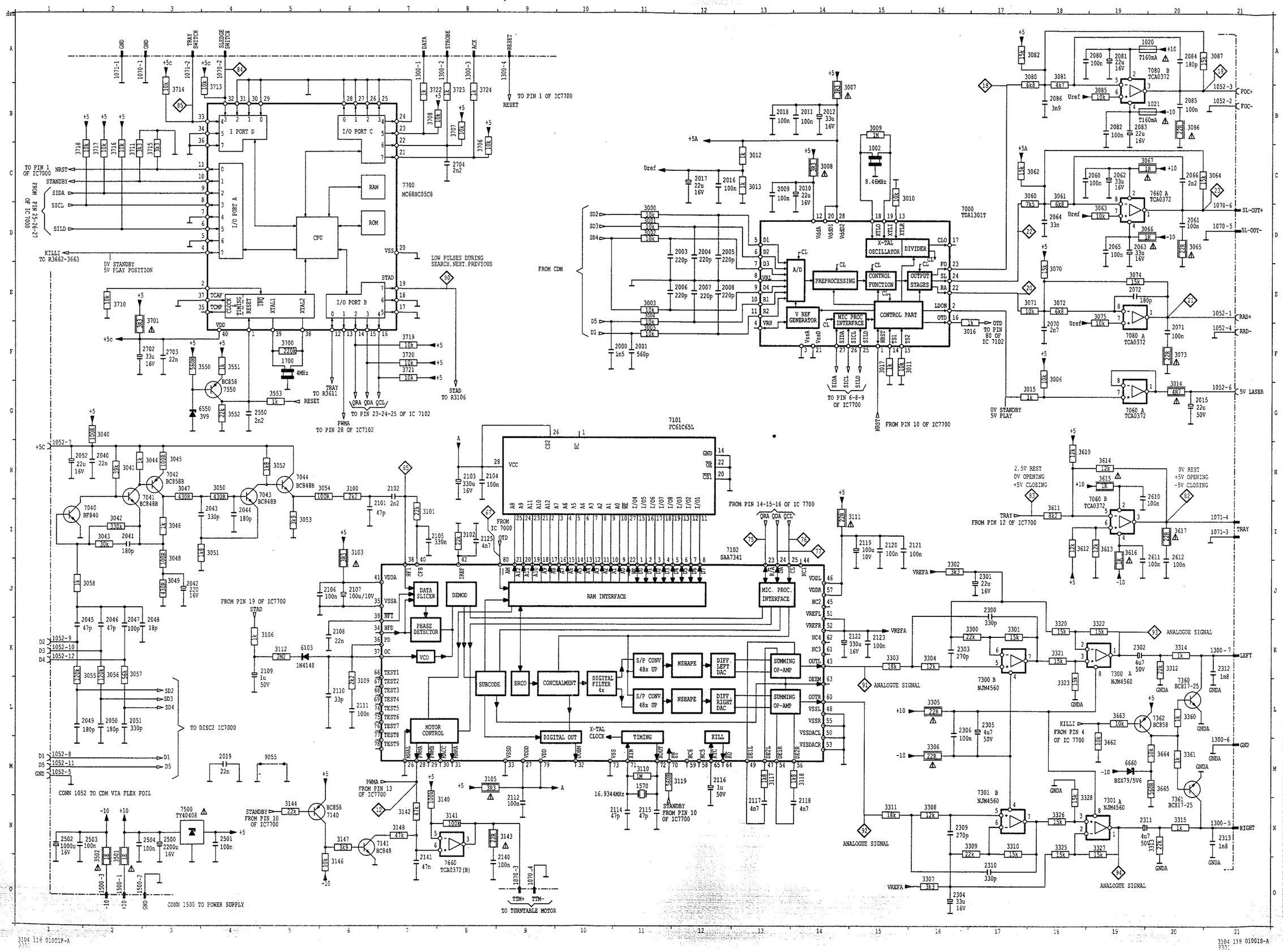
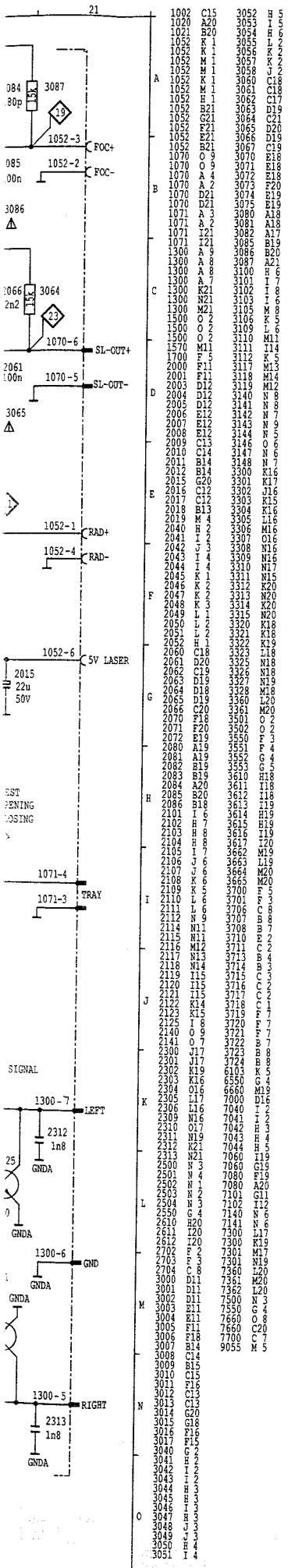
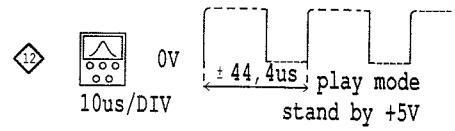
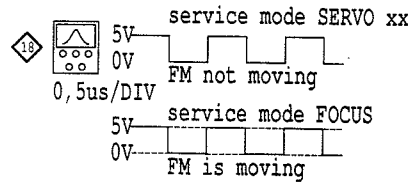
CD CIRCUIT DIAGRAM



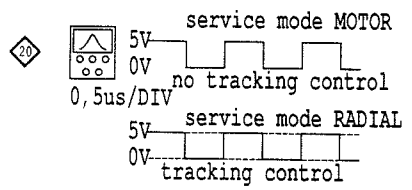


1002 C15 3052 H 5
1020 A20 3053 I 5
1021 B20 3054 H 6
1052 K 1 3055 L 2
1052 K 1 3056 K 2
1052 M 1 3057 K 2
1052 M 1 3058 J 2
A 1052 K 1 3060 C18
1052 M 1 3061 C18
1052 H 1 3062 C17
1052 B21 3063 D19
1052 G21 3064 C21
1052 F21 3065 D20
1052 E21 3066 D19
1052 B21 3067 C19
1070 O 9 3070 E18
1070 O 9 3071 E18
1070 A 4 3072 E18
1300 A 8 3073 F20
B 1070 D21 3074 E19
1070 D21 3075 E19
1071 A 3 3080 A18
1071 A 2 3081 A18
1071 I21 3082 A17
1071 I21 3085 B19
1300 A 9 3086 B20
1300 A 8 3087 A21
1300 A 8 3100 H 6
1300 A 7 3101 I 7
C 1300 K21 3102 I 8
1300 N21 3103 I 6
1300 M21 3105 M 8
1500 O 2 3106 K 5
1500 O 2 3109 L 6
1500 O 2 3110 M11
1570 M11 3111 I14
1700 F 5 3112 K 5
2000 F11 3117 M13
2001 F11 3118 M14
2003 D12 3119 M12
D 2004 D12 3140 N 8
2005 D12 3141 N 8
2006 E12 3142 N 7
2007 E12 3143 N 9
2008 E12 3144 N 5
2009 C13 3146 O 6
2010 C14 3147 N 6
2011 B14 3148 N 7
2012 B14 3300 K16
2015 G20 3301 K17
E 2016 C12 3302 J16
2017 C12 3303 K15
2018 B13 3304 K16
2019 M 4 3305 L16
2040 H 2 3306 M16
2041 I 2 3307 O16
2042 J 3 3308 N16
2043 I 4 3309 N16
2044 I 4 3310 N17
2045 K 1 3311 N15
2046 K 2 3312 K20
F 2047 K 2 3313 N20
2048 K 3 3314 K20
2049 L 1 3315 N20
2050 L 2 3320 K18
2051 L 2 3321 K18
2052 H 1 3322 K19
2060 C18 3323 L18
2061 D20 3325 N18
2062 C19 3326 N18
2063 D19 3327 N19
2064 D18 3328 M18
G 2065 D19 3360 L20
2066 C20 3361 M20
2070 F18 3501 O 2
2071 F20 3502 O 2
2072 E19 3550 F 3
2080 A19 3551 F 4
2081 A19 3552 G 4
2082 B19 3553 G 5
2083 B19 3610 H18
2084 A20 3611 I18
H 2085 B20 3612 I18
2086 B18 3613 I19
2101 I 6 3614 H19
2102 H 7 3615 H19
2103 H 8 3616 I19
2104 H 8 3617 I20
2105 I 7 3662 M19
2106 J 6 3663 L19
2107 J 6 3664 M20
2108 K 6 3665 M20
2109 K 5 3700 F 5
I 2110 L 6 3701 F 3
2111 L 6 3706 C 8
2112 N 9 3707 B 8
2114 N11 3708 B 7
2115 N11 3710 E 2
2116 M12 3711 C 2
2117 N13 3713 B 4
2118 N14 3714 B 3
2119 I15 3715 C 3
2120 I15 3716 C 2
2121 I15 3717 C 2
J 2122 K14 3718 C 1
2123 K15 3719 F 7
2125 I 8 3720 F 7
2140 O 9 3721 F 7
2141 O 7 3722 B 7
2300 J17 3723 B 8
2301 J17 3724 B 8
2302 K19 6105 K 5
2303 K16 6550 G 4
2304 O16 6660 M19
K 2305 L17 7000 D16
2306 L16 7040 I 2
2309 N16 7041 I 2
2310 O17 7042 H 3
2311 N19 7043 H 4
2312 K21 7044 H 5
2313 N21 7060 I19
2500 N 3 7060 G19
2501 N 4 7080 F19
2502 N 1 7080 A20
2503 N 2 7101 G11
L 2504 N 3 7102 I12
2550 G 4 7140 N 6
2610 H20 7141 N 6
2611 I20 7300 L17
2612 I20 7300 K19
2702 F 2 7301 M17
2703 F 3 7301 N19
2704 C 8 7360 L20
3000 D11 7361 M20
3001 D11 7362 L20
3002 D11 7500 N 3
M 3003 E11 7550 G 4
3004 E11 7660 O 8
3005 F11 7660 C20
3006 F18 7700 C 7
3007 B14 9055 M 5
3008 C14
3009 B15
3010 C15
3011 F16
3012 C13
N 3013 C13
3014 G20
3015 G18
3016 F16
3017 F15
3040 G 2
3041 H 2
3042 I 2
3043 I 2
3044 H 3
3045 H 3
3046 I 3
O 3047 H 3
3048 J 3
3049 J 3
3050 H 4
3051 I 4

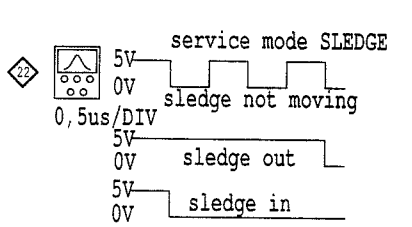




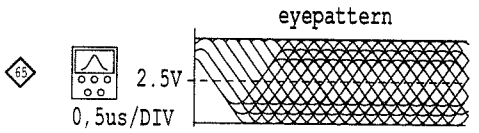
19 ACTIVITY DURING PLAY



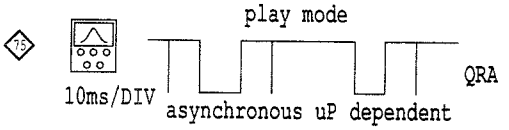
21 ACTIVITY DURING PLAY

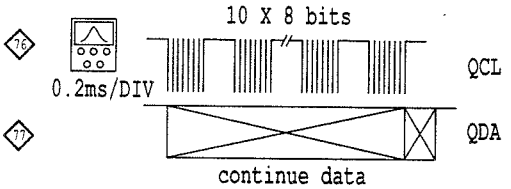


23 SERVICE POSITION SLEDGE
SL-OUT -2,6V
SL-IN +2,6V



67 SERVICE POSITION SLEDGE,FOCUS,MOTOR: 0V
SERVICE POSITION RADIAL: 5V





84 SERVICE POSITION SLEDGE
0V REST POSITION
+5V WHEN SLEDGE IS MOVING

85 +5V REST POSITION OF TRAY
0V WHEN OPENING OR CLOSING

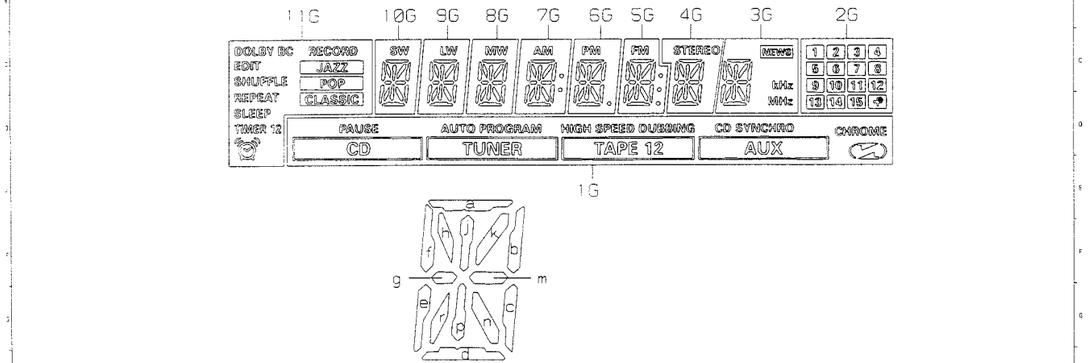
3104 118 01001S-A
9301

FRONT CIRCUIT II

ANODE CONNECTION

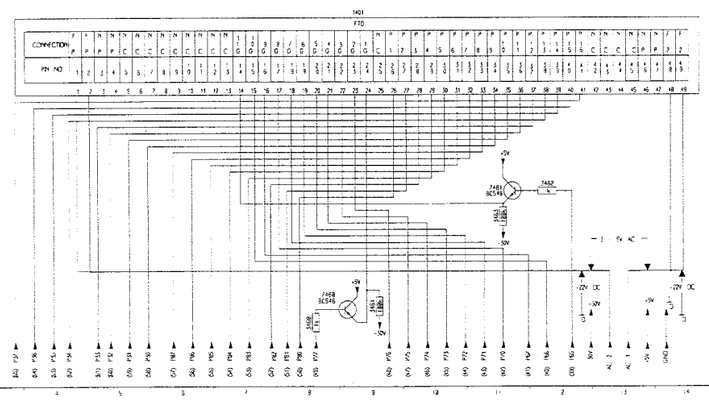
	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1		a	a	a	a	a	a	a	a	1	PAUSE
P2	TIMER	j,p	j,p	j,p	j,p	j,p	j,p	j,p	j,p	2	AUTO
P3	1	k	k	k	k	k	k	k	k	3	PROGRAM
P4	2	h	h	h	h	h	h	h	h	4	HIGH SPEED
P5	SLEEP	b	b	b	b	b	b	b	b	5	DUBBING
P6	REPEAT	f	f	f	f	f	f	f	f	6	CD SYNCHRO
P7	SHUFFLE	m	m	m	m	m	m	m	m	7	CHROME
P8	EDIT	g	g	g	g	g	g	g	g	8	
P9	DOLBY	c	c	c	c	c	c	c	c	9	
P10	B	e	e	e	e	e	e	e	e	10	
P11	C	r	r	r	r	r	r	r	r	11	AUX
P12	RECORD	n	n	n	n	n	n	n	n	12	TAPE
P13	JAZZ	d	d	d	d	d	d	d	d	13	1
P14	POP	SW	LW	MW	AM	PM	FM	STEREO	NEWS	14	2
P15	CLASSIC	-	-	-	○ ○	○	● ● ○	-	MHz	15	TUNER
P16	-	-	-	-	-	-	● ○ ○	-	kHz	+	CD

GRID ASSIGNMENT

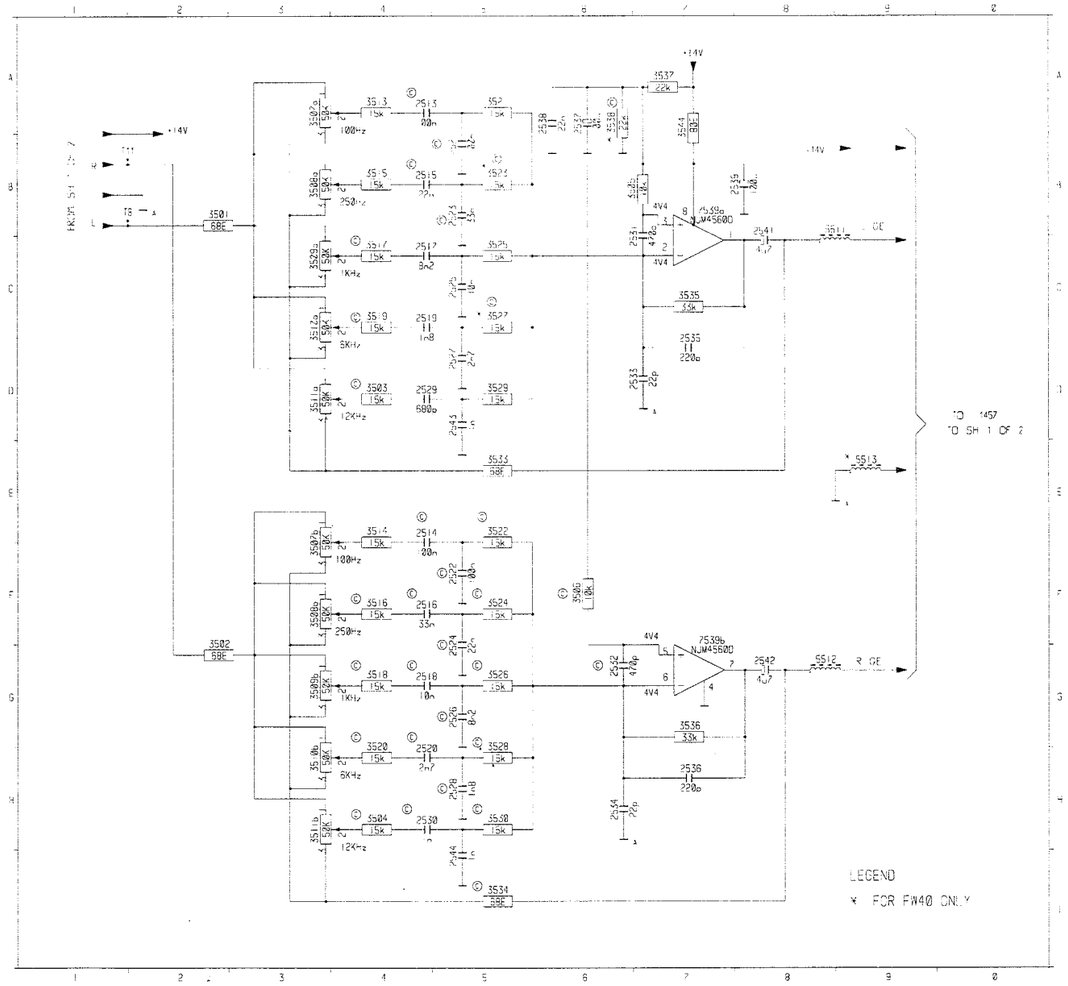


DISPLAY CONNECTION

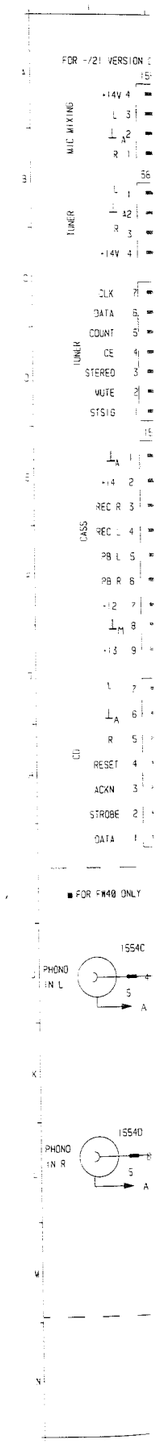
NP = NO PIN
NC = NO CONNECTION
FP = F-LAMENT
Px = ANODE
xG = GRID



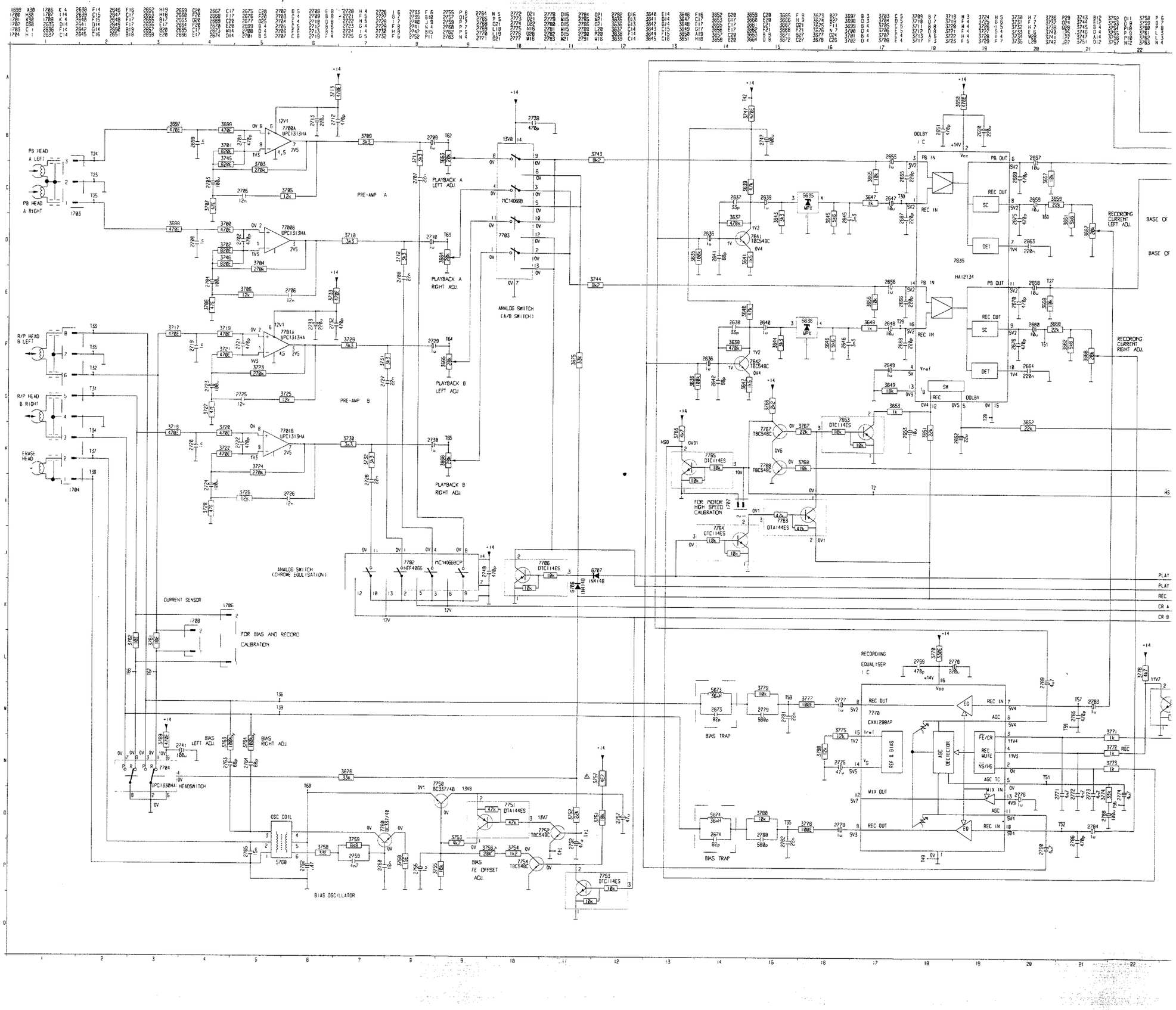
NOTE:
NUMBER IN (**) ARE PIN NUMBER OF 7400
NUMBER Pxx ARE PORT NUMBER OF 7400

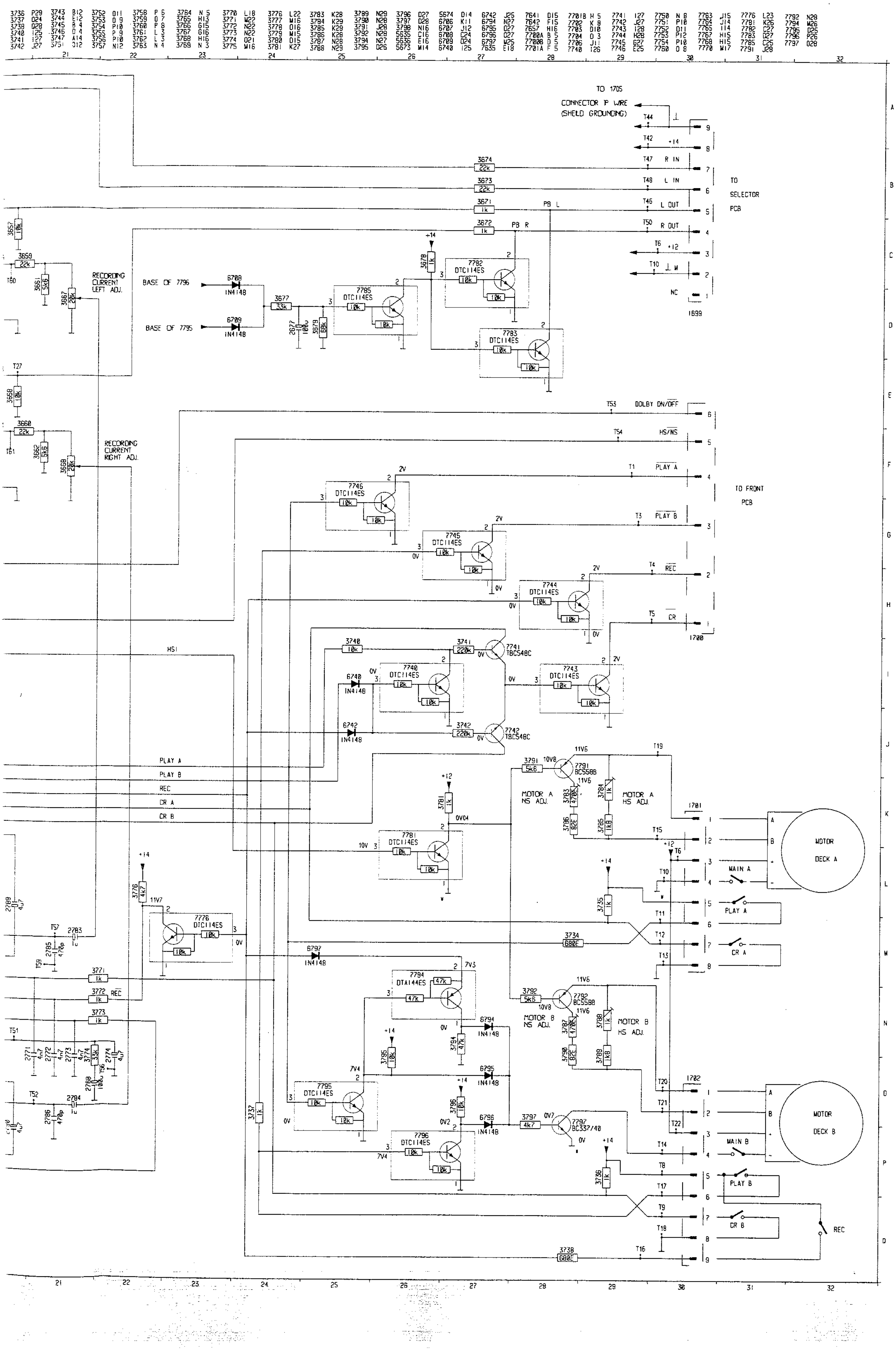


SELECTOR

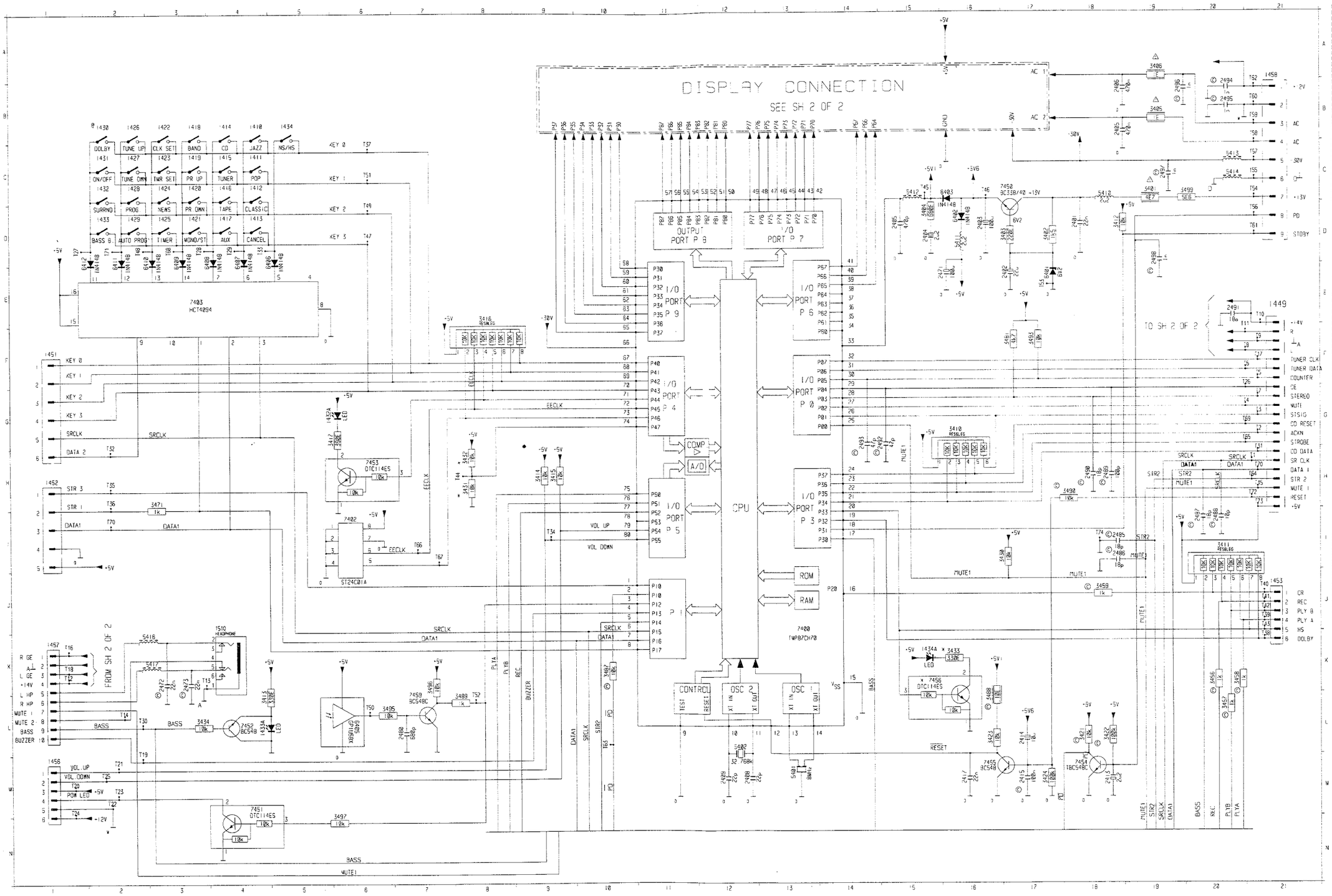


TAPE CORE CIRCUIT



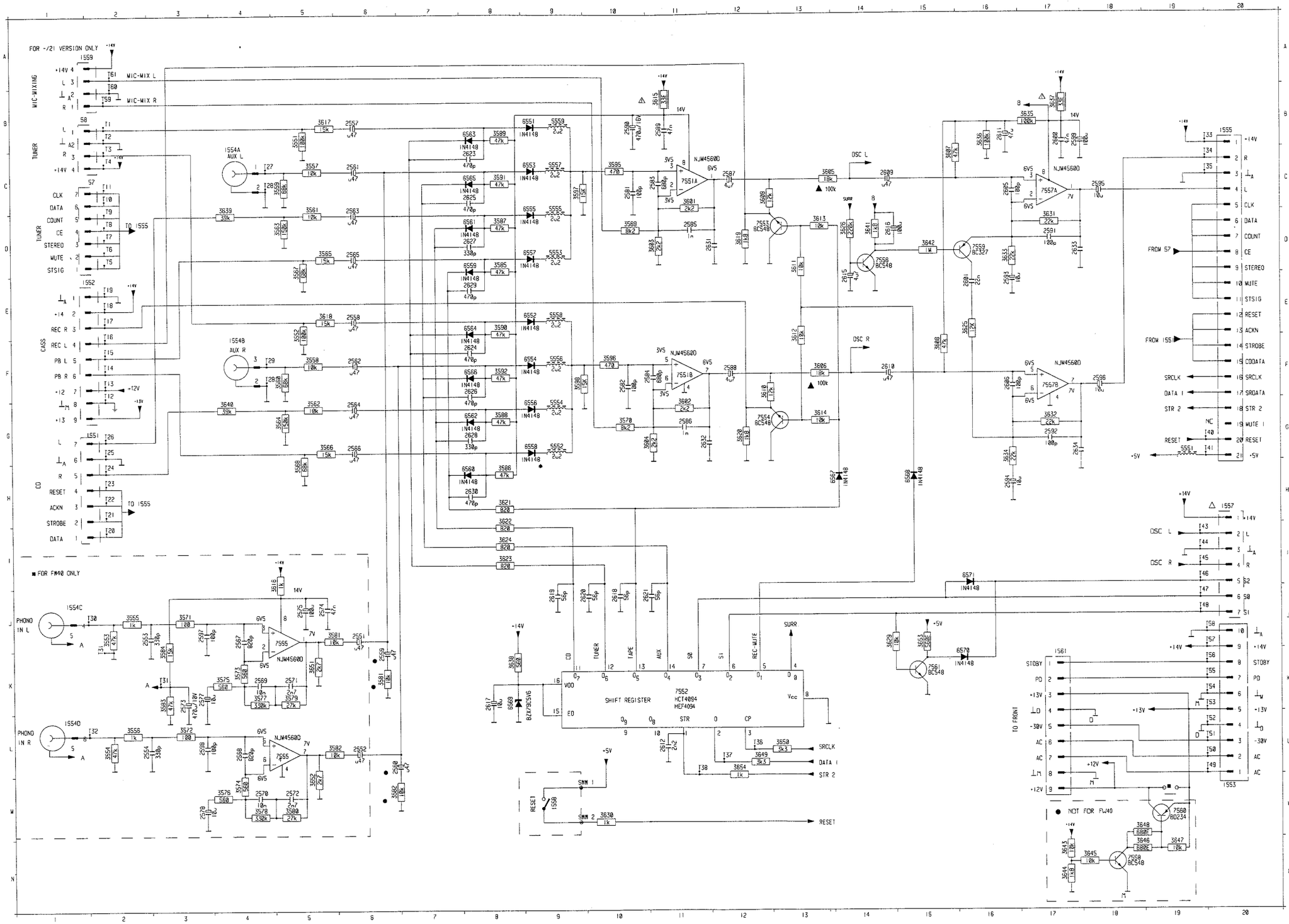

TO 1705
CONNECTOR 'P' WIRE (SHIELD GROUNDING)
TO SELECTOR PCB
PB L
PB R
R IN
L IN
L OUT
R OUT
NC
1699
RECORDING CURRENT LEFT ADJ.
RECORDING CURRENT RIGHT ADJ.
BASE OF 7796
BASE OF 7795
DOLBY ON/OFF
HS/NS
PLAY A
PLAY B
REC
CR
TO FRONT PCB
1700
HSI
CR A
CR B
MOTOR A NS ADJ.
MOTOR A HS ADJ.
MOTOR B NS ADJ.
MOTOR B HS ADJ.
MOTOR DECK A
MOTOR DECK B
MAIN A
MAIN B
1701
1702

FRONT CIRCUIT I



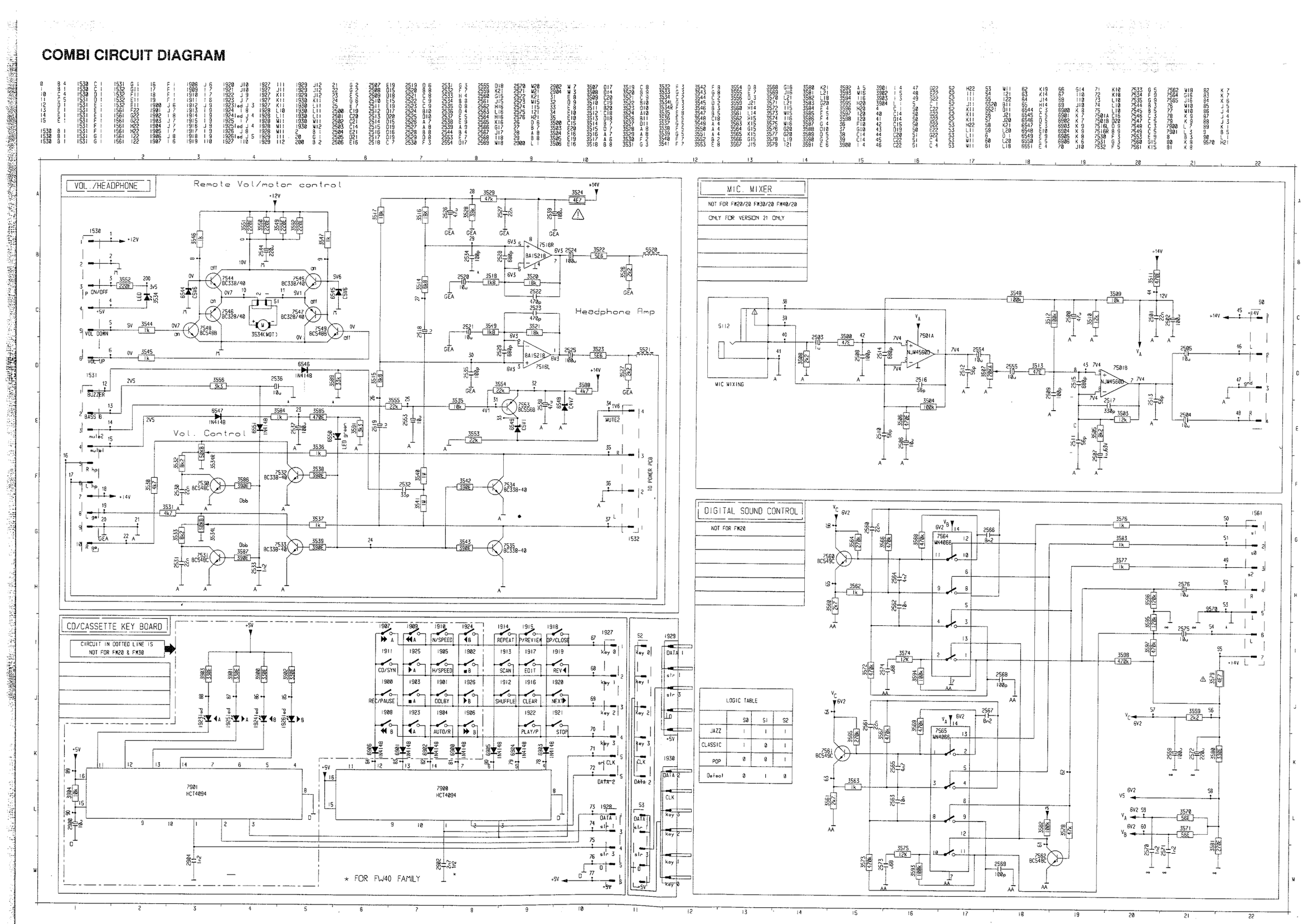
NOTE
* FOR FW20 ONLY
# NOT FOR FW20 FAMILY
@ FOR FW30 FAMILY ONLY

SELECTOR CIRCUIT DIAGRAM

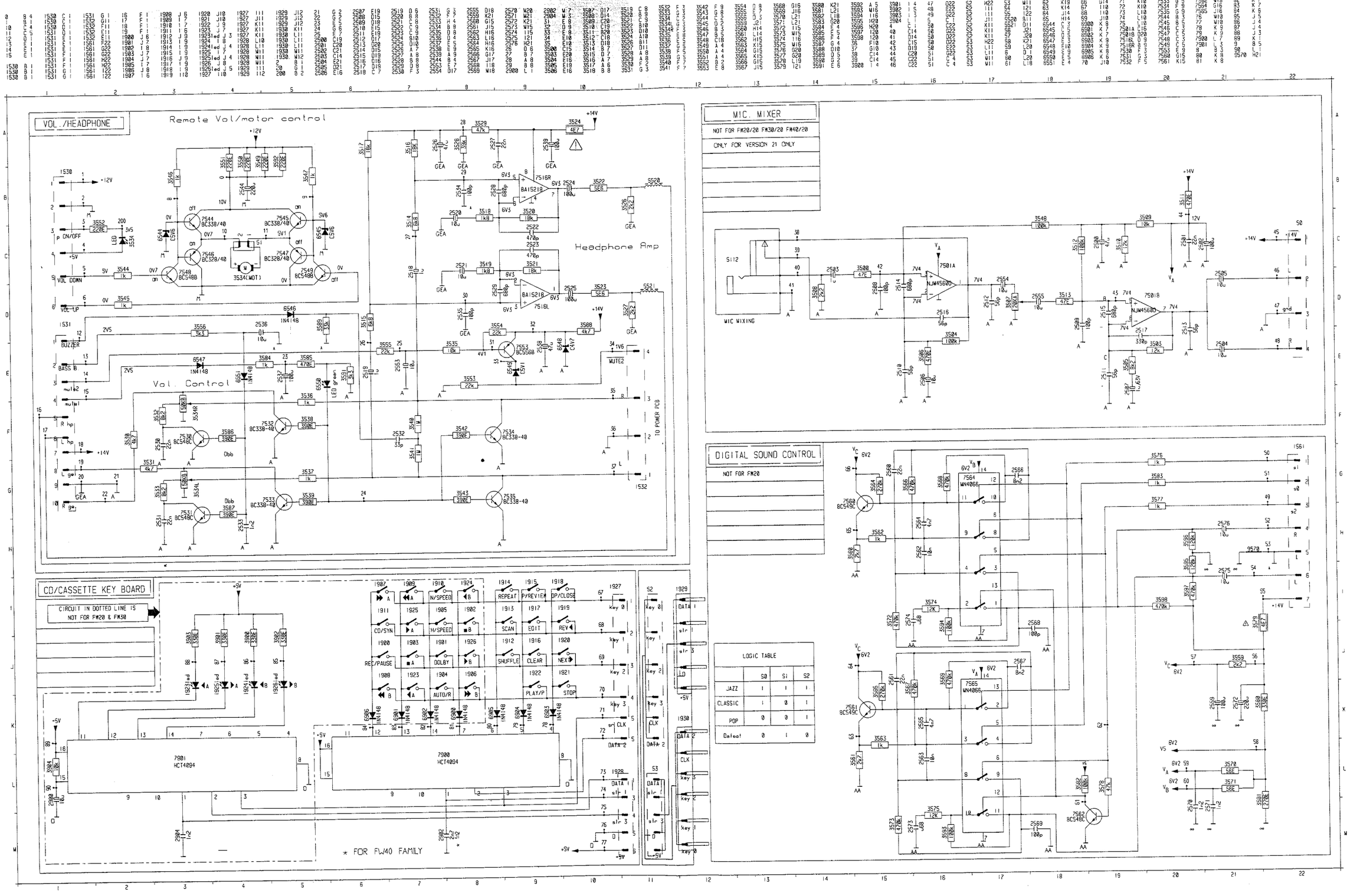


▲ FOR FW20 ONLY
△ NOT FOR FW20
■ FOR FW40 ONLY
● NOT FOR FW40

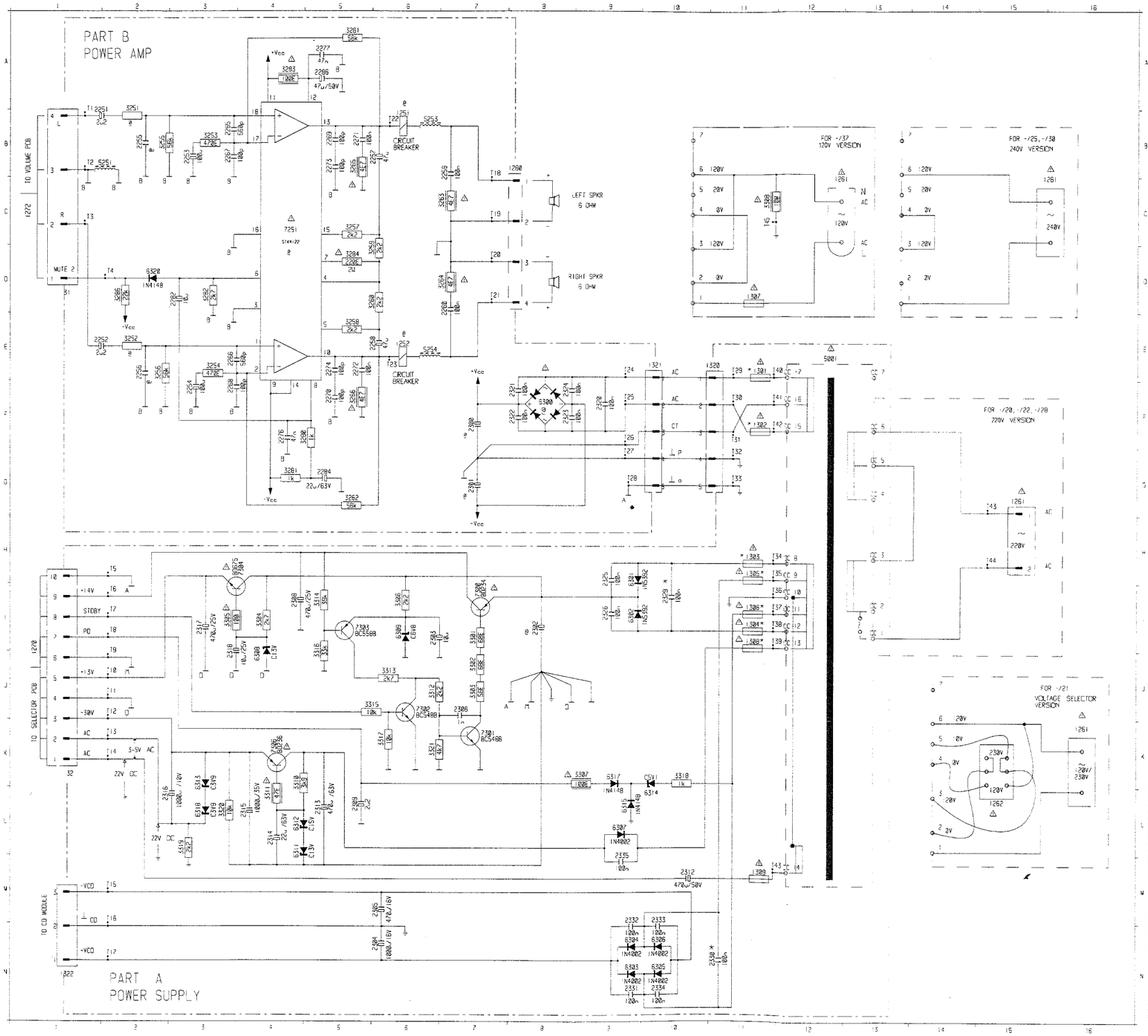
COMBI CIRCUIT DIAGRAM



COMBI CIRCUIT DIAGRAM



POWER CIRCUIT DIAGRAM



IC 7251 VOLTAGES

Pin No	FW20	FW30
1	0 V	0 1V
2	0 V	0 1V
3	0V	0V
4	+15 4V	-18 5V
5	-1 2V	-1 0V
6	0V	0V
7	+15 5V	-21 5V
8	+16 0V	-22 0V
9	+16 2V	22 1V
10	0V	0V
11	15 4V	22 1V
12	15 5V	21 0V
13	0V	0V
14	+16 2V	-22 1V
15	-1 2V	-1 0V
16	0V	0V
17	-0 1V	-0 1V
18	-0 1V	-0 1V

TRANSISTOR VOLTAGE

Pin No	ITEM NO					
	7300	7301	7302	7303	7304	7306
e	21 5V	0V	0V	6 7V	13 0V	-30 0V
b	20 0V	0.6V	0V	6 2V	12 3V	-29 2V
c	14 0V	20 6V	0 9V	1 3V	21 5V	-47 2V

NOTE FOR ITEMS MARKED @

ITEMS	FW20	FW30	FW40
7251	STK4112	-	STK4132
6300	D3SB	D5SB	D5SB
2300 2301	3300u /25V		3300u/35V
1251 1252	1 75A	2 0A	2 5A
3251 3252	22k	10k	5k3
2255 2256	100pF	272pF	680pF
2302	2200uF		5600uF

Item Marked *	FW20		FW30		FW40		
	All versions except /37	/37	All versions except /37	/37	Other version	/53	/37
1301	2A	3.15A	3.15A	5A	4A	4A	5A
1302							
1303	1A	1 25A	1A	1 25A		1A	1.25A
1304							
1305	0.63A	1.25A	0.63A	1.25A	0.63A	0.63A	1.25A
1306							
1307	-	2A	-	2A	-	1 6A	2A
1308	0.63A	1.25A	0.63A	1.25A	0.63A	0.63A	1.25A
1309							

* NOT FOR /37

FRONT CIR

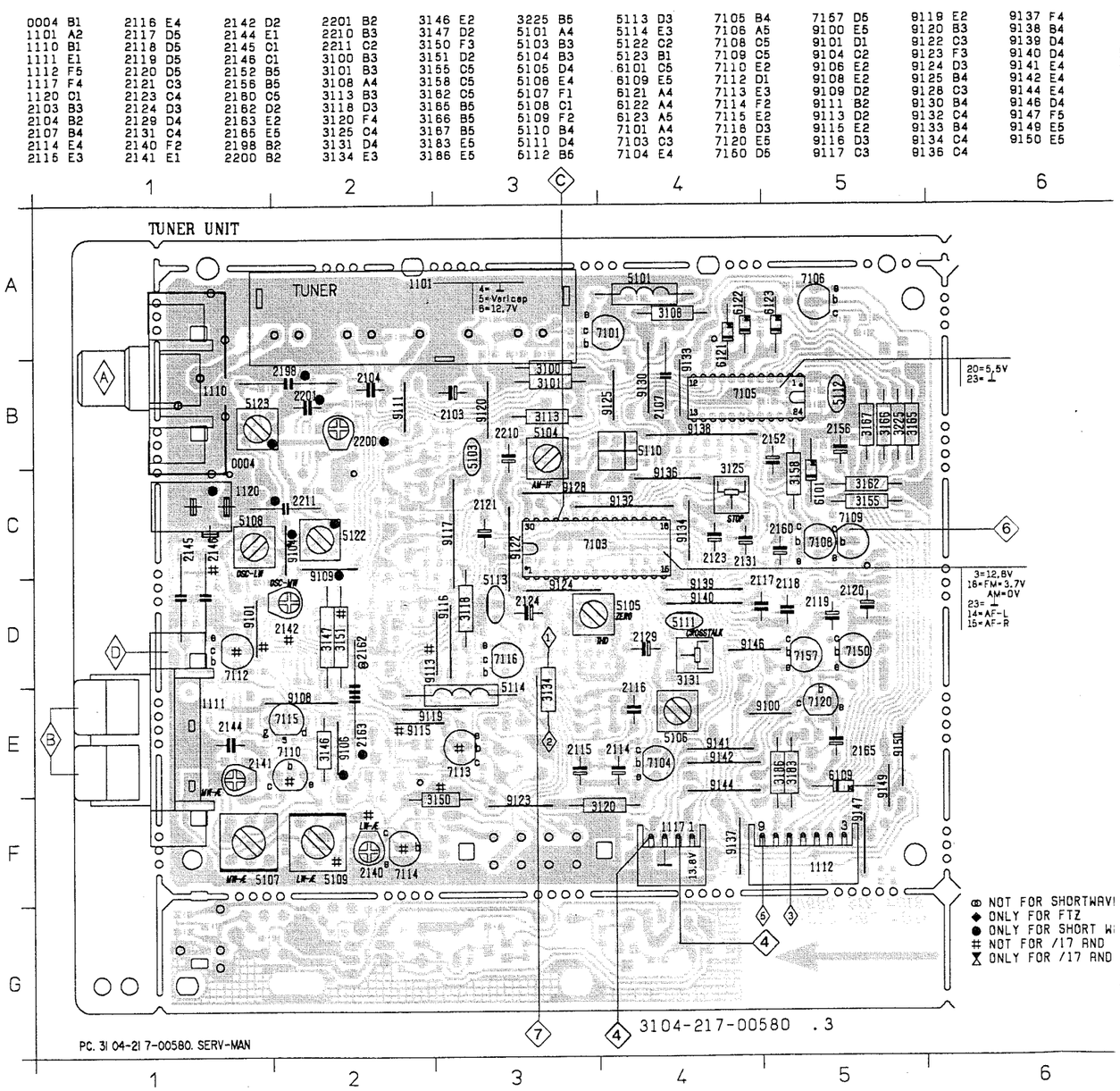
TUNER ADJUSTMENT

SK...	FREQUENCY	I/P	DISPLAY	ADJUST	O/P	SCOPE/METER
Varicap alignment						
FM 87.5-108MHz			108MHz 87.5MHz	check		8V ± 1V 1.65V ± 0.35V
FM @ 65-108MHz			108MHz 65MHz	check		8.75V ± 1.75V 2.25V ± 0.75V
LW + 153-279kHz			279kHz 153kHz	5108 check	◇6	8.5V 1V ± 0.3V
MW 522-1611kHz (530-1700kHz)			1611kHz (1710kHz)	2142 (5108)		8.5V (8.5V)
			522kHz (530kHz)	check		1.1V ± 0.3V (1.0V ± 0.3V)
FM						
FM	98MHz mod = 1kHz Δf = 75kHz 1mV	◇A	98MHz	5105	◇1 – ◇2	0V ± 0.02V
	98MHz 90% Left 9% Pilot 1mV		98MHz	3131	◇4 Right	min.
				check	◇3	Lo
	98MHz mod = 1kHz Δf = 75kHz 15μV		98MHz	3125	◇5	Hi ⌐ Lo
AM-IF						
MW	450kHz Δf = 10kHz 50Hz	◇C	1494kHz (1600kHz)	5104	◇7	Symmetrical max fo
AM-RF						
LW *	155kHz 270kHz	◇B	155kHz 270kHz	5109 2140	◇4	max.
MW *	558kHz (560kHz)		558kHz (560kHz)	5107		
	1494kHz (1600kHz)		1494kHz (1600kHz)	2141		

* Mod 1kHz 30% AM
(..) For Grid = 10kHz
+ For LW version only
@ For /34 version only

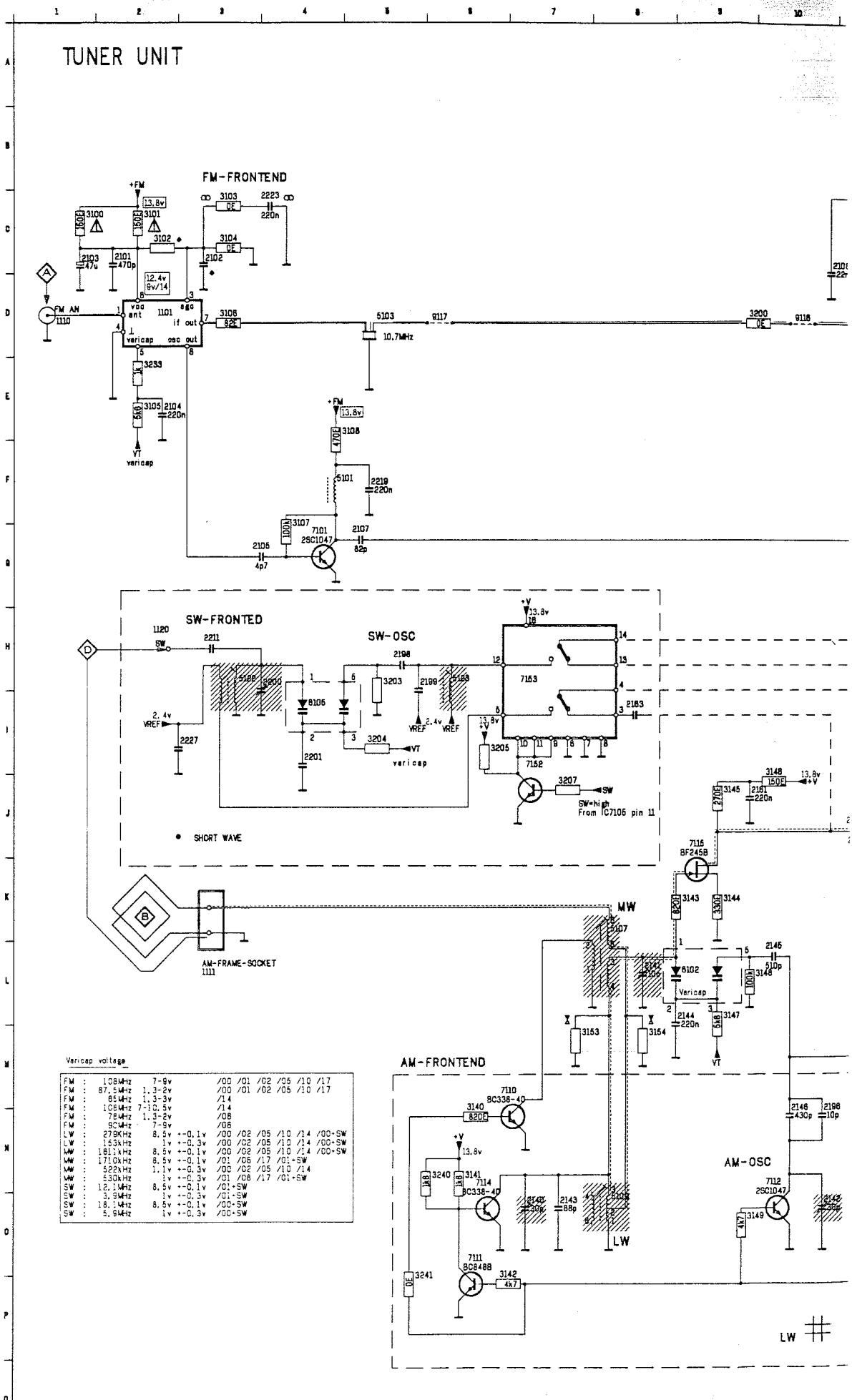
Repeat

TUNER 92 COMPONENT AND CHIP LAYOUT - For /22 and other versions produced before wk 249.



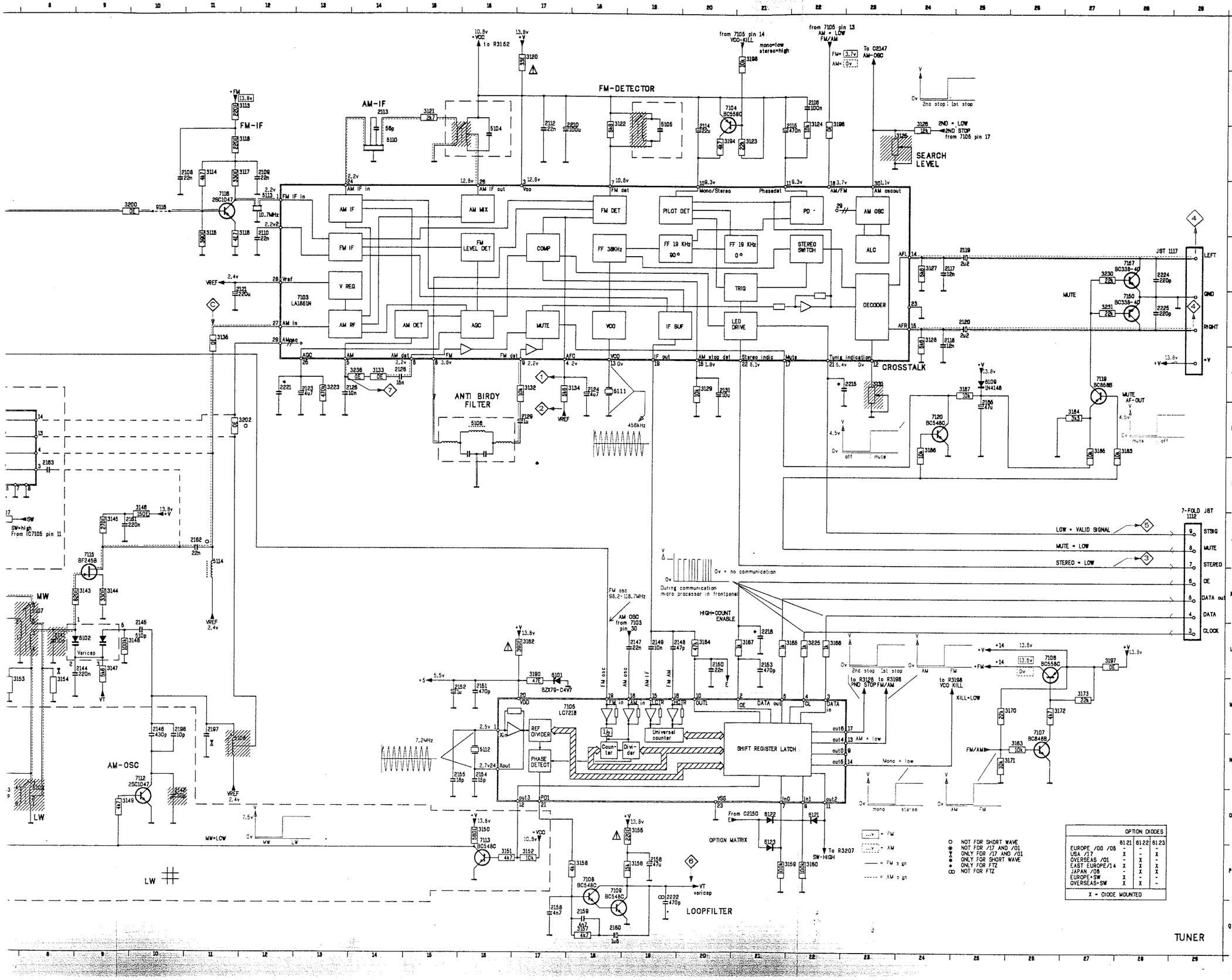
TUNER 92 CIRCUIT DIAGRAM - For /22 and other versions produced before v

TUNER UNIT



ES. 3104-217-00580. SERV. ES-UNIT

ersions produced before wk 249.



OPTION DIODES			
	6121	6122	6123
EUROPE /00 /05	-	-	-
USA /17	X	-	X
OVERSEAS /01	-	X	-
EAST EUROPE/14	X	X	X
JAPAN /08	-	X	X
EUROPE+SW	X	-	-
OVERSEAS+SW	X	X	-

X = DIODE MOUNTED

1101	G 2	7101	G 4
2101	C 2	7103	F13
2102	C 3	7104	B20
2103	C 1	7105	M18
2104	E 2	7106	L26
2105	G 4	7107	M26
2107	G 5	7108	P18
2108	C10	7109	P18
2109	C12	7110	N 7
2110	D12	7111	O 8
2112	B17	7112	M10
2113	B14	7113	Q16
2114	C20	7114	N 6
2115	C21	7115	J 9
2116	B22	7116	D11
2117	F24	7119	Q27
2118	F24	7120	M24
2119	E25	7150	F28
2120	F25	7152	I 7
2121	F11	7153	H 7
2123	G13	7157	E28
2124	G18	9116	D10
2125	G13	9117	D 6
2126	G14		
2129	H17		
2131	G20		
2140	O 7		
2141	L 8		
2142	Q10		
2143	O 7		
2144	L 8		
2145	L10		
2148	N10		
2147	L19		
2148	L19		
2149	L19		
2150	L20		
2151	N18		
2152	N15		
2153	L21		
2154	N16		
2155	N15		
2156	P19		
2158	Q17		
2159	Q18		
2160	Q18		
2161	J 9		
2162	J11		
2183	I 8		
2185	H25		
2186	N10		
2197	N11		
2198	M 5		
2199	M 5		
2200	M 3		
2201	I 4		
2210	C17		
2211	M 3		
2215	Q22		
2216	L21		
2219	F 5		
2221	G12		
2222	P19		
2223	C 4		
2224	E26		
2225	F26		
2227	I 2		
3100	C 1		
3101	C 2		
3102	C 2		
3103	C 3		
3104	C 3		
3105	E 2		
3106	F 3		
3107	F 4		
3108	E 4		
3113	B11		
3114	C11		
3115	D11		
3116	D11		
3117	C11		
3118	C11		
3120	A17		
3121	B15		
3122	B18		
3123	C21		
3124	B22		
3126	B24		
3127	E24		
3128	F24		
3129	Q20		
3132	G17		
3133	G14		
3134	G17		
3135	F11		
3140	N 6		
3141	N 5		
3142	O 7		
3143	K 8		
3144	K 9		
3145	J 8		
3146	I10		
3147	L 9		
3148	O 9		
3150	Q16		
3151	P16		
3152	P17		
3153	M 7		
3154	M 8		
3155	Q19		
3156	P19		
3157	Q18		
3158	P18		
3159	P21		
3160	P22		
3162	L17		
3163	M26		
3164	L20		
3165	L21		
3166	L22		
3167	L21		
3170	M25		
3171	M25		
3172	M28		
3173	M27		
3183	M27		
3184	M27		
3185	M27		
3186	M24		
3187	O25		
3190	L17		
3194	C20		
3198	B22		
3197	L27		
3198	R21		
3200	Q10		
3202	H11		
3203	M 5		
3204	I 5		
3205	I 6		
3207	J 7		
3223	G13		
3225	L22		
3230	F27		
3231	F27		
3233	E 2		
3235	G14		
3240	N 5		
3241	O 5		
5104	C16		
5105	B19		
5106	H16		
5107	K 8		
5111	G18		
5112	M16		
6101	L17		
6102	L 8		
6105	I 4		
6109	O25		
6121	O22		
6122	O21		
6123	O21		

TUNER Adjustment table (ECO 4 FM/MW- and FM/MW/LW - versions)

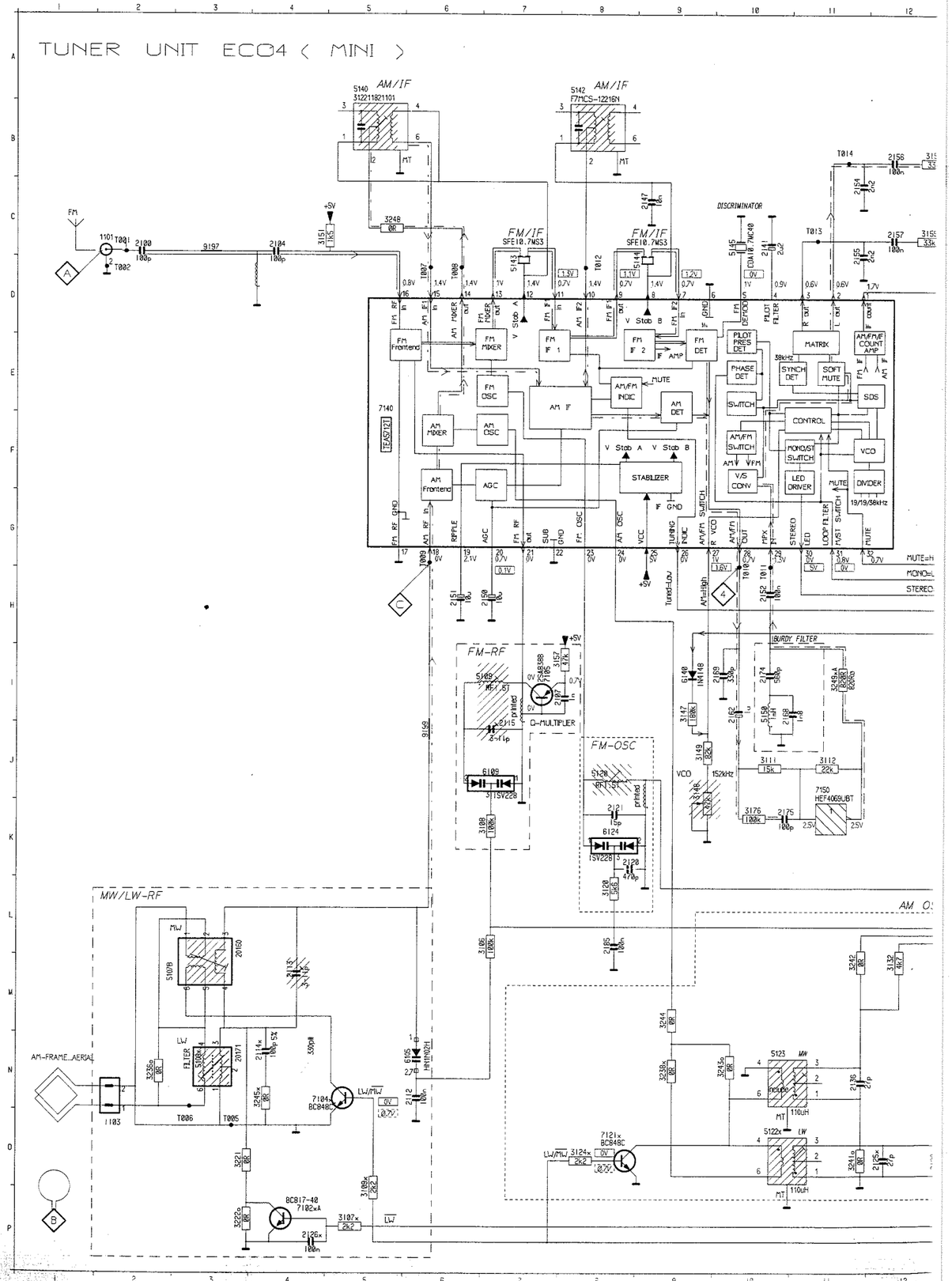
Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM /00/01/05/10/17			108 MHz	5120	1	8 ± 0.2V
87.5 - 108MHz			87.5MHz	check		4.1 ± 0.5V
FM /14 East Europe			108 MHz	5120		8V ± 0.2V
65.81 - 108MHz			65.81 MHz	check		0.8 ± 0.4V
MW /01/17 2-band version			1710kHz	5123		9V ± 0.1V
530 - 1710kHz			530kHz	check		1V ± 0.4V
LW /00/05/10/14			279kHz	5122		8V ± 0.2V
153 - 279kHz			153kHz	check		1V ± 0.4V
MW /00/05/10/14			1611kHz	5123		8V ± 0.1V
522 - 1611kHz			522kHz	check		1V ± 0.4V
FM - RF						
FM /00/01/05/10/17	108MHz	A	108MHz	2115	3	MAX ↕
	87.5MHz	mod=1kHz Δf=22.5kHz	87.5MHz	5109		
FM /14 East Europe	108MHz		108MHz	2115		
	65.81MHz		65.81MHz	5109		
VCO						
FM	98 MHz, 1mV continuous wave	A	98MHz	3148	2	152 ± 1 kHz
AM - IF						
MW	540kHz Δf = 10kHz as low as possible	100nF 50E C	540kHz	5142 5140	4	symmetrical and max height
AM - RF						
LW	198kHz	B	198kHz	5108	4	MAX
MW /00/05/10/14 3-band version	1494kHz	mod=1kHz 30% AM	1494kHz	2113		MAX ↕
	549kHz		549kHz	5107		
MW /01/17 2-band version	1500kHz		1500kHz	2113		
	550kHz		550kHz	5107		

* Use Service Test Program. By selecting the TUNER TEST test frequencies will be stored as preset frequ. automatically.

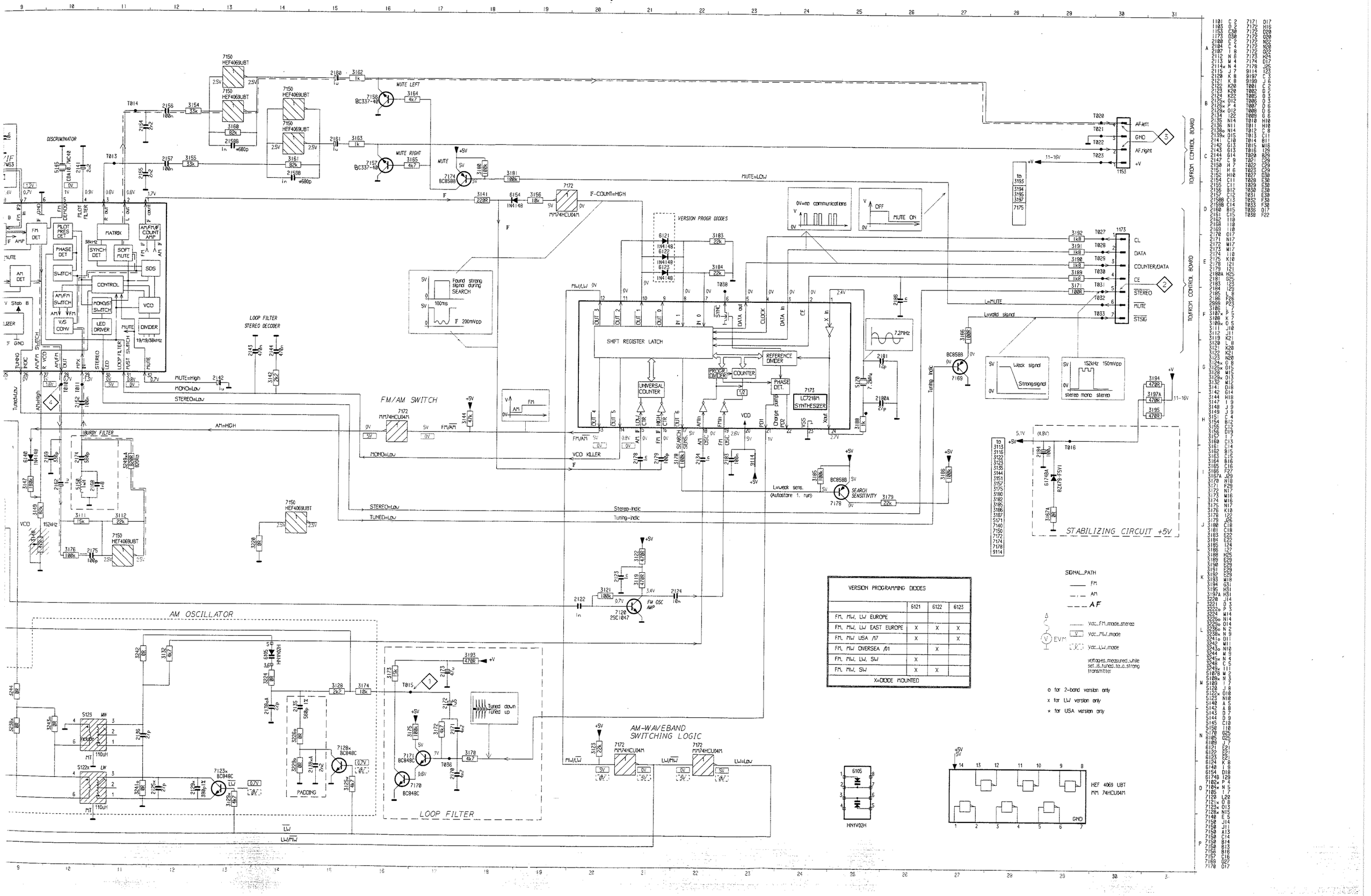
↕ repeat

Note : Please read /00 as /20, /01 as /21, /17 as /37 etc.

ECO4 CIRCUIT DIAGRAM - For all versions produced from wk 249 onwards except /22.

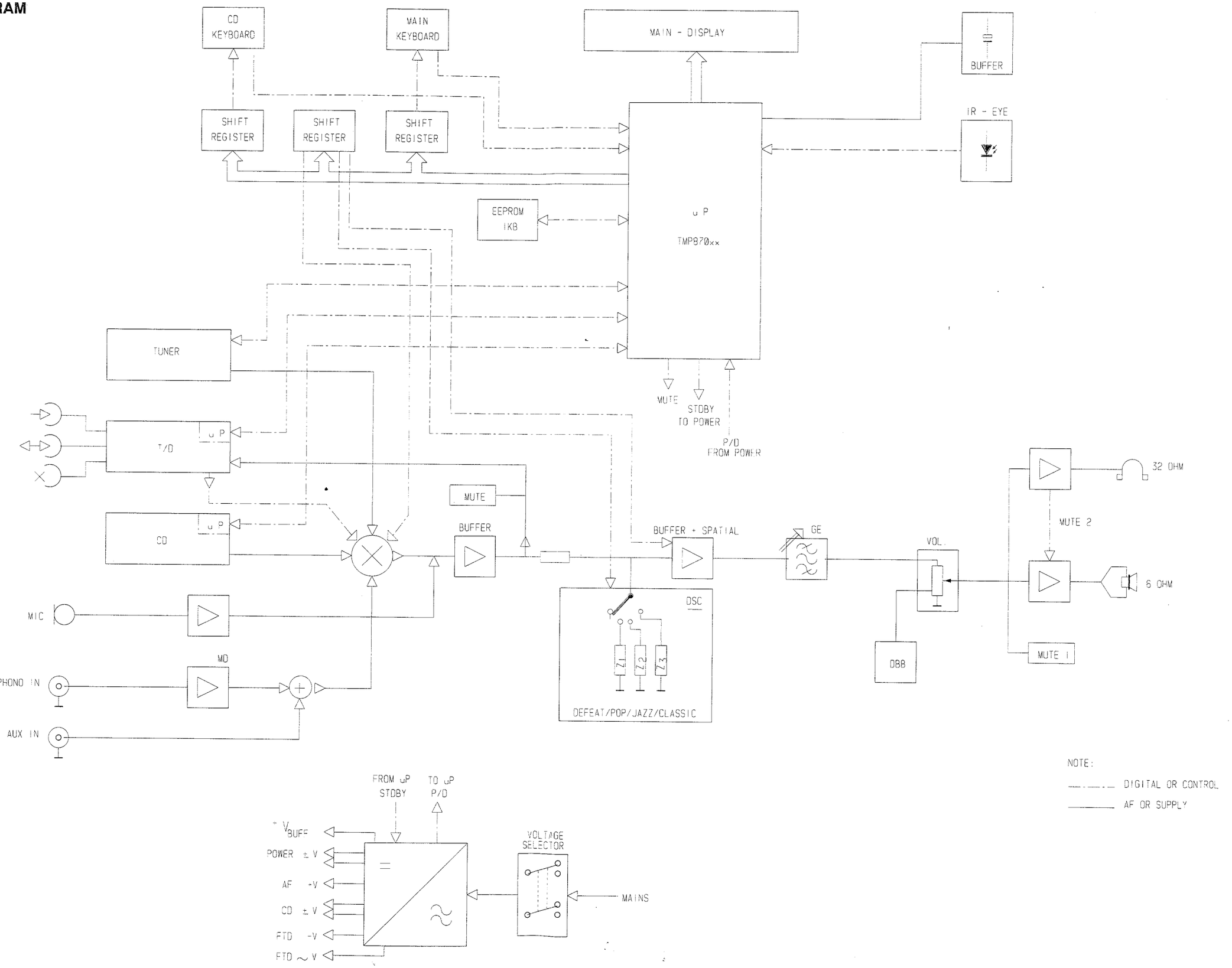


9 onwards except /22.



VERSION PROGRAMMING DIODES			
	6121	6122	6123
FM, MW, LW EUROPE			
FM, MW, LW EAST EUROPE	X	X	X
FM, MW USA /17	X		X
FM, MW OVERSEA /01		X	
FM, MW, LW, SW	X		
FM, MW, SW	X	X	
X=DIODE MOUNTED			

BLOCK DIAGRAM



WIRING DIAGRAM