

**ESQUEMAS
TÉCNICOS
VOL. IV**



gradiente

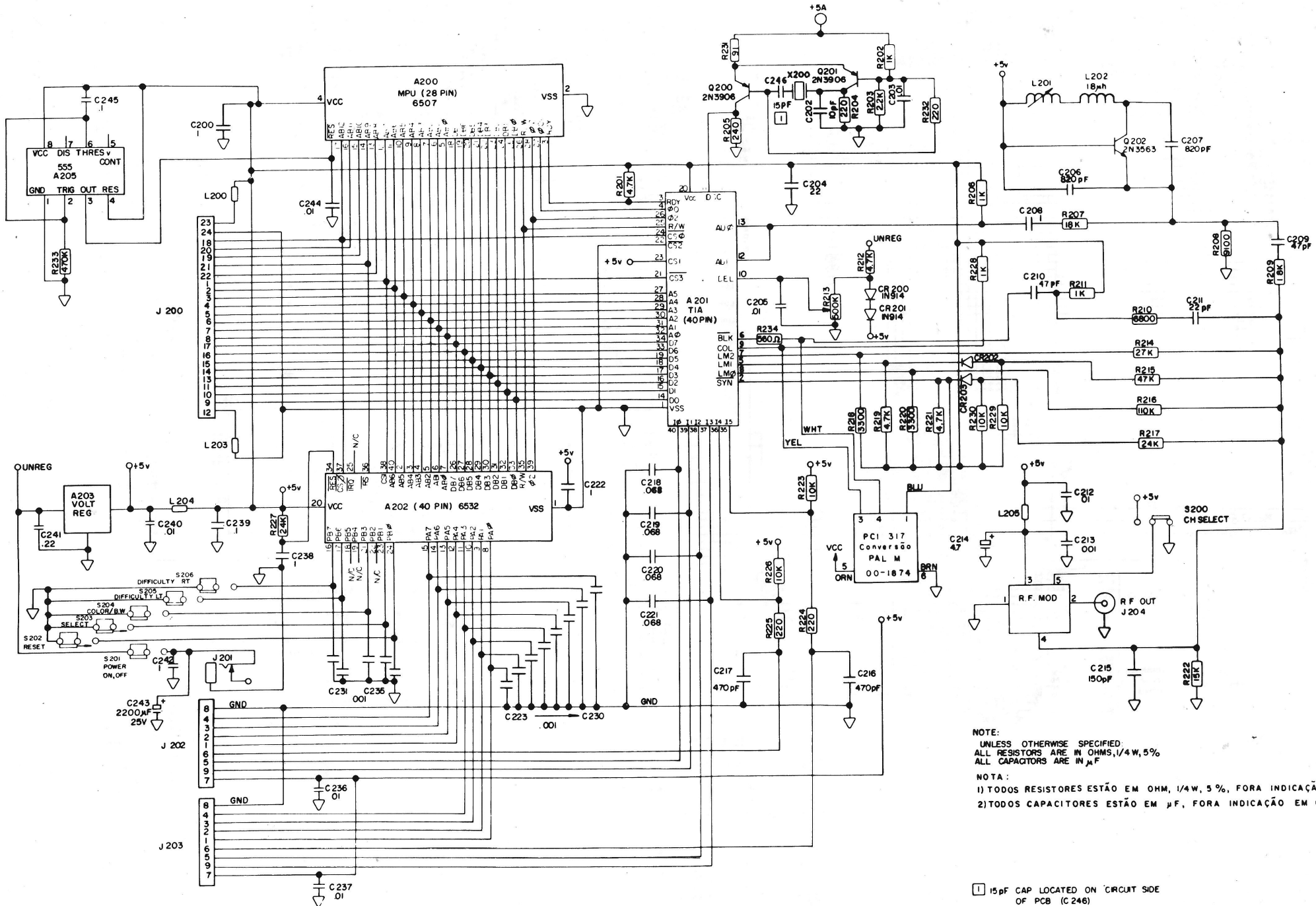


gradiente

MARCA REGISTRADA DA GRADIENTE INDUSTRIAL S.A.

eltec[®]

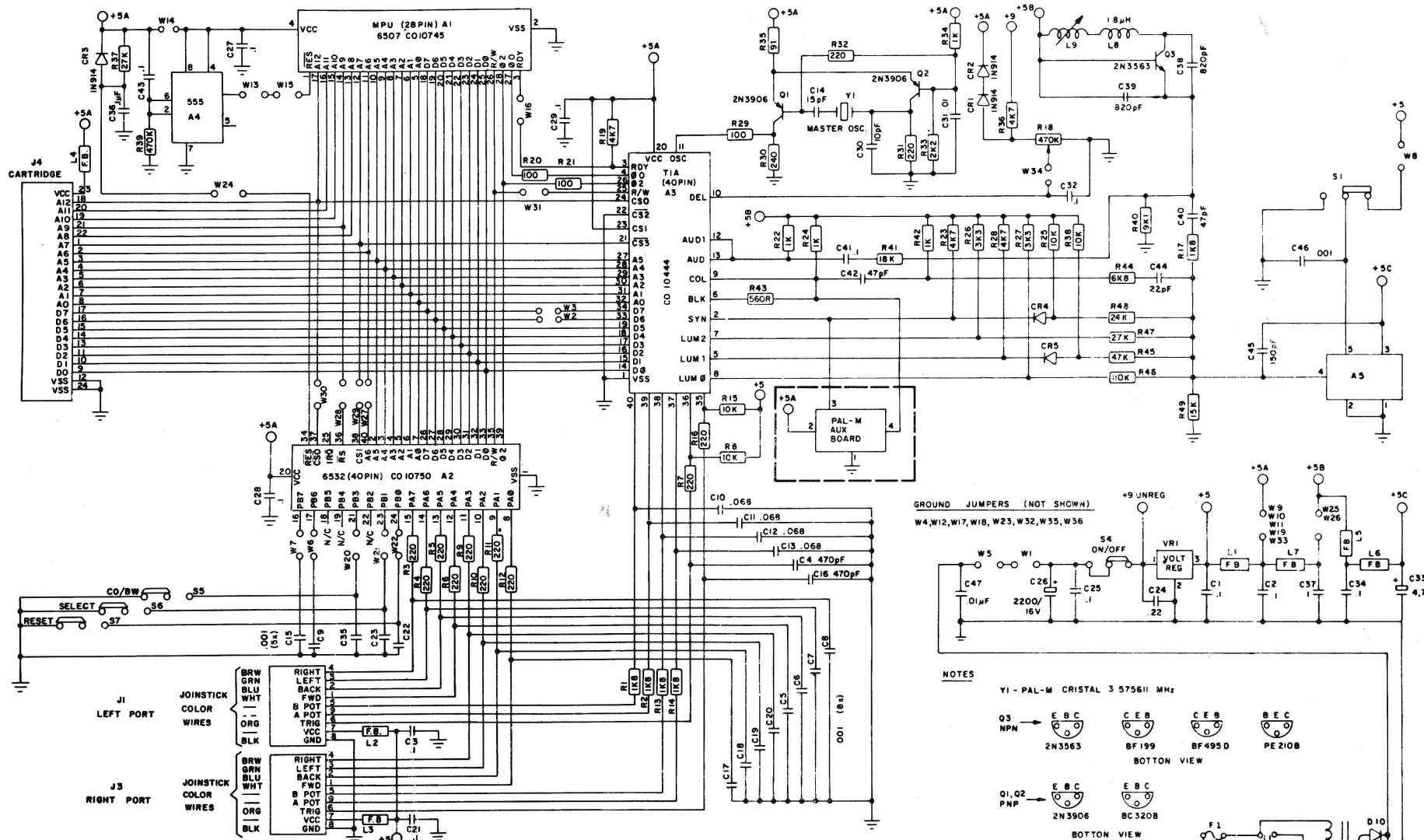
EDITORA DE LIVROS TÉCNICOS LTDA.



NOTE:
 UNLESS OTHERWISE SPECIFIED,
 ALL RESISTORS ARE IN OHMS, 1/4W, 5%
 ALL CAPACITORS ARE IN μ F

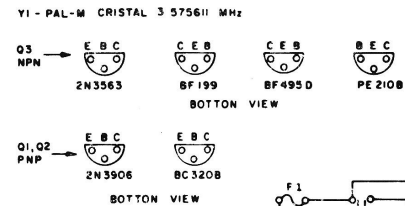
NOTA:
 1) TODOS RESISTORES ESTÃO EM OHM, 1/4W, 5%, FORA INDICAÇÃO EM CONTRÁRIO
 2) TODOS CAPACITORES ESTÃO EM μ F, FORA INDICAÇÃO EM CONTRÁRIO

□ 15 pF CAP LOCATED ON CIRCUIT SIDE OF PCB (C246)



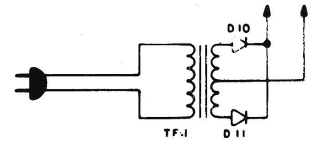
GROUND JUMPERS (NOT SHOWN)
W4, W12, W17, W18, W23, W32, W35, W36

NOTES



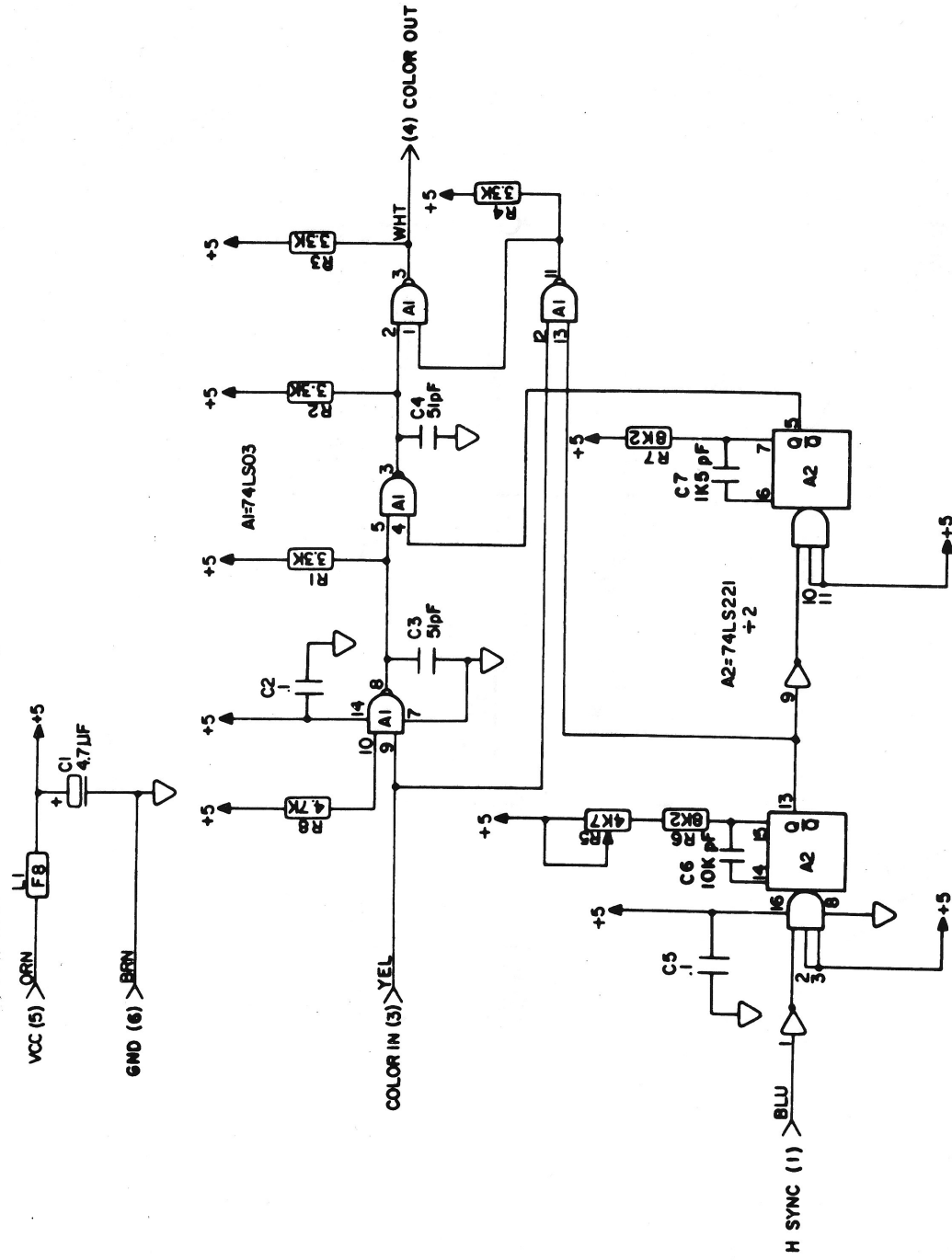
NOTAS - PARA A VERSÃO MÉXICO

- ① - UTILIZAR A FONTE ABAIXO
- ② - NÃO UTILIZAR O PCI 335 (PAL-M AUX BOARD)
- ③ - R43(560R) MUDAR PARA 820R



ATARI 2600 VIDEO COMPUTER SYSTEM

Circuito Auxiliar Conversão PAL-M



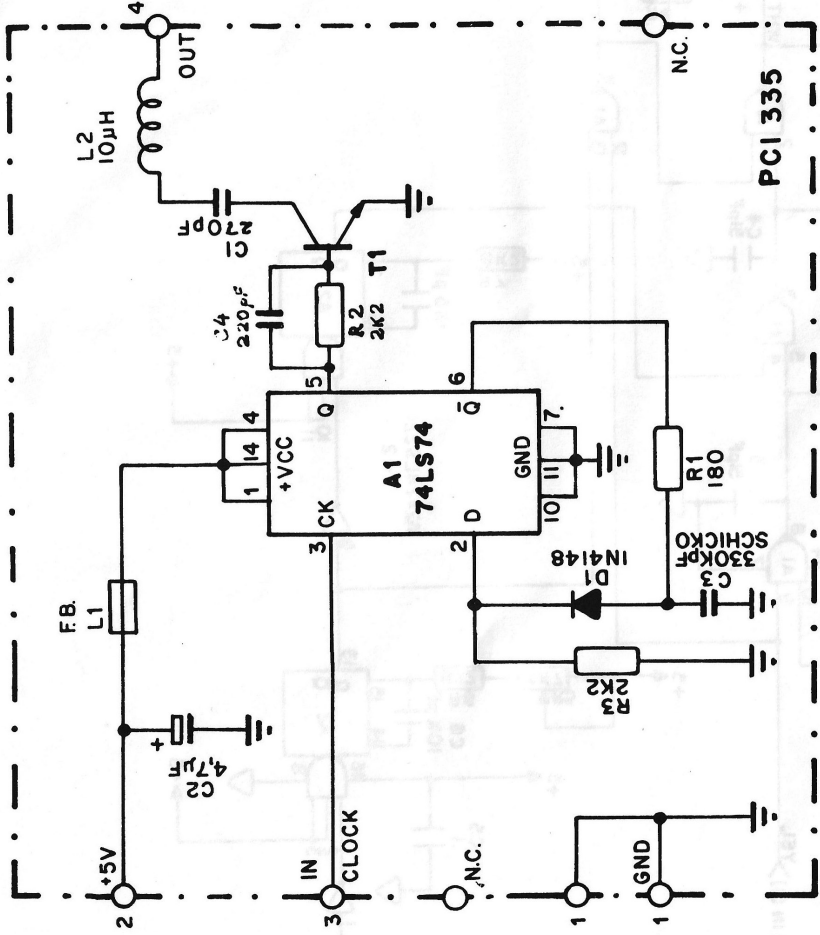
NOTA:

1) TODOS RESISTORES ESTÃO EM OHM, 1/4 W,
5%, FORA INDICAÇÃO EM CONTRÁRIO.

2) TODOS CAPACITORES ESTÃO EM µF,
FORA INDICAÇÃO EM CONTRÁRIO.

ATARI VIDEO COMPUTER SYSTEM

Circuito Auxiliar Conversão PAL-M/Modulador RF

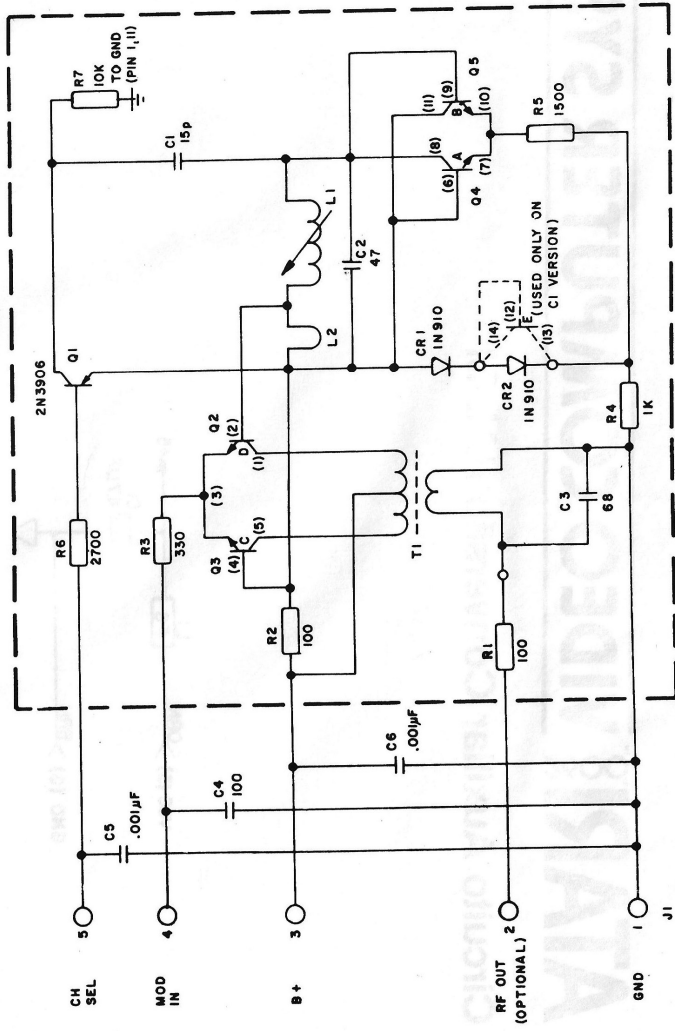


PCI 335

Circuito Auxiliar Conversão PAL-M

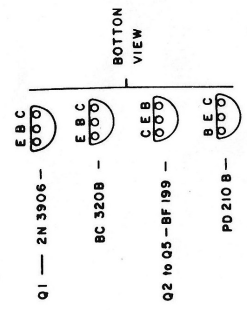


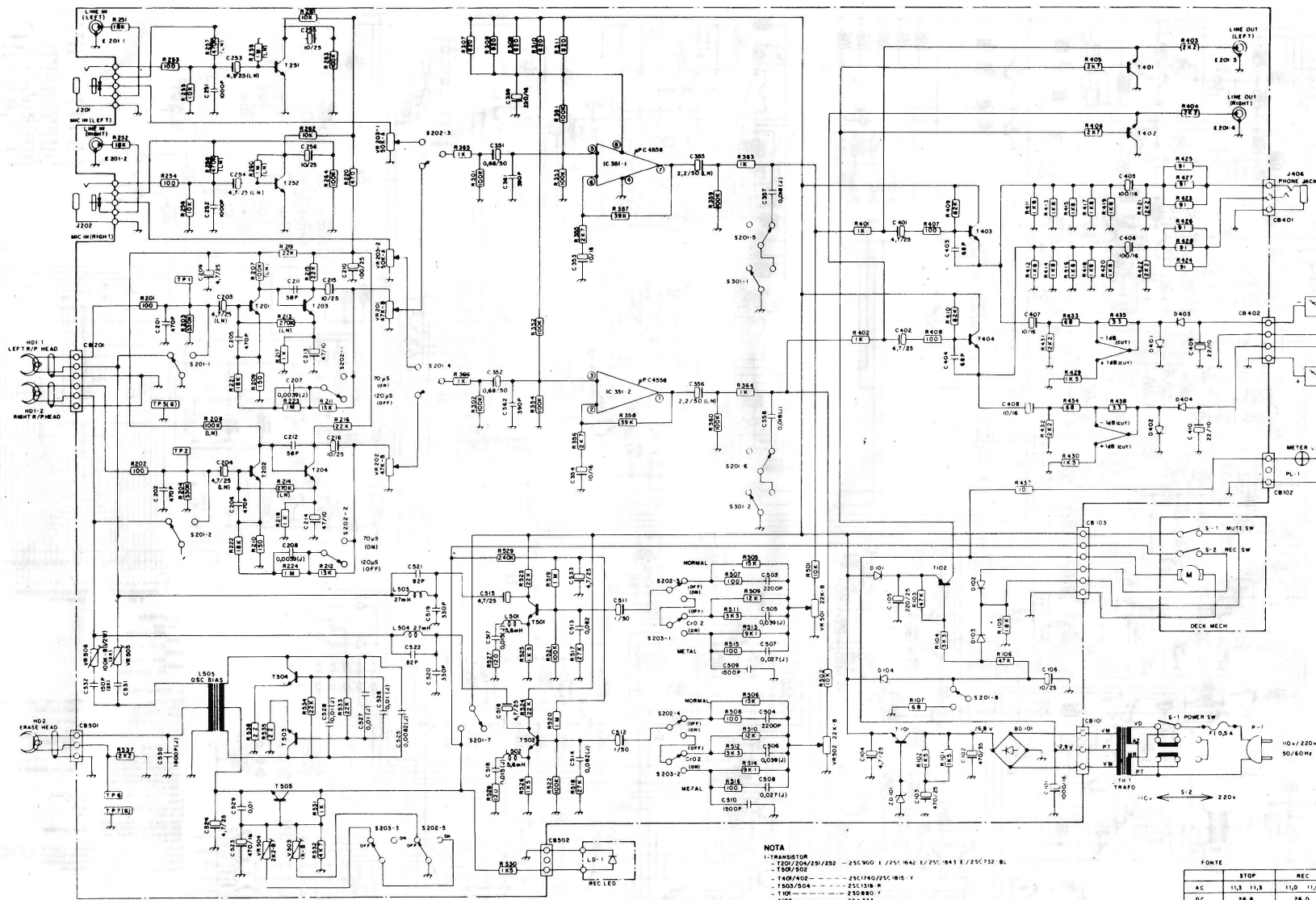
BOTTOM VIEW



Circuito Modulador RF

- NOTES:
 1- ALL CAPACITOR VALUES IN PF UNLESS OTHERWISE SPECIFIED
 2- L2 IS IN PCB FOIL PATTERN
 3- CI VERSION - CA 3086 LM 3086



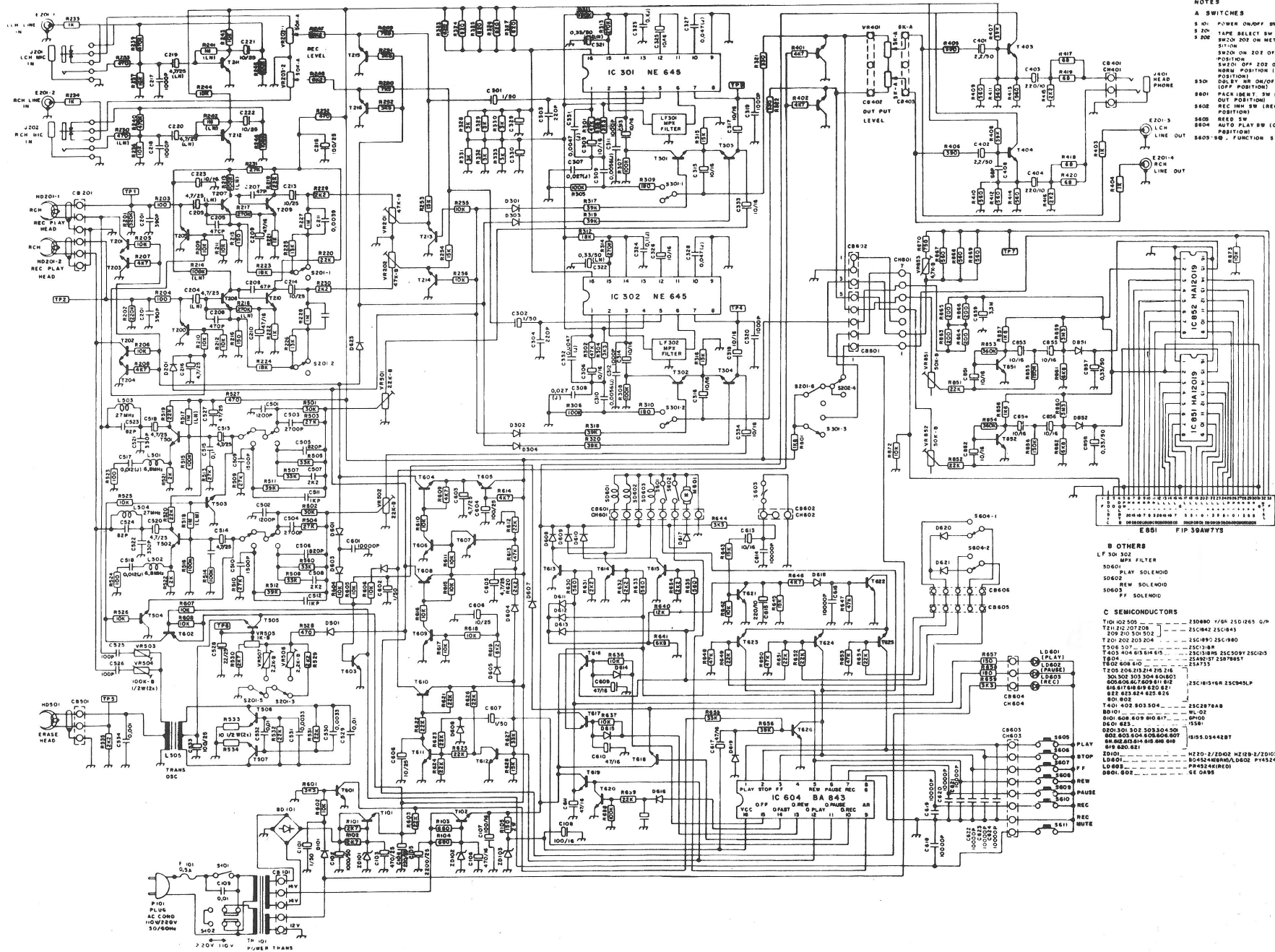


	DC	SIGNAL				
		STOP	PLAY	REC	PLAY	REC
T201/202		STOP	PLAY	REC	PLAY	REC
COLETOR	1,25	1,25	1,25	1,25	0,7mV	
BASE	0,59	0,59	0,59	0,59	0,23mV	
EMISSOR	0,2	0,2	0,2	0,2	0,23mV	
T251/252		STOP	PLAY	REC	PLAY	REC
COLETOR	3,8	3,8	3,8	3,8	40	
BASE	2,6	0,6	2,6		0,2mV	
EMISSOR	0	0	0	0	0	
T403/404		STOP	PLAY	REC	PLAY	REC
COLETOR	9,8	19,8	19,8			
BASE	12,4	10,4	10,4	550	550	
EMISSOR	9,8	9,8	9,8	550	550	
T303/304		STOP	PLAY	REC	PLAY	REC
COLETOR						
BASE						
EMISSOR						
T101		STOP	PLAY	REC	PLAY	REC
COLETOR	26,8	26,8				
BASE	27,5	20,5	20,4			
EMISSOR	9,8	19,8				
T203/204		STOP	PLAY	REC	PLAY	REC
COLETOR	5,2	5,2	5,2	40		
BASE	1,25	1,25	1,25	0,7		
EMISSOR	0,6	0,6	0,6	0,2		
T401/402		STOP	PLAY	REC	PLAY	REC
COLETOR	0	0	0	0		
BASE	0,7	0,2	0,2	0		
EMISSOR	0,007	0,003	0,003	550	550	
T501/502		STOP	PLAY	REC	PLAY	REC
COLETOR	19,8	19,8	11,0	0		
BASE	0,003	0,003	1,18	95		
EMISSOR	0,003	0,003	0,6	0		
T102		STOP	PLAY	REC	PLAY	REC
COLETOR						
BASE						
EMISSOR						
T102		STOP	PLAY	REC	PLAY	REC
COLETOR	19,1	0,75	0,4			
BASE	19,3	19,3	19,4			
EMISSOR	19,2	19,6	19,6			

- NOTA**
- 1-TRANSISTOR
 - T201/202/T251/252 - 25C400 E / 25C442 E / 25C443 E / 25C732 BL
 - T403/404 - 25C1740/25C1815 F
 - T501/502 - 25C318 B
 - T102 - 25C380 Y
 - T101 - 25A733
 - T401/402/T501 - 25C3508 / 25C3518 H / 25C2100 Y
 - 2-DIODO
 - D102 - 1W4003/4P100D
 - D102/404 - BA109/1318SS
 - D401/404 - DA95/1N60
 - Z001 - Z220-2
 - B0101 - WL-02
 - 3-CHAVE
 - S201/S201-B-RECORD, PLAY MODE SW (PLAY POSITION)
 - S202/S202-S-TAPE SELECT SW (S202, S203 OFF POSITION)
 - S303/S303-S-NORMAL (S202/203 OFF ON, S202 OF S, S203 ON)
 - COIL - (S202 ON S203 OFF)
 - METAL (S202, S203 ON)
 - 4-POSICAO DE TESTE
 - BIAS E CORRENTE DE GRAVACAO TP 1, 2, 3
 - CORRENTE DE APARTEAMENTO TP 4, 7
 - 5- TENSÕES IC MEDIDAS EM VOLTS
 - 6- TENSÕES AC SINAL MEDIDAS EM MILIVOLTS

FONTE

	STOP	REC	IC 351	STOP	PLAY	REC	PLAY	REC
AC	11,3	11,3	11,0	11,0	9,7	9,7	9,6	9,5
DC	26,8	26,0	2	9,7	9,7	9,6	40	40
DC LAMP	12,9	12,6	3	9,7	9,7	9,6	40	40
DC LAMP	10,7	10,3	4	9,7	9,7	9,7	40	40
			5	9,7	9,7	9,7	40	40
			6	9,8	9,8	9,7	40	40
			7	9,8	9,8	9,7	40	40
			8	19,3	19,3	19,4	19	19



NOTES

A SWITCHES

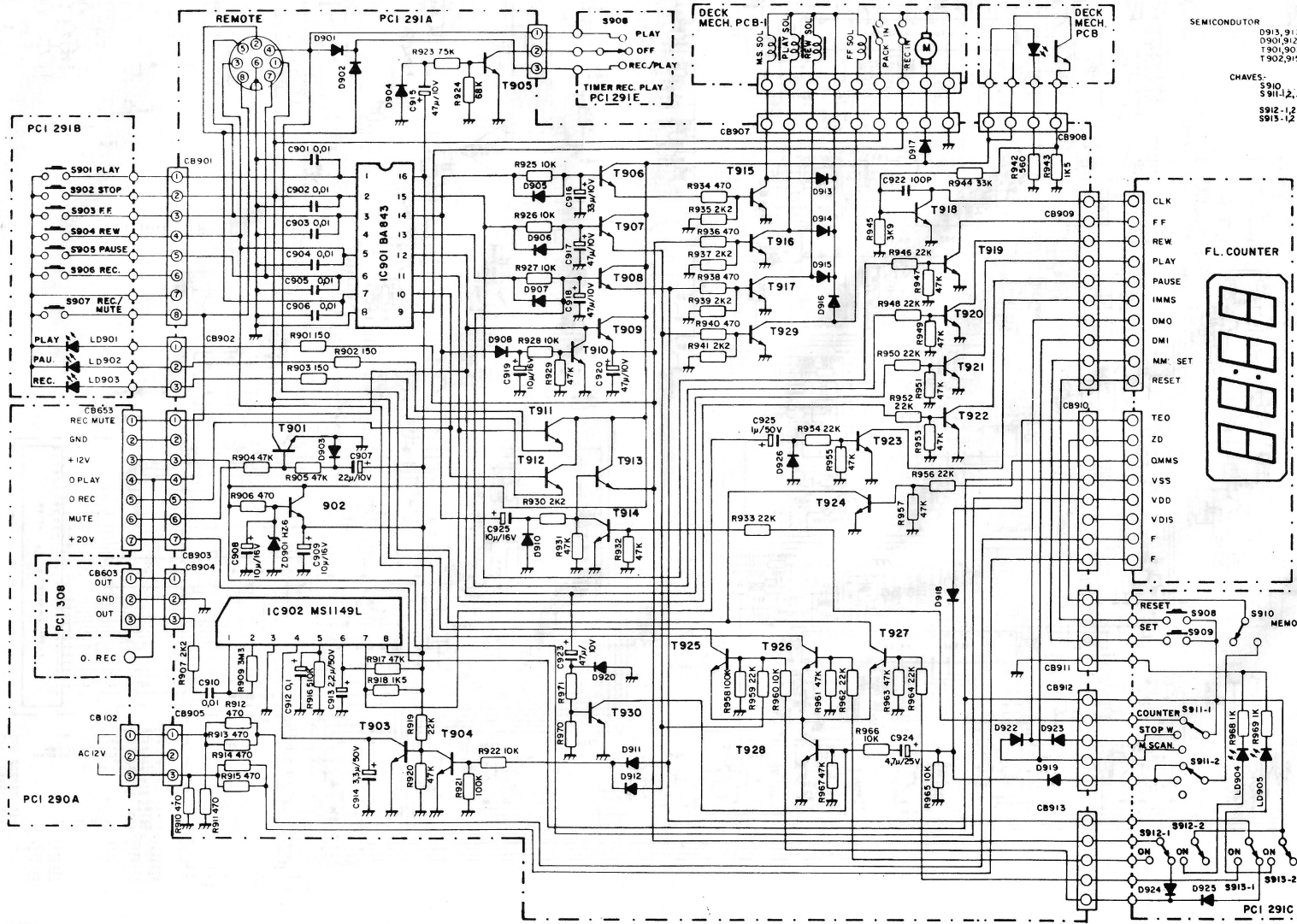
- S 10: POWER ON/OFF SW
- S 20: TAPE SELECT SW
- S 201: 202 ON/OFF POSITION
- S 203: 204 ON/OFF POSITION
- S 205: 206 ON/OFF POSITION
- S 207: 208 ON/OFF POSITION
- S 209: 210 ON/OFF POSITION
- S 211: 212 ON/OFF POSITION
- S 213: 214 ON/OFF POSITION
- S 215: 216 ON/OFF POSITION
- S 217: 218 ON/OFF POSITION
- S 219: 220 ON/OFF POSITION
- S 221: 222 ON/OFF POSITION
- S 223: 224 ON/OFF POSITION
- S 225: 226 ON/OFF POSITION
- S 227: 228 ON/OFF POSITION
- S 229: 230 ON/OFF POSITION
- S 231: 232 ON/OFF POSITION
- S 233: 234 ON/OFF POSITION
- S 235: 236 ON/OFF POSITION
- S 237: 238 ON/OFF POSITION
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- S 271: 272 ON/OFF POSITION
- S 273: 274 ON/OFF POSITION
- S 275: 276 ON/OFF POSITION
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- S 499: 500 ON/OFF POSITION

B OTHERS

- LF 301: 302
- LF 303: 304
- LF 305: 306
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- LF 499: 500

C SEMICONDUCTORS

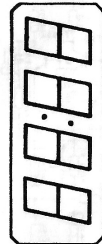
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- T115: 116 500
- T117: 118 500
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- T127: 128 500
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- T499: 500 500



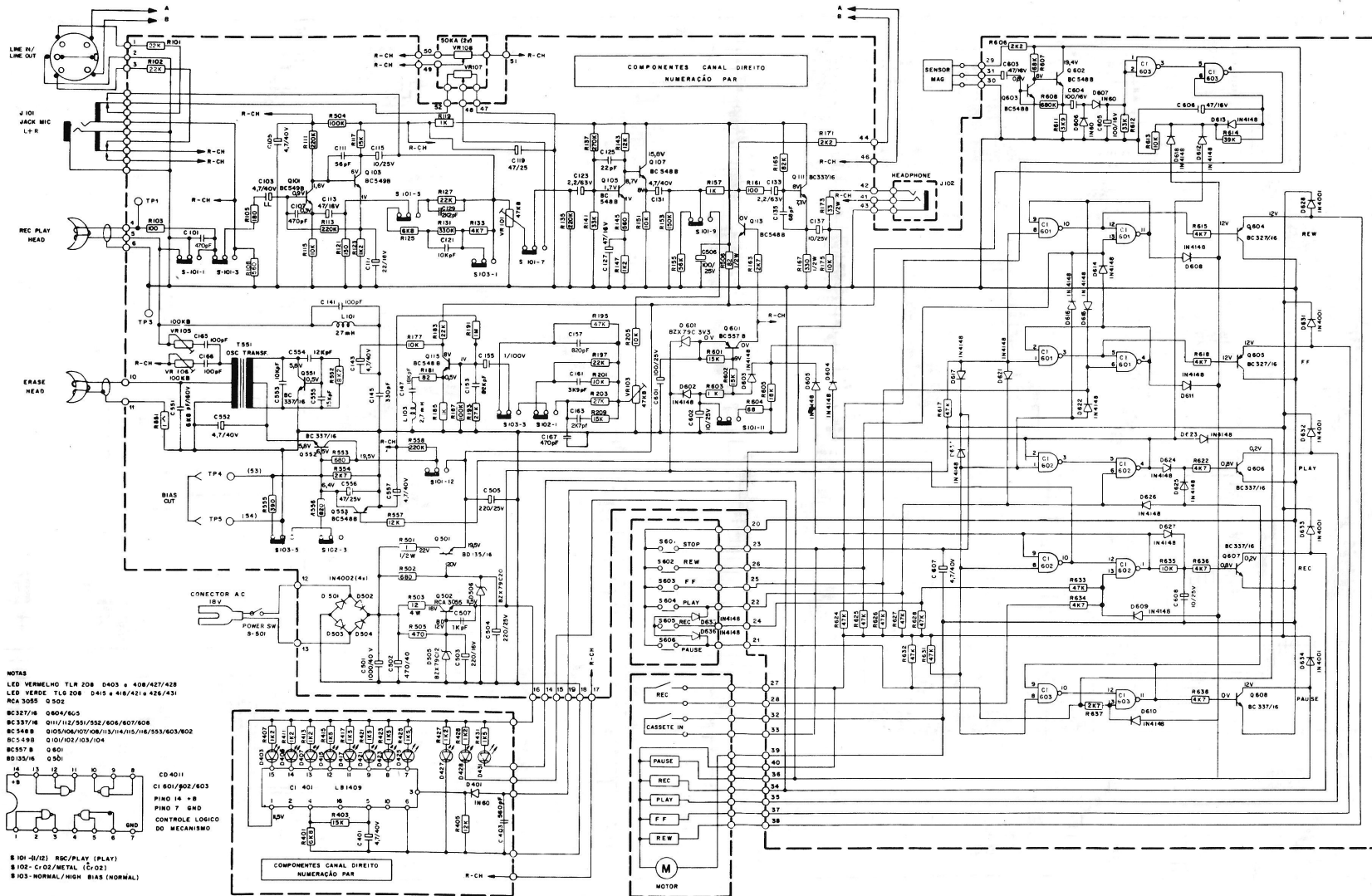
SEMICONDUCTOR
 D913, 917 IN4003
 D901, 912, 918, 926 1S1555
 T901, 903, 914, 918, 930 2SC1815
 T902, 915, 917 2SC1318

CHANGES:
 S910 MEMORY ON/OFF (POS OFF)
 S911-1, 2 MODE COUNTER/STOP W/M SCAN (POS COUNTER)
 S912-1, 2 AUTO PLAY ON/OFF (POS OFF)
 S913-1, 2 AUTOREW ON/OFF (POS OFF)

FL. COUNTER



RESET S908
 SET S909
 MEMORY S910
 COUNTER S911-1
 STOP W/M SCAN S911-2
 S912-1
 S912-2
 S913-1
 S913-2



NOTAS
 LED VERMELHO TLR 208 D403 + 408/427/428
 LED VERDE TLG 208 D415 + 418/421 + 426/431
 RCA 3055 Q 502
 BC327/6 Q604/Q605
 BC337/6 Q111/122/351/552/606/607/608
 BC548B Q105/106/107/108/113/114/115/116/553/603/602
 BC327/6 Q101/102/103/104
 BC57B Q 801
 BD105/16 Q 501

CD 4011
 C1 601/602/603
 PINO 7 GND
 CONTROLE LÓGICO
 DO MECANISMO

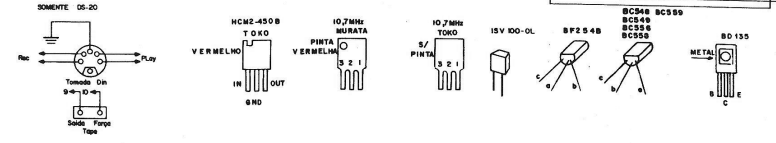
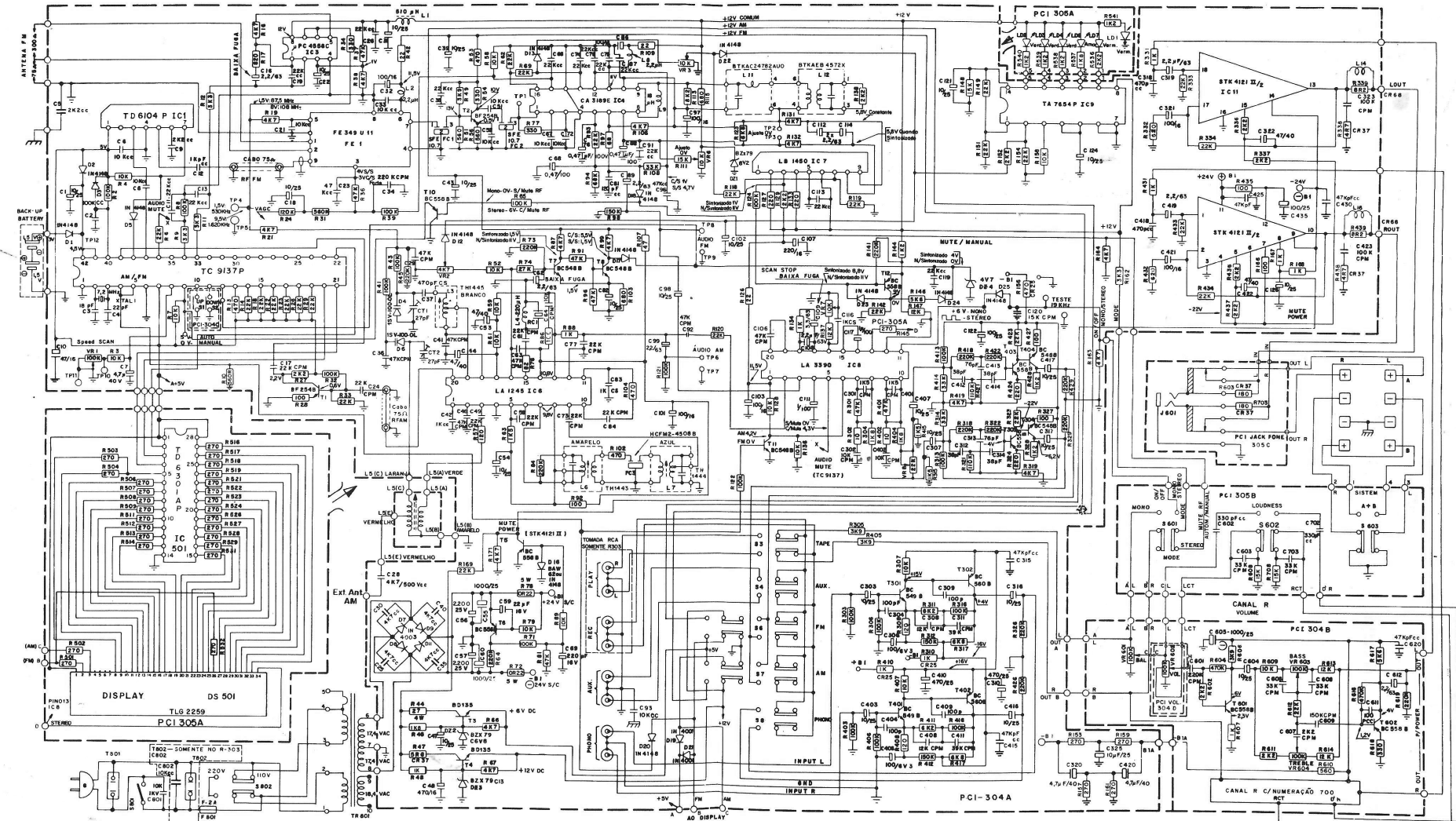
S 101-1/2 REC/PLAY (PLAY)
 S 102-1 C102/METAL C102
 S 103-NORMAL/HIGH BIAS (NORMAL)

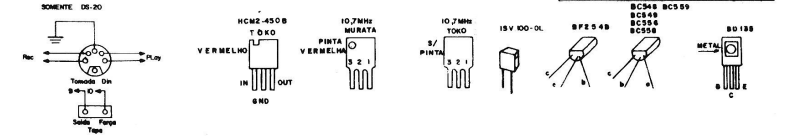
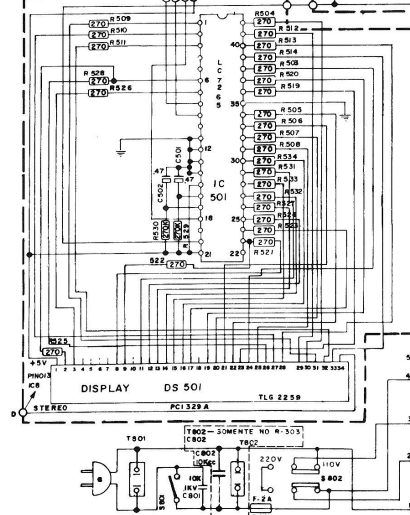
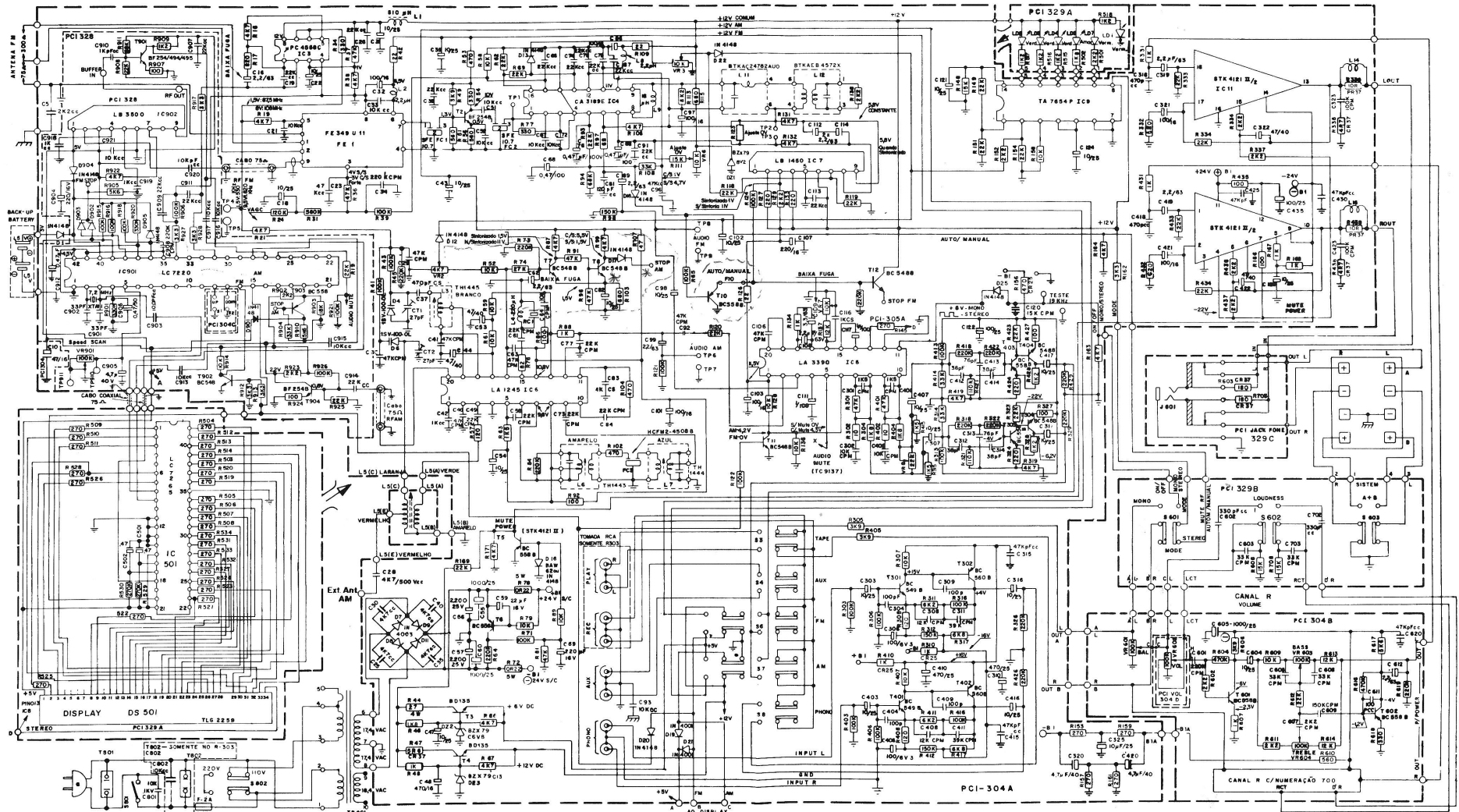
MÉTL. LÓGICO DOS PINOS DOS C1's 601/602/603 (FUNÇÃO REC/PLAY)

PINOS	1	2	3	4	5	6	7	8	9	10	11	12	13	14
601	H	L	N	L	H	H	H	H	L	H	L	H	H	H
602	H	L	N	L	H	H	H	H	L	H	L	H	H	H
603	H	L	N	L	H	H	H	H	L	H	L	H	H	H

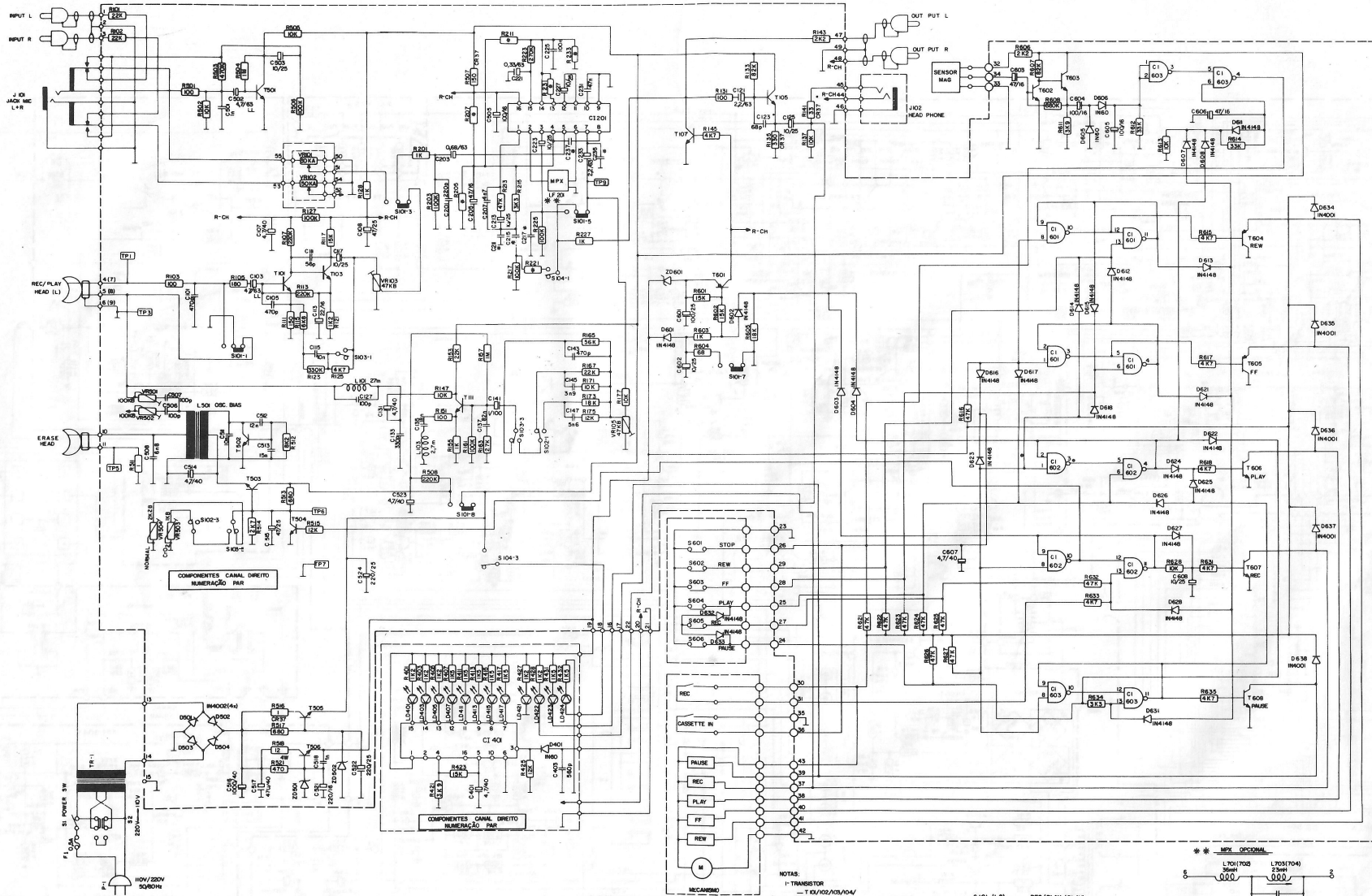
H=9.413V
 L=0.41V
 AS TENSÕES INDICADAS NO ESQUEMA FORAM MEDIDAS COM
 MULTÍMETRO DIGITAL HP MODELO 5408B.

DS-20 - RECEIVER





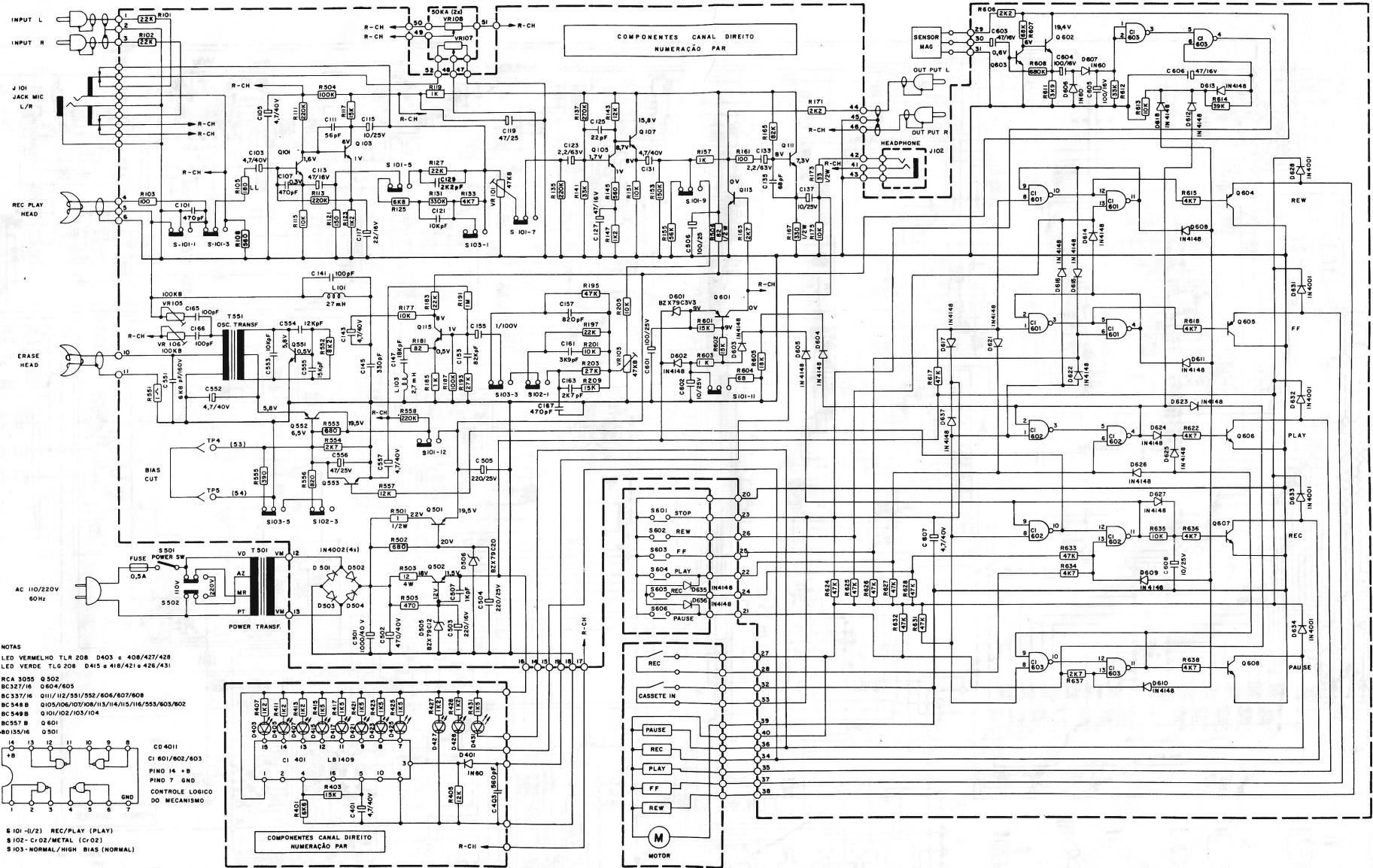
DS-40 COM DOLBY



© DOLBY INC. CI 201/202

COMPONENTES	NE 645 B/W	LM 1112 C
R205/206/207/208	1K	
R221/222	180	JUMPER
R211/212	180 K	
C217/218/235/238	1n	
C215/216	5n6	3.3n
C211/212	27n	
R231/232		180 K
R233/234		3.30 K
C237/238		1n

- NOTAS:
- 1- TRANSISTOR
 - T101/102/103/104/105/106/107 ----- BC549B
 - 501 ----- BC549B
 - T101/102/202/205 ----- BC537/16
 - 806/807/808 ----- BC548B
 - T107/108/112/504/602/603 ----- BC548B
 - T508 ----- BD135
 - T509 ----- MCA3005
 - T801 ----- BC507B
 - T804/805 ----- BC537/16
 - 2- LED
 - LD404/406/42/422 ----- COV 36.4 (V0)
 - LD407/408/418/448/452/454 ----- COV 36.4 (V0)
 - 3- ZENER
 - ZD301 ----- BZX 79C12
 - ZD302 ----- BZX 79C20
 - ZD303 ----- BZX 79C30
- * MPX OPCIONAL
 L701 (702) 300nF
 L703 (704) 200nF
 C701 (704) 30pF
 C705 (704) 22pF



NOTAS
 LED VERMELHO TLR 208 D403 e 408/427/428
 LED VERDE TLG 208 D415 e 418/421 e 426/431

RCA 3055 Q 502
 BC327/H Q 604/605
 BC337/H Q111/112/551/552/606/607/608
 BC548 B Q105/106/107/108/113/114/115/116/553/603/602
 BC548 B Q101/102/103/104
 BC557 B Q 601
 9D155/16 C 501

CD 4011
 CI 601/602/603
 PINO 14 + B
 PINO 7 GND
 CONTROLE LÓGICO DO MECANISMO

S 101 - (1/2) REC/PLAY (PLAY)
 S 102 - C 02/METAL (C 02)
 S 103 - NORMAL/HIGH BIAS (NORMAL)

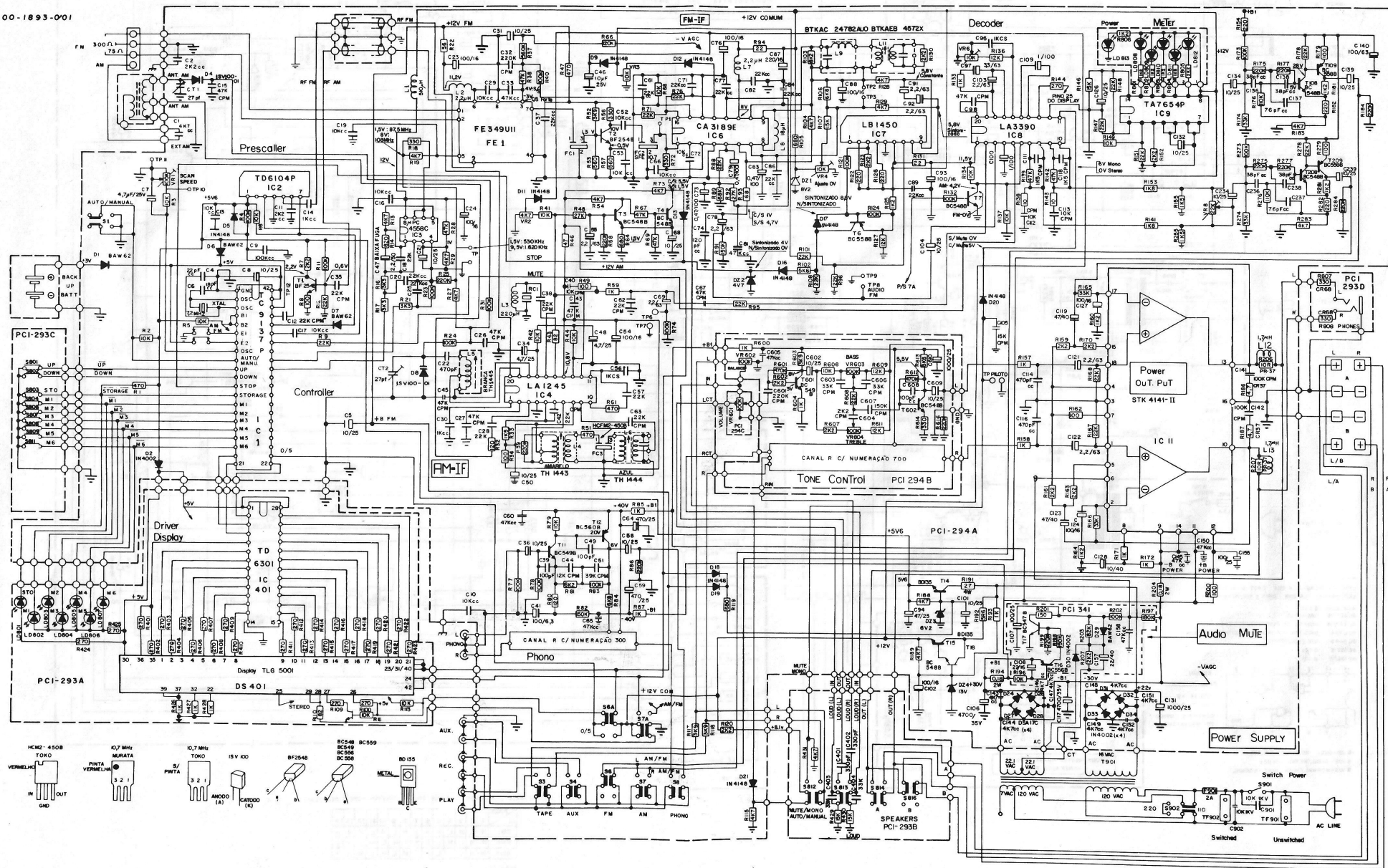
NÍVEL LÓGICO DOS PINOS DOS CÍ 601/602/603 (FUNÇÃO REC./PLAY)

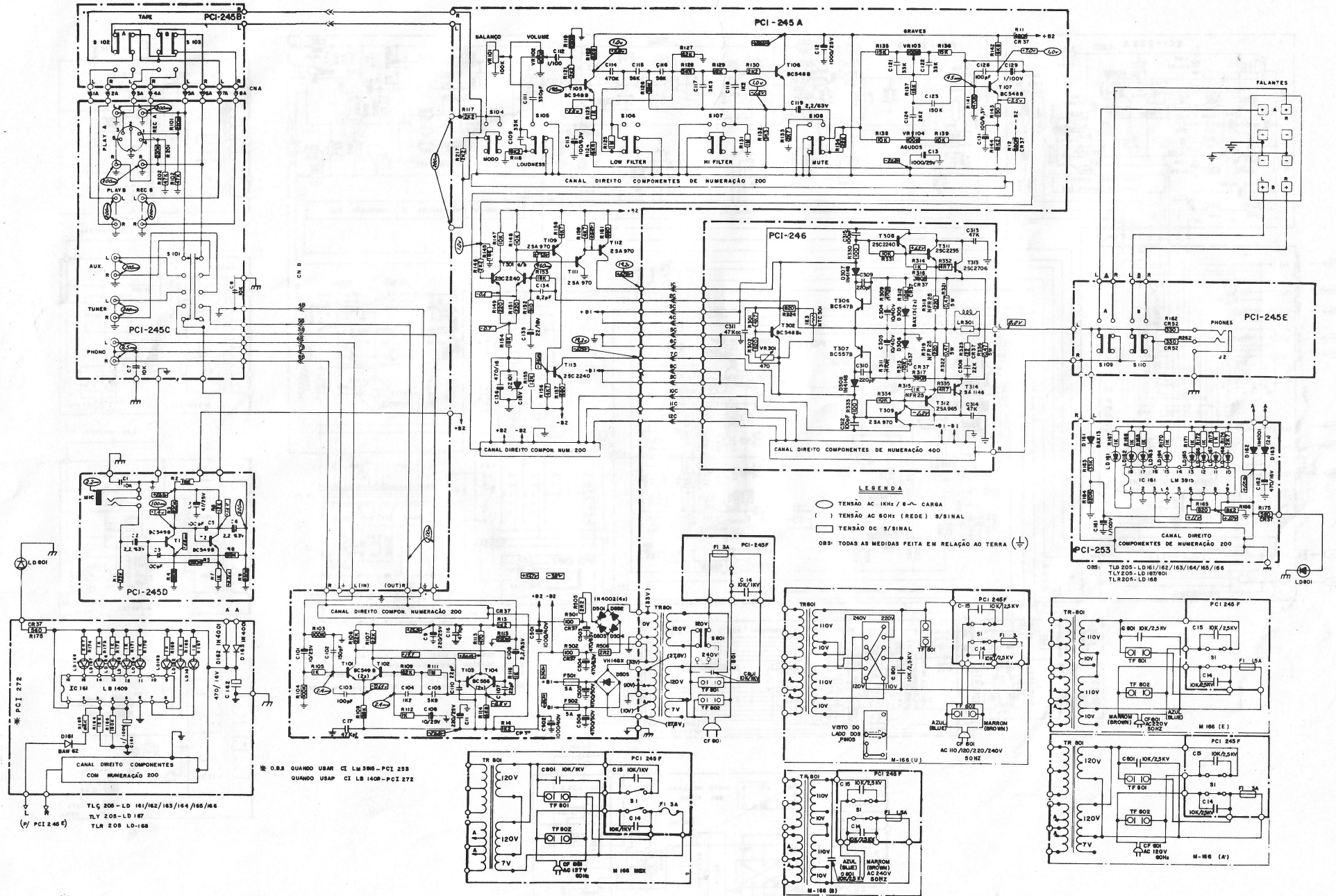
CI	1	2	3	4	5	6	7	8	9	10	11	12	13	14
601	H	L	L	L	H	H	H	H	L	L	L	L	H	H
602	H	L	L	L	L	H	H	H	L	L	L	L	H	H
603	H	L	L	L	L	H	H	H	L	L	L	L	H	H

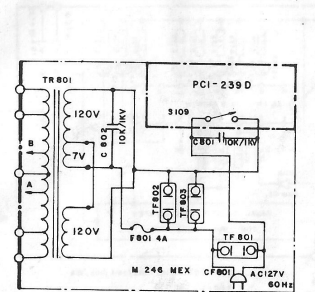
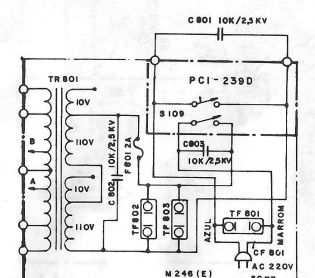
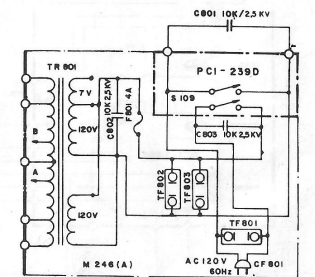
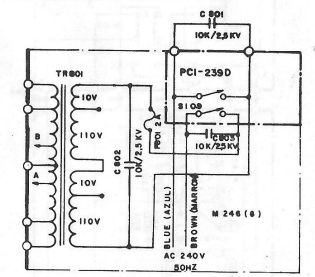
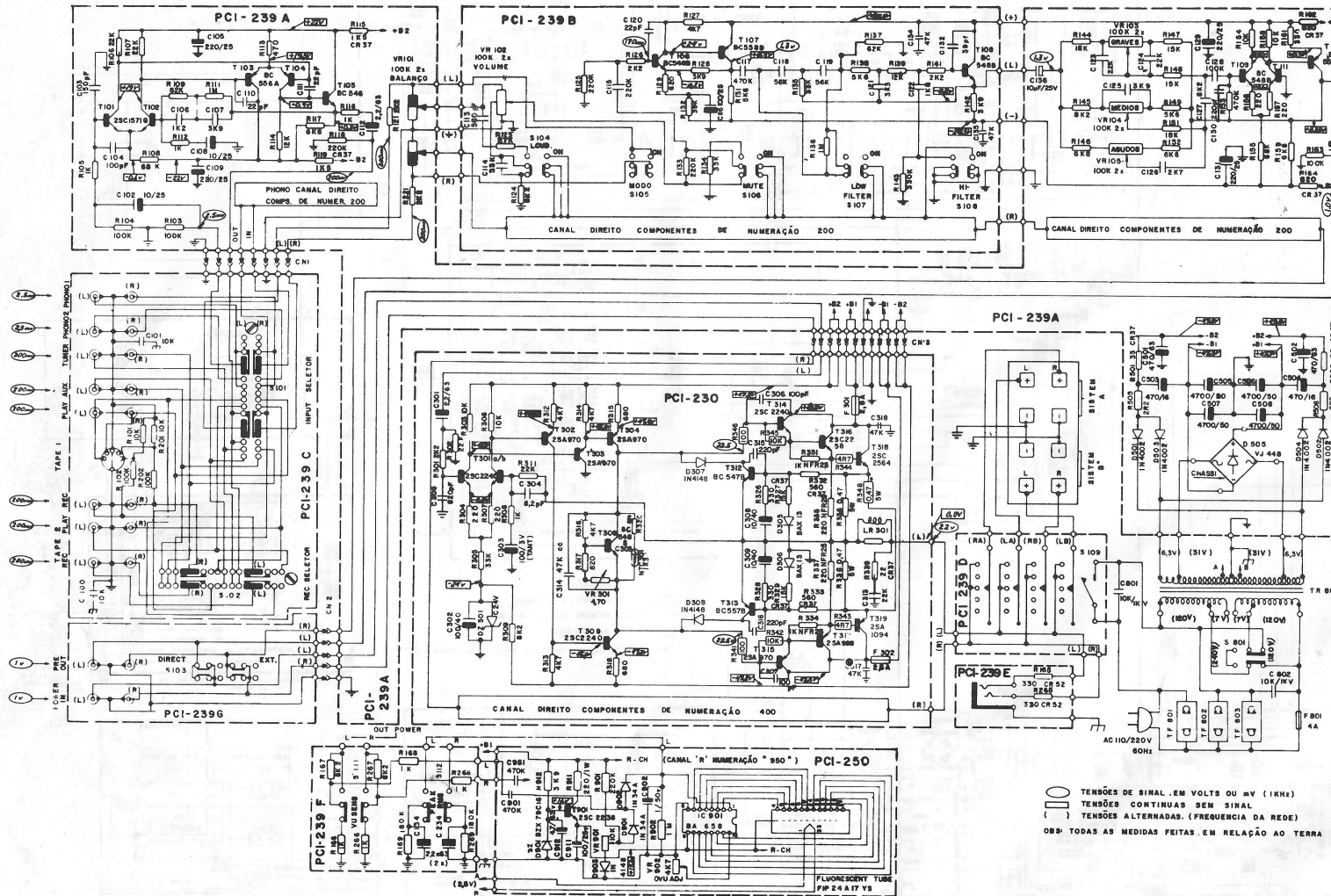
H=9+13V
 L=0+1V
 AS TENSÕES INDICADAS NO ESQUEMA FORAM MEDIDAS COM
 MULTÍMETRO DIGITAL HP MODELO 3486 B .

DS-40 RECEIVER

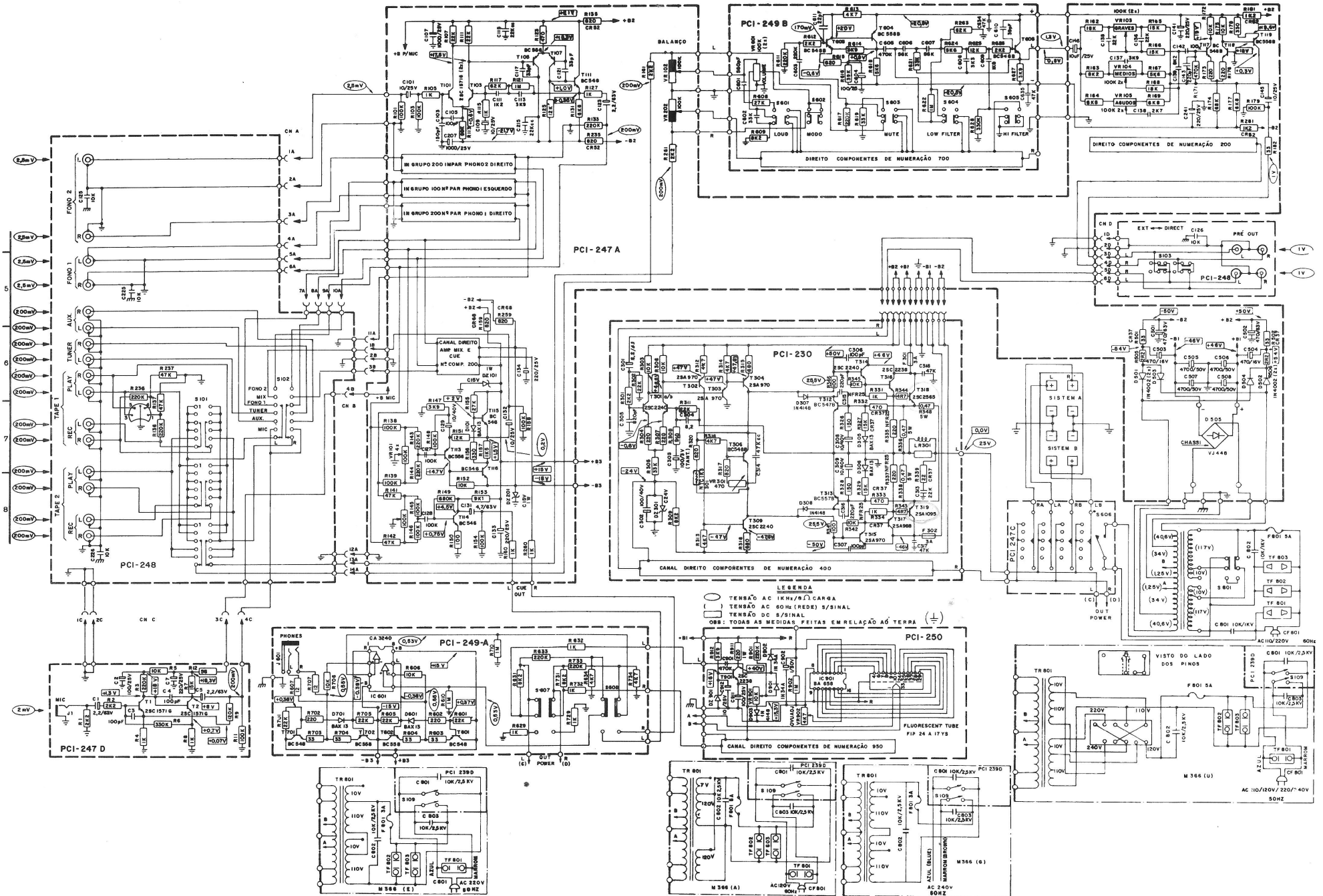
00-1893-001

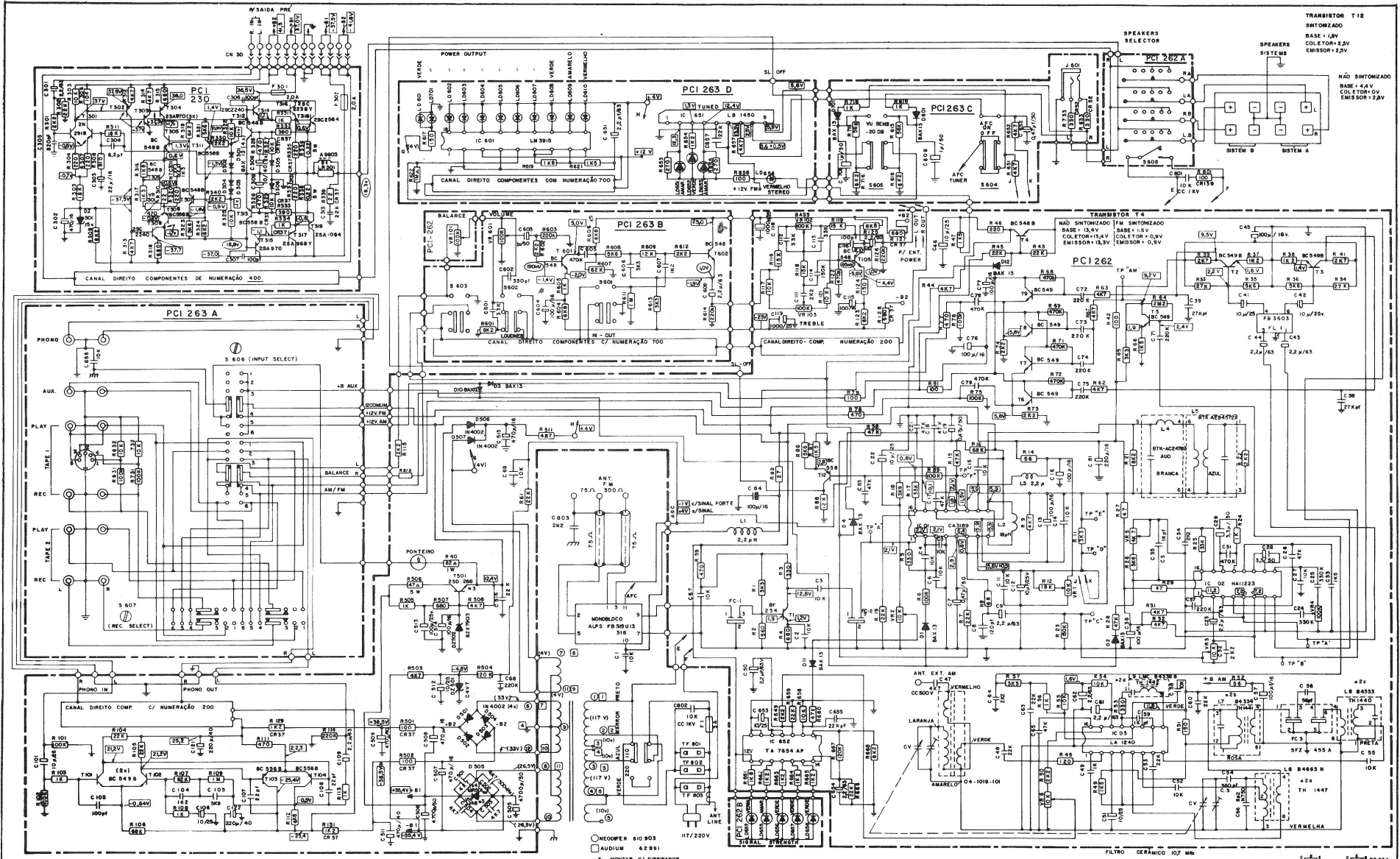






TENSÕES DE SINAL, EM VOLTS OU mV (1KHz)
 TENSÕES CONTÍNUAS SEM SINAL
 TENSÕES ALTERNADAS, (FREQUENCIA DA REDE)
 OBS: TODAS AS MEDIDAS FEITAS EM RELAÇÃO AO TERRA





TRANSISTOR T 12
 SINTONIZADO
 BASE = 1,0V
 COLETOR = 2,0V
 EMISSOR = 2,0V

NÃO SINTONIZADO
 BASE = 4,4V
 COLETOR = 0V
 EMISSOR = 2,0V

COOPER B10-803
 AUDIUM 62931
 23 - MONTAR C/ DISSIPADOR

POSIÇÃO DAS CHAVES

805 - INPUT SELECTOR
 POS. 1 - TAPE 1
 POS. 2 - TAPE 2
 POS. 3 - PHONO
 POS. 4 - F.M
 POS. 5 - A.M
 POS. 6 - AUX.

807 - REC. SELECTOR
 POS. 1 - TAPE 2-1
 POS. 2 - TAPE 1-2
 POS. 3 - OFF
 POS. 4 - PHONO
 POS. 5 - A.M
 POS. 6 - AUX.

NOTA

-OPÇÃO 6/ BOBINA "TOKO" AM
 20 - BOB. OSC. VERMELHA TH 1447 OPÇÃO W / TOKO TWR B4833M (52-102-001) SPZ 455 A
 21 - BOB. 18 P.F. AM. VERMELHA TH 1444 OPÇÃO W / TOKO LNC B4535 H (52-100-001)
 22 - BOB. 25 P.F. AM. PRETA TH 1440 OPÇÃO W / TOKO LNC B4533 H (52-100-001)
 24 - BOB. 38 P.F. AM. VERDE TH 1442 OPÇÃO W / TOKO LNC B4536 H (52-100-001)

TENSÃO AC - 110V / B.J. CARNA
 TENSÃO AC - 60 Hz S/ SINAL
 TENSÃO DC - SEM SINAL
 OBS.: TODAS AS TENSÕES MEDIDAS EM RELAÇÃO A TERRA

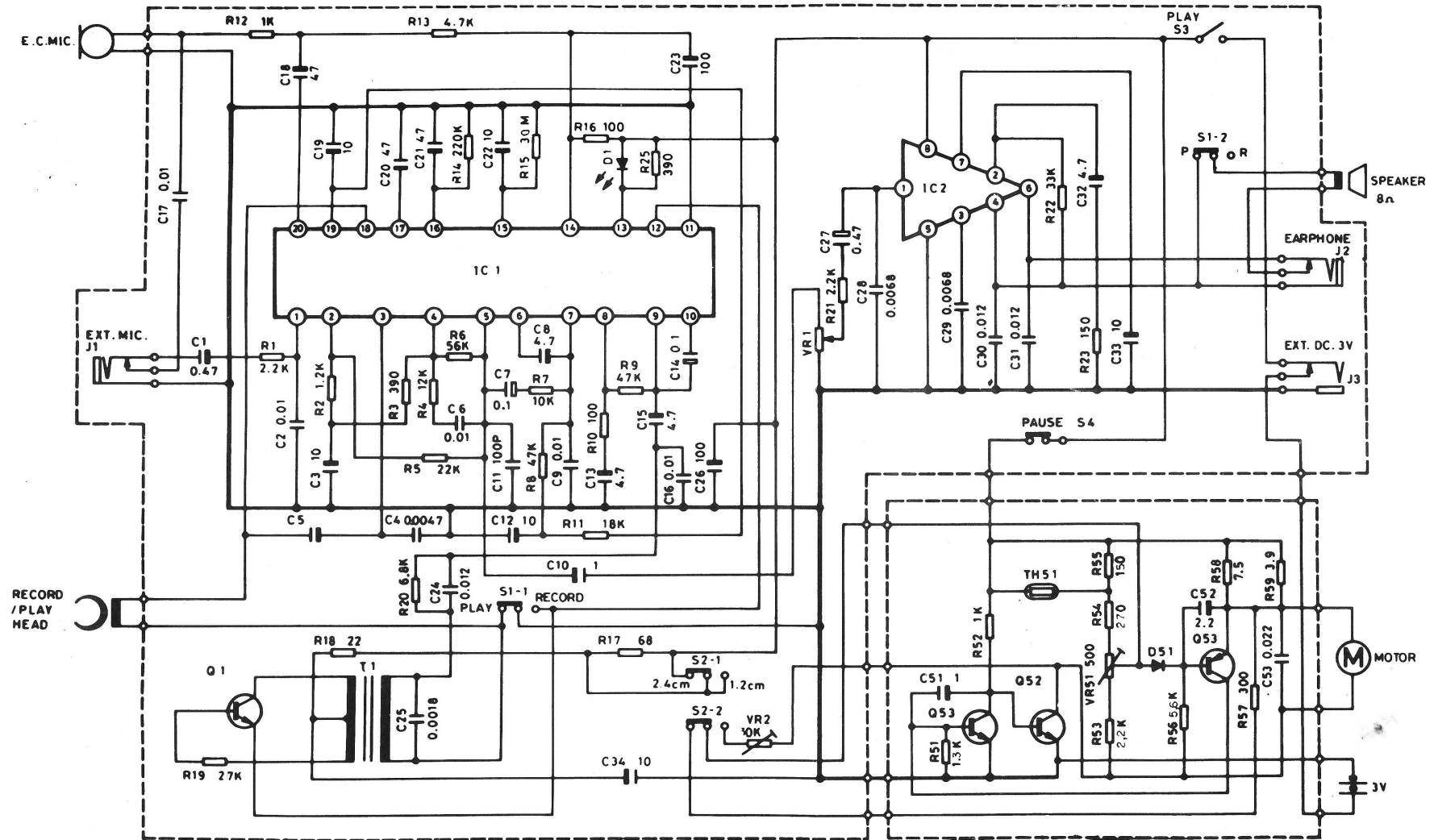
FILTRO CERÂMICO 400MHz

FILTRO CERÂMICO 107 MHz

PINTA MURATA TOKO

82C 254 8F454
 226
 250 286 28314
 TIP 29
 C 23C950V6

Diagrama Esquemático



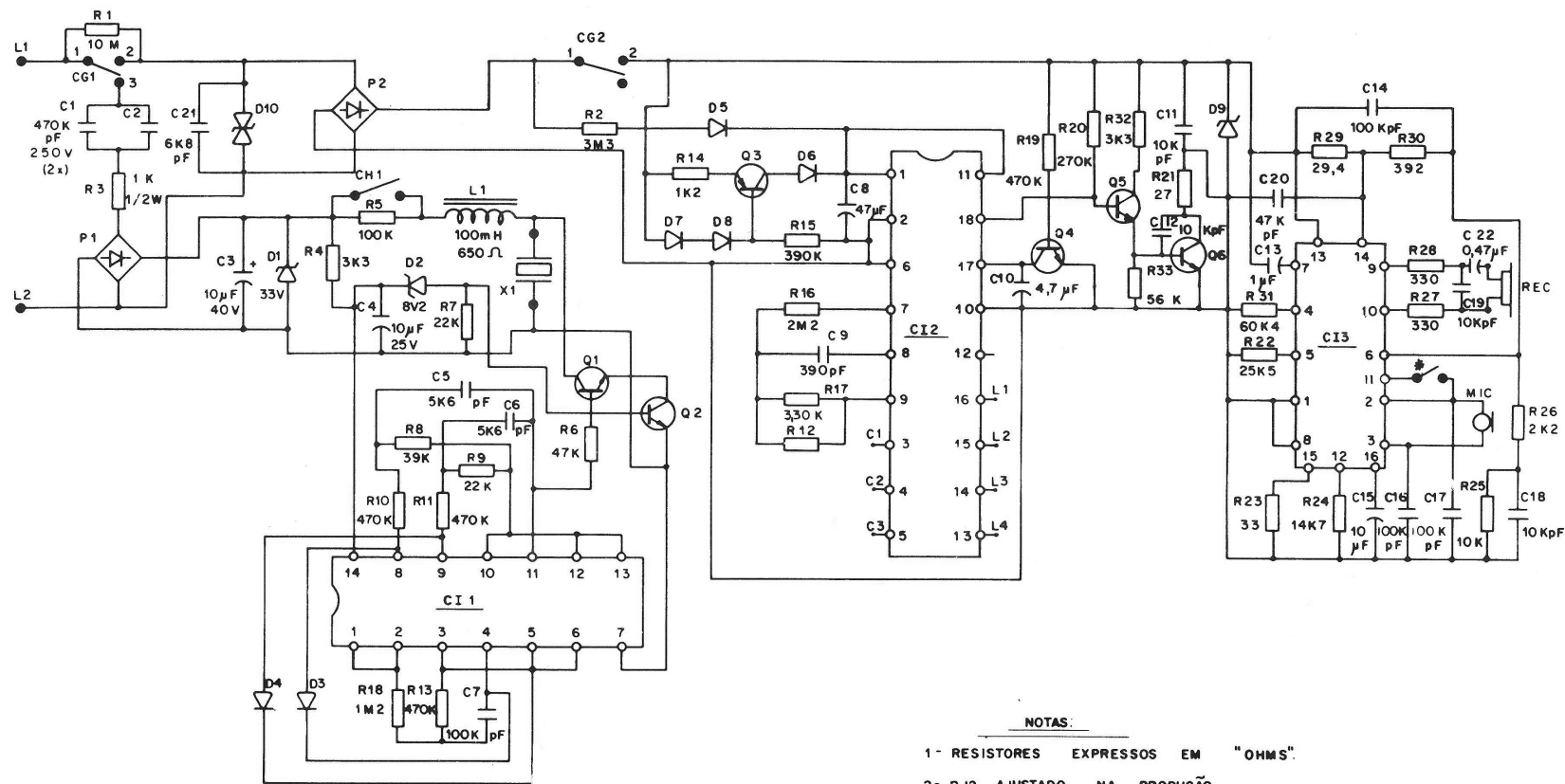
IC1 ---- μ PC1217G
 IC2 ---- μ PC1218H
 Q1 ---- 2SC2785-F
 Q51 ---- 2SC2785-E
 Q52 ---- 2SC7001-K

Q53 ---- 2SA1175-H
 D1 ---- TLR-210
 D51 ---- 1S953

S1 -- PLAY/RECORD SWITCH (PLAY POSITION)
 S2 -- 1.2cm/2.4cm TAPE SPEED SWITCH (2.4cm POSITION)
 S3 -- POWER SWITCH (OFF POSITION)
 S4 -- PAUSE SWITCH (OFF POSITION)

NOTAS: 1- RESISTORES VALORES ESPECIFICADOS EM Ω K=1000 Ω M= 10000K Ω .
 2- CAPACITORES VALORES ESPECIFICADOS EM μ F P=10⁻⁶ μ F.
 3- TODOS RESISTORES SÃO DE 1/6 W., SALVO OUTROS ESPECIFICADOS.
 4- TODAS AS MEDIDAS DE TENSÕES SÃO FEITAS ENTRE O T.P. E O TERRA COM VTVM E O VOLUME NO MÍNIMO SEM SINAL.

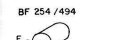
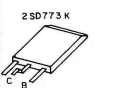
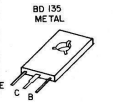
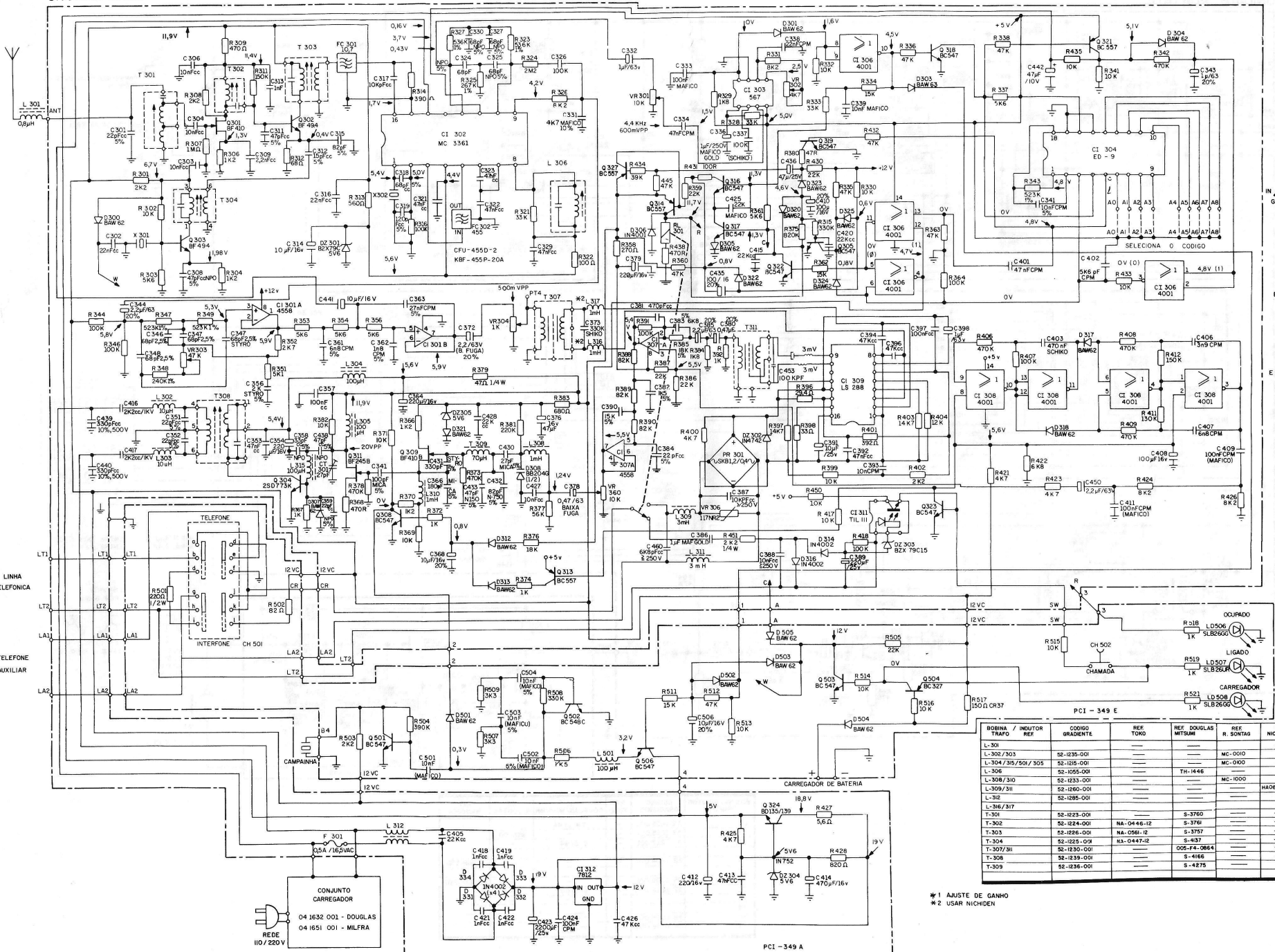
TELEFONE PICCOLO



NOTAS:

- 1- RESISTORES EXPRESSOS EM "OHMS"
- 2- R12 AJUSTADO NA PRODUÇÃO
- 3- P/ DIAG DE BLOCOS V DES. 002-F-4-0533
- 4- P/ IMP COMPS V DES 002-F-4-0530
- 5- " " SOLDA " " 002-F-4-0528
- 6- " " COBRE " " 002-F-4-0509

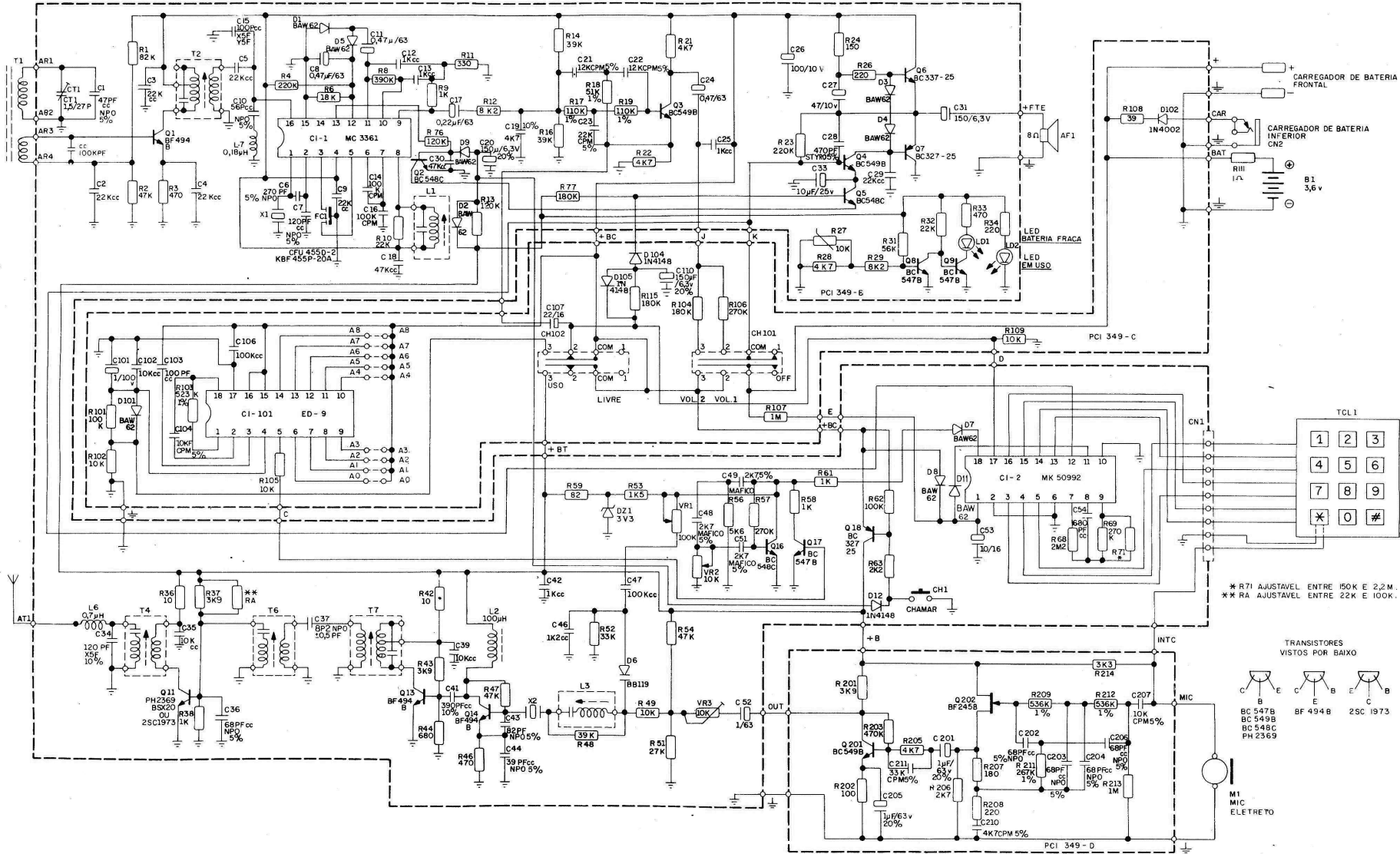
UNIDADE BASE



BOBINA / INDUCTOR	REF.	CODIGO GRADIENTE	REF. TONO	REF. DOUGLAS	REF. SONTAG	REF. NICHIDEN	REF. YAMAZAKI
L-301							
L-302/303		52-1235-001			MC-0010		
L-304/315/501/305		52-1218-001			MC-0000		
L-306		52-1095-001		TH-1446			
L-308/310		52-1233-001			MC-1000		
L-309/311		52-1260-001				HA081050-302K	
L-312		52-1285-001					RF-402
L-316/317		52-1223-001		S-3760			
T-301		52-1224-001	NA-0448-12	S-3761			
T-303		52-1226-001	NA-0581-12	S-3757			
T-304		52-1225-001	NA-0447-12	S-437			
T-307/311		52-1230-001		005-F4-0864			
T-308		52-1239-001		S-4466			
T-309		52-1236-001		S-4275			

*1 AJUSTE DE GANHO
*2 USAR NICHIDEN

UNIDADE PORTATIL



* R71 AJUSTAVEL ENTRE 150K E 2,2M.
 ** RA AJUSTAVEL ENTRE 22K E 100K.

TRANSISTORES VISTOS POR BAIXO

BC 547B
 BC 549B
 BC 548C
 PH 2369

BOBINA/INDUTOR TRAFÓ RF	CODIGO GRADIENTE	REF TORO	REF DOUGLAS/MITSUMI	REF R. SONTAG	REF NICHIDEN
L1	S2.1055.001	-	TH 1446	-	-
L2	S2.1215.001	-	-	MCO100	-
L3	S2.1217.001	-	S-3764	-	-
L6	S2.1284.001	-	-	-	L2H 5%
L7	26.1009.001	-	-	-	AM-3.032.02
T1	S2.1214.005	-	S-3763	-	-
T2	-	-	-	-	-
T3	-	-	-	-	-
T4	-	-	-	-	-
T6	S8.1004.001	-	S-3750	-	-
T7	S8.1006.001	-	S-3749	-	-

ÍNDICE

ATARI 2600.....	3
ATARI 2600.....	4
ATARI 2600 - CIRCUITO AUXILIAR CONVERSÃO PAL-M	5
ATARI 2600 - CIRCUITO AUXILIAR CONVERSÃO PAL-M/MODULADOR RF	6
C - 404.....	7
C - 464.....	8
C - 484 (1)	9
C - 484 (2)	10
D - S20 (CD)	11
D - S20 - RECEIVER	12
DS - 20 - RECEIVER (VERSÃO SANYO).....	13
DS - 40 - COM DOLBY	14
DS - 40 - SEM DOLBY	15
DS - 40 RECEIVER	16
M - 166/E/G/U/A/MEX	17
M - 246/E/G/U/AMEX	18
M - 366/E/G/U/A	19
M - 1560	20
MC - 4000	21
TELEFONE PICCOLO	22
WL - 510 - TELEFONE SEM FIO (UNIDADE BASE)	23
WL - 510 - TELEFONE SEM FIO (UNIDADE PORTÁTIL)	24

ELTEC EDITORA DE LIVROS TÉCNICOS LTDA.
R. DR. COSTA VALENTE, 33 - BRÁS
CEP.: 03052 - SÃO PAULO - SP
FONE: (011) 948.5255 - FAX (011) 264.3197

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