

APPLICATION		REVISIONS			
NEXT ASSY.	USED ON	LTR	DESCRIPTION	DATE	APPROVED
	A590 SCSI	1	ADVANCE ENGINEERING RELEASE	5-19-88	<i>[Signature]</i>
		A	SPECIFICATION RELEASE	11/4/88	<i>[Signature]</i>

1.0

DESCRIPTION

This specification describes the Functional Requirements for an A590 SCSI Assembly.

Refer to Figure 1 - Timing Chart, ("B" size drawing).

Page 6 of 6 is a B-size

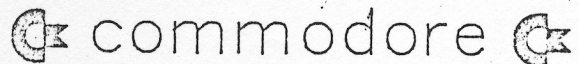
COMMODORE PART #	STATUS				
312752-01	Active				

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

TOLERANCES
 ANGLES ± 1 DEGREE
 2 PLACE DECIMALS ± .02
 3 PLACE DECIMALS ± .010

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DRWN	C. Bonsall	5-17-88
SYSTEMS ENG		
TEST ENG		
CIRCUIT ENG		
COMP ENG		



TITLE
 FUNCTIONAL SPECIFICATIONS
A590

SIZE DRAWING NO.
 A 312752

SCALE none SHEET 1 OF 6

2.0

PARAMETERS

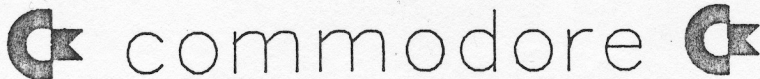
Dimensions: 6 x 10.5 x 2.75 inches, Assembly.
6.25 x 3.25 x 4.25 inches, Brick.

Weight: 4.5 lb, Assembly.

Power Requirements: 117/220/240 VAC, 50-watts (maximum).

Power Consumption: Maximum for internal Hard Drive shall not exceed 8-Watts.

Features: 20- or 40-MByte hard disk.
Sockets for up to 2-Megabytes of fast RAM (using 256K x 4 DRAMs).
Auto-boot ROMs.
Rear socket permits connection of SCSI expansion device(s). Connects to 86-pin connector on side of Host.
Includes diskette with all necessary hard disk operating system software.



TITLE

FUNCTIONAL SPECIFICATIONS, A590

SIZE
A

DRAWING NO.

312752

REV

SCALE none

SHEET 2 OF 6

3.0 FUNCTIONAL REQUIREMENT

3.1 THEORY of OPERATION

The Host power supply provides +5 volts to this Assembly through an 86-pin connector where it enables the A590 external power supply.

The Assembly as described herein shall consist of three independent subsystems:

- [1] MEMORY
- [2] DMA/SCSI CONTROLLER
- [3] AUTO-CONFIG

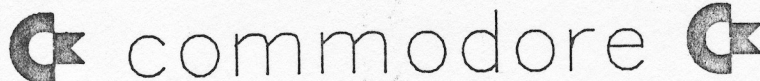
AUTO-CONFIG for all on-board devices (RAM, ROM, DMA controller) shall be executed by the DMA controller chip.

The DMA chip provides "_RAMSEL" and "_ROMCS" signals to indicate an access to the on board RAM and ROM, respectively. During auto-config time the DMA chip must indicate how much RAM is on board. It determines this by reading its "RAMSZ" line. The following chart shows the relationship between the signal on RAMSZ and the amount of RAM that should be present:

Signal	Amount of RAM
Ground	None
Inverse of CDAC	512K
CDAC	1M
Vcc	2M

The signal applied to "RAMSZ" is determined by JP1. The DMA controller chip also generates the signal "_SLAVE" whenever something within the auto config address space is being accessed. This is tied directly to "_OVR" to allow for generation of "_DTACK" on our board.

The auto-boot ROMS simply connect to the bus with the data outputs being enabled by "_ROMCS". "_DTACK" is generated automatically by the DMA chip when the ROM is accessed.



TITLE

FUNCTIONAL SPECIFICATIONS

A590

SIZE
A

DRAWING NO.

312752

REV

SCALE none



SHEET 3 OF 6

3.1

THEORY of OPERATION (continued)

The RAM section is controlled by U5. (See Figure 1). U5 generates RAS and CAS for the RAMs as well as DTACK. The RAM is set up in 4 separate banks, each with its own CAS, but a common RAS. The CAS on the bank that is being accessed has a special access waveform, while the other three CAS lines will just perform a refresh. After the access, a hidden refresh is performed. If the RAM is not being accessed, all of the RAM is just continually refreshed. On writes, the byte(s) (upper, lower, or both) to write shall be determined by gating the write signal to the RAMs with UDS and LDS. Byte control of reads is gated by applying LDS or UDS to the output enable inputs of the RAMs. The multiplexed address that DRAMS need is generated by U8 and U9, which is controlled by the mux signal from U5. There are two possible relationships between processor timing and the C1 and C3 clocks. U5 only understands one of these (Agnus normally synchronizes the processor to this relationship, but this relationship can be upset by DMA operations, for instance). If U5 sees the other relationship, it will insert a single wait state to realign the 68000 to what it considers correct timing. This special cycle is shown on the timing diagram in addition to normal cycles.

The DMA controller (U1) attaches to the bus and to the WD33C93 SCSI controller chip (U4). U4 attaches to an internal 50 pin SCSI connector and goes out to a DB25 connector on the back of the board which allows attachment of SCSI peripherals. The DMA controller also provides a special XT interface for IBM PC XT bus type drives (this is NOT ST-506). This connects to the internal drive. The 7-Mhz clock required by the DMA controller is generated by U6. The special SCSI bus reset signal is generated whenever the Amiga is reset.


 commodore
 

TITLE

FUNCTIONAL SPECIFICATIONS, A590

SIZE
A

DRAWING NO.



312752

REV

SCALE none

SHEET 4 OF 6

FIGURE 1
Memory Timing Chart
(Refer to "B" size drawing)

 commodore 

TITLE

FUNCTIONAL SPECIFICATIONS, A590

SIZE
A

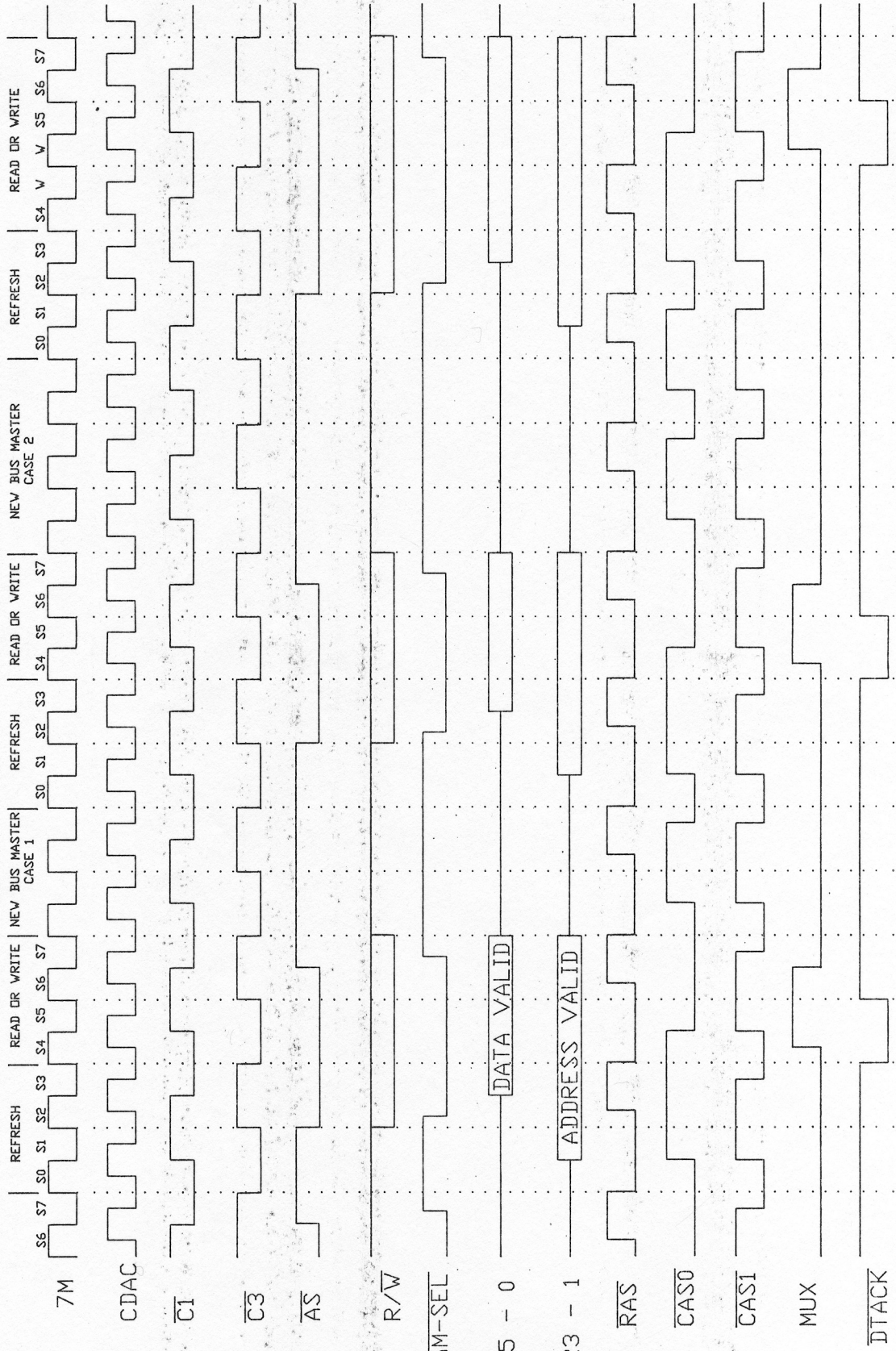
DRAWING NO.

312752

REV

SCALE none

SHEET 5 OF 6



Commodore 14000 SHAWNEE DRIVE WEST VALLEY CITY, GA 30087		SIZE B 312.752	REV 1
PART NUMBER A590		TIMING	
SCALE 1:1	SHEETS OF 5		

PART NUMBER	DESCRIPTION	REVISIONS		DATE	APPROVED
		ZN	LTR		
312642-01	PACKING ASSEMBLY, A590 H.D.D - US FED EXP	1	ADVANCE ENGINEERING RELEASE		J. PORTER
312642-02	PACKING ASSEMBLY, A590 H.D.D - CANADA	A	PILOT PRODUCTION RELEASE	11/4/88	J. BOYER
312642-03	PACKING ASSEMBLY, A590 H.D.D - AUSTRALIA	B	REVISED PER ECO 880266	12/21/88	R. M. BUCKS
312642-04	PACKING ASSEMBLY, A590 H.D.D - UK	C	REVISED & REDRAWN PER ECO 890001	1/27/89	R. M. BUCKS
312642-05	PACKING ASSEMBLY, A590 H.D.D - EUROPE-EFIGS	D	REVISED PER ECO 890037	3/23/89	R. M. BUCKS
312642-06	PACKING ASSEMBLY, A590 H.D.D - EUROPE-SCANDANAVIA	E	REVISED PER ECO 890103	5/17/89	R. M. BUCKS
312642-07	PACKING ASSEMBLY, A590 H.D.D - SWITZERLAND	F	REVISED PER ECO 890146	6/10/89	R. M. BUCKS
312642-08	PACKING ASSEMBLY, A590 H.D.D - GERMANY	G	REVISED PER ECO 890248	9/7/89	R. M. BUCKS
312642-09	PACKING ASSEMBLY, A590 H.D.D - FRANCE	H	REVISED PER ECO 890171	11/16/89	R. M. BUCKS
312642-10	PACKING ASSEMBLY, A590 H.D.D - NETHERLANDS	J	REVISED PER ECO 890339	12/14/89	R. M. BUCKS
312642-11	PACKING ASSEMBLY, A590 H.D.D - SWEDEN	K	REVISED PER ECO 900049	5/10/90	R. M. BUCKS
312642-12	PACKING ASSEMBLY, A590 H.D.D - DENMARK	L	REVISED PER ECO 900312	10/18/90	R. M. BUCKS
312642-13	PACKING ASSEMBLY, A590 H.D.D - NORWAY	M	REVISED PER ECO 910080	3/28/91	R. M. BUCKS
312642-14	PACKING ASSEMBLY, A590 H.D.D - ITALY	N	REVISED PER ECO 910090	4/11/91	R. M. BUCKS
312642-15	PACKING ASSEMBLY, A590 H.D.D - SPAIN	P	REVISED PER ECO 910069	4/25/91	R. M. BUCKS
312642-16	INACTIVE	R	REVISED PER ECO 910239	7/24/91	R. M. BUCKS
		T	REVISED PER ECO 910317	9/17/91	R. M. BUCKS

1. SHEET 3 OF 3 SIZE D
ASSEMBLY DRAWING 312642
NOTES:

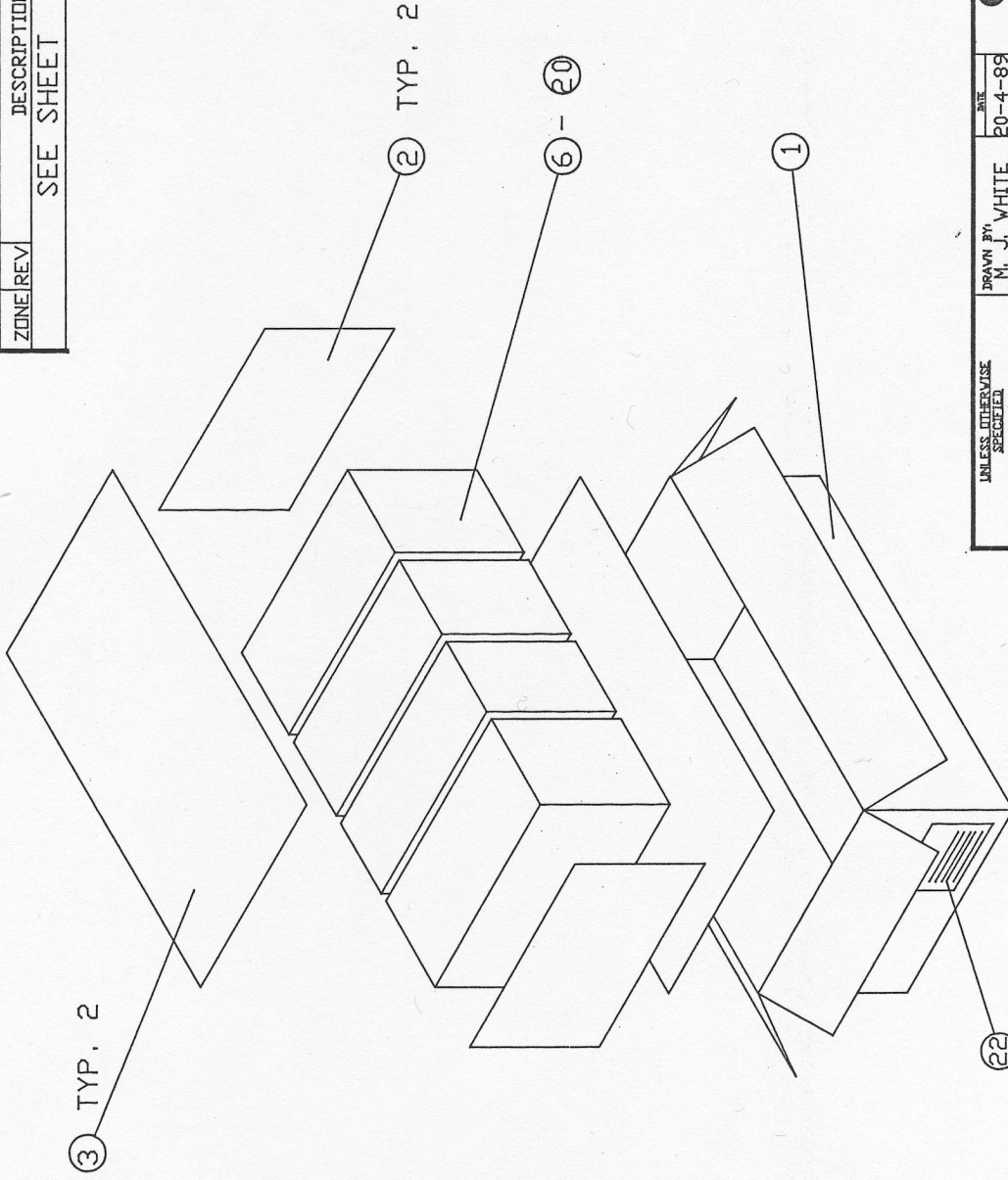
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Comm:core	TITLE: PACKING ASSEMBLY, A590 SCS1	Drawn by	APH	Drawing #	312642
					Sheet 1 of 3

QUANTITY REQUIRED PER DASH #													PART NO.	DESCRIPTION	REF DES / NOTES															
25	24	23	22	21	20	19	18	17	16	15	14	13				12	11	10	09	08	07	06	05	04	03	02	01	ITM #		
**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	1	363146-01	SHIPPING BOX, A590 (** = 1/4)		
**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	2	363147-01	PROTECTION SHEET, SIDE (** = 1/2)		
**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	3	363148-01	PROTECTION SHEET, TOP & BOTTOM (** = 1/2)		
																									4					
																										5				
																										6	312642-01	PACKING ASSY. US		
																										7	312642-02	PACKING ASSY. CN		
																										8	312642-03	PACKING ASSY. AL		
																										9	312642-04	PACKING ASSY. UK		
																										10	312642-05	PACKING ASSY. EU (EFIGS)		
																										11	312642-06	PACKING ASSY. EU (SCANDI)		
																										12	312642-07	PACKING ASSY. SWITZ		
																										13	312642-08	PACKING ASSY. GR		
																										14	312642-09	PACKING ASSY. FR		
																										15	312642-10	PACKING ASSY. NE		
																										16	312642-11	PACKING ASSY. SD		
																										17	312642-12	PACKING ASSY. DN		
																										18	312642-13	PACKING ASSY. NR		
																										19	312642-14	PACKING ASSY. IT		
																										20	312642-15	PACKING ASSY. SP		
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																										22	366463-01	LABEL, A590 C	PUT ONTO ITEM 1	
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Commodore		Title	
A590 SCSI HARD DISK DRIVE		A590 SCSI HARD DISK DRIVE	
Drawn by	M.J.WHITE	Drawing #	312641
		Sheet 2	of 3
Rev	D		

REVISIONS			
ZONE/REV	DESCRIPTION	DATE	APPROVED
	SEE SHEET 1		



Commodore COMMODORE ELECTRONICS LTD. WEST CHESTER, PA 19380 (215) 431-9100		DATE 20-4-89
DRAWN BY M. J. WHITE	CHKD	ENGR
APPR	USED ON A 590	NEXT ASSY
UNLESS OTHERWISE SPECIFIED TOLERANCES IN DECIMALS		
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MATERIAL		FINISH

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A 590 SCSI HARD DISK DRIVE	
SIZE B	312641
REV D	
SCALE	SHEET 3 OF 3

PART NUMBER	DESCRIPTION	REVISIONS			DATE	APPROVED
		ZN	LTR	DESCRIPTION		
312615-01	PCB ASSEMBLY, A590 SCSI, HD DATA CABLE ON LEFT	A		PILOT PRODUCTION RELEASE	11/4/88	J. BOYER
312615-02	PCB ASSEMBLY, A590 SCSI, HD DATA CABLE ON RIGHT	B		REVISED PER ECO 880254	12/14/89	R.M.B.
		C		REVISED PER ECO 890001	1/27/89	R.M.B.
		D		REVISED PER ECO 890037	3/23/89	R.M.B.
		E		REVISED PER ECO 890058	4/19/89	R.M.B.
		F		REVISED PER ECO 890103	5/17/89	R.M.B.
		G		REVISED PER ECO 890248	9/7/89	R.M.B.
		H		REVISED PER ECO 890275	9/27/89	R.M.B.
		J		PCB 7.0 REVISED PER ECO 890207	12/14/89	R.M.B.
		K		REVISED PER ECO 900049	5/10/90	R.M.B.
		L		REVISED PER ECO 900178	6/21/96	R.M.B.

1. SHEET 4 OF 4 SIZE B
ASSEMBLY DRAWING 312615

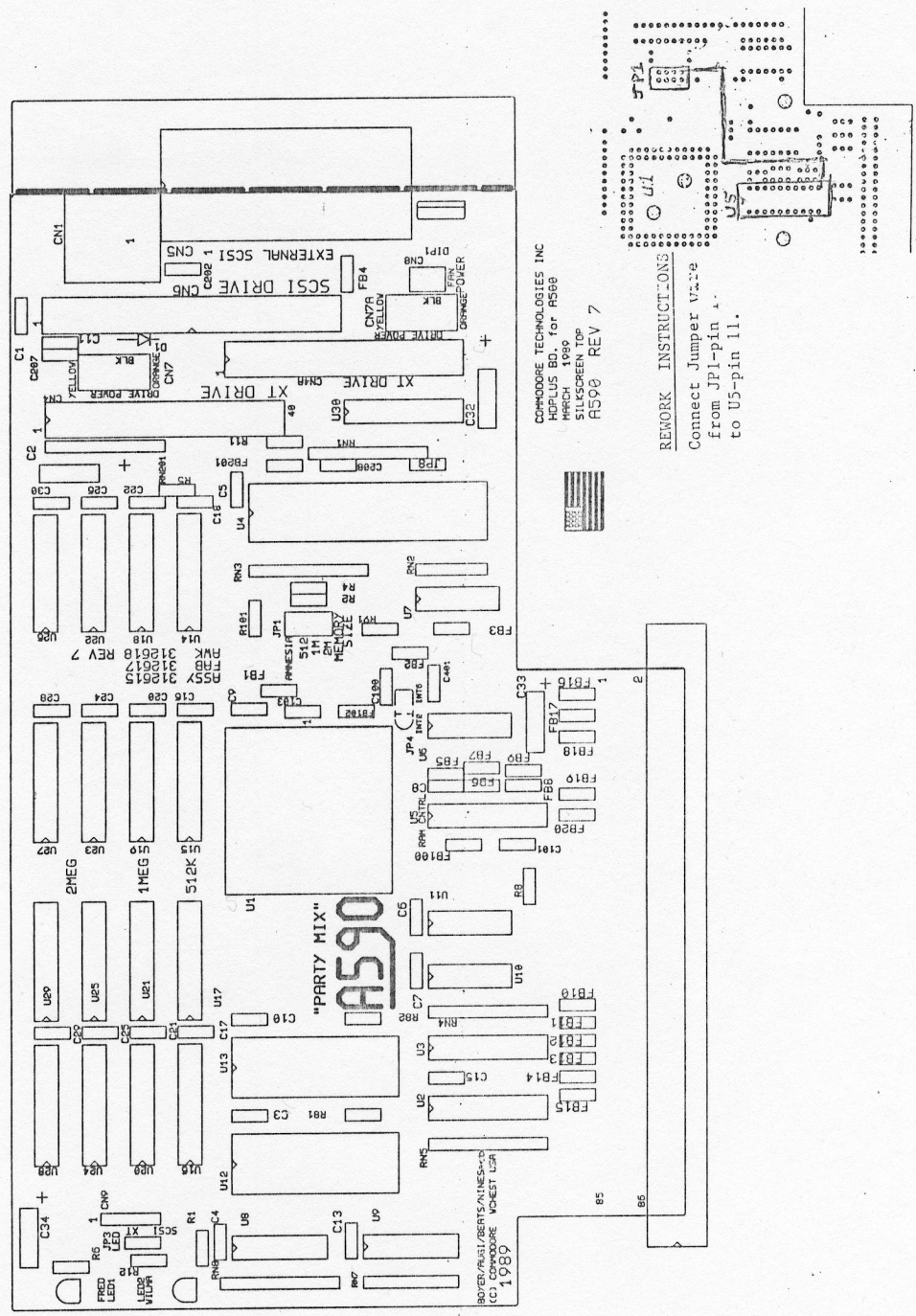
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Commodore	TITLE: PCB ASSEMBLY, A590 SCSI	Drawn by APH	Drawing # 312615
			Sheet 1 of 4

QTY. REQ. PER DASH #		ITM #	PART NO.	DESCRIPTION	REF DES / NOTES												
10	09	08	07	06	05	04	03	02	01								
	R	1	312616-01	SCHEMATIC, A590													
	R	2	312617-01	PCB FABRICATION, A590													
	1	3	312618-01	PCB ARTWORK, A590													
	R	4	312624-01	PCB OUTLINE, A590													
		5															
	1	6	390685-01	IC, RAM CONTROLLER	U5												
		7															
	1	8	390617-01	IC, 74ALS32	U11												
		9															
	2	10	390332-01	IC, 74F158A	U8, U9												
		11															
	2	12	901526-46	IC, 74LS245	U2, U3												
	1	13	390722-01	IC, EPROM PROGRAMMED, ODD A590 DRIVER	U12 PROGRAMMED INTO P/N 380204-01												
	1	14	390721-01	IC, EPROM PROGRAMMED, EVEN A590 DRIVER	U13 PROGRAMMED INTO P/N 380204-01												
	1	15	901521-32	IC, 74LS86	U6												
	S	16	390563-01	IC, DMAC	(U1) SUBSTITUTE FOR ITEM 17												
	1	17	390563-02	IC, DMAC, ENHANCED	U1												
	1	18	901522-30	IC, 7407	U7												
	1	19	390206-01	IC, WD33C93	U4												
		20															
	1	21	901521-03	IC, 74LS08	U10												
		22															
	1	23	390017-01	DIODE, 1N914	D1												
	17	24	252214-01	DOUBLE FERRITE BEAD, .2" SPACING	FB4-FB20												
	3	25	903025-08	LONG FERRITE BEAD	FB1-FB3												
	3	26	903025-01	SHORT FERRITE BEAD	FB100, FB102, FB201												
		27															
	2	28	380388-04	RESISTOR NETWORK, 220/330 x 8	RN1, RN3												
		29															
	1	30	380388-01	RESISTOR NETWORK, 220/330 x 4	RN2												
	1	31	902422-03	RESISTOR NETWORK, 33 OHM x 4	RN7												
	1	32	390227-04	RESISTOR NETWORK, 33 OHM x 5	RN8												
	3	33	902410-08	RESISTOR NETWORK, 4.7K OHM, X 9, SIP	RN4, RN5, RN201												
	1	34	390386-03	LED, YELLOW	LED2												
	1	35	390386-02	LED, GREEN	LED1												
		36															
	3	37	901550-105	RESISTOR, 33 OHM, 1/4W	R1, R5, R11												
	2	38	901550-131	RESISTOR, 56 OHM, 1/4W	R12, R101												
	1	39	901550-134	RESISTOR, 130 OHM, 1/4W	R6												
	6	40	901550-01	RESISTOR, 1K OHM, 1/4W	R2, R4, R8, R81, R82, R89												
	1	41	390186-01	RESISTOR, 0 OHM, 1/4W	JP8												
		42															
	4	43	900101-17	CAPACITOR, 22uf, 35V	C2, C32-C34 MAX. BODY LENGTH <= 13mm												
	S	44	900188-03	CAPACITOR, 22uf, 16V	SUBSTITUTE FOR ITEM 43												
	25	45	900022-05	CAPACITOR, .33uf, RADIAL	C1, C3, C4, C6, C7, C10, C11, C13, C15-C18, C20-C22, C24-C26, C28-C30, C												
	S	46	900020-03	CAPACITOR, .33uf, RADIAL	SUBSTITUTE FOR ITEM 45												
	8	47	390397-01	CAPACITOR, .1uf, LOW ESR	C5, C8, C9, C100, C101, C202, C207, C208												
		48															
	1	49	390363-01	SWITCH, 4 POSITION, DIP, RIGHT ANGLE	SW1												
		50															
Commodore		Title		PCB ASSY., A590 SCSI		Drawn by		APH		Drawing #		312615		REV		L	
												Sheet 2		of 4			

REVISIONS

LTR ZONE	DESCRIPTION	DATE	APPROVED
	SEE SHEET 1		



COMMODORE TECHNOLOGIES INC
 HOPLUS BD. for A590
 MARCH 1990
 SILICONE TOP
 A590 REV 7

REWORK INSTRUCTIONS
 Connect Jumper wire
 from JP1-pin 1
 to U5-pin 11.



SIZE	DRAWING NUMBER	REV.
B	312615	L
SHEET	4	OF

DRAWN BY	DATE	ENGR.
M. J. WHITE	5/1/90	
CHKD:		APPR:

TITLE: PCB ASSEMBLY

commodore

F-8200