COMMODORE

PC 10 III

Technical Manual

1/88

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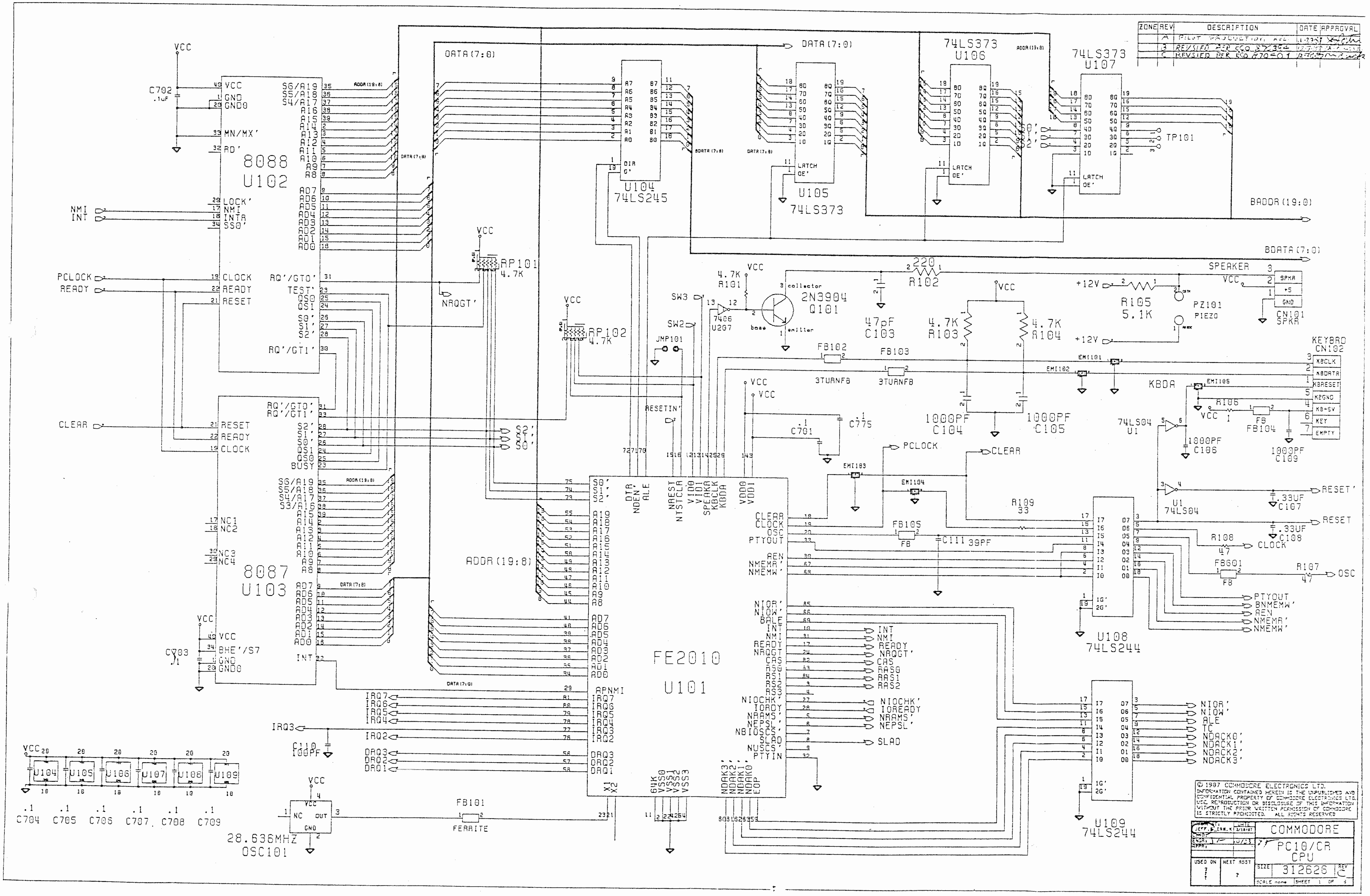
Dier
Lau
Krämer



8088
U102
8087
U103
FE2010
U101
U104
74LS245
U105
74LS373
74LS373
U106
74LS373
U107
U108
74LS244
U109
74LS244
RP101
4.7K
RP102
4.7K
2N3904
Q101
DATA (7:0)
ADDR (19:8)
BADDR (19:0)
BDATA (7:0)
NMI
INT
PCLOCK
READY
CLEAR
NRQGT'
SPEAKER
SPKR
CN101
KEYBRD
CN102
PZ101
PIEZO
R105
5.1K
R102
220
C103
47pF
C104
1000PF
C105
1000PF
TP101
28.636MHZ
OSC101
FB101
FERRITE
RESET'
RESET
CLOCK
OSC
74LS04
U1
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COMMODORE
PC10/CR
CPU
SIZE
312626
REV
C
SHEET 1 OF 6

ZONE	REV	DESCRIPTION	DATE	APPROVAL

OSC201 16MHZ
FB201 FERRITE
R207 10
C711 .1
C710 .1
C712 C713 C714 C715 C716 C717 C718 C719
IRQ6-IN
DRQ-IN
CR201 IN914
C202 220PF
8.2K R206
R202 4.7K
R201 4.7K
R203 4.7K
RP201 PUSHPULL 220 330
RP203 3.3K
NDACK2'
TC
NIOR'
NIOW'
FDCCS'
74LS04 U1
74LS08 U2
9268 U203
RDY
FLT/TRO
RW/SEEK
LCT/DIR
IDX
FR/STP
HDL
WP/TS
DSKD'
US0
US1
HD
WDOUT
WE
DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7
VSS
PA0201 PA0202 PA0203
P0 P1 P2 MINI MFM CLK IFSI RESET
FDC-RESET
BADDR(19:0)
IDATA(7:0)
74LS14 U3
7406 U206
U207
CN201 FLOPPY_DISK_CONNECTOR
DRV0
DRV1
ROM U201
A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11 A12 A13 A14
D0 D1 D2 D3 D4 D5 D6 D7
YPP CS' OE' GND
JMP204 JMP205
NEPSL
U202 U204 U205 U206 U207 U1 U2 U3
74LS245 U205
74LS245 U204
DIR G'
BDATA(7:0)
IDIR'
R204 4.7K
NDACK3' HDCS'
U326 74LS08
NIOR' IOR-DLY'
U202 74LS244
RP202 33
NIOW' NIOR' NDACK3' HDCS' RESET'
CN203 R205 470
IRQ5 JMP206
DRQ3 JMP207
CN202 40PIN
C201 .33
HD(7:0)

DRAWN BY: JEFF.F_IAN.K	DATE: 2/16/87
CHKD:	
ENGR:	
APPR:	

COMMODORE
PC10/CR
FDD_HDD_BIOS

USED ON	NEXT ASST
1	2

SIZE D | 312626 | REV C
SCALE none | SHEET 2 OF 8

ZONE	REV	DESCRIPTION	DATE	APPROVAL

74LS158 U301 — SELECT, 1A/1B, 2A/2B, 3A/3B, 4A/4B, STROBE', 1Y', 2Y', 3Y', 4Y' — RP301 33, RP301 33, RP301 33, RP301 33

74LS158 U302 — SELECT, 1A/1B, 2A/2B, 3A/3B, 4A/4B, STROBE', 1Y', 2Y', 3Y', 4Y' — RP301 33, RP301 33, RP301 33, RP302 33

74LS158 U303 — SELECT, 1A/1B, 2A/2B, 3A/3B, 4A/4B, STROBE', 1Y', 2Y', 3Y', 4Y' — RP302 33, RP302 33

SLAD

BADDR(19:0)

74LS245 U304 — A7–A0, B7–B0, DIR, G'

BDATA(0:7)

NMEMR'

NRAMS'

256K_DRAM U305 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U306 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U307 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U308 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U309 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U310 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U311 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U312 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U313 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U314 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U315 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U316 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U317 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U318 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U319 — A8–A0, RAS', CAS', WE', DIN, DOUT

256K_DRAM U320 — A8–A0, RAS', CAS', WE', DIN, DOUT

DATABITS(7:0)

64K_DRAM U321 — A7–A0, RAS', CAS', WE', OE', IO1–IO4

64K_DRAM U322 — A7–A0, RAS', CAS', WE', OE', IO1–IO4

64K_DRAM U323 — A7–A0, RAS', CAS', WE', OE', IO1–IO4

64K_DRAM U324 — A7–A0, RAS', CAS', WE', OE', IO1–IO4

74LS04 U325 — 74LS08 U326 — RAS0, CAS, BNMEMW', RAS1 — RP302 33, RP302 33, RP302 33, RP302 33, RP303 33

MUXADDR(8:0)

BANKCNTRL(21:0)

RASA', CASA'

RASB', CASB'

DATABITS(7:0)

74LS04 U325 — 74S00 U328 — CAS — RP303 33 — CASA', CASB'

74LS04 U325 — 74S08 U326 — RAS2 — RP303 33 — RASA'

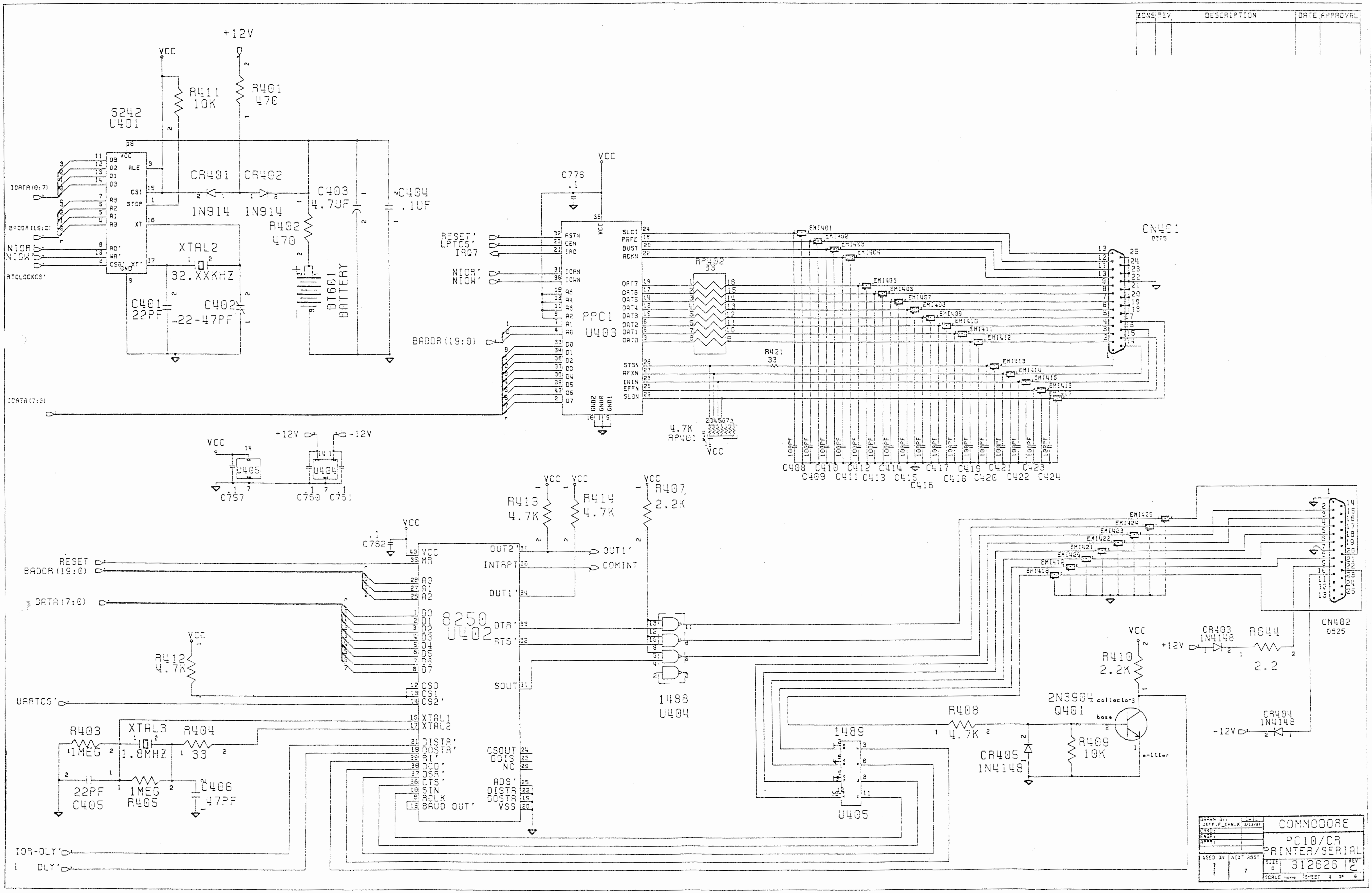
74LS04 U325 — 74S10 U327 — NDACK0', RAS2 — RTP303 33 — RASB'

BADDR(19:0)

U301 U302 U303 U304 U305 U306 U307 U308 U309 U310 U311 U312 U313 U314 U315 U316 U317 U318 U319 U320 U321 U322 U323 U324 U325 U326 U327 U328

C723 C724 C725 C726 C727 C728 C729 C730 C731 C732 C733 C734 C735 C736 C737 C738 C739 C740 C741 C742 C743 C744 C745 C746 C747 C748 C753 C800

DRAWN BY: JEFF_F_IAN_K	DATE: 3/19/87	COMMODORE	
CHKD:		PC10/CR RAM	
ENGR:			
APPR:			
USED ON: 7	NEXT ASST: 7	SIZE: 312626	REV: C
		SCALE: none SHEET 3 OF 5	


ZONE REV DESCRIPTION DATE APPROVAL
+12V
VCC
R411
10K
R401
470
6242
U401
IDATA(0:7)
BADDR(19:0)
NIOR
NIOW
ATCLOCKCS'
CR401
CR402
1N914
1N914
C403
4.7UF
C404
.1UF
R402
470
XTAL2
32.XXKHZ
C401
22PF
C402
22-47PF
BT601
BATTERY
C776
.1
RESET'
LPTCS'
IRQ7
NIOR'
NIOW'
BADDR(19:0)
PPC1
U403
RP402
33
R421
33
4.7K
RP401
CN401
D925
IDATA(7:0)
+12V
-12V
U405
U404
C757
C760
C761
C408 C410 C412 C414 C417 C419 C421 C423
C409 C411 C413 C415 C418 C420 C422 C424
C416
R413
4.7K
R414
4.7K
R407
2.2K
C752
.1
RESET
BADDR(19:0)
DATA(7:0)
8250
U402
OUT1'
COMINT
1488
U404
CN402
D925
R412
4.7K
UARTCS'
R403
1MEG
XTAL3
1.8MHZ
R404
33
22PF
C405
1MEG
R405
C406
47PF
1489
U405
R408
4.7K
2N3904
Q401
R410
2.2K
CR403
1N4148
R644
2.2
CR404
1N4148
CR405
1N4148
R409
10K
IOR-DLY'
DLY'
COMMODORE
PC10/CR
PRINTER/SERIAL
312626
C

ZONE	REV	DESCRIPTION	DATE	APPROVAL

POWER
CN506
POWERGOOD
-12V
+12V
GND0
GND
+5V

IN4148
CR501
R501
10K
VCC
PG
7905
VR501
IN
OUT
GND
-5V
-12V
+12V
1UF
C503
47UF
C504
47UF
C507
.22
C508
47UF
C546
47UF
C505
C501 C542 C544 C547
47UF 47UF 47UF 47UF
C502 C543 C545
47UF 47UF 47UF
R503
470
CN504
U3
74LS14
U206
7406
U3
74LS14
74LS04
U1
RESETIN'
1K
R504
SW501
1UF
C541

NIOCHK'
BDATA(7:0)

SILPOWER
CN505
POWERGOOD
NC1
GND0
NC1
-12V
+12V
+5V
NC2
PG
-12V
+12V
VCC

RESET
C511
1000PF
IRQ2
C512
1000PF
DRQ2
C513
1000PF
VCC
RP501
4.7K
-5V
-12V
+12V
NMEMW'
NMEMR'
NIOW'
NIOR'
NDACK3'
DRQ3
C514
1000PF
NDACK1'
DRQ1
C515
1000PF
NDACK0'
CLOCK
R502
47
IRQ7
IRQ6
C517
1000PF
IRQ5
C518
1000PF
IRQ4
C519
1000PF
IRQ3
C520
1000PF
NDACK2'
TC
ALE
VCC
R503
47
OSC

VCC
RP505
10K
AEN
IOREADY

C540 1000PF
C539 1000PF
C538 1000PF
C537 1000PF
C536 1000PF
C535 1000PF
VCC
RP502
10K
C534 1000PF
C533 1000PF
C532 1000PF
C531 1000PF
C530 1000PF
C529 1000PF
C528 1000PF
VCC
RP503
10K
C527 1000PF
C526 1000PF
C525 1000PF
C524 1000PF
C523 1000PF
C522 1000PF
C521 1000PF
VCC
RP504
10K

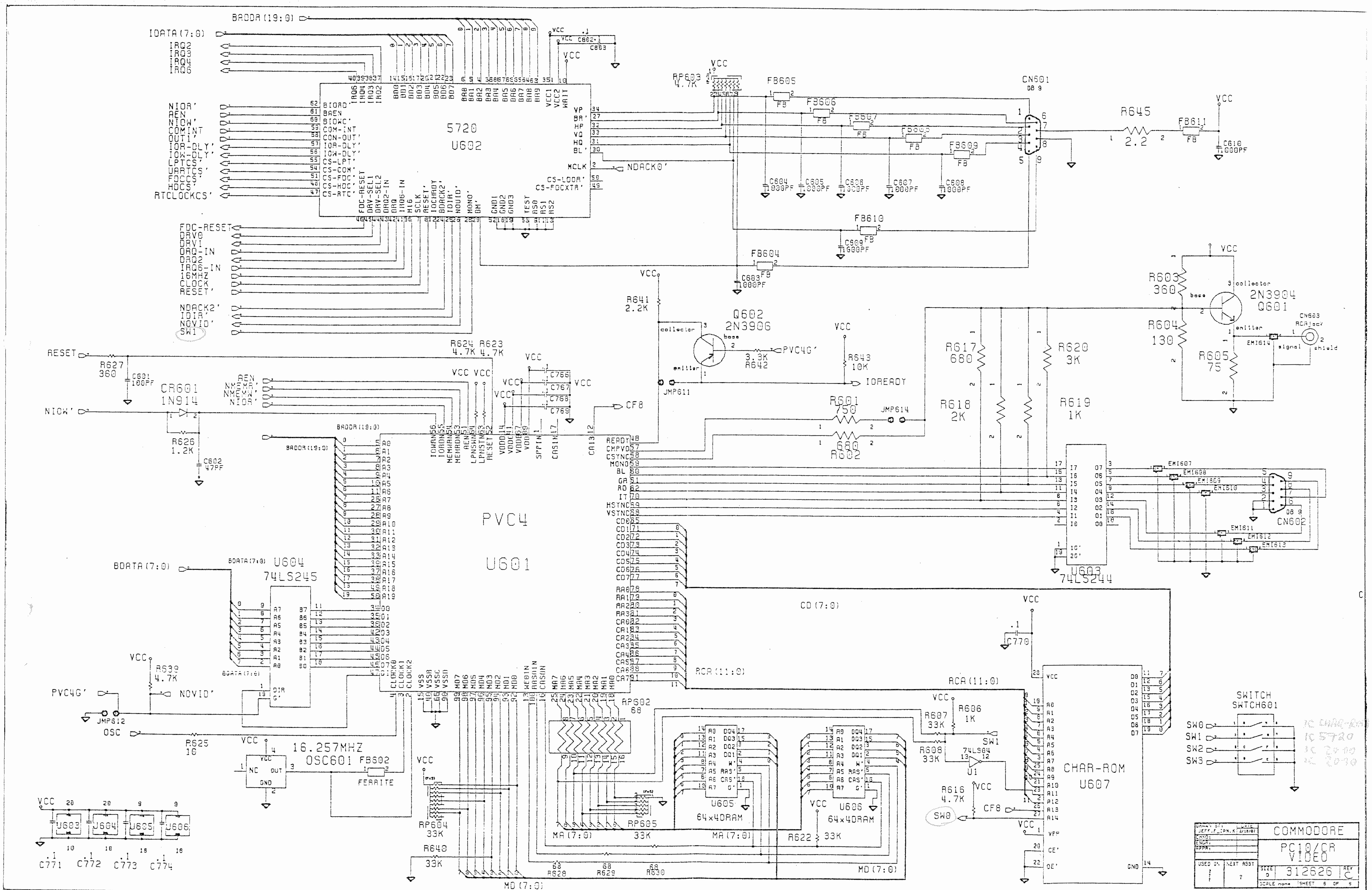
CN501
EXPANSION
GND1 IOCHK
RESDRV D7
5V1 D6
IRQ2 D5
-5VDC D4
DRQ2 D3
-12V D2
-CO SEL D1
12V D0
GND2 IOREADY
-MEMW AEN
-MEMR A19
-IOW A18
-IOR A17
-DACK3 A16
DRQ3 A15
-DACK1 A14
DRQ1 A13
-DACK0 A12
CLK A11
IRQ7 A10
IRQ6 A9
IRQ5 A8
IRQ4 A7
IRQ3 A6
-DACK2 A5
T/C A4
ALE A3
5V2 A2
OSC A1
GND3 A0

CN502
EXPANSION
GND1 IOCHK
RESDRV D7
5V1 D6
IRQ2 D5
-5VDC D4
DRQ2 D3
-12V D2
-CO SEL D1
12V D0
GND2 IOREADY
-MEMW AEN
-MEMR A19
-IOW A18
-IOR A17
-DACK3 A16
DRQ3 A15
-DACK1 A14
DRQ1 A13
-DACK0 A12
CLK A11
IRQ7 A10
IRQ6 A9
IRQ5 A8
IRQ4 A7
IRQ3 A6
-DACK2 A5
T/C A4
ALE A3
5V2 A2
OSC A1
GND3 A0

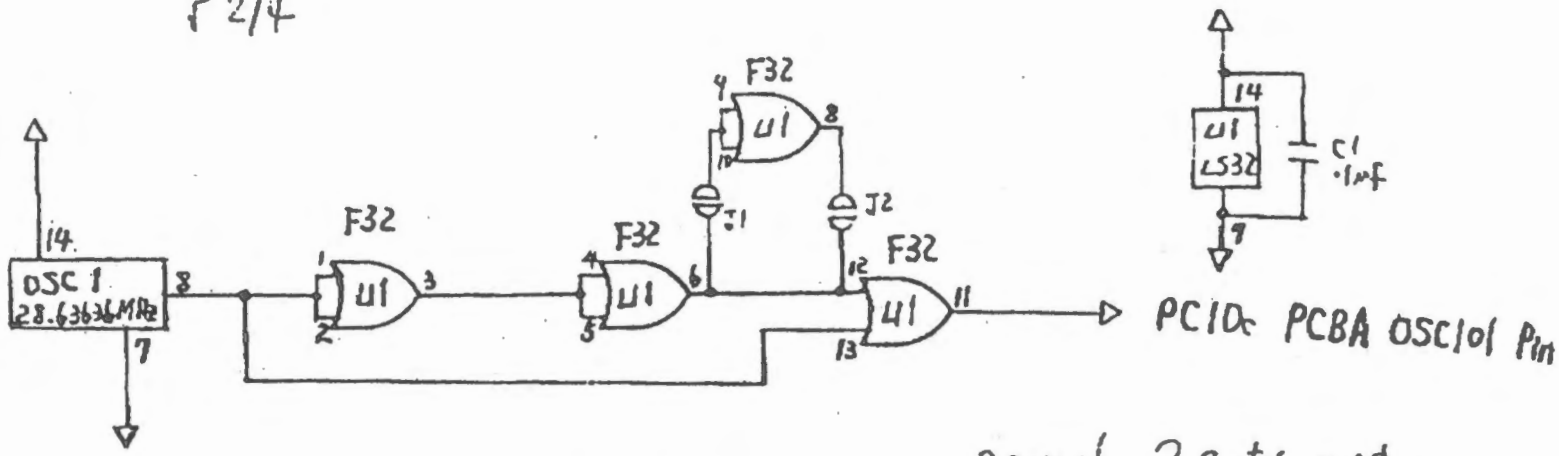
CN503
EXPANSION
GND1 IOCHK
RESDRV D7
5V1 D6
IRQ2 D5
-5VDC D4
DRQ2 D3
-12V D2
-CO SEL D1
12V D0
GND2 IOREADY
-MEMW AEN
-MEMR A19
-IOW A18
-IOR A17
-DACK3 A16
DRQ3 A15
-DACK1 A14
DRQ1 A13
-DACK0 A12
CLK A11
IRQ7 A10
IRQ6 A9
IRQ5 A8
IRQ4 A7
IRQ3 A6
-DACK2 A5
T/C A4
ALE A3
5V2 A2
OSC A1
GND3 A0

BEXPAN(30:0)
BADDR(19:0)

DRAWN BY: JEFF.F_IAN.K	DATE 3/19/87	COMMODORE
CHKD:		PC10/CR EXPANSION
ENGR:		
APPR:		
USED ON 1 2	NEXT ASST 7	SIZE 312626 REV C
		SCALE none SHEET 5 OF 8


BADDR (19:0)
IDATA (7:0)
IRQ2
IRQ3
IRQ4
IRQ6
NIOR'
AEN
NIOW'
COMINT
OUT1'
IOR-DLY'
IOW-DLY'
LPTCS'
UARTCS'
FDCCS'
HDCS'
RTCLOCKCS'
5720
U602
NDACK0'
FDC-RESET
DRV0
DRV1
DRQ-IN
DRQ2
IRQ6-IN
16MHZ
CLOCK
RESET'
NDACK2'
IDIR'
NOVID'
SW1
RP603 4.7K
FB605
FB606
FB607
FB608
FB609
FB610
FB604
CN601 DB 9
R645 2.2
FB611
C610 .1000PF
C604 .1000PF
C605 .1000PF
C606 .1000PF
C607 .1000PF
C608 .1000PF
C609 .1000PF
C603 .1000PF
R603 360
R604 130
R605 75
2N3904 Q601
CN603 RCA jack
EMI614
R641 2.2K
Q602 2N3906
R642 3.3K
PVC4G'
R643 10K
IOREADY
JMP611
JMP614
R601 750
R602 680
R617 680
R618 2K
R619 1K
R620 3K
RESET
R627 360
C601 100PF
CR601 1N914
NIOW'
R626 1.2K
C602 47PF
R624 4.7K
R623 4.7K
C766
C767
C768
C769
CF8
PVC4
U601
EMI607
EMI608
EMI609
EMI610
EMI611
EMI612
EMI613
CN602 DB 9
U603 74LS244
BDATA (7:0)
U604 74LS245
CD (7:0)
RCA (11:0)
C770
CHAR-ROM
U607
R639 4.7K
NOVID'
PVC4G'
JMP612
OSC
R625 10
16.257MHZ
OSC601
FB602
FERRITE
RP602 68
U605 64x4DRAM
U606 64x4DRAM
R607 33K
R606 1K
SW1
R608 33K
74LS04
U1
R616 4.7K
CF8
SW0
RP604 33K
RP605 33K
R622 33K
R640 33K
MA (7:0)
MD (7:0)
R628 68
R629 68
R630 68
SWITCH
SWTCH601
SW0
SW1
SW2
SW3
U603
U604
U605
U606
C771
C772
C773
C774
COMMODORE
PC10/CR
VIDEO
312626
REV C
SHEET 6 OF 9

P2/4



SCHEMATIC

Normal 2 gates med
Cut one wire, solder Two
Solder bridge can increase
to 3 gates (9ns high Time

Appendix B
List of Logical Device Identifiers

AUX:	Refers to input from or output to an auxiliary device. This could be another computer if you have two machines connected together for transferring files.
CON:	For 'console' or terminal, including keyboard and display (Input / Output). If using as an input device (keyboard), there is a key-combination to indicate 'end of input' (see Appendix C).
PRN:	This 'listing' or 'print' device such as a printer.
NUL:	Does not refer to any particular file or device. NUL is used when the syntax of a command requires that a filename is specified even though the file is not to be used. It is useful for testing applications: as an input device it simulates end-of-file immediately; as an output device it simulates successful writing of data without data actually being written.
COM1	Serial port
COM2	Serial port
LPT1	Parallel printer port
LPT2	Parallel printer port
LPT3	Parallel printer port

Appendix C
Special Key Sequences

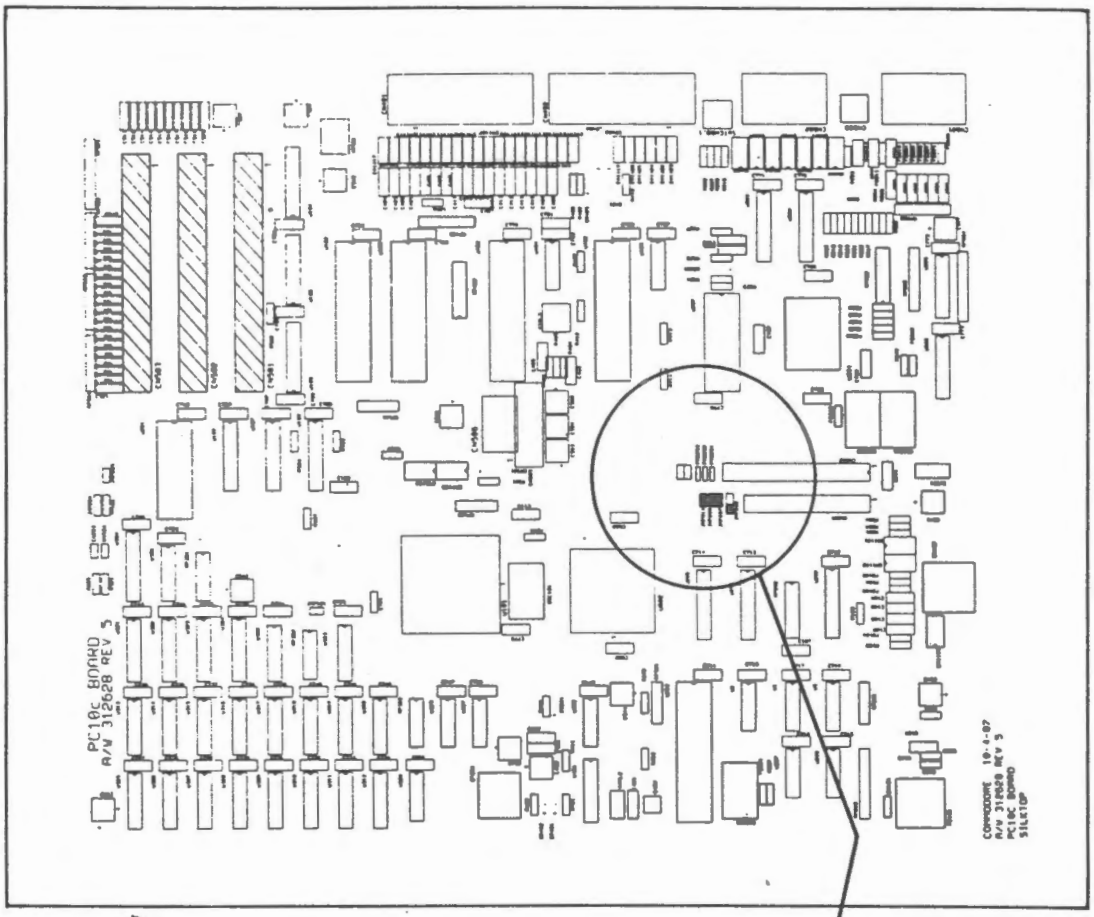
Editing Key

Keys	Description of function
F1	Copy one character from template (last line entered) to new command line.
F2	Copy characters up to a specified character from template to new command line.
F3	Copy remainder of template to new command line.
DEL	Do not copy next character from template to new command line.
F4	Do not copy characters from template to new command line up to a specified character.
ESC	Cancel new command line.
INS	Switch character insertion on.
INS	Switch character insertion off.
F6	Accept new command line as template for further editing.

Other Keys

Key	Description of function
Ctrl-C or Ctrl-Break	Abort current command.
Ctrl-J or Ctrl-↵	Terminates an input line without sending it to MS-DOS Used to extend input line beyond one line.
Ctrl-P or Ctrl-PrtSc	Switches echoing of console output to printer on.
Ctrl-N or Ctrl-PrtSc	Switches echoing of console output to printer off.
Ctrl-S or Ctrl-NumLock	Suspends screen listing. Output remains suspended until any key is depressed.
Ctrl-X or ESC	Cancel current command-line.
Ctrl-Z or F6 then ↵	Terminates input in edit or in COPY from CON.
Ctrl-H or Backspace	Move cursor back and delete.
Shift-PrtSc	Print current screen contents.
Ctrl-Alt-Del	Re-boot MS-DOS.

Appendix D
Jumper Settings on Motherboard

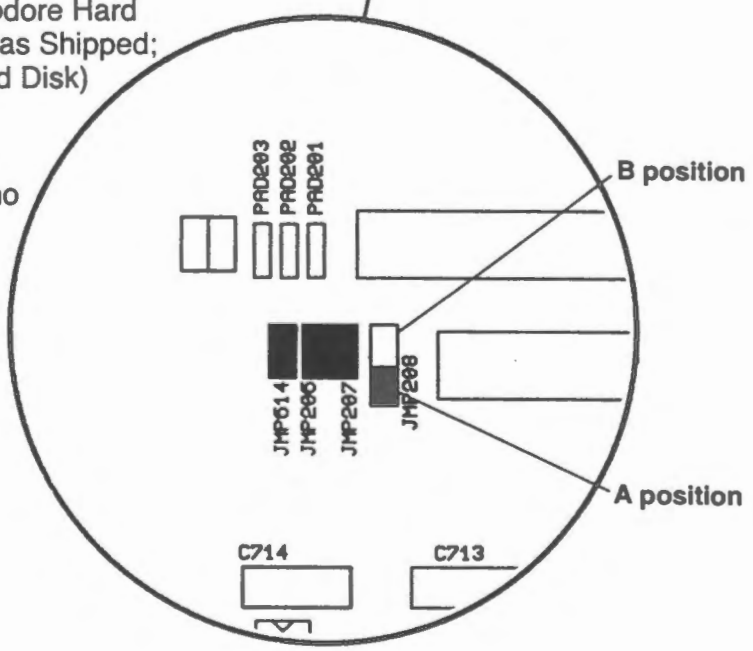


JMP 208 — A position = No Commodore Hard Disk installed (PC10 as Shipped)—Use this position if a hard disk is installed in an expansion slot.
B position = Commodore Hard Disk installed (PC20 as Shipped; PC10 w/optional Hard Disk)

JMP 614 In—Composite Color
Out—Composite Mono

All other jumpers are for factory use only

JMP 206 In
207 In



Appendix E
Dip Switch Settings and the Reset Switch

DIP SWITCH SETTINGS

These switch settings refer to the CONFIG switch area on the back of the system unit.

SWITCH #1

UP(OFF) USA/Europe Character Set
DOWN(ON) Scandinavian Character Set

SWITCH #2

UP(OFF) Onboard Video Adapter is MONO
DOWN(ON) Onboard Video Adapter is COLOR

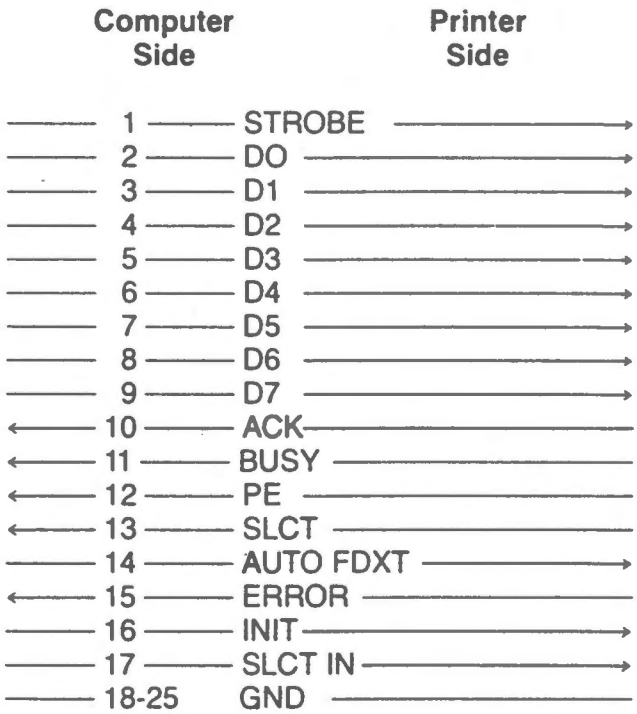
SWITCH #3	SWITCH #4	DEFAULT VIDEO MODE	SAMPLE SETTING
UP(OFF)	UP(OFF)	Monochrome	
UP(OFF)	DOWN(ON)	80 Column Color	
DOWN(ON)	UP(OFF)	40 Column Color	
DOWN(ON)	DOWN(ON)	NO MONITOR	

THE RESET SWITCH

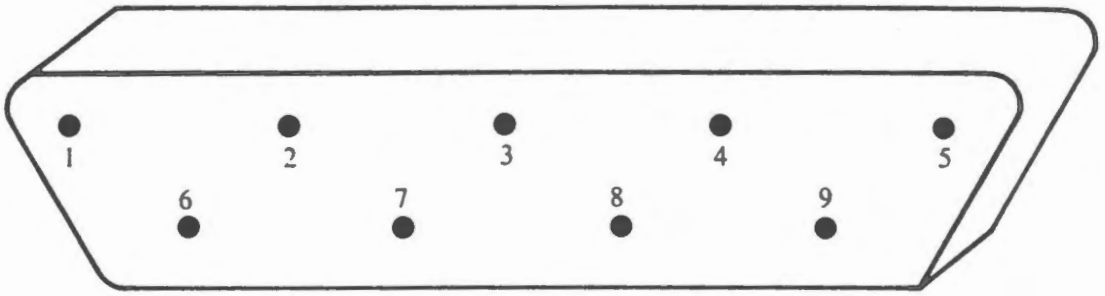
The Reset switch protrudes slightly on the right side of the machine just behind the keyboard connector. Pressing this switch will effectively re-boot the computer as if the power had been cycled OFF and then ON. All information in the computer's RAM memory, as well as information being written to mass storage devices such as hard disks or floppy disks while the switch was depressed may also be lost.

The intent of the switch is to provide an alternative to cycling power when an application program may have "crashed" the computer.

Appendix F
Pin Definitions for Parallel Port

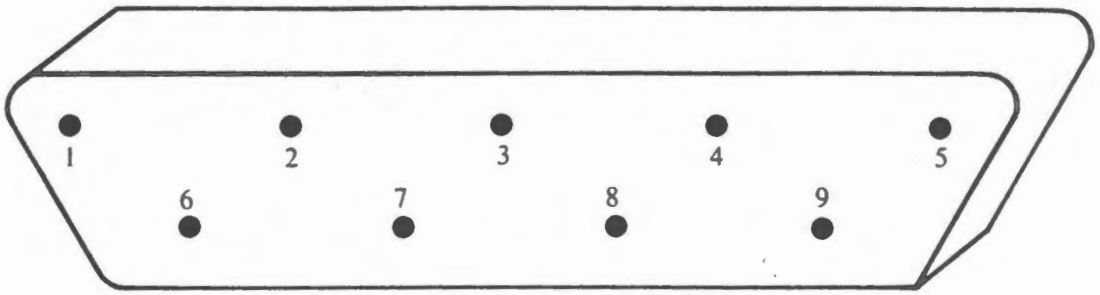


Appendix H
Pin Definitions for Mouse Port



Pin No.	Signal
1	Vertical
2	Horizontal
3	Vertical Q
4	Horizontal Q
5	Button (3)
6	Button (1)
7	+ 5 volts
8	Ground
9	Button (2)

Appendix I
Pin Definitions for RGBI Video Port



Video Connector

DB9 Female Connector

Color/Graphic Modes		Monochrome Mode	
Pin No.	**Signal**	**Pin No.**	**Signal**
1	GND	1	GND
2	GND	2	GND
3	RED	3	not used
4	GREEN	4	not used
5	BLUE	5	not used
6	INTENSITY	6	INTENSITY
7	MONO	7	VIDEO
8	H SYNC	8	H SYNC
9	V SYNC	9	V SYNC

Appendix J
The Commodore PC10/PC20 Keyboard

The Commodore PC10/PC20 Keyboard is divided into four sections:

— the Typewriter Area
— the Special Key / Cursor Key area
— the Numeric Keypad
— the Function Keys

In using the Commodore PC10/PC20 keyboard, note that:

— All the keys on the keyboard repeat as long as they are held down.

— You cannot interchange either the numeral zero (0) and the upper case letter o, or the numeral 1 and the lower case letter l.

— Keys may be **program controlled.** this means that their use is defined by the programming language or application software currently being used. The description of the specific function of these keys can be found in the MS-DOS Reference Manual or in the manual for the particular applications software being used.

In this appendix, whenever combinations of keys are to be pressed, the names of the keys to be pressed are separated by a hyphen. For example, *Ctrl-Alt-Del* means hold the Ctrl and Alt keys down and then press the Del key at the same time. See Appendix C for a list of special key sequences used in Ms-DOS.

An illustration of the keyboard is shown in Figure J-1.

The following pages describe each area of the keyboard, including definitions of the individual keys in each area. To make full use of your PC10/PC20 computer, you should become familiar with the names, locations and functions of all the keys .

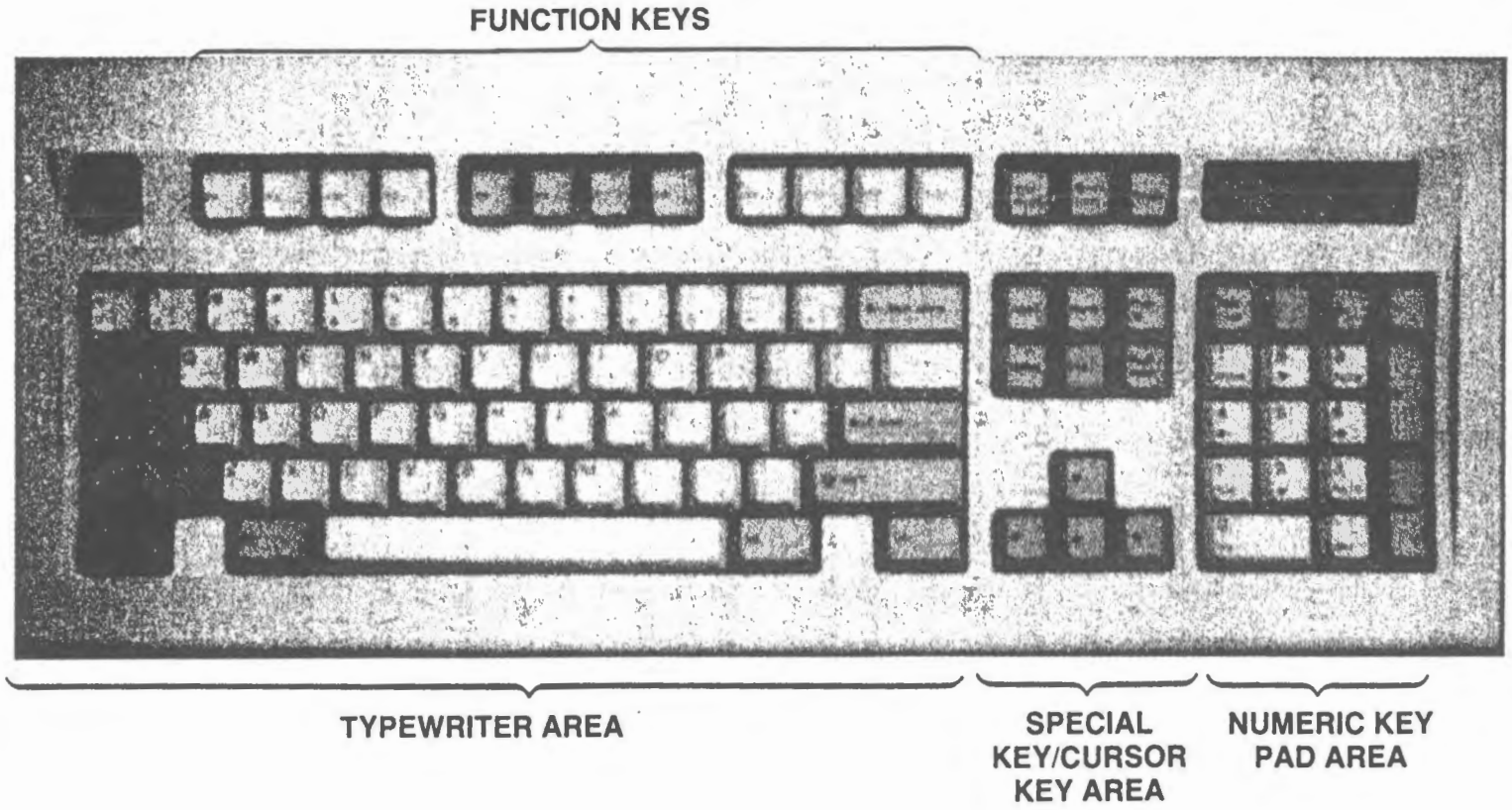


FIGURE J-1. THE COMMODORE PC10/PC20 KEYBOARD

THE TYPEWRITER AREA

The Typewriter Area contains a standard typing keyboard and some additional keys.

The SHIFT keys

There are two Shift keys in the Typewriter Area. They are oversize keys with an upward pointing arrow, and are located at each end of the second from the bottom row of typing keys. Holding down either shift key and pressing any of the alphabetic keys causes the letter shown on that key to be displayed in upper case. In addition, the shift keys are often used with other keys to perform special functions.

If the Caps Lock or Num Lock key is on, pressing the SHIFT key cancels the effect of that key. For example, if Caps Lock is on and you hold down the SHIFT key and press the A key, then the lower case letter (i.e., a) is displayed.

The CAPS LOCK key

Pressing the Caps Lock key at the left side of the middle row of typing keys locks the characters A through Z into the upper case position. When you first press the Caps Lock key, an indicator light located above the Numeric Keypad goes on. To release the Caps Lock Key, you press the key again and this light goes out.

Lower case characters can be obtained while the Caps Lock light is on by holding down the SHIFT key and pressing the required letter key.

The BACK SPACE key

This key is located on the far right side of the top row of the main keyboard, and has a small horizontal arrow pointing left. Pressing the Back Space key causes the character to the LEFT of the cursor to be erased, while the cursor and any characters to the RIGHT of the cursor move one position to the left.

The ENTER key

There are two Enter keys: one on the main keyboard, and one in the Numeric Keypad. The Enter key on the main keyboard is located at the right side of the middle row. On the top of this key is a right-angled arrow that points left. You must press the Enter key to transmit a command or information to the computer. The Enter key (which can be program controlled) may be referred to as a Return key or as a CR (Carriage Return) key in some program documentation.

The ALT key

There are two Alt (for "Alternate") keys, located at either end of the Space Bar in the bottom row of typing keys. The Alt key has several uses:

— Pressing the alt key simultaneously with the Ctrl and Del keys restarts (or "reboots") MS-DOS.

— Holding down the alt key and pressing a single alphabetic key A through Z allows you to enter a GW-BASIC keyword automatically. This is fully described in the GW-BASIC manual.

— Special characters can be entered using the Alt key and the number keys on the numeric keypad to the right of the main keyboard. Hold down the Alt key, type the three digit ASCII code for the required character and then release the Alt key. The character is then displayed. a list of ASCII character codes is shown in Appendix C of the GW-BASIC User's Guide.

The CTRL key

There are two Ctrl (for "Control") keys, located at either end of the bottom row of typing keys. The Ctrl key is a program controlled key. It is also used in conjunction with other keys to perform various control functions for MS-DOS. See Appendix C, Special Key Sequences.

The ESC key

The Esc (for "Escape") key, located at the far left of the top row of the keyboard, is a program controlled key.

The TAB key

This is the key with small horizontal arrows pointing left and right. The Tab key is located at the far left of the second from the top row of the typing keys. This key is used to set and remove tabs.

The SPACE Bar

This is the large key extending most of the way across the bottom of the main keyboard. This key is similar in location and function to the space bar on a typewriter. The Space Bar moves the cursor to the right, inserting spaces as it moves. If there are any characters in the path of the cursor movement, they are erased.

THE SPECIAL KEY/CURSOR KEY AREA

This area contains 13 keys, including a four key cursor keypad at the bottom and some special keys. Certain keys have multiple functions (e.g., Pause/Break). These functions are printed on the top and front of the keys. You press the Shift key to activate the function on the front of the key.

The PRINT SCREEN key

The Print Screen key is used to give a printed copy of the information displayed on the screen. Alpha/numeric characters displayed on the screen, such as program listings, can be printed on daisy wheel, dot-matrix and laser printers. Graphics information can usually only be reproduced on dot-matrix or laser printers.

The SCROLL LOCK key

This is a program controlled key. It is used typically to halt the scrolling of information on the screen. Usually, to resume scrolling, you press the key again.

The PAUSE key

This is a program controlled key. It is used typically to temporarily halt program execution.

The BREAK key

This is a program controlled key. The Break key is used in conjunction with the Ctrl key (i.e., in a Ctrl-Break sequence) to stop a GW-BASIC program when it is running. Under MS-DOS, Ctrl-Break has the same function as Ctrl-C: that is, it aborts the command currently being executed.

The INSERT key

Pressing the Insert key turns the insert function on. Any characters typed while the Insert function is on are inserted at the cursor position, without overwriting (i.e., deleting) any character already at the cursor position. To turn the Insert function off, press the Insert key again. Any character typed when Insert is off appears at the cursor position and overwrites any character already at the cursor position.

The DELETE key

Pressing the Delete key deletes the character at the cursor position. The cursor remains at that position and all the characters to the right of it move one position to the left.

The HOME key

This key moves the cursor to the top left corner of the screen, which is known as the Home position.

The END key

This key places the cursor one character position to the right of the last character on the line.

The PAGE UP key

The Page Up key is a program controlled key that moves the cursor to the next page (a full page is 24 lines) in the program.

The PAGE DOWN key

The Page Down key is a program controlled key that moves the cursor to the previous page in the program.

Controlling the Cursor from the Cursor Keypad

You can move the cursor around the screen by using the four cursor keys located in the Cursor Keypad located at the bottom of the keyboard, between the Typewriter Area and the Numeric Keypad. Cursor movement is controlled as follows:

— the up arrow key moves the cursor up

— the down arrow key moves the cursor down

— the right arrow key moves the cursor to the right

— the left arrow key moves the cursor to the left

The cursor moves one line or one character position for each time a key is pressed. The cursor will move continuously as long as you are holding down a key.

THE NUMERIC KEYPAD

The Numeric Keypad is at the far right of the Commodore PC10/ PC20 keyboard. The keys in this section of the keyboard usually function as number and mathematical keys as long as the Num Lock Key is on. With the Num Lock Key off, you can use certain keys to control the position of the cursor on the screen and perform some special functions. Note that many of the functions of keys in the Special Key/Cursor Key area are available in the Numeric Keypad.

Controlling the Cursor from the Numeric Keypad

You can control cursor movement from the Numeric Keypad by using the 2, 4, 6 and 8 keys, as follows:

— the 8 key moves the cursor up

— the 2 key moves the cursor down one

— the 6 key moves the cursor to the right

— the 4 key moves the cursor to the left

The cursor moves one line or one character position for each time a key is pressed. The cursor will move continuously as long as you are holding down a key.

The NUM LOCK key

Pressing the Num Lock key locks the numeric keys 0 through 9 into the numeric position. When you first press this key, an indicator light located above the Numeric Keypad goes on. To release this key, press the key again and this light goes out.

The other functions on the Numeric Keypad keys (such as scrolling the cursor by using the 2, 4, 6 and 8 keys) can be obtained while the Num Lock is on by holding down the Shift key and pressing the required key.

The HOME key

This key (the 7 key) moves the cursor to the top left corner of the screen, which is known as the Home position.

The END key

This key (the 1 key) places the cursor one character position to the right of the last character on the line.

The INS key

Pressing the Ins (for "Insert") key (the 0 key) turns the Insert function on. Any characters typed while the Insert function is on are inserted at the cursor position. To turn the Insert function off, press the Ins key again. Any characters typed when Insert is off appear at the cursor position, overwriting (i.e., deleting) any character already at the cursor position.

The DEL key

Pressing the Del (for "Delete") key (the decimal point key) deletes the character at the cursor position. The cursor remains at that position and all the characters to the right of it move one position to the left.

The PG UP key

The Pg Up (for "Page Up") key (the 9 key) is a program controlled key that moves the cursor to the previous page (a full page is 24 lines).

The PG DN key

The Pg Dn (for "Page Down") key (the 3 key) is a program controlled key that moves the cursor to the next page.

The +, −, * and / keys

These keys are used for mathematical functions: + for addition, − for subtraction, * for multiplication and / for division.

The ENTER key

You can press the Enter key to transmit a command or information to the computer. In other words, pressing this key has the same effect as pressing the Enter on the main keyboard. This can be a program controlled key.

THE FUNCTION KEYS

The Function Keys are the keys located in the horizontal row of keys above the Typing Area, and marked F1 through F12. These keys are program controlled keys — that is, their use is controlled by whatever software you are currently using.

SPECIAL KEYBOARDS

The PC10/PC120 MS-DOS software allows you to select any of the following keyboards, in addition to the U.S (ASCII) keyboard. Just type the appropriate KEYBxx command at the MS-DOS prompt and press ENTER.

In the KEYBxx command, xx is one of the following two-letter codes:

Code	Keyboard	Command
DV	Dvorak	keybdv
FR	France	keybfr
GR	Germany	keybgr
IT	Italy	keybit
SP	Spain	keybsp
UK	United Kingdom	keybuk

You should load only one keyboard program after starting MS-DOS.

You can switch from the keybxx program to the default (U.S./ASCII) keyboard format at any time by pressing CTRL-ALT-F1. You can then return to the memory-resident keyboard program by pressing CTRL-ALT-F2.

For More Information About the Keyboard...

For more information about using the PC10/PC20 keyboard, see Chapter 1 of the MS-DOS User's Guide and the user's manuals for your software programs.

Appendix K
AUTOCONFIG™

AUTOCONFIGuration is a unique feature of Commodore PC10/ PC20 Personal Computers, allowing them to automatically sense additional peripheral devices plugged into the PC10/PC20 expansion bus. Once these additional devices are detected, the resident peripherals on the PC10/PC20 mother board are adjusted as not to interfere or "clash" with expansion peripherals. The AUTOCONFIG™ feature can prevent hardware damage to peripherals and motherboard, as well as ease the installation of expansion cards.

The AUTOCONFIG™ process is as follows:

Video

If onboard Video controller is configured as a MONO adapter (dip switch #2 is UP(OFF), then an attempt is made to configure a MONO adapter in the expansion bus. If this is successful, then an expansion MONO adapter is assumed to be present and the onboard Video controller is never enabled.

If onboard Video controller is configured as a COLOR adapter (dip switch #2 is DOWN(ON), then an attempt is made to configure a COLOR adapter in the expansion bus. If this is successful, then an expansion COLOR adapter is assumed to be present and the onboard Video controller is never enabled.

Put simply, if video adapter present on the expansion bus is the same as the onboard video controller is configured to be, then the onboard video controller will NOT be enabled!

It is possible however, to have two different video controllers in the system. For example, the onboard controller may be configured as a COLOR controller and a Monochrome Display Adapter (MDA) can be placed on the expansion bus because the devices do not respond to the same I/O or Memory addresses.

Serial Port (COMn:)

Before the onboard serial port is enabled a scan of the two standard COMn: hardware locations is made. If serial hardware (serial card/modem) is found operational, possible bootup message(s) are:

"EXPANSION COM at 03F8h"

and/or

"EXPANSION COM at 02F8h"

If both available COM: addresses are occupied by expansion boards, then the onboard serial port will not be enabled. The onboard serial port will be configured and tested at I/O address 03F8h if no expansion COM:'s are found and will be configured and tested to the unused COM: address if only one expansion COM: is found.

If the onboard serial port is configured and tested successfully a message will be output during bootup:

"ONBOARD COM at 03F8h"

or

"ONBOARD COM at 02F8h"

Parallel Port (LPTn: or PRN:)

Before the onboard parallel port is enabled a scan of the three standard LPTn: hardware locations is made. If parallel hardware (printer card) is found operational, possible bootup message(s) may be:

"EXPANSION LPT at 0378h"

and/or

"EXPANSION LPT at 0278h"

and/or

"EXPANSION LPT at 03BCh"

If all available LPT: addresses are occupied by expansion boards, then the onboard parallel port will not be enabled. The onboard parallel port will be configured and tested at I/O address 0378h if no expansion LPT:'s are found, and will be configured and tested to the unused LPT: address if two expansion LPT:'s are found. If only one expansion LPT: is found, the onboard parallel port will be enabled to the first available I/O address, when searching in the following sequence:

0378h,0278h,03BCh

If the onboard parallel port is configured and tested successfully, a message will be output during bootup:

"ONBOARD LPT at 0378h"

or

"ONBOARD LPT at 0278h"

or

"ONBOARD LPT at 03BCh"

Real-Time Clock

Before the onboard real-time clock hardware is enabled, a check is made for interfering hardware in the I/O address range 02COh through 02CFh. If no interference is detected the onboard real-time clock is enabled.

A message will be output during bootup:

"ONBOARD RTC at 02COh"

Mouse Port

A check is made for a standard Microsoft Bus Mouse.

If it is found in the I/O channel then the onboard Microsoft compatible mouse hardware is never enabled. The following message will appear during bootup:

"EXPANSION MOUSE at 023Ch"

If no expansion mouse is found the onboard mouse is enabled and tested. If the mouse is operational then the following message will appear during bootup:

"ONBOARD MOUSE at 023Ch"

NOTE: The onboard mouse hardware is enabled/tested independent of the presence of the actual mouse. The bootup messages will appear even if the Commodore PC Mouse Kit is not attached.

8087 Numeric Coprocessor

A test is made for the presence of an 8087 Numeric Coprocessor during bootup. If an 8087 is detected the following message will be output:

"8087 Numeric Coprocessor"

NOTE: Ensure that the 8087 coprocessor installed is 8MHz for turbo mode.

NOTES FOR THE PROGRAMMER

It is possible to override the configuration done at bootup. **It is STRONGLY RECOMMENDED** that only advanced programmers with experience with low-level hardware/software interaction attempt this.

NOTE: If software override of the default configuration is performed, the presence of any expansion hardware should be taken into account to prevent hardware clash resulting in damage of the expansion hardware or the PC10/PC20 motherboard.

Configuration is performed via the COMMODORE CONFIGURATION REGISTER at I/O address 230h. This register is read/write with only bit7 changing its meaning from read to write.

COMMODORE CONFIGuration REGISTER—I/O addr 230h

R/W	bit6	bit6	bit5	bit4	bit3	bit2	bit1	bit0
R	mono	rtc	X	mouse	com1	com0	lpt1	lpt0
W	venb'	rtc	X	mouse	com1	com0	lpt1	lpt0

mono — indicates that the onboard video adapter is setup as a monochrome adapter when high, color when low.

venb' — when set low the onboard video adapter will be enabled.

rtc — when set high the onboard real-time clock will be enabled.

X — this bit is reserved for future use.

mouse — when set high the onboard mouse will be enabled.

com1	com0	
low	low	— onboard serial port is disabled.
low	high	— serial port enabled at I/O addr 2f8h
high	low	— serial port enabled at I/O addr 3f8h
high	high	— this configuration is reserved.

lpt1	lpt0	
low	low	— onboard parallel port is disabled.
low	high	— parallel port enabled at I/O addr 3bch
high	low	— parallel port enabled at I/O addr 378h
high	high	— parallel port enabled at I/O addr 278h

Appendix L
PC10/PC20 Video Modes

NOTE: See Appendix E for information on setting the configuration dip switches to select video modes.

Video Mode Characteristics

Adapter Name	Resolution	Colors
CGA	80 column alpha (8×8 cell)	16 of 16 colors
	40 column alpha (8×8 cell)	16 of 16 colors
	320x200 graphics	4 colors
	640x200 graphics	black & white
Monitor type:	9Pin Video—RGBI (CGA or MultiSync Monitor)	
	Composite Connector—NTSC color (40 columns)	
	Composite Connector—NTSC mono (80 columns)	
Vert. Update:	60 hz	
Horz. Update	15.7 Khz	
Max. Dot Clock:	14.318 Mhz	
PLANTRONICS	320x200 graphics	16 of 16 colors
	640x200 graphics	4 of 16 colors
Monitor type:	same as CGA	
Vert. Update:	same as CGA	
Horz. Update:	same as CGA	
Max. Dot Clock:	14.318 Mhz	
MDA	80 column alpha (9×14 cell)	monochrome
Monitor type:	9Pin Video/TTL Monochrome	
	Composite Connector—monochrome PAL monitor	
Vert. Update:	50 hz	
Horz. Update:	18.432 Khz	
Max. Dot Clock:	16.257 Mhz	

HERCULES	720 × 348 graphics	monochrome
Monitor type:	same as MDA	
Vert. Update:	same as MDA	
Horz. Update:	same as MDA	
Max. Dot Clock:	16.257 Mhz	
ALPHA132	132 × 43 alpha (8 × 8 cell)	monochrome
Monitor type:	9Pin Video/TTL monochrome monitor	
Vert. Update:	48.7 hz	
Horz. Update:	18.52 Khz	
Max. Dot Clock:	24.000 Mhz	

VIDEO SPECIFICS FOR THE PROGRAMMER

IBM CGA and MDA Modes

The standard IBM compatible Video modes are:

Color Graphics Adapter(CGA):

40 × 25 color alpha
80 × 25 color alpha
320 × 200 color graphics
640 × 200 b&w graphics

Monochrome Display Adapter(MDA):

80 × 25 mono alpha

Specific details concerning hardware registers and memory organization for the IBM compatible adapters are available in the PC Technical Reference as well as adapter specific Technical Reference guides which can be obtained from IBM. Because this information is readily available from many sources, this appendix focuses on the information which is less readily obtained.

Hercules Graphics Mode

This mode is essentially a bitmapped version of the MDA. The video dot clock (16.257 Mhz) and the screen resolution (720 × 348 pels) are identical. The memory requirement to hold one full display is just less that 32Kbytes; therefore, two display pages are available.

Page0: address b000:0000h to b000:7fffh
Page1: address b000:8000h to b000:ffffh

NOTE: Page1 occupies address space used by CGA video memory. DO NOT switch to this page if an EXPANSION CGA adapter is installed. Hardware damage to the EXPANSION card and/or the PC10/PC20 motherboard may result!

The relevant registers are:

Hercules Enable Register—I/O addr 3bfh

bit0: 0 — disable setting graphics mode
1 — enable setting graphics mode
bit1: 0 — disable changing graphics pages
1 — enable changing graphics pages

Mode Register—I/O addr 3b8h

bit1: 0 — disable Hercules mode(default MDA)
1 — enable Hercules graphics
bit3: 0 — video disable
1 — video enable
bit5: 0 — blink disable
1 — blink enable
bit7: 0 — Hercules Page0
1 — Hercules Page1

Hercules 6845 CRTC parameters:

register #0	36h
#1	2dh
#2	2fh
#3	07h
#4	5bh
#5	00h
#6	57h
#7	53h
#8	02h
#9	03h
#a	00h
#b	00h
#c	00h
#d	00h

Locating specific pixels within the bitmap may be performed with the following equation:

byte offset = (8192 * (Y mod 4)) + (90 * INT(Y mod 4)) + INT(X/8); bit position = 7 − (X mod 8);

where: 0 <= X <= 719;
0 <= Y <= 347;

320x200 16 color BIT ORGANIZATION

bplane#	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
plane0	c1	c0	c1	c0	c1	c0	c1	c0
plane1	c3	c2	c3	c2	c3	c2	c3	c2
pixel#	pixel0		pixel1		pixel2		pixel3	

640x200 4 color BIT ORGANIZATION

bplane#	bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
plane0	c0	c0	c0	c0	c0	c0	c0	c0
plane1	c1	c1	c1	c1	c1	c1	c1	c1
pixel#	pixel0	pixel1	pixel2	pixel3	pixel4	pixel5	pixel6	pixel7

c2/I	c1/R	c0/G	c3/B	color
0	0	0	0	black
0	0	0	1	blue
0	0	1	0	green
0	0	1	1	cyan
0	1	0	0	red
0	1	0	1	magenta
0	1	1	0	brown
0	1	1	1	white
1	0	0	0	gray
1	0	0	1	lt. blue
1	0	1	0	lt. green
1	0	1	1	lt. cyan
1	1	0	0	lt. red
1	1	0	1	lt. magenta
1	1	1	0	yellow
1	1	1	1	bright white

Appendix M
Adding a Hard Disk to a PC10

Using the PC10 with a Hard Disk

Several options are available when considering hard disk storage on a PC10. A hard disk may be added by the usual method of placing a hard disk controller card into the expansion bus and attaching the disk to the card via ribbon cable. If the disk is of the 5¼" form factor it may be mounted below the floppy drive if a second floppy drive is not installed. The preferred disk form factor is 3½" because it can be added without consuming the space allocated to a present or future second floppy drive.

Commodore dealers offer a special 3½" 20Mbyte hard disk upgrade kit which does not require the addition of a controller card, thus freeing one potentially useful expansion slot. This special drive is only available from Commodore and is the same as the drive built into the Commodore PC20.

The drive attaches to the PC10 motherboard via a 40 conductor ribbon cable. The cable attaches to connector CN202 visible through the opening behind the floppy drive on the floppy/power sub-assembly. The special drive may only be used when no other hard disk controllers/disks are in the system. Before installing the drive, jumper JMP208 must be changed. See Appendix D for information on how to set this jumper for hard disk use.

Formatting Hard Disks

The steps involved in hard disk formatting are:

1. Low-Level Format
   Actually places special information required by the controller to access the disk (e.g., ID fields and Error Detect/Correct information).
2. Partitioning
   Links the physical device into the MS-DOS logical device system.
3. MS-DOS Format
   Formats the logical device in MS-DOS format. (e.g., file structures).

When installing a Commodore PC compatible hard disk kit or reformatting a PC20 hard disk the low-level format is performed as follows:

1. At the A> prompt press the Enter key.
2. When the A> prompt reappears, type:
   DEBUG
   and press Enter again.
3. The prompt will change to a dash (-). When the dash appears, type:
   G=FA00:5
   and press Enter. The low-level format is then performed. The following messages are displayed:

   WX2 Format Revision 1.08 © Copyright Western Digital Corp. 1986
   Current Drive is C:, Select new Drive or RETURN for current.
   Current Interleave is 3, Select new Interleave or RETURN for current.
   Are you dynamically configuring the drive—answer Y/N n
   Press "y" to begin formatting drive C with interleave 03.

NOTE: This entry is specific to the Commodore hard disk. Refer to manufacturer's instructions when using other hard disks.

Note that you answer No (n) to the prompt about dynamically reconfiguring the drive.

When installing a non-Commodore type of controller/disk, refer to the manufacturer's instructions for low-level format specific to the particular unit.

When the formatting is complete the A> prompt reappears. You must then partition the hard disk. To do this, you use the FDISK command. See Appendix F of the MS-DOS User's Reference manual for instructions on how to use FDISK.

When the hard disk has been partitioned, you use the MS-DOS FORMAT command to format the partition. To do this, type:

FORMAT C: /S/V

The /S option copies the system files from the MS-DOS System Disk onto the hard disk. During the formatting process you will see the standard formatting message and prompts, including a prompt for a volume label (disk name). When you respond to this prompt you will see the usual message listing the total disk space and the available disk space, followed by the A> prompt. To start using the hard disk, remove the floppy MS-DOS System Disk from Drive A: and reboot the system by pressing Ctrl-Alt-Del. When the system finishes rebooting, you will see a C> prompt instead of the A> prompt.

NOTE: If you do not remove the floppy System Disk from Drive A:, the system will boot from the floppy disk in Drive A: rather than from the hard disk.

Appendix N
Technical Specifications

Specification

PC10/PC20	XT Compatible
Memory	
ROM	Autoconfig BIOS
RAM	640KB
RAM expandable	
on board	n/a
on slots	Yes
CPU	
Type	8088-1
Clock speed	4.77, 7.16, 9.54 MHz
8087 Math Co-processor	Socket on board
Number of Slots	Three full size (XT)
Operating System	MS-DOS 3.2 included
KEYBOARD	
Number of keys	ASCII 101 International 102
Type	Enhanced AT
Numeric keypad	Yes
Cursor keys	4 – inverted T layout
POWER SUPPLY	
Type	High-efficiency switching power supply with integrated cooling fan
Maximum configuration supported	2 floppy disk drives, one hard disk drive, 3 expansion cards
INPUT/OUTPUT PORTS	
RS232C serial	Built in
Centronics parallel	Built in
Mouse port	Built in for 1352 Mouse

STORAGE

Floppy drive	Built-in controller supports two drives
Hard drive	BIOS built in for "XT" hard disk interface
Maximum internal configuration	Two half-height 5.25 inch floppy disk drives and one half-height 3.5 inch hard disk drive

VIDEO

CGA	Built in
80 column color alpha/numeric	
40 column color alpha/numeric	
640 × 200 black and white graphics	
320 × 200 4 color graphics	
MDA	Built in
80 column monochrome alpha/numeric	
Hercules	Built in
720 × 348 monochrome graphics	
Plantronics Color Plus	Built in
640 × 200 4 color	
320 × 200 16 color graphics	

COMPATIBLE MONITORS

TTL monochrome
RGBI
Composite NTSC color
Composite NTSC/PAL monochrome

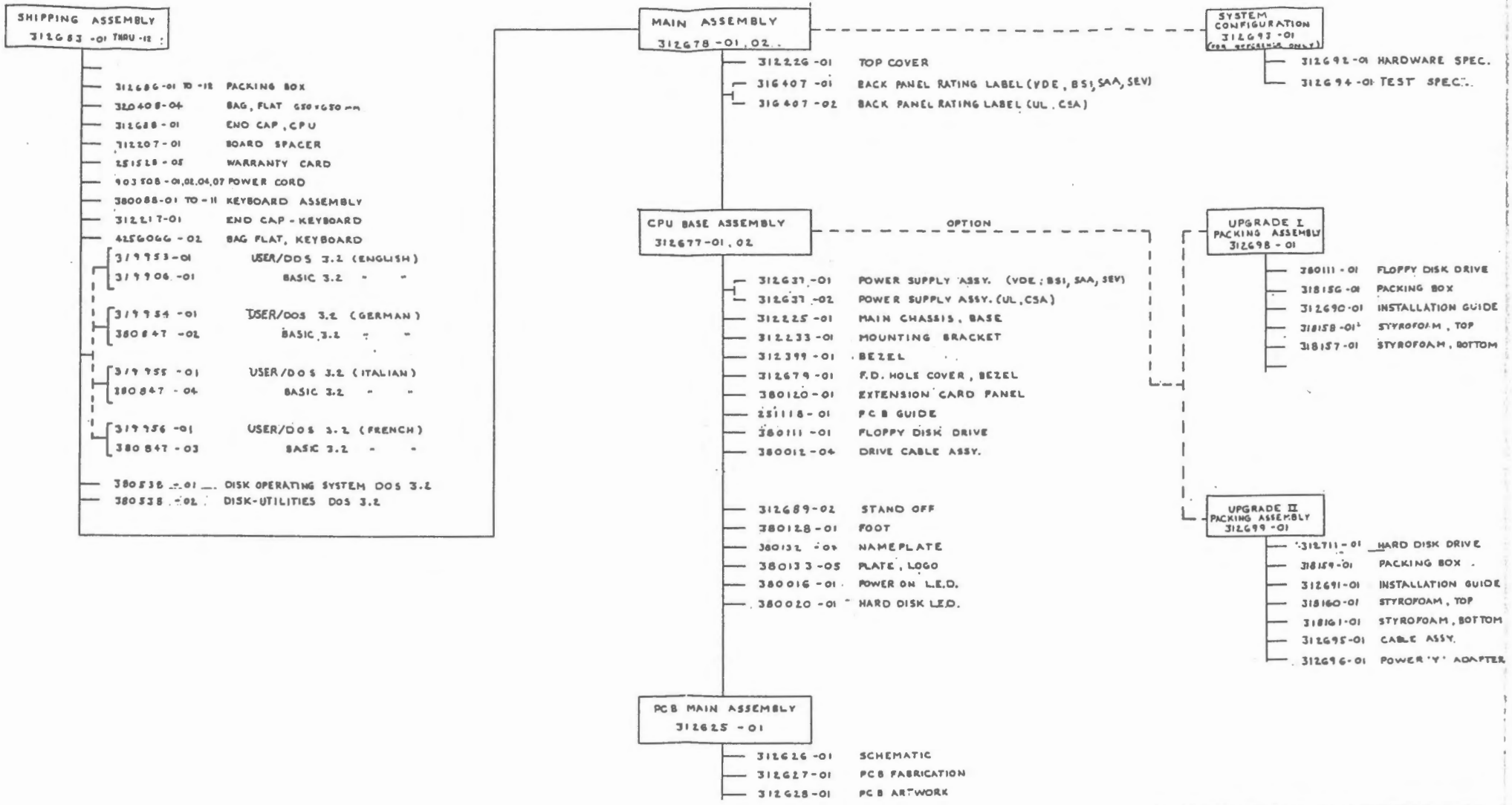
OTHER FEATURES

- Sound Capability
- External Configuration switches
- Built-in real-time clock/ calendar with battery back-up

COMMODORE ADD-ON OPTIONS

- Second floppy disk drive
- "XT" Hard disk with controller on board; does not require extra slot
- 1352 Mouse
- 1680 Modem
- MPS 1250 Printer
- 2002-89 Monitor
- 1084 Monitor

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		ADVANCE ENGINEERING RELEASE	6-30-87	[illegible]



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DRAWN BY: C.J. WOOTERS 7-31-87

MATERIAL

FINISH

USED ON PC10c NEXT ASSY

commodore

DRAWING TREE
PC 10c

SIZE D 312676 REV 1

SCALE ~ SHEET 1 OF 1

QUANTITY REQD PER PART / DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	01		312626-01	SCHEMATIC			
	02		312627-01	FABRICATION DRAWING			
	03		312628-01	PCB ARTWORK			
	04						
	05						
	06						
	07						
	08						
1	09		318048-01	IC, FE2010A	U101		
1	10		380200-02	IC, 8088 10MHZ	U102		ECR Pending
	11						
5	12		901521-46	IC, 74LS245	U104, U204, U205, U304, U604		
4	13		901521-03	IC, 74LS244	U108, 109, U202, U603		
3	14		901521-29	IC, 74LS373	U105, 106, 107		
	15						
1	16		901521-02	IC, 74LS04	U1		
1	17		901521-03	IC, 74LS08	U2		
1	18		901521-30	IC, 74LS14	U3		
1	19		901525-01	IC, 74S04	U325		
1	20		901525-04	IC, 74S00	U328		
1	21		901525-05	IC, 74S08	U326		
3	22		318089-01	IC, 74LS158	U301, 302, 303		
1	23		901525-06	IC, 74S10	U327		
2	24		901522-06	IC, 7406	U206, 207		
	25						
	26						
1	27		312710-01	IC, SMC9268	U203		
1	28		318073-01	IC, OKI6242	U401		
1	29		380205-01	IC, 8250	U402		
1	30		901882-01	IC, 1488 DRIVER	U404		
1	31		901883-01	IC, 1489 RECIEVER	U405		
1	32		318088-01	IC, PVC4 VIDEO	U601		
1	33		318091-01	IC, PPC1	U403		
1	34		318087-01	IC, CUSTOM 5720	U602		SPEC NOT AVAILABLE AT AER
	35						
	36						

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commodore

TITLE: PC 10c PCB ASS'Y

DRWN BY: IAN K. DATE: 5/10

CHKD:

ENGR: DATE:

APPR:

SIZE B | 312625 | REV 1 | SHT 2/4

ADVANCED REPRO

QUANTITY REQD PER PART / DASH NO. 01	ITEM	OS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	37						
6	38		390083-02	IC, 64KX4 DRAMS (150ns)	U605,606		U321 - U324
16	39		380223-01	IC, 256KX1 DRAMS (150ns)	U305-320		
	40						
1	41		318086-01	IC, VIDEO CHARACTER ROM	U607		LISTING NOT AVAILABLE AT A
1	42		318085-01	IC, FRANK BIOS ROM	U201		LISTING NOT AVAILABLE AT A
	43						
	44						
	45						
	46						
2	47		904150-06	SOCKET, 40 PIN DIP	U102, 103		
2	48		904150-05	SOCKET, 28 PIN DIP	U201, U607		
1	49		390185-02	SOCKET, 68 PIN PLCC	U602		
1	50		390185-01	SOCKET, 84 PIN PLCC	U101		
	51						
	52						
	53						
	54			RESISTOR NETWORKS			
	55						
3	56		902441-31	4.7K x 5, 6PIN, SIP	RP101, 102, RP501		
1	57		380388-01	220/330 x 4, 6PIN, SIP	RP201		
1	58		902442-55	4.7K x 7, 8PIN, SIP	RP401		RP603
3	59		902442-35	10K x 7, 8PIN, SIP	RP502, 503, 504		
1	60		902410-06	3.3K x 9, 10PIN, SIP	RP203		
1	61		902410-13	10K x 9, 10PIN, SIP	RP505,		
1	62		902410-17	33K x 9, 10PIN, SIP	RP604		
1	63		902441-42	33K x 5, 6 PIN, SIP	RP605		
	64						
	65						
	66			RESISTORS, 5%, 1/4 WATT			
1	67		901550-03	5.1K OHM	R105		
2	68		901550-84	1M OHM	R403, 405		
3	69		901550-64	10 OHM	R502, 503, 625		
12	70		901550-19	4.7K OHM	R103, 104, 201-204, 408, 412, 616, 623, 624, 639		
23	71		901550-105	33 OHM	R301-314, 404, 419, R205-211, R315		
2	72		901550-58	470 OHM	R401, 402		
	73						

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commodore

TITLE: PC 10 c PCB ASS'Y

DRWN BY: IAN K. DATE: 5/1C

CHKD:

ENGR: DATE:

APPR:

SIZE B 312625 REV 1 SH 3

ADVANCED REPRO

QUANTITY REQD PER PART / DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	74						
2	75		901550-18	2.2K OHm	R407, 410		
3	76		901550-20	10K OHm	R409, 411, 501		
3	77		901550-01	1K OHm	R504, 619		R606
1	78		901550-88	750 OHm	R601		
2	79		901550-31	680 OHm	R602, 617		
2	80		901550-108	360 OHm	R603		R627
1	81		901550-134	130 OHm	R604		
1	82		901550-45	75 OHm	R605		
3	83		901550-06	33K OHm	R608, 622		R607
1	84		901550-53	2K OHm	R618		
1	85		901550-33	3K OHm	R620		
1	86		901550-17	1.2K OHm	R626		
11	87		901550-94	68 OHM	R628-638		
9	88		901550-135	30 OHm	R413-421		
2	89		901550-52	220 OHm	R505		R102
	90			CAPACITORS			
	91						
	92						
6	93		900462-29	47PF, MLC, AXIAL, COG	C103, 104, 105, 106, 406, C602		
1	94		900462-20	20PF, MLC, AXIAL, COG	C401		
1	95		900462-21	22PF, MLC, AXIAL, COG	C405		
	96						
	97						
18	98		900462-37	100PF, MLC, AXIAL, COG	C408-424,		C601
29	99		900463-16	1000PF, MLC, AXIAL, X7R	C511-540		
	100						C747, 748, 753, 800, 802, 803
53	101		390082-01	.1UF, MLC, AXIAL, Z5U	C404, C701-719, C723-726, C757, C765-778, C407		
20	102		390082-04	.33UF, MLC, AXIAL, (AVX)	C727-746		
	103						
1	104		390082-05	.22UF, MLC, AXIAL, Z5U	C508		
	105						
1	106		390101-05	4.7UF, ALUM., ELEC, RADIAL	C403		
	107						
11	108		390101-01	47UF, ELECT, RADIAL @ 16V	C501, 502, 504, 505, 507, 542, 543, 544, 545		C546, C547
	109						
	110						

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commodore

TITLE: PC 10c PCB ASS'Y

DRWN BY: IAN K. DATE 5/10

CHKD:

ENGR: DATE

APPR:

SIZE B 312625 REV SHT 4/7

ICED REPRO

QUANTITY REQD PER PART / DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	111						
	112						
2	113		900022-04	1UF, MLC, RADIAL, @ 50V	C503, 541		
	114						
	115						
	116						
	117						
1	118		251029-01	VARCAP, 4-20PF	C402		
	119						
	120						
	121						
	122						
1	123		900560-01	CRYSTAL, 32.768 KHZ	XTAL 2		
1	124		900556-13	CRYSTAL, 1.832 MHz, HC18U	XTAL 3		
	125						
1	126		325566-10	OSCILLATOR, 16MHZ	OSC201		
1	127		325566-13	OSCILLATOR, 16.257 MHZ	OSC601		
1	128	X	325566-15	OSCILLATOR, 24.000 MHZ	OSC602		ECR Pending at AER
1	129		325566-12	OSCILLATOR, 28.63636MHZ	OSC101		
	130						
	131						
2	132		902686-02	TRANSISTOR, 2N2222A NPN	Q101, Q401		
1	133		902658-01	TRANSISTOR, 2N3904 NPN	Q601		
6	134		900850-01	DIODE, IN4148	CR401-405, CR501, CR601		
	135						
1	136		901527-03	REGULATOR, 7905 -5V	VR501		
	137						
	138						
1	139		312680-01	PIEZO BEEPER	PZ101		
	140						
40	141		251842-02	EMI FILTER, 100PF	EMI401-425, EMI601-615		
	142						
1	143		380393-01	BATTERY, NICAD 3.6V	BT601		
	144						
	145						
	146						
	147						

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commodore

TITLE: PC 10c PCB ASS'Y

DRWN BY: IAN K | DATE: 5/10 | CHKD:

ENGR: | DATE: | APPR:

SIZE B | 312625 | REV 1 | SHT 5/7

ADVANCED REPRO

QUANTITY REQD PER PART/DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
	148						
	149						
2	150		903326-03	HEADER, 3PIN SIL	JMP204, 208		
7	151		903326-02	HEADER, 2PIN SIL	JMP101, JMP205, 206, 207, 611, 612, 613		
9	152		390043-01	SHORTING BLOCKS, 2 POS			
	153						
1	154		903345-17	HEADER, 34PIN DIL	CN201		
1	155		903345-20	HEADER, 40PIN DIL	CN202		
	156						
	157						
	158						
1	159		252166-01	DIN, 5 PIN, ROUND, FEMALE	CN102		
	160						
1	161		390241-06	D-SUB, 25PIN, FEMALE	CN401		
1	162		390242-06	D-SUB, 25PIN, MALE	CN402		
1	163		390242-02	D-SUB, 9 PIN, MALE	CN601		
1	164		390241-02	D-SUB, 9 PIN, FEMALE	CN602		
	165						
1	166		252122-01	JACK, RCA FEMALE, RT ∠	CN603		
	167						
	168						
	169						
3	170		903446-02	CONNECTOR, 62PIN	CN501-503		
	171						
1	172		903349-01	CONNECTOR, POWER	CN12		
	173						
1	174		251260-01	SWITCH, NO, PB	SW501		
1	175		904775-01	SWITCH, 4POS, 8PIN DIP, LEVER	SWTCH601		
	176						
	177						
	178						
	179						
	180						
	181						
	182						
	183						
	184						

commodore

TITLE: PC 10 c PCB ASS'Y

DRWN BY: IAN K. DATE 5/10

CHKD: DATE

ENGR: DATE

APPR:

SIZE B | 312625 | REV 1 | SHT 6/7

CED REPRO

PART NO.	DESCRIPTION
312678 - 01	MAIN ASSEMBLY , PC 10c -(VDE, BST, SAA, SEV)
312678 - 02	MAIN ASSEMBLY PC 10C -(UL, CSA,)

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
1		ADVANCE ENGINEERING RELEASE	8-18-87	

49

1. SHEET 3 OF 3 SIZE. D
ASSY DWG 312678
NOTES:

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commodore	TITLE: MAIN ASSEMBLY , PC 10c	DRAWN BY: C.J. WOOTERS	DATE 6-17-87	ENGR	SIZE B	DRAWING NUMBER 312678
		CHKD		APPR:		SHEET 1 OF 3

CENTRONICS BLUEPRINT

QUANTITY REQD PER PART / DASH NO. 02	QUANTITY REQD PER PART / DASH NO. 01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
1	1	1	D	312226-01	TOP COVER			
	1	2	S/D	312677-01	CPU BASE ASSEMBLY PC10c			(VDE, BSI, SAA, SEV)
1	-	3	S/D	312677-02	CPU BASE ASSEMBLY PC10c			(UL, CSA.)
5	5	4	B	905655-04	LOCK WASHER, EXT. TOOTHED, M4			
5	5	5	B	906810-05	SCREW, MACHINE, M4x0.7x6.0LG			
-	1	6	C	316407-01	BACK PANEL LABEL			(VDE, BSI, SAA, SEV)
1	-	7	C	316407-02	BACK PANEL LABEL			(UL, CSA)

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commodore

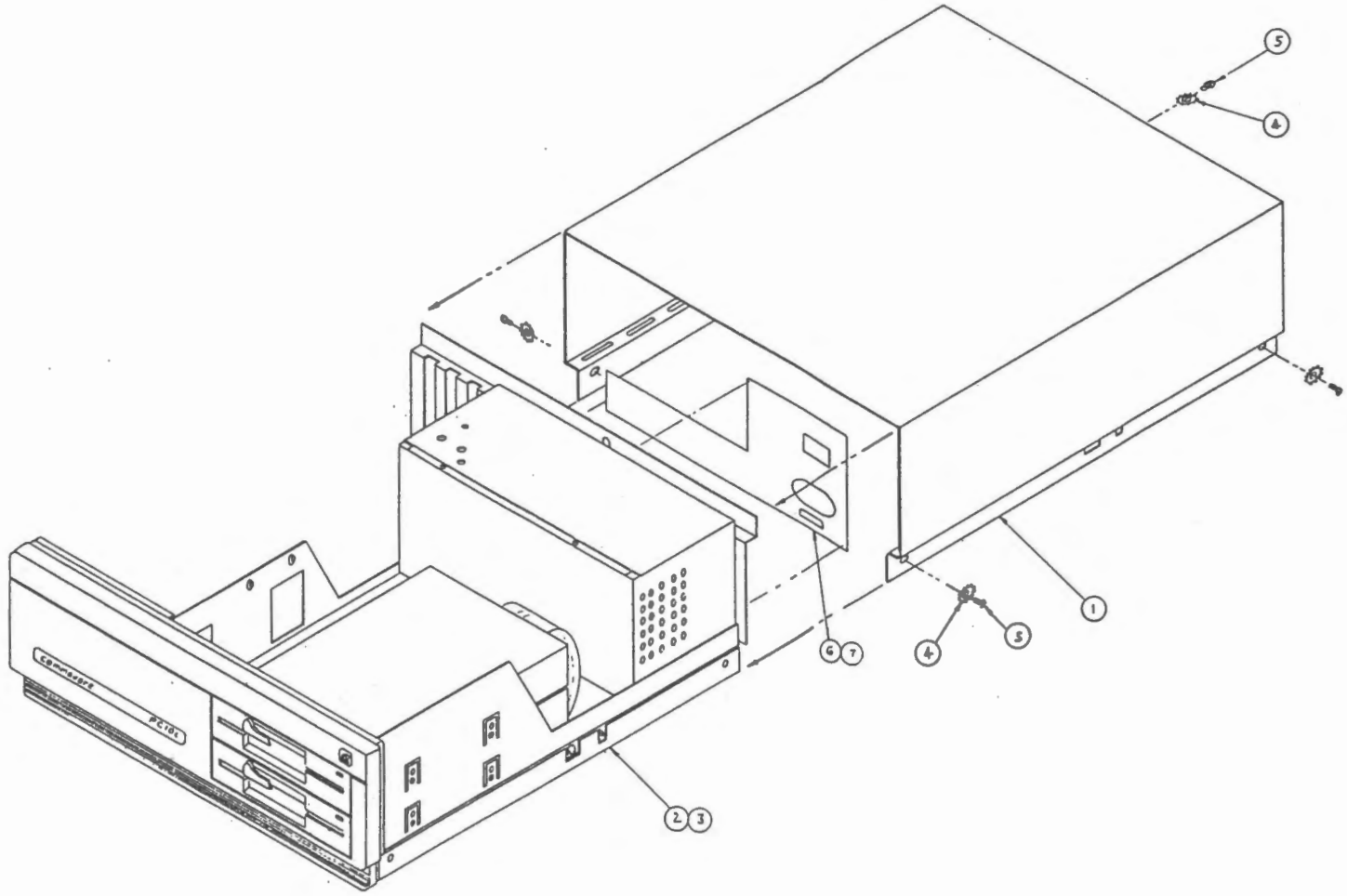
TITLE: MAIN ASSEMBLY, PC 10c

DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
C.J. VROCTERS	6/17/87				312678	1	2/3
CHKD:		APPR:					

ANCED REPRO

PART NR.	DESCRIPTION
312678-01	MAIN ASSEMBLY, PC10c (VDE 6821, SMA, SVE)
312678-02	MAIN ASSEMBLY PC10c (UL CSA)

REVISIONS			
ZONE	LTR	DESCRIPTION	DATE
		SEE SHEET 1.	



UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS	DRAWN BY: C J WOOTERS	DATE 6-17-87
	CHKD	
	ENGR	6/17/87
	APPD.	
MATERIAL:	USED ON PC10c	NEXT ASSY
FINISH:		

commodore

MAIN ASSEMBLY
PC 10c

SIZE D 312678

SCALE ~ SHEET 3

PART NO.	DESCRIPTION
312677-01	CPU BASE ASSY., PC10C, (VDE, BSI, SAA, SEV)
312677-02	CPU BASE ASSY., PC10C, (UL, CSA)

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		ADVANCE ENGINEERING RELEASE	8-19-87	

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1. SHEET 3 OF 3 SIZE D

ASSY DWG: 312677

NOTES:

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commodore	TITLE: CPU BASE ASSEMBLY, PC10-C	DRAWN BY: C.J. WOOTERS	DATE 6-11-87	ENGR		SIZE B	DRAWING NUMBER 312677
		CHKD.		APPR.			SHEET 1 OF 3

QUANTITY REQD PER PART / DASH NO. 02	01	ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
1	1	1	D	312225-01	MAIN CHASSIS BASE			
1	1	2	D	312233-01	MOUNTING BRACKET			
1	1	3	D	312399-01	BEZEL			
1	1	4	B	312679-01	F.D. HOLE COVER, BEZEL			
4	4	5	B	380120-01	EXTENSION CARD PANEL			
4	4	6	B	251118-01	PCB GUIDE			
1	1	7	A	380111-01	FLOPPY DISK DRIVE			
-	1	8		312637-01	POWER SUPPLY			(VDE, BSI, SAA, SEV)
1	-	9		312637-02	POWER SUPPLY			(UL, CSA)
4	4	10	A	380128-01	FOOT			
1	1	11	B	380132-07	NAMEPLATE			
9	9	12	B	312689-02	STAND OFF			
1	1	13	A	380133-05	PLATE LOGO			
		14						
1	1	15	B	380012-04	FLOPPY DISK CABLE			
1	1	16	B	380016-01	POWER ON L.E.D.			
1	1	17	B	380020-01	HARD DISK L.E.D.			
1	1	18	B	312625-01	P.C.B. MAIN ASSY.			
3	3	19	B	906883-01	SCREW, SELF TAPPING M3 x 8.0 LG.			USE ON BEZEL
2	2	20	B	906883-15	SCREW, SELFTAPPING M3 x 5.0 LG			USE ON F.D. HOLE COVER
8	8	21	B	906810-01	SCREW, MACH. M4 x 0.7 x 8.0 LG			USE ON POWER SUPPLY, MTG. BRACKET
4	4	22	B	324465-01	SCREW, MACH. M3.5 x 0.5 x 5.0 LG.			USE ON EXTENSION CARD PANEL
4	4	23	B	906800-03	SCREW, M3 x 0.5 x 8.0 LG.			FOR FLOPPY DISK DRIVE
4	4	24	B	905650-07	LOCKWASHER, EXT. TOOTHED 3.7 DIA			FOR EXT. CARD PANEL
1	1	25	B					
		26						
		27						
		28						
		29						
		30						
		31						
		32						
		33						
		34						
		35						
		36						
		37						

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commodore

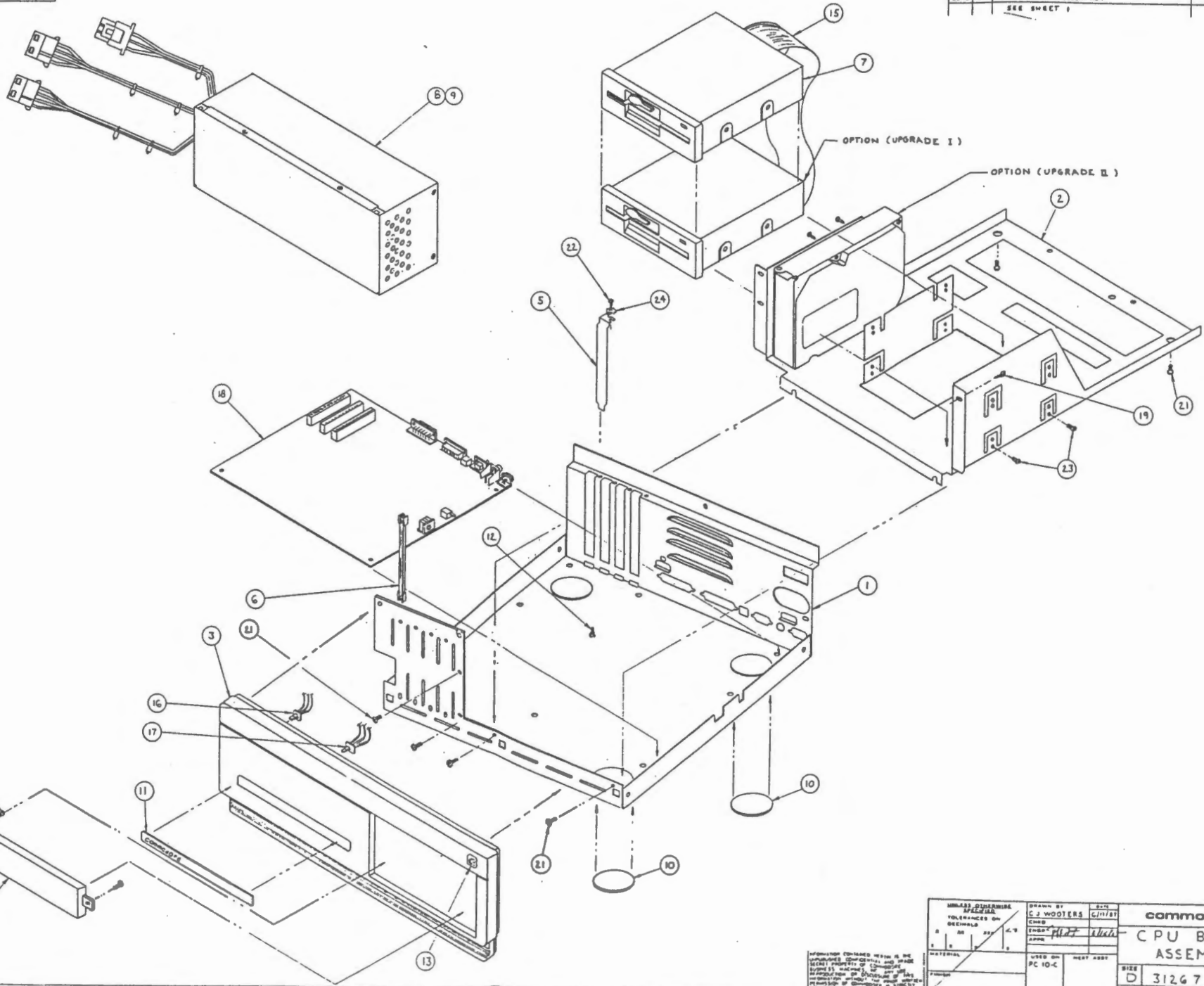
TITLE: C.P.U BASE ASSEMBLY

DRWN BY:	DATE	ENGR:	DATE	SIZE		REV	SHT
C.J. WOOTERS	6-11-87			B	312677	1	2/3
CHKD: C BONSALL	7-13-87	APPR:					

VANCED REPRO

T. NR.	DESCRIPTION
477-01	CPU BASE ASSEMBLY, PC 10c (VDE 8ST, SAA SBV
477-02	CPU BASE ASSEMBLY, PC 10 c (UL, CSA.)

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROV
		SEE SHEET 1		



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UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS	DRAWN BY C J WOOTERS	DATE 6/11/87
	CHKD	
	ENGR	
	APPR	
MATERIAL	USED ON PC 10-C	NEXT ASSY

commodore

CPU BASE ASSEMBLY

SIZE		REV
D	312677	1
SCALE		SHEET 3 OF 3