
COMMODORE

PC 10 - III

PC 20 - III

Technical Manual

4/88

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1.0 Einführung: Die Hardware

Ihr Commodore PC 10/20-III

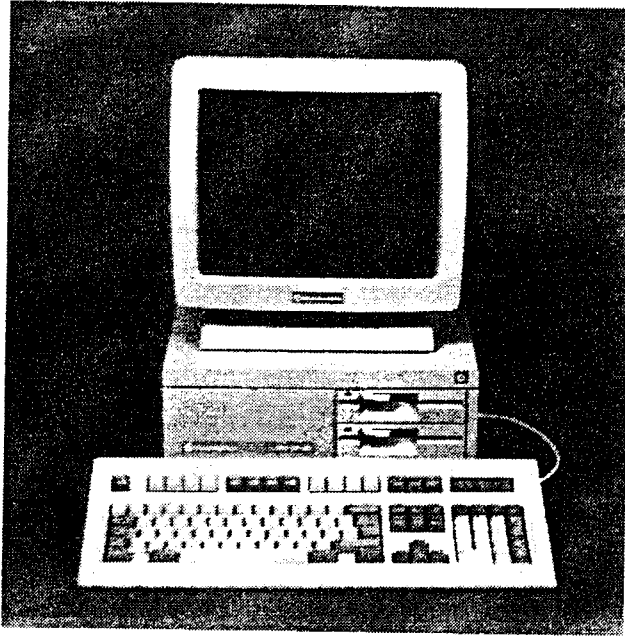
- ist voll kompatibel zum PC/XT-Industriestandard
- verarbeitet die gesamte verfügbare PC/XT-Software
- arbeitet mit der 8088-1 - 16-Bit-CPU bei wählbarer Taktfrequenz (4,77; 7,16; 9,54 MHz)
- enthält Floppy-Disk- sowie Festplatten-Interface bereits auf der Hauptplatine
- enthält ein Microsoft-kompatibles Maus-Interface bereits auf der Hauptplatine
- konfiguriert alle vorhandenen Ein-/Ausgabe- und Video-Adapter beim Einschalten selbsttätig
- hat 640 KBytes Hauptspeicher (RAM)
- verfügt über ein (PC 20-III) oder zwei (PC 10-III) 5 1/4-Zoll, 360 KBytes-Floppy-Disk-Laufwerke
- enthält ein 3 1/2-Zoll-Festplattenlaufwerk (nu PC 20-III)
- bietet 3 freie voll PC/XT-kompatible Erweiterungssteckplätze
- enthält eine parallele (CENTRONIX) Drucker-Schnittstelle
- enthält eine serielle (RS232) Schnittstelle
- enthält eine Akku-gepufferte Echtzeituhr
- enthält einen kombinierten Monochrom/Color-Grafik-Adapater (MDA/CGA, Hercules, PLANTRONICS)
- enthält ein ausreichend dimensioniertes Netzteil mit Gebläse
- wird komplett mit PC/AT-kompatibler Tastatur und Monochrom-Monitor ausgeliefert.

In diesem Kapitel werden Ihnen die Hardware-Komponenten des Commodore PC 10/20-III vorgestellt. Außerdem bekommen Sie Hinweise zur Wartung des Rechnersystems.

Der Commodore PC 10/20-III besteht aus den drei folgenden Komponenten:

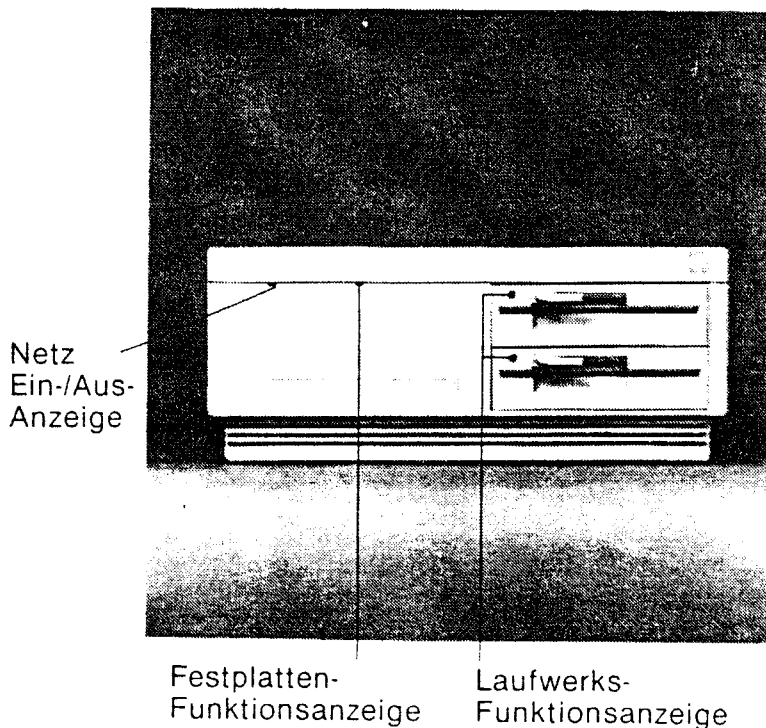
- Systemeinheit mit den integrierten Diskettenlaufwerken und dem optionalen Festplatten-Laufwerk
- Bildschirm
- Tastatur

Auf der untenstehenden Abbildung sehen sie einen kompletten Commodore PC 10-III:



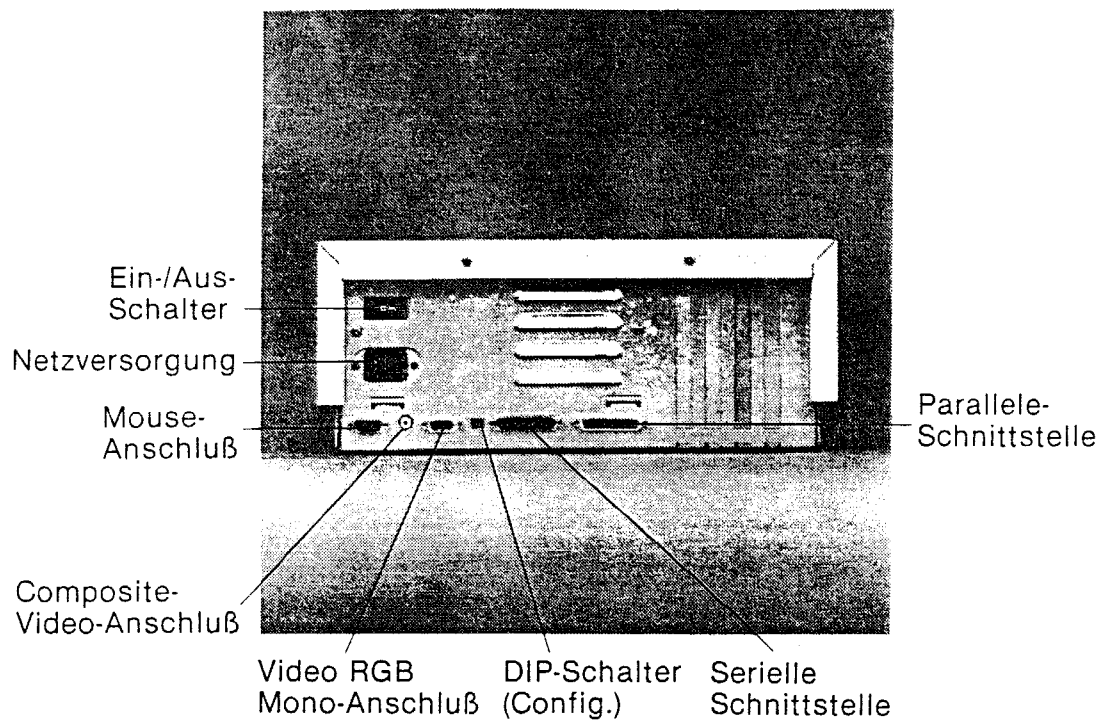
1.1 Die Systemeinheit

Die Systemeinheit enthält die Hauptleiterplatte, ein Netzteil, ein oder zwei Diskettenlaufwerke sowie Adapter (Anschlüsse) für weitere Peripheriegeräte. Ein Festplattenlaufwerk kann auf einfache Weise nachgerüstet werden, da sich das Festplatten-Interface (50-polige Stiftleiste) bereits auf der Hauptleiterplatte befindet. Beim PC 20-III ist es serienmäßig installiert.

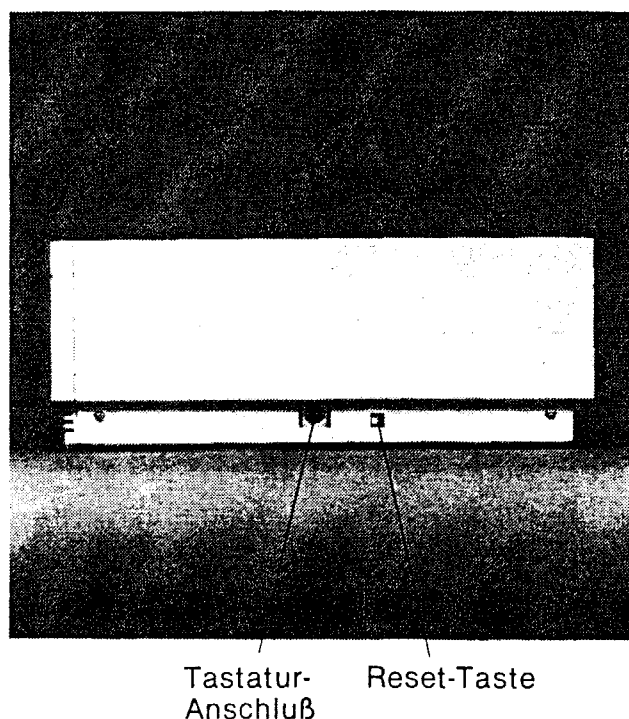


Einführung: Die Hardware

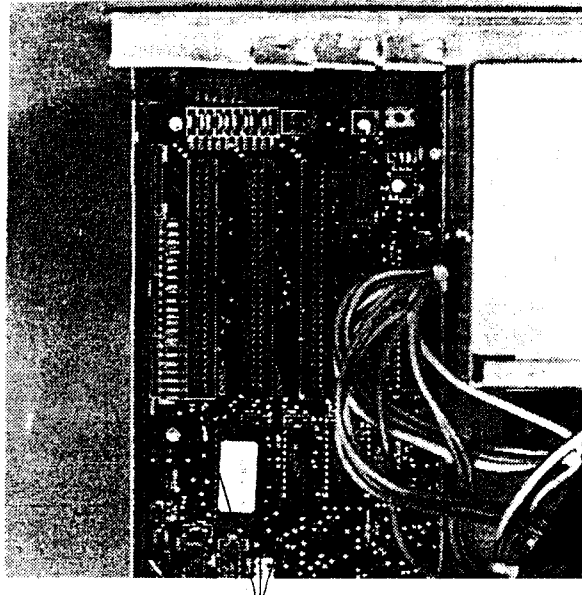
Auf der Rückseite der Systemeinheit befinden sich der Netzanschluß, der Netzschalter sowie die Steckverbinder der seriellen Schnittstelle für die Datenfernübertragung, der parallelen Schnittstelle für den Anschluß von einem Drucker oder Plotter, den Schnittstellen für den Monitoranschluß sowie der Maus-Schnittstelle (Microsoft-kompatibel mit Amiga-Maus-kompatiblem Anschluß):



Die rechte Seite der Systemeinheit enthält den Anschluß für die Tastatur sowie die Reset-Taste, mit deren Hilfe Sie das Rechnersystem zurücksetzen können, ohne es aus- und wieder einschalten zu müssen:



Für die Erweiterung Ihres PC 10/20-III mit Steckkarten enthält der Rechner 3 mit dem Industriestandard kompatible Erweiterungs-Steckplätze, die Sie links hinten auf der Hauptplatine finden, wenn Sie die Gehäuseabdeckung abnehmen:



Erweiterungssteckplätze

Wie bereits erwähnt, enthält der PC 10/20-III einen selbstkonfigurierenden Betriebssystem-Kern (Autoconfig-BIOS), der eventuelle Hardware-Erweiterungen in Form von Ein-/Ausgabe-Steckkarten automatisch erkennt und die Arbeitsweise des Systems entsprechend anpaßt. Wenn das Rechnersystem gestartet wird, untersucht dieses BIOS zunächst, ob Ein-/Ausgabe-Erweiterungssteckkarten vorhanden sind. Falls ja, so werden die auf diesen befindlichen Schnittstellen initialisiert und ersetzen ggf. die auf der Hauptplatine bereits vorhandenen. Dabei werden entsprechende informative Meldungen auf dem Bildschirm angezeigt. Auf diese Weise werden Schnittstellen-Konflikte verhindert. Das umständliche Umstecken von Steckbrücken (Jumper) zur Auswahl der seriellen Schnittstelle COM1 oder COM2 oder zur Auswahl der Drucker-Schnittstelle LPT1, LPT2 oder LPT3 ist also nicht mehr erforderlich.

1.1 Starten des Commodore PC 10/20-III

Ehe Sie anfangen, mit Ihrem Rechner zu arbeiten, sollten Sie Grundsätzliches über die Systemstruktur Ihres Rechners wissen.

2.1 Das Betriebssystem

Ein Betriebssystem ist ein Programm, das den Betrieb Ihres Computers überwacht und steuert. Betriebssysteme sind komplex und bestehen aus vielen Teilen. Ein Element des Betriebssystems ist das sogenannte BIOS (Basic Input Output System = Ein-/Ausgabe-Kernsystem). Es ist im Rechner fest eingebaut und erlaubt dem in den Speicher geladenen Betriebssystemteil die Daten-Ein-/Ausgabe (Tastatur, Bildschirm, Disketten, Festplatte, Drucker, serielle Schnittstelle). Das andere wesentliche Betriebssystem-Element ist das MS-DOS.

MS-DOS ist ein Disk-Betriebssystem. Das bedeutet, daß die einzelnen Programme von einer Diskette oder einer Festplatte geladen und benutzt werden können. Bevor Sie mit Ihrem Commodore PC 10/20-III arbeiten können, muß ein Teil von MS-DOS in den Speicher geladen werden. Doch dazu im nächsten Kapitel mehr.

MS-DOS unterstützt Funktionen des Rechners, wie

- Laden und Starten von Programmen
- Verwalten von Disketten oder Festplatten
- Datenein-/ausgabe

2.2 Wie Sie MS-DOS starten

In diesem Abschnitt lernen Sie, wie Sie Ihren Commodore-PC 10/20-III in Betrieb nehmen, indem Sie das Betriebssystem MS-DOS starten. Dazu folgen Sie diesen Schritten:

1. Vergewissern Sie sich zunächst, daß Ihr Computer ausgeschaltet ist.
2. Nehmen Sie die Systemdiskette (Disk 1) aus ihrer Schutzhülle.

3. Legen Sie die Systemdiskette in das Laufwerk A der Systemeinheit (das ist das obere Laufwerk, wenn Ihr PC über zwei Floppy-Disk-Laufwerke verfügt).
4. Schließen Sie die Laufwerkverriegelung.
5. Schalten Sie jetzt Ihren Computer und Ihren Monitor ein.

Nach ca. 15 Sekunden, die der Computer benötigt, um seine eigene Funktionsfähigkeit zu testen, sowie Betriebssystem-Informationen von der Systemdiskette zu lesen, sollten Sie folgende Bildschirmausgabe sehen:

```
Commodore PC BIOS  Rev. 4.3      318 085 - 01
```

```
Copyright (C) 1987 by Commodore Electronics Ltd.  
Copyright (C) 1985 by Phoenix Software Associates  
Ltd.
```

```
All Rights Reserved
```

```
Onboard  LPT1      at 0378h  
Onboard  COM1      at 03F8h  
Onboard  MOUSE     at 023Ch  
Onboard  RTC       at 02C0h  
Onboard  RAM       640 KBytes  OK
```

```
Harddisk not found
```

```
A>
```

Nach den vier Titelzeilen zeigt das selbstkonfigurierende BIOS alle automatisch initialisierten Erweiterungen, die sich bereits auf der Hauptplatine befinden, an. Es sind dies die Parallel-Schnittstelle LPT1, die serielle Schnittstelle COM1, die Mausschnittstelle MOUSE, die batteriegepufferte Hardware-Uhr mit Kalender RTC, die auch nach dem Ausschalten des Rechnersystems Datum und Uhrzeit weiterführt, sowie der volle Speicherausbau mit 640 KBytes, der auf Funktionsfähigkeit getestet wird.

Starten des Commodore PC 10/20-III

Da das Festplatten-Interface ebenfalls bereits auf der Hauptplatine installiert ist, versucht das BIOS, MS-DOS von der Platte zu starten. Ist keine Platte installiert, so wird dies zusätzlich angezeigt (s.o.).

Sie haben jetzt den residenten Betriebssystemteil direkt von der Systemdiskette in den Hauptspeicher des Rechners geladen. Man bezeichnet diesen Vorgang als "Booten des Rechnersystems". Die Zeichenkombination

A>

bedeutet, daß der residente Betriebssystemteil von der Systemdiskette in Laufwerk A geladen wurde und dieses Laufwerk zunächst das Standardlaufwerk ist.

Wenn Sie über einen Commodore PC 20-III mit installierter Festplatte verfügen, so können Sie diesen direkt von der Festplatte starten, da hier bereits werkseitig das System auf die Festplatte übertragen wurde. Dann dürfen Sie jedoch die Systemdiskette nicht in das Diskettenlaufwerk einlegen, wenn Sie den Rechner einschalten. In diesem Fall ist das Standardlaufwerk nach dem Systemstart C, sie erhalten also dieselbe Startanzeige wie oben, nur daß die Laufwerksanzeige jetzt

C>

ist. Bei einem so ausgerüsteten PC ist jedoch auch das Starten von Diskette möglich.

Das Standardlaufwerk, häufig auch als das voreingestellte Laufwerk bezeichnet, ist das Laufwerk, auf das MS-DOS automatisch bei Befehlseingaben zugreift, sofern kein anderes Laufwerk zusammen mit dem Befehl angegeben wurde (s.a. Kapitel 4.3). Bei MS-DOS gelten folgende Zuordnungen:

Disketten-Laufwerke:

A> Laufwerk 1 (oberes Laufwerk)

B> Laufwerk 2 (unteres Laufwerk; optional bei PC 20-III)

Festplatten-Laufwerke:

C> Laufwerk 1 (optional bei PC 10-III)

D> Laufwerk 2 (optional)

Nach dem Einschalten ist das Standardlaufwerk immer das, von dem aus MS-DOS gestartet wurde.

Hinweis: Ihr Commodore PC 10/20-III ist mit einer Akku-gepufferten Echtzeituhr ausgestattet, die bei der ersten Inbetriebnahme auf das aktuelle Datum und die aktuelle Uhrzeit gesetzt werden muß. Folgen Sie dazu diesen Schritten:

1. Falls Sie beim Starten des Rechnersystems noch nicht die Software-Uhr von MS-DOS mit den Befehlen DATE (Datum) und TIME (Uhrzeit) gesetzt haben, holen Sie dies nach. Das Eingabeformat wird von den beiden Befehlen angezeigt (TT.MM.JJ für das Datum und HH.MM.SS für die Zeit)

2. Geben Sie ein

```
setclock -w
```

und drücken Sie die Eingabetaste. Mit diesem Befehl wird der Inhalt der MS-DOS-Software-Uhr in die Akku-gepufferte Echtzeituhr des Systems übertragen und dort automatisch fortgeschrieben.

Die Befehlsdatei AUTOEXEC.BAT auf der Systemdiskette enthält den Befehl SETCLOCK -R. Mit diesem Befehl wird jedesmal, wenn der Rechner gestartet wird, der Inhalt der akku-gepufferten Echtzeituhr in die MS-DOS-Softwareuhr übertragen.

Hinweis: Ihr Commodore PC 10/20-III ist mit einem Mikroprozessor mit umschaltbarer Betriebsfrequenz (4,77; 7,15; 9,54 MHz) ausgestattet. Aus Kompatibilitätsgründen wird beim Start des Rechners die Betriebsfrequenz 4,77 MHz vorgewählt. Soll eine andere Frequenz vorgewählt werden, so kann der Befehl SPEED mit dem entsprechenden Parameter in die AUTOEXEC.BAT-Datei eingefügt werden. In dieser Datei sind alle Befehle enthalten, die MS-DOS beim Systemstart automatisch ausführen soll, um den Rechner in den vom Anwender gewünschten Betriebszustand zu setzen (s.a. Kapitel 5.6.1 und 5.6.2 *MS-DOS-Referenzhandbuch*). Beim SPEED-Befehl gibt es folgende Formate:

```
speed -s      4,77 MHz (Voreinstellung)
speed -t      7,15 MHz
speed -d      9,54 MHz
```

Die Umschaltung der Betriebsfrequenz kann auch jederzeit durch Betätigen einer speziellen Tastenkombination von der Tastatur aus vorgenommen werden (s. Kapitel 4.3)

2.3 Wie die Arbeit mit MS-DOS beendet wird

Im Betriebssystem MS-DOS gibt es keinen Beendigungsbefehl. Dennoch ist die Beendigung der Arbeit mit MS-DOS denkbar einfach. Folgen Sie dazu diesen Schritten:

1. Stellen Sie sicher, daß die Ausführung des letzten eingegebenen MS-DOS-Befehls oder aufgerufenen Programmes beendet ist. Sie sehen das an der Bereitschaftsanzeige (z.B. A>) auf dem Bildschirm.
2. Entfernen Sie aus allen Diskettenlaufwerken ggf. eingelegte Disketten und verwahren Sie diese in ihren Schutzhüllen an einem sicheren Platz.
3. Schalten Sie Ihren Computer und den Monitor einfach aus.

To set the clock speed from the keyboard, use these key sequences:

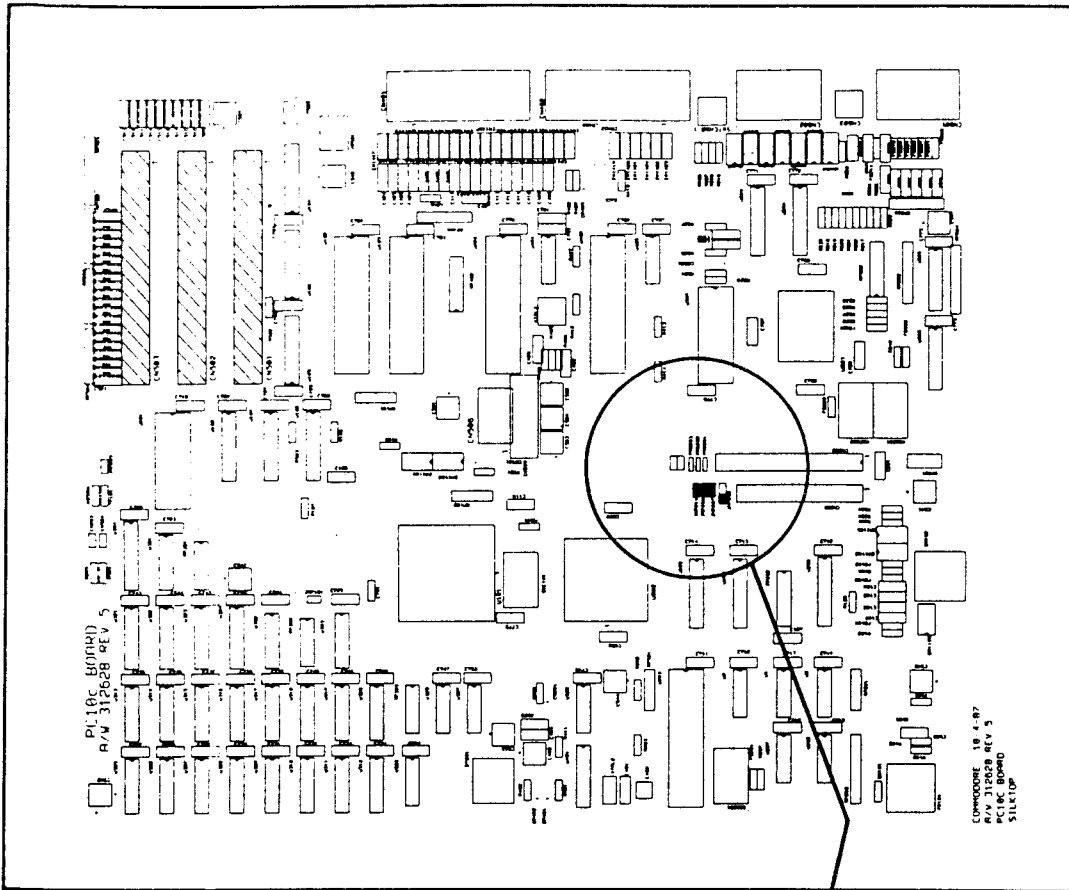
- CTRL-ALT-S for standard speed (4.77 MHz)
- CTRL-ALT-T for turbo speed (7.16 MHz)
- CTRL-ALT-D for double speed (9.54 MHz)

NOTE: Some software may require that you select standard speed (4.77 MHz) for normal operation.

2.0 Technische Daten

Zentralprozessor	8088-1, 4,77; 7,16; 9,54 MHz wählbar
Speicher	640 KBytes
ROM	32 KBytes selbstkonfigurierendes BIOS
Diskettenlaufwerke	5 1/4 Zoll, 360 KBytes formatiert
Festplattenlaufwerk	3 1/2 Zoll, 20 MBytes formatiert (nur PC 20-III)
Maus	mechanisch, 0,13 mm Schrittweite (200 Schritte/Zoll, Microsoft-kompatible Schnittstelle, Anschluß Amiga-Maus-kompatibel)
Schnittstellen	Serielle RS-232-Schnittstelle 8-Bit-CENTRONICS-Parallelschnittstelle 3 Erweiterungssteckplätze gemäß Industriestandard Maus-Schnittstelle Tastatur-Schnittstelle RGBI-Video-Schnittstelle Composite-Video-Schnittstelle
Video-Modes	Monochrom-Text, 80x25 Zeichen Hercules-Grafik, 720x348 Punkte Color-Text, 40x25 Zeichen, 16 Farben 80x25 Zeichen, 16 Farben
Color-Grafik	320x200 Punkte, 4 oder 16 Farben 640x200 Punkte, 2 oder 4 Farben
unterstützte Monitore	Farb-Monitor (RGBI digital) Monochrom-Monitor digital Composite-Monitor (BAS)
Netzspannung	220 V, 50 Hz Wechselspannung
Betriebstemperatur	15°C bis 32°C
Lagertemperatur	-20°C bis +60°C
Luftfeuchtigkeit	20% bis 80% nichtkondensierend
max Gehäusebelastbarkeit	18 kg ²⁻¹

2.1 Jumper Settings on Motherboard

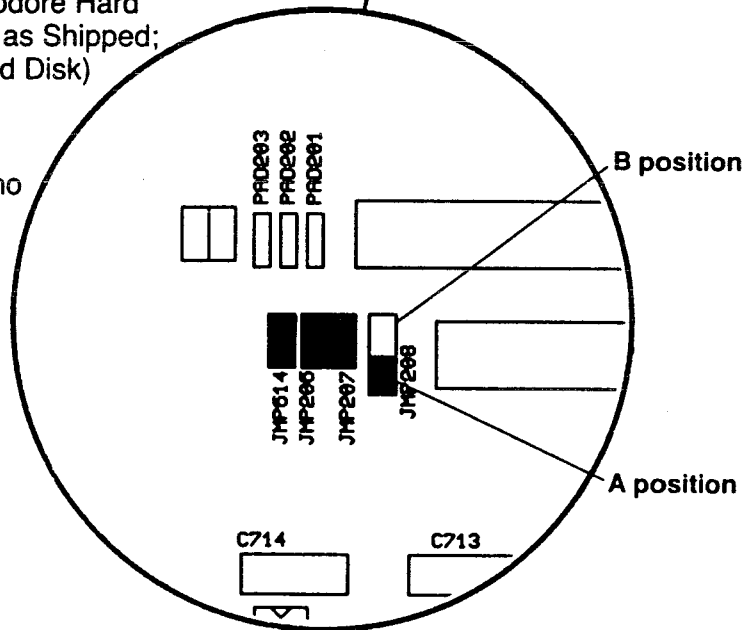


JMP 208 } A position = No Commodore Hard Disk installed (PC10 as Shipped)—Use this position if a hard disk is installed in an expansion slot.
 B position = Commodore Hard Disk installed (PC20 as Shipped; PC10 w/optional Hard Disk)

JMP 614 In—Composite Color
 Out—Composite Mono

All other jumpers are for factory use only

JMP 206 In
 207 In



2.2 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.

3.0 List of Filename Extensions

Extension	Type	Example
COM	Required for a transient executable file.	DISKCOPY.COM EDLIN.COM
ASM	Required for assembly language source (text) files used with ASM command.	PROG1.ASM PATCH.ASM
LST	Required for the listing file of the assembly language program.	PROG1.LST PATCH.LST
OBJ	Identifies relocatable object file created by assembler.	TEST.OBJ
BAS	Required for BASIC program source (text) files.	PROG1.BAS
INT	Required for program intermediate file for execution (already compiled).	PROG1.INT
BAK	Created by EDLIN (text editor) as a backup copy of file before it is altered.	FILE 1.BAK
\$\$\$	Temporary (scratch) files created and normally erased by EDLIN and other programs.	FILE 1. \$\$\$
BAT	Text file with commands or names of programs to be executed batch style by the Batch facility	JOB 1.BAT
EXE	Relocatable executable file.	SORT.EXE
SYS	System file or utility	IO.SYS

3.1 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

3.2 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.

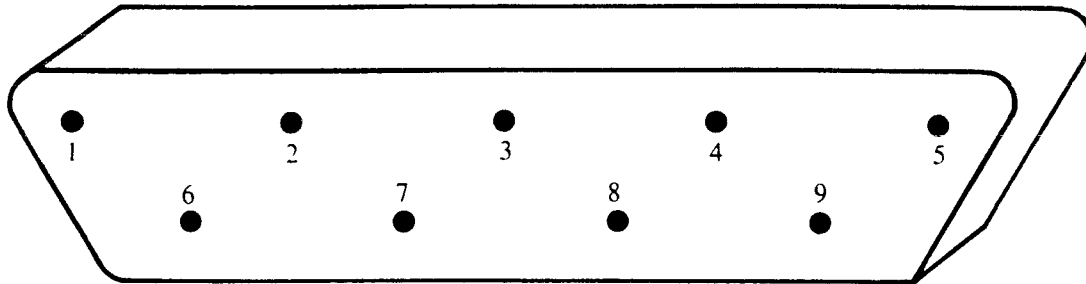
4.0 Pin Definitions for Parallel Port

Computer Side	Printer Side
1	STROBE
2	DO
3	D1
4	D2
5	D3
6	D4
7	D5
8	D6
9	D7
10	ACK
11	BUSY
12	PE
13	SLCT
14	AUTO FDXT
15	ERROR
16	INIT
17	SLCT IN
18-25	GND

4.1 Pin Definitions for Serial Port

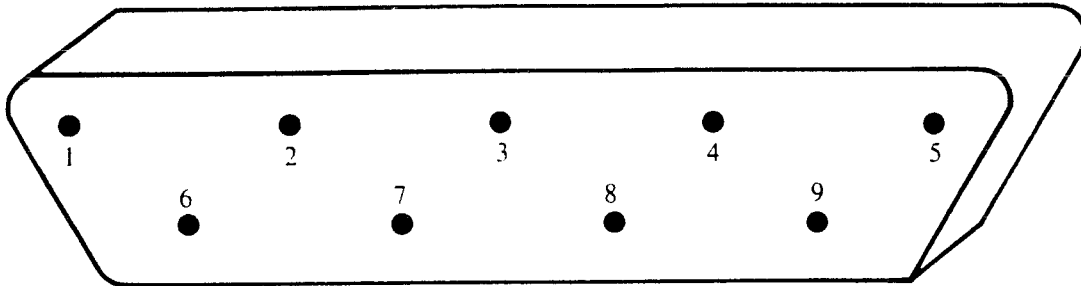
Computer Side	Peripheral Side
1	CHASSIS GND
2	T × D
3	R × D
4	RTS
5	CTS
6	DSR
7	SIG GND
8	DCD
9	+ 12 V
10	- 12 V
20	DTR
22	RI

4.2 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)

4.3 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

4.4 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 .

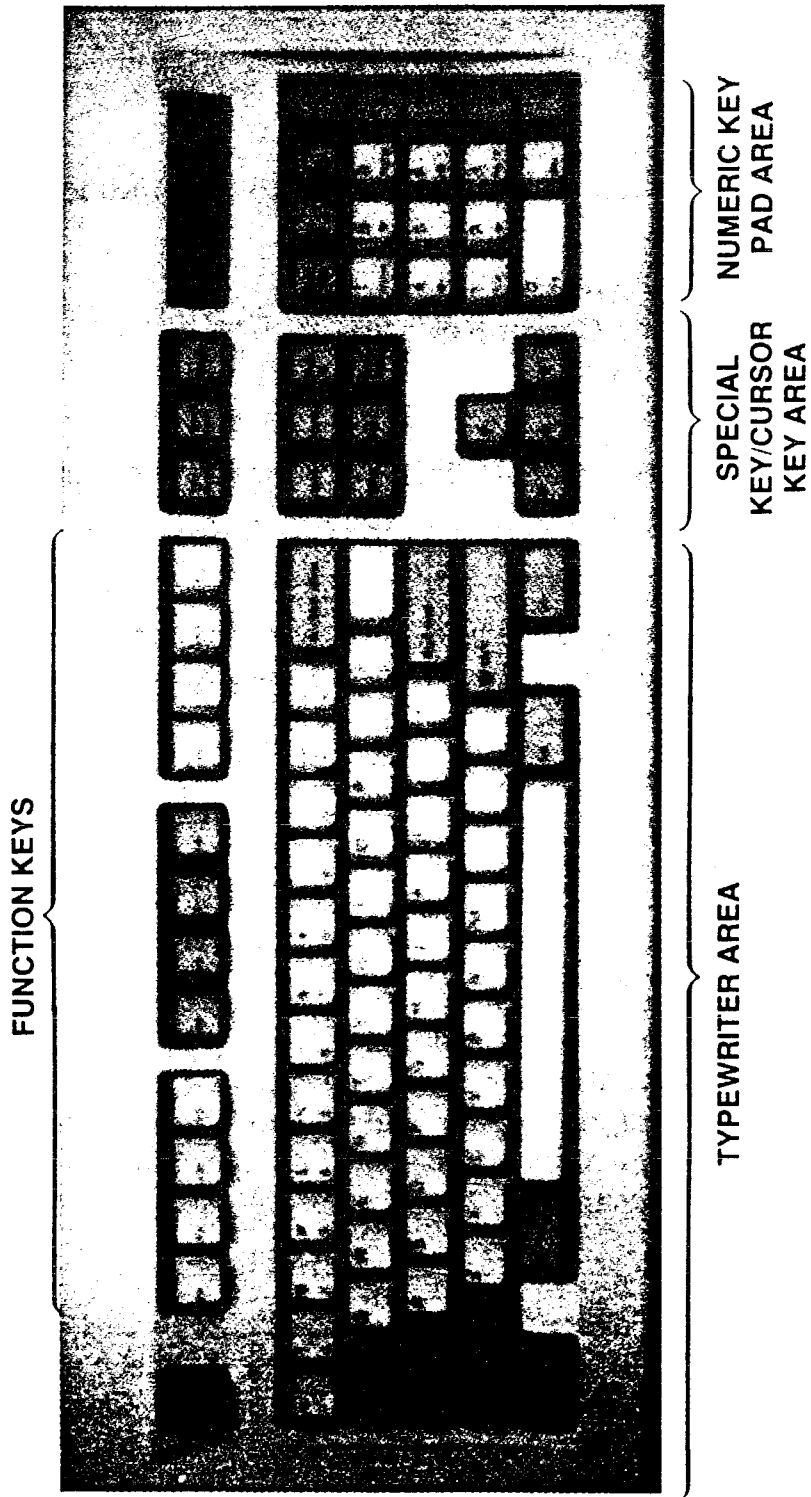


FIGURE J-1. THE COMMODORE PC10/PC20 KEYBOARD

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 row 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.

5.0 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 02C0h through 02CFh. If no interference is detected the onboard real-time clock is enabled.

A message will be output during bootup:

“ONBOARD RTC at 02C0h”

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

6.0 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(CG A):

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 than 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:

$$\text{byte offset} = (8192 * (Y \bmod 4)) + (90 * \text{INT}(Y \bmod 4)) + \text{INT}(X/8); \text{bit position} = 7 - (X \bmod 8);$$

where: $0 \leq X \leq 719;$
 $0 \leq Y \leq 347;$

Plantronics® ColorPlus™ Mode(s)

This mode is an enhancement to the graphics modes of the CGA. The dot clock is 14.318 Mhz in the 640x200 mode and 7.16 Mhz in the 320x200 mode. The 640x200 mode offers a choice of 4 out of 16 colors per pixel vs. black&white in the CGA mode with the same resolution. The 320x200 mode offers 16 out of 16 colors compared vs. 4 out 16 colors for the comparable CGA mode.

Plantronics 6845 CRTC parameters:
(actually the same as CGA 320x200 & 640x200)

register #0	38h
#1	28h
#2	2dh
#3	0ah
#4	7fh
#5	06h
#6	64h
#7	70h
#8	02h
#9	01h
#a	06h
#b	07h
#c	00h
#d	00h

The 32Kbytes of display RAM are divided into two bit planes.

Plane0 — Even scan lines @ addr b000:8000h to b000:9f3fh
Odd scan lines @ addr b000:a000h to b000:bf3fh

Plane1 — Even scan lines @ addr b000:c000h to b000:df3fh
Odd scan lines @ addr b000:e000h to b000:ff3fh

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

7.0 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.

8.0 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

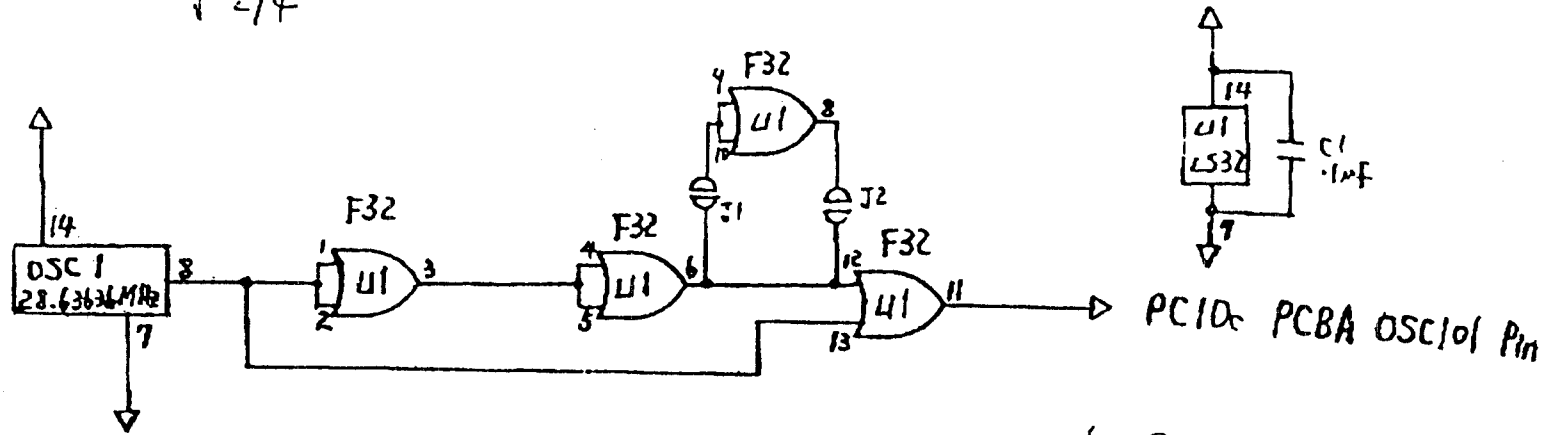
1680 Modem

MPS 1250 Printer

2002-89 Monitor

1084 Monitor

P2/4

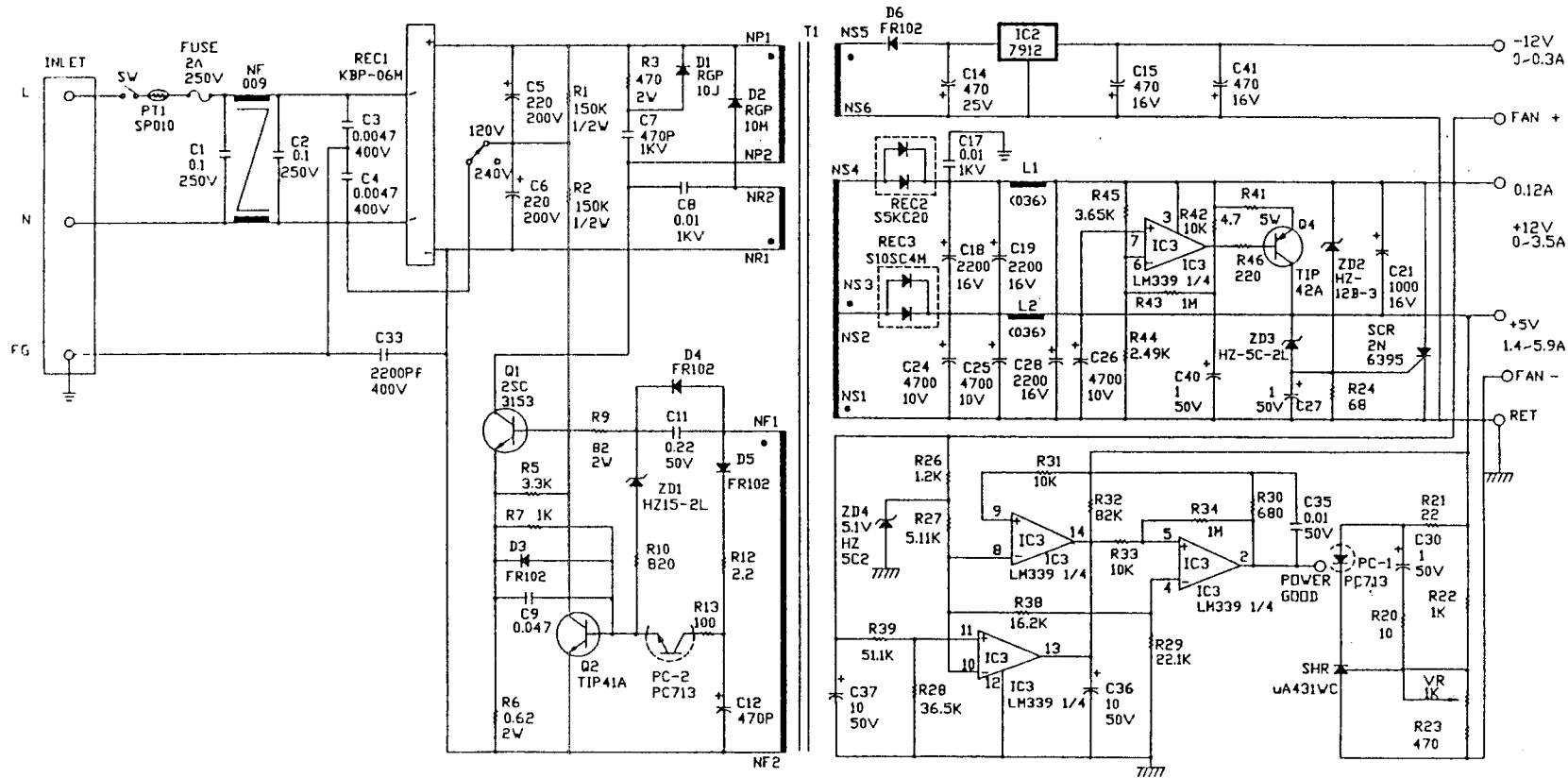


SCHEMATIC

Normal 2 gates used
 Cut one wire, solder two
 Solder bridge can increase
 to 3 gates (9ns high time)

REVISIONS

- F. RC4,R1 and R2 Was 220K
 RF5,R7 Was 2.4K,R6 Was 0.02
 D1 Was 3153,C9 Was 0.022
 R12 Was 15,C12 Was 0.01
 R10 Was 1K,ZD1 Was ZD16C2
 C10 and R11 cancel
 EE9,ZD3 Was HZ-6A-1L 76.12.14
- G. EE4,R9 Was 100,ADD D3 77.2.24

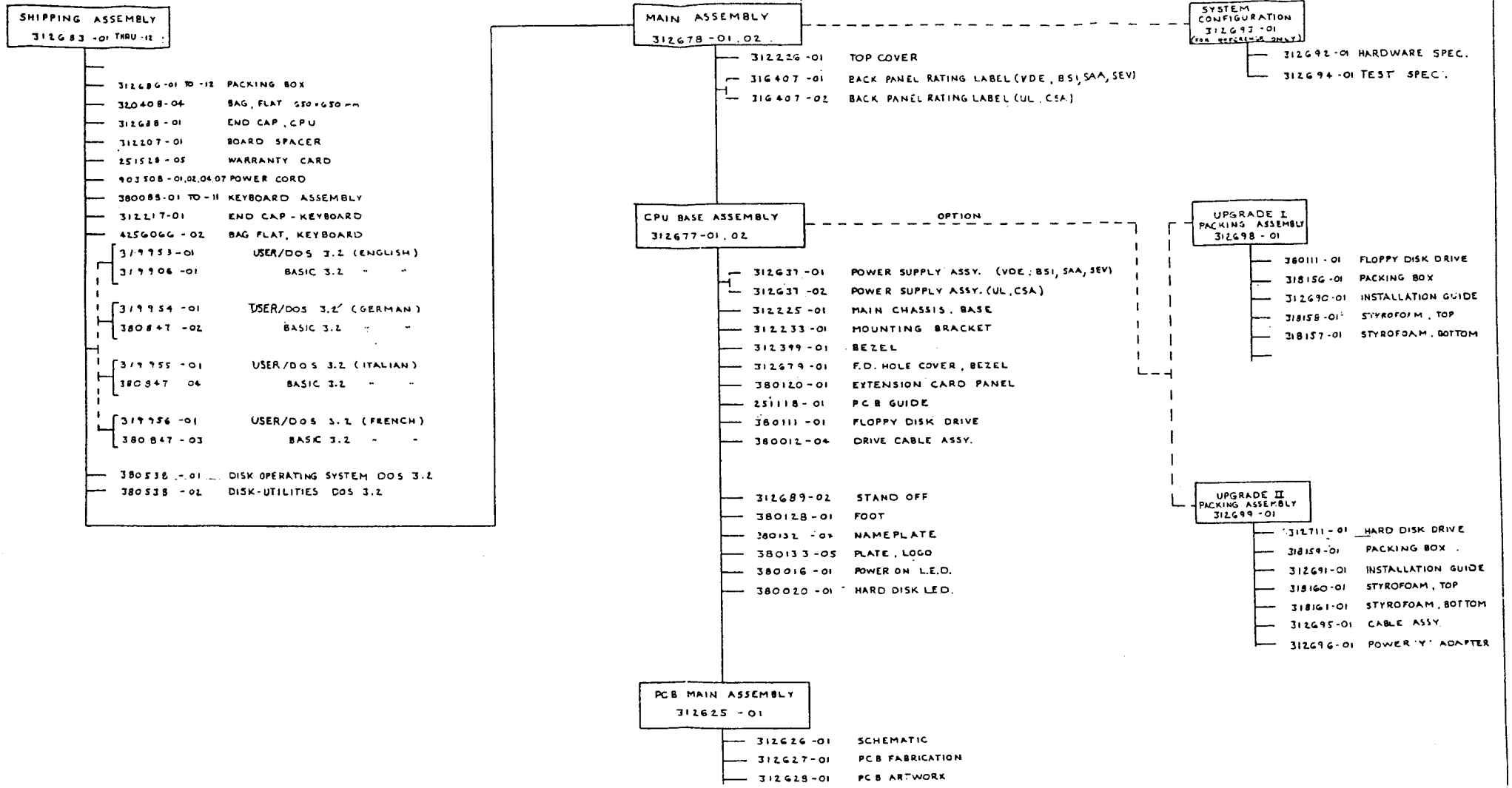


GENERAL NOTES

- ALL RESISTORS ARE 1/4W ±5% UNLESS OTHERWISE INDICATED.
- ALL RESISTORS ARE IN OHM & CAPACITORS ARE IN UF UNLESS OTHERWISE INDICATED

MODEL	PSM-763	
DRAWN	唐瑞芬	77.2.24
DESIGN		5/1/82
CHECKED		
APPROVED		
DRAWING NO.	PES-30226	REV.
		G

10-1



UNLESS OTHERWISE SPECIFIED		DRAWN BY	DATE	commodore	
TOLERANCES ON DIMENSIONS		C.J. WOOTERS	7-31-78	DRAWING TREE	
FINISH		CHKD		PC10c	
MATERIAL		USED ON	REV	SIZE	REV
FINISH		PC10c		D	1
SCALE				SCALE ~ 1 SHEET 1 OF 1	

10-2

10/13/87 - REFLECTS REV5 PCB *JK*

LTR	ZONE	DESCRIPTION	DATE	APPROVED
I		ADVANCE ENGINEERING RELEASE	8-16-87	<i>JK</i>
A		PILOT PRODUCTION RELEASE	10-28-87	<i>JK</i>
B		REVISED PER ECO 870394	12-1-87	<i>R. D. ...</i>
C		REVISED PER ECO 870401	12-23-87	<i>R. D. ...</i>
D		REVISED PER ECO 870434	1-27-88	<i>R. D. ...</i>

SHEET 7 of 7 is "C" SIZE

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UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X .XX .XXX <'S ± ± ± ±	DRAWN BY:	DATE	commodore PC 10c PCB ASS'Y		
	IAN K.	5/10			
	CHKD: C20NSALL	2-13-87			
	ENGR: <i>JK</i>	10/13/87			
MATERIAL:		USED ON	NEXT ASSY	SIZE	REV
FINISH:		PC 10c		B	D
				312625	
				SCALE -	SHEET 1 OF 7

QUANTITY REQD PER PART / DASH NO.													ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
													01						
													01	312626-01	SCHEMATIC				
													02	312627-01	FABRICATION DRAWING				
													03	312628-01	PCB ARTWORK				
													04						
													05						
													06						
													07						
													08						
													09	318048-01	IC, FE2010A	U101			
													10	380200-02	IC, 8088 10MHZ	U102			
													11						
													12	901521-46	IC, 74LS245	U104, U204, U205, U304, U604			
													13	901521-03	IC, 74LS244	U108, 109, U202, U603			
													14	901521-29	IC, 74LS373	U105, 106, 107			
													15						
													16	901521-02	IC, 74LS04	U1			
													17	901521-03	IC, 74LS08	U2			
													18	901521-30	IC, 74LS14	U3			
													19	901525-01	IC, 74504	U325			
													20	901525-04	IC, 74500	U328			
													21	901525-05	IC, 74508	U326			
													22	318089-01	IC, 74LS158	U301, 302, 303			
													23	901525-06	IC, 74510	U327			
													24	901522-06	IC, 7406	U206, 207			
													25						
													26						
													27	312710-01	IC, SMC9268	U203			
													28	318073-01	IC, OKI6242	U401			
													29	380205-01	IC, 8250	U402			
													30	901882-01	IC, 1488 DRIVER	U404			
													31	901883-01	IC, 1489 RECIEVER	U405			
													32	318088-01	IC, PVC4 VIDEO	U601			
													33	318091-01	IC, PPC1	U403			
													34	318087-01	IC, CUSTOM 5720	U602			
													35						
													36						

commodore

TITLE: PC 10c PCB ASS'Y

DRWN BY: IAN K.
CHKD:

DATE: 5/10

ENGR:
APPR:

DATE:

SIZE: B

312625

REV: D
SHT: 2/7

QUANTITY REQD PER PART / DASH NO.										ITEM	QTY	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										01							
											37						
											6 38	390083-04	IC, 64KX4 DRAMS (100 _{ns})	U605,606			U321 - U324
											16 39	380223-05	IC, 256KX1 DRAMS (80 _{ns})	U305-320			
											40						
											1 41	318086-01	IC VIDEO CHARACTER ROM	U607			
											1 42	318085-01	IC, BIOS ROM	U201			
											43						
											5 44	317066-02	EPROM, Character ROM, 27256, 250 _{ns}				Substitute for item 41
											5 45	317066-01	EPROM, BIOS ROM, 27256, 150 _{ns}				Substitute for item 42
											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		RESISTOR NETWORKS				
											1 53	252134-03	68 Ω , 16 PIN, 8 element DIP	RP602			(8 isolated elements)
											3 54	318867-01	33 Ω , 14 PIN, 7 element DIP	RP301, 302, 303			(7 isolated elements)
											2 55	252134-04	33 Ω , 16 PIN, 8 element DIP	RP202, RP402			(8 isolated elements)
											3 56	902441-31	4.7K x 5, 6 PIN, SIP	RP101, 102, RP501			
											1 57	380388-01	220/330 x 4, 6 PIN, SIP	RP201			
											2 58	902442-55	4.7K x 7, 8 PIN, SIP	RP401			RP603
											3 59	902442-35	10K x 7, 8 PIN, SIP	RP502, 503, 504			
											1 60	902410-06	3.3K x 9, 10 PIN, SIP	RP203			
											1 61	902410-13	10K x 9, 10 PIN, SIP	RP505,			
											1 62	902410-17	33K x 9, 10 PIN, SIP	RP604			
											1 63	902441-42	33K x 5, 6 PIN, SIP	RP605			
											5 64	902442-41	33K x 7, 8 PIN, SIP				Substitute for item 63
											65						
											66		RESISTORS, 5%, 1/4 WATT				
											1 67	901550-03	5.1K OHM	R105			
											2 68	901550-84	1M OHM	R403, 405			
											2 69	901550-64	10 OHM	R625, R207			
											15 70	901550-19	4.7K OHM	R103, 104, 201-204, 408, 412, 616, 623, 624, 639, R101, R413, 411			
											3 71	901550-105	33 OHM	R404, R109, R421			
											4 72	901550-58	470 OHM	R401, 402, R205, R504			
											1 73	901550-02	3.3K OHM	R642			

commodore

TITLE: PC 10 c PCB ASS'Y

DRWN BY: IAN K.
CHKD:

DATE: 5/10

ENGR:
APPR:

DATE:

SIZE: B

312625

REV: D

SHT: 7

QUANTITY REQD PER PART / DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										01							
											74						
										3	75	901550-18	2.2K OHM		R407, 410, R641		
										4	76	901550-20	10K OHM		R409, 411, 501, R643		
										2	77	901550-01	1K OHM		R619	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		
										4	83	901550-06	33K OHM		R608, 622	R607, R670	
										1	84	901550-53	2K OHM		R618		
										1	85	901550-33	3K OHM		R620		
										1	86	901550-17	1.2K OHM		R626		
										3	87	901550-94	68 OHM		R628, 629	R630	
										2	88	901600-36	1ohm 1/2 watt		R106		
										2	89	901550-52	220 OHM		R505	R102	
										4	90	901550-56	47 OHM		R107, 108	R502, 503	
										1	91	901550-05	8.2K OHM		R206		
										1	92	901600-28	2.2 OHM 1/2 WATT		R645		
										3	93	900019-17	47PF, MLC, RADIAL, COG		C103, 406, 602		
										1	94	900019-14	39PF, MLC, RADIAL, COG		C111		
										2	95	900019-13	22PF, MLC, RADIAL, COG		C405	C401	
										S	96	900019-xx	33PF, MLC, RADIAL, COG			Substitute for item 94	
										1	97	900014-19	220PF, MLC, RADIAL, COG		C202		
										19	98	900019-15	100PF, MLC, RADIAL, COG		C408-424	C601, C110	
										41	99	900014-06	1000PF, MLC, RADIAL, X7R		C511-540	C104, C105, C106, C109, C603-C610	
										45	100	900020-01	.1UF MLC, RADIAL, Z5U		C802, C803	C760, 761, 762, C766-776, C800	
											101				C404, C701-C719, C723-C726, C747, 748, 753, 757		
										23	102	900020-09	.33UF, MLC, RADIAL, Z5U		C727-746, C107, 108, C201		
											103						
										1	104	900020-08	.22UF, MLC, RADIAL Z5U		C508		
											105						
										1	106	390101-05	4.7UF, ALUM, ELECT, RADIAL		C403		
											107						
										11	108	390101-01	47UF, ELECT, RADIAL @ 16V			C501, 502, 504, 505, 507, 542, 543, 544, 545	
											109					C546, C547	
										S	110	390082-01	.1UF MLC, AXIAL, Z5U			Substitute for C701 only (Item 100)	

commodore

TITLE:

PC 10c PCB ASS'Y

DRWN BY:
IAN K.
CHKD:

DATE
5/10

ENGR:
APPR:

DATE

SIZE
B

312625

REV
D

SHT
4/7

QUANTITY REQD PER PART / DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
										143						
										144						
										2 150		903326-03	HEADER, 3PIN SIL	JMP204, 208,		
										7 151		903326-02	HEADER, 2PIN SIL	JMP101, JMP205, 206, 207;		, 614, CN504, CN203
										7 152		390043-01	SHORTING BLOCKS 2 POS			See Sheet 7 for positions
										1 153		359520-14	JUMPER WIRE (#24) INSULATED			JUMPER 1
										1 154		903345-17	HEADER, 34PIN DIL	CN201		
										1 155		903345-20	HEADER, 40PIN DIL	CN202		
										156						
										14 157		403025-01	Ferrite Bead	FB104,		FB101, FB201, FB607, FB602, FB604-611, FB105
										1 158		390268-01	Loose Ferrite Bead	FB601		See sheet 7 for location
										1 159		252166-01	DIN, 5 PIN, ROUND, FEMALE	CN102		
										160						
										1 161		390241-05	D-SUB, 25PIN, FEMALE	CN401		
										1 162		390242-05	D-SUB, 25PIN, MALE	CN402		
										1 163		390242-01	D-SUB, 9 PIN, MALE	CN601		
										1 164		390241-01	D-SUB, 9 PIN, FEMALE	CN602		
										165						
										1 166		252122-01	JACK, RCA FEMALE, RT &	CN603		
										167						
										2 168		903781-01	Jumper Wires	EMI103, 104		FB601
										169						
										3 170		903446-02	CONNECTOR, 62PIN	CN501-503		
										171						
										1 172		903344-01	CONNECTOR, POWER	CN506		
										173						
										1 174		251260-01	SWITCH, NO, PB	SW501		
										1 175		904775-01	SWITCH, 4POS, 8PIN DIP, LEVER	SWTCH601		
										176						
										2 177		390253-02	Three Turn Ferrite Bead	FB102, FB103,		
										178						
										9 179		390257-02	EMI FILTER, DSS310-5Y55101M	EMI101, 102, 105, EMI607, 610, 611, 612, 613, 614 (Mount. - Eric)		
										180						
										5 181		312777-01	PC10c EMI Assembly (1 Ferrite)	EMI101, 102, EMI607, 610, 611, 612, 613, 614		
										5 182		312777-02	PC10c EMI Assembly (2 Ferrites)	EMI105		
										1 183		390280-01	FUSE, PICO, 4A	F401		
										184						

Commodore

TITLE: PC 10 c PCB ASS'Y

DRWN BY: JAN K.
CHKD: [blank]

DATE: 5/10

ENGR: [blank]
APPR: [blank]

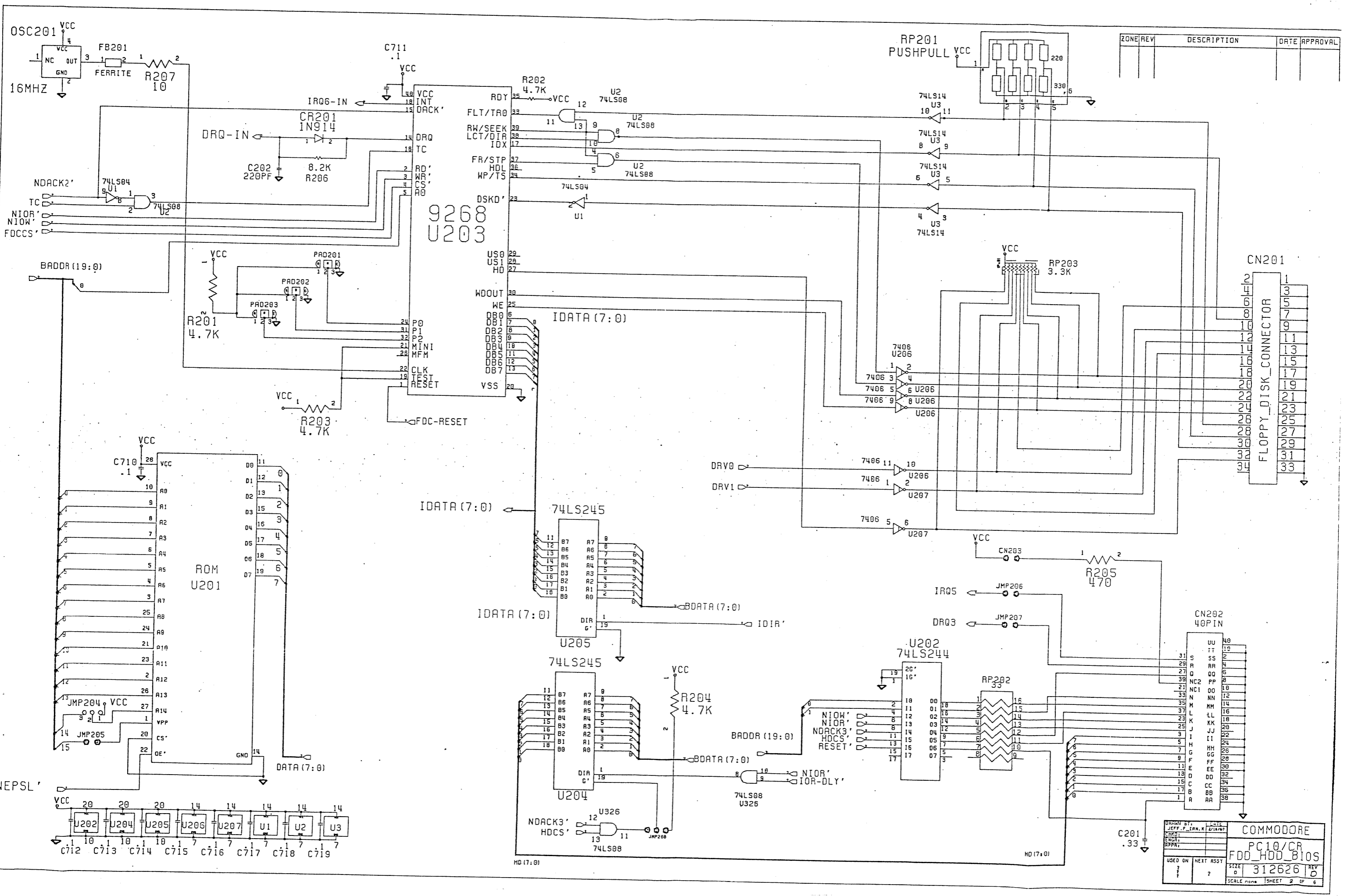
DATE: [blank]

SIZE: B

312625

REV: D

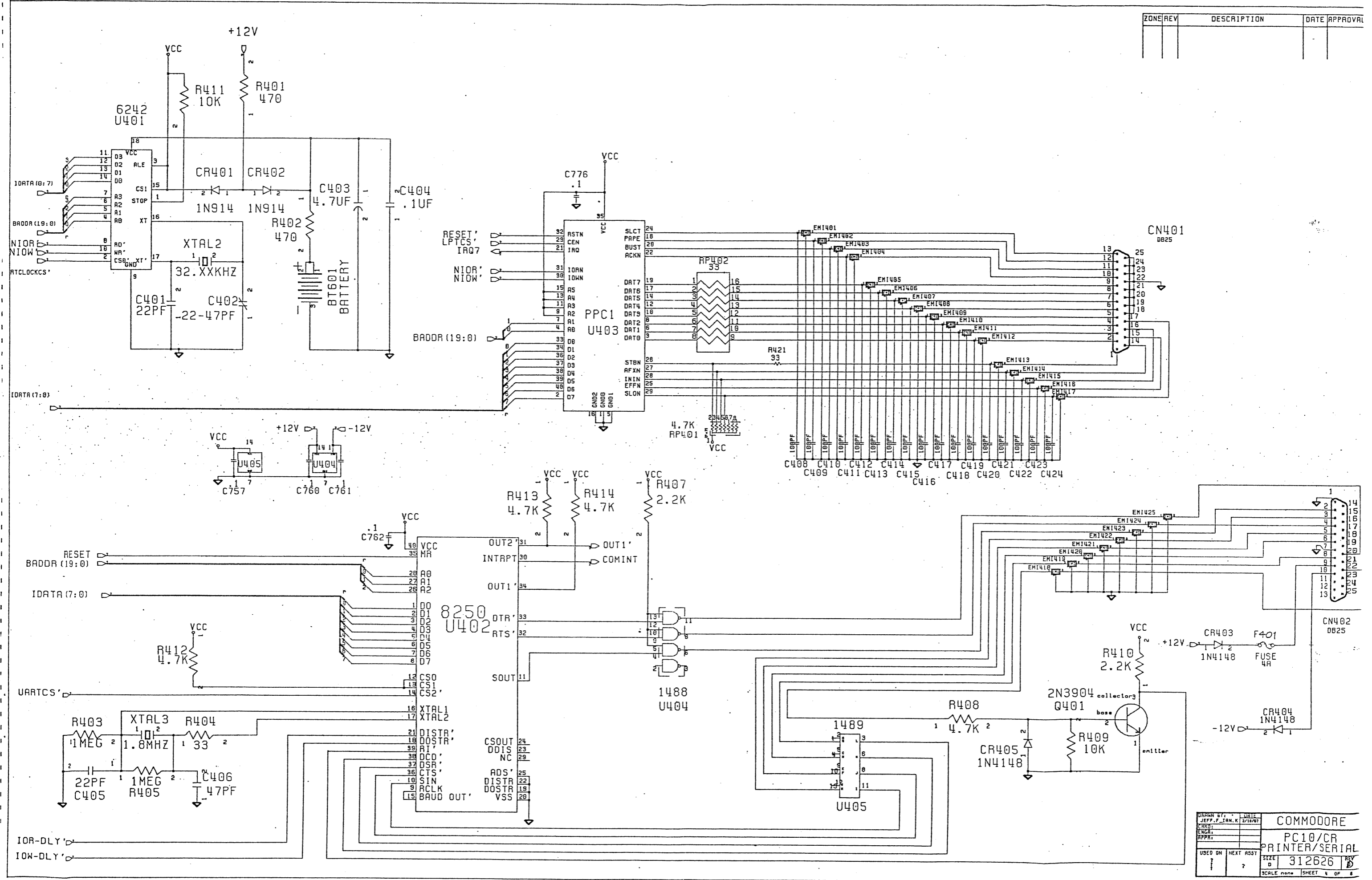
SHT: 7



ZONE/REV	DESCRIPTION	DATE	APPROVAL

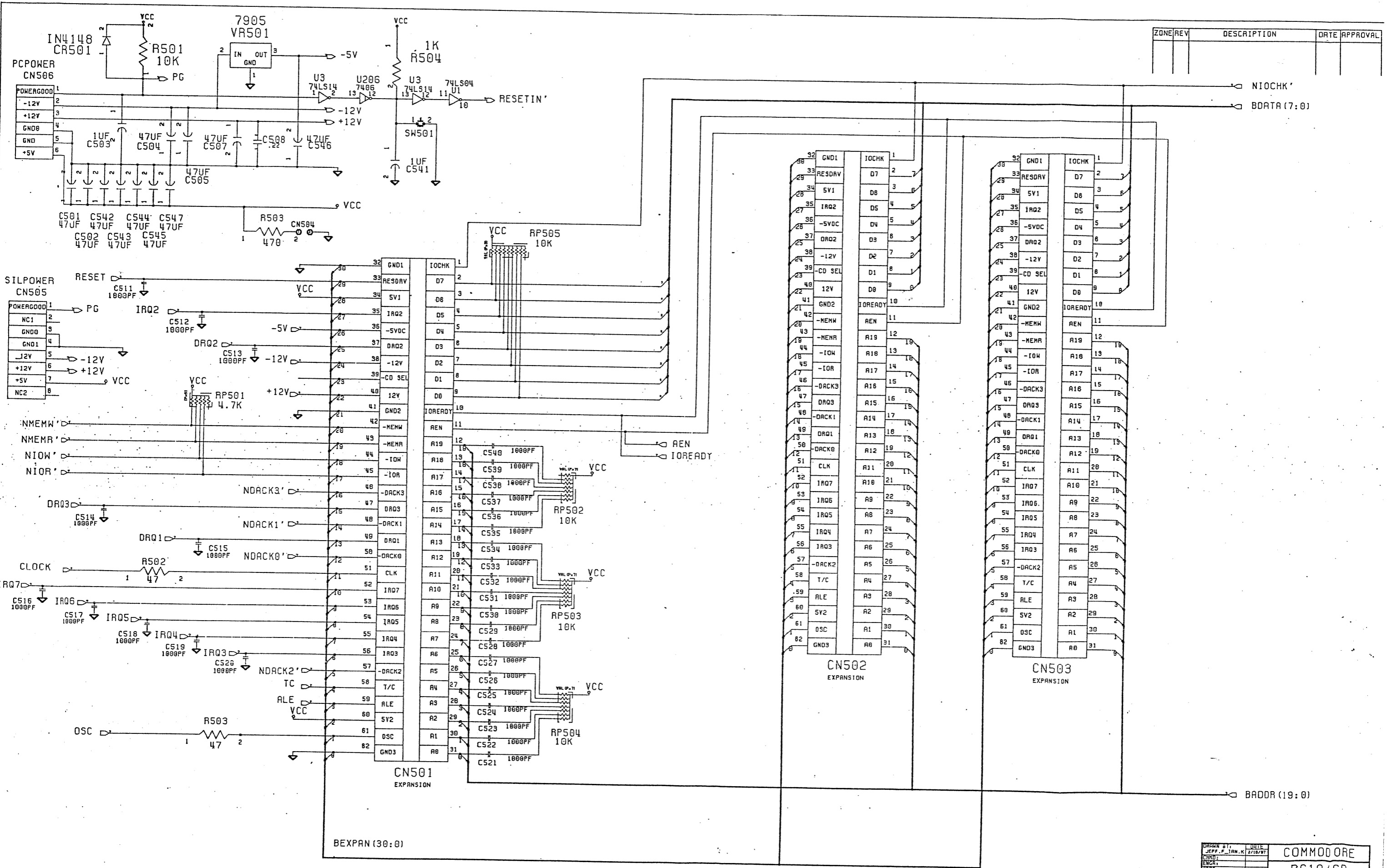
DRAWN BY: JEFF.P. (CAN.K. 2/10/87)		COMMODORE	
CHECKED BY: JEFF.P. (CAN.K. 2/10/87)		PC10/CR	
ENGR: JEFF.P. (CAN.K. 2/10/87)		FDD_HDD_BIOS	
APPR: JEFF.P. (CAN.K. 2/10/87)		SIZE: 0	312626
USED ON: ?	NEXT ASST: ?	SCALE: none	SHEET: 2 OF 6

ZONE	REV	DESCRIPTION	DATE	APPROVAL

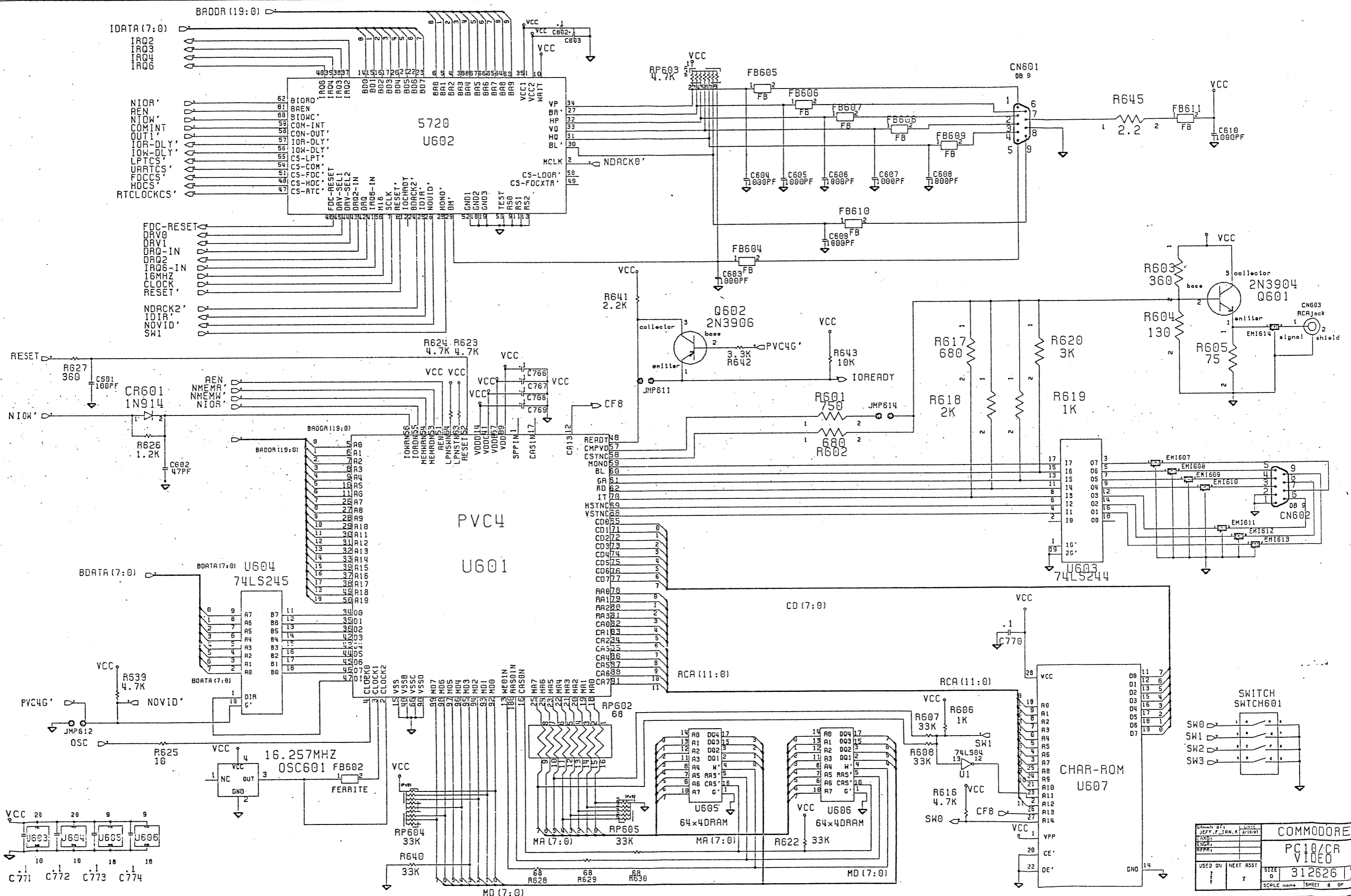


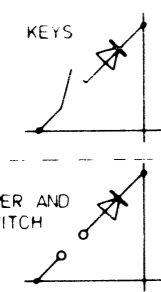
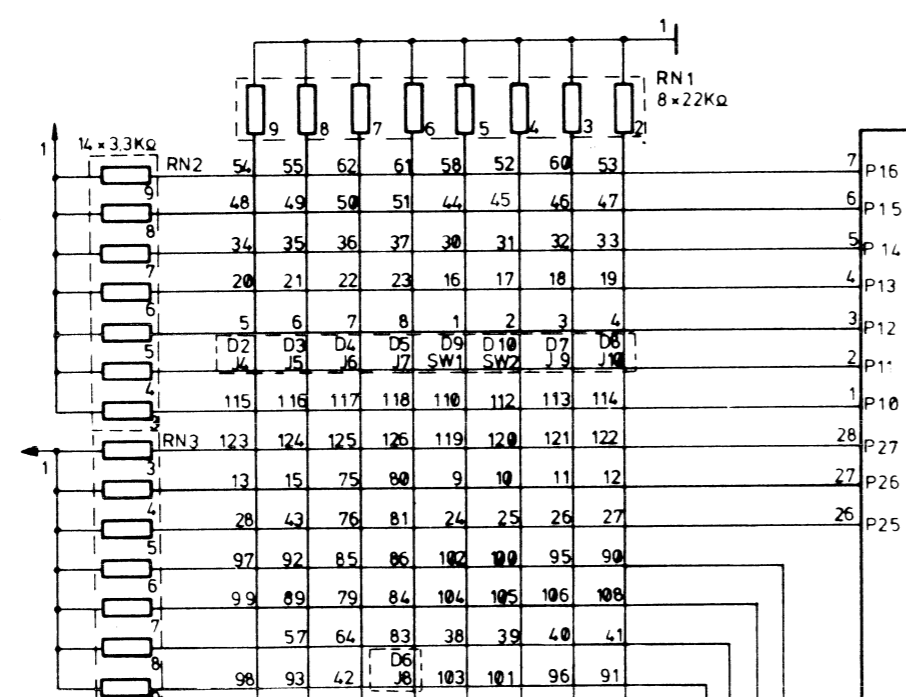
DRAWN BY: JEFF F. TAN, K		DATE: 2/19/87		COMMODORE	
CHKD:				PC10/CR	
ENGR:				PRINTER/SERIAL	
APPR:				REV B	
USED ON	NEXT ASST	SIZE	312626	REV	B
?	?	SCALE	none	SHEET	4 OF 6

ZONE/REV	DESCRIPTION	DATE	APPROVAL



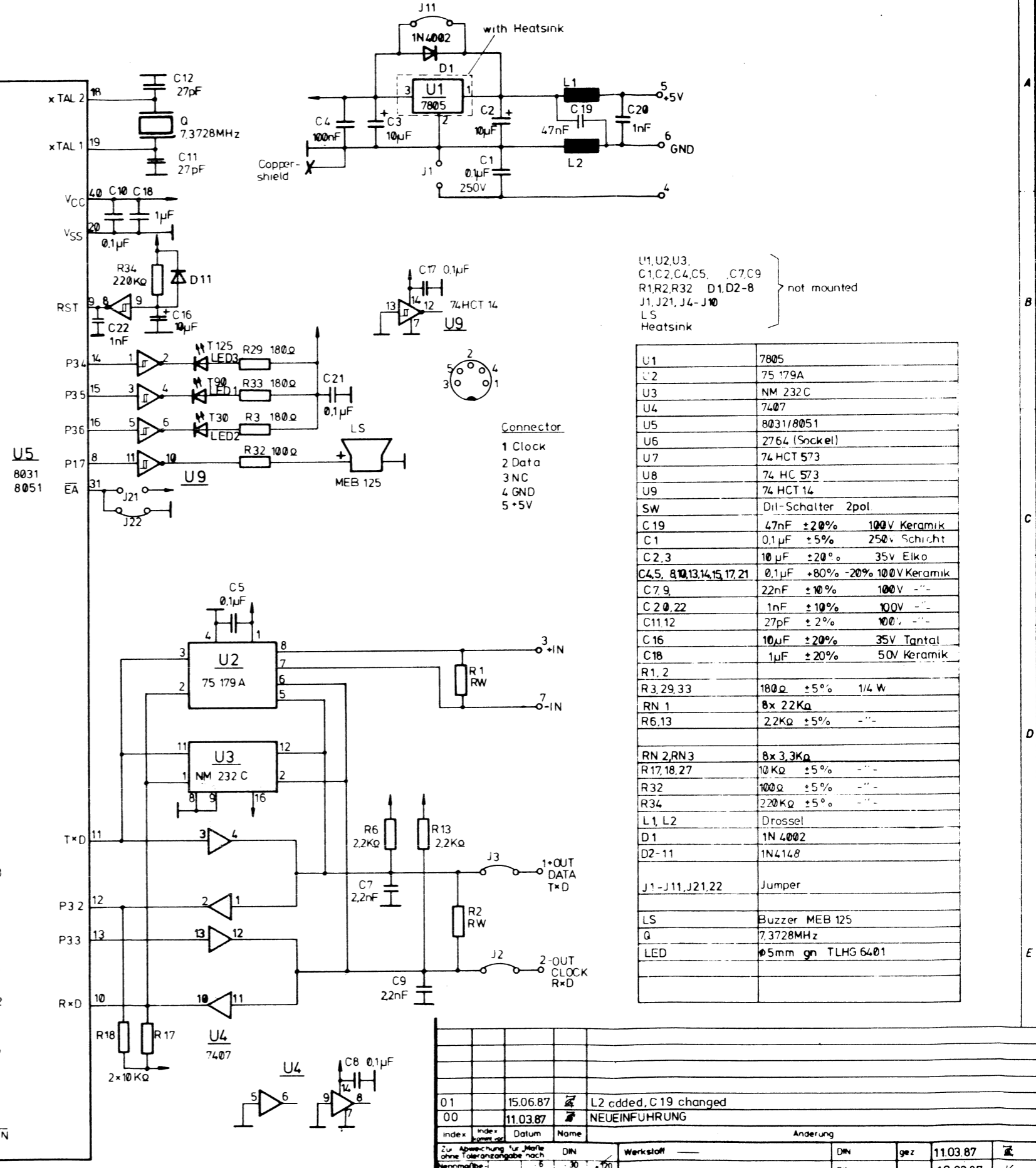
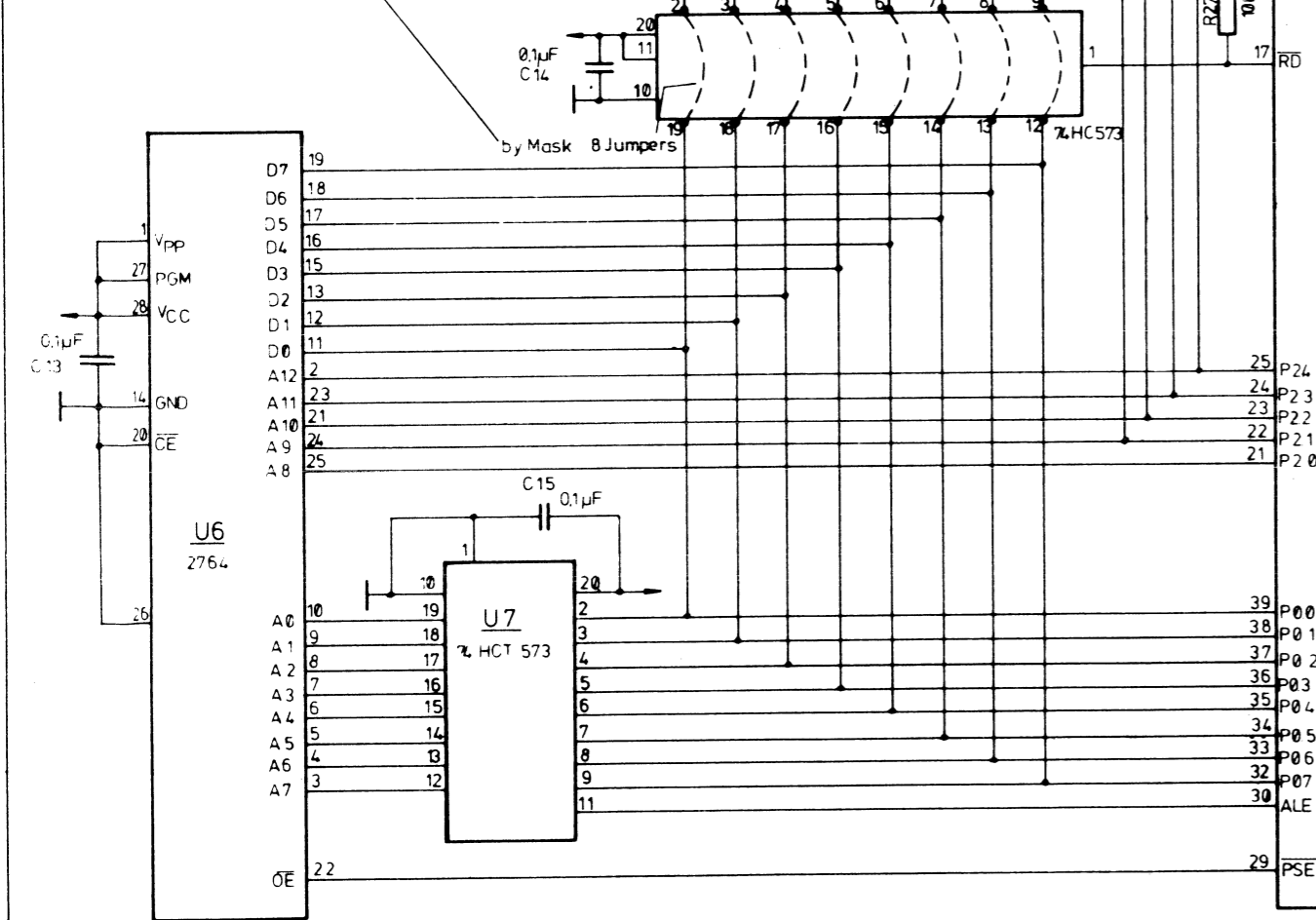
DESIGNED BY: JEFF P. TAN-K	DATE: 2/18/87	COMMODORE	
ENGR:		PC10/CR	
APPN:		EXPANSION	
USED ON: 1	NEXT ASSY: 2	SIZE: 312626	REV: 1
SCALE: none		SHEET 5 OF 6	





	SW1	SW2
AT 03-MF	off	off
PC-XT	on	on
AT 02	off	on

	J21	J22	U5	U6	U7	U8	C13	C14	C15	R27
EPROM	O	X	8031	X	X	X	X	X	X	X
MASK	X	O	8051	O	O	8xJ	O	O	O	O



U1,U2,U3,
C1,C2,C4,C5, C7,C9
R1,R2,R32 D1,D2-8
J1,J21,J4-J10
LS
Heatsink

U1	7805
U2	75 179A
U3	NM 232C
U4	7407
U5	8031/8051
U6	2764 (Socket)
U7	74 HCT 573
U8	74 HC 573
U9	74 HCT 14
SW	Dil-Schalter 2pol
C19	47nF ±20% 100V Keramik
C1	0.1µF ±5% 250V Schicht
C2,3	10µF ±20% 35V Eiko
C4,5, 8,10,13,14,15,17,21	0.1µF ±80% -20% 100V Keramik
C7,9	22nF ±10% 100V -
C20,22	1nF ±10% 100V -
C11,12	27pF ±2% 100V -
C16	10µF ±20% 35V Tantal
C18	1µF ±20% 50V Keramik
R1,2	
R3,29,33	180Ω ±5% 1/4 W
RN 1	8x 22KΩ
R6,13	2.2KΩ ±5% -
RN 2,RN3	8x 3.3KΩ
R17,18,27	10KΩ ±5% -
R32	100Ω ±5% -
R34	220KΩ ±5% -
L1, L2	Drossel
D1	1N 4002
D2-11	1N4148
J1-J11,J21,22	Jumper
LS	Buzzer MEB 125
Q	7,3728MHz
LED	φ5mm gn TLHG 6401

01	15.06.87		L2 added, C19 changed
00	11.03.87		NEUEINFUHRUNG
index	index	Datum	Name
Zur Abrechnung für Liefer ohne Toleranzangabe nach			
Nennmaße	6	30	120
fein	±0.05	±0.1	±0.15
mittel	±0.1	±0.2	±0.3
Winkel	±2'	±1'	Werte in Zeichnung eintragen
Nennmaße für Winkel beziehen sich auf die Längs- oder kürzeren Schenkel			
Zu Mittelabweichung IT 10			
Wärmebehandlung			
G80-1000 HAD national (102 Key)		620-0291	
CHERRY-MIKROSWALTER GmbH Industriestraße 19 8572 Auerbach / Opt		Ers 1 Ers d	

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PART NO.	DESCRIPTION

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	G	REVISED AND REDRAWN PER ECO 870465	4/7/88	<i>n-Burke</i>

1. SHEET 8 OF 8 SIZE C
 ASSY DWG
 NOTES:

C.A.D. GENERATED
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COMMODORE	TITLE: PCB ASSEMBLY PC10/20-III	DRAWN BY: J. HOOPER	DATE: 4-5-88	ENGR:		SIZE	DRAWING NUMBER	
		CHKD:		APPR:		B	312625	
							SHEET 1 OF 8	

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
										-01						
											1	312626 -01	SCHEMATIC			
											2	312627 -01	FABRICATION DRAWING			
											3	312628 -01	PCB ARTWORK			
											4					
											5					
											6					
											7					
											8					
											1	9	318948 -01	IC, FE2010A	U101	
											1	10	380200 -02	IC, 8088 10MHz	U102	
												11				
											5	12	901521 -46	IC, 74LS245	U104, U204, U205, U304, U604	
											4	13	901521 -03	IC, 74LS244	U108, U109, U202, U603	
											3	14	901521 -29	IC, 74LS373	U105, U106, U107	
												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, U302, U303	
											1	23	901525 -06	IC, 74S10	U327	
											2	24	901522 -06	IC, 7406	U206, U207	
												25				
												26				
											1	27	312710 -01	IC, SMC9268	U203	
											1	28	318073 -01	IC, PKI6242	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 VIDED	U601	
											1	33	318091 -01	IC, PPC1	U403	
											1	34	318087 -01	IC, CUSTOM 5720	U602	
												35				

COMMODORE

TITLE : PCB ASSEMBLY PC10/20-III

DRAWN BY : J. HOOPER
CHKD :

DATE : 4-5-88

ENGR :
APPR :

DATE :
SIZE : B

DRAWING NUMBER : 312625
SHEET 2 OF 8

REV : G

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
									-01	36							
										37							
									2	38		390083 -04	IC, 64K X 4 DRAMS (100 ns)	U605, U606			
									16	39		380223 -03	IC, 256K X 1 DRAMS (120 ns)	U305 - U320			
									4	40		390083 -01	IC, 64K X 4 DRAMS (120 ns)	U321 - U324			
									1	41		318086 -01	IC, VIDEO CHARACTER ROM	U607			
									1	42		318085 -01	IC, BIOS ROM	U201			
										43							
									S	44		317066 -02	EPROM, CHARACTER ROM, 27256, (250 ns)				SUBSTITUTE FOR ITEM 41
									S	45		317066 -01	EPROM, BIOS ROM, 27256, (150 ns)				SUBSTITUTE FOR ITEM 42
										46							
									2	47		904150 -06	SOCKET, 40 PIN DIP	U102, U103			
									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			RESISTOR NETWORKS				
									1	53		252134 -03	68 μ , 16 PIN, 8 ELEMENT DIP	RP602			(8 ISOLATED ELEMENTS)
									3	54		318867 -01	33 μ , 14 PIN, 7 ELEMENT DIP	RP301 - RP303			(7 ISOLATED ELEMENTS)
									2	55		252134 -04	33 μ , 16 PIN, 8 ELEMENT DIP	RP202, RP402			(8 ISOLATED ELEMENTS)
									3	56		902441 -31	4.7K X 5, 6 PIN, SIP	RP101, RP102, RP501			
									1	57		380388 -01	220/330 X 4, 6 PIN, SIP	RP201			
									2	58		902442 -55	4.7K X 7, 8 PIN, SIP	RP401, RP603			
									3	59		902442 -35	10K X 7, 8 PIN, SIP	RP502 - RP504			
									1	60		902410 -06	3.3K X 9, 10 PIN, SIP	RP203			
									1	61		902410 -13	10K X 9, 10 PIN, SIP	RP505			
									1	62		902410 -17	33K X 9, 10 PIN, SIP	RP604			
									1	63		902441 -42	33K X 5, 6 PIN, SIP	RP605			
									S	64		902442 -41	33K X 7, 8 PIN, SIP				SUBSTITUTE FOR ITEM 63
										65							
										66			RESISTORS, 5% 1/4 WATT				
									1	67		901550 -03	5.1K OHM	R105			
									2	68		901550 -84	1M OHM	R403, R405			
									2	69		901550 -64	10 OHM	R625, R207			
									15	70		901550 -19	4.7K OHM	R103, R104, R201 - R204, R408, R412, R616, R623, R624, R639, R101, R413, R414			

COMMODORE

TITLE : PCB ASSEMBLY PC10/20-III

DRAWN BY : J. HOOPER
CHKD :

DATE : 4-5-88

ENGR :
APPR :

DATE

SIZE : B

DRAWING NUMBER : 312625
SHEET 3 OF 8

REV : G

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
										3	71	901550 -105	33 OHM	R404, R109, R421		
										4	72	901550 -58	470 OHM	R401, R402, R205, R504		
										1	73	901550 -02	3.3K OHM	R642		
											74					
										3	75	901550 -18	2.2K OHM	R407, R410, R641		
										4	76	901550 -20	10K OHM	R409, R411, R501, R643		
										2	77	901550 -01	1K OHM	R619, R606		
										1	78	901550 -88	750 OHM	R601		
										2	79	901550 -31	680 OHM	R602, R617		
										2	80	901550 -108	360 OHM	R603, R627		
										1	81	901550 -134	130 OHM	R604		
										1	82	901550 -45	75 OHM	R605		
										4	83	901550 -06	33K OHM	R608, R622, R607, R640		
										1	84	901550 -53	2K OHM	R618		
										1	85	901550 -33	3K OHM	R620		
										1	86	901550 -17	1.2K OHM	R626		
										3	87	901550 -94	68 OHM	R628 - R630		
										1	88	901600 -36	1 OHM 1/2 WATT	R106		
										2	89	901550 -52	220 OHM	R505, R102		
										4	90	901550 -56	47 OHM	R107, R108, R502, R503		
										1	91	901550 -05	8.2K OHM	R206		
										1	92	901600 -28	2.2 OHM 1/2 WATT	R645		
										3	93	900019 -17	47pF, MLC, RADIAL, COG	C103, C406, C602		
										1	94	900019 -14	39pF, MLC, RADIAL, COG	C111		
										2	95	900019 -13	22pF, MLC, RADIAL, COG	C405, C401		
										S	96	900019 -XX	33pF, MLC, RADIAL, COG			
										1	97	900019 -19	220pF, MLC, RADIAL, COG	C202		SUBSTITUTE FOR ITEM 94
										19	98	900019 -15	100pF, MLC, RADIAL, COG	C408 - C424, C601, C110		
										41	99	900014 -06	1000pF, MLC, RADIAL, X7R	C511 - C540, C104 - C106, C109, C603 - C610		
										45	100	900020 -01	.1uF, MLC, RADIAL, Z5U	C802, C803, C760 - C762, C766 - C776, C800, C404, C701 - C		
											101			C723 - C726, C747, C748, C753, C757		
										23	102	900020 -09	.33uF, MLC, RADIAL, Z5U	C727 - C746, C107, C108, C201		
											103					
										1	104	900020 -08	.22uF, MLC, RADIAL, Z5U	C508		
											105					

COMMODORE

TITLE :
PCB ASSEMBLY PC10/20-III

DRAWN BY :
J. HOOPER
CHKD :

DATE
4-5-88

ENGR :
APPR :

DATE

SIZE
B

DRAWING NUMBER
312625
SHEET 4 OF 8

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										-01							
										1	106	390101 -05	4.7uF, ALUM., ELEC., RADIAL	C403			
											107						
										11	108	390101 -01	47uF, ELECT., RADIAL @ 16V	C501 - C505, C507, C542 - C547			
											109						
										S	110	390082 -01	.1uF, MLC, AXIAL, Z5U			SUBSTITUTE FOR C701 ONLY (ITEM 100)	
											111						
											112						
										2	113	390101 -08	1uF, ELEC., RADIAL @ 50V	C503, C541			
											114						
											115						
											116						
											117						
										1	118	251029 -01	VAR. CAP., 4 - 20pF	C402			
											119						
											120						
											121						
											122						
										1	123	900560 -01	CRYSTAL, 32.768 KHz	XTAL2			
										1	124	900556 -13	CRYSTAL, 1.832 MHz, HC18U	XTAL3			
											125						
										1	126	325566 -10	OSCILLATOR, 16 MHz	OSC201			
										1	127	325566 -13	OSCILLATOR, 16.257 MHz	OSC601			
											128						
										1	129	390270 -01	OSCILLATOR, 28.63636 MHz	OSC101			
											130						
											131						
										1	132	902707 -01	TRANSISTOR, 2N3906 PNP	Q602			
										3	133	902658 -01	TRANSISTOR, 2N3904 NPN	Q101, Q104, Q106			
										8	134	900850 -01	DIODE, IN4148	CR401 - CR405, CR501, CR601, CR201			
											135						
										1	136	901527 -03	REGULATOR, 7905 -5V	VR501			
											137						
											138						
										1	139	312680 -01	PIEZO BEEPER	PZ101		STAR MANUFACTURING QMB-12	
											140						

COMMODORE	TITLE :	PCB ASSEMBLY PC10/20-III	DRAWN BY :	DATE	ENGR :	DATE	SIZE	DRAWING NUMBER	REV
			J. HOOPER	4-5-88			B	312625	
			CHKD :		APPR :			SHEET 5 OF 8	

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
									-01	27	141	251842 -02	EMI FILTER, 100pF	EMI401 -EMI425, EMI608, EMI609		
											142					
										1	143	380393 -01	BATTERY, NICAD 3.6V	BT601		
										S	144	390083 -04	IC, 64K X 4 DRAM (100 ns)			SUBSTITUTE FOR ITEM 40
										S	145	390083 -05	IC, 64K X 4 DRAM (80 ns)			SUBSTITUTE FOR ITEM 38 & 40
										S	146	380223 -04	IC, 256K X 1 DRAM (100 ns)			SUBSTITUTE FOR ITEM 39
										S	147	380223 -05	IC, 256k X 1 DRAM (80 ns)			SUBSTITUTE FOR ITEM 39
											148					
											149					
										2	150	903326 -03	HEADER, 3 PIN SIL	JMP204, JMP208		
										7	151	903326 -02	HEADER, 2 PIN SIL	JMP101, JMP205 - JMP207, JMP614, CN504, CN203		
										7	152	390043 -01	SHORTING BLOCKS 2 POS.			SEE SHEET 8 FOR POSITIONS
										1	153	359520 -14	JUMPER WIRE (#24), INSULATED	JUMPER1		
										1	154	903345 -17	HEADER, 34 PIN DIL	CN201		
										1	155	903345 -20	HEADER, 40 PIN DIL	CN202		
											156					
										14	157	903025 -01	FERRITE BEAD	FB101, FB104, FB105, FB201, FB601, FB602, FB604 - FB606		
										1	158	390268 -01	LOOSE FERRITE BEAD	FB601		SEE SHEET 8 FOR LOCATION
										1	159	252166 -03	DIN, 5 PIN, ROUND, FEMALE	CN102		
											160					
										1	161	390241 -05	D-SUB, 25 PIN, FEMALE	CN401		
										1	162	390242 -05	D-SUB, 25 PIN, MALE	CN402		
										1	163	390242 -01	D-SUB, 9 PIN, MALE	CN601		
										1	164	390241 -01	D-SUB, 9 PIN, FEMALE	CN602		
											165					
										1	166	252122 -01	JACK, RCA FEMALE, RT4	CN603		
											167					
										3	168	903781 -01	JUMPER WIRES	EMI103, EMI104, FB601		
											169					
										3	170	903446 -02	CONNECTOR 62 PIN	CN501 - CN503		
											171					
										1	172	903349 -01	CONNECTOR POWER	CN506		
										S	173	251260 -02	SWITCH, NO, PB			SUBSTITUTE FOR ITEM 174
										1	174	251260 -01	SWITCH, NO, PB	SW501		
										1	175	904775 -01	SWITCH, 4 POS., 8 PIN DIP LEVER	SWTCH601		

COMMODORE

TITLE :
PCB ASSEMBLY PC10/20-III

DRAWN BY :
J. HOOPER
CHKD :

DATE
4-5-88

ENGR :
APPR :

DATE

SIZE
B

DRAWING NUMBER
312625
SHEET 6 OF 8

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
										176						
									2	177	390253 -02	THREE TURN FERRITE BEAD	FB102, FB103			
										178						
									9	179	390257 -02	EMI FILTER, DSS310-5Y5S101M	EMI101, EMI102, EMI105, EMI607, EMI610 - EMI614 (MURATA-ERIE)			
										180						
									S	181	312777 -01	PC10C EMI ASSEMBLY (1 FERRITE)	EMI101, EMI102, EMI607, EMI610 - EMI614			
									S	182	312777 -02	PC10C EMI ASSEMBLY (2 FERRITES)	EMI105			
									1	183	390280 -01	FUSE, PICO, 4A	F401			
										184						
										185						
										186						
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										210						

COMMODORE

TITLE : PCB ASSEMBLY PC10/20-III

DRAWN BY : J. HOOPER
CHKD :

DATE : 4-5-88

ENGR :
APPR :

DATE

SIZE : B

DRAWING NUMBER : 312625
SHEET 7 OF 8

REV : G

REVISIONS			
ZONE/REV	DESCRIPTION	DATE	APPROVED
	SEE SHEET 1		

COMMODORE 10-4-87
R/V 240000

PC-III (PC10) BOARD
R/W 312628 REV 5.4

BLACK
GRAY

- NOTES:
- 1) SHORTING JUMPER SHIPPING POSITIONS (390043-01)
 - 2) JUMPER WIRE (903781-01) IN FB601 FOOTPRINT.
 - 3) ADD FB601 (390268-01) TO LEAD OF R107.
 - 4) ⊗ PC10-III EMI ASSEMBLY 312777-01 SINGLE FERRITE ORIENTATION.
 - 5) Q602, R642, MODIFICATION LOCATION.
 - 6) R641 MODIFICATION LOCATION.
 - 7) C111, FB105 MODIFICATION LOCATION.
 - 8) R643 MODIFICATION LOCATION.
 - 9) LOCATION OF JUMPER 1. SOLDER SIDE OF PCB.
 - 10) F401 MODIFICATION LOCATION.
 - 11) R645 MODIFICATION LOCATION.

12282-038F

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UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DIMENSIONS FRACTIONS DECIMALS ANGLES	DRAWN BY J. HODGSON 3-9-88	DATE 3-9-88	COMMODORE
MATERIAL	USED ON PC10/20	HEAT ASSY	PCB ASSY. PC10/20-III
FINISH:	PC COLT	SCALE 1:1	SIZE C 312625
			REV G
			SHEET 8 OF 8

PART NO.	DESCRIPTION				
	PRODUCT DESIGNATION	PRODUCT CONFIGURATION			
		COUNTRY	5 1/4 FL	3 1/2 FL	HD DRIVE
313032-01	PC10-III E1	EUROPE	1 FL		
313032-02	PC10-III U1, C1	UL, CSA	1 FL		
313032-03	" E2	EUROPE	2 FL		
313032-04	" U2, C2	UL, CSA	2 FL		
313032-05	" U3, C3	UL, CSA		1 FL	
313032-06	PC10-III U4, C4	UL, CSA		2 FL	
313032-07	PC20-III E	EUROPE	1 FL		1 HD
313032-08	PC20-III U	UL, CSA	1 FL		1 HD

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PILOT PRODUCTION RELEASE	2-18-88	<i>[Signature]</i>

1. SHEET / OF 3 SIZE
 ASSY DWG
 NOTES:

N39044
CENTENNIAL BLUEPRINT

commodore	TITLE: MAIN ASSEMBLY PC10-III, PC20-III	DRAWN BY:	DATE:	ENGR:	SIZE:	DRAWING NUMBER:
		<i>[Signature]</i>			B	313032
		CHKD:		APPR:		SHEET / OF 3

QUANTITY RECD PER PART / DASH NO.								ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
03	07	06	05	04	03	02	01							
1	1	1	1	1	1	1	1	1		312226-01	TOP COVER			
1	1	1	1	1	1	1	1	2		313010-01	BEZEL			
-	-	1	1	1	1	1	1	3		316468-02	NAMEPLATE - PC10-III			
1	1	-	-	-	-	-	-	4		316468-03	NAMEPLATE PC20-III			
1	1	1	1	1	1	1	1	5		380133-03	PLATE, LOGO			
1	1	1	1	1	1	1	1	6		380016-02	POWER ON LED			
1	1	1	1	1	1	1	1	7		380020-02	HARD DRIVE L.E.D			
1	1	1	1	1	1	1	1	8		316407-01	BACK PANEL LABEL			
1	-	1	1	1	-	1	-	9		316452-05	FCC RATING LABEL			
5	5	5	5	5	5	5	5	10		325542-02	SCREW, EXT TOOTH M4 x 6.0 LG			USE ON COVER SUB. FOR ITEM 25,26
5	5	3	5	3	3	5	5	11		906833-01	SCREW, SELF TAPPING 2.9 x 8 LG.			4x ON BEZEL, 2x ON F.D. HOLE COVER
-	-	-	-	-	-	-	1	12		312677-01	BASE ASSY EUR. (1) 5 1/2			
-	-	-	-	-	-	-	1	13		312677-02	BASE ASSY UL, CSA (1) 5 1/2			
-	-	-	-	-	1	-	-	14		312677-03	BASE ASSY EUR. (2) 5 1/2			
-	-	-	-	1	-	-	-	15		312677-04	BASE ASSY UL, CSA (2) 5 1/2			
-	1	-	-	-	-	-	-	16		312677-05	BASE ASSY EUR (1) 5 1/2 (1) HD			PC 20-III
1	-	-	-	-	-	-	-	17		312677-06	BASE ASSY UL, CSA (1) 5 1/2 (1) HD			PC 20-III
-	-	-	1	-	-	-	-	18		312677-07	BASE ASSY UL, CSA (1) 3 1/2 FL			
-	-	1	-	-	-	-	-	19		312677-08	BASE ASSY UL, CSA (2) 3 1/2 FL			
-	1	-	-	-	1	-	1	20		316452-01	RATING LABEL, EUROPE			
								21						
-	1	-	-	-	-	-	1	22		312679-02	F.D. HOLE COVER, BEZEL			DARK BEIGE (MUNSELL # 26Y 6.09/1.3)
1	-	-	1	-	-	1	-	23		312679-01	F.D. HOLE COVER, BEZEL			LIGHT BEIGE (BORG WARNER 33596)
								24						
6	6	6	6	6	6	6	6	25		906810-05	SCREW M4 x 6.0 LG.			USE ON COVER
6	6	6	6	6	6	6	6	26		905655-04	LOCKWASHER, EXT. TOOTHED 4.3 DIA			" " "

commodore

TITLE: MAIN ASSEMBLY PC10-III, PC20-III

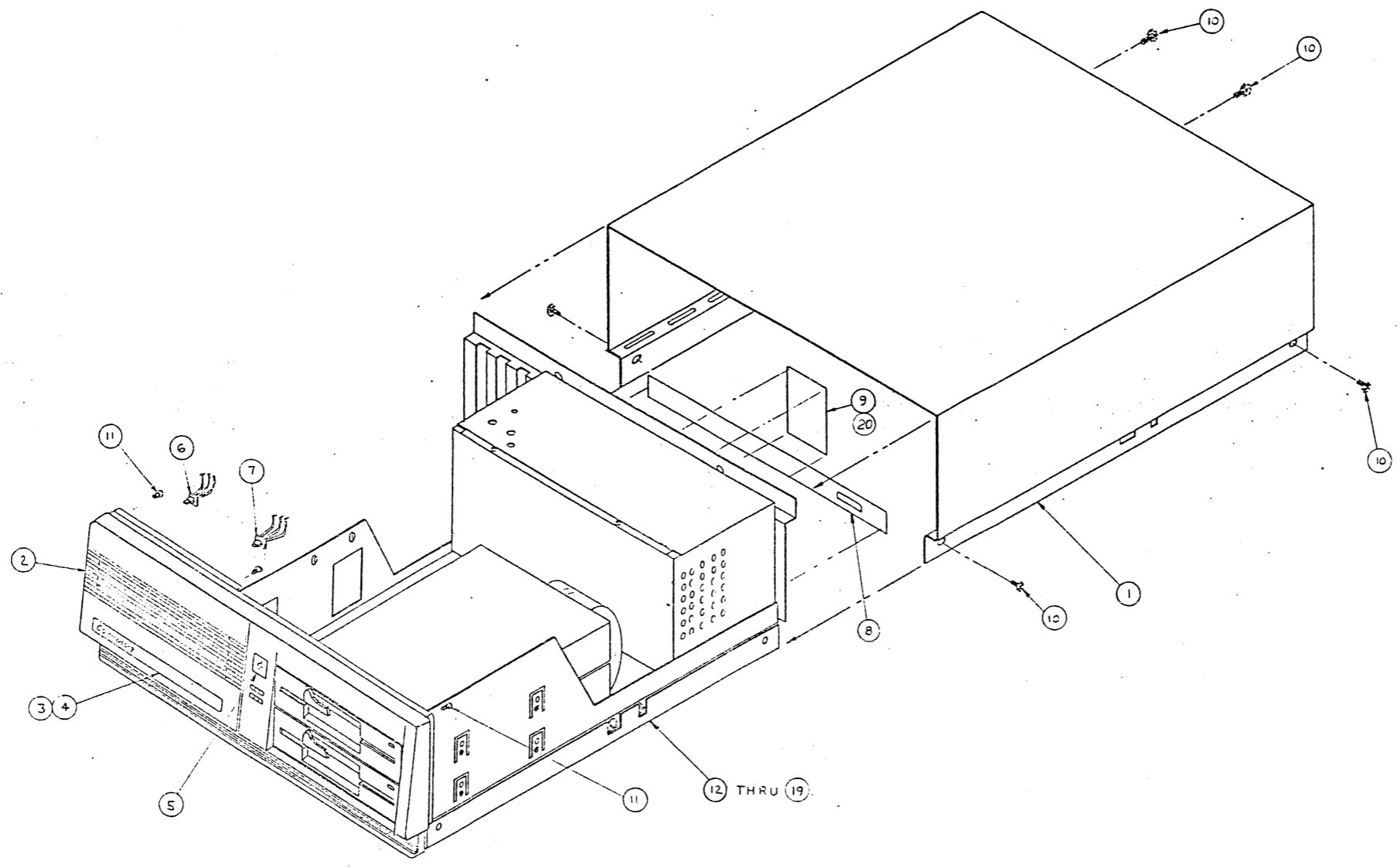
DRWN BY: W. STELLER
 DATE: 2/12/85
 CHKD:

ENGR:
 DATE:
 SIZE:
 APPR:

313032

REV A
 SHT 2/3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1.		



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UNLESS OTHERWISE SPECIFIED		DRAWN BY	DATE	commodore	
TOLERANCES ON DECIMALS		C. J. WOOLERS	12.12.87	MAIN ASSEMBLY	
A	3X	ENGR.		PC 10/20 III	
B	1	APPR.		SIZE	D 313032 A
C	0.2			SCALE	~ SHEET 3 OF 3
MATERIAL		USED ON	NEXT ASSY		
FINISH		PC 10 III			

PART NO.	PRODUCT DESIGNATION	DESCRIPTION		
		PRODUCT CONFIGURATION		
		COUNTRY	FL. DRIVE	HD. DRIVE
312677 -01	PC10-III-E1,A1	EUROPE VDE, BSI, SAA	1 FL.	
312677 -02	PC10-III-U1,C1	UL, CSA	1 FL.	
312677 -03	PC10-III-E2,A2	EUROPE VDE, BSI, SAA	2 FL.	
312677 -04	PC10-III-U2,C2	UL, CSA	2 FL.	
312677 -05	PC20-III-E,A	EUROPE VDE, BSI, SAA	1 FL.	1 HD.
312677 -06	PC20-III-U,C	UL, CSA	1 FL.	1 HD.
312677 -07	PC20-III-U3	UL, CSA	(1) 3 1/2 FL.	
312677 -08	PC20-III-U4	UL, CSA	(2) 3 1/2 FL.	

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
	G	REVISED PER ECO 880019		
	H	REVISED PER ECO 880042	5-18-83	R. J. Bush

1. SHEET 3 OF 3 SIZE D
 ASSY DWG 312677
 NOTES:

COMMODORE	TITLE: CPU BASE ASSEMBLY, PC10/20-III	DRAWN BY: J. HOOPER	DATE 3-31-88	ENGR:	SIZE B	DRAWING NUMBER 312677
		CHKD:		APPR:		SHEET 1 OF 3

QUANTITY REQD PER PART/DASH NO.									ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
-08	-07	-06	-05	-04	-03	-02	-01								
1	1	1	1	1	1	1	1	1	1	D	312225 -01	MAIN CHASSIS BASE			
1	1	1	1	1	1	1	1	1	2	D	313066 -01	MOUNTING BRACKET			
1	1	1	1	1	1	1	1	1	3	B	313011 -02	SPACER PLATE			
									4						
4	4	4	4	4	4	4	4	4	5	B	380120 -01	EXTENSION CARD PANEL			
3	3	3	3	3	3	3	3	3	6	B	251118 -01	PCB GUIDE			
-	-	1	1	2	2	1	1		7	A	380111 -01	FLOPPY DISK DRIVE			
-	-	-	1	-	1	-	1		8	A	312637 -01	POWER SUPPLY			< VDE, BSI, SAA, SEV >
1	1	1	-	1	-	1	-		9	A	312637 -02	POWER SUPPLY			< UL, CSA >
4	4	4	4	4	4	4	4	4	10	A	380128 -01	FOOT			
									11						
4	4	4	4	4	4	4	4	4	12	B	312689 -02	STAND OFF			
2	1	-	-	-	-	-	-		13	A	312574 -01	FLOPPY DISK DRIVE 3 1/2			
									14						
1	1	1	1	1	1	1	1	1	15	B	380012 -08	FLOPPY DISK CABLE			
									16						
									17						
1	1	1	1	1	1	1	1	1	18	B	312625 -01	P.C.B. MAIN ASSEMBLY			
									19						
									20						
8	8	8	8	8	8	8	8	8	21	B	325542 -02	SCREW, MECH. WITH EXT. TOOTH M4 X 0.7 X 6.0 LG.			USE ON POWER SUPPLY, MTG. BRACKET
4	4	4	4	4	4	4	4	4	22	B	324465 -01	SCREW, MACH. M3.5 X 0.5 X 5.0 LG.			USE ON EXTENSION CARD PANEL
8	4	4	4	8	8	4	4		23	B	325541 -03	SCREW, WITH EXT. TOOTH M3 X 0.5 X 8.0 LG.			FOR FLOPPY DISK DRIVE
4	4	4	4	4	4	4	4		24	B	905650 -07	LOCKWASHER, EXT. TOOTHED 3.7 DIA.			FOR EXT. CARD PANEL
-	-	1	1	-	-	-	-		25	B	312711 -01	HARD DISK DRIVE			
-	-	1	1	-	-	-	-		26	B	312695 -01	HARD DISK - CABLE ASSEMBLY			
									27						
8	8	8	8	8	8	8	8	8	28	A	390251 -01	STAND OFF 'D' CONN.			
									29						
5	5	5	5	5	5	5	5	5	30	A	390266 -05	STAND OFF, HEX 6.0 MM X 9.0 LG.			
10	10	10	10	10	10	10	10	10	31	B	906800 -05	SCREW, MACH. M3 X 0.5 X 6.0 LG.			USED WITH ITEM 30
-	-	4	4	-	-	-	-		32	B	350117 -01	SCREW, 6 - 32 0.3 LG. WITH EXT TOOTH			FOR HD. DRIVE
									33						
									34						
									35						

COMMODORE

TITLE : CPU BASE ASSEMBLY PC10/20-III

DRAWN BY : J. HOOPER
CHKD :

DATE : 3-31-88

ENGR :
APPR :

DATE

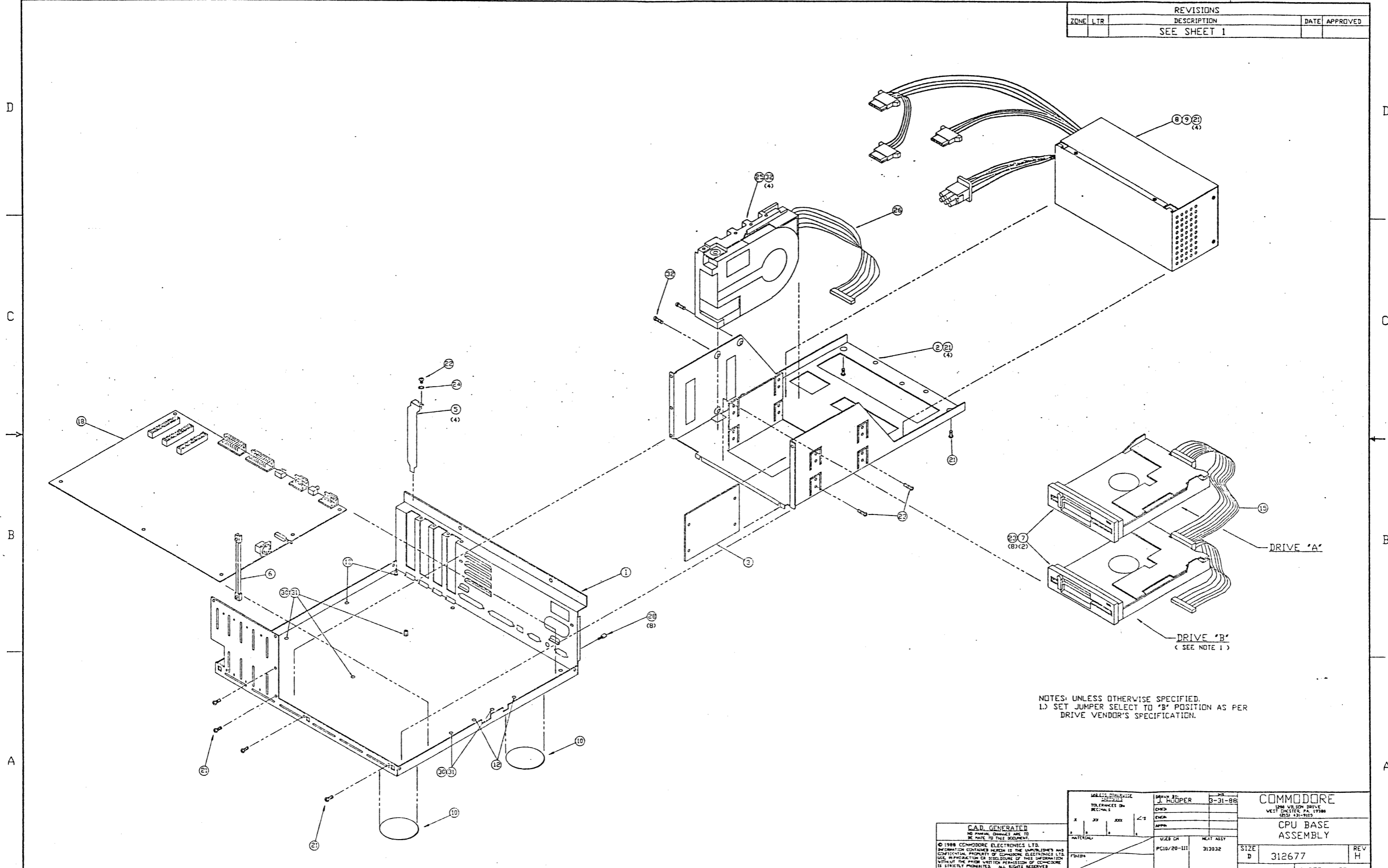
SIZE : B

DRAWING NUMBER : 312677
SHEET 2 OF 3

REV : H

8 7 6 5 4 3 2 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVED
SEE SHEET 1				



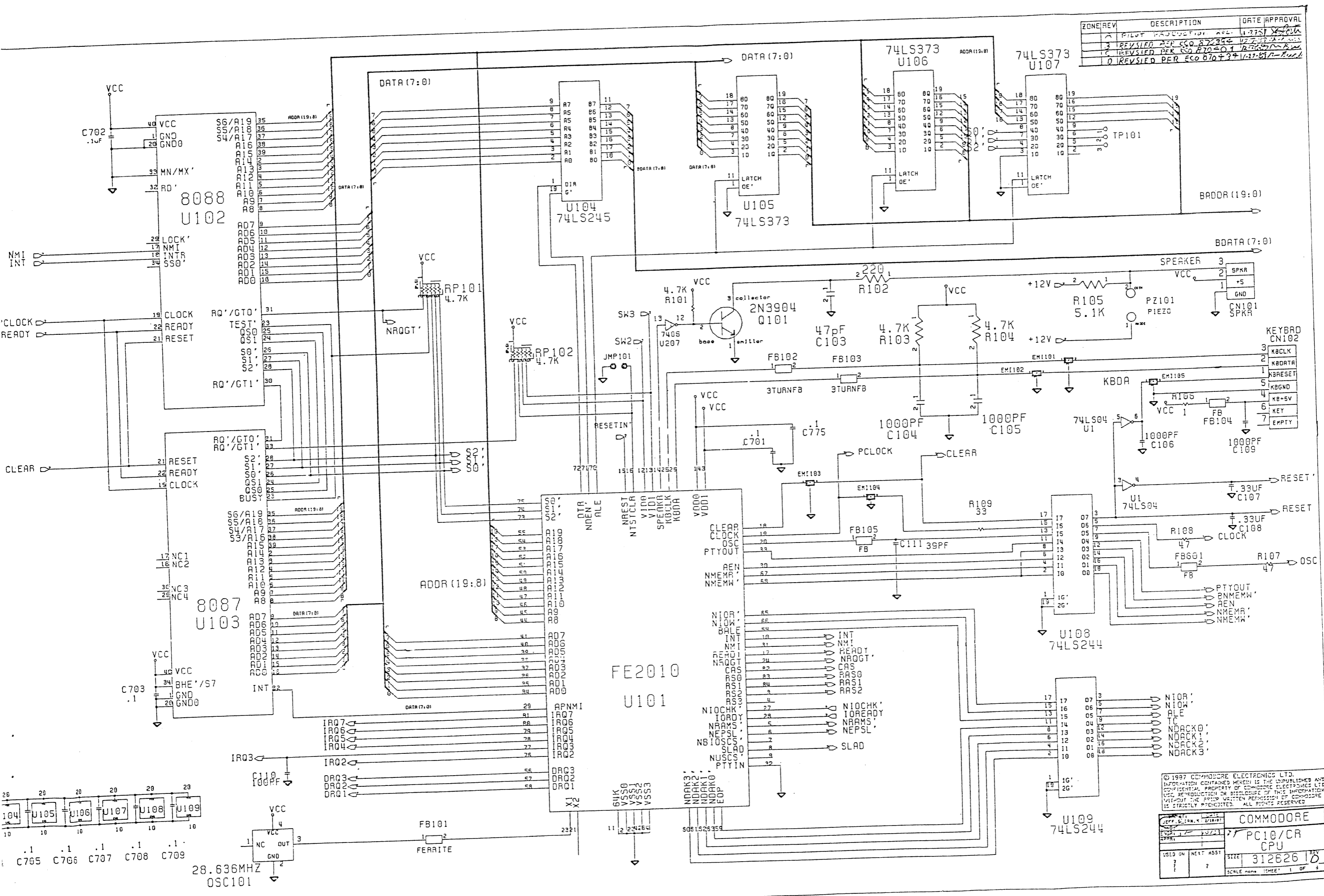
NOTES: UNLESS OTHERWISE SPECIFIED.
 1.) SET JUMPER SELECT TO 'B' POSITION AS PER
 DRIVE VENDOR'S SPECIFICATION.

CAD GENERATED
 NO DIMENSIONS ARE TO
 BE MADE TO THIS DOCUMENT.
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SCALE: DIMENSIONAL DIMENSIONS ON REVISIONS	DRYAN L. J. JUMPER	DATE 9-31-88	COMMODORE 1988 VULCAN DRIVE WEST CHESTER, PA. 19380 610-331-9100
MATERIALS	U.S. OR PC10/20-III	NEXT ASSY 319032	SIZE D 312677
FINISH			REV H
			SCALE NONE SHEET 3 OF 3

8 7 6 5 4 3 2 1

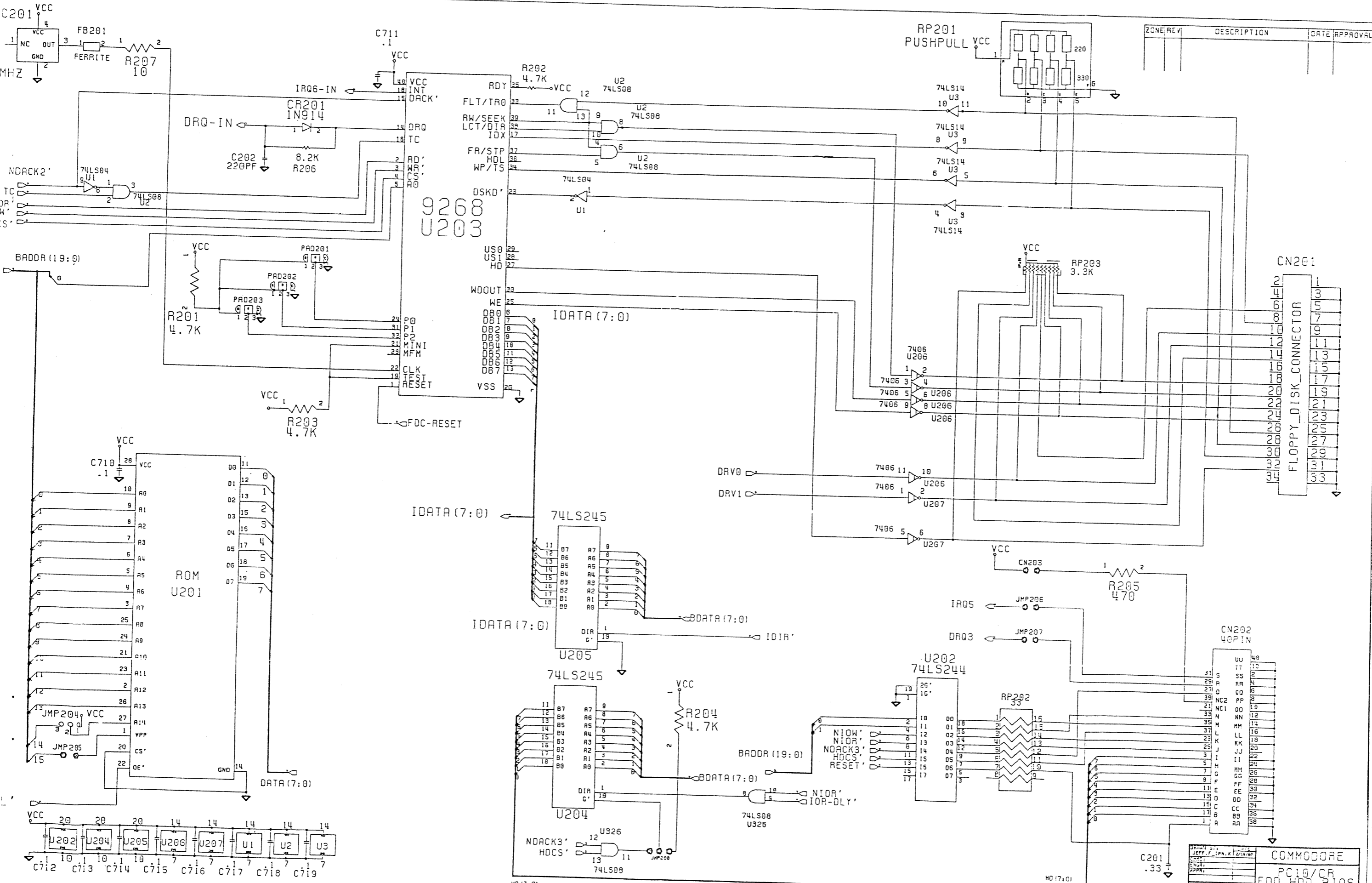
ZONE/REV	DESCRIPTION	DATE APPROVAL
A	PILOT PRODUCTION	11-27-87
B	REVISED PER ECO 872354	12-22-87
C	REVISED PER ECO 872354	12-22-87
D	REVISED PER ECO 870734	11-27-87



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DATE	11-27-87	DESIGNER	Louis
BY	JEF	CHECKED	JEF
USED ON	7	NEXT ASST	?
SIZE	312626	REV	0
SCALE	NAME	SHEET	1 OF 3

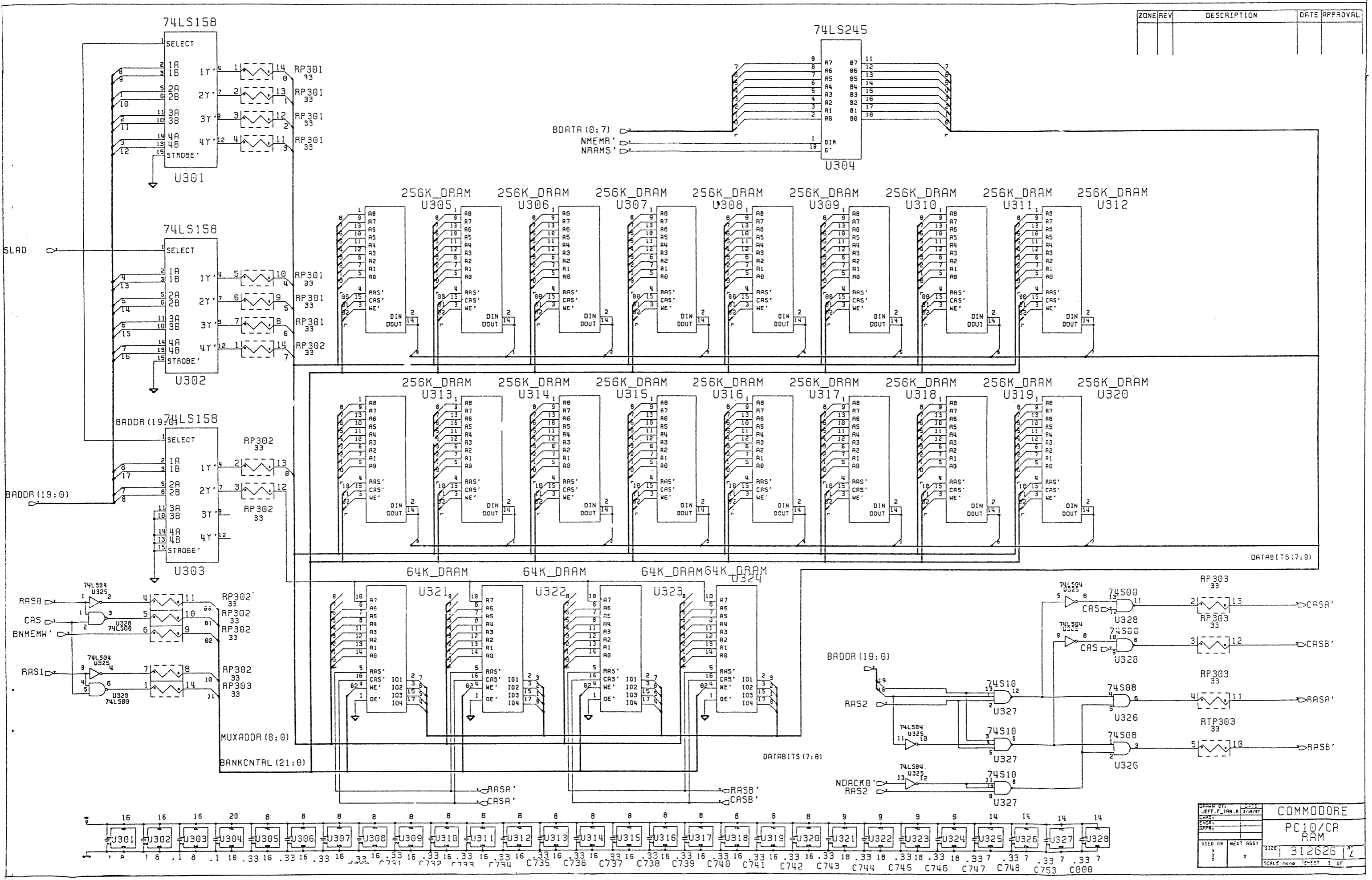
COMMODORE
 PC10/CR
 CPU



ZONE/REV	DESCRIPTION	DATE	APPROVAL

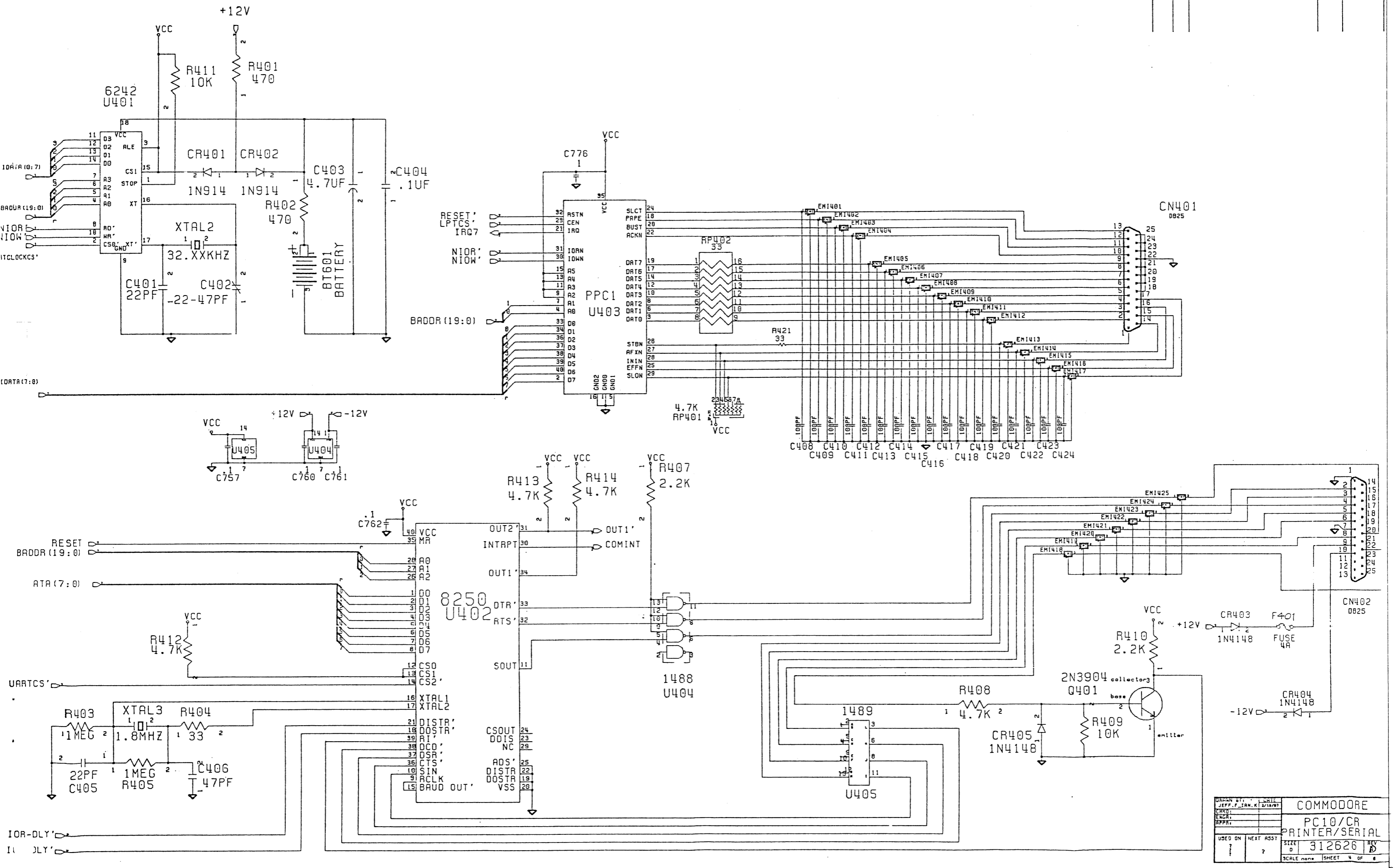
COMMODORE	
PC10/CR	
FDD_HDD_210S	
USED ON	REV
7	2
SCALE: 1:1	

ZONE/REV	DESCRIPTION	DATE	APPROVAL



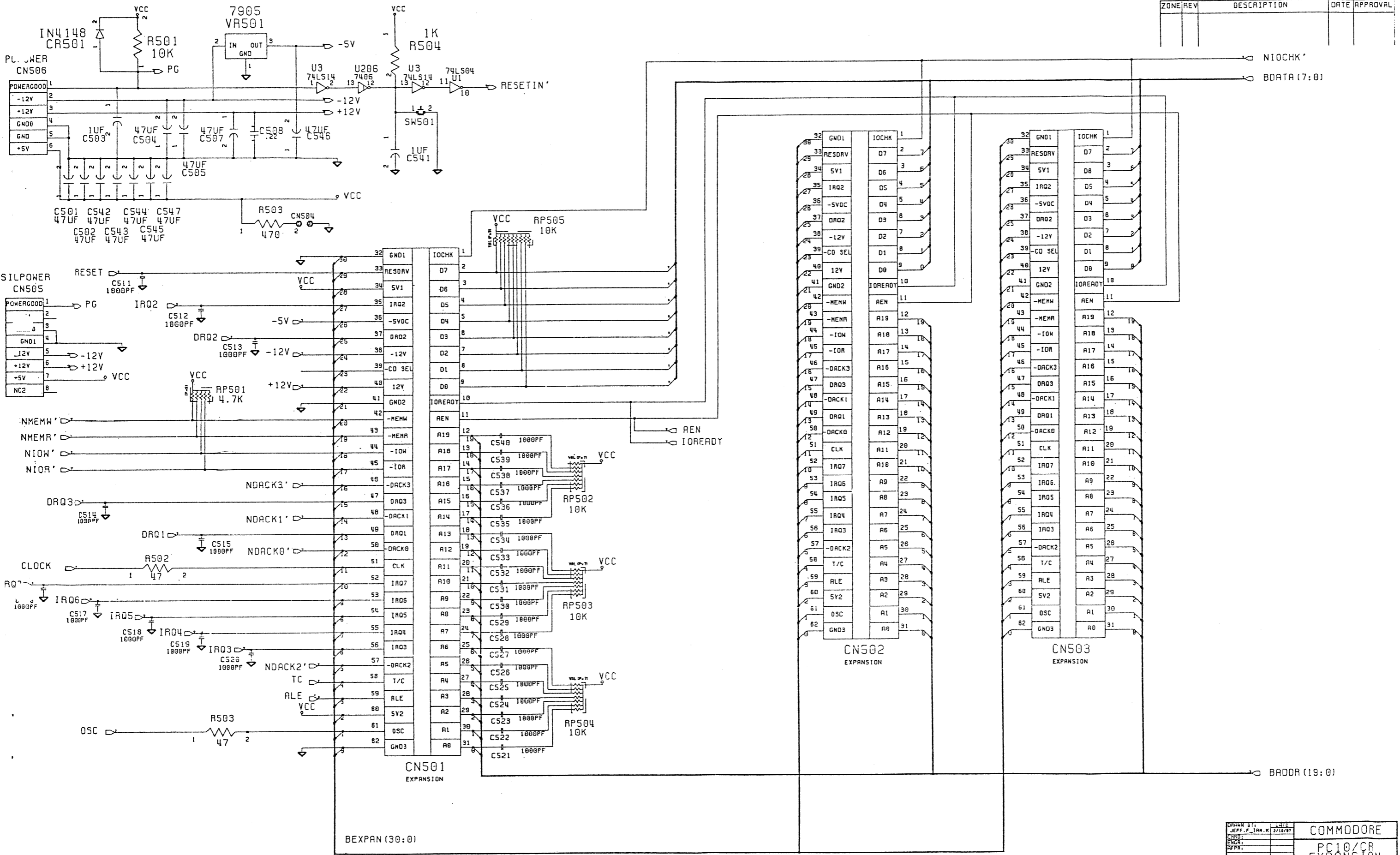
DESIGNER	JEFF. P. TAN. K. 2/18/87	COMMODORE
DATE		PC10/CR
APPRA		RAM
USED ON		SIZE 312626
NEXT ASST		SCALE none 1:1:1 3 of 7

ZONE	REV	DESCRIPTION	DATE	APPROVAL

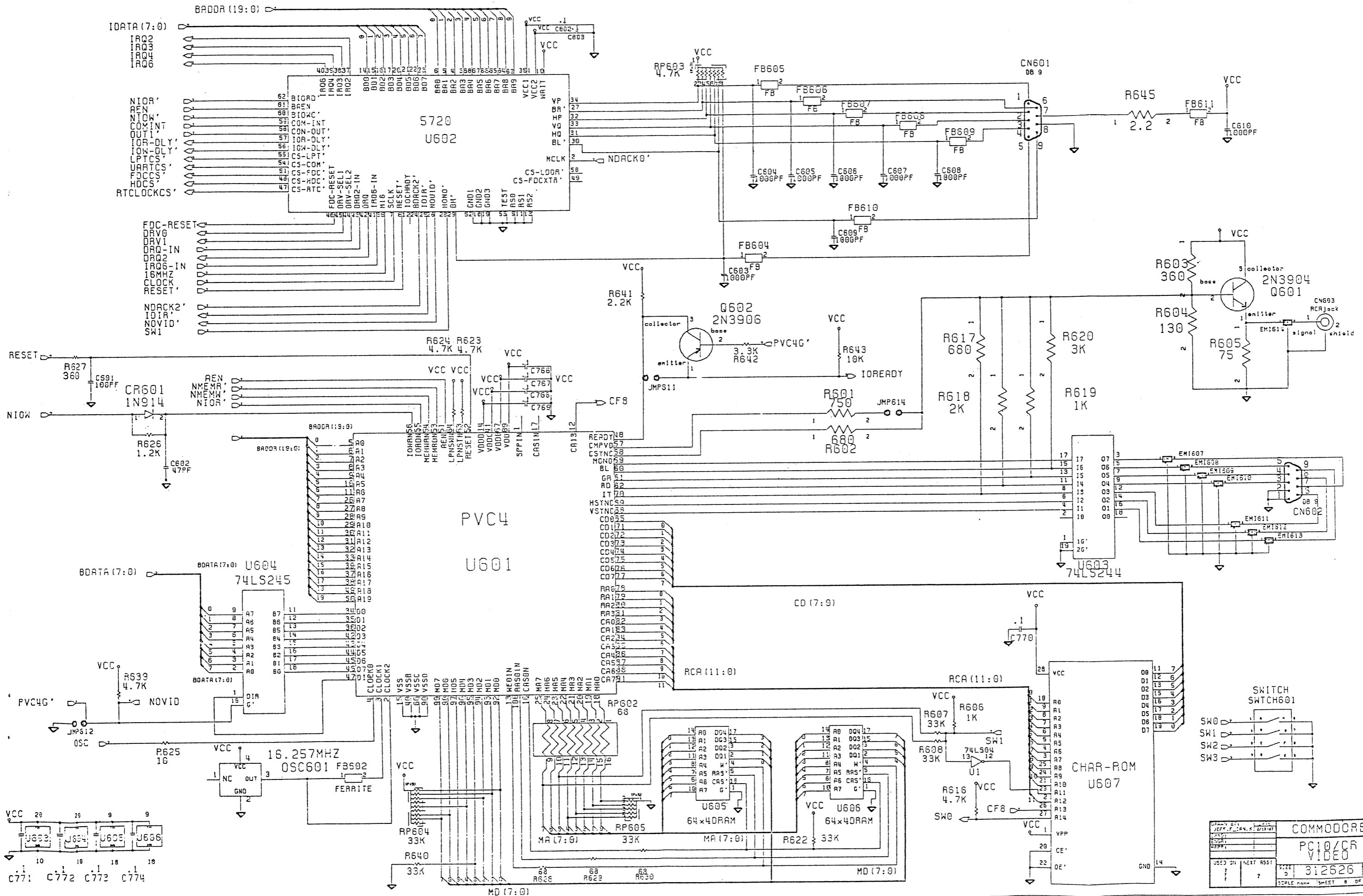


DESIGNED BY	L. W. J.	COMMODORE
CHECKED BY	J. F. F. TAN, K. 2/19/87	PC10/CR
ENGR.		PRINTER/SERIAL
APP'D.		
USED ON	?	SIZE 0 312626 REV 8
NEXT ASST	?	SCALE none SHEET 4 OF 8

ZONE	REV	DESCRIPTION	DATE	APPROVAL



DESIGNER	JEFF. P. IAN. K.	DATE	2/10/87
ENGR.			
CHKD.			
DATE			
USED ON	NEXT ASSY	SIZE	312626
1	7	SCALE	none
		SHEET	5 OF 6



USED ON	NEXT ASST	SIZE	312626
7	7	9	7
SCALE		SHEET 8 OF 7	

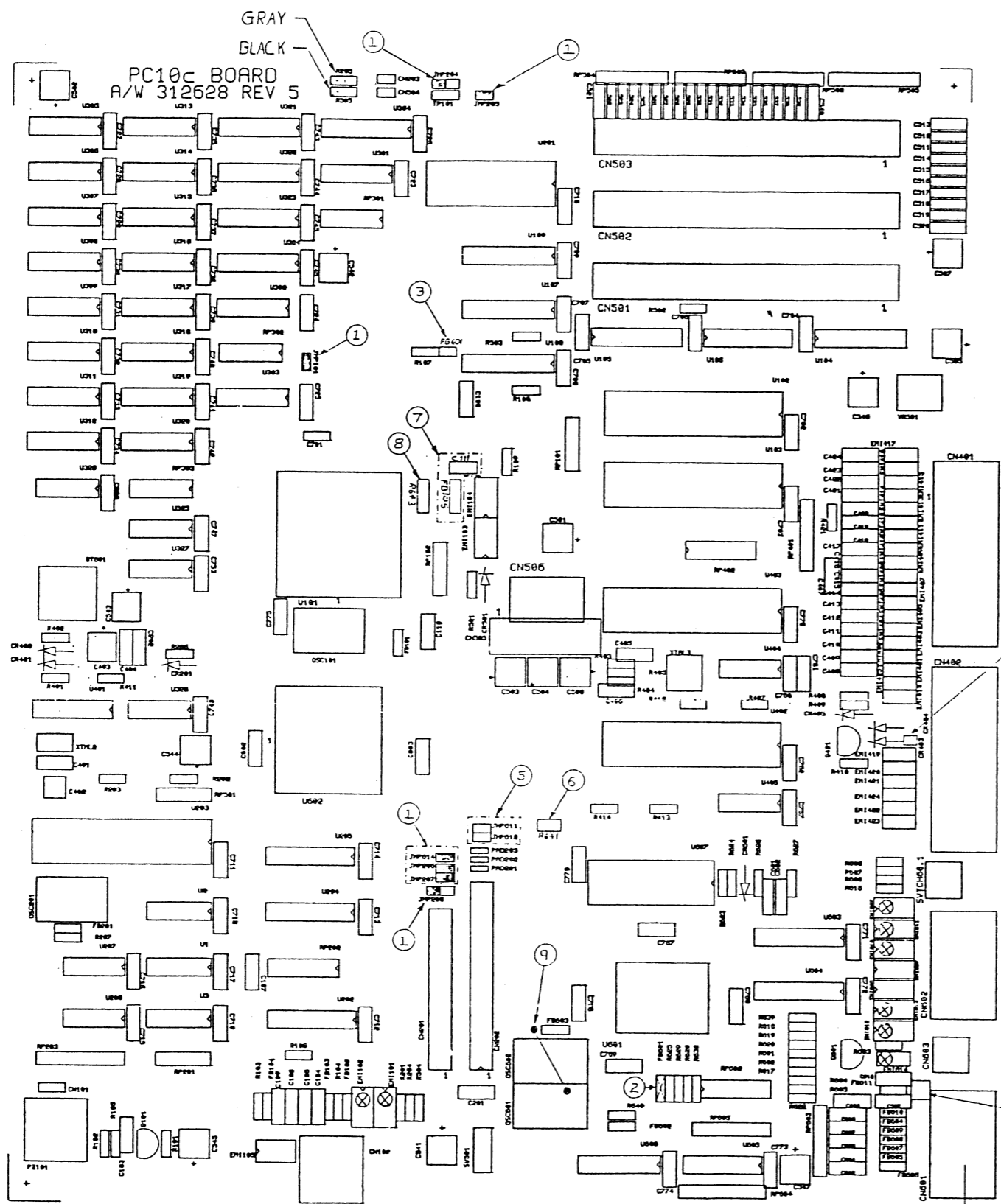
4

3

2

1

SEE SHEET 1



COMMODORE 10-4-87
 A/W 312628 REV 5
 PC10c BOARD
 SILKTOP

- NOTES:
- ① SHORTING JUMPER SHIPPING POSITIONS (390043-01)
 - ② JUMPER WIRE (903781-01) IN FB601 FOOTPRINT
 - ③ ADD FB601 (390268-01) TO LEAD OF R107.
 - ④ ⊗ PC10c EMI ASSEMBLY 312777-01 SINGLE FERRITE ORIENTATION.
 - ⑤ Q602, R642, MODIFICATION LOCATION.
 - ⑥ R641 MODIFICATION LOCATION.
 - ⑦ C711 FB105 MODIFICATION LOCATION.
 - ⑧ R643 MODIFICATION LOCATION.
 - ⑨ LOCATION OF JUMPER 1, SOLDER SIDE OF PCB.
 - ⑩ F401 MODIFICATION LOCATION.
 - ⑪ R645 MODIFICATION LOCATION.

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UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS X .XX .XXX L'S ± ± ± ±	DRAWN BY: C. BONCALL	DATE 10-19-87	commodore
	CHKD:	ENGR:	
MATERIAL:	USED ON PC10c	NEXT ASSY	SIZE c 312625
FINISH:			REV D
			SCALE SHEET 7 OF 7

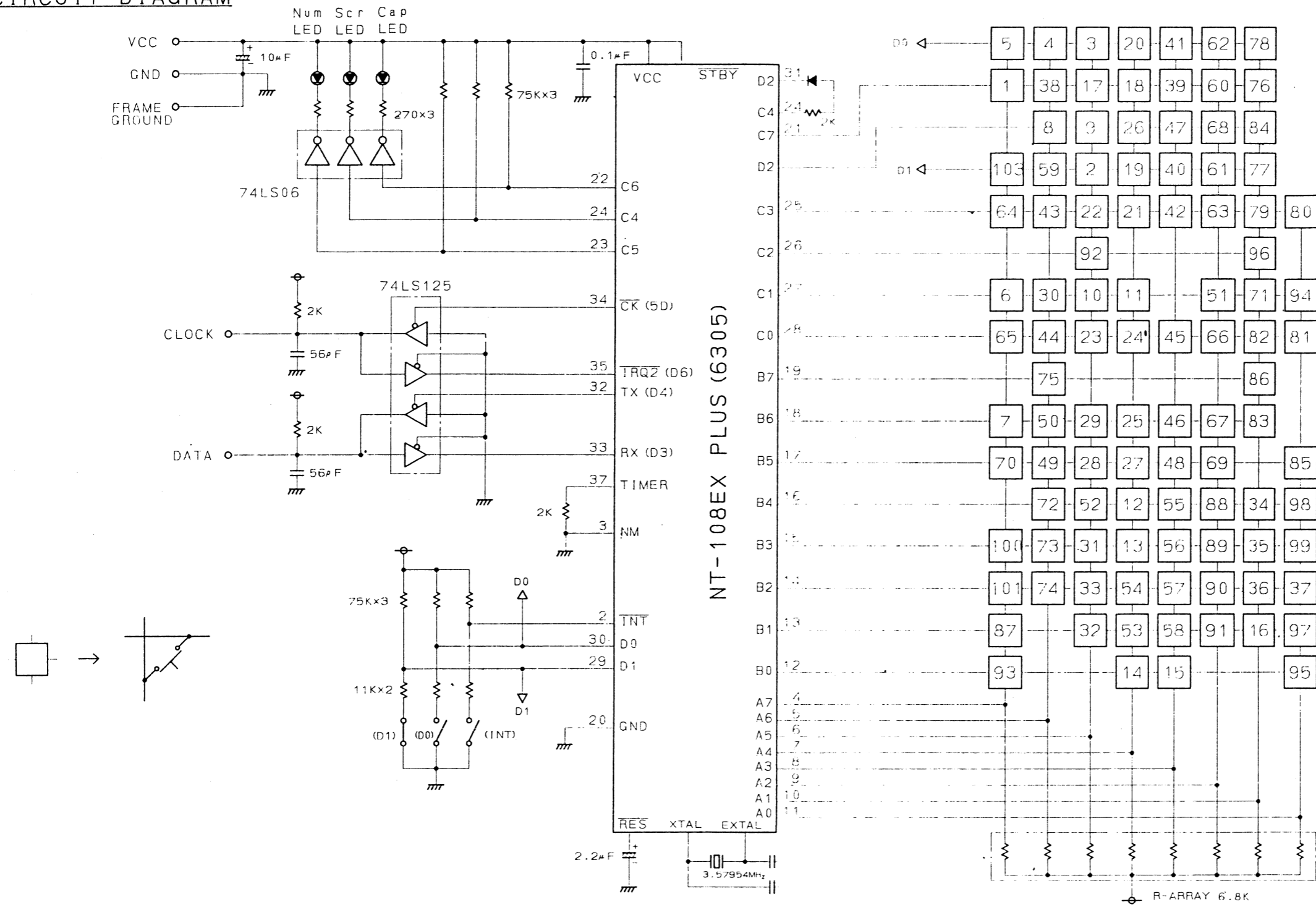
4

3

2

1

CIRCUIT DIAGRAM



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67
68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84
85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101

BESTELL-NR.	0371229
GERAETEBEZEICHNUNG	COMPUTER
WARENGATTUNG	390
AUSFUEHRUNGS-NR.	001
GERAETEBESCHREIBUNG	
PRIVILEG	PC 10 III
LIEFERANTEN-NR.	224764
PREIS	1998.00
KATALOG	882
GARANTIEZEIT	6
KD-SEKTOR	S
HEIM/BRINGE	WERKSTATT
BETREUUNG	EIGEN
KOSTENTRAEGER	EIGEN
REPARATURFAEHIG	JA

ERSATZTEILLISTE

ZEILE	POSITION	SYM BEZEICHNUNG	ET-NUMMER	ANZ
1				
2		TEILE LAUT EXPLOSIONSZEICHNUNG		
3				
4	3	FRONTBLLENDE	723 743 1	001
5	4	ABDECKUNG FUER LAUFWERKSCHACHT	723 744 9	001
6	7	1 FLOPPY-LAUFWERK	723 745 6	001
7	8	1 NETZTEIL	723 746 4	001
8	10	GEHAUSEFUSS	723 747 2	001
9	11	COMMODORE - SCHRIFTZUG	723 748 0	001
10	13	COMMODORE-WARENZEICHEN	723 749 8	001
11	15	FLOPPY-KABEL	723 750 6	001
12	16	LED POWER ON FUER PC 10	723 731 6	001
13	17	LED-HARD DISK F. PC 10	723 732 4	001
14				
15		MS-DOS 3.21 DISKETTE	723 752 2	001
16		UTILITIES 3.2 DISKETTE	723 753 0	001
17		DOS-HANDBUCH FUER PC 10	723 754 8	001
18		BASIC-HANDBUCH FUER PC 10	723 755 5	001
19		1 TASTATUR KPL.	723 756 3	001
20				

21	TEILE LAUT POSITIONSBEZEICHNUNG			
22				
23	BT 601	NC-AKKU 3,6 V	723 740 7	001
24				
25	CN 601	BUCHSE, CONTROL	968 225 3	001
26				
27	CR 401-405	DIODE 1 N 4148	175 540 4	005
28	CR 501,601	DIODE 1 N 4148	175 540 4	002
29				
30	EMI401-425	EMI FILTER 100 PF	723 739 9	025
31	EMI601-615	EMI FILTER 100 PF	723 739 9	015
32				
33	OSC 101	OSZILLATOR 26,63636 MHZ	723 757 1	001
34	OSC 201	OSZILLATOR 16 MHZ	723 735 7	001
35	OSC 601	OSZILLATOR 16,257 MHZ	723 736 5	001
36	OSC 602	OSZILLATOR 24 MHZ	723 737 3	001
37				
38	PZ 101	PIEZO-SUMMER	723 738 1	001
39				
40	Q 101,401	TRANSISTOR BC 546 B	923 701 7	002
41	Q 601	TRANSISTOR 2 N 3904	952 885 2	001
42				
43	SW 501	SCHALTER	723 741 5	001
44	SW 601	DIP-SCHALTER 4-FACH	723 742 3	001
45				
46	U 1	IC 74 LS 04	929 537 9	001
47	U 2	IC 74 LS 08	929 539 5	001
48	U 3	IC SN 74 LS 14	966 454 1	001
49	U 101	IC FE 2010 A	723 718 3	001
50	U 102	IC 8088	723 719 1	001
51	U 104	IC SN 74 LS 245	968 220 4	001
52	U 105-107	IC SN 74 LS 373	954 463 6	003
53	U 108,109	IC SN 74 LS 244	952 679 5	002
54	U 201	IC FRANK BIOS ROM	723 730 8	001
55	U 202	IC SN 74 LS 244	952 679 5	001
56	U 203	IC SMC 9268	723 723 3	001
57	U 204,205	IC SN 74 LS 245	968 220 4	002
58	U 206,207	IC SN 7406	965 493 0	002
59	U 301-303	IC 74 LS 158	720 358 1	003
60	U 304	IC SN 74 LS 245	968 220 4	001
61	U 305-320	IC C025991 256KX1 150NS DYN.RAM	721 506 4	016
62	U 321-324	IC 41464 (64K*4 RAM)	722 226 8	004
63	U 325	IC SN 74 S 04	954 468 5	001
64	U 326	IC 74 S 08	723 721 7	001
65	U 327	IC 74 S 10	723 722 5	001
66	U 328	IC 74 S 00	723 720 9	001
67	U 401	IC OKI 6242	723 724 1	001
68	U 402	IC 8250	723 725 8	001
69	U 403	IC PPC 1	723 727 4	001
70	U 404	IC 1488 RS-232 TREIBER	721 503 1	001
71	U 405	IC 1489 RS-232 EMPFAENGER	721 504 9	001
72	U 601	IC PVC4 VIDEO	723 726 6	001
73	U 602	IC 5720 CUSTOM	723 728 2	001
74	U 603	IC SN 74 LS 244	952 879 5	001
75	U 604	IC SN 74 LS 245	968 220 4	001
76	U 605,606	IC 41464 (64K*4 RAM)	722 226 8	002
77	U 607	IC VIDEO CHARACTER ROM	723 729 0	001
78				
79	U'101	IC SOCKEL 84 PIN	722 720 0	001
80	U'602	IC-SOCKEL 68 PIN	723 733 2	001
81				
82	VR 501	IC 7905	954-475 0	001
83				
84	X'TAL 2	QUARZ,32.768KHZ	968 422 6	001
85	X'TAL 3	QUARZ 1,832 MHZ (HC16U)	723 734 0	001
86				
87	ZUBEHOER:			
88				
89		MS-DOS 3.21 DISKETTE	723 752 2	001
90		UTILITIES 3.2 DISKETTE	723 753 0	001
91		DOS-HANDBUCH FUER PC 10	723 754 8	001
92		BASIC-HANDBUCH FUER PC 10	723 755 5	001

ENDE