

**IDENTIFICATION:** HIGH-SPEED BUFFER (HSB-N) TEST  
Diagnostic Routine

**AUTHOR:** E. R. Borgers, PBC

**ACCEPTED:** May 1, 1961

**PURPOSE:** To test the capability of the High-Speed Buffer, HSB-N, to communicate with the PB250 Computer.

**STORAGE:** 90 words of line 02 plus five channels of line 00.

**TIMING:** 36 milliseconds for each successful input-output pass.

**USE:** The operating procedure is as follows:

- a. After loading the test routine by means of the Octal Utility Package, transfer control to sector 377 of line 02.
- b. After the Flexowriter indicating light comes on, type the buffer length in octal, two digits only. (For example, type  $26_8$  for HSB-22).
- c. If the BREAKPOINT switch is up, the program will shift random numbers into the buffer, read them back, and compare with the numbers originally generated.
- d. If an error is found, the program will halt with a line number of  $12)_8$  displayed in the OPERAND lights of the PB250 Computer panel. To continue testing, depress both the ENABLE and BREAKPOINT switches.
- e. When the BREAKPOINT switch is down, the program will cycle on the same number until this switch is raised. When the BREAKPOINT switch is up, the program will generate new numbers.
- f. After an error halt, the operator may inspect the information by dumping (using the Octal Utility Package) sectors 076 and 077 in line 00, which contain the number

USE (cont.):                   shifted out, and sectors 101 and 102 in line 00, which contain the information received from the buffer.

METHOD:                    The program assembles BSO and BSI masks based on the typed-in buffer length. Pseudo-random numbers are generated in the same manner as described in Random Number Write-Read II (catalog number 9001). These numbers are sent out to the buffer using BSO and received immediately using BSI commands. The numbers are then compared with the numbers originally generated.

                              If successful, a new random number is generated. The BREAKPOINT switch is tested after every pass; if the switch is down, the same number is used until the switch is raised.

**PB 250 PROGRAM LISTING**

CATALOG NUMBER 9002

PROBLEM                     BUFFER TEST ROUTINE                    

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PROGRAMMER           E. R. BORGERS          

DATE 3-27-61

LOCATION	INSTRUCTION	SYMBOLIC OP CODE	REMARKS	
37702\$	000 4400;	CLC	INITIALIZE 0 → A,C	
000	001S0702;	LDP		
001	-7777777			
002	-7777777			
003	076 1302;	STD		
004	101 1302	STD		
005	006S0502;	LDA		
006	107 7502;	[TOF]		
007	105 1102;	STA		
010	012S4502;	CLA		
011	017S5502;	LAI		
012	010S5102;	RTK		
013	014 5102;	RTK		
014	013 7736;	TES		
015	012 7736;	TES		
016	014S5700;	CIB		
017	+0000007	LAI MASK		FULL MASK → BSO, BSI, TOF CONNECTOR → 10502
020	024 3502;	TCN		
021	001 0402;	LDC		
022	026 2110;	ABL		
023	012S4300;	CLB		
024	000 1100;	STA		
025	026S1502;	SUB		
026	+0000027	+23		
027	047 3502;	TAN		
030	000 0500;	LDA		
031	032S5602;	CAM	2 OCTAL DIGIT BUFFER SIZE → F00	
032	+0000054	+44		
033	067 7502;	TOF		
034	113 1502;	SUB		
				BUFFER > 22 BITS ?
				YES. BUFFER = 44 BITS

**pb Packard Bell Computer****PB 250 PROGRAM LISTING**CATALOG NUMBER 9002PROBLEM BUFFER TEST ROUTINEPAGE 2 OF 4PROGRAMMER E. R. BORGERSDATE 3-27-61

LOCATION	INSTRUCTION	SYMBOLIC OF CODE	REMARKS
035	054 2110;	ABL	NO 22 < BUFFER < 44 FORM SHIFT AND INSERT B - 22 BITS INTO SECOND BSI AND BSO MASKS
036	037S1402;	ADD	
037	044 2110;	ABL	
040 04	043 1102;	STA	
041	001 0602;	LDB	
042	000 4500;	CLA	
043	+0000000		
044	077 1102;	STA	
045	102 1102;	STA	
046	067S3702;	TRU	
047	000 4500;	CLA	BUFFER < 23 BITS 0 → SECOND BUFFER MASKS
050	077 1102;	STA	
051	102 1102;	STA	
052	114S3702;	TRU	BUFFER = 22 BITS
053	054S5602;	CAM	
054	+0000026	+22	
055	067 7502;	TOF	NO BUFFER < 22 BITS INSERT B BITS IN FIRST WORD OF BSI, BSO MASKS
056	075 2110;	ABL	
057	060S1402;	ADD	
060	065 2110;	ABL	
061	064 1102;	STA	
062	001 0602;	LDB	
063	000 4500;	CLA	
064	+0000000	[ABL]	
065	076 1102;	STA	
066	101 1102;	STA	
067	070S0602;	LDB	-GENERATE RANDOM NUMBER → F16, F17
070	077 0600;	LDB	
071	072S0402;	LDC	
072	+2304555		

**pb Packard Bell Computer**

**PB 250 PROGRAM LISTING**

CATALOG NUMBER 9002

PROBLEM BUFFER TEST ROUTINE

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PROGRAMMER E. R. BORCHERS

DATE 3-27-61

LOCATION	INSTRUCTION	SYMBOLIC OP CODE	REMARKS
073	127 3200;	MUP	BS0
074	076 1300;	STD	
075	100S7200;	BS0	
076	-7777777		
077	-7777777		
100	103S7300;	BSI	BSI
101	-7777777		
102	-7777777		
103	120S3702;	TRU	FIRST WORD OUT = FIRST WORD IN ?
104	101 5600;	CAM	
105	107 7502;	TOF	
106	112S3702;	TRU	NO. ERROR
107	124S3702;	TRU	SECOND WORD OUT = SECOND WORD IN ?
110	102 5600;	CAM	
111	130 7502;	TOF	
112	070S0012;	HLT	YES- REPEAT
113	+0000026	+22	NO. ERROR
114	111 0502;	LDA	BUFFFR < 23 BITS BYPASS SECOND CHECK
115	105 1102;	STA	
116	000 0500;	LDA	
117	053S3702;	TRU	
120	000 4300;	CLB	
121	076 0400;	LDC	EXTRACT BITS OF RANDOM NUMBER NOT SHIFTED OUT
122	101 4602;	AOC	
123	102S0300;	ROT	
124	000 4300;	CLB	EXTRACT BITS OF RANDOM NUMBER NOT SHIFTED OUT
125	077 0400;	LDC	
126	102 4602;	AOC	
127	106S0300;	ROT	
130	075 7735;		
			IF BREAKPOINT DOWN HOLD R. N.

