

 **commodore**

**service
information**

Commodore Computer

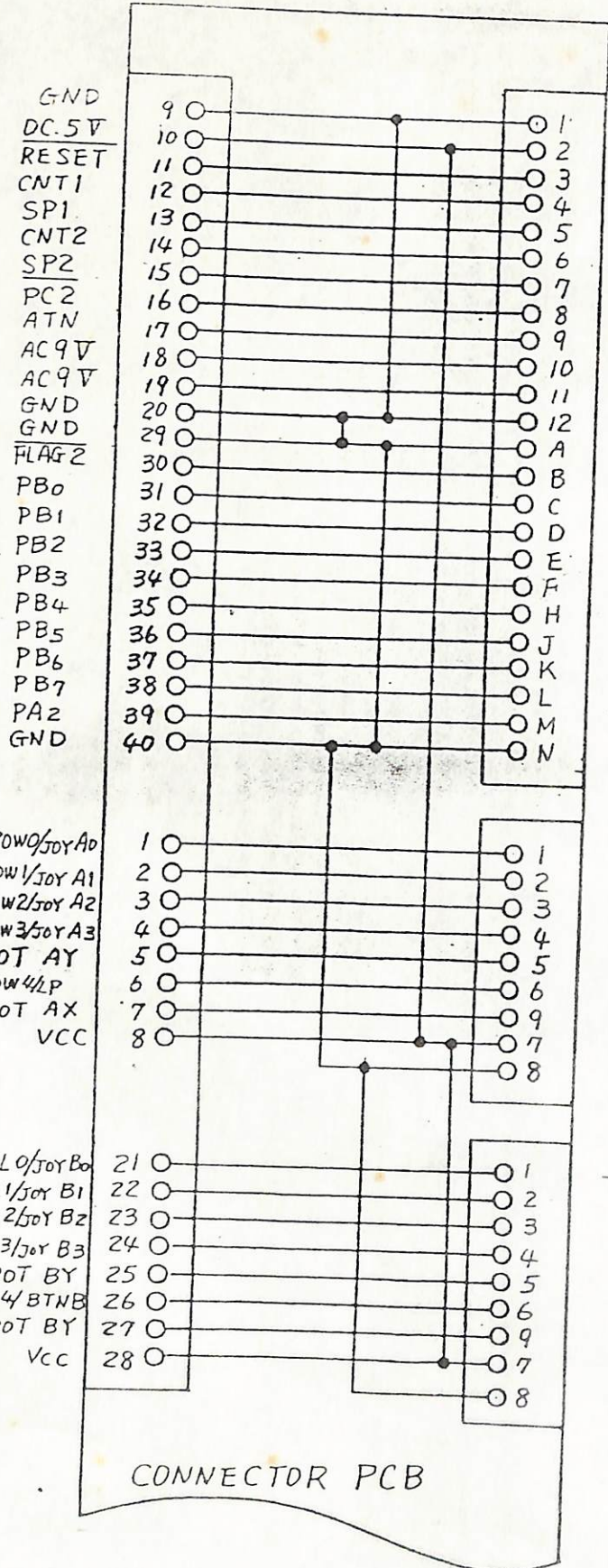
Technical Manual

Model SX-64

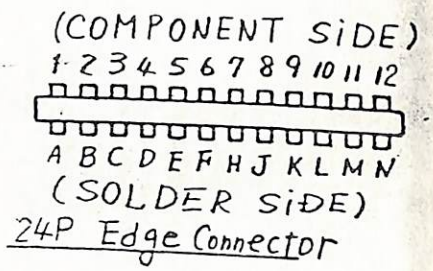
These documents are for repair service information only. Part numbers are for reference only. Only parts on current dealer parts list are available. No license is given for any use by possession of these documents and may not be reproduced in any form without the written approval of Commodore Electronics Limited.

 **commodore**
COMPUTER

P7



P6 USERS PORT



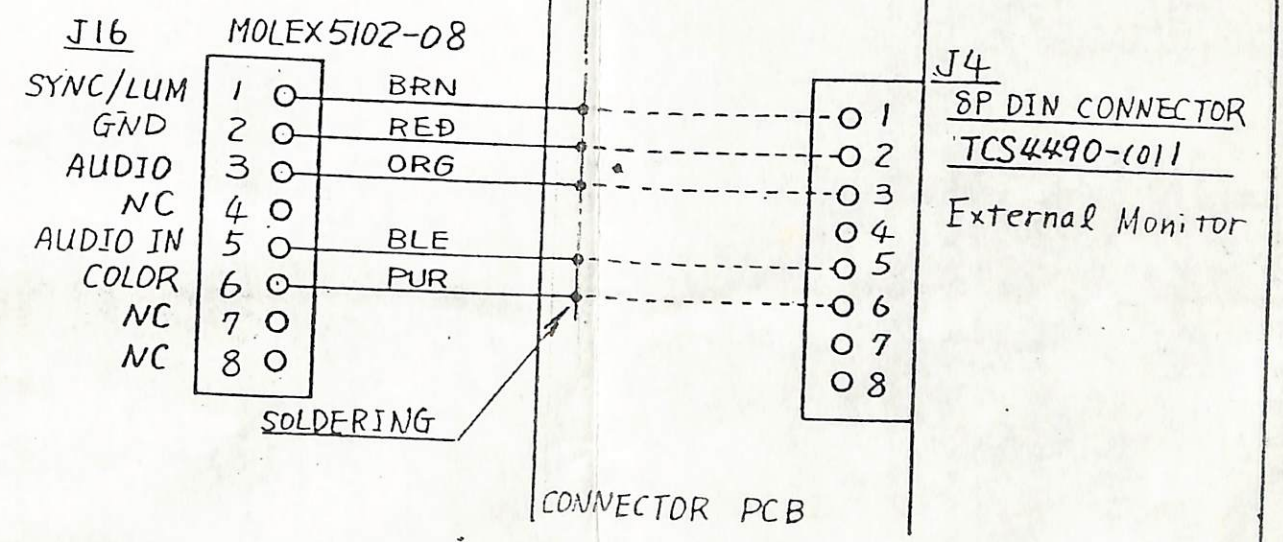
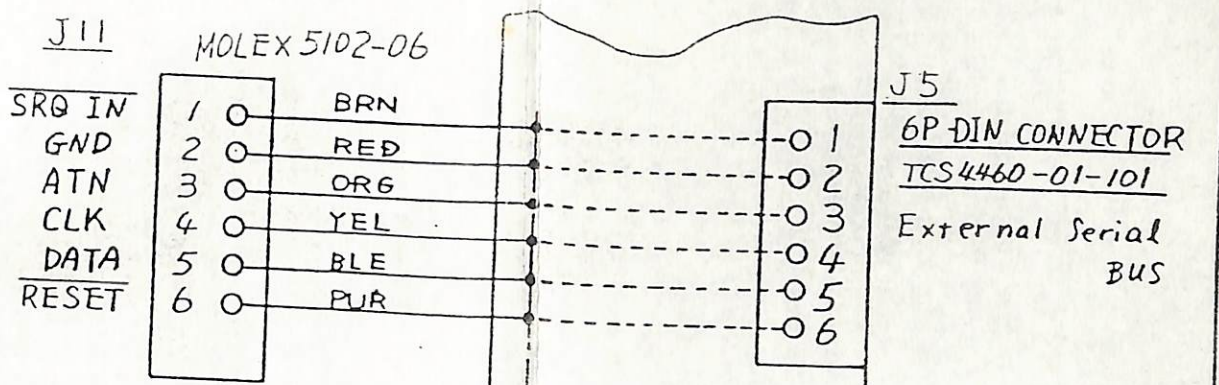
P3 CONTROL PORT 1
9P D-SUB Connector

P2 CONTROL PORT 2
9P D-SUB Connector

CONNECTOR PCB

REVISIONS

LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	10-27-83	J. O. B.

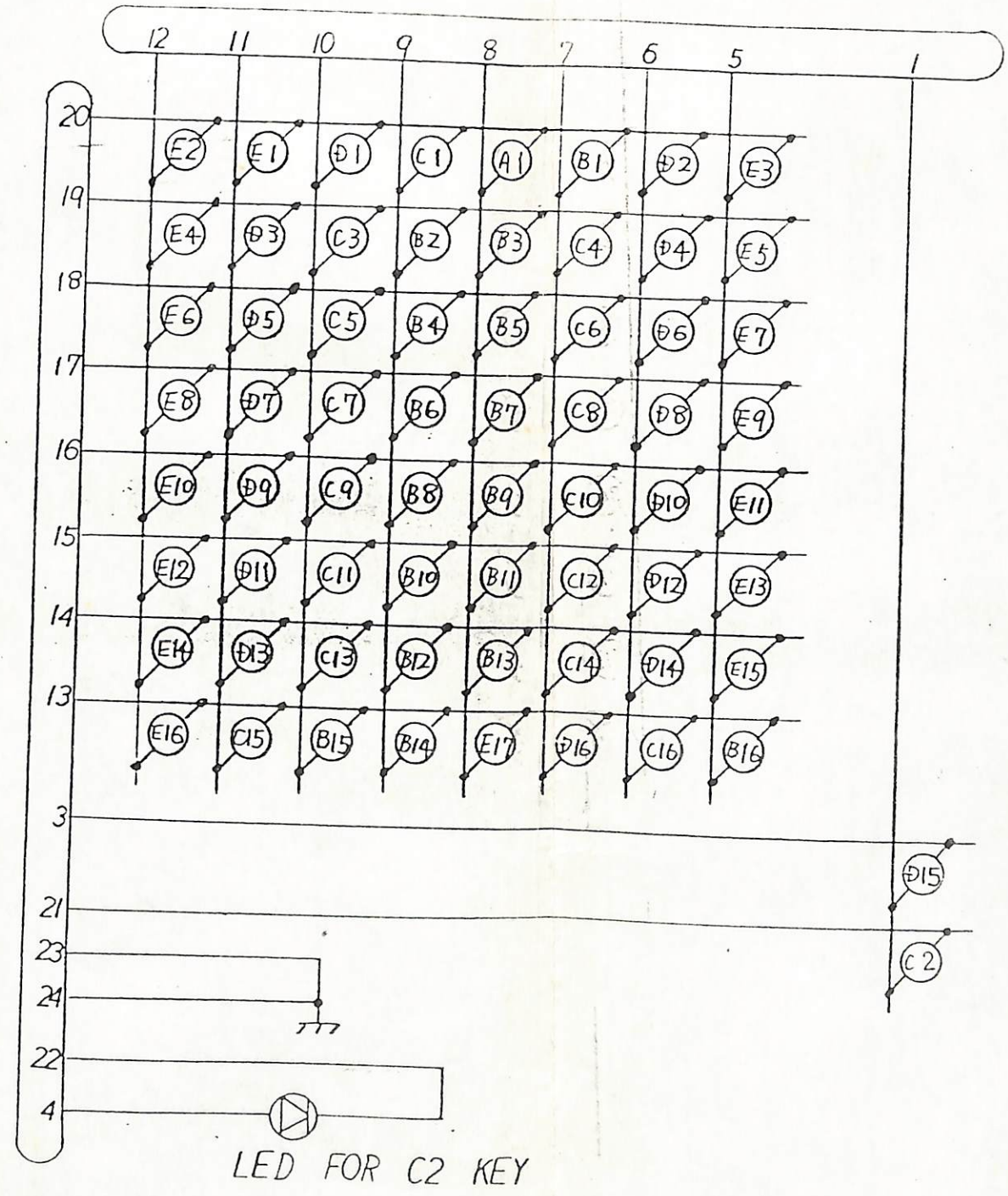


Wier Material
AWG26
AWM1007 VW-1

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS X XX XXX L'S	DRAWN BY: J. Migo	DATE: 7.13.83	commodore
	CHKD: CHAGISAYA	8/16/83	
	ENGR: J. Fujita	8-16-83	
	APPR: J. O. B.	10-27-83	
MATERIAL:	USED ON: SX-64	NEXT ASSY: 250674	SCHEMATIC, CONNECTOR, PCB ASSY
FINISH:			
	SIZE B	250421	REV A
SCALE NONE			SHEET 1 OF 1

066

LTR ZONE		REVISIONS	
		DESCRIPTION	DATE APPROVED
		SEE SHEET	



SCHEMATIC

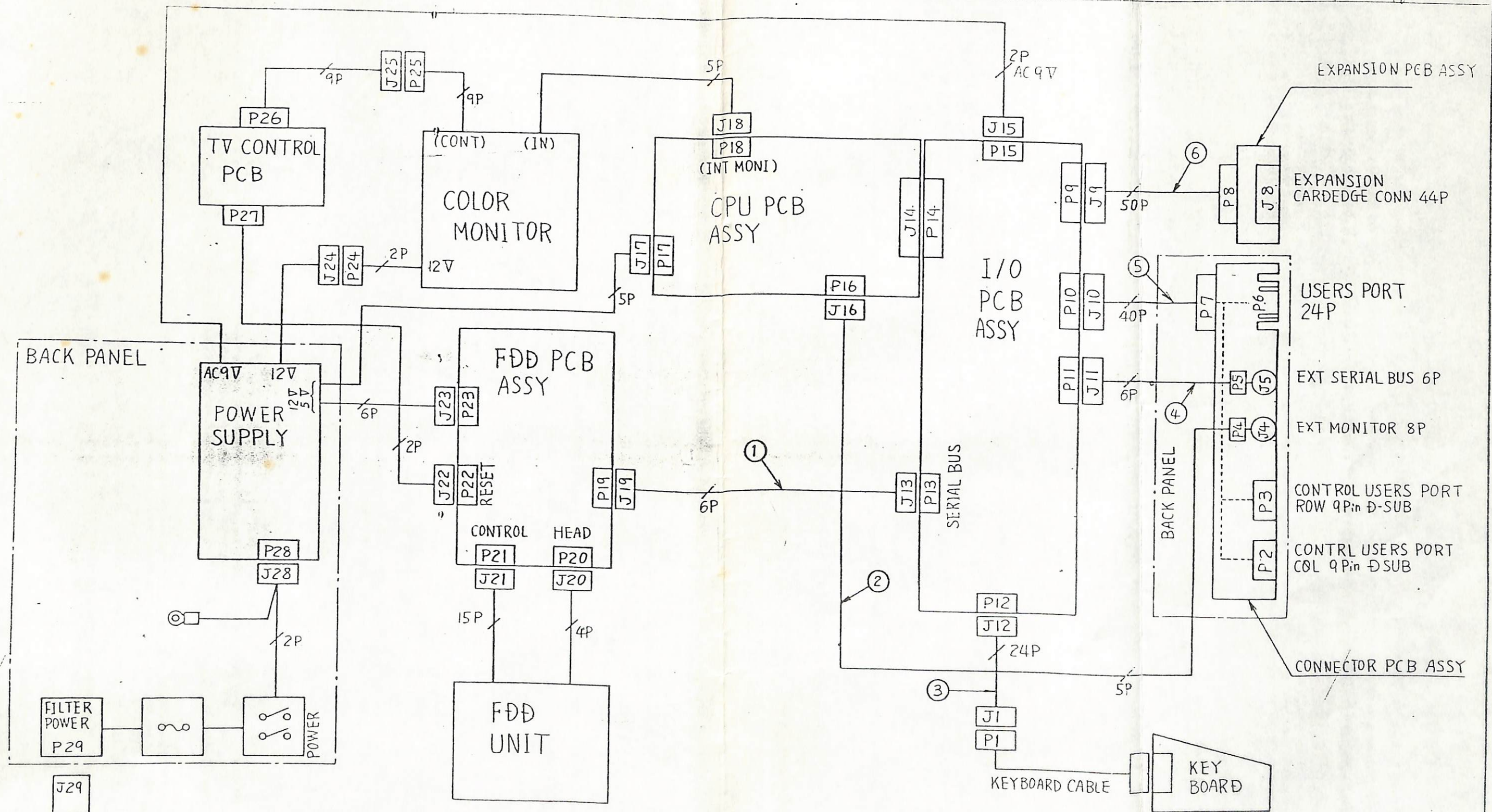
commodore

KEYBOARD

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS X XX XXX L'S	DRAWN BY:	DATE
	<i>M. Strano</i>	7/30/83
	CHKD: C. HOGSKA	8/16/83
	ENGR: <i>R. Gistina</i>	8-16-83
	APPR: <i>[Signature]</i>	10-17-83
MATERIAL:	USED ON:	NEXT ASSY:
FINISH:		

SIZE	REV
B	A
251555	
SCALE	SHEET 3 OF 3

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	10-19-83	<i>[Signature]</i>



- 1 SERIAL BUS CABLE ASSY
- 2 EXT 8P CABLE ASSY
- 3 KEYBOARD INNER CABLE ASSY
- 4 EXT 6P CABLE ASSY
- 5 USERS 40P CABLE ASSY
- 6 EXPANSION 50P CABLE ASSY

UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS X XX XXX L'S ± ± ± ±	DRAWN BY:	DATE
	C. HAGISAKA	5/31/83
	CHKD: C. HAGISAKA	8/16/83
	ENGR: <i>[Signature]</i>	8-16-83
MATERIAL:	APPR: <i>[Signature]</i>	10-19-83
FINISH:	USED ON	NEXT ASSY
	SX-64	250618

KEYBOARD CABLE	KEY BOARD
EXPANSION PCB ASSY	EXPANSION CARDEDGE CONN 44P
USERS PORT 24P	
EXT SERIAL BUS 6P	
EXT MONITOR 8P	
CONTROL USERS PORT ROW 9Pin D-SUB	
CONTRL USERS PORT COL 9Pin D-SUB	
CONNECTOR PCB ASSY	

commodore		
BLOCK DIAGRAM, SX-64		
SIZE	REV	
B	A	
SCALE NONE	SHEET 1 OF 1	

018

QUANTITY PER PART / DASH NO.				ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
				1						
				2						
				3	C	251103-01	SCHEMATIC, SX-69 CPU.			
				4	B	906107-01	IC MPS6510A MPU	UD7		MOS
				5	B	906109-01	6567 VIC	UF4		FOR NTSC
				6	B	906112-01	MPS6581 SID	UE3		
				7	B	901453-01	2114L-30 RAM	UE7		
				8	B	901505-01	4164-2 DINAMIC RAM	UA4~7 UB4~7		
				9	B	901226-01	2364A BASIC ROM	UD4		
				10	B	251104-01-R	2564 KERNAL ROM	UD3		EP-ROM
				11	B	901225-01	2332A CHARA ROM	UD1		
				12	B	901523-01	NE555 TIMER	UG7		
				13	B	901502-01	4066 QUAD ANALOG SW	UG6		
				14	B	901521-57	74LS257 DATA SELECTOR	UA3, UB3		DON'T USE TI'S AND NS'S TTL
				15	B	-58	258 DATA SELECTOR	UB1		DON'T USE TI'S AND NS'S TTL
				16	B	-29	373 8BIT LATCH	UB2		
				17	B	-18	139 DVAL DECODER	UC1		
				18	B	901521-03	08 QUAD ANDGATE	UF6		
				19	B	901522-06	7406 HEX INVERTER BUFFER	UF7		
				20	B	906114-01	7700-001 PLA	UE4		
				21	B	906114-02	MB112A101 PLA	UE4		SUBSTITUTE FOR ITEM 20
				22	B	906111-01	IC 6569 VIC	UF4		FOR PAL
				23	B	902671-02	TRANSISTOR NPN 2SC458	TR1 THRU 8		HITACHI
				24						
				25	B	251105-01	CLOCK UNIT 2-OUT.PUT			TOTSU 14.31818MHZ, 8.1818MHZ, NTSC
				26	B	251105-02	CLOCK UNIT 2-OUT.PUT			TOTSU 17MHZ, 7.8MHZ, PAL
				27	B	325513-01	COIL INDUCTOR 2.2uH	L1		RADIAL
				28	B	325513-02	COIL INDUCTOR 22uH	L2		RADIAL
				29	B	904153-05	IC SOCKET 40PIN	UD7, UF4		
				30	B	-04	20PIN	UE3, 4, UD3		
				31	B	904153-03	IC SOCKET 24PIN	UD4, UD1		
				32						
				33						
				34	B	325563-01	FERRIT BEAD	FB1 THRU 14		RADIAL
				35						
				36						

commodore

TITLE: PCB ASSY, SX-64 CPU

DRAWN BY: I. Mizuhata	DATE: 8/11/83	ENGR: G. G. G.	DATE: 8-16-83	SIZE: B	REV: B	SHT: 2/5
CHKD: C. H. H.	DATE: 8/11/83	APPR: J. J. J.	DATE: 8-17-83			

QUANTITY REQD PER PART / DASH NO.				ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
				37	B	251070-16	CAPACITOR CERAMIC DISC 330PF/50V	C51		RADIAL
				38	B	-24	150PF/50V	C38, 110		
				39	B	-27	270PF/50V	C39		
				40	B	251070-30	470PF/50V	C29, 50		
				41	B	251074-01	1000PF/50V	C49		
				42	B	251069-12	2200PF/50V	C31, 32		
				43	B	251075-06	0.1uF/25V	C12~14, 19, 20, 22, 27, 40, 46, 55, 29, 40		
				44	B	251075-07	0.22uF/25V	C1, 2, 4~7, 9, 10, 27, 33		
				45	B	251069-11	2200PF ±10%/50V	C53, 54		
				46	B	251075-04	CERAMIC DISC 0.047uF/25V	C52		
				47	B	900464-31	CERAMIC 0.47uF ±20%/50V	C8, 11, 25, 28, 35		
				48	B	900100-01	ELECTROLYTIC 10uF/25V	C3, 15~17, 21, 23, 26, 30, 36, 39, 47		
				(1)	B	251072-21	CAPACITOR CERAMIC DISK 82PF ±5%	C101		SUITABLE FOR ITEM 21
				50	B	251068-41	RESISTOR 82Ω 1/4W ±5% CARBON	R1		RADIAL
				51	B	-76	1kΩ	R8, 9, 13, 22, 35		
				52	B	-51	100Ω	R3, 15		
				53	B	-107	12kΩ	R6		
				54	B	-101	10kΩ	R10, 11, 12		
				55	B	-98	82kΩ	R7		
				56	B	-151	1MΩ	R23		
				57	B	-61	270Ω	R14, 21		
				58	B	-111	27kΩ	R16		
				59	B	-108	20kΩ	R17		
				60	B	-117	47kΩ	R24		
				61	B	-68	510Ω	R20		
				62	B	-80	65kΩ	R4		
				63	B	-88	3.3kΩ	R5, 31, 32, 35		
				64	B	-73	820Ω	R18		
				65	B	251068-83	2kΩ 1/4W ±5% CARBON	R19		RADIAL
				66	B	902422-03	PACK 33Ω 1COMP, 8PIN	RA1, 2		
				67	B	902410-09	15kΩ 9COMP, 10PIN	RA3		
				68	B	902442-29	PACK 33kΩ 7COMP, 8PIN	RA4		
				69	B	251068-55	150Ω 1/4W ±5% CARBON	R2, 34		
				70	B	-53	120Ω	R36		
				71	B	-58	200Ω	R37		
				72	B	251068-63	RESISTOR 330Ω 1/4W ±5% CARBON	R25		

commodore

TITLE: PCB ASSY, SX-64 CPU

DRAWN BY: T. Mizuhata
CHKD: G. HISAKA

DATE: 7/30/83
DATE: 8/15/83
ENGR: G. Endo
APPR: G. Endo

DATE: 8-16-83
DATE: 11-27-83

SIZE: B
250408

REV: B
SMT: 3/5

ABILITY READ PEN
PART / DASH NO.

PART / DASH NO.			ITEM	OS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
03	02	01	73	P	250642-27	HEADER ASSY 54 PIN	J14	JAE	PS-54SD-D4TS1-1
			74	B	250669-08	8 PIN	P16	MOLEX	5045-08A
			75	B	250669-05	5 PIN	P18	MOLEX	5045-05A
			76	B	250643-06	HEADER ASSY 6 PIN	P17	MOLEX	5285-06A
			77						
			78						
			79						
1	1	1	80	C	251429-01	HEAT SINK			
2	2	2	81	C	251341-01	LEAF SPRING			
			82						
			83						
	1	1	84	B	251102-01	PCB FABRICATION, SX-64 CPU		MEIKO	FOR UL, BSI, VDE
1			85	B	251102-02	PCB FABRICATION, SX-64 CPU			FOR CSA
V _F	P _{FF}	P _{TF}	86	B	251430-01	PCB ARTWORK, SX-64 CPU			
			87	B	251431-01	PCB SILKSCREEN, SX-64 CPU			
V _{TF}	P _{TF}	P _{TF}	88	B	251432-01	PCB SOLDER MASK, SX-64 CPU			
			89						
			90						
			91						
2	2	2	92	B	251069-03	CAPACITOR CERAMIC DISK 330pF	C111, C112		
1	1	1	93	B	251070-22	100pF	C113		
2	2	2	94	B	251070-20	CAPACITOR CERAMIC DISK 68pF	C102, C114		
			95						
			96						
			97						
			98						
			99						
1	1	1	100	B	400850-05	DIODE SIGNAL WG 713C	D1		
			101						
			102						
			103						
			104						
			105						
			106						
			107						
			108						

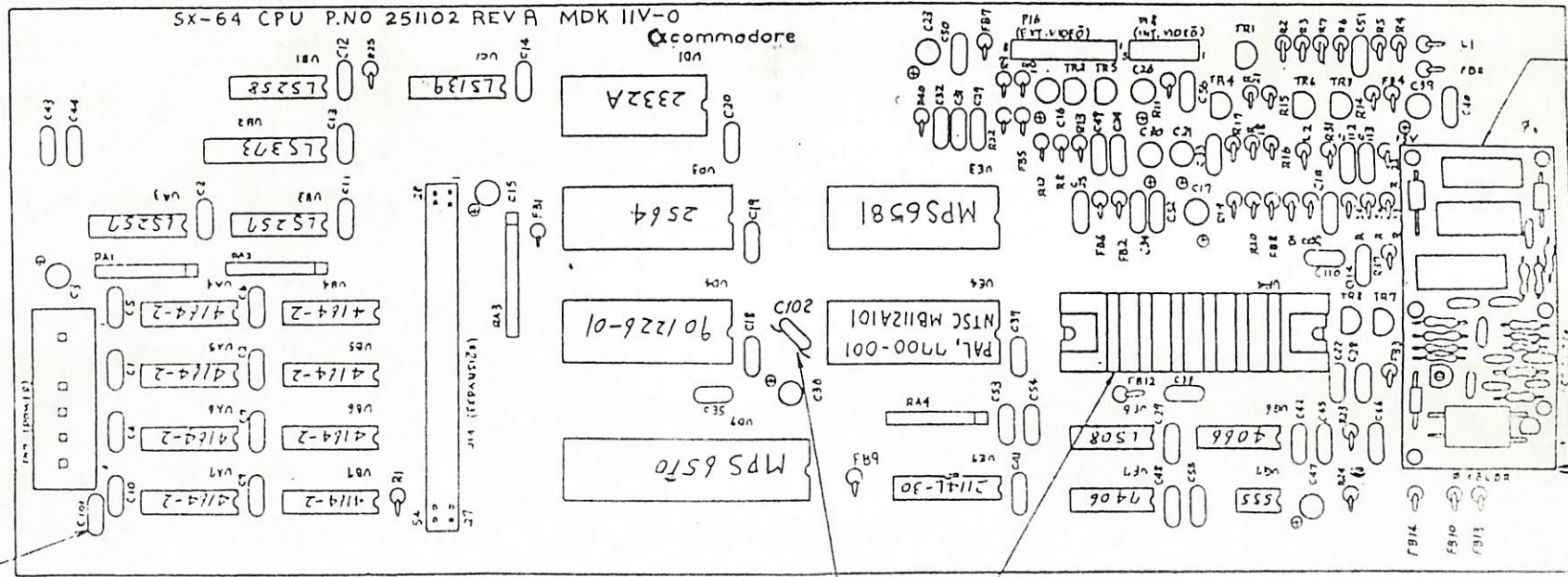
commodore

TITLE PCB ASSY, SX-64 CPU

DRWN BY: T. Mizohata	DATE 7/30/83	ENGR: R. Shalvia	DATE 8-16-83	SIZE B	REV B	SHT 4/5
CHKD: C. WAGISAWA	DATE 8/15/83	APPR: J. K. ...	DATE 8-27-83			

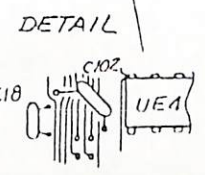
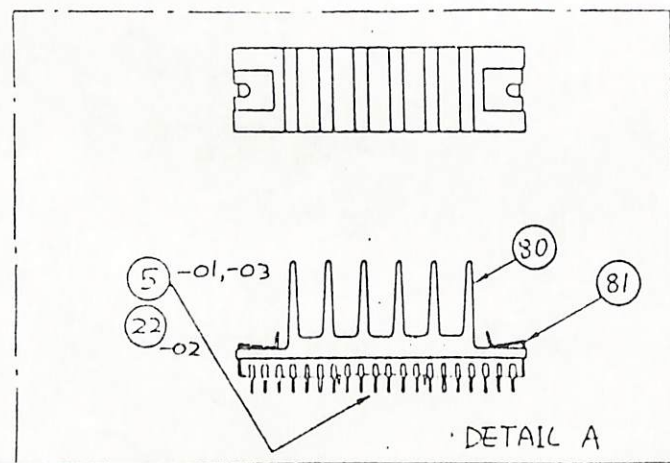
250408

REVISIONS			APPROVED
LTR	ZONE	DESCRIPTION	
		SEE SHEET	



25-01-03
26-02

49



SEE DETAIL A

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS X .1 XX .01 XXX .001	DRAWN BY: T. Mizohata	DATE 7.25.83	commodore	
	CHKD: CHYUAKA	8/15/83		
MATERIAL:	ENGR: R. G. ...	8-16-83	SIZE B	REV B
	FINISH:	APPR: ...	250408	
USED ON SX-64	NEXT ASSY 250619	SCALE NONE SHEET 5 OF 5		

PART NO.	DESCRIPTION
2504.10-01	PCB ASSY, SX-64 FDD CONTROL
2504.10-02	PCB ASSY, SX-64 FDD CONTROL FOR CSA

REVISIONS			
LTR	ZONE	DESCRIPTION	DATE
A		PRODUCTION RELEASE	10-27-83 JLL
B		REVISED PER ECO 830529	10-27-83 JLL

1. SHEET 6 OF 6 SIZE B
 ASSY DWG
 NOTES-UNLESS OTHERWISE SPECIFIED:

commodore	TITLE PCB ASSY, SX-64 FDD CONTROL	DRAWN BY:	DATE	ENGR	DATE	SIZE	DRAWING NUMBER
		T. MIZOHATA	7/30/83	A. Fujino	9/26/83	B	250410
		CHKD: C. HAGA	10/13/83	APPR: JLL	10/18/83		SHEET 1 OF 6

QUANTITY REQUIRED PER PART / DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
		1						
		2						
		3	C	251110-01	SCHEMATIC, SX-64 FDD CONTROL			
		4						
1	1	5	B	951435-01	IC MPS 6502A CPU	UBC4	MOS	
2	2	6	B	901437-01	MPS 6522 VIA	UBC3,UDC5	MOS	
1	1	7	B	325502-03	TMM 2016P RAM	UA1		
		8						
1	1	9	B	901229-05AE	2564 DOS EP-ROM	UA3		
1	1	10	B	325302-01	2364 ROM	UA4		
1	1	11	B	325572-01	GATE ARRAY	UF5		
1	1	12	B	901521-01	74LS00 QUAD NAND GATE	UC2		
1	1	13	B	-02	04 HEX INVERTER	UB2		
1	1	14	B	-30	14 HEX SCHMIT GATE	UF2		
1	1	15	B	-17	42 DECODER	UD2		
2	2	16	B	-32	86 QUAD EX-OR GATE	UD3,UD4		
1	1	17	B	901521-26	74LS193 4BIT BINARY COUNTER	UG5		
2	2	18	B	901522-30	7407 HEX NONINVERT BUFFER	UG4,UF3		
S	S	19	B	-01	7417 HEX NONINVERT BUFFER			SUBSTITUTE FOR ITEM 18
1	1	20	B	901522-06	7406 HEX INVERT BUFFER	UE3		
1	1	21	B	901521-54	74LS197 4BIT BINARY COUNTER	UL5		
S	S	22	B	901522-03	74177 4BIT BINARY COUNTER			SUBSTITUTE FOR ITEM 21
1	1	23	B	901510-01	9602 ONE SHOT MULT	UH4		
1	1	24	B	901523-01	LM311 VOLTAGE COMPARATOR	UK4		
2	2	25	B	901523-08	NE592 VIDEO AMP	UH1, UJ1		
1	1	26	B	251111-01	MS4530 QUAD TRANSISTOR ARR	UF2	MITSUBISHI	
S	S	27	B	251111-02	IC ULN2049A QUAD TRANSISTOR ARR	UF2		SUBSTITUTE FOR ITEM 26
		28						
2	2	29	B	902671-01	TRANSISTOR NPN 2SC945	TR1, TR7		
S	S	30	B	902693-01	NPN 2SC1815			
1	1	31	B	902720-01	PNP 2SA673	TR6		SUBSTITUTE FOR ITEM 29
4	4	32	B	902717-01	PNP 2SA733	TR2 ~ 5		
S	S	33	B	902744-01	TRANSISTOR PNP 2SA1015			SUBSTITUTE FOR ITEM 32
		34						
1	1	35	B	901522-05	IC 7404 HEX INVERTER	UF3		
		36						

commodore

TITLE: PCB ASSY, SX-64 FDD CONTROL

DRAWN BY: T. Muzahata
CHKD: C. IWATA

DATE: 7/30/83
8/15/83

ENGR: R. S. ...
APPR: ...

DATE: 8-16-83
4-27-83

SIZE: B

250410

REV: B

SHT: 2/6

QUANTITY REQD PER PART / DASH NO.

ITEM	OS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES
88	B	900850-05	DIODE SIGNAL WG713C	D1~6, D8, D10		
88	B	900850-01	DIODE SIGNAL IN4148			SUBSTITUTE FOR ITEM 37
39	B	325505-01	DIODE ZENER HZ3C-2	D9		RADIAL
40	B	325506-01	DIODE ZENER HZ5C-2	D7		RADIAL
41						RADIAL
42	B	325566-01	CRYSTAL MODULE 16MHZ ±50PPM			
43	B	325566-02	CRYSTAL MODULE 16MHZ ±100PPM			SUBSTITUTE ITEM 42
44	B	325513-01	COIL INDUCTOR 22μH	L6		RADIAL
45	B	325513-02	COIL INDUCTOR 22μH	L4.5		
46	B	325513-03	COIL INDUCTOR 100μH	L1~3		
47						
48	B	325563-01	FERRITE BEAD	F6B1~10		RADIAL
49						
50	B	900100-01	CAP. ELECTROLYTIC 10μF/25V	C18, 32, 33		RADIAL
51	B	900100-42	CAP. ELECTROLYTIC 33μF/50V	C3		
52	B	900100-40	CAP. ELECTROLYTIC 1μF/25V	C31		
53	B	900402-17	CAP. TANTALUM 0.47μF/35V	C6, 7		
54	B	251072-24	CAP. CERAMIC DISC 47PF 50V	C17		
55	B	251072-28	CAP. CERAMIC DISC 330PF 50V	C15, 12		
56	B	251072-32	CAP. CERAMIC DISC 680PF 50V	C14, 16, 5		
57	B	251074-01	CAP. CERAMIC DISC 1000PF 25V	C9, C50		
58	B	251074-09	CAP. CERAMIC DISC 0.0022μF 25V	C10, 11		
59	B	251075-06	CAP. CERAMIC DISC 0.1μF 25V	C1, 2, 4, 8, 13		22, 23, 24, 25, 26, 27, 28, 29, 30
60						
61	B	904150-06	IC SOCKET 40PIN	UREC4, UD05		38, 39, 40, 41, 34, 19, 20, 21
62	B	904153-03	IC SOCKET 24PIN	UA4, UA1		6502-1, 6502-2, PLA-1 (UFS, URC3)
63	B	904153-04	IC SOCKET 28PIN	UA3		2364-1, 2016-1
64	B	250644-06	HEADER ASSY 6P, L-ANGLE	P19		MOLEX 5046-06A
65	B	250644-02	HEADER ASSY 2P, L-ANGLE	P22		MOLEX 5046-02A
66	B	250644-01	HEADER ASSY 5P, L-ANGLE	P20		MINI-STE HIF3G-5P-2.54DS
67	B	250644-15	HEADER ASSY 15P, L-ANGLE	P21		MOLEX 5046-15A
68	B	250643-06	HEADER ASSY 6P, STRAIGHT	P23		MOLEX 5285-06A
69						
70						
71						
72						

commodore

TITLE PCB ASSY, SX-64 FDD CONTROL

DRWN BY: T. Mizohata	DATE: 8/5/83	ENGR: S. Yoshida	DATE: 8-16-83	SIZE: B	REV: B	SHEET: 3/6
CHKD BY: C. HIGASHI	DATE: 8/5/83	APPR: S. Yoshida	DATE: 8-22-83			

QUANTITY REQUIRED PER PART / DASH NO.										ITEM	OS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										02-01							
										1	73	B	251068-42	RESISTOR 47Ω 1/4W±5% CARBON	R50		RADIAL
										4	74	A	-55	150Ω	R21,22,37,38		
										3	75		-59	220Ω	R19,20,33		
										3	76		-63	330Ω	R23,34,36		
										2	77		-64	360Ω	R28,31		
										6	78		-67	470Ω	R5,7,8,13, 26,27		
										1	79		-68	510Ω	R29		
										2	80		-71	680Ω	R1,6		
										9	81		-76	1kΩ	R35,40,41 42,43 46,47,48,49		
										1	82		-80	1.5kΩ	R4		
										1	83		-101	10kΩ	R44		
										6	84		-84	2.2kΩ	R9,12,14,24 25		
										4	85		-109	2.2kΩ	R2,15,16,30		
										1	86		↓ -126	100kΩ	R39		
										1	87		251068-51	100Ω 1/4W±5% CARBON	R45		
										1	88		251265-49	91Ω 1/4W±1% METALOX	IDE, R3		
										1	89		-51	100Ω	R11		
										1	90		-55	150Ω	R10		
										2	91		↓ -99	RESISTOR 9.1kΩ 1/4W±1% METALOX	IDE, R17,18	RADIAL	
										1	92	B	251265-98	8.2kΩ 1/4W±5% CARBON	R32		
											93						
											94						
										1	95	B	251109-01	PCB FABRICATION, SX-64 FDD			
										1	96	A	251109-02	PCB FABRICATION, SX-64 FDD			FOR CSA
										EF	97		251433-01	PCB ARTWORK, SX-64 FDD			
										EF	98		251434-01	PCB SILK SCREEN, SX-64 FDD			
										EF	99	B	251435-01	PCB SOLDER MASK, SX-64 FDD			
											100						
											101						
											102						
										1	103	B	251584-08	WRAPPING WIRE AWG28 L=45MM			
										1	104	B	251584-09	WRAPPING WIRE AWG28 L=95MM			
											105						
											106						
											107						
											108						

commodore

TITLE: PCB ASSY. SX-64 FDD CONTROL

DRAWN BY: T. Mizohata	DATE: 7/30/83	ENGR: R. Gilling	DATE: 8/16/83	SIZE: B	REV: 250410	SHEET: B 2/6
CHKD: C. HAGISA	DATE: 8/15/83	APPR: J.P.	DATE: 8/22/83			

QUANTITY REQ'D PER PART DASH NO.		ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTE
		0201						
S	S	109	B	901521-04	1C 74LS04 HEX INVERTER	UF3		SUBSTITUTE FOR ITEM 35.
S	S	110	B	901522-19	1C 7414 HEX SCH INVERTER	UF3		SUBSTITUTE FOR ITEM 35
S	S	111	B	901521-30	1C 74LS14 HEX SCH INVERTER	UF3		SUBSTITUTE FOR ITEM 35
		112						
S	S	113	B	901522-05	1C 7404 HEX INVERTER	UB2		SUBSTITUTE FOR ITEM 13
S	S	114	B	901522-19	1C 7414 HEX SCH INVERTER	UB2		SUBSTITUTE FOR ITEM 13
S	S	115	B	901521-30	1C 74LS14 HEX SCH INVERTER	UB2		SUBSTITUTE FOR ITEM 13
		116						
		117						
S	S	118	B	900850-02	DIODE SIGNAL 1S2473	D1-6,8,10		SUBSTITUTE FOR ITEM 37
S	S	119	B	-07	1S 953(3)			
S	S	120	B	-08	1S 953(7)			
S	S	121	B	900850-14	DIODE SIGNAL 1S1588	D1-6,8,10		SUBSTITUTE FOR ITEM 37
		122						
		123						
		124						
		125						
		126						
		127						
		128						
		129						
		130						
		131						
		132						
		133						
		134						
		135						
		136						
		137						
		138						
		139						
		140						
		141						
		142						
		143						
		144						
		145						
		146						

commodore

TITLE: PCB ASSY, SX-64 FDD CONTROL

DRAWN BY: R. Jida
CHKD:

DATE: 12-20-83

ENGR:
APPN:

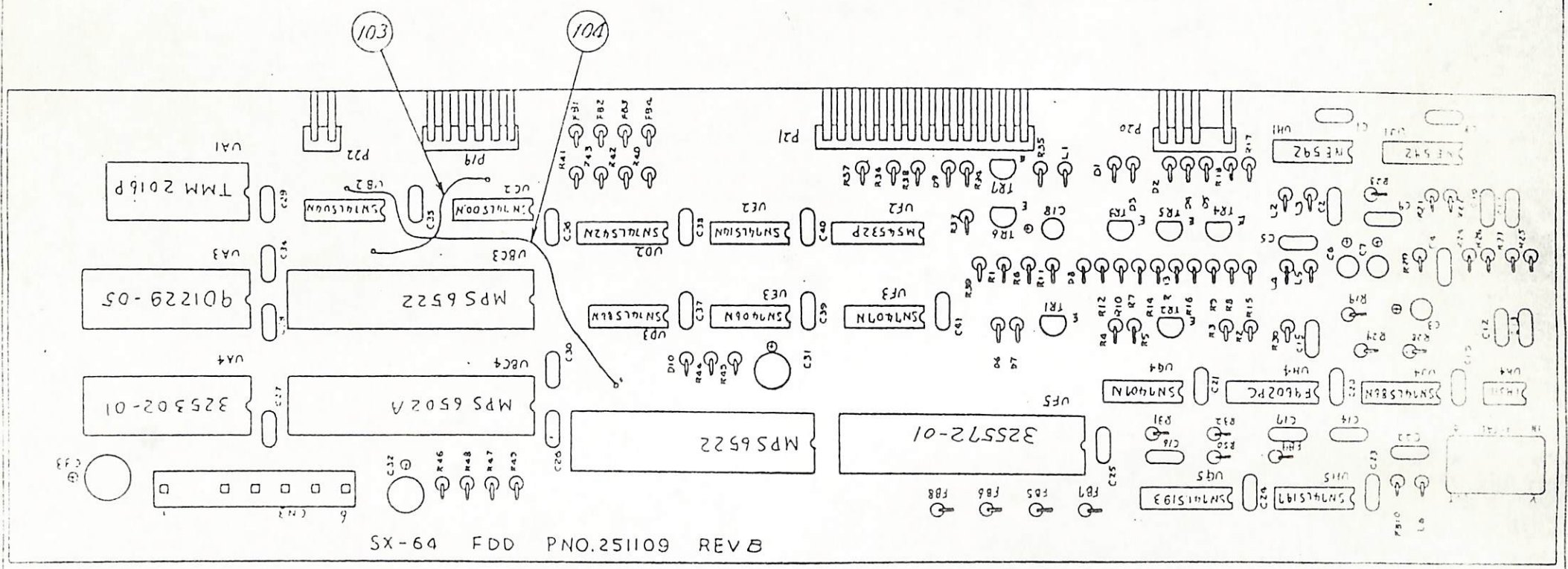
DATE:

SIZE: B

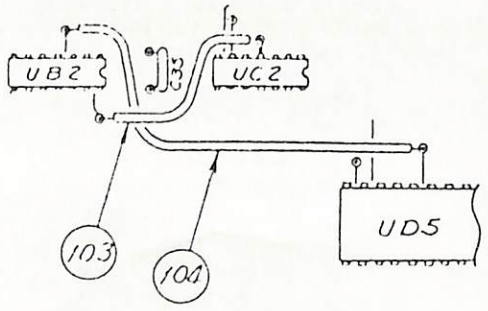
DRAWING NUMBER: 250410
SHEET: 5 of 4

REV: B

LTR		ZONE		REVISIONS	
				DESCRIPTION	
				SEE SHEET	



DETAIL OF ITEM 103 & 104 SOLDERING



UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS X XX XXX 1/16"	DRAWN BY: T. Mizokata		DATE: 7-12-83		commodore
	CHKD: C. HAGIYAMA		8-15-83		
MATERIAL:		USED ON: SX-64		NEXT ASSY: 250410	
FINISH:					
				PCB ASSY, SX-64 FDD CONTROL	
				SIZE: B	REV: B
				SCALE NONE SHEET 6 OF 6	

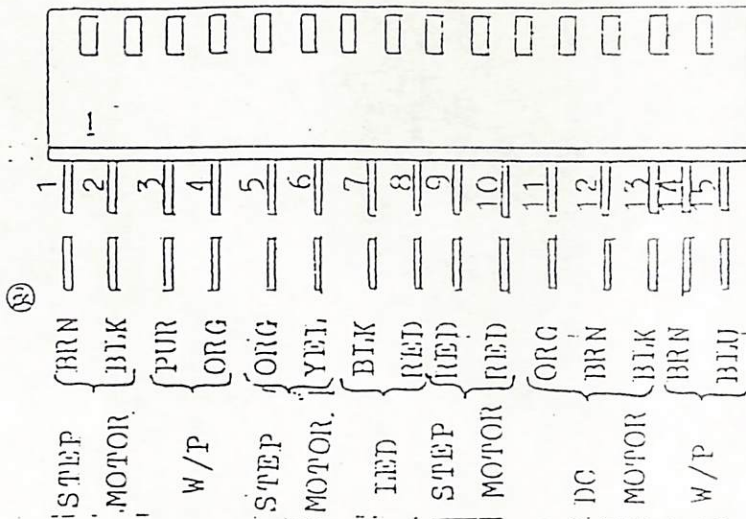
CLASS. NO.

TITLE

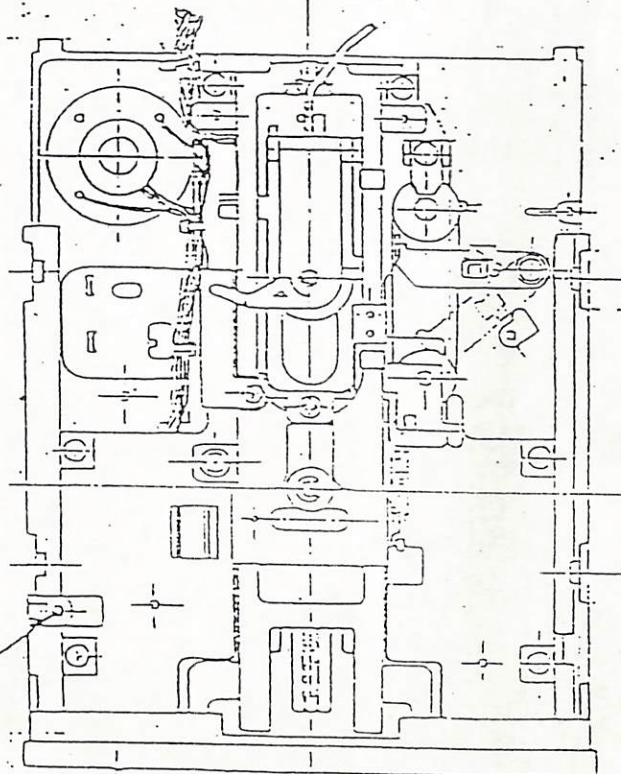
Control Line

FUNCTION

Nail to lock



- DC MOTOR
 - BLK RETURN
 - BRN +12V
 - ORG MOTOR ON
- STEP MOTOR
 - RED +12V
 - RED +12V
 - YEL C
 - ORG A
 - BLK B
 - BRN D



- W/P
- TRANSISTOR
 - ORG (+)
 - PUR (-)
- DIODE
 - BRN (+)
 - BLU (-)

- LED
 - RED (+)
 - BLK (-)

* Recommended connector
 Molex ~~5045NA~~ 5046NA
 5045NA

DATE	SYMB.	PAGE	APPO.	CHXD.	DSCG.	TITLE
					Jul 22 '81	OR
					U. Hill	DOCUMENT NO.

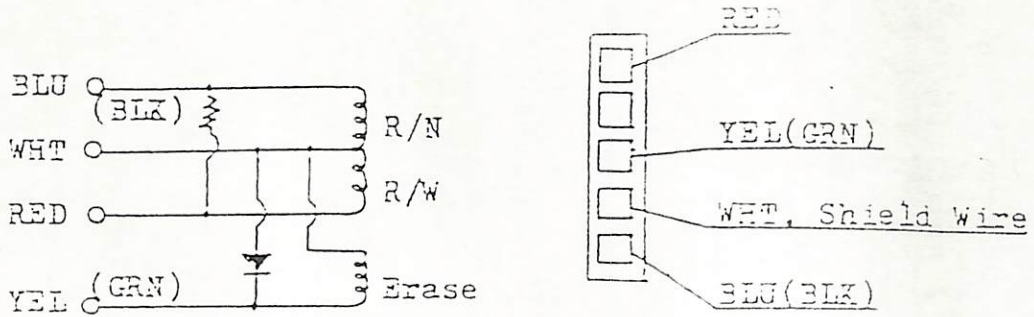


ALPS ELECTRIC CO., LTD.

(英文品名・社名等は)

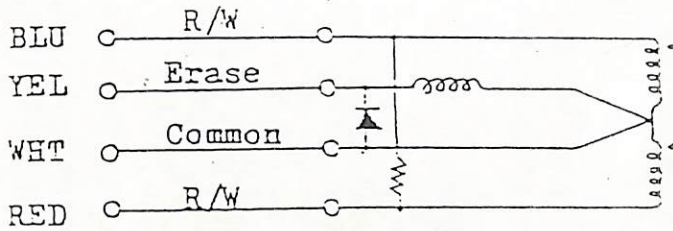
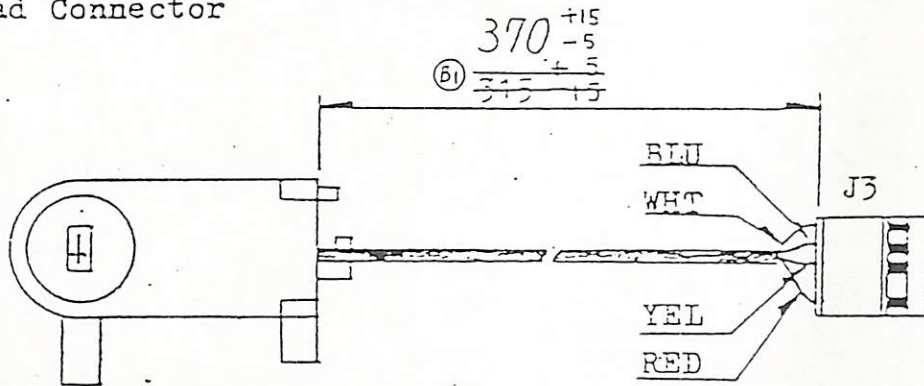
ALPS ELECTRIC CO., LTD.

Connector Pin

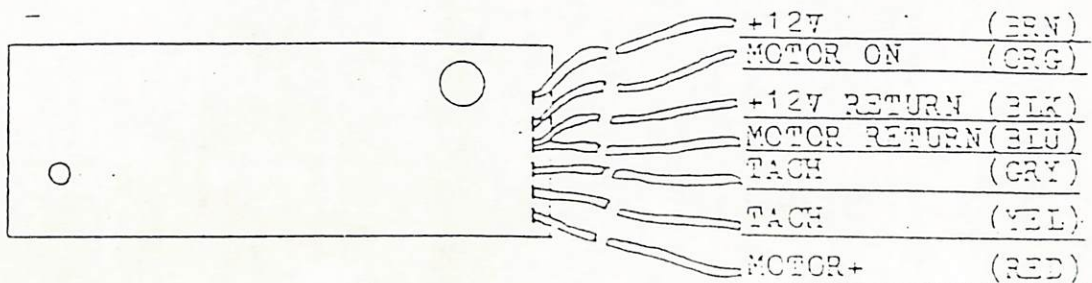


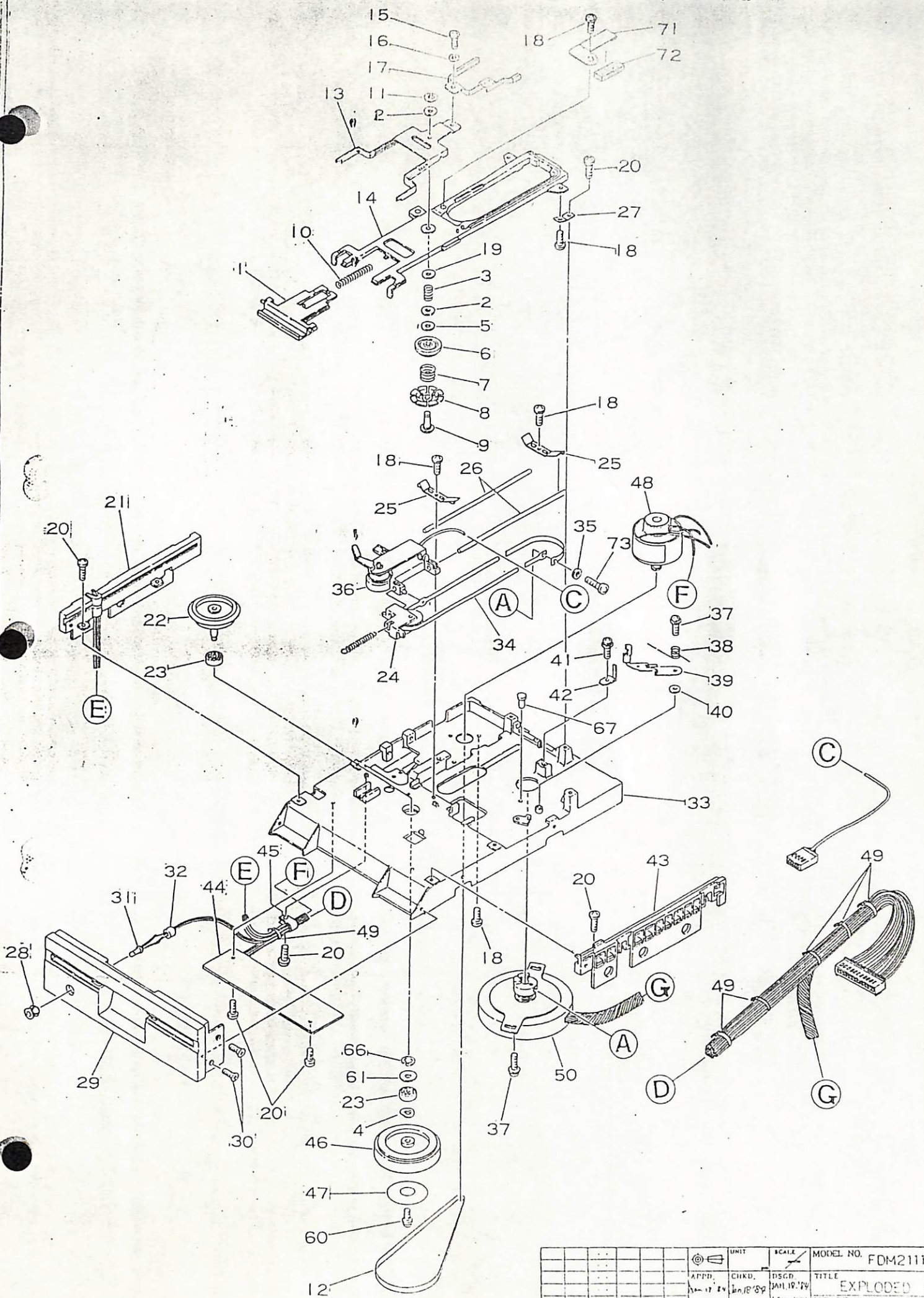
Housing
Hirose HIF3G-5S-254C
Terminal
Hirose HIF3-2428SCFA

Head Connector



DC Motor Control P.C.B



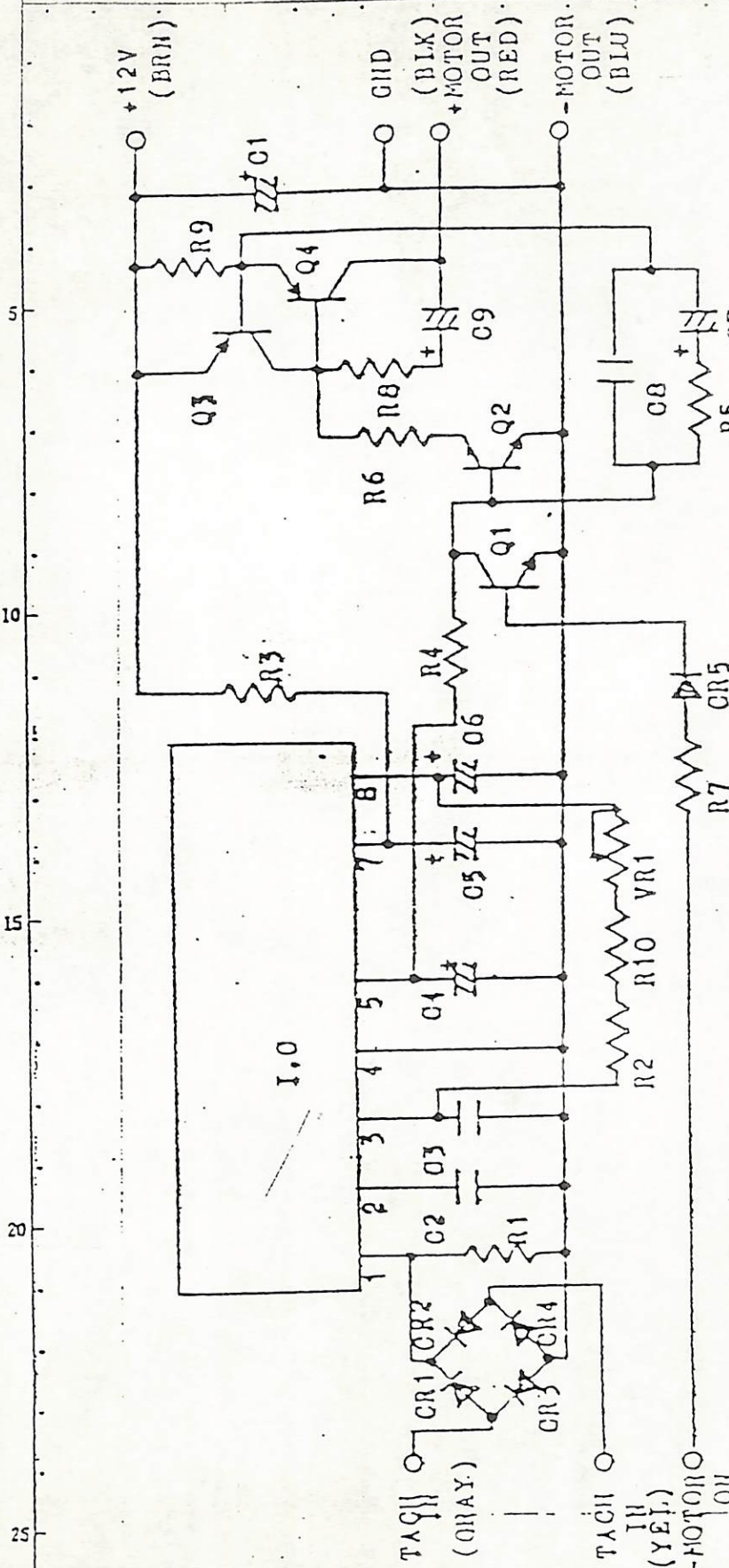


TIME	SYMB	DATE	APP'D.	CHK'D.	DS'CD.	UNIT	SCALE	MODEL NO.	TITLE
								FDM2111-B	EXPLODED VIEW
									ENCLOSURE NO.
ALPS ELECTRIC CO., LTD.									

CLASS. NO.

TITLE

Motor control assembly



Symbol	Description	Symbol	Description
R8	Resistor, 150Ω/4W	CR5	Diode
R9	Resistor, 0.68Ω/2W	R1	Resistor, 1kΩ/4W
R10	Resistor, 5.1kΩ/8W	R2	Resistor, 68kΩ/4W
VR1	Variable Resistor, 20kΩ	R3	Resistor, 220Ω/4W
C1, 5, 6	Capacitor, 10μF/35V	R4	Resistor, 3.3kΩ/4W
C2	Capacitor, 0.0047μF/50V	R5	Resistor, 2.7kΩ/4W
C3	Capacitor, 0.47μF/35V	R6	Resistor, 820Ω/4W
C4, 9	Capacitor, 0.47μF/35V		
C7	Capacitor, 2.2μF/16V		
CB	Capacitor, 0.068μF/50V		

APPD. _____ CHKD. _____ DSGD. _____ TITLE _____

PAGE SYMB. DATE APPD. CHKD. DSGD.

DOCUMENT NO. _____

NO.	PART NO.	NAME	NO.	PART NO.	NAME	NO.	PART NO.	NAME
1	BH212-A	Door Assy.	25	HY616	Guide Shaft Keeper	49	GR123	Band
2	HY623	Collar	26	EY142	Guide Shaft	50	QY153-A	Stepper Assy.
3	WS114	Clamp Spring	27	HY712	Hinge Spring	51		
4	GW115	Wave Washer	28	BG111	LED Holder	52		
5	GW114	Thrust Washer	29	BH131	Front Panel	53		
6	BJ122-A	Collet Assy.	30	2A121064	Screw	54		
7	WS142	Hub Spring	31	DE111-AG	LED Assy.	55		
8	BJ112	Hub	32	BG211	LED Holder Ring	56		
9	EY114	Hub Shaft	33	VY119	Housing	57		
10	WS171	Door Spring	34	GR134	Steel Belt	58		
11	2LO03001	E-Washer	35	GW118	Washer	59		
12	GR111	Drive Belt	36	QY124-D	Head Assy.	60	2A271030	Screw
13	HY581	Hub Support	37	2A331050	Screw	61	2LFD0011	Washer
14	FY117	Hub Frame	38	WS157	Eject Spring	62		
15	2A151040	Screw	39	HY532-A	Eject Assy.	63		
16	2G102602	Washer	40	GW123	Poly Slider	64		
17	HY582-A	Arm Support Assy.	41	2A341060	Screw	65		
18	2A132040	Screw	42	HY551	Carriage Stopper	66	2M313001	C-Washer
19	HY625	Collar	43	BG262-A	Disk Guide-R Assy.	67	GP114	Eject Pin
20	2A131050	Screw	44	PY133AA	Motor Control P.C.B	68		
21	BG261-AL	Disk Guide-L Assy.	45	GR152	Cord Holder	69		
22	EY182	Spindle Unit	46	UP512	Spindle Pulley	70		
23	GU127	Spindle Bearing	47	GT111	Tacho Disk	71	JS482	Pad Holder
24	UP533-A	Tension Pulley Assy.	48	QY112	D.C Motor	72	GS112	Pressure Pad
						73	2A151030	Screw

						UNIT	SCALE	MODEL NO.
							mm	FDM2111-B4
						APPD.	CHKD.	DSCD.
						Jan 18 '84	Jan 18 '84	JAN. 18 '84
								TITLE
								EXPLODED VIEW
								DOCUMENT NO.
								(2/2)

1, specifications

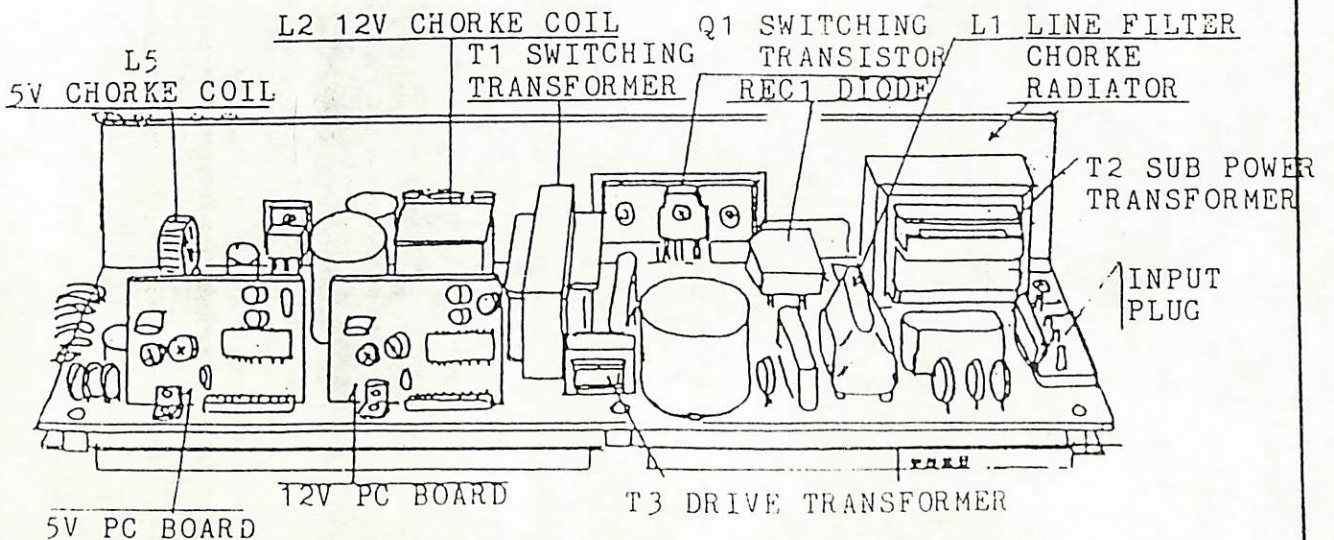
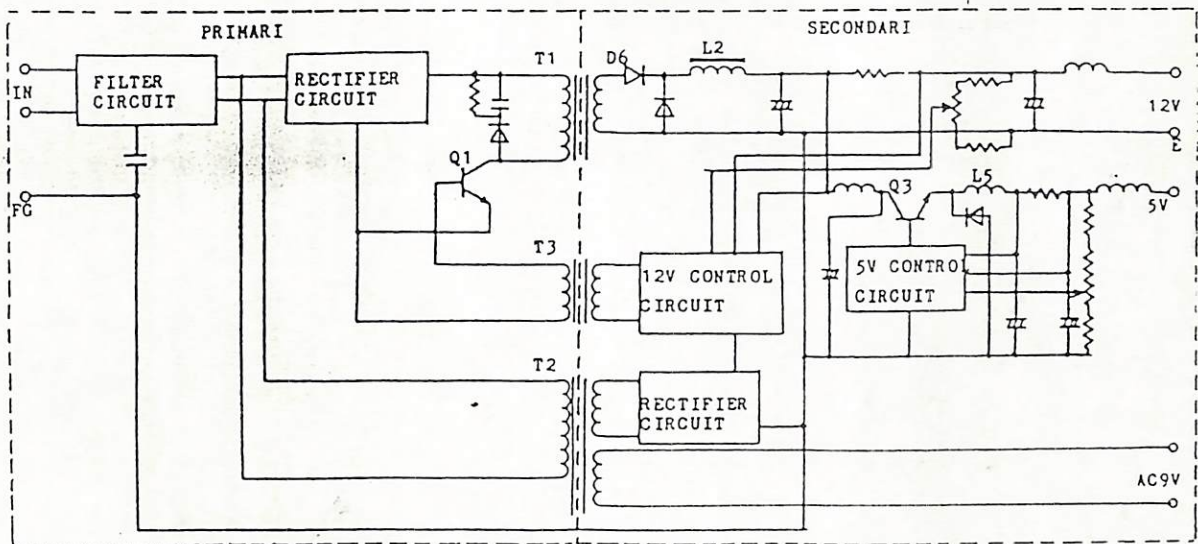
1-1 INPUT

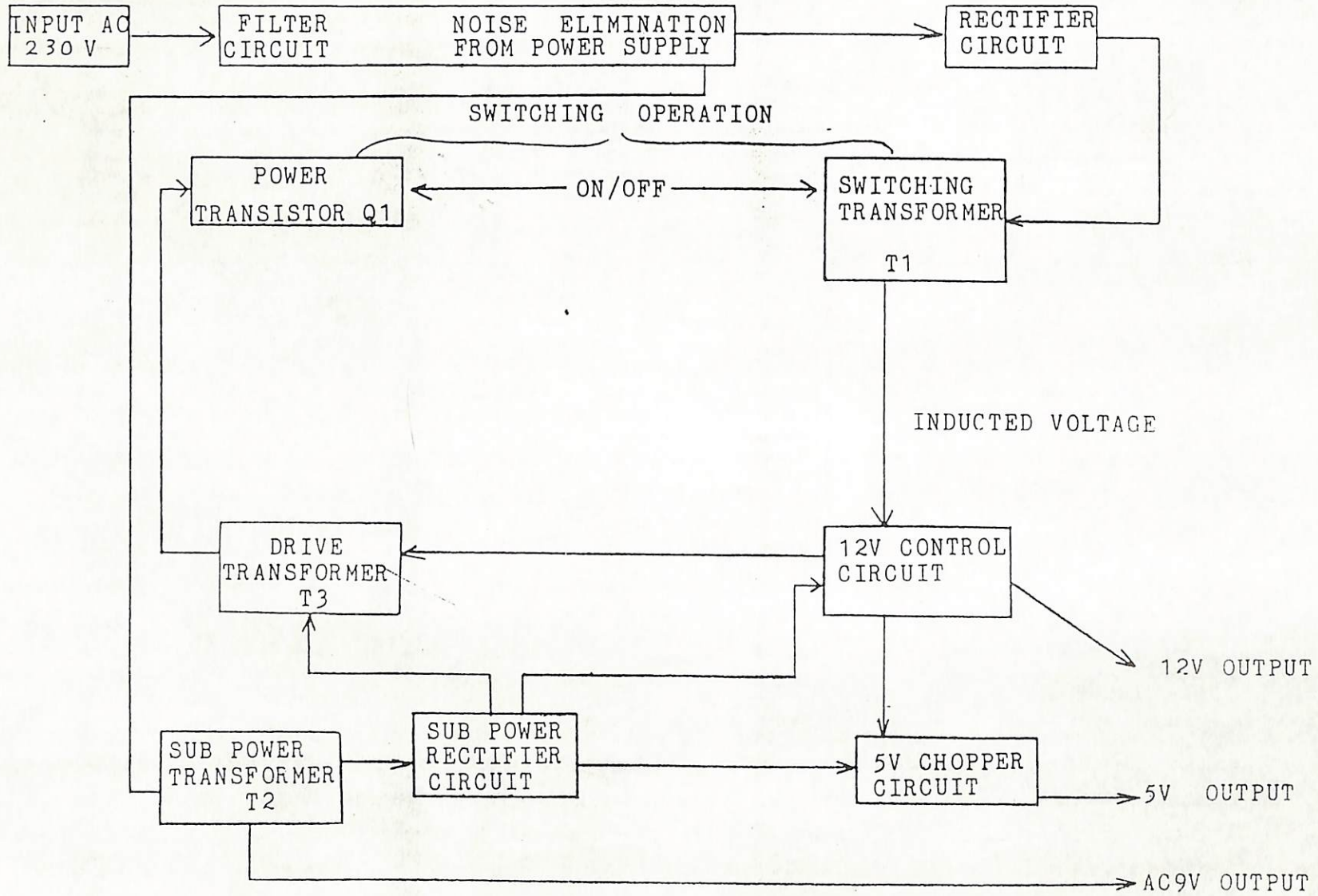
- 1-1-1 VOLTAGE AC 230V 10% 50.60Hz
- 1-1-2 POWER 75W typ
- 1-1-3 SURGE CURRENT 25A max

1-2 OUTPUT

- 1-2-1 VOLTAGE 5V 2% , 12V 2% , AC9V 3%
- 1-2-2 CURRENT 5V; 3.15A , 12V; 2.76A , AC9V; 200mA
- 1-2-3 VARIATION 5V 3% , 12V 5% , AC9V 15%
- 1-2-4 RIPPLE 5V; 150mV(p-p) , 12V; 290mV(p-p)
- 1-2-5 OVER CURRENT PROTECTION 5V ; 3.6~4A
12V ; 3.6~4A

2, CIRCUIT





BLOCK DIAGRAM

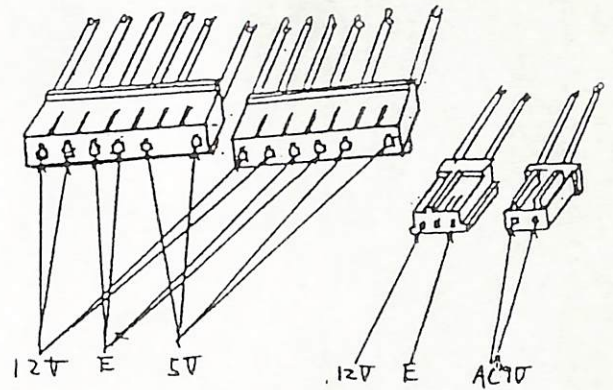
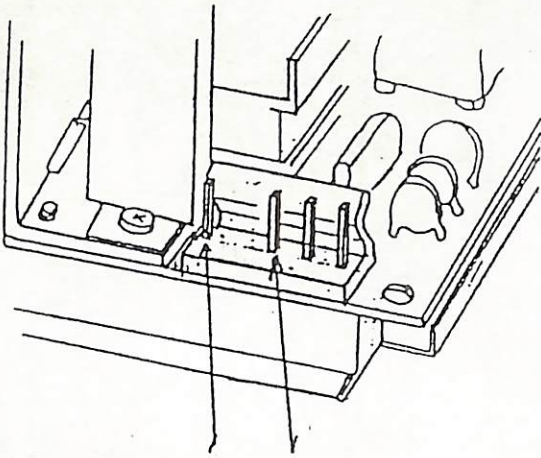
(13) x-94 (2)

3. ALIGNMENT INSTRUCTION

1. INPUT OUTPUT CONNECTION

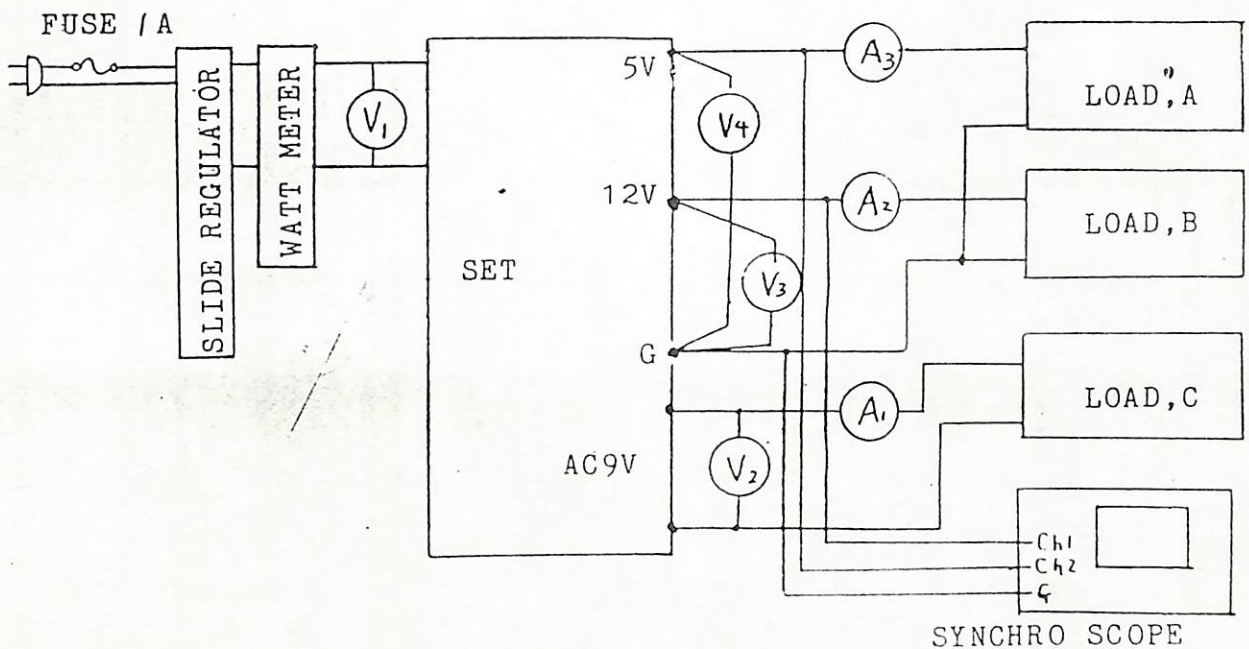
INPUT

OUT PUT



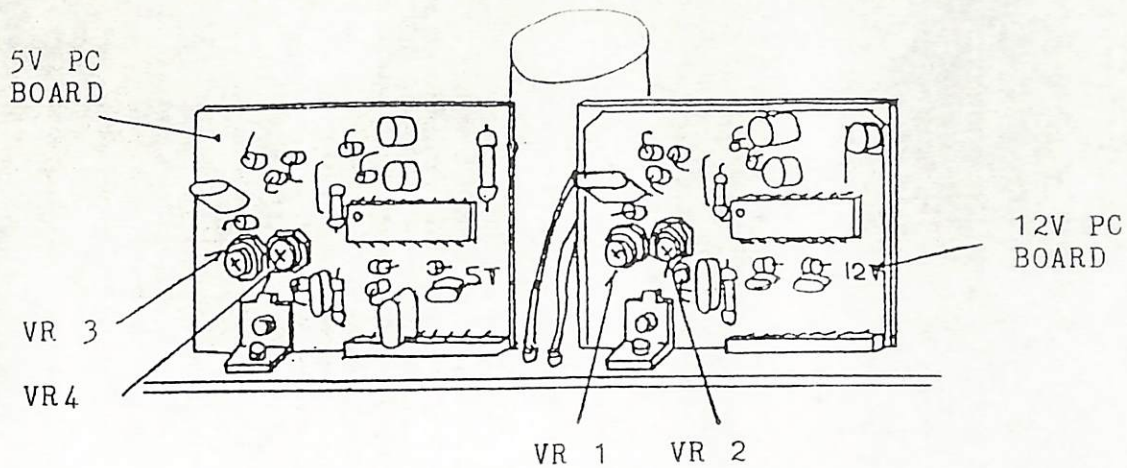
IN PUT 230V 50/60Hz

CONNECT :ON

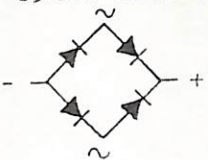
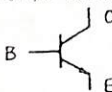
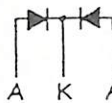
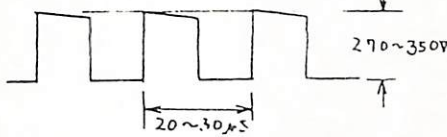
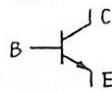
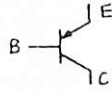
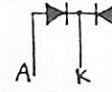
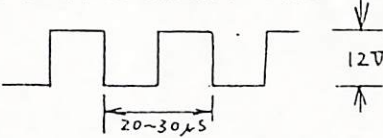


- 1) SLIDE REGULATOR
- 2) WATT METER
- 3) LOAD A, B
- 4) V1
- 5) V2
- 6) V3
- 7) V4
- 8) A1
- 9) A2, 3
- 10) LOAD C

- | | | |
|------------------|--------------------------|--|
| AC | 220~240V | |
| AC WATT METER | TYP 75W | |
| ELECTRONIC LOAD | TYP 12V , 5A | |
| AC VOLTAGE METER | TYP 120V 240V | |
| AC VOLTAGE METER | TYP 9V | |
| DC VOLTAGE METER | TYP 12V | |
| DC VOLTAGE METER | TYP 5V | |
| AC CURRENT METER | TYP 200mA | |
| DC CURRENT METER | TYP 3A | |
| SLIDE RESISTOR | TYP 45Ω | |



Step	Item	Remarks For Adjustment
1	Connection	Connect the SET as Per SKETCH 6
2	Volume (VR)	Turn VR1,VR2,VR3,VR4 onPC Board for 5V,12V Till the End in Clockwise Rotation
3	AC Power ON	Set Slide Reguleter at 230^{V} and AC Power ON
4	Rated Current Setting	Set Circuit Loaded as Belows 1) Load A DC 5V 3.15A 2) Load B DC 12V 2.76A 3) Load C AC 9V 200mA
5	Output Voltage Adjustment	Adjust VR2 and VR4 then Set in the Range of the Following Voltage 1) DC 5V (VR4) 4.970~5.030V 2) DC 12V (VR2) 11.950~12.050V
6	Operation of Over-Current Protection and Adjustment of the Point	Adjust and Set VR1,VR3 to Operate Over-Current Protection at the Following Values 1) DC 5V (VR3) 3.6~4A 2) DC 12V (VR1) 3.6~4A

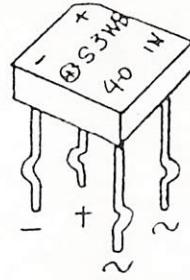
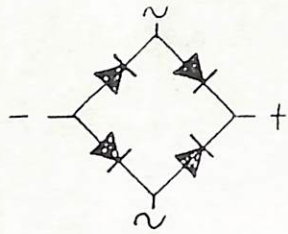
TRUBLE	CHECK POINT	CAUSES AND TEST	SOLUTION
NO OUTPUT	SOME SCRAP INSIDE OK	SHORT CIRCUIT BY SCRAP <u>YES</u>	REPAIR
NO AC 9V OUTPUT	SUPPLEMENTARY CIRCUIT OK	T2 TRANSFORMER SHORT OR OPEN <u>YES</u> T2 PRIMARY LEAD WHITE TO WHITE 160~200Ω SECONDARY LEAD RED TO RED 9~12Ω SECONDARY LEAD BLUE TO BLUE 3.2~3.4Ω OK	CHANGE T2
IN CASE OF REC1 SHORT FUSE IS CUT	CHECK BRIDGE DIODE OK	REC2 S1V5-10 DIODE RECTIFIED VOLTAGE DC 12~15V REC1 S3WB40 SHORT OR OPEN <u>YES</u>	CHANGE REC1
			
IN CASE OF Q1 SHORT FUSE IS CUT	CHECK SWITCHING TRANSISTOR OK	Q1 2SC2792 SHORT OR OPEN <u>YES</u>	CHANGE Q1
			
	CHECK HIGH-SPEED RECTIFY DIODE OK	D6 ESAC85-009 SHORT OR OPEN <u>YES</u>	CHANGE D6
			
12V CONTROL CIRCUIT		CHECK BETWEEN COLLECTOR AND EMITTER OF 2SC2792 IN Q1 BY SYNCHRO-SCOPE <u>NO</u>	CHANGE A BOARD OF 12V CONTROL
			
		12V OUTPUT ADJUSTMENT SHIFT <u>YES</u>	RE-ALIGNMENT
5V output ONLY NO OUTPUT	CHECK SWITCHING TRANSISTOR OK	Q3 2SC2334 SHORT OR OPEN <u>YES</u>	CHANGE Q3
			
	CHECK DRIVE TRANSISTOR OK	Q4 2SA1020-00rY SHORT OR OPEN <u>YES</u>	CHANGE Q4
			
	CHECK HIGH-SPEED RECTIFY DIODE OK	D7 ESAC82-004 SHORT OR OPEN <u>YES</u>	CHANGE D7
			
5V CONTROL CIRCUIT		CHEC BETWEEN EMITTER OF 2SC2334 AND GRUND IN Q4 BY SYNCHRO-SCOPE <u>NO</u>	CHANGE A BOARD OF 5V CONTROL
			
		5V OUTPUT ADJUSTMENT SHIFT <u>YES</u>	RE-ALIGNMENT

5. SEMICONDUCTOR OUTSIDE APPEARANCE

1, REC1

S3WB 60

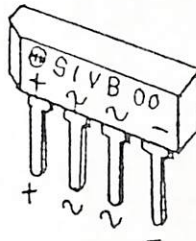
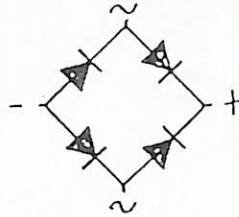
RECTIFIER STACKS DIODES



2, REC2

S1VB10

RECTIFIER STACKS DIODES



3, D1

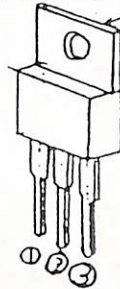
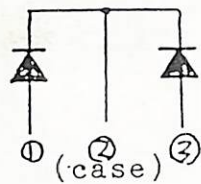
ERB28-08

FAST RECOVERY DIODES



4, D6,7

ESAC85-009 , ESAC82-004 SCHOTTKY BARRIER DIODES

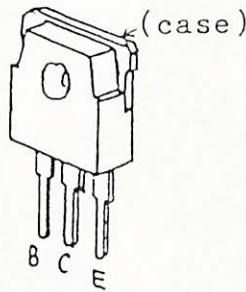
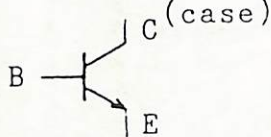


JEDEC:TO-220AB

5, Q1

2SC2C2792or3351

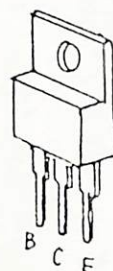
POWER TRANSISTOR



6, Q3

2SC2334 (case)

POWER TRANSISTOR
C (case)



JEDEC:TO-220AB

7, Q4

2SA1012

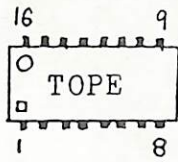
TRANSISTOR



8, IC1,2

MB3759

INTEGRATED CIRCUITS

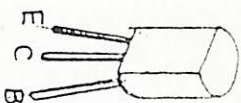


4424

7, Q4

2SA1012

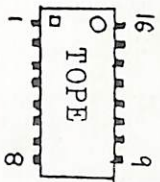
TRANSISTOR



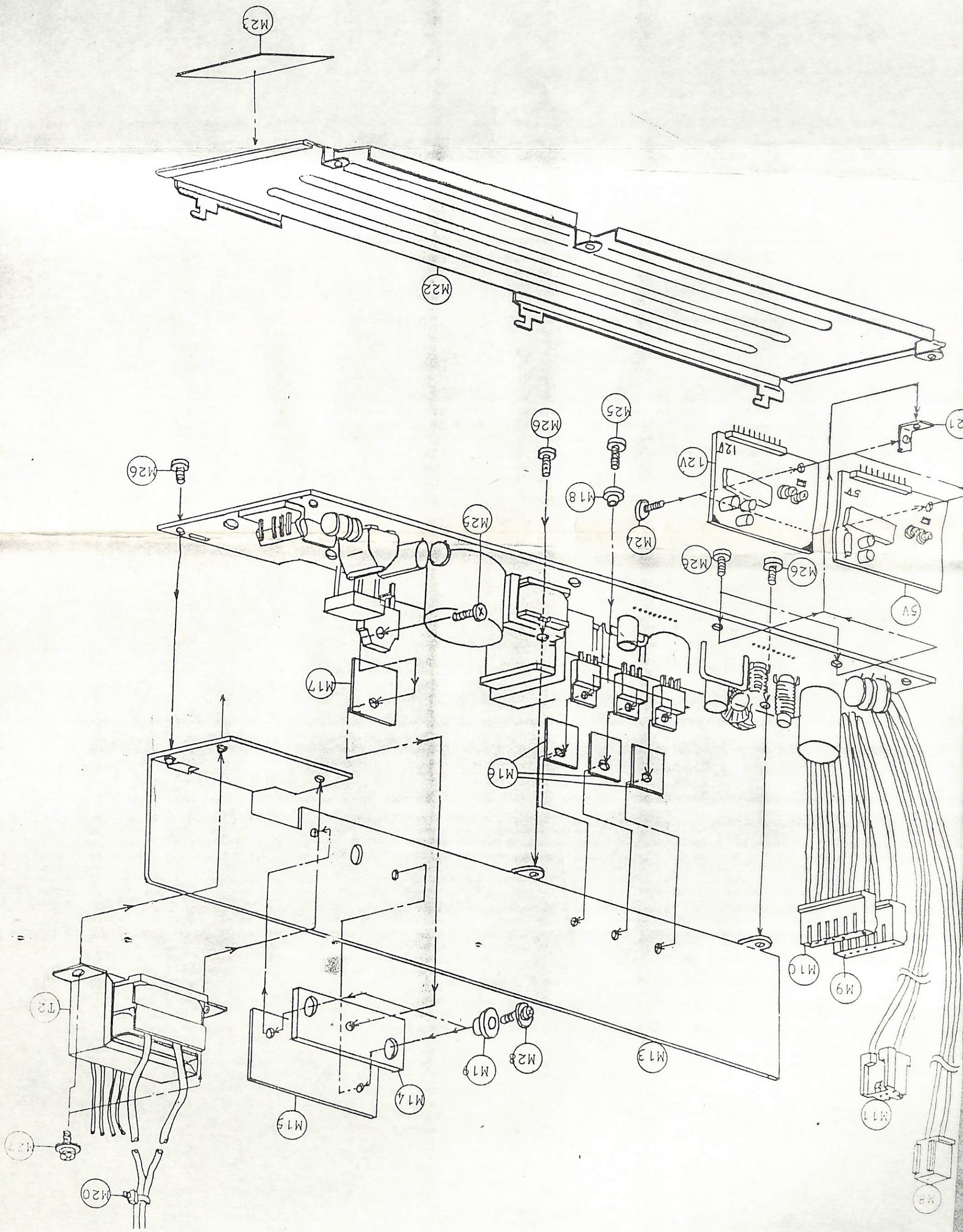
8, IC1,2

MB3759

INTEGRATED CIRCUITS



21/01



EXPLODED VIEW AND PARTS LISTS
EXPLODED VIEW

Symbol	Part, No	Part Name	Description	Safety Part	Service Part
C21	68-0343F	CEE102A10V	CEE CAPACITOR		
C22	68-2701K	CMP224A63K-N	CMP CAPACITOR		
C23	68-27080	CPS104A50K-N	CPS CAPACITOR		
C24	68-0343F	CEE102A10V	CEE CAPACITOR		
C25	68-27080	CPS104A50K-N	CPS CAPACITOR		
C27	68-0341E	CEE479A50V	CEE CAPACITOR		
C28	68-2708I	CPS103A50K-N	CPS CAPACITOR		
C29	68-0341F	CEE100A50V	CEE CAPACITOR		
C30	68-2708F	CPS332A50K-N	CPS CAPACITOR		
C31	68-0341E	CEE479A50V	CEE CAPACITOR		
C32	68-2708I	CPS103A50K-N	CPS CAPACITOR		
C33	68-27080	CPS104A50K-N	CPS CAPACITOR		
C34	68-0341E	CEE479A50V	CEE CAPACITOR		
C36	68-2811G	CC472A2500Z	CC CAPACITOR		
C37	68-2811G	CC472A2500Z	CC CAPACITOR		
C40	68-0341F	CEE100A50V	CEE CAPACITOR		
C41	68-27080	CPS104A50K-N	CPS CAPACITOR		
RESISTORS					
Part Name.with RD:Carbon Resistor					
Part Name.with SRM:Metal Oxide Film Resistor					
R1	68-2503K	8D-13	POWER SHERMISTOR	!	0.5%
R2	68-4951Y	SRM15K-J3A	SRM RESISTOR	!	
R3	68-4943Y	SRM100-J2A	SRM RESISTOR	!	
R4	68-0332Y	RD22-J1/2A	RD RESISTOR	!	
R5	68-4937A	SRM10-J1A	SRM RESISTOR	!	
R9	68-4937A	SRM10-J1A	SRM RESISTOR		
R10	68-4937A	SRM10-J1A	SRM RESISTOR		
R11	68-0353A	MANGANEN WIRE			
R12	68-0299V	RD30K-J1/4D	RD RESISTOR		
R13	68-0298M	RD1K-J1/4D	RD RESISTOR		
R14	68-0299C	RD4.7K-J1/4D	RD RESISTOR	!	
R15	68-0298R	RD1.6K-J1/4D	RD RESISTOR	!	
R16	68-0297S	RD150-J1/4D	RD RESISTOR		
R17	68-0280S	RD820-J1/4B	RD RESISTOR		
R18	68-4937A	SRM10-J1A	SRM RESISTOR		
R19	68-0299V	RD30K-J1/4D	RD RESISTOR		
R20	68-0353A	MANGANEN WIRE			
R21	68-0298M	RD1K-J1/4D	RD RESISTOR		
R22	68-0298Y	RD3.3K-J1/4D	RD RESISTOR		
R24	68-0298V	RD2.4K-J1/4D	RD RESISTOR		
R25	68-0281K	RD4.7K-J1/4B	RD RESISTOR	!	
R26	68-0281S	RD10K-J1/4B	RD RESISTOR	!	
R27	68-0300Y	RD470K-J1/4D	RD RESISTOR	!	
R30	68-0299Q	RD18K-J1/4D	RD RESISTOR		
R31	68-0299G	RD6.8K-J1/4D	RD RESISTOR		
R32	68-0300I	RD100K-J1/4D	RD RESISTOR		
R33	68-4937A	SRM10-J1A	SRM RESISTOR		
R34	68-0298S	RD1.8K-J1/4D	RD RESISTOR		
R35	68-0281M	RD5.6K-J1/4B	RD RESISTOR		
R36	68-0281M	RD5.6K-J1/4B	RD RESISTOR		
R37	68-0300I	RD100K-J1/4D	RD RESISTOR		
R38	68-0299V	RD30K-J1/4D	RD RESISTOR		
R40	68-0299M	RD12K-J1/4D	RD RESISTOR		
R41	68-0298A	RD330-J1/4D	RD RESISTOR		

10. PARTS LIST

Symbol	Part, No	Parts Name	Description	Safety Parts	Service Parts
TRANSFORMERS & COILS					
T1	68-4090A	SWITCHING TRANSFORMER		!	0.5%
T2	68-1110A	SUB POWER TRANSFORMER		!	
T3	68-0854A	DRIVE TRANSFORMER		!	
L1	68-1606D	UF2327F	LINE FILTER CHORKE		
L2	68-1366D	SKU-33-B8	CHORKE COIL		
L3	68-0306A	5μH	CHORKE COIL		
L4	68-0013B	FN-R8S	CHORKE COIL		
L5	68-1351A	SK11-2-100	CHORKE COIL		
L6	68-0306A	5μH	CHORKE COIL		
TRANSISTORS & DIODES					
Symbol No. with Q: Transistor			Symbol No. with REC: Diode		
Symbol No. with D: Diode					
Q1	68-2056F	2SC2792 or 3551	SWITCHING TRANSISTOR	!	0.5%
Q3	68-0040C	2SC2334-K	SWITCHING TRANSISTOR		0.2%
Q4	68-2001A	2SA1020-0, Y	TRANSISTOR		0.1%
REC1	68-0345F	S3WB-60	DIODE	!	0.1%
REC2	68-2254A	S1VB-10	DIODE		0.1%
D1	68-2034C	ERB28-08	DIODE		0.1%
D6	68-0035D	ESAC-85-009	DIODE		0.1%
D7	68-0035B	ESAC-82-004	DIODE		0.1%
ICs					
IC1	68-1912A	MB3759	IC	!	0.1%
IC2	68-1912A	MB3759	IC	!	0.1%
CAPACITORS					
Part Name. with CC: Ceramic Capacitor					
Part Name. with CMP: Metallized Polyester Film Capacitor					
Part Name. with CPS: Polyester Film Capacitor					
Part Name. with CEE: Aluminum Electrolytic Capacitor					
C1	68-2712I	CMP224A250K-N	CMP CAPACITOR	!	
C2	68-2811D	CC102A2500K	CC CAPACITOR	!	
C3	68-2811D	CC102A2500K	CC CAPACITOR	!	
C4	68-2811E	CC222A2500M	CC CAPACITOR	!	
C5	68-2811E	CC222A2500M	CC CAPACITOR	!	
C6	68-2712G	CMP104A250M	CMP CAPACITOR	!	
C7	68-2610D	CEE221D400R	CEE CAPACITOR	!	
C8	68-2709S	CMP104A630K-N	CMP CAPACITOR	!	
C9	68-2812A	CC221A1000K	CC CAPACITOR	!	
C11	68-0341R	CEE101A35V	CEE CAPACITOR		
C12	68-28140	CC222A2000K	CC CAPACITOR		
C13	68-28140	CC222A2000K	CC CAPACITOR		
C14	68-2610B	CEE472D25Q	CEE CAPACITOR		
C15	68-2701K	CMP224A63K-N	CMP CAPACITOR		
C16	68-27080	CPS104A50K-N	CPS CAPACITOR		
C17	68-0342R	CEE222A16V	CEE CAPACITOR		
C18	68-27080	CPS104A50K-N	CPS CAPACITOR		
C19	68-0342S	CEE332A16V	CEE CAPACITOR		

Symbol	Part, No	Part Name	Description	Safety Part	Service Part
R42	68-0300I	RD100K-J1/4D	RD RESISTOR		
R45	68-0299A	RD3.9K-J1/4D	RD RESISTOR		
R50	68-0336U	RD330K-J1/2A	RD RESISTOR	!	
SEMI FIXED RESISTOR					
VR1	68-0119B	RGS6-FAN500		!	0.2%
VR2	68-0119F	RGS6-FAN1K		!	0.2%
VR3	68-0119B	RGS6-FAN500		!	0.2%
VR4	68-0119F	RGS6-FAN1K		!	0.2%
MISCELLANEOUS					
M1	68-4114A	PC BOARD (A)		!	
M2	68-4115A	PC BOARD (B) 1/2		!	
M3	68-4505A	JOINT P=7.5mm			
M4	68-4505B	JOINT P=10mm			
M5	68-4505C	JOINT P=12.5mm			
M6	68-4505D	JOINT P=15mm			
M6	68-3521F	ANGLE PLUG, M34-09-30-134P		!	
M7	68-3514C	PLUG, 5285-04A		!	
M8	68-3516A	CONNECTOR 2P ASS			0.2%
M9	68-3519A	CONNECTOR 6P ASS			0.2%
M10	68-3519A	CONNECTOR 6P ASS			0.2%
M11	68-3517A	CONNECTOR 3P ASS			0.2%
M12	68-4003L	TUBING (UL)		!	0.5%
MECHANICAL PART					
M13	68-5086A	RADIATOR (A)			
M14	68-5087A	RADIATOR (B)			
M15	68-5082A	RADIATION SEAT (SARCON 45F)		!	
M16	68-0026B	RADIATION SEAT TO-220 (SARCON 45F)		!	0.2%
M17	68-0352A	RADIATION SEAT TO-3P (SARCON 45F)		!	0.5%
M18	68-0076A	BUSHING		!	
M19	68-0025A	BUSHING (C)		!	
M20	68-5078A	BAND (KM-85)			
M21	68-0067A	L ANGLE			
M22	68-5083A	SIIRUDO PLATE			
M23	68-5088A	LABEL			
SCREWS					
M24	68-5800C	BIND HEAD 3.0×6mm			
M25	68-5800D	BIND HEAD 3.0×8mm			
M26	68-0015E	BIND HEAD 3.0×6mm (SUS)			
M27	68-5802B	W-SEMS 3.0×6mm			
M28	68-5802D	W-SEMS 3.0×10mm			
M29	68-5089A	NYLON RIVET			
PCB ASS					
12V	68-5100	12V PC BOARD ASS		!	0.2
5V	68-5099	5V PC BOARD ASS			0.2

P445

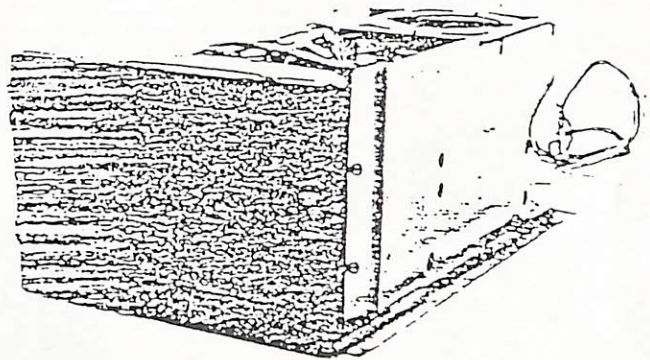
Commodore

SERVICE MANUAL

MODEL

250622-02

5" COLOR VIDEO MONITOR



No. 5463
SEPT. 1983

CONTENTS

SPECIFICATIONS ----- 2

1. SAFETY PRECAUTION FOR MONITOR 3

2. SERVICE ADJUSTMENT 4 ~ 7

3. REPLACEMENT PARTS LIST 8 ~ 11

[EXPLODED VIEW] 11

4. BLOCK DIAGRAM 12

* With 250622-02 SCHEMATIC DIAGRAM

SPECIFICATIONS


Dimensions: 16.5cm(W) x 28.0cm(D) x 11.6cm(H)

Weight: 14.4 kg

Color System	PAL
Horizontal resolution	220 Lines
Video/Sync Input	1Vp-p
Chroma Input	1Vp-p
Audio input	0.8Vp-p, High Impedance.
Scan frequency	H. 15.63 kHz, V. 50 Hz
Power input	DC 12V
Power Consumption	1.35A(max.), 1.18A(Avg.)
Picture tube	5", 55 degree deflection, In-line gun Dot screen Quick Start.
Viewable picture size	7.9 cm(H) x 10.4 cm(W)
High voltage	14 kV ± 1 kV (at zero beam current)
Speaker	6.6cm round type, 16 Ω
Audio power output	0.45 W
Tube	1
IC	4
Transistor	25

(Design and specifications subject to change without notice.)

1. SAFETY PRECAUTION FOR MONITOR

- The design of this product contains special hardware, many circuits, and components specially for safety purposes.
For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
- Alterations of the design or circuitry of receiver should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
- Many electrical and mechanical parts in television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by () on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual may create shock, fire, or other hazards.
- If any repair has been made to the chassis, it is recommended that the B1 setting should be checked or adjusted. (See ADJUSTMENT OF B1 VOLTAGE).
- The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives provided by the manufacturer of the complete product.
- Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k Ω 2W resistor to the anode button.

When service is completed, always clean and dress. Exposed metal parts should be painted and the cabinet kept in the best condition. When cabinet contact has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

8. ISOLATION CHECK (SAFETY FOR ELECTRICAL SHOCK HAZARD)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, channel selector knob, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) DIELECTRIC STRENGTH TEST

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1,100 V AC (r.m.s.) for a period of one second.

This method of test requires a test equipment not generally found in the service trade.

(2) LEAKAGE CURRENT CHECK

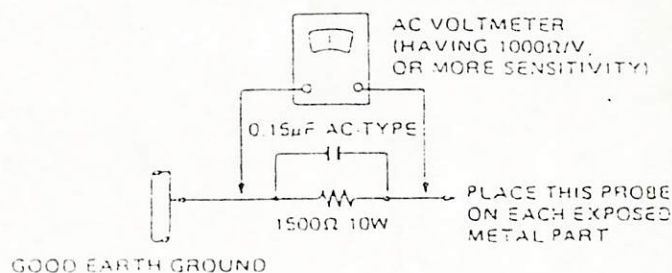
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• ALTERNATE CHECK METHOD

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor paralleled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



2. SERVICE ADJUSTMENTS

PURITY

1. Display a vertical extreme pattern.
 2. As viewed from the back (See Fig. 2-1), turn the magnet lock counter-clockwise to loosen it.
 3. Turn the green cutoff VR (R707) fully clockwise and the red and blue cutoff VRs (R704, R701) fully counter-clockwise. (Fig. 2-8)
Adjust the screen VR (Fig. 2-8) so that the vertical green band becomes easy to see.
 4. Loosen the deflection yoke securing screw and slide the yoke fully rearward to obtain color shading in the green disk.
 5. Overlap the two purity magnet tabs and set them to 12 o'clock position.
 6. Open and close the two purity magnets (scissor fashion) and adjust so that the green disk is positioned at the centre of the picture.
- If green disk is not obtained, adjust for uniform overall coloration.
7. Slide the deflection yoke forward and adjust its position so that the green color completely fills the picture area.
 8. Confirm that uniform overall rasters of both red and blue single color rasters can also be obtained in the same manner.
 9. Secure the deflection yoke retaining screw moderately so that the deflection yoke does not move back and forth.

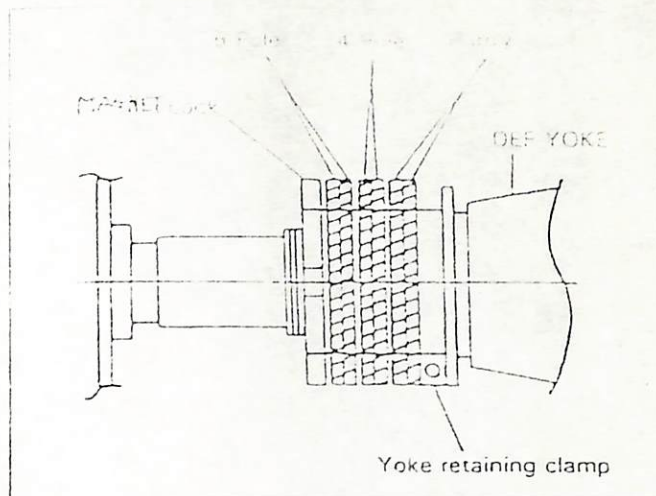


Fig. 2-1

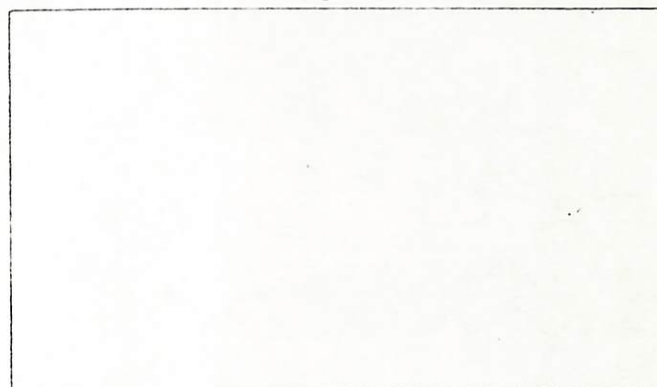


Fig. 2-2

STATIC CONVERGENCE (CENTER)

1. Employ a crosshatch pattern and adjust the brightness so that the image is clear, but slightly darkened.
2. Turn the red and blue cutoff VRs fully clockwise and the green cutoff VR fully counter-clockwise (Fig. 2-8). Adjust the screen VR (Fig. 2-8) for an easily seen image.
3. Adjust convergence roughly in the corner by tilting the deflection yoke vertically or horizontally, then insert a wedge between the yoke and CRT on top.
4. Turn the two 4 pole convergence magnets and adjust so that red and blue become overlapped throughout the picture area to yield magenta. (Fig. 2-4)
5. Turn the green cutoff VR full clockwise and adjust the two 6 pole convergence magnets so that the green and magenta become overlapped throughout the picture area to yield white. (Fig. 2-5)
6. Repeat steps 4 and 5.

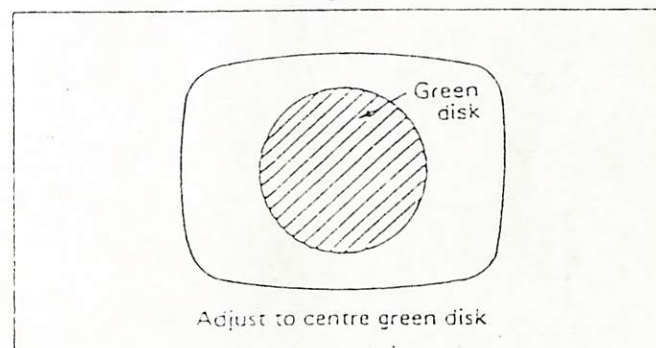


Fig. 2-3

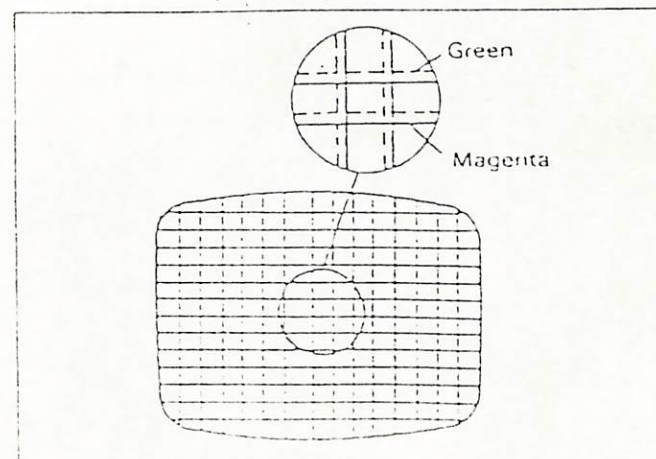


Fig. 2-4

DYNAMIC CONVERGENCE (CONER)

1. Remove the wedge.
2. Adjust convergence as shown in Fig. 2-7 by tilting the yoke up and down; then insert the wedges on top and bottom.
3. Apply (modeler's) glue on the wedges and magnets to fix.
4. Tighten the screw of the deflection yoke.
5. Turn the magnet lock and tighten securely.

WHITE BALANCE

1. Display a monochrome pattern.
2. After switching the cut off service SW. to SERVICE, short TP-35A and TP-35B with a jumper wire, and then display a single horizontal line.
3. Turn the red, blue and green cutoff VRs (R704, R701, R707) and the screen VR (Fig. 2-8) fully counter-clockwise to eliminate luminance.
4. Gradually turn the screen VR clockwise to where single line of one of the colors appears.
5. Turn the cutoff VR of this color clockwise about 10 degrees.
6. Again turn the screen VR so that this color appears only faintly.
7. Adjust the other cutoff VRs so that the horizontal line becomes white.
8. After removing a jumper wire which are shorted at step 2), return the cut off service SW. to NORMAL and then display a monochrome pattern.
9. With a dark picture, perform fine adjustment to obtain optimum white balance.
10. With a bright picture, adjust the red and green drive VRs for optimum white balance.

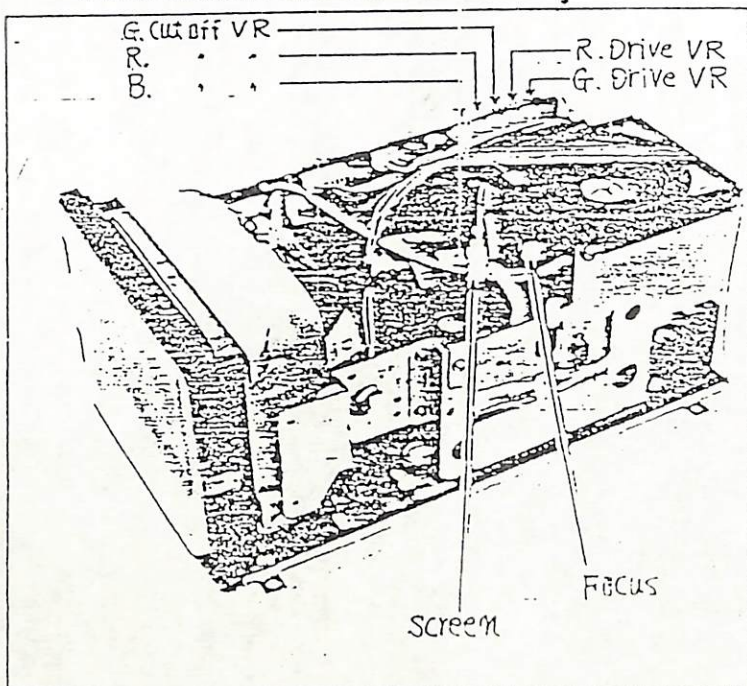


Fig. 2-8

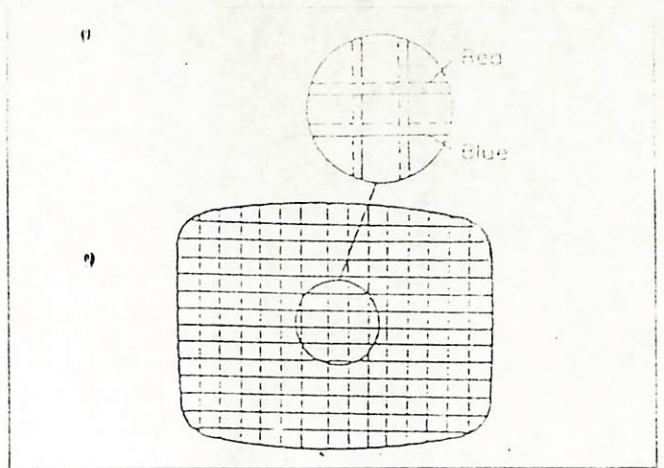


Fig. 2-5

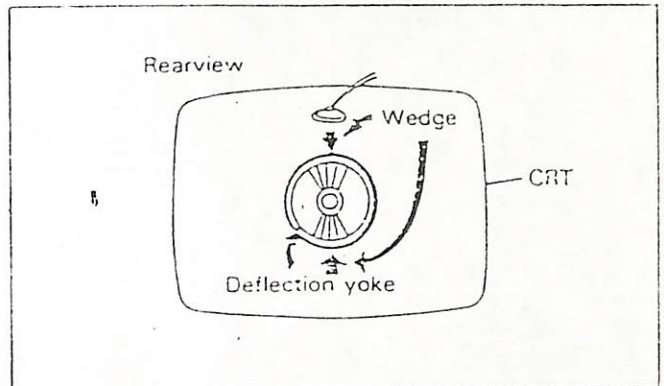


Fig. 2-6

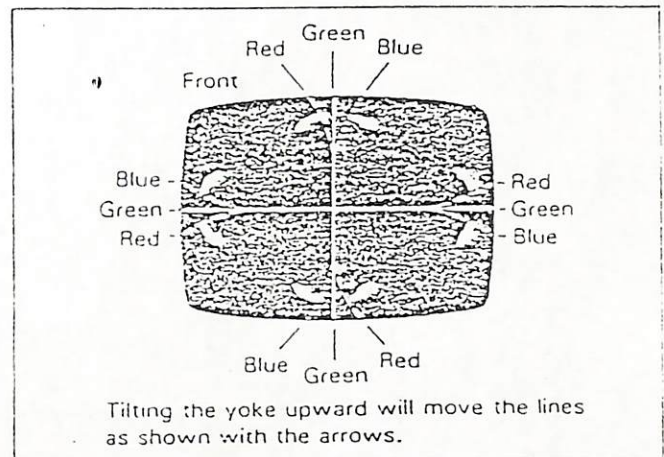
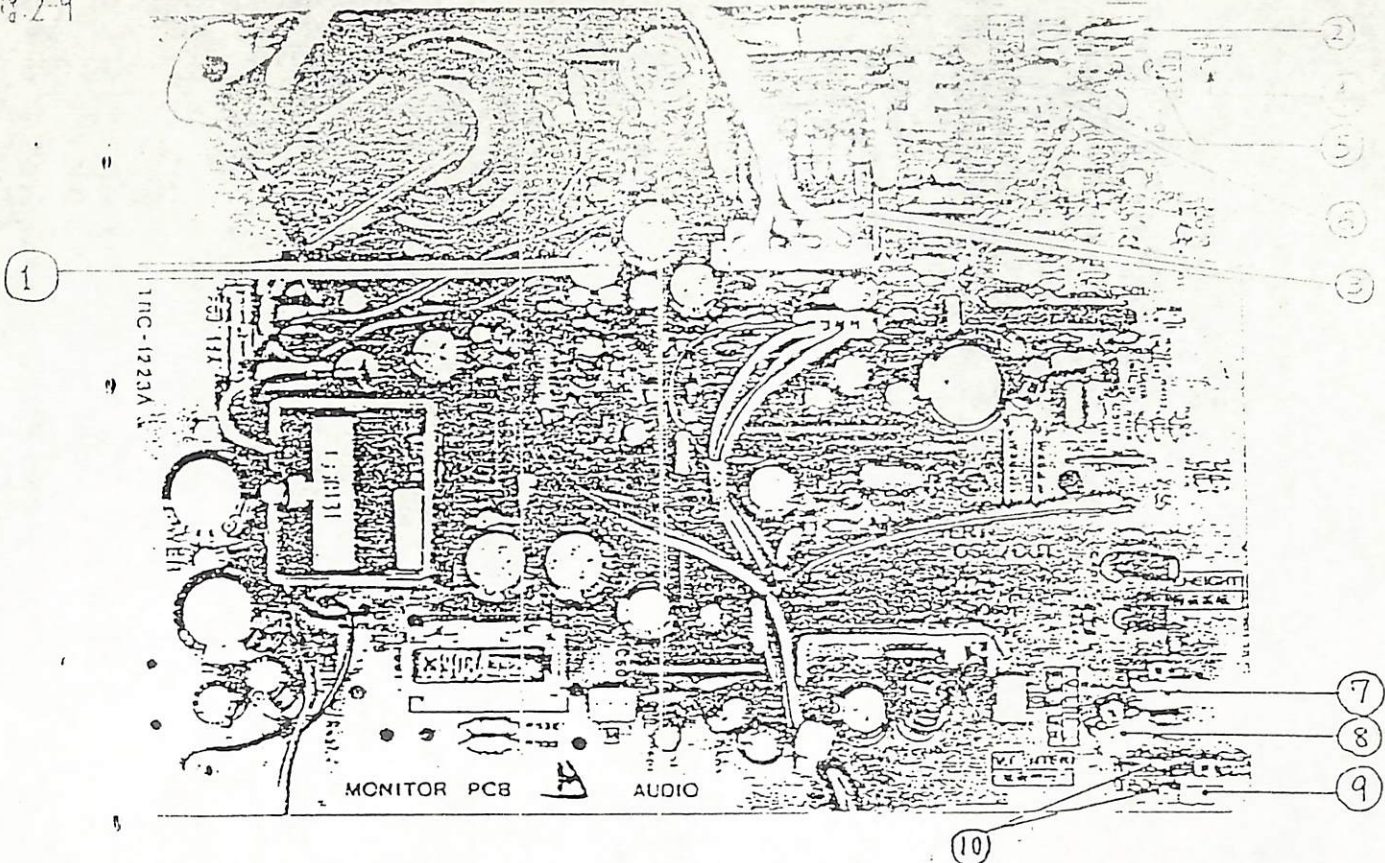


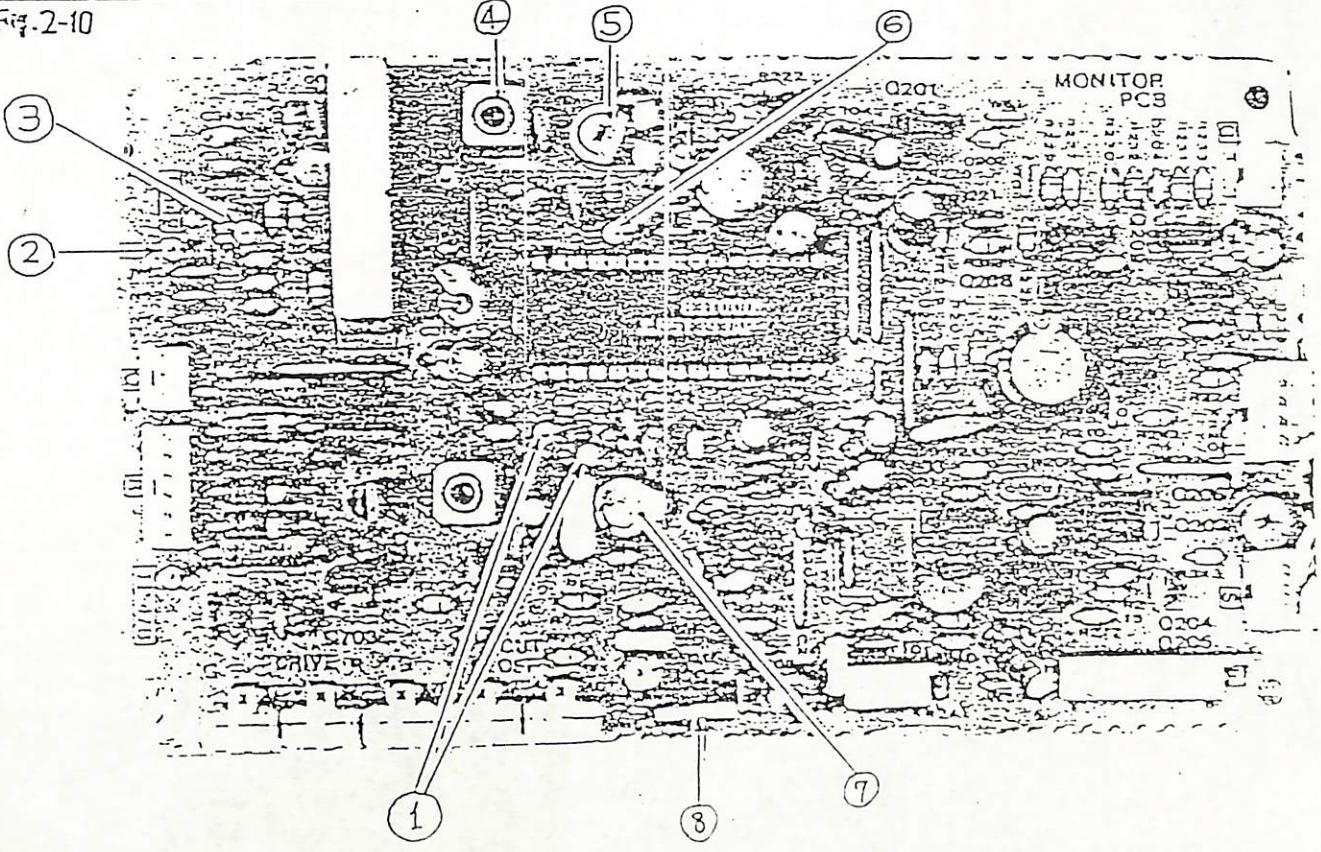
Fig. 2-7

Fig. 2-9



- ①: B1 ADJ. VR ③: H.Center ⑤: TP-33 ⑦: V.Height VR ⑨: V.Center VR
- ②: Sub.H.Center ④: TP-91(B:) ⑥: H.Held VR ⑧: V.Lim.VR ⑩: TP-35A/B

Fig. 2-10



- ①: TP-16A/B ③: TP-48 ⑤: DLAMP VR ⑦: C324 (Trimmer)
- ②: TP-19 ④: T303 (DL.P.Transf.) ⑧: S201 (Cut off Service SW)

Alignment location

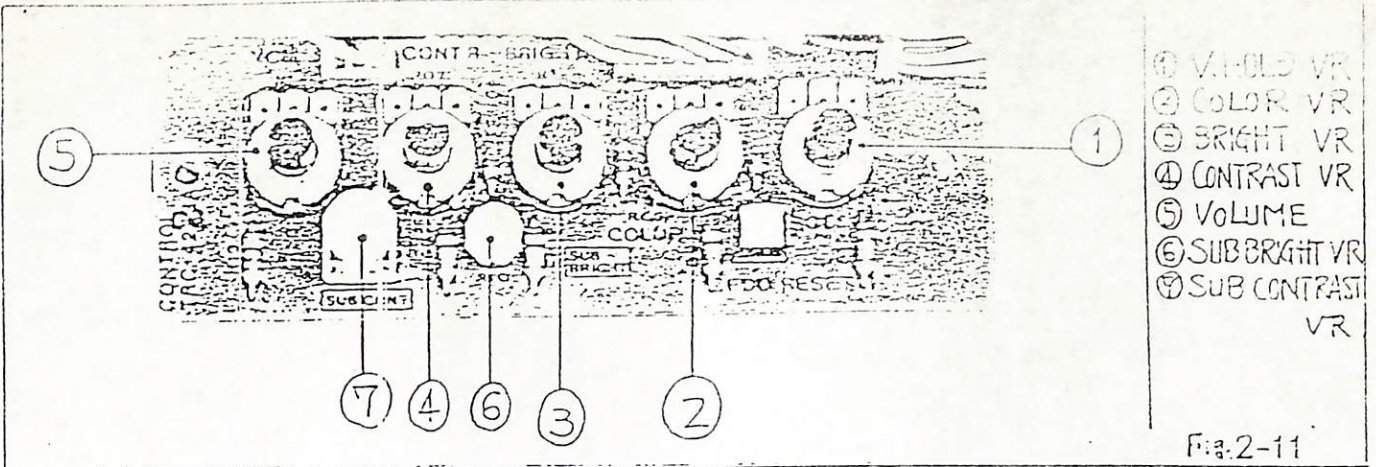


Fig. 2-11

B₁ VOLTAGE (28V)

Cutoff the picture by the bright VR (R4211) and sub bright VR (R4210).

Measure the voltage between TP-91 of the def. , power reg. and Audio out PB Assy and ground.
Adjust B₁ adj. VR (R902) to obtain 28V.

FOCUS

Adjust the FOCUS control for best overall definition and picture detail at normal brightness and contrast.

V. CENTER

Adjust the V. center VR (R417) to the optimum vertical picture position.

HORIZONTAL OSCILLATOR

1. Set the H. Hold VR to the mechanical center position.
2. Connect the jumper clip between TP-33 and earth.
3. While rotating the H. Hold VR, keep the picture stationary or slowly moving.
4. Remove the jumper clip.
5. Make sure that the set maintains horizontal sync, when signals are switched.

H. CENTER

Set the H. center switch (S85) and Sub-H. center switch (S86) to the optimum horizontal picture position.

VERTICAL HEIGHT AND LINEARITY

1. Display a pattern which allows easy confirmation of symmetry (such as a circle or crosshatch).
2. Reduce the vertical size with the V. HEIGHT VR.
3. Adjust the vertical symmetry with the V. LIN. VR.
4. Readjust the vertical height, so that the picture extends to normal size.

SUB CONTRAST AND SUB BRIGHT

1. Display a picture and set the contrast and bright VRs to the center click positions.
2. Adjust the sub contrast VR (R4206) and sub bright VR (R4210) for optimum display.

COLOR SYNC

1. Display a color video signal and apply bias +10V to TP-45.
2. Connect a jumper clip between TP-46A and TP-46B.
3. Use a nonmetallic driver to turn trimmer capacitor C324.
4. Adjust so that the rolling color stripes become thick and the rolling slows or stops.
5. Remove jumper wire.
6. Confirm that color sync, is not disrupted when signals are switched.

DL-MATRIX

1. Display a color video signal.
2. Set the oscilloscope to X-Y range, and connect its X-probe to TP-48 and its Y-probe to TP-49.
3. Connect a jumper clip between TP-46A and TP-46B. And apply bias +10 V to TP-45.
4. Adjust the trimmer capacitor (C324) slightly so that the color becomes unlocked and the loops of the displayed lissajous figure appear on the scope. (Fig. 2-12)
5. Adjust the DL AMP control (R304) for the absence of loops and adjust the DL PHASE TRANSF. (T303) so that each pair of lines merge together.
6. Adjust the trimmer capacitor (C324) to just regain floating color synchronization.
7. Remove a jumper clip and bias +10V.

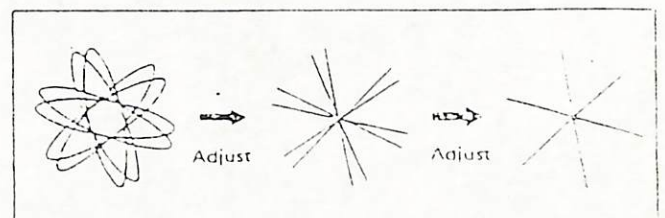


Fig. 2-12

3. REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE

Components identified by the Δ symbol in the PARTS LIST and the chapter index of this manual have special safety requirements important to safety. Before replacing any of these components, be sure to study the SAFETY PRECAUTIONS on page 3 of this Service Manual. DO NOT degrade the safety of the set through improper servicing.

1. ABBREVIATED WORD OF RESISTORS AND CAPACITORS

RESISTOR

- CR : Carbon Resistor
- Comp. R : Composition Resistor
- OM R : Oxide Metal Film Resistor
- VR : Variable Resistor
- MF R : Metal Film Resistor
- CMF R : Coating Metal Film Resistor


- FR : Fusible Resistor
- UNF R : Nonflammable Resistor

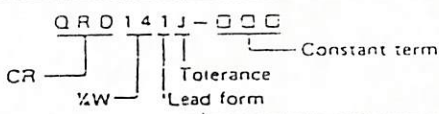
CAPACITOR


- C Cap. : Ceramic Capacitor
- M Cap. : Mylar Capacitor
- E Cap. : Electrolytic Capacitor

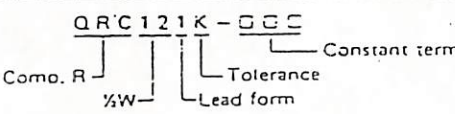
- BP E Cap. : Bi-Polar (or Non-Polar) Electrolytic Capacitor
- MM Cap. : Metallized Mylar Capacitor
- PP Cap. : Polypropylene Capacitor
- MPP Cap. : Metallized PP Capacitor
- PS Cap. : Polystyrol Capacitor
- Tan. Cap. : Tantal Capacitor


2. FOLLOWING RESISTORS AND CAPACITORS OF STANDARD ELECTRICAL COMPONENTS ARE OMITTED FROM THIS PARTS LIST. EACH PART NUMBER OF THESE STANDARD REPLACEMENT COMPONENTS IS DEFINED AS FOLLOWS.

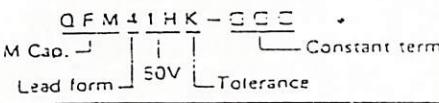
Carbon Resistor (C R): Lead form ()


Rating	Part No.
1/2W	QRD141J-□□□ 
1/4W	QRD121J-□□□

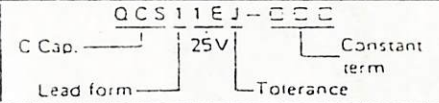
Composition Resistor (Comp. R): Lead form ()


Rating	Part No.
1/2W	QRC121K-□□□ 

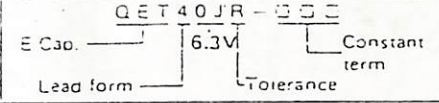
Mylar Capacitor (M Cap.): Lead form ()

Withstand Voltage	Part No.
50V	QFM41HK-□□□ 
100V	QFM42AK-□□□
200V	QFM42DM-□□□

Ceramic Capacitor (C Cap.): Lead form ()

Withstand Voltage	Parts No.
25V	QCS11EJ-□□□ 
50V	QCS11JP-□□□
500V	QCS12HP-□□□

Electrolytic Capacitor (E Cap.): Lead form ()

Withstand Voltage	Parts No.
6.3V	QET40JR-□□□ 
10V	QET41AR-□□□
16V	QET41CR-□□□
25V	QET41SR-□□□
50V	QET41HR-□□□

3. DECODING OF TOLERANCE AND CONSTANT TERM

J: ±5% K: ±10% M: ±20% N: ±30% H: $\begin{matrix} +50\% \\ -10\% \end{matrix}$ Z: $\begin{matrix} +80\% \\ -20\% \end{matrix}$ P: $\begin{matrix} +100\% \\ -0\% \end{matrix}$ A: $\begin{matrix} +100\% \\ -10\% \end{matrix}$ R: $\begin{matrix} +30\% \\ -10\% \end{matrix}$

CONSTANT TERM

• Carbon Resistor (1/2W, ±5% Tolerance)

QRD141J-□□□

CONSTANT TERM.

□ □ □	2.7Ω	QRD141J-2R7
1 R 0	47kΩ	47 × 10 ³ → QRD141J-473
9 R 7	9.7Ω	
1 0 □	10Ω	means 10 × 10 ⁰ (Ω)
8 2 □	82Ω	means 82 × 10 ⁰ (Ω)

• Ceramic Capacitor (50 Volts, ±5% Tolerance)

QCS11EJ-□□□

CONSTANT TERM.

□ □ □	5pF	QCS11EJ-5R0
1 R 0	10pF	68 × 10 ¹ → QCS11EJ-681
8 R 0	80pF	33 × 10 ¹ → QCS11EJ-335
1 0 □	10pF	means 10 × 10 ⁰ (pF)
8 8 □	88pF	means 88 × 10 ⁰ (pF)

TRC-1223A-1 (VIDEO & CHROMA PCB ASSY) 1/2

250622-32

SYMBOL NO.	PART No.	PART NAME	REMARK
VARIABLE RESISTOR			
R1304	CEX40033-003	VR (DL AMP)	5k Ω B
1701	A75557-103	" (B. CUT OFF)	10k Ω "
1704	" -103	" (R. CUT OFF)	" "
1706	" -221	" (R. DRIVE)	220 Ω "
1707	" -103	" (G. CUT OFF)	10k Ω "
1709	" #221	" (G. DRIVE)	220 Ω "
RESISTOR			
R1710	QRG019J-123S	10M R	12k Ω 1W J
1712	" -123S	"	" " "
1714	" -123S	"	" " "
CAPACITOR			
C1305	QEB51HM-224M	E Cap.	0.22 μ F 50V M
1324	QAT3001-010	Trimmer Cap.	"
COIL			
L1201	A76186-1.5	Peaking Coil	1.5 μ H
1202	A49468-562	"	5600 μ H
1203	" -101	"	100 μ H
1301	A76186-8.2	"	8.2 μ H
1302	" -68	"	68 μ H
TRANSFORMER			
T1302	CE40395-001	CW. Transf.	
1303	CE40396-001	DL P Transf.	
DIODE			
D1201	1SS133	Si. Diode	
~5			

TRC-1223A-2 (DEF. POWER REG. & ALTD. OUT PCB ASSY)

SYMBOL NO.	△	PART No.	PART NAME	REMARK
VARIABLE RESISTOR				
R1409		QVZ3507-223	VR (V HEIGHT)	22k Ω B
1413		" -222	" (V. LIN.)	22k Ω "
1417		" -102	" (V. CENT.)	1k Ω "
1508		A75557-222	" (H. HOLD)	2.2k Ω "
1902		CEX40054-023	" (B1 ADJ)	2k Ω "
RESISTOR				
R1917		QRG019J-152S	OM R	1.5K Ω 1W J
1926		QRM024K-R22	MP R	0.22 Ω 2W K
CAPACITOR				
C1401		QEN61HM-105Z	BP E Cap.	1 μ F 50V M
1404		QEN51HM-105	"	" " "
1405		QFZ0083-104M	M. Cap.	0.1 μ F " K
1408		QEE51EK-105B	Tan. Cap.	1 μ F 25V "
1409		QEE51AK-226M	"	22 μ F 10V "
1410		" -226M	"	" " "
1412		QEU51EM-108M	E Cap.	1000 μ F 25V M
1413		QEB51HM-224M	"	0.22 μ F 50V "
1509		QFP31HJ-562S	PP Cap.	5600pF " J
1515	△	QFP42JJ-562S	"	" 630V "
1516	△	" -472M	"	4700pF " "
1517	△	" -472M	"	" " "
1518		QFH52AJ-155M	MM Cap.	1.5 μ F 100V "
1519		QFP32DK-473M	PP Cap.	0.047 μ F 200V K
1520		" -473M	"	" " "
1528		QEN61HM-474Z	BP E Cap.	0.47 μ F 50V M
1601		QEN51HM-105	"	1 μ F " "

TRC-1223A-2 (DEF. POWER REG. & AUDIO OUT PCB ASS'Y) 7/3

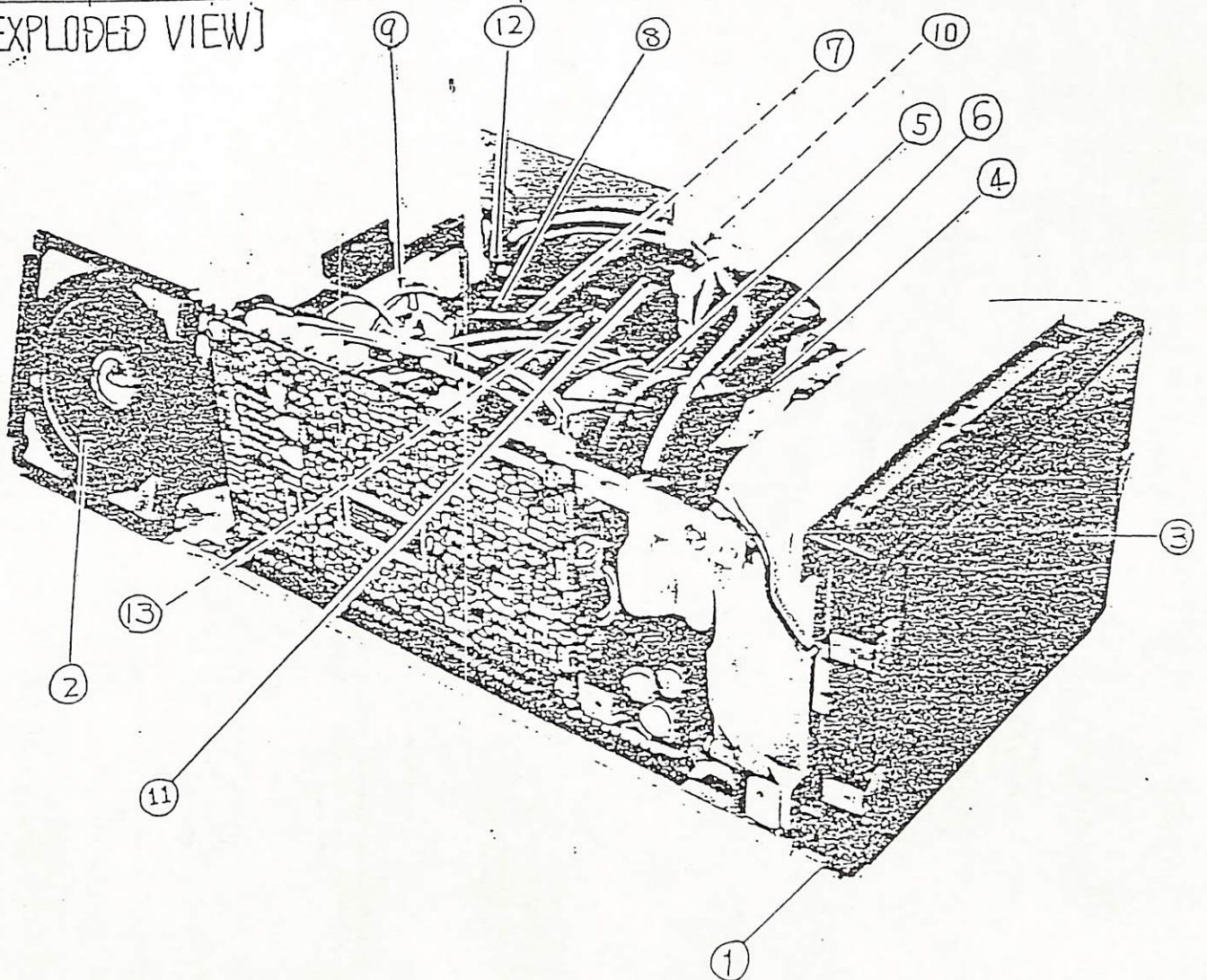
SYMBOL No.	△	PART No.	PART NAME	REMARKS
COIL				
L1501		CE40024-002	Hor. Lim.	
1503		CJ30030-054	Coil	"
1522		CE40140-000	W Coil	
1901		CJ30131-00A	Power Choke	
TRANSFORMER				
T1501		A76568-MA	H. Drive Transf.	
1502	△	CJ39587-00A	F. B. Transf.	
1531		C39084-A	Side Pin Transf.	
1901		A76567-MA	P. Drive Transf.	
DIODE				
D1501		HZS6.8E(B2)	Zener Diode	
1502		V19E	Si. Diode	
1504		V09E	"	
~7			"	
1508		U19B(V)	"	
1601		HZS10E(B3)	Zener Diode	
1902		U19B	Si. Diode	
1903		HZS6.8E(B2)	Zener Diode	
1904		HZS12E(B)	"	
1905		HZS6.8E(B2)	"	
1906		1SS133	Si. Diode	
1907		HZS13E(B1)	Zener Diode	
1908		1SS133	Si. Diode	
1909		"	"	
TRANSISTOR				
Q1401		2SA1015(Y,GR)	Transistor	
1501		2SC1685	Si. Transistor	
1502		2SA817A(O,Y)	"	
1503	△	2SC2335	"	
1601		2SD1133	Transistor	

CHASSIS AND CABINET PARTS LIST

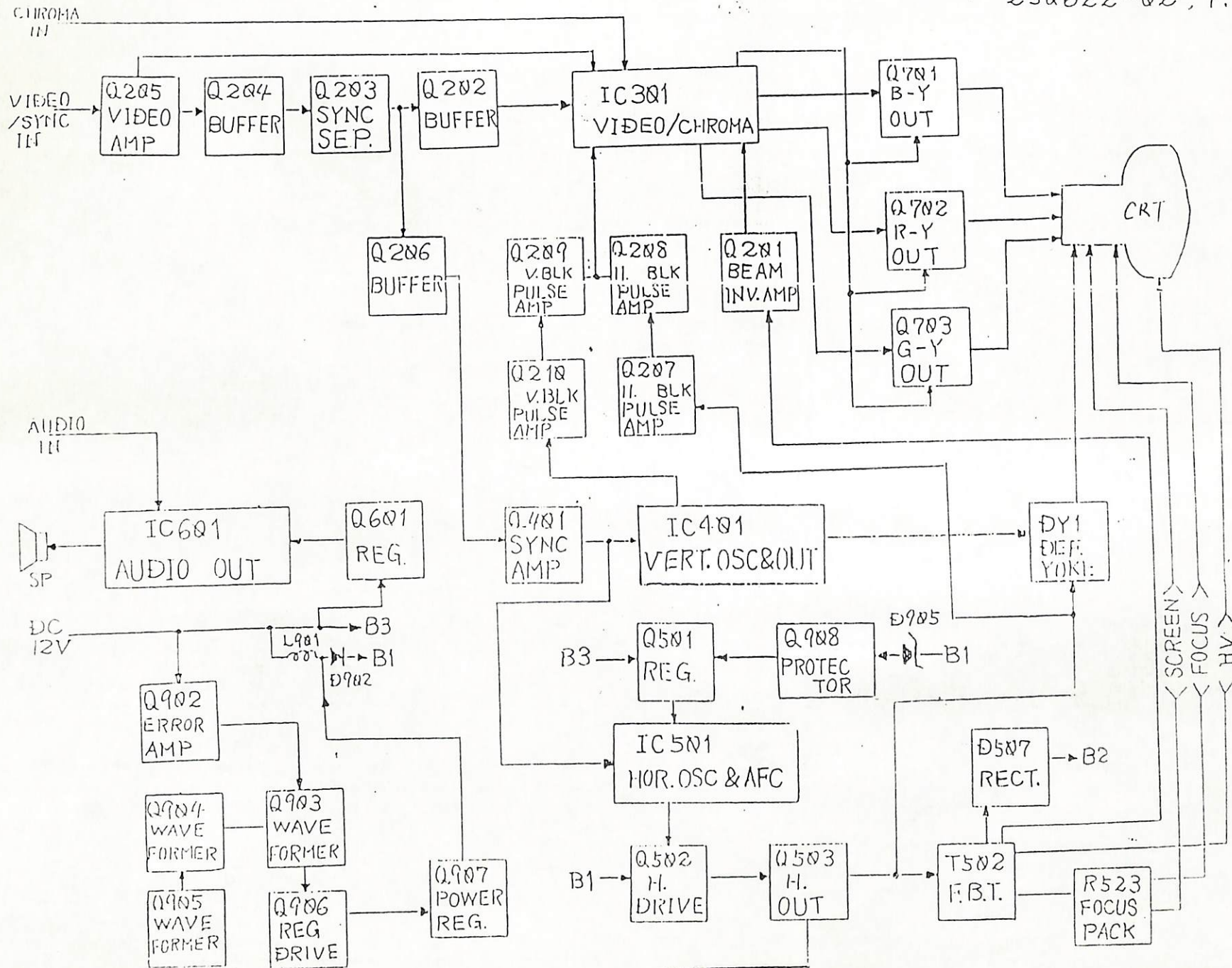
252822702

VIEW No.	SYMECL No.	△	PART No.	PART NAME	REMARK
1			CM10022-000	Front Panel Assy	
2			HSA0799-010	Speaker	
3			CM41779-A01	Protector Glass	
4	V01	△	150BMB22-AF	Picture Tube	
5	DY1	△	NCJ26210-00A	Def. Yoke	
6			—	Wedge	
7			—	PC Magnet	
8	T1502	△	CJ39587-000A	F. B. Transf.	
9		△	C39158-D	CRT Socket	
10	Q1907		2SD1118	Si. Transistor	Power regulator
11	R1523	△	CJ49510-257-28	Focus Pack	Focus Screen
12			A46445	Focus Cover	(X2)
13	C001	△	QCZ9217-102M	C Cap.	1000p 3KV P

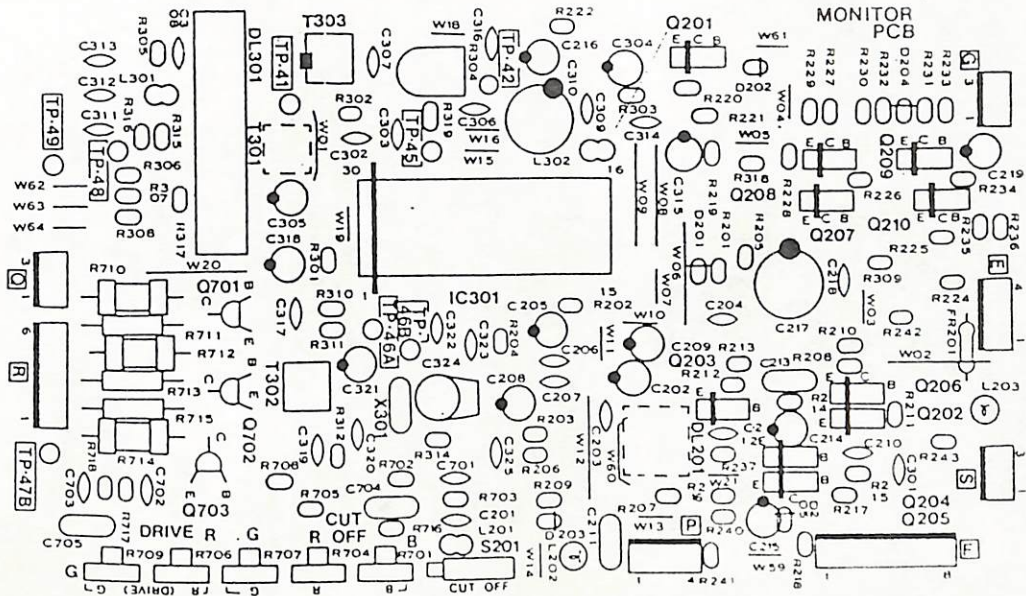
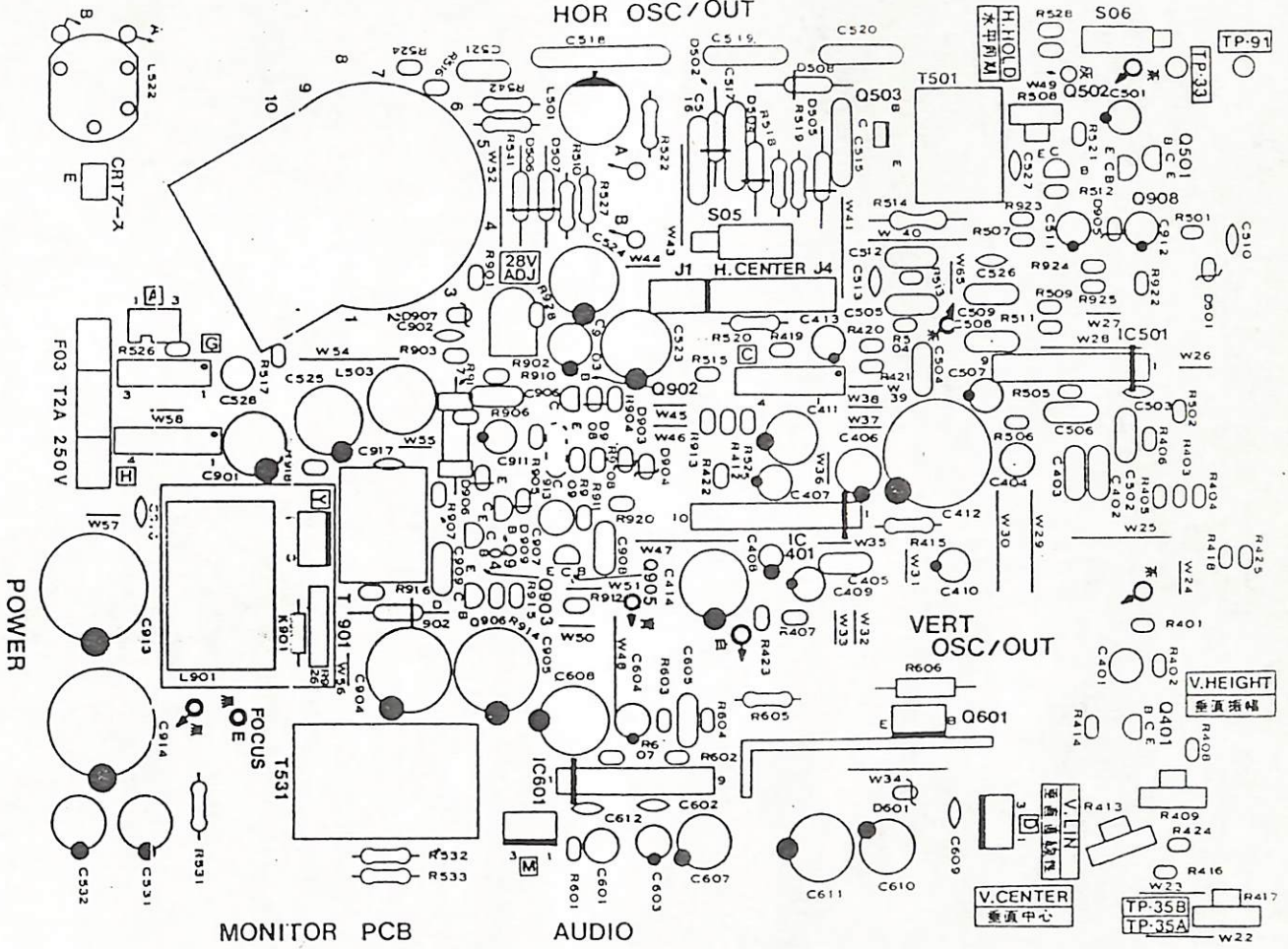
(EXPLODED VIEW)

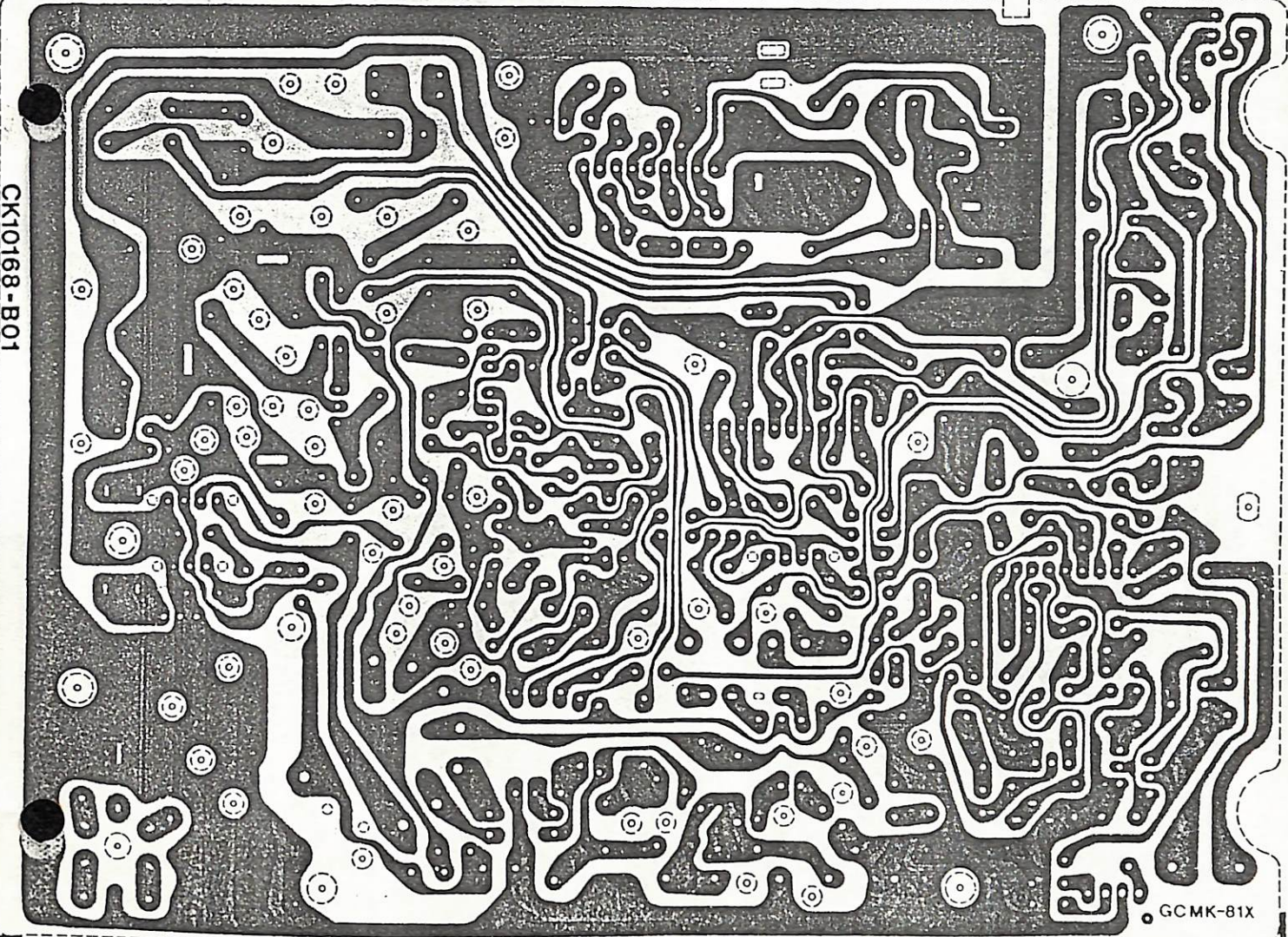
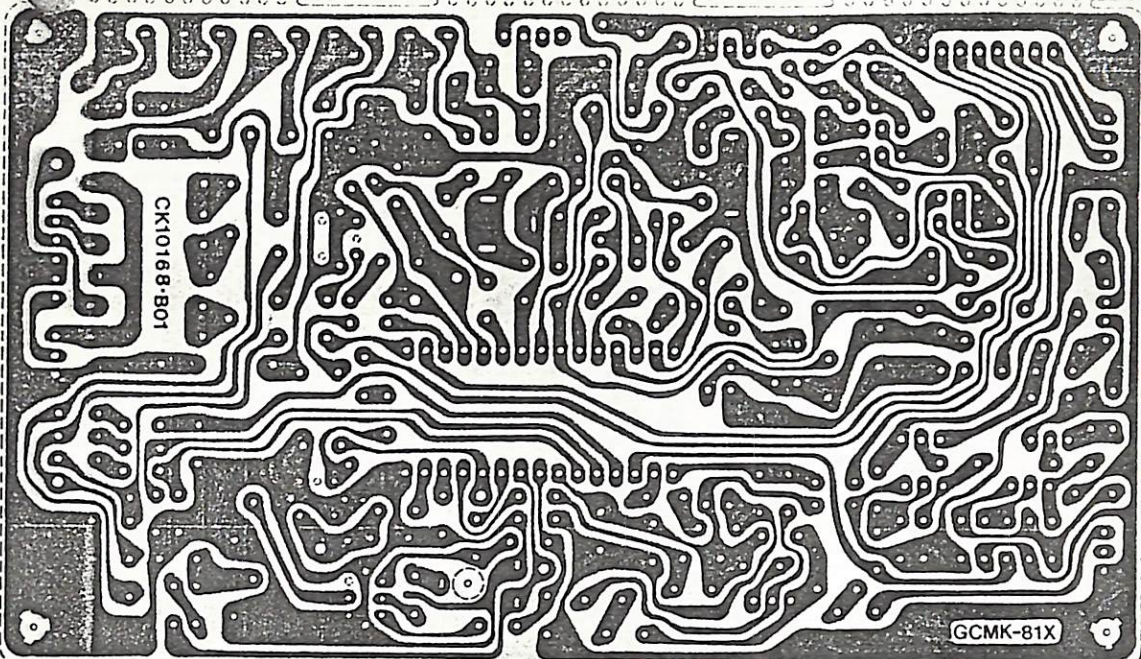


(No. 5463) 11

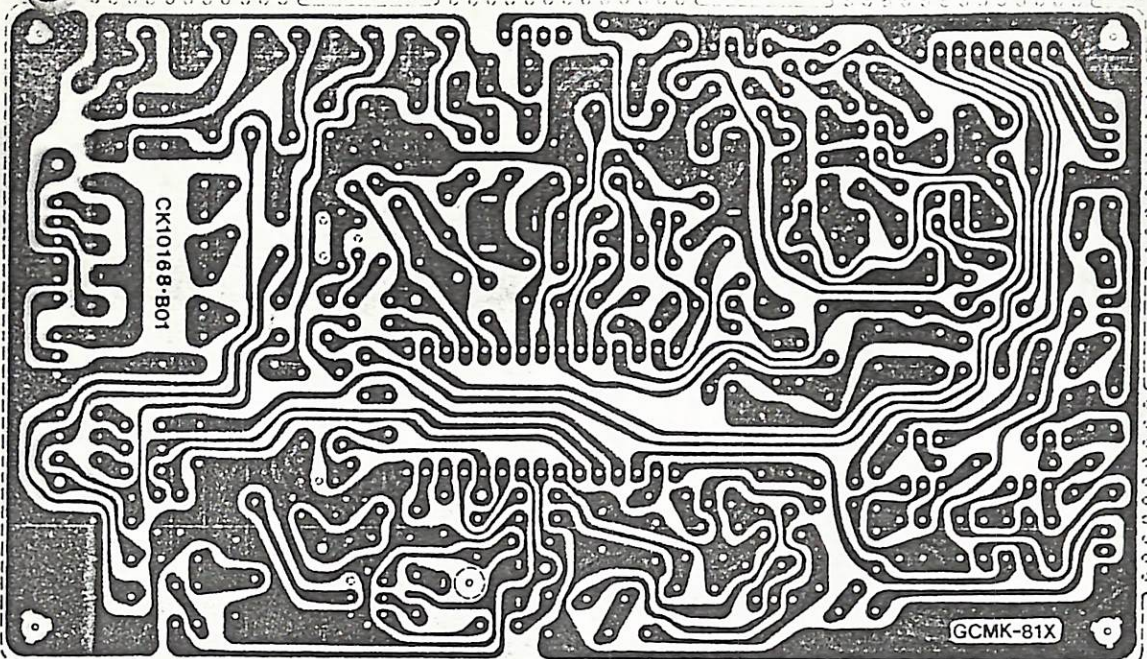


TRC-1223A



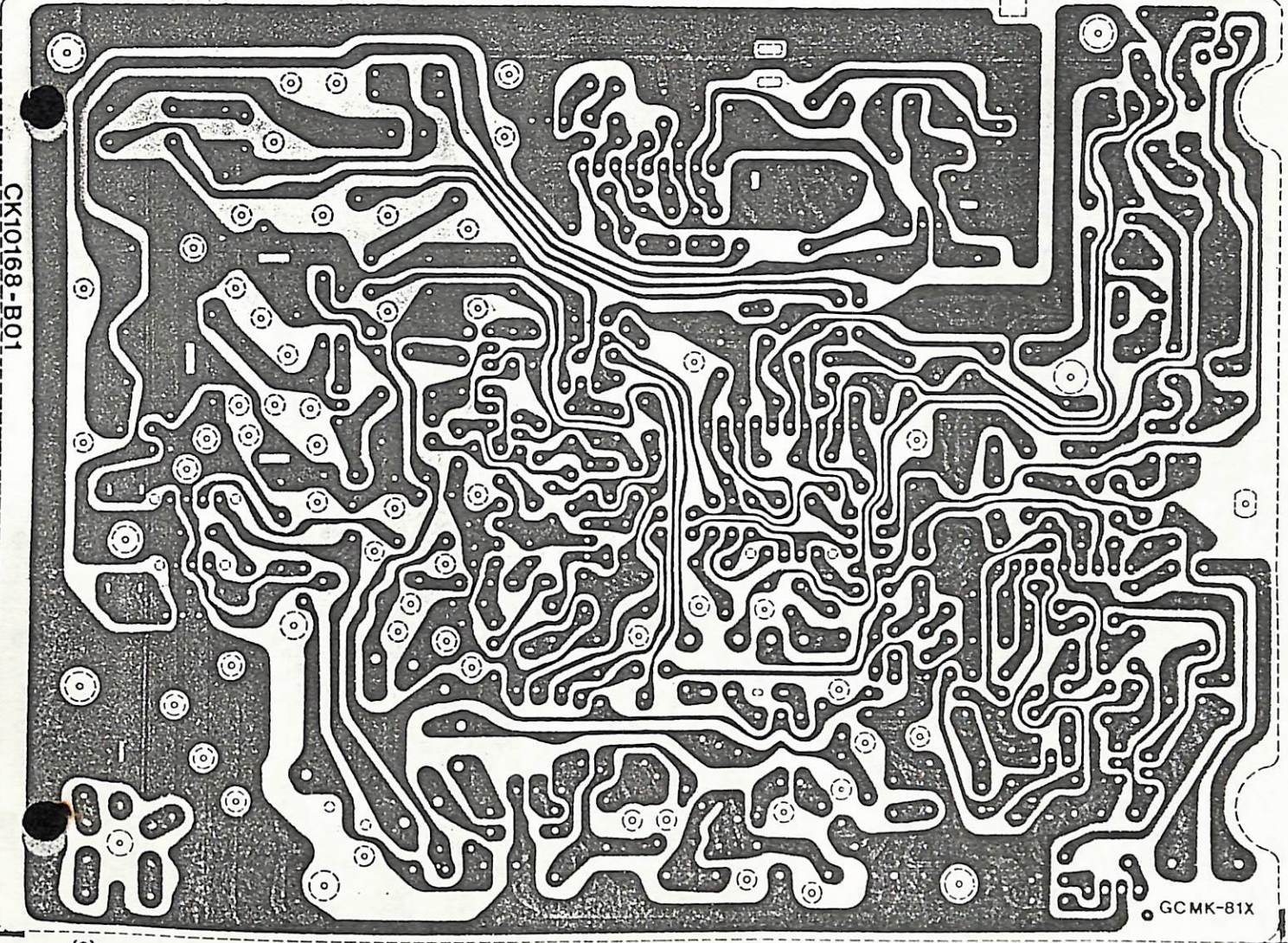


250622-02



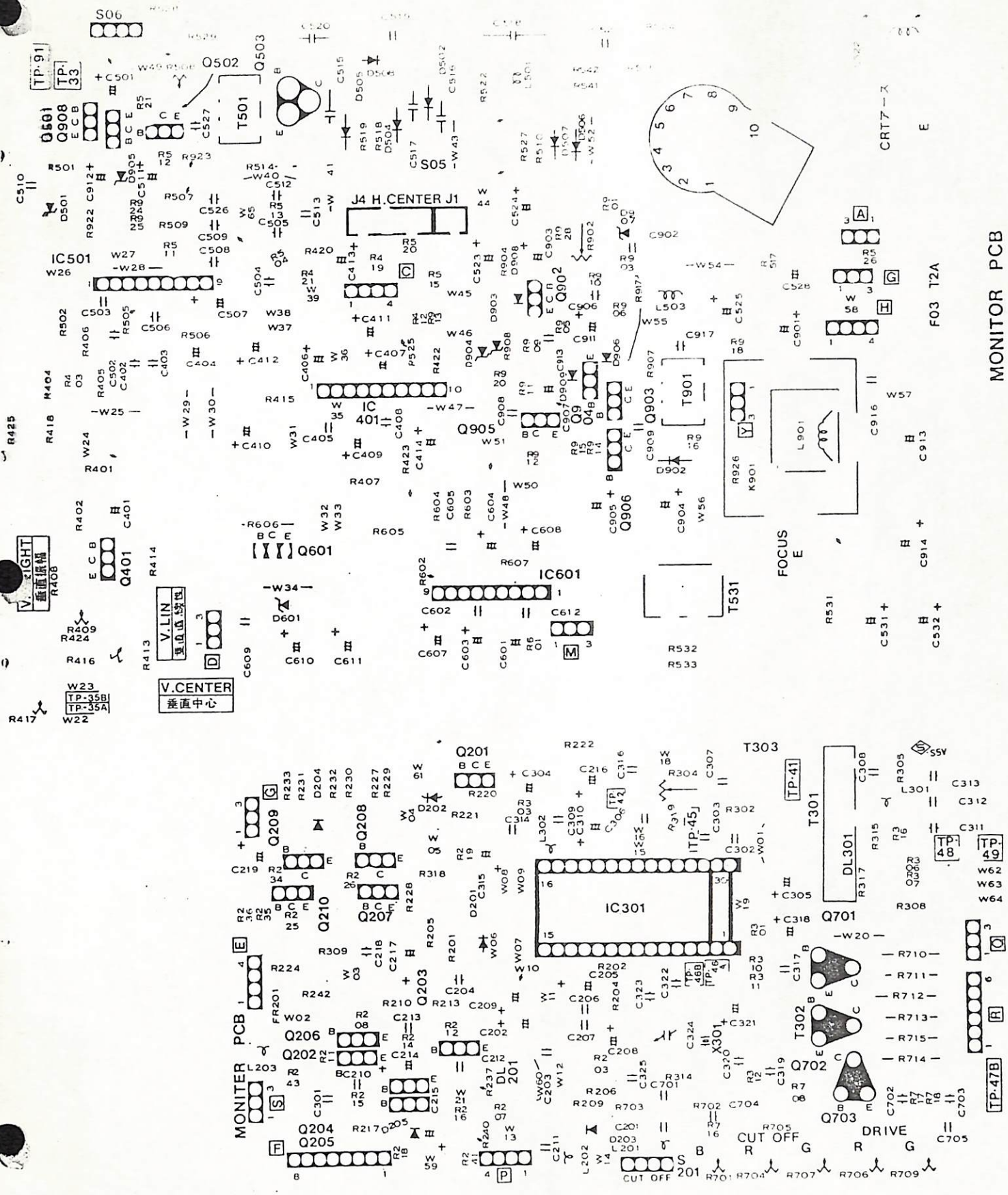
CK10168-B01

GCMK-81X



CK10168-B01

GCMK-81X



MONITOR PCB

F03 T2A

CRT7-X

C913

C914

C531+

C532+

C313

C312

C311

W62

W63

W64

W65

W66

W67

W68

W69

W70

W71

W72

W73

W74

W75

W76

W77

W78

W79

W80

W81

W82

W83

W84

W85

W86

W87

W88

W89

W90

W91

W92

W93

W94

W95

W96

W97

W98

W99

W100

W101

W102

W103

W104

W105

W106

W107

W108

W109

W110

W111

W112

W113

W114

W115

W116

W117

W118

W119

W120

W121

W122

W123

W124

W125

W126

W127

W128

W129

W130

W131

W132

W133

W134

W135

W136

W137

W138

W139

W140

W141

W142

W143

W144

W145

W146

W147

W148

W149

W150

W151

W152

W153

W154

W155

W156

W157

W158

W159

W160

W161

W162

W163

W164

W165

W166

W167

W168

W169

W170

W171

W172

W173

W174

W175

W176

W177

W178

W179

W180

W181

W182

W183

W184

W185

W186

W187

W188

W189

W190

W191

W192

W193

W194

W195

W196

W197

W198

W199

W200

W201

W202

W203

W204

W205

W206

W207

W208

W209

W210

W211

W212

W213

W214

W215

W216

W217

W218

W219

W220

W221

W222

W223

W224

W225

W226

W227

W228

W229

W230

W231

W232

W233

W234

W235

W236

W237

W238

W239

W240

W241

W242

W243

W244

W245

W246

W247

W248

W249

W250

W251

W252

W253

W254

W255

W256

W257

W258

W259

W260

W261

W262

W263

W264

W265

W266

HOW TO REMOVE FOR SERVICE

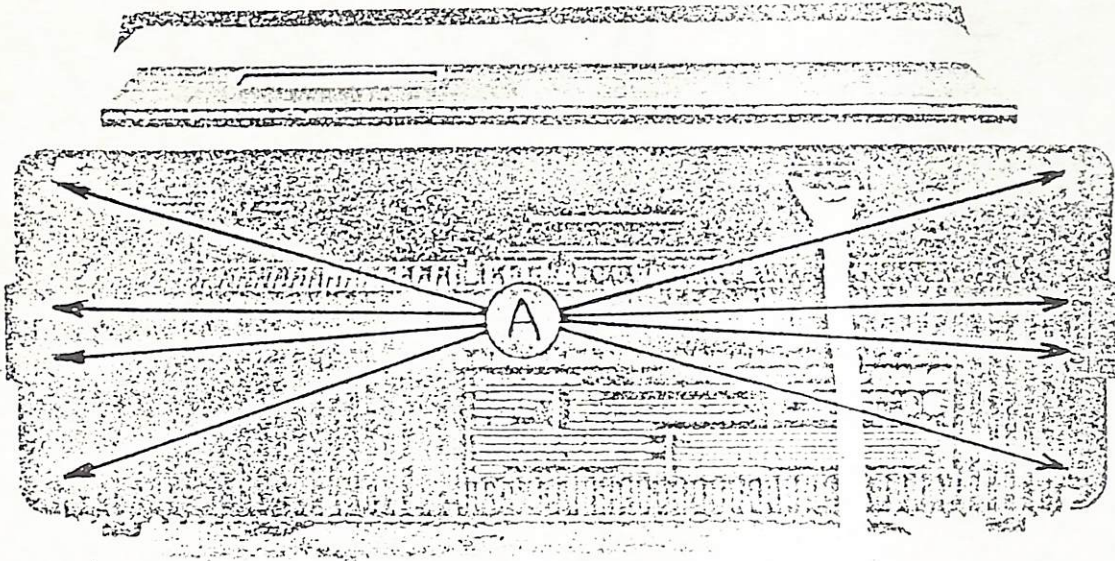


Fig. 1

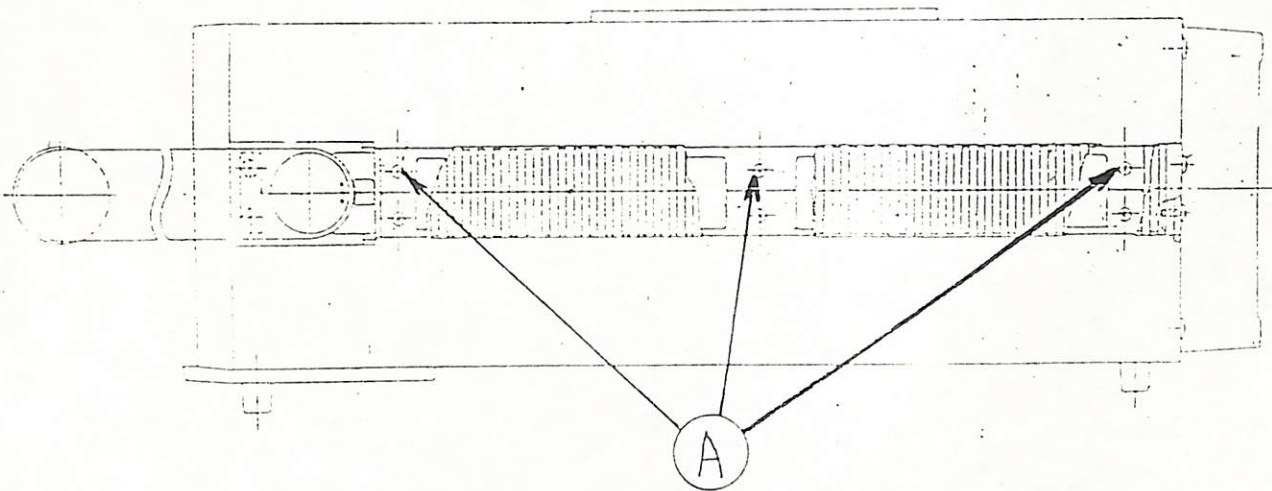
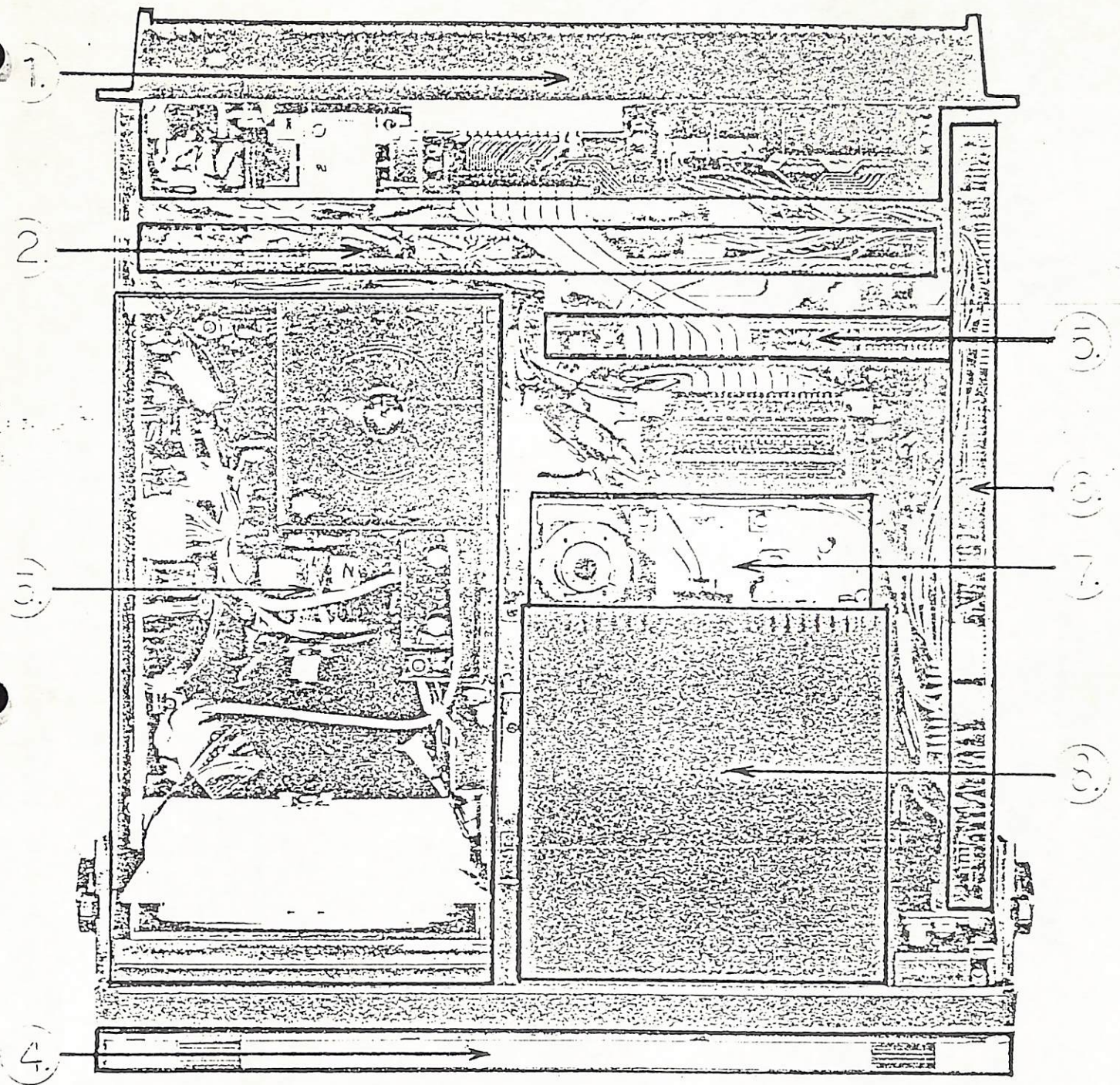


Fig. 2

How to remove the top cover assy

1. Remove six screws marked A in Fig. 1.
2. Remove two side ventilators B.
3. The top cover will come apart by removing six screws marked A (on both sides) in Fig. 2.

DETAILS OF INSIDE



1. BACK PANNEL
ASSY

2. PCB ASSY SX-64
FDD CONTROL

3. MONITOR, SX-64

4. KEY BOARD ASSY

5. PCB ASSY SX-64
I/O

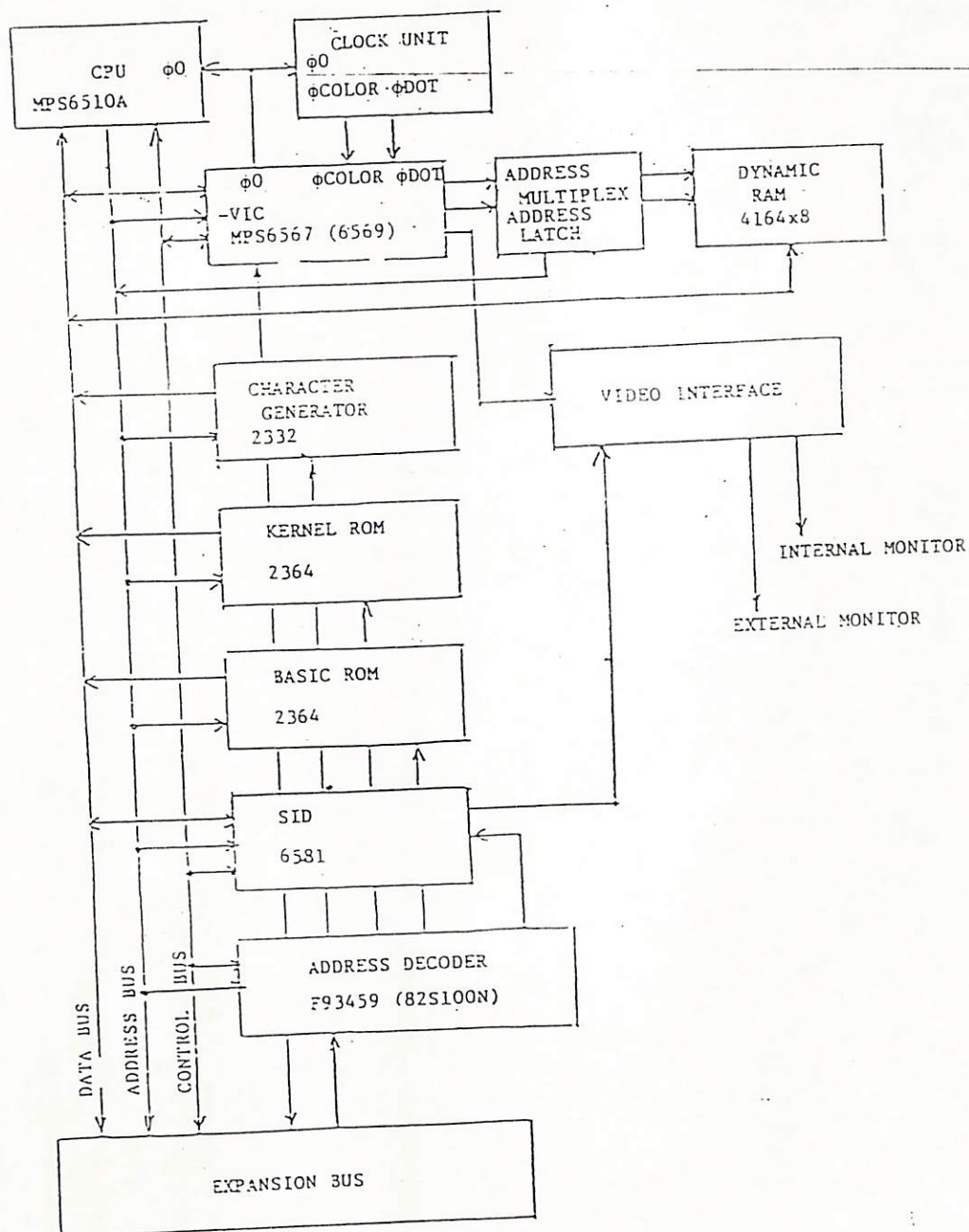
6. PCB ASSY SX-64
CPU

7. FLOPPY DISK
DRIVE

8. DISK POCKET

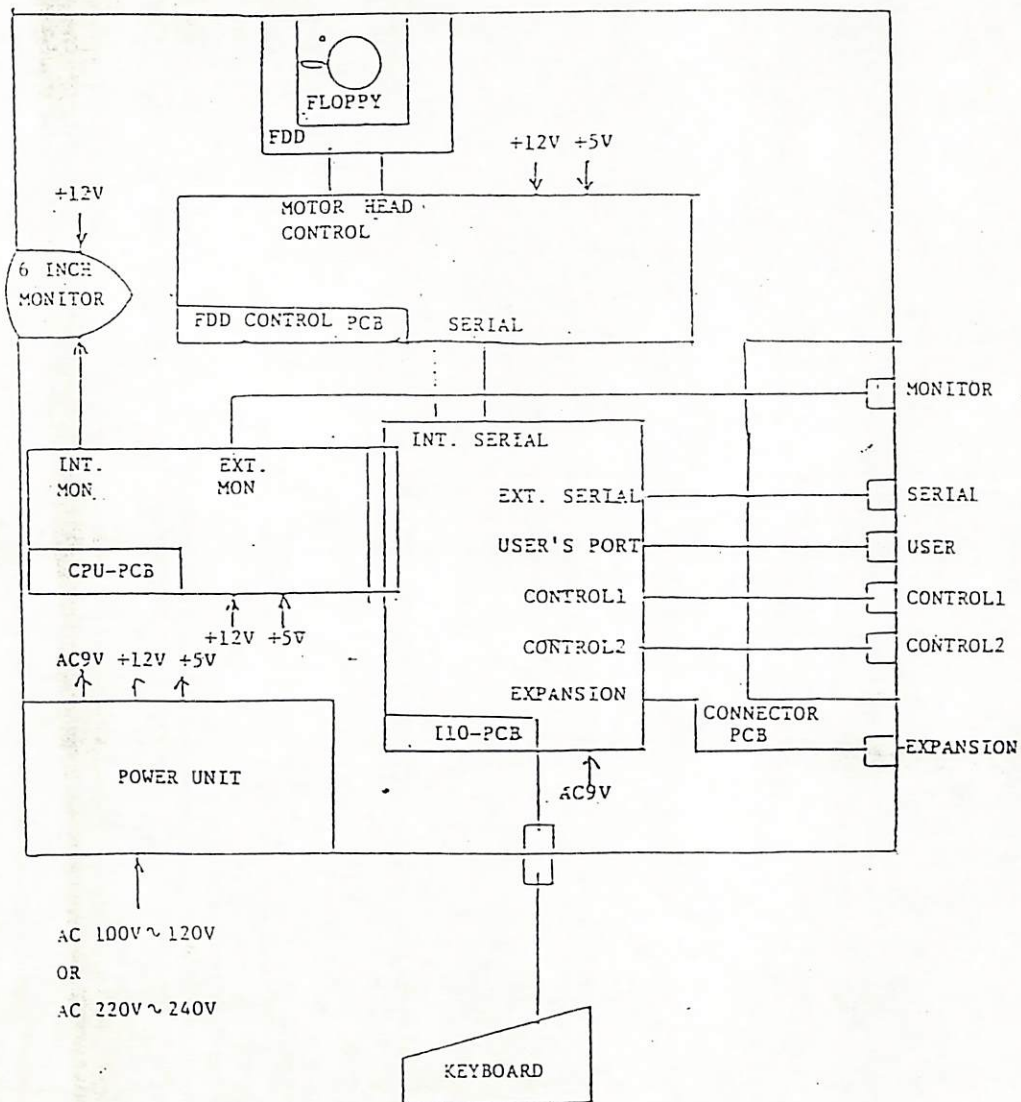
B. Operation of Each Block

B1. Internal block diagram of CPU-PCB

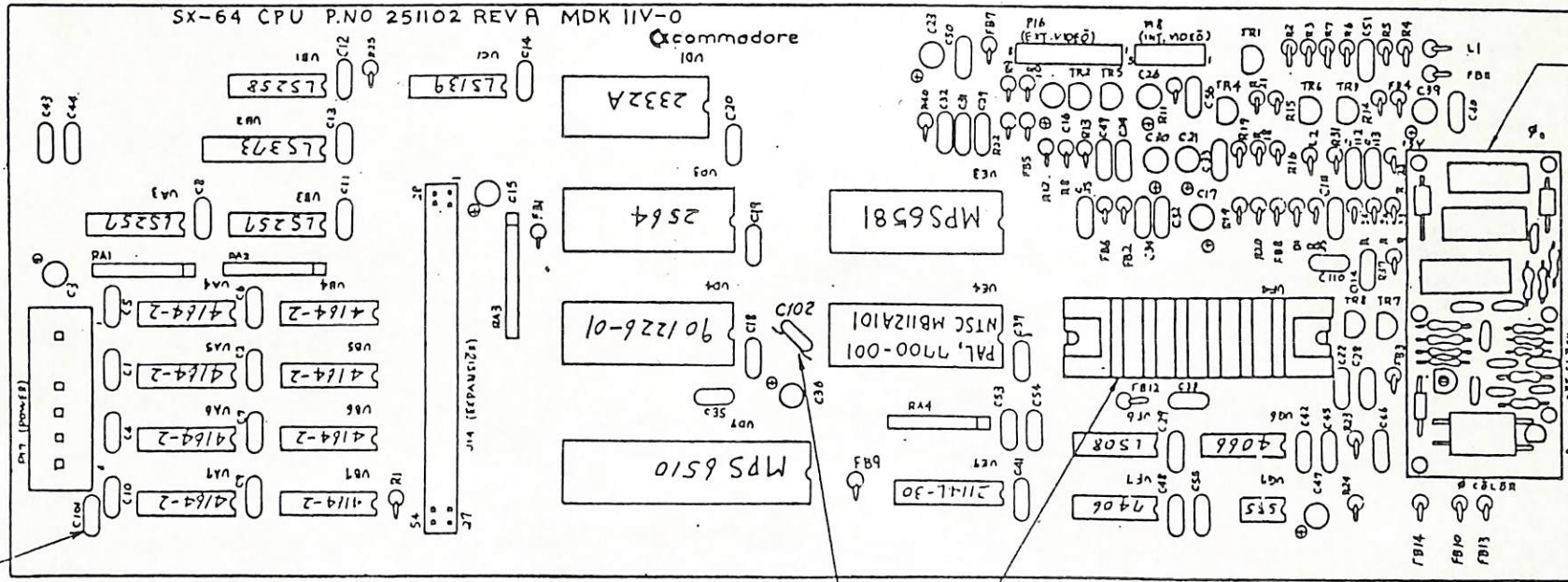


1. SX-64 OPERATION MANUAL

A. Block Diagram

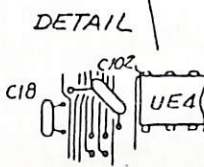
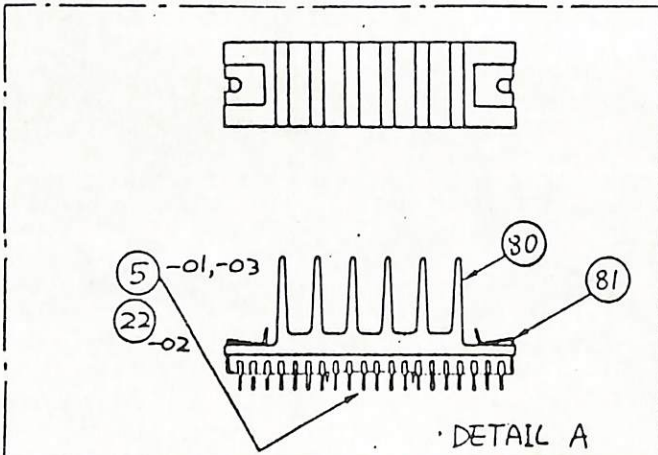


REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET		



25-01,03
26-02

(19)



SEE DETAIL A

UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS: X XX XXX L'S	DRAWN BY:	T. M. Zohata	DATE:	7.25.83	commodore
	CHKD:	CHIGIWA KA		8/15/83	
	ENGR:	R. G. G. G.		8-16-83	
	APPR:	R. G. G. G.		8-27-83	
MATERIAL:	USED ON:	SX-64	NEXT ASSY:	250619	SIZE: B
FINISH:					REV: B
					SCALE: NONE
					SHEET 5 OF 5

PART NO.	DESCRIPTION
250409-01	PCB ASSY, SX-64 I/O
250409-02	PCB ASSY, SX-64 I/O FOR CSA

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	10-17-83	<i>Yokel</i>
B		REVISED PER ECO 830484	11-22-83	<i>Yokel</i>

1. SHEET 4 OF 4 SIZE B
 ASSY DWG
 NOTES-UNLESS OTHERWISE SPECIFIED:

commodore	TITLE: PCB ASSY, SX-64 I/O	DRAWN BY: T. MIZOHATA	DATE: 7/30/83	ENGR: <i>R. Fujino</i>	DATE: 7/26/83	SIZE: B	DRAWING NUMBER: 250409
		CHKD: G. HAYASHI	DATE: 8/15/83	APPR: <i>Yokel</i>	DATE: 10/27/83		SHEET 1 OF 4

QUANTITY REQD PER PART / DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										02-01							
										R _F		C	251107-01	SCHEMATIC DIAGRAM, SX-64 I/O			
										R _F							
										1	1	B	901522-06	IC 7406 HXE INVERTER BUFFER	UD2		
										1	1	B	901521-06	↑ 74LS74A DUAL D-FLIP-FLOP	UE2		
										1	1	B	901523-03	↑ NE556 DUAL TIMER	UE3		
										1	1	B	901502-01	↓ 4066 QUAD ANALOG SW	UC1		
										2	2	B	906108-01	IC MPS6526 CIA	UB2,UB3		
										1	1	B	251108-01	CRYSTAL MODULE 60HZ	UA1	KYOSERA	
										1	1	B	902671-01	TRANSISTOR 2SC945	TR1		
										1	1	B	251071-28	CAPACITOR CERAMIC DISK 330pF/25V ±10% C7			
										9	9	B	251075-06	↑ 0.1μF/25V ±10% C1~5,8,9,10,11			
										Z	Z	B	900100-01	↓ ELECTROLYTIC 10μF/20V C12, C13			
										1	1	B	900464-36	CAPACITOR CERAMIC 0.47μF/25V C6		RADIAL	
										2	2	B	251068-88	RESISTOR 3.3KΩ 1/4W ±5% R10, R3			
										1	1	B	251068-59	RESISTOR 220Ω 1/4W ±5% CARBON R1		RADIAL	
										3	3	B	↑ -76	↑ 1KΩ ↑ R5, R6, R7			
										2	2	B	↓ -117	↓ 47KΩ ↓ R4, R11			
										1	1	B	251068-126	RESISTOR 100KΩ 1/4W ±5% CARBON R8		RADIAL	
										1	1	B	902442-22	RESISTOR PARK 1KΩ 7-comp 8PIN RA1			
										1	1	B	325513-01	COIL INDUCTOR 2.2μH L1		RADIAL	
										6	6	B	325563-01	FERRITE BEAD FB1~6		RADIAL	
										Z	Z	B	904150-06	IC SOCKET 40PIN UB2, UB3			

commodore

TITLE: PCB ASSY, SX-64 I/O

DRAWN BY: T. M. 20	DATE: 7/30/83	ENGR: G. R. Smith	DATE: 8-15-83	SIZE: B	REV: B	SHT: 2/4
CHKD: C. HADICATA	DATE: 8/16/82	APPR: J. D.	DATE: 10-27-83			

Z50409

QUANTITY REQD PER PART / DASH NO.										ITEM	Ø	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										22	38	B	250644-06	HEADER ASSY 6P, L-ANGLE	P11, P13		MOLEX 5046-06A
										11	40	B	250644-02	HEADER ASSY 2P, L-ANGLE	P15		MOLEX 5046-06A
										11	42	B	250645-01	HEADER ASSY 24P, STRAIGHT	P12		MITSUMI
										11	46	B	250646-27	HEADER ASSY 54P L-ANGLE	P14		FUJITSU FCN-725P054-AU/L
										11	50	B	250695-20	HEADER ASSY 40P, STRAIGHT	P10		FUJITSU FCN-724P040-AU/L
										11	52	B	250647-01	HEADER ASSY 50P, STRAIGHT	P9		FUJITSU FCN-724P050-AU/L
										1	59	B	251106-01	PCB FABRICATION, SX-64 I/O			MEIKO
										1	60	B	251106-02	FABRICATION, SX-64 I/O			MEIKO FOR CSA
										RFF RFF	61	B	251436-01	ARTWORK, SX-64 I/O			
										RFF RFF	62	B	251437-01	SILKSCREEN, SX-64 I/O			
										RFF RFF	63	B	251438-01	PCB SOLDER MASK, SX-64 I/O			
											64						
											65						
											66						
											67						
											68						
											69						
											70						
											71						
											72						
											73						
											74						

commodore	TITLE: PCB ASSY, SX-64 I/O	DRWN BY: T. M. 20 hda	DATE: 7/30/83	ENGR: R. S. S. S. S.	DATE: 8-15-83	SIZE: B	250409	REV: B	SHT: 3/4
		CHKD: G. W. G. G. G.	DATE: 8/15/83	APPR: S. S. S.	DATE: 8-27-83				

PART NO.	DESCRIPTION
250410-01	PCB ASSY, SX-64 FDD CONTROL
250410-02	PCB ASSY, SX-64 FDD CONTROL FOR CSA

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
A		PRODUCTION RELEASE	10-27-83	<i>J. H. L.</i>
B		REVISED PER ECO 830529	12-21-83	<i>J. H. L.</i>

1. SHEET 6 OF 6 SIZE B
 ASSY DWG
 NOTES-UNLESS OTHERWISE SPECIFIED:

commodore	TITLE: PCB ASSY, SX-64 FDD CONTROL	DRAWN BY:	DATE	ENGR.	DATE	SIZE	DRAWING NUMBER
		T. MIZOHATA	7/30/83	<i>R. G. H. L.</i>	9/26/83	B	250410
		CHKD:	DATE	APPR.	DATE		SHEET 1 OF 6
		C. HAGIWARA	8/13/83	<i>J. H. L.</i>	8-27-83		

QUANTITY REQD PER PART / DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										1							
										2							
										3	C	251110-01	SCHEMATIC, SX-64 FDD CONTROL				
										4							
										5	B	951435-01	IC MPS 6502A CPU	UBC4		MO5	
										6	B	901437-01	MPS 6522 VIA	UBC3,UDCS		MO5	
										7	B	325502-03	TMM 2016P RAM	UA1			
										8							
										9	B	901229-05AE	2564 DOS EP-ROM	UA3			
										10	B	325302-01	2364 ROM	UA4			
										11	B	325572-01	GATE ARRAY	UF5			
										12	B	901521-01	74LS00 QUAD NAND GATE	UC2			
										13	B	-02	04 HEX INVERTER	UB2			
										14	B	-30	14 HEX SCHMIT GATE	UF2			
										15	B	-17	42 DECODER	UD2			
										16	B	-32	86 QUAD EX-OR GATE	UD3,UD4			
										17	B	901521-26	74LS193 4BIT BINARY COUNTER	UG5			
										18	B	901522-30	7407 HEX NONINVERT BUFFER	UG4,UF3			
										19	B	-01	7417 HEX NONINVERT BUFFER				SUBSTITUTE FOR ITEM 18
										20	B	901522-06	7406 HEX INVERT BUFFER	UF3			
										21	B	901521-54	74LS197 4BIT BINARY COUNTER	UH5			
										22	B	901522-03	74177 4BIT BINARY COUNTER				SUBSTITUTE FOR ITEM 21
										23	B	901510-01	9602 ONE SHOT MULTI	UH4			
										24	B	901523-04	LM311 VOLTAGE COMPARATOR	UK4			
										25	B	901523-08	NE592 VIDEO AMP	UH1,UJ1			
										26	B	251111-01	MS4532 QUAD TRANSISTOR ARRY	UF2		MITSUBISHI	
										27	B	251111-02	IC ULN2069B QUAD TRANSISTOR ARRY	UF2			SUBSTITUTE FOR ITEM 26
										28							
										29	B	902671-01	TRANSISTOR NPN 2SC945	TR1,TR7			
										30	B	902673-01	NPN 2SC1815				
										31	B	902720-01	PNP 2SA673	TR6			SUBSTITUTE FOR ITEM 29
										32	B	902717-01	PNP 2SA733	TR2~5			
										33	B	902744-01	TRANSISTOR PNP 2SA1015				SUBSTITUTE FOR ITEM 32
										34							
										35	B	901522-05	IC 7404 HEX INVERTER	UF3			
										36							

commodore

TITLE: PCB ASSY, SX-64 FDD CONTROL

DRWN BY: T. Mizuhata
CHKD: G. Higashiyama

DATE: 7/30/83
DATE: 8/15/83

ENGR: G. Higashiyama
APPR: [Signature]

DATE: 8-16-83
DATE: 1-27-83

SIZE: B

250410

REV: B

SHT: 2/6

QUANTITY REQD PER PART / DASH NO.										ITEM	QS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
										88	37	B	900850-05	DIODE SIGNAL WG713C	D1~6, DR. D10		RADIAL
										55	38	B	900850-01	↓ DIODE SIGNAL IN4148			SUBSTITUTE FOR ITEM 37 RADIAL
										11	39	B	325505-01	↓ DIODE ZENER HZ3C-2	D9		RADIAL
										11	40	B	325506-01	DIODE ZENER HZ5C-2	D7		RADIAL
											41						
										11	42	B	325566-01	CRYSTAL MODUE 16MHZ ±50PPM			
										55	43	B	325566-02	CRYSTAL MODUE 16MHZ ±100PPM			SUBSTITUTE ITEM 42
										11	44	B	325513-01	COIL INDUCTOR 22uH	L6		RADIAL
										22	45	B	↓ -02	↓ COIL INDUCTOR 22uH	L4.5		
										33	46	B	325513-03	COIL INDUCTOR 10uH	L1~3		
											47						
										1010	48	B	325563-01	FERRITE BEAD	FB1~10		RADIAL
											49						
										33	50	B	900100-01	CAP ELECTROLYIC 10uF/25V	C18, 32, 33		RADIAL
										11	51	B	↓ -42	↑ CAP ELECTROLYIC 33uF/50V	C3		
										11	52	B	900100-40	ELECTROLYIC 1uF/25V	C31		
										22	53	B	900402-17	TANTALUM 0.47uF/25V	C6, 7		
										11	54	B	251072-24	CERAMIC DISC 47PF 50V	C17		
										22	55	B	↓ -28	↑ CERAMIC DISC 330PF 50V	C15, 12		
										33	56	B	251072-32	CERAMIC DISC 680PF 50V	C14, 16, 5		
										22	57	B	251074-01	CERAMIC DISC 1000PF 25V	C9, C50		
										22	58	B	251074-09	↓ CERAMIC DISC 2022uF 25V	C10, 11		
										2525	59	B	251075-06	CAP CERAMIC DISC 0.1uF 25V	C1, 2, 4, 8, 13	22, 23, 24, 25, 26, 27, 28, 29, 30	
											60						
										44	61	B	904150-06	IC SOCKET 40PIN	U8C4, U8C5	6502-1, 6502-2, PLA-1 (UFS, LIBC3)	
										22	62	B	904153-03	↓ IC SOCKET 24PIN	UA4, UA1	2364-1, 2016-1	
										11	63	B	904153-04	IC SOCKET 28PIN	UA3	2364-1	
										11	64	B	250644-06	HEADER ASSY 6P, L-ANGLE	P19	MOLEX 5046-06A	
										11	65	B	250644-02	↑ HEADER ASSY 2P, L-ANGLE	P22	MOLEX 5046-02A	
										11	66	B	250644-01	↑ HEADER ASSY 5P, L-ANGLE	P20	MINI-STRIP HIF3G-5P-2.54DS	
										11	67	B	250644-15	↓ HEADER ASSY 15P, L-ANGLE	P21	MOLEX 5046-15A	
										11	68	B	250643-06	HEADER ASSY 6P, STRAIGHT	P23	MOLEX 5285-06A	
											69						
											70						
											71						
											72						

commodore

TITLE: PCB ASSY, SX-64 FDD CONTROL

DRAWN BY: T. Mizobata	DATE: 8/5/83	ENGR: S. Fujita	DATE: 8-16-83	SIZE: B	REV: B	SHT: 3/6
CHKD: C. YAGISAKA	APPR: 7/2					

QUANTITY REQD PER PART / DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES			
										1	1	73	B	251068-43	RESISTOR 47Ω 1/4W±5% CARBON	R50		RADIAL	
										4	4	74	↑	-55	150Ω	R21,22,37,38			
										3	3	75		-59	220Ω	R19,20,33			
										3	3	76		-63	330Ω	R27,34,36			
										2	2	77		-64	360Ω	R28,31			
										6	6	78		-67	470Ω	R5,7,8,13	26	27	
										1	1	79		-68	510Ω	R29			
										2	2	80		-71	680Ω	R1,6			
										9	9	81		-76	1kΩ	R35,40,41	42	43	46, 47, 48, 49
										1	1	82		-80	1.5kΩ	R4			
										1	1	83		-101	10kΩ	R44			
										6	6	84		-84	2.2kΩ	R9,12,14,24	25		
										4	4	85		-109	22kΩ	R2,15,16,30			
										1	1	86		↓ -126	100kΩ	R39			
										1	1	87		251068-51	100Ω 1/4W±5% CARBON	R45			
										1	1	88		251265-49	91Ω 1/4W±1% METALOX	IDE, R3			
										1	1	89		-51	100Ω	R11			
										1	1	90		-55	150Ω	R10			
										2	2	91	↓	↓ -99	RESISTOR 9.1kΩ 1/4W±1% METALOX	IDE, R7, 18		RADIAL	
										1	1	92	B	251265-98	8.2kΩ 1/4W±5% CARBON	R32			
												93							
												94							
										1	1	95	B	251109-01	PCB FABRICATION, SX-64 FDD				
										1	1	96	↑	251109-02	PCB FABRICATION, SX-64 FDD			FOR CSA	
										REF	REF	97		251433-01	PCB ARTWORK, SX-64 FDD				
										REF	REF	98	↓	251434-01	PCB SILK SCREEN, SX-64 FDD				
										REF	REF	99	B	251435-01	PCB SOLDER MASK, SX-64 FDD				
												100							
												101							
												102							
										1	1	103	B	251584-08	WRAPPING WIRE AWG28 L=05MM				
										1	1	104	B	251584-09	WRAPPING WIRE AWG28 L=95MM				
												105							
												106							
												107							
												108							

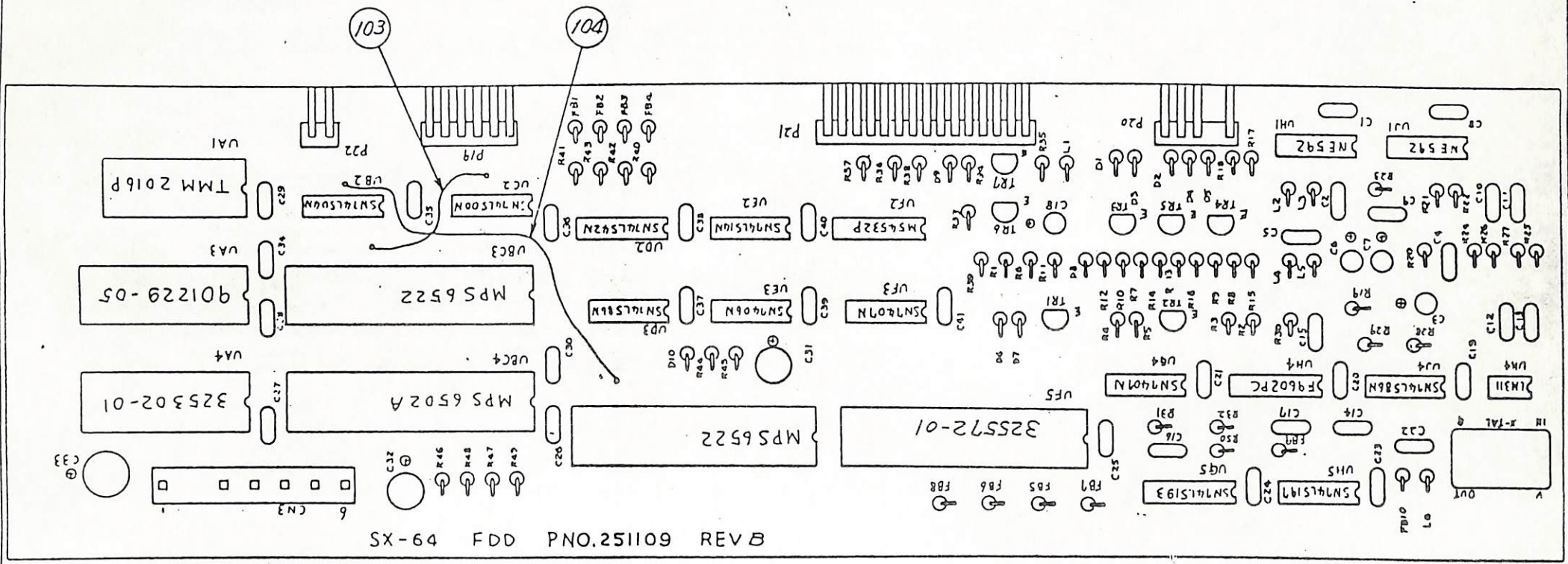
commodore	TITLE: PCB ASSY. SX-64 FDD CONTROL	DRWN BY: T. Mizohata	DATE: 7/30/83	ENGR: A. Guichin	DATE: 8-16-83	SIZE: B	REV: B	SHT: 4/6
		CHKD: C. HAGISA KA	DATE: 8/15/83	APPR: [Signature]	DATE: 10-27-83			

QUANTITY REQD PER PART/DASH NO.										ITEM	DS	PART NUMBER	DESCRIPTION	REF DES	BEND	NOTES	
									0201	S S	109 B	901521-04	1C 74LS04	HEX INVERTER	UF3		SUBSTITUTE FOR ITEM 35
										S S	110 B	901522-19	1C 7414	HEX SCH INVERTER	UF3		SUBSTITUTE FOR ITEM 35
										S S	111 B	901521-30	1C 74LS14	HEX SCH INVERTER	UF3		SUBSTITUTE FOR ITEM 35
											112						
										S S	113 B	901522-05	1C 7404	HEX INVERTER	UB2		SUBSTITUTE FOR ITEM 13
										S S	114 B	901522-19	1C 7414	HEX SCH INVERTER	UB2		SUBSTITUTE FOR ITEM 13
										S S	115 B	901521-30	1C 74LS14	HEX SCH INVERTER	UB2		SUBSTITUTE FOR ITEM 13
											116						
											117						
										S S	118 B	900850-02	DIODE SIGNAL	1S2473	D1-6,8,10		SUBSTITUTE FOR ITEM 37
										S S	119 B	-07		1S 953(3)			
										S S	120 B	-08		1S 953(7)			
										S S	121 B	900850-14	DIODE SIGNAL	1S 1588	D1-6,8,10		SUBSTITUTE FOR ITEM 37
											122						
											123						
											124						
											125						
											126						
											127						
											128						
											129						
											130						
											131						
											132						
											133						
											134						
											135						
											136						
											137						
											138						
											139						
											140						
											141						
											142						
											143						
											144						
											145						
											146						

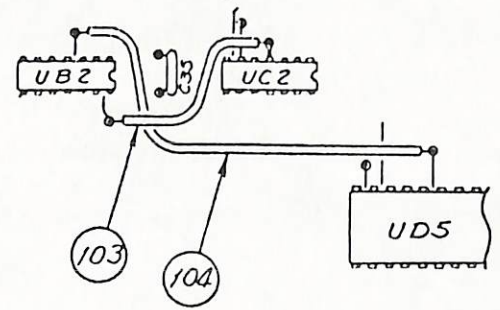
044	commodore	TITLE:	PCB ASSY, SX-64 FDD CONTROL	DRAWN BY:	R. Jida	DATE:	12-20-83	ENGR:		DATE:		SIZE:	B	DRAWING NUMBER:	250410	REV:	B
		CHKD:		APPR:		SHEET:	5 OF 6										

LTR		ZONE		DESCRIPTION	DATE	APPROVED
				SEE SHEET		

REVISIONS



DETAIL OF ITEM 103 & 104 SOLDERING



UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS: X .XX .XXX .4'S	DRAWN BY: T.M. Zahata		DATE 7.12.83	
	CHKD: C. HAGIWARA		8.15.83	
MATERIAL:		USED ON SX-64		NEXT ASSY 250410
FINISH:				
commodore			PCB ASSY; SX-64 FDD CONTROL	
SIZE B	250410		REV B	
SCALE NONE			SHEET 6 OF 6	

045

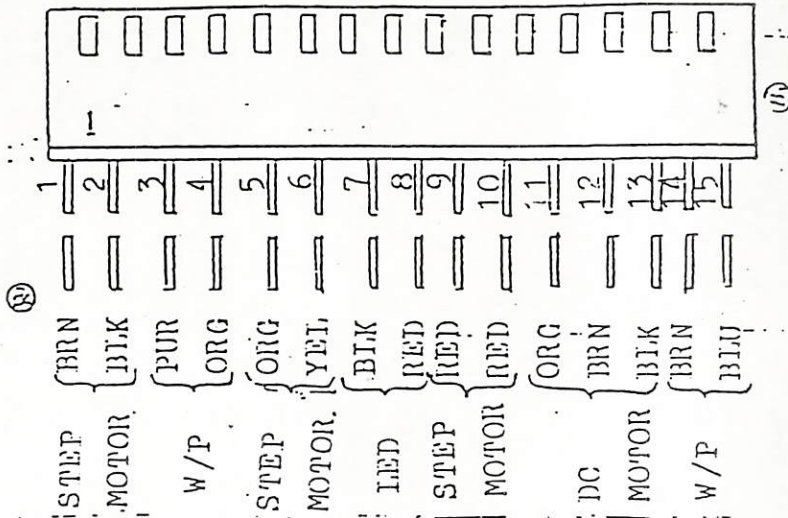
CLASS. NO.

TITLE

Control Line

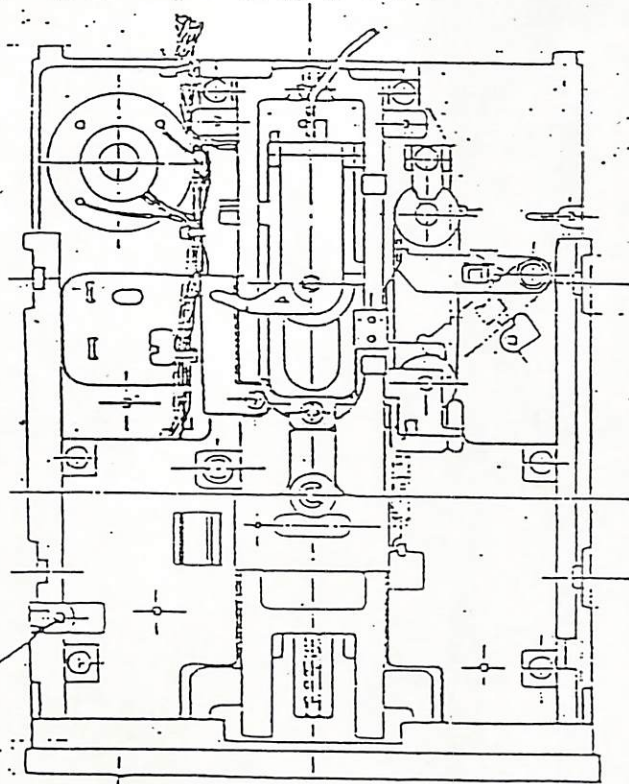
FUNCTION

Nail to lock



DC MOTOR {
 BLK RETURN
 BRN +12V
 ORG MOTOR ON

STEP MOTOR {
 RED +12V
 RED +12V
 YEL C
 ORG A
 BLK B
 BRN D



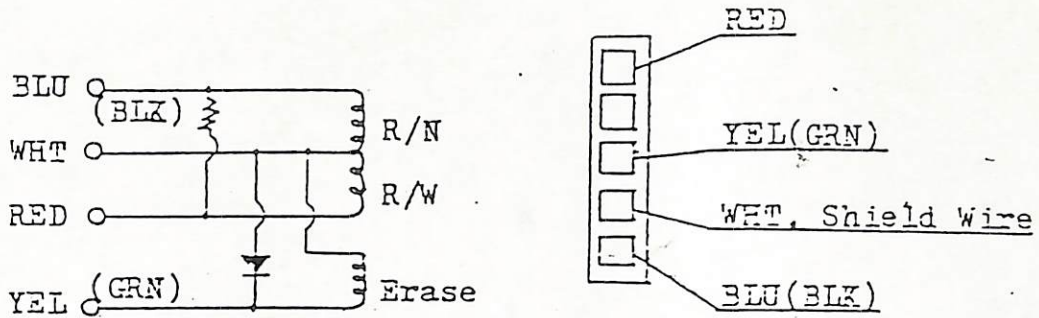
W/P
 TRANSISTOR
 ORG (+)
 PUR (-)
 DIODE
 BRN (+)
 BLU (-)

LED
 RED (+)
 BLK (-)

* Recommended connector
 Molex ~~5054NA~~ 5046NA
 5045NA

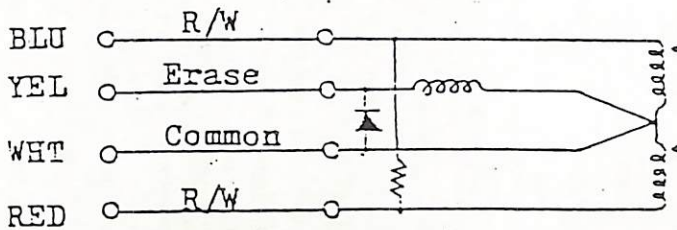
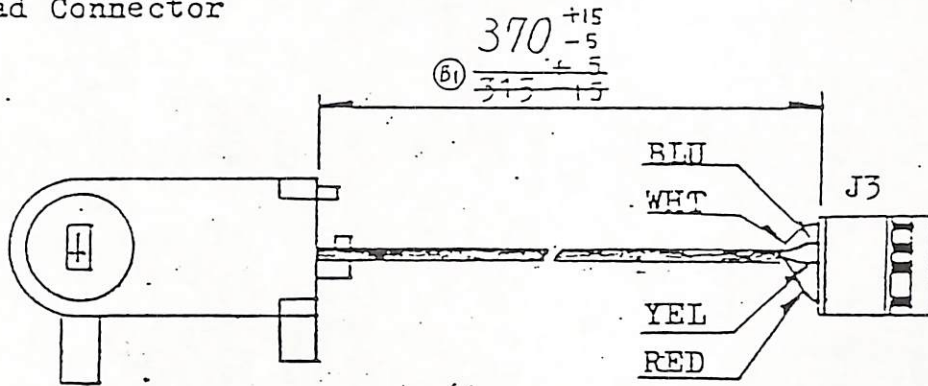
					APPD.	CHKD.	DSCD.	TITLE	OR
							Feb. 22 '81		
							Y. Higashi	DOCUMENT NO.	(/)
PAGE	SYMB.	DATE	APPD.	CHKD.	DSCD.				

Connector Pin

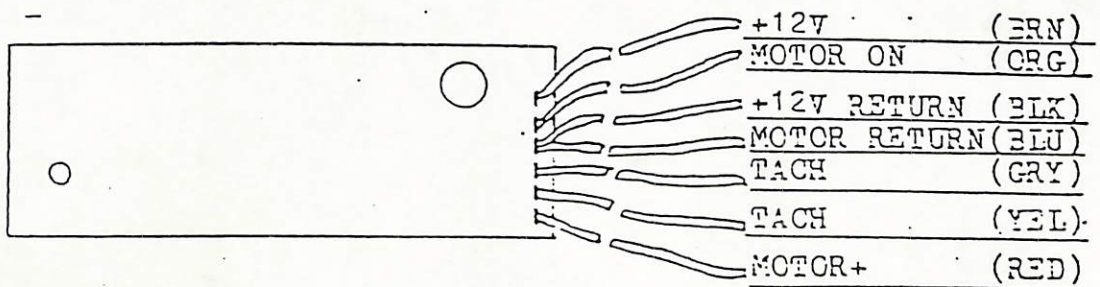


Housing
Hirose HIF3G-5S-254C
Terminal
Hirose HIF3-2428SCFA

Head Connector



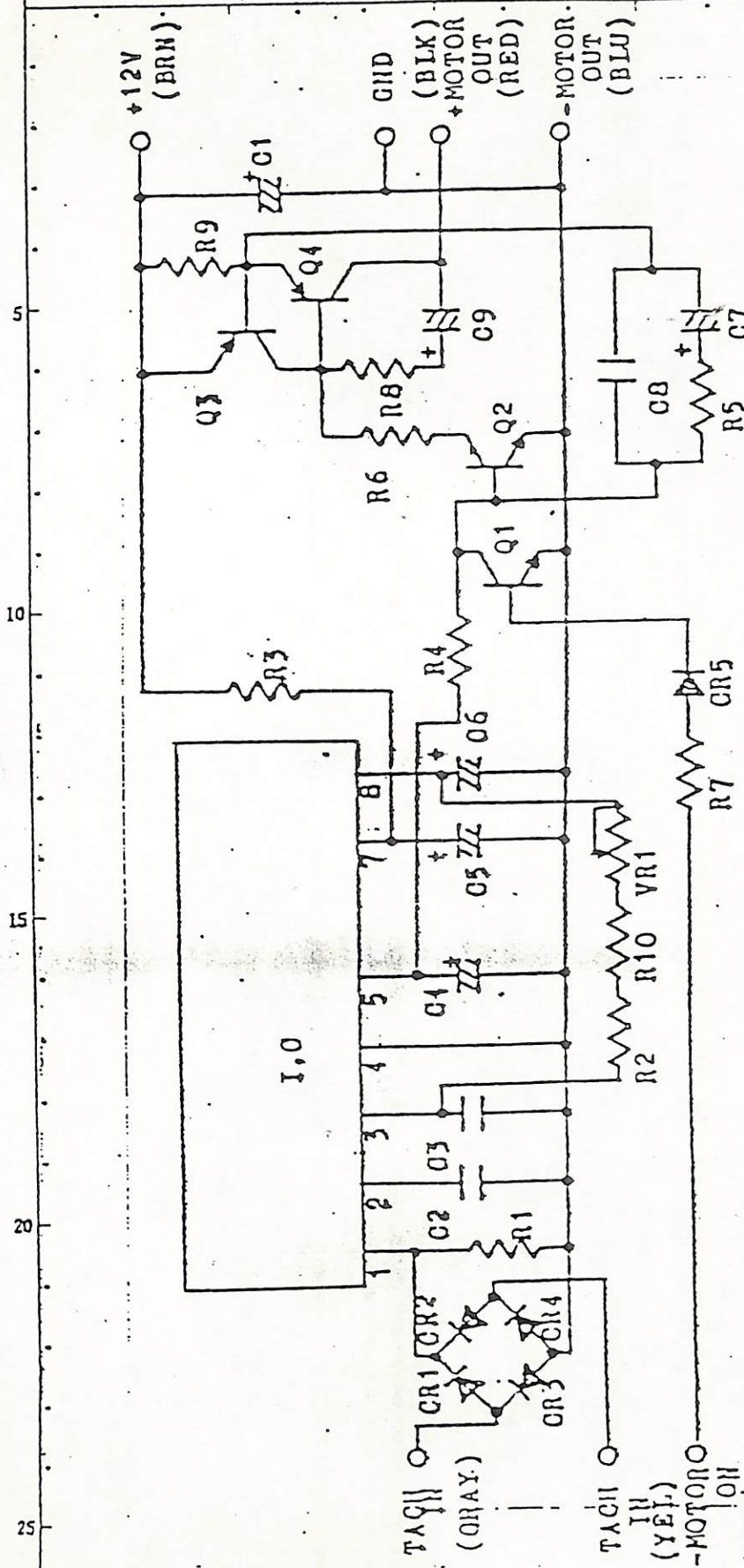
DC Motor Control P.C.B



CLASS. NO.

TITLE

Motor control assembly



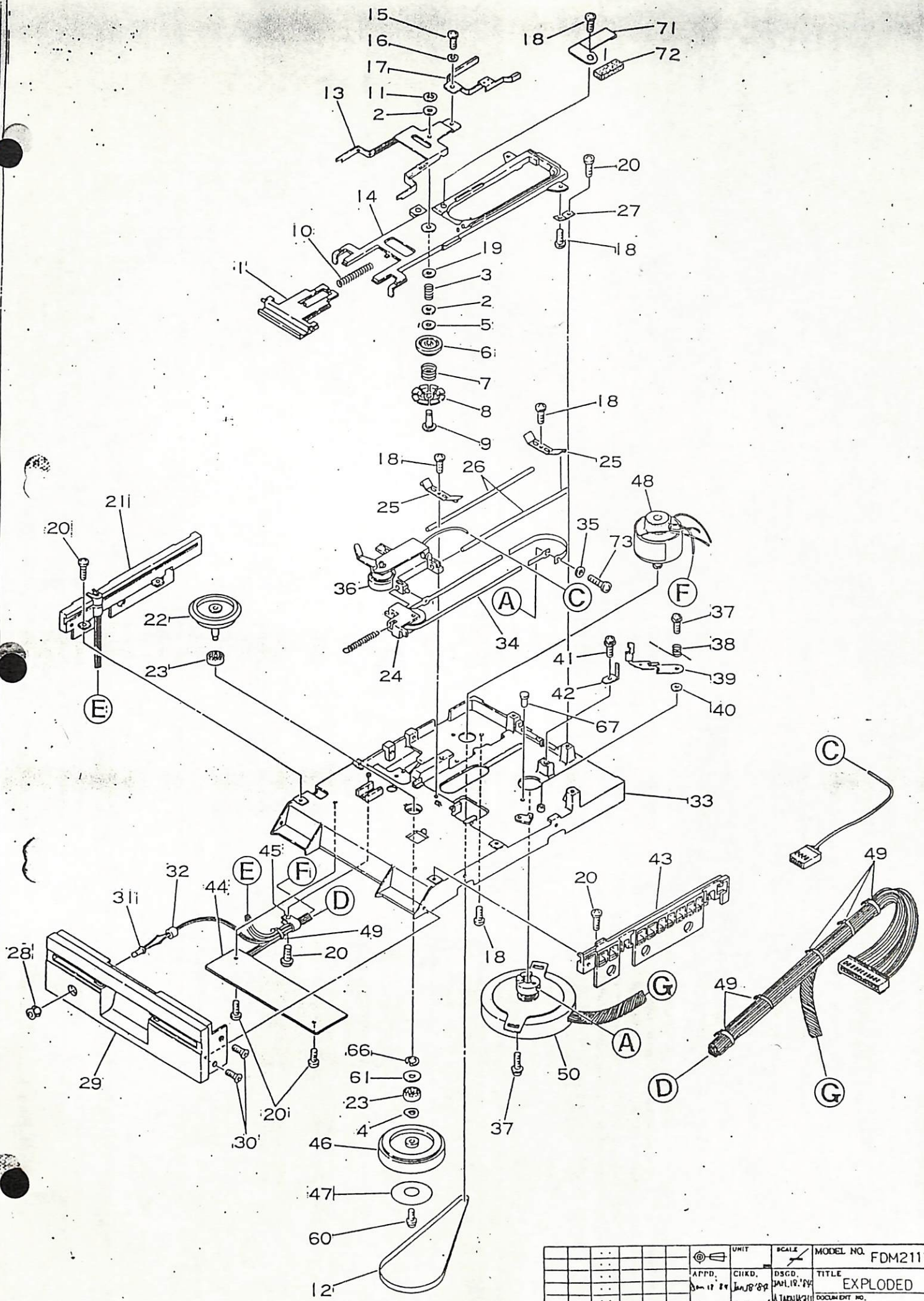
Symbol	Description	Symbol	Description
I,0	CX-065B	R8	Resistor, 150 Ω /4W
Q1	Transistor	R9	Resistor, 0.68 Ω 2W
Q2	Transistor	R10	Resistor, 5.1k Ω /8W
Q3	Transistor	VR1	Variable Resistor, 20k Ω
Q4	Transistor	C1,5,6	Capacitor, 10 μ F35V
CR1,2,3,4,5	Diode	C2	Capacitor, 0.0047 μ F50V
R1,7	Resistor, 1k Ω /4W	C3	Capacitor, 0.033 μ F50V
R2	Resistor, 68k Ω /4W	C4,9	Capacitor, 0.47 μ F35V
R3	Resistor, 220 Ω /4W	C7	Capacitor, 2.2 μ F16V
R4	Resistor, 3.3k Ω /4W	C8	Capacitor, 0.068 μ F50V
R5	Resistor, 2.7k Ω /4W		
R6	Resistor, 820 Ω /4W		

APPD. _____ CHKD. _____ DSGD. _____ TITLE _____

PAGE _____ SYMB. _____ DATE _____ APPD. _____ CHKD. _____ DSGD. _____

July 22, 82
C.H. 82

DOCUMENT NO. _____



ZONE	STWB	DATE	APPD.	CHKD.	DSGD.	UNIT	SCALE	MODEL NO.
						UNIT	SCALE	FDM2111-E
						APPD.	CHKD.	TITLE
						30-11-89	30-11-89	EXPLODED VIEW
								DOCUMENT NO.

ALPS ELECTRIC CO., LTD.

FOLD

FOLD

NO.	PART NO.	NAME	NO.	PART NO.	NAME	NO.	PART NO.	NAME
1	BH212-A	Door Assy.	25	HY616	Guide Shaft Keeper	49	GR123	Band
2	HY623	Collar	26	EY142	Guide Shaft	50	QY153-A	Stepper Assy.
3	WS114	Clamp Spring	27	HY712	Hinge Spring	51		
4	GW115	Wave Washer	28	BG111	LED Holder	52		
5	GW114	Thrust Washer	29	BH131	Front Panel	53		
6	BJ122-A	Collet Assy.	30	2A121064	Screw	54		
7	WS142	Hub Spring	31	DE111-AG	LED Assy..	55		
8	BJ112	Hub	32	BG211	LED Holder Ring	56		
9	EY114	Hub Shaft	33	VY119	Housing	57		
10	WS171	Door Spring	34	GR134	Steel Belt	58		
11	2L003001	E-Washer	35	GW118	Washer	59		
12	GR111	Drive Belt	36	QY124-D	Head Assy.	60	2A271030	Screw
13	HY581	Hub Support	37	2A331050	Screw	61	2LFD0011	Washer
14	FY117	Hub Frame	38	WS157	Eject Spring	62		
15	2A151040	Screw	39	HY532-A	Eject Assy.	63		
16	2G102602	Washer	40	GW123	Poly Slider	64		
17	HY582-A	Arm Support Assy.	41	2A341060	Screw	65		
18	2A132040	Screw	42	HY551	Carriage Stopper	66	2M313001	C-Washer
19	HY625	Collar	43	BG262-A	Disk Guide-R Assy.	67	GP114	Eject Pin
20	2A131050	Screw	44	PY133AA	Motor Control P.C.B	68		
21	BG261-AL	Disk Guide-L Assy.	45	GR152	Cord Holder	69		
22	EY182	Spindle Unit	46	UP512	Spindle Pulley	70		
23	GU127	Spindle Bearing	47	GT111	Tacho Disk	71	JS482	Pad Holder
24	UP533-A	Tension Pulley Assy.	48	QY112	D.C Motor	72	GS112	Pressure Pad
						73	2A151030	Screw

				UNIT	SCALE	MODEL NO.
				APPD.	CHKD.	DSGD.
				Jan 18 '84	Jan 18 '84	JAN. 18 '84
				A. TAKAHASHI		TITLE
						EXPLODED VIEW
						DOCUMENT NO.
						(2/2)

1, specifications

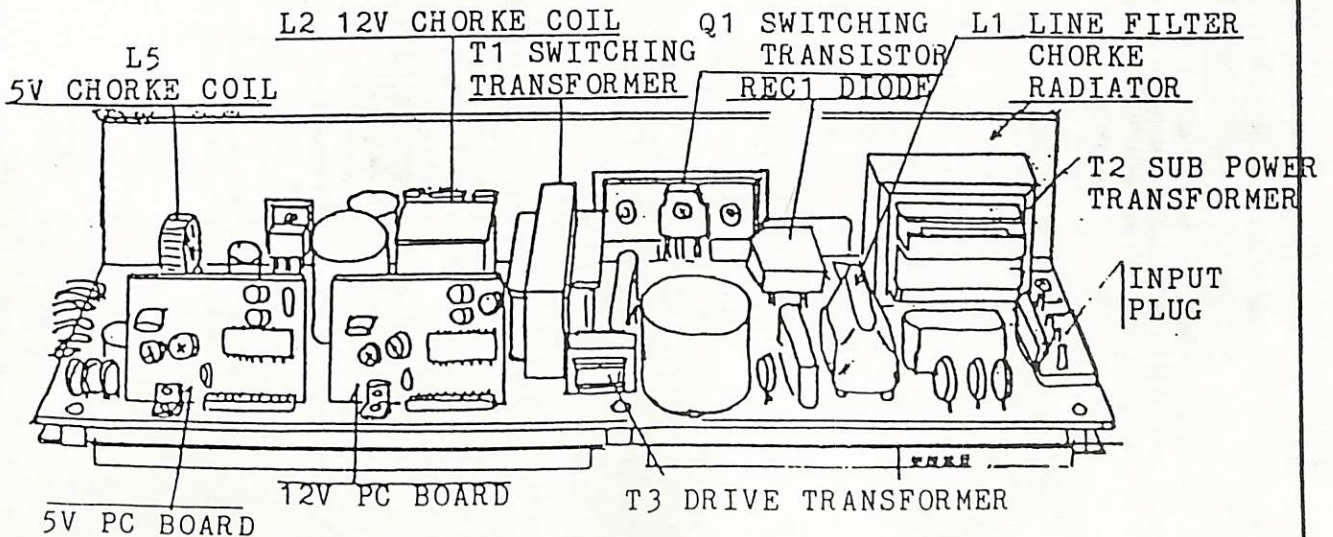
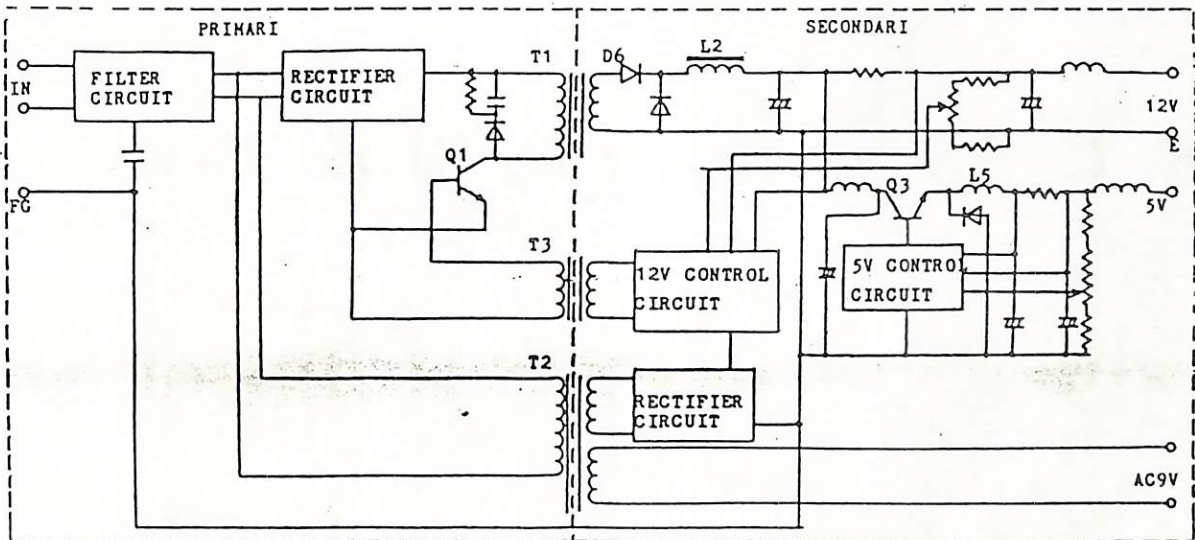
1-1 INPUT

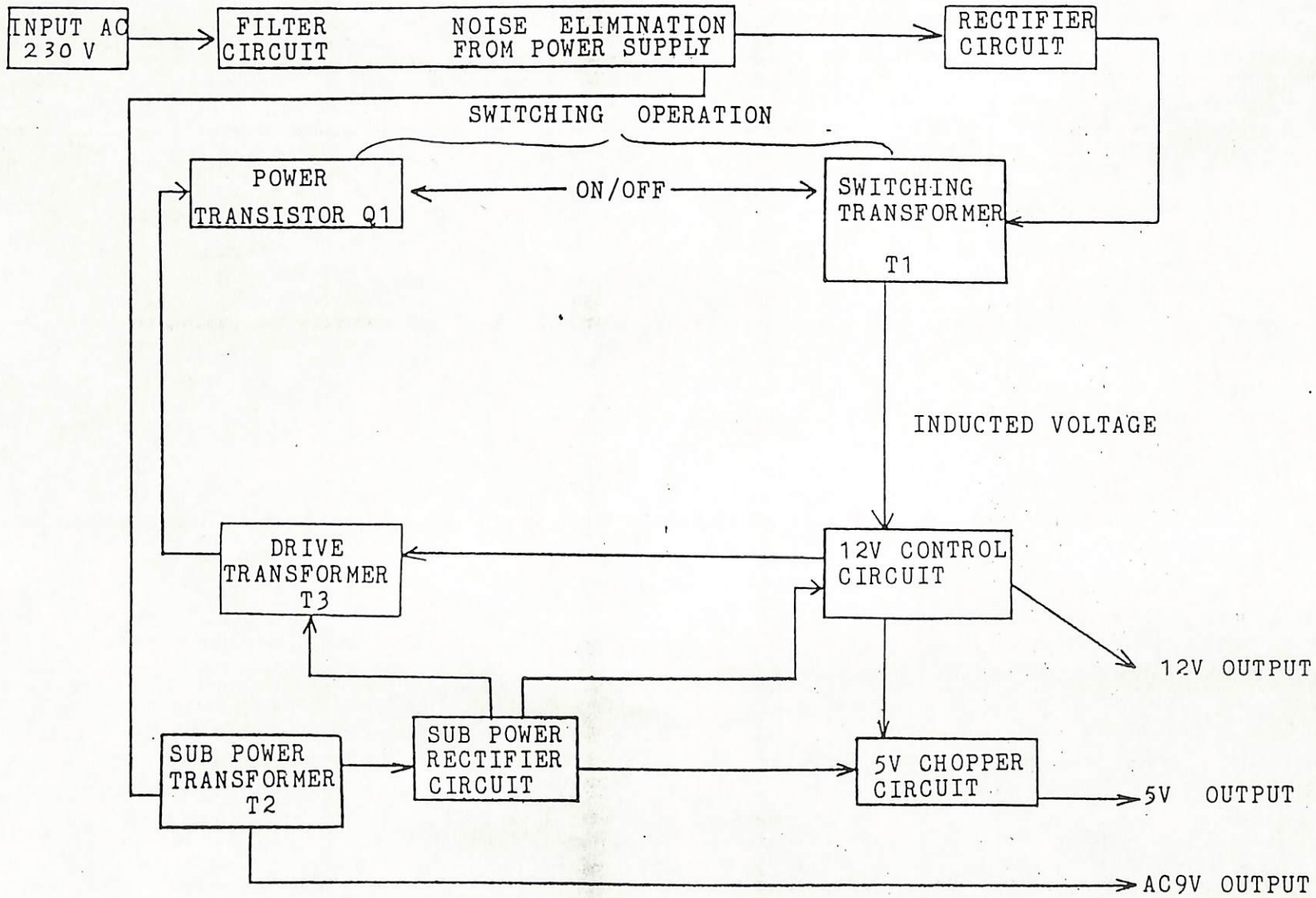
- 1-1-1 VOLTAGE AC 230V 10% 50.60Hz
- 1-1-2 POWER 75W typ
- 1-1-3 SURGE CURRENT . 25A max

1-2 OUTPUT

- 1-2-1 VOLTAGE 5V 2% , 12V 2% , AC9V 3%
- 1-2-2 CURRENT 5V;3.15A , 12V;2.76A , AC9V;200mA
- 1-2-3 VARIATION 5V 3% , 12V 5% , AC9V 15%
- 1-2-4 RIPPLE 5V; 150mV(p-p) , 12V; 290mV(p-p)
- 1-2-5 OVER CURRENT 5V ; 3.6~4A
- PROTECTION 12V ; 3.6~4A

2, CIRCUIT





BLOCK DIAGRAM

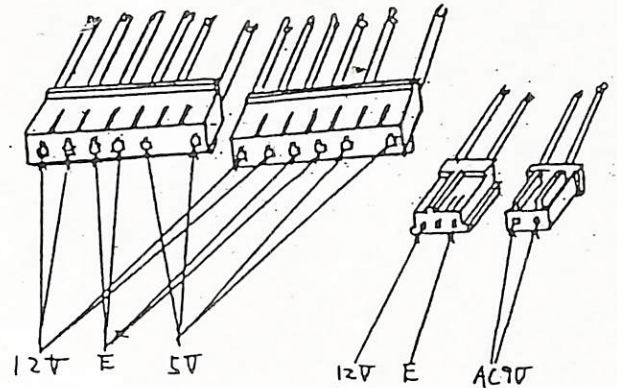
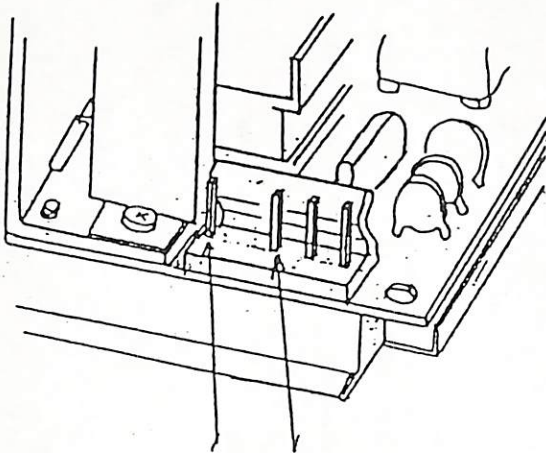
(1/3) ~ 3中 (2)

3. ALIGNMENT INSTRUCTION

1. INPUT OUTPUT CONNECTION

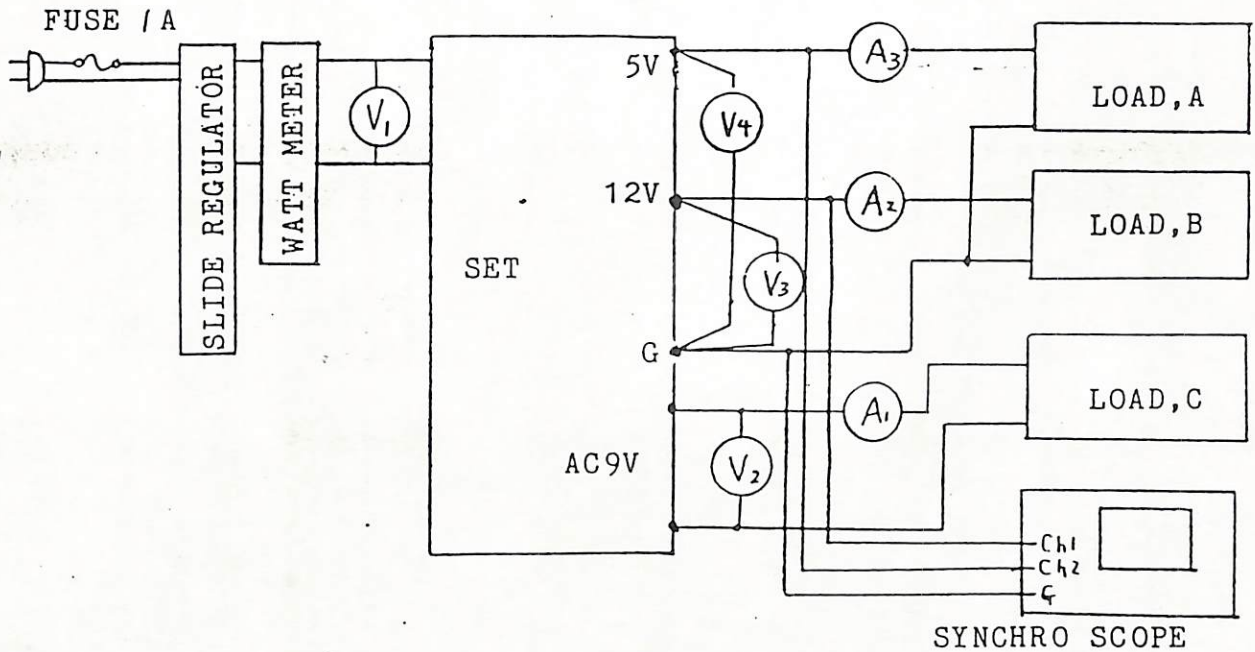
INPUT

OUT PUT



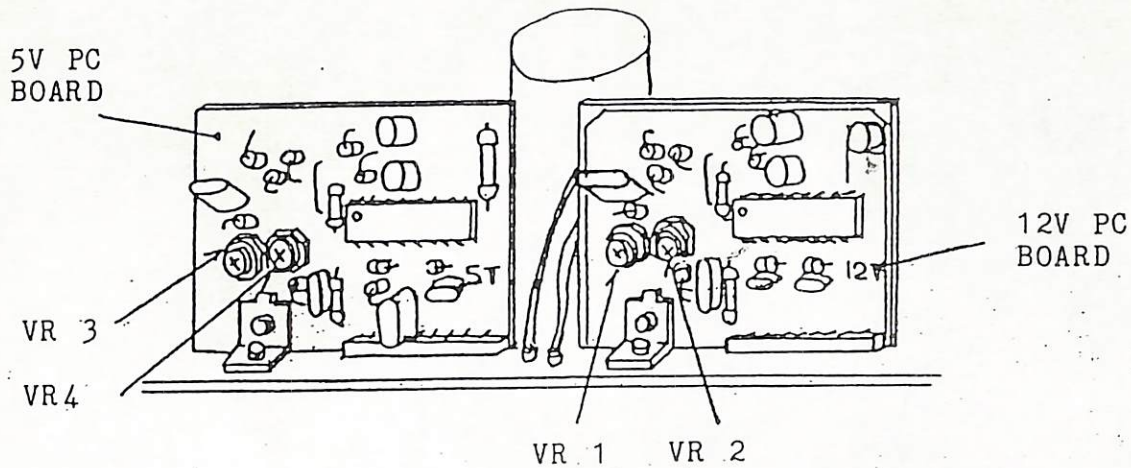
IN PUT 230V 50/60Hz

CONNECT : ON



- 1) SLIDE REGULATER
- 2) WATT METER
- 3) LOAD A, B
- 4) V1
- 5) V2
- 6) V3
- 7) V4
- 8) A1
- 9) A2, 3
- 10) LOAD C

- AC 220~240V
- AC WATT MATER TYP 75W
- ELECTRONIC LOAD TYP 12V , 5A
- AC VOLTAGE METER TYP ~~120V~~ 240V
- AC VOLTAGE METER TYP 9V
- DC VOLTAGE METER TYP 12V
- DC VOLTAGE METER TYP 5V
- AC CURRENT METER TYP 200mA
- DC CURRENT METER TYP 3A
- SLIDE RESISTOR TYP 45Ω



Step	Item	Remarks For Adjustment
1	Connection	Connect the SET as Per SKETCH 6
2	Volume (VR)	Turn VR1,VR2,VR3,VR4 onPC Board for 5V,12V Till the End in Clockwise Rotation
3	AC Power ON	Set Slide Reguleter at $\frac{1}{2}V$ and AC Power ON 230
4	Rated Current Setting	Set Circuit Loaded as Belows 1) Load A DC 5V 3.15A 2) Load B DC 12V 2.76A 3) Load C AC 9V 200mA
5	Output Voltage Adjustment	Adjust VR2 and VR4 then Set in the Range of the Following Voltage 1) DC 5V (VR4) 4.970~5.030V 2) DC 12V (VR2) 11.950~12.050V
6	Operation of Over-Current Protection and Adjustment of the Point	Adjust and Set VR1,VR3 to Operate Over-Current Protection at the Following Values 1) DC 5V (VR3) 3.6~4A 2) DC 12V (VR1) 3.6~4A

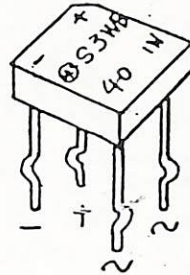
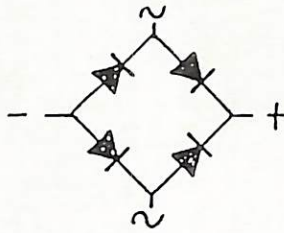
TROUBLE	CHECK POINT	CAUSES AND TEST	SOLUTION
NO OUTPUT	SOME SCRAP INSIDS	SHORT CIRCUIT BIY SCRAP <u>YES</u>	CLEANING
NO AC 9V OUTPUT	SUPPLEMENTARY CIRCUIT	T2 TRANSFORMER SHORT OR OPEN <u>YES</u> T2 PRIMARY LEAD WHITE TO WHITE 160~200Ω SECONDARY LEAD RED TO RED 9~12Ω SECONDARY LEAD BLUE TO BLUE 3.2~3.7Ω	CHANGE T2
IN CASE OF REC1 SHORT FUSE IS CUT	CHECK BRIDGH DIODE	REC2 S1VB-10 DIODE RECTIFIED VOLTAGE DC 12~15V REC1 S3WB40 SHORT OR OPEN <u>YES</u>	CHANGE REC1
IN CASE OF Q1 SHORT FUSE IS CUT	CHECK SWITCHING TRANSISTOR	Q1 2SC2792 SHORT OR OPEN <u>YES</u>	CHANGE Q1
	CHECK HIGH-SPEED RECTIFY DIODE	D6 ESAC85-009 SHORT OR OPEN <u>YES</u>	CHANGE D6
12V CONTROL CIRCUIT		CHECK BETWEEN COLLECTOR AND EMITTER OF 2SC2792 IN Q1 BY SYNCHRO-SCOPE <u>NO</u>	CHANGE A BOARD OF 12V CONTROL
		12V OUTPUT ADJUSTMENT SHIFT <u>YES</u>	RE-ALIGNMENT
5V output ONLY NO OUTPUT	CHECK SWITCHING TRANSISTOR	Q3 2SC2334 SHORT OR OPEN <u>YES</u>	CHANGE Q3
	CHECK DRIVE TRANSISTOR	Q4 2SA1020-0orY SHORT OR OPEN <u>YES</u>	CHANGE Q4
	CHECK HIGH-SPEED RECTIFY DIODE	D7 ESAC82-004 SHORT OR OPEN <u>YES</u>	CHANGE D7
5V CONTROL CIRCUIT		CHEC BETWEEN EMITTER OF 2SC2334 AND GRUND IN Q4 BY SYNCHRO-SCOPE <u>NO</u>	CHANGE A BOARD OF 5V CONTROL
		5V OUTPUT ADJUSTMENT SHIFT <u>YES</u>	RE-ALIGNMENT

5, SEMICONDUCTOR OUTSIDE APPEARANCE

1, REC1

S3WB 60

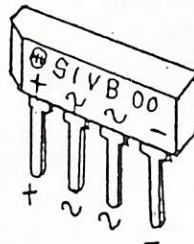
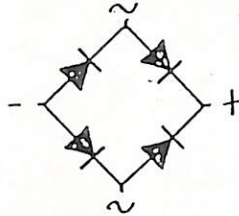
RECTIFIER STACKS DIODES



2, REC2

S1VB10

RECTIFIER STACKS DIODES



3, D1

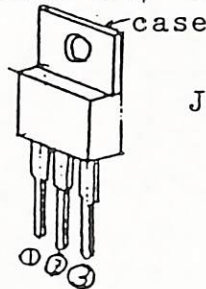
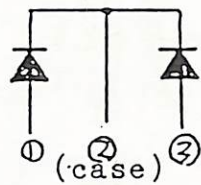
ERB28-08

FAST RECOVERY DIODES



4, D6,7

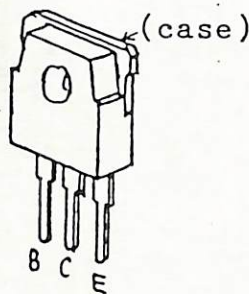
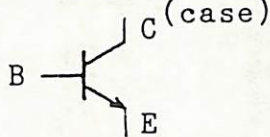
ESAC85-009 , ESAC82-004 SCHOTTKY BARRIER DIODES



5, Q1

2SC2C2792 or 3351

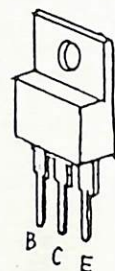
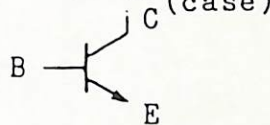
POWER TRANSISTOR



6, Q3

2SC2334 (case)

POWER TRANSISTOR



登録番号

7, Q4

2SA1012

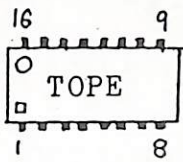
TRANSISTOR



8, IC1,2

MB3759

INTEGRATED CIRCUITS



変換番号

Symbol	Part, No	Part Name	Description	Safety Part	Service Part
C21	68-0343F	CEE102A10V	CEE CAPACITOR		
C22	68-2701K	CMP224A63K-N	CMP CAPACITOR		
C23	68-27080	CPS104A50K-N	CPS CAPACITOR		
C24	68-0343F	CEE102A10V	CEE CAPACITOR		
C25	68-27080	CPS104A50K-N	CPS CAPACITOR		
C27	68-0341E	CEE479A50V	CEE CAPACITOR		
C28	68-2708I	CPS103A50K-N	CPS CAPACITOR		
C29	68-0341F	CEE100A50V	CEE CAPACITOR		
C30	68-2708F	CPS332A50K-N	CPS CAPACITOR		
C31	68-0341E	CEE479A50V	CEE CAPACITOR		
C32	68-2708I	CPS103A50K-N	CPS CAPACITOR		
C33	68-27080	CPS104A50K-N	CPS CAPACITOR		
C34	68-0341E	CEE479A50V	CEE CAPACITOR		
C36	68-2811G	CC472A2500Z	CC CAPACITOR		
C37	68-2811G	CC472A2500Z	CC CAPACITOR		
C40	68-0341F	CEE100A50V	CEE CAPACITOR		
C41	68-27080	CPS104A50K-N	CPS CAPACITOR		
RESISTORS					
Part Name.with RD:Carbon Resistor					
Part Name.with SRM:Metal Oxide Film Resistor					
R1	68-2503K	8D-13	POWER SHERMISTOR	!	0.5%
R2	68-4951Y	SRM15K-J3A	SRM RESISTOR	!	
R3	68-4943Y	SRM100-J2A	SRM RESISTOR	!	
R4	68-0332Y	RD22-J1/2A	RD RESISTOR	!	
R5	68-4937A	SRM10-J1A	SRM RESISTOR	!	
R9	68-4937A	SRM10-J1A	SRM RESISTOR	!	
R10	68-4937A	SRM10-J1A	SRM RESISTOR	!	
R11	68-0353A	MANGANEN WIRE			
R12	68-0299V	RD30K-J1/4D	RD RESISTOR		
R13	68-0298M	RD1K-J1/4D	RD RESISTOR		
R14	68-0299C	RD4.7K-J1/4D	RD RESISTOR	!	
R15	68-0298R	RD1.6K-J1/4D	RD RESISTOR	!	
R16	68-0297S	RD150-J1/4D	RD RESISTOR		
R17	68-0280S	RD820-J1/4B	RD RESISTOR		
R18	68-4937A	SRM10-J1A	SRM RESISTOR		
R19	68-0299V	RD30K-J1/4D	RD RESISTOR		
R20	68-0353A	MANGANEN WIRE			
R21	68-0298M	RD1K-J1/4D	RD RESISTOR		
R22	68-0298Y	RD3.3K-J1/4D	RD RESISTOR		
R24	68-0298V	RD2.4K-J1/4D	RD RESISTOR		
R25	68-0281K	RD4.7K-J1/4B	RD RESISTOR	!	
R26	68-0281S	RD10K-J1/4B	RD RESISTOR	!	
R27	68-0300Y	RD470K-J1/4D	RD RESISTOR	!	
R30	68-0299Q	RD18K-J1/4D	RD RESISTOR		
R31	68-0299G	RD6.8K-J1/4D	RD RESISTOR		
R32	68-0300I	RD100K-J1/4D	RD RESISTOR		
R33	68-4937A	SRM10-J1A	SRM RESISTOR		
R34	68-0298S	RD1.8K-J1/4D	RD RESISTOR		
R35	68-0281M	RD5.6K-J1/4B	RD RESISTOR		
R36	68-0281M	RD5.6K-J1/4B	RD RESISTOR		
R37	68-0300I	RD100K-J1/4D	RD RESISTOR		
R38	68-0299V	RD30K-J1/4D	RD RESISTOR		
R40	68-0299M	RD12K-J1/4D	RD RESISTOR		
R41	68-0298A	RD330-J1/4D	RD RESISTOR		

変更番号

10, PARTS LIST

Symbol	Part, No	Parts Name	Description	Safety Parts	Service Parts
TRANSFORMERS & COILS					
T1	68-4090A	SWITCHING TRANSFORMER		!	0.5%
T2	68-1110A	SUB POWER TRANSFORMER		!	
T3	68-0854A	DRIVE TRANSFORMER		!	
L1	68-1606D	UF2327F	LINE FILTER CHORKE		
L2	68-1366D	SKU-33-B8	CHORKE COIL		
L3	68-0306A	5MH	CHORKE COIL		
L4	68-0013B	FN-R8S	CHORKE COIL		
L5	68-1351A	SK11-2-100	CHORKE COIL		
L6	68-0306A	5MH	CHORKE COIL		
TRANSISTORS & DIODES					
Symbol No. with Q: Transistor			Symbol No. with REC: Diode		
Symbol No. with D: Diode					
Q1	68-2056F	2SC2792 or 3551	SWITCHING TRANSISTOR	!	0.5%
Q3	68-0040C	2SC2334-K	SWITCHING TRANSISTOR		0.2%
Q4	68-2001A	2SA1020-0,Y	TRANSISTOR		0.1%
REC1	68-0345F	S3WB-60	DIODE	!	0.1%
REC2	68-2254A	S1VB-10	DIODE		0.1%
D1	68-2034C	ERB28-08	DIODE		0.1%
D6	68-0035D	ESAC-85-009	DIODE		0.1%
D7	68-0035B	ESAC-82-004	DIODE		0.1%
ICs					
IC1	68-1912A	MB3759	IC	!	0.1%
IC2	68-1912A	MB3759	IC	!	0.1%
CAPACITORS					
Part Name. with CC: Ceramic Capacitor					
Part Name. with CMP: Metallized Polyester Film Capacitor					
Part Name. with CPS: Polyester Film Capacitor					
Part Name. with CEE: Aluminum Electrolytic Capacitor					
C1	68-2712I	CMP224A250K-N	CMP CAPACITOR	!	
C2	68-2811D	CC102A2500K	CC CAPACITOR	!	
C3	68-2811D	CC102A2500K	CC CAPACITOR	!	
C4	68-2811E	CC222A2500M	CC CAPACITOR	!	
C5	68-2811E	CC222A2500M	CC CAPACITOR	!	
C6	68-2712G	CMP104A250M	CMP CAPACITOR	!	
C7	68-2610D	CEE221D400R	CEE CAPACITOR	!	
C8	68-2709S	CMP104A630K-N	CMP CAPACITOR	!	
C9	68-2812A	CC221A1000K	CC CAPACITOR	!	
C11	68-0341R	CEE101A35V	CEE CAPACITOR	!	
C12	68-28140	CC222A2000K	CC CAPACITOR		
C13	68-28140	CC222A2000K	CC CAPACITOR		
C14	68-2610B	CEE472D25Q	CEE CAPACITOR		
C15	68-2701K	CMP224A63K-N	CMP CAPACITOR		
C16	68-27080	CPS104A50K-N	CPS CAPACITOR		
C17	68-0342R	CEE222A16V	CEE CAPACITOR		
C18	68-27080	CPS104A50K-N	CPS CAPACITOR		
C19	68-0342S	CEE332A16V	CEE CAPACITOR		

Symbol	Part, No	Part Name	Description	Safety Part	Service Part			
R42	68-0300I	RD100K-J1/4D	RD RESISTOR	!				
R45	68-0299A	RD3.9K-J1/4D	RD RESISTOR					
R50	68-0336U	RD330K-J1/2A	RD RESISTOR					
SEMI FIXED RESISTOR								
VR1	68-0119B	RGS6-FAN500		!	0.2%			
VR2	68-0119F	RGS6-FAN1K			0.2%			
VR3	68-0119B	RGS6-FAN500			0.2%			
VR4	68-0119F	RGS6-FAN1K			0.2%			
MISCELLANEOUS								
M1	68-4114A	PC BOARD (A)		!				
M2	68-4115A	PC BOARD (B) 1/2						
M3	68-4505A	JOINT P=7.5mm						
M4	68-4505B	JOINT P=10mm						
M5	68-4505C	JOINT P=12.5mm						
M6	68-4505D	JOINT P=15mm						
M6	68-3521F	ANGLE PLUG, M34-09-30-134P		!				
M7	68-3514C	PLUG, 5285-04A						
M8	68-3516A	CONNECTOR 2P ASS				0.2%		
M9	68-3519A	CONNECTOR 6P ASS				0.2%		
M10	68-3519A	CONNECTOR 6P ASS				0.2%		
M11	68-3517A	CONNECTOR 3P ASS				0.2%		
M12	68-4003L	TUBING (UL)				0.5%		
MECHANICAL PART								
M13	68-5086A	RADIATOR (A)					!	
M14	68-5087A	RADIATOR (B)						
M15	68-5082A	RADIATION SEAT (SARCON 45F)						
M16	68-0026B	RADIATION SEAT TO-220 (SARCON 45F)						
M17	68-0352A	RADIATION SEAT TO-3P (SARCON 45F)	0.5%					
M18	68-0076A	BUSHING						
M19	68-0025A	BUSHING (C)						
M20	68-5078A	BAND (KM-85)						
M21	68-0067A	L ANGLE						
M22	68-5083A	SIIRUDO PLATE						
M23	68-5088A	LABEL						
SCREWS								
M24	68-5800C	BIND HEAD 3.0×6mm						
M25	68-5800D	BIND HEAD 3.0×8mm						
M26	68-0015E	BIND HEAD 3.0×6mm (SUS)						
M27	68-5802B	W-SEMS 3.0×6mm						
M28	68-5802D	W-SEMS 3.0×10mm						
M29	68-5089A	NYLON RIVET						
PCB ASS								
12V	68-5100	12V PC BOARD ASS		!	0.2			
5V	68-5099	5V PC BOARD ASS			0.2			

登録番号

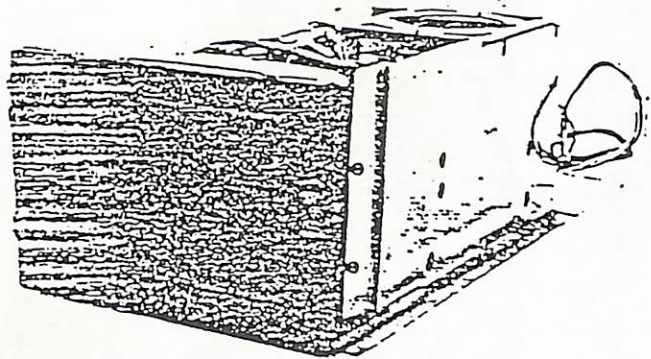
Commodore

SERVICE MANUAL

MODEL

250622-02

5" COLOR VIDEO MONITOR



No. 5463
SEPT. 1983

CONTENTS

SPECIFICATIONS-----	2
1. SAFETY PRECAUTION FOR MONITOR.....	3
2. SERVICE ADJUSTMENT	4 ~ 7
3. REPLACEMENT PARTS LIST	8 ~ 11
[EXPLODED VIEW]	11
4. BLOCK DIAGRAM	12
* With 250622-02 SCHEMATIC DIAGRAM	

SPECIFICATIONS

Dimensions: 16.5cm(W) x 28.0cm(D) x 11.6cm(H)

Weight: 14.4kg

Color System	PAL
Horizontal resolution	220 Lines
Video/Sync Input	1Vp-p
Chroma Input	1Vp-p
Audio input	0.8Vp-p, High Impedance.
Scan frequency	H. 15.63 kHz, V. 50 Hz
Power input	DC 12V
Power Consumption	1.35A(max.), 1.18A(Avg.)
Picture tube	5", 55 degree deflection, In-line gun Dot screen Quick Start.
Viewable picture size	7.9 cm(H) x 10.4 cm(W)
High voltage	14 kV ± 1 kV (at zero beam current)
Speaker	6.6cm round type, 16 Ω
Audio power output	0.45 W
Tube	1
IC	4
Transistor	25

(Design and specifications subject to change without notice.)

2. SERVICE ADJUSTMENTS

PURITY

1. Display a monochrome pattern.
 2. As viewed from the back (See Fig. 2-1), turn the magnet lock counter-clockwise to loosen it.
 3. Turn the green cutoff VR (R707) fully clockwise and the red and blue cutoff VRs (R704, R701) fully counter-clockwise. (Fig. 2-8)
Adjust the screen VR (Fig. 2-8) so that the vertical green band becomes easy to see.
 4. Loosen the deflection yoke securing screw and slide the yoke fully rearward to obtain color shading in the green disk.
 5. Overlap the two purity magnet tabs and set them to 12 o'clock position.
 6. Open and close the two purity magnets (scissor fashion) and adjust so that the green disk is positioned at the centre of the picture.
- If green disk is not obtained, adjust for uniform overall coloration.
7. Slide the deflection yoke forward and adjust its position so that the green color completely fills the picture area.
 8. Confirm that uniform overall rasters of both red and blue single color rasters can also be obtained in the same manner.
 9. Secure the deflection yoke retaining screw moderately so that the deflection yoke does not move back and forth.

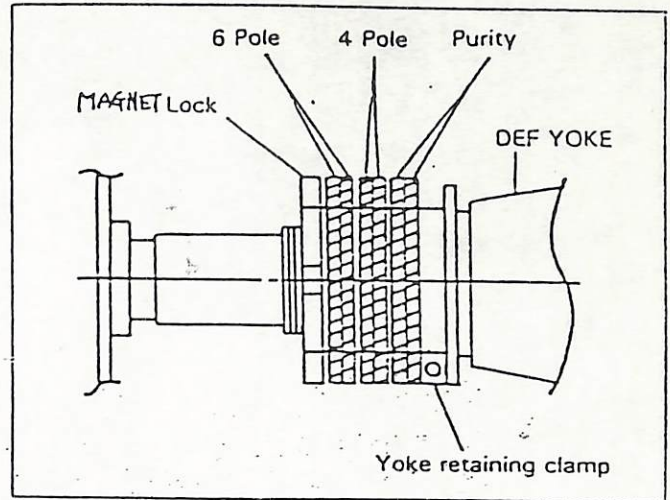


Fig. 2-1

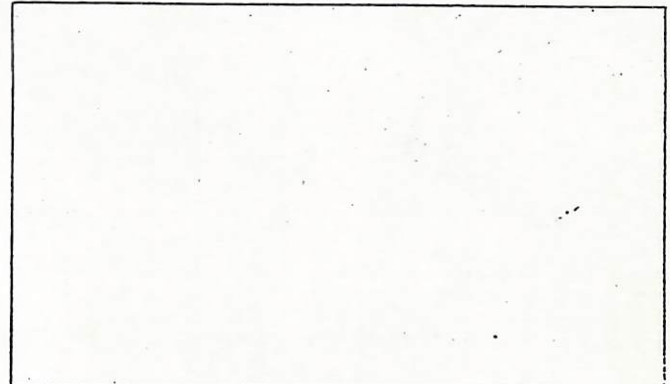


Fig. 2-2

STATIC CONVERGENCE (CENTER)

1. Employ a crosshatch pattern and adjust the brightness so that the image is clear, but slightly darkened.
2. Turn the red and blue cutoff VRs fully clockwise and the green cutoff VR fully counter-clockwise (Fig. 2-8). Adjust the screen VR (Fig. 2-8) for an easily seen image.
3. Adjust convergence roughly in the corner by tilting the deflection yoke vertically or horizontally, then insert a wedge between the yoke and CRT on top.
4. Turn the two 4 pole convergence magnets and adjust so that red and blue become overlapped throughout the picture area to yield magenta. (Fig. 2-4)
5. Turn the green cutoff VR full clockwise and adjust the two 6 pole convergence magnets so that the green and magenta become overlapped throughout the picture area to yield white. (Fig. 2-5)
6. Repeat steps 4 and 5.

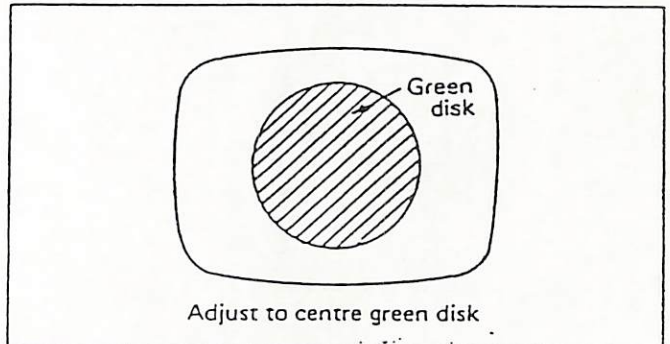


Fig. 2-3

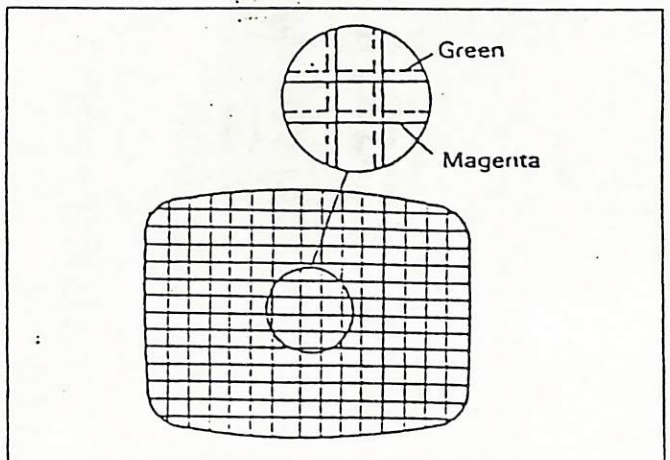



Fig. 2-4

1. SAFETY PRECAUTION FOR MONITOR

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of receiver should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in television sets have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by () on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual may create shock, fire, or other hazards.
4. If any repair has been made to the chassis, it is recommended that the B₁ setting should be checked or adjusted (See ADJUSTMENT OF B₁ VOLTAGE).
5. The high voltage applied to the picture tube must conform with that specified in Service manual. Excessive high voltage can cause an increase in X-Ray emission, arcing and possible component damage, therefore operation under excessive high voltage conditions should be kept to a minimum, or should be prevented. If severe arcing occurs, remove the AC power immediately and determine the cause by visual inspection (incorrect installation, cracked or melted high voltage harness, poor soldering, etc.). To maintain the proper minimum level of soft X-Ray emission, components in the high voltage circuitry including the picture tube must be the exact replacements or alternatives approved by the manufacturer of the complete product.
6. Do not check high voltage by drawing an arc. Use a high voltage meter or a high voltage probe with a VTVM. Discharge the picture tube before attempting meter connection, by connecting a clip lead to the ground frame and connecting the other end of the lead through a 10k Ω 2W resistor to the anode button.

7. When service is required, observe the original lead dress. Extra precaution should be given to assure correct lead dress in the high voltage circuit area. Where a short circuit has occurred, those components that indicate evidence of overheating should be replaced. Always use the manufacturer's replacement components.

8. ISOLATION CHECK

(SAFETY FOR ELECTRICAL SHOCK HAZARD)

After re-assembling the product, always perform an isolation check on the exposed metal parts of the cabinet (antenna terminals, channel selector knobs, metal cabinet, screwheads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.

(1) DIELECTRIC STRENGTH TEST

The isolation between the AC primary circuit and all metal parts exposed to the user, particularly any exposed metal part having a return path to the chassis should withstand a voltage of 1,100 V AC (r.m.s.) for a period of one second.

This method of test requires a test equipment not generally found in the service trade.

(2) LEAKAGE CURRENT CHECK

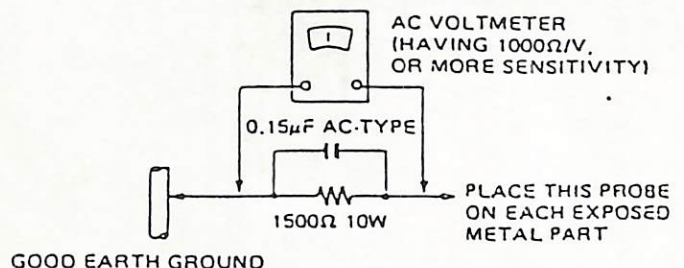
Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.) Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5mA AC (r.m.s.).

• ALTERNATE CHECK METHOD

Plug the AC line cord directly into the AC outlet (do not use a line isolation transformer during this check.). Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10W resistor parallelled by a 0.15 μ F AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).

Measure the AC voltage across the resistor with the AC voltmeter.

Move the resistor connection to each exposed metal part, particularly any exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.35V AC (r.m.s.). This corresponds to 0.5mA AC (r.m.s.).



DYNAMIC CONVERGENCE (CONER)

1. Remove the wedge.
2. Adjust convergence as shown in Fig. 2-7 by tilting the yoke up and down; then insert the wedges on top and bottom.
3. Apply (modeler's) glue on the wedges and magnets to fix.
4. Tighten the screw of the deflection yoke.
5. Turn the magnet lock and tighten securely.

WHITE BALANCE

1. Display a monochrome pattern.
2. After switching the cut off service SW. to SERVICE, short TP-35A and TP-35B with a jumper wire, and then display a single horizontal line.
3. Turn the red, blue and green cutoff VRs (R704, R701, R707) and the screen VR (Fig. 2-8) fully counterclockwise to eliminate luminance.
4. Gradually turn the screen VR clockwise to where single line of one of the colors appears.
5. Turn the cutoff VR of this color clockwise about 10 degrees.
6. Again turn the screen VR so that this color appears only faintly.
7. Adjust the other cutoff VRs so that the horizontal line becomes white.
8. After removing a jumper wire which are shorted at step 2), return the cut off service SW. to NORMAL and then display a monochrome pattern.
9. With a dark picture, perform fine adjustment to obtain optimum white balance.
10. With a bright picture, adjust the red and green drive VRs for optimum white balance.

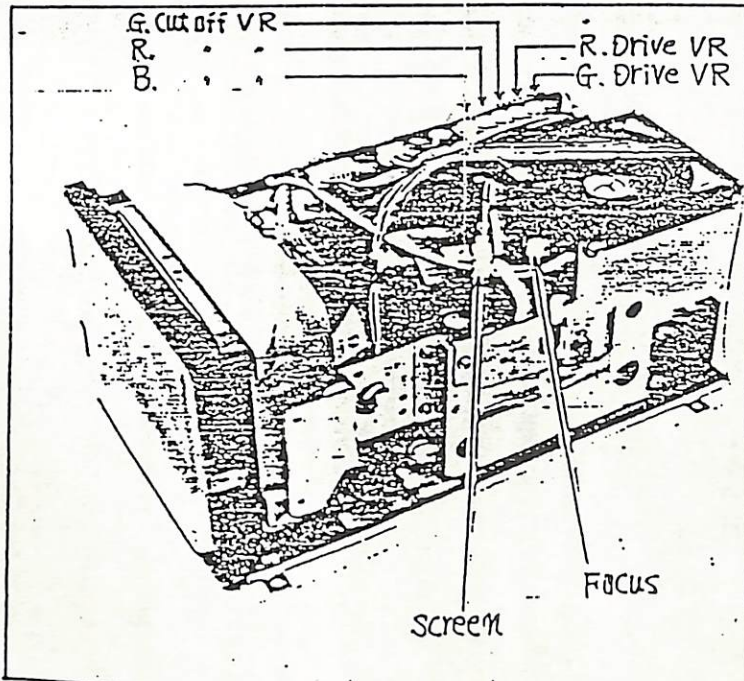


Fig. 2-8

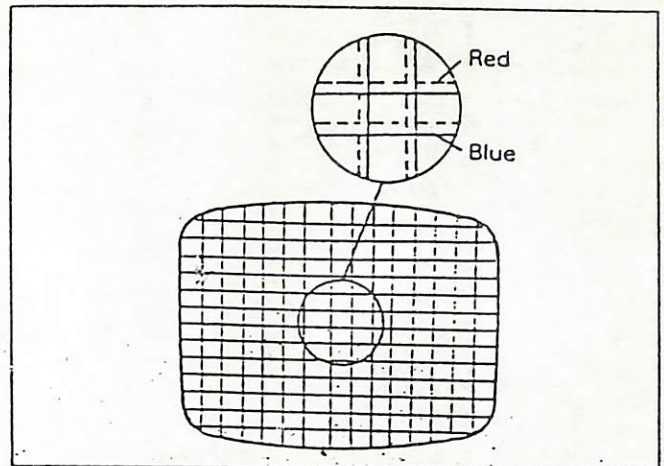


Fig. 2-5

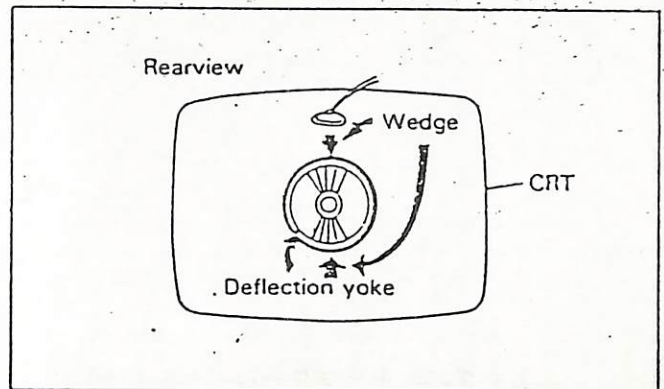


Fig. 2-6

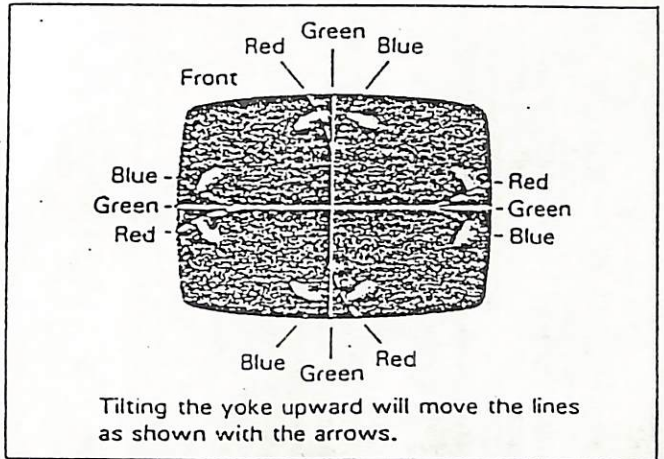
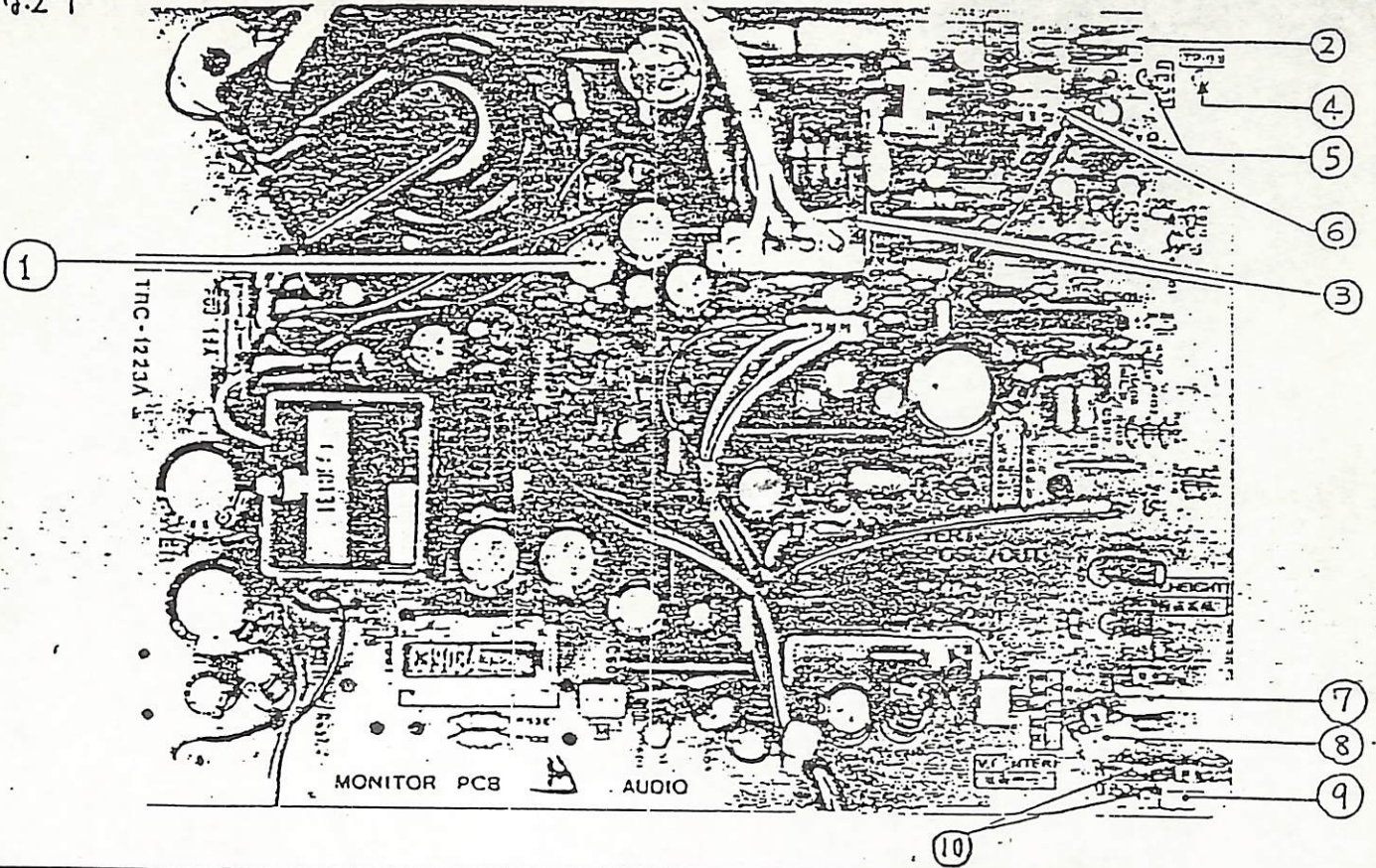


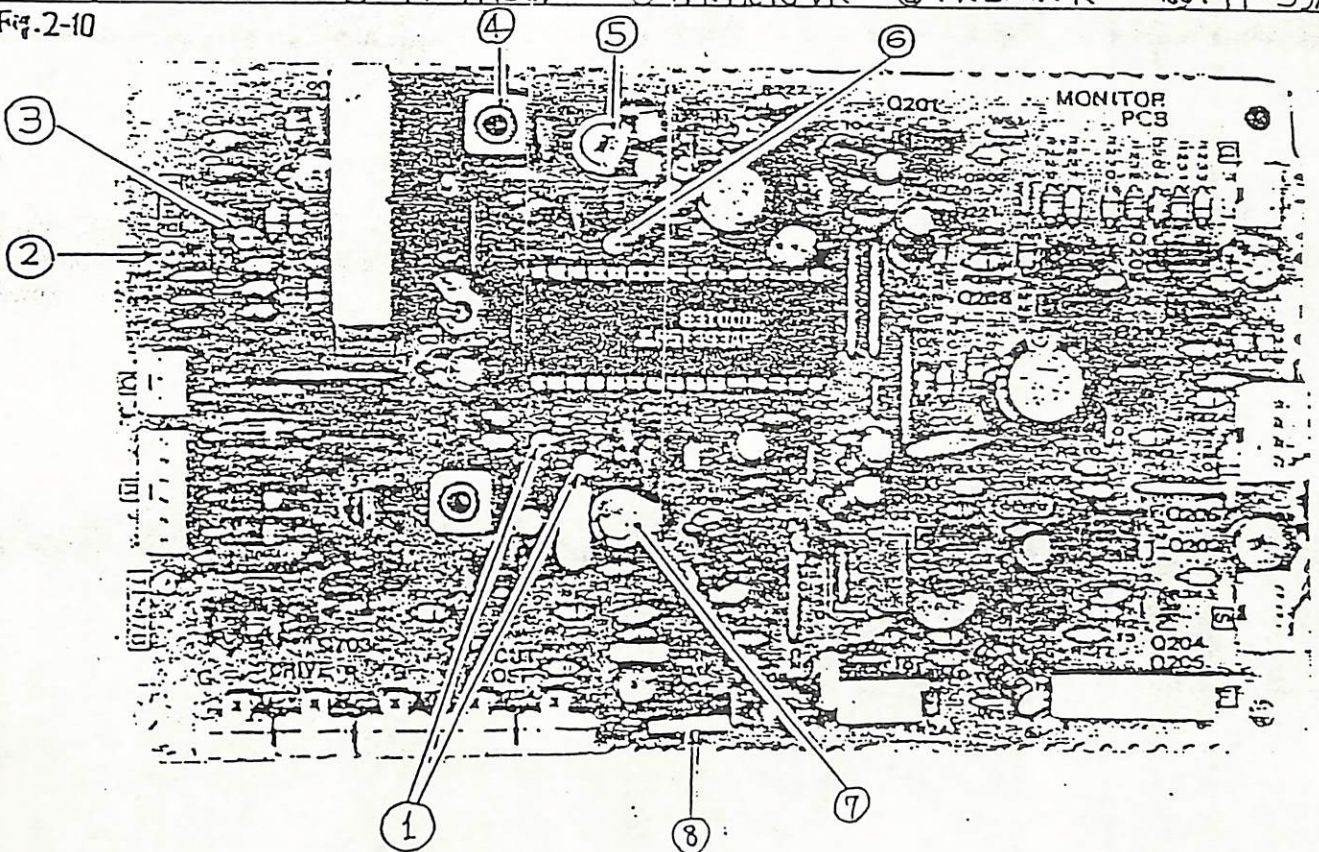
Fig. 2-7

Fig.2-9



- | | | | | |
|-----------------|--------------|--------------|----------------|----------------|
| ①: B1 ADJ. VR | ③: H.Center | ⑤: TP-33 | ⑦: V.Height VR | ⑨: V.Center VR |
| ②: Sub.H.Center | ④: TP-91(B1) | ⑥: H.Held VR | ⑧: V.Lim.VR | ⑩: TP-35A/B |

Fig.2-10



- | | | | |
|-------------|------------------------|-------------|-------------------------------|
| ①: TP-46A/B | ③: TP-48 | ⑤: DLAMP VR | ⑦: C324 (Trimmer) |
| ②: TP-49 | ④: T3G3 (DL.P.Transf.) | ⑧: TP-45 | ⑧: S201 (Cut off Service SW.) |

Alignment location

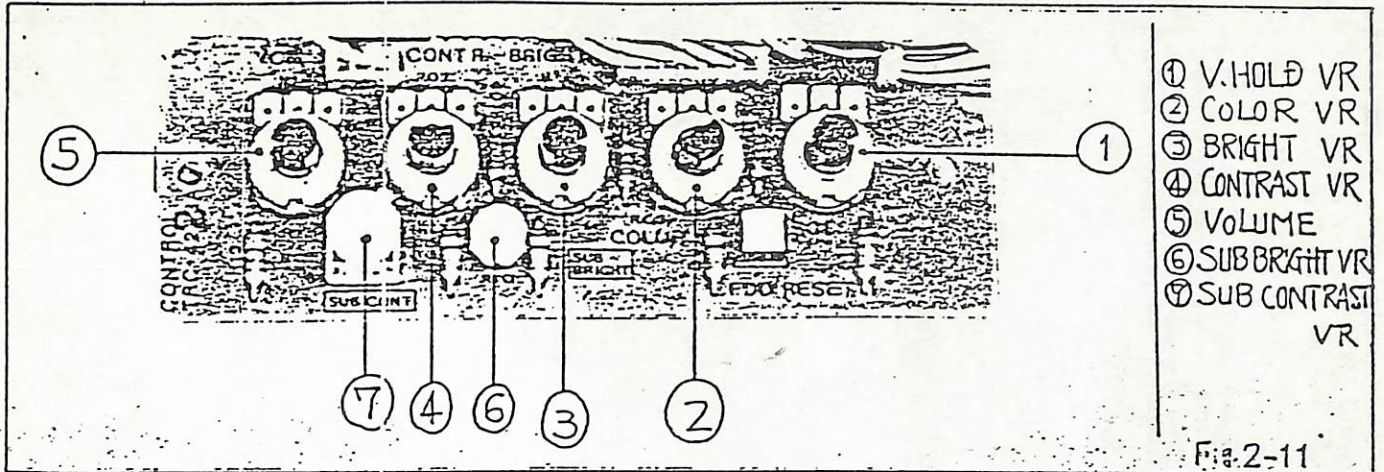


Fig. 2-11

B₁ VOLTAGE (28V)

Cutoff the picture by the bright VR (R4211) and sub bright VR (R4210). Measure the voltage between TP-91 of the def. , power reg. and Audio out PB Assy and ground. Adjust B₁ adj. VR (R902) to obtain 28V.

FOCUS

Adjust the FOCUS control for best overall definition and picture detail at normal brightness and contrast.

V. CENTER

Adjust the V. center VR (R417) to the optimum vertical picture position.

HORIZONTAL OSCILLATOR

1. Set the H. Hold VR to the mechanical center position.
2. Connect the jumper clip between TP-33 and earth.
3. While rotating the H. Hold VR, keep the picture stationary or slowly moving.
4. Remove the jumper clip.
5. Make sure that the set maintains horizontal sync, when signals are switched.

H. CENTER

Set the H. center switch (S85) and Sub-H. center switch (S86) to the optimum horizontal picture position.

VERTICAL HEIGHT AND LINEARITY

1. Display a pattern which allows easy confirmation of symmetry (such as a circle or crosshatch).
2. Reduce the vertical size with the V. HEIGHT VR.
3. Adjust the vertical symmetry with the V. LIN. VR.
4. Readjust the vertical height, so that the picture extends to normal size.

SUB CONTRAST AND SUB BRIGHT.

1. Display a picture and set the contrast and bright VRs to the center click positions.
2. Adjust the sub contrast VR (R4206) and sub bright VR (R4210) for optimum display.

COLOR SYNC

1. Display a color video signal and apply bias +10V to TP-45.
2. Connect a jumper clip between TP-46A and TP-46B.
3. Use a nonmetallic driver to turn trimmer capacitor C324.
4. Adjust so that the rolling color stripes become thick and the rolling slows or stops.
5. Remove jumper wire.
6. Confirm that color sync, is not disrupted when signals are switched.

DL-MATRIX

1. Display a color video signal.
2. Set the oscilloscope to X-Y range, and connect its X-probe to TP-48 and its Y-probe to TP-49.
3. Connect a jumper clip between TP-46A and TP-46B. And apply bias +10V to TP-45.
4. Adjust the trimmer capacitor (C324) slightly so that the color becomes unlocked and the loops of the displayed lissajous figure appear on the scope. (Fig. 2-12)
5. Adjust the DL AMP control (R304) for the absence of loops and adjust the DL PHASE TRANSF. (T303) so that each pair of lines merge together.
6. Adjust the trimmer capacitor (C324) to just regain floating color synchronization.
7. Remove a jumper clip and bias +10V.

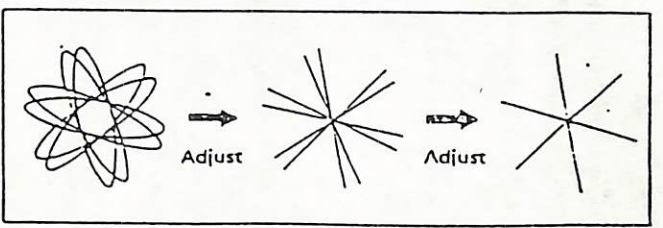


Fig. 2-12

3. REPLACEMENT PARTS LIST

PRODUCT SAFETY NOTE

Components identified by the Δ symbol in the PARTS LIST and the shaded areas on the Schematic have special characteristics important to safety. Before replacing any of these components read carefully the SAFETY PRECAUTION on Page 3 of this Service Manual. DO NOT degrade the safety of the set through improper servicing.

1. ABBREVIATED WORD OF RESISTORS AND CAPACITORS

RESISTOR

CR : Carbon Resistor
 Comp. R : Composition Resistor
 OM R : Oxide Metal Film Resistor
 VR : Variable Resistor
 MFR : Metal Film Resistor
 CMFR : Coating Metal Film Resistor


FR : Fusible Resistor
 UNFR : Nonflammable Resistor

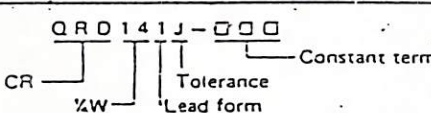
CAPACITOR


C Cap. : Ceramic Capacitor
 M Cap. : Mylar Capacitor
 E Cap. : Electrolytic Capacitor

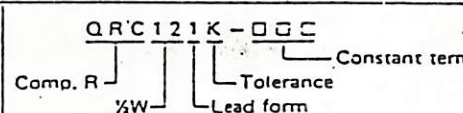
BPE Cap. : Bi-Polar (or Non-Polar) Electrolytic Capacitor
 MM Cap. : Metalized Mylar Capacitor
 PP Cap. : Polypropylene Capacitor
 MPP Cap. : Metalized PP Capacitor
 PS Cap. : Polystyrol Capacitor
 Tan. Cap. : Tantal Capacitor


2. FOLLOWING RESISTORS AND CAPACITORS OF STANDARD ELECTRICAL COMPONENTS ARE OMITTED FROM THIS PARTS LIST. EACH PART NUMBER OF THESE STANDARD REPLACEMENT COMPONENTS IS DEFINED AS FOLLOWS.

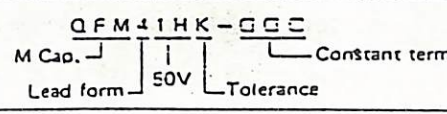
Carbon Resistor (CR): Lead form ()


Rating	Part No.
$\frac{1}{2}W$	
$\frac{1}{4}W$	QRD121J-□□□

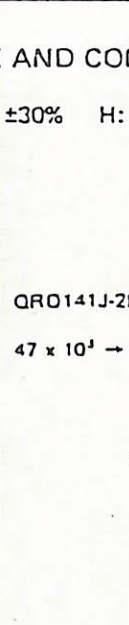
Composition Resistor (Comp. R): Lead form ()


Rating	Part No.
$\frac{1}{2}W$	


Mylar Capacitor (M Cap.): Lead form ()

Withstand Voltage	Part No.
50V	
100V	QFM42AK-□□□
200V	QFM42DM-□□□

Ceramic Capacitor (C Cap.): Lead form ()

Withstand Voltage	Parts No.
25V	
50V	QCS11HP-□□□
500V	QCS12HP-□□□

Electrolytic Capacitor (E Cap.): Lead form ()

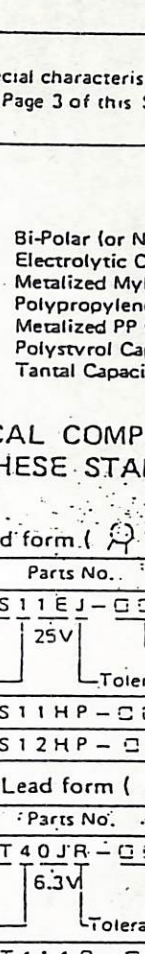
Withstand Voltage	Parts No.
6.3V	
10V	QET41AR-□□□
16V	QET41CR-□□□
25V	QET41ER-□□□
50V	QET41HR-□□□

3. DECODING OF TOLERANCE AND CONSTANT TERM

J: $\pm 5\%$ K: $\pm 10\%$ M: $\pm 20\%$ N: $\pm 30\%$ H: $\begin{matrix} +50\% \\ -10\% \end{matrix}$ Z: $\begin{matrix} +80\% \\ -20\% \end{matrix}$ P: $\begin{matrix} +100\% \\ -0\% \end{matrix}$ A: $\begin{matrix} +100\% \\ -10\% \end{matrix}$ R: $\begin{matrix} +30\% \\ -10\% \end{matrix}$

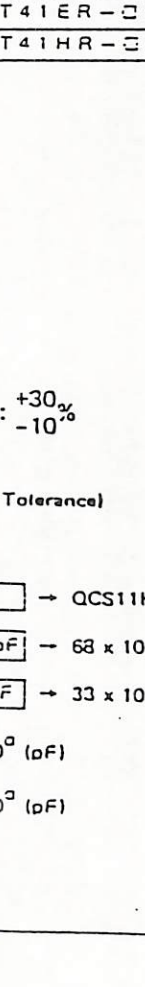
CONSTANT TERM

• Carbon Resistor ($\frac{1}{2}W$, $\pm 5\%$ Tolerance)

QRD141J-□□□
 CONSTANT TERM.


- □ □ → 2.7 Ω → QRD141J-2R7
- 1 R 0 - 1.0 Ω → 47k Ω → 47 x 10³ → QRD141J-473
- 9 R 7 - 9.7 Ω
- 1 0 □ - 10□ means 10 x 10³ (Ω)
- 8 2 □ - 82□ means 82 x 10³ (Ω)

• Ceramic Capacitor (50 Volts, $\pm 5\%$ Tolerance)

QCS11HJ-□□□
 CONSTANT TERM.


- □ □ → 50pF → QCS11HJ-5R0
- 1 R 0 - 1.0pF → 680pF → 68 x 10¹ → QCS11HJ-681
- 8 R 0 - 8.0pF → 3.3 μ F → 33 x 10¹ → QCS11HJ-335
- 1 0 □ - 10□ means 10 x 10⁰ (pF)
- 8 8 □ - 88□ means 88 x 10⁰ (pF)

TRC-1223A-1 (VIDEO & CHROMA PCB ASS'Y) 1/2

250622-82

SYMBO ^L No.	Δ	PART No.	PART NAME.	REMARK
VARIABLE RESISTOR				
R1304		CEX40053-053	VR(DL AMP)	5k Ω B
1701		A75557-103	" (B. CUT OFF)	10k Ω "
1704		" -103	" (R. CUT OFF)	" "
1706		" -221	" (R. DRIVE)	220 Ω "
1707		" -103	" (G. CUT OFF)	10k Ω "
1709		" -221	" (G. DRIVE)	220 Ω "
RESISTOR				
R1710		QRG019J-123S	OM R	12k Ω 1W J
1712		" -123S	"	" " "
1714		" -123S	"	" " "
CAPACITOR				
C1305		QEB51HM-224M	E Cap.	0.22 μ F 50V M
1324		QAT3001-010	Trimmer Cap.	"
COIL				
L1201		A76186-1.5	Peaking Coil	1.5 μ H
1202		A49468-562	"	5600 μ H
1203		" -101	"	100 μ H
1301		A76186-8.2	"	8.2 μ H
1302		" -68	"	68 μ H
TRANSFORMER				
T1302		CE40395-001	CW. Transf.	
1303		CE40396-001	DL P Transf.	
DIODE				
D1201		1SS133	Si. Diode	
~5				

TRC-1223A-2 (DEF. POWER REG. & AUDIO OUT PCB ASS'Y) V3

SYMBOL No.	△	PART No.	PART NAME.	REMARK
VARIABLE RESISTOR				
R1409		QVZ3507-223	VR (V. HEIGHT)	22k Ω B
1413		" -222	" (V. LIN.)	2.2k Ω "
1417		" -102	" (V. CENT.)	1k Ω "
1508		A75557-222	" (H. HOLD)	2.2k Ω "
1902		CEX40054-023	" (B1 ADJ)	2k Ω "
RESISTOR				
R1917		QRG019J-152S	OM R	1.5K Ω 1W J
-1926		QRM024K-R22	MP R	0.22 Ω 2W K
CAPACITOR				
C1401		QENG1HM-105Z	BP E Cap.	1 μ F 50V M
1404		QEN51HM-105	"	" " "
1405		QFZ0083-104M	M. Cap.	0.1 μ F " K
1408		QEE51EK-105B	Tan. Cap.	1 μ F 25V "
1409		QEE51AK-226M	"	22 μ F 10V "
1410		" -226M	"	" " "
1412		QEU51EM-108M	E Cap.	1000 μ F 25V M
1413		QEB51HM-224M	"	0.22 μ F 50V "
1509		QFP31HJ-562S	P P Cap.	5600pF " J
1515	△	QFP42JJ-562S	"	" 630V "
1516	△	" -472M	"	4700pF " "
1517	△	" -472M	"	" " "
1518		QFH52AJ-155M	M.M Cap.	1.5 μ F 100V "
1519		QFP32DK-473M	P P Cap.	0.047 μ F 200V K
1520		" -473M	"	" " "
1528		QENG1HM-474Z	BP E Cap.	0.47 μ F 50V M
1601		QEN51HM-105	"	1 μ F " "

TRC-1223A-2 (DEF. POWER REG. & AUDIO OUT PCB ASS'Y) 7/3

SYM EQL No.	△	PART No.	PART NAME.	REMARK
COIL				
L1501		CE40024-002	Hor. Lin.	
1503		CJ30030-054	Coil	
1522		CE40140-000	W Coil	
1901		CJ30131-00A	Power Choke	
TRANSFORMER				
T1501		A76568-MA	H. Drive Transf.	
1502	△	CJ39587-00A	F. B. Transf.	
1531		C39084--A	Side Pin Transf.	
1901		A76567-MA	P. Drive Transf.	
DIODE				
D1501		HZS6.8E(B2)	Zener Diode	
1502		V19E	Si. Diode	
1504		V09E	"	
~7				
1508		U19B(V)	"	
1601		HZS10E(B3)	Zener Diode	
1902		U19B	Si. Diode	
1903		HZS6.8E(B2)	Zener Diode	
1904		HZS12E(B)	"	
1905		HZS6.8E(B2)	"	
1906		ISS133	Si. Diode	
1907		HZS13E(B1)	Zener Diode	
1908		ISS133	Si. Diode	
1909		"	"	
TRANSISTOR				
Q1401		2SA1015(Y,GR)	Transistor	
1501		2SC1685	Si. Transistor	
1502		2SA817A(O,Y)	"	
1503	△	2SC2335	"	
1601		2SD1133	Transistor	

TRC-1223A-2(DEF. POWER REG. & AUDIO OUT PCB ASS'Y) 3/3

250622-3

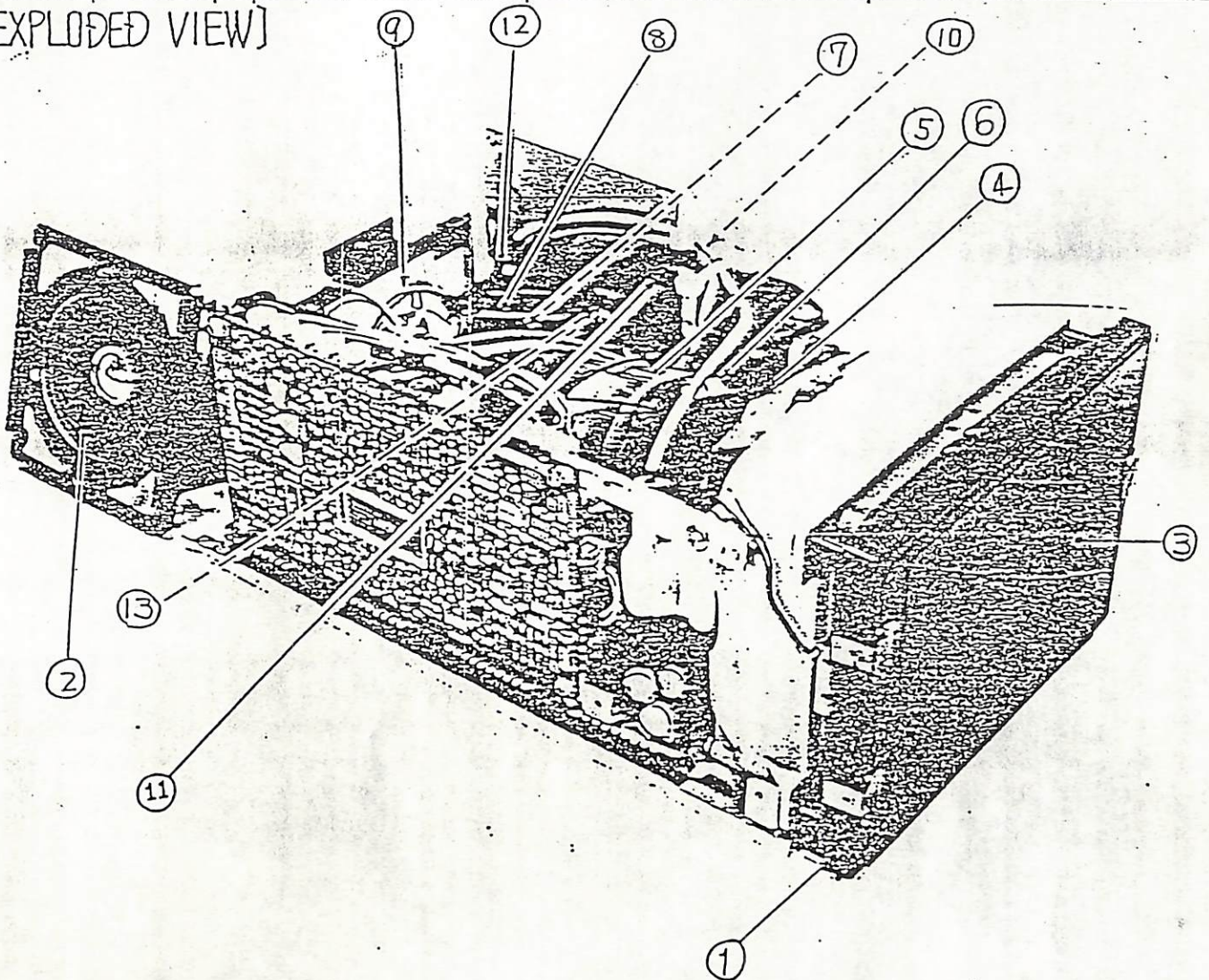
SYM ECL No.	PART No.	PART NAME.	REMARK
Q1902	2SA1015(Y,GR)	Transistor	
1903	2SC1685	Si. Transistor	
~5			
1906	2SA817A(O,Y)	"	
1908	2SC1685	"	
I C			
IC1401	μPC1031H2	I C	
1501	AN5750	"	
1601	AN5265	"	
OTHER			
R1518	ΔQRZ0054-270M	F R	27Ω 1/4W J
1519	Δ -220M	"	22Ω " "
F03	ΔQMF51A2-2R0S	Fuse	2A
S05	CEX40078-001	Lever SW	H. Cent
S06	" -002	"	Sub H. Cent
K1901	CE40155-001	Core	

CRT AND CABINET PARTS LIST

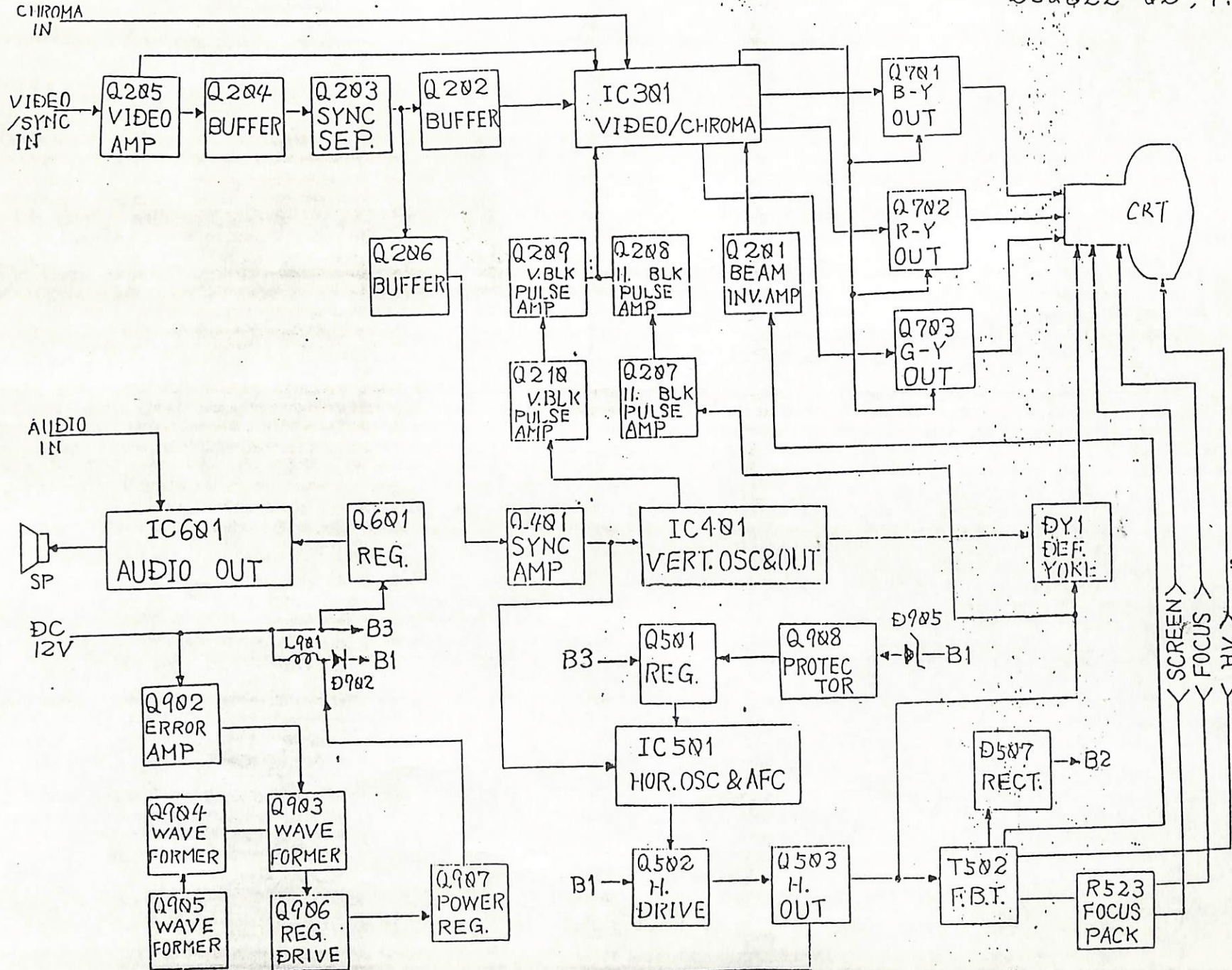
50022

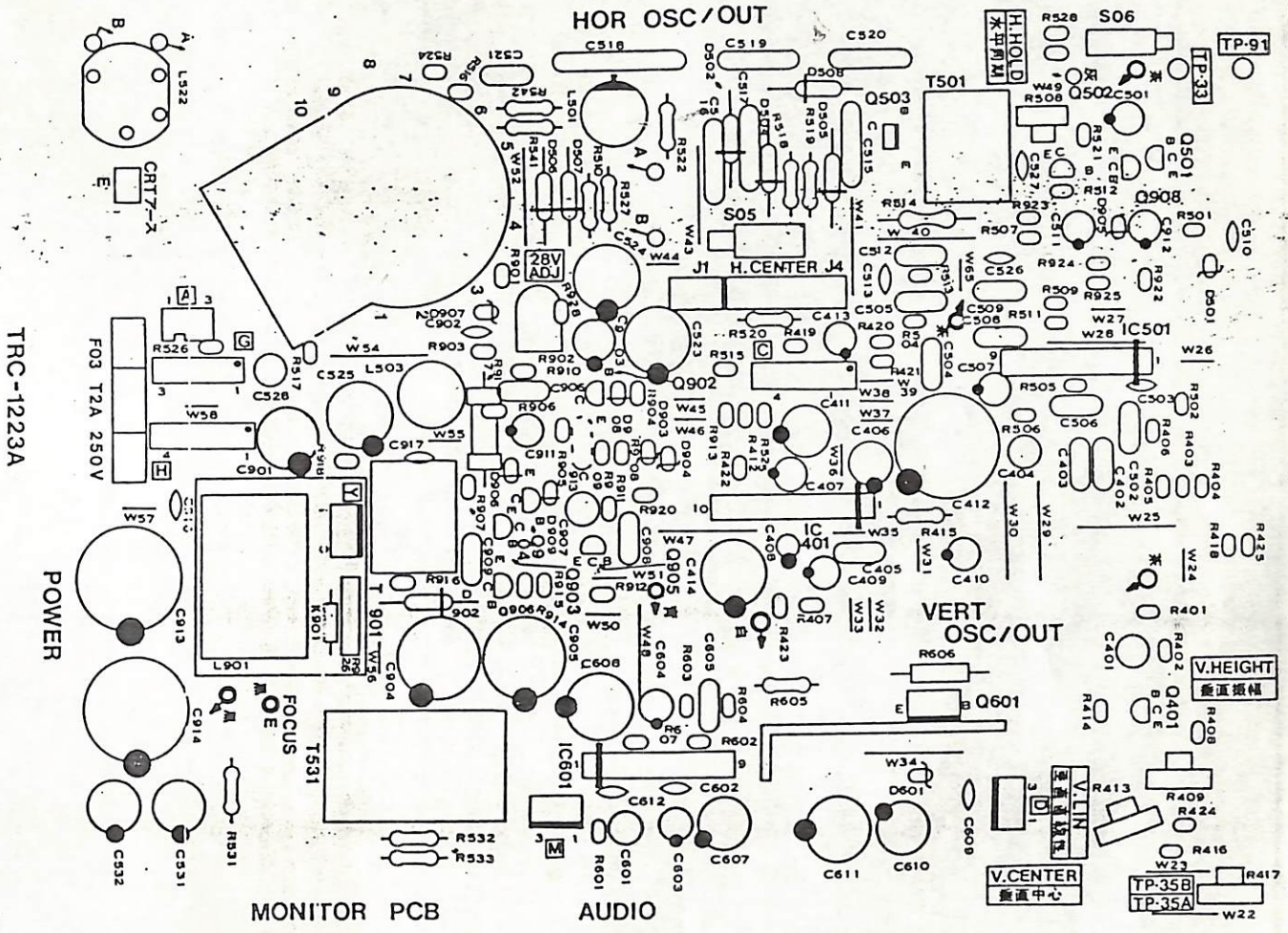
VIEW No.	SYMBOL No.	A	PART No.	PART NAME	REMARK
1			CM10022-00D	Front Panel Ass'y	
2			HSA0799-01C	Speaker	
3			CM41779-A01	Protector Glass	
4	V01	△	150BMB22-AF	Picture Tube	
5	DY1	△	CJ26210-00A	Def. Yoke	
6			—	Wedge	
7			—	PC Magnet	
8	T1502	△	CJ39587-00A	F. B. Transf.	
9		△	C39158-D	CRT Socket	
10	Q1907		2SD1118	Si. Transistor	Power regulator
11	R1523	△	CJ49510-257-28	Focus Pack	Focus Screen
12			A46445	Focus Cover	(X2)
13	C001	△	QCZ9017-102M	C Cap.	1000p - 3KV P

(EXPLODED VIEW)



(No. 5463) 11



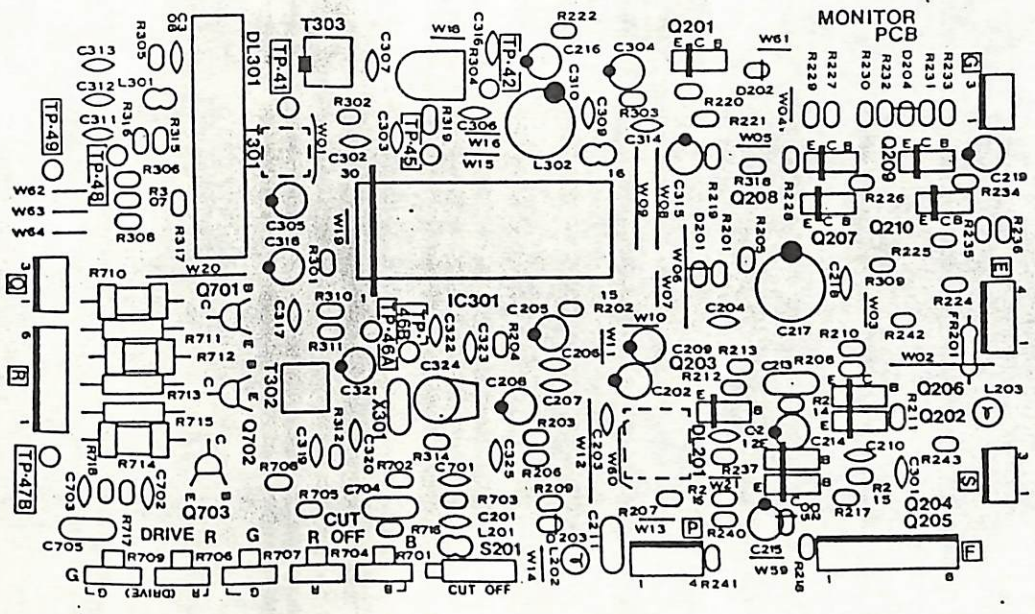


TRC-1223A

POWER

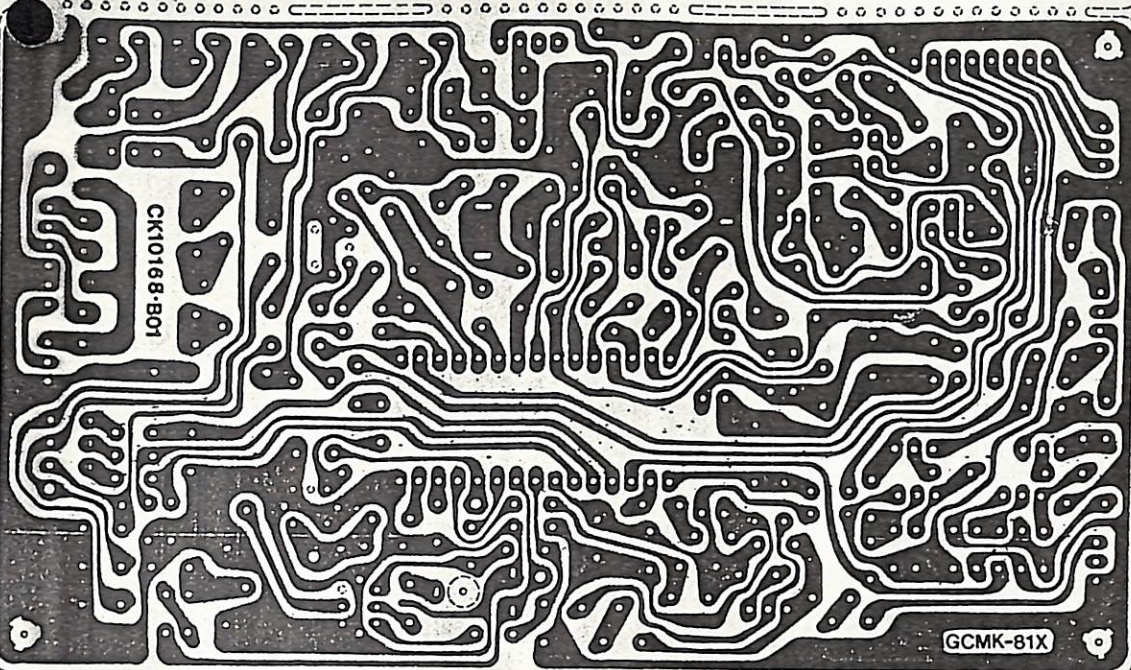
MONITOR PCB

AUDIO



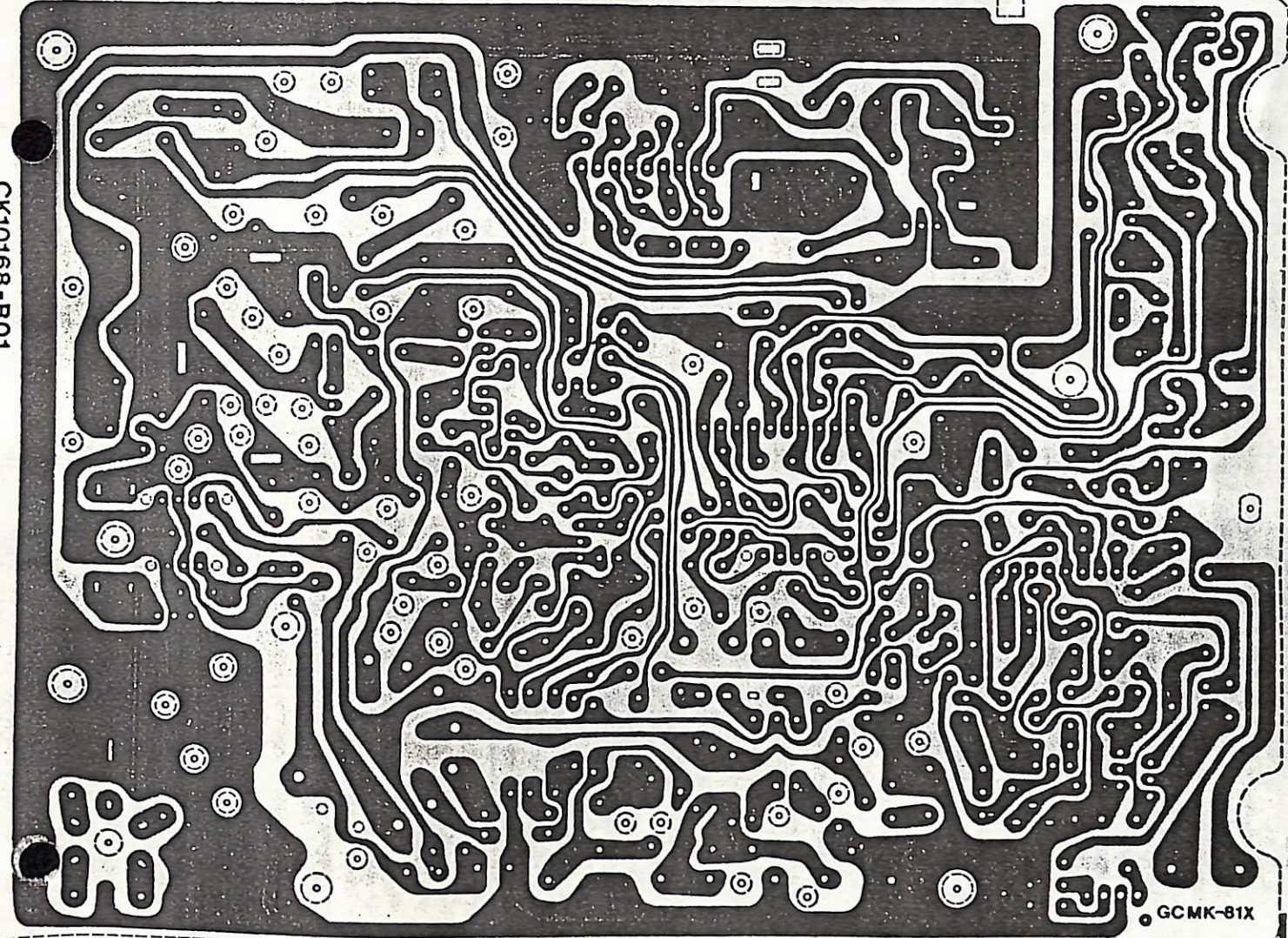


101



CK10168-B01

GCMK-81X



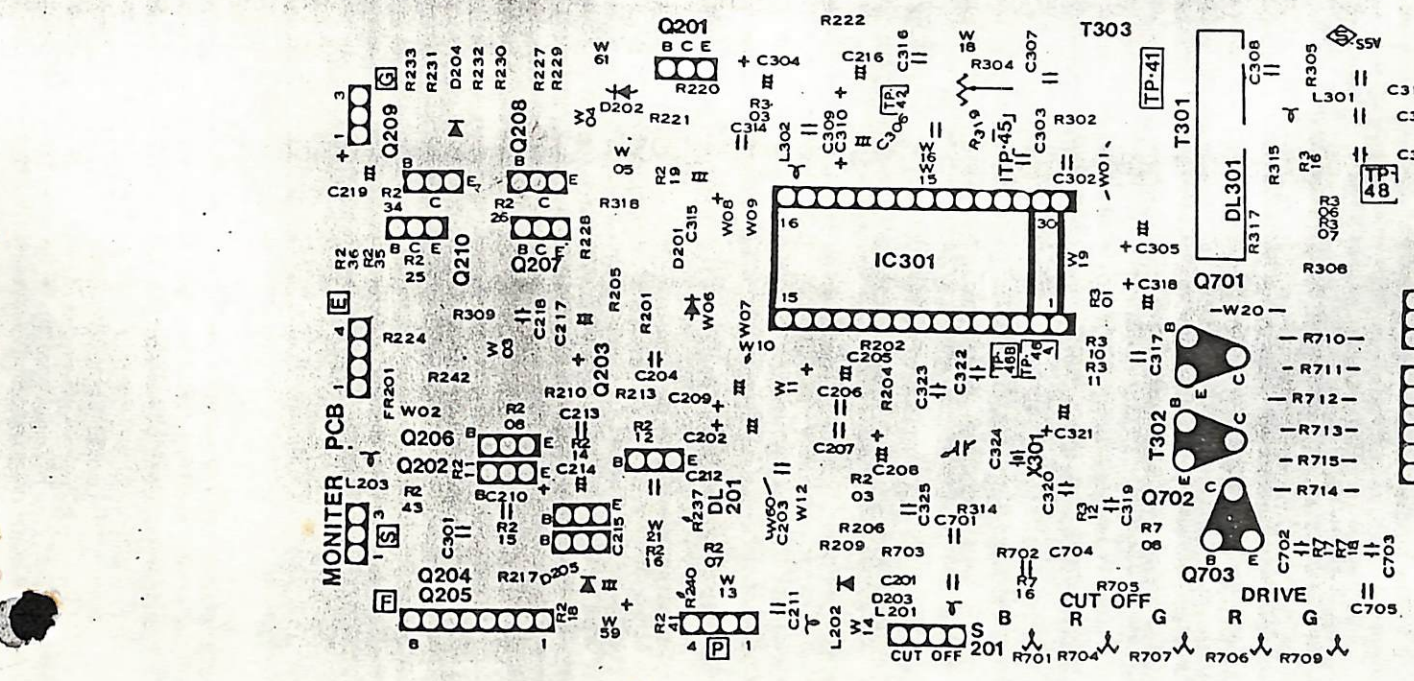
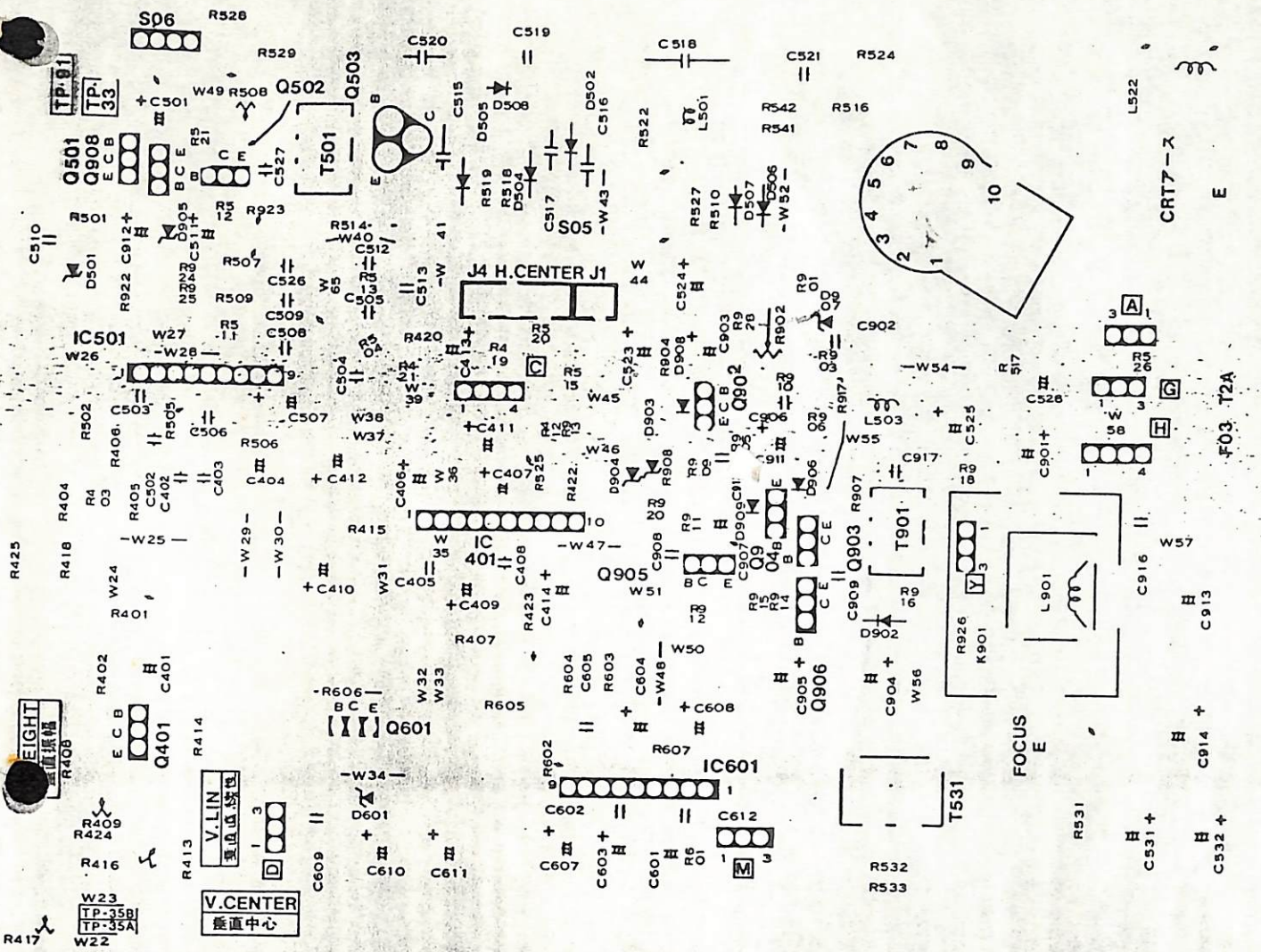
CK10168-B01

GCMK-81X

101

G.I.P

250622-02



MONITOR PCB