

USER'S GUIDE

MOD-MEP SERIES

EPROM

PROGRAMMERS

CUSTOMER SUPPORT

Your MOD-MEP programmer should perform well for you. If it does not, please contact your dealer or call the Customer Support Department at JDR Microdevices. The toll free number is **800-538-5000**. Please include a daytime phone number when writing.

PARTS LIST

Your MOD-MEP Programmer package should include the following:

- one User's Manual
- one EPROM ZIF Socket module
- one 5 1/4" Utility Diskette

The MOD-MEP programmers provide a versatility and ease of use superior to many other EPROM programmers on the market today. Many of the other programmers, for example, do not reliably program CMOS or the newer and larger EPROMs in the 27 series. The MOD-MEP programmers, on the other hand, are compatible with any 27 series EPROM or CMOS EPROM (2716-27C1024) and can even program some of the more commonly used EEPROMs.

The MOD-MEP programmers can copy ROM programs from disk files to EPROMs, or from one EPROM to another. In addition, the MOD-MEP programmers can "blank check" EPROMs before copying, and compare the copy with the original to verify accuracy after copying. They also have extensive memory manipulation commands that allow you to modify ROM programs once they are loaded into the buffer memory.

To help you use these many features, the MOD-MEP programmers include software that combines all the programming commands in one easy-to-use menu driven program. Simply locate the desired function (copy, save, etc.) on the menu and press the appropriate key on the keyboard: there is no need to memorize commands.

With their many programming features and ease of use, the MOD-MEP programmers will prove to be very effective programming tools. Thank you for purchasing an MOD-MEP Programmer.

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5 TROUBLESHOOTING GUIDE

Provides solutions to common programmer problems.

1 INTRODUCTION

MANUAL CONTENTS

The following instructions will help you install and operate your MOD-MEP programmer correctly; please read them carefully. A brief reference guide to the software is also included.

MANUAL ARRANGEMENT

This manual is divided into five parts:

- (1) Introduction
- (2) Installation
- (3) Using the Programmer
- (4) Quick-Reference Guide
- (5) Troubleshooting Guide

ITEMS REQUIRED FOR INSTALLATION

TOOLS

You will need a Phillips or a flatblade screwdriver in order to remove the computer cover and the expansion slot cover. You may also need a pair of small needle-nose pliers to install or remove jumper blocks.

ADAPTER CARD

The MOD-MEP programmers require the MOD-MAC adapter card.

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2 INSTALLATION

Installation of an MOD-MEP programmer consists of two parts: (1) installing the required **hardware** and, (2) installing the **MEP software**.

HARDWARE INSTALLATION

The MOD-MEP Programmer requires the MOD-MAC adapter card (sold separately). To install the MOD-MAC, follow the procedure described below in steps 1 - 5. If an MOD-MAC card is already installed in your system, ignore these steps.

INSTALLATION OVERVIEW

Hardware installation consists of the following five steps:

- (1) Remove the computer case cover
- (2) Check the MOD-MAC card jumper pins
- (3) Insert the MOD-MAC card
- (4) Replace computer case cover
- (5) Connect the ZIF socket cable

Caution: do not connect your printer or any other parallel device to the MAC card! Printers and other parallel devices may be damaged by the MAC card.

COMPUTER SYSTEM

The MOD-MEP programmers are designed for the IBM PC, PC-XT, PC-AT and compatibles with at least 384K of RAM installed. The speed setting of your system is unimportant since the MOD-MEP programmers can be configured for different microprocessor speeds.

DOS

The programmer software is designed to run under MS-DOS or IBM's PC-DOS (versions 3.0 or greater).

EPROM CHIPS

The MOD-MEP programmers can be used to program the following EPROMs:

EPROM	CMOS EPROM	EEPROM
2716	27C16	2816A
2716B	27C32	2817A
2732	27C64	2864A
2732A	27C128	
2732B	27C256	
2764	27C512	
2764A	27C010	
27128	29C011	
27128A	27C301	
27256	27C1024	
27256A		
27512		
27512A		
27011		
27010 (128K X 8)		
27100 (128K X 8)		
271024 (64K X 16)		

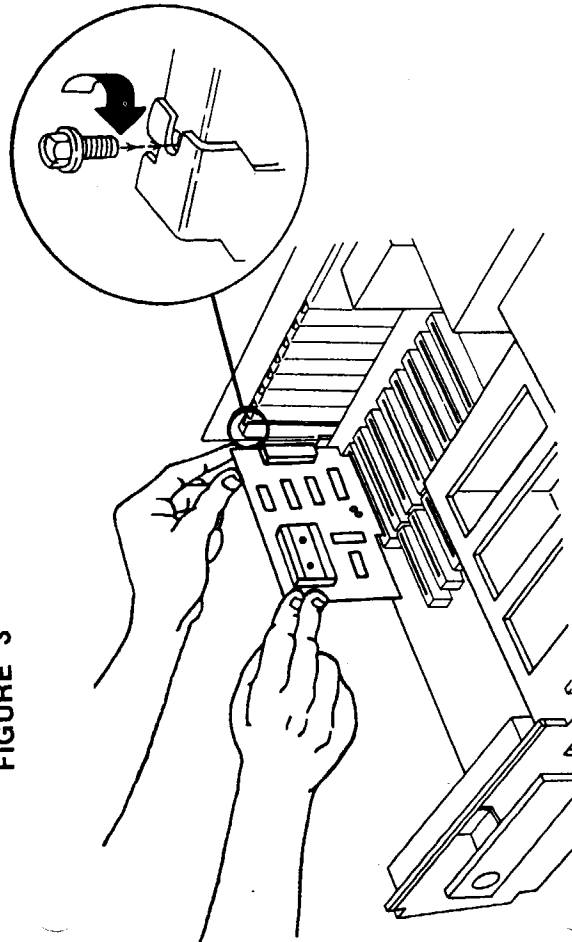
Note: The MOD-MAC is preset for the address 280H. If it conflicts with other cards in your system, you can change the address by following the procedure described on page 14.

STEP 3: INSERT THE MOD-MAC CARD

Next, select a slot for the MOD-MAC and remove the slot cover. Then, gently press the MOD-MAC all the way down into the slot (figure 3). Finally, fasten the card to the PC frame with the slot cover screw.

Caution: the MOD-MAC can be damaged if it is not inserted all the way down into the slot!

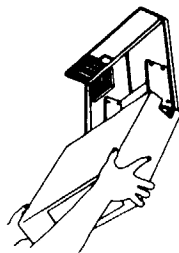
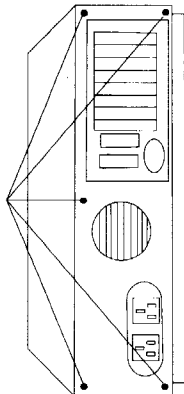
FIGURE 3



STEP 1: REMOVE THE CASE COVER

Begin installation by turning off the computer and removing the power cord. Then, if you have a flip-top case, press the buttons on the flip-top and lift up. If you have a slide case, remove the Phillips screws at the rear of the case and slide the cover forward (figure 1).

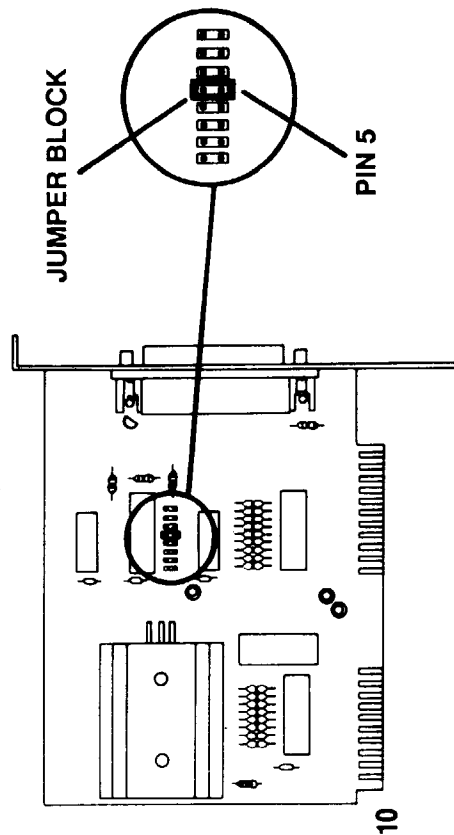
REMOVE THE SCREWS ON THE BACK OF THE CASE



STEP 2: CHECK THE JUMPER PINS

Before inserting the MOD-MAC card, check the JP1 jumper pins on the programmer card. There should be a jumper block on pin 5 (refer to figure 2).

FIGURE 2



SOFTWARE INSTALLATION

STEP 1: COPY FILES

If your system has floppy drives only, you must make and use a work-copy of the MOD-MEP utility diskette. **Do not use the original utility diskette!** If you attempt to use the original diskette, your monitor will display a "disk write" error message whenever you terminate the main program.

To make a work copy, insert your DOS diskette into Drive A. Then, insert a blank diskette into your B drive, and type the command **FORMAT B: /S** to format the diskette and copy the operating system onto the blank diskette. Next, copy the file "DEBUG.COM" from your DOS Utilities diskette onto the work diskette. Finally, copy all files from the MOD-MEP utility diskette onto the formatted work diskette by inserting the MOD-MEP utility diskette and using the **COPY A:*.* B:** command.

After copying these files, the work diskette can be used to boot up the system, and will automatically start the main program.

If your system has a hard disk, you must first create a separate directory. Then, copy all of the files from the MOD-MEP utility diskette into the new directory.

STEP 4: REPLACE THE CASE COVER

Next, slide the computer cover into place and fasten it with the Phillips screws.

STEP 5: CONNECT THE CABLE

Caution: do not connect the ZIF socket module to the MAC card while the computer is turned on. Such an installation can put the module in an "unknown" state, resulting in damage to the test chip and/or the module.

Finally, connect the ZIF socket to the MOD-MAC card using the included cable. The male cable end must be inserted into the MOD-MAC card; the female end must be connected to the ZIF socket module (figure 4).

MALE END

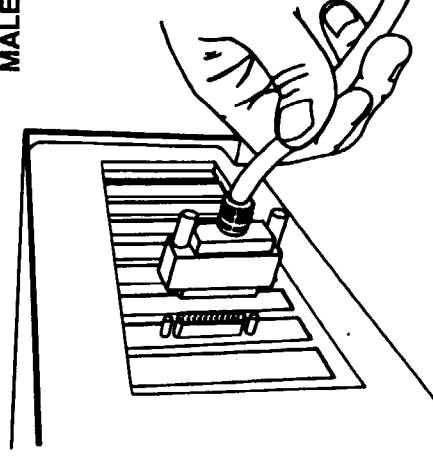
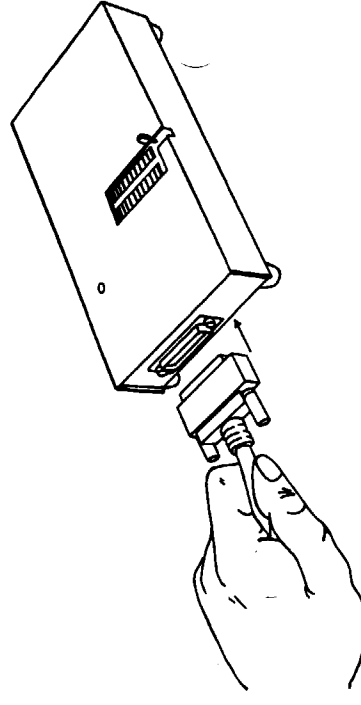


FIGURE 4

FEMALE END



Now, press <1> if you have placed a jumper block on the #1 pins on the MAC card, press <2> if the jumper block is placed on the #2 pins, press <3> if the jumper block is placed on the #3 pins, and so on. The addresses corresponding to these jumper block settings are:

JUMPER BLOCK	ADDRESS
PIN 1	200H
PIN 2	220H
PIN 3	240H
PIN 4	260H
PIN 5	280H
PIN 6	2A0H
PIN 7	2C0H
PIN 8	2E0H

Next, check the OSC frequency listed on the menu: this must match the motherboard speed setting of your computer. If the OSC frequency listed does not match that of your system, press <F>. The following submenu will appear onscreen:

```

SETUP PROGRAM
by Modular Circuit Technology
-----
CURRENT I/O ADDRESS IS : 280H PIN 5
PC TYPE & SPEED IS      : 8M

(A) CHANGE I/O ADDRESS.
(F) CHANGE OSC FREQUENCY.
<ESC> EXIT

CHANGE OSC FREQ
1.XT/4.77M  2.XT/6M      3.XT/8M      4.XT/10M
5.AT/6M     6.AT/8M     7.AT/10M     8.AT/12M
SELECT:
  
```

Thus, for example, if your computer is an XT operating at 8Mhz, press <3>; if it is an AT operating at 10Mhz, press <4>.

STEP 2: CONFIGURE THE MCT-MAC

Next, configure the adapter card by running the SETUP program. To do this, simply type **SETUP** and press the **ENTER** key. The following menu will appear:

```

SETUP PROGRAM
by Modular Circuit Technology
-----
CURRENT I/O ADDRESS IS : 280H PIN 5
PC TYPE & SPEED IS      : 8M

(A) CHANGE I/O ADDRESS.
(F) CHANGE OSC FREQUENCY.
<ESC> EXIT
  
```

Check the **current I/O address** listed on the menu: it should be 280H, matching the address setting on the MAC card. (The MAC card is shipped with a jumper block on the # 5 pins, which is address 280H). If the address of the card does not match the address listed on the menu, you can change the menu setting by pressing <A>. The monitor will then display the following:

```

SETUP PROGRAM
by Modular Circuit Technology
-----
CURRENT I/O ADDRESS IS : 280H PIN 5
PC TYPE & SPEED IS      : 8M

(A) CHANGE I/O ADDRESS.
(F) CHANGE OSC FREQUENCY.
<ESC> EXIT
CHANGE I/O ADDRESS
JUMPER IN WHICH POSITION (1-8):
  
```


HEXOBJ

Type the file name you wish to give the file and press **ENTER**. After you enter the file name, the program will then ask for the file format:

```
HEX FORMAT TO OBJECT CONVERTER  V1.0
for INTEL, MOTOROLA & TEK
By Modular Circuit Technology    SEP.1988
-----
HEX file name: input example
OBJ file name: output example
HEX file format (<I>INTEL/<M>MOTOROLA/
<T>TEKTRONICS):
```

Type in the letter corresponding to the type of hex file you are converting. A wait message will be displayed while the program converts the input file and records the converted file onto the destination disk. When the program completes its work, the screen will display:

```
HEX FORMAT TO OBJECT CONVERTER  V1.0
for INTEL, MOTOROLA & TEK
By Modular Circuit Technology    SEP.1988
-----
HEX file name: input example
OBJ file name: output example
HEX file format (<I>INTEL/<M>MOTOROLA/
<T>TEKTRONICS): I
Wait...
INTEL HEX to Binary converter
Convert complete
A> _
```

When complete, the HEXOBJ program will return you to DOS. You may now proceed with the startup and programming covered in the next chapter.

The HEXOBJ.EXE utility program converts ASCII formatted files to the HEX format required by the EPROM programmer. This is a useful feature because some assemblers (Intel's, for example) generate ROM programs in ASCII format. If you have such an assembler, you must use the HEXOBJ.EXE conversion program.

To use the conversion program, insert the Utility diskette into Drive A and type **HEXOBJ**. The screen will display:

```
HEX FORMAT TO OBJECT CONVERTER  V1.0
for INTEL, MOTOROLA & TEK
By Modular Circuit Technology    SEP.1988
-----
HEX file name:
```

Type the file name (including drive letter or and pathname) of the file to be converted and then press **ENTER**. The screen should now display:

```
HEX FORMAT TO OBJECT CONVERTER  V1.0
for INTEL, MOTOROLA & TEK
By Modular Circuit Technology    SEP.1988
-----
HEX file name: input example
OBJ file name:
```

SELECT EPROM TYPE

Your first step should always be to select the EPROM manufacturer, type, and voltage. Start by typing **M** from the main menu. The screen should display the following submenu:

```
MANUFACTURER :

1 : DON'T CARE      A : Oki
2 : AMD             B : Richo
3 : Exel            C : Rockwell
4 : Fujitsu         D : Seeq
5 : Hitachi         E : SGS
6 : Intel           F : Signetic
7 : Mitsubishi      G : TI
8 : NS              H : Toshiba
9 : NEC             I : UMC
                   J : VLSI
                   K : Xicor

<SPACE BAR> select type.
ESC> back to main menu.
SELECT NUMBER ? _
```

Type the number or letter of the manufacturer which matches your EPROM. The manufacturer should appear in the upper right of the main menu. Next, select the type by pressing the **space bar**. The screen should display the available types for your particular manufacturer.

3 USING THE PROGRAMMER

START-UP

Note: The MODA-MEP-16 has a switch on the lower left side of the ZIF socket unit which has to be switched on before you attempt to run the software. The green power light signals the unit is switched on. All other models do not have this switch.

The file EPP-XX.EXE is the central program of the EPROM Programmer software (XX is the number of gangs or sockets your model has). Enter the EPP-XX.EXE program by typing **EPP-XX** (single digits must be preceded by a 0) and pressing ENTER, or by booting the system with a utility boot diskette. The screen should display:

```
MCT E(EPROM) PROGRAMMER V1.0      *MFG:      *ZIP :
MODEL: MCT-MEP-XX (C) SEP 1988    *TYP:      *PROG:
By Modular Circuit Technology      #Ypb:      #Vcc :

=====
MAIN MENU :

1. DIR
2. LOAD OBJ FILE TO MEMORY BUFFER
3. SAVE MEMORY BUFFER TO DISK
4. DEBUG MEMORY BUFFER
5. GANG SIZE
6. PROGRAMMING ALGORITHM
7. SET MEMORY BUFFER SIZE
M. MANUFACTURER
T. TYPE
B. BLANK CHECK
P. PROGRAM  A. AUTO
R. READ      V. VERIFY
C. COMPARE  D. DISPLAY & EDIT
Q. QUIT

SELECT WHICH NUMBER ? _
```

Check to make sure that the values displayed in the upper right of the menu match the specifications of your EPROM. If they do, press **ESC** to return to the main menu.

SELECT GANG SIZE

After selecting the correct EPROM manufacturer and type, press **5** to select the number of ZIF sockets you wish to use. After pressing 5, the screen will display the following submenu:

GANG SIZE:

1: 1 socket
2: 2 sockets
3: 3 sockets
4: 4 sockets

<ESC> back to main menu.

SELECT NUMBER? _

Type in the number of sockets you are going to use, then press **ESC** to return to main menu. The number of sockets will be displayed in the upper right of the main menu.

Note: with the MOD-MEP-16, you cannot select the gang size. The MOD-MEP-16 will execute commands (except for the COMPARE command) on all 16 sockets.

TYPE :

1 : 2716B	A : 27256
2 : 2716/9716	B : 27512
3 : 2732/9732	C : 2817A
4 : 2732A/9732A	D : 2864A/B
5 : 2764/9764	E : 2764AF/APC
6 : 2764A	F : 27128AF/APC
7 : 9864	G : 27256F/PC
8 : 27128	H : 27C256
9 : 97128A	I : 27C256F/PC
	J : 27512PC
	K : 27C512
	L : 27C512F/PC

<ESC> back to main menu.

SELECT NUMBER ? _

Type in the number or letter that corresponds the type of your EPROM. The type and voltages will automatically be selected and displayed at the upper right of the main menu:

*MFG : AMD	*ZIP : 1
*TYP : 27512	*PROG : intelligent
*Vpp : 13.0V	*Vcc : 6.0V

Note: EPROM chips are not always clearly labelled; it may be difficult, for example, to determine whether the EPROM you wish to program is a 2732 requiring 25V, or whether it is a 2732A, which requires 21V. If you encounter this problem, try to program the EPROM at the lower voltage first; if this does not work, then erase the EPROM and try the higher EPROM voltage.

LOAD :
Enter file name to be loaded :
—
<ESC> back to main menu.

Type in the name of the file you wish to transfer to the memory buffer. You must include the drive letter and any path names. After the file name has been entered, the screen should display the following submenu:

LOAD :
Enter file name to be loaded :
A:TEST
Enter buffer starting address :
—

You must now specify the memory buffer location (address) to which the disk file will be sent. Type **0000** if you wish the disk file to be transferred to the very beginning of the memory buffer. After you enter the address (in hex), the screen will display:

LOAD :
Enter file name to be loaded :
A:TEST
Enter buffer starting address :
0000
Loading now....
Ok !
Press any key to continue. —

INSERT THE EPROMS INTO ZIF SOCKETS

After you have selected the gang size, insert the EPROMs into the ZIF sockets starting with the socket labelled 1 and continuing with the socket labelled 2 and so on until all chips have been inserted. There must be no empty sockets between the first and last chips. With the notch on top, the lower left pin should go into the pin slot labelled GND (refer to figure 5).

Caution: The notch-end of the EPROM must not be inserted at the end of the ZIF socket labelled GND! The MOD-MEP-16 has a diagram in between the socket banks showing chip orientation instead of the GND label.

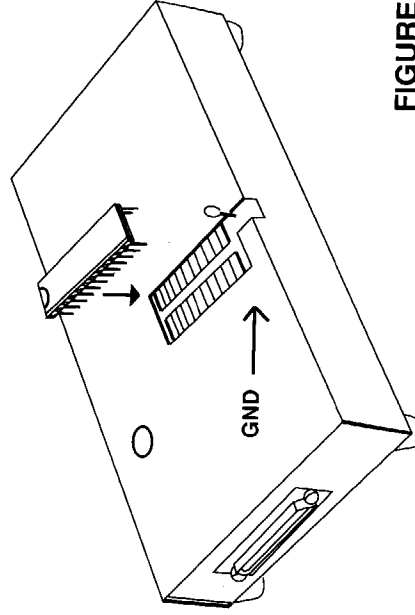


FIGURE 5

LOAD DISK FILE INTO BUFFER

After you have inserted the target EPROM into the ZIF socket, transfer your disk file to the memory buffer (The file must be in hex format; refer to page 16.). To do this, press 2: the following submenu will appear:

The disk file is now in the memory buffer. Press any key to return to the LOAD submenu, then press **Esc** to return to the main menu.

COPY BUFFER CONTENTS TO EPROM

After loading the disk file into the memory buffer, and inserting the chip, you can now program the EPROM by typing **A**. The **A** function will automatically conduct a blank check before programming to determine whether the EPROM is blank and free of defects.

After typing **A**, the following submenu will be displayed:

```
AUTO :  
CHIP STARTING ADR : 0000  
CHIP END ADR      : FFFF  
BUFFER STARTING ADR : 0000  
BUFFER CHECK SUM  :
```

You may have to wait for the programmer to compute the check sum. Do not type anything until a number is displayed for the buffer check sum. The submenu should then look like this:

```
AUTO :  
CHIP STARTING ADR : 0000  
CHIP END ADR      : FFFF  
BUFFER STARTING ADR : 0000  
BUFFER CHECK SUM  : BA1E  
Ready (Yes/Even/Odd/C<ESC>)? _
```

Type **Y**. The screen will now display:

24

```
AUTO :  
CHIP STARTING ADR : 0000  
CHIP END ADR      : FFFF  
BUFFER STARTING ADR : 0000  
BUFFER CHECK SUM  : BA1E  
Ready (Yes/Even/Odd/C<ESC>)?Y  
Blank checking . . . . .
```

During the blank check, the chip status for each chip will be displayed in the submenu:

```
No.1 Error at XXXX  
No.2 OK!  
No.3 OK!  
No.4 OK!
```

The error message for socket No. 1 indicates that the chip has already been programmed. If the EPROM is blank, but defective, the programmer will attempt to copy the buffer onto the defective EPROM. However, at the end of the programming process, the programmer will compare EPROM contents with the memory buffer. Any discrepancies between buffer and EPROM will be displayed:

```
Verifying . . .  
No.1 ERROR AT XXXX  
No.2 OK!  
No.3 OK!  
No.4 OK!
```

This completes the programming process. To program other EPROMs, wait for the busy LED to shut off, then replace the EPROMs and type **Y**.

25

1. DIR

Press **1** to list the files in a specified directory or disk. After pressing **1**, the screen will display:

DIR command format is :
[d:][path][filename][.ext][P][W]
or press <ESC> to return to main menu

Type in the pathname or the drive letter of the directory, and press **ENTER**. Press **ESC** to return to the main menu.

2. LOAD OBJ FILE INTO MEMORY BUFFER

Press **2** to load data from a disk file into the memory buffer. When prompted, type in the complete name of the file to include the drive letter and any path names, then press **ENTER**. Next, type in the address at which you want to store the file in the buffer and press **ENTER**. Press **ESC** to return to the main menu. The program will load the file and display the following:

LOAD :
Enter file name to be loaded :
D:EXAMPLE
Enter buffer starting address :
0000
Loading now. . .
OK!
Press any key to continue.

4 QUICK REFERENCE GUIDE

The following reference guide describes each of the commands found in the main menu. The commands will be described in the order in which they are listed in the menu:

```
MCT E(E)PROM PROGRAMMER V1.0      *MFG:      *ZIP :
MODEL: MCT-MEP-XX (C) SEP 1988    *TYP :      *PROG :
By Modular Circuit Technology      #Vpp :      #Vcc :

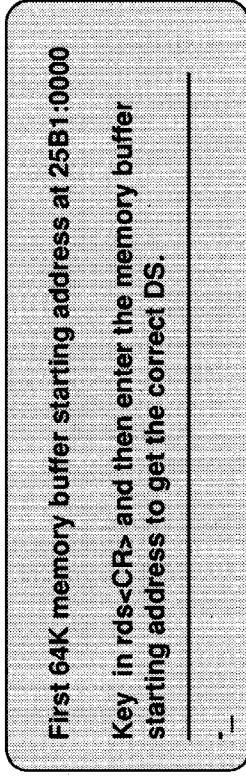
=====
MAIN MENU :
=====
1. DIR
2. LOAD OBJ FILE TO MEMORY BUFFER
3. SAVE MEMORY BUFFER TO DISK
4. DEBUG MEMORY BUFFER
5. GANG SIZE
6. PROGRAMMING ALGORITHM
7. SET MEMORY BUFFER SIZE
M. MANUFACTURER
T. TYPE
B. BLANK CHECK
P. PROGRAM      A. AUTO
R. READ        V. VERIFY
C. COMPARE     D. DISPLAY & EDIT
Q. QUIT

SELECT WHICH NUMBER ? _
```

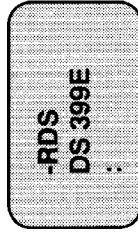
Note: The MOD-MEP-16 does not have a command **5** or **D**. Use command **4 (DEBUG)** to display and edit the memory buffer for this model.

4. DEBUG MEMORY BUFFER

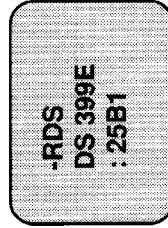
Press **4** to debug and modify the memory buffer. This function uses the DEBUG.COM program included with your version of DOS. The screen will display:



Type **RDS** then press **ENTER**. The screen should now display:



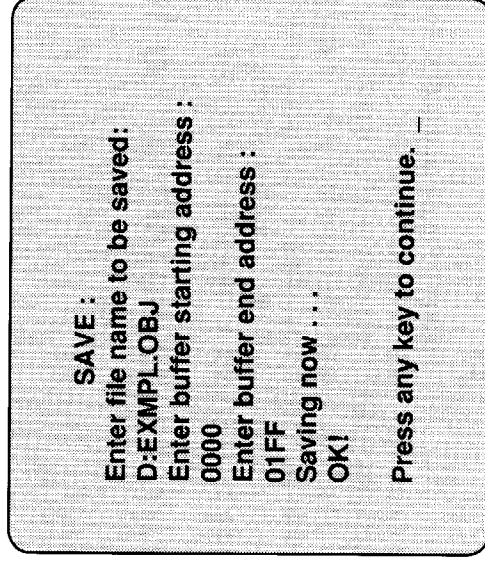
Type in the starting address given in the first line.



You may now proceed with the DEBUG program procedure. Refer to your DOS reference manual for more information.

3. SAVE MEMORY BUFFER TO DISK

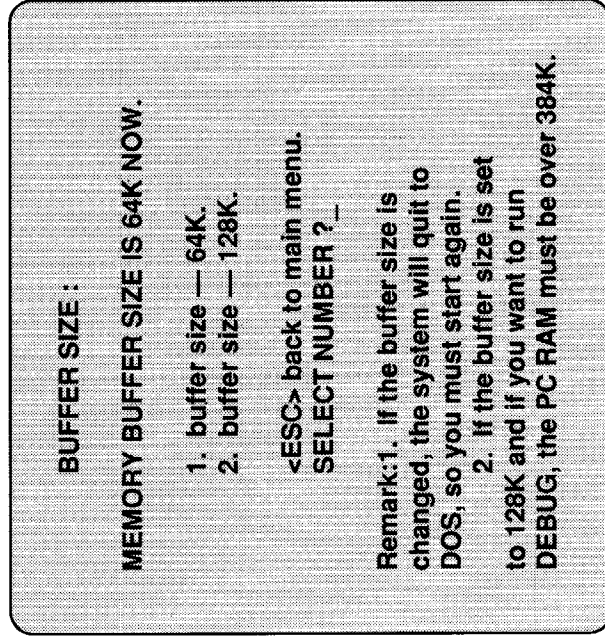
Press **3** to save data from the memory buffer to a disk file. When prompted, type in the complete name under which you want the file to be saved, including drive letter and any pathnames, then press **ENTER**. Next, type in the starting address of the portion of the buffer you want to save, and press **ENTER**. Then, type in the end address of the portion of the buffer you want to save, and press **ENTER**. The screen should now display:



The buffer has been saved when the **OK!** message appears. Press any key then press **ESC** to return to the main menu.

7. SET MEMORY BUFFER SIZE

Press **7** to select memory buffer size. This function lets you choose a 64K or 128K memory buffer size. After pressing **7**, the screen should display:



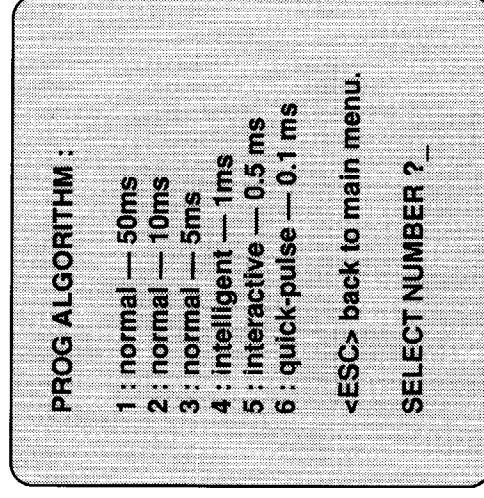
If you change the buffer size, the program will return you to DOS after pressing **ESC**. You must restart the program by typing EPP-XX and pressing **ENTER**. You must have at least 384K of RAM to run DEBUG if you select the 128K buffer size.

5. GANG SIZE

Press **5** to select the number of ZIF sockets you are going to use.

6. PROGRAMMING ALGORITHM

The programming algorithm is automatically selected when you change the manufacturer or type. This function allows you to manually set the programming algorithm. From the main menu, press **6** and the screen should display the submenu:



Type in the number that corresponds to the algorithm of your choice (refer to the Appendix for Algorithm flowcharts). The algorithm will be displayed in the upper right of the main menu. Press **ESC** to return to the main menu.

T. TYPE

Press **T** to select the chip type. After pressing **T**, the screen will display the available types for the selected manufacturer:

TYPE :	
1 : 2716B	A : 27256
2 : 2716/9716	B : 27512
3 : 2732/9732	C : 2817A
4 : 2732A/9732A	D : 2864A/B
5 : 2764/9764	E : 2764AF/APC
6 : 2764A	F : 27128AF/PC
7 : 9864	G : 27256F/PC
8 : 27128	H : 27C256
9 : 97128A	I : 27C256F/PC
	J : 27512PC
	K : 27C512
	L : 27C512F/PC

<ESC> back to main menu.
SELECT NUMBER ? _

When you change the type number, the programming algorithm, Vpp, and Vcc will also be changed according to the manufacturer and type. Verify the values displayed in the upper right of the main menu.

M. MANUFACTURER

Type **M** to select the manufacturer of the chip you are programming. After typing **M**, the screen will display:

MANUFACTURER :	
1 : DON'T CARE	A : Oki
2 : AMD	B : Ricoh
3 : Exel	C : Rockwell
4 : Fujitsu	D : Seeq
5 : Hitachi	E : SGS
6 : Intel	F : Signetic
7 : Mitsubishi	G : TI
8 : NS	H : Toshiba
9 : NEC	I : UMC
	J : VLSI
	K : Xicor

<SPACE BAR> select type.
<ESC> back to main menu.
SELECT NUMBER ? _

Select the manufacturer by typing the corresponding number or letter. After selecting the manufacturer, the new manufacturer will be displayed in the upper right of the main menu, and all other chip information will become blank. These values will automatically be set after you select the type. You can select the type from the manufacturer submenu by pressing the space bar. The available types for the selected manufacturer will then be displayed (refer to the following section on selecting type).

P. PROGRAM

Press **P** to program data from the memory buffer to the EPROMs. After you press **P**, the screen will display:

PROGRAM :

CHIP STARTING ADR : 0000
CHIP END ADR : 3FFF
BUFFER STARTING ADR : 0000
BUFFER CHECK SUM : C000

Ready (Yes/Even/Odd/C/<ESC>) ? _

The "CHIP STARTING ADR" and "CHIP END ADR" determine the range in the chip to which the data from the memory buffer starting at "BUFFER STARTING ADR" will be programmed. If you wish to change these addresses, press **C**. Otherwise, press **Y**, and the programming will start.

If the EPROM is blank, and free of defects, the programmer will burn the buffer contents into the EPROM. The programming message will appear on the screen as well as scrolling numbers at the bottom right of the submenu. These numbers represent the transfer of buffer content to the EPROM. When the transfer is complete, this message will be displayed:

B. BLANK CHECK

Type **B** to conduct a blank check to determine if the EPROMs are blank. After pressing **B**, the screen will display the following submenu:

BLANK CHECK :

CHIP STARTING ADDR : XXXX
CHIP END ADDR : XXXX
BUFFER STARTIN ADR : XXXX
BUFFER CHECK SUM : XXXX

Ready to check (Y/C/<ESC>) ? _

Type **Y** to start the blank check, **C** to change the addresses, or **ESC** to return to the main menu. If a chip fails the test, the first address that is not blank will be displayed and the programmer will continue with the next chip. Otherwise, the "OK!" message will be displayed.

Ready to check (Y/C/<ESC>) ? Y

Blank checking

NO.1 — Error at 0
NO.2 — OK!
NO.3 — OK!
NO.4 — OK!

R. READ

Press **R** to read data from the EPROM location specified by "CHIP STARTING ADR" and "CHIP END ADR" into the memory buffer starting at "BUFFER STARTING ADR."

Note: the programmer will read from the chip in the ZIF socket labelled "MASTER." Make sure the chip which you want to read is in this socket.

After pressing R, the screen will display:

```
READ :  
CHIP STARTING ADR : 0000  
CHIP END ADR      : 3FFF  
BUFFER STARTING ADR : 0000  
BUFFER CHECK SUM   : 4D37  
Ready (Yes/Even /Odd/C/<ESC>) ? _
```

If you wish to change the specified addresses, type **C**. Otherwise type **Y**. The submenu will display the READING message, and, in the lower right, scrolling numbers representing the transfer of contents from the EPROM to the buffer. When the reading is complete, the OK! message will be displayed.

```
Verifying .....  
No.1 --- OK  
No.2 --- OK  
No.3 --- OK  
No.4 --- OK
```

This completes the EPROM programming process. If you wish to program other EPROMs, wait for the busy LED to shut off, then replace the EPROMs with new ones, and type **Y**. After you have finished, press **Esc** to return to the main menu.

A. AUTO

Press **A** to execute function B (Blank Check), and function P (Program). Refer to page 24 for a complete description of the Auto function.

C. COMPARE

Press **C** to compare a segment of data in the chip with a segment of data in the memory buffer. The difference between COMPARE and VERIFY is that COMPARE will display the contents of both the chip and buffer.

Note: the programmer will compare only the chip in the socket labelled "MASTER."

After pressing **C**, the screen will display:

```
COMPARE :  
CHIP STARTING ADDR : 0000  
CHIP END ADDR      : 3FFF  
BUFFER STARTING ADDR : 0000  
BUFFER CHECK SUM   : 4D27  
Ready (Yes/Even/Odd/C/<ESC>)? _
```

Press **C**, if you wish to change the address ranges. Otherwise, press **Y**. The screen will display the differences in the format:

CHIP ADDR: CHIP DATA - (BUFFER ADDR: BUFFER DATA)

```
Error at :  
Press <ESC> to terminate display.  
-----  
0000:ff-(0000:23) 0001:ff-(0001:45) 0002:ff-(0002:67)  
Press any key to back to main menu.
```

V. VERIFY

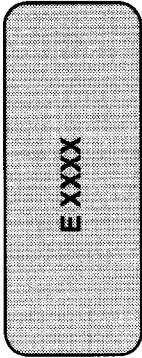
Press **V** if you wish to compare a section of chip memory with a section of the memory buffer. This is usually done to confirm the accuracy of the programming, or to determine the program loaded into the EPROMs. After pressing **V**, the screen should display:

```
VERIFY :  
CHIP STARTING ADDR : 0000  
CHIP END ADDR      : EFFF  
BUFFER STARTING ADDR : 0000  
BUFFER CHECK SUM   : 4D37  
Ready (Yes/Even/Odd/C/<ESC>)? _
```

If you want to change the address ranges, press **C**. Otherwise, press **Y** and the screen should display

```
Verifying . . . .  
NO.1 -- OK  
NO.2 -- OK  
NO.3 -- OK  
NO.4 -- OK
```

To edit the memory buffer at address XXXX (Hex), type:



The screen will display the address and the current contents of that address. A blinking underline cursor will prompt you to enter a value for that address. After entering a value, the contents of the next address will be displayed along with the blinking cursor prompt. This will continue for each value you enter. To stop, press **ENTER**. To return to the main menu, press **Q** then press **ENTER**.

Note: The MOD-MEP-16 does not have a command **D**. Use command 4 (DEBUG) to display and edit the memory buffer for this model.

Q. QUIT

Press **Q** to exit the main menu and return to DOS. If you are in one of the submenus, you must first exit that submenu and return to the main menu; then press **Q** to exit.

While the differences are being displayed, you can press the **Ctrl** and the **S** keys simultaneously to hold the display. Press **Esc** to terminate the display, then press any key to return to the main menu. If no errors are found, the **OK!** message will be displayed.

D. DISPLAY & EDIT

Press **D** to display and edit the contents of the memory buffer. After pressing **D**, the screen will display:

Command syntax

Dump memory

Enter

Quit to MENU

Help command

: D[start address,end address]

: E[start address]

: Q

: H or?

Note: { ... }

[...]

Address limit

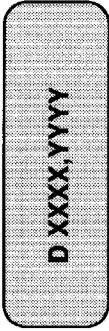
Comma (,) may be replaced by blank, dot or TAB

: Contain must be specified.

: Contain optional.

: 131072 (1FFFF Hex)

To display a segment of the memory buffer from address XXXX (Hex) to YYYY (Hex), type:

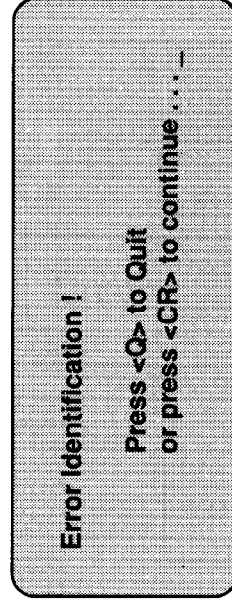


SOLUTION:

The programmer card may be improperly installed or may have a short circuit. Switch the computer off and push the card into the slot to make sure it is firmly seated. Turn the computer on again. If the problem persists, switch the computer off, remove the programmer card from the motherboard, and turn the computer on again. If there is no longer any clicking sound when the card is removed, there might be a problem in the card. Contact your dealer or call the Customer Support Department at JDR Microdevices for further assistance.

PROBLEM:

When executing EPP-XX, or when booting up, the screen displays the following message:



SOLUTION:

Make sure that the card is fully seated in its slot. Check that cables are plugged in correctly. Software will not run on programmers made by other manufacturers. For the MOD-MEP-16, make sure the switch is on and the green power light is on.

5 TROUBLESHOOTING

We have provided the following troubleshooting guide to help you overcome some of the more commonly experienced installation/setup problems. This troubleshooting guide, however, is not intended to be a repair manual. If you encounter problems other than those described here, please contact your dealer or the Customer Support Department at JDR Microdevices. The toll free number is **800-538-5000**.

INSTALLATION PROBLEMS

PROBLEM:

When the computer is turned on, nothing happens; the power supply fan does not turn and nothing appears on the monitor screen.

SOLUTION:

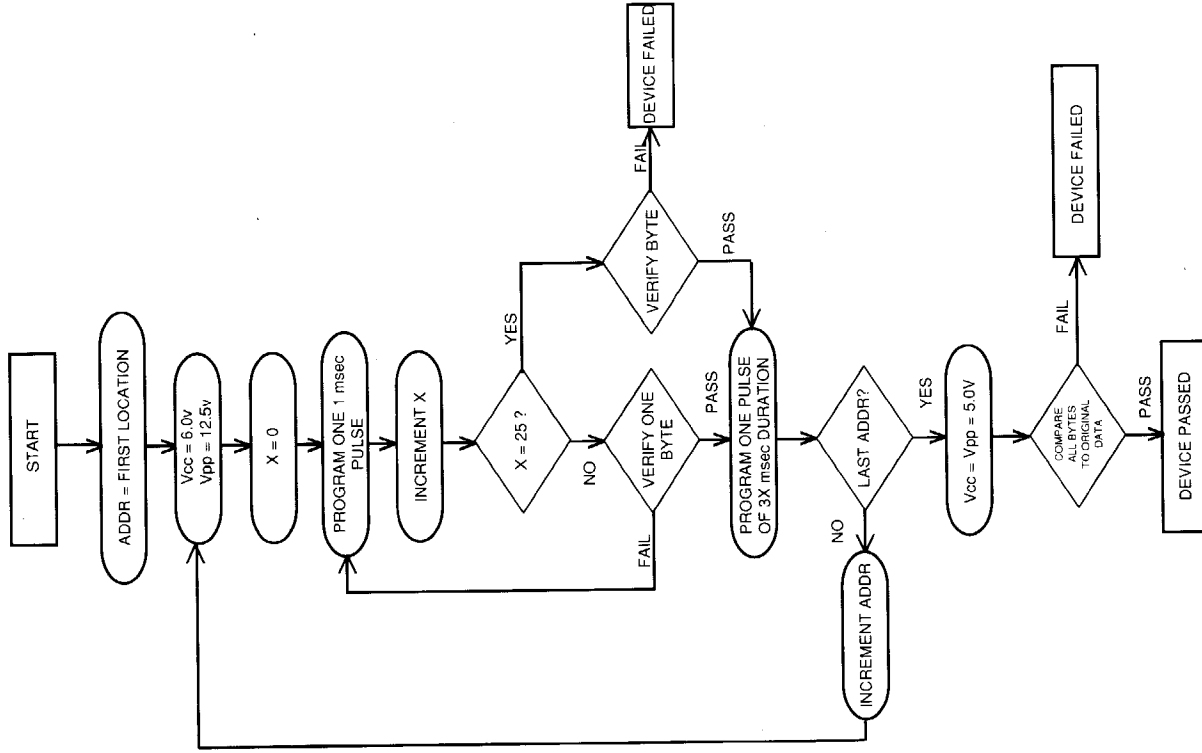
Check the power cord. Make sure that one end of the cord is securely inserted into a power outlet and the other end is pressed firmly into the power supply. If you have a surge protector, make sure that it is switched on.

PROBLEM:

When the computer is turned on, the power supply fan spins and there is a clicking sound from the power supply.

APPENDIX

INTEL INTELLIGENT PROGRAMMING FLOW CHART



OPERATIONAL PROBLEMS

PROBLEM:

During each attempt to exit, the computer fails to exit, but instead displays the following error message:

**Write protect error writing drive A
Abort, Retry, Fail?**

SOLUTION:

You must not use the original utility diskette. The original diskette is write-protected and will not allow EPP-XX pre-exit disk write activity. Make a work copy of the original and use the work copy.

PROBLEM:

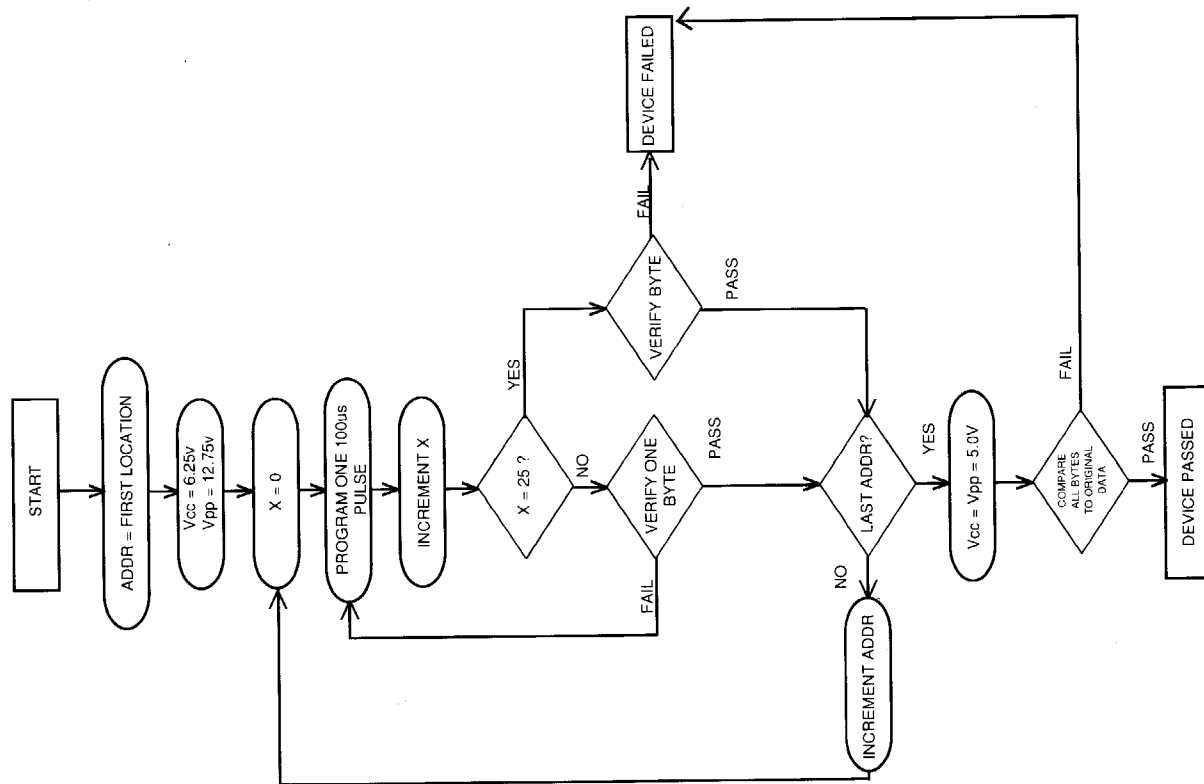
When trying to execute a command, the screen displays:

**Type not selected
Press any key to quit**

SOLUTION:

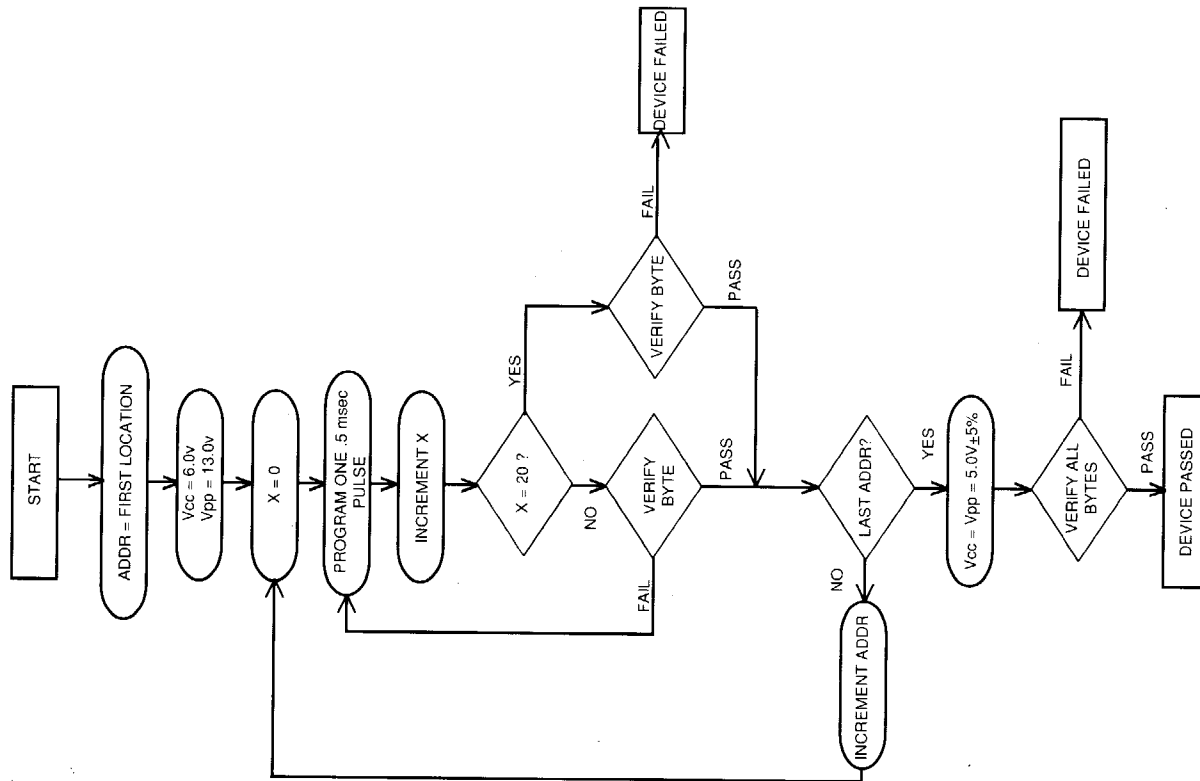
You must enter an EPROM type before using any of the EPP-XX functions. From the main menu, press **T** to select an EPROM type.

INTEL QUICK-PULSE PROGRAMMING FLOW CHART



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NATIONAL SEMICONDUCTOR INTERACTIVE PROGRAMMING FLOW CHART



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