-8
D9	11-9
DA	12-11-2-8-9
DB	12-11-3-8-9
DC	12-11-4-8-9
DD	12-11-5-8-9
DE	12-11-6-8-9
DF	12-11-7-8-9

EBCDIC Character (Hexadecimal)	Punched Card Code
E0	0-2-8
E1	11-0-1-9
E2	0-2
E3	0-3
E4	0-4
E5	0-5
E6	0-6
E7	0-7
E8	0-8
E9	0-9
EA	11-0-2-8-9
EB	11-0-3-8-9
EC	11-0-4-8-9
ED	11-0-5-8-9
EE	11-0-6-8-9
EF	11-0-7-8-9
F0	0
F1	1
F2	2
F3	3
F4	4
F5	5
F6	6
F7	7
F8	8
F9	9
FA	12-11-0-2-8-9
FB	12-11-0-3-8-9
FC	12-11-0-4-8-9
FD	12-11-0-5-8-9
FE	12-11-0-6-8-9
FF	12-11-0-7-8-9



varian data machines
a varian subsidiary

**CODE
IDENT. NO**

89A0200

REV

A

PREPARED BY

APPR.

SHT 9 OF 24

5. Entry Point: SA01
6. Calling Sequence: P-1 LDA value to be converted
P JMPM SA01
P+1
P+2 Any instruction
7. Entrance Parameters: EBCDIC character in bits 0 through 7 of A register.
8. Exit Point: Only one exit exists for this subroutine. Return is to P+2 of the calling program.
9. Exit Parameters: X Register unchanged
B Register unchanged
A Register converted value in bits 0 through 11, as follows:

CPU bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Card column	-	-	-	-	12	11	0	1	2	3	4	5	6	7	8	9

10. Tables or Files Modified or Read: SAT1 - Hollerith 0-7 punch table
SAT2 - Hollerith character table
11. Tables or Files Created: None
12. Called By: Any system program
13. Called From: None
14. Exception Conditions: None
15. Timing: 55 cycles
16. Size: 30 words - Instructions
2 words - Temporary storage
136 words- Tables
17. Comments: This subroutine is not re-entrant. Every EBCDIC character is convertible. That is, there is no error condition associated with this subroutine.



varian data machines
a varian subsidiary

CODE
IDENT. NO

89A0200

REV


A

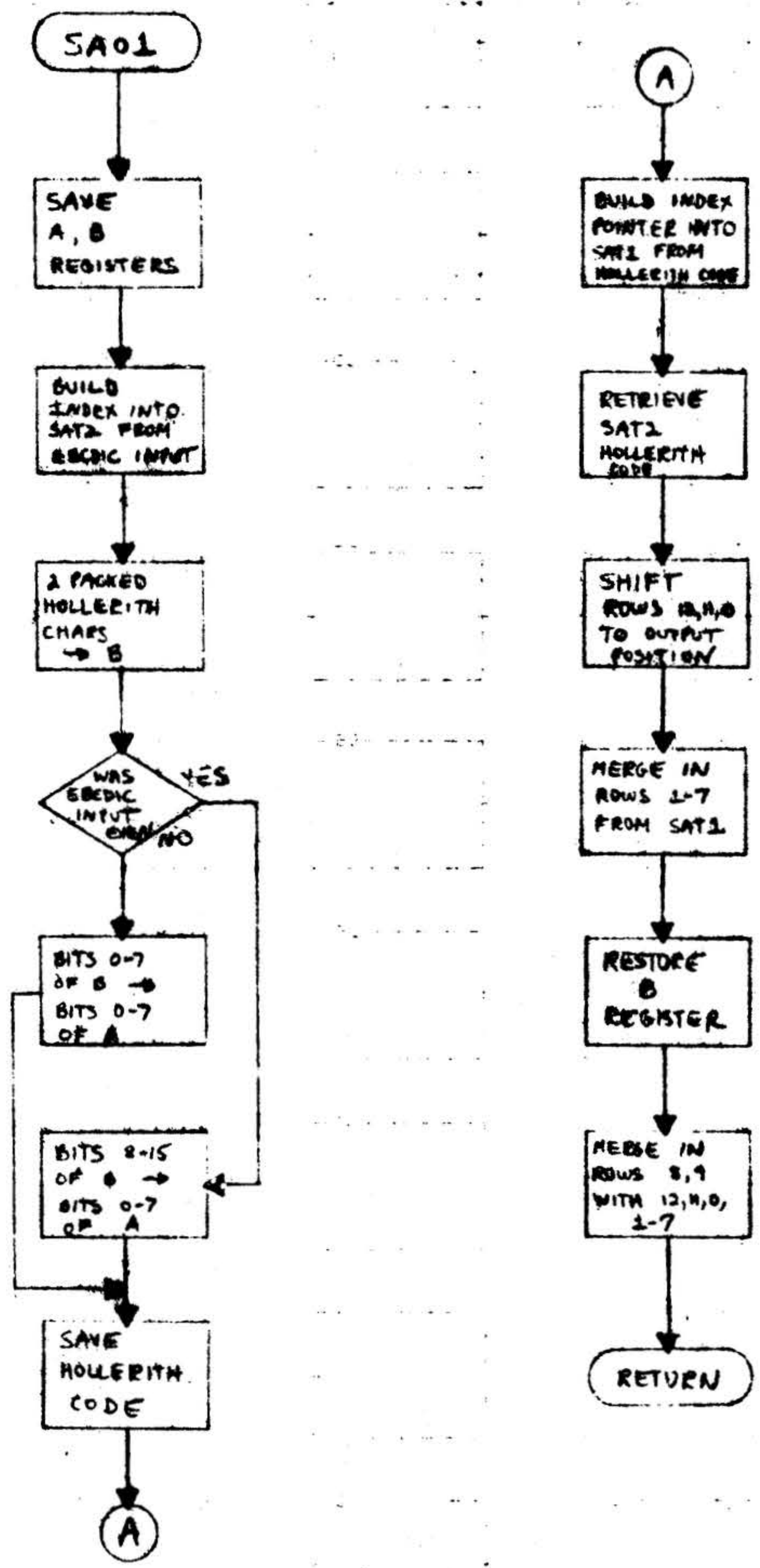
PREPARED BY

APPR.

SHT 10 OF 24

- 18. Special Notation: None
- 19. Hardware Details: None
- 20. Flowcharts:

 varian data machines a varian subsidiary	CODE IDENT. NO			REV
	PREPARED BY	APPR.	89A0200	A
			SHT 11 OF 24	



↑ 12,13,14,15 FROM 12,13,14,15

FOLD UNDER AT DOTTED LINE

2.2

1. Title: Convert Hollerith to EBCDIC
2. Symbolic Name: SB01
3. Purpose: To convert an 029 Hollerith character in bits 0 through 11 of the A register to its corresponding EBCDIC code in bits 0 through 7 of the A register.
4. Description: Index registers B and X are saved. The B register is initialized to zero and will be used as the field 1 (1-7 punches) pointer. The original Hollerith input is checked to see if row 9 is punched. If punched, bit 11 is set and if not punched, bit 11 is reset. The Hollerith input rows 1-7 are now searched against table SBT1 to determine which of the rows 1-7 (or none) has been punched. More than 1 punch in rows 1-7 results in a return to the calling program with the accumulator set negative. An index into table SBT2 is built by isolating card rows 9, 12, 11, 0 into bit positions 6, 5, 4, 3 and adding the displacement into SBT1 which was determined when a match on rows 1-7 was found. This 7 bit number is added to the beginning address of table SBT2 to obtain the address of the corresponding two EBCDIC characters - one with an 8 punch and one without an 8 punch. The original Hollerith input is now checked to see if row 8 was punched. The appropriate EBCDIC is then right justified in the accumulator, the B and X registers are restored, and a return is made to the calling program.
5. Entry Point: SB01
6. Calling Sequence:
 - P-1 LDA value to be converted
 - P JMPM
 - P+1 SB01
 - P+2 Any instruction
7. Entrance Parameters: 029 Hollerith character in bits 0 through 11 of A register.



varian data machines
a varian subsidiary

CODE IDENT. NO

89A0200

REV

A

PREPARED BY

APPR.

SHT 13 OF 24

8. Exit Point: Only one exit exists for this subroutine. Return is to P+2 of the calling program.
9. Exit Parameters: X Register unchanged
B Register unchanged
A Register converted value in bits 0 through 7.
10. Tables or Files Modified or Read: SBT1 1-7 row punch table
SBT2 EBCDIC character table
11. Tables or Files Created: None
12. Called By: Any system program
13. Called From: None
14. Exception Conditions: An input containing more than one punch in rows 1-7 is an error and results in a return to the calling program with the accumulator set negative.
15. Timing: 44 cycles minimum
114 cycles maximum
16. Size: 46 words - Instructions
4 words - Temporary storage
136 words - Tables
17. Comments: This subroutine is not re-entrant.
18. Special Notation: None
19. Hardware Details: None
20. Flowcharts:



varian data machines
a varian subsidiary

CODE IDENT. NO

89A0200

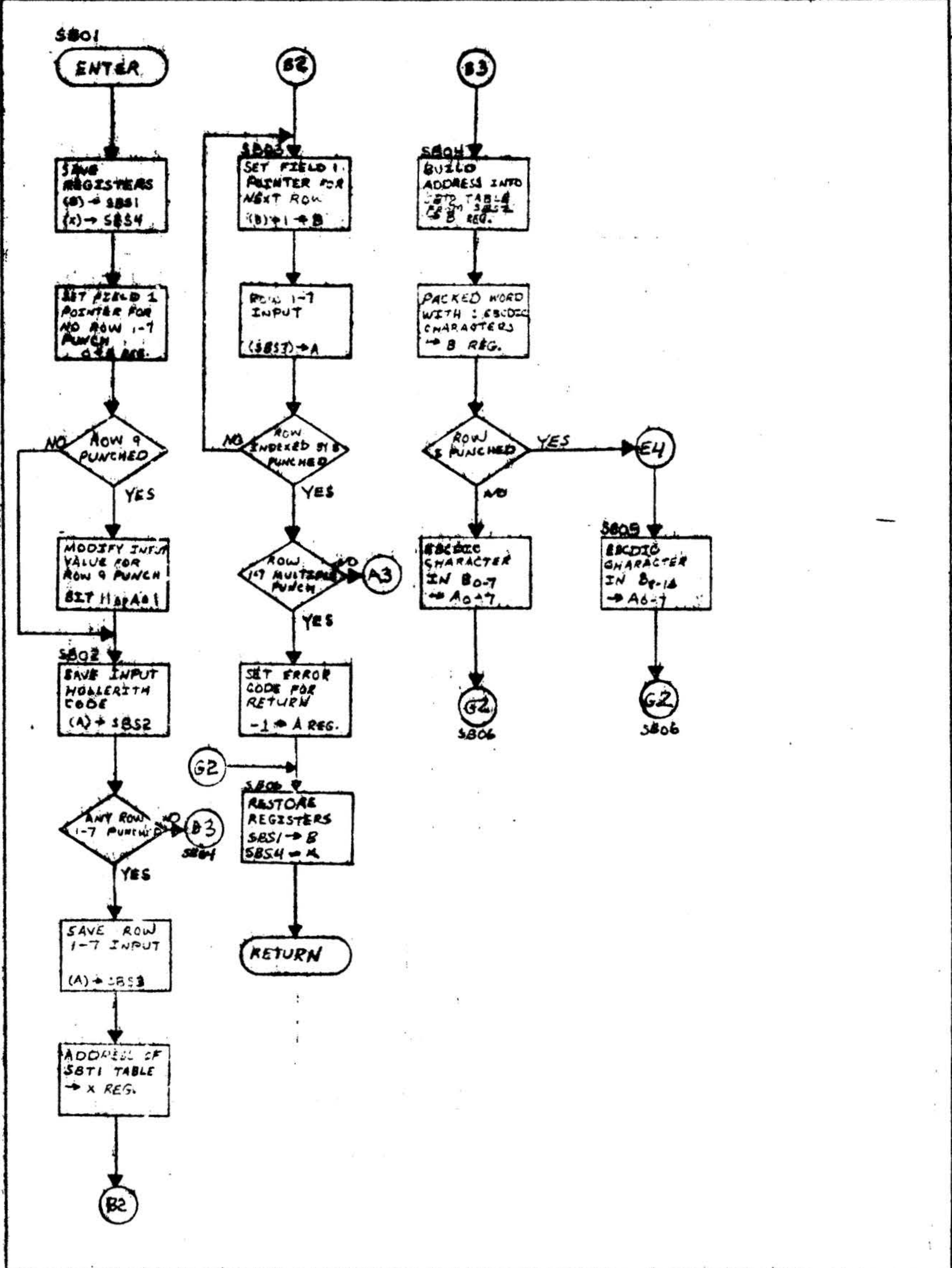
REV

A

PREPARED BY

APPR.

SHT 14 OF 24



2.3

1. Title: EBCDIC to ASCII Conversion
2. Symbolic Name: SC01
3. Purpose: To convert an 8-bit EBCDIC character in the A register to its equivalent 8-bit ASCII code in the A register.
4. Description:

Index register B and the input value in the A register are saved. The input value is checked to see if it is in the range of either 40-7F or C0-FF. If not, a return to the calling program is made with the accumulator negative. Otherwise, a shift command to test the validity of the value to be converted is built. The displacement into the SCT1 table is calculated by right justifying bits 4 and 5 of the EBCDIC input. Adding the beginning address of SCT1 to this value yields the address of the word in SCT1 containing the legality bit for this EBCDIC input. A check is now made to determine exactly which range the input value is in, 40-7F or C0-FF. If 40-7F, an offset of zero into the SCT1 table is used. If C0-FF, an offset of four is used. The legality bit for this input value is now checked. If not legal, a return to the calling routine is made with the accumulator negative. If legal, bits 1-5 of the EBCDIC input value are added to the beginning address of the SCT2 table to obtain the address of the word containing the two ASCII characters for this value. If the EBCDIC input value was even, the left ASCII character is set in the accumulator, right justified. If odd, the right ASCII character is set in the accumulator, also right justified. The B register is then restored and a return is made to the calling program.
5. Entry Points: SC01
6. Calling Sequence:
 - P-1 LDA value
 - P JMPM SC01
 - P+2 Any Instruction



varian data machines
a varian subsidiary

**CODE
IDENT. NO**

89A0200

REV

A

PREPARED BY

APPR.

SHT 16 OF 24

7. Entrance Parameters: EBCDIC character in bits 0 through 7 of A register.
8. Exit Point: Only one exit exists for this subroutine. Return is to P+2 of the calling program.
9. Exit Parameters: B register unchanged.
ASCII code in bits 0 through 7 of the A register.
10. Table or Files Modified or Read: SCT1 Legality check table
SCT2 ASCII character table
11. Tables or Files Created: None
12. Called By: Any system program
13. Called From: None
14. Exception Conditions: If the input value is not in the ranges 40-7F or C0-FF, or if the legality status bit in Table SCT1 is set, a return to the calling program is made with the accumulator set negative.
15. Timing: 17 cycles minimum
72 cycles maximum
16. Size: 44 words - Instructions
2 words - Temporary storage
40 words - Tables
17. Comments: This subroutine is not re-entrant. Some output devices allow only 7-bit ASCII. If other than 8-bit ASCII is desired, this subroutine should be modified as follows:
Either - 1) Modify table SCT2 to include desired codes
or
2) Insert an appropriate mask instruction at location SC30+1.
18. Special Notation: None
19. Hardware Details: None
20. Flowcharts:



varian data machines
a varian subsidiary

CODE
IDENT. NO

REV

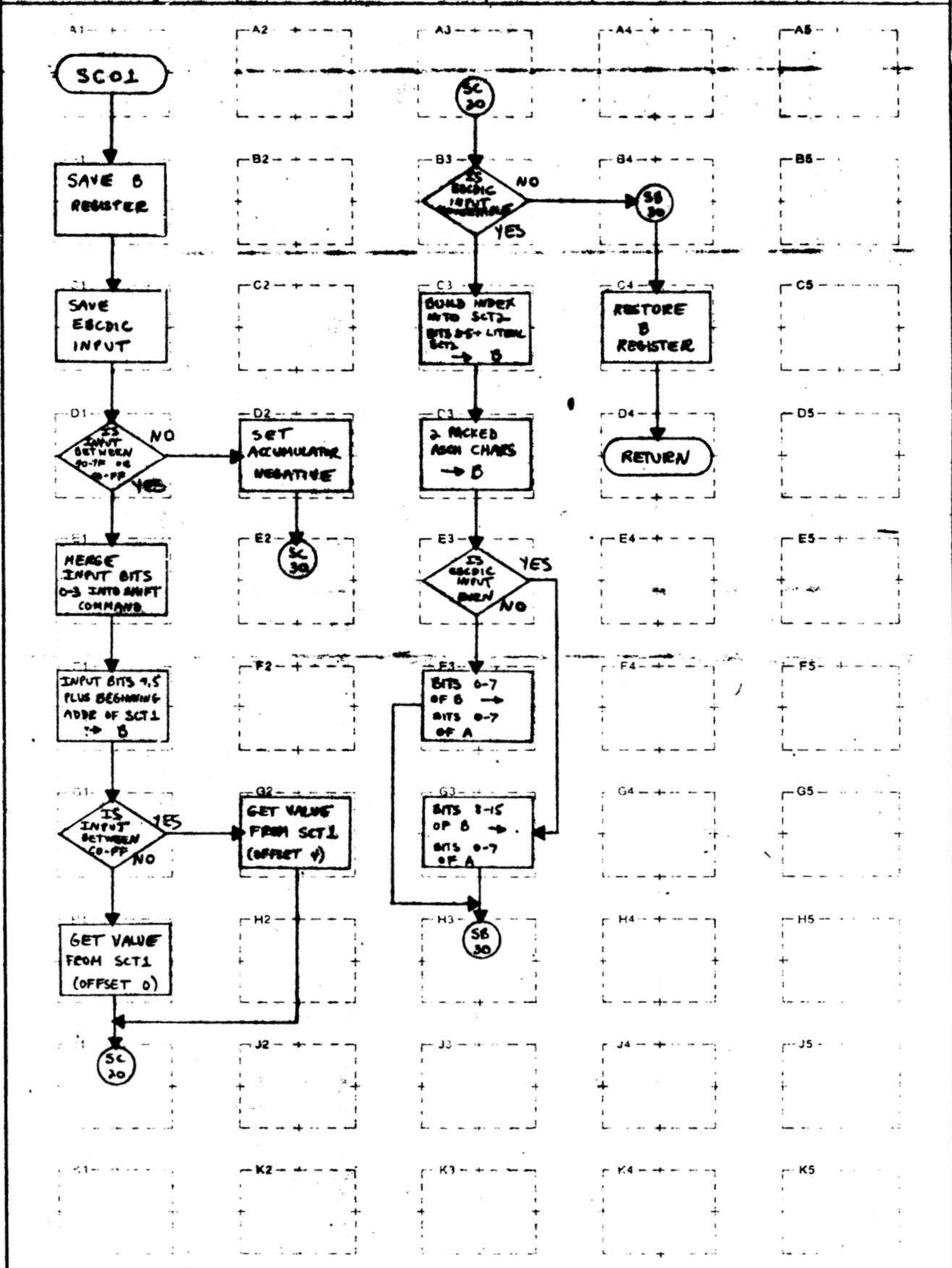
89A0200

A

PREPARED BY

DATE

SHT 17 OF 24



↑ FOLD UNDER AT DOTTED LINE

OLD UNDER AT DOTTED LINE

99A0349-000A

SECTION 3

TEST PROCEDURE AND RESULTS

3.1 DESCRIPTION OF PROCEDURE

The three conversion routines were tested as follows:

Two tables, TBL1 and TBL2 were generated. For the EBCDIC TO HOLLERITH conversion, sequential EBCDIC values from 0 to 255 were placed into the A-register and a call to SA01 was made for each value. The output HOLLERITH characters were then placed sequentially into TBL1.

For the HOLLERITH TO EBCDIC conversion, the HOLLERITH values from TBL1 were placed into the A-register and a call to SB01 was made for each value. The output EBCDIC characters were placed sequentially into TBL2. An illegal HOLLERITH character was then given to SB01 with the associated error return stored in TBL2+256.

For the EBCDIC TO ASCII conversion, the EBCDIC values from TBL2 were placed into the A-register and a call to SC01 was made for each value. The output ASCII characters (or error codes) were sequentially stored back into TBL1.



varian data machines
a varian subsidiary

CODE
IDENT. NO

89A0200

REV

A

PREPARED BY

APPR

SHT 19 OF 24

PAGE 000001

```

001500          .CRG      .01500
***
*      TEST ROUTINE FOR SA01
***
001500  031562          .LDX      .ADT1      ADDRESS OF HOLLERITH TABLE TC X
001501  011561  TS01   .LDA      .TSC1      LOAD EBCDIC VALUE
001502  005111          .IAR          ADD ONE
001503  141000          .SUB      .=256     ARE WE DONE
001504  001010          .JAZ      .TSC5     YES
001505  001516  R
001506  121000          .ADD      .=256     NO - GET EBCDIC VALUE BACK
001507  051561          .STA      .TSC1
001510  002000          .CALL     .SA01     CONVERT
001511  002555  R
001512  055000          .STA      .0,X     STORE HOLLERITH VALUE
001513  005144          .IXR          INCREMENT HOLLERITH TABLE ADDRESS
001514  001000          .JMP      .TSC1     GO NEXT VALUE
001515  001501  R
001516  000001  TS05   .FLT      .1

***
*      TEST ROUTINE FOR SB01
***
001517  031562          .LDX      .ADT1      ADDRESS OF HOLLERITH TABLE TC X
001520  022163          .LDB      .ADT2      ADDRESS OF EBCDIC TABLE TC B
001521  015000  TS10   .LDA      .0,X     GET HOLLERITH VALUE
001522  002000          .CALL     .SB01     CONVERT
001523  003037  R
001524  056000          .STA      .0,B     STORE EBCDIC VALUE
001525  005144          .IXR          INCREMENT HOLLERITH TABLE ADDRESS
001526  005122          .IBR          INCREMENT EBCDIC TABLE ADDRESS
001527  011560          .LDA      .CNTA     ARE WE DONE
001530  141001          .SUB      .=255
001531  001010          .JAZ      .TS15     YES
001532  001536  R
001533  041560          .INR      .CNTA     NO - INCREMENT COUNTER
001534  001000          .JMP      .TS10
001535  001521

```

IBM Corporation
 Mainframe Data Machines
 Department of Systems Technology

PREPARED BY	CODE IDENT. NO.
APPROVED BY	
DATE	
REV	89A0200
	A

FORM 7 (100)

3.3 TEST RESULTS


3.3.1 Test of EBCDIC TO HOLLERITH (SA01)

Output of SA01 to TBL1. Used as input to SB01.

G1500.

D1563.

(001563)	005403	004401	004201	004101	004041			
(001570)	004021	004011	004005	004003	004403	004203	004103	004043
(001600)	004023	004013	004007	006403	002401	002201	002101	002041
(001610)	002021	002011	002005	002003	002403	002203	002103	002043
(001620)	002023	002013	002007	003403	001401	001201	001101	001041
(001630)	001021	001011	001005	001003	001403	001203	001103	001043
(001640)	001023	001013	001007	007403	000401	000201	000101	000041
(001650)	000021	000011	000005	000003	000403	000203	000103	000043
(001660)	000023	000013	000007	000000	005401	005201	005101	005041
(001670)	005021	005011	005005	005003	004402	004202	004102	004042
(001700)	004022	004012	004006	004000	006401	006201	006101	006041
(001710)	006021	006011	006005	006003	002402	002202	002102	002042
(001720)	002022	002012	002006	002000	001400	003201	003101	003041
(001730)	003021	003011	003005	003003	001402	006000	001102	001042
(001740)	001022	001012	001006	007000	007401	007201	007101	007041
(001750)	007021	007011	007005	007003	000402	000202	000102	000042
(001760)	000022	000012	000006	005402	005400	005200	005100	005040
(001770)	005020	005010	005004	005002	005001	005202	005102	005042
(002000)	005022	005012	005006	006402	006400	006200	006100	006040
(002010)	006020	006010	006004	006002	006001	006202	006102	006042
(002020)	006022	006012	006006	003402	003400	003200	003100	003040
(002030)	003020	003010	003004	003002	003001	003202	003102	003042
(002040)	003022	003012	003006	007402	007400	007200	007100	007040
(002050)	007020	007010	007004	007002	007001	007202	007102	007042
(002060)	007022	007012	007006	005000	004400	004200	004100	004040
(002070)	004020	004010	004004	004002	004001	005203	005103	005043
(002100)	005023	005013	005007	003000	002400	002200	002100	002040
(002110)	002020	002010	002004	002002	002001	006203	006103	006043
(002120)	006023	006013	006007	001202	003401	001200	001100	001040
(002130)	001020	001010	001004	001002	001001	003203	003103	003043
(002140)	003023	003013	003007	001000	000400	000200	000100	000040
(002150)	000020	000010	000004	000002	000001	007203	007103	007043
(002160)	007023	007013	007007					

 International Business Machines Corporation a subsidiary	CODE IDENT. NO		REV
	PREPARED BY	APPR.	89A0200 A
		SHT 22 OF 24	

3.3.2 Test of HOLLERITH TO EBCDIC (S301)

Output of S301 to TBL2 (TBL1 has been used as input).

G1517.

D2164.

(002164)	000000	000001	000002	000003				
(002170)	000004	000005	000006	000007	000010	000011	000012	000013
(002200)	000014	000015	000016	000017	000020	000021	000022	000023
(002210)	000024	000025	000026	000027	000030	000031	000032	000033
(002220)	000034	000035	000036	000037	000040	000041	000042	000043
(002230)	000044	000045	000046	000047	000050	000051	000052	000053
(002240)	000054	000055	000056	000057	000060	000061	000062	000063
(002250)	000064	000065	000066	000067	000070	000071	000072	000073
(002260)	000074	000075	000076	000077	000100	000101	000102	000103
(002270)	000104	000105	000106	000107	000110	000111	000112	000113
(002280)	000114	000115	000116	000117	000120	000121	000122	000123
(002310)	000124	000125	000126	000127	000130	000131	000132	000133
(002320)	000134	000135	000136	000137	000140	000141	000142	000143
(002330)	000144	000145	000146	000147	000150	000151	000152	000153
(002340)	000154	000155	000156	000157	000160	000161	000162	000163
(002350)	000164	000165	000166	000167	000170	000171	000172	000173
(002360)	000174	000175	000176	000177	000200	000201	000202	000203
(002370)	000204	000205	000206	000207	000210	000211	000212	000213
(002400)	000214	000215	000216	000217	000220	000221	000222	000223
(002410)	000224	000225	000226	000227	000230	000231	000232	000233
(002420)	000234	000235	000236	000237	000240	000241	000242	000243
(002430)	000244	000245	000246	000247	000250	000251	000252	000253
(002440)	000254	000255	000256	000257	000260	000261	000262	000263
(002450)	000264	000265	000266	000267	000270	000271	000272	000273
(002460)	000274	000275	000276	000277	000300	000301	000302	000303
(002470)	000304	000305	000306	000307	000310	000311	000312	000313
(002500)	000314	000315	000316	000317	000320	000321	000322	000323
(002510)	000324	000325	000326	000327	000330	000331	000332	000333
(002520)	000334	000335	000336	000337	000340	000341	000342	000343
(002530)	000344	000345	000346	000347	000350	000351	000352	000353
(002540)	000354	000355	000356	000357	000360	000361	000362	000363
(002550)	000364	000365	000366	000367	000370	000371	000372	000373
(002560)	000374	000375	000376	000377	177777			



main data machines
a world of data

CODE IDENT. NO.

89A0200

REV
A

PREPARED BY

APPR.

123 OF 24

3.3.3 Test of EBCDIC TO ASCII (SC01)

Output of SC01 to TBL1 (TBL2 has been used as input).

G1543.

D1563.

(001563)	177777	177777	177777	177777	177777			
(001570)	177777	177777	177777	177777	177777	177777	177777	177777
(001600)	177777	177777	177777	177777	177777	177777	177777	177777
(001610)	177777	177777	177777	177777	177777	177777	177777	177777
(001620)	177777	177777	177777	177777	177777	177777	177777	177777
(001630)	177777	177777	177777	177777	177777	177777	177777	177777
(001640)	177777	177777	177777	177777	177777	177777	177777	177777
(001650)	177777	177777	177777	177777	177777	177777	177777	177777
(001660)	177777	177777	177777	000240	177600	177401	177003	176007
(001670)	174017	170037	160077	140177	100377	000333	000256	000274
(001700)	000250	000253	000336	000246	177600	177401	177003	176007
(001710)	174017	170037	160077	140177	100377	000241	000244	000252
(001720)	000251	000273	000337	000255	000257	177600	177401	177003
(001730)	176007	174017	170037	160077	140177	100377	000254	000245
(001740)	000335	000276	000277	177700	177601	177403	177007	176017
(001750)	174037	170077	160177	140377	100777	000272	000243	000300
(001760)	000247	000275	000242	177777	177777	177777	177777	177777
(001770)	177777	177777	177777	177777	177777	177777	177777	177777
(002000)	177777	177777	177777	177777	177777	177777	177777	177777
(002010)	177777	177777	177777	177777	177777	177777	177777	177777
(002020)	177777	177777	177777	177777	177777	177777	177777	177777
(002030)	177777	177777	177777	177777	177777	177777	177777	177777
(002040)	177777	177777	177777	177777	177777	177777	177777	177777
(002050)	177777	177777	177777	177777	177777	177777	177777	177777
(002060)	177777	177777	177777	100077	000301	000302	000303	000304
(002070)	000305	000306	000307	000310	000311	177000	176001	174003
(002100)	170007	160017	140037	100077	000312	000313	000314	000315
(002110)	000316	000317	000320	000321	000322	177000	176001	174003
(002120)	170007	160017	140037	140077	100177	000323	000324	000325
(002130)	000326	000327	000330	000331	000332	177400	177001	176003
(002140)	174007	170017	160037	000260	000261	000262	000263	000264
(002150)	000265	000266	000267	000270	000271	176000	174001	170003
(002160)	160007	140017	100037					



International Business Machines Corporation
Indian subsidiary

CODE IDENT. NO

89A0200

REV

A

PREPARED BY

APPR.

SHT 24 OF 24