

DIAGNOSTIC PROGRAM PROCEDURES

LOW MEMORY ADDRESS TEST
FOR HP 2116B COMPUTER



HP Order No. HP 20403 (current version)

HEWLETT  PACKARD

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HP 02116-91765

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LOW MEMORY ADDRESS TEST

The Low 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 the starting and ending addresses. The second section loads the 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 Low Memory Address Test occupies locations 7600-7643 and tests locations 0002-7577. Together with the High Memory Address Test, this diagnostic can test the operation of all locations of core. The program is loaded from paper tape with the photoreader.

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 loaded. If no errors are detected, the program returns to the starting address and makes another pass through the 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 PROCEDURES

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 7600.
- 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 is 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

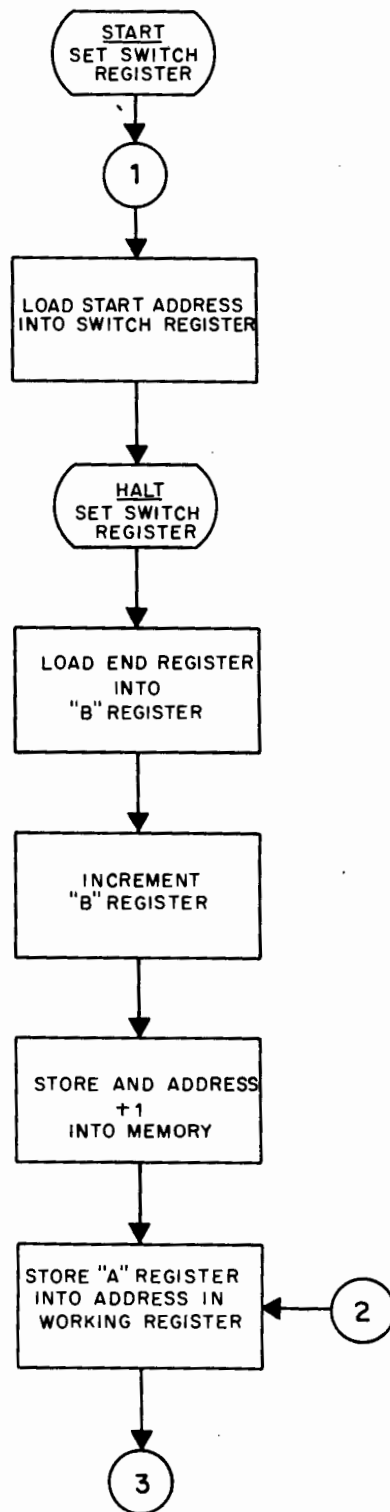


Figure LMA-1. Memory Address Test Flowchart (1 of 2)

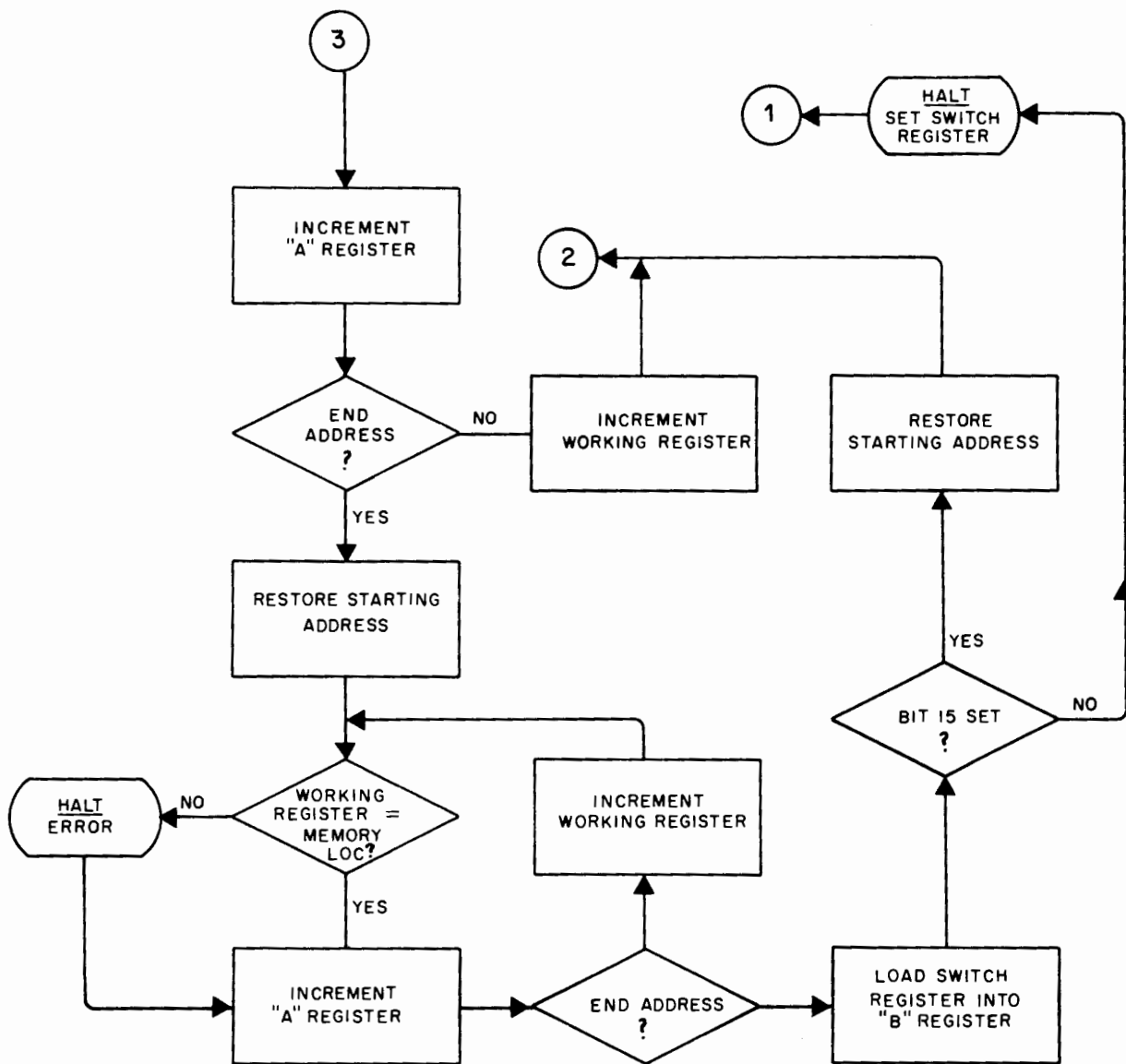


Figure LMA-1. Memory Address Test Flowchart (2 of 2)

LISTING

PAGE 0001

0001
BEGN 007600
WRT1 007607
RED1 007615
RED2 007617
GOOD 007623
FIN1 007631
NEW1 007637
SADR 007641
KADR 007642
LADR 007643
** NO ERRORS*

ASFB,A,B,L,T


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0001          ASMB,A,B,L,T
0002*****MEMORY ADDRESS TEST*****
0003 07600          ORG 7600B
0004 07600 102501  BEGN LIA 01          LOAD STARTING ADDR.OF BLOCK INTO
0005 07601 073641          STA SADR          STARTING ADDR. TO WORKING STORAG
0006 07602 073642          STA RADR          ST. ADDR. RESTORE LOCN.
0007 07603 102001          HLT 01          PUT LAST ADDR. OF BLOCK INTO B
0008 07604 106501          LIB 01          LOAD LAST ADDR. OF BLOCK INTO B
0009 07605 006004          INB          LAST ADDR.+1
0010 07606 077643          STB LADR          STORE LAST ADDR.+1
0011 07607 173641  WR11 STA SADR,I          STORE ADDRESS
0012 07610 002004          INA          INCR. TO NEXT ADDR.
0013 07611 053643          CPA LADR          IS WRITE LOOP COMPLETE?
0014 07612 027615          JMP RED1          JMP TO READ LOOP
0015 07613 037641          ISZ SADR          INCR. WORKING ADDR.
0016 07614 027607          JMP WRT1          DO NEXT ADDR.
0017 07615 063642  REI1 LDA RADR
0018 07616 073641          STA SADR          RESTOKE STARTING ADDR.
0019 07617 153641  REI2 CPA SADR,I          IS ADDR. GOOD
0020 07620 027623          JMP GOOD          YES
0021 07621 167641          LDB SADR,I          NO
0022 07622 102001          HLT 01          A=GOOD ADDR. B=BAD CONTENTS
0023 07623 063641  GOOD LDA SADR
0024 07624 002004          INA          INCR. WORKING ADDR. BY 1
0025 07625 053643          CPA LADR          IS READ LOOP COMPLETE?
0026 07626 027631          JMP FIN1          ONE PASS COMPLETE
0027 07627 037641          ISZ SADR          INCR. WORKING ADDR. BY 1
0028 07630 027617          JMP RED2          DO NEXT ADDR.
0029 07631 106501  FIN1 LIB 01          LOAD SW. REG. INTO B
0030 07632 006020          SSB
0031 07633 027637          JMP NEW1          BIT15=1
0032 07634 063642          LDA RADR          BIT15=0 -CONTINUE LOOPING
0033 07635 073641          STA SADR          RESTOKE STARTING ADDR.
0034 07636 027607          JMP WRT1          DO ANOTHER PASS
0035 07637 102001  NEW1 HLT 01          PUT IN NEW STARTING ADDRESS
0036 07640 027600          JMP BEGN
0037 07641 000000  SAIR OCT 0
0038 07642 000000  RAIR OCT 0
0039 07643 000000  LAIR OCT 0
0040          END

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** NO ERRORS*