IBM

# DIAGNOSTIC FUNCTION TEST PEPRODUCTION

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## RD-PCH-PR-SPEED TEST

A. PURPOSE OF TEST

TO PROVIDE A CONVENIENT CHECK OF THE OPERATING SPEEDS OF THE 1401, 1402, AND 1403.

- B. LOADING PROCEDURE.
  - I. TO BE RUN FROM CARDS, PLACE THE TEST DECK IN THE FILE FEED FOLLOWED BY BLANK OR SCRAP CARDS TO BE COUNTED. PLACE SOME BLANK CARDS IN THE PUNCH FEED. BE SURE THAT ALL SENSE SWITCHES ARE TURNED OFF. EXCEPT FOR SENSE SWITCH F. IF THE SYSTEM HAS THE ADVANCED PROGRAMMING FEATURE SENSE SWITCH F SHOULD BE TURNED ON, OTHERWISE, IT SHOULD BE OFF. DEPRESS THE START RESET SWITCH, THEN THE LOAD KEY.

AFTER THE PROGRAM CARDS HAVE BEEN ENTERED, THE MACHINE WILL REMAIN IN THE MAIN LOOP WAITING FOR AN OPERATION TO BE SELECTED FOR COUNTING.

2. TO BE RUN FROM TAPES, PLACE A 3 IN 578 AND PLACE BLANK CARDS IN READER AND PUNCH. TEST RUNS FROM THIS POINT IN SAME MANNER AS IT DOES FOR CARDS.

### C. PROGRAM CONTROL

- I. SENSE SWITCHES (FOR MACHINES WITHOUT SENSE SWITCHES SEE NOTE BELOW).
  - B ON START READ COUNT. OFF - END READ COUNT.
  - C ON START PUNCH COUNT. OFF - END PUNCH COUNT.
  - O ON START PRINT COUNT.
  - ON START CYCLE COUNT.
  - F ON FOR ADVANCED PROGRAM MACHINES
  - G ON BRANCH TO END OF TEST
    OFF CONTINUE IN PROGRAM LOOP

NOTE: TO RUN ON MACHINES WITHOUT SENSE SWITCHES, SUBSTITUTE "UNCONDITIONAL BRANCHES" FOR THE OPERATION TO BE SELECTED. USE THE START AND STOP KEY TO BEGIN AND END THE COUNT.

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### DIAGNOSTIC FUNCTION TEST

PART NO. 451634 SHEET 2 OF 7

### D. TEST PROCEDURE

## REPRODUCTION

THE PROGRAM CONTAINS VARIOUS LOOPS UNDER THE CONTROL OF SENSE SWITCHES. THE INDIVIDUAL LOOPS CONTAIN AN OPERATION. AN ADD AND A BRANCH BACK TO REPEAT THE OPERATION. STARTING AND STOPPING THE OPERATION IS UNDER CONTROL OF A SENSE SWITCH SO THAT THE RUNNING TIME CAN BE TIMED AGAINST AN EXTERNAL REFERENCE.

THE TEST BEGINS BY CLEARING THE PUNCH AREA AND THEN RUNS CARDS INTO BOTH THE READ AND PUNCH FEEDS. IT THEN ADVANCES TO A MAIN LOOP WHICH CONSISTS OF CLEARING THE PRINT AREA, SENSE SWITCHES B.C.D AND E OFF AND A BRANCH BACK TO COMPLETE THE LOOP. TURNING SENSE SWITCH B ON INITIATES A READ AND COUNT LOOP. TURNING IT OFF TERMINATES IT. TURNING SENSE SWITCH C ON INITIATES A PUNCH AND COUNT LOOP. TURNING IF OFF TERMINATES IT. TURNING SENSE SWITCH D ON INITIATES A COUNT AND PRINT LOOP. TURNING IT OFF TERMINATES IT. TURNING SENSE SWITCH E ON INITIATES A LOOP THAT IS DESIGNED TO CHECK FOR PROPER DURATION OF 1401 CYCLES. THE LOOP CONSISTS OF AN ADD 5 FOR AN AMOUNT ACCUMULATION. THIS IS FOLLOWED BY A BRANCH ON SENSE SWITCH F, WHICH WHEN TURNED ON WILL BYPASS A NO OP. THE PURPOSE OF THIS IS TO CORRECT FOR THE NUMBER OF CYCLES TAKEN FOR I-B STAR TRANSFER CYCLES ON ADVANCE PROGRAM MACHINES. MACHINES WITHOUT THE ADVANCED PROGRAMMING FEATURE SHOULD BE RUN WITH SWITCH F OFF. A CLEAR OP FOLLOWS IN ORDER TO COMPLETE THE LOOP WITH THE PROPER NUMBER OF PROCESS CYCLES. THE TOTAL ACCUMULATED BY RUNNING THIS TEST FOR ONE (1) MINUTE SHOULD BE 347.500 WHICH WAS CHOSEN BECAUSE IT IS THE FREQUENCY OF THE BASIC 1401 OSCILLATOR, (347,500 CYCLES PER SECOND). CAUTION--IT MUST BE CONSIDERED THAT AN ERROR OF ONE (1) SECOND WOULD RESULT IN THE TOTAL BEING OFF BY 5.790.

TURNING SENSE SWITCH G ON INITIATES A BRANCH TO END OF TEST.

### E. STOPS

718 IN STORAGE ADDRESS REGISTER; HALT TO SET SENSE SWITCHES.

737 IN STORAGE ADDRESS REGISTER: HALT TO RESET SENSE SWITCHES FOR NEXT TEST.

#### F. PRINTOUTS

AFTER EACH TEST, THE ACUTAL SPEED WILL BE PRINTED BY THE 1403 PRINTER.

### G. COMMENTS

### CHECKING SPEEDS:

EXAMPLE: TO CHECK READ FEED. USE A WATCH OR WALL CLOCK WITH A SECOND HAND. AT A REFERENCE POINT IN TIME, TURN SENSE B ON. AFTER ONE MINUTE OF OPERATION, TURN IT OFF. THE NUMBER OF CARDS FED WILL PRINT OUT AND THE PROGRAM WILL RETURN TO THE MAIN LOOP.

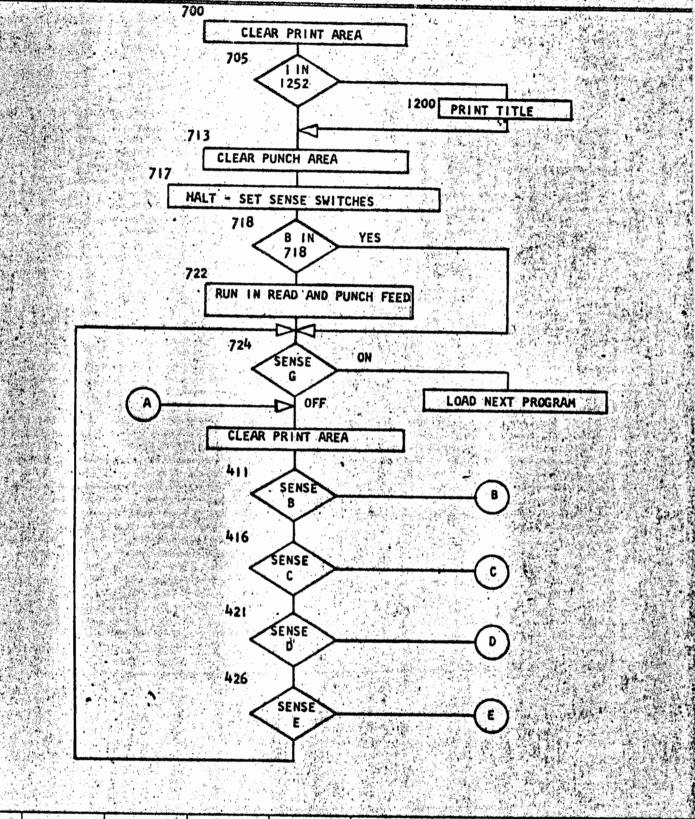
THE 1401 SPEED CHECK IS DESIGNED PRIMARILY TO CHECK FOR PROPER CLOCK OPERATION. A CIRCUIT FAILURE COULD OCCUR SUCH THAT A TRIGGER WOULD REMAIN ON FOR AN EXTRA OSCILLATOR PULSE WITH NO APPARENT MACHINE MALFUNCTION OTHER THAN A RELEASE OVER EXTENSION DUE TO INCREASED PROCESS TIME.

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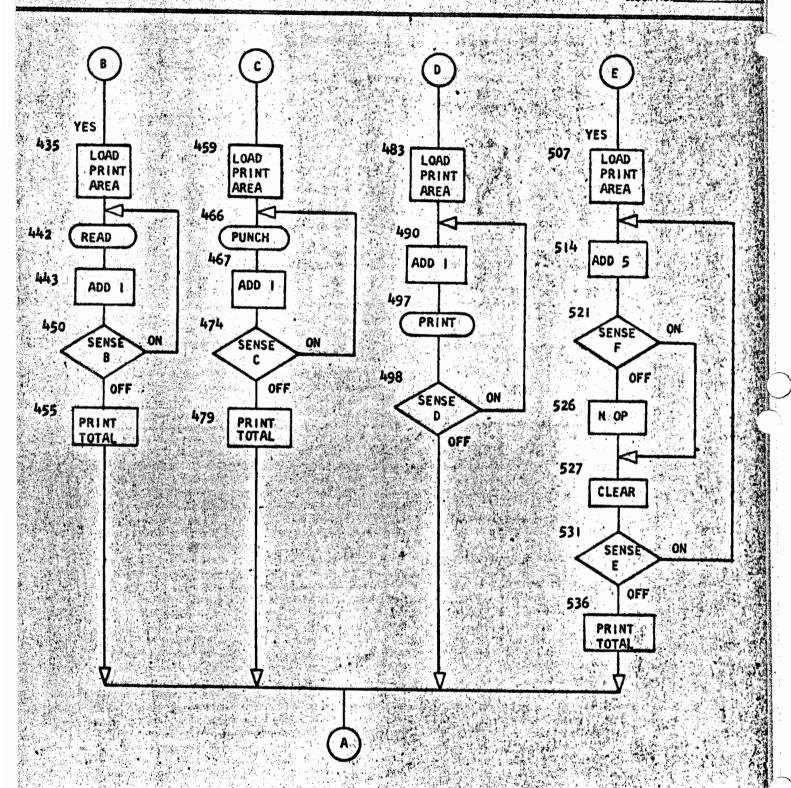
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# DIAGNOSTIC FUNCTION TEST

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### 1401 DATA PROCESSING SYSTEM

### DIAGNOSTIC FUNCTION TEST

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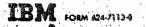
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# DIAGNOSTIC FUNCTION TEST

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# REPRODUCTION

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