HEWLETT-PACKARD CO. hp

NOTE: This page provides a running history of changes for a multi-page drawing which cannot conveniently be re-issued completely after each change. When making a change, list for each page all before-and-after num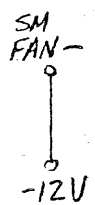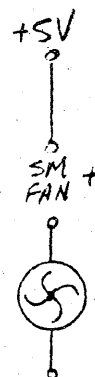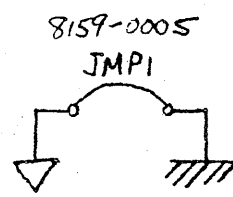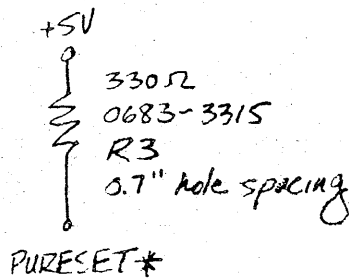bers (within reason; use judgement, and use "extensive" revision note if loss of past history is tolerable, or retype complete page) and associate with each a symbol made up of the change letter and a serial subscript to appear here and on the page involved (there enclosed in a circle, triangle, or other attention-getting outline).

Ltr	REVISIONS	DATE	INITIALS
A	as issued	10-21-85	JB

Model No. 98661A/B	Stock No.

Title   Schematic

Description	Date 6-1-85
By Jim Brokish	Sheet No. 1 of 12
Supersedes	Drawing No. A-98561-66501-4

9320-3246 (6/75)

ENGINEERING RESPONSIBILITY ☑		SEPIA ☑	

0	1	2	3	4		6		8	9		11	12	14	15
18	17		19		21	22	23	25	29	30	32	33	38	43
45	46	61	63											

SYM	REVISIONS	APPROVED	DATE
A	AS ISSUED		10-21-8

+5V
330 Ω
0683-3315
R3
0.7" hole spacing

PURESET *

8159-0005
JMP1

+5V
SM FAN +
SM FAN −
−12V

Qty 2
1901-0731
+12V
CR2 CR3
BIG FAN +
BIG FAN −

+12V
LED+
HLMP-1523
1990-0835
LED−
820Ω 820Ω
0683-8215
R1,2
.5" spacing
CR1
15V ZENER
1W
1902-0202
−12V
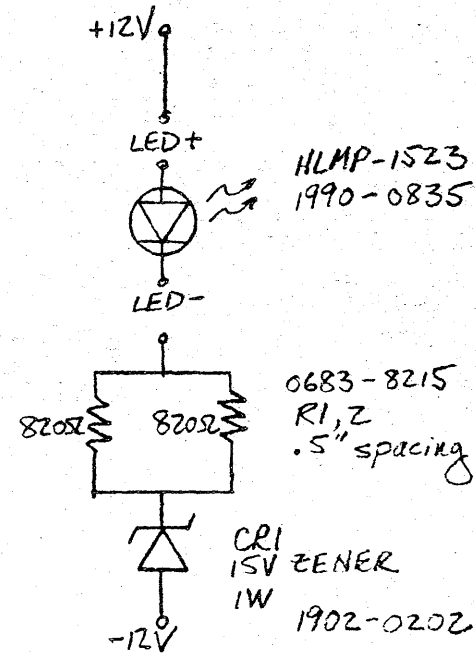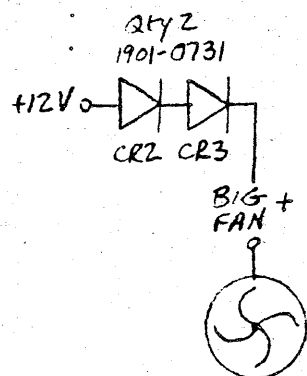
NOTE: SEE ALSO CONNECT LIST

ITEM	QTY.	MATERIAL-DESCRIPTION	MAT'L-PART NO.	MAT'L-DWG. NO.	MAT'L-SPEC.

DO NOT SCALE THIS DRAWING

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN INCHES.

TOLERANCES .XX ± .02 .XXX ± .005

SEE CORP. STD. 608

DRAWN BY	J. BROKISH	DATE 6/7/85
ENGINEER	J. BROKISH	6/7/85
RELEASE TO PROD.		
SUPERSEDES DWG.		

BOBCAT MOTHERBOARD SCHEMATIC

TITLE

NEXT ASSEMBLY

FINISH | SCALE

hp HEWLETT PACKARD

PART NUMBER

A-98561-66501-4

BOBCAT BUS SIGNALS IN ALPHABETICAL ORDER

SIGNAL	MOTHERBD TO BIG BOARD (J1,J2)	MOTHERBOARD TO BACKPLANE RIBBON CABLE (JA, JB)	DIO PIN NUMBER	BACKPLANE TO EXPANDER RIBBON CABLE (JC, JD)
BA1	B27	JB46	50	JD46
BA2	B26	JB47	51	JD47
BA3	B25	JB48	52	JD48
BA4	B24	JB49	53	JD49
BA5	B23	JA2	54	JC2
BA6	B22	JA3	55	JC3
BA7	B21	JA4	56	JC4
BA8	B20	JA5	57	JC5
BA9	B19	JA6	58	JC6
BA10	B17	JA7	59	JC7
BA11	B16	JA8	60	JC8
BA12	B15	JA9	63	JC9
BA13	B14	JA10	64	JC10
BA14	B13	JA12	65	JC12
BA15	B12	JA13	66	JC13
BA16	B11	JA14	67	JC14
BA17	B10	JA15	68	JC15
BA18	B8	JA16	69	JC16
BA19	B7	JA17	70	JC17
BA20	B6	JA18	71	JC18
BA21	B5	JA19	72	JC19
BA22	B4	JA20	73	JC20
BA23	B3	JA22	74	JC22
BAS*	A8	JB42	46	JD42
BD0	C19	JA24	77	JC24
BD1	C18	JA25	78	JC25
BD2	C17	JA26	79	JC26
BD3	C16	JA27	80	JC27
BD4	C15	JA28	81	JC28
BD5	C14	JA29	82	JC29
BD6	C13	JA31	83	JC31
BD7	C12	JA32	84	JC32
BD8	C10	JA33	87	JC33
BD9	C9	JA34	88	JC34
BD10	C8	JA35	89	JC35
BD11	C7	JA36	90	JC36
BD12	C6	JA37	91	JC37
BD13	C5	JA38	92	JC38
BD14	C4	JA39	93	JC39
BD15	C3	JA41	94	JC41

SIGNAL	MOTHERBD TO PROC BOARD (J1,J2)	MOTHERBOARD TO BACKPLANE RIBBON CABLE (JA, JB)	DIO PIN NUMBER	BACKPLANE TO EXPANDER RIBBON CABLE (JC, JD)
BDRV*	C25	JB25	29	JD25
BERR*	A25	JB34	38	JD34
BFC0	B28	JB26	31	JD26
BFC1	B29	JB27	32	JD27
BFC2	B30	JB28	33	JD28
BG*	C22	JB20	23	JD20
BG1*	A14	JB13	10	JD13
BG2*	A31	JB14	11	JD14
BG3*	--	--	12	JD15
BGACK*	C23	JB24	26	JD24
BLDS*	A7	JB37	43	JD37
BUDS*	A5	JB39	44	JD39
BR*	C20	JB22	24	JD22
BR/W*	A10	JB41	45	JD41
DMACK*	A22	JB7	4	JD7
DMACK0*	A23	JB6	3	JD6
DMARDY*	A17	JB12	9	JD12
DMAR0*	A20	JB2	1	JD2
DMAR1*	A19	JB3	2	JD3
DONE*	A16	JB23	25	JD23
DTACK*	A13	JB31	34	JD31
ENDT*	A11	JB29	30	JD29
FOLD*	C24	JB35	42	JD35
HALT*	A4	JB44	49	JD44
IACK*	--	--	20	--
IMA*	--	--	41	--
IR1*	C31	JB10	8	JD10
IR2*	C30	JB9	7	JD9
IR3*	C29	JB17	16	JD17
IR4*	C28	JB16	15	JD16
IR5*	C27	JB19	18	JD19
IR6*	C26	JB18	17	JD18
IR7*	A26	JB8	6	JD8
PURESET*	C32	JB5	--	JD5
R. CLOCK	A28	JA43	98	JC43
RESET*	A32	JB33	37	JD33
SAS*	A29	JA45	97	JC45
SPARE0	--	--	5	JD4
SPARE1	--	--	27	JC47
SPARE2	--	--	28	JC48
VECTOR*	--	--	19	--

HEWLETT PACKARD

SIGNAL	MOTHERBD TO PROC BOARD (J1,J2)	MOTHERBOARD TO BACKPLANE RIBBON CABLE (JA, JB)	DIO PIN NUMBER	BACKPLANE TO EXPANDER RIBBON CABLE (JC, JD)
-12	C1	JA49	99	--
+12	A1,A2	JA47,A48	100	--
DGND	--	--	95,96	--
+5	A3,B2,C11	JA23,42,46	85,86	--
+5	B18,C21	JB4,15,32,43		--
+5	B31,B32			--
GND	B1,C2,A6,	JA1,11,21,30,	13,14,21,	JC1,11,21,23,
GND	A9,B9,A12	40,44,50	22,35,36,	30,40,42,44,
GND	A15,A18	JB1,11,21,30,	39,40,47,	46,49,50
GND	A21,A24	36,38,40,45,	48,61,62,	JD1,11,21,30,
GND	A27,A30	50	75,76,	32,36,38,40,
GND				43,45,50

HEWLETT PACKARD

J3 : POWER SUPPLY CONNECTOR

| | POWER SUPPLY |
PIN NUMBER	CONNECTOR
PIN 1:	PURESET* (SEE ALSO SHEET 2)
PIN 2:	+5V
PIN 3:	+5V
PIN 4:	+5V
PIN 5:	+5V
PIN 6:	+5V
PIN 7:	RS+ (+5V AT CENTER OF BOARD)
PIN 8:	RS- (GND AT CENTER OF BOARD)
PIN 9:	GND
PIN 10:	GND
PIN 11:	GND
PIN 12:	GND
PIN 13:	GND
PIN 14:	+12V
PIN 15:	+12V
PIN 16:	GND
PIN 17:	GND
PIN 18:	-12V
PIN 19:	GND

J6: EXPANDER POWER (PIN 1 IS IN UPPER RIGHT)

PIN 2:	GND	PIN 1:	-12V
PIN 4:	GND	PIN 3:	GND
PIN 6:	GND	PIN 5:	GND
PIN 8:	GND	PIN 7:	GND
PIN 10:	+5V	PIN 9:	+5V
PIN 12:	+12V	PIN 11:	+12V
PIN 14:	+5V	PIN 13:	+5V
PIN 16:	GND	PIN 15:	GND
PIN 18:	+5V	PIN 17:	+5V
PIN 20:	PURESET*	PIN 19:	+5V
	(SEE PURESET* ON SHEET 2 ALSO)		

HEWLETT PACKARD

NOTES:

1. PSPARE AND SPARE ON THE BACKPLANE HAVE BEEN RENAMED
   R. CLOCK AND SAS* RESPECTIVELY FOR RODIO. THEY THEREFORE
   DO NOT SHOW UP ON THIS LIST EXCEPT UNDER THE NEW NAME.

2. BOBCAT DOES NOT SUPPORT VECTORED INTERRUPTS. IACK*
   WILL BE TIED DIRECTLY TO +5V AT EACH DIO CONNECTOR.
   VECTOR* AND IMA* WILL BE NO CONNECTS AT EACH OF THE
   DIO CONNECTORS. (I.E., THE VECTOR* PINS ARE NOT
   CONNECTED TOGETHER, EVEN BETWEEN DIO)

3. THE SIGNAL BG3, SPARE0, SPARE1, AND SPARE2 ARE NOT
   ON THE MOTHERBOARD. THEY ARE, HOWEVER BUSSED BETWEEN
   ALL DIO CONNECTORS AND BUSSED THROUGH TO THE EXPANDER.
   TWO I/O CARDS COULD THEN TALK THROUGH THESE SPARES IF
   NECESSARY.

4. DGND IS CONNECTED DIRECTLY TO LOGIC GROUND AT THE
   DIO CONNECTOR. IT IS THE RESPONSIBILITY OF THE I/O CARD
   DESIGNER TO DESIGN THE CARD SUCH THAT LARGE CURRENT
   GLITCHES ARE NOT PLACED ON THIS GROUND.

5. PINS 1 AND 50 ON THE RIBBON CABLES ARE LOGIC GROUND.
   PLACING THE GROUNDS IN THIS SYMMETRIC FASHION ALLOWS US
   TO PLUG THE RIBBON CABLE IN IN EITHER DIRECTION.

6. I HAVE CHOSEN THE PINOUT ON THE RIBBON CABLES SUCH THAT
   THE A AND B PINOUT IS VERY CLOSE TO THE C AND D PINOUT
   RESPECTIVELY. THE ONLY DIFFERENCES ARE THAT NO POWER SIGNALS
   ARE RUN THROUGH THE C AND D CABLES, AND THAT SOME SIGNALS
   NOT ROUTED FROM THE MOTHERBOARD TO THE BACKPLANE (A AND B)
   ARE ROUTED FROM THE BACKPLANE TO THE EXPANDER (C AND D).

7. ALL SIGNALS ON THE 96 PIN MOTHERBOARD CONNECTORS ARE ROUTED
   TO THE BOBCAT BACKPLANE THROUGH THE A AND B RIBBON CABLES.
   POWER IS ALSO PROVIDED TO THE BOBCAT BACKPLANE THROUGH THESE
   RIBBON CABLES. BACKPLANE POWER ALLOCATION IS:

VOLTAGE	MAX CURRENT	RIBBON CABLE WIRES ALLOCATED
+5 V	6.2 A	7
+12 V	1.6 A	2
-12 V	0.5 A	1
GROUND	7.8 A	16

   EACH CONTACT IS RATED FOR 1 A. THE CONTACT AND WIRE
   RESISTANCE THROUGH EACH WIRE OF THE 28AWG RIBBON CABLES
   IS ABOUT .075 OHM. WITH 6.2 A RUNNING THROUGH +5, THEN,
   WE SHOULD SEE ABOUT 65mV DROP THROUGH THE RIBBON CABLE
   ON THE +5 LINE BETWEEN THE MOTHERBOARD AND THE BACKPLANE.

8. THE SENSE WIRES FOR THE +5V SUPPLY ARE TIED INTO THE +5V
    AND GROUND PLANE NEAR THE RIBBON CABLES TO ALLOW THE POWER
    SUPPLY TO COMPENSATE FOR DROPS ACROSS THE MOTHERBOARD.

9. THE C AND D CABLES BETWEEN THE BACKPLANE AND EXPANDER
    HAVE 22 LOGIC GROUND WIRES ALLOCATED TO MINIMIZE ANY LOGIC
    GROUND DIFFERENTIAL BETWEEN THE BOXES.

```
RIBBON CABLE JB IN NUMERICAL ORDER
-----------------------------------
GND        1
DMAR0*
DMAR1*
+5V
PURESET*   5     PURESET* KEPT AWAY FROM GROUND
DMACK0*
DMACK*
IR7*
IR2*
IR1*      10
GND
DMARDY*
BG1*
BG2*
+5V       15
IR4*
IR3*
IR6*
IR5*
BG*       20
GND
BR*
DONE*
BGACK*
BDRV*     25
BFC0
BFC1
BFC2
ENDT*
GND       30
DTACK*
+5V
RESET*           RESET* KEPT AWAY FROM GROUND
BERR*
FOLD*     35
GND
BLDS*
GND              LOTS OF GROUNDS NEAR HANDSHAKE LINES
BUDS*
GND       40
BR/W*
BAS*
+5V
HALT*
GND       45
BA1
BA2
BA3
BA4
GND       50
```

HEWLETT PACKARD

RIBBON CABLE JA IN NUMERICAL ORDER

```
GND       1
BA5
BA6
BA7
BA8       5
BA9
BA10
BA11
BA12
BA13     10
GND
BA14
BA15
BA16
BA17     15
BA18
BA19
BA20
BA21
BA22     20
GND
BA23
+5V
BD0
BD1      25
BD2
BD3
BD4
BD5
GND      30
BD6
BD7
BD8
BD9
BD10     35
BD11
BD12
BD13
BD14
GND      40
BD15
+5V
R. CLOCK
GND
SAS*     45
+5V
+12V
+12V
-12V           -12V LINE ISOLATED FROM ANY SIGNAL LINE
GND      50
```

```
RIBBON CABLE JD IN NUMERICAL ORDER
-----------------------------------
GND         1
DMAR0*
DMAR1*
SPARE0
PURESET* 5      PURESET* KEPT AWAY FROM GROUND
DMACK0*
DMACK*
IR7*
IR2*
IR1*     10
GND
DMARDY*
BG1*
BG2*
BG3*     15
IR4*
IR3*
IR6*
IR5*
BG*      20
GND
BR*
DONE*
BGACK*
BDRV*    25
BFC0
BFC1
BFC2
ENDT*
GND      30
DTACK*
GND
RESET*
BERR*
FOLD*    35
GND
BLDS*
GND             LOTS OF GROUNDS NEAR PROCESSOR HANDSHAKE LINES
BUDS*
GND      40
BR/W*
BAS*
GND
HALT*
GND      45
BA1
BA2
BA3
BA4
GND      50
```

RIBBON CABLE JC IN NUMERICAL ORDER

```
GND        1
BA5
BA6
BA7
BA8        5
BA9
BA10
BA11
BA12
BA13      10
GND
BA14
BA15
BA16
BA17      15
BA18
BA19
BA20
BA21
BA22      20
GND
BA23
GND
BD0
BD1       25
BD2
BD3
BD4
BD5
GND       30
BD6
BD7
BD8
BD9
BD10      35
BD11
BD12
BD13
BD14
GND       40
BD15
GND
R. CLOCK
GND
SAS*      45
GND
SPARE1
SPARE2
GND
GND       50
```