

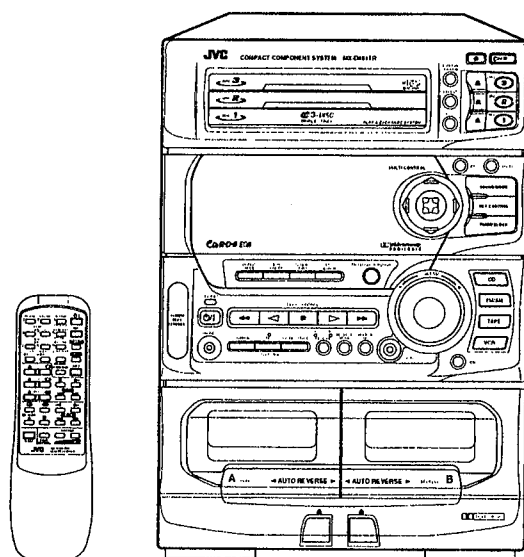
# JVC

## SERVICE MANUAL

### COMPACT COMPONET SYSTEM

## CA-D851TR

PICK UP	OPT-150S
LSI	MN35510



#### Area Suffix

BS .....	The U.K.
EF .....	Continental Europe Except Germany & Italy
EN .....	Nordic Countries
G .....	Germany

COMPACT  
**disc**  
DIGITAL AUDIO



**R·D·S EON**

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## Troubleshooting

- If you are having a problem with your CA-D851TR, check this list for a possible solution before calling for service.
- If you cannot solve the problem from the hints given here, or the Unit has been physically damaged, call a qualified person, such as your dealer, for service.

Symptom	Possible Cause	Action
No sound is heard.	Connections are incorrect, or loose.	Check all connections and make corrections. (See pages 4 - 6.)
Unable to record.	Cassette record protect tabs are removed.	Cover holes on back edge of cassette with tape.
Poor radio reception	<ul style="list-style-type: none"> <li>• The antenna is disconnected.</li> <li>• The AM Loop Antenna is too close to the Unit.</li> <li>• The FM Wire Antenna is not properly extended and positioned.</li> </ul>	<ul style="list-style-type: none"> <li>• Re-connect the antenna securely.</li> <li>• Change the position and direction of the AM Loop Antenna.</li> <li>• Extend FM Wire Antenna to the best reception position.</li> </ul>
The CD skips.	The CD is dirty or scratched.	Clean or replace the CD.
Unable to operate the Remote Control.	<ul style="list-style-type: none"> <li>• The path between the Remote Control and the sensor on the Unit is blocked.</li> <li>• The batteries have lost their charge.</li> </ul>	<ul style="list-style-type: none"> <li>• Remove the obstruction.</li> <li>• Replace the batteries.</li> </ul>
The CD tray cannot be opened.	The main AC power cord is not plugged in.	Plug in the AC power plug.
The CD does not play.	The CD is upside down.	Put the CD in with the label side up.
Operations are disabled.	The built-in microprocessor has malfunctioned due to external electrical interference.	Unplug the Unit then plug it back in.
The cassette door cannot be opened.	During tape playing, the power cord was unplugged.	Plug in the power cord, press the  button, and then the  button.

English

English

## Specifications

### Amplifier Section

Output Power (IEC 268-3/DIN)	
Front speakers	45 watts per channel, min. RMS, both channels driven, into 6 ohms at 1 kHz with no more than 0.9% total harmonic distortion.
Center speaker (At surround operation)	25 watts, min RMS, driven, into 8 ohms at 1 kHz, with no more than 0.9% total harmonic distortion.
Rear speakers (At surround operation)	12.5 watts per channel, min RMS, both driven, into 16 ohms at 1 kHz, with no more than 0.9% total harmonic distortion.

### Input Sensitivity/Impedance (1 kHz)

VCR	300 mV/45 kohms
-----	-----------------

### Cassette Deck Section

Frequency Response	
Type II (CrO <sub>2</sub> ) :	30 - 16,000 Hz
Type I (NORMAL) :	30 - 15,000 Hz
Wow And Flutter	0.15% (WRMS)

### CD Automatic Changer Section

CD Capacity	3 discs
Dynamic Range	93 dB
Signal-To-Noise Ratio	98 dB
Wow And Flutter	Unmeasurable

### Tuner Section

FM Tuner	
Tuning Range	87.5 - 108.0 MHz
AM Tuner	
Tuning Range	
MW	522 - 1,629 kHz
LW	144-288 kHz

Dimensions	245 x 345 x 350.2 mm (W/H/D) (9-11/16 x 13-5/8 x 13-13/16 inches)
Mass	8.5 kg (18.8 lbs)

### Accessories

AM (MW/LW) Loop Antenna	(1)
Remote Control	(1)
Batteries R6P (SUM-3)/AA (15F)	(2)
FM Wire Antenna	(1)

### Power Specifications

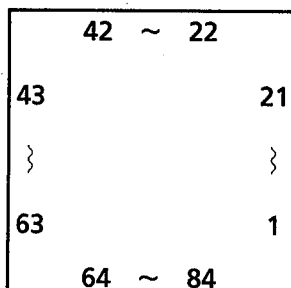
Power Requirements	AC 230 V <sup>~</sup> , 50 Hz
Power Consumption	160 watts
	20 watts (in standby mode)

*Design and specifications are subject to change without notice.*

# Description of ICs

## ■ MN172412K8L1( IC902) : TUNER / DISPLAY Controller

### 1. Terminal layout



### 2. Terminal Function

Pin No.	Symbol	I/O	Functions and Operations	Pin No.	Symbol	I/O	Functions and Operations
1	7G	O	FL grid control	49	RDS RST	I	Reset signal from IC191
2	8G	O	FL grid control	50	/TUNED	I	TUNED indication control
3~15	P1~P13	O	FL anode control	51	/STEREO	I	STEREO indication control
16	P14	O	FL anode control	52	MUTE	O	Muting of tuner sound
17	P15	O	FL anode control	53	DCSOUT	O	Compulink signal output
18	P16	O	FL anode control	54	DCSIN	I	Compulink signal input
19	P20	O	FL anode control	55	CS2	I	chip select terminal input
20	P19	O	FL anode control	56	KI1	I	Key matrix input
21	P18	O	FL anode control	57	KI2	I	Key matrix input
22	P17	O	FL anode control	58	KI3	I	Key matrix input
23	-BP	--	Power supply for FL display	59	KI4	I	Key matrix input
24	P36	O	FL anode control	60	IFDATA	I	Data from PLL synthesizer
25	P35	O	FL anode control	61	CE	O	Chip enable signal for PLL synthesizer
26	P34	O	FL anode control	62	CK	O	Clock for PLL synthesizer
27	P33	O	FL anode control	63	TUDATA	O	Data for PLL synthesizer
28	P32	O	FL anode control	64	CS1	I	chip select terminal input
29	P31	O	FL anode control	65	C-REQ	I	Communication request data to IC301
30	P30	O	FL anode control	66	C-CLK	O	Communication data clock to IC301
31	P29	O	FL anode control	67	C-DATA	O	Communication data to IC301
32	P28	O	FL anode control	68	/RESET	I	RESET signal input
33	P27	O	FL anode control	69	GND	--	Connected to GND
34	P26	O	FL anode control	70	X1	--	Non connection
35	P25	O	FL anode control	71	X2	--	Connected to GND
36	P24	O	FL anode control	72	OSC2	I/O	Clock oscillation terminal
37	P23	O	FL anode control	73	OSC1	I/O	Clock oscillation terminal
38	P22	O	FL anode control	74	VDD	--	Power supply (+B5V)
39	P21	O	FL anode control	75	T-REQ	I	Request signal to IC901
40	FOUT	O	Clock frequency	76	T-CLK	O	Clock signal to IC901
41	SPISTB	O	Strobe signal for IC903	77	T-DATA	O	Data for IC901
42	SPIDT1	O	Data input from IC903	78	NC	--	Non connection
43	SPIDTO	O	Data output for IC903	79	1G	O	FL grid control
44	SPICSB	O	Chip select output for IC903	80	2G	O	FL grid control
45	RDS CK	O	Clock input from IC191	81	3G	O	FL grid control
46	RDS DATA	O	Data signal from IC191	82	4G	O	FL grid control
47	RDS RST	O	Reset signal for IC191	83	5G	O	FL grid control
48	/TUINH	I	Inhibit signal Input	84	6G	O	FL grid control

## ■ MN17P3222JAAX1(IC301) : DECK/CD Controller

### 1. Terminal layout

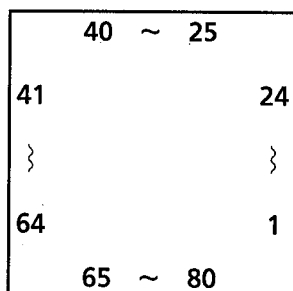
42 ~ 22	
43	21
}	}
63	1
64 ~ 84	

### 3. Terminal Function

Pin No.	Symbol	I/O	Functions and Operations	Pin No.	Symbol	I/O	Functions and Operations
1	/APACK	I	APACKswitch detect input	49	/RESTSW	I	Traverse REST sw input
2	AEQ	O	It is "L" when CrO2 tape is in deck A	50		--	Connected to GND
3	DECKAI	O	DECKA indicater control	51		--	Connected to GND
4	DECKBI	O	DECKB indicater control	52	/RST	O	CD Lsi reset signal output
5		--	Non connection	53	MLD	O	Command load signal output to CD Lsi
6		--	Non connection	54	MDATA	O	Command data output to CD Lsi
7	RECI	O	Indication control	55	MLCK	O	Command clock signal output to CD Lsi
8	PON IND	O	Power indicater control	56	DATA	O	Communication data to changer $\mu$ -com
9	DISC1IND	O	DISC1 indicater control	57	SCK	O	Communication clock signal to changer $\mu$ -com
10	DISC2IND	O	DISC2 indicater control	58	CHST	I	Strobe signal to changer $\mu$ -com
11	DISC3IND	O	DISC3 indicater control	59	REQ1	I	Request signal to changer $\mu$ -com
12	PBEQ	O	Play back	60		--	Connected to GND
13	MSIN	I	music scan signal input	61		--	Connected to GND
14	NR	O	NR control signal	62		--	Connected to GND
15	/CAPN	O	Capstan (ON/OFF) control	63	CS	--	Connected to GND
16	BPLZ	O	B mecha. solenoid control	64		--	Connected to GND
17	APLZ	O	A mecha. solenoid control	65		--	Connected to GND
18		--	Connected to GND	66		--	Connected to GND
19		--	Non connection	67		--	Connected to GND
20	BMT	O	It is 'H' when Deck B is not playing	68	/RESET	I	CD reset signal input
21	OMT	O	Deck PB Mute control signal	69	GND	--	Connected to GND
22	RMT	O	Recording mute signal output	70	NC	--	Non connection
23		--	Non connection	71	GND	--	Connected to GND
24	/PB/REC	O	Rec. P.B select signal output	72	OSC	I	Osillation terminal
25	REC	O	It is "H" when recording	73	OSC	--	Osillation terminal
26	BIAS	O	REC bias ON/OFF control	74	VDD	--	+5V
27~39		--	Connected to GND	75	DCS IN	I	DCS signal input
40	C-REQ	O	Communication request data output to IC902	76	DCS OUT	O	DCS signal output
41	C-CLK	I	Clock signal input from IC902	77	APLS	I	A mech. reel pulse input
42		--	Non connection	78	BEQ	O	Play equalizer control
43	C-DATA	I	Command data output to IC902	79	/PSWB	I	B mech. play switch input
44		--	Connected to GND	80	BPLS	I	B mech.pranger control output
45	SQCK	O	Outside lock for sub-code Q resister output	81	/FREC	I	FREC switch detect input
46	SUBQ	I	Sub code and Q register signal input	82	/RREC	I	RREC switch detect input
47	LSION	O	CD Lsi on signal output	83	/BPACK	I	BPACKswitch detect input
48	STAT	O	STATUS signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	84	/PSWA	O	A mech. play switch input

■ HD404719A71F5(IC901) : AMP Controller

1. Terminal layout

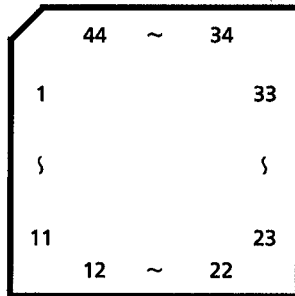


2. Terminal Function

Pin No.	Symbol	I/O	Functions and Operations	Pin No.	Symbol	I/O	Functions and Operations
1	IN6	I	Key input (A/D convert)	40		--	Not use
2	/INH	I	Inhibit signal input	41	CDI	O	CD indication control
3	/PRT	I	Protector signal input	42	TUI	O	TUNED indication control
4	AD GND	--	Connected to GND	43	TAPEI	O	TAPE indication control
5	RESET	I	Reset signal input	44	VCRI	O	VCR indication control
6	OSC1	I/O	Clock oscillation terminal	45		--	Not use
7	OSC2	I/O	Clock oscillation terminal	46	APOI	O	APO indication control
8	GND	--	Connected to GND	47	BASSI	O	BASS indication control
9		--	Connected to GND	48	STUNDBYI	O	STNDBY indication control
10		--	Not use	49		--	Connected to GND
11	/TEST	O	Pull up	50~57		--	Not use
12	VCC	--	Power supply	58	SCK	O	Clock for IC401
13	RDS	O	Chip select terminal	59	SDA1	O	Data for IC401
14	PROLOGIC	O	Chip select terminal	60		--	Not use
15	KARAOKE	O	Chip select terminal	61	/RMIN	I	Remote control signal input
16	ECHO	O	Chip select terminal	62		--	Not use
17	SABASS	O	Chip select terminal	63	T-DATA	I	Communication data from IC302
18	HPIN	I	Head phone detect	64	T-REQ	O	Communication request data to IC302
19	CDRESET	O	CD servo Lsi reset signal output	65	T-CLK	O	Communication data clock from IC302
20	/TUINH	O	Tuner Inhibit signal output	66~68		--	Not use
21	TURESET	O	Tuner reset signal output	69	JOG2	I	Input 2 Jog pulse
22	DCSIN	I	Compulink signal data input	70	JOG1	I	Input 1 Jog pulse
23	DCSOUT	O	Compulink signal data output	71		--	Not use
24	ACO	O	Power supply control signal	72	SMUTE	O	Source Mute control signal
25	CONT.A	O	KARAOKE on/off control signal	73	ECHO2	O	Echo2 signal output
26,27		--	Not use	74	ECHO1	O	Echo1 signal output
28	RERAY1	O	Speaker relay on/off signal output	75	AD Vcc	--	Power supply (+B5V)
29		--	Not use	76	IN1	I	Key input (A/D convert)
30	SURR	O	Surrund ON/OFF control signal	77	IN2	I	Key input (A/D convert)
31		--	Not use	78	IN3	I	Key input (A/D convert)
32~38		--	Not use	79	IN4	I	Key input (A/D convert)
39		--	Not use	80	IN5	I	Key input (A/D convert)

## ■ UPD65612GB-165(IC801) : Changer Controller

### 1. Terminal Layout

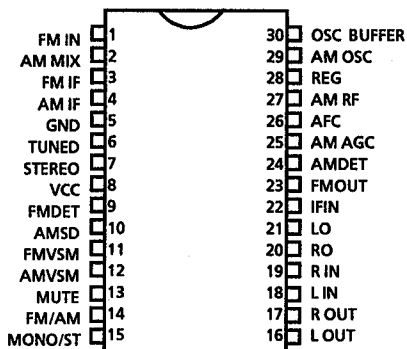


### 2. Pin Functions

Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	NC	--	Non connection	23	2SSW	I	TRAY2 switch input signal
2	NC	--	Non connection	24	1SSW	I	TRAY1 switch input signal
3	NC	--	Non connection	25	NC	--	Non connection
4	OS1I	I	Oscillation terminal	26	CAM0	I	Cam switch input signal for LCAM
5	OS1O	O	Oscillation terminal	27	CAM1	I	Cam switch input signal for LCAM
6	OS2I	I	Oscillation terminal	28	CAM2	I	Cam switch input signal for LCAM
7	OS2O	O	Oscillation terminal	29	CAM3	I	Cam switch input signal for LCAM
8	NC	--	Non connection	30	CAM4	I	Cam switch input signal for RCAM
9	C25IN	I	Connected to C25OUT	31	CAM5	I	Cam switch input signal for RCAM
10	C25OUT	O	Connected to C25IN	32	CAM6	I	Cam switch input signal for RCAM
11	RESET	I	Reset signal input	33	CAM7	I	Cam switch input signal for RCAM
12	REQ	O	Output the "mecha. data request"	34	FIT	O	Connected to C50
13	DATA	I/O	Control, Status data I/O	35	C50	I	Connected to FIT
14	ST	I	Strobe signal input	36	LMUP	O	L motor control signal
15	CKS	I	Clock input	37	LMDWN	O	L motor control signal
16	SELECT	--	Connected to GND	38	C25	--	Non connection
17	GND	--	GND	39	VDD	--	Power supply terminal
18	CK	--	Connected to GND	40	C100	--	Non connection
19	1MSW	I	TRAY1 switch input signal	41	RMUP	O	R motor control signal
20	2MSW	I	TRAY2 switch input signal	42	RMDWN	O	R motor control signal
21	3MSW	I	TRAY3 switch input signal	43	NC	--	Non connection
22	3SSW	I	TRAY3 switch input signal	44	NC	--	Non connection

■ LA1837 (IC102) : FM AM IF AMP & detector, FM MPX Decoder

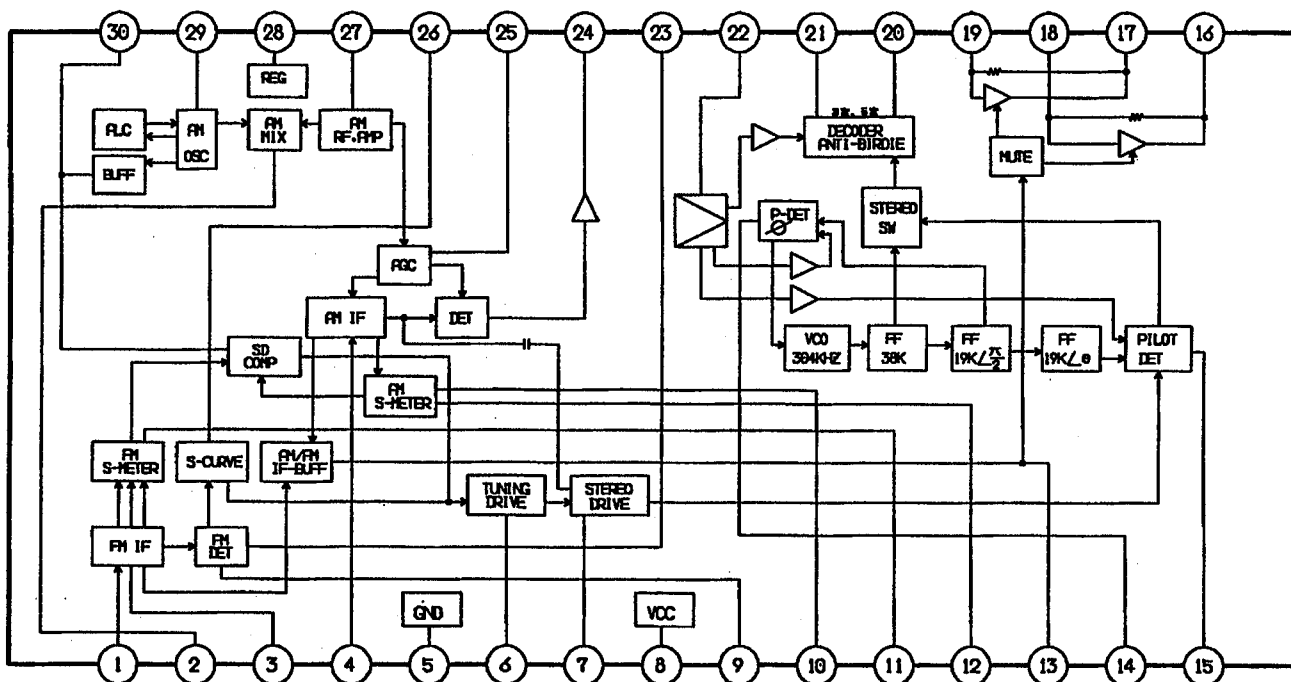
1. Terminal Layout



3. Pin Function

Pin No.	Symbol	I/O	Function
1	FM IN	I	This is an input terminal of FM IF Signal.
2	AM MIX	O	This is an output terminal for AM mixer.
3	FM IF	I	Bypass of FM IF
4	AM IF	I	Input of AM IF Signal.
5	GND	—	This is the device ground terminal.
6	/TUNED	O	When the set is tuning, this terminal becomes "L".
7	STEREO	O	Stereo indicator output. Stereo : "L", Mono : "H"
8	VCC	—	This is the power supply terminal.
9	FM DET	—	FM detect transformer.
10	AM SD	—	AM ceramic filter terminal
11	FM VSM	O	Fix the sensitivity of FM tuned
12	AM VSM	O	Fix the sensitivity of AM tuned
13	MUTE	O/I	When the signal of IF REQ of IC121(LC72131) appear, the signal of FM/AM IF output. //Muting control input.
14	FM/AM	I	Change over the FM / AM input. "H" : FM, "L" : AM
15	MONO/ST	O	Stereo : "H", Mono : "L"
16	LOUT	O	Left channel signal output.
17	ROUT	O	Right channel signal output
18	L IN	I	Input terminal of the Left channel post AMP.
19	R IN	I	Input terminal of the Right channel post AMP.
20	ROUT	O	Mpx Right channel signal output.
21	LOUT	O	Mpx Left channel signal output.
22	IFIN	I	Mpx input terminal.
23	FM OUT	I	Voltage controlled oscillator terminal.
24	AM DET	—	AM low cut adjustment.
25	AM AGC	I	This is an AGC voltage input terminal for AM.
26	AFC	—	This is an output terminal of voltage for FM-AFC.
27	AM RF	I	This is an input terminal for AM RF signal.
28	REG	—	Control of desides the frequency width
29	AM OSC	—	This is a terminal of AM Local oscillation circuit.
30	OSC BUFFER	O	AM Local oscillation Signal output.

2. Block Diagram

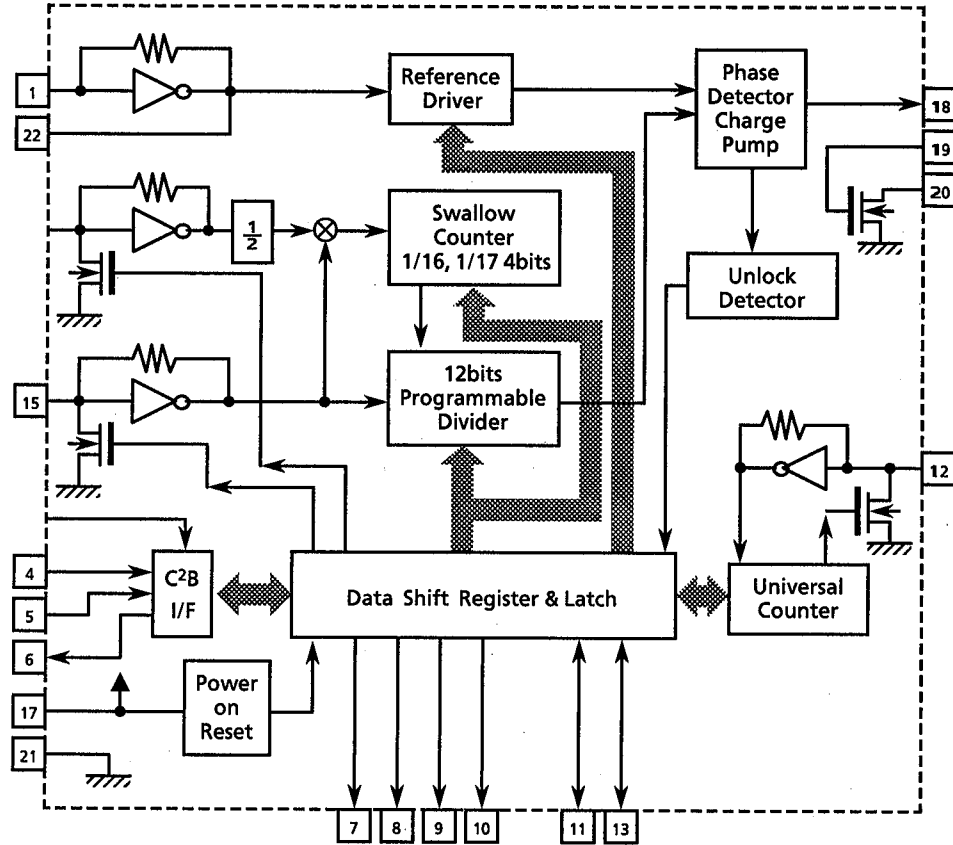


■ LC72131 (IC121) : PLL Synthesizer

1. Terminal Layout

XIN	1	22	XOUT
PLLCE	3	20	LPF OUT
PLLDA	4	19	LPF IN
PLLCK	5	18	PD
IFDATA	6	17	VDD
FM	7	16	FM OSC
AM	8	15	AM OSC
LW	9	14	
AUTO/MONO	10	13	IF REQ
FM-LOW	11	12	FM/AM IF

2. Block Diagram



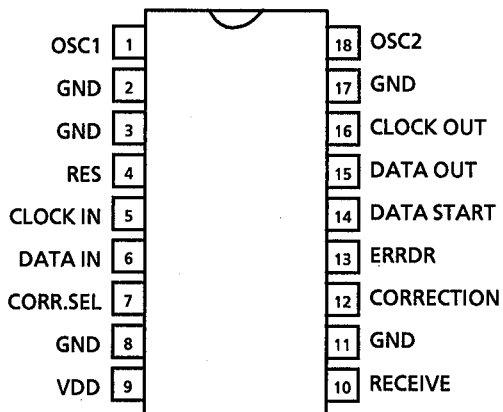
3. Pin Functions

Pin No.	Symbol	I/O	Functions	Pin No.	Symbol	I/O	Functions
1	X in	I	Crystal oscillator (7.2MHz).	12	FM/AM IF	I	Universal counter input
2		--	Not use	13	IF REQ	O	Output the "IF-signal request" to IC102
3	PLLCE	I	Fix the chip enable to "H" when inputting(DI) and outputting (DO) the serial data	14		I	Not use
4	PLLDA	I	Receive the control data from the controller (IC201).	15	AMOSC		Input the local oscillator signal of AM.
5	PLLCK	I	This clock is used to synchronize data when transmitting the data of DI and DO.	16	FM OSC	I	Input the local oscillator signal of FM.
6	IFDATA	O	Transmit the data from LC72131 to the controller which is synchronized with CK.	17	VDD	O	This is a terminal of power supply.
7	FM	O	It is "L" on FM mode.	18	PD	O	PLL charge pump output : When the local oscillator signal frequency is higher than the reference frequency high level signals will output. When it is lower than the reference frequency, low level signals will output. When it is same as reference frequency signals, it will be floating.
8	AM	O	It is "L" on MW mode.	19	LPF IN	I	Transistor used for the PLL active low-pass filter
9	LW	O	It is "L" on LW mode.	20	LPF OUT	O	Transistor used for the PLL active low-pass filter
10	AUTO/MONO	O	It is "L" on monaural, "H" on auto.	21	VSS	--	Connected to GND
11	POWER	O	Regulator control signal P ON "H", STANDBY "L"	22	X out	O	Crystal oscillator (7.2MHz).

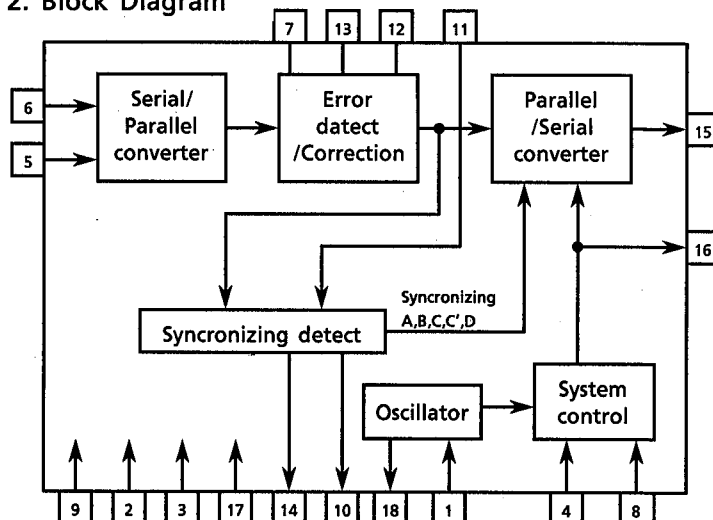


## ■ LC7073M (IC191) : Radio Data System

### 1. Terminal Layout



### 2. Block Diagram

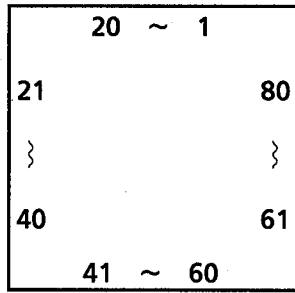


### 3. Pin Functions

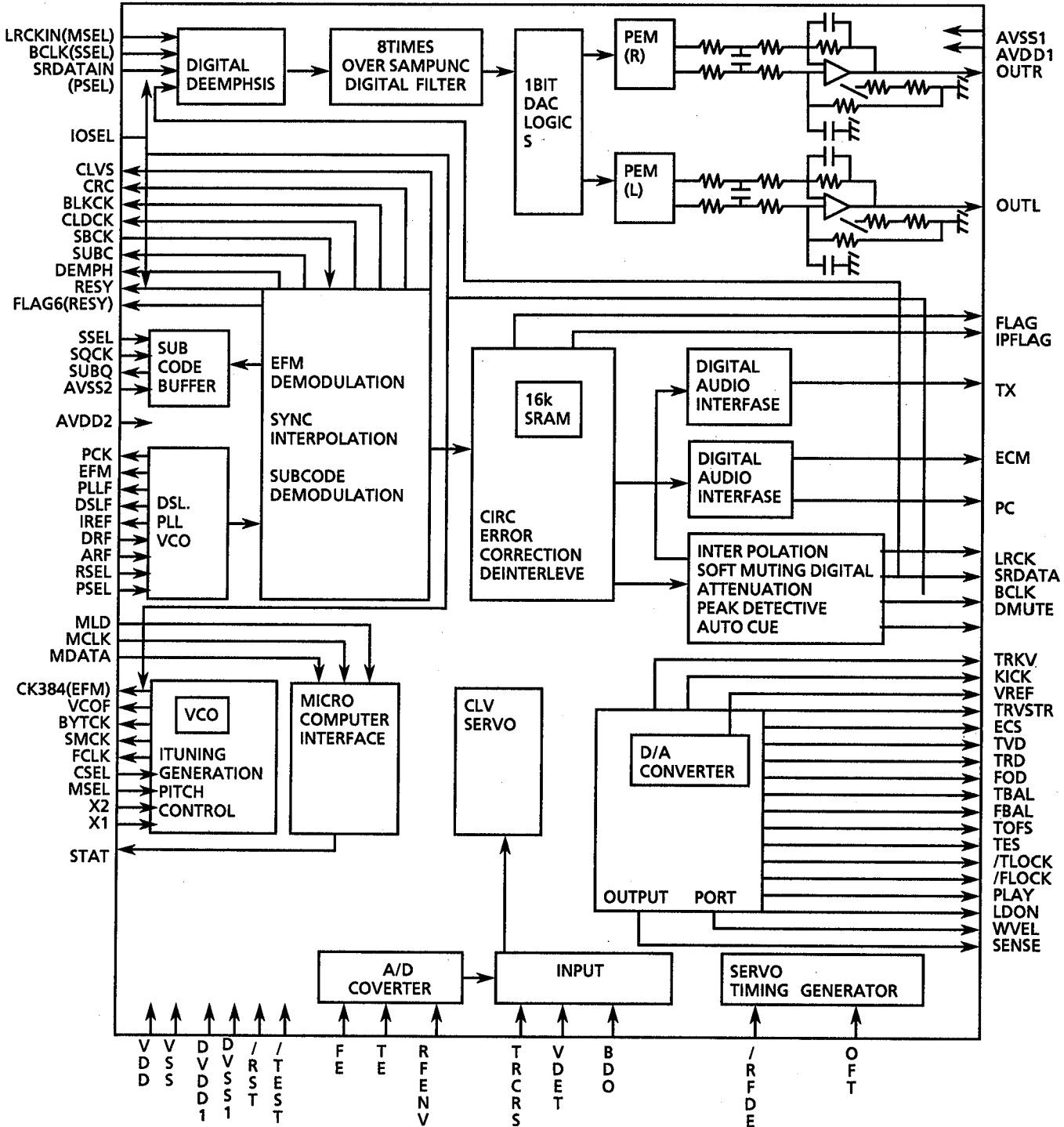
Pin No.	Symbol	I/O	Function	Pin No.	Symbol	I/O	Function
1	OSC1	I	Oscillation terminal	10	RECEIVE	—	Non connection
2	GND	—	GND	11	GND	—	GND
3	GND	—	GND	12	CORRECTION	—	Non connection
4	RES	I	Reset input	13	ERRDR	—	Non connection
5	CLOCK IN	I	RDS clock input	14	DATA START	O	Data start signal for block data to output serial data
6	DATA IN	I	RDS data input	15	DATA OUT	O	Serial data output
7	CORR.SEL	I	Non connection	16	CLOCK OUT	O	Data output of serial data output
8	GND	—	GND	17	GND	—	GND
9	VDD	—	Power supply	18	OSC2	O	Oscillation terminal

■ MN35510 (IC603) : DIGITAL SERVO & DIGITAL SIGNAL PROCESSER

1. Terminal Layout



2. Block Diagram



## 3. Description

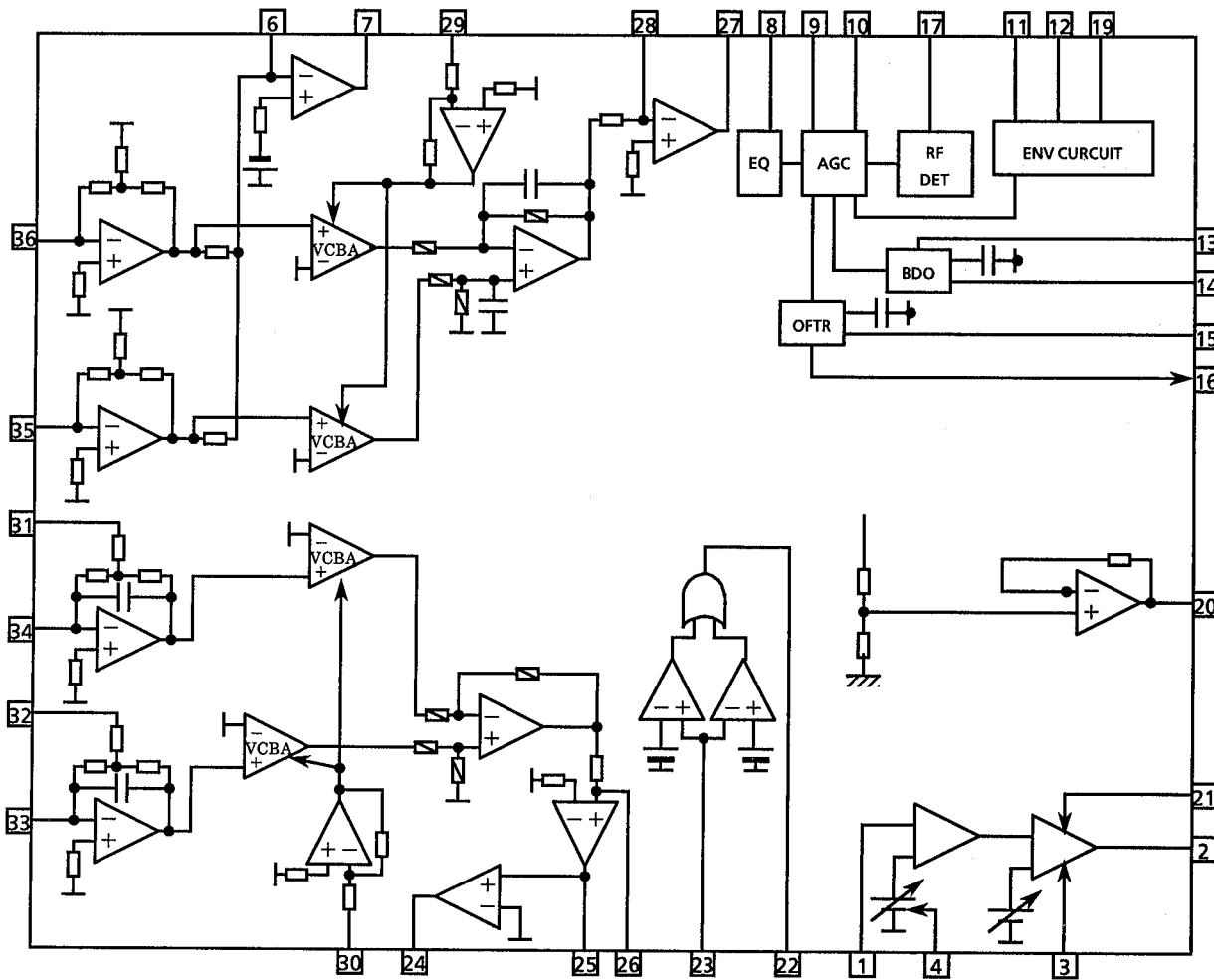
Pin No.	symbol	I/O	Description	Pin No.	symbol	I/O	Description
1	BCLK	O	Bit clock output pin SRDATA	41	TES	O	Tracking error shunt signal output (H;shunt)
2	LRCK	O	L/R distinction signal output	42	PLAY	—	Not used
3	SRDATA	O	Serial data output	43	WVEL	—	Not used
4	DVDD1	—	Power supply(Digital)	44	ARF	I	RF signal input
5	DVSS1	—	Connected to GND (Digital)	45	IREF	I	Reference current input pin
6	TX	O	Not use	46	DRF	—	Connected to GND
7	MCLK	I	$\mu$ -com command clock signal input (Data is latched at signal's rising point)	47	DSL F	I/O	Loop filter pin for DSL
8	MDATA	I	$\mu$ -com command data input	48	PLLF	I/O	Loop filter pin for PLL
9	MLD	I	$\mu$ -com command load signal input	49	VCOF	—	Connected to GND
10	SENSE	O	Not used	50	AVDD2	—	Power supply (Analog)
11	FLOCK	O	Not used	51	AVSS2	—	Connected to GND(Analog)
12	TLOCK	O	Not used	52	EFM	—	Not used
13	BLKCK	O	Subcode · block · clock signal output	53	PCK	—	Not used
14	SQCK	I	Outside lock for sub-code Q resister input	54	PDO	—	Not used
15	SUBQ	O	Sub-code Q-code output	55	SUBC	—	Not used
16	DMUTE	—	Connected to GND	56	SBCK	—	Not used
17	STATUS	O	Status signal (CRC,CUE,CLVS,TTSTOP,ECLV,SQOK)	57	VSS	—	Connected to GND(for X'tal cscillation circuit)
18	RST	I	Reset signal input (L :Reset)	58	X1	I	Input of 16.9344MHz X'tal oscillation circuit
19	SMCK	—	Not used	59	X2	O	Output of X'tal oscillation circuit
20	PMCK	—	Not used	60	VDD	—	Power supply(for X'tal cscillation circuit)
21	TRV	O	Traverse enforced output	61	BYTCK	—	Not used
22	TVD	O	Traverse drive output	62	CLDCK	—	Not used
23	PC	—	Not used	63	FCLK	—	Not used
24	ECM	O	Spindle motor drive signal (Enforced mode output) 3-State	64	IPPLAG	—	Not used
25	ECS	O	Spindle motor drive signal (Servo error signal output)	65	FLAG	—	Not used
26	KICK	O	Kick pulse output	66	CLVS	—	Not used
27	TRD	O	Tracking drive output	67	CRC	—	Not used
28	FOD	O	Focus drive output	68	DEMPH	—	Not used
29	VREF	I	Reference voltage input pin for D/A output block(TVD,FOD,FBAL,TBAL)	69	RESY	—	Not used
30	FBAL	O	Focus Balance adjust signal output	70	IOSEL	—	Pull up
31	TBAL	O	Tracking Balance adjust signal output	71	TEST	—	Pull up
32	FE	I	Focus error signal input(Analog input)	72	AVDD1	—	Power supply (Digital)
33	TE	I	Tracking error signal input(Analog input)	73	OUT L	O	Lch audio output
34	RF ENV	I	RF envelope signal input(Analog input)	74	AVSS1	—	Connected to GND
35	VDET	I	Vibration detect signal input(H : detect)	75	OUT R	O	Rch audio output
36	OFT	I	Off track signal input(H : off track)	76	RSEL	—	Pull up
37	TRCRS	I	Track cross signal input	77	CSEL	—	Connected to GND
38	RFDET	I	RF detect signal input (L : detect)	78	PSEL	—	Connected to GND
39	BDO	I	BDO input pin (H : drop out)	79	MSEL	—	Connected to GND
40	LDON	O	Laser ON signal output (H : on)	80	SSEL	—	Pull up (+5V)

■ AN8806SB (IC601) : RF & SERVO AMP

1. Terminal Layout

PD	1	36	PDAC
LD	2	35	PDBD
LDON	3	34	PDE
LDP	4	33	PDF
VCC	5	32	PDER
RF-	6	31	PDFR
RF OUT	7	30	TBAL
RF IN	8	29	FBAL
C.AGC	9	28	FE-
ARF	10	27	FE OUT
C.ENV	11	26	TE-
C.EA	12	25	TE OUT
CS BDO	13	24	CROSS
BDO	14	23	TE BPF
CS BRT	15	22	VDET
OFTR	16	21	LD OFF
/NRFDET	17	20	VREF
GND	18	19	ENV

2. Block Diagram

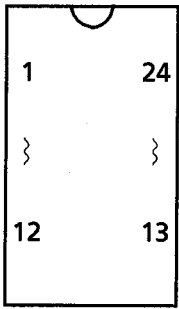


## 3. Functions

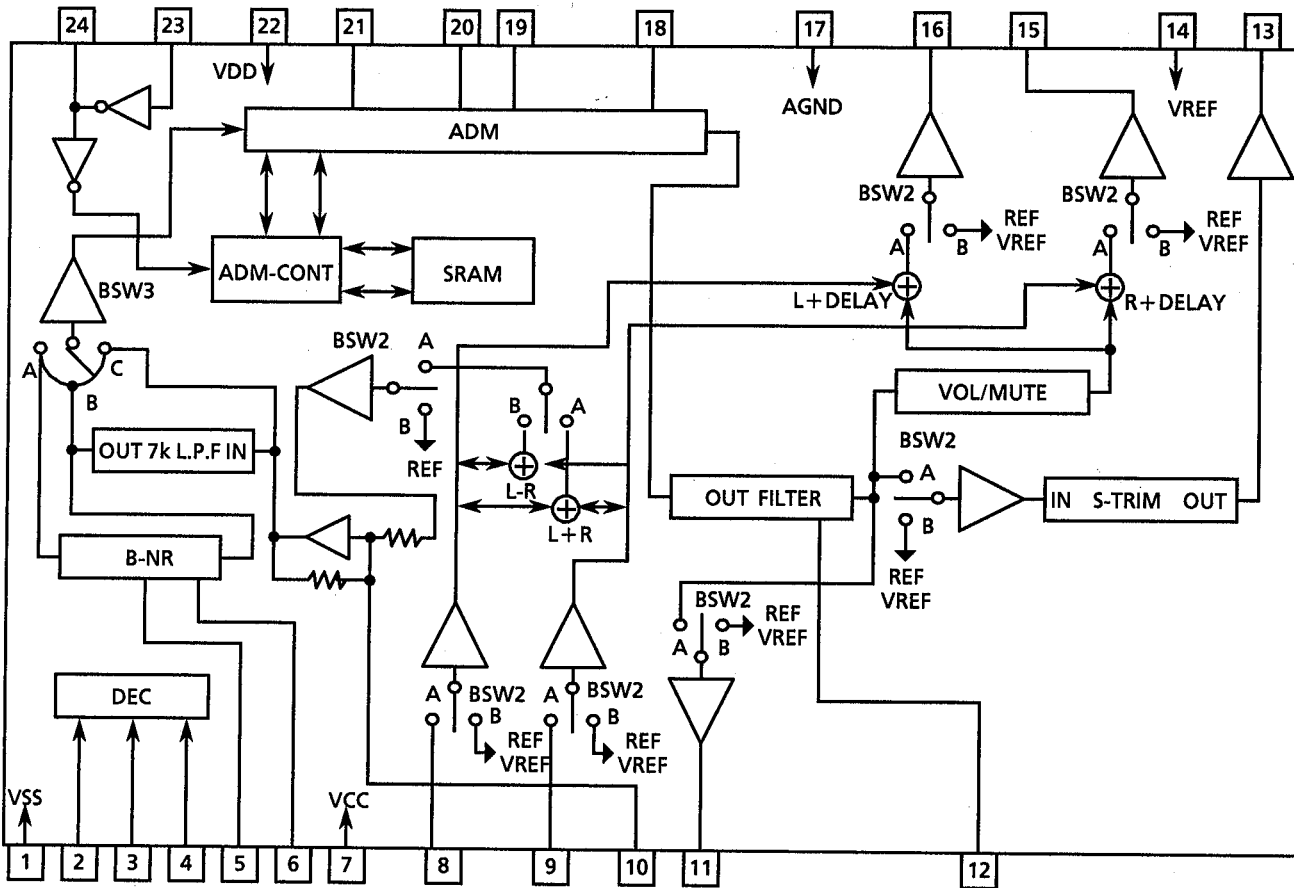
Pin No.	Symbol	I/O	Functions and operations
1	PD	I	APC amp input terminal
2	LD	O	APC amp output terminal
3	LD ON	I	APC ON/OFF control terminal
4	LDP	--	Connected to ground
5	VCC	--	Power supply
6	RF-	I	Inverse input pin for RF amp
7	RF OUT	O	RF amp output
8	RF IN	I	RF input
9	C.AGC	I/O	Connecting pin of AGC loop filter
10	ARF	O	RF output
11	C.ENV	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
12	C.EA	I/O	A capacitor is connected to this terminal to detect the envelope of RF signal
13	CS BDO	I/O	A capacitor is connected to detect the lower envelope of the RF signal
14	BDO	O	BDO output pin
15	CS BRT	I/O	A capacitor is connected to detect the lower envelope of the RF signal
16	OFTR	O	Of-track status signal output
17	/NRFDET	O	RF detection signal output
18	GND	--	Ground
19	ENV	O	Envelope output
20	VREF	O	Reference voltage output
21	LD OFF	--	Connect to ground
22	VDET	O	Vibration detection signal output
23	TE BPF	I	Input pin of tracking error through BPF
24	CROSS	O	Tracking error cross output
25	TE OUT	O	Tracking error signal output
26	TE-	I	Inverse input pin for tracking error amp
27	FE OUT	O	Output pin of focus error
28	FE-	I	Inverse input pin for focus error amp
29	FBAL	I	Focus balance control
30	TBAL	I	Tracking balance control
31	PDFR	I/O	F I-V amp gain control
32	PDER	I/O	E I-V amp gain control
33	PDF	I	I-V amp input
34	PDE	I	I-V amp input
35	PD BD	I	I-V amp input
36	PD AC	I	I-V amp input

■ LV1016 (IC541) : Dolby Surround Passive Decoder

1. Terminal Layout



2. Block Diagram

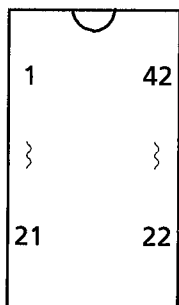


## 3. Pin Functions

Pin No.	Symbol	I/O	Functions
1	DGND	--	Digital GND
2	CLK	I	Serial interface clock
3	DATA	I	Serial interface data input
4	STB	I	Strobe signal input
5	NR-DET	--	Capacitor for noise reduction detection
6	NR-IREF	--	Resistor for noise reduction reference current
7	VCC	--	Supply
8	L-IN	I	Left channel signal input
9	R-IN	I	Right channel signal input
10	S-IN	I	Surround signal input
11	DELAY-OUT	--	Not used
12	DC-CUT	--	Capacitor for DC-cut
13	S-OUT	O	Surround signal output
14	VREF	--	Analog reference voltage
15	R-MIX-OUT	--	Not used
16	L-MIX-OUT	--	Not used
17	ADND	--	Analog ground
18	DC-CUT	--	Capacitor for DC-cut
19	D/A	--	Capacitor for integrator
20	NOISE SHAPER	--	Capacitor for noise shaper
21	A/D	--	Capacitor for integrator
22	VDD	--	Supply for the digital section
23	OSC	--	Oscillation terminal
24	OSC	--	Oscillation terminal

## ■ LA2786 (IC501) : Dolby Pro Logic Surround Signal Processor

### 1. Terminal Layout

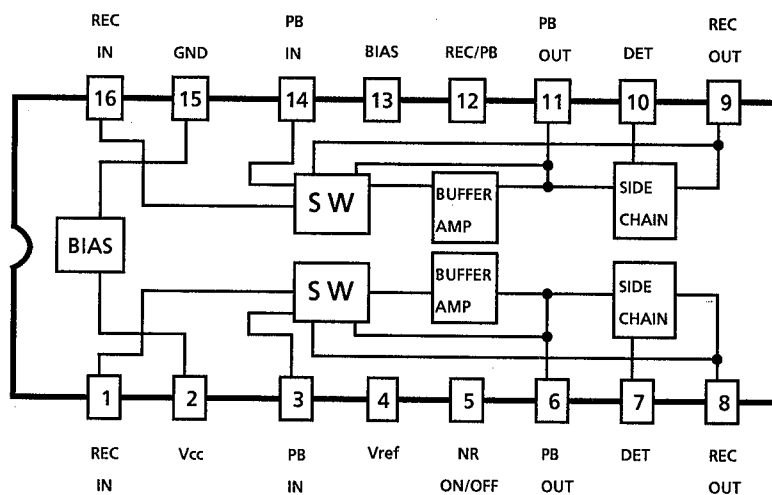


### 2. Pin Functions

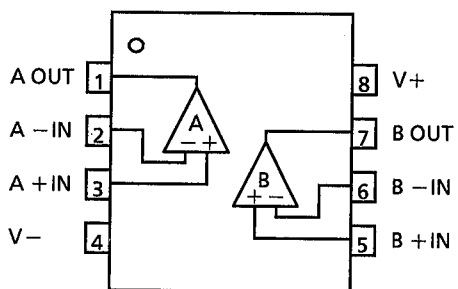
Pin No	Symbol	I/O	Functions	Pin No	Symbol	I/O	Functions
1	NS-BPF1	--	Capacitor for spectrum filter in noise sequencer	22	VCS-1	--	Capacitor for time constant (in log differential area)
2	NS-BPF2	--	Capacitor for spectrum filter in noise sequencer	23	VCS-2	--	Capacitor for time constant (in log differential area)
3	VREF	--	Analog reference voltage	24	VCS-TH	--	Capacitor for time constant (in log differential area)
4	S-DC-OUT	--	Capacitor for DC-cut Sch	25	L+R RECT	--	Capacitor for Center channel detection
5	C-DC-OUT	--	Capacitor for DC-cut Cch	26	DC-CUT	--	Capacitor for DC-cut at detection circuit
6	L-DC-OUT	--	Capacitor for DC-cut Lch	27	L-R RECT	--	Capacitor for Surround channel detection
7	R-DC-OUT	--	Capacitor for DC-cut Rch	28	DC-CUT	--	Capacitor for DC-cut at detection circuit
8	VREF-BUFFER	--	VREF low impedance	29	R-BPF3	--	LPF,HPF for Right channel control circuit
9	L-IN	I	Left channel signal input	30	R-BPF2	--	LPF,HPF for Right channel control circuit
10	R-IN	I	Right channel signal input	31	R-BPF1	--	LPF,HPF for Right channel control circuit
11	GND	--	Ground	32	C-TRIM DC-CUT	--	Capacitor for DC-cut Center channel
12	L-BPF1	--	LPF,HPF for Lch control circuit	33	C-MODE-CAP	--	Capacitor for Center channel output low-pass filter
13	L-BPF2	--	LPF,HPF Left channel control circuit	34	C-OUT	O	Center signal output
14	L-BPF3	--	LPF,HPF Left channel control circuit	35	S-OUT	O	Surround signal output
15	DC-CUT	--	Capacitor for DC-cut at detection circuit	36	R-OUT	O	Right channel signal output
16	R RECT	--	Capacitor for Right channel detection	37	L-OUT	O	Left channel signal output
17	DC-CUT	--	Capacitor for DC-cut at detection circuit	38	VCC	--	power supply
18	L RECT	--	Capacitor for Left channel detection	39	OSC	--	Oscillation for noise sequencer and auto balance
19	VLR-TH	--	Capacitor for time constant (in log differential area)	40	STB	I	Strobe signal input
20	VLR-2	--	Capacitor for time constant (in log differential area)	41	DATA	I	Serial interface data input
21	VLR-1	--	Capacitor for time constant (in log differential area)	42	CLK	I	Serial interface clock



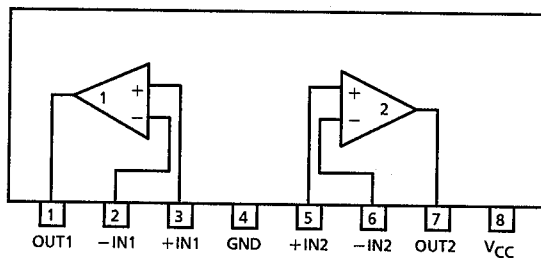
■ HA12136A(IC231) : NR amplifier



■ BA15218 (IC402,403,407,562,912) : Dual OP Amp.



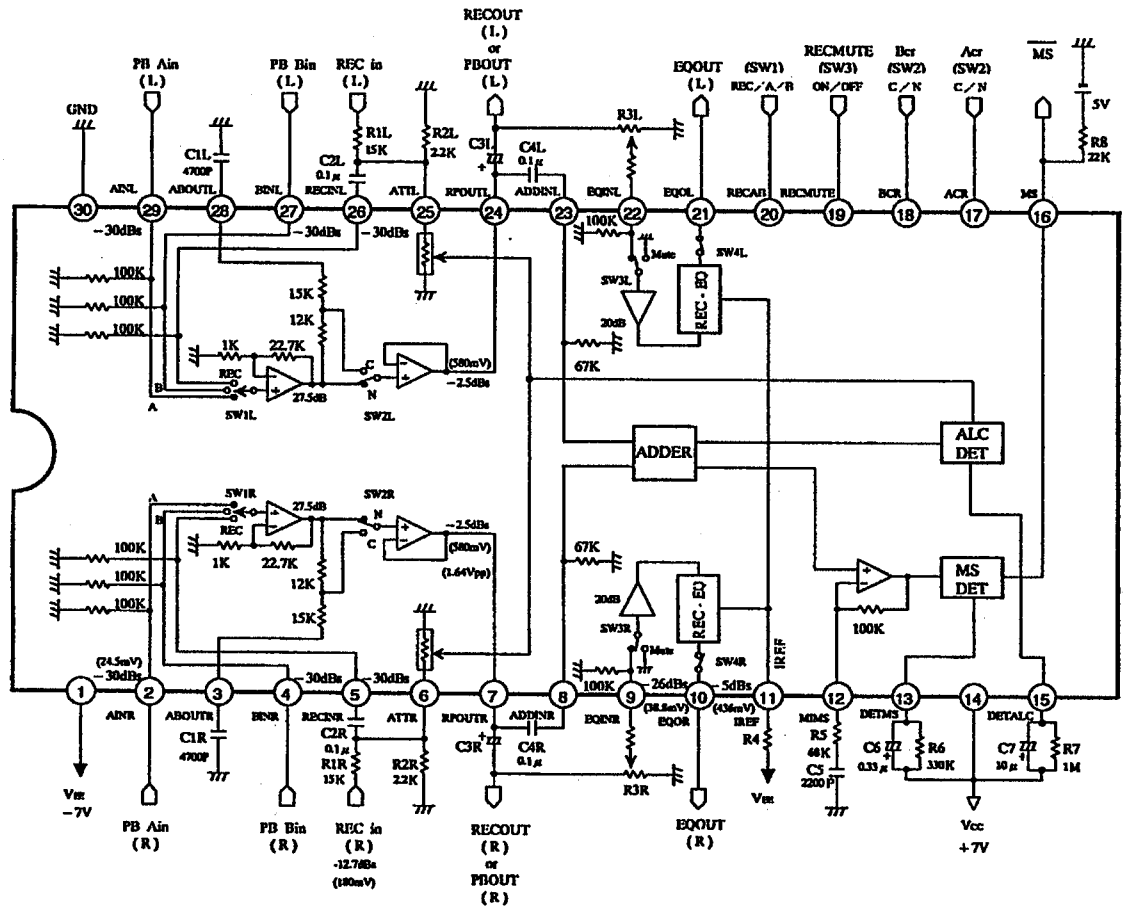
■ BA15218N (IC302,303) : Dual OP Amp.





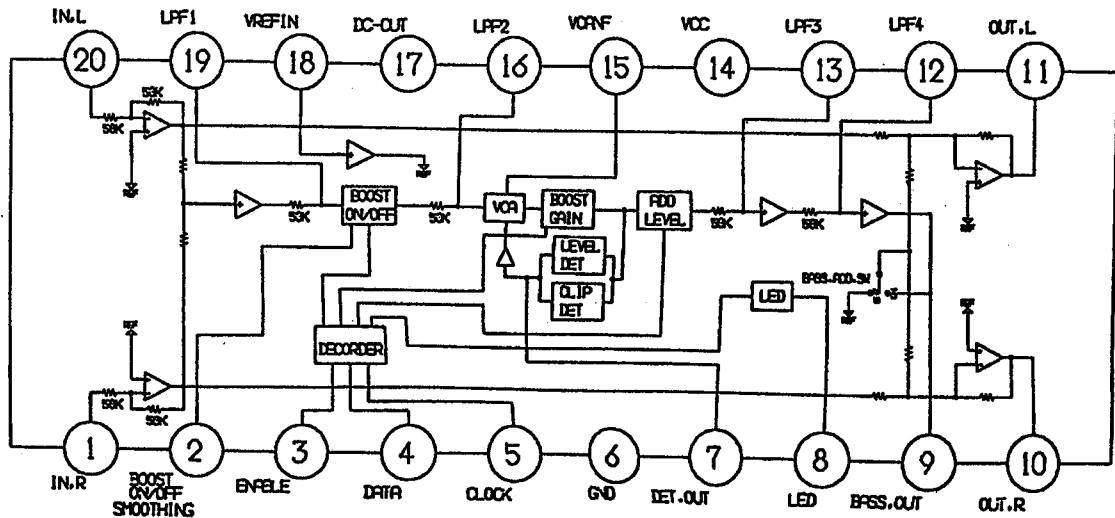
■ HA12206NT (IC305) : P.B & EQ/REC Amp.

Block Diagram



■ LA2650 (IC406) : SA BASS

Block Diagram



# Anode Designation

	1G	2G	3G	4G	5G	6G	7G	8G
P1	9j	—	—	—	—	—	C	5-3
P2	10j	—	—	—	—	—	EON	4-3
P3	11j	4a	4a	4a	4a	6-k	RDS	3-3
P4	12j	4b	4b	4b	4b	6-j	—	2-3
P5	5j	4k	4k	4k	4k	6-e	7-2	1-3
P6	6j	4j	4j	4j	4j	6-f	—	5-2
P7	7j	4h	4h	4h	4h	6-g	7-6	4-2
P8	8j	4f	4f	4f	4f	6-h	7-8	3-2
P9	1j	4g	4g	4g	4g	6-i	7-7	2-2
P10	2j	4m	4m	4m	4m	6-a	7-10	1-2
P11	3j	4c	4c	4c	4c	6-b	7-9	5-1
P12	4j	4n	4n	4n	4n	6-c	7-1	4-1
P13	SOURCE	4p	4p	4p	4p	6-d	CD	3-1
P14	OFF	4r	4r	4r	4r	—	1	2-1
P15	ON	4e	4e	4e	4e	—	—	1-1
P16	CLOCK	4d	4d	4d	4d	—	ALL	S3
P17	16j	—	—	s	—	MHz	REPEAT	1-4
P18	15j	—	—	t	—	—	RANDOM	2-4
P19	14j	—	—	—	—	SET	PROGRAM	3-4
P20	13j	—	—	—	—	kHz	TA	4-4
P21	—	5d	5d	5d	5d	1a	—	5-4
P22	1-a	5e	5e	5e	5e	1b	NEWS	1-5
P23	1-b	5r	5r	5r	5r	1f	INFO	2-5
P24	1-c	5p	5p	5p	5p	1g	]	3-5
P25	2-a	5n	5n	5n	5n	1c	7-5	4-5
P26	2-b	5c	5c	5c	5c	1e	TUNED	5-5
P27	2-c	5m	5m	5m	5m	1d	STEREO	1-6
P28	3-a	5g	5g	5g	5g	CH	AUTO	2-6
P29	3-b	5f	5f	5f	5f	2a	7-3	3-6
P30	3-c	5h	5h	5h	5h	2b	7-11	4-6
P31	S1	5j	5j	5j	5j	2f	—	5-6
P32	—	5k	5k	5k	5k	2g	—	1-7
P33	1-d	5b	5b	5b	5b	2c	SOUND MODE	2-7
P34	REC	5a	5a	5a	5a	2e	7-4	3-7
P35	DAILY	—	—	—	—	2d	PRO LOGIC	4-7
P36	SLEEP	—	—	—	—	VOL	3CH LOGIC	5-7

## Pin Connection

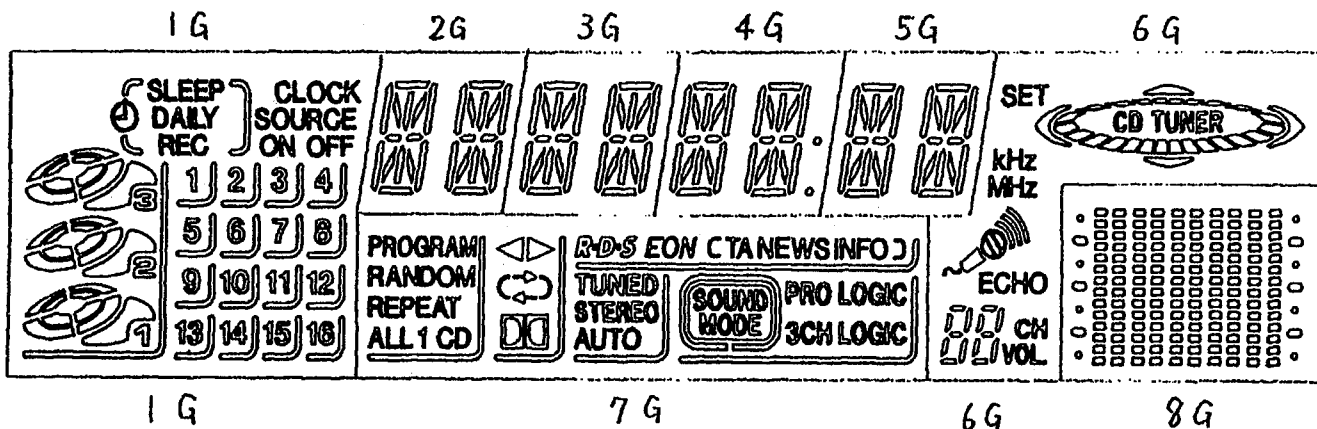
TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11									
ELECTRODE	F	F	NP	NP	1G	2G	3G	4G	5G	6G	7G									
TERMINAL NO.	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ELECTRODE	8G	NX	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
TERMINAL NO.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
ELECTRODE	P	P	NX	NX	NX	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
TERMINAL NO.	52	53	54	55	56	57	58	59	60	61	62									
ELECTRODE	P	NX	NX	NX	NX	NX	NX	NP	NP	F	F									

Notes: F: Filament NP: No Pin  
 G: Gr-16 NX: No Extend Pin  
 P: Anode

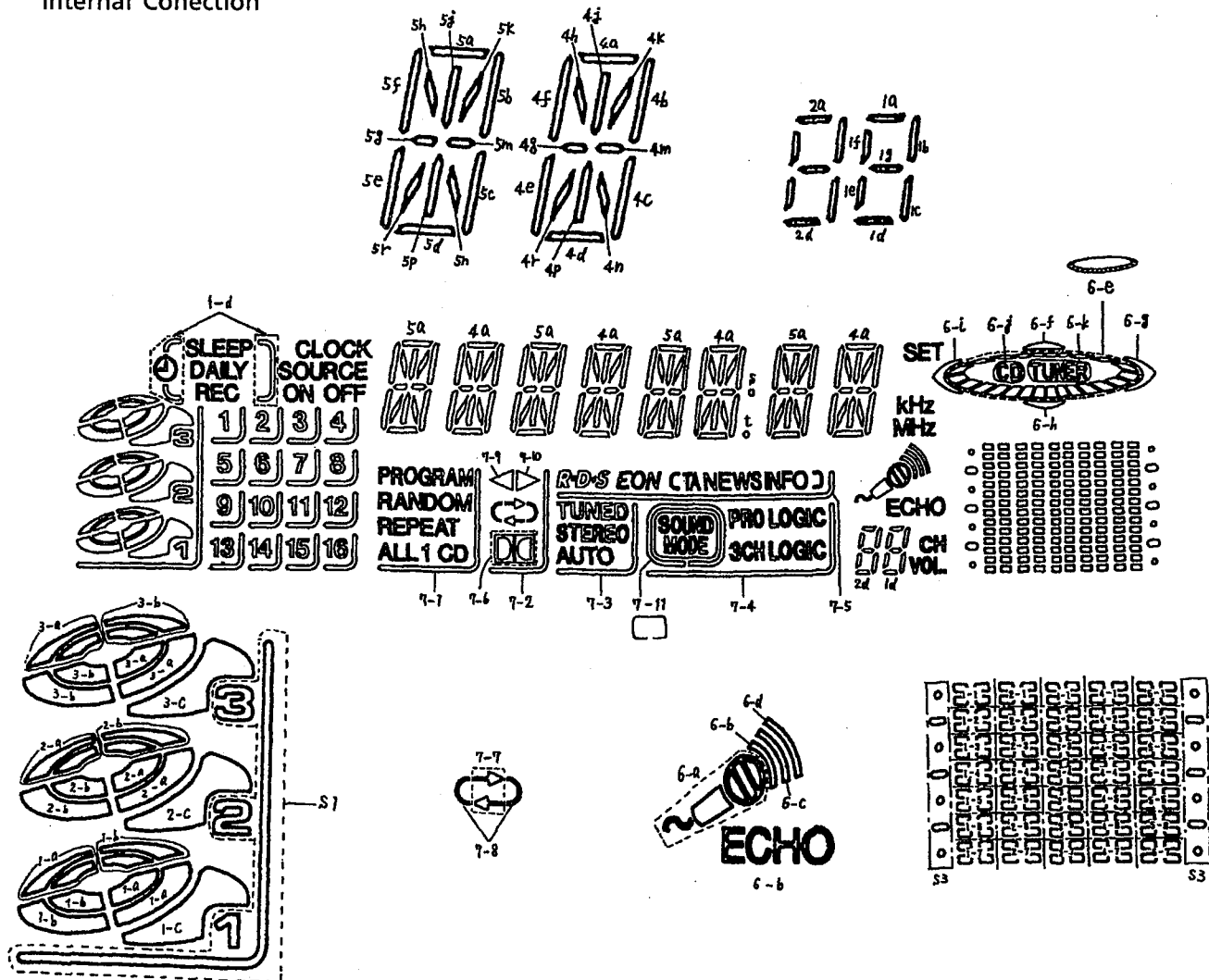
# Internal Connections for FL Display Tube

■ DI901:QLF0012-001

## Grid Layout



## Internal Connection



# Anode Designation

	1G	2G	3G	4G	5G	6G	7G	8G
P1	9j	—	—	—	—	—	□	5-3
P2	10j	—	—	—	—	—	EON	4-3
P3	11j	4a	4a	4a	4a	6-k	RDS	3-3
P4	12j	4b	4b	4b	4b	6-j	—	2-3
P5	5j	4k	4k	4k	4k	6-e	7-2	1-3
P6	6j	4j	4j	4j	4j	6-f	—	5-2
P7	7j	4h	4h	4h	4h	6-g	7-6	4-2
P8	8j	4f	4f	4f	4f	6-h	7-8	3-2
P9	1j	4g	4g	4g	4g	6-i	7-7	2-2
P10	2j	4m	4m	4m	4m	6-a	7-10	1-2
P11	3j	4c	4c	4c	4c	6-b	7-9	5-1
P12	4j	4n	4n	4n	4n	6-c	7-1	4-1
P13	SOURCE	4p	4p	4p	4p	6-d	CD	3-1
P14	OFF	4r	4r	4r	4r	—	1	2-1
P15	ON	4e	4e	4e	4e	—	—	1-1
P16	CLOCK	4d	4d	4d	4d	—	ALL	S3
P17	16j	—	—	s	—	MHz	REPEAT	1-4
P18	15j	—	—	t	—	—	RANDOM	2-4
P19	14j	—	—	—	—	SET	PROGRAM	3-4
P20	13j	—	—	—	—	kHz	TA	4-4
P21	—	5d	5d	5d	5d	1a	—	5-4
P22	1-a	5e	5e	5e	5e	1b	NEWS	1-5
P23	1-b	5r	5r	5r	5r	1f	INFO	2-5
P24	1-c	5p	5p	5p	5p	1g	□	3-5
P25	2-a	5n	5n	5n	5n	1c	7-5	4-5
P26	2-b	5c	5c	5c	5c	1e	TUNED	5-5
P27	2-c	5m	5m	5m	5m	1d	STEREO	1-6
P28	3-a	5g	5g	5g	5g	CH	AUTO	2-6
P29	3-b	5f	5f	5f	5f	2a	7-3	3-6
P30	3-c	5h	5h	5h	5h	2b	7-11	4-6
P31	S1	5j	5j	5j	5j	2f	—	5-6
P32	—	5k	5k	5k	5k	2g	—	1-7
P33	1-d	5b	5b	5b	5b	2c	SOUND MODE	2-7
P34	REC	5a	5a	5a	5a	2e	7-4	3-7
P35	DAILY	—	—	—	—	2d	PRO LOGIC	4-7
P36	SLEEP	—	—	—	—	VOL	3CH LOGIC	5-7

## Pin Connection

TERMINAL NO.	1	2	3	4	5	6	7	8	9	10	11									
ELECTRODE	F	F	NP	NP	16	26	36	46	56	66	76									
TERMINAL NO.	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
ELECTRODE	86	NX	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
TERMINAL NO.	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
ELECTRODE	P	P	NX	NX	NX	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P
TERMINAL NO.										52	53	54	55	56	57	58	59	60	61	62
ELECTRODE										P	NX	NX	NX	NX	NX	NX	NP	NP	F	F

Notes: F: Filament NP: No Pin  
 G: Grid NX: No Extend Pin  
 P: Anode

# Cassette Mech. Ass'y removal

**(15) Head assembly removal**

1. Remove the Cassette mech. ass'y.
2. Remove the flexible wire from the cassette deck and remove the 3 screws  $\text{\textcircled{K}}$  holding the head ass'y.

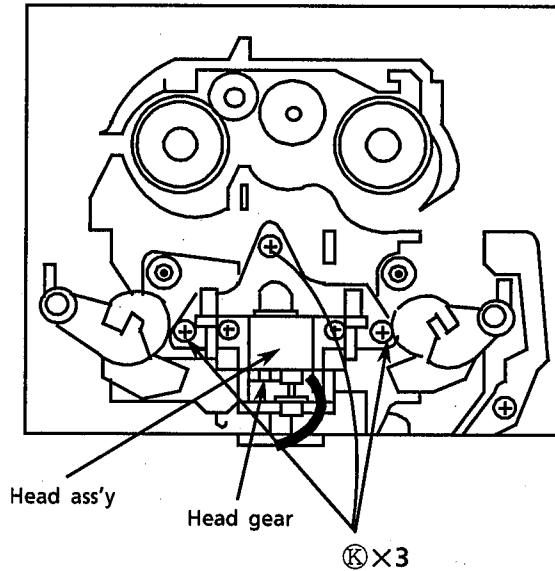


Fig.18 Cassette mechanism top view

**(17) Pinch roller (FWD/REV) removal**

1. Remove the cassette mech. assembly.
2. Remove the hook holding the pinch roller.
3. Remove the pinch roller ass'y.

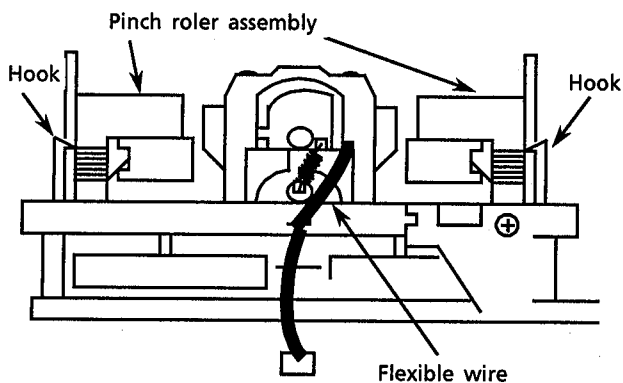


Fig. 20 Cassette mechanism bottom view

**(16) Head assembly**

1. The direction of the head is changed with the direction lever. When servicing, install the direction lever according to the direction of the head assembly.

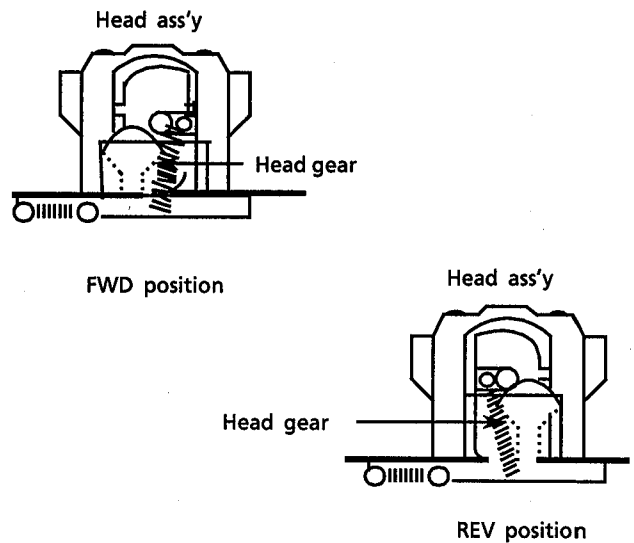


Fig.19-A Head ass'y side view

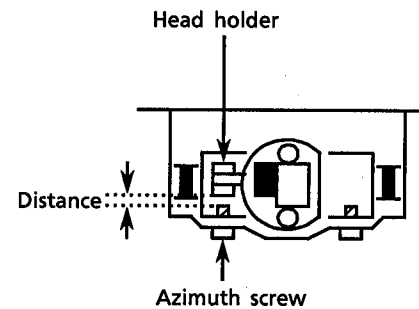


Fig.19-B A distance of between head older and azimuth screw

(18) Capstan motor removal.

1. Remove the cassette mechanism.
2. Remove the cassette deck control PCB.
3. Remove the 6 screws (L) holding the bracket.
4. Remove the hooks (■) of the bracket.
5. Put the cutting on the flywheel A together the bracket's pall as shown in fig. 22(Flywheel A) and check that the flywheel B is removed from the bracket's pall (fig. 22-Flywheel B).
6. Remove the capstan motor with the bracket.
7. Unsolder the broken flat wire of the capstan motor.
8. Remove the 2 screws fixing the motor and the bracket.

\* To remove the bracket, it is easier to remove mech. "B" first.  
 Vice versa, assembling mech. "A" is easier for reassembly.

8.7 ± 0.05mm

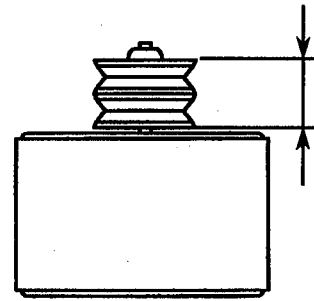


Fig. 21 Capstan motor pulley installation

(19) Flywheel removal

1. Remove the cassette mechanism assembly.
2. Remove the cassette amp PCB.
3. Remove the 6 screws (L) and the bracket.
4. Remove the 4 hooks of the bracket.
5. Remove the bracket.
6. Remove the flywheels.

\*The oil on the capstan must be wiped out after reassembling.

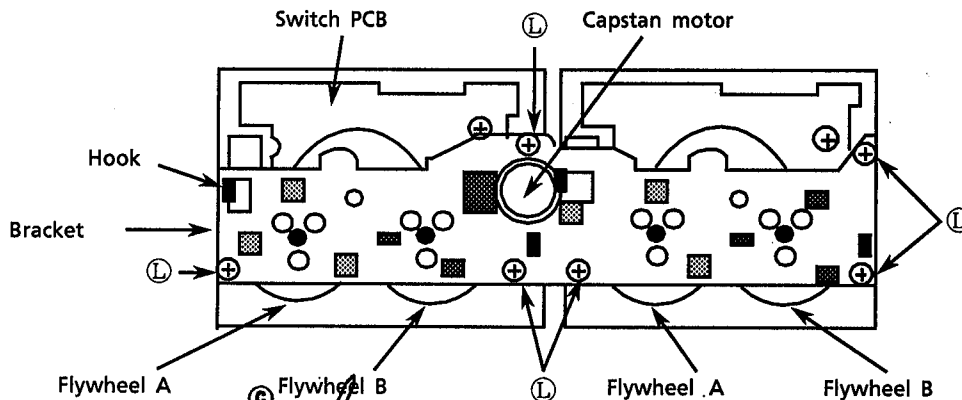


Fig. 22-A

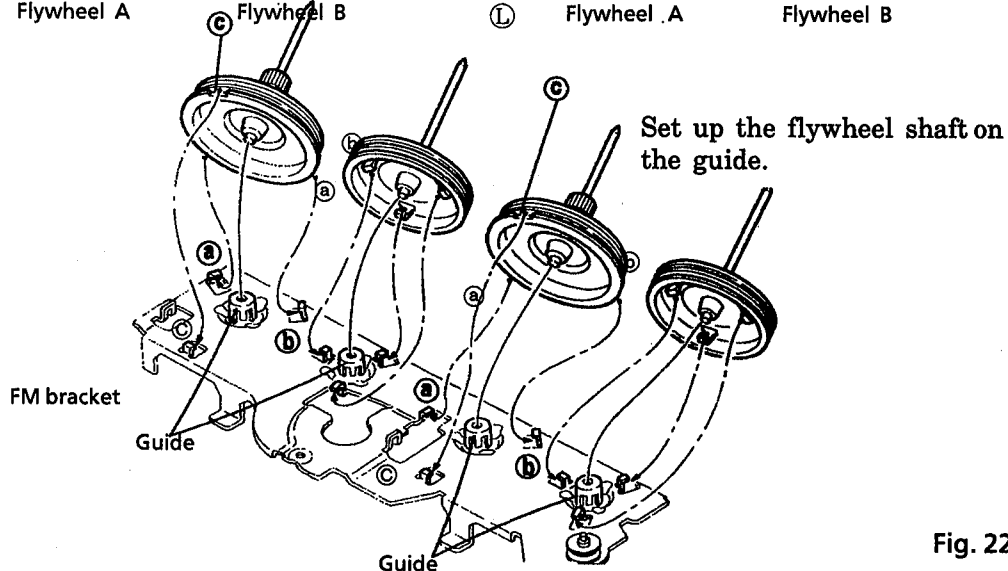


Fig. 22-B



(20) How to install the belts

1. Install the flywheels and belts as shown in the figure below. ( Fig. 23 )

When putting the belts, put the long belt first.

2. Install the main reels to put the belts on the flywheels.

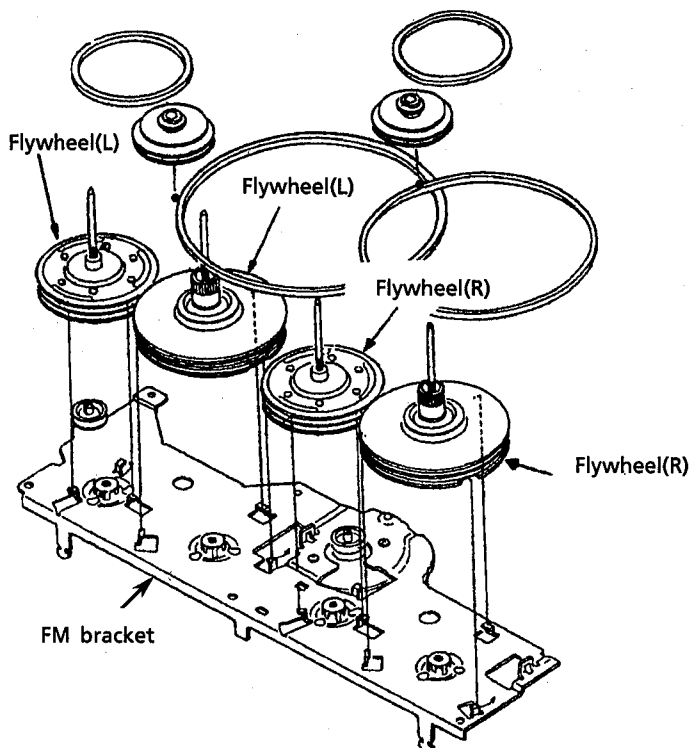


Fig. 23-A Install the Bracket and flywheels

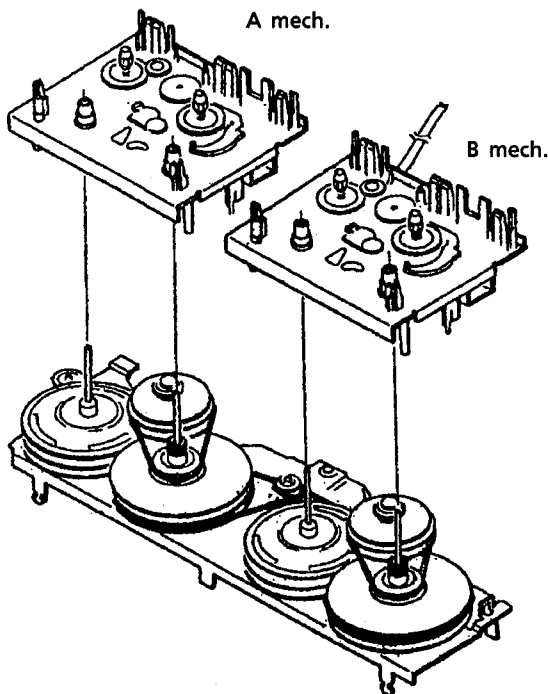
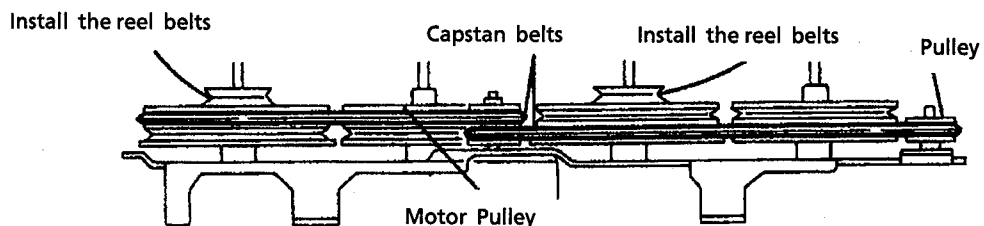


Fig. 23-C Install the cassette mech.



REEL BELTS → After hooking reel belts, no twist.

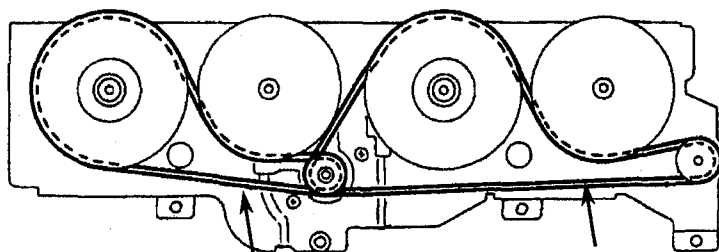
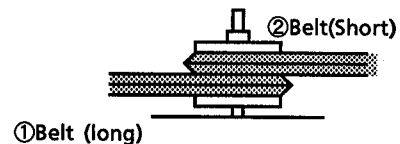


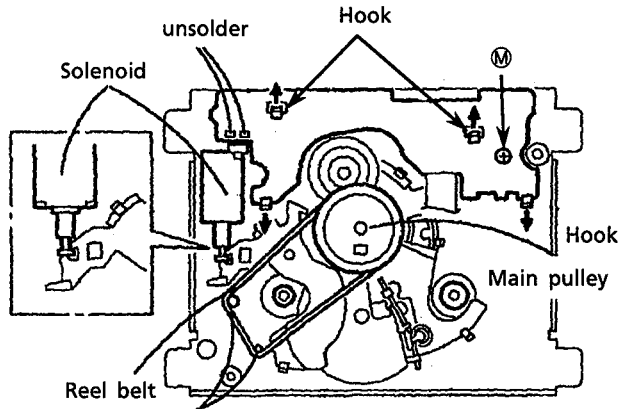
Fig. 23-B Install the Belts

②Belt (Short)

①Belt (long)

**(21) Switch PCB removal**

1. Remove the flywheel.
2. Remove the 1 screw (M).
3. Unsolder the broken solenoid.
4. Release the 4 hooks holding the Switch PCB.
5. Remove it.



When attach the FM bracket,  
Install the reel belt on the stud  
(See fig. 23)

Fig. 24

**(22) Control cam removal**

1. Remove the FM bracket and flywheel.
2. Pull out the main pulley.
3. Remove the trigger arm.  
While opening the two tabs (a) under the trigger arm, pull out the trigger arm from the shaft.
4. Pull out the elevator ring.
5. Remove the FWD/REV arm assembly.  
a. Remove the FWD/REV arm spring.  
b. While opening the four FWD/REV arm retaining tabs (b) outwards, pull out the FWD/REV arm.
6. Pull out the control cam.  
While pulling the shaft stopper section of the control cam in the central direction, pull out the control cam.

**When attaching the control cam**

While pressing the FWD/REV arm in the direction of the sorrow, pull the head the front.

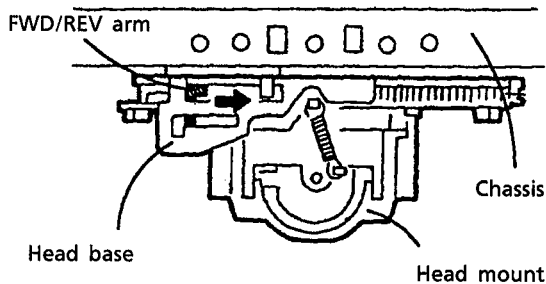
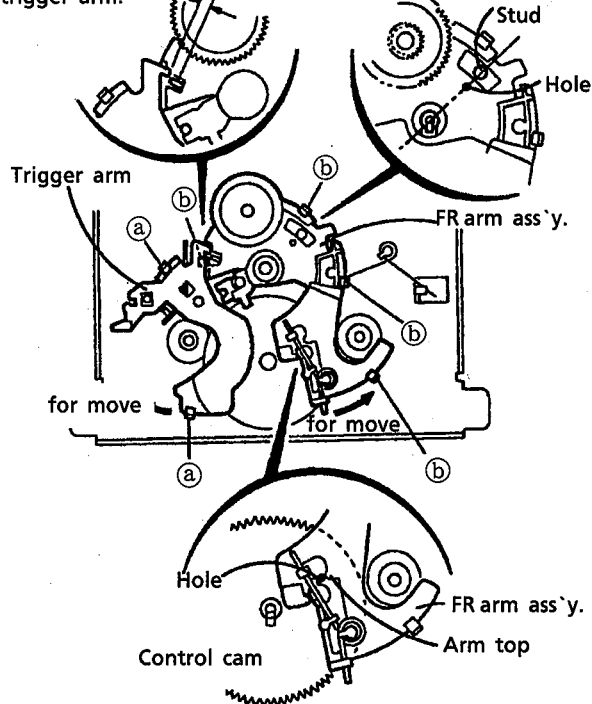


Fig. 25-c

Moving area of the trigger arm. Position of the hole and the stud after fixing the FR arm ass'y.



Position of the hole of cam and top of the arm after fixing the FR arm ass'y.

Fig. 25-a

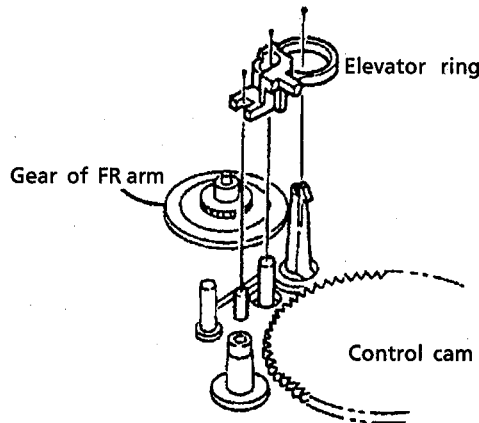


Fig. 25-b

After performing the procedure shown above, the studs under the control cam move as shown.

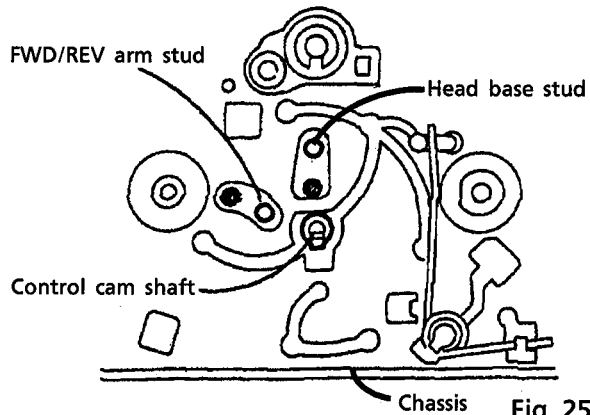
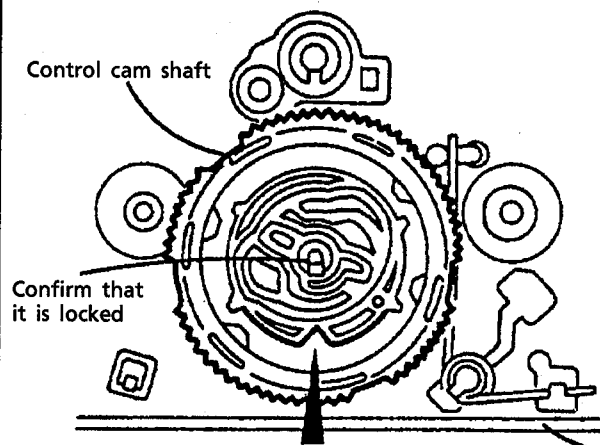


Fig. 25-d

## (23) How to assemble

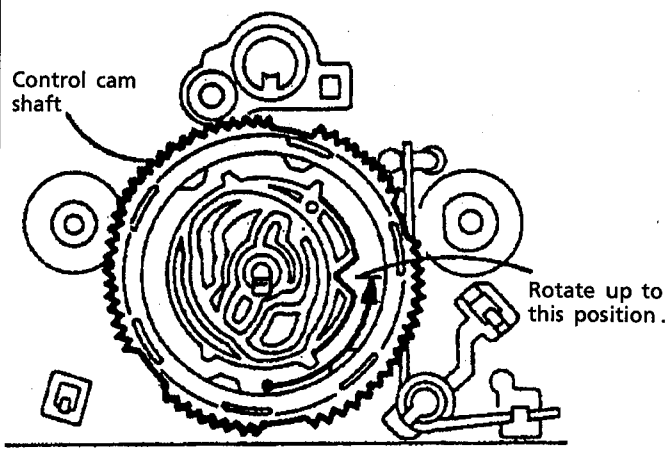
1. Move the FWD/REV arm in the direction of the arrow .
2. In step 1 ,pull the head base forward .
3. In step 2 ,after inserting the cam into the shaft ,move the head base and FWD/REV arm slightly until the cam is fully inserted and it clicks to inform when it has been locked .
4. Rotate the cam counterclockwise to check if the cam rotates smoothly and the spring clicks according to the forward/backward movement of the head base .
5. After checking the rotation of the cam ,rotate the cam until the notch section comes to the right so that the FWD/REV arm assembly can be attached .
6. Attach the FWD/REV arm assembly while observing the positioning of:
  - the hole and stud
  - the cam hole and arm edge
 shown in the figure 25-a .  
 After attachment ,move the FWD/REV arm in the direction of the arrow to check if it moves back to the original position .
7. Attach the elevator ring .
8. Attach the trigger arm .  
 After attachment ,move the trigger arm in the direction of the arrow to check if it moves back to the original position .

Working confirmation:  
 If the control cam rotates counterclockwise ,the assembly was successful: if it does not rotates . It must be reassembled .



Fit the control cam its notch located as shown .  
 (Engage with the gear of the control cam while moving the FWD/REV arm and head base slightly .)

Fig. 26-a



Attach the FWD/REV arm with the control cam rotated up to the position shown .

Fig. 26-b

## CD Changer mech. Ass'y removal

### (24) CD Tray assembly removal

1. Disassemble the changer mech..
  2. Remove the screw ③ holding the stopper bracket.(See Fig.27) --- (U.S.A only)
  3. Remove the rod from both ends' hooks which are secured on T.Bracket ② and clamber base ④.[See Fig. 27)
  4. Remove 3 screws ① securing T.Bracket.(See Fig. 29.)
  5. Remove a screw ⑤securing center of the clamber ass'y. (See Fig. 28)
  6. Remove the clamber ass'y from ★ screw fixing side.
  7. Remove a screw ⑥which secures the return spring and lock levers from the chassis ass'y.(See Fig. 30.)
  8. Remove 2 palls ⑦ which slightly secure the return spring to remove it.
  9. Remove 3 lock levers.
  10. Check that the lifter unit stopper is inserted into hole ⑧ located on CD tray ass'y. (See Fig. 31.)
  11. Check that the driver unit elevator is seen from a hole (marked ⑨) on left side of the CD changer mech..(See Fig. 32 and 33.)
- [NOTE] Set the elevator in correct position (Fig. 33) by rotating the pulley gear with finger if it is not positioned correctly (Fig. 34.).
12. Rotate the motor pulley clockwise with finger until the lifter unit's stopper is lowered from ⑧hole located on the CD tray ass'y. (See Fig. 34.)
  13. And, pull all 3 CD tray assemblies forward until they stop. (See Fig. 32.)
  14. Press 2 pawls (f, f') located rear side of the CD tray ass'y according to an arrow ⑩ to remove the CD tray ass'y. (See Fig. 35.)  
At first, removing the lowest tray is easier.

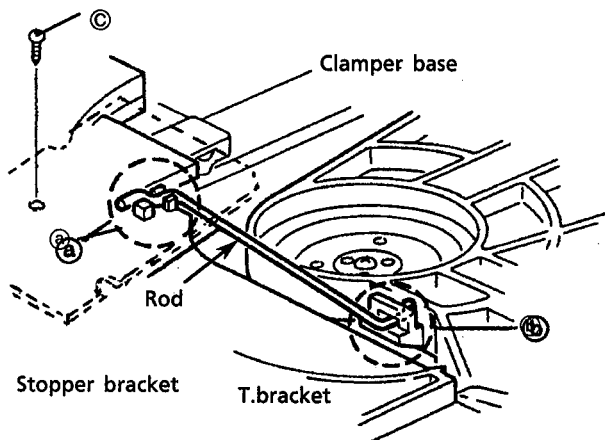


Fig. 27

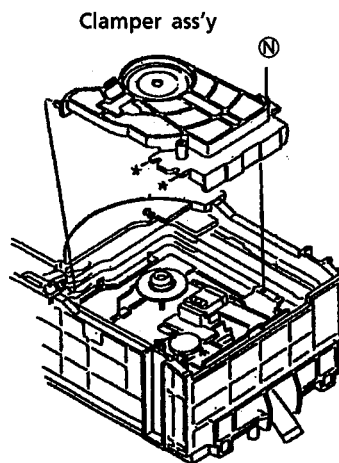


Fig.28

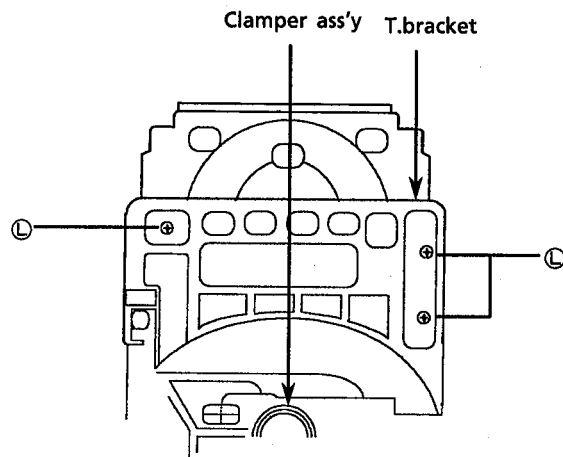


Fig.29

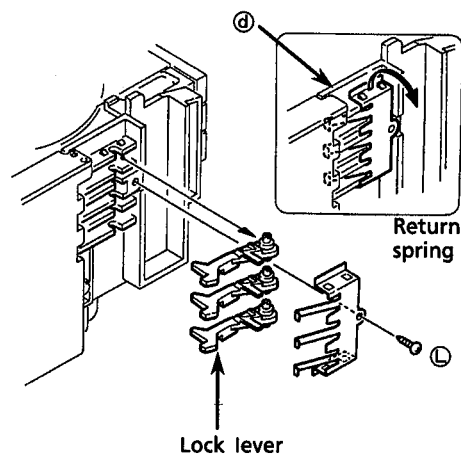


Fig.30

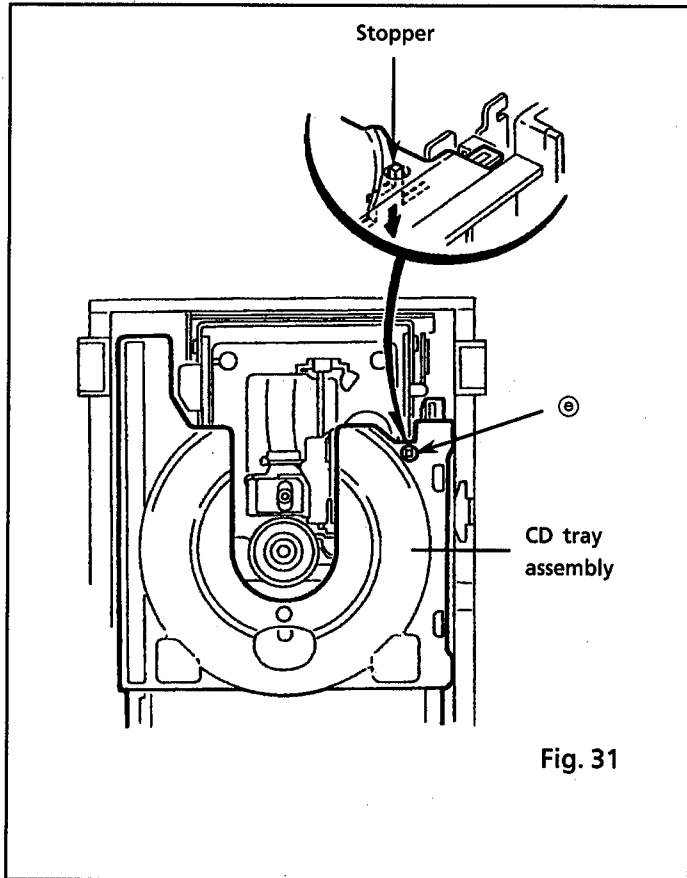


Fig. 31

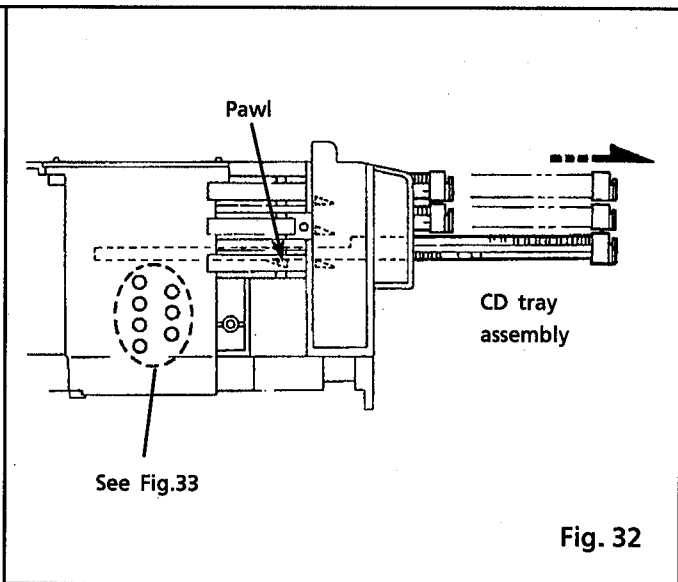


Fig. 32

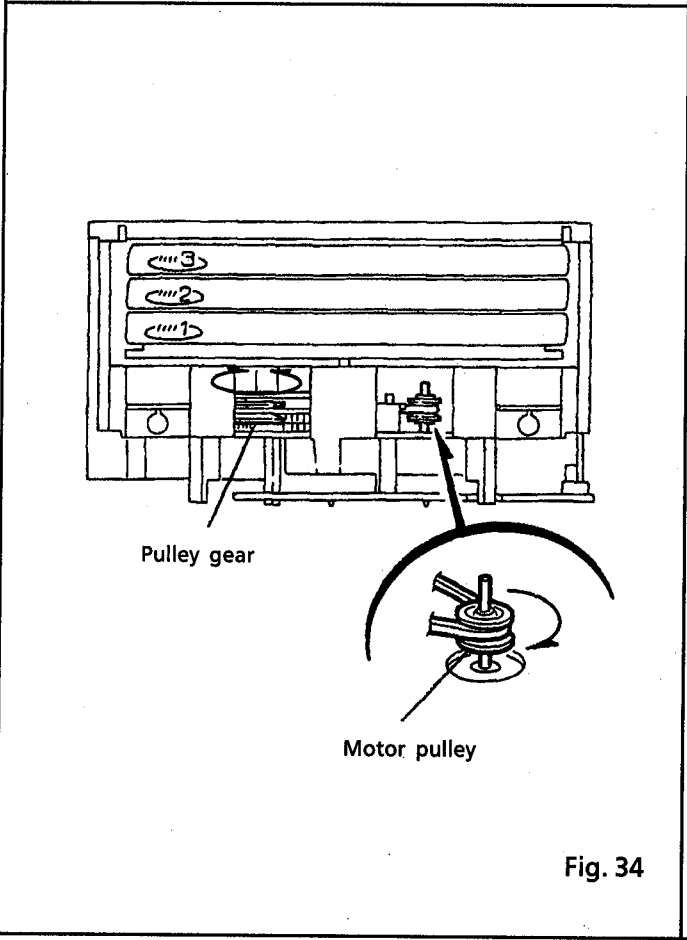


Fig. 34

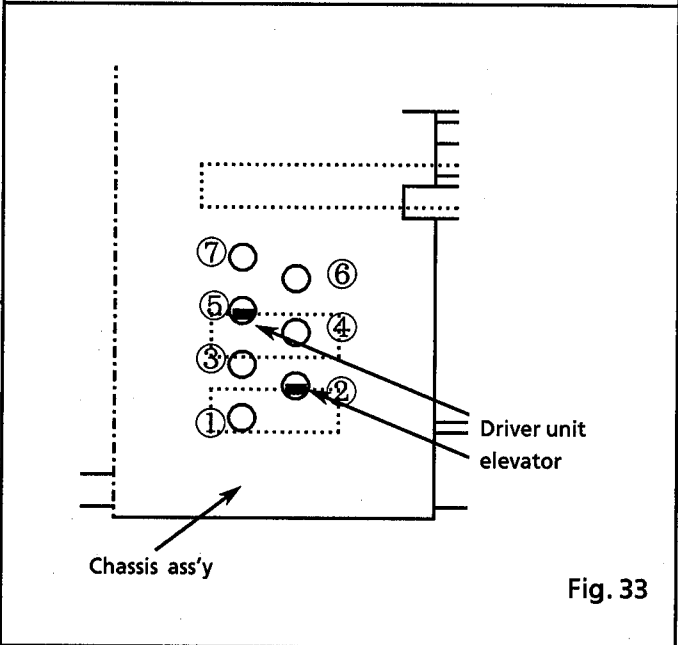


Fig. 33

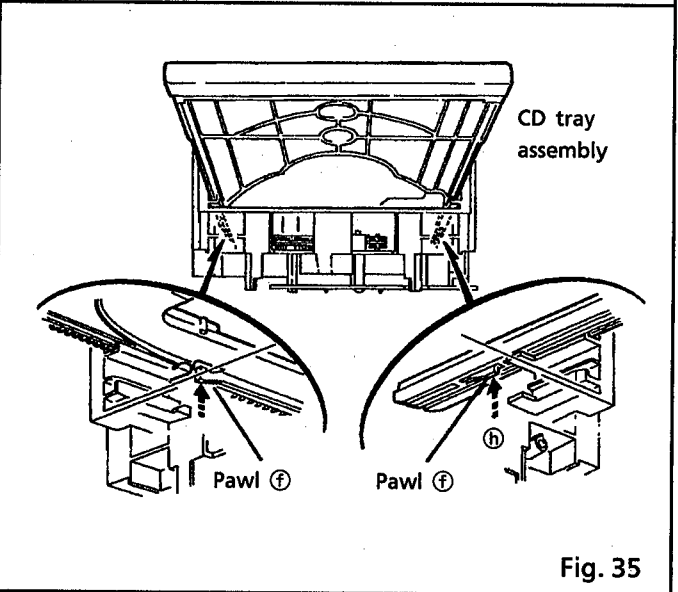


Fig. 35

(25) CD mechanism removal

1. Remove the CD tray ass'y.
2. Rotate the Cam R1, R2 ass'y counterclockwise so that CD mech. ass'y's shaft ⑥ is positioned as shown in Fig. 36.
3. Remove 4 screws ⑦ securing CD mech. ass'y. (See Fig. 36.)

\*How to replace pick-up unit

1. If CD mech. is removed without disassembling CD mech. ass'y, rotate the Cam R1, R2 ass'y clockwise to set the CD mech. ass'y's shaft(L) as shown in Fig. 37.
2. Lift the CD mech. ass'y toward the direction ① to remove it from the lifter unit. (See Fig. 38.)

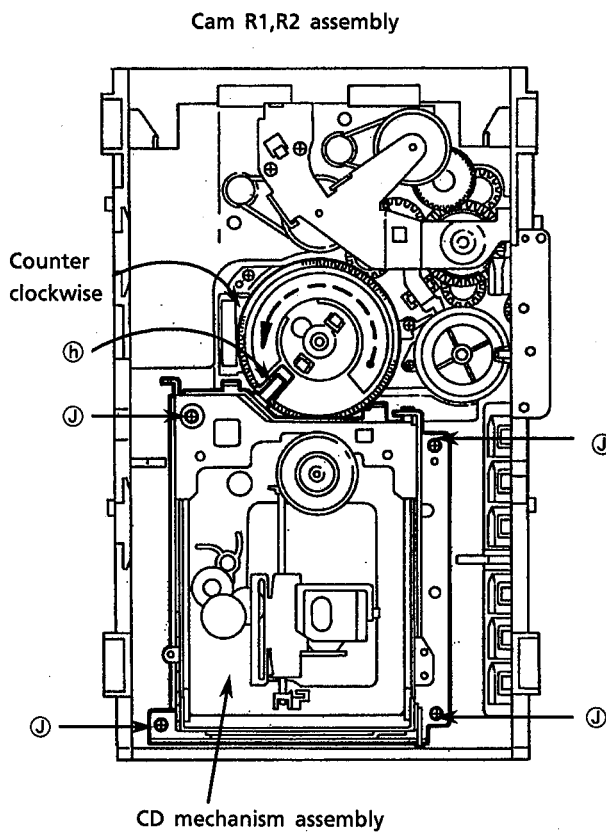


Fig. 36

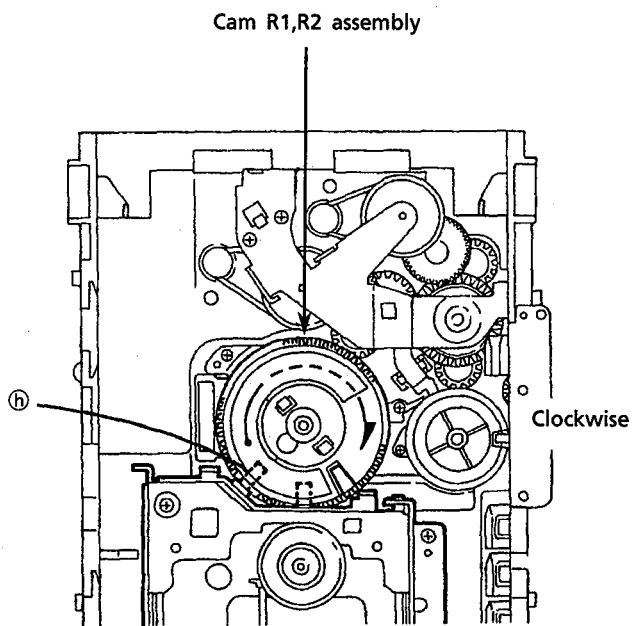


Fig. 37

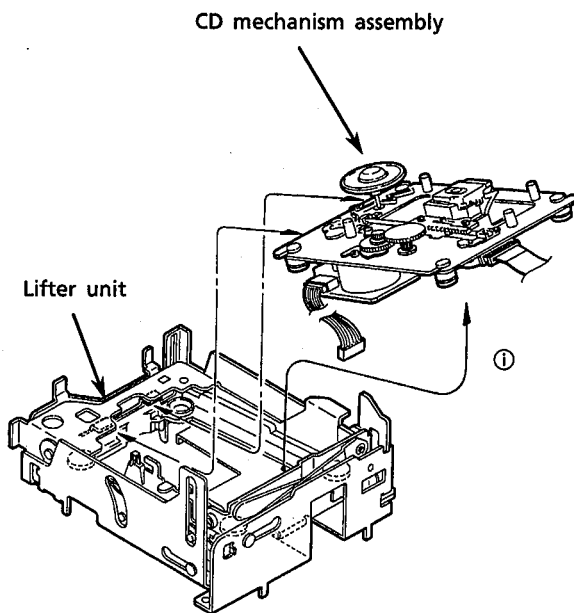


Fig. 38

**(26) Actuator motor board removal**

1. Unsolder 4 soldered point ① for both motors. (See Fig. 39.)
2. Remove a screw ③ securing the CD servo board. (See Fig. 39.)
3. Press the hook and release it to remove the CD servo board.
4. Remove 2 screws ④ securing the actuator motor board. (See Fig. 39.)
5. Remove 2 screws ⑤ securing the tray select switch board. (See Fig. 40.)

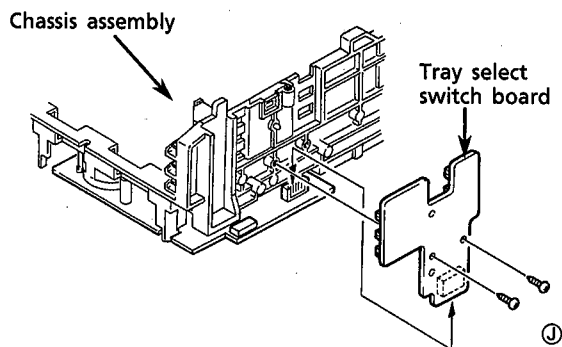


Fig. 40

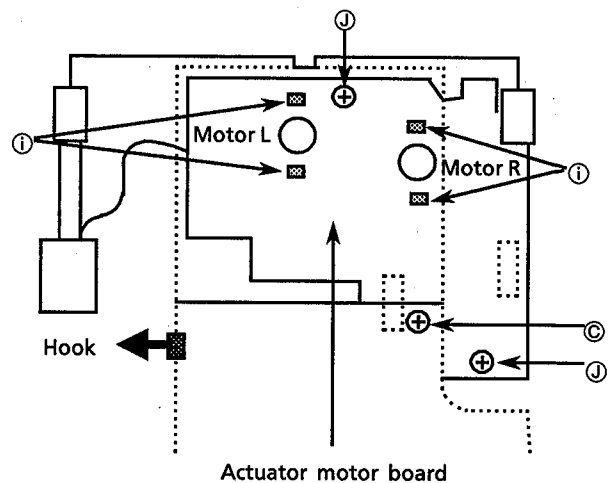


Fig. 39

**(27) Cam unit removal**

1. Disassemble CD mech. ass'y.
2. Rotate the Cam gear L so that the drive unit's pole ⑧ is positioned as shown in Fig. 41.
3. Remove the drive unit and cylinder gear. (See Fig. 42.)
4. Rotate the Cam gear L so that the select gear's ⑨ is positioned as shown in Fig. 43.
5. Remove 4 screws ④ securing the cam unit which includes the cam gear L and Cam R1, R2 ass'y. (See Fig. 43.)

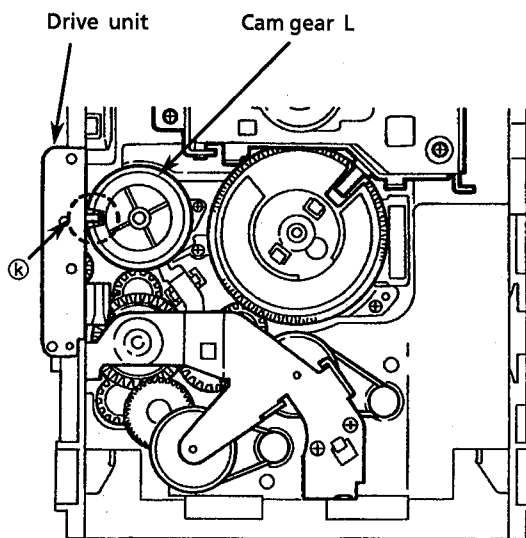


Fig. 41

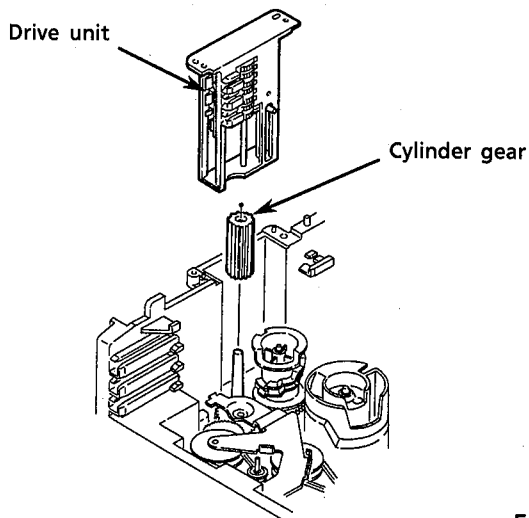


Fig. 42

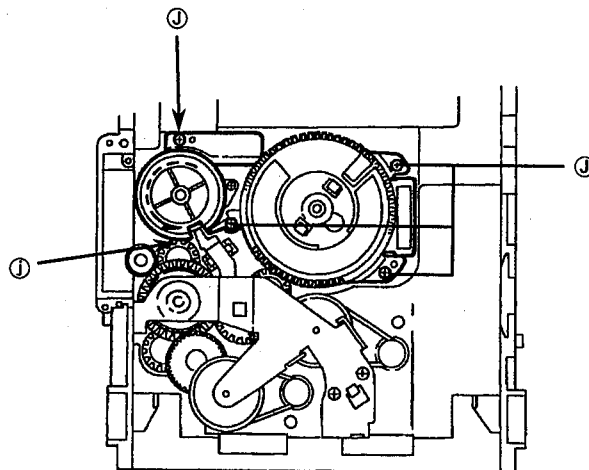


Fig. 43

(28) Removal for actuator motor and belt

1. Remove 2 screws ② securing the gear bracket.  
(See Fig. 44.)
2. Press the pawl ④ securing the gear bracket to the arrow in the figure to remove the gear bracket. (See Fig. 44.)
3. Remove the gear bracket from the chassis ass'y's ① securing top of the gear bracket. (See Fig. 45.)
4. Remove each belts from the both actuator motor pulleys and the pulley gears. (See Fig.44.)
5. Reverse the chassis ass'y and widen 4 poles ③ which secure both actuator motors to its arrows to remove the actuator motors. (See Fig.46.)

[NOTE] The pulley gears and other gears which consist the gear unit may drop separately if the chassis ass'y is reversed without gear bracket and belt. See Fig. 47 to assemble them again.

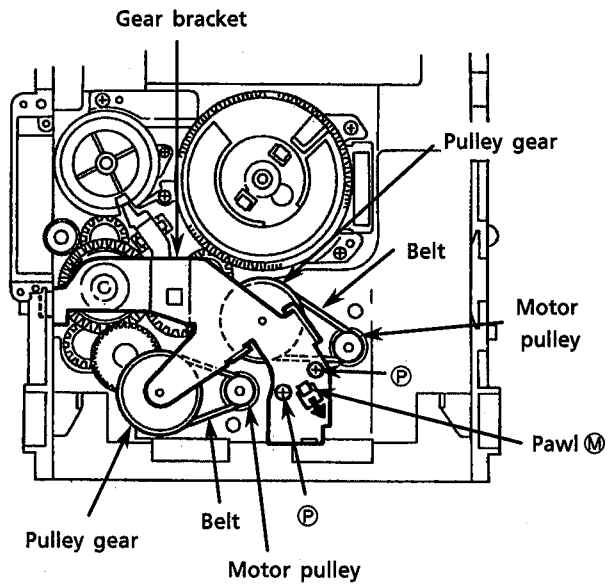


Fig. 44

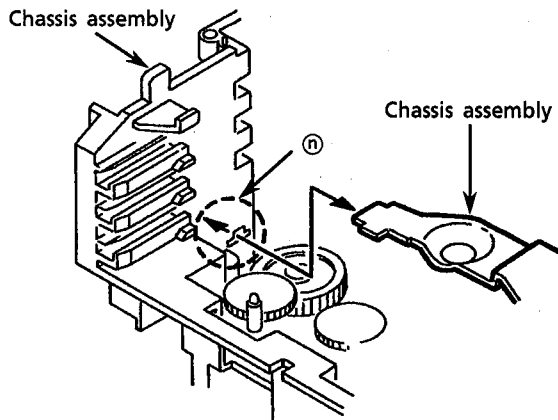


Fig. 45

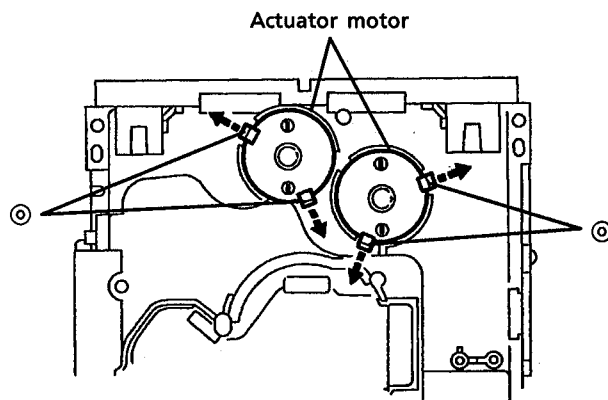


Fig. 46

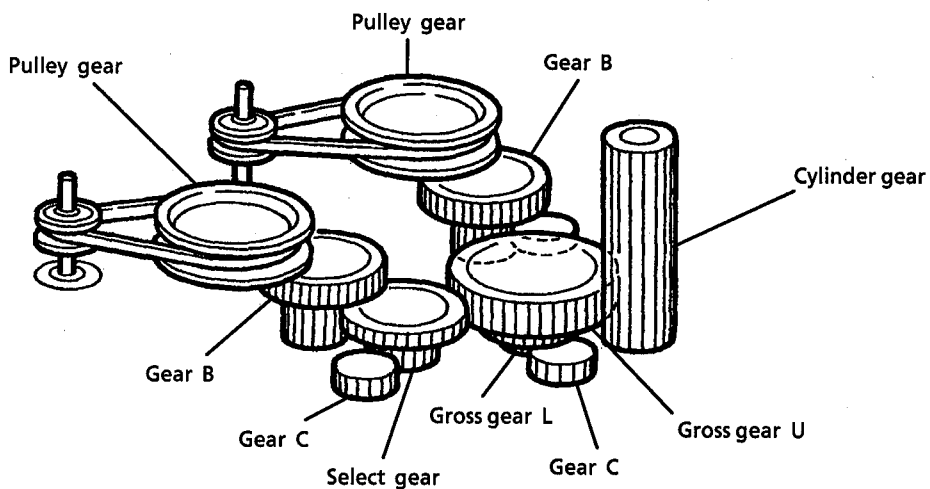


Fig. 47



**(29) Removal of cam R1, R2 ass'y and cam gear L**

1. Remove the slit washer securing Cam R1, R2 ass'y.  
(See Fig. 48.)
2. Remove 2 poles  $\textcircled{P}$  securing Cam R1 to remove Cam R2 from Cam R1.
3. Remove the slit washer securing Cam gear L.
4. Remove Cam gear L from the C.G. base ass'y.

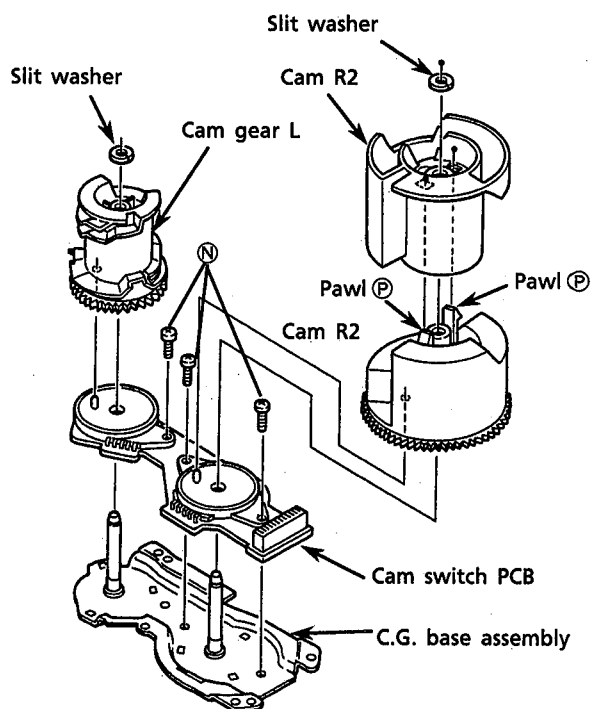


Fig. 48

**(30) Removal of C.G. base ass'y**

Remove 3 screws  $\textcircled{N}$  securing the C.G. base ass'y. (See Fig. 48 and 49.)

[NOTE] Set the drive unit's pawl  $\textcircled{R}$  so that it is positioned as shown in Fig. 49.  
Confirm that the cam gear L engages with the gear unit by rotating the cam gear L.

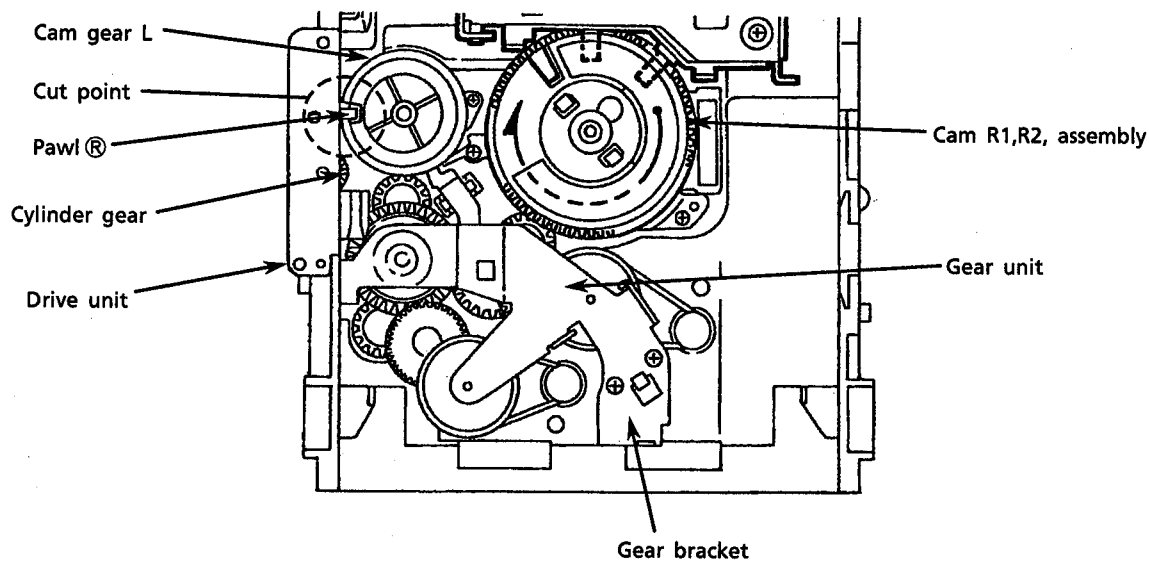


Fig. 49

**(31) Removing the Pickup**

1. Remove the CD mech. assembly.
2. Release the shaft to remove the pickup.

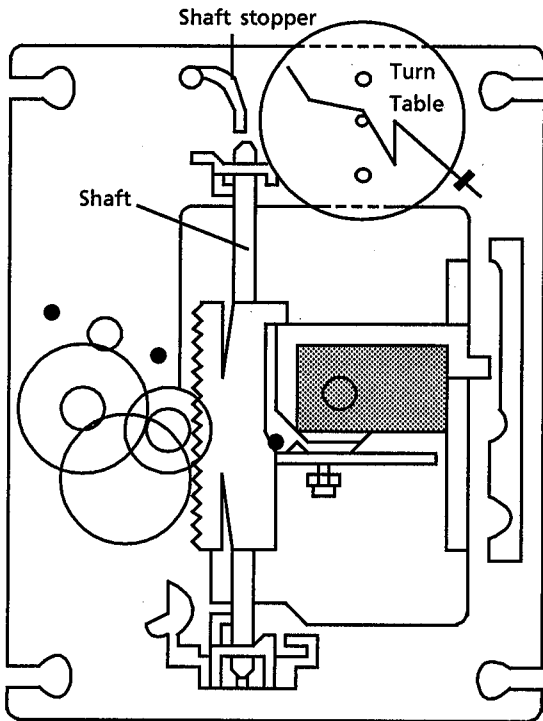


Fig. 50

**(32) Spindle motor installation**

1. Tighten the 2 screws to the same torque.
2. Fasten the spindle and feed motor P.C. board with the screw and solder.
3. Install the turntable. When installing, press straight down at the center of the turntable until the distance from the surface of the mech. base to the turntable is exactly  $19.4 \pm 0.1\text{mm}$ .

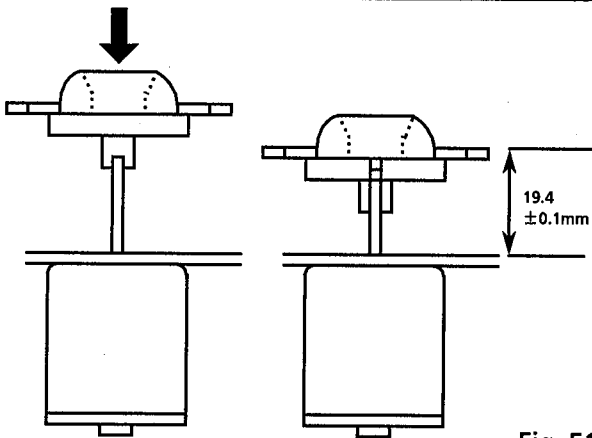


Fig. 51

**(33) Removing the Spindle motor**

1. Remove the CD mech. assembly.
2. Remove the turntable, and remove the 2 screws ⊗ retaining the spindle motor.
3. Remove the screw retaining the spindle and feed motor circuit board and unsolder it.

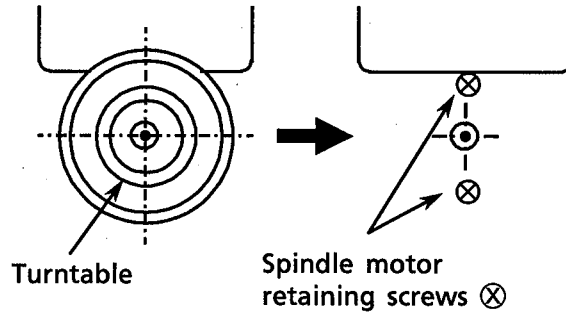


Fig. 52

- (34) After inserting the turntable, bond the motor shaft and turntable together (at the section marked by an arrow in fig 53 on the left below).**

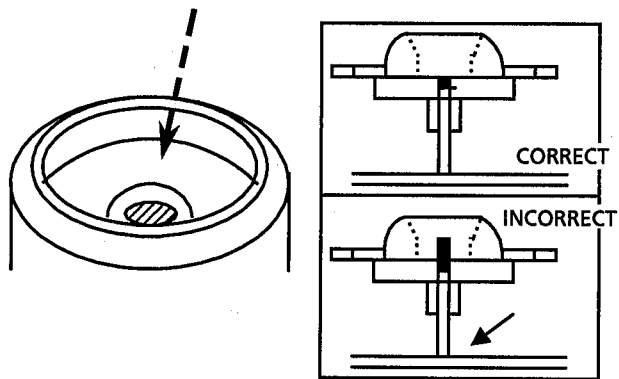


Fig. 53

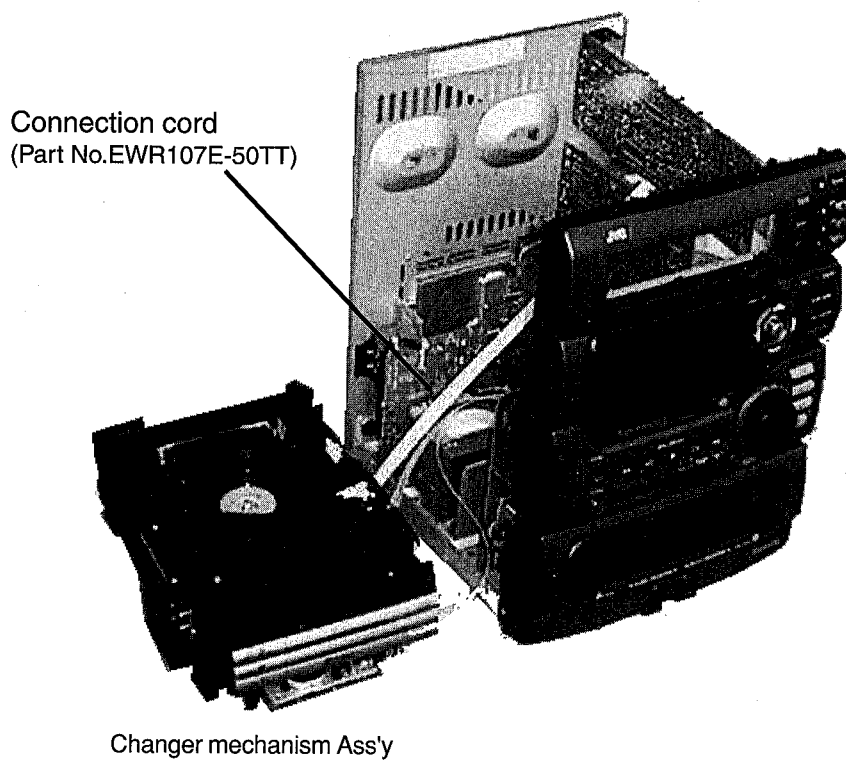
- (35) Use "LOCKTITE" #460 bonding agent, and apply as little as possible.**

Take care not to allow any excess bonding agent to get onto the turntable.

Be extremely careful not to allow bonding agent to adhere to the motor bearing (the section marked by an arrow in fig. 53 on the right).

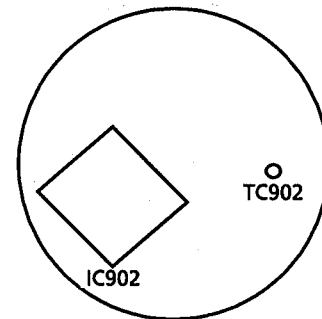
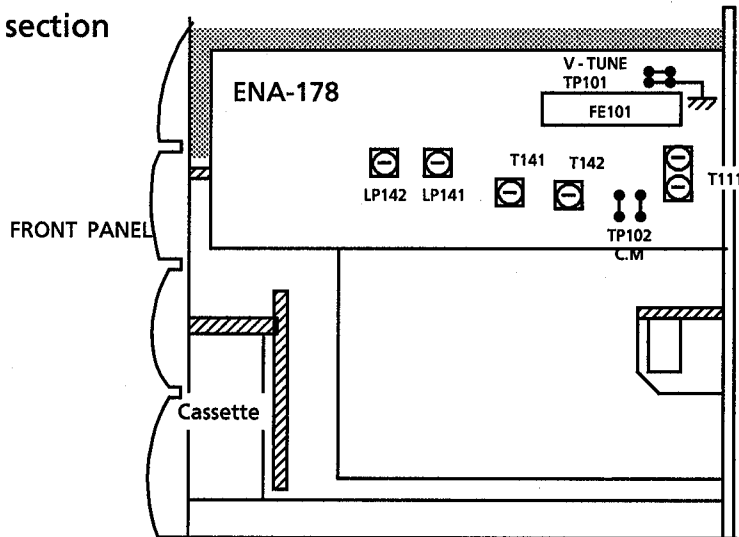
## ***Connected an extension cord***

- 1.Remove the CD changer mechanism ass'y.
- 2.Disconnect the 7pin wire from the CN613(Source selector & SEA P.C.B)and disconnect the 7pin wire.
- 3.Connected the extension cord CN603 to CN613.



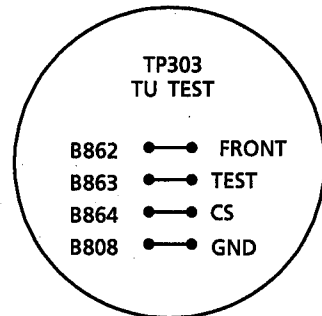
# Adjustment procedures

## Tuner section



ENB-255-1  
(System control PCB)

Fig.1



ENC-139-2  
(Deck control PCB)

## Clock Adjustment

1. After connecting B863 and B864 with some wire as shown in the figure below, connect the AC power cord into an AC outlet.
2. Confirm that the display is off and remove the wire.
3. Connect a frequency counter to TP303 B862 and B808.
4. Adjust TC902 for the frequency  $50000 \pm 0.29\text{Hz}$ .

### (1) Tuning voltage

Confirm the voltages at TP101 is within the standard values shown in the table below. If the voltages are not satisfied, replace T111 for MW 5or FE101 for FM.

#### Tuning range & FM Tuning voltage (Unit : V)

Area	Range				
	LW ( kHz)	MW (kHz)	FM (MHz)	FM TU.VOL	
				87.5MHz	108.0MHz
All Area	144~288	522~1629	87.5~108.0	$1.6 \pm 1.0$	$8.0 \pm 2.0$

#### AM Tuning voltage (Unit : V)

Area	Frequency (MW)		Frequency (LW)	
	522KHz	1629KHz	144kHz	288kHz
All Area	$> 0.7$	$< 8.3$	$0.5 < 1.0$	$5.0 < 7.5$

### (2) FM center meter

Receive a broadcast which understanding the frequency by using the function of 'MANUAL SEARCH'. Adjust T141 (detector coil) so that the voltage at TP102 becomes  $0 \pm 1.5\text{mV}$ .

■ Deck Adjust point

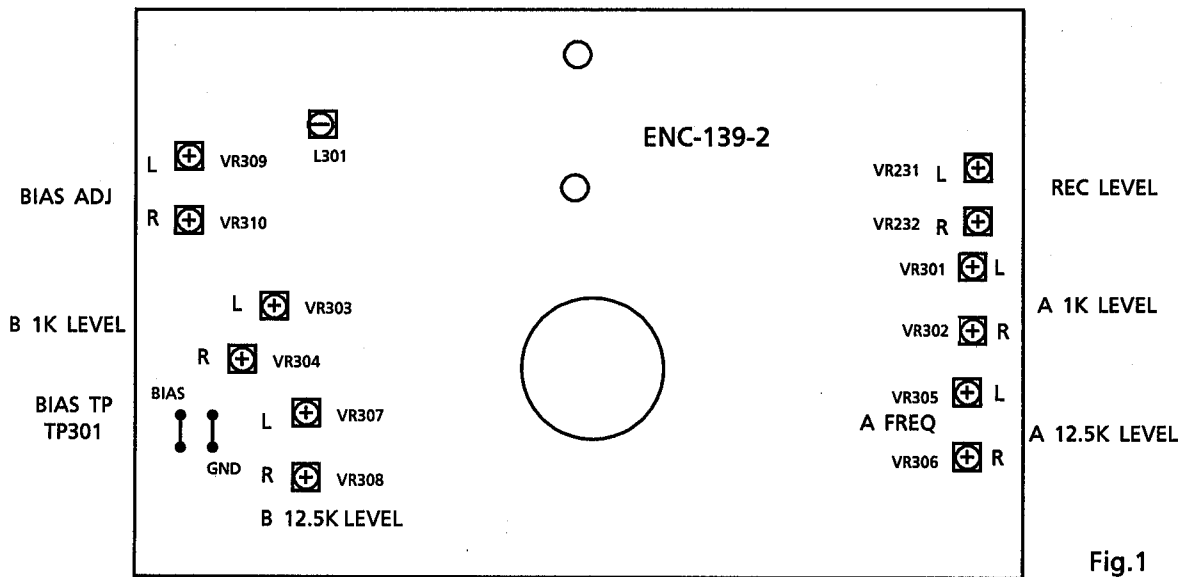
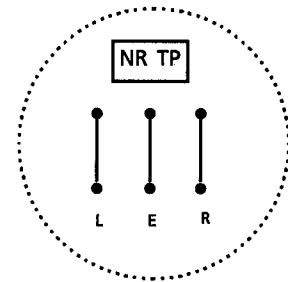
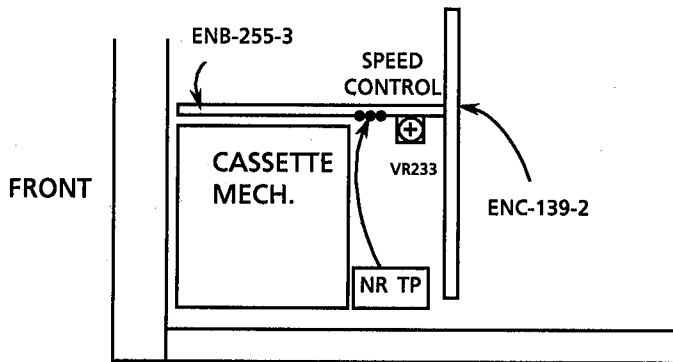


Fig.1



Speed Control PCB Fig.2

Deck section

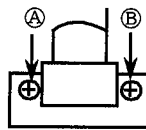
1. Measuring instruments

- Audio frequency signal generator ( 0dbS output at the 600 ohm output terminal from 50Hz to 20KHz)
- Electronic voltmeter
- Frequency counter
- Wow & Flutter meter
- Distortion Meter with band pass filter
- Attenuator (600 ohm impedance)
- A resistor with 600Ω

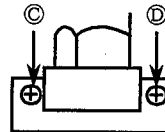
Tape No.	Frequency	Level (Wow & Flutter)	Purpose
VTT-703L	10kHz	-10dBs	Head azimuth , Frequency Response
VTT-712	3000Hz	0dBs 0.025%WRMS	Tape Speed , Wow & Flutter
VTT-724	1kHz	-4dBs	Standard Level
TMT-6447	—	—	Blank Skip
TMT-6247 , TMT-6237	—	—	Music Scan
TMT-7088S	—	—	Recording standard Normal : UR
AC-712	—	—	Recording standard METAL :MA
AC-513	—	—	Recording standard CrO <sub>2</sub> :SA
TW-2111, TW-2121	—	—	Forward / reverse play torque measuring
TW-2231	—	—	Feed forward / rewind torque measuring
C-120 Tape	—	—	Confirming the tape running

## 2.Adjustment and repairing the mechanism

Item	Adjustment method	Standard value	Remarks
Head azimuth	<p>Deck A</p> <ol style="list-style-type: none"> <li>1. Connect an electronic voltmeter to the NR TP901 (figure 2) to playback VTT-703L.</li> <li>2. Adjust screw Ⓐ so that the indication of the voltmeter becomes maximum when PLAY (▶) is pressed.</li> <li>3. Adjust screw Ⓑ so that the indication of the voltmeter becomes maximum when PLAY (◀) is pressed.</li> </ol> <p>Deck B</p> <ol style="list-style-type: none"> <li>4. Adjust screw Ⓒ so that the indication of the voltmeter becomes maximum when PLAY (▶) is pressed.</li> <li>5. Adjust screw Ⓓ so that the indication of the voltmeter becomes maximum when PLAY (◀) is pressed.</li> <li>6. After making the adjustment, apply screw lock to prevent screws Ⓐ, Ⓑ, Ⓒ and Ⓓ coming loose.</li> </ol>	Maximum	<ol style="list-style-type: none"> <li>1. Refer to figure 3.</li> <li>2. When the specified characteristic cannot be obtained because of head wear, excessive magnetization, etc., replace the head assembly and adjust the head azimuth. Also, perform the electric adjustment.</li> <li>3. When there is the difference of more than 3 ~ 4 dB between left and right output levels, replace the head assembly to avoid complaints.</li> </ol>
Playback torque	1. Measure the torque in the playback mode by the torque meter.	26 ~ 72 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Fast forward torque	1. Measure the torque in the fast forward mode by the torque meter.	75 ~ 175 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Rewind torque	1. Measure the torque in the rewind mode by the torque meter.	75 ~ 175 g-cm	When the standard torque cannot be obtained, replace the FR arm assembly or motor.
Wow & flutter	<ol style="list-style-type: none"> <li>1. Connect the wow &amp; flutter meter to the DOLBY TP (figure 2) and play back VTT-712.</li> <li>2. Its reading should be within 0.25% (WTD).</li> </ol>	Less than 0.25%	As a complaint may occur if the wow & flutter fluctuates by 0.1% even though it is allowed in the standard, repairing is required.



Deck A



Deck B

Fig.3

### 3. Electrical Adjustments (Make the following adjustments after adjusting the head azimuth.)

In principle, the adjustments should be made in the following sequence.

Set the NR switch to OFF and the BEAT CUT switch to "1".

Adjustments marked with an asterisk(\*) should always be made after the head is replaced

0dBs=0.775V

Item	Adjustment Method	Adjustment Location	Standard Value	Remarks
Tape Speed	1. Connect a frequency counter to the NR TP 901 (figure 2) and play back VTT-712. 2. Adjust the semi-fixed resistor VR901 on ENH-292 - 1 (figure 2).	VR233	3,000 Hz ±10Hz	Connect a wow & flutter meter with a built-in frequency counter to the speaker terminals.
* Standard level (Playback Level)	1. Connect an electronic voltmeter to the NR TP901 (figure 2). Play back VTT-724 (1 kHz : -4dBs) to adjust the semi-fixed resistors.	Deck A L: VR301 R: VR302 Deck B L: VR303 R: VR304	488mV (-4dBs)	1) The playback level varies when the head is replaced so should be adjusted. Use an electronic voltmeter with an impedance of 100 kΩ or more.
* Playback Frequency Response	1. Connect an electronic voltmeter to the NR TP 901 (figure 2). 2. Play VTT-703L (10kHz : -10dBs) and adjust semi-fixed resistors to obtain the standard values.	Deck A L: VR305 R: VR306 Deck B L: VR307 R: VR308	245mV (-10dBs)	—
* Recording Bias Frequency	1. Connect a frequency counter to the BIAS TP (figure 2), and perform a recording to adjust bias frequency.	L301	105 kHz ±5 kHz	
* Record / Play Frequency Response (Bias current)	1. Supply 1kHz and 12.5kHz with 30mV signals to AUX terminals respectively to record them. 2. Connect an electronic voltmeter to the NR TP901 (figure 2) to confirm the recorded values. 3. If the values are not satisfied, adjust the semi-fixed resistors and record the signal again to confirm the recorded values.	L: VR309 R: VR310	0±2 dB with 1 kHz as the standard.	<b>Refer to figure 4 below.</b> 1) The recording and playback frequency response of a cassette deck are adjusted by adjusting the bias. 2) Perform the adjustment with normal tape and confirm that the values are within the range for metal tape.

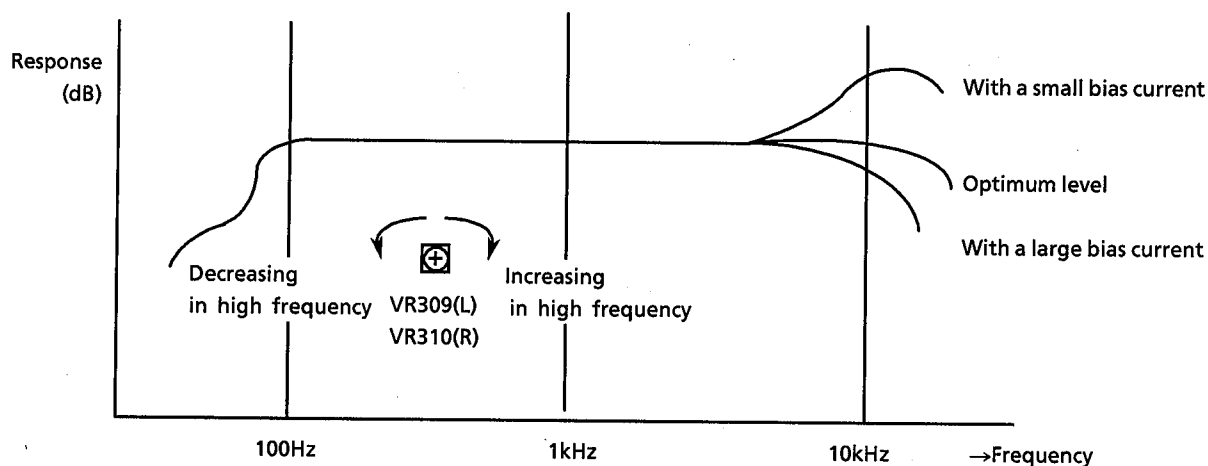
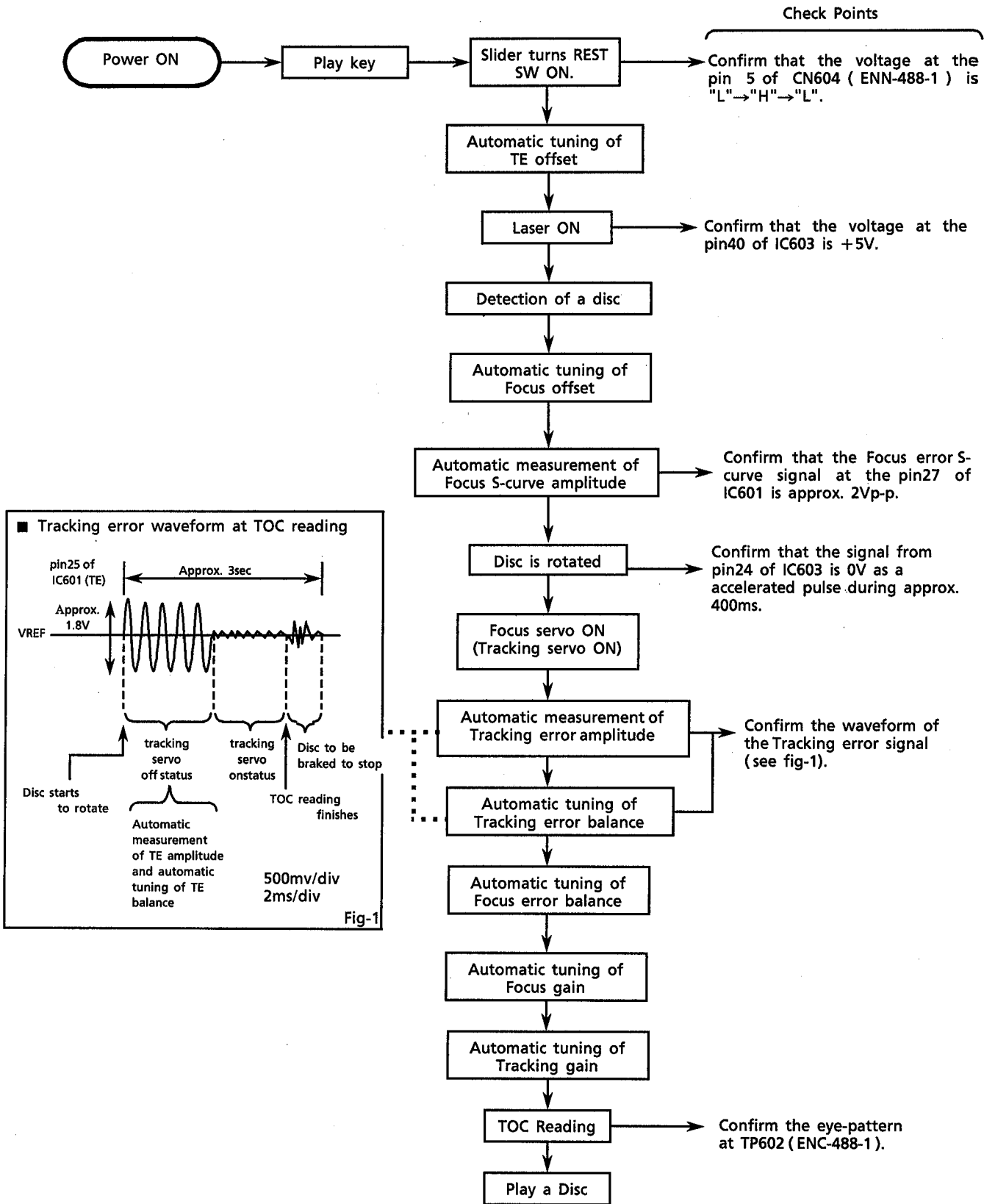


Fig.4

# Flow of Functional Operation Until TOC is Read





## Maintenance of Laser Pickup

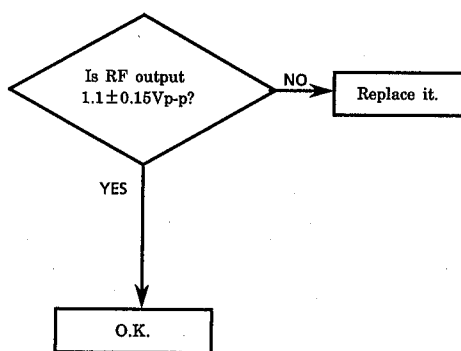
### (1) Cleaning the pick up lens

Before you replace the pick up, please try to clean the lens with a alcohol soaked cotton swab.

### (2) Life of the laser diode (Fig.1)

When the life of the laser diode has expired, the following symptoms will appear.

- (1) The level of RF output (EFM output: amplitude of eye pattern) will be low.



(Fig.1)

### (3) Semi-fixed resistor on the APC PC board

The semi-fixed resistor on the APC printed circuit board which is attached to the pickup is used to adjust the laser power. Since this adjustment should be performed to match the characteristics of the whole optical block, do not touch the semi-fixed resistor.

If the laser power is lower than the specified value, the laser diode is almost worn out, and the laser pickup should be replaced.

If the semi-fixed resistor is adjusted while the pickup is functioning normally, the laser pickup may be damaged due to excessive current.

## Replacement of Laser Pickup

Turn off the power switch and, disconnect the power cord from the ac outlet.

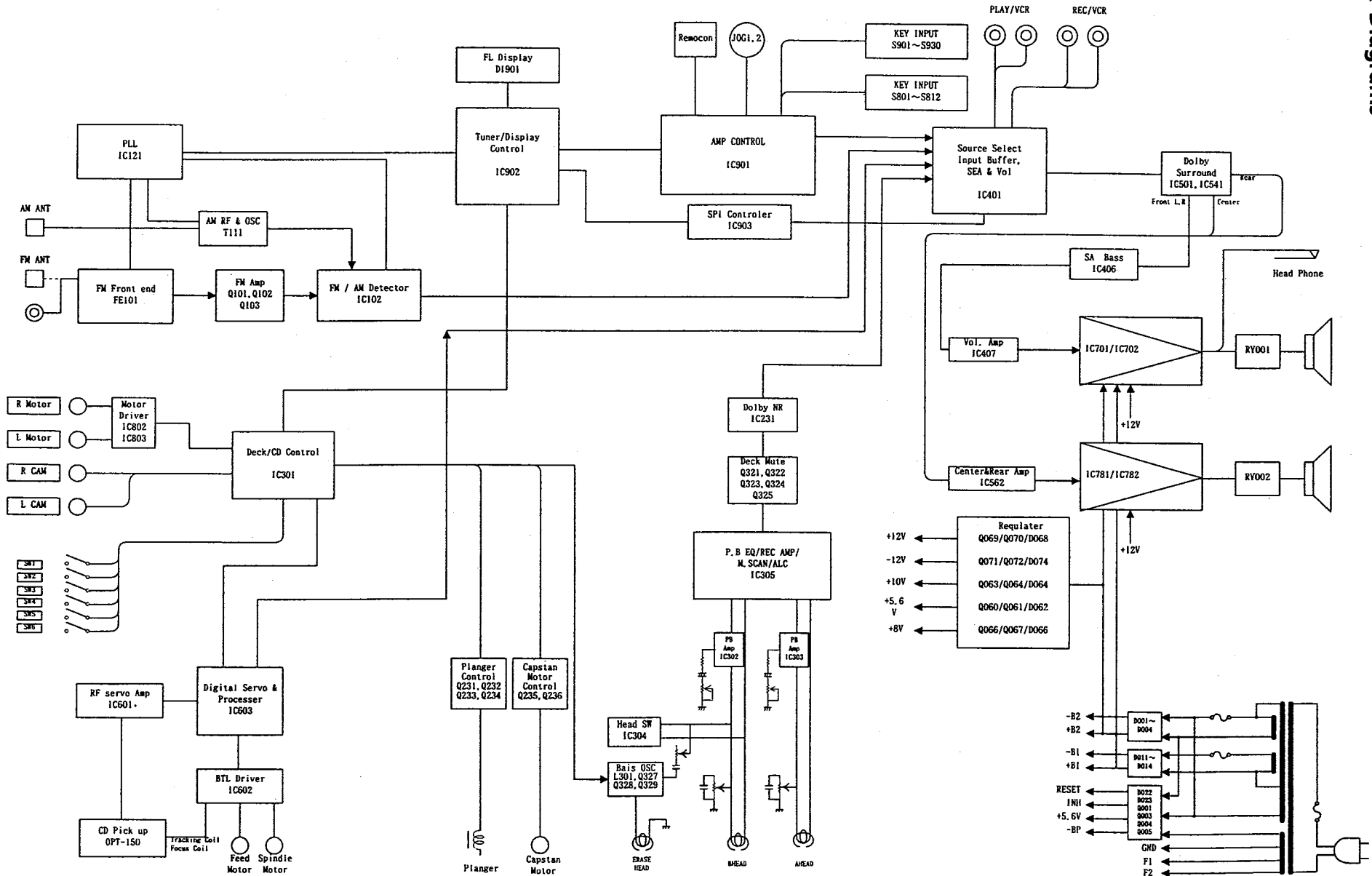
Replace the pickup with a normal one. (Refer to "Pickup Removal" on the previous page)

Plug the power cord in, and turn the power on. At this time, check that the laser emits for about 3seconds and the objective lens moves up and down.  
Note: Do not observe the laser beam directly.

Play a disc.

Check the eye-pattern at TP2.

Finish.



# Schematic Diagrams

## Primary With Main Power Supply Section

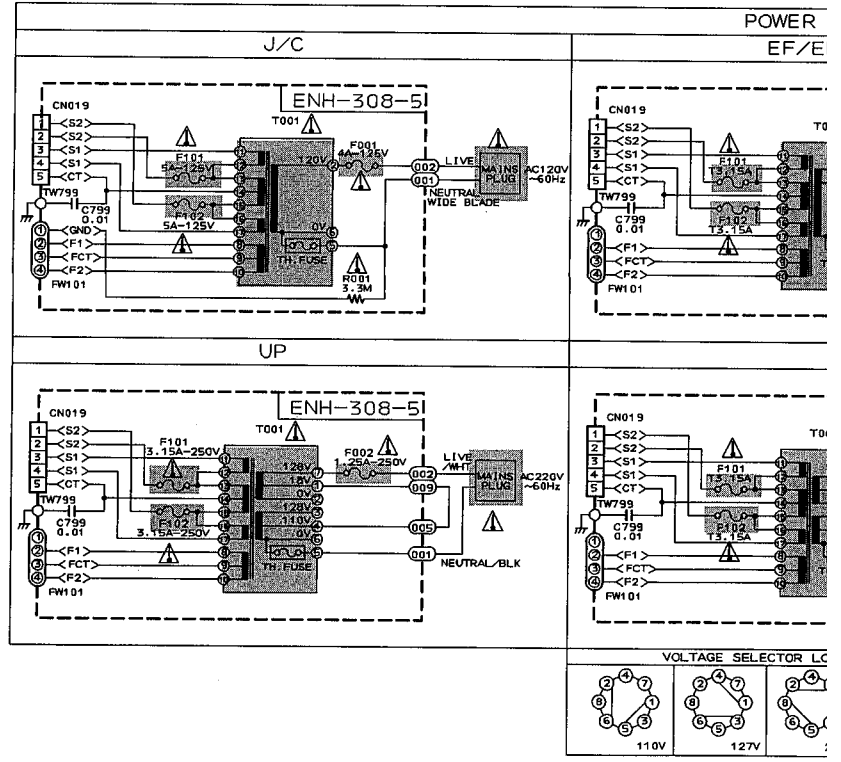
### EXPLANATION

SHEET NUMBER	MODEL TO BE /
1/11	CA-D701T, /CA-D851T
2/11	CA-D701T, /CA-D851T
3/11	CA-D701T, /CA-D851T
4/11	CA-D701T, /CA-D851T
5/11	CA-D701T, /CA-D851T
6/11	CA-D701T,
7/11	CA-D701T
8/11	CA-D851TF
9/11	CA-D701T
10/11	CA-D701T, /CA-D851TF
11/11	CA-D701T, /CA-D851TF

**VERSION CODES**

J : U.S.A.  
 C : CANADA  
 EN : NORDIC COUNTRIES  
 EF : CONTINENTAL EUROPE EXCEPT GERMANY  
 G : GERMANY  
 VX : EASTERN EUROPE  
 BS : U.K.  
 A : AUSTRARIA  
 UP : KOREA  
 UB : HONGKONG  
 US : SINGAPORE  
 UT : TAIWAN  
 U : UNIVERSAL EXCEPT ALL OF ABOVE

NOTES:  
 MARK (\*) IS TO SHOW I  
 DETAILS ARE EXPLAIN



5

4

3

2

1

A

B

C

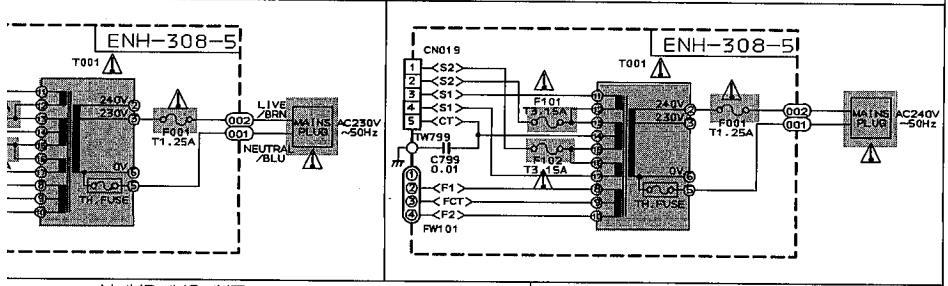
D

**EXPLANATION OF OVERALL OF SCHEMA.**  
**MODEL CA-D701T/CA-D761T/CA-D851TR**

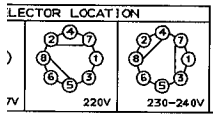
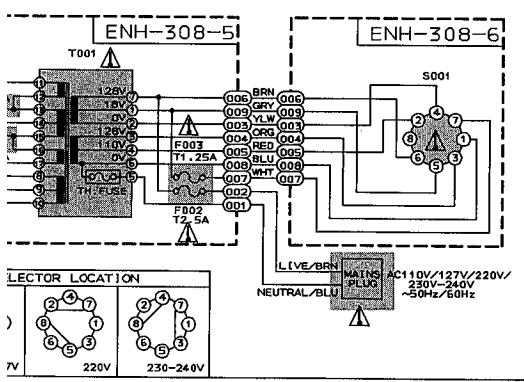
MODEL NUMBERS TO BE APPLIED	CIRCUITS DESCRIPTION
D701T/CA-D761T D851TR	PRIMARY WITH MAINS TRANSFORMER
D701T/CA-D761T D851TR	DC REGULATORS/AUDIO OUTPUT
D701T/CA-D761T D851TR	EXTERNAL SIGNAL INPUT SOURCE SELECTOR SWITCH MIC AMPLIFIER
D701T/CA-D761T D851TR	TAPE DECK MECHANISMS CONTROL MISCELLANEOUS CIRCUITS FOR TAPE DECK SUCH AS AMPLIFIER, SWITCH, BIAS AND OTHERS
D701T/CA-D761T D851TR	FL DISPLAY/USER CONTROL KEYS FOR TUNER SECTION AND AUDIO DISC/SYSTEM CONTROL LSI FOR TUNER SECTION
D701T/CA-D761T	(ONLY FOR J, C, U, UB, US, UT, UP, A) TUNER RF/IF/FM MULTIPLEX
D701T	(ONLY FOR EF, EN, BS, G) TUNER RF/IF/FM MULTIPLEX
D851TR	(ONLY FOR EF, EN, BS, G) TUNER RF/IF/FM MULTIPLEX/RDS SIGNAL PROCESSOR ICs
D701T	(ONLY FOR VX) TUNER RF/IF/FM MULTIPLEX
D701T/CA-D761T D851TR	AMPLIFIER FOR AUDIO DISC SYSTEM CONTROL LSI FOR AUDIO DISC
D701T/CA-D761T D851TR	AUDIO DISC MECHANISMS CONTROL

▷ SHOW DEVIATION IN VERSIONS.  
 EXPLAINED NEAR THE MARK.

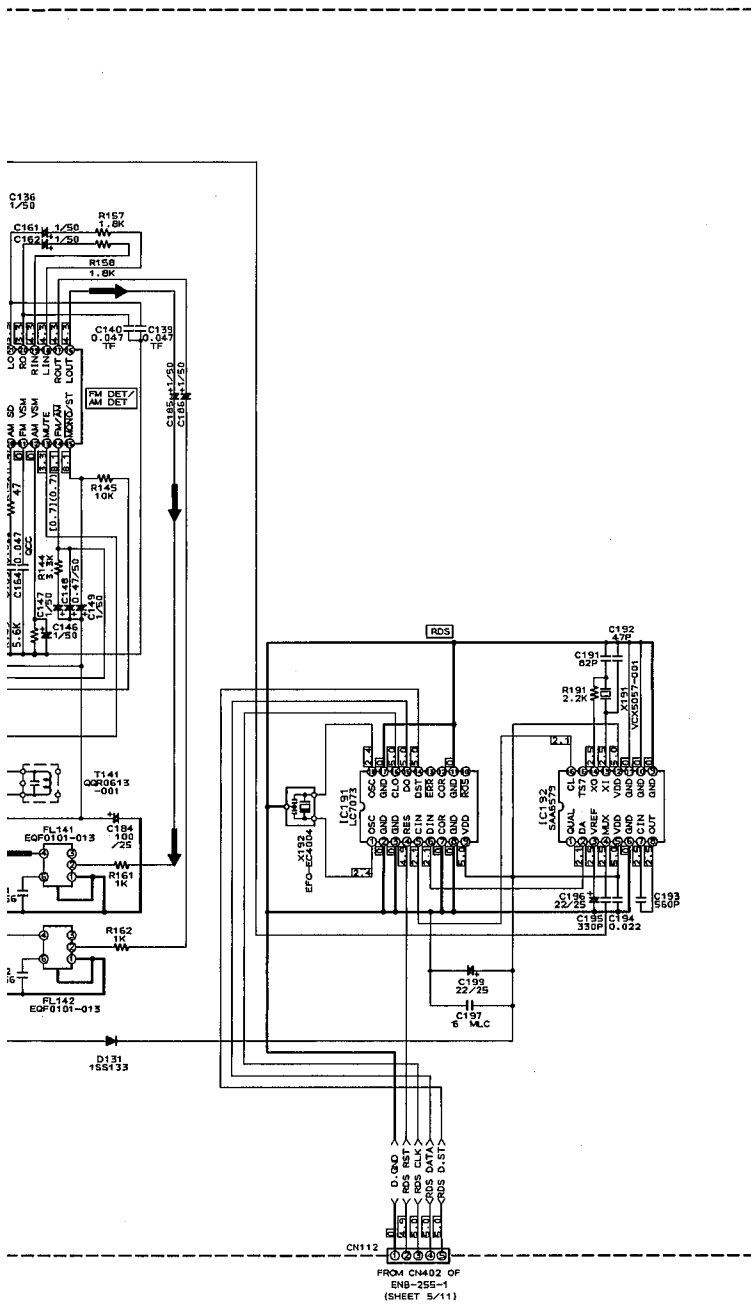
**POWER SUPPLY SECTION**  
 EF/EN/G/VX/BS








U/UB/US/UT



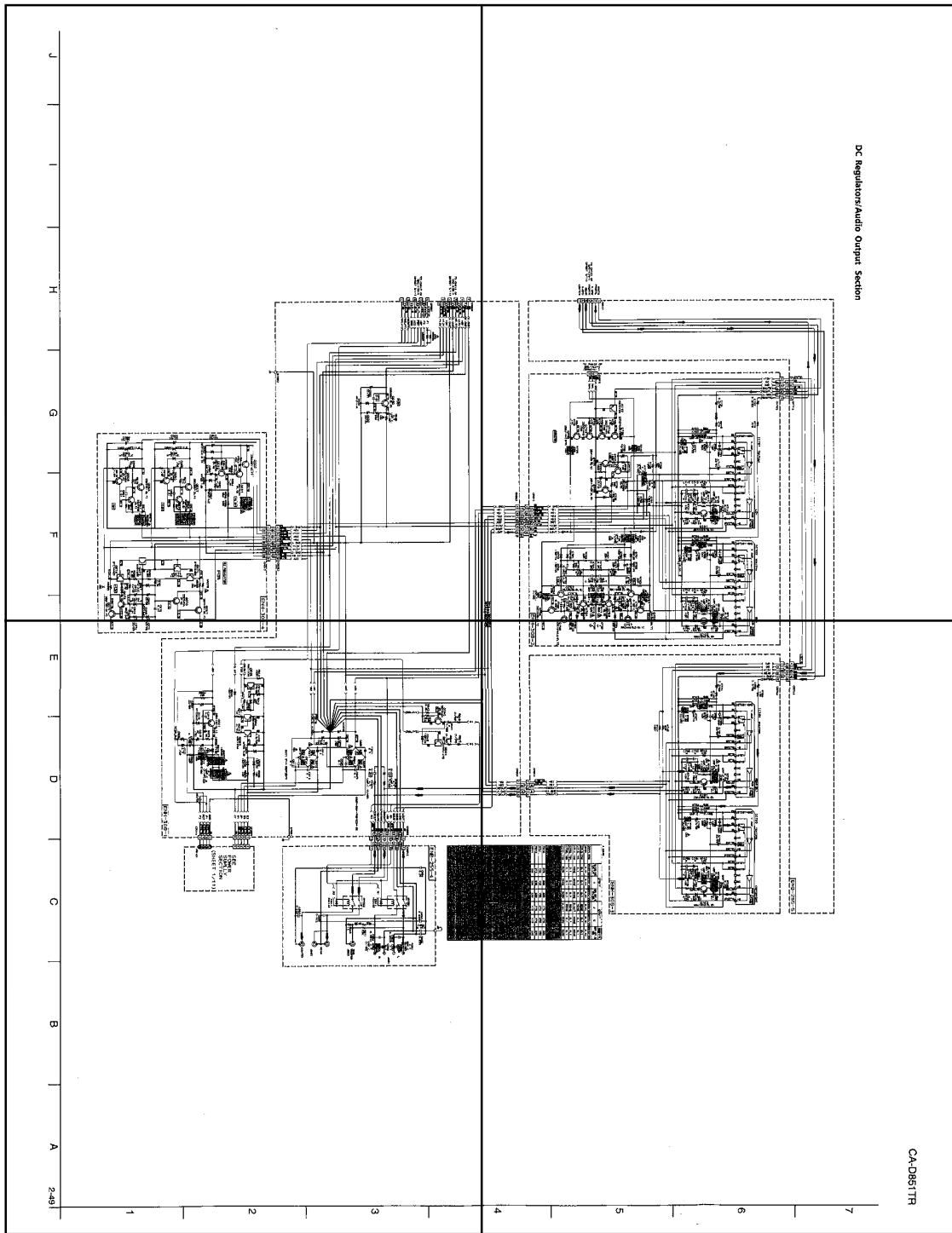




- Notes:
1.  indicates Main signal path.
  2.  indicates REC. signal path.
  3.  indicates CENTER & REAR signal path.
  4. When replacing the parts in the darkened are (  ) and those marked with  ,be sure to use the designated parts to ensure safety.
  5. This is the standard circuit diagram.  
The design and contents are subject to change without notice.

P2-49-a

P2-49-b



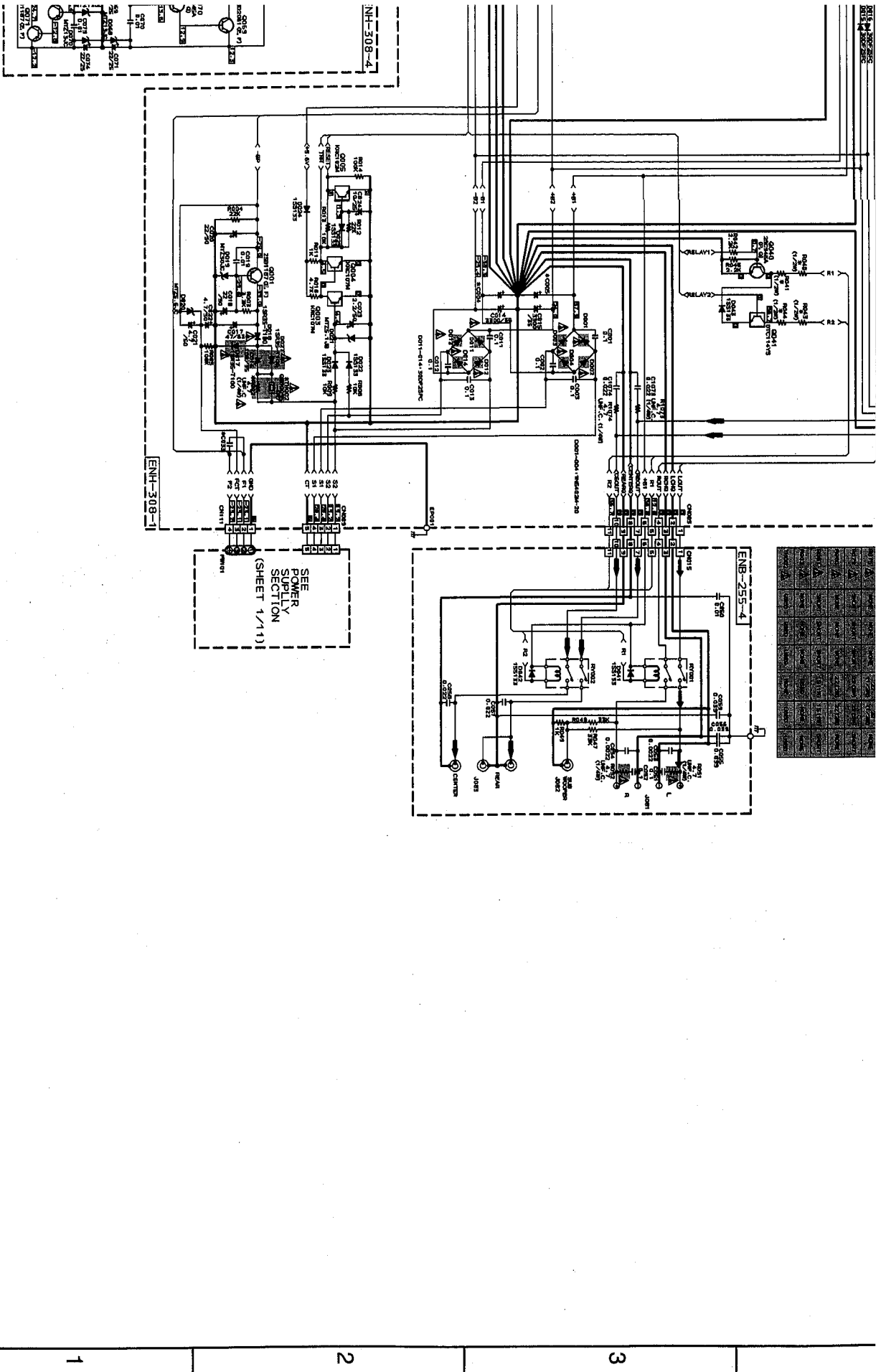
P2-49-c

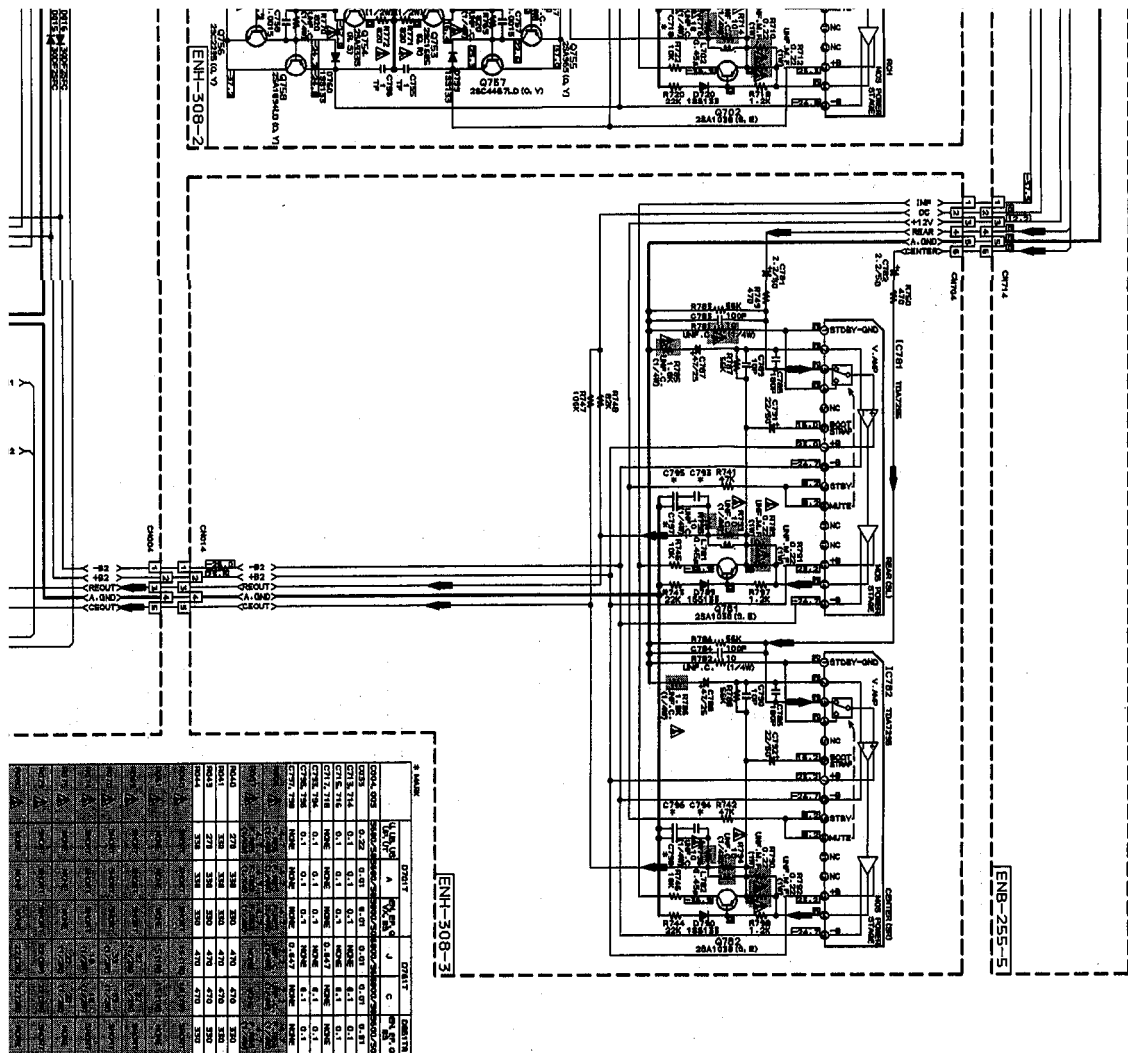
P249-d







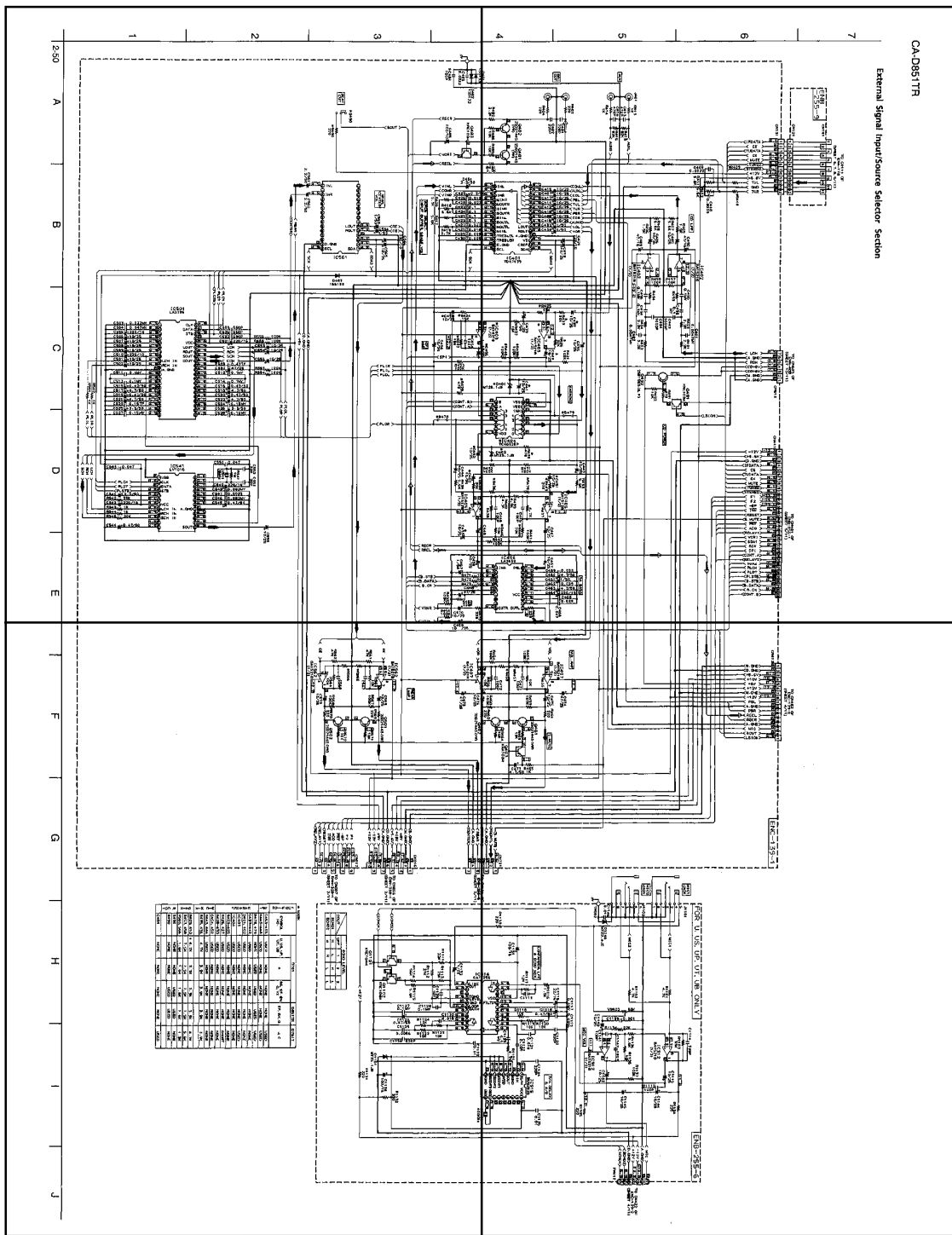




4 5 6 7

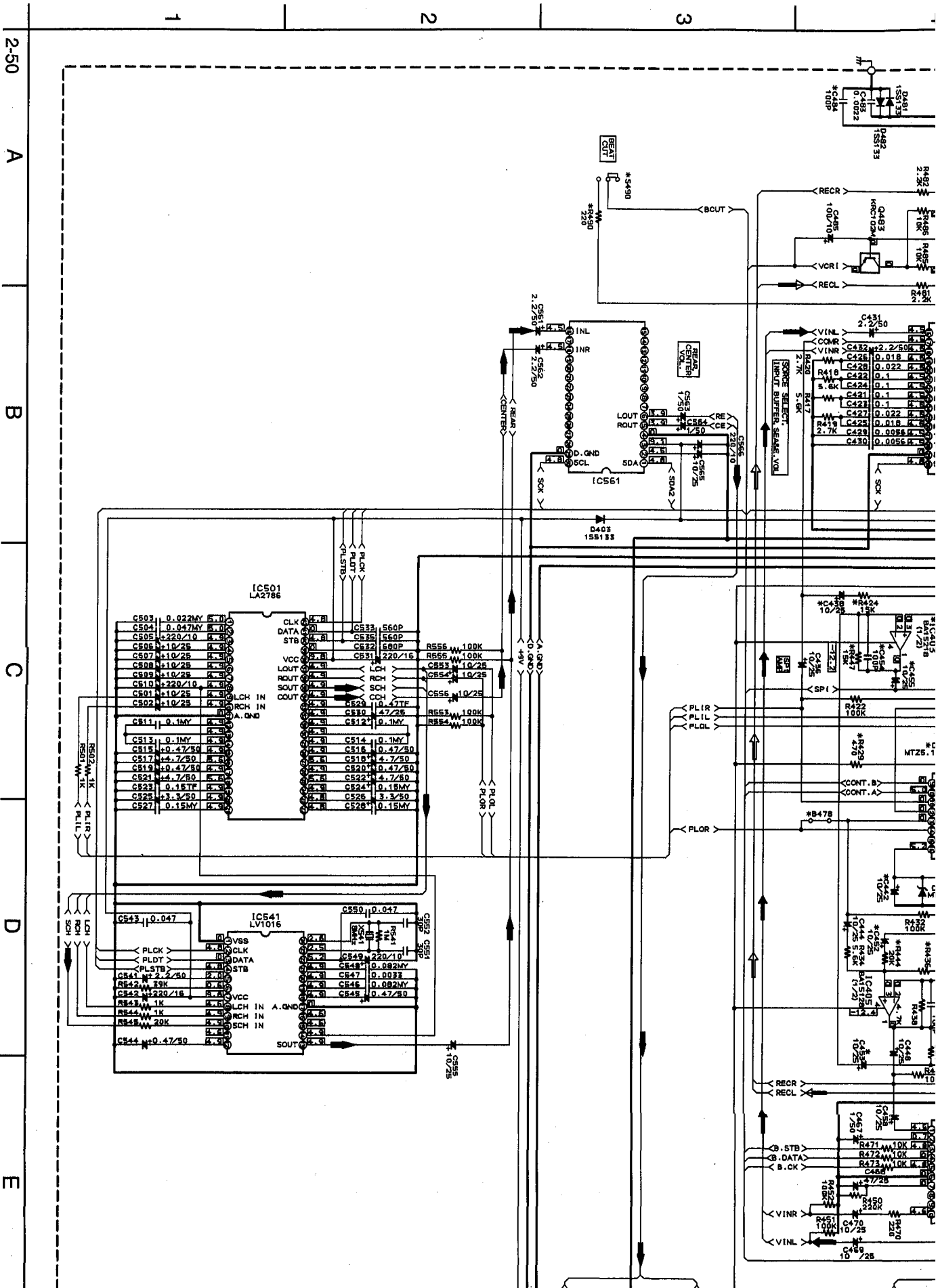
P2-50-a

P2-50-b

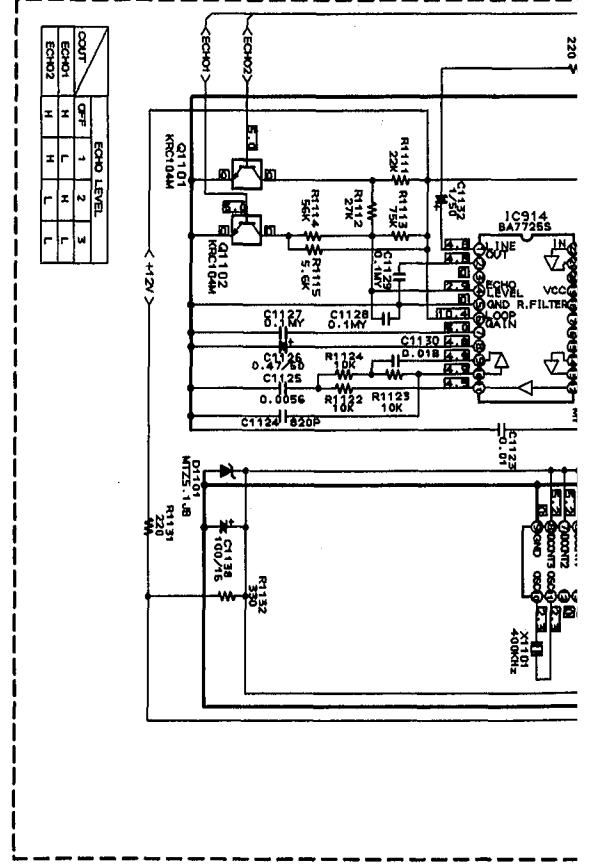
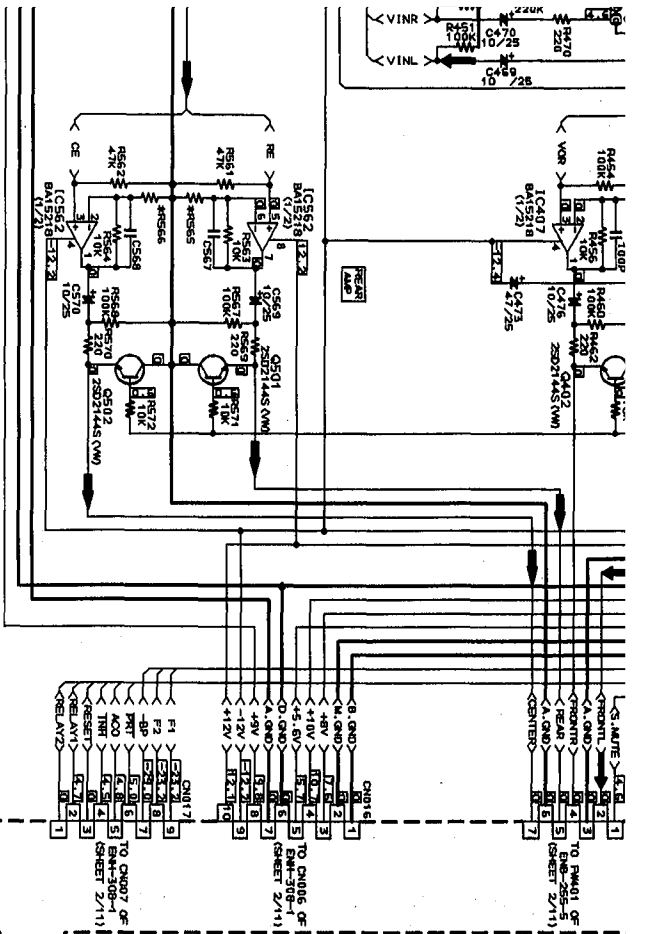


P2-50-c

P250-d







\* MARK

MARK	SYMBOL	U.S. LP, Vt. LB	A	BS, EP, EN, G, Vx	D851TR	D761T	Y.C
Y	C453-455	USED	NONE	NONE	NONE	NONE	USED
Y	R445-448	USED	NONE	NONE	NONE	NONE	USED
Y	R478, 479	NONE	USED	USED	USED	USED	NONE
Y	C437-442	USED	NONE	NONE	NONE	NONE	USED
Y	D401, 402	USED	NONE	NONE	NONE	NONE	USED
Y	IC403	USED	NONE	NONE	NONE	NONE	USED
Y	IC404	USED	NONE	NONE	NONE	NONE	USED
Y	R429-432	USED	NONE	NONE	NONE	NONE	USED
Y	R426, 427	USED	NONE	NONE	NONE	NONE	USED
Y	R428-430	USED	NONE	NONE	NONE	NONE	USED
Y	C451, 452	USED	NONE	NONE	NONE	NONE	USED
Y	R443, 444	USED	NONE	NONE	NONE	NONE	USED
Y	R435, 436	4.7K	3.9K	3.9K	3.9K	3.9K	3.9K
Y	R409, 410	4.7K	3.9K	3.9K	3.9K	4.7K	4.7K
Y	R457, 458	7.5K	7.5K	7.5K	7.5K	5.1K	5.1K
Y	R565, 566	1.6K	1.6K	1.6K	1.6K	1.3K	1.3K
Y	R490	NONE	NONE	USED	USED	NONE	NONE
Y	C484	NONE	NONE	NONE	NONE	USED	USED

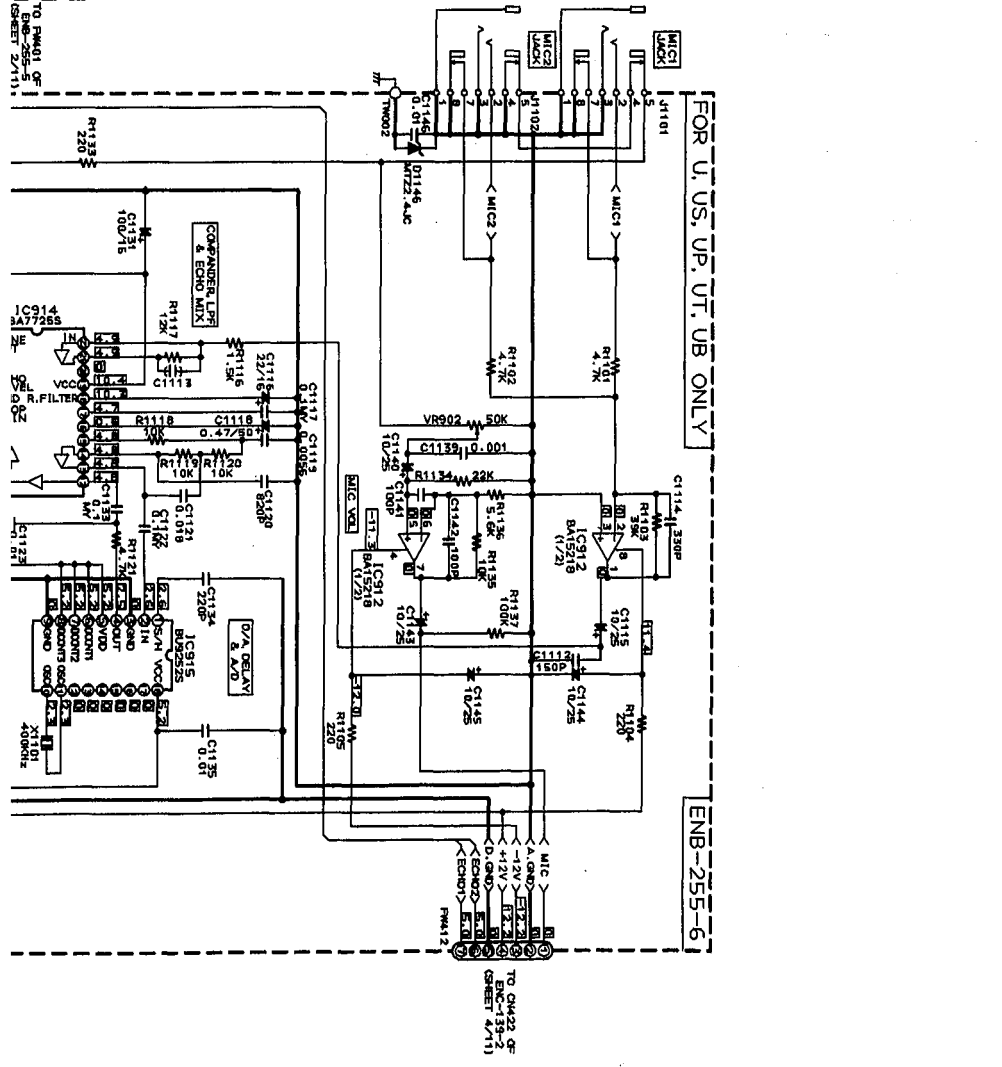
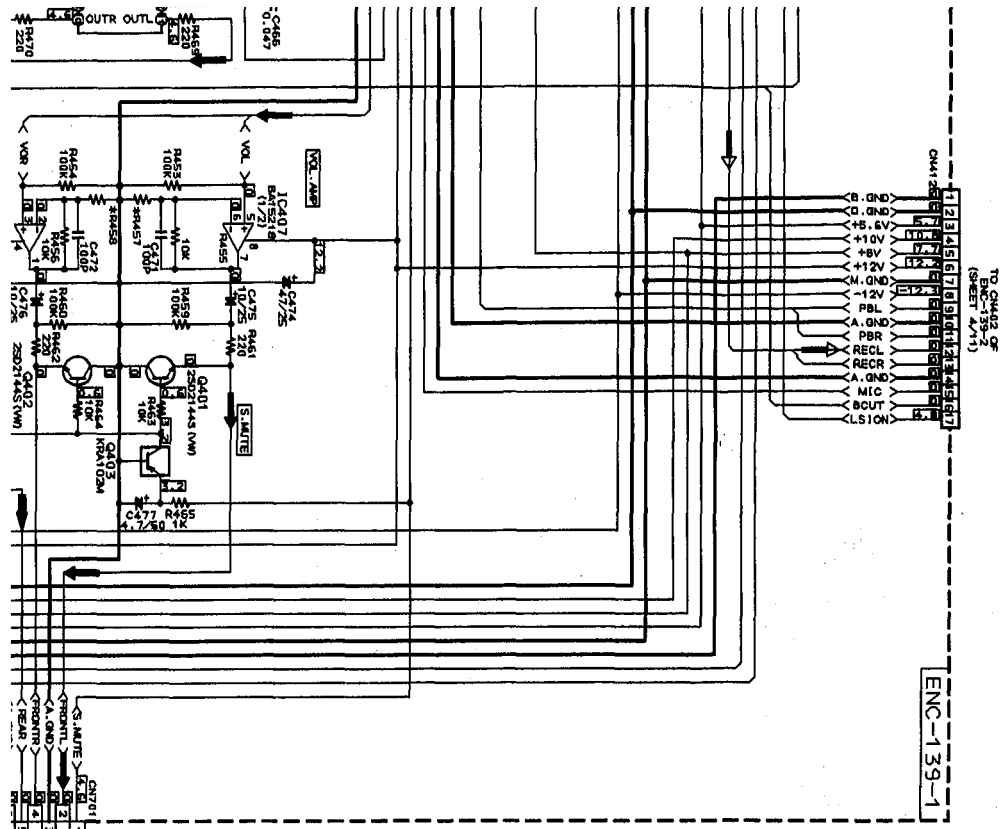
F

G

H

I

J

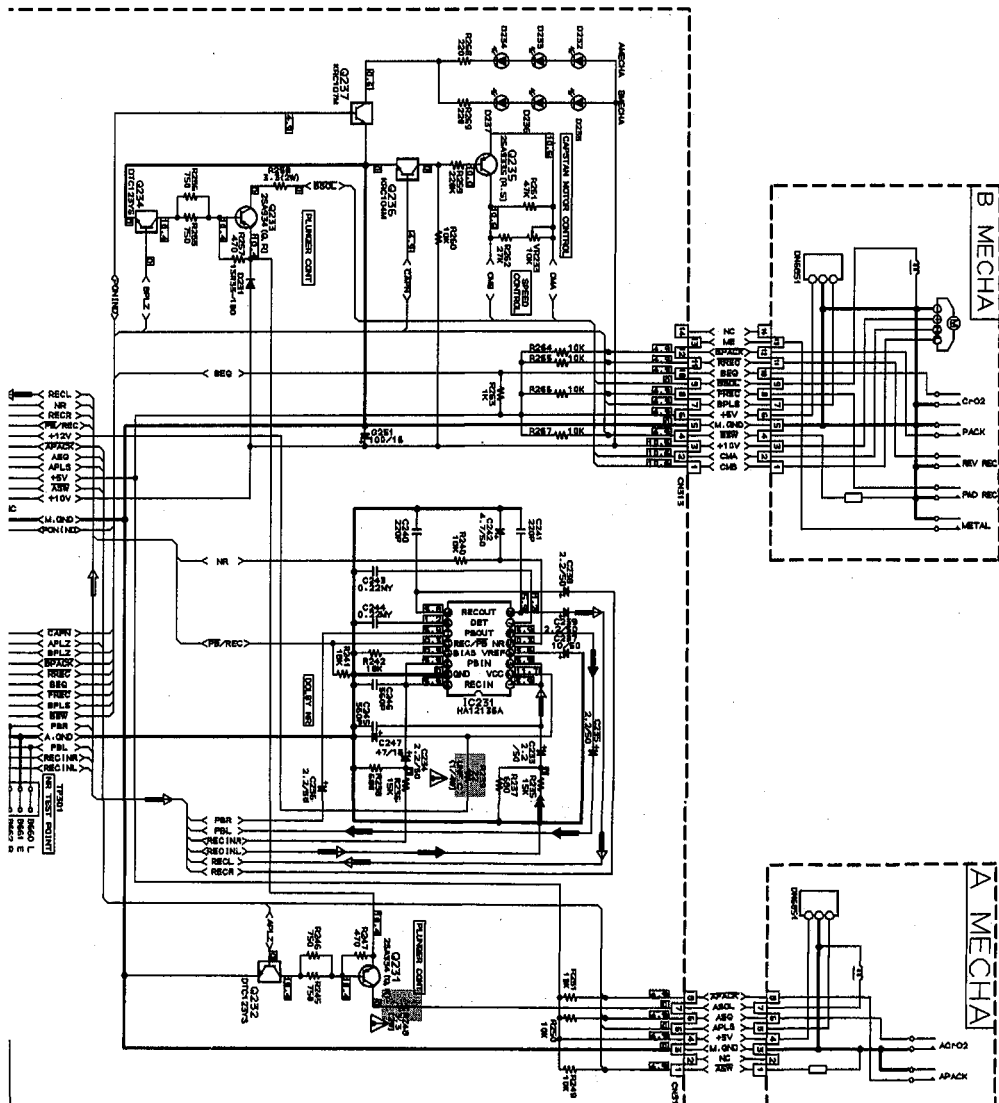


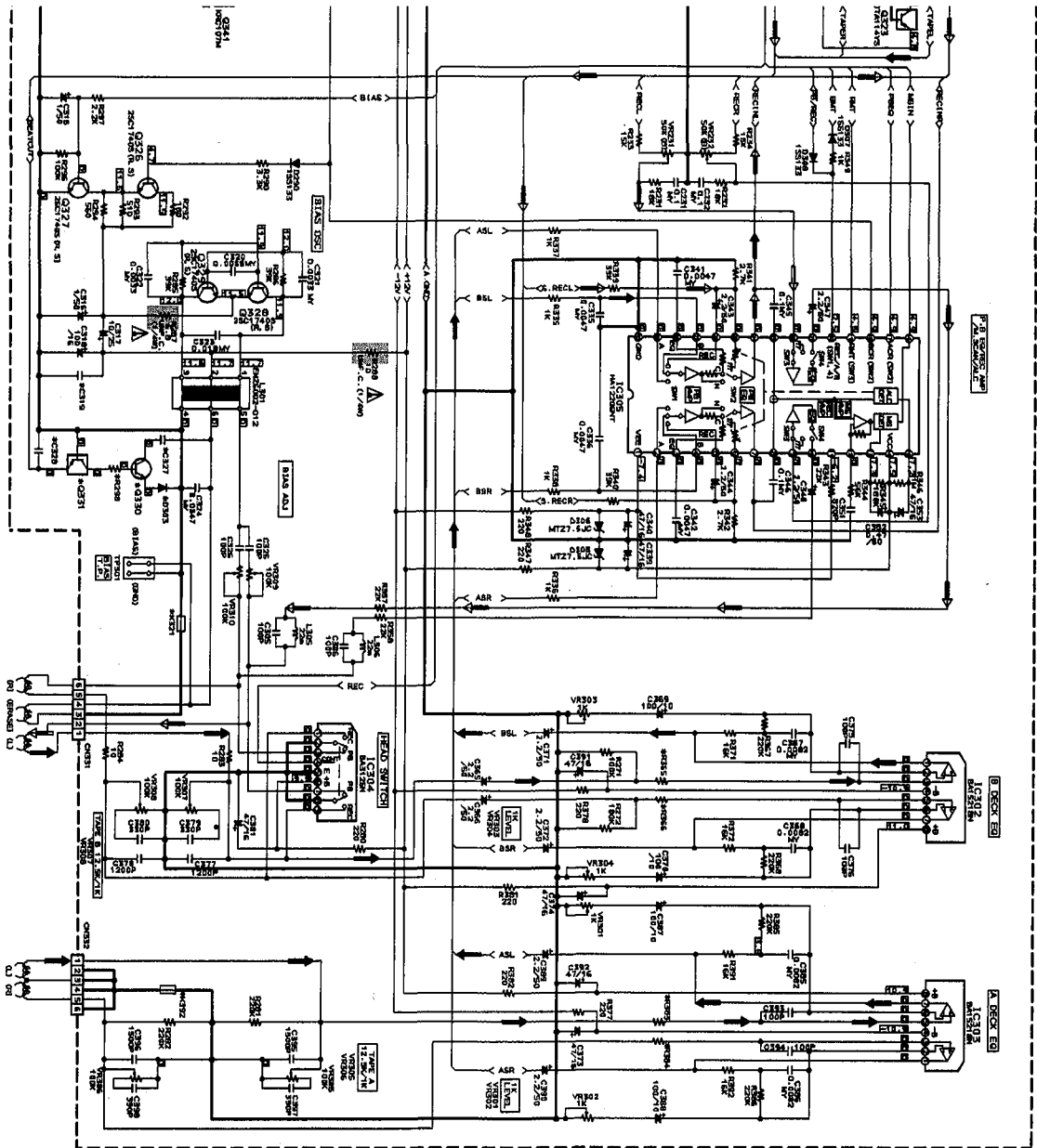






Tape Deck Mechanisms Control/Deck Amplifier Section





E      D      C      B      A

251

1      2      3

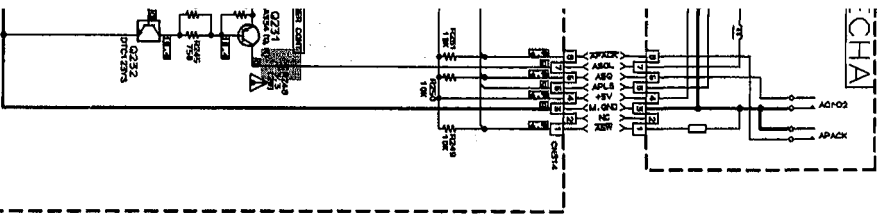


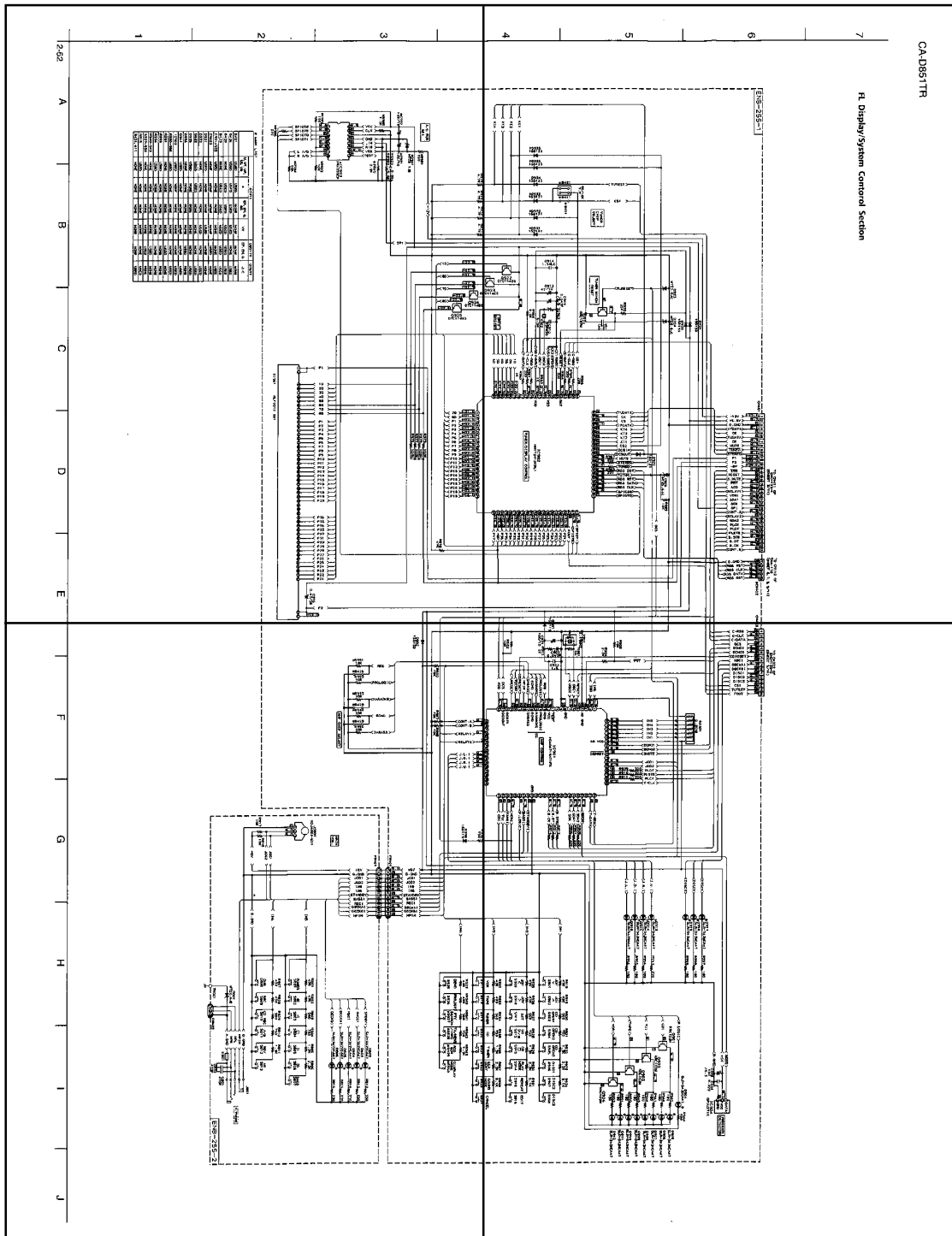
TABLE 1

U.M. No.	CA-0121	EF. No. 6	CA-0122	CA-0123
0219	NONE	0.022	NONE	0.022
0220	NONE	0.022	NONE	0.022
0221	NONE	0.022	NONE	0.022
0222	NONE	0.022	NONE	0.022
0223	NONE	0.022	NONE	0.022
0224	NONE	0.022	NONE	0.022
0225	NONE	0.022	NONE	0.022
0226	NONE	0.022	NONE	0.022
0227	NONE	0.022	NONE	0.022
0228	NONE	0.022	NONE	0.022
0229	NONE	0.022	NONE	0.022
0230	NONE	0.022	NONE	0.022
0231	NONE	0.022	NONE	0.022
0232	NONE	0.022	NONE	0.022
0233	NONE	0.022	NONE	0.022
0234	NONE	0.022	NONE	0.022
0235	NONE	0.022	NONE	0.022
0236	NONE	0.022	NONE	0.022
0237	NONE	0.022	NONE	0.022
0238	NONE	0.022	NONE	0.022
0239	NONE	0.022	NONE	0.022
0240	NONE	0.022	NONE	0.022
0241	NONE	0.022	NONE	0.022
0242	NONE	0.022	NONE	0.022
0243	NONE	0.022	NONE	0.022
0244	NONE	0.022	NONE	0.022
0245	NONE	0.022	NONE	0.022
0246	NONE	0.022	NONE	0.022
0247	NONE	0.022	NONE	0.022
0248	NONE	0.022	NONE	0.022
0249	NONE	0.022	NONE	0.022
0250	NONE	0.022	NONE	0.022
0251	NONE	0.022	NONE	0.022
0252	NONE	0.022	NONE	0.022
0253	NONE	0.022	NONE	0.022
0254	NONE	0.022	NONE	0.022
0255	NONE	0.022	NONE	0.022
0256	NONE	0.022	NONE	0.022
0257	NONE	0.022	NONE	0.022
0258	NONE	0.022	NONE	0.022
0259	NONE	0.022	NONE	0.022
0260	NONE	0.022	NONE	0.022
0261	NONE	0.022	NONE	0.022
0262	NONE	0.022	NONE	0.022
0263	NONE	0.022	NONE	0.022
0264	NONE	0.022	NONE	0.022
0265	NONE	0.022	NONE	0.022
0266	NONE	0.022	NONE	0.022
0267	NONE	0.022	NONE	0.022
0268	NONE	0.022	NONE	0.022
0269	NONE	0.022	NONE	0.022
0270	NONE	0.022	NONE	0.022
0271	NONE	0.022	NONE	0.022
0272	NONE	0.022	NONE	0.022
0273	NONE	0.022	NONE	0.022
0274	NONE	0.022	NONE	0.022
0275	NONE	0.022	NONE	0.022
0276	NONE	0.022	NONE	0.022
0277	NONE	0.022	NONE	0.022
0278	NONE	0.022	NONE	0.022
0279	NONE	0.022	NONE	0.022
0280	NONE	0.022	NONE	0.022
0281	NONE	0.022	NONE	0.022
0282	NONE	0.022	NONE	0.022
0283	NONE	0.022	NONE	0.022
0284	NONE	0.022	NONE	0.022
0285	NONE	0.022	NONE	0.022
0286	NONE	0.022	NONE	0.022
0287	NONE	0.022	NONE	0.022
0288	NONE	0.022	NONE	0.022
0289	NONE	0.022	NONE	0.022
0290	NONE	0.022	NONE	0.022
0291	NONE	0.022	NONE	0.022
0292	NONE	0.022	NONE	0.022
0293	NONE	0.022	NONE	0.022
0294	NONE	0.022	NONE	0.022
0295	NONE	0.022	NONE	0.022
0296	NONE	0.022	NONE	0.022
0297	NONE	0.022	NONE	0.022
0298	NONE	0.022	NONE	0.022
0299	NONE	0.022	NONE	0.022
0300	NONE	0.022	NONE	0.022

TABLE 1

P2-52-a

P2-52-b



P2-52-c

P2-52-d

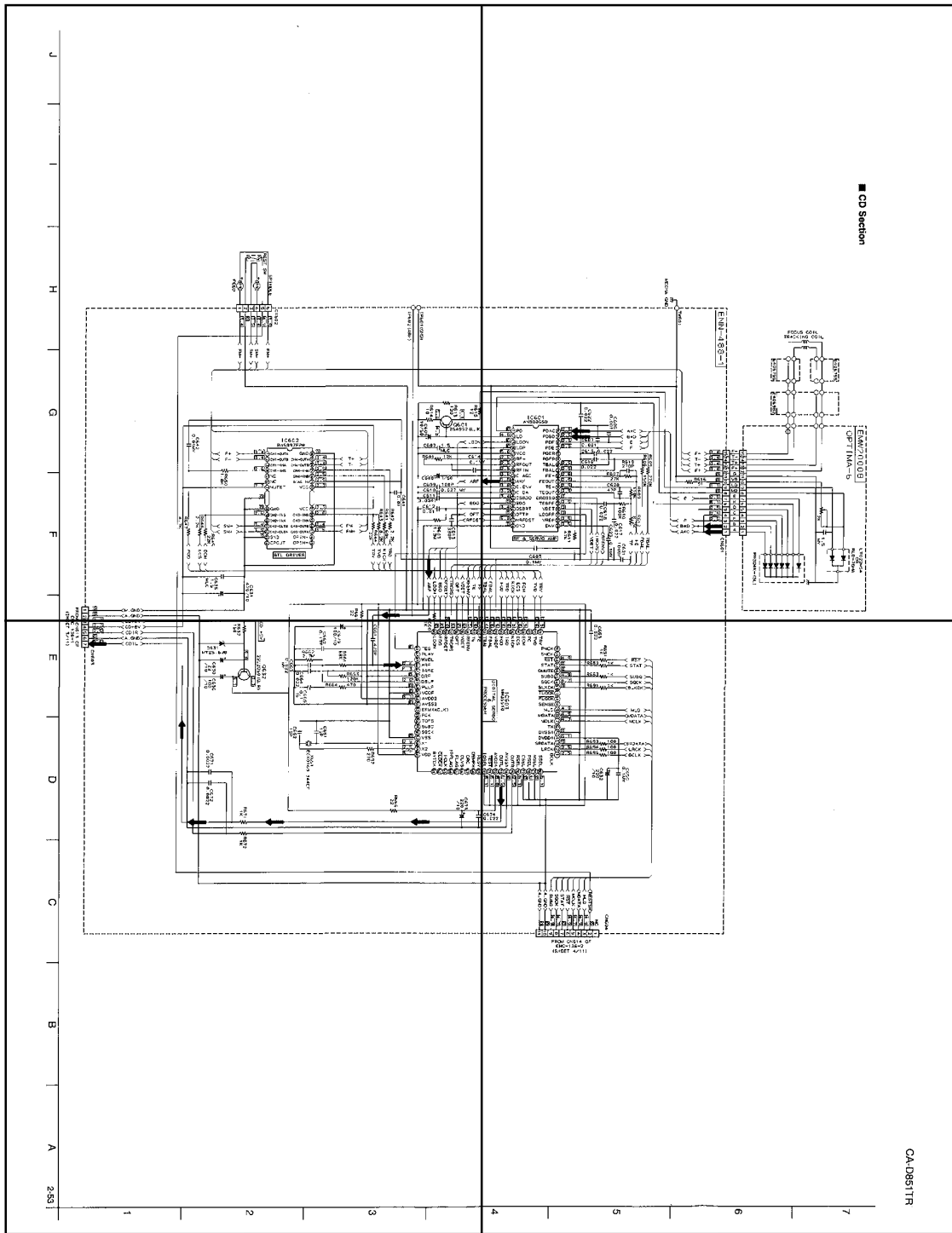




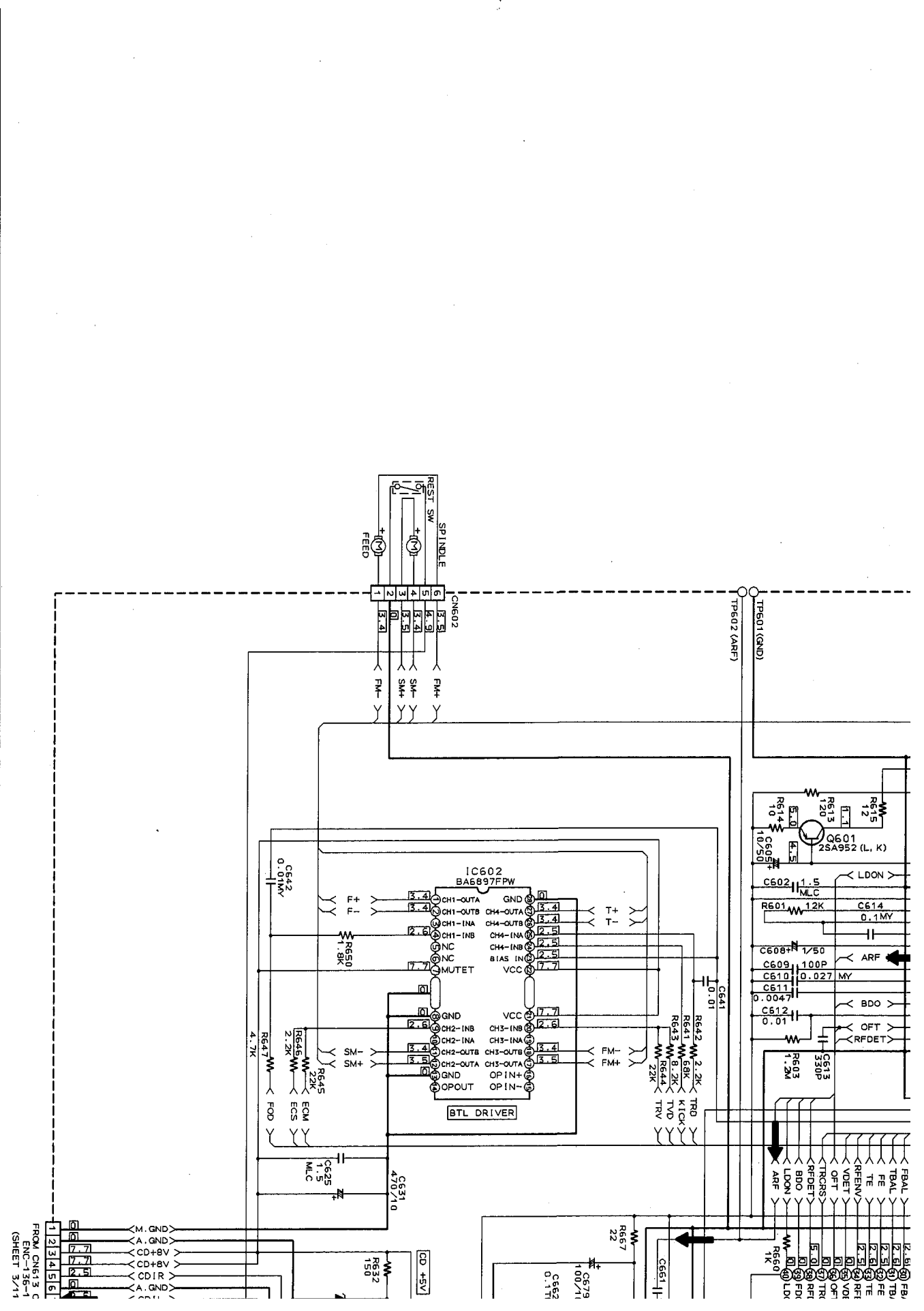




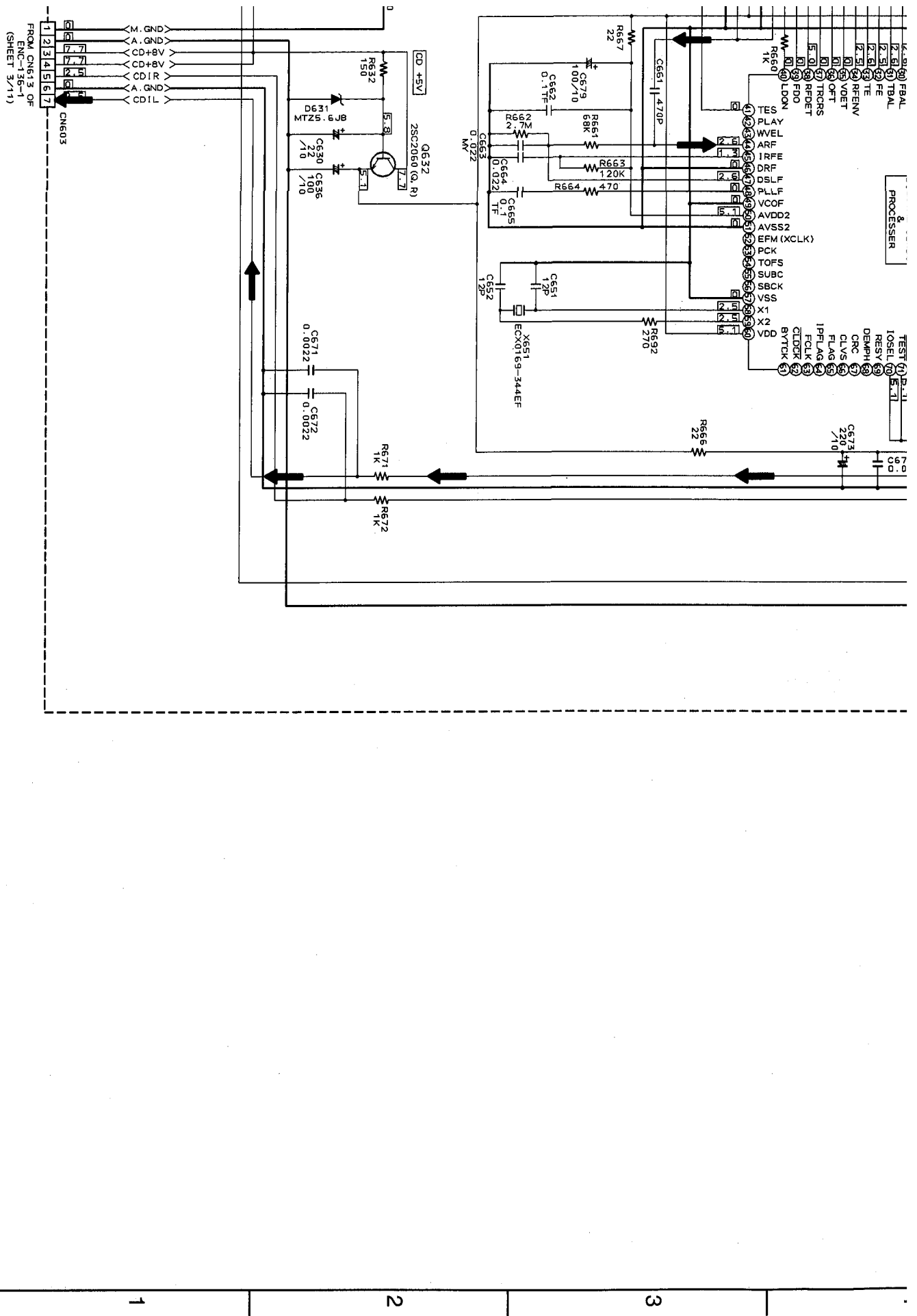




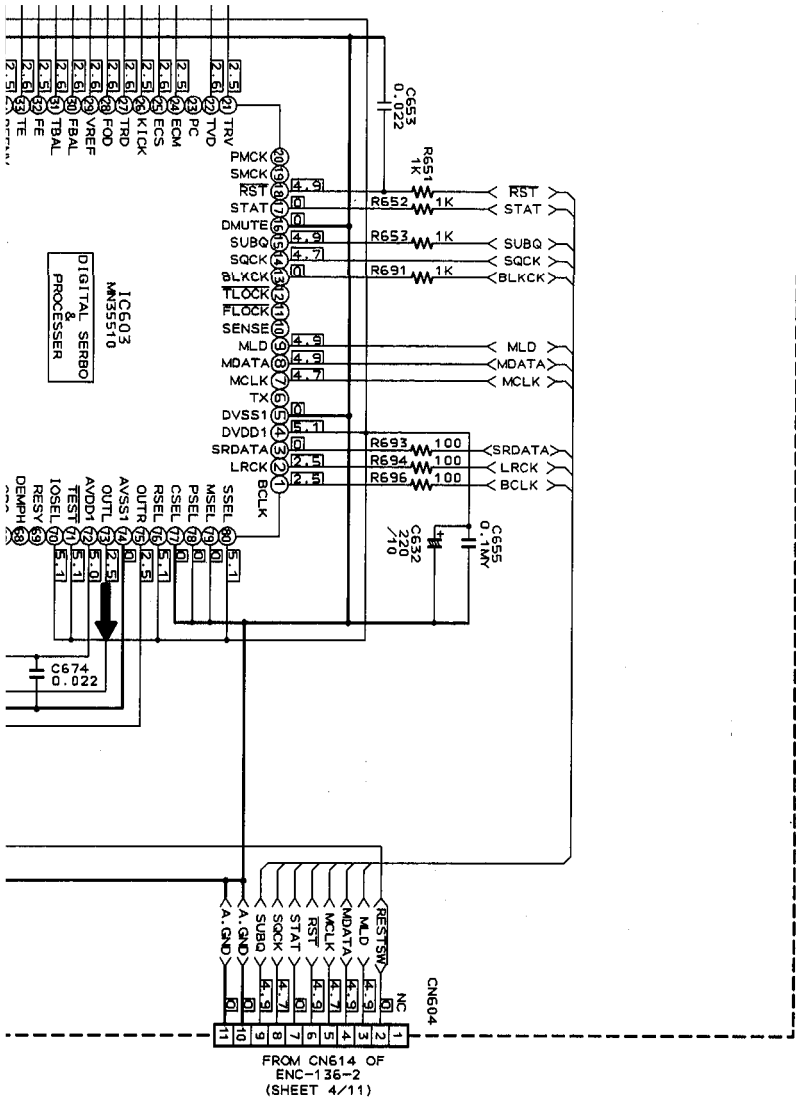
J I H G F







E | D | C | B | A | 2-53



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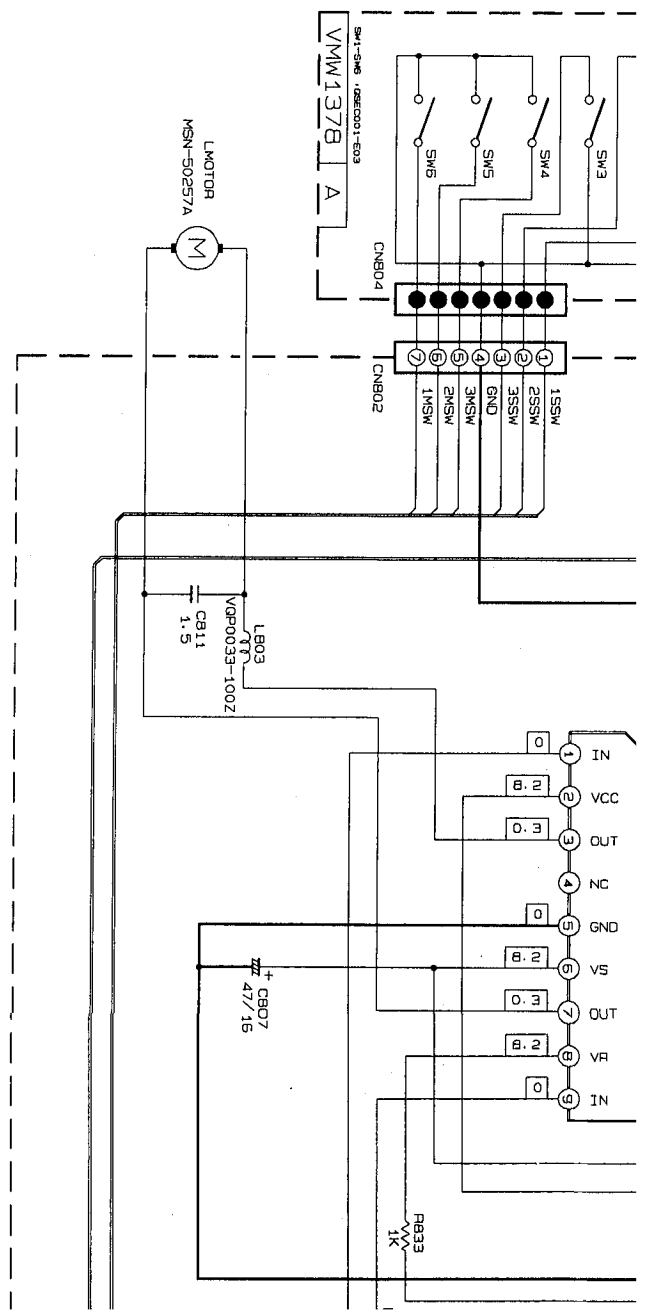




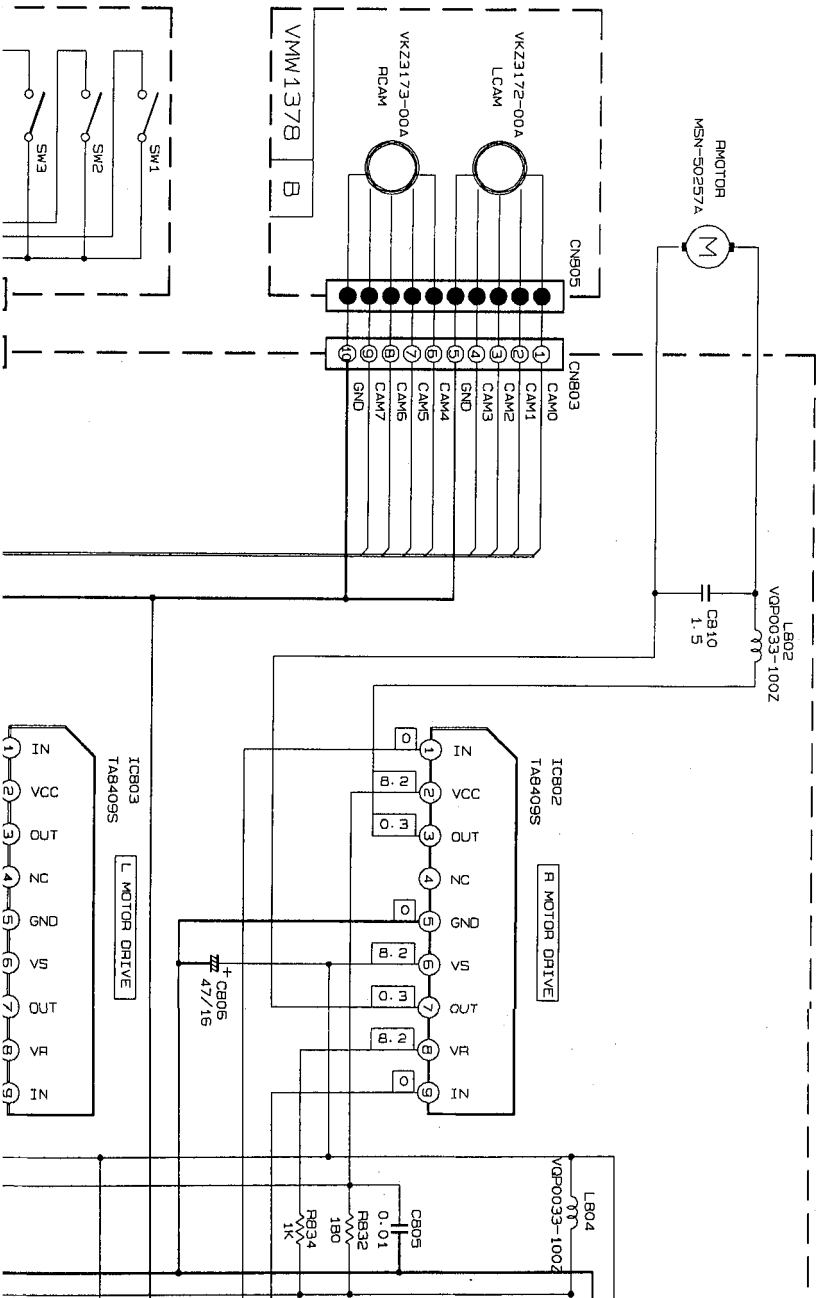
TABLE 1 CAM PATTERN LIST

CAM NO	LCAM			RCAM			POSITION	
	0	1	2	3	4	5	6	7
POSITION	0	1	2	3	4	5	6	7
MAIN TRAV1	0	1	1	0	1	1	1	0
SUB TRAV1	0	0	1	1	0	1	0	0
CAMR 1	0	1	0	1	0	1	0	1
MAIN TRAV2	1	0	0	1	0	0	1	0
SUB TRAV2	1	1	0	0	0	1	1	1
CAMR 2	1	0	1	0	0	0	1	1
MAIN TRAV3	1	1	0	0	0	0	1	1
SUB TRAV3	1	1	0	0	0	0	1	1
CAMR 3	1	1	0	1	1	1	1	1
OFF	1	1	1	1	1	1	1	1

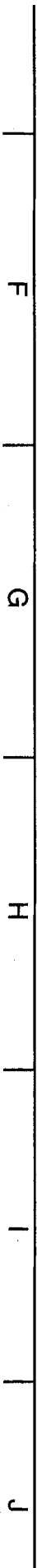
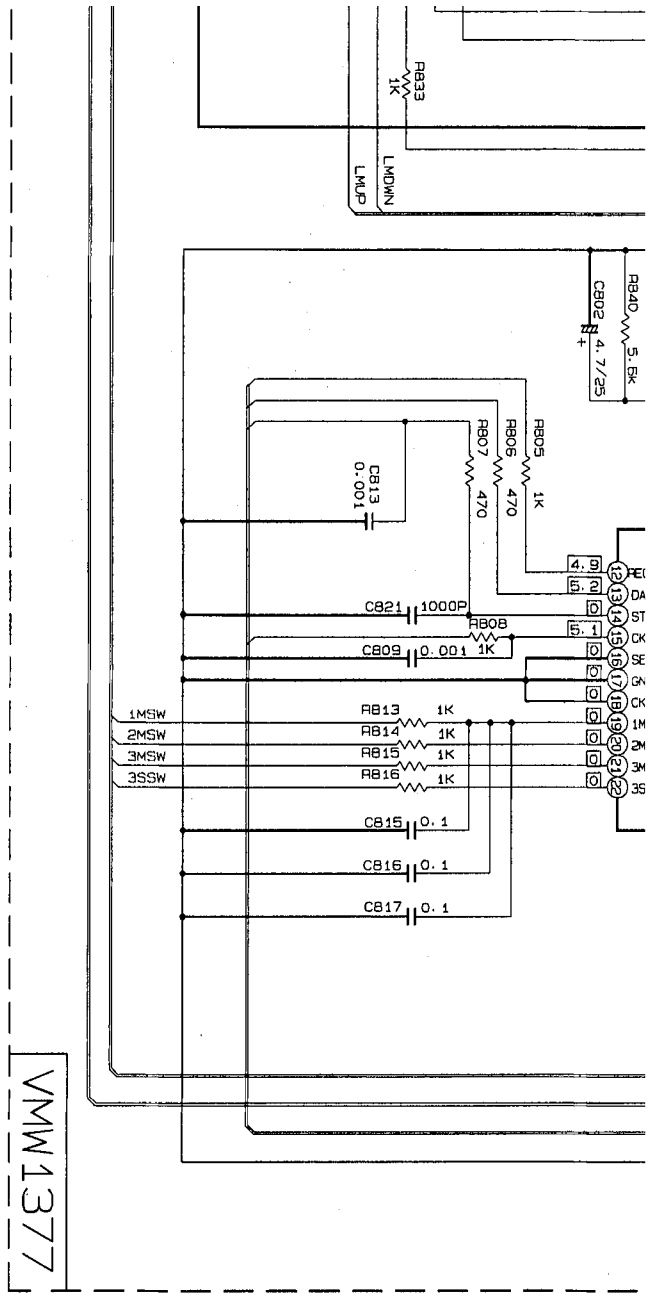
D=0V  
1=5V

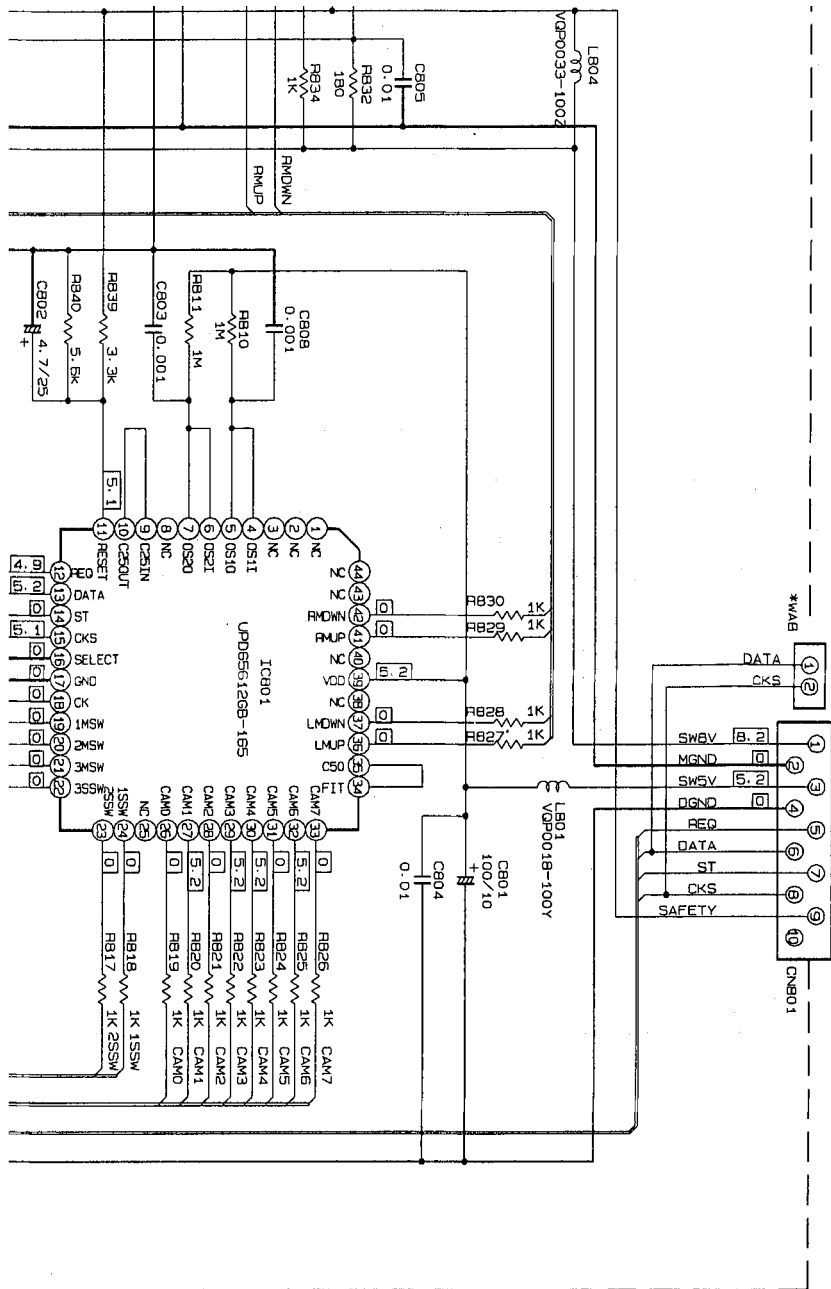


■ Changer Section



7  
6  
5  
4



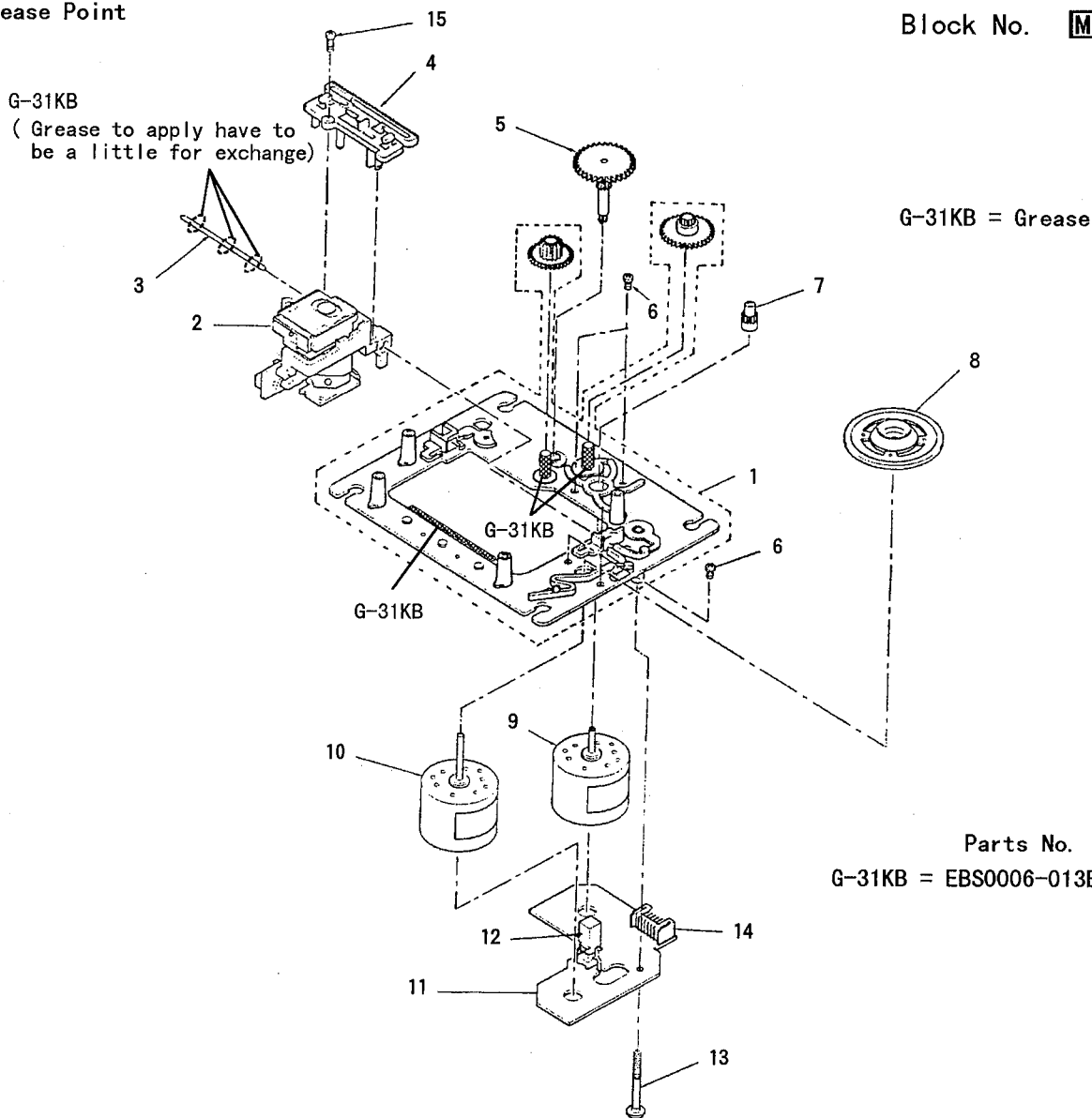


TO CNB11 OF  
 FMH-005-1  
 (SHEET 2/8)

CD Mechanism Ass'y and Parts List

■ Grease Point

Block No. **M3MM**



■ Parts List (CD Mechanism Ass'y)

Δ	Item	Parts Number	Parts Name	Q'ty	Description	Area
	1	E102501-221SS	MECHA. BASE ASSY	1	Made in Singapore	
		EPB-002PK	MECHA. BASE ASSY	1	Made in Malaysia	
	2	OPT1MA-150S	OPTICAL PICK UP	1		
	3	E406777-001	CD SHAFT	1		
	4	E307746-001	CD RACK	1		
	5	E307745-221SS	MECHA GEAR	1		
	6	SDSP2003N	SCREW	4		
	7	E406750-001	PINION GEAR	1		
	8	E75807-302	TURN TABLE	1		
	9	MDN-4RA3ETA-1	FEED MOTOR	1	Made in Singapore	
		E406784-001	FEED MOTOR	1	Made in Malaysia	
	10	E406783-001	SPINDLE MOTOR	1		
	11	EMW10190-001 (S)	P. C. BOARD	1		
	12	ESB1100-005	LEAF SWITCH	1		
	13	E75832-001	SCREW	1		
	14	EMV5109-006B	CONNECT TERMINAL	1	6PIN	
	15	SDSF2006Z	SCREW	1		

## ■ Electrical Parts List (ENH-308M)

△	Item	Parts Number	Description	Area
		I. C. S		
	IC701	TDA7294	I. C (M)	
	IC702	TDA7294	I. C (M)	
	IC781	TDA7295	I. C (M)	
	IC782	TDA7295	I. C (M)	
		DIODES		
	D001	1N5402M-20	DIODE	
	D002	1N5402M-20	DIODE	
	D003	1N5402M-20	DIODE	
	D004	1N5402M-20	DIODE	
△	D011	30DF2SFC	SI. DIODE	
△	D012	30DF2SFC	SI. DIODE	
△	D013	30DF2SFC	SI. DIODE	
△	D014	30DF2SFC	SI. DIODE	
△	D015	30DF2SFC	SI. DIODE	
△	D016	30DF2SFC	SI. DIODE	
	D017	1SR35-100	SI. DIODE	
	D018	1SR35-100	SI. DIODE	
	D019	MTZ30JC	ZENER DIODE	
	D020	MTZ5. 6JC	ZENER DIODE	
	D021	MTZ5. 1JB	ZENER DIODE	
	D022	1SS133	SI. DIODE	
	D023	1SS133	SI. DIODE	
	D024	1SS133	SI. DIODE	
	D025	1SS133	SI. DIODE	
	D027	1SR35-100	SI. DIODE	
	D030	MTZ11JA	ZENER DIODE	
	D043	1SS133	SI. DIODE	
	D060	MTZ5. 1JB	ZENER DIODE	
	D061	MTZ11JC	ZENER DIODE	
	D062	MTZ13JC	ZENER DIODE	
	D063	MTZ11JC	ZENER DIODE	
	D064	MTZ13JC	ZENER DIODE	
	D065	MTZ8. 2JC	ZENER DIODE	
	D066	MTZ13JC	ZENER DIODE	
	D067	MTZ13JC	ZENER DIODE	
	D068	MTZ13JC	ZENER DIODE	
	D069	MTZ13JC	ZENER DIODE	
	D070	MTZ13JC	ZENER DIODE	
	D703	1SS133	SI. DIODE	
	D704	1SS133	SI. DIODE	
	D719	1SS133	SI. DIODE	
	D720	1SS133	SI. DIODE	
	D728	1SS133	SI. DIODE	
	D751	1SS133	SI. DIODE	
	D752	1SS133	SI. DIODE	
	D753	1SS133	SI. DIODE	
	D754	1SS133	SI. DIODE	
	D755	1SS133	SI. DIODE	
	D756	1SS133	SI. DIODE	
	D757	MTZ3. 9JB	ZENER DIODE	
	D758	MTZ3. 9JB	ZENER DIODE	
	D759	1SS133	SI. DIODE	
	D760	1SS133	SI. DIODE	
	D789	1SS133	SI. DIODE	
	D790	1SS133	SI. DIODE	
		TRANSISTORS		
	Q001	2SB1187 (F, G)	SI. TRANSISTOR	
	Q003	KRC107M-T	DIGITAL TRANSISTOR	
	Q004	KRC107M-T	DIGITAL TRANSISTOR	
	Q005	KRC102M-T	DIGITAL TRANSISTOR	
	Q030	2SD2061 (F, G)	SI. TRANSISTOR	
	Q040	2SC945A	SI. TRANSISTOR	
	Q041	DTC114YS	DIGITAL TRANSISTOR	

△	Item	Parts Number	Description	Area
	Q060	2SD2061 (F, G)	SI. TRANSISTOR	
	Q061	2SC945A	SI. TRANSISTOR	
	Q062	2SC945A	SI. TRANSISTOR	
	Q063	2SD2061 (F, G)	SI. TRANSISTOR	
	Q064	2SA933S (RS)	SI. TRANSISTOR	
	Q065	2SC945A	SI. TRANSISTOR	
	Q066	2SD2061 (F, G)	SI. TRANSISTOR	
	Q067	2SA933S (RS)	SI. TRANSISTOR	
	Q068	2SC945A	SI. TRANSISTOR	
	Q069	2SD2061 (F, G)	SI. TRANSISTOR	
	Q070	2SC945A	SI. TRANSISTOR	
	Q071	2SB1187 (F, G)	SI. TRANSISTOR	
	Q072	2SA933S (RS)	SI. TRANSISTOR	
	Q073	KRA104M-T	DIGITAL TRANSISTOR	
	Q074	DTC144ES	DIGITAL TRANSISTOR	
	Q075	KRC104M-T	DIGITAL TRANSISTOR	
	Q076	DTA144ES	DIGITAL TRANSISTOR	
	Q701	2SA1038 (R, S)	SI. TRANSISTOR	
	Q702	2SA1038 (R, S)	SI. TRANSISTOR	
	Q726	2SC2389 (S, E)	SI. TRANSISTOR	
	Q727	2SA1038 (R, S)	SI. TRANSISTOR	
	Q728	2SC1740S (R, S)	SI. TRANSISTOR	
	Q733	2SD2144S (VW)	SI. TRANSISTOR	
	Q734	2SD2144S (VW)	SI. TRANSISTOR	
	Q735	2SD2144S (VW)	SI. TRANSISTOR	
	Q736	2SD2144S (VW)	SI. TRANSISTOR	
	Q737	KRA111M-T	DIGITAL TRANSISTOR	
	Q751	2SC1685	SI. TRANSISTOR	
	Q752	2SA933S (RS)	SI. TRANSISTOR	
	Q753	2SC1685	SI. TRANSISTOR	
	Q754	2SA933S (RS)	SI. TRANSISTOR	
	Q755	2SA965 (Y)	SI. TRANSISTOR	
	Q756	2SC2235 (O, Y)	SI. TRANSISTOR	
	Q781	2SA1038 (R, S)	SI. TRANSISTOR	
	Q782	2SA1038 (R, S)	SI. TRANSISTOR	
		CAPACITORS		
	C001	QFV82AJ-104	0. 1MF 100V THIN FILM CAP.	
	C002	QFV82AJ-104	0. 1MF 100V THIN FILM CAP.	
	C003	QFV82AJ-104	0. 1MF 100V THIN FILM CAP.	
	C004	QEZ0360-568	5600MF E. CAP.	
	C005	QEZ0360-568	5600MF E. CAP.	
	C011	QFV81HJ-104	0. 1MF 50V THIN FILM CAP.	
	C012	QFV81HJ-104	0. 1MF 50V THIN FILM CAP.	
	C013	QFV81HJ-104	0. 1MF 50V THIN FILM CAP.	
	C014	QETB1VM-338	3300MF 35V AL E. CAP.	
	C015	QETB1VM-338	3300MF 35V AL E. CAP.	
	C016	QETN1VM-107Z	100MF 35V E. CAP.	
	C017	QETN1JM-476Z	47MF 63V E. CAP.	
	C018	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C019	QCVB1CM-103Y	0. 01MF 16V CER. CAP.	
	C020	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C021	QETN1HM-475Z	4. 7MF 50V AL E. CAP.	
	C022	QETN1HM-475Z	4. 7MF 50V AL E. CAP.	
	C023	QETN1HM-225Z	2. 2MF 50V AL E. CAP.	
	C024	QETN1EM-106Z	10MF 25V E. CAP.	
	C030	QETN1EM-226Z	22MF 25V E. CAP.	
	C031	QCVB1CM-103Y	0. 01MF 16V CER. CAP.	
	C032	QETN1EM-226Z	22MF 25V E. CAP.	
	C033	QFLB1HJ-103	0. 01MF 50V MYLAR CAP.	
	C060	QETN1EM-226Z	22MF 25V E. CAP.	
	C061	QCF21HP-103A	0. 01MF 50V CER. CAP.	
	C062	QETN1EM-226Z	22MF 25V E. CAP.	
	C063	QETN1EM-226Z	22MF 25V E. CAP.	
	C064	QCF21HP-103A	0. 01MF 50V CER. CAP.	

■ Electrical Parts List (ENH-308M)

△	Item	Parts Number	Description	Area
	C065	QETN1EM-226Z	22MF 25V E. CAP.	
	C066	QETN1EM-226Z	22MF 25V E. CAP.	
	C067	QCF21HP-103A	0.01MF 50V CER. CAP.	
	C068	QETN1EM-226Z	22MF 25V E. CAP.	
	C069	QETN1EM-226Z	22MF 25V E. CAP.	
	C070	QCF21HP-103A	0.01MF 50V CER. CAP.	
	C071	QETN1EM-226Z	22MF 25V E. CAP.	
	C072	QETN1EM-226Z	22MF 25V E. CAP.	
	C073	QCF21HP-103A	0.01MF 50V CER. CAP.	
	C074	QETN1EM-226Z	22MF 25V E. CAP.	
	C103	QFLB1HJ-103	0.01MF 50V MYLAR CAP.	
	C703	QCB1HK-101Y	100PF 50V CER. CAP.	
	C704	QCB1HK-101Y	100PF 50V CER. CAP.	
	C705	QCB1HK-181Y	180PF 50V CER. CAP.	
	C706	QCB1HK-181Y	180PF 50V CER. CAP.	
	C707	QETN1EM-476Z	47MF 25V E. CAP.	
	C708	QETN1EM-476Z	47MF 25V E. CAP.	
	C709	QCSB1HJ-100Y	10PF 50V CER. CAP.	
	C710	QCSB1HJ-100Y	10PF 50V CER. CAP.	
	C711	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C712	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C713	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C714	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C715	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C716	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C721	QETN1HM-225Z	2.2MF 50V AL E. CAP.	
	C722	QETN1HM-225Z	2.2MF 50V AL E. CAP.	
	C726	QETN1EM-106Z	10MF 25V E. CAP.	
	C729	QETN1CM-476Z	47MF 16V AL E. CAP.	
	C751	QCY31HK-272Z	2700PF 50V CER. CAP.	
	C752	QCY31HK-272Z	2700PF 50V CER. CAP.	
	C753	QCY31HK-472Z	4700PF 50V CER. CAP.	
	C754	QCY31HK-472Z	4700PF 50V CER. CAP.	
	C755	QFV81HJ-105	1MF 50V THIN FILM CAP.	
	C756	QFV81HJ-105	1MF 50V THIN FILM CAP.	
	C757	QCB1CM-152Y	1500PF 16V CER. CAP.	
	C758	QCB1CM-152Y	1500PF 16V CER. CAP.	
	C781	QETN1HM-225Z	2.2MF 50V AL E. CAP.	
	C782	QETN1HM-225Z	2.2MF 50V AL E. CAP.	
	C783	QCB1HK-101Y	100PF 50V CER. CAP.	
	C784	QCB1HK-101Y	100PF 50V CER. CAP.	
	C785	QCB1HK-181Y	180PF 50V CER. CAP.	
	C786	QCB1HK-181Y	180PF 50V CER. CAP.	
	C787	QETN1EM-476Z	47MF 25V E. CAP.	
	C788	QETN1EM-476Z	47MF 25V E. CAP.	
	C789	QCSB1HJ-100Y	10PF 50V CER. CAP.	
	C790	QCSB1HJ-100Y	10PF 50V CER. CAP.	
	C791	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C792	QETN1HM-226Z	22MF 50V AL E. CAP.	
	C793	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C794	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C795	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C796	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C799	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C1073	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C1074	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
		RESISTORS		
	R003	QRD167J-332	3.3K 1/6W CARBON RES.	
	R004	QRD167J-223	22K 1/6W CARBON RES.	
	R005	QRD161J-104	100K 1/6W CARBON RES.	
△	R006	QRZ0077-4R7	4.7 1/4W FUSE RESISTO	
△	R007	QRZ0077-4R7	4.7 1/4W FUSE RESISTO	
	R008	QRD161J-103	10K 1/6W CARBON RES.	
	R009	QRD161J-103	10K 1/6W CARBON RES.	

△	Item	Parts Number	Description	Area
	R010	QRD161J-472	4.7K 1/6W CARBON RES.	
	R011	QRD161J-102	1K 1/6W CARBON RES.	
	R012	QRD167J-223	22K 1/6W CARBON RES.	
	R013	QRD161J-103	10K 1/6W CARBON RES.	
	R014	QRD161J-104	100K 1/6W CARBON RES.	
	R030	QRD14CJ-4R7SX	4.7 1/4W UNF. CARBON R	
	R031	QRD161J-681	680 1/6W CARBON RES.	
	R040	QRD12CJ-331SX	330 1/2W UNF. CARBON R	
	R041	QRD12CJ-331SX	330 1/2W UNF. CARBON R	
	R042	QRD161J-222	2.2K 1/6W CARBON RES.	
	R043	QRD12CJ-331SX	330 1/2W UNF. CARBON R	
	R044	QRD12CJ-331SX	330 1/2W UNF. CARBON R	
	R045	QRD161J-222	2.2K 1/6W CARBON RES.	
	R062	QRD161J-331	330 1/6W CARBON RES.	
	R063	QRD161J-331	330 1/6W CARBON RES.	
	R064	QRD161J-122	1.2K 1/6W CARBON RES.	
	R065	QRD161J-561	560 1/6W CARBON RES.	
	R066	QRD161J-561	560 1/6W CARBON RES.	
	R067	QRD161J-122	1.2K 1/6W CARBON RES.	
	R068	QRD161J-331	330 1/6W CARBON RES.	
	R071	QRD161J-221	220 1/6W CARBON RES.	
	R072	QRD161J-681	680 1/6W CARBON RES.	
	R073	QRD161J-182	1.8K 1/6W CARBON RES.	
	R076	QRD161J-221	220 1/6W CARBON RES.	
	R077	QRD161J-681	680 1/6W CARBON RES.	
	R078	QRD161J-182	1.8K 1/6W CARBON RES.	
	R081	QRD167J-272	2.7K 1/6W CARBON RES.	
	R082	QRD167J-562	5.6K 1/6W CARBON RES.	
	R084	QRD167J-272	2.7K 1/6W CARBON RES.	
	R085	QRD167J-562	5.6K 1/6W CARBON RES.	
△	R701	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R702	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
	R703	QRD161J-563	56K 1/6W CARBON RES.	
	R704	QRD161J-563	56K 1/6W CARBON RES.	
△	R705	QRD14CJ-182SX	1.8K 1/4W UNF. CARBON R	
△	R706	QRD14CJ-182SX	1.8K 1/4W UNF. CARBON R	
	R707	QRD161J-563	56K 1/6W CARBON RES.	
	R708	QRD161J-563	56K 1/6W CARBON RES.	
△	R709	QRX014J-R22	0.22 1W METAL FILM R	
△	R710	QRX014J-R22	0.22 1W METAL FILM R	
△	R711	QRX014J-R22	0.22 1W METAL FILM R	
△	R712	QRX014J-R22	0.22 1W METAL FILM R	
△	R713	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R714	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R715	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R716	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
	R717	QRD161J-122	1.2K 1/6W CARBON RES.	
	R718	QRD161J-122	1.2K 1/6W CARBON RES.	
	R719	QRD167J-223	22K 1/6W CARBON RES.	
	R720	QRD167J-223	22K 1/6W CARBON RES.	
	R721	QRD161J-103	10K 1/6W CARBON RES.	
	R722	QRD161J-103	10K 1/6W CARBON RES.	
	R723	QRD161J-473	47K 1/6W CARBON RES.	
	R724	QRD161J-473	47K 1/6W CARBON RES.	
	R725	QRD161J-104	100K 1/6W CARBON RES.	
	R726	QRD161J-823	82K 1/6W CARBON RES.	
	R727	QRD161J-104	100K 1/6W CARBON RES.	
	R728	QRD161J-103	10K 1/6W CARBON RES.	
	R729	QRD161J-104	100K 1/6W CARBON RES.	
	R730	QRD161J-103	10K 1/6W CARBON RES.	
	R733	QRD161J-473	47K 1/6W CARBON RES.	
	R734	QRD161J-473	47K 1/6W CARBON RES.	
	R735	QRD161J-473	47K 1/6W CARBON RES.	
	R736	QRD161J-473	47K 1/6W CARBON RES.	

## ■ Electrical Parts List (ENH-308M)

△	Item	Parts Number	Description	Area
	R739	QRG01DJ-821X	820 1W OXIDE METAL	
	R740	QRG01DJ-821X	820 1W OXIDE METAL	
	R741	QRD161J-473	47K 1/6W CARBON RES.	
	R742	QRD161J-473	47K 1/6W CARBON RES.	
	R743	QRD167J-223	22K 1/6W CARBON RES.	
	R744	QRD167J-223	22K 1/6W CARBON RES.	
	R745	QRD161J-103	10K 1/6W CARBON RES.	
	R746	QRD161J-103	10K 1/6W CARBON RES.	
	R747	QRD161J-104	100K 1/6W CARBON RES.	
	R748	QRD161J-823	82K 1/6W CARBON RES.	
	R749	QRD161J-471	470 1/6W CARBON RES.	
	R750	QRD161J-471	470 1/6W CARBON RES.	
	R751	QRD167J-223	22K 1/6W CARBON RES.	
	R752	QRD167J-223	22K 1/6W CARBON RES.	
	R753	QRD161J-222	2.2K 1/6W CARBON RES.	
	R754	QRD161J-222	2.2K 1/6W CARBON RES.	
	R755	QRD161J-221	220 1/6W CARBON RES.	
	R756	QRD161J-221	220 1/6W CARBON RES.	
	R757	QRD167J-223	22K 1/6W CARBON RES.	
	R758	QRD167J-223	22K 1/6W CARBON RES.	
	R759	QRD167J-682	6.8K 1/6W CARBON RES.	
	R760	QRD167J-682	6.8K 1/6W CARBON RES.	
	R761	QRD161J-222	2.2K 1/6W CARBON RES.	
	R762	QRD161J-222	2.2K 1/6W CARBON RES.	
	R763	QRD167J-223	22K 1/6W CARBON RES.	
	R764	QRD167J-223	22K 1/6W CARBON RES.	
	R765	QRG01DJ-182X	1.8K 1W OXIDE METAL	
	R766	QRG01DJ-182X	1.8K 1W OXIDE METAL	
△	R767	QRD14CJ-681SX	680 1/4W UNF. CARBON R	
△	R768	QRD14CJ-681SX	680 1/4W UNF. CARBON R	
	R769	QRD14CJ-821SX	820 1/4W CARBON RES.	
	R770	QRD14CJ-821SX	820 1/4W CARBON RES.	
	R771	QRD161J-821	820 1/6W CARBON RES.	
	R772	QRD161J-821	820 1/6W CARBON RES.	
△	R773	QRD14CJ-101S	100 1/4W UNF. CARBON R	
△	R774	QRD14CJ-101S	100 1/4W UNF. CARBON R	
	R775	QRD161J-471	470 1/6W CARBON RES.	
	R776	QRD161J-471	470 1/6W CARBON RES.	
	R777	QRD14CJ-4R7SX	4.7 1/4W UNF. CARBON R	
	R778	QRD14CJ-4R7SX	4.7 1/4W UNF. CARBON R	
△	R781	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R782	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
	R783	QRD161J-563	56K 1/6W CARBON RES.	
	R784	QRD161J-563	56K 1/6W CARBON RES.	
△	R785	QRD14CJ-182SX	1.8K 1/4W UNF. CARBON R	
△	R786	QRD14CJ-182SX	1.8K 1/4W UNF. CARBON R	
	R787	QRD161J-563	56K 1/6W CARBON RES.	
	R788	QRD161J-563	56K 1/6W CARBON RES.	
△	R789	QRX014J-R22	0.22 1W METAL FILM R	
△	R790	QRX014J-R22	0.22 1W METAL FILM R	
△	R791	QRX014J-R22	0.22 1W METAL FILM R	
△	R792	QRX014J-R22	0.22 1W METAL FILM R	
△	R793	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R794	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R795	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
△	R796	QRD14CJ-100SX	10 1/4W UNF. CARBON R	
	R797	QRD161J-122	1.2K 1/6W CARBON RES.	
	R798	QRD161J-122	1.2K 1/6W CARBON RES.	
	R1073	QRD14CJ-4R7SX	4.7 1/4W UNF. CARBON R	
	R1074	QRD14CJ-4R7SX	4.7 1/4W UNF. CARBON R	
		OTHERS		
		EMW10687-202	PRINTED BOARD	
		QWE880-12RR	VINYL WIRE	
	L701	EQL0011-R45J1	INDUCTOR	

△	Item	Parts Number	Description	Area
	L702	EQL0011-R45J1	INDUCTOR	
	L781	EQL0011-R45J1	INDUCTOR	
	L782	EQL0011-R45J1	INDUCTOR	
	CN002	EMV7163-011	CONNECT TERMINAL	
	CN003	EMV7163-010	CONNECT TERMINAL	
	CN004	EMV7163-005	CONNECTOR	
	CN005	EMV7163-011	CONNECT TERMINAL	
	CN006	EMV7163-010	CONNECT TERMINAL	
	CN007	EMV7163-009	CONNECT TERMINAL	
	CN009	EMV5138-005	CONNECT TERMINAL	
	CN012	EMV5163-011R	CONNECT TERMINAL	
	CN013	EMV5163-010R	CONNECT TERMINAL	
	CN014	EMV5163-005R	CONNECTOR	
	CN019	EWS285-002J	SOCKET WIRE ASSY	
	CN111	EMV7145-004Z	SOCKET ASSY	
	CN703	EMV5163-007R	CONNECT TERMINAL	
	CN704	EMV5163-006R	CONNECT TERMINAL	
	CN915	EMV7145-003Z	SOCKET ASSY	
	EP001	EMZ4002-002Z	EARTH PLATE	
	EP002	EMZ4002-002Z	EARTH PLATE	
	FT011	EMG7331-003Z	FUSE CLIP	EF EN G
	FT012	EMG7331-003Z	FUSE CLIP	EF EN G
	FT511	EMG7331-003Z	FUSE CLIP	
	FT512	EMG7331-003Z	FUSE CLIP	
	FT521	EMG7331-003Z	FUSE CLIP	
	FT522	EMG7331-003Z	FUSE CLIP	
	FW101	EWR34D-13LS	FLAT WIRE	
	TB001	EMZ4001-002Z	TAB	
	TB002	EMZ4001-002Z	TAB	
	TH002	QAD0095-4R7Z	POSITIVE THERMISTOR	
	TW799	EWP201-025	TERMINAL WIRE	



■ Electrical Parts List (ENB-255M)

△	Item	Parts Number	Description	Area
		I. C. S		
	IC231	HA12136A	I. C (MONO-ANALOG)	
	IC901	HD404719A71FS	I. C (MICRO-COMPUTER)	
	IC902	MN172412JAAW	I. C (MICRO-COMPUTER)	
	IC904	GP1U271X	INFRARED DETECT UNIT	
		DIODES		
	D041	1SS133	SI. DIODE	
	D042	1SS133	SI. DIODE	
	D231	1SR35-100	SI. DIODE	
	D232	SLR-342MCA47	L. E. D.	
	D233	SLR-342MCA47	L. E. D.	
	D234	SLR-342MCA47	L. E. D.	
	D235	SLR-342MCA47	L. E. D.	
	D236	SLR-342MCA47	L. E. D.	
	D237	SLR-342MCA47	L. E. D.	
	D801	MTZ2. 4JB	ZENER DIODE	
	D802	SLR-342VC3F	L. E. D.	
	D803	SLR-342VC3F	L. E. D.	
	D804	SLR-342VC3F	L. E. D.	
	D805	SLR-342VC3F	L. E. D.	
	D806	SLR-342VC3F	L. E. D.	
	D901	1SS119	SI. DIODE	
	D902	1SS133	SI. DIODE	
	D904	SLR-342DCA47	L. E. D.	
	D905	SLR-342MCA47	L. E. D.	
	D906	SLR-342MCA47	L. E. D.	
	D907	SLR-342MCA47	L. E. D.	
	D908	SLR-342MCA47	L. E. D.	
	D909	SLR-342MCA47	L. E. D.	
	D910	SLR-342MCA47	L. E. D.	
	D911	SLR-342MCA47	L. E. D.	
	D912	SLR-342MCA47	L. E. D.	
	D913	SLR-342MCA47	L. E. D.	
	D914	SLR-342MCA47	L. E. D.	
	D915	SLR-342MCA47	L. E. D.	
	D916	SLR-342MCA47	L. E. D.	
	D917	SLR-342MCA47	L. E. D.	
	D918	SLR-342MCA47	L. E. D.	
	D919	SLR-342MCA47	L. E. D.	
	D920	1SS133	SI. DIODE	
	D921	1SS133	SI. DIODE	
	D922	1SS133	SI. DIODE	
	D923	MTZ5. 6JC	ZENER DIODE	
	D924	MTZ5. 6JC	ZENER DIODE	
	D925	MTZ5. 6JC	ZENER DIODE	
	D934	1SS133	SI. DIODE	
	D936	1SS133	SI. DIODE	
	D996	1SS119	SI. DIODE	
		TRANSISTORS		
	Q231	2SA934 (Q, R)	SI. TRANSISTOR	
	Q232	DTC123YS	DIGITAL TRANSISTOR	
	Q233	2SA934 (Q, R)	SI. TRANSISTOR	
	Q234	DTC123YS	DIGITAL TRANSISTOR	
	Q235	2SA933S (RS)	SI. TRANSISTOR	
	Q236	KRC107M-T	DIGITAL TRANSISTOR	
	Q237	KRC107M-T	DIGITAL TRANSISTOR	
	Q901	KRC102M-T	DIGITAL TRANSISTOR	
	Q902	KRC102M-T	DIGITAL TRANSISTOR	
	Q903	KRC102M-T	DIGITAL TRANSISTOR	
	Q904	KRC102M-T	DIGITAL TRANSISTOR	
	Q921	KRC107M-T	DIGITAL TRANSISTOR	
	Q922	DTC114ES	DIGITAL TRANSISTOR	
	Q923	DTC114ES	DIGITAL TRANSISTOR	
	Q924	DTC114ES	DIGITAL TRANSISTOR	
	Q925	DTC114ES	DIGITAL TRANSISTOR	
		CAPACITORS		
	C050	QCY31HK-103Z	0. 01MF 50V CER. CAP.	

△	Item	Parts Number	Description	Area
	C051	QFV81HJ-104	0. 1MF 50V THIN FILM CAP.	
	C052	QFV81HJ-104	0. 1MF 50V THIN FILM CAP.	
	C053	QCXB1CM-222Y	2200PF 16V CER. CAP.	
	C054	QCXB1CM-222Y	2200PF 16V CER. CAP.	
	C055	QFLB1HJ-393	0. 039MF 50V MYLAR CAP.	
	C056	QFLB1HJ-393	0. 039MF 50V MYLAR CAP.	
	C057	QCXB1EZ-223	0. 022MF 25V CER. CAP.	
	C058	QCXB1EZ-223	0. 022MF 25V CER. CAP.	
	C059	QFLB1HJ-393	0. 039MF 50V MYLAR CAP.	
	C233	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C234	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C235	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C236	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C237	QETC1HM-106ZM	10MF 50V E. CAP.	
	C238	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C239	QETC1HM-225ZM	2. 2MF 50V E. CAP.	
	C240	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C241	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C242	EETB1HM-475E	4. 7MF 50V E. CAP.	
	C243	QFV81HJ-224	0. 22MF 50V THIN FILM CAP.	
	C244	QFV81HJ-224	0. 22MF 50V THIN FILM CAP.	
	C245	QCBB1HK-561Y	560PF 50V CER. CAP.	
	C246	QCBB1HK-561Y	560PF 50V CER. CAP.	
	C247	EETB1CM-476	47MF 16V E. CAP.	
	C251	QETN1CM-107Z	100MF 16V E. CAP.	
	C801	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C802	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C901	EETB1AM-107E	100MF 10V E. CAP.	
	C902	QCZ0205-155	1. 5MF 25V C. CAP.	
	C903	QEAD0HZ-479ZM	47000MF E. CAP.	
	C904	QCXB1EZ-223	0. 022MF 25V CER. CAP.	
	C905	QER50JM-107	100MF 6. 3V AL. E. CAP.	
	C910	QCT26CH-330	33PF 50V CER. CAP.	
	C911	QEAD0HZ-479ZM	47000MF E. CAP.	
	C912	EETB1AM-476E	47MF 10V E. CAP.	
	C914	QCZ0205-155	1. 5MF 25V C. CAP.	
	C915	QCVB1CM-103Y	0. 01MF 16V CER. CAP.	
	C916	QER51HM-474G	0. 47MF 50V AL. E. CAP.	
	TC902	ENZ1003-015	0. 1MF TRIMMER CAPA	
		RESISTORS		
	R047	QRD161J-333	33K 1/6W CARBON RES.	
	R048	QRD161J-333	33K 1/6W CARBON RES.	
	R049	QRD161J-102	1K 1/6W CARBON RES.	
	R051	QRD140J-4R7SX	4. 7 1/4W UNF. CARBON R	
	R052	QRD140J-4R7SX	4. 7 1/4W UNF. CARBON R	
	R235	QRD167J-153	15K 1/6W CARBON RES.	
	R236	QRD167J-153	15K 1/6W CARBON RES.	
	R237	QRD161J-681	680 1/6W CARBON RES.	
	R238	QRD161J-681	680 1/6W CARBON RES.	
△	R239	QRD140J-220S	22 1/4W UNF. CARBON R	
	R240	QRD161J-103	10K 1/6W CARBON RES.	
	R241	QRD161J-183	18K 1/6W CARBON RES.	
	R242	QRD161J-183	18K 1/6W CARBON RES.	
	R245	QRD167J-751	750 1/6W CARBON RES.	
	R246	QRD167J-751	750 1/6W CARBON RES.	
	R247	QRD161J-471	470 1/6W CARBON RES.	
△	R248	QRX022J-3R3A	3. 3 2W METAL FILM R	
	R249	QRD161J-103	10K 1/6W CARBON RES.	
	R250	QRD161J-103	10K 1/6W CARBON RES.	
	R251	QRD161J-103	10K 1/6W CARBON RES.	
	R255	QRD167J-751	750 1/6W CARBON RES.	
	R256	QRD167J-751	750 1/6W CARBON RES.	
	R257	QRD161J-471	470 1/6W CARBON RES.	
△	R258	QRX022J-3R3A	3. 3 2W METAL FILM R	
	R259	QRD161J-224	220K 1/6W CARBON RES.	
	R260	QRD161J-103	10K 1/6W CARBON RES.	
	R261	QRD161J-473	47K 1/6W CARBON RES.	

## ■ Electrical Parts List (ENB-255M)

△	Item	Parts Number	Description	Area
	R262	QRD161J-273	27K 1/6W CARBON RES.	
	R263	QRD161J-102	1K 1/6W CARBON RES.	
	R264	QRD161J-103	10K 1/6W CARBON RES.	
	R265	QRD161J-103	10K 1/6W CARBON RES.	
	R266	QRD161J-103	10K 1/6W CARBON RES.	
	R267	QRD161J-103	10K 1/6W CARBON RES.	
	R268	QRD161J-221	220 1/6W CARBON RES.	
	R269	QRD161J-221	220 1/6W CARBON RES.	
	R801	QRD167J-431	430 1/6W CARBON RES.	
	R802	QRD167J-431	430 1/6W CARBON RES.	
	R803	QRD161J-561	560 1/6W CARBON RES.	
	R804	QRD167J-751	750 1/6W CARBON RES.	
	R805	QRD161J-132	1.3K 1/6W CARBON RES.	
	R806	QRD161J-222	2.2K 1/6W CARBON RES.	
	R807	QRD167J-431	430 1/6W CARBON RES.	
	R808	QRD167J-431	430 1/6W CARBON RES.	
	R809	QRD161J-561	560 1/6W CARBON RES.	
	R810	QRD167J-751	750 1/6W CARBON RES.	
	R811	QRD161J-132	1.3K 1/6W CARBON RES.	
	R812	QRD161J-331	330 1/6W CARBON RES.	
	R813	QRD161J-331	330 1/6W CARBON RES.	
	R814	QRD161J-331	330 1/6W CARBON RES.	
	R815	QRD161J-331	330 1/6W CARBON RES.	
	R816	QRD161J-331	330 1/6W CARBON RES.	
	R817	QRD161J-103	10K 1/6W CARBON RES.	
	R818	QRD161J-103	10K 1/6W CARBON RES.	
	R900	QRD161J-103	10K 1/6W CARBON RES.	
	R901	QRD161J-105	1M 1/6W CARBON RES.	
	R902	QRD161J-103	10K 1/6W CARBON RES.	
	R903	QRD161J-220	22 1/6W CARBON RES.	
	R904	QRD161J-222	2.2K 1/6W CARBON RES.	
	R905	QRD161J-103	10K 1/6W CARBON RES.	
	R906	QRD161J-221	220 1/6W CARBON RES.	
	R907	QRD161J-221	220 1/6W CARBON RES.	
	R908	QRD161J-221	220 1/6W CARBON RES.	
	R909	QRD161J-221	220 1/6W CARBON RES.	
	R910	QRD161J-221	220 1/6W CARBON RES.	
	R911	QRD161J-221	220 1/6W CARBON RES.	
	R918	QRD167J-431	430 1/6W CARBON RES.	
	R919	QRD167J-431	430 1/6W CARBON RES.	
	R920	QRD161J-561	560 1/6W CARBON RES.	
	R921	QRD167J-751	750 1/6W CARBON RES.	
	R922	QRD161J-132	1.3K 1/6W CARBON RES.	
	R923	QRD161J-222	2.2K 1/6W CARBON RES.	
	R924	QRD161J-512	5.1K 1/6W CARBON RES.	
	R925	QRD167J-431	430 1/6W CARBON RES.	
	R926	QRD167J-431	430 1/6W CARBON RES.	
	R927	QRD161J-561	560 1/6W CARBON RES.	
	R928	QRD167J-751	750 1/6W CARBON RES.	
	R929	QRD161J-132	1.3K 1/6W CARBON RES.	
	R930	QRD161J-222	2.2K 1/6W CARBON RES.	
	R931	QRD161J-512	5.1K 1/6W CARBON RES.	
	R932	QRD167J-431	430 1/6W CARBON RES.	
	R933	QRD167J-431	430 1/6W CARBON RES.	
	R934	QRD161J-561	560 1/6W CARBON RES.	
	R935	QRD167J-751	750 1/6W CARBON RES.	
	R936	QRD161J-132	1.3K 1/6W CARBON RES.	
	R937	QRD161J-222	2.2K 1/6W CARBON RES.	
	R938	QRD161J-512	5.1K 1/6W CARBON RES.	
	R939	QRD167J-431	430 1/6W CARBON RES.	
	R940	QRD167J-431	430 1/6W CARBON RES.	
	R941	QRD161J-561	560 1/6W CARBON RES.	
	R942	QRD167J-751	750 1/6W CARBON RES.	
	R943	QRD161J-132	1.3K 1/6W CARBON RES.	
	R944	QRD161J-181	180 1/6W CARBON RES.	
	R945	QRD161J-181	180 1/6W CARBON RES.	
	R946	QRD161J-181	180 1/6W CARBON RES.	

△	Item	Parts Number	Description	Area
	R947	QRD161J-181	180 1/6W CARBON RES.	
	R948	QRD161J-181	180 1/6W CARBON RES.	
	R949	QRD161J-181	180 1/6W CARBON RES.	
	R950	QRD161J-181	180 1/6W CARBON RES.	
	R951	QRD161J-181	180 1/6W CARBON RES.	
	R952	QRD161J-181	180 1/6W CARBON RES.	
	R953	QRD161J-221	220 1/6W CARBON RES.	
	R954	QRD161J-181	180 1/6W CARBON RES.	
	R955	QRD161J-181	180 1/6W CARBON RES.	
	R956	QRD161J-181	180 1/6W CARBON RES.	
	R957	QRD161J-181	180 1/6W CARBON RES.	
	R958	QRD161J-181	180 1/6W CARBON RES.	
	R959	QRD161J-181	180 1/6W CARBON RES.	
	R960	QRD161J-102	1K 1/6W CARBON RES.	
	R961	QRD161J-221	220 1/6W CARBON RES.	
	R962	QRD161J-102	1K 1/6W CARBON RES.	
	R963	QRD161J-222	2.2K 1/6W CARBON RES.	
	R964	QRD161J-221	220 1/6W CARBON RES.	
	R965	QRD161J-221	220 1/6W CARBON RES.	
	R966	QRD161J-221	220 1/6W CARBON RES.	
	R967	QRD161J-221	220 1/6W CARBON RES.	
	R968	QRD161J-221	220 1/6W CARBON RES.	
	R970	QRD167J-223	22K 1/6W CARBON RES.	
	R971	QRD161J-472	4.7K 1/6W CARBON RES.	
	R972	QRD161J-472	4.7K 1/6W CARBON RES.	
	R973	QRD161J-472	4.7K 1/6W CARBON RES.	
	R974	QRD161J-472	4.7K 1/6W CARBON RES.	
	R975	QRD161J-473	47K 1/6W CARBON RES.	
	R976	QRD161J-104	100K 1/6W CARBON RES.	
	R977	QRD161J-104	100K 1/6W CARBON RES.	
	R978	QRD161J-104	100K 1/6W CARBON RES.	
	R979	QRD161J-104	100K 1/6W CARBON RES.	
	R987	QRD161J-103	10K 1/6W CARBON RES.	
	R989	QRD161J-103	10K 1/6W CARBON RES.	
	R991	QRD161J-104	100K 1/6W CARBON RES.	
	R992	QRD161J-104	100K 1/6W CARBON RES.	
	R995	QRD161J-104	100K 1/6W CARBON RES.	
	R996	QRD167J-151	150 1/6W CARBON RES.	
	RA901	ORB069J-222	2.2K 1/10W NETWORK RES.	
	VR233	QVPA603-103A	10K TRIMMER RES.	
		OTHERS		
		EMW10685-102	PRINTED BOARD	
	J081	EMB10TV-401AJ3	SPEAKER TERMINAL	
	J082	EMN00TV-119AJ4	PIN JACK	
	J083	EMN00TV-304AJ4	PIN JACK	
	J801	QMS3R80-EEOS	HEADPHONE JACK	
	K801	ENZ8101-007	INDUCTOR	
	S801	ESP0001-023M	TACT SWITCH	
	S802	ESP0001-023M	TACT SWITCH	
	S803	ESP0001-023M	TACT SWITCH	
	S804	ESP0001-023M	TACT SWITCH	
	S805	ESP0001-023M	TACT SWITCH	
	S806	ESP0001-023M	TACT SWITCH	
	S807	ESP0001-023M	TACT SWITCH	
	S808	ESP0001-023M	TACT SWITCH	
	S809	ESP0001-023M	TACT SWITCH	
	S810	ESP0001-023M	TACT SWITCH	
	S811	ESP0001-023M	TACT SWITCH	
	S812	ESP0001-023M	TACT SWITCH	
	S813	ESP0001-023M	TACT SWITCH	
	S901	ESP0001-023M	TACT SWITCH	
	S902	ESP0001-023M	TACT SWITCH	
	S903	ESP0001-023M	TACT SWITCH	
	S904	ESP0001-023M	TACT SWITCH	
	S905	ESP0001-023M	TACT SWITCH	
	S906	ESP0001-023M	TACT SWITCH	
	S907	ESP0001-023M	TACT SWITCH	

■ Electrical Parts List (ENB-255M)

△	Item	Parts Number	Description	Area
	S908	ESP0001-023M	TACT SWITCH	
	S909	ESP0001-023M	TACT SWITCH	
	S910	ESP0001-023M	TACT SWITCH	
	S911	ESP0001-023M	TACT SWITCH	
	S912	ESP0001-023M	TACT SWITCH	
	S913	ESP0001-023M	TACT SWITCH	
	S914	ESP0001-023M	TACT SWITCH	
	S915	ESP0001-023M	TACT SWITCH	
	S916	ESP0001-023M	TACT SWITCH	
	S917	ESP0001-023M	TACT SWITCH	
	S918	ESP0001-023M	TACT SWITCH	
	S919	ESP0001-023M	TACT SWITCH	
	S920	ESP0001-023M	TACT SWITCH	
	S921	ESP0001-023M	TACT SWITCH	
	S922	ESP0001-023M	TACT SWITCH	
	S923	ESP0001-023M	TACT SWITCH	
	S924	ESP0001-023M	TACT SWITCH	
	S925	ESP0001-023M	TACT SWITCH	
	S926	ESP0001-023M	TACT SWITCH	
	S927	ESP0001-023M	TACT SWITCH	
	S928	ESP0001-023M	TACT SWITCH	
	S929	ESP0001-023M	TACT SWITCH	
	S930	ESP0001-023M	TACT SWITCH	
	X901	EGX0004-194KM	CERAMIC RESONATOR	
	X902	EGX0006-000KNJ	CRYSTAL	
	BK901	E309782-002SM	P. W. BOARD BRACKET	
	BK902	E310200-001SM	L. E. D. HOLDER	
	CN015	EMV5163-011R	CONNECT TERMINAL	
	CN101	EMV7163-012	CONNECT TERMINAL	
	CN121	EWS26C-A408	FLAT WIRE ASSY	
	CN301	EMV7172-014R	CONNECT TERMINAL	
	CN302	EMV7172-014R	CONNECT TERMINAL	
	CN313	VMC0314-S14	CONNECT TERMINAL	
	CN314	VMC0314-S08	CONNECT TERMINAL	
	CN401	VMC0163-R33	CONNECT TERMINAL	
	CN402	EWS265-A412	SOCKET WIRE ASSY	
	CN403	EMV7160-016	CONNECT TERMINAL	
	CN713	EMV7163-007	CONNECT TERMINAL	
	CN714	EMV7163-006	CONNECT TERMINAL	
	DI901	QLF0012-001	FLUORESCENT DISPLAY TUBE	
	FS050	E3400-431	FELT SPACER	
	FS901	E3400-439	FELT SPACER	
	FS902	E3400-439	FELT SPACER	
	FW401	VWSC12-083K3K	FLAT WIRE ASSY	
	FW402	EWR33D-25LS	FLAT WIRE	
	FW411	EWR37D-10LS	FLAT WIRE	
	JS801	QJ4003-E01	PUSH SWITCH	
	RY001	ESK7D24-213R	RELAY	
	RY002	ESK7D24-213R	RELAY	
	SP901	VYH7653-001	LEAF SPRING	
	SP902	VYH7653-001	LEAF SPRING	
	TW001	EWT015-001	TERMINAL WIRE	

## ■ Electrical Parts List (ENG-139)

△	Item	Parts Number	Description	Area
		I. C. S		
	IC301	MN173222JAAX1	I. C (MICRO-COMPUTER)	
	IC302	BA15218N	I. C (MONO-ANALOG)	
	IC303	BA15218N	I. C (MONO-ANALOG)	
	IC304	BA3126N	I. C (MONO-ANALOG)	
	IC305	HA12206NT	I. C (MONO-ANALOG)	
	IC401	TDA7439	I. C (M)	
	IC402	BA15218	I. C (MONO-ANALOG)	
	IC405	BA15218	I. C (MONO-ANALOG)	
	IC406	LA2650	I. C (MONO-ANALOG)	
	IC407	BA15218	I. C (MONO-ANALOG)	
	IC501	LA2786	I. C (MONO-ANALOG)	
	IC541	LV1016	I. C (M)	
	IC561	TDA7439	I. C (M)	
	IC562	BA15218	I. C (MONO-ANALOG)	
		DIODES		
	D201	1SS133	SI. DIODE	
	D202	1SS133	SI. DIODE	
	D203	1SS133	SI. DIODE	
	D290	1SS133	SI. DIODE	
	D303	1SS133	SI. DIODE	
	D305	MTZ7.5JC	ZENER DIODE	
	D306	MTZ7.5JC	ZENER DIODE	
	D307	1SS133	SI. DIODE	
	D308	1SS133	SI. DIODE	
	D403	1SS133	SI. DIODE	
	D481	1SS133	SI. DIODE	
	D482	1SS133	SI. DIODE	
		TRANSISTORS		
	Q201	KRC107M-T	DIGITAL TRANSISTOR	
	Q321	2SD2144S (VW)	SI. TRANSISTOR	
	Q322	2SD2144S (VW)	SI. TRANSISTOR	
	Q323	KRA107M-T	DIGITAL TRANSISTOR	
	Q324	2SD2144S (VW)	SI. TRANSISTOR	
	Q325	2SD2144S (VW)	SI. TRANSISTOR	
	Q326	2SC1740S (R. S)	SI. TRANSISTOR	
	Q327	2SC1740S (R. S)	SI. TRANSISTOR	
	Q328	2SC1740S (R. S)	SI. TRANSISTOR	
	Q329	2SC1740S (R. S)	SI. TRANSISTOR	
	Q330	2SC1740S (R. S)	SI. TRANSISTOR	
	Q331	KRA104M-T	DIGITAL TRANSISTOR	
	Q341	KRC107M-T	DIGITAL TRANSISTOR	
	Q342	KRC107M-T	DIGITAL TRANSISTOR	
	Q343	KRC107M-T	DIGITAL TRANSISTOR	
	Q401	2SD2144S (VW)	SI. TRANSISTOR	
	Q402	2SD2144S (VW)	SI. TRANSISTOR	
	Q403	KRA102M-T	DIGITAL TRANSISTOR	
	Q481	2SD2144S (VW)	SI. TRANSISTOR	
	Q482	2SD2144S (VW)	SI. TRANSISTOR	
	Q483	KRA102M-T	DIGITAL TRANSISTOR	
	Q491	KRC102M-T	DIGITAL TRANSISTOR	
	Q492	2SB1565 (E. F)	SI. TRANSISTOR	
	Q501	2SD2144S (VW)	SI. TRANSISTOR	
	Q502	2SD2144S (VW)	SI. TRANSISTOR	
		CAPACITORS		
	C201	QETN1AM-227Z	220MF 10V E. CAP.	
	C202	QCZ0205-155	1.5MF 25V C. CAP.	
	C203	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C205	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C206	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C211	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C231	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C232	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C305	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C306	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C315	EETB1HM-105E	1MF 50V E. CAP.	
	C316	EETB1HM-105E	1MF 50V E. CAP.	
	C317	EETB1EM-106E	10MF 25V E. CAP.	
	C318	QETN1CM-107Z	100MF 16V E. CAP.	
	C319	QCF21HP-223A	0.022MF 50V CER. CAP.	

△	Item	Parts Number	Description	Area
	C320	QFLB1HJ-682	6800PF 50V MYLAR CAP.	
	C321	QFLB1HJ-332	3300PF 50V MYLAR CAP.	
	C322	QFLB1HJ-332	3300PF 50V MYLAR CAP.	
	C323	QFLB1HJ-183	0.018MF 50V MYLAR CAP.	
	C324	QFP31HG-472	4700PF 50V POLYPROP. FILM	
	C325	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C326	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C327	QCBB1HK-561Y	560PF 50V CER. CAP.	
	C328	QCBB1EZ-223	0.022MF 25V CER. CAP.	
	C335	QCF21HP-472	4700PF 50V CER. CAP.	
	C336	QCF21HP-472	4700PF 50V CER. CAP.	
	C339	EETB1CM-476	47MF 16V E. CAP.	
	C340	EETB1CM-476	47MF 16V E. CAP.	
	C341	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C342	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C343	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C344	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C345	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C346	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C347	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C348	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C351	QCBB1HK-821Y	820PF 50V CER. CAP.	
	C352	QETB1HM-474N	0.47MF 50V E. CAP.	
	C353	QETN1HM-476Z	47MF 50V E. CAP.	
	C365	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C366	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C367	QFLB1HJ-822	8200PF 50V MYLAR CAP.	
	C368	QFLB1HJ-822	8200PF 50V MYLAR CAP.	
	C369	EETB1AM-107E	100MF 10V E. CAP.	
	C370	EETB1AM-107E	100MF 10V E. CAP.	
	C371	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C372	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C373	EETB1CM-476	47MF 16V E. CAP.	
	C374	QETC1EM-476ZM	47MF 25V E. CAP.	
	C375	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C376	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C377	QCXB1CM-122	1200PF 16V POLYPROP. FILM	
	C378	QCXB1CM-122	1200PF 16V POLYPROP. FILM	
	C379	QCBB1HK-331Y	330PF 50V CER. CAP.	
	C380	QCBB1HK-331Y	330PF 50V CER. CAP.	
	C381	EETB1CM-476	47MF 16V E. CAP.	
	C385	QFLB1HJ-822	8200PF 50V MYLAR CAP.	
	C386	QFLB1HJ-822	8200PF 50V MYLAR CAP.	
	C387	EETB1AM-107E	100MF 10V E. CAP.	
	C388	EETB1AM-107E	100MF 10V E. CAP.	
	C389	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C390	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C391	EETB1CM-476	47MF 16V E. CAP.	
	C392	EETB1CM-476	47MF 16V E. CAP.	
	C393	QCS21HJ-101A	100PF 50V CER. CAP.	
	C394	QCS21HJ-101A	100PF 50V CER. CAP.	
	C395	QCXB1CM-152Y	1500PF 16V CER. CAP.	
	C396	QCXB1CM-152Y	1500PF 16V CER. CAP.	
	C397	QCBB1HK-391Y	390PF 50V CER. CAP.	
	C398	QCBB1HK-391Y	390PF 50V CER. CAP.	
	C401	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C402	QFLB1HJ-472	4700PF 50V MYLAR CAP.	
	C403	QFLB1HJ-102	1000PF 50V MYLAR CAP.	
	C404	QFLB1HJ-102	1000PF 50V MYLAR CAP.	
	C405	EETB1EM-106E	10MF 25V E. CAP.	
	C406	EETB1EM-106E	10MF 25V E. CAP.	
	C407	EETB1EM-106E	10MF 25V E. CAP.	
	C408	EETB1EM-106E	10MF 25V E. CAP.	
	C409	QFLB1HJ-392	3900PF 50V MYLAR CAP.	
	C410	QFLB1HJ-392	3900PF 50V MYLAR CAP.	
	C411	EETB1EM-106E	10MF 25V E. CAP.	
	C412	EETB1EM-106E	10MF 25V E. CAP.	
	C413	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C414	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C415	EETB1EM-106E	10MF 25V E. CAP.	

## ■ Electrical Parts List (ENC-139)

△	Item	Parts Number	Description	Area
	C416	EETB1EM-106E	10MF 25V E. CAP.	
	C417	EETB1EM-106E	10MF 25V E. CAP.	
	C418	EETB1EM-106E	10MF 25V E. CAP.	
	C419	EETB1EM-106E	10MF 25V E. CAP.	
	C420	QETN1AM-227Z	220MF 10V E. CAP.	
	C421	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C422	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C423	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C424	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C425	QFLB1HJ-183	0.018MF 50V MYLAR CAP.	
	C426	QFLB1HJ-183	0.018MF 50V MYLAR CAP.	
	C427	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C428	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C429	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C430	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C431	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C432	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C433	EETB1HM-105E	1MF 50V E. CAP.	
	C434	EETB1HM-105E	1MF 50V E. CAP.	
	C435	EETB1EM-106E	10MF 25V E. CAP.	
	C436	EETB1EM-106E	10MF 25V E. CAP.	
	C443	EETB1EM-106E	10MF 25V E. CAP.	
	C444	EETB1EM-106E	10MF 25V E. CAP.	
	C445	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C446	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C447	EETB1EM-106E	10MF 25V E. CAP.	
	C448	EETB1EM-106E	10MF 25V E. CAP.	
	C457	EETB1EM-106E	10MF 25V E. CAP.	
	C458	EETB1EM-106E	10MF 25V E. CAP.	
	C459	QFLB1HJ-333	0.033MF 50V MYLAR CAP.	
	C460	EETB1HM-475E	4.7MF 50V E. CAP.	
	C461	QETB1HM-474N	0.47MF 50V E. CAP.	
	C462	QFLB1HJ-393	0.039MF 50V MYLAR CAP.	
	C463	QETB1HM-474N	0.47MF 50V E. CAP.	
	C464	QETN1AM-227Z	220MF 10V E. CAP.	
	C465	QFLB1HJ-393	0.039MF 50V MYLAR CAP.	
	C466	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C467	EETB1HM-105E	1MF 50V E. CAP.	
	C468	QETC1EM-476ZM	47MF 25V E. CAP.	
	C469	EETB1EM-106E	10MF 25V E. CAP.	
	C470	EETB1EM-106E	10MF 25V E. CAP.	
	C471	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C472	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C473	QETC1EM-476ZM	47MF 25V E. CAP.	
	C474	QETC1EM-476ZM	47MF 25V E. CAP.	
	C475	EETB1EM-106E	10MF 25V E. CAP.	
	C476	EETB1EM-106E	10MF 25V E. CAP.	
	C477	EETB1HM-475E	4.7MF 50V E. CAP.	
	C481	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C482	QCBB1HK-221Y	220PF 50V CER. CAP.	
	C483	QCXB1CM-222Y	2200PF 16V CER. CAP.	
	C485	QETB1AM-107	100MF 10V AL E. CAP.	
	C486	QCF21HP-223A	0.022MF 50V CER. CAP.	
	C489	QETB1CM-476	47MF 16V AL E. CAP.	
	C490	QETB1CM-476	47MF 16V AL E. CAP.	
	C493	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C494	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C495	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C496	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C501	EETB1EM-106E	10MF 25V E. CAP.	
	C502	EETB1EM-106E	10MF 25V E. CAP.	
	C503	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C504	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C505	QETN1AM-227Z	220MF 10V E. CAP.	
	C506	EETB1EM-106E	10MF 25V E. CAP.	
	C507	EETB1EM-106E	10MF 25V E. CAP.	
	C508	EETB1EM-106E	10MF 25V E. CAP.	
	C509	EETB1EM-106E	10MF 25V E. CAP.	
	C510	QETN1AM-227Z	220MF 10V E. CAP.	
	C511	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	

△	Item	Parts Number	Description	Area
	C512	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C513	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C514	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C515	QETB1HM-474N	0.47MF 50V E. CAP.	
	C516	QETB1HM-474N	0.47MF 50V E. CAP.	
	C517	EETB1HM-475E	4.7MF 50V E. CAP.	
	C518	EETB1HM-475E	4.7MF 50V E. CAP.	
	C519	QETB1HM-474N	0.47MF 50V E. CAP.	
	C520	QETB1HM-474N	0.47MF 50V E. CAP.	
	C521	EETB1HM-475E	4.7MF 50V E. CAP.	
	C522	EETB1HM-475E	4.7MF 50V E. CAP.	
	C523	QFV81HJ-154	0.15MF 50V THIN FILM CAP.	
	C524	QFV81HJ-154	0.15MF 50V THIN FILM CAP.	
	C525	QETN1HM-335Z	3.3MF 50V AL E. CAP.	
	C526	QETN1HM-335Z	3.3MF 50V AL E. CAP.	
	C527	QFV81HJ-154	0.15MF 50V THIN FILM CAP.	
	C528	QFV81HJ-154	0.15MF 50V THIN FILM CAP.	
	C529	QFV71HJ-474ZM	0.47MF 50V THIN FILM CAP.	
	C530	QETC1EM-476ZM	47MF 25V E. CAP.	
	C531	QETN1CM-227ZS	220MF 16V E. CAP.	
	C532	QCBB1HK-681Y	680PF 50V CER. CAP.	
	C533	QCBB1HK-561Y	560PF 50V CER. CAP.	
	C535	QCBB1HK-561Y	560PF 50V CER. CAP.	
	C541	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C542	QETN1CM-227ZS	220MF 16V E. CAP.	
	C543	QCF21HP-473A	0.047MF 50V CER. CAP.	
	C544	QETB1HM-474N	0.47MF 50V E. CAP.	
	C545	QETB1HM-474N	0.47MF 50V E. CAP.	
	C546	QFLB1HJ-823	0.082MF 50V MYLAR CAP.	
	C547	QCY31HK-332Z	3300PF 50V CER. CAP.	
	C548	QFLB1HJ-823	0.082MF 50V MYLAR CAP.	
	C549	QETN1AM-227Z	220MF 10V E. CAP.	
	C550	QCF21HP-473A	0.047MF 50V CER. CAP.	
	C551	QCS21HJ-300	30PF 50V CER. CAP.	
	C552	QCS21HJ-300	30PF 50V CER. CAP.	
	C553	EETB1EM-106E	10MF 25V E. CAP.	
	C554	EETB1EM-106E	10MF 25V E. CAP.	
	C555	EETB1EM-106E	10MF 25V E. CAP.	
	C556	EETB1EM-106E	10MF 25V E. CAP.	
	C561	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C562	QETC1HM-225ZM	2.2MF 50V E. CAP.	
	C563	EETB1HM-105E	1MF 50V E. CAP.	
	C564	EETB1HM-105E	1MF 50V E. CAP.	
	C565	EETB1EM-106E	10MF 25V E. CAP.	
	C566	QETN1AM-227Z	220MF 10V E. CAP.	
	C569	EETB1EM-106E	10MF 25V E. CAP.	
	C570	EETB1EM-106E	10MF 25V E. CAP.	
		RESISTORS		
	R202	QRD161J-102	1K 1/6W CARBON RES.	
	R203	QRD161J-102	1K 1/6W CARBON RES.	
	R204	QRD161J-102	1K 1/6W CARBON RES.	
	R205	QRD161J-102	1K 1/6W CARBON RES.	
	R206	QRD161J-103	10K 1/6W CARBON RES.	
	R207	QRD161J-103	10K 1/6W CARBON RES.	
	R208	QRD161J-472	4.7K 1/6W CARBON RES.	
	R209	QRD167J-223	22K 1/6W CARBON RES.	
	R211	QRD161J-103	10K 1/6W CARBON RES.	
	R213	QRD161J-472	4.7K 1/6W CARBON RES.	
	R214	QRD161J-103	10K 1/6W CARBON RES.	
	R217	QRD161J-103	10K 1/6W CARBON RES.	
	R218	QRD161J-221	220 1/6W CARBON RES.	
	R231	QRD161J-183	18K 1/6W CARBON RES.	
	R232	QRD161J-183	18K 1/6W CARBON RES.	
	R233	QRD167J-153	15K 1/6W CARBON RES.	
	R234	QRD167J-153	15K 1/6W CARBON RES.	
	R271	QRD161J-104	100K 1/6W CARBON RES.	
	R272	QRD161J-104	100K 1/6W CARBON RES.	
	R280	QRD161J-221	220 1/6W CARBON RES.	
	R281	QRD161J-224	220K 1/6W CARBON RES.	
	R282	QRD161J-224	220K 1/6W CARBON RES.	

## ■ Electrical Parts List (ENG-139)

△	Item	Parts Number	Description	Area
	R283	QRD161J-100	10 1/6W CARBON RES.	
	R284	QRD161J-100	10 1/6W CARBON RES.	
	R285	QRD161J-393	39K 1/6W CARBON RES.	
	R286	QRD161J-393	39K 1/6W CARBON RES.	
	R287	QRD140J-6R8SX	6.8 1/4W UNF. CARBON R	
△	R288	QRZ0077-100	10 1/4W FUSIBLE RES.	
	R290	QRD167J-332	3.3K 1/6W CARBON RES.	
	R292	QRD161J-181	180 1/6W CARBON RES.	
	R293	QRD167J-511	510 1/6W CARBON RES.	
	R294	QRD161J-561	560 1/6W CARBON RES.	
	R296	QRD161J-104	100K 1/6W CARBON RES.	
	R297	QRD161J-222	2.2K 1/6W CARBON RES.	
	R298	QRD161J-561	560 1/6W CARBON RES.	
	R335	QRD161J-102	1K 1/6W CARBON RES.	
	R336	QRD161J-102	1K 1/6W CARBON RES.	
	R337	QRD161J-102	1K 1/6W CARBON RES.	
	R338	QRD161J-102	1K 1/6W CARBON RES.	
	R339	QRD161J-393	39K 1/6W CARBON RES.	
	R340	QRD161J-393	39K 1/6W CARBON RES.	
	R341	QRD167J-272	2.7K 1/6W CARBON RES.	
	R342	QRD167J-272	2.7K 1/6W CARBON RES.	
	R343	QRD167J-223	22K 1/6W CARBON RES.	
	R344	QRD161J-563	56K 1/6W CARBON RES.	
	R345	QRD161J-184	180K 1/6W CARBON RES.	
	R346	QRD161J-105	1M 1/6W CARBON RES.	
	R347	QRD161J-221	220 1/6W CARBON RES.	
	R348	QRD161J-221	220 1/6W CARBON RES.	
	R349	QRD161J-102	1K 1/6W CARBON RES.	
	R351	QRD161J-472	4.7K 1/6W CARBON RES.	
	R352	QRD161J-472	4.7K 1/6W CARBON RES.	
	R353	QRD167J-223	22K 1/6W CARBON RES.	
	R354	QRD167J-223	22K 1/6W CARBON RES.	
	R355	QRD161J-103	10K 1/6W CARBON RES.	
	R356	QRD161J-103	10K 1/6W CARBON RES.	
	R357	QRD167J-223	22K 1/6W CARBON RES.	
	R358	QRD167J-223	22K 1/6W CARBON RES.	
	R359	QRD161J-103	10K 1/6W CARBON RES.	
	R360	QRD161J-103	10K 1/6W CARBON RES.	
	R361	QRD167J-562	5.6K 1/6W CARBON RES.	
	R362	QRD167J-562	5.6K 1/6W CARBON RES.	
	R365	QRD161J-470	47 1/6W CARBON RES.	
	R366	QRD161J-470	47 1/6W CARBON RES.	
	R367	QRD161J-224	220K 1/6W CARBON RES.	
	R368	QRD161J-224	220K 1/6W CARBON RES.	
	R371	QRD161J-163	16K 1/6W CARBON RES.	
	R372	QRD161J-163	16K 1/6W CARBON RES.	
	R377	QRD161J-221	220 1/6W CARBON RES.	
	R378	QRD161J-221	220 1/6W CARBON RES.	
	R381	QRD161J-221	220 1/6W CARBON RES.	
	R382	QRD161J-221	220 1/6W CARBON RES.	
	R383	QRD161J-470	47 1/6W CARBON RES.	
	R384	QRD161J-470	47 1/6W CARBON RES.	
	R385	QRD161J-224	220K 1/6W CARBON RES.	
	R386	QRD161J-224	220K 1/6W CARBON RES.	
	R391	QRD161J-163	16K 1/6W CARBON RES.	
	R392	QRD161J-163	16K 1/6W CARBON RES.	
	R401	QRD161J-222	2.2K 1/6W CARBON RES.	
	R402	QRD161J-222	2.2K 1/6W CARBON RES.	
	R403	QRD161J-222	2.2K 1/6W CARBON RES.	
	R404	QRD161J-222	2.2K 1/6W CARBON RES.	
	R405	QRD167J-152	1.5K 1/6W CARBON RES.	
	R406	QRD167J-152	1.5K 1/6W CARBON RES.	
	R407	QRD167J-562	5.6K 1/6W CARBON RES.	
	R408	QRD167J-562	5.6K 1/6W CARBON RES.	
	R409	QRD167J-332	3.3K 1/6W CARBON RES.	
	R410	QRD167J-332	3.3K 1/6W CARBON RES.	
	R411	QRD167J-562	5.6K 1/6W CARBON RES.	
	R412	QRD167J-562	5.6K 1/6W CARBON RES.	
	R413	QRD161J-102	1K 1/6W CARBON RES.	
	R414	QRD161J-102	1K 1/6W CARBON RES.	

△	Item	Parts Number	Description	Area
	R415	QRD161J-823	82K 1/6W CARBON RES.	
	R416	QRD161J-823	82K 1/6W CARBON RES.	
	R417	QRD167J-562	5.6K 1/6W CARBON RES.	
	R418	QRD167J-562	5.6K 1/6W CARBON RES.	
	R419	QRD167J-272	2.7K 1/6W CARBON RES.	
	R420	QRD167J-272	2.7K 1/6W CARBON RES.	
	R421	QRD161J-104	100K 1/6W CARBON RES.	
	R422	QRD161J-104	100K 1/6W CARBON RES.	
	R431	QRD161J-104	100K 1/6W CARBON RES.	
	R432	QRD161J-104	100K 1/6W CARBON RES.	
	R433	QRD167J-562	5.6K 1/6W CARBON RES.	
	R434	QRD167J-562	5.6K 1/6W CARBON RES.	
	R435	QRD161J-392	3.9K 1/6W CARBON RES.	
	R436	QRD161J-392	3.9K 1/6W CARBON RES.	
	R437	QRD161J-472	4.7K 1/6W CARBON RES.	
	R438	QRD161J-472	4.7K 1/6W CARBON RES.	
	R439	QRD161J-432	4.3K 1/6W CARBON RES.	
	R440	QRD161J-432	4.3K 1/6W CARBON RES.	
	R441	QRD161J-104	100K 1/6W CARBON RES.	
	R442	QRD161J-104	100K 1/6W CARBON RES.	
	R450	QRD161J-224	220K 1/6W CARBON RES.	
	R451	QRD161J-104	100K 1/6W CARBON RES.	
	R452	QRD161J-104	100K 1/6W CARBON RES.	
	R453	QRD161J-104	100K 1/6W CARBON RES.	
	R454	QRD161J-104	100K 1/6W CARBON RES.	
	R455	QRD161J-103	10K 1/6W CARBON RES.	
	R456	QRD161J-103	10K 1/6W CARBON RES.	
	R457	QRD161J-752	7.5K 1/6W CARBON RES.	
	R458	QRD161J-752	7.5K 1/6W CARBON RES.	
	R459	QRD161J-104	100K 1/6W CARBON RES.	
	R460	QRD161J-104	100K 1/6W CARBON RES.	
	R461	QRD161J-221	220 1/6W CARBON RES.	
	R462	QRD161J-221	220 1/6W CARBON RES.	
	R463	QRD161J-103	10K 1/6W CARBON RES.	
	R464	QRD161J-103	10K 1/6W CARBON RES.	
	R465	QRD161J-102	1K 1/6W CARBON RES.	
	R469	QRD161J-221	220 1/6W CARBON RES.	
	R470	QRD161J-221	220 1/6W CARBON RES.	
	R471	QRD161J-103	10K 1/6W CARBON RES.	
	R472	QRD161J-103	10K 1/6W CARBON RES.	
	R473	QRD161J-103	10K 1/6W CARBON RES.	
	R481	QRD161J-222	2.2K 1/6W CARBON RES.	
	R482	QRD161J-222	2.2K 1/6W CARBON RES.	
	R483	QRD161J-221	220 1/6W CARBON RES.	
	R484	QRD161J-221	220 1/6W CARBON RES.	
	R485	QRD161J-103	10K 1/6W CARBON RES.	
	R486	QRD161J-103	10K 1/6W CARBON RES.	
	R490	QRD161J-221	220 1/6W CARBON RES.	
	R491	QRD161J-471	470 1/6W CARBON RES.	
	R492	QRD161J-103	10K 1/6W CARBON RES.	
	R493	QRD167J-113	11K 1/6W CARBON RES.	
	R494	QRD167J-113	11K 1/6W CARBON RES.	
	R497	QRD161J-104	100K 1/6W CARBON RES.	
	R498	QRD161J-104	100K 1/6W CARBON RES.	
	R501	QRD161J-102	1K 1/6W CARBON RES.	
	R502	QRD161J-102	1K 1/6W CARBON RES.	
	R541	QRD161J-105	1M 1/6W CARBON RES.	
	R542	QRD161J-393	39K 1/6W CARBON RES.	
	R543	QRD161J-102	1K 1/6W CARBON RES.	
	R544	QRD161J-102	1K 1/6W CARBON RES.	
	R545	QRD161J-203	20K 1/6W CARBON RES.	
	R553	QRD161J-104	100K 1/6W CARBON RES.	
	R554	QRD161J-104	100K 1/6W CARBON RES.	
	R555	QRD161J-104	100K 1/6W CARBON RES.	
	R556	QRD161J-104	100K 1/6W CARBON RES.	
	R561	QRD161J-473	47K 1/6W CARBON RES.	
	R562	QRD161J-473	47K 1/6W CARBON RES.	
	R563	QRD161J-103	10K 1/6W CARBON RES.	
	R564	QRD161J-103	10K 1/6W CARBON RES.	
	R565	QRD161J-162	1.6K 1/6W CARBON RES.	

■ Electrical Parts List (ENC-139)

△	Item	Parts Number	Description	Area
	R566	QRD161J-162	1.6K 1/6W CARBON RES.	
	R567	QRD161J-104	100K 1/6W CARBON RES.	
	R568	QRD161J-104	100K 1/6W CARBON RES.	
	R569	QRD161J-221	220 1/6W CARBON RES.	
	R570	QRD161J-221	220 1/6W CARBON RES.	
	R571	QRD161J-103	10K 1/6W CARBON RES.	
	R572	QRD161J-103	10K 1/6W CARBON RES.	
	VR231	QVPA603-503A	50K VARIABLE RES.	
	VR232	QVPA603-503A	50K VARIABLE RES.	
	VR301	QVPA603-102AZA	1K TRIMMER RES.	
	VR302	QVPA603-102AZA	1K TRIMMER RES.	
	VR303	QVPA603-102AZA	1K TRIMMER RES.	
	VR304	QVPA603-102AZA	1K TRIMMER RES.	
	VR305	QVPA603-104A	100K TRIMMER RES.	
	VR306	QVPA603-104A	100K TRIMMER RES.	
	VR307	QVPA603-104A	100K TRIMMER RES.	
	VR308	QVPA603-104A	100K TRIMMER RES.	
	VR309	QVPA603-104A	100K TRIMMER RES.	
	VR310	QVPA603-104A	100K TRIMMER RES.	
		OTHERS		
		EMW10686-102	PRINTED BOARD	
		E3400-431	FELT SPACER	
		GWE350-09RR	VINYL WIRE	
	J401	EMN00TV-414AJ2	4P PIN JACK	
	J701	EMV7145-004Z	SOCKET ASSY	
	J702	EMV7145-003Z	SOCKET ASSY	
	K301	ENZ8101-007	INDUCTOR	
	K302	ENZ8101-007	INDUCTOR	
	K303	ENZ8101-007	INDUCTOR	
	K321	ENZ8101-007	INDUCTOR	
	K392	ENZ8101-007	INDUCTOR	
	L301	ENZ6002-012	OSCILLATOR COIL	
	L305	EQL2106-223	INDUCTOR	
	L306	EQL2106-223	INDUCTOR	
	S490	QSS7A12-E01	SLIDE SWITCH	
	X201	ECX0060-000EM	CERAMIC RESONATOR	
	X541	ECXP8R0-001Z	CRYSTAL	
	CN016	EMV5163-010R	CONNECT TERMINAL	
	CN017	EMV5163-009R	CONNECT TERMINAL	
	CN131	EMV5109-012A	MALE CONNECTOR	
	CN311	EMV5172-014B	CONNECT TERMINAL	
	CN312	EMV5172-014B	CONNECT TERMINAL	
	CN322	VMC0163-016	CONNECT TERMINAL	
	CN331	EMV7155-106R	CONNECT TERMINAL	
	CN332	EMV7155-106R	CONNECT TERMINAL	
	CN402	VMC0163-017	CONNECT TERMINAL	
	CN411	VMC0163-033	CONNECT TERMINAL	
	CN412	VMC0163-017	CONNECT TERMINAL	
	CN613	VMC0163-007	CONNECT TERMINAL	
	CN614	VMC0163-011	CONNECT TERMINAL	
	CN811	VMC0163-010	AC CONNECTOR	
△	CP401	ICP-N15	I. C. PROTECTOR	
	EPO03	E409182-001SM	EARTH TERMINAL	
	FS485	E3400-431	FELT SPACER	
	FS486	E3400-431	FELT SPACER	
	SP301	VYH7653-001	LEAF SPRING	

## ■ Electrical Parts List (ENN-488M)

△	Item	Parts Number	Description	Area
		I. C. S		
	1C601	AN806SB	I. C (MONO-ANALOG)	
	1C602	BA6897FPW	I. C (MONO-ANALOG)	
	1C603	MN35510-S	I. C (M)	
		DIODES		
	D631	MTZ5.6JB	ZENER DIODE	
		TRANSISTORS		
	Q601	2SA952 (L, K)	SI. TRANSISTOR	
	Q632	2SC2060 (Q, R)	SI. TRANSISTOR	
		CAPACITORS		
	C602	QCZ0205-155	1.5MF 25V C. CAP.	
	C603	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C605	EETB1EM-106E	10MF 25V E. CAP.	
	C606	QCBB1HK-102Y	1000PF 50V CER. CAP.	
	C607	QCBB1HK-102Y	1000PF 50V CER. CAP.	
	C608	EETB1HM-105E	1MF 50V E. CAP.	
	C609	QCBB1HK-101Y	100PF 50V CER. CAP.	
	C610	QFLB1HJ-273	0.027MF 50V MYLAR CAP.	
	C611	QCXB1CM-472Y	4700PF 16V CER. CAP.	
	C612	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C613	QCBB1HK-331Y	330PF 50V CER. CAP.	
	C614	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C615	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C616	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C617	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C618	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C619	QCBB1HK-271Y	270PF 50V CER. CAP.	
	C620	QCSB1HJ-470	47PF 50V CER. CAP.	
	C621	QCBB1HK-102Y	1000PF 50V CER. CAP.	
	C622	QCF21HP-223A	0.022MF 50V CER. CAP.	
	C623	QFLB1HJ-104	0.1MF 50V MYLAR CAP.	
	C625	QCZ0205-155	1.5MF 25V C. CAP.	
	C630	QETN1AM-226ZS	22MF 10V E. CAP.	
	C631	QETN1AM-477Z	470MF 10V E. CAP.	
	C632	QEK61AM-227ZM	220MF 10V AL E. CAP.	
	C636	EETB1AM-107E	100MF 10V E. CAP.	
	C641	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C642	QFLB1HJ-103	0.01MF 50V MYLAR CAP.	
	C651	QCSB1HJ-120Y	12PF 50V CER. CAP.	
	C652	QCSB1HJ-120Y	12PF 50V CER. CAP.	
	C653	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C655	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C661	QCBB1HK-471Y	470PF 50V CER. CAP.	
	C662	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C663	QFLB1HJ-223	0.022MF 50V MYLAR CAP.	
	C664	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C665	QFV81HJ-104	0.1MF 50V THIN FILM CAP.	
	C671	QCXB1CM-222Y	2200PF 16V CER. CAP.	
	C672	QCXB1CM-222Y	2200PF 16V CER. CAP.	
	C674	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C675	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C679	QEK51AM-107	100MF 10V AL E. CAP.	
	C693	QEK61AM-227ZM	220MF 10V AL E. CAP.	
	C694	QCHB1EZ-223	0.022MF 25V CER. CAP.	
		RESISTORS		
	R601	QRD161J-123	12K 1/6W CARBON RES.	
	R603	QRD161J-125	1.2M 1/6W CARBON RES.	
	R605	QRD161J-274	270K 1/6W CARBON RES.	
	R606	QRD161J-154	150K 1/6W CARBON RES.	
	R607	QRD161J-273	27K 1/6W CARBON RES.	
	R609	QRD161J-114	110K 1/6W CARBON RES.	
	R610	QRD161J-104	100K 1/6W CARBON RES.	
	R611	QRD161J-473	47K 1/6W CARBON RES.	
	R612	QRD161J-822	8.2K 1/6W CARBON RES.	
	R613	QRD161J-121	120 1/6W CARBON RES.	
	R614	QRD161J-100	10 1/6W CARBON RES.	
	R615	QRD161J-120	12 1/6W CARBON RES.	
	R616	QRD161J-910Y	91 1/6W CARBON RES.	
	R632	QRD161J-151	150 1/6W CARBON RES.	
	R641	QRD161J-683	68K 1/6W CARBON RES.	

△	Item	Parts Number	Description	Area
	R642	QRD161J-222	2.2K 1/6W CARBON RES.	
	R643	QRD161J-822	8.2K 1/6W CARBON RES.	
	R644	QRD161J-223	22K 1/6W CARBON RES.	
	R645	QRD161J-223	22K 1/6W CARBON RES.	
	R646	QRD161J-222	2.2K 1/6W CARBON RES.	
	R647	QRD161J-472	4.7K 1/6W CARBON RES.	
	R650	QRD161J-182	1.8K 1/6W CARBON RES.	
	R651	QRD161J-102	1K 1/6W CARBON RES.	
	R652	QRD161J-102	1K 1/6W CARBON RES.	
	R653	QRD161J-102	1K 1/6W CARBON RES.	
	R660	QRD161J-102	1K 1/6W CARBON RES.	
	R661	QRD161J-683	68K 1/6W CARBON RES.	
	R662	QRD161J-275	2.7M 1/6W CARBON RES.	
	R663	QRD161J-124	120K 1/6W CARBON RES.	
	R664	QRD161J-471	470 1/6W CARBON RES.	
	R666	QRD161J-220	22 1/6W CARBON RES.	
	R667	QRD161J-220	22 1/6W CARBON RES.	
	R671	QRD161J-102	1K 1/6W CARBON RES.	
	R672	QRD161J-102	1K 1/6W CARBON RES.	
	R692	QRD161J-271	270 1/6W CARBON RES.	
		OTHERS		
		EMW10688-003A	PRINTED BOARD	
	X651	ECX0169-344EF	CRYSTAL	
	CN601	EMV7171-115R	CONNECT TERMINAL	
	CN602	EMV5109-006A	CONNECT TERMINAL	
	CN603	VMC0163-R07	CONNECT TERMINAL	
	CN604	VMC0163-R11	CONNECT TERMINAL	
	SP601	VYH7237-001	I. C. COVER	
	SP602	VYH7237-003	I. C. COVER	
	SP603	VYH7237-003	I. C. COVER	
	TP601	GMV5004-002K	PLUG ASSY	
	TW601	EFW102-047	TERMINAL WIRE	



■ Electrical Parts List (ENA-178AM)

△	Item	Parts Number	Description	Area
		I. C. S		
	IC102	LA1837	I. C (MONO-ANALOG)	
	IC121	LC72131	I. C (M)	
	IC191	LC7073	I. C (DIGI-MOS)	
	IC192	SAA6579	I. C (M)	
		DIODES		
	D121	1SS133	SI. DIODE	
	D123	1SS133	SI. DIODE	
	D129	1SS133	SI. DIODE	
	D130	MTZ10JC	ZENER DIODE	
	D131	1SS133	SI. DIODE	
		TRANSISTORS		
	Q101	2SC461	SI. TRANSISTOR	
	Q102	2SC535	SI. TRANSISTOR	
	Q103	2SC461	SI. TRANSISTOR	
	Q111	2SD2144S (VW)	SI. TRANSISTOR	
	Q112	2SD2144S (VW)	SI. TRANSISTOR	
	Q113	2SD2144S (VW)	SI. TRANSISTOR	
	Q114	2SD2144S (VW)	SI. TRANSISTOR	
	Q121	DTA124ES	DIGITAL TRANSISTOR	
	Q123	2SC2060 (G, R)	SI. TRANSISTOR	
		CAPACITORS		
	C101	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C102	QETN1EM-107Z	100MF 25V E. CAP.	
	C103	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C104	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C105	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C107	QETN1EM-226Z	22MF 25V E. CAP.	
	C109	QETN1EM-226Z	22MF 25V E. CAP.	
	C111	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C112	QCT30CH-120Y	12PF 50V CER. CAP.	
	C113	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C117	QCSB1HK-5R6Y	5.6PF 50V CER. CAP.	
	C118	QCSB1HJ-150Y	15PF 50V CER. CAP.	
	C121	QCT30CH-180Y	18PF 50V CER. CAP.	
	C122	QCT30CH-180Y	18PF 50V CER. CAP.	
	C123	QCC21EM-473	0.047MF 25V CER. CAP.	
	C126	QCSB1HK-101Y	100PF 50V CER. CAP.	
	C128	QENB1HM-474	0.47MF 50V NP E. CAP.	
	C129	QCSB1HK-102	1000PF 50V CER. CAP.	
	C130	QETN1EM-107Z	100MF 25V E. CAP.	
	C133	QETN1EM-226Z	22MF 25V E. CAP.	
	C134	QCSB1HK-331Y	330PF 50V CER. CAP.	BS
		QCSB1HK-331Y	330PF 50V CER. CAP.	EN
	C135	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C136	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C137	QCSB1HK-391Y	390PF 50V CER. CAP.	
	C139	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C140	QFLB1HJ-473	0.047MF 50V MYLAR CAP.	
	C141	QCC21EM-473	0.047MF 25V CER. CAP.	
	C143	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C144	QCC21EM-473	0.047MF 25V CER. CAP.	
	C146	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C147	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C148	QETN1HM-474Z	0.47MF 50V AL E. CAP.	
	C149	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C150	QETN1EM-226Z	22MF 25V E. CAP.	
	C156	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C157	QCC21EM-473	0.047MF 25V CER. CAP.	
	C158	QETN1EM-226Z	22MF 25V E. CAP.	
	C161	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C162	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C163	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C164	QCC21EM-473	0.047MF 25V CER. CAP.	
	C168	QFV81HJ-274	0.27MF 50V THIN FILM CAP.	
	C180	QETN1EM-107Z	100MF 25V E. CAP.	
	C181	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C182	QFLB1HJ-562	5600PF 50V MYLAR CAP.	
	C183	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C184	QETN1EM-107Z	100MF 25V E. CAP.	
	C185	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C186	QETN1HM-105Z	1MF 50V AL E. CAP.	
	C191	QCSB1HK-820Y	82PF 50V CER. CAP.	
	C192	QCSB1HJ-470	47PF 50V CER. CAP.	
	C193	QCSB1HK-561Y	560PF 50V CER. CAP.	
	C194	QCHB1EZ-223	0.022MF 25V CER. CAP.	
	C195	QCSB1HK-331Y	330PF 50V CER. CAP.	
	C196	QETN1EM-226Z	22MF 25V E. CAP.	
	C197	QCZ0205-155	1.5MF 25V C. CAP.	

△	Item	Parts Number	Description	Area
	C199	QETN1EM-226Z	22MF 25V E. CAP.	
		RESISTORS		
	R102	QRD167J-332	3.3K 1/6W CARBON RES.	
	R103	QRD161J-221	220 1/6W CARBON RES.	
	R104	QRD167J-272	2.7K 1/6W CARBON RES.	
	R105	QRD161J-391	390 1/6W CARBON RES.	
	R106	QRD161J-102	1K 1/6W CARBON RES.	
	R107	QRD161J-561	560 1/6W CARBON RES.	
	R108	QRD167J-332	3.3K 1/6W CARBON RES.	
	R109	QRD161J-221	220 1/6W CARBON RES.	
	R110	QRD161J-472	4.7K 1/6W CARBON RES.	
	R111	QRD161J-472	4.7K 1/6W CARBON RES.	
	R112	QRD161J-472	4.7K 1/6W CARBON RES.	
	R113	QRD161J-103	10K 1/6W CARBON RES.	
	R114	QRD161J-122	1.2K 1/6W CARBON RES.	
	R115	QRD161J-104	100K 1/6W CARBON RES.	
	R116	QRD161J-472	4.7K 1/6W CARBON RES.	
	R119	QRD161J-103	10K 1/6W CARBON RES.	
	R121	QRD161J-473	47K 1/6W CARBON RES.	
	R122	QRD161J-472	4.7K 1/6W CARBON RES.	
	R124	QRD161J-222	2.2K 1/6W CARBON RES.	
	R126	QRD167J-562	5.6K 1/6W CARBON RES.	
	R127	QRD167J-822	8.2K 1/6W CARBON RES.	
	R128	QRD161J-472	4.7K 1/6W CARBON RES.	
	R129	QRD161J-222	2.2K 1/6W CARBON RES.	
△	R130	QRZ0077-680	68 1/4W FUSIBLE RES.	
	R131	QRD161J-103	10K 1/6W CARBON RES.	
	R132	QRD161J-102	1K 1/6W CARBON RES.	
	R133	QRD167J-822	8.2K 1/6W CARBON RES.	
	R134	QRD161J-102	1K 1/6W CARBON RES.	
	R140	QRD161J-563	56K 1/6W CARBON RES.	
	R141	QRD161J-472	4.7K 1/6W CARBON RES.	
	R142	QRD161J-470	47 1/6W CARBON RES.	
	R143	QRD167J-562	5.6K 1/6W CARBON RES.	
	R144	QRD167J-332	3.3K 1/6W CARBON RES.	
	R145	QRD161J-103	10K 1/6W CARBON RES.	
	R146	QRD167J-562	5.6K 1/6W CARBON RES.	
	R147	QRD161J-273	27K 1/6W CARBON RES.	
	R148	QRD161J-561	560 1/6W CARBON RES.	
	R150	QRD161J-101	100 1/6W CARBON RES.	
	R157	QRD161J-182	1.8K 1/6W CARBON RES.	
	R158	QRD161J-182	1.8K 1/6W CARBON RES.	
	R161	QRD161J-102	1K 1/6W CARBON RES.	
	R162	QRD161J-102	1K 1/6W CARBON RES.	
	R163	QRD161J-472	4.7K 1/6W CARBON RES.	
	R164	QRD161J-472	4.7K 1/6W CARBON RES.	
	R181	QRD161J-102	1K 1/6W CARBON RES.	
	R182	QRD161J-103	10K 1/6W CARBON RES.	
	R183	QRD161J-103	10K 1/6W CARBON RES.	
	R184	QRD161J-103	10K 1/6W CARBON RES.	
	R191	QRD161J-222	2.2K 1/6W CARBON RES.	
		OTHERS		
		EMW10684-003A	PRINTED BOARD	
	L111	EQL4007-150T	INDUCTOR	
	T111	EQR7121-006	RF COIL	
	T141	QQR0613-001	I. F. TRANSFORMER	
	T142	QAX0303-001	CERAMIC FILTER	
	X121	ECX0007-200KWJ1	CRYSTAL	
	X191	VCX5057-001	CRYSTAL	
	X192	EFO-EC4004T4	CERAMIC RESONATOR	
	AT101	EMB41YV-302K	ANTENNA TERMINAL	
	BK001	E308963-223SM	SHIELD BRACKET	
	CF101	QAX0285-001Z	CERAMIC FILTER	
	CF102	QAX0285-001Z	CERAMIC FILTER	
	CN111	EMV5163-012R	CONNECT TERMINAL	
	CN112	EMV5109-005A	MALE CONNECTOR	
	FL141	EQF0101-013	LOWPASS FILTER	
	FL142	EQF0101-013	LOWPASS FILTER	
	RF101	GAU0005-001	FRONT END	

## ■ Electrical Parts List (Changer Control P.C. Board)

△	Item	Parts Number	Description	Area
		I. C. S		
	IC801	UPD65612GB-208	I. C (M)	
	IC802	TAB409S	I. C (MONO-ANALOG)	
	IC803	TAB409S	I. C (MONO-ANALOG)	
		CAPACITORS		
	C801	QEK51AM-107	AL E. CAP.	
	C802	QEK51EM-475	AL E. CAP.	
	C803	QFLB1HJ-102	1000PF 50V MYLAR CAP.	
	C804	QCFB1HZ-104Y	0.1MF 50V CER. CAP.	
	C805	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C806	QEK51CM-476	AL E. CAP.	
	C808	QFLB1HJ-102	1000PF 50V MYLAR CAP.	
	C810	QCZ0205-155	1.5MF 25V C. CAP.	
	C811	QCZ0205-155	1.5MF 25V C. CAP.	
	C813	QCVB1CM-103Y	0.01MF 16V CER. CAP.	
	C821	QCB1HK-102Y	1000PF 50V CER. CAP.	
		RESISTORS		
	R805	QRD161J-102	1K 1/6W CARBON RES.	
	R806	QRD161J-471	470 1/6W CARBON RES.	
	R807	QRD161J-471	470 1/6W CARBON RES.	
	R808	QRD161J-102	1K 1/6W CARBON RES.	
	R810	QRD161J-684	680K 1/6W CARBON RES.	
	R811	QRD161J-105	1M 1/6W CARBON RES.	
	R813	QRD161J-102	1K 1/6W CARBON RES.	
	R814	QRD161J-102	1K 1/6W CARBON RES.	
	R815	QRD161J-102	1K 1/6W CARBON RES.	
	R816	QRD161J-102	1K 1/6W CARBON RES.	
	R817	QRD161J-102	1K 1/6W CARBON RES.	
	R818	QRD161J-102	1K 1/6W CARBON RES.	
	R819	QRD161J-102	1K 1/6W CARBON RES.	
	R820	QRD161J-102	1K 1/6W CARBON RES.	
	R821	QRD161J-102	1K 1/6W CARBON RES.	
	R822	QRD161J-102	1K 1/6W CARBON RES.	
	R823	QRD161J-102	1K 1/6W CARBON RES.	
	R824	QRD161J-102	1K 1/6W CARBON RES.	
	R825	QRD161J-102	1K 1/6W CARBON RES.	
	R826	QRD161J-102	1K 1/6W CARBON RES.	
	R827	QRD161J-102	1K 1/6W CARBON RES.	
	R828	QRD161J-102	1K 1/6W CARBON RES.	
	R829	QRD161J-102	1K 1/6W CARBON RES.	
	R830	QRD161J-102	1K 1/6W CARBON RES.	
	R832	QRD161J-181	180 1/6W CARBON RES.	
	R833	QRD161J-102	1K 1/6W CARBON RES.	
	R834	QRD161J-102	1K 1/6W CARBON RES.	
	R839	QRD167J-332	3.3K 1/6W CARBON RES.	
	R840	QRD167J-562	5.6K 1/6W CARBON RES.	
		OTHERS		
		VMW1377-004A	PW BOARD	
		SBSF2608Z	TAPPING SCREW	
		VYH7237-001SS	IC HOLDER	
	L801	VQP0018-100	INDUCTOR	
	L802	VQP0033-100Z	INDUCTOR	
	L803	VQP0033-100Z	INDUCTOR	
	L804	VQP0033-100Z	INDUCTOR	
	CN801	VMC0163-R10	CONNECT TERMINAL	
	CN802	VMC0289-P07	CONNECT TERMINAL	
	CN803	VMC0324-12310	CONNECT TERMINAL	
	CN804	VMC0289-S07	CONNECTOR	