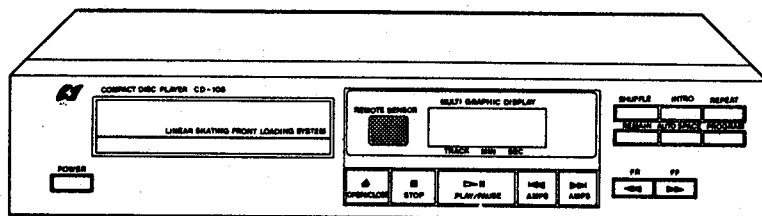


# SERVICE MANUAL

## COMPACT DISC PLAYER CD-X105



### CAUTION

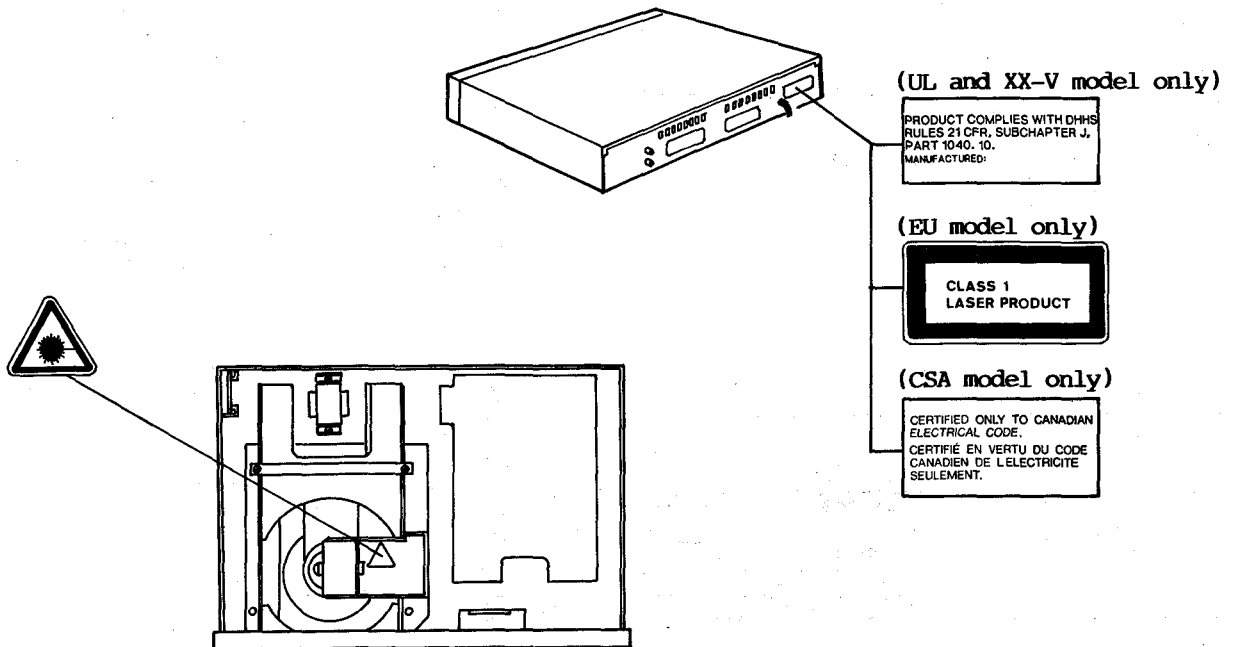
1. Parts identified by the  $\triangle$  symbol on the schematic diagram and the parts list are critical for safety. Use only replacement parts that have critical characteristics recommended by the manufacturer.
2. Make leakage-current or resistance measurements to determine that exposed parts are acceptably insulated from the supply circuit before returning the appliance to the customer.

Format .....	Compact disc, digital audio
Pick-up .....	3-beam, semiconductor laser
No. of channels .....	2 channels (stereo)
Decoding (D/A) .....	16-bit dynamic/channel
Frequency response .....	20Hz 20KHz
Total harmonic distortion .....	Less than 0.06% (1KHz)
Signal-to-noise ratio (S/N) ....	Better than 90 dB
Dynamic range .....	Better than 85 dB
Wow and flutter .....	Below measurable limit
Output voltage/load impedance	
Output .....	2V/10K ohmS
Power requirements .....	AC 120V/220V/240V, 50/60Hz
For U.S.A. & Canada .....	AC 120V, 60Hz
For Europe .....	AC 220V, 50Hz
Power consumption .....	14.5 watts
Dimensions .....	430 mm (16-15/16") W
.....	92 mm (3-5/8") H
.....	262 mm (10-1/3") D
Weight .....	2.8 Kg (6.2 lbs) net

\* Design and specifications subject to changes without notice for improvements.

# Caution Concerning Handling of The Laser

The following label has been affixed to the unit, listing the proper procedure for working with the laser beam.



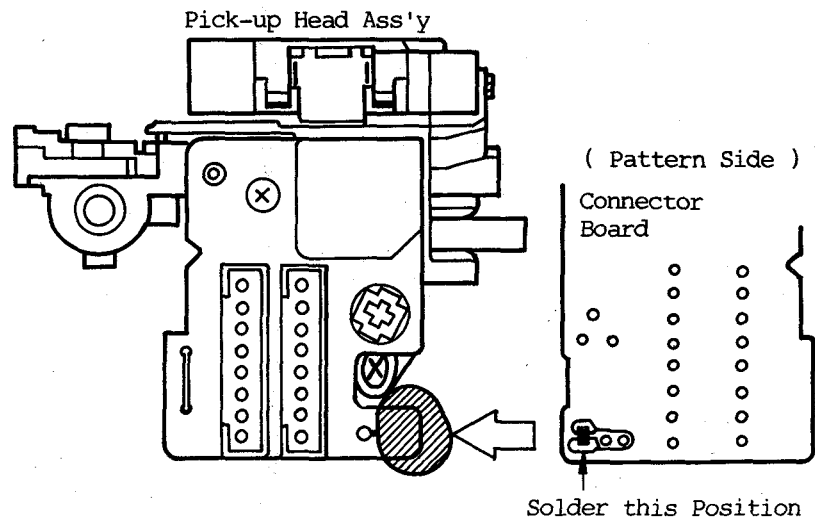
## ■ Cautions When Removing The Laser Pick-up For Repairing

Before removing the laser pick-up, short-circuit the terminals by soldering. This is to prevent damage to the pick-up during removal operation.

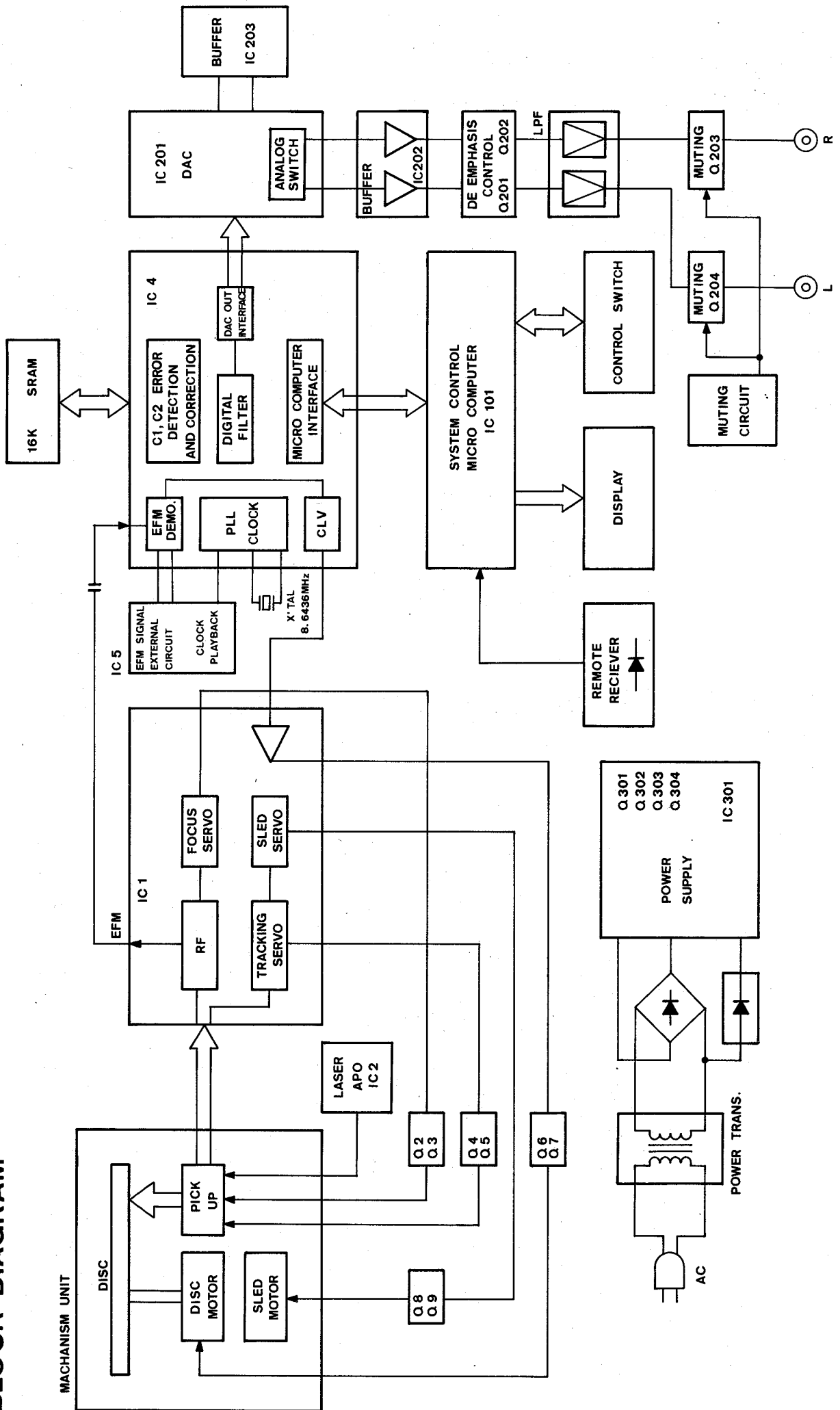
1. Solder the pick-up terminals.
2. Detach 2 lead connectors.

## ■ Cautions When Replacing The laser Pick-up

1. Insert the 2 pick-up lead connectors into the connector PCB.
2. Detach the short-circuited pick-up terminal soldering.  
\* The terminal is factory soldered for protection, so use the same procedure when replacing the pick-up when a new one.

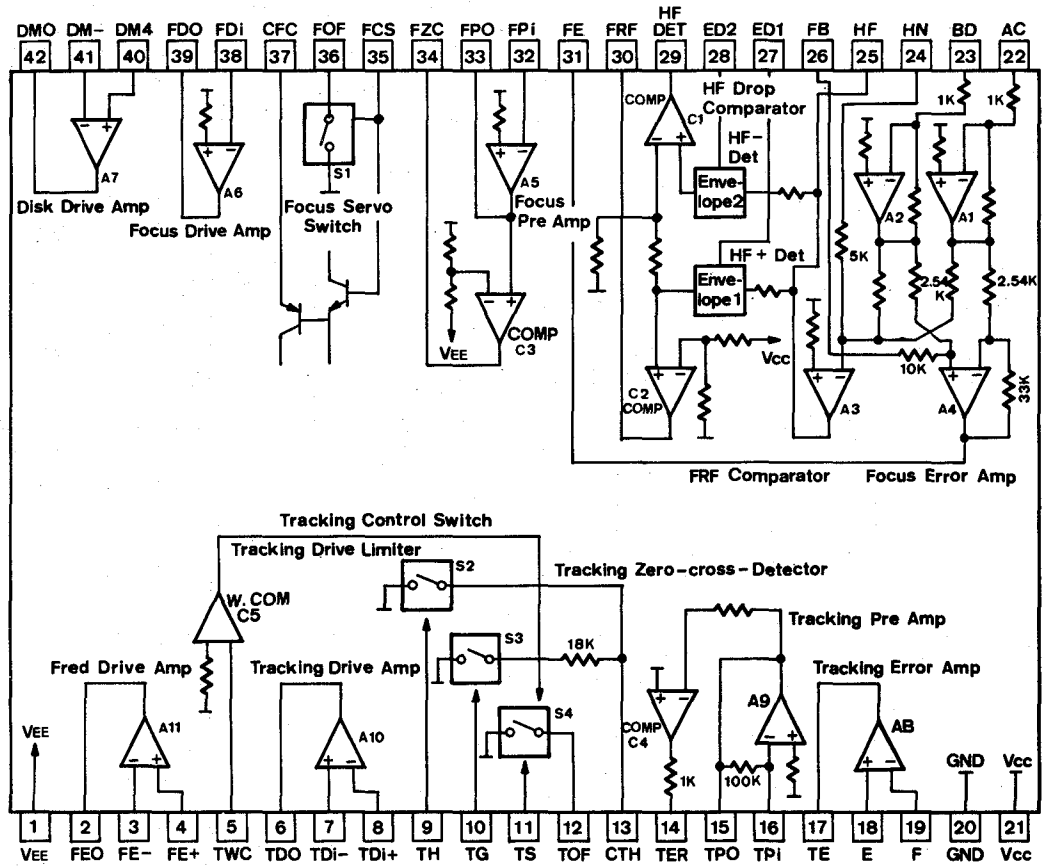


# BLOCK DIAGRAM

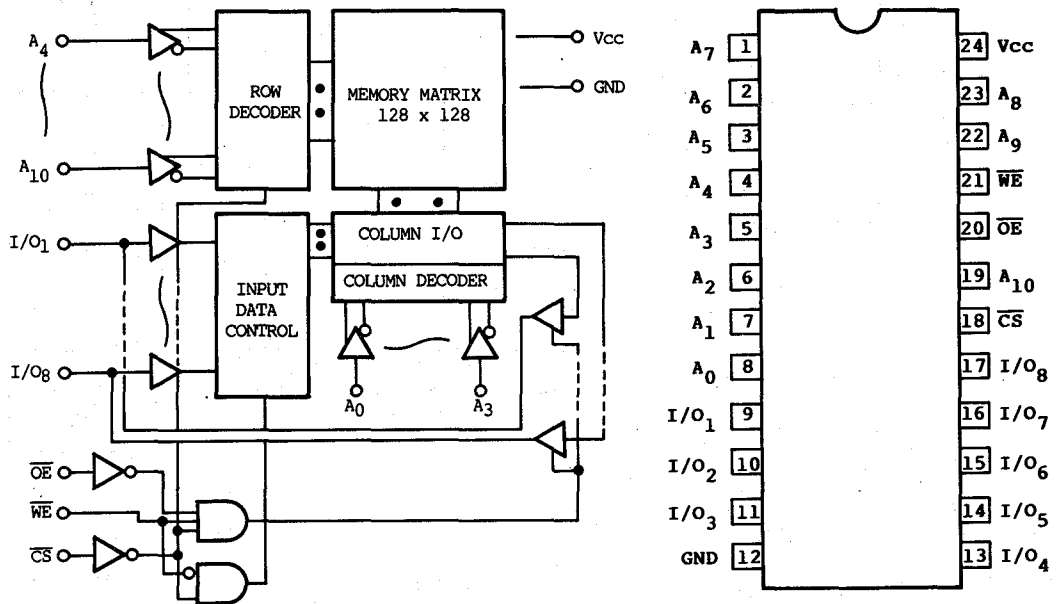


# INTERIOR BLOCK DIAGRAM & TERMINAL FUNCTION OF IC

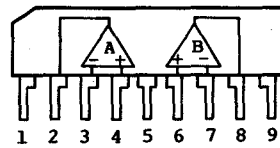
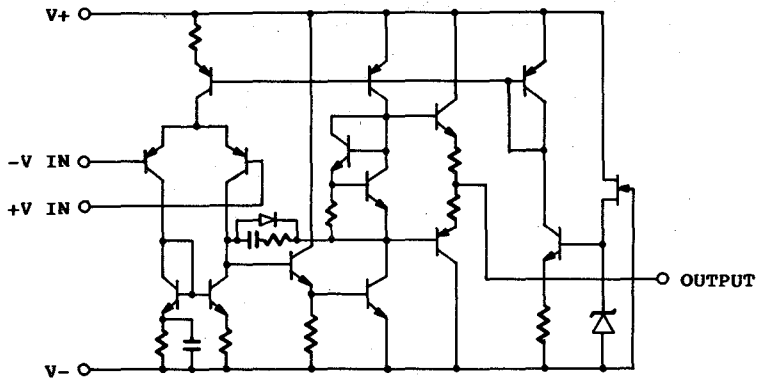
XC 488A0 ( Focus & Tracking Servo )



UM 6116-2 ( SRAM )

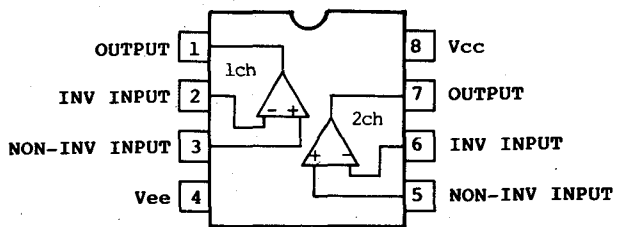


NJM 2068 ( OP. Amp )

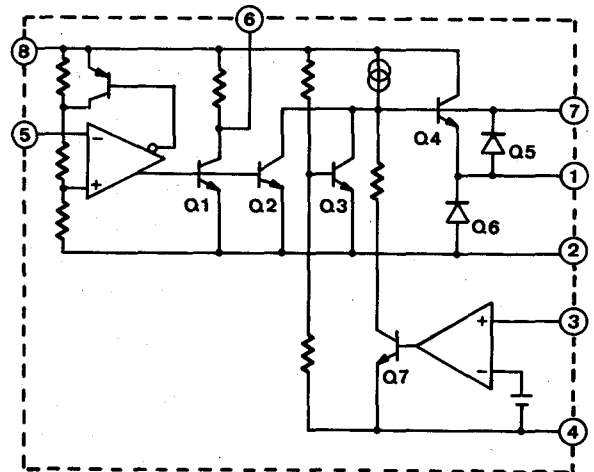


1. V+
2. A OUTPUT
3. A-INPUT
4. A+INPUT
5. V-
6. B+INPUT
7. B-INPUT
8. V OUTPUT
9. V+

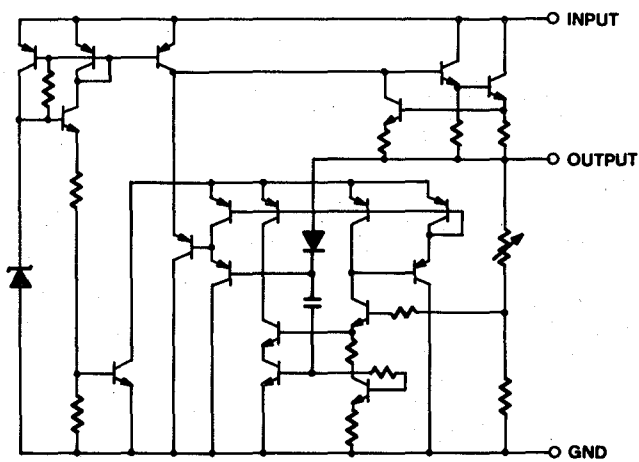
uPC 4560C ( OP Amp )



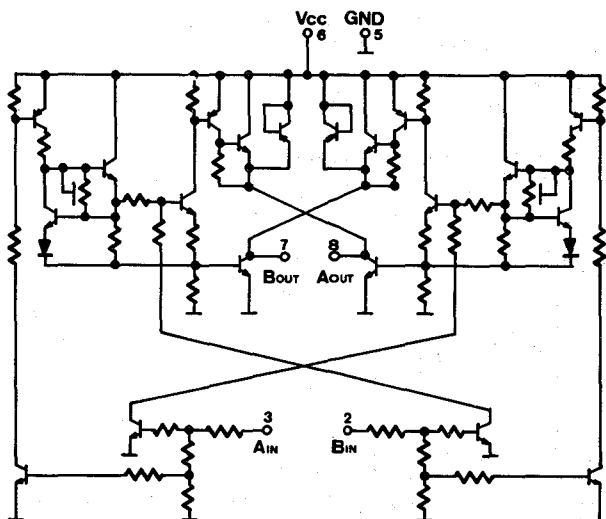
IR 3C02 ( APO )



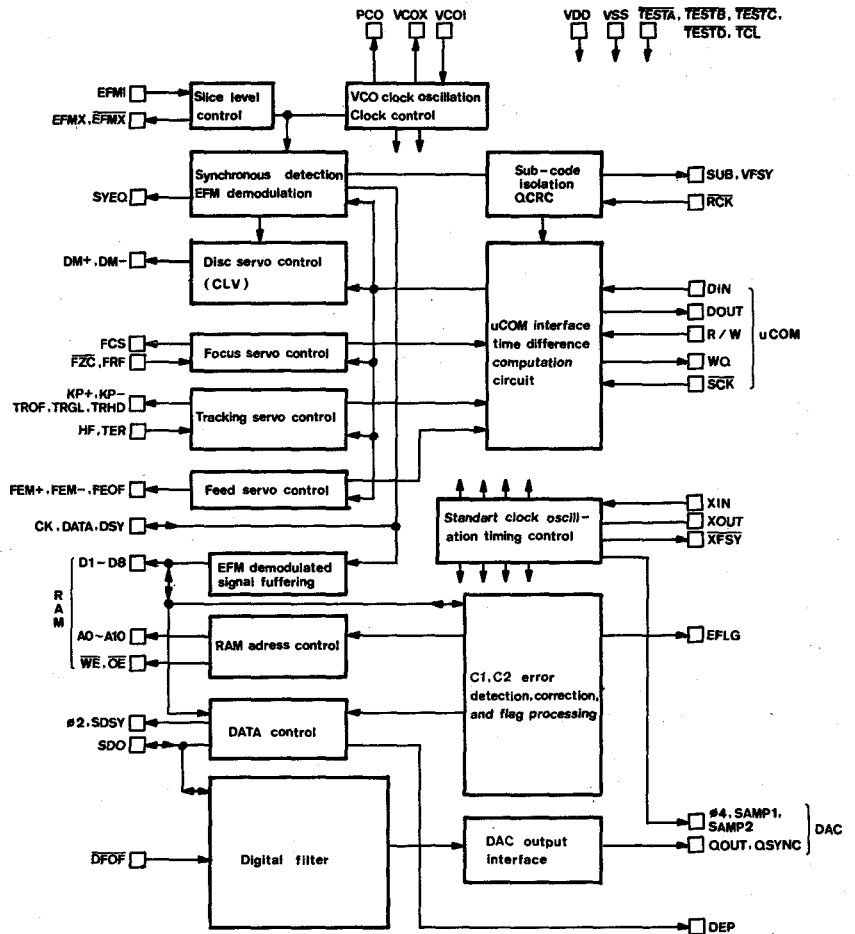
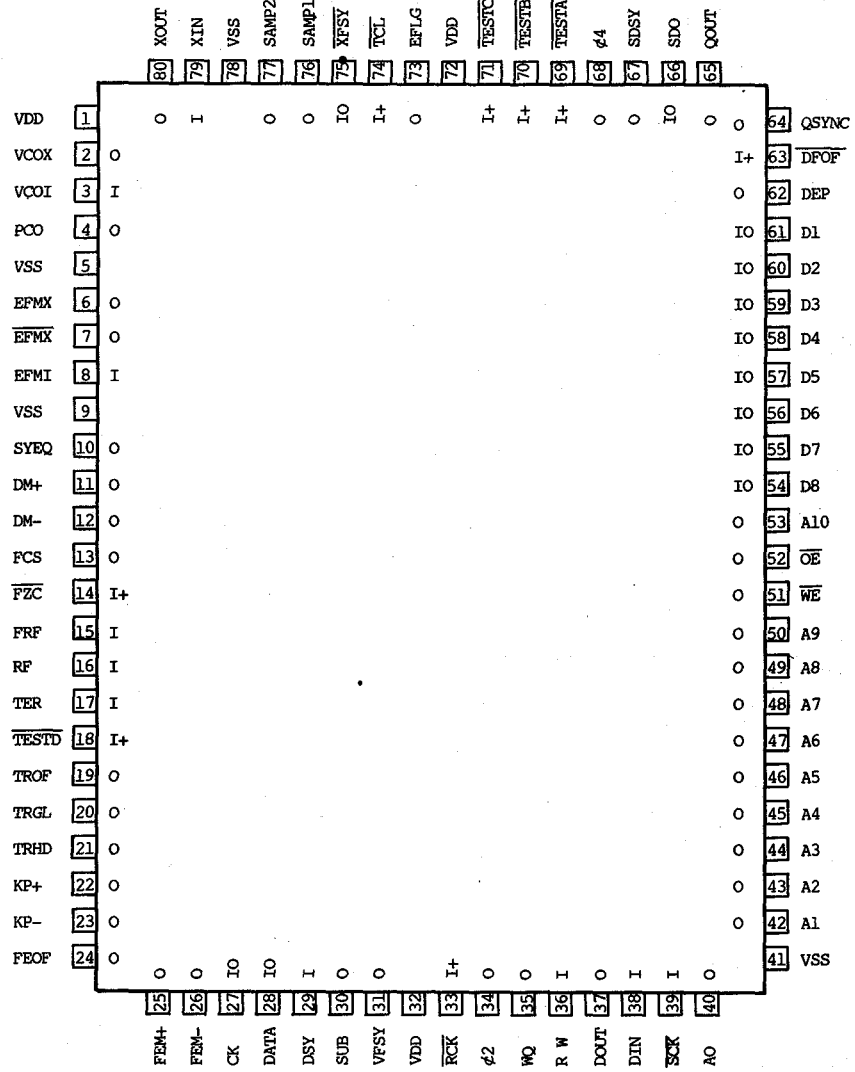
MC 78L12 ( Regulator )

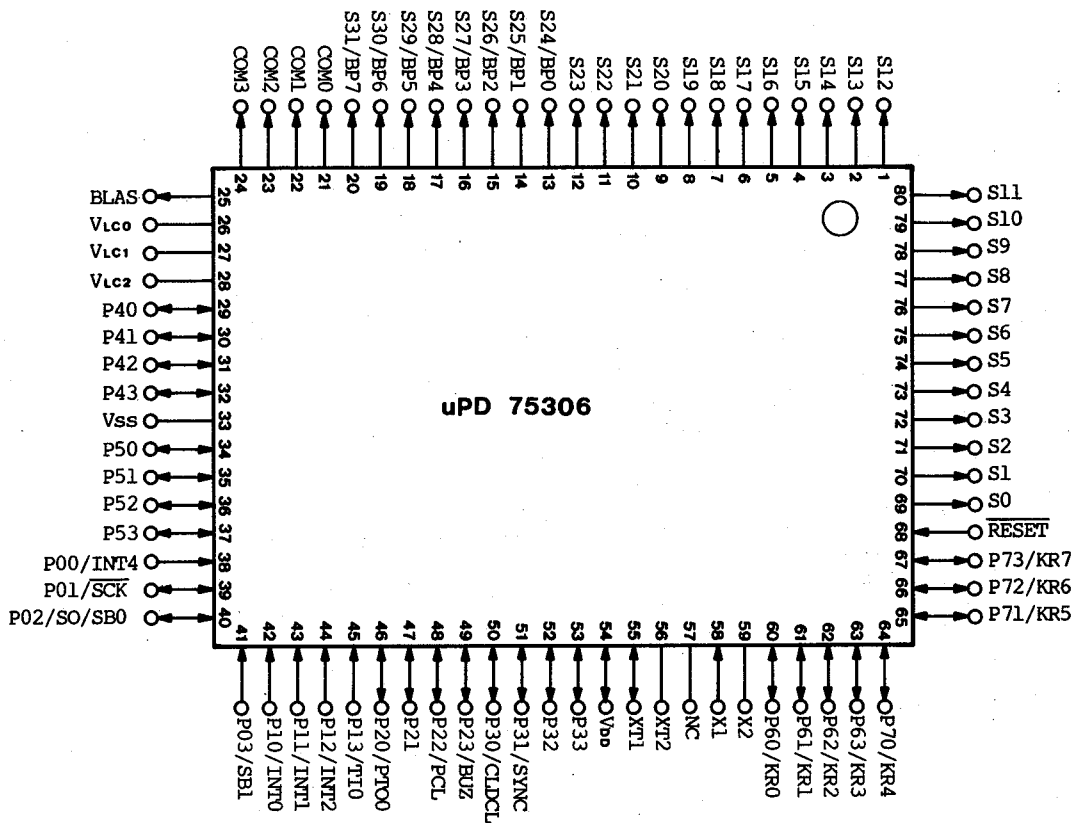


BA 6208 ( Motor Drive )

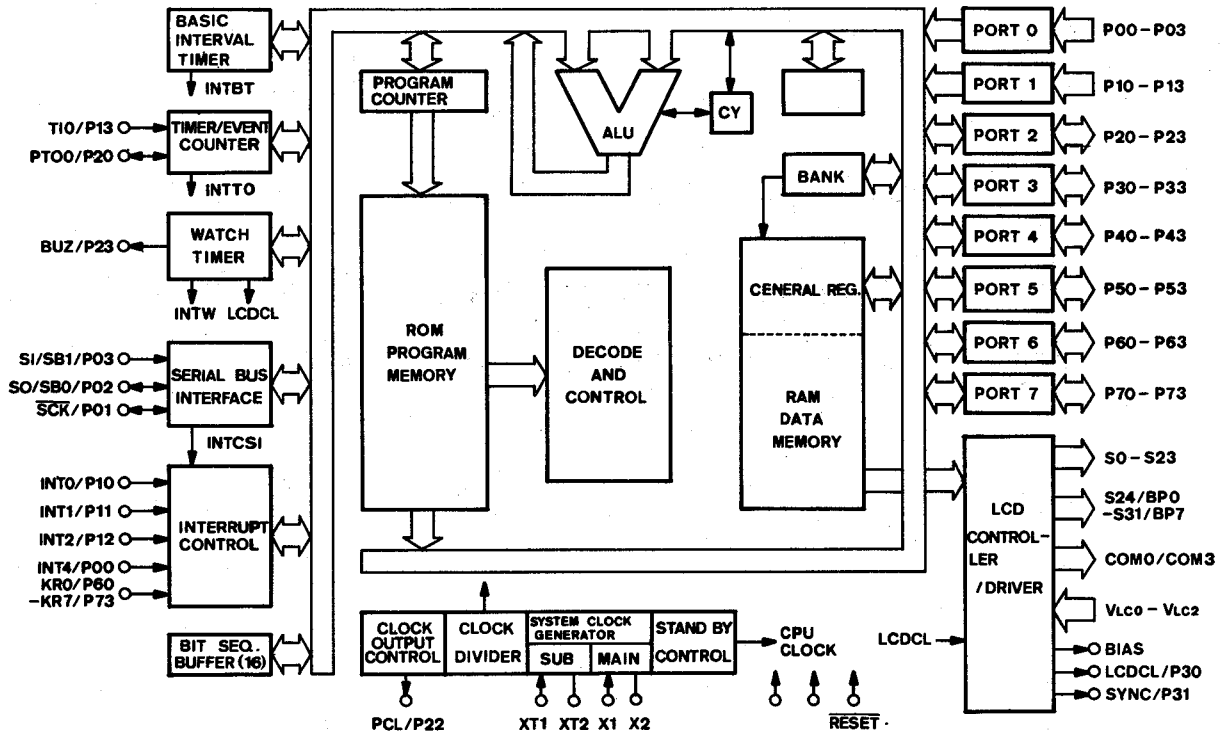


# YM 3805 ( Signal Processor & Controller )

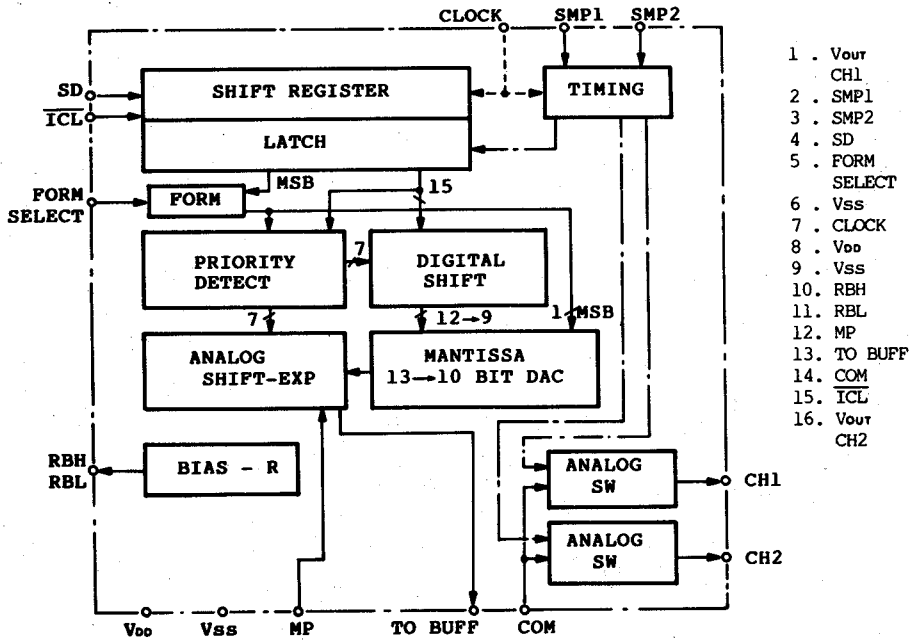




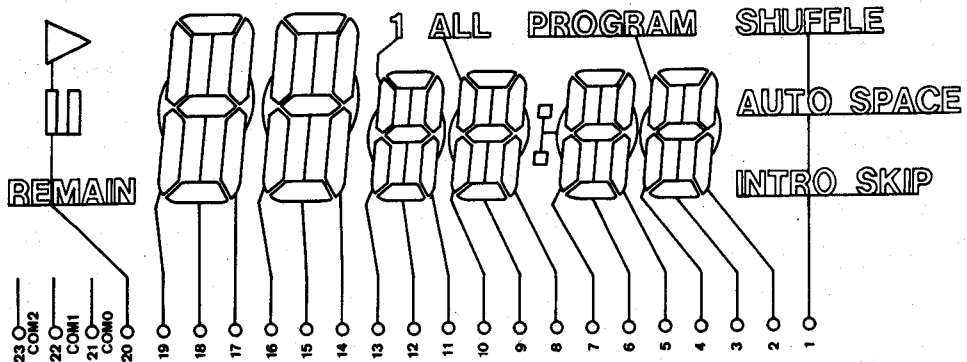
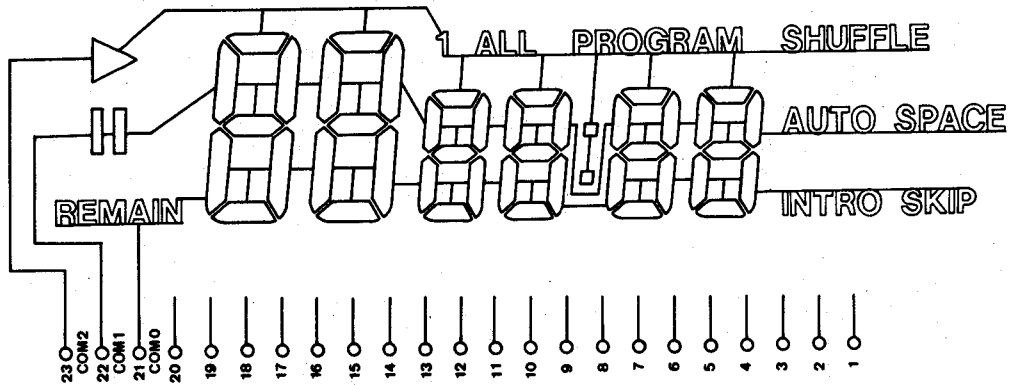
- |                        |  |
|------------------------|--|
| P00-03 : Port 0        | S0-31 : Segment Output 0-31                  |
| P10-13 : Port 1        | COM0-3 : Common Output 0-3                   |
| P20-23 : Port 2        | Vlc0-2 : LDC Power Supply 0-2                |
| P30-33 : Port 3        | BLAS : LCD Power Supply Bias Control         |
| P40-43 : Port 4        | LCDCI : LCD Clock                            |
| P50-53 : Port 5        | SYNC : LCD Synchronization                   |
| P60-63 : Port 6        | TI0 : Timer Input 0                          |
| P70-73 : Port 7        | PTO0 : Programmable Timer Output 0           |
| BP0-7 : Bit Port       | BUZ : Buzzer Clock                           |
| LR0-7 : Key Return     | PCL : Programmable Clock                     |
| SCK : Serial Clock     | INT0,1,4 : External Vectored Interrupt 0,1,4 |
| SI : Serial Input      | INT2 : External Test Interrupt 2             |
| SO : Serial Output     | XI,2 : Main-system Clock Oscillation 1,2     |
| SB0,1 : Serial Bus 0,1 | XT1,2 : Subsystem Clock Oscillation 1,2      |
| RESET : Reset          | NC : Non-connection                          |



YM 3020 ( Floating D/A Converter )

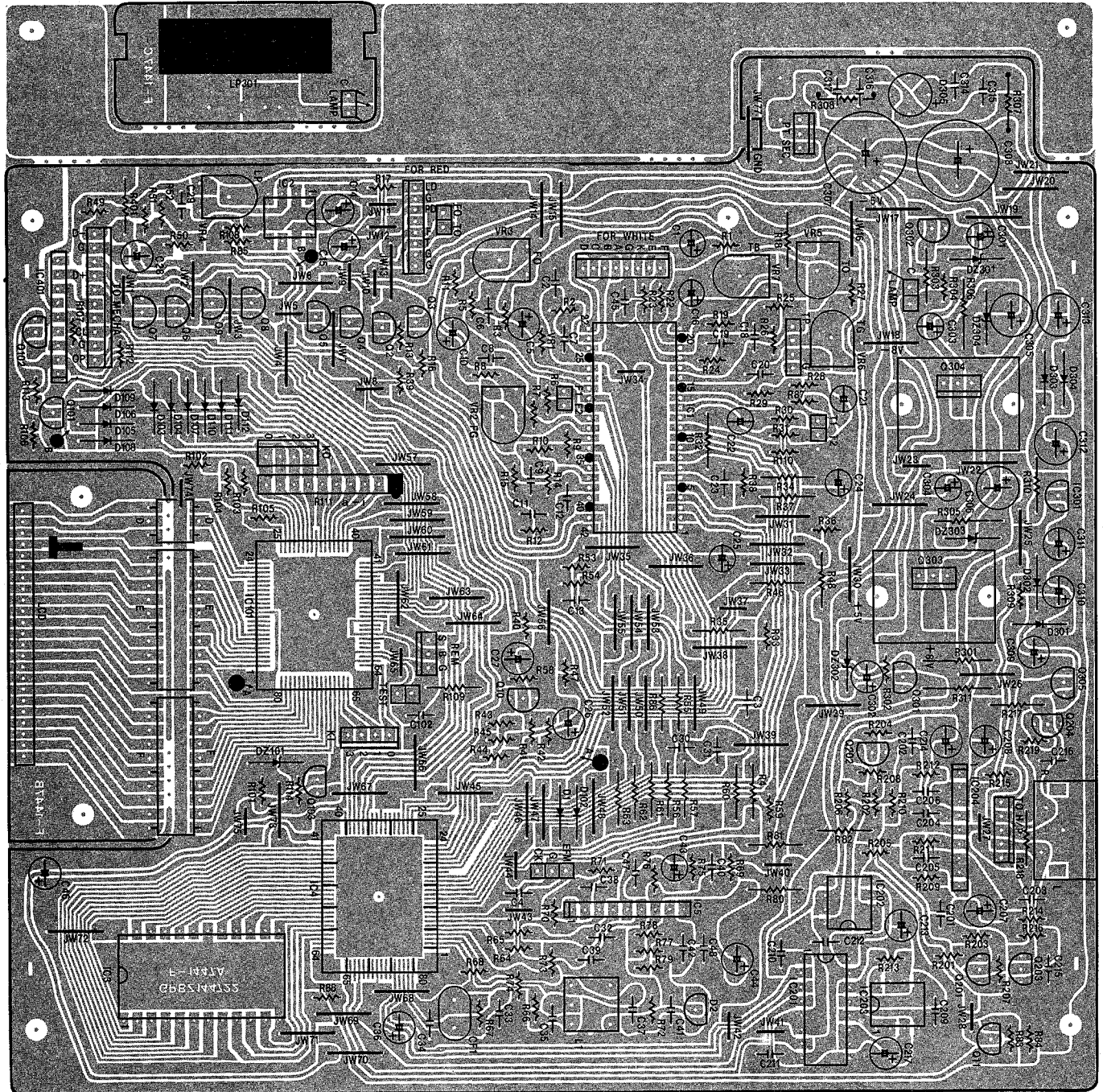


LCD DISPLAY





# PARTS LOCATION OF P. C. BOARD



Parts List ( GPBZ144722 )

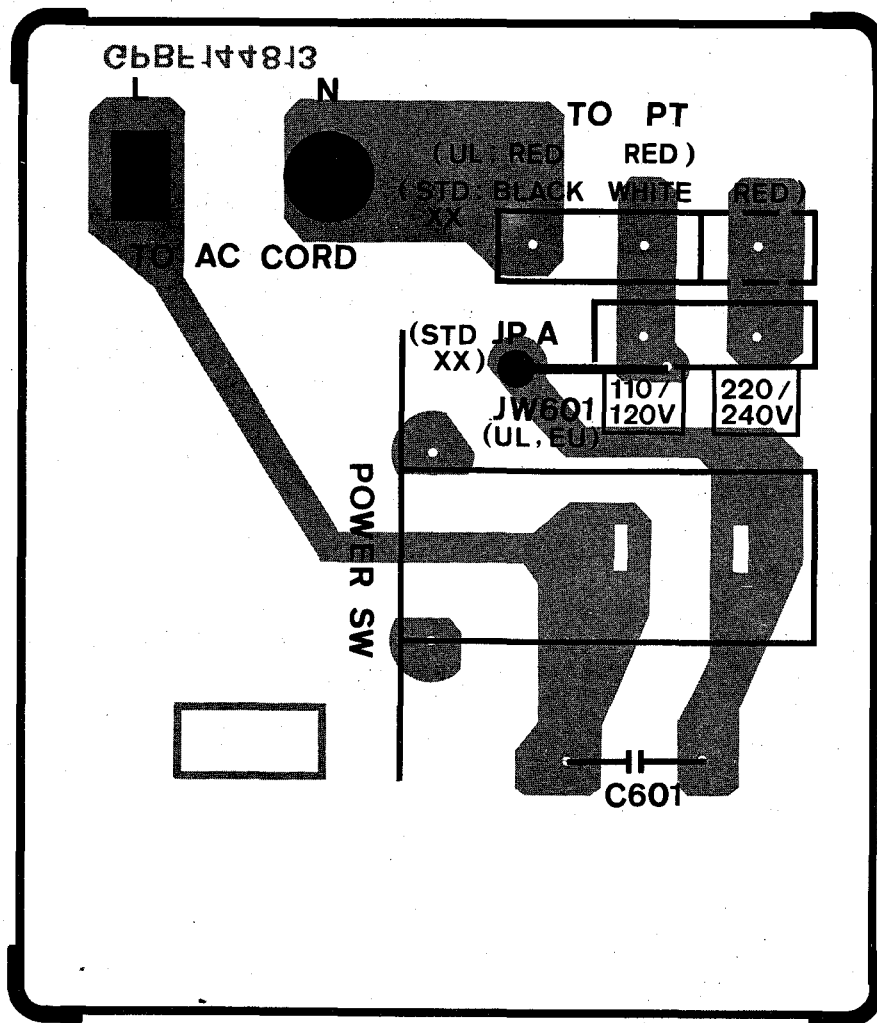
Parts No.	Stock No.(J)	Stock No.(T)	Description	
<b>IC'S</b>				
IC1		EICC488A04	XC 488A0	YAMAHA
IC2		EICIR3C020	IR 3C02	SHARP
IC3		EICUM61166	UM 6116	UMC
IC4		EICYM38056	YM 3805	
IC5		EICM2068S6	NJM 2068S	JRC
IC201		EICYM30201	YM 3020	
IC202,203		EIC9C45603	uPC 4560C	NEC
IC204		EICM4558S0	M 4558S	JRC
IC301		EIC078L129	MC 78L12	AC TAPE
IC401	46149600	EICBA62089	BA 6208	MOTOR DRIVEN
IC101		EICP306GF1	uPD75P306GF	NEC (KENTECH)
<b>Transistor</b>				
Q2,4,6,9;301		ESC2060R99	2SC 2060R	ROHM
Q3,5,7,8		ESCA934R94	2SA 934R	ROHM
Q10,102,201,202, 203,204		ESCC945P23	2SC 945P	NEC
Q11,101,103,302,305		ESCA733P28	2SA 733P	NEC
Q303	03083901	ESCD313HP3	2SD 313HP-D	
Q304	48063301	ESEB507E75	2SB 507E	
<b>Diode</b>				
D1,102,103,104,105 106,107,108,109,110 111,112,301,302	83000100	EDS4148135	1N 4148	DIODE
D2		EDSSVC2118	SVC 211	DIODE
DZ101		EDZ0390003	3.9V	ZENER DIODE
D303,304	83005000	EDS4002424	1N 4002	DIODE
DZ303,304	46112700	EDZ0820001	8.2V	ZENER DIODE
DZ301,302		EDZ0560006	5.6V	ZENER DIODE
D305		ERBW005D02	W 005M	DIODE
L1		ETL5D6UH01	5.6uH	PLL COIL
CF1		ECF8643606	8.6436MHz	X'TAL
VR2,6,7		ERH015A101	100KA	
VR3,5		ERH104A100	10KA	
VR4		ERH204A107	20KA	
C38	08702300	ECS822JFC7	820pF	POLY CAP
C7	08600400	ECC300IFI7	3pF	CERAMIC CAP
C4,23	08601700	ECC331IFI7	33pF	CERAMIC CAP
C19,33,34,45	08601900	ECC471IFI6	47pF	CERAMIC CAP
C209	08602100	ECC681IFI3	68pF	CERAMIC CAP
C2	08602300	ECC102IFI5	100pF	CERAMIC CAP
C20	08602900	ECC332IFI8	330pF	CERAMIC CAP
C12,39	08603100	ECC472IFI7	470pF	CERAMIC CAP
C47,48,102,314,315, 316,317	08603600	ECC224FFI9	223pF	CERAMIC CAP
C35,211	08603700	ECC474FFI8	473pF	CERAMIC CAP
C13,41	46281800	ECP103KFI1	102pF	MYLAR CAP
C6,29	46282000	ECP153KFI6	152pF	MYLAR CAP
C210,212	46282200	ECP223KFI4	222pF	MYLAR CAP
C203,204	46282300	ECP273KFI9	272pF	MYLAR CAP

Parts List ( GPBZ144722 )

Parts No.	Stock No.(J)	Stock No.(T)	Description
C40,42,215,216	46282400	ECP333KFI4	332pF MYLAR CAP
C32	46282700	ECP683KFI0	682pF MYLAR CAP
C8,30,31,37	46282900	ECP104KFI2	103pF MYLAR CAP
C205,206	46283100	ECP154KFI7	153pF MYLAR CAP
C9	46283400	ECP274KFI0	273pF MYLAR CAP
C201,202	46283900	ECP684KFI1	683pF MYLAR CAP
C3	46284100	ECP105KFI3	104pF MYLAR CAP
C11		ECP185KDC5	184pF MYLAR CAP
C18		ECP275KDC9	274pF MYLAR CAP
C22		ECE156N6I8F	1.5uF/50V (NP) ELECT CAP
C21	48103400	ECE106N6I3F	1uF/50V (NP) ELECT CAP
C28	83133500	ECE226N6I6F	2.2uF/50V (NP) ELECT CAP
C27	08414100	ECE226F6I3	2.2uF/50V ELECT CAP
C207,208	46553000	ECE476D6I8	4.7uF/25V ELECT CAP
C24,217	08414400	ECE107F6I1	10uF/50V ELECT CAP
C14		ECE227B6I6	22uF/10V ELECT CAP
C5	46552500	ECE337B6I6	33uF/10V ELECT CAP
C1	08410700	ECE477B6I5	47uF/10V ELECT CAP
C10,15,16,25,26,36 43,44,46,301,302, 303,304	83122600	ECE108B6I4	100uF/10V ELECT CAP
C213,214,309,310,311	83123000	ECE108C7I4	100uF/16V ELECT CAP
C312,313	83123400	ECE108D7I1	100uF/25V ELECT CAP
C305,306	48455800	ECE478B9I5	470uF/10V ELECT CAP
C307	48456700	ECE229CIC81	2200uF/16V ELECT CAP
C308	48460800	ECE339CKC71	3300uF/16V ELECT CAP
R49	46484700	ERJ22006I9	2.2 ohm 1/6W RESISTOR
R17	46487100	ERJ22106I0	22 1/6W RESISTOR
R213	46488700	ERJ10206I8	100 1/6W RESISTOR
R203,204	46489300	ERJ18206I2	180 1/6W RESISTOR
R25,79	46489500	ERJ22206I1	220 1/6W RESISTOR
R10	46489900	ERJ33206I1	330 1/6W RESISTOR
R205,206	46490300	ERJ47206I0	470 1/6W RESISTOR
R9	46490500	ERJ56206I4	560 1/6W RESISTOR
R1,209,210,302,304	46490800	ERJ82206I3	820 1/6W RESISTOR
R88,114,211,212,216	46491000	ERJ10306I9	1K 1/6W RESISTOR
R66	46491400	ERJ15306I4	1.5K 1/6W RESISTOR
R36,73	46491800	ERJ22306I2	2.2K 1/6W RESISTOR
R50	46492000	ERJ27306I7	2.7K 1/6W RESISTOR
R26	46492400	ERJ39306I0	3.9K 1/6W RESISTOR
R6,77,85,105	46492600	ERJ47306I1	4.7K 1/6W RESISTOR
R87	46492800	ERJ56306I5	5.6K 1/6W RESISTOR
R42,64,65,201,202	46493000	ERJ68306I8	6.8K 1/6W RESISTOR
R28,72	46493200	ERJ82306I4	8.2K 1/6W RESISTOR
R43,59,71,110,219	46493400	ERJ10406I0	10K 1/6W RESISTOR
R47,51	46493600	ERJ12406I6	12K 1/6W RESISTOR
R41,58,102,103,104	46493800	ERJ15406I5	15K 1/6W RESISTOR
R14	46494000	ERJ18406I4	18K 1/6W RESISTOR
R22,23,30,40,68,69, 74,75,76,83,101,106 107,108,214,215,113	46494200	ERJ22406I3	22K 1/6W RESISTOR
29			

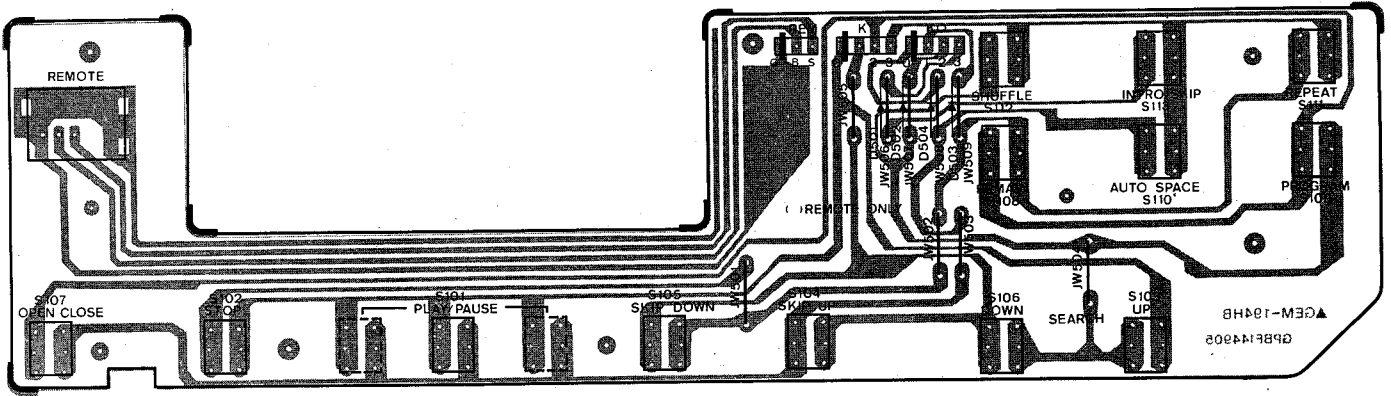
Parts List ( GPBZ144722 )

Parts No.	Stock No. (J)	Stock No. (T)	Description
VR1	46494400	ERJ27406I8	27K ohm 1/6W RESISTOR
R5, 31, 70	46494600	ERJ33406I3	33K 1/6W RESISTOR
R2, 45	46494800	ERJ39406I1	39K 1/6W RESISTOR
R7, 84, 309	46495000	ERJ47406I2	47K 1/6W RESISTOR
R52	46495200	ERJ56406I6	56K 1/6W RESISTOR
R13, 53, 54	46495400	ERJ68406I9	68K 1/6W RESISTOR
R11	46495600	ERJ82406I5	82K 1/6W RESISTOR
R3, 78, 112	46495800	ERJ10506I1	100K 1/6W RESISTOR
R15	46496200	ERJ15506I6	150K 1/6W RESISTOR
R19	46496400	ERJ18506I5	180K 1/6W RESISTOR
R24, 38	46496600	ERJ22506I4	220K 1/6W RESISTOR
R12	46497000	ERJ33506I4	330K 1/6W RESISTOR
R27, 207, 208	46497400	ERJ47506I3	470K 1/6W RESISTOR
R8	46497800	ERJ68506I0	680K 1/6W RESISTOR
R33, 44, 67	46498200	ERJ10606I2	1M 1/6W RESISTOR
R401	08903100	ERJ18104I5	18 ohm 1/4W RESISTOR
R310	08903300	ERJ22104I4	22 1/4W RESISTOR
R18, 48, 303	08904900	ERJ10204I2	100 1/4W RESISTOR
R4, 80, 81	08905700	ERJ22204I5	220 1/4W RESISTOR
R46, 217	08907300	ERJ10304I3	1K 1/4W RESISTOR
R37	08908100	ERJ22304I6	2.2K 1/4W RESISTOR
R63, 218	08909700	ERJ10404I4	10K 1/4W RESISTOR
R109	08910500	ERJ22404I7	22K 1/4W RESISTOR
R32, 34	08911100	ERJ39404I5	39K 1/4W RESISTOR
R61, 62	08911300	ERJ47404I6	47K 1/4W RESISTOR
R56, 57, 60, 82	08912100	ERJ10504I5	100K 1/4W RESISTOR
R86	08913900	ERJ56504I1	560K 1/4W RESISTOR
R35, 55	08914300	ERJ82504I0	820K 1/4W RESISTOR
R111		ERN22410J8	22K x 9 RES. NETWORK
R307, 308		ERD10004041	1ohm 1/4W FUSE RESISTOR
R16, 39	46499700	ERJ68206I7	680 1/6W RESISTOR
R305, 306	08905500	ERJ18204I6	180 1/4W RESISTOR
R301, 311	83076200	ERJ470F2C2	4.7 1/2W RESISTOR
G, S		MEJ1610F07	IL-3P
KO		MEJ1613F08	IL-4P
KI		MEJ1614F05	IL-4P
	83024900	MEJ1288M02	ILG-3P
	83025000	NEJ1289M09	ILG-4P
	83025600	MEJ1295M02	ILG-10P
	46913000	MEJ1528M05	PH-8P
		MEJ1575D09	O/P JACK
		MES1095D07	HEAT SINK H=22mm
		MEC1173D05	TEST PIN 2P
		MEC1174D02	TEST PIN 3P
		MEC1180D05	TEST PIN 4P
		GDT2802005	LCD DISPLAY
LP301		GEL0910026	LAMP 20mm
	48527900	EWV0005D04	0.5 mm 0.5# JUMP WIRE
	30000900	EWV0006D01	10 mm 0.6# JUMP WIRE



**Parts List ( GPBF144813 )**

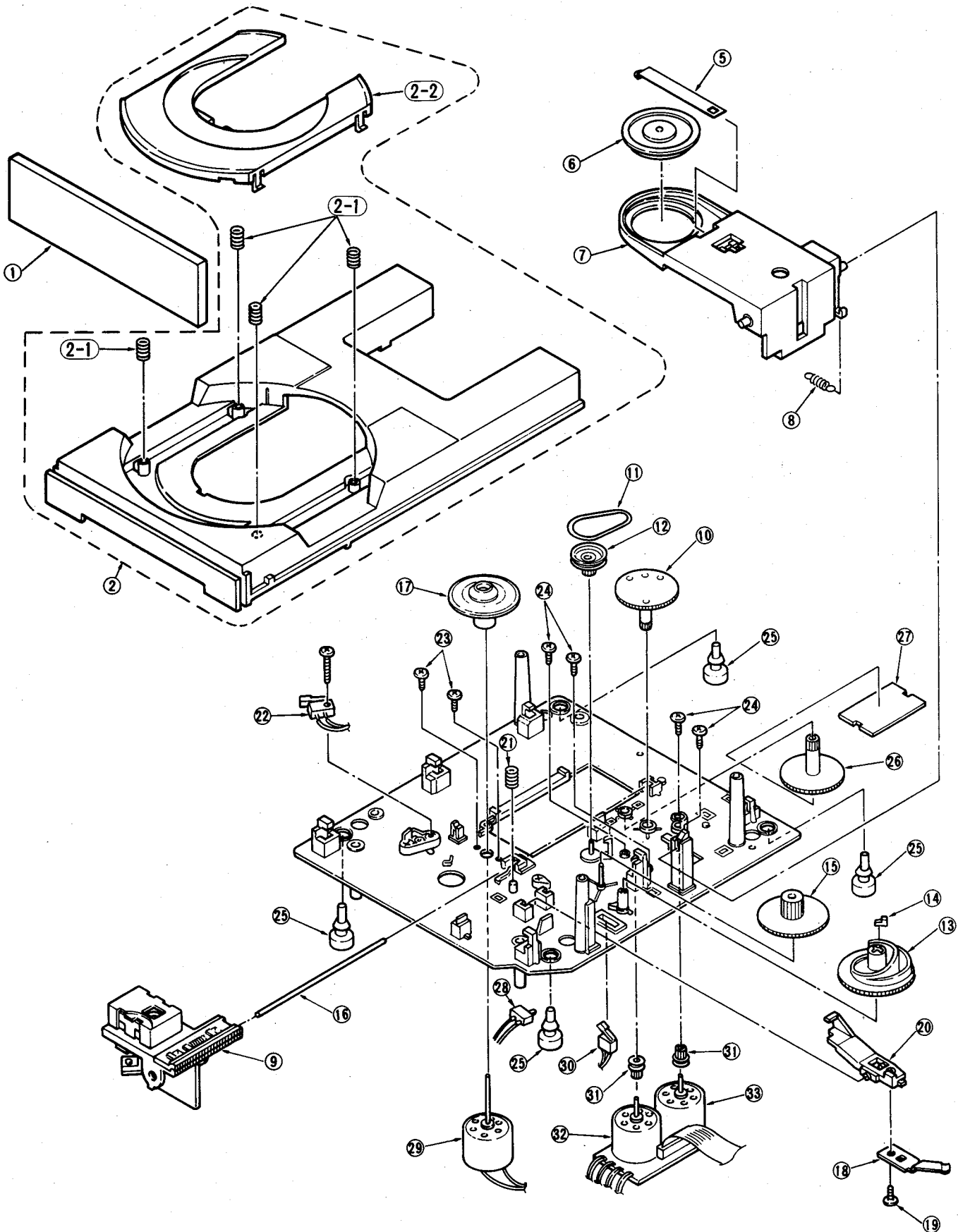
Parts No.	Stock No.(J)	Stock No.(T)	Description
C601		ECC473FT09	472pF 400V CERAMIC CAP
PF1	83004200	GWA0960D02	POWER SDDLB TV-3
PF1		GWA0960D13	POWER SDDLB TV-3 (UL/CSA)
	83041700	MEC1130D00	TERMINAL FOR AC CORD
PT		MEC1181D02	TERMINAL 2P L-752NB
		MEC1175D09	TERMINAL 2P (XX)
		MEC1182D09	TERMINAL 3P L-753NB (XX)
	30001100	MEC0822D07	10 mm 0.6# BARE WIRE
		MEJ1086D02	CONNECTOR (XX)



**Parts List ( GPBF144905 )**

Parts No.	Stock No.(J)	Stock No.(T)	Description
	07286800	MEC0822D07	10 mm 0.6# BARE WIRE
		GWP0912D07	TOUCH SWITCH TOKO
		GRR0001D03	REMOTE CON. RECEIVER

# Exploded View of Mechanism Ass'y



Parts List ( Mechanism Ass'y )

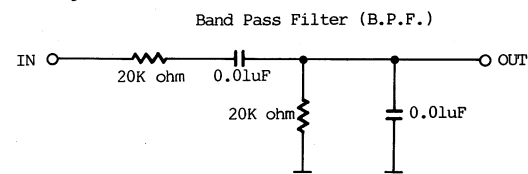
Parts No.	Stock No.(J)	Stock No.(T)	Description
1		MDC1532D36	Tray Panel
2	27764740	MSB1908D18	Tray Ass'y
2-1	27659000	MMS1095D04	Spring
2-2	27655910	MSB1910D02	Disk Plate
5	27657000	MMS1091D06	CL Plate
6	27656600	MSB1902D05	Clamper
7	27656910	MSB1904D09	Clamp Arm
8	27658900	MMS1092D03	Spring
9	68064700	EPUSNP1002	Pickup Ass'y
10	27656300	MSB1900D01	Middle Gear
11	27422700	MPF2742270	Belt
12	27656400	MMP1064D09	L Pulley
13	27656000	MSB1897D06	Cam Gear
14	27727600	MPF1629D06	Rubber Cushion
15	27656500	MSB1901D08	L Gear
16	27658800	MPF2765882	Support Rail
17	27364110	MPH0003D09	Turn Table
18	27656810	MMS1094D07	LA Plate Spring
19	13303900	5310205IO8	Screw, TB 2 x 5
20	27656700	MMS1903D02	Lift Arm
21	27659100	MMS1093D00	Spring
22	48829000	GWS4882909	Push SW., TRAY OUT
23	46609800	5310203HO4	Screw 2 M2 x 3B, Motor
24	00420600	5100206IO8	Screw MB2 x 6, Motor
25	27792500	MPF2779250	Floating Rubber
26	27656200	MSB1899D00	Feed Plate
27	27656100	MSB1898D03	Holder Plate
28	48793900	GWS4879398	Push SW., FEED IN
29	48584900	MTR4858499	Spindle Motor
30	48829000	GWS4882909	Push SW., TRAY IN
31	27572400	MMP1063D02	Pulley
32	49263100	MTR4926314	Loading Motor
33	49263100	MTR4926314	Feed Motor



# ADJUSTMENT

## Notes on Adjustment

1. Turn off power before removing top cover.
2. See Fig.1 & Fig.2 for adjustment.
3. Test disc is YEDS 18 TYPE 4 of SONY.
4. For adjustment the following filters is required.



STEP	SUBJECT	INPUT	ADJUST FOR	MEASURE OUTPUT	ADJUST	DESCRIPTION
1	Focus Offset	NON	VR 3	Connect scope to point FO and GND	DC - 200mV	
2	Tracking Offset	NON	VR 5	Connect scope to point TO and GND	DC = 0V and Noise = MIN	
3	VCO	NON	L 1	Connect F counter to point CK and GND	F = 4.3218 MHz $\pm$ 10 KHz	EFM short across
4	EFM Level	Play 12th music of DISC	VR 4	Connect scope to point EFM and GND	P - P = 1.8 V	1.8V
5	TE Balance	Play disc	VR 7	Connect scope to point B and GND	 Adjust a=b, Scope: DC	IN TO THE TEST MODE: 1) Power switch TURN OFF 2) "TEST" (TP) Short across two pins 3) Power switch TURN ON 4) PRESS STOP key 4 Times.
6	Tracking Gain	Play 7th music of DISC (No signal)	VR 6	Connect VTVM to point T1 through BPF and connect VTVM to point T2 through BPF	 Adjust to T1 = T2 + 3.5 dB	
7	Focus Gain	Play 7th music of DISC (No signal)	VR 2	Connect VTVM to point F1 through BPF and connect VTVM to point F2 through BPF	 Adjust to F1 = F2 + 2.5 dB	
8	Repeat alignment step 1 and step 2.					

MAIN P. C. B. ( Fig. 1 )

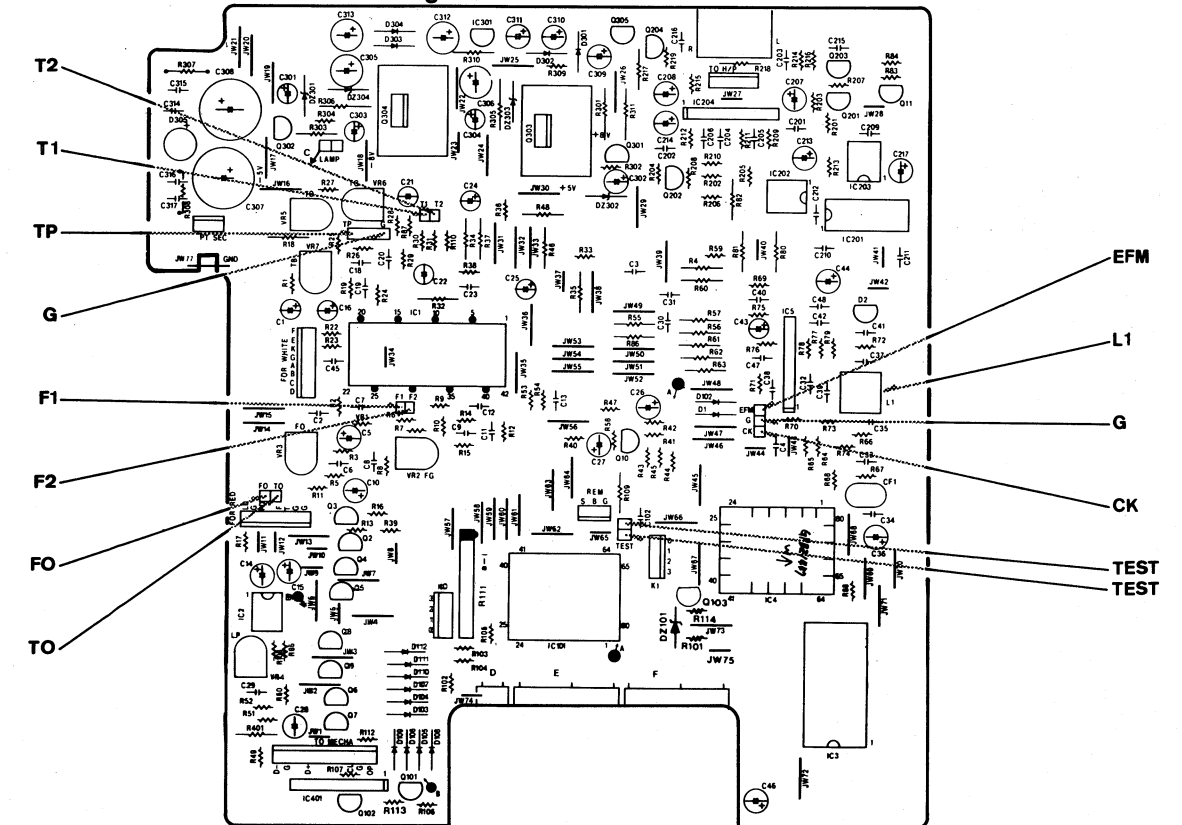
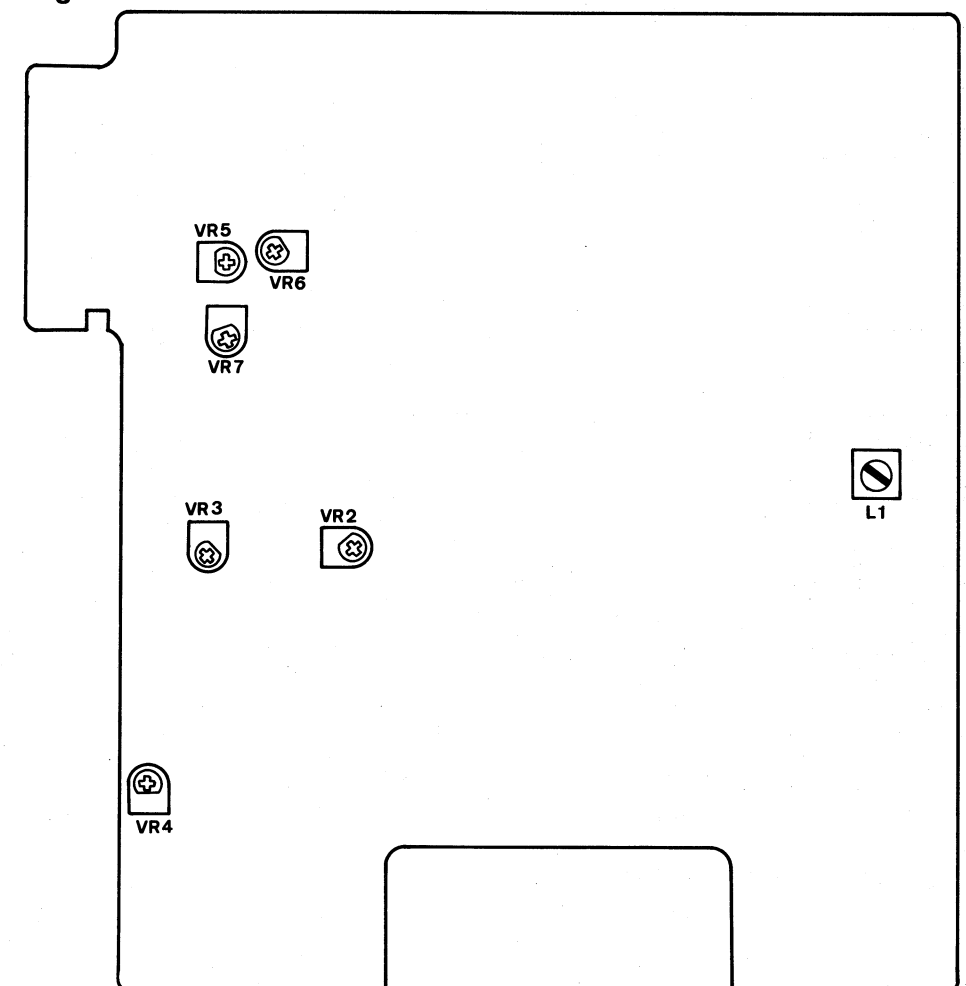
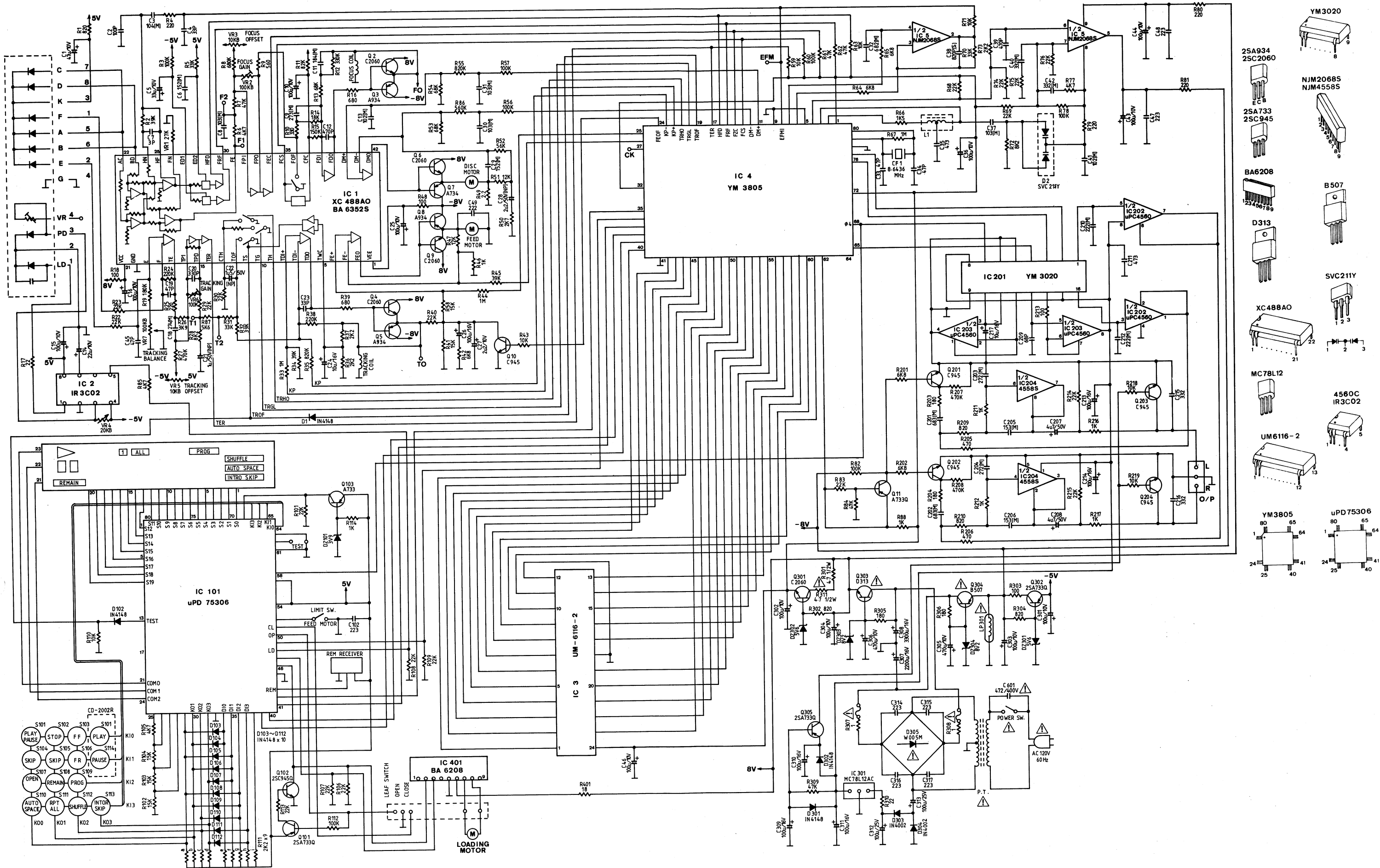


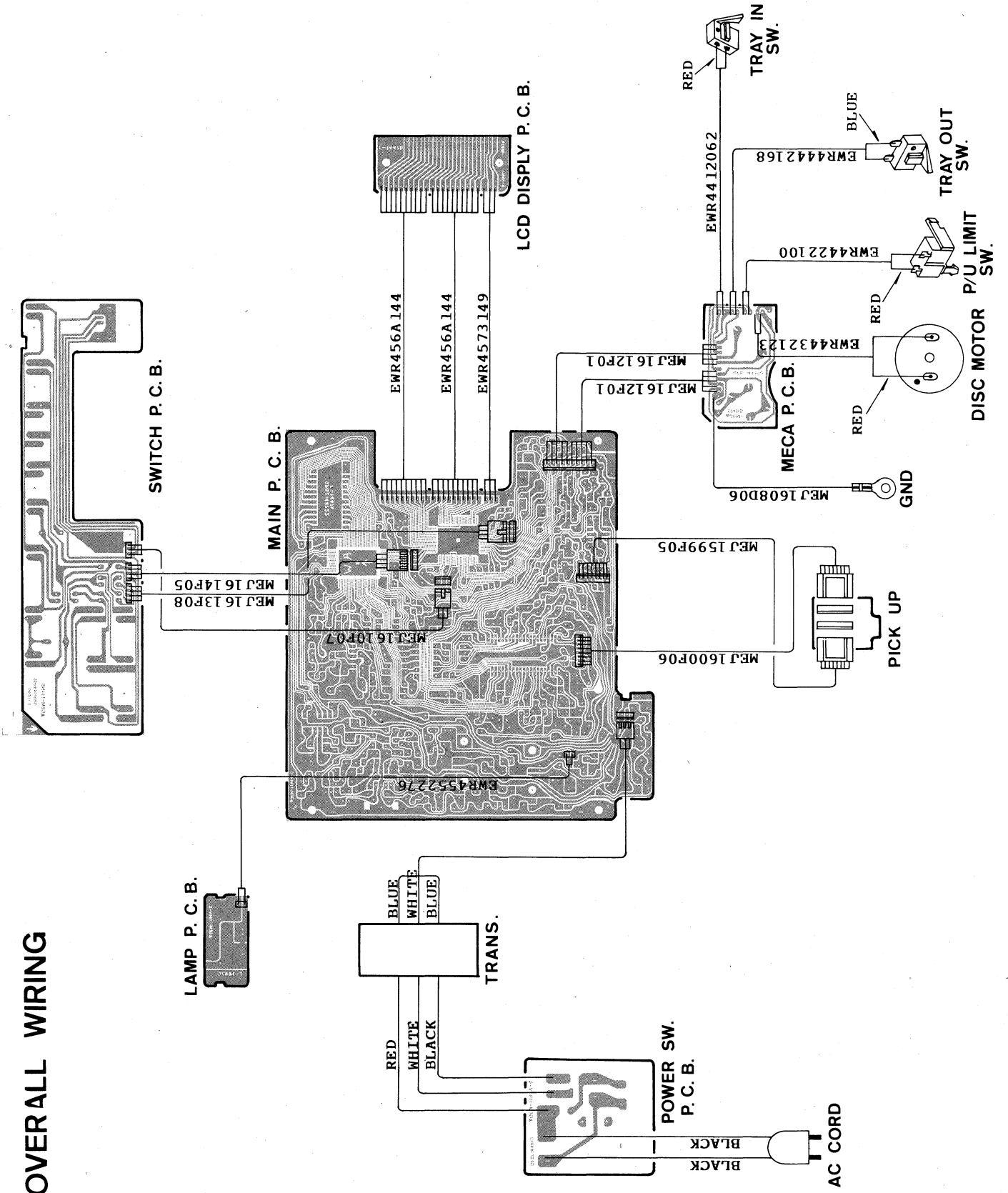
Fig. 2



# SCHEMATIC DIAGRAM



# OVERALL WIRING



## PACKING LIST

Stock No.	Description
1 MPC1704D09	SHIPPING CARTON
2 MPP1340D07	POLY FOAM FOR SET
3 MPW1098D08	POLY BAG FOR SET

## ASS'Y LIST

Stock No.	Description
MDL2718D06	INST. BOOK
MDL2718D17	INST. BOOK (UL/CSA)
MPW1085D06	POLY BAG FOR INST.
MEJ1333D05	PJP CORD
GBT0005D04	BATTERY SUM-3 SANYO (2PS)
GRC0014D09	REMOTE UNIT

