

■ SPECIFICATIONS

■ AUDIO SECTION

Minimum RMS Output Power per Channel

8Ω, 20Hz to 20kHz, 0.03% THD	70W
6Ω, 20Hz to 20kHz, 0.06% THD	80W

Dynamic Power per Channel (IHF)

8/6/4/2Ω	95/117/140/200W
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DIN Standard Output Power per Channel

1kHz, 0.7% THD, 4Ω (H, W models)	100W
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IEC Power

1kHz, 0.03% THD, 8Ω (H, W models)	77W
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Power Band Width

8Ω, 35W, 0.03% THD	10Hz to 40kHz
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Damping Factor

8Ω, 20Hz to 20kHz	150 or more
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Input Sensitivity/Impedance

PHONO MM	2.5mV/47kΩ
CD etc.	150mV/47kΩ
MAIN IN	1.0V/10kΩ

Maximum Input Signal Level (1kHz, 0.005% THD)

PHONO MM	120mV
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Output Level/Impedance

REC OUT	150mV/2.6kΩ
PRE OUT	1.0V/1.5kΩ

Headphone Jack Rated Output/Impedance

0.03% THD, RL = 8Ω	0.47V/390Ω
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Frequency Response (20Hz to 20kHz)

CD etc.	0±0.5dB
MAIN IN	0±0.5dB

RIAA Equalization Deviation (20Hz to 20kHz)

PHONO MM	0±0.5dB
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Total Harmonic Distortion (20Hz to 20kHz)

PHONO MM to REC OUT (3V)	0.005%
CD etc. to PRE OUT (1V)	0.008%
CD etc. to SP OUT (35W/8Ω)	0.025%

Signal-to-Noise Ratio (IHF-A Network)

PHONO MM (5mV Input Shorted)	88dB
CD MEGA DIRECT (Shorted)	110dB

Residual Noise (IHF-A Network) 50μV (Pure Direct SW ON)

Channel Separation (Vol. -30dB)

PHONO MM (Input Shorted) 1kHz/10kHz	63dB/52dB
CD etc. (Input 5.1kΩ Terminated) 1kHz/10kHz	65dB/50dB

Tone Control Characteristics

BASS : Boost/cut	±10dB (20Hz)
Turnover Frequency	350Hz
TREBLE : Boost/cut	±10dB (20kHz)
Turnover Frequency	3.5kHz

Remote Control Custom Code 7A

■ GENERAL

Power Supply

H, W models	AC 230V, 50Hz
B model	AC 240V, 50Hz
R model	AC 110/120/220/240V, 60/50Hz

Power Consumption 170W

AC Outlets

Switched x 3	100W max. (Total)
H, W, R models	100W max. (Total)
Switched x 1	100W max.
B model	100W max.

Dimensions (W x H x D) 280 x 118.5 x 388.5mm (11" x 4-21/32" x 15-5/16")

Weight 8.2kg (18 lbs 6 oz)

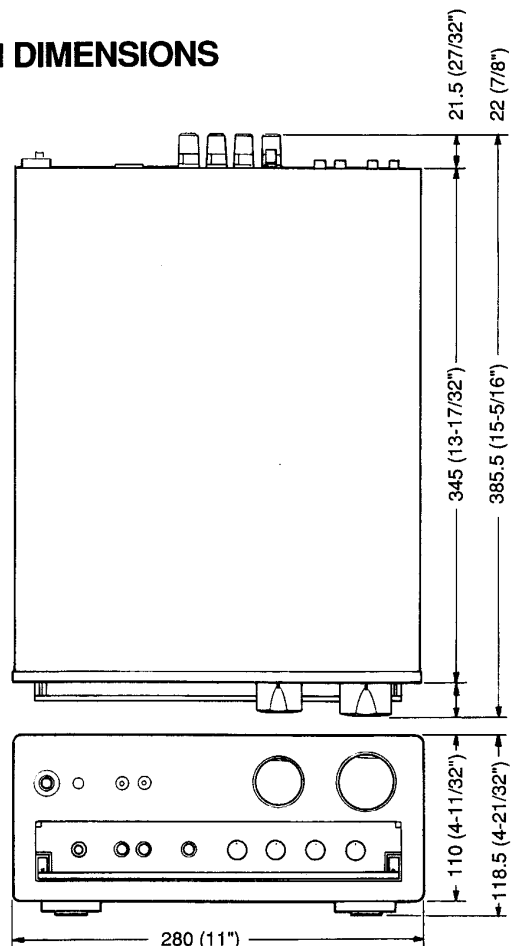
Accessories Remote Control Transmitter x 1 Battery (size "AA", R06) x 2

* Specifications subject to change without notice.

H European model
W German model

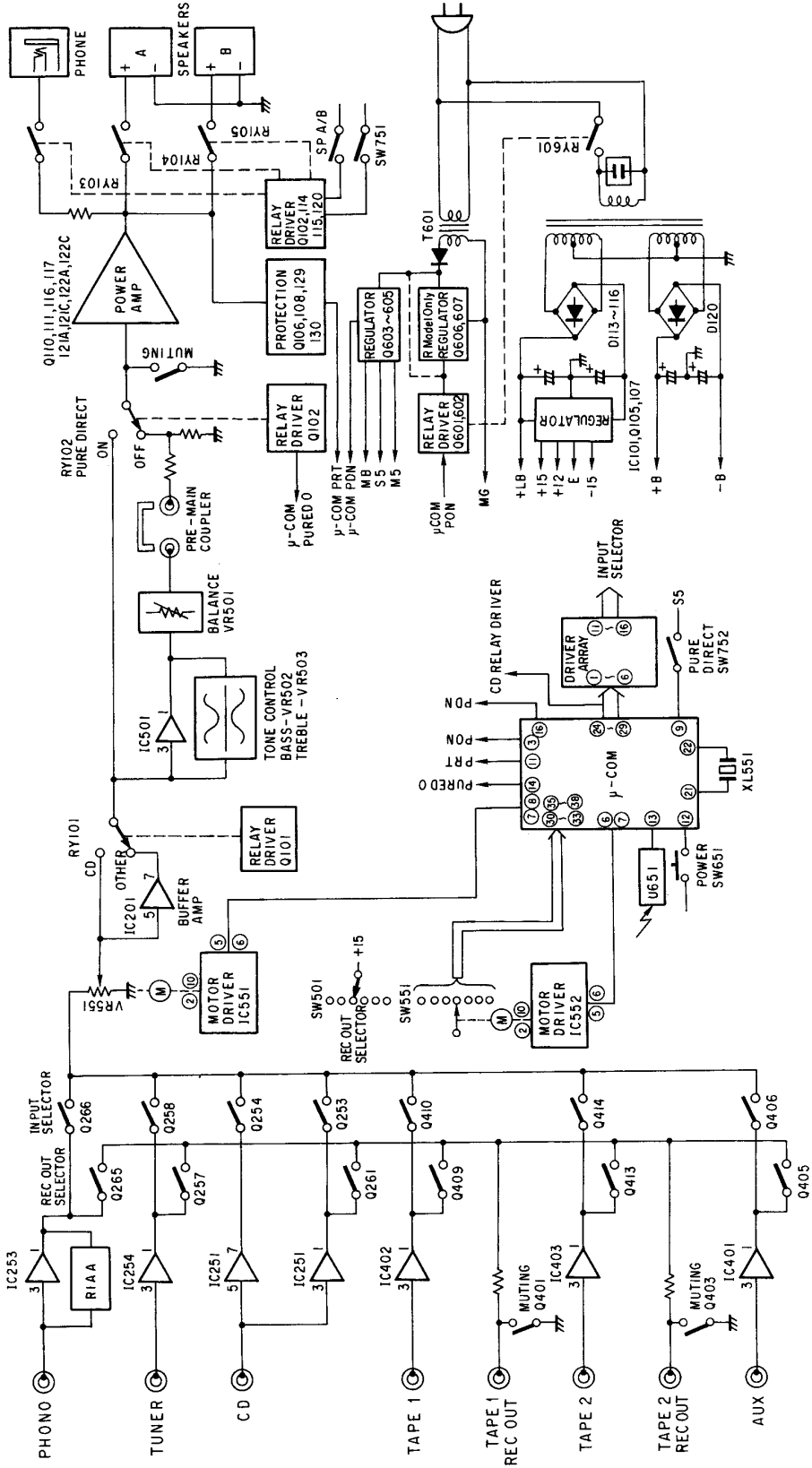
B British model
R General model

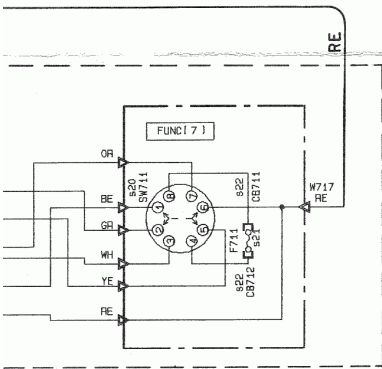
■ DIMENSIONS



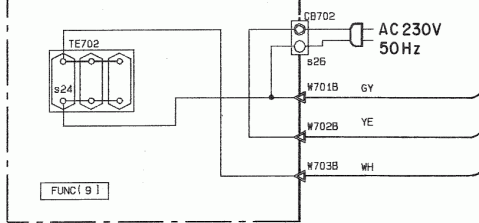
unit: mm (inch)

■ BLOCK DIAGRAM



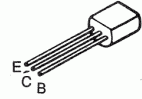


H.W models

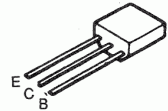


PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

2SC1815Y
2SC2240GR



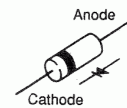
2SA9335
2SC1740S
2SD1915F
DTC114ES



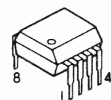
2SC4466 (O, P, Y)



All Diodes



NJM2068D-D



J	R	B	H	W
470/25	330/63	470/25	470/25	470/25
X	18K	X	X	X
X	H2S152TD MTZJ15C	X	X	X
X	C1815(Y)	X	X	X
X	100	X	X	X
X	10/16	X	X	X
X	C4466(O/P/Y)	X	X	X
X	100/16	X	X	X
O	X	O	O	O
XC542	XC082	XC084	XC084	XC084
X	X	220P	220P	220P
X	X	220uH	220uH	220uH
47	47	2-2K	2-2K	2-2K
X	X	T2-5A250V	T2-5A250V	T2-5A250V
X	X	T1-6A250V	T1-6A250V	T1-6A250V
X	X	VP20650	VP20650	VP20650
O	O	X	X	X
X	VA96180	X	X	X
X	T1-6A250V	X	X	X
X	VP20650	X	X	X
VP92400	VP92400	X	X	X
X	X	X	VP72860	VP72860
V687990	V687990	X	X	X
X	X	X	V687990	V687990
X	X	V687990	X	X
X	X	LA00214	X	X
T4A125V	T4A125V	X	X	X
VP20650	VP20650	X	X	X

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
41	D501-602, 604-606 609-610	HSS104 1SS133 1SS176
42		
43		
44		
45		
46		
47		

RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊗	SEMI VARIABLE RESISTOR
■	CHIP RESISTOR

CAPACITOR

REMARKS	PARTS NAME
NO MARK	ELECTROLYTIC CAPACITOR
⊗	TANTALUM CAPACITOR
NO MARK	CERAMIC CAPACITOR
⊙	CERAMIC TUBULAR CAPACITOR
⊗	POLYESTER FILM CAPACITOR
○	POLYSTYRENE FILM CAPACITOR
⊖	MICA CAPACITOR
⊙	POLYPROPYLENE FILM CAPACITOR
●	SEMICONDUCTIVE CERAMIC CAPACITOR

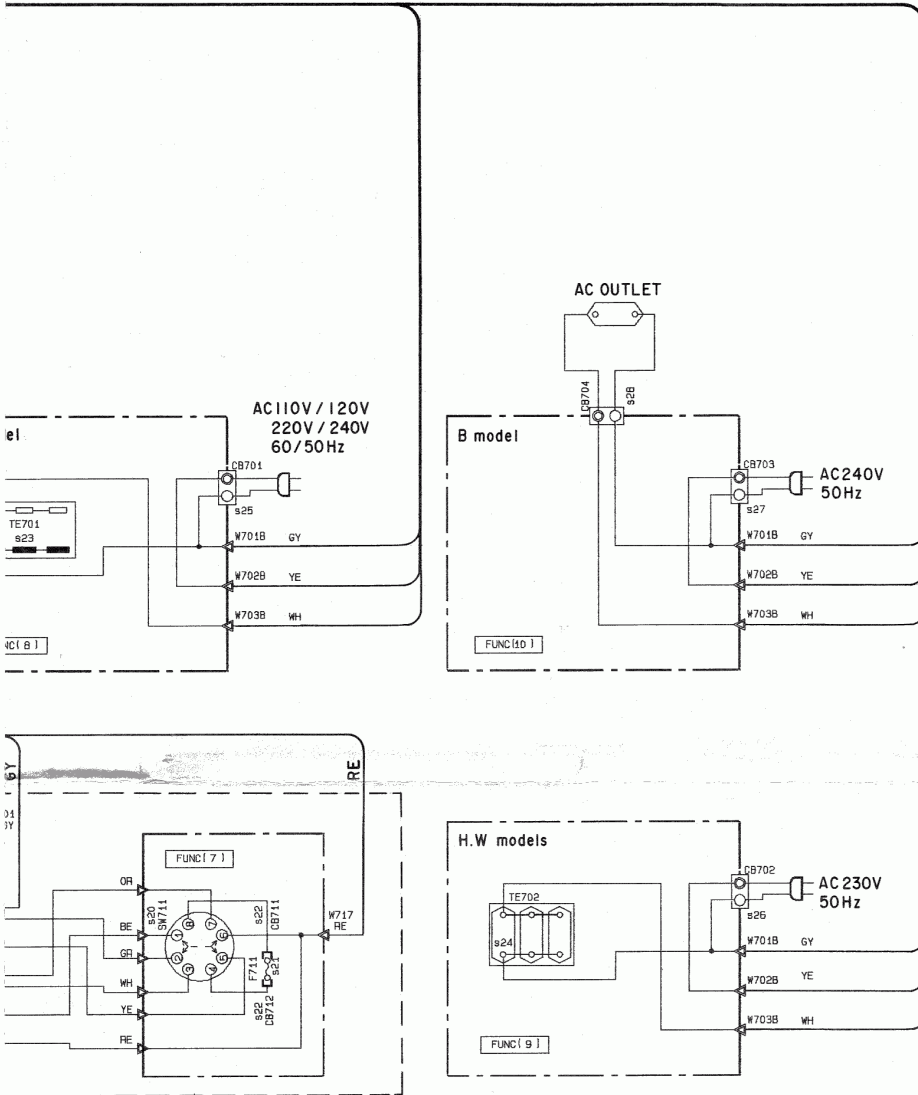
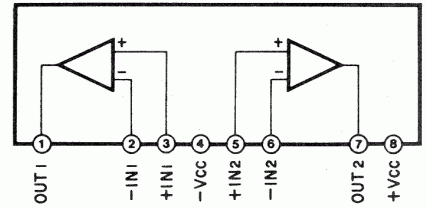
NOTICE

(J)..... Japanese model
(U)..... U.S.A model
(C)..... Canadian model
(A)..... Australian model
(G)..... European model
(B)..... British model
(R)..... General model
(P)..... RP model

- All voltages are measured with a 10MΩ/V DC electric volt meter.
- Components having special characteristics are marked △ and must be replaced with parts having specifications equal to those originally installed.
- Schematic diagram is subject to change without notice.

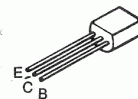
IC BLOCK

IC251, 252, 253, 254
 IC401, 402, 403 501: NJM2068D-D
 (Dual OP-Amp)

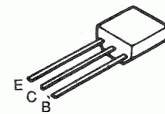


PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICs.

2SC1815Y
 2SC2240GR



2SA9335
 2SC1740S
 2SD1915F
 DTC114ES



2SC4466 (O, P, Y)



All Diodes

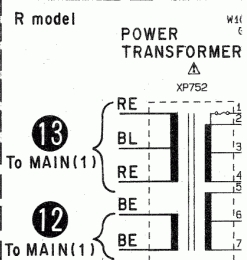
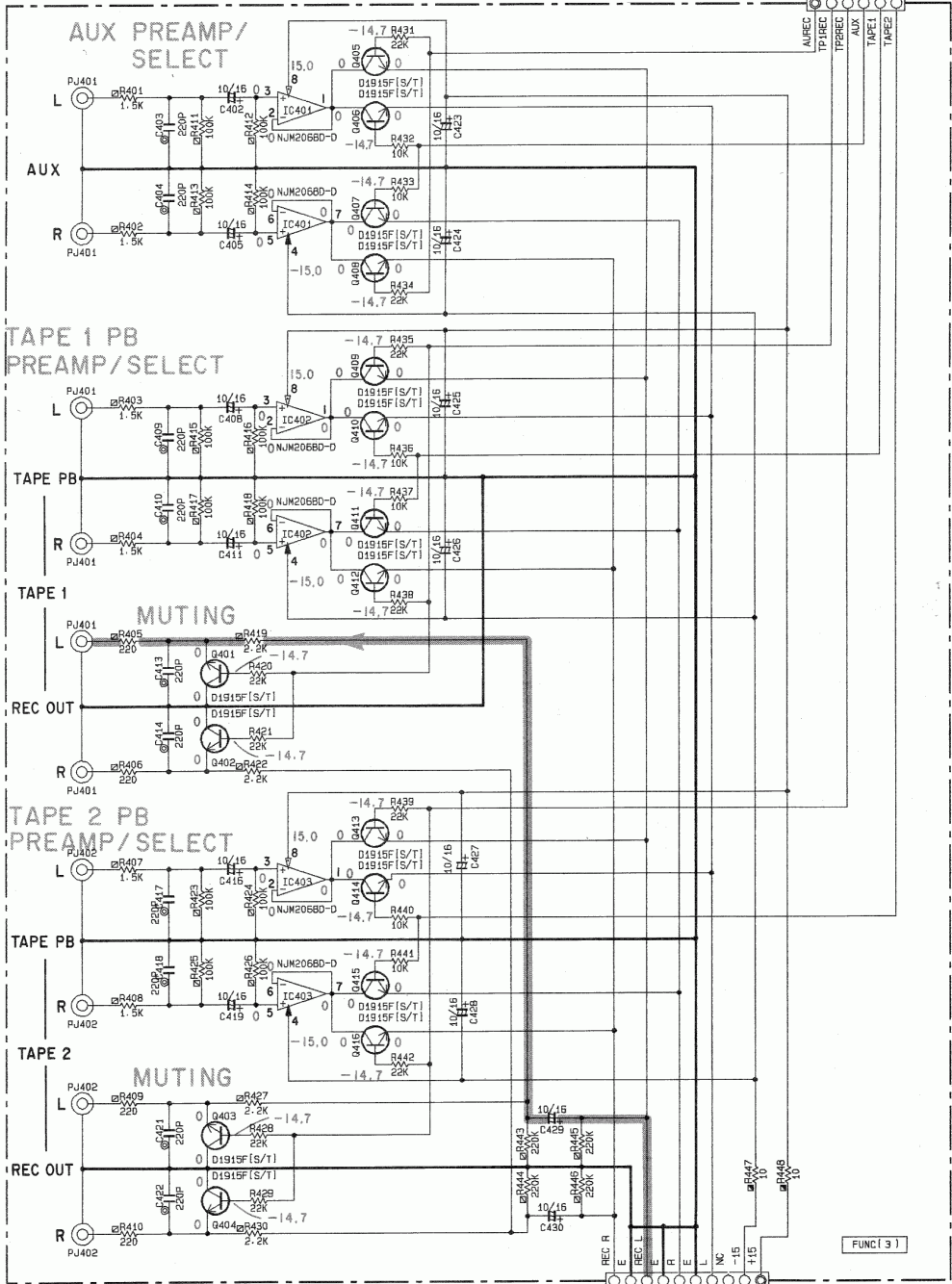
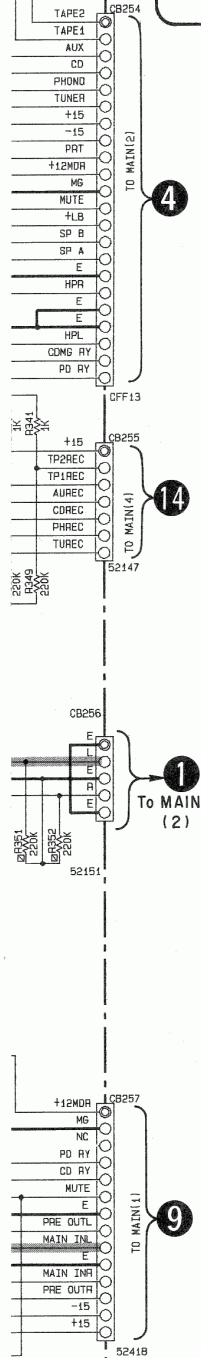
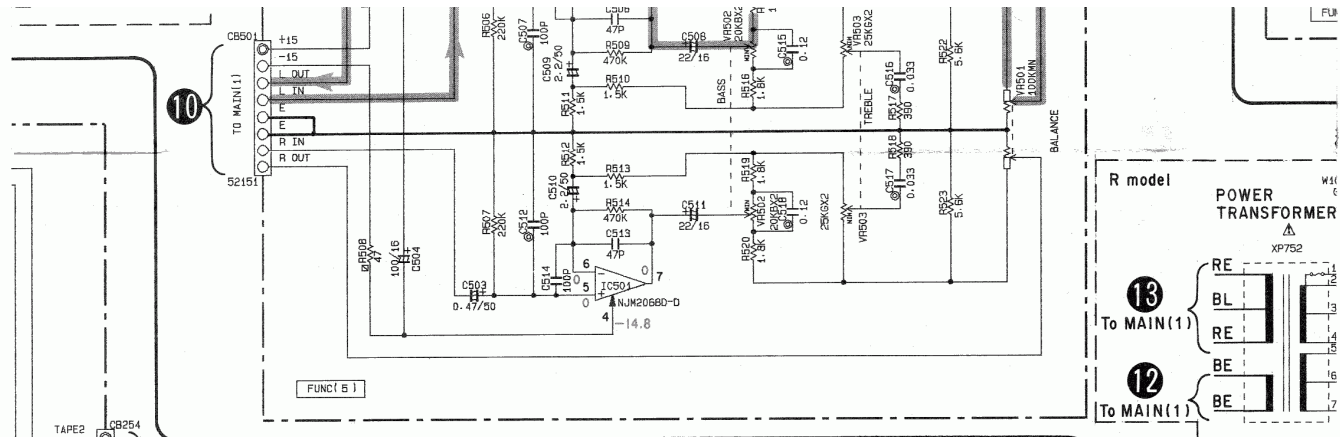
J	R	B	H	W
470/25	330/63	470/25	470/25	470/25
X	1BK	X	X	X
X	H2S182TD W7ZJ15C	X	X	X
X	C18151Y	X	X	X
X	100	X	X	X
X	10/16	X	X	X
X	C4466(O/P/Y)	X	X	X
X	100/16	X	X	X
O	X	O	O	O
XC542	XC082	XC084	XC084	XC084
X	X	220P	220P	220P
X	X	220uH	220uH	220uH
47	47	2.2K	2.2K	2.2K
X	X	T2-5A250V	T2-5A250V	T2-5A250V
X	X	T1-6A250V	T1-6A250V	T1-6A250V
X	X	VP20E50	VP20E50	VP20E50
O	O	X	X	X
X	VA961B0	X	X	X
X	T1-6A250V	X	X	X

Interchangeable Parts at Manufacture-Stage

Mark	Reference Parts Number	Parts Name
#1	D601-602-604-606 605-610	HSS104 1SS133 19S176
#2		
#3		
#4		
#5		
#6		
#7		

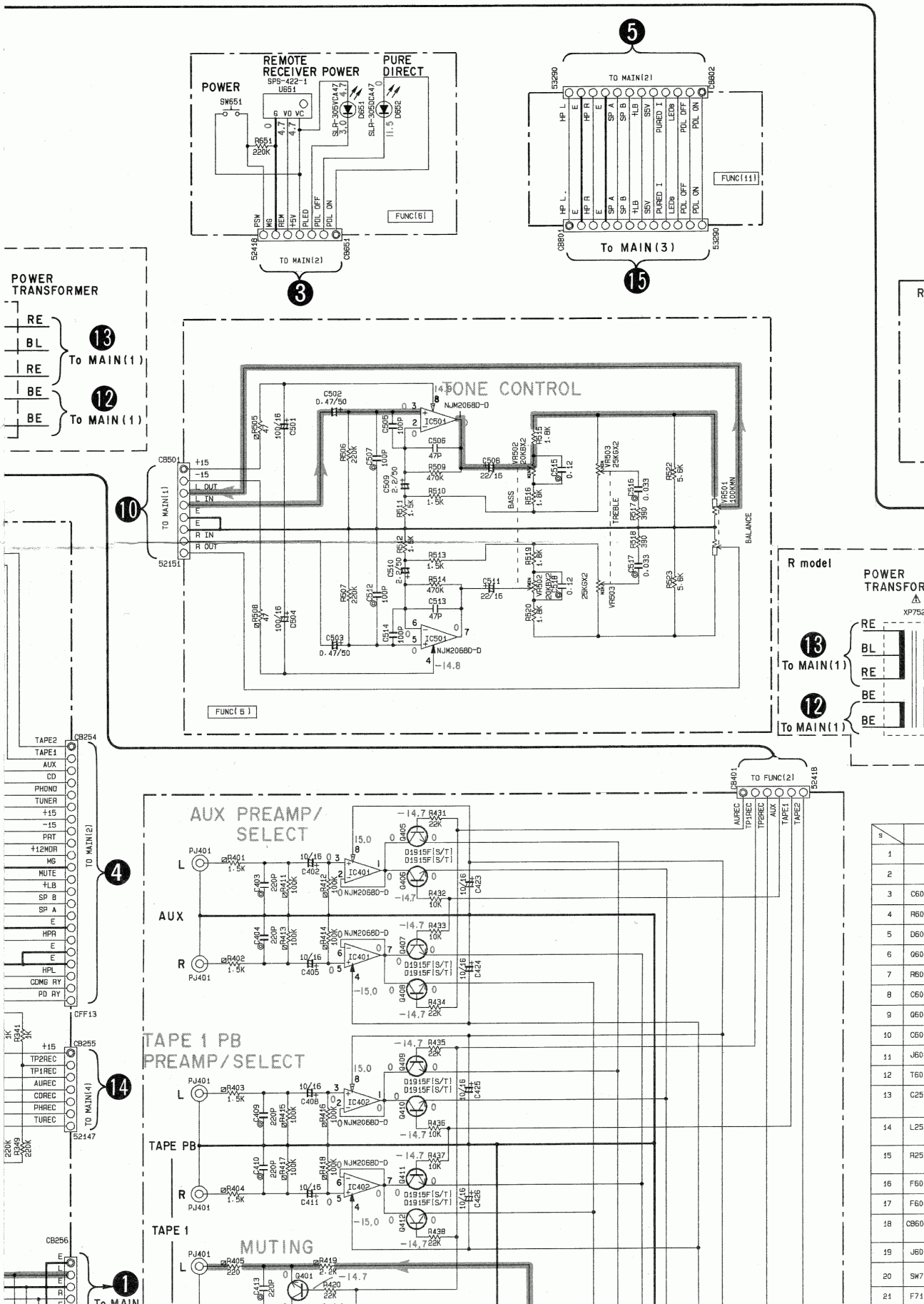
RESISTOR

REMARKS	PARTS NAME
NO MARK	CARBON FILM RESISTOR (P=5)
□	CARBON FILM RESISTOR (P=10)
△	METAL OXIDE FILM RESISTOR
▲	METAL FILM RESISTOR
⊠	METAL PLATE RESISTOR
⊞	FIRE PROOF CARBON FILM RESISTOR
□	CEMENT MOLDED RESISTOR
⊙	SEMI VARIABLE RESISTOR



1	
2	
3	C609
4	R605
5	D607
6	O607
7	R607
8	C607
9	O606
10	C605
11	J601
12	T601
13	C255-257
14	L251-252
15	R257-251
16	F601
17	F602
18	CB602-605
19	J602
20	SW711
21	F711
22	CB711-712
23	TE701
24	TE702
25	CB701
26	CB702
27	CB703
28	CB704
29	F603
30	
31	CB607-608

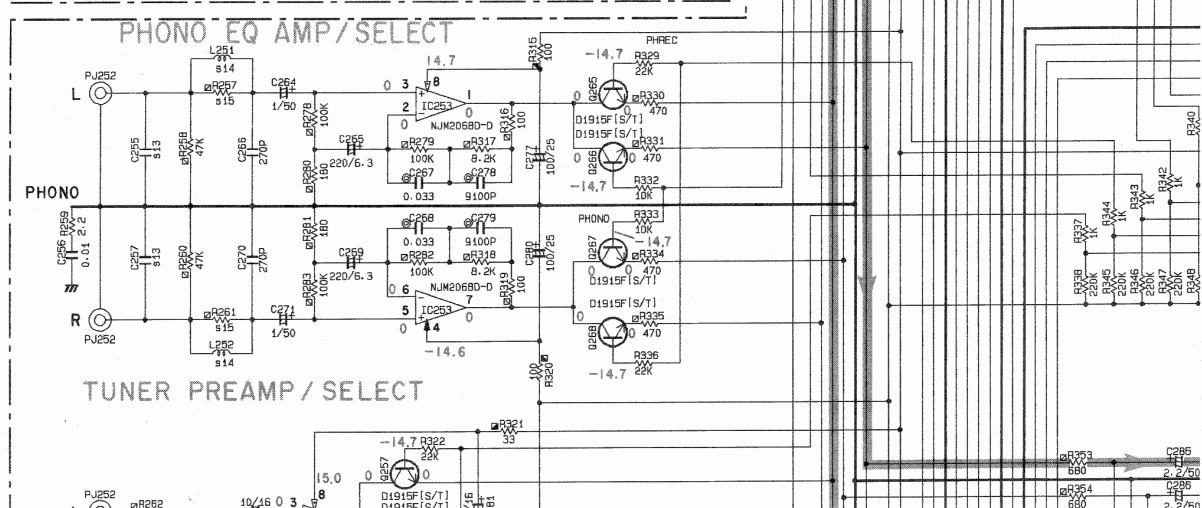
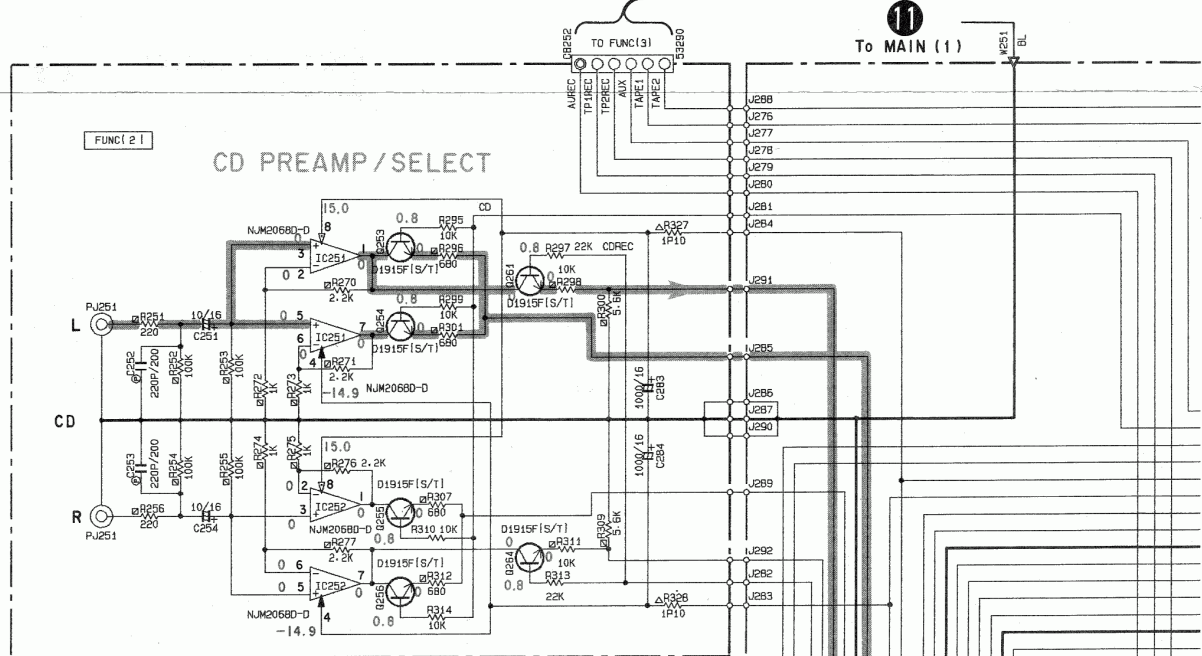
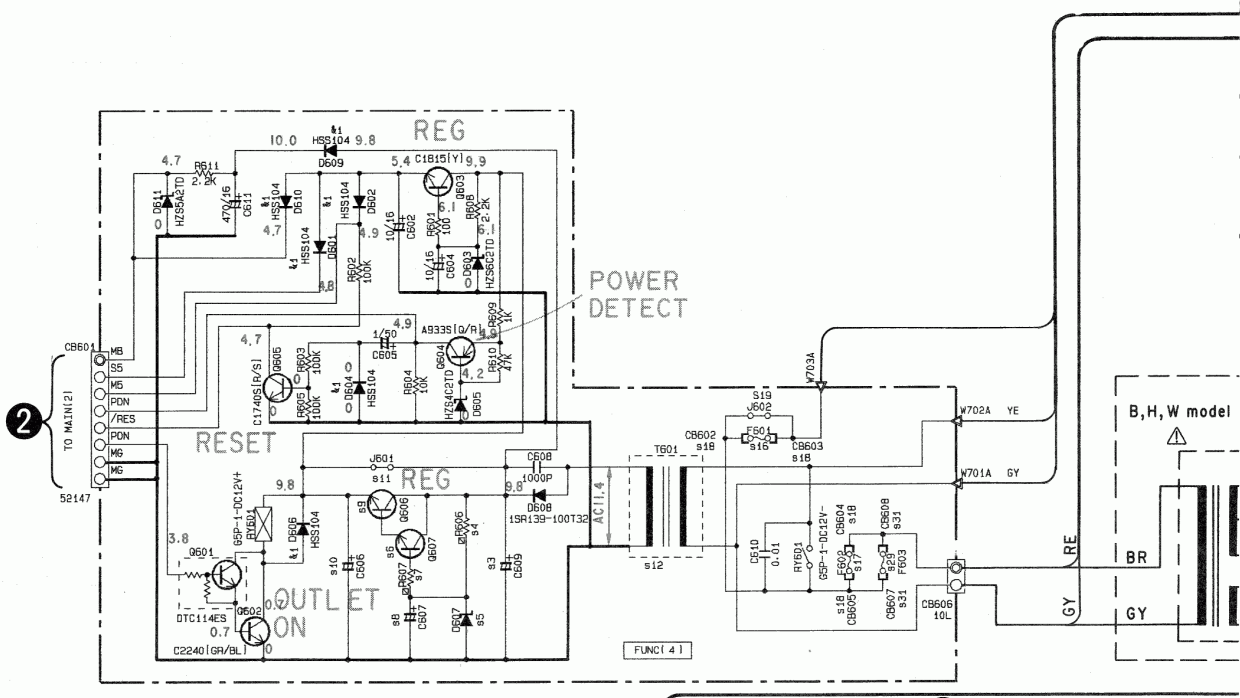
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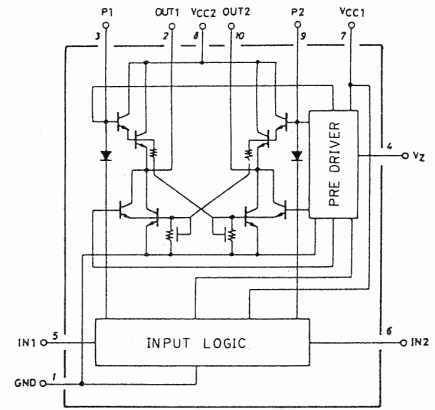
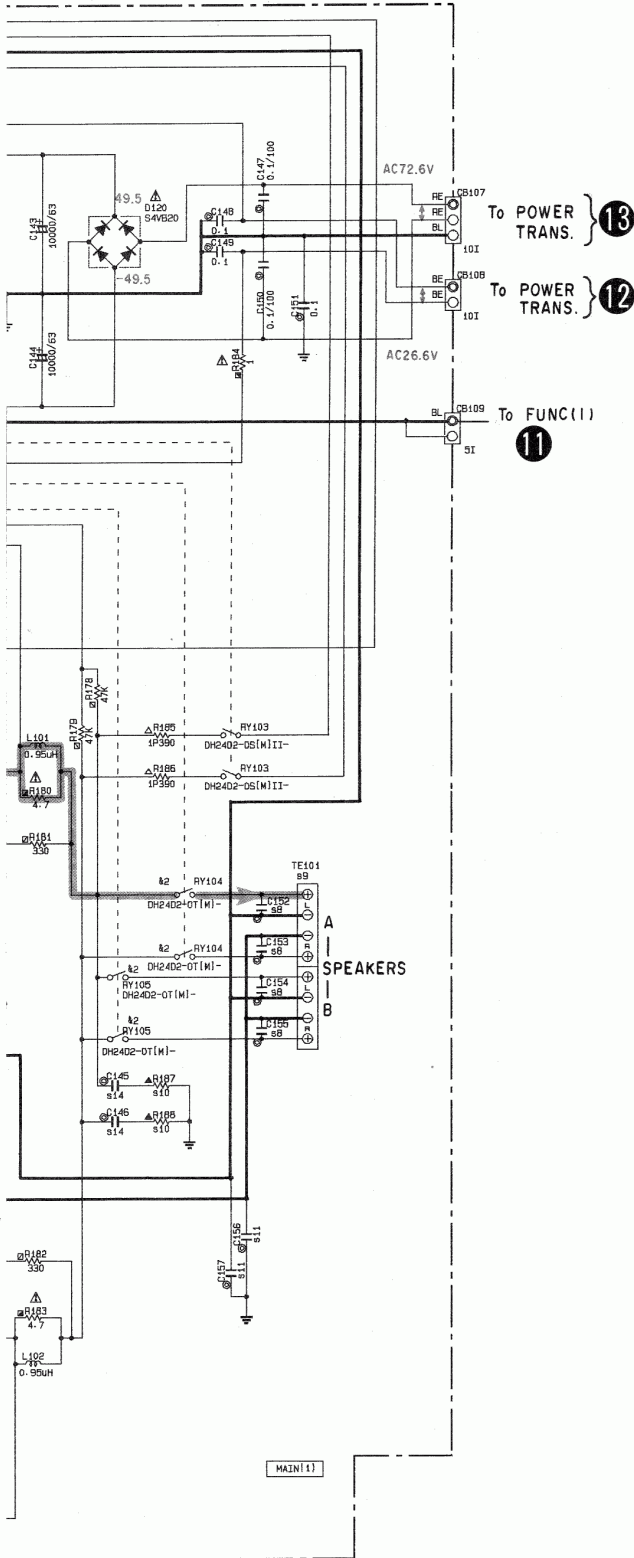
9	
1	
2	
3	C609
4	R606
5	D607
6	0607
7	R607
8	C607
9	0606
10	C606
11	J601
12	T601
13	C255
14	L251
15	R257
16	F601
17	F602
18	CB602
19	J602
20	SW711
21	F711

SCHEMATIC DIAGRAM (Function) AX-10

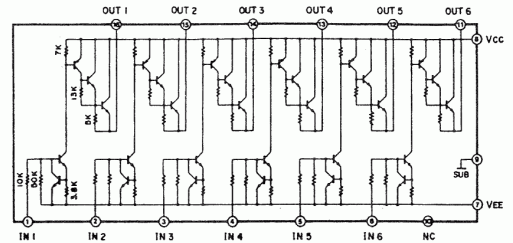
1
2
3
4
5
6



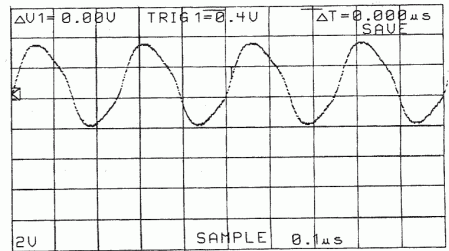
**IC551, 552: LB1641
(Motor Driver)**



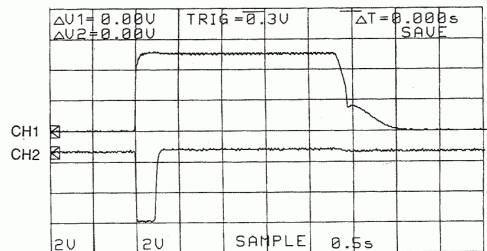
**IC553: LB1294
(Driver Array)**



Point ① (Pin 22 of IC 554)
 V : 2V/div H : 0.1μsec/div
 DC range 1 : 1 probe



Point ②
 (CH1 : Pin 16 of IC 554)
 (CH2 : Pin 23 of IC 554)
 V : 2V/div H : 0.5sec/div
 DC range 1 : 1 probe



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- Schematic diagram is subject to change without notice.

ES

10

0

12

NOTICE

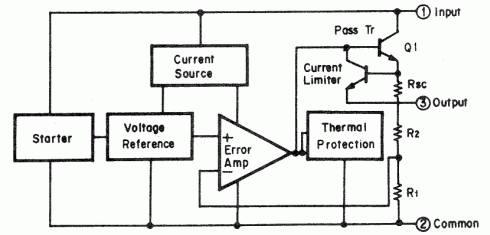
- (J)..... Japanese model
- (U)..... U.S.A model
- (C)..... Canadian model
- (A)..... Australian model
- (G)..... European model
- (B)..... British model
- (R)..... General model
- (P)..... RP model

Interchangeable Parts at Manufacture-Stage

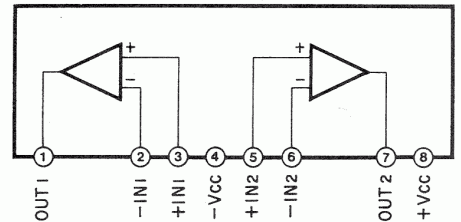
Mark	Reference Parts Number	Parts Name
k1	D101, 102, 105-107	HSS104
	109, 110, 112, 117	ISS133
		ISS176
k2	RY104, 105	DH2402-OT[M] JR2AD-DC24V
k3	0556	2SA933S [G/R] 2SA1118 [E/P] 2SA1352A [G/R/S]
k4	D108	H2S152TD WTZJ15C

IC BLOCK

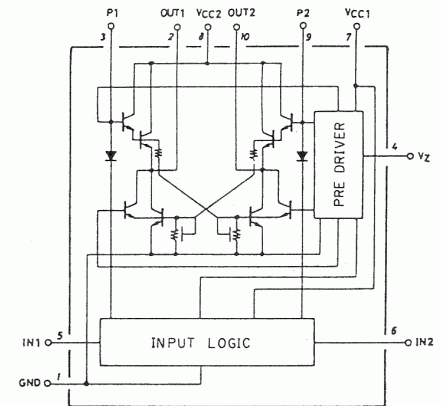
IC101: NJM78M12FA (+12V Regulator)



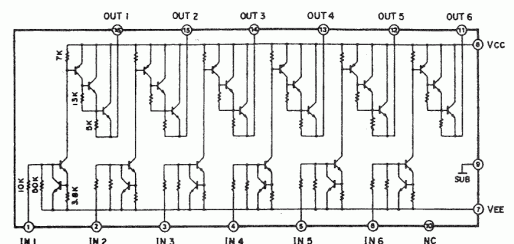
IC201: NJM2068D-D (Dual OP-Amp)



IC551, 552: LB1641 (Motor Driver)

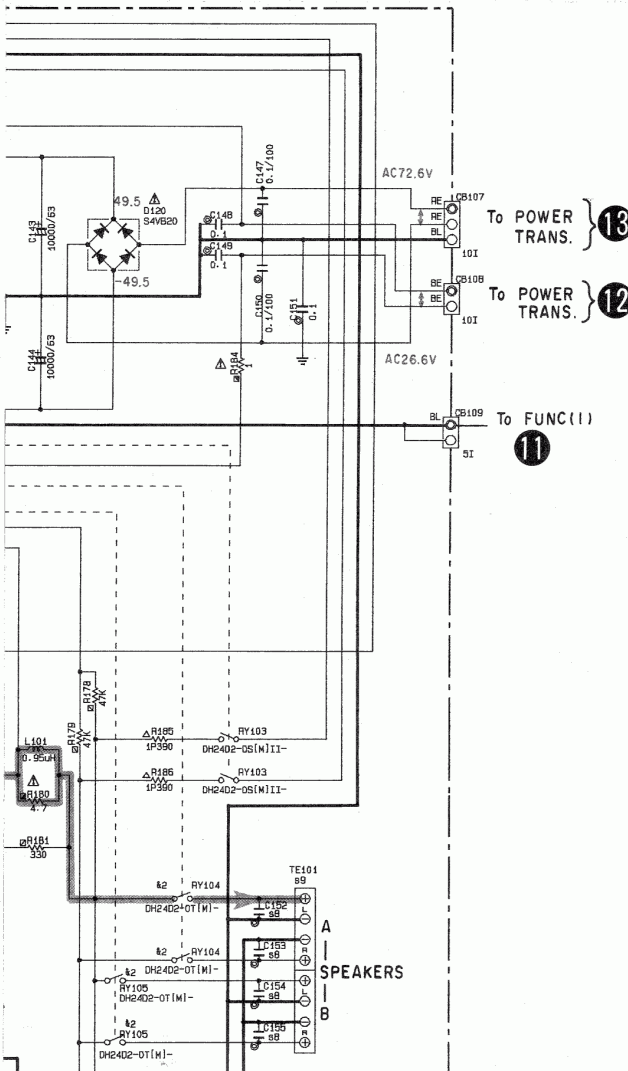
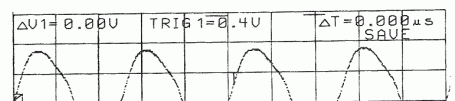


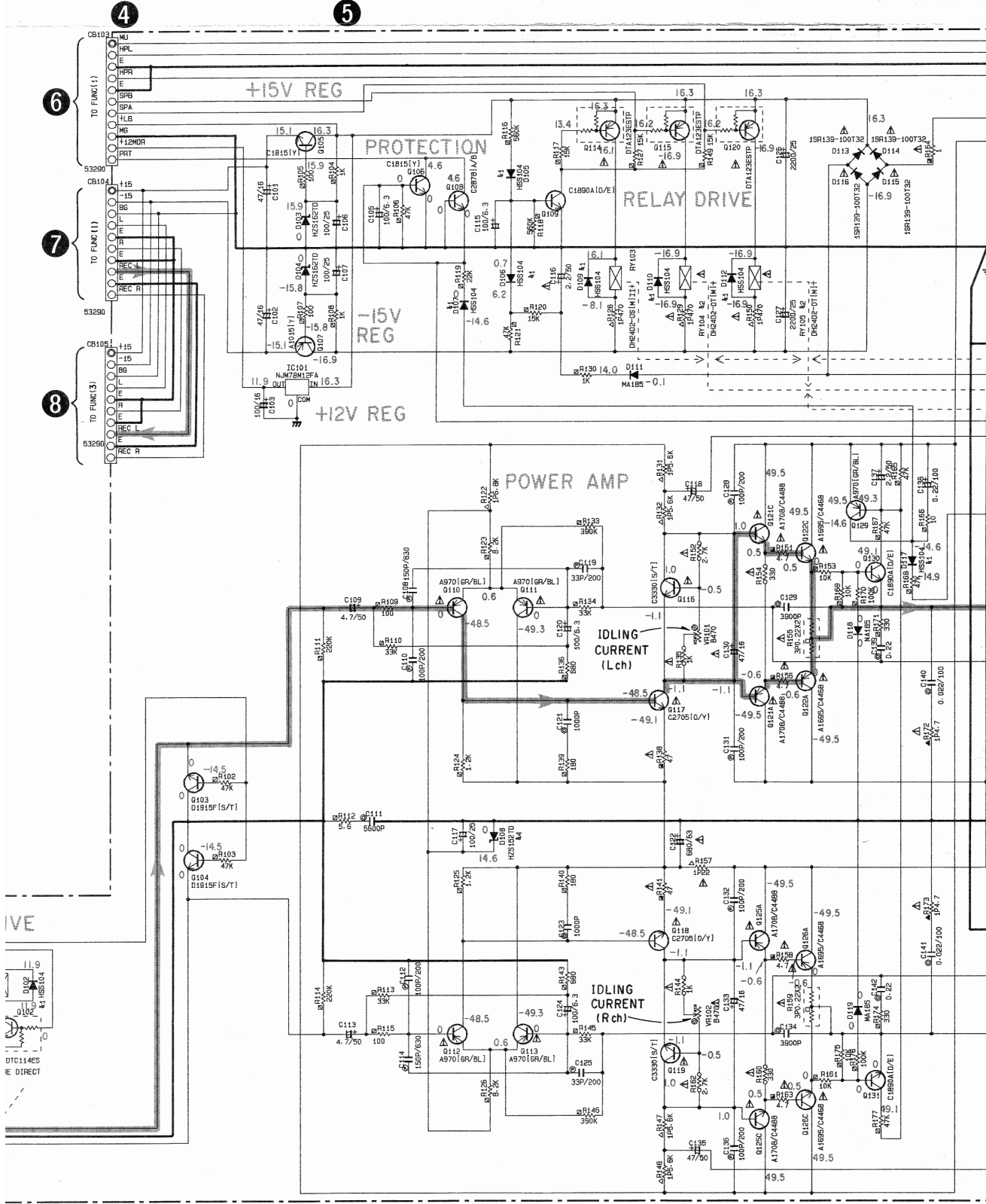
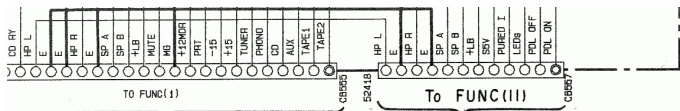
IC553: LB1294 (Driver Array)


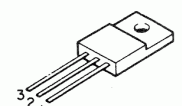
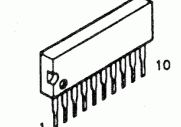
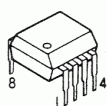
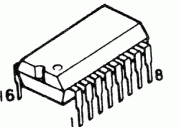
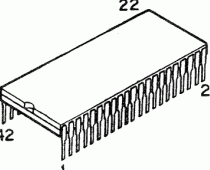


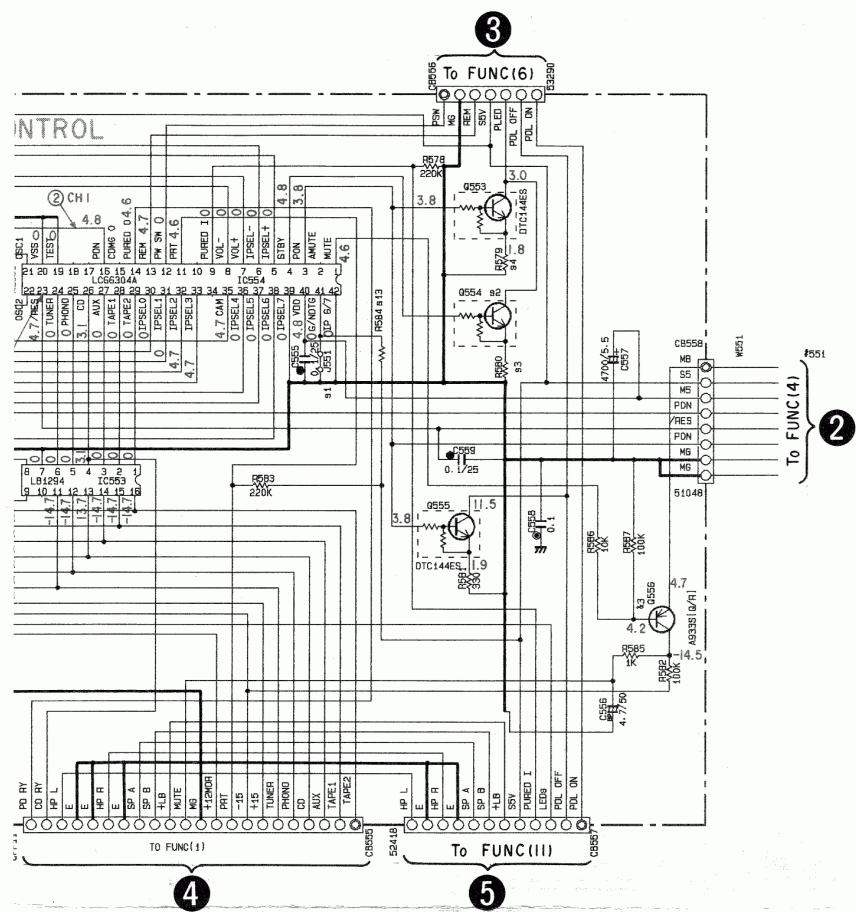
Point ① (Pin 22 of IC 554)

V : 2V/div H : 0.1μsec/div
 DC range 1 : 1 probe



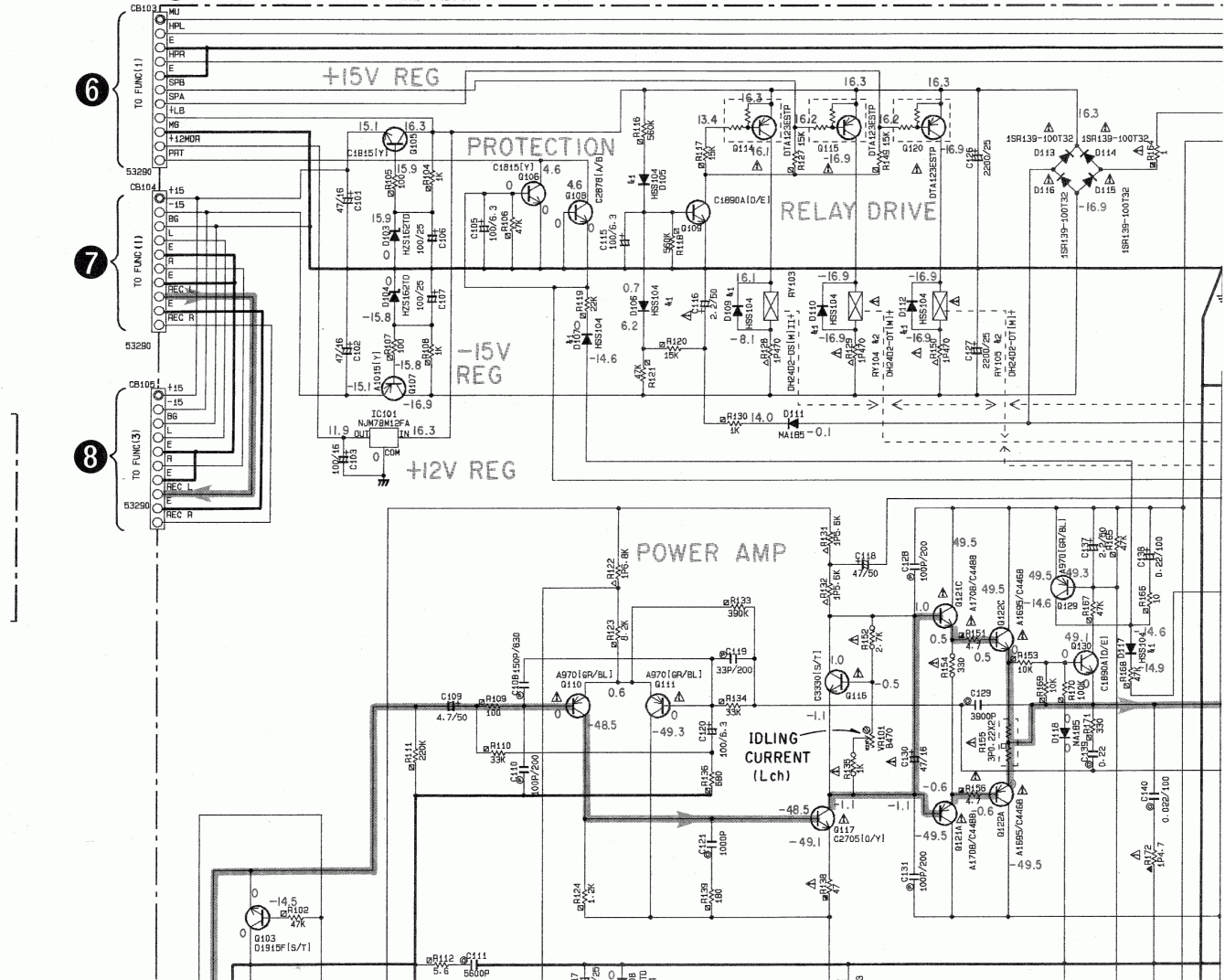


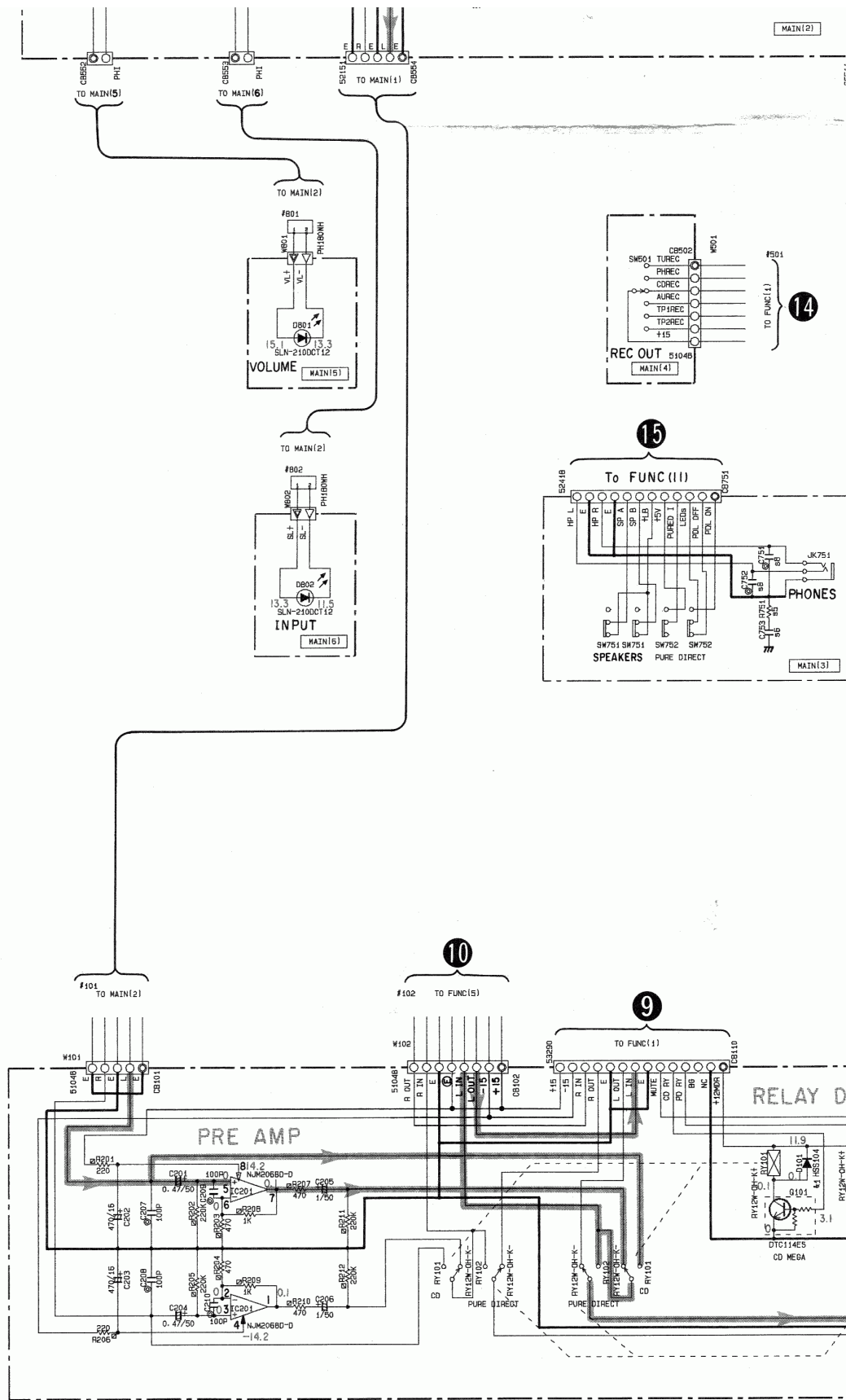
<p>S4VB20</p> 	<p>NJM78M12FA</p> 	<p>LB1641</p> 	<p>NJM2068D-D</p> 	<p>LB1294</p> 	<p>LC66304A</p> 
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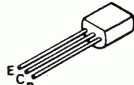
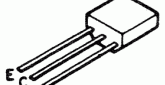
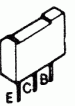

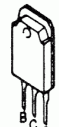
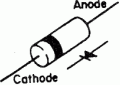
	J	R	B	H	V
1	JB51		X	X	X
2	Q554	X	X	DTC144ES	DTC144
3	R660	X	X	680	680
4	R579	330	330	560	560
5	R751	X	X	2.2	2.2
6	C753	X	X	0.01	0.01
7					
8	C152-155 751, 752	X	X	0.01	0.01
9	TE104	VC31370	VC31370	VK50620	VC3137
10	R167, 198	X	X	4.7	4.7
11	C156, 157	X	X	0.022	0.022
12					
13	R584	X	X	220K	220K
14	C145, 146	X	X	0.022	0.022
15	R568	X	X	2.2	2.2
16	C960	X	X	0.01	0.01
17					
18					
19					

OUT 2
+ VCC





PIN CONNECTION DIAGRAM OF TRANSISTORS, DIODES AND ICS.

<p>2SA970GR 2SC1815Y 2SC1890A 2SC2878A, B</p> 	<p>2SA933S 2SD1915F DTC114ES DTC144ES DTA123ES</p> 	<p>2SC4488 2SA1708 (R, S)</p> 	<p>2SC2705 (O, Y)</p> 	<p>2SA1695 (O, P, Y) 2SC4468 (O, P, Y)</p> 	<p>All Diodes</p> 
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3

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7

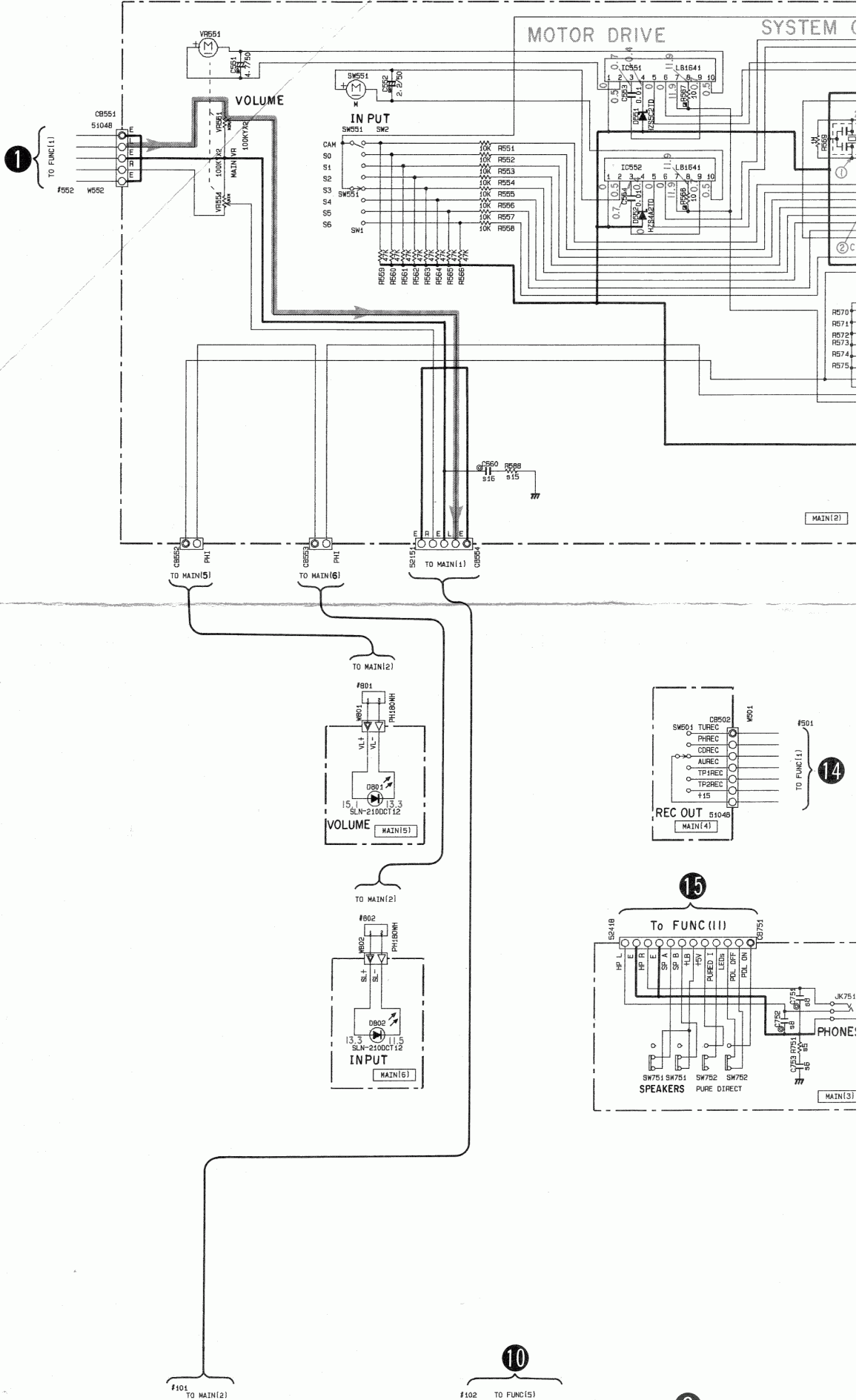
8

SCHEMATIC DIAGRAM (MAIN)

AX-10

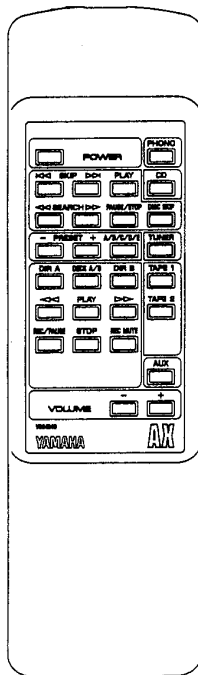
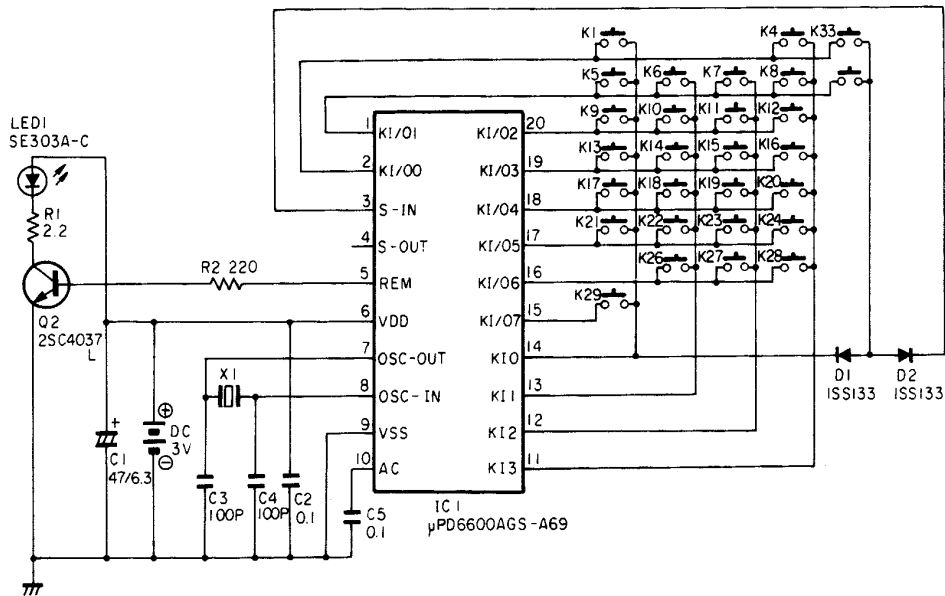
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A B C D

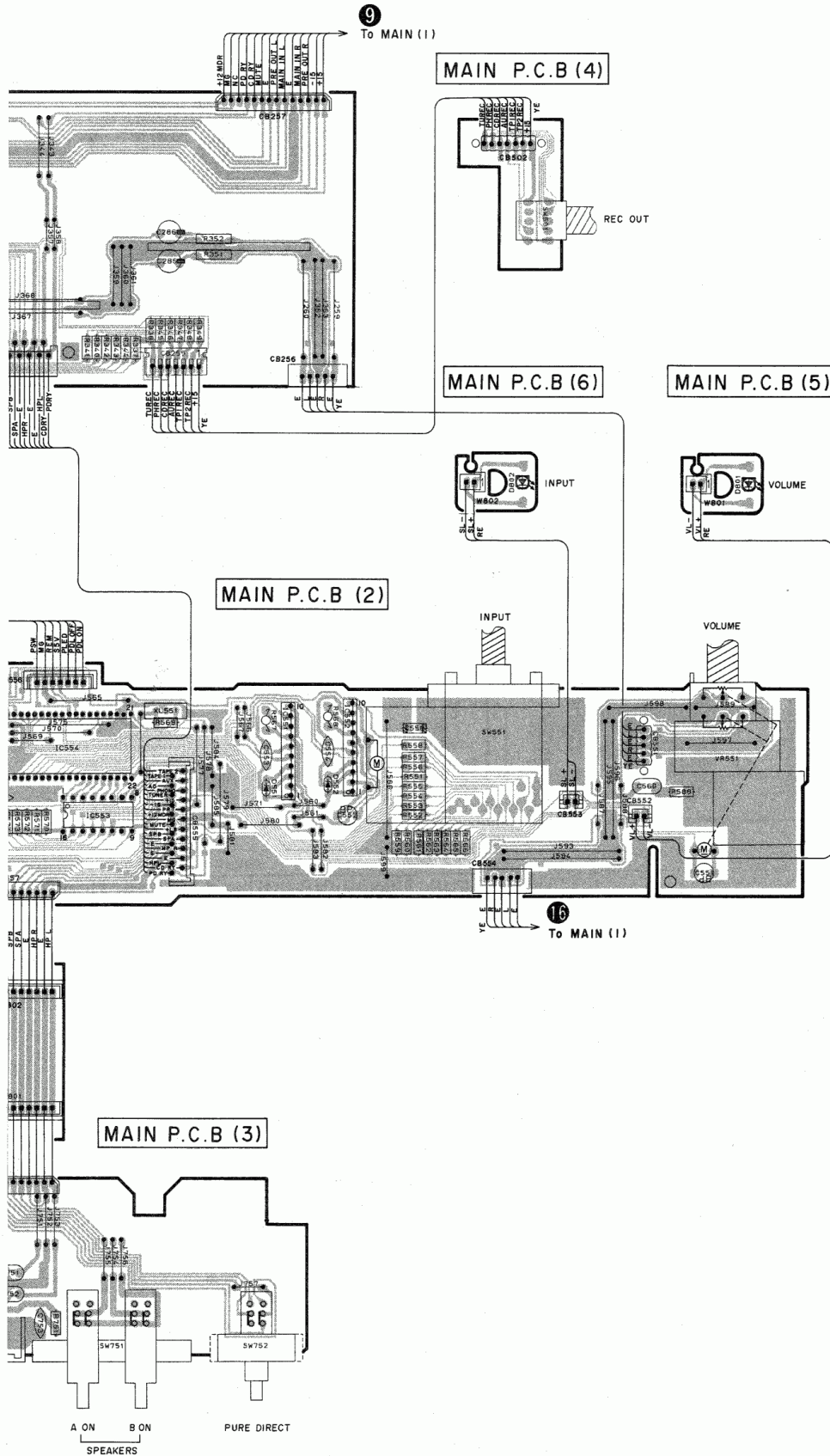


REMOTE CONTROL TRANSMITTER

■ SCHEMATIC DIAGRAM AX-10



Key No.	Custom (HEX)	Data (HEX)	Function
K1	7A	14	PHONO
K4	7A	1F	POWER
K5	7A	15	CD
K6	7A	08	PLAY
K7	7A	0A	SKIP ►►
K8	7A	0B	SKIP ◄◄
K9	7A	4F	DISC SKIP
K10	7A	09	PAUSE/STOP
K11	7A	0C	SEARCH ►►
K12	7A	00	SEARCH ◄◄
K13	7A	16	TUNER
K14	7A	12	A/B/C/D/E
K15	7A	10	PRESET +
K16	7A	11	PRESET -
K17	7A	18	TAPE 1
K18	7A	40	DIR B
K19	7A	06	DECK A/B
K20	7A	07	DIR A
K21	7A	19	TAPE 2
K22	7A	02	►►
K23	7A	00	PLAY
K24	7A	01	◄◄
K26	7A	05	REC MUTE
K27	7A	03	STOP
K28	7A	04	REC/PAUSE
K29	7A	17	AUX
K33	7A	1A	VOLUME +
K34	7A	1B	VOLUME -



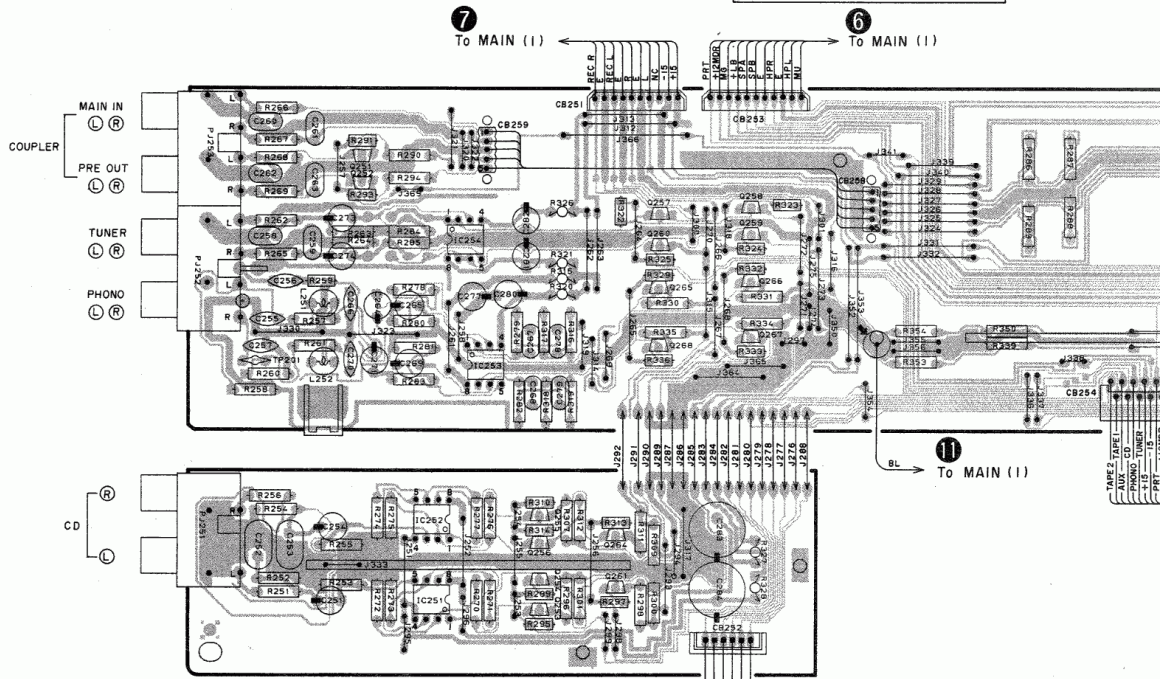
● Semiconductors Location

Ref. No.	Location
IC251	B3
IC252	B2
IC253	B2
IC254	B2
IC401	B4
IC402	B4
IC403	B4
IC551	E3
IC552	E3
IC553	D4
IC554	D3
U651	B5
Q251	B1
Q252	B1
Q253	B3
Q254	B3
Q255	B2
Q256	B2
Q257	C2
Q258	C2
Q259	C2
Q260	C2
Q261	B3
Q264	B2
Q265	C2
Q266	C2
Q267	C2
Q268	C2
Q401	B4
Q402	B4
Q403	B4
Q404	B4
Q405	C4
Q406	C4
Q407	C4
Q408	C4
Q409	C4
Q410	C4
Q411	C4
Q412	C4
Q413	C4
Q414	C4
Q415	C4
Q416	C4
Q553	D3
Q554	D3
Q555	D3
Q556	D4
D551	E3
D552	E3
D651	C5
D652	C5
D801	G2
D802	F2
VR551	F3

■ PRINTED CIRCUIT BOARD (Pattern side view)

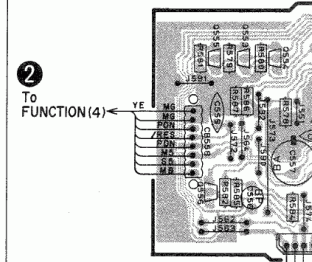
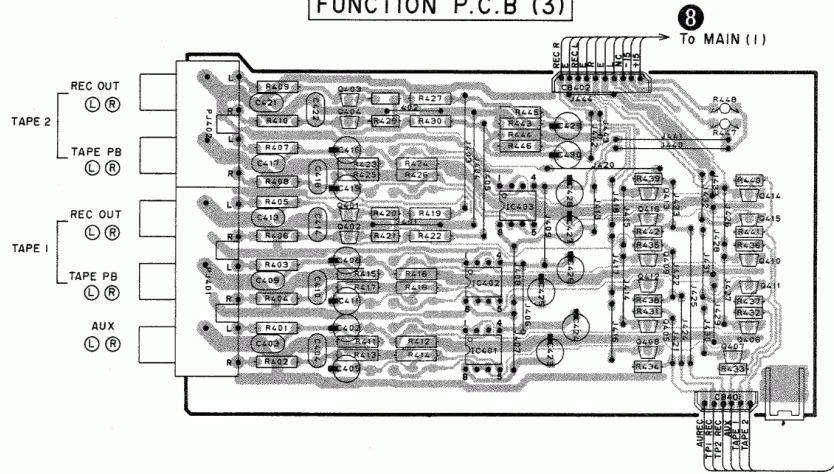
AX-10

FUNCTION P.C.B (I)

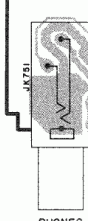
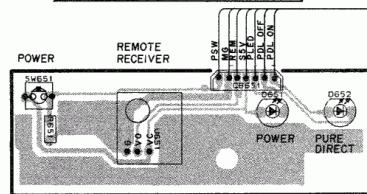


FUNCTION P.C.B (2)

FUNCTION P.C.B (3)

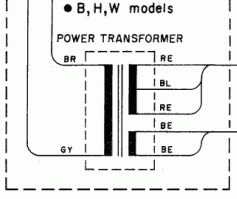
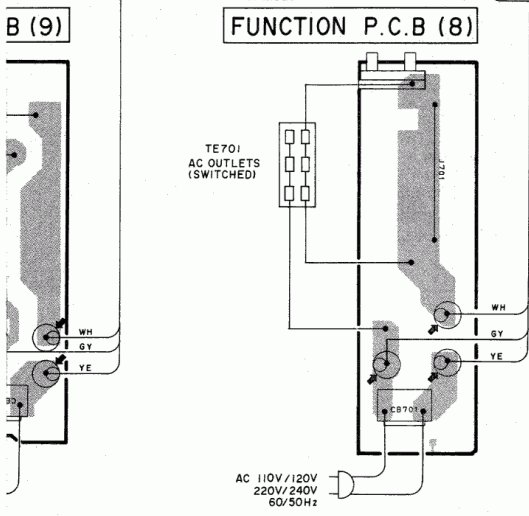
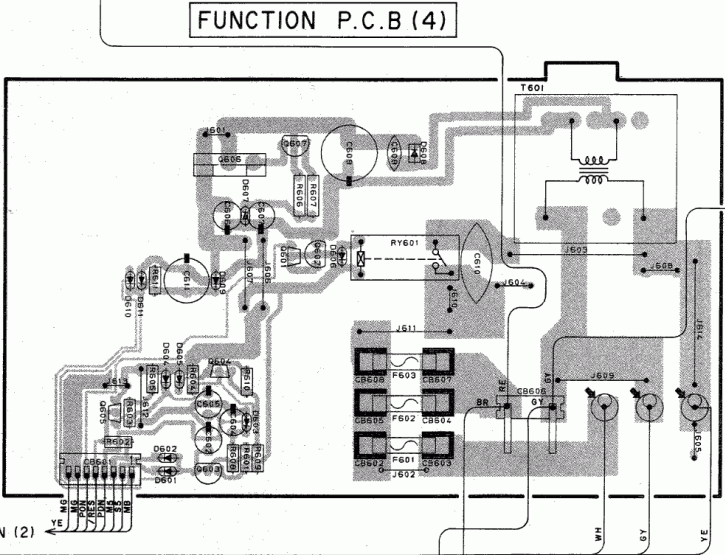
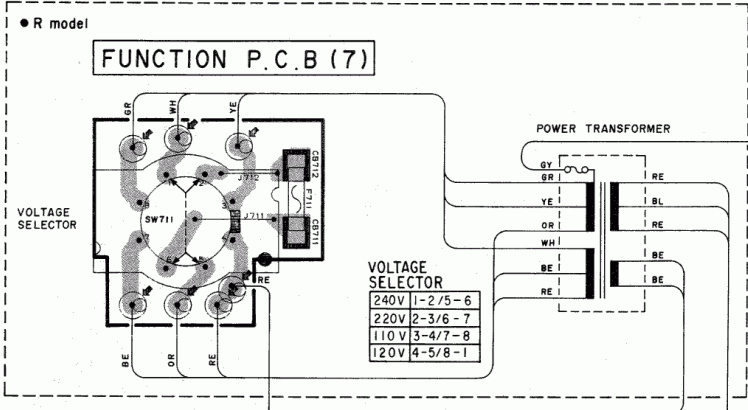
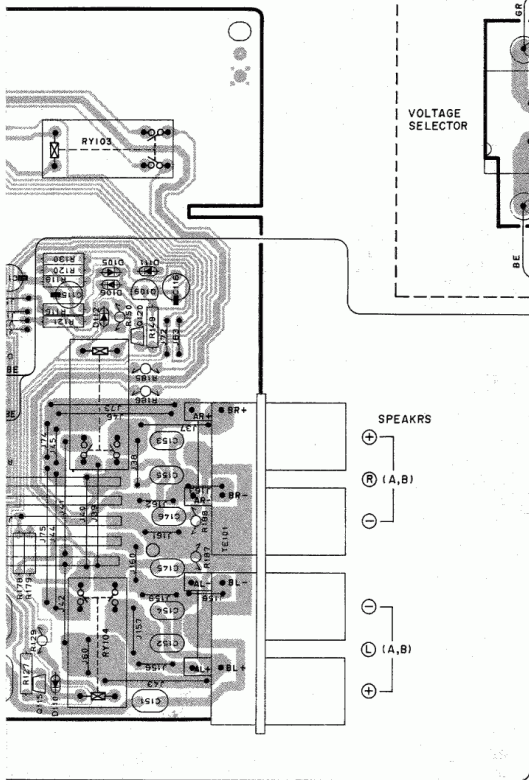


FUNCTION P.C.B (6)



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(1)



● Semiconductors Location

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC101	D2	Q118	B3	D101	A2	D114	D3	D607	G3
IC201	A3	Q119	B2	D102	A2	D115	D3	D608	G3
IC501	B5	Q120	E2	D103	D2	D116	D3	D609	F3
Q101	A2	Q121A	B3	D104	D2	D117	C2	D610	F3
Q102	A2	Q121C	C3	D105	E2	D118	C3	D611	F3
Q103	B3	Q122A	B3	D106	E2	D119	C2		
Q104	B2	Q122C	C3	D107	C2	D120	D3	VR101	B3
Q105	D2	Q125A	B2	D108	B3	D601	F4	VR102	B2
Q106	D2	Q126A	B2	D109	D2	D602	F4	VR501	B5
Q107	D2	Q126C	C3	D110	D3	D603	G3	VR502	A5
Q108	D2	Q129	C2	D111	E2	D604	F3	VR503	B5
Q109	E2	Q130	C3	D112	E2	D605	F3		
Q110	B3	Q131	C2	D113	D3	D606	G3		
Q111	B3	Q601	G3						
Q112	B3	Q602	G3						
Q113	B2	Q603	F4						
Q114	D2	Q604	F3						
Q115	D3	Q605	F3						
Q116	B3	Q606	F3						
Q117	B3	Q607	G3						

A

B

C

D

PRINTED CIRCUIT BOARD (Pattern side view)

AX-10

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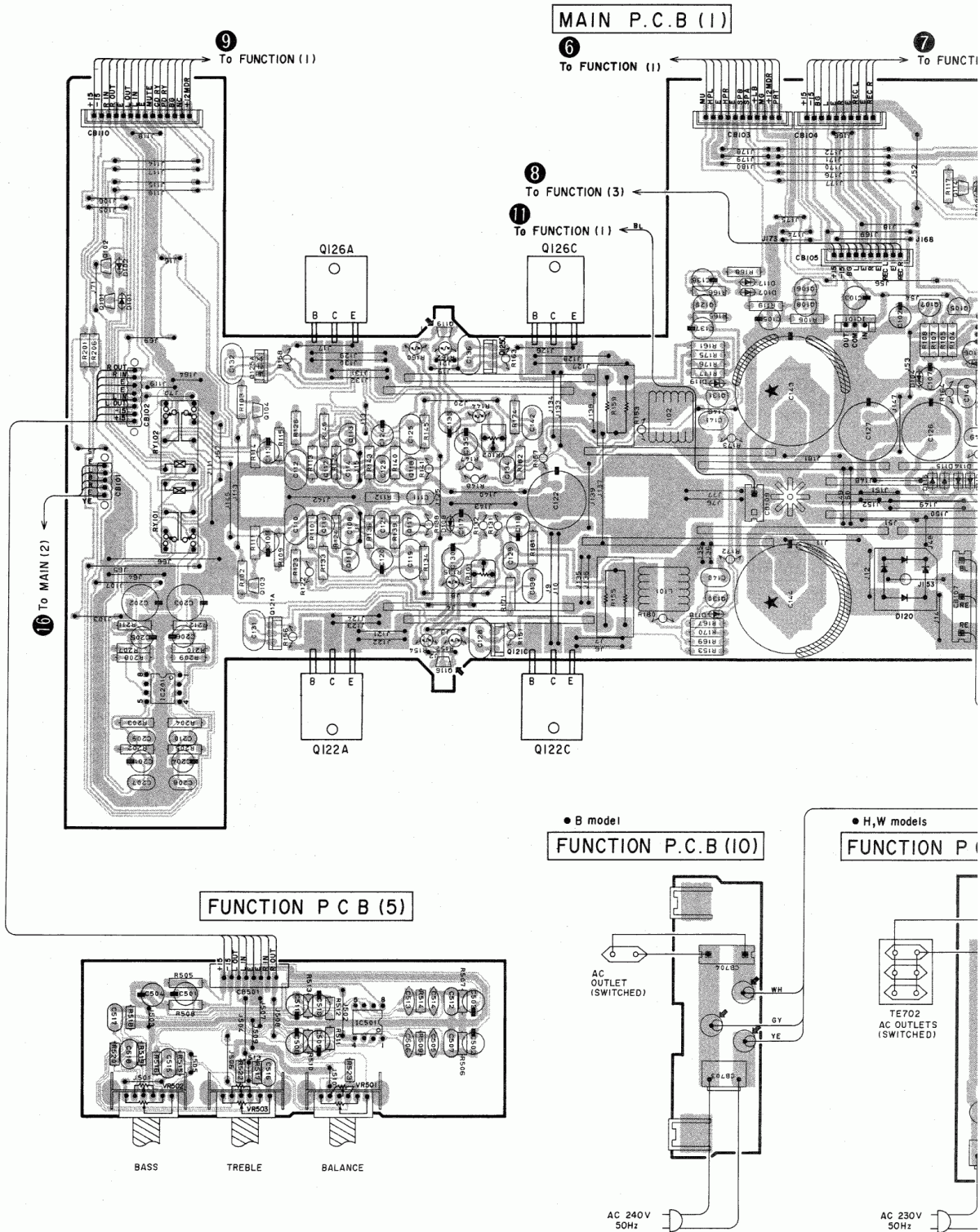
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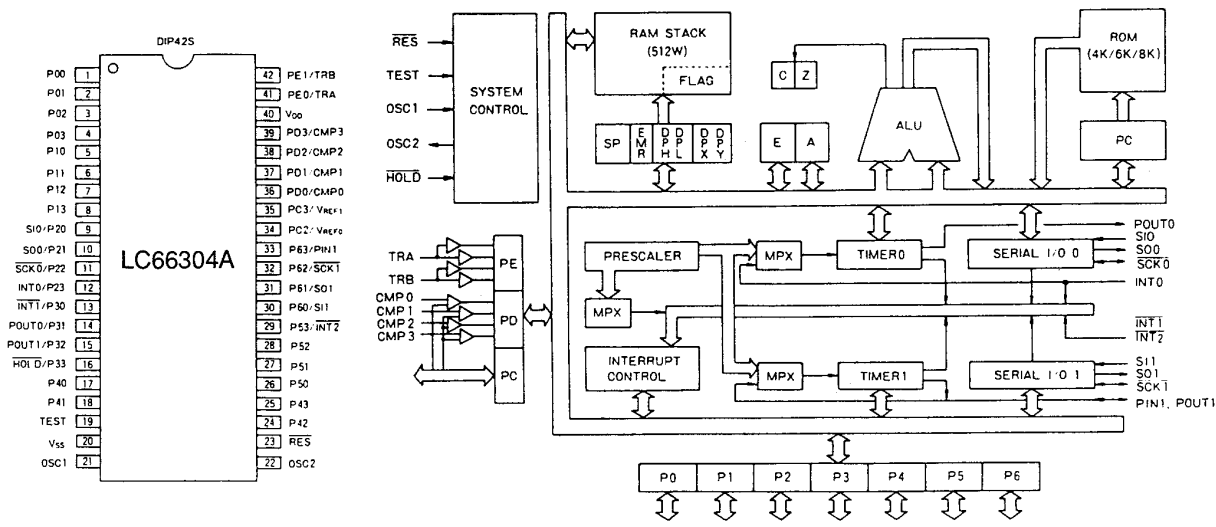
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μ-COM DATA

IC554 : LC66304A
4 bit μ-COM



No.	PORT	I/O	NAME	FUNCTION	No.	PORT	I/O	NAME	FUNCTION
1	P00	O	MUTE	Mute	22	OSC2	O	OSC2	Clock (4MHz)
2	P01	O	AMUTE	N.C.	23	RES	I	/RES	Reset
3	P02	O	PON	Outlet Relay ON	24	P42	O	TUNER	Tuner Select
4	P03	O	STBY	Standby (Power LED)	25	P43	O	PHONO	Phono Select
5	P10	O	IPSEL+	Input Selector (Turn Right)	26	P50	O	CD	CD Select
6	P11	O	IPSEL-	Input Selector (Turn Left)	27	P51	O	AUX	AUX Select
7	P12	O	VOL+	Main Volume (Up)	28	P52	O	TAPE1	Tape 1 Select
8	P13	O	VOL-	Main Volume (Down)	29	P53/INT2	O	TAPE2	Tape 2 Select
9	SI0/P20	I	PURED1	Pure Direct	30	P60/SI1	I	IPSEL0	Input Select
10	SO0/P21	I	—	N.C.	31	P61/SO1	I	IPSEL1	Input Select
11	SCK0/P22	I	PRT	Protection	32	P62/SCK1	I	IPSEL2	Position Detect
12	INT0/P23	I	PWSW	Power Switch	33	P63/PIN1	I	IPSEL3	Input Select
13	INT1/P30	I	REM	Remote Control	34	PC2/VREF0	—	—	N.C.
14	POUT0/P31	O	PURED0	Pure Direct Relay ON	35	PC3/VREF1	I	CAM	Cam Position Detect
15	POUT1/P32	O	CDMGO	N.C.	36	PD0/CMP0	I	IPSEL4	Input Select
16	HOLD/P33	I	PDN	Power Down Detect	37	PD1/CMP1	I	IPSEL5	Input Select
17	P40	—	—	N.C.	38	PD2/CMP2	I	IPSEL6	Position Detect
18	P41	—	—	N.C.	39	PD3/CMP3	I	IPSEL7	Input Select
19	TEST	I	TEST	GND	40	VDD	I	VDD	+5V
20	VSS	I	VSS	GND	41	PE0/TRA	I	G/NOTG	Market Detect H:B,H,W L:J,R
21	OSC1	I	OSC1	Clock (4MHz)	42	PE1/TRB	I	—	GND

ADJUSTMENT

● IDLING CURRENT ADJUSTMENT

- When replacing the power and drive transistors, adjust idling current.
- After the power has been turned on, age about 60 minutes in non loaded condition.

	Test points	Adjustment point	Rating
Lch	Across the terminals of R155 (TP2 ↔ TP3)	VR101	10mV ±4mV DC
Rch	Across the terminals of R159 (TP2 ↔ TP3)	VR102	10mV ±4mV DC

