8LD01A
8LD10A
8LD02A

7080 PROGRAM LOADERS

April 15, 1961

8LD01
8LD10
8LD02

A. PURPOSE

To provide a means for loading programs, in card form or in 80 character tape records, into any position of the 7080 Memory (except 18640 - 18799).

B. METHOD

The program consists of two cards.

Basically, the first card (8LDXX-1) reads the second load card (8LDXX-2), the first program card, types out the six character identification of the program being loaded, and transfers to the area occupied by the second load card.

The second load card examines the 2 digit length of field and the 4 digit memory address designated on each program card and adjusts variable instructions to send from 1 to 65 positions of data to specified resident memory locations. This card also reads subsequent program cards.

Loading is terminated when a card is read containing a "00" length of field. When detected, a transfer is made to memory position 0004 where the very first program instruction should be located.
(See the write-up for 8TR02)

C. AREA OF MACHINE REQUIRED

1. Units -

   MF, Storage, Typewriter, CR or Tape

2. Memory Locations -

   0000 - 0079 (temporarily)
   18590 - 18799

D. LOADING PROCEDURE

1. Card -

   Auto-Load 0100 (from 714) use 8LD01
   Auto-Load 010● (from 7502) use 8LD10

2. Card Records on Tape -

Auto-Load 0202 (from 729) use 8LD02 (See I. 1. Comments)

E. PROGRAM CONTROL

1. Both cards of a set of loaders must always precede the program input deck.

2. Alteration Switches -

None specified

3. Check Switches -

All in automatic

F. NORMAL STOPS

None

G. ERROR STOPS

None programmed.
Check Switches will halt machine on error.

H. PRINTED RESULTS

1. Normal Typeouts

The six character identification of the program being loaded should always be indicated. If it is not, program may not have been loaded correctly. In the event none of or less than 6 characters are typed, check the first program card. The first six columns may be blank or incompletely punched.

I. COMMENTS

1. For the sake of clarity, each set of loaders must be used with the input machine for which it was designed.

8LD01
8LD10
8LD02

8LD01 - For direct 714 Card Reader to CPU input. 0100

8LD10 - For direct 7502 Console Card Reader to CPU input. 0100 or 0101

8LD02 - For direct 729 Tape to CPU input. This is preceded by an off-line card reader to tape operation in which the program with the two cards of 8LD02 ahead of it are written on tape. 0202

2. The single card 8TR02 transition program, followed by 3 blank cards, should always follow the last card of the program being loaded when using any of the above loaders and when immediate program execution is desired.

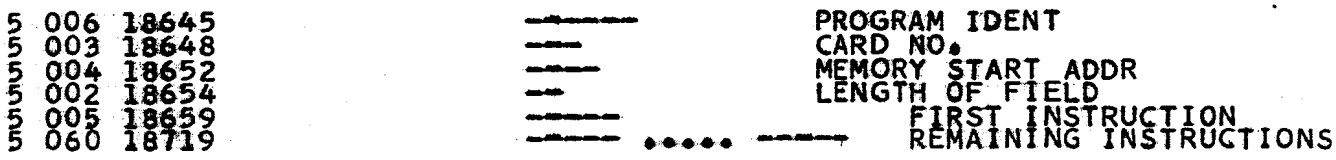
8LD01A 4-4-61

-7080-
TWO-CARD LOAD PROGRAM
FOR INPUT FROM 714 CARD READER

```
                                                          8LD01-1    FIRST LOAD CARD
     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
     ¤ 00004 EEM 3 14   0000 0&-0 ¤                           ENTER 7080 MODE
     ¤ 00009 SPC ,      0000      ¤                           RESET SPC TO BANK 0
     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤I¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
                     I
     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤V¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
     ¤ 00014 RD  Y     18720 Y720 ¤                           READ 8LD01-2 INTO 18720-799
     ¤ 00019 RCV U     18594 Y594 ¤
     ¤ 00024 TMT 9      0034      ¤                           TMT REMAINING OPS TO 18590-639
     ¤ 00029 TR  1     18594 Y594-¤--------0101
     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
                                    I
                                    I
  2 040 00069                A0008YY640B00068Y6457Y63720500RY6321Y724

  2 008 00077                 8LD01-1
  2 001 00078                ¤
  2 001 00079                #

                                                          DISPLACED PORTION OF 8LD01-1

     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
     ¤ 18594 NOP A      0008.......¤.I
     ¤ 18599 RD  Y     18640 Y640 ¤                           RD 1ST PROG CD INTO 18640-719
     ¤                            ¤
     ¤ 18604 SET B      0006      ¤
     ¤ 18609 LOD 8     18645 Y645 ¤                           PICK UP 6 CHAR PROG IDENT
     ¤ 18614 UNL 7     18637 Y637 ¤
     ¤                            ¤
     ¤ 18619 SEL 2      0500      ¤
     ¤ 18624 WR  R     18632 Y632 ¤                           TYPE ------ PROG IDENT
     ¤ 18629 TR  1     18724 Y724-¤--------0101               GO TO 8LD01-2 AREA
     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
                                    I
                                    I
  2 008 18637                 8LD01-1
  2 001 18638                ¤                         GROUP  MARK
  2 001 18639                #                         RECORD MARK
                                                          8LD01-2    SECOND LOAD CARD

     ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
  ..¤.18724 SET B      0002.......¤.I
  I ¤ 18729 LOD 8     18654 Y654 ¤                           PICK UP 2 DIGIT LENGTH OF FLD
  I ¤ 18734 TRZ N     18659 Y659 ¤                           IF 00-GO TO 1ST OP ON PROG CD
  I ¤                            ¤
  I ¤ 18739 UNL 7     18759 Y759 ¤                           SET VARIABLE ASU 12 SET ADDR
  I ¤ 18744 SET B      0004      ¤
  I ¤ 18749 LOD 8     18652 Y652 ¤                           PICK UP 4 DIGIT MEM START ADDR
  I ¤ 18754 UNL 7     18764 Y764 ¤                           SET VARIABLE RCV ADDR
  I ¤                            ¤
  I ¤ 18759 SET B 12   0000 0&00 ¤                           VARIABLE SET FOR SGL CHAR TMT
  I ¤ 18764 RCV U      0000      ¤                           RECIPIENT ADDR FOR CARD DATA
  I ¤ 18769 TMT 9 12  18655 YF55 ¤                           SEND FROM 1 TO 65 POS OF DATA
  I ¤                            ¤
  I ¤ 18774 NOP A      0008      ¤
  I ¤ 18779 SEL 2      0100      ¤                           SELECT 0100 CR
  I ¤ 18784 RD  Y     18640 Y640 ¤                           READ NEXT PROGRAM CARD
  +-¤-18789 TR  1     18724 Y724-¤--------0101               REPEAT DATA TRANSMIT ROUTINE
    ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
```

2 010 18799 8LD01-2

TYPICAL PROGRAM CARD FORMAT



```
                                                         8LD02A                4-4-61
                                                                 -7080-
                                                            TWO-CARD  LOAD PROGRAM
                                                         FOR INPUT FROM 729 TAPE DRIVES

                                                         8LD02-1    FIRST LOAD CARD
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑
        ⌑ 00004 EEM 3 14   0000 0&-0 ⌑                   ENTER 7080 MODE
        ⌑ 00009 SPC ,      0000      ⌑                   RESET SPC TO BANK 0
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑I⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑
                     I
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑V⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑
        ⌑ 00014 RD  Y     18720 Y720 ⌑                   READ 8LD02-2 INTO 18720-799
        ⌑ 00019 RD  Y     18640 Y640 ⌑                   RD 1ST PROG CD INTO 18640-719
        ⌑ 00024 TSA 0 03   0029 00B9-⌑-+-----0101
        ⌑                            ⌑ I
        ⌑ 00029 RCV U     18604 Y604.⌑.I
        ⌑ 00034 TMT 9      0044      ⌑                   TMT REMAINING OPS TO 18600-639
        ⌑ 00039 TR  1     18604 Y604-⌑-+-----0101
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑ I
                                       I
                                       I
   2 030 00069              B00068Y6457Y63720500RY6321Y724

   2 008 00077               8LD02-1
   2 001 00078              ⌑
   2 001 00079              #

                                                         DISPLACED PORTION OF 8LD02-1

        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑ I
        ⌑ 18604 SET B      0006.......⌑.I
        ⌑ 18609 LOD 8     18645 Y645 ⌑                   PICK UP 6 CHAR PROG IDENT
        ⌑ 18614 UNL 7     18637 Y637 ⌑
        ⌑                            ⌑
        ⌑ 18619 SEL 2      0500      ⌑
        ⌑ 18624 WR  R     18632 Y632 ⌑                   TYPE ------ PROG IDENT
        ⌑ 18629 TR  1     18724 Y724-⌑-+-----0101        GO TO 8LD02-2 AREA
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑ I
                                       I
                                       I
   2 008 18637               8LD02-1
   2 001 18638              ⌑                          GROUP  MARK
   2 001 18639              #                          RECORD MARK

                                                         8LD02-2    SECOND LOAD CARD

        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑ I
     ..⌑.18724 SET B      0002.......⌑.I
     I  ⌑ 18729 LOD 8     18654 Y654 ⌑                   PICK UP 2 DIGIT LENGTH OF FLD
     I  ⌑ 18734 TRZ N     18659 Y659 ⌑                   IF 00-GO TO 1ST OP ON PROG CD
     I  ⌑                            ⌑
     I  ⌑ 18739 UNL 7     18759 Y759 ⌑                   SET VARIABLE ASU 12 SET ADDR
     I  ⌑ 18744 SET B      0004      ⌑
     I  ⌑ 18749 LOD 8     18652 Y652 ⌑                   PICK UP 4 DIGIT MEM START ADDR
     I  ⌑ 18754 UNL 7     18764 Y764 ⌑                   SET VARIABLE RCV ADDR
     I  ⌑                            ⌑
     I  ⌑ 18759 SET B 12   0000 0&00 ⌑                   VARIABLE SET FOR SGL CHAR TMT
     I  ⌑ 18764 RCV U      0000      ⌑                   RECIPIENT ADDR FOR CARD DATA
     I  ⌑ 18769 TMT 9 12  18655 YF55 ⌑                   SEND FROM 1 TO 65 POS OF DATA
     I  ⌑                            ⌑
     I  ⌑ 18774 SEL 2      0202      ⌑                   SELECT 0202 TAPE DRIVE
     I  ⌑ 18779 RD  Y     18640 Y640 ⌑                   READ NEXT PROGRAM CARD
     I  ⌑ 18784 TSA 0 03  18789 Y7H9-⌑-+-----0101
     I  ⌑                            ⌑ I
     +-⌑-18789 TR  1      18724 Y724+⌑+I-----0101        REPEAT DATA TRANSMIT ROUTINE
        ⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑⌑
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2 010 18799 8LD02-2

TYPICAL PROGRAM CARD FORMAT

```
5 006 18645  ------          PROGRAM IDENT
5 003 18648  ---             CARD NO.
5 004 18652  ----            MEMORY START ADDR
5 002 18654  --              LENGTH OF FIELD
5 005 18659  -----               FIRST INSTRUCTION
5 060 18719  ----- ..... -----  REMAINING INSTRUCTIONS
```

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                                                              8LD10A                 4-4-61
                                                                       -7080-
                                                                  TWO-CARD  LOAD PROGRAM
                                                              FOR INPUT FROM 7502 CONSOLE CR

                                                              8LD10-1   FIRST LOAD CARD
        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
        ¤ 00004 EEM 3 14   0000 0&-0 ¤                      ENTER 7080 MODE
        ¤ 00009 SPC ,      0000      ¤                      RESET SPC TO BANK 0
        ¤¤¤¤¤¤¤¤¤¤¤¤¤I¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
                     I
        ¤¤¤¤¤¤¤¤¤¤¤¤¤V¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
        ¤ 00014 RD  Y      18720 Y720 ¤                     READ 8LD10-2 INTO 18720-799
        ¤ 00019 RCV U      18594 Y594 ¤
        ¤ 00024 TMT 9       0034      ¤                     TMT REMAINING OPS TO 18590-639
        ¤ 00029 TR  1      18594 Y594-¤-------0101
        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
                                        I
                                        I
   2 040 00069                   A0008YY640B00068Y6457Y63720500RY6321Y724

   2 008 00077                    8LD10-1
   2 001 00078                   ¤
   2 001 00079                   #

                                                              DISPLACED PORTION OF 8LD10-1

        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
        ¤ 18594 NOP A       0008.......¤.I
        ¤ 18599 RD  Y      18640 Y640 ¤                     RD 1ST PROG CD INTO 18640-719
        ¤                             ¤
        ¤ 18604 SET B       0006      ¤
        ¤ 18609 LOD 8      18645 Y645 ¤                     PICK UP 6 CHAR PROG IDENT
        ¤ 18614 UNL 7      18637 Y637 ¤
        ¤                             ¤
        ¤ 18619 SEL 2       0500      ¤
        ¤ 18624 WR  R      18632 Y632 ¤                     TYPE ------ PROG IDENT
        ¤ 18629 TR  1      18724 Y724-¤-------0101          GO TO 8LD10-2 AREA
        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
                                        I
                                        I
   2 008 18637                    8LD10-1
   2 001 18638                   ¤                      GROUP  MARK
   2 001 18639                   #                      RECORD MARK

                                                              8LD10-2   SECOND LOAD CARD

        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤ I
     ..¤.18724 SET B       0002......¤.I
     I  ¤ 18729 LOD 8      18654 Y654 ¤                     PICK UP 2 DIGIT LENGTH OF FLD
     I  ¤ 18734 TRZ N      18659 Y659 ¤                     IF 00-GO TO 1ST OP ON PROG CD
     I  ¤                             ¤
     I  ¤ 18739 UNL 7      18759 Y759 ¤                     SET VARIABLE ASU 12 SET ADDR
     I  ¤ 18744 SET B       0004      ¤
     I  ¤ 18749 LOD 8      18652 Y652 ¤                     PICK UP 4 DIGIT MEM START ADD
     I  ¤ 18754 UNL 7      18764 Y764 ¤                     SET VARIABLE RCV ADDR
     I  ¤                             ¤
     I  ¤ 18759 SET B 12    0000 0&00 ¤                     VARIABLE SET FOR SGL CHAR TMT
     I  ¤ 18764 RCV U       0000      ¤                     RECIPIENT ADDR FOR CARD DATA
     I  ¤ 18769 TMT 9 12  18655 YF55 ¤                     SEND FROM 1 TO 65 POS OF DATA
     I  ¤                             ¤
     I  ¤ 18774 NOP A       0008      ¤
     I  ¤ 18779 SEL 2       0101      ¤                     SELECT 0101 CONSOLE CARD READ
     I  ¤ 18784 RD  Y      18640 Y640 ¤                     READ NEXT PROGRAM CARD
     I--¤-18789 TR  1      18724 Y724-¤-------0101          REPEAT DATA TRANSMIT ROUTINE
        ¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤¤
```

2 010 18799 8LD10-2

TYPICAL PROGRAM CARD FORMAT

```
5 006 18645  ------                PROGRAM IDENT
5 003 18648  ---                   CARD NO.
5 004 18652  -----                 MEMORY START ADDR
5 002 18654  --                    LENGTH OF FIELD
5 005 18659  -----                    FIRST INSTRUCTION
5 060 18719  ----- ..... -----       REMAINING INSTRUCTIONS
```