```
BOOT     START    0        BOOTSTRAP LOADER FOR SIC/XE
.
. THIS BOOTSTRAP READS OBJECT CODE FROM DEVICE F1 AND ENTERS IT
. INTO MEMORY STARTING AT ADDRESS 80 (HEXADECIMAL). AFTER ALL OF
. THE CODE FROM DEVF1 HAS BEEN SEEN ENTERED INTO MEMORY, THE
. BOOTSTRAP EXECUTES A JUMP TO ADDRESS 80 TO BEGIN EXECUTION OF
. THE PROGRAM JUST LOADED.  REGISTER X CONTAINS THE NEXT ADDRESS
. TO BE LOADED.
.
         CLEAR    A        CLEAR REGISTER A TO ZERO
         LDX      #128     INITIALIZE REGISTER X TO HEX 80
LOOP     JSUB     GETC     READ HEX DIGIT FROM PROGRAM BEING LOADED
         RMO      A,S      SAVE IN REGISTER S
         SHIFTL   S,4      MOVE TO HIGH-ORDER 4 BITS OF BYTE
         JSUB     GETC     GET NEXT HEX DIGIT
         ADDR     S,A      COMBINE DIGITS TO FORM ONE BYTE
         STCH     0,X      STORE AT ADDRESS IN REGISTER X
         TIXR     X,X      ADD 1 TO MEMORY ADDRESS BEING LOADED
         J        LOOP     LOOP UNTIL END OF INPUT IS REACHED
.
. SUBROUTINE TO READ ONE CHARACTER FROM INPUT DEVICE AND
. CONVERT IT FROM ASCII CODE TO HEXADECIMAL DIGIT VALUE. THE
. CONVERTED DIGIT VALUE IS RETURNED IN REGISTER A. WHEN AN
. END-OF-FILE IS READ, CONTROL IS TRANSFERRED TO THE STARTING
. ADDRESS (HEX 80).
.
GETC     TD       INPUT    TEST INPUT DEVICE
         JEQ      GETC     LOOP UNTIL READY
         RD       INPUT    READ CHARACTER
         COMP     #4       IF CHARACTER IS HEX 04 (END OF FILE),
         JEQ      80           JUMP TO START OF PROGRAM JUST LOADED
         COMP     #48      COMPARE TO HEX 30 (CHARACTER '0')
         JLT      GETC     SKIP CHARACTERS LESS THAN '0'
         SUB      #48      SUBTRACT HEX 30 FROM ASCII CODE
         COMP     #10      IF RESULT IS LESS THAN 10, CONVERSION IS
         JLT      RETURN       COMPLETE. OTHERWISE, SUBTRACT 7 MORE
         SUB      #7           (FOR HEX DIGITS 'A' THROUGH 'F')
RETURN   RSUB             RETURN TO CALLER
INPUT    BYTE     X'F1'    CODE FOR INPUT DEVICE
         END      LOOP
```

Figure 3.3 Bootstrap loader for SIC/XE.