

DIAGNOSTIC PROGRAM PROCEDURES

**HIGH MEMORY ADDRESS TEST
FOR HP 2116B COMPUTER**



HP Order No. HP 20404 (current version)



11000 Wolfe Road
Cupertino, California 95014

Manual of Diagnostics
HP 02116-91764

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HIGH MEMORY ADDRESS TEST

The High Memory Address Test tests the memory address register and a specified section of core. The program is divided into three main sections. The first section selects the area of core to be tested by using the switches to set starting and ending addresses. The second section loads the test pattern into core, and the third section reads back what has been stored in memory and tests it for errors. If an error is detected, the program halts with the error in the B-register and the correct data in the A-register.

HARDWARE CONFIGURATION

This diagnostic test is for the 2116B computer.



Program Organization

The High Memory Address Test occupies location 0100 to 0134 and tests locations from 0144 to the upper limit of memory. Together with the Low Memory Address Test, this test makes it possible to test the operation of all locations in core.

The program begins by loading the starting address of the core area to be examined from the switch register. The routine then halts while the end address is loaded from the switch register.

The program then stores a number in the address equal to that number. After all addresses have been loaded, the program returns to the starting address and reads back what has been stored. If no errors are detected, the program returns to the starting address and makes another pass through core.

If an error is detected, the test halts the computer with the error in the B-register and the correct address in the A-register.

Operating Procedure

The program is loaded from paper tape with the photoreader. With the loader in core, load the program as follows:

- a. Set the SWITCH REGISTER to 0m7700.
- b. Press LOAD ADDRESS.
- c. Place tape in photoreader.
- d. Turn on photoreader.
- e. Set ENABLE-PROTECT Switch to ENABLE.
- f. Press RUN.
- g. Set ENABLE-PROTECT Switch to PROTECT.

Executing

- a. Set the SWITCH REGISTER TO 0100.
- b. Press LOAD ADDRESS.
- c. Set the SWITCH REGISTER to the starting address of the area of core to be tested.
- d. Press RUN (the computer halts).
- e. Set the SWITCH REGISTER to the end address of the area to be tested.
- f. Press RUN.

The computer test runs until an error is encountered or until the test is stopped. When an error has been encountered, record the contents of the A- and B-registers, then press RUN. The program continues until the next error halts the computer or until the test is stopped.

MEMORY ADDRESS TEST

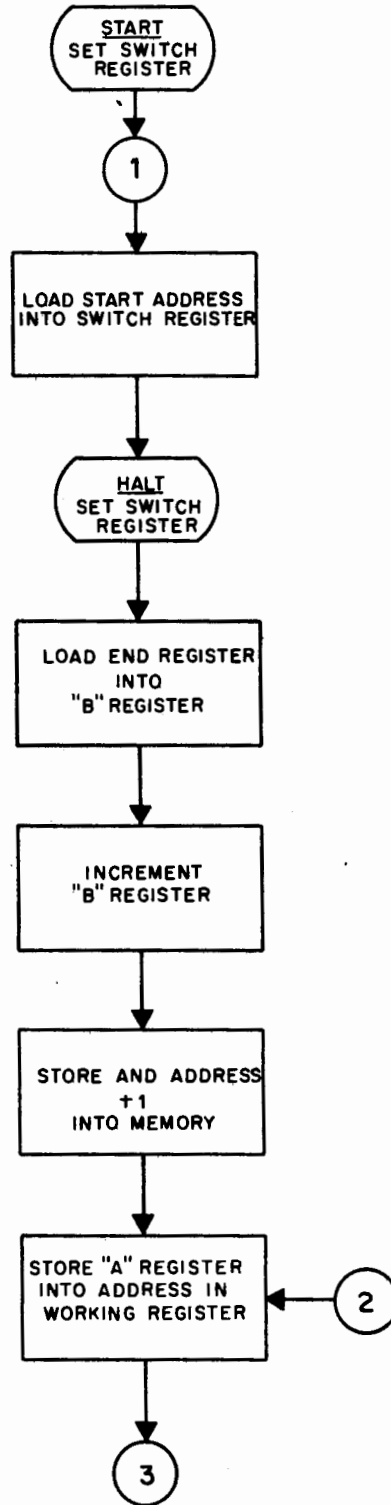


Figure HMA-1. Memory Address Test Flowchart (1 of 2)

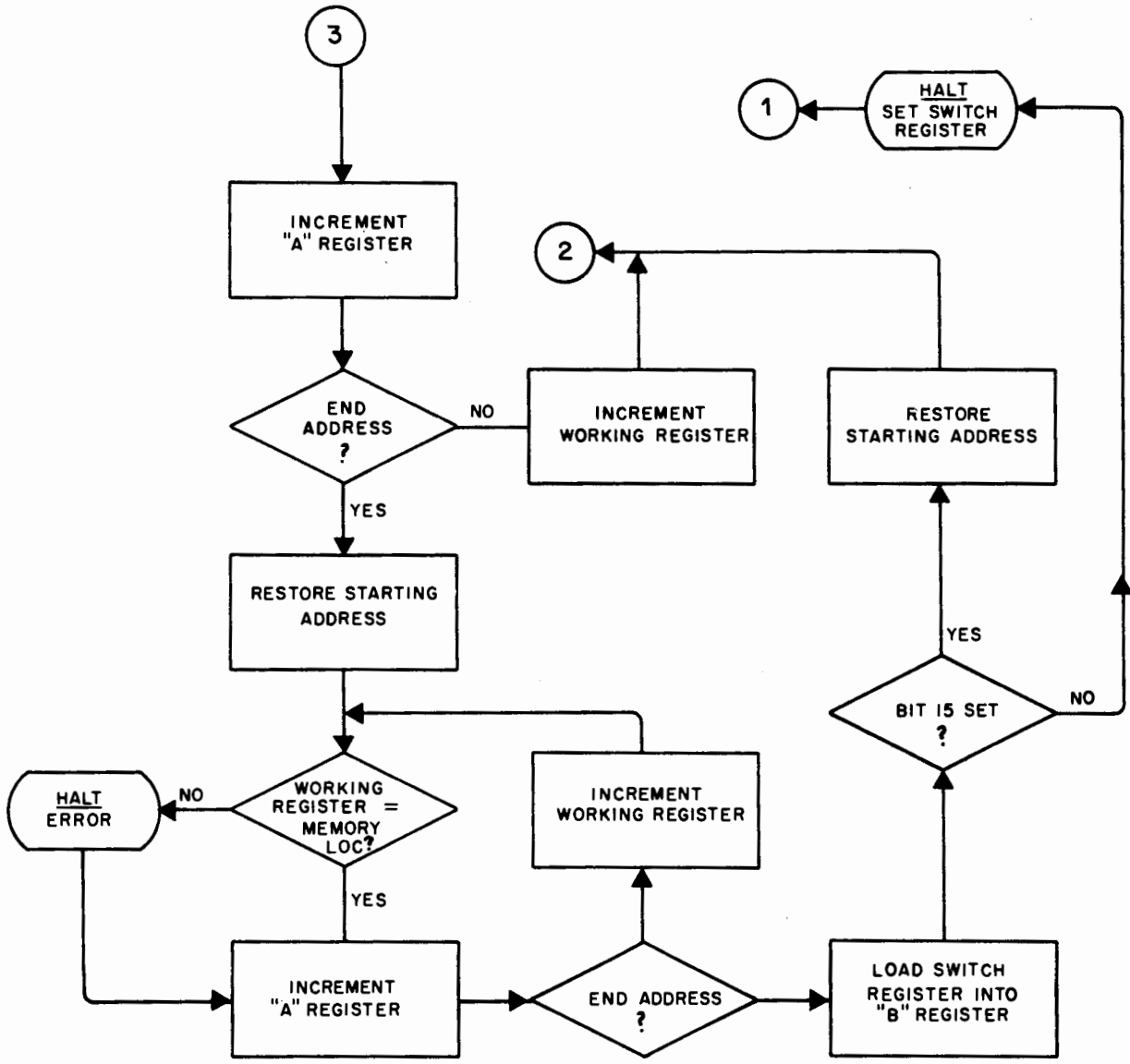


Figure HMA-1. Memory Address Test Flowchart (2 of 2)

LISTING

PAGE 0001

0001		ASPB,A,B,L,T
BEGN	000100	
WRT1	000107	
RED1	000115	
RED2	000117	
GOOD	000123	
FIN1	000131	
NEW1	000137	
SADR	000141	
KADR	000142	
LADR	000143	
** NO ERRORS*		




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0001          ASPB,A,B,L,T
0002*****MEMORY ADDRESS TEST*****
0003 00100          ORG 100B
0004 00100 102501  BEGN LIA 01          LOAD STARTING ADDR.OF BLOCK INTO
0005 00101 070141          STA SADR          STARTING ADDR. TO WORKING STORAG
0006 00102 070142          STA RADR          ST. ADDR. RESTORE LOCN.
0007 00103 102001          HLT 01          PUT LAST ADDR. OF BLOCK INTO B
0008 00104 106501          LIB 01          LOAD LAST ADDR. OF BLOCK INTO B
0009 00105 000004          INB          LAST ADDR.+1
0010 00106 074143          STB LADR          STORE LAST ADDR.+1
0011 00107 170141  WRT1 STA SADR,I          STORE ADDRESS
0012 00110 002004          INA          INCR. TO NEXT ADDR.
0013 00111 050143          CPA LADR          IS WRITE LOOP COMPLETE?
0014 00112 024115          JMP RED1          JMP TO READ LOOP
0015 00113 034141          ISZ SADR          INCR. WORKING ADDR.
0016 00114 024107          JMP WRT1          DO NEXT ADDR.
0017 00115 060142  REI1 LDA RADR
0018 00116 070141          STA SADR          RESTORE STARTING ADDR.
0019 00117 150141  REI2 CPA SADR,I          IS ADDR. GOOD
0020 00120 024123          JMP GOOD          YES
0021 00121 164141          LDB SADR,I          NO
0022 00122 102001          HLT 01          A=GOOD ADDR. B=BAD CONTENTS
0023 00123 060141  GOOD LDA SADR
0024 00124 002004          INA          INCR. WORKING ADDR. BY 1
0025 00125 050143          CPA LADR          IS READ LOOP COMPLETE?
0026 00126 024131          JMP FIN1          ONE PASS COMPLETE
0027 00127 034141          ISZ SADR          INCR. WORKING ADDR. BY 1
0028 00130 024117          JMP RED2          DO NEXT ADDR.
0029 00131 106501  FIN1 LIB 01          LOAD SW. REG. INTO B
0030 00132 000020          SSB
0031 00133 024137          JMP NEW1          BIT15=1
0032 00134 060142          LDA RADR          BIT15=0 -CONTINUE LOOPING
0033 00135 070141          STA SADR          RESTORE STARTING ADDR.
0034 00136 024107          JMP WRT1          DO ANOTHER PASS
0035 00137 102001  NEW1 HLT 01          PUT IN NEW STARTING ADDRESS
0036 00140 024100          JMP BEGN
0037 00141 000000  SAIR OCT 0
0038 00142 000000  RAIR OCT 0
0039 00143 000000  LAIR OCT 0
0040          END
** NO ERRORS*

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