

# Service Manual

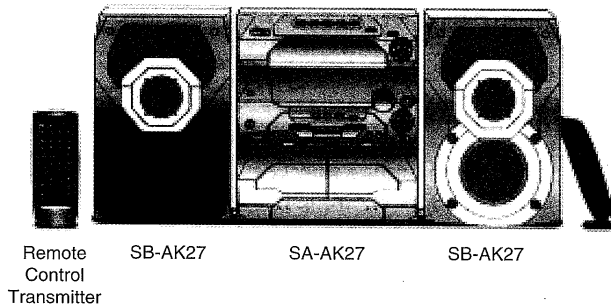
**COMPACT**  
**disc**  
DIGITAL AUDIO

**MASH\***  
multi-stage noise shaping

CD Stereo System  
**SA-AK27**

Colour

(S) ... Silver Type



Remote  
Control  
Transmitter

SB-AK27

SA-AK27

SB-AK27

Area

Suffix for Model No.	Area	Colour
(GC)	Asia, Latin America, Africa and Middle Near East	(S)
(GN)	Oceania	

System	Music Center	Speaker
SC-AK27 (GC)	SA-AK27 (GC)	SB-AK27 (GC)
SC-AK27 (GN)	SA-AK27 (GN)	SB-AK27 (GC)

\* MASH is a trademark of NTT.

**TAPE SECTION : AR2 MECHANISM SERIES**  
**CD SECTION : RAE0152Z-M TRAVERSE DECK SERIES**

## Specifications

### Amplifier Section

PMPO	1800W
RMS power output	
THD 10%, both channels driven	
For GC area	90W per channel (6Ω)
For GN area	100W per channel (6Ω)
For GN only	
1 kHz continuous power output	
THD 1% both channel driven	74W per channel (6Ω)
Input sensitivity and impedance	
AUX	250mV, 13.3KΩ
For GC area	
MIC	0.7mV, 680Ω

### Cassette Deck Section

Track system	4 track, 2 channel
Heads	
Record/playback	Solid permalloy head
Erasure	Double gap ferrite head
Motor	DC servo motor
Recording system	AC bias 100 kHz
Erasing system	AC erase 100 kHz
Tape speed	4.8 cm/s
Frequency response (+3, -6 dB at DECK OUT)	
NORMAL (TYPE I)	35 Hz - 14 kHz
HIGH (TYPE II)	35 Hz - 14 kHz
S/N	50dB(A weighted)
Wow and flutter	0.18 % (WRMS)
Fast forward and rewind time	Approx. 120 seconds with C-60 cassette tape

### FM Tuner Section

Frequency range	87.5 - 108.0 MHz (50 kHz steps)
Sensitivity	2.5 μV(IHF)
S/N 26dB	2.2 μV
Antenna terminal(s)	75 Ω (unbalanced)

### AM Tuner Section

Frequency range	
AM(MW)	522 - 1629 kHz (9kHz steps)
(For GC only)	520 - 1630 kHz (10kHz steps)
SW (For GC only)	3.200 - 7.350 MHz (0.005MHz steps)
	9.400 - 21.750 MHz (0.005MHz steps)
Sensitivity	
AM(MW)	
S/N 20 dB (at 999 kHz)	560 μV/m
SW (For GC only)	
S/N 20 dB (at 5.3MHz)	35.5 μV

### CD Section

Sampling frequency	44.1 kHz
Decoding	16 bit linear
Beam source/wave length	Semiconductor laser / 780 nm
Number of channels	Stereo
Frequency response	20Hz - 20kHz (+1dB, -2dB)
Wow and flutter	Below measurable limit
Digital filter	8 fs
D/A converter	MASH (1 bit DAC)

### General

Power consumption	145W
Power supply	
For GC area	AC 110V/127V/220V/230 - 240V, 50/60Hz
For GN area	AC 230 - 240V, 50Hz
Dimensions (W x H x D)	270 x 331 x 340 mm
Weight	
For GC area	8.15 kg
For GN area	8.1 kg

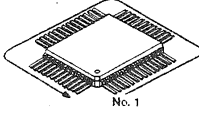
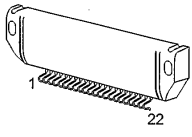
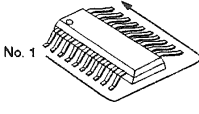
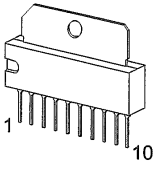
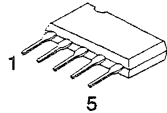
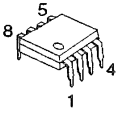
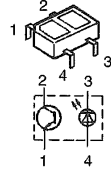
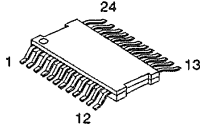
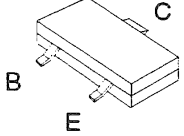
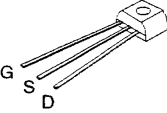
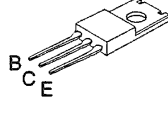
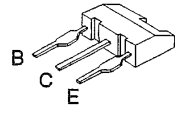
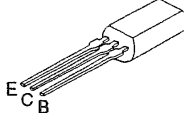
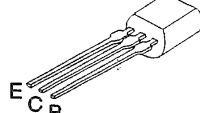
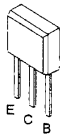
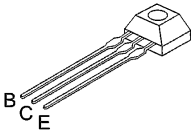
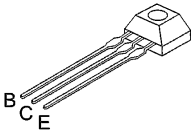
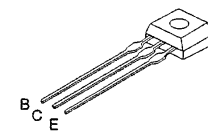
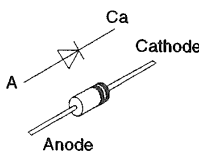
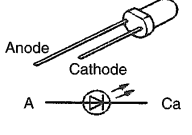
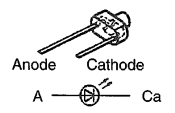
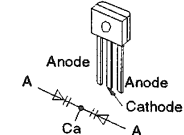
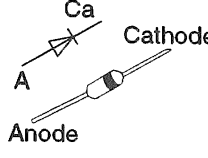
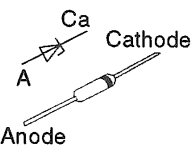
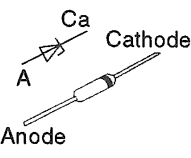
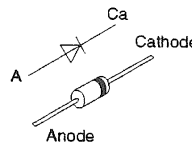
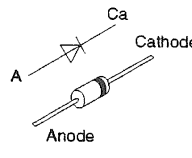
### Notes :

- Specifications are subject to change without notice. Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

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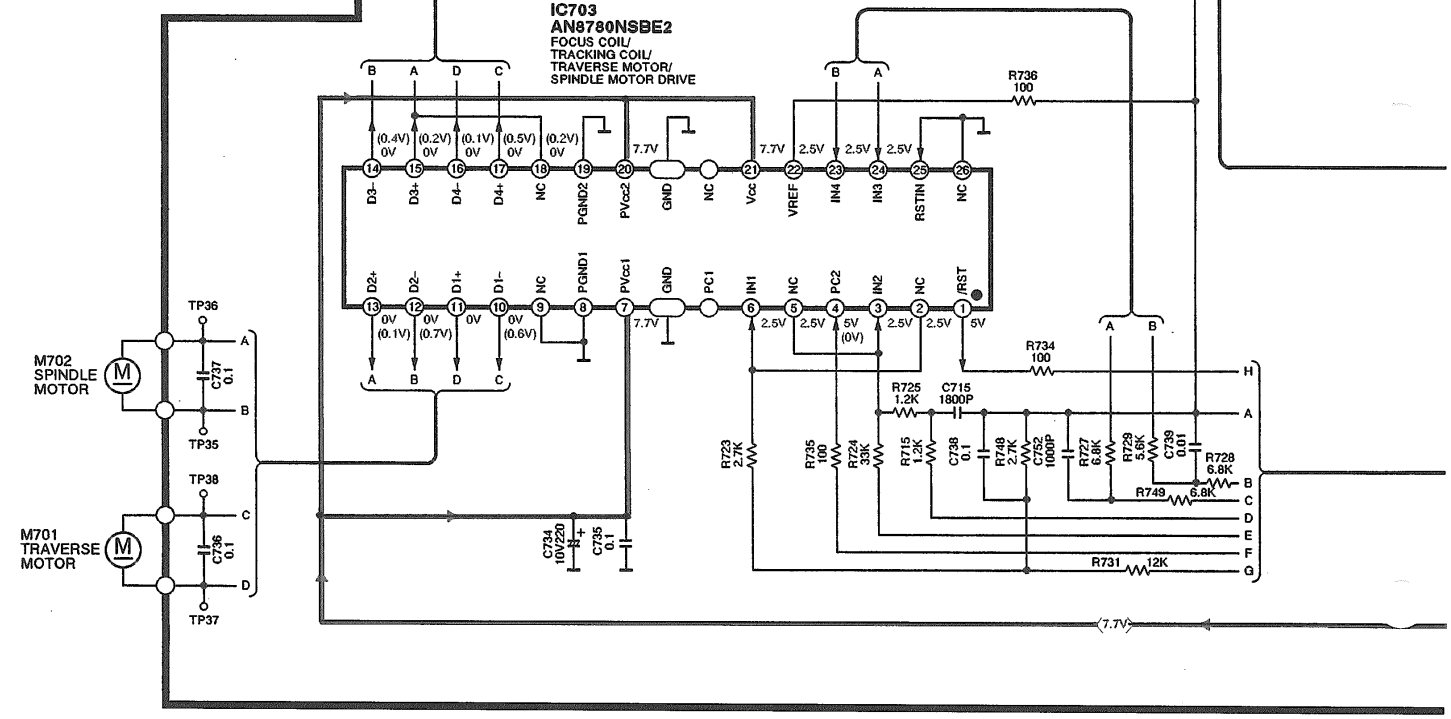
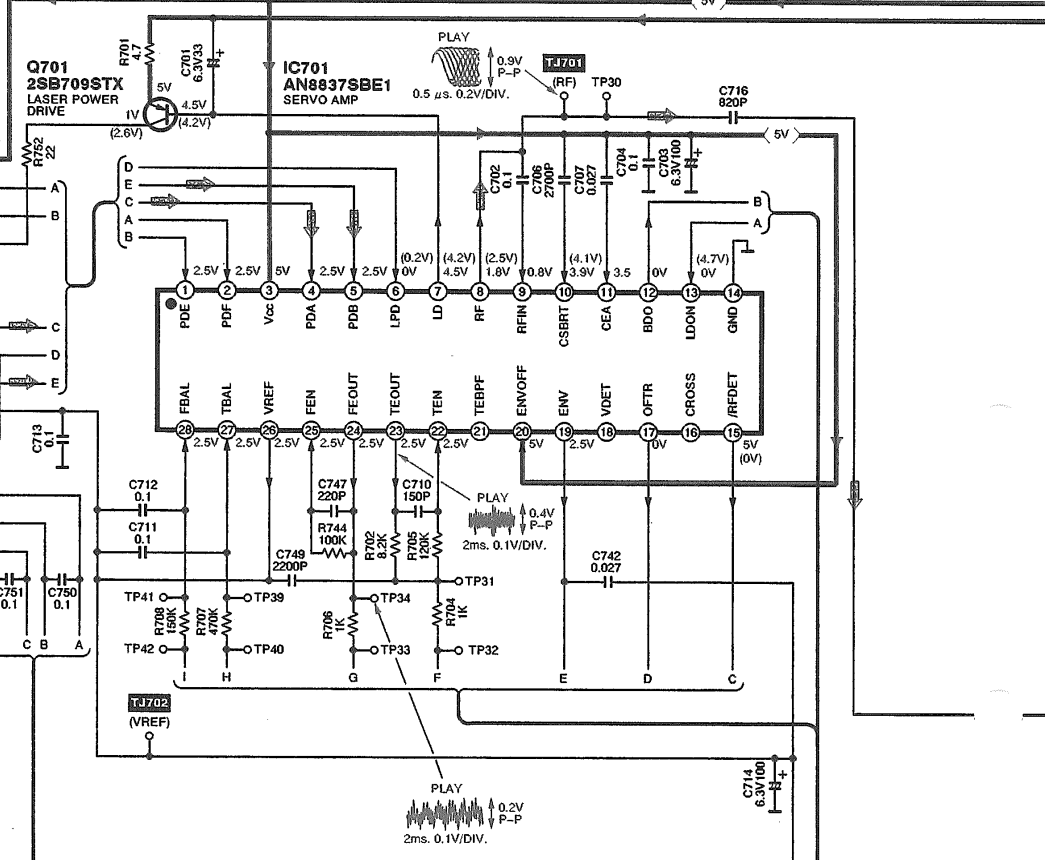
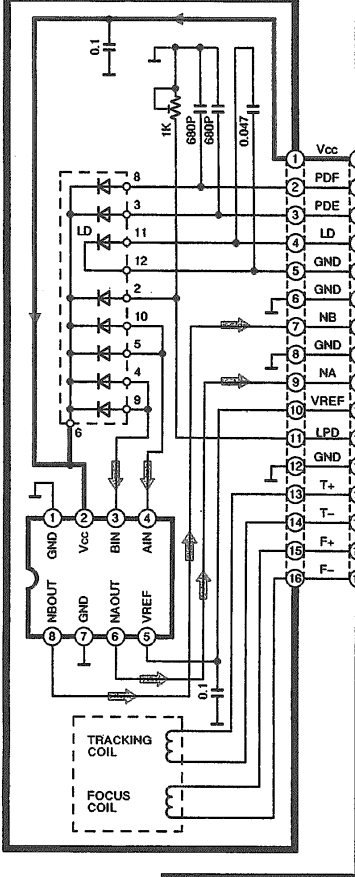
## ■ Illustration of IC's, Transistors and Diodes

<p>M38198MCA821(100P) MN662746RPK1(80P) M62433AFP(80P)</p>  <p>No. 1</p>	<p>RSN312H24</p> 	<p>BA3835F-E2(18P)    LA1833MN-TLM (24P) AN8780SBE2 (28P)    LC72131MDTRM (20P) BU2090AF-E2 (16P)    M62456FPE1 (24P) M51167AFP-TB (36P)</p>  <p>No. 1</p>		<p>TA7291P</p> 
<p>BA7755A</p> 	<p>M5218AP</p> 	<p>ON2180RLC</p> 	<p>AN8837SBE1</p> 	<p>2SA1037AKSTX DTC114YKA146 2SC2412KT96R DTC144TKA146 2SD2114K1V DTC114TKA146 DTA114EKA146 JTA143XKA146</p> 
<p>2SK544F-AC</p> 	<p>2SD2395E 2SB1566E</p> 	<p>2SB1238QRTV2 2SD1859QRTV2 2SB1417PQTA</p> 	<p>2SC3940AQSTA 2SC3940RTA</p> 	<p>KTA12710YTA KTC32030YTA 2SB621RTA 2SD1302STA 2SD965RTA KSB564ACYGTA</p> 
<p>2SA1309ARTA 2SJ498CDTA</p> 	<p>KRC109MTA KRA102MTA KRC111MTA KRA110MTA KRC103MTA KRC102MTA</p> 	<p>KTC3199GRTA RVTDTTC143EST 2SC2786MTA RVTDTA114EST 2SC2787FL1TA RVTDTTC143XST</p> 	<p>2SA933SSTA RVTDTTC114EST 2SC1740SSTA 2SC2785FTA 2SC2787LTA 2SD2144STA</p> 	
<p>RK306LFU1</p> 	<p>SLR325DCT31 SLR325MCT31W</p> 	<p>LN201LPQJA</p> 	<p>SVC211SPA-AL</p> 	<p>RVD1SS133TA 1SS291TA MA165TA</p> 
<p>MTZJ10BTA MTZJ4R7BTA MTZJ5R1BTA MTZJ15CTA MTZJ33BTA MTZJ24DTA MTZJ12BTA</p> 	<p>MTZJ5R1CTA MTZJ5R6BTA MTZJ6R2BTA MTZJ8R2BTA MTZJ7R5ATA MA4020LTA</p> 	<p>1D3E 1N5402BM21 RL1N4003N02</p> 	<p>1D3E 1N5402BM21 RL1N4003N02</p> 	

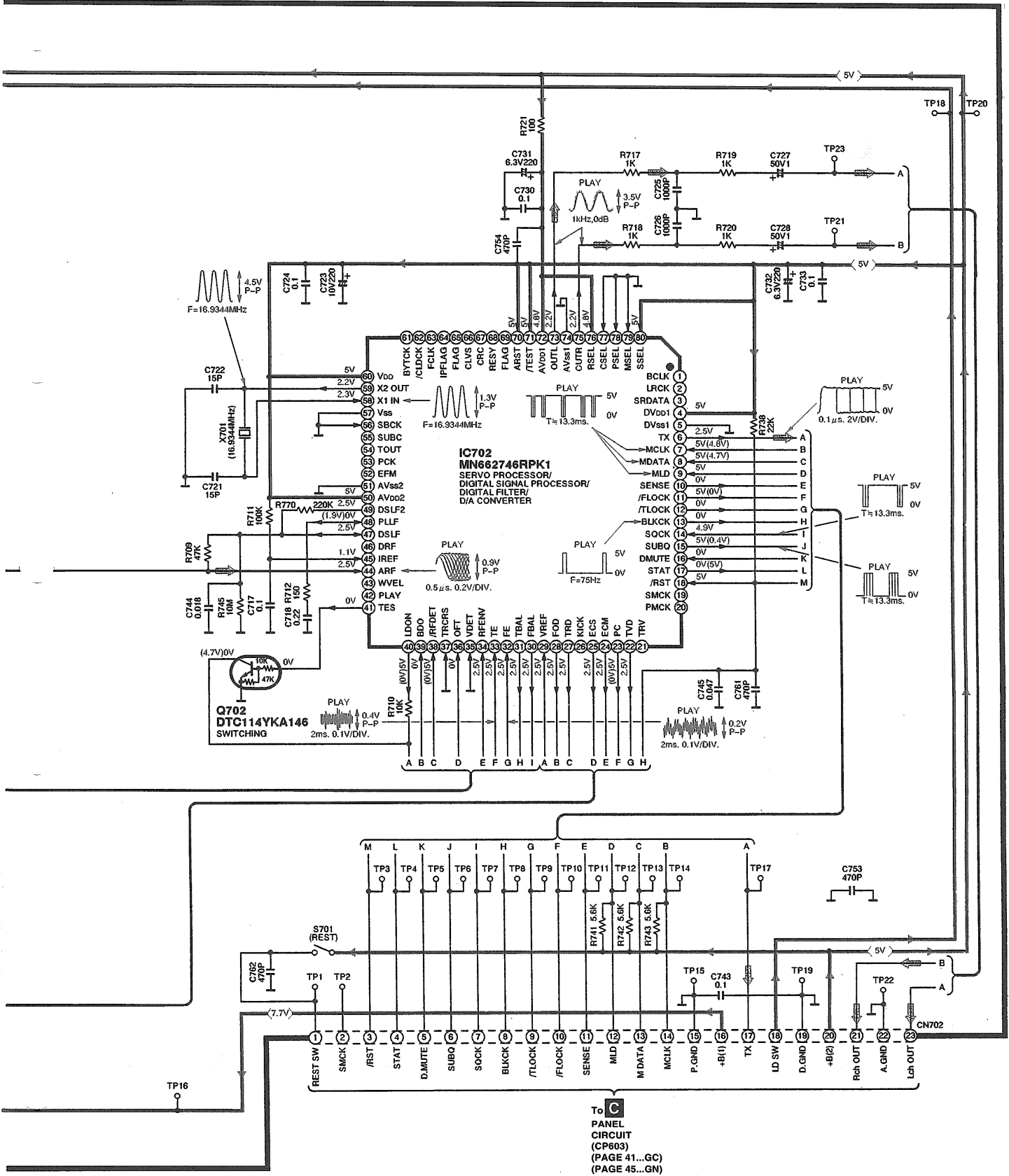
: +B line      : CD signal line

**A** CD SERVO CIRCUIT (P.C.B. on page 59)

**△** OPTICAL PICKUP CIRCUIT

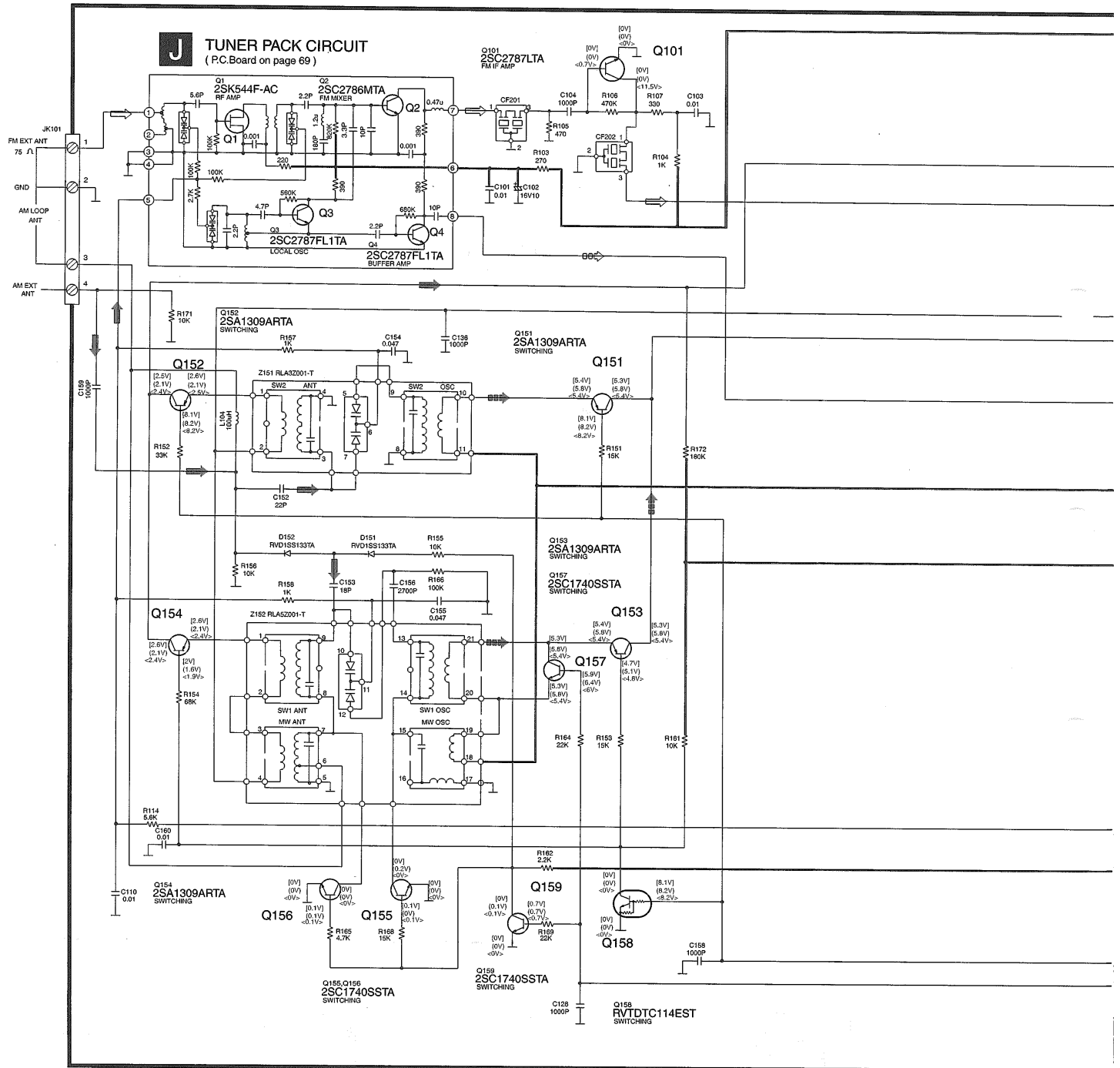


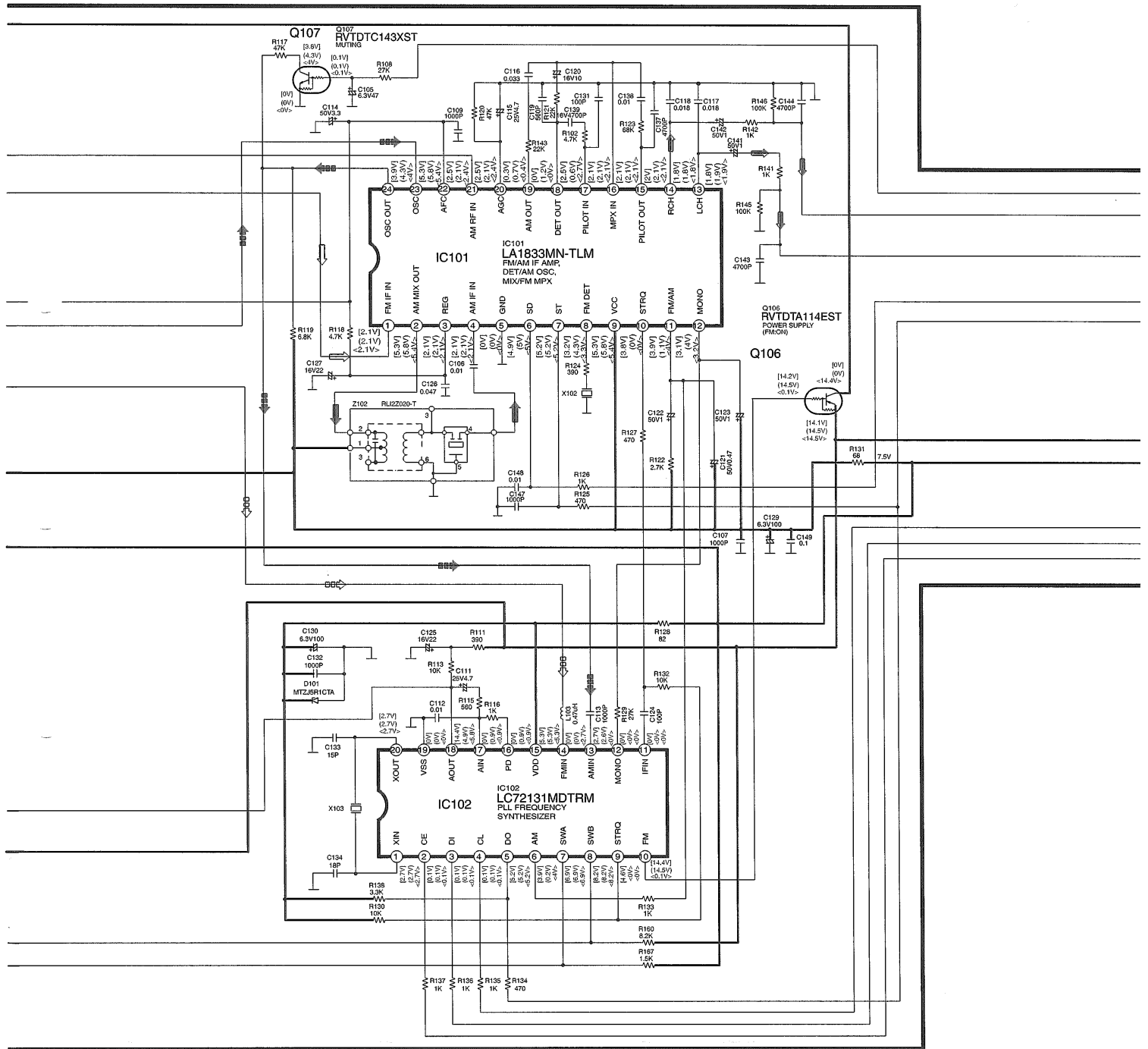
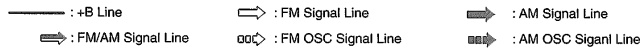
— : +B line       : CD signal line

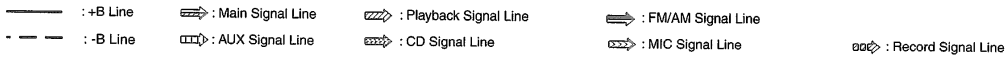


— : +B Line  
 ⇨ : FM Signal Line  
 ⇨ : AM Signal Line  
 ⇨ : FM OSC Signal Line  
 ⇨ : AM OSC Signal Line

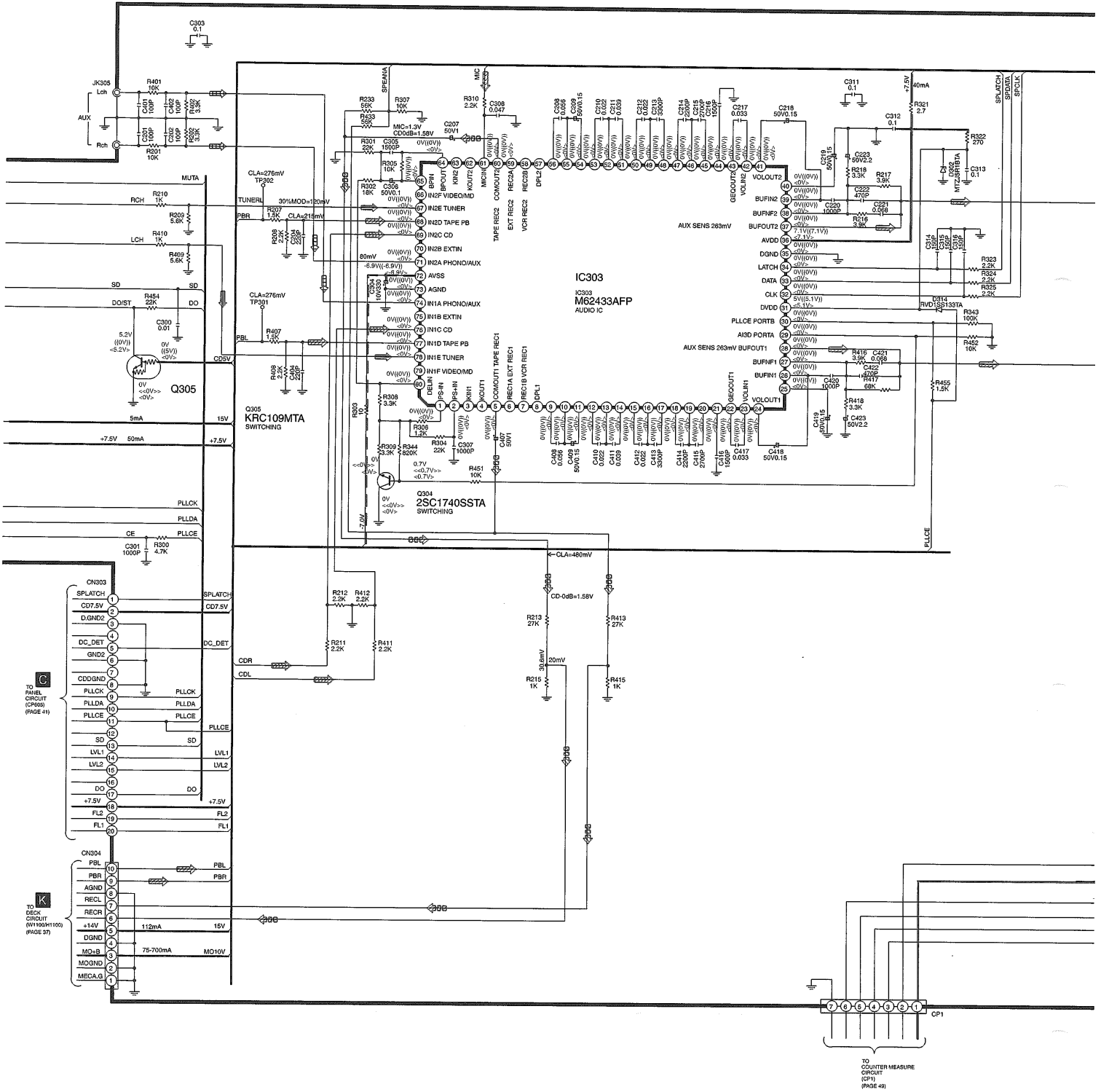
**B** MAIN CIRCUIT (P.C.Board on page 60)  
 FOR GC ONLY

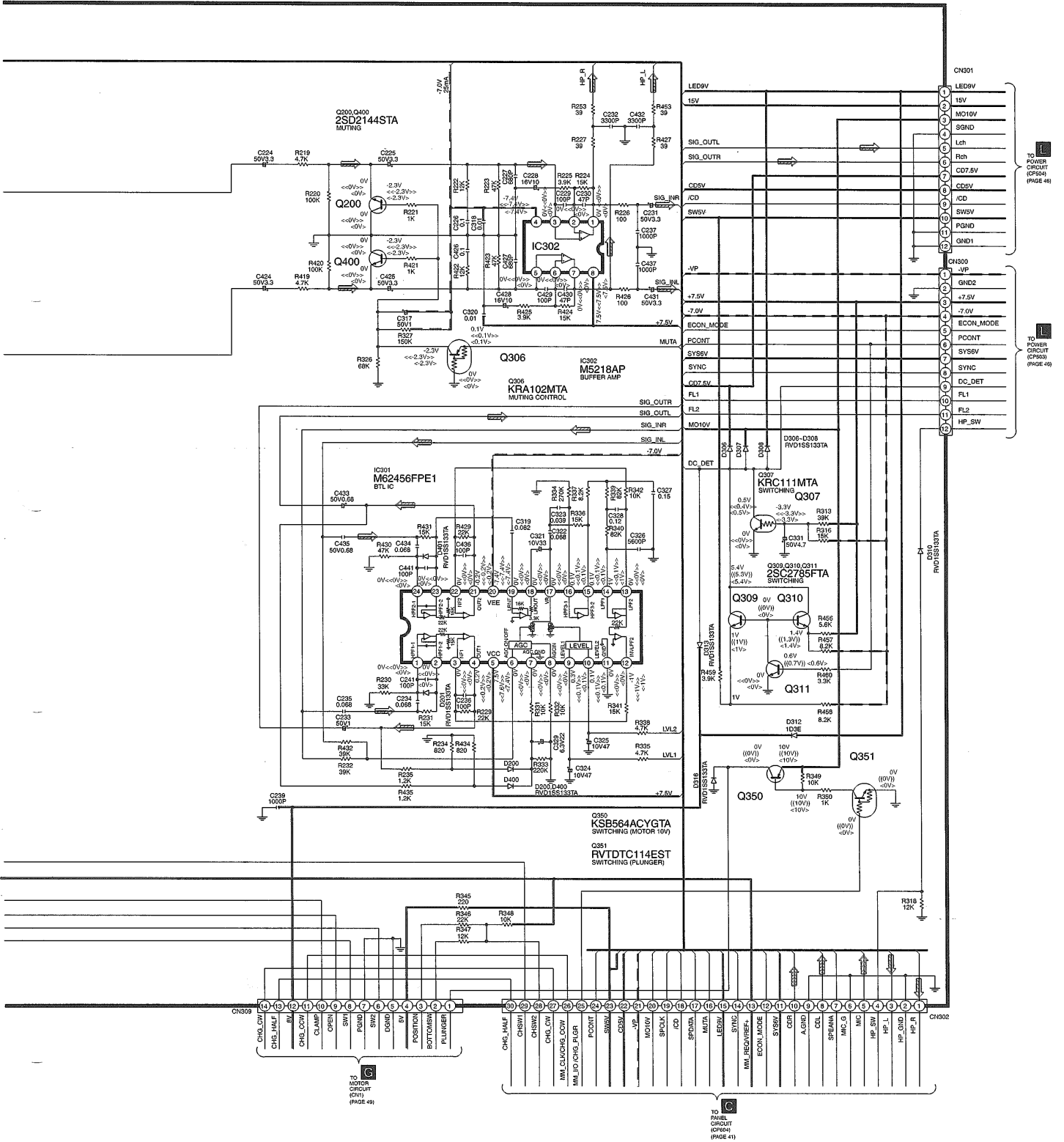
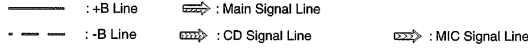




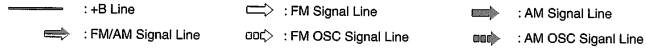


**B MAIN CIRCUIT** (P.C.Board on page 60)  
FOR GC ONLY

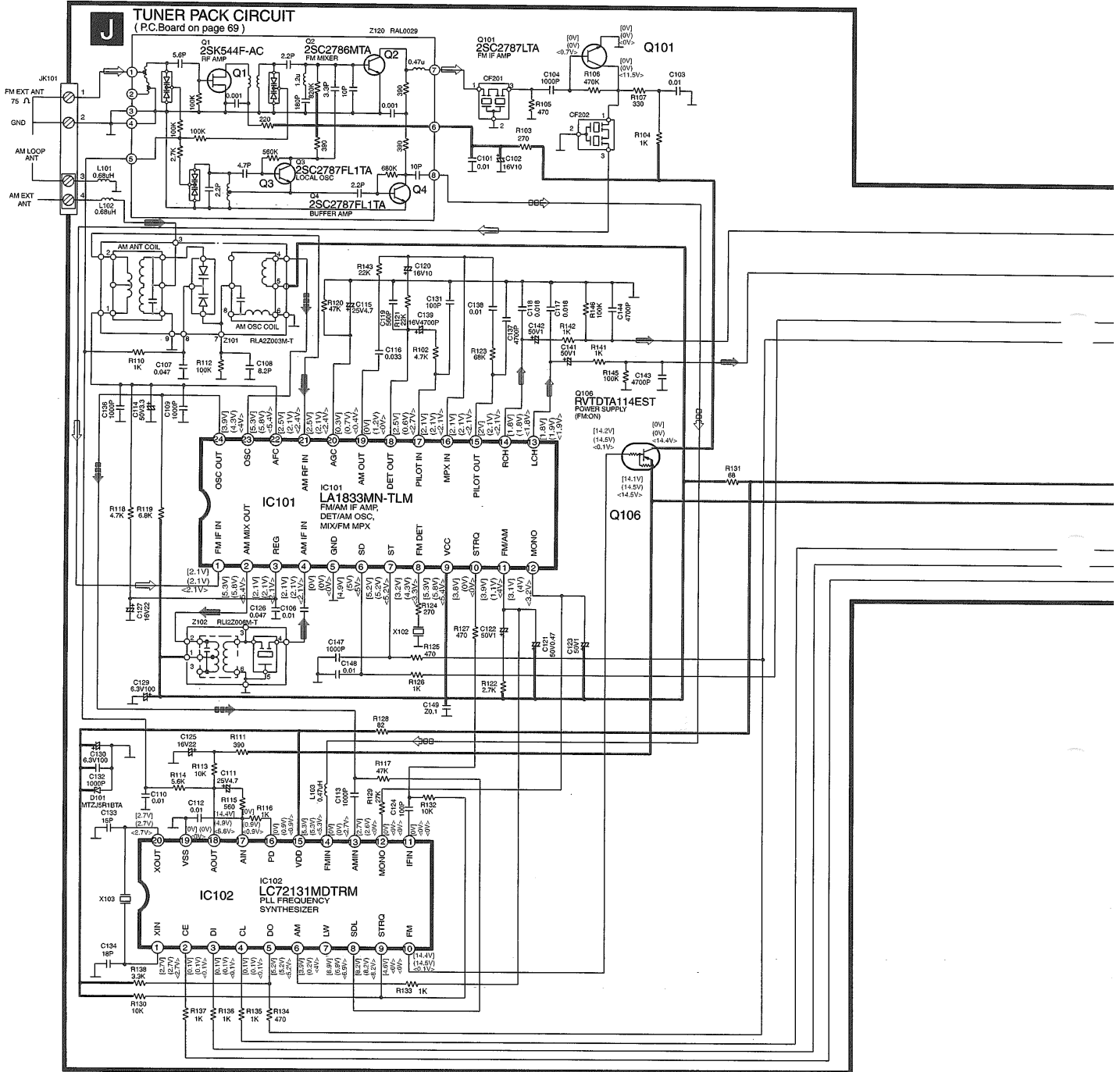


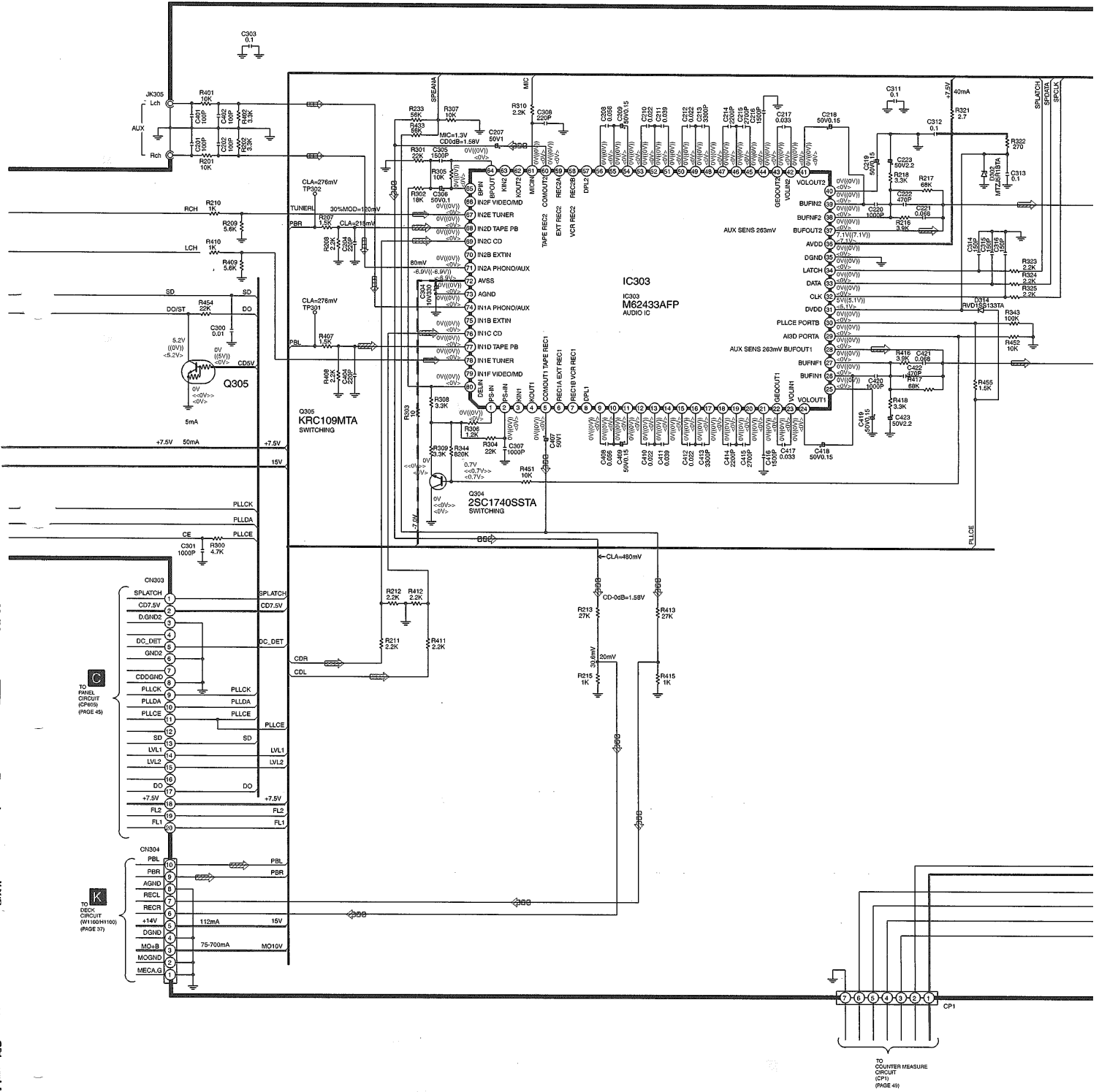


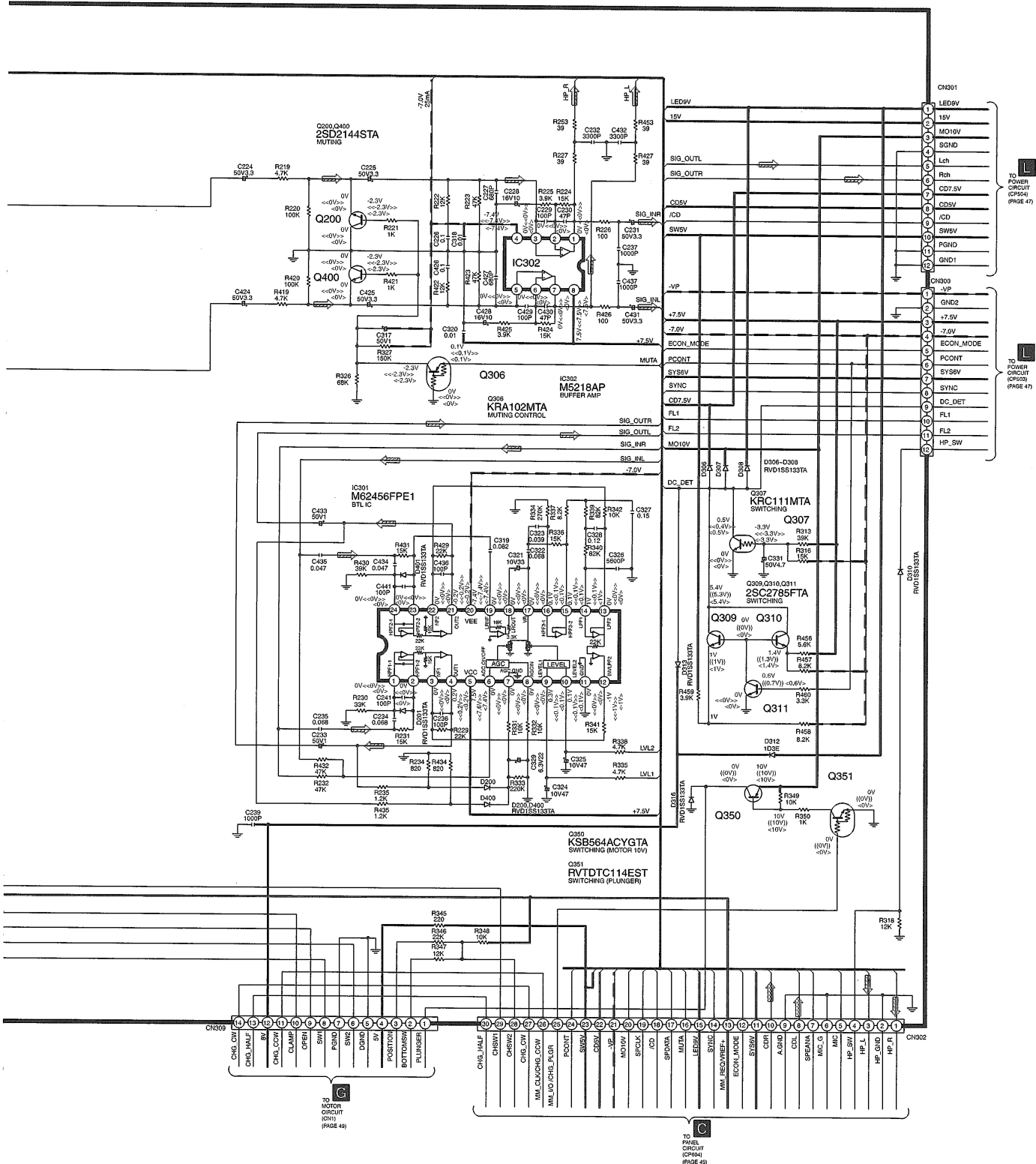
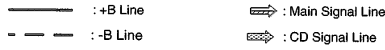




**B** MAIN CIRCUIT (P.C.Board on page 62)  
FOR GN ONLY

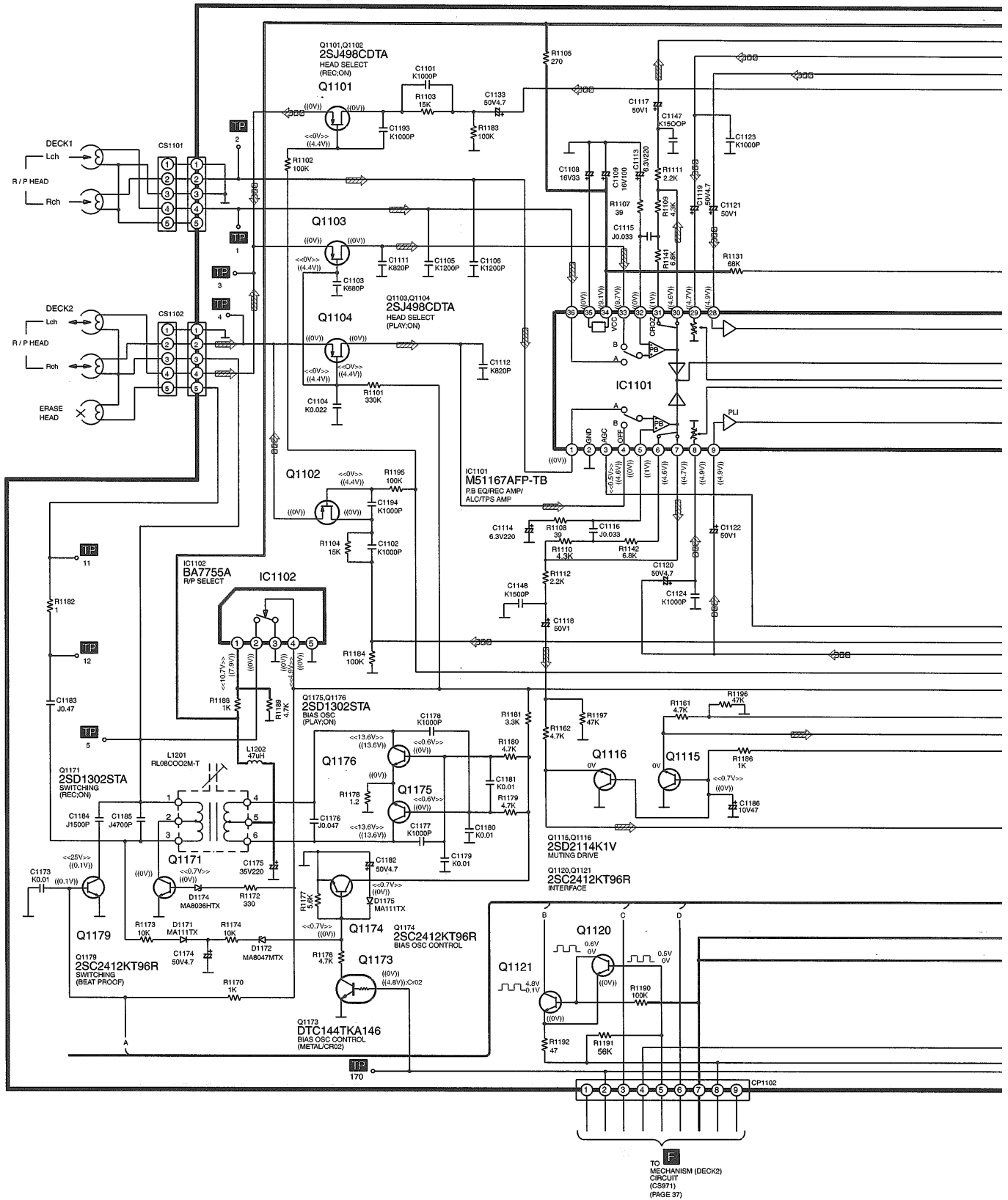






— : +B Line    ▨ : Playback Signal Line    ⊞ : Record Signal Line

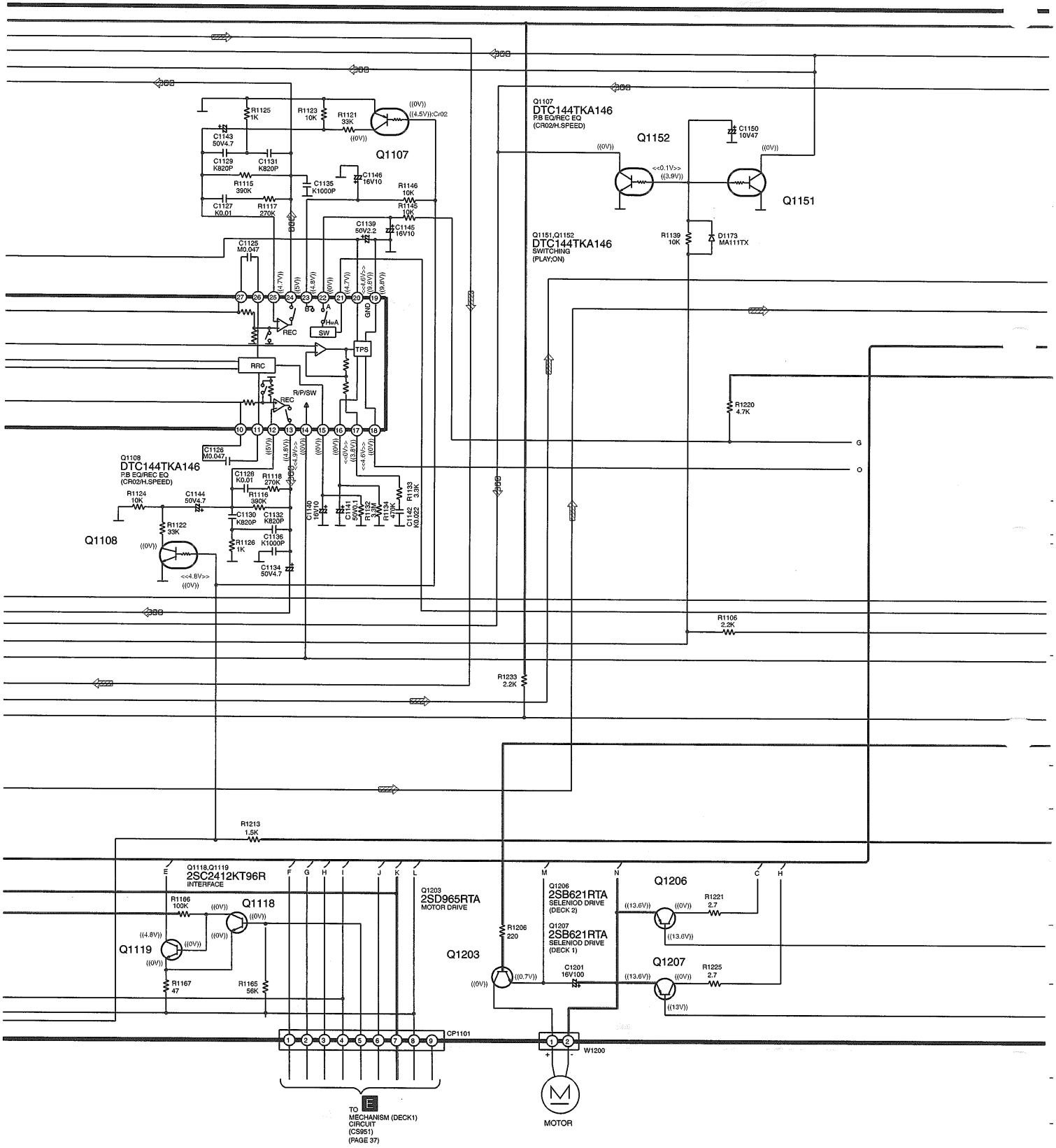
**K** DECK CIRCUIT (P.C.Board on page 70)



— : +B Line

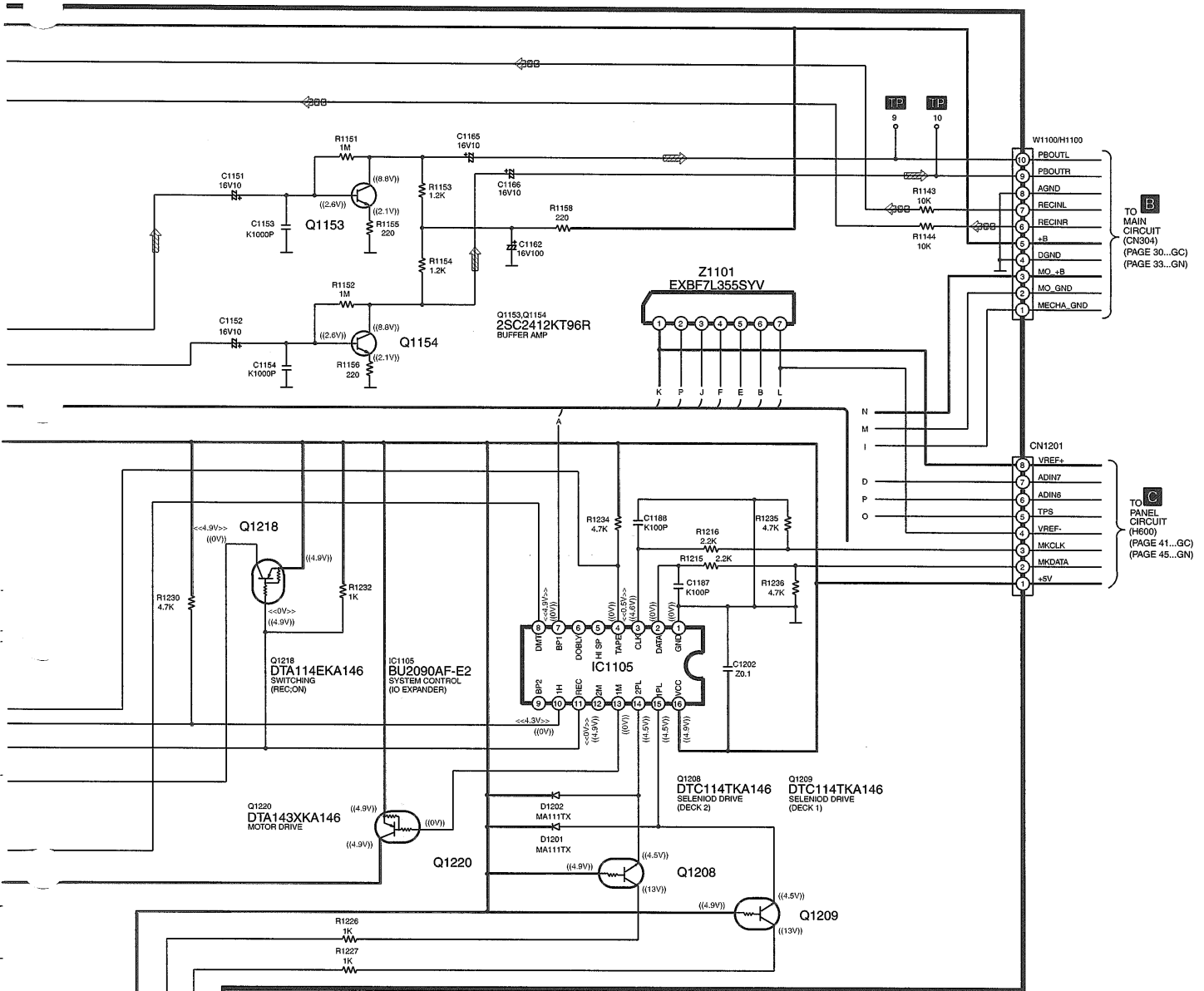
▤ : Playback Signal Line

⊞ : Record Signal Line



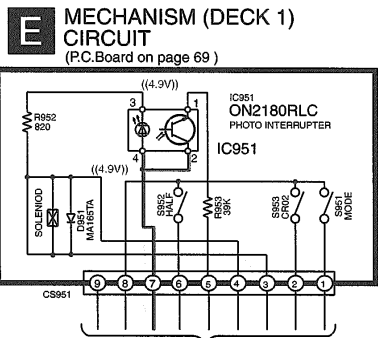
TO MECHANISM (DECK1)  
CIRCUIT (CS851)  
(PAGE 37)

— : +B Line      ⇨ : Playback Signal Line      ⇩ : Record Signal Line

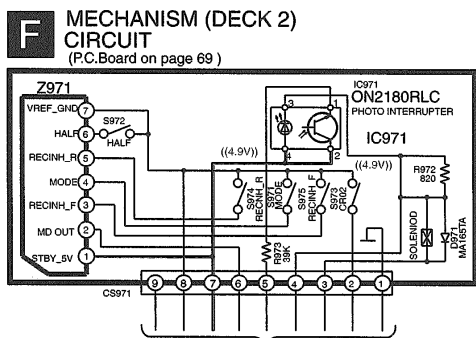


**B**  
TO MAIN  
CIRCUIT  
(C1304)  
(PAGE 30...GC)  
(PAGE 33...GN)

**C**  
TO PANEL  
CIRCUIT  
(H800)  
(PAGE 41...GC)  
(PAGE 45...GN)



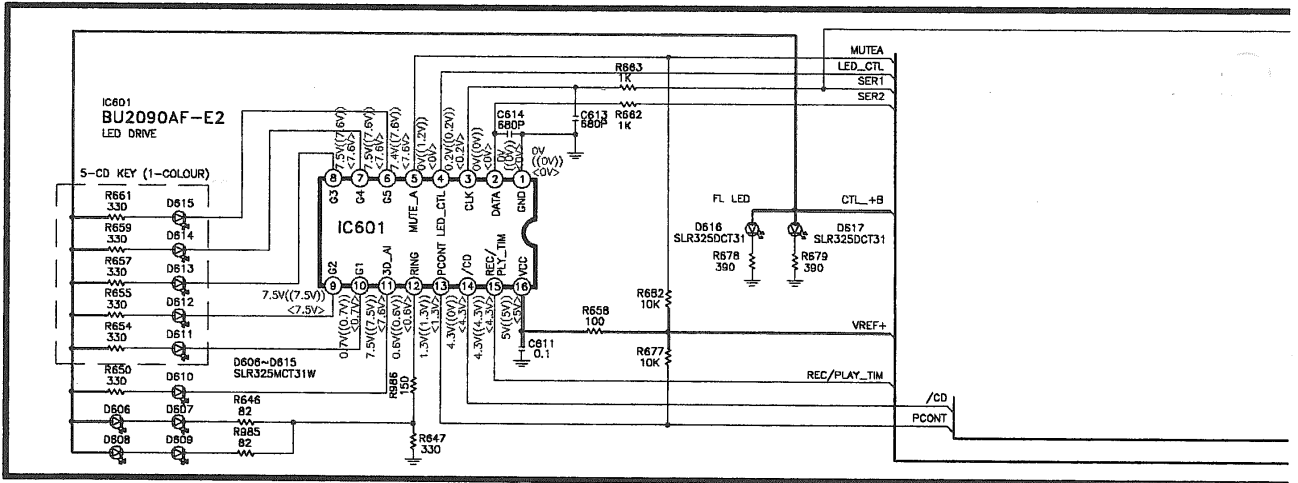
**K**  
TO DECK  
CIRCUIT  
(CP1101)  
(PAGE 36)



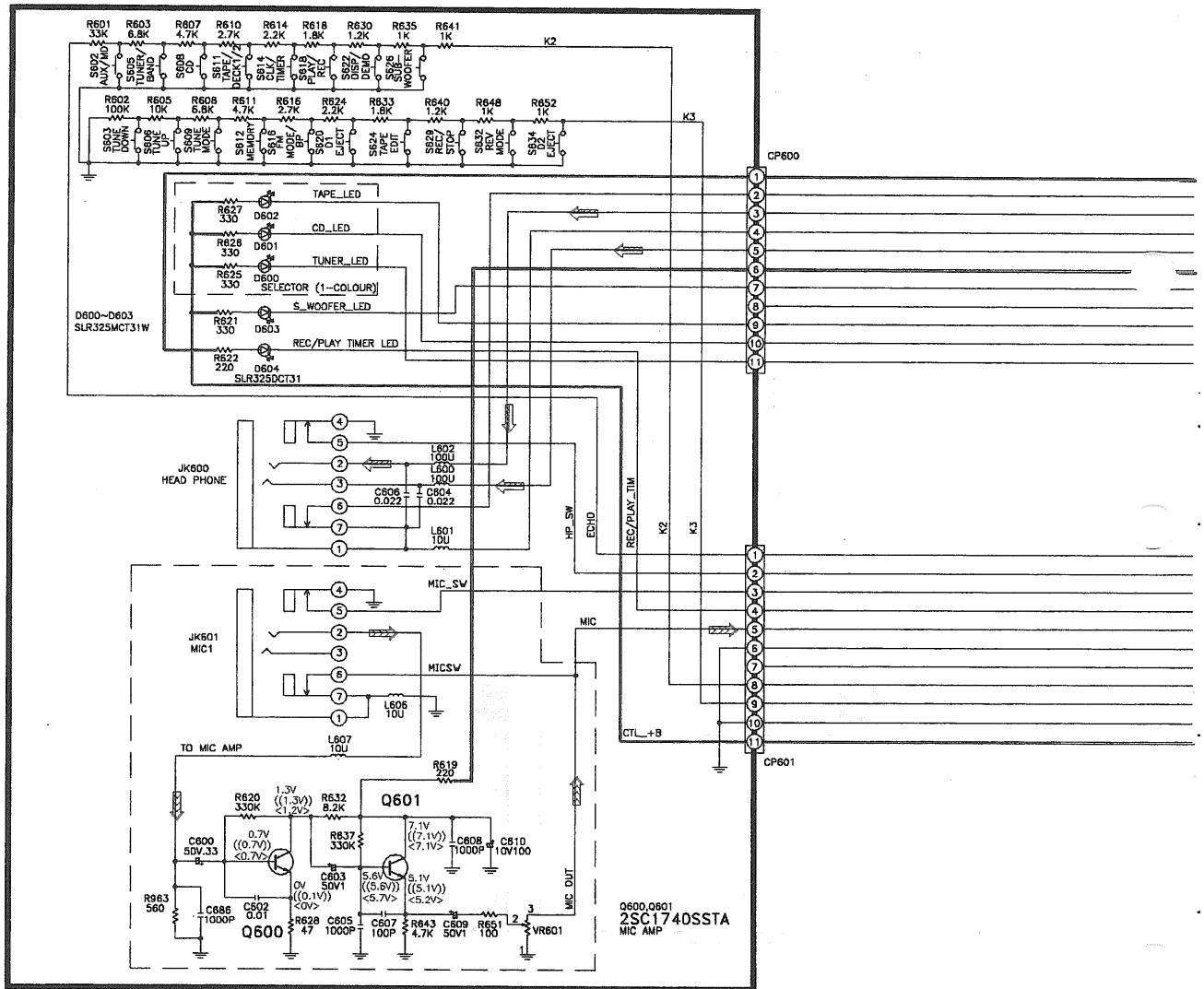
**K**  
TO DECK  
CIRCUIT  
(CP1102)  
(PAGE 35)

— : +B Line    ⇨ : Main Signal Line    ⇨⇨ : MIC Signal Line

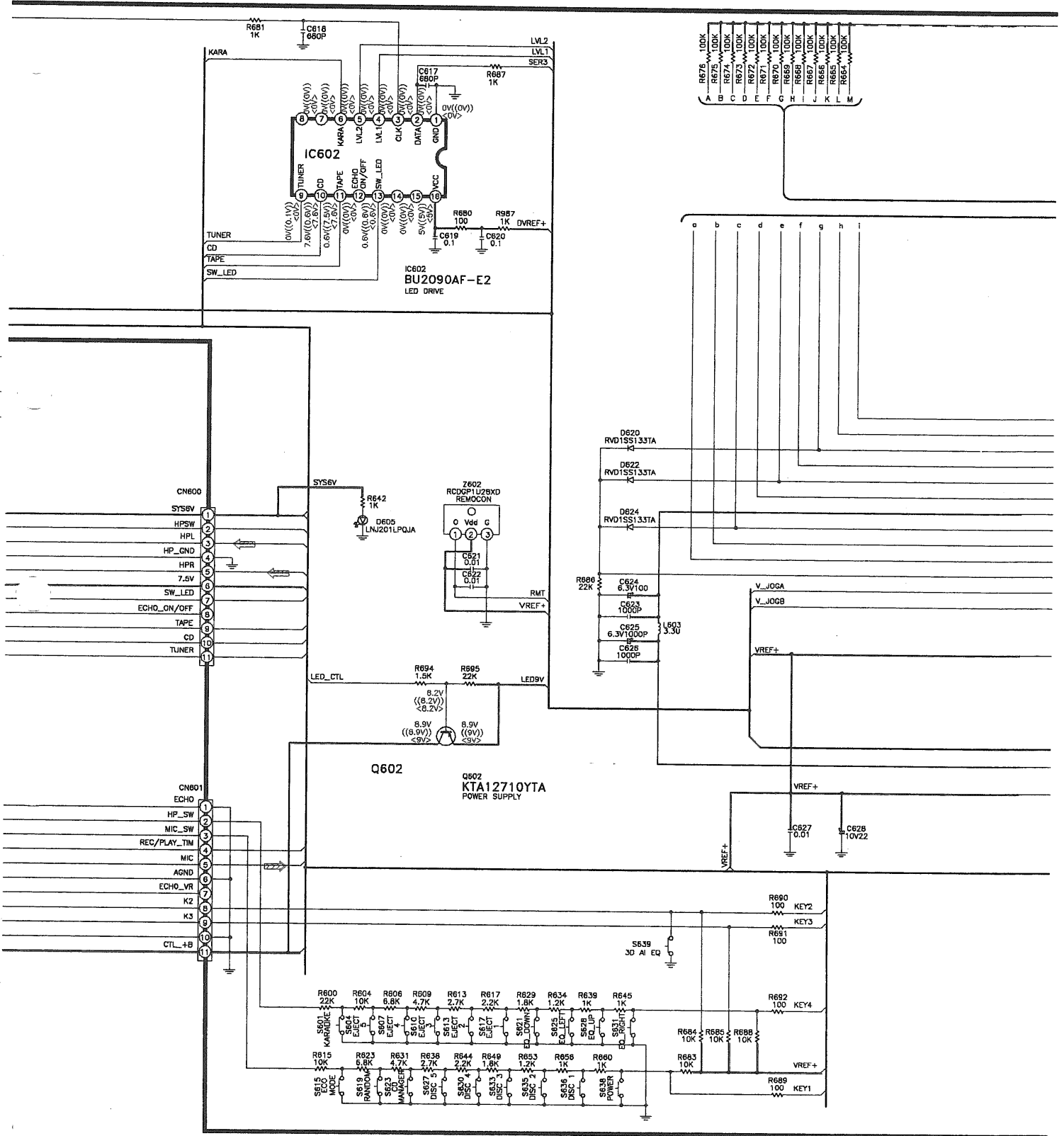
**C** PANEL CIRCUIT ( P.C.Board on page 64 )  
FOR GC ONLY



**D** TACT SWITCH CIRCUIT ( P.C.Board on page 68 )  
FOR GC ONLY

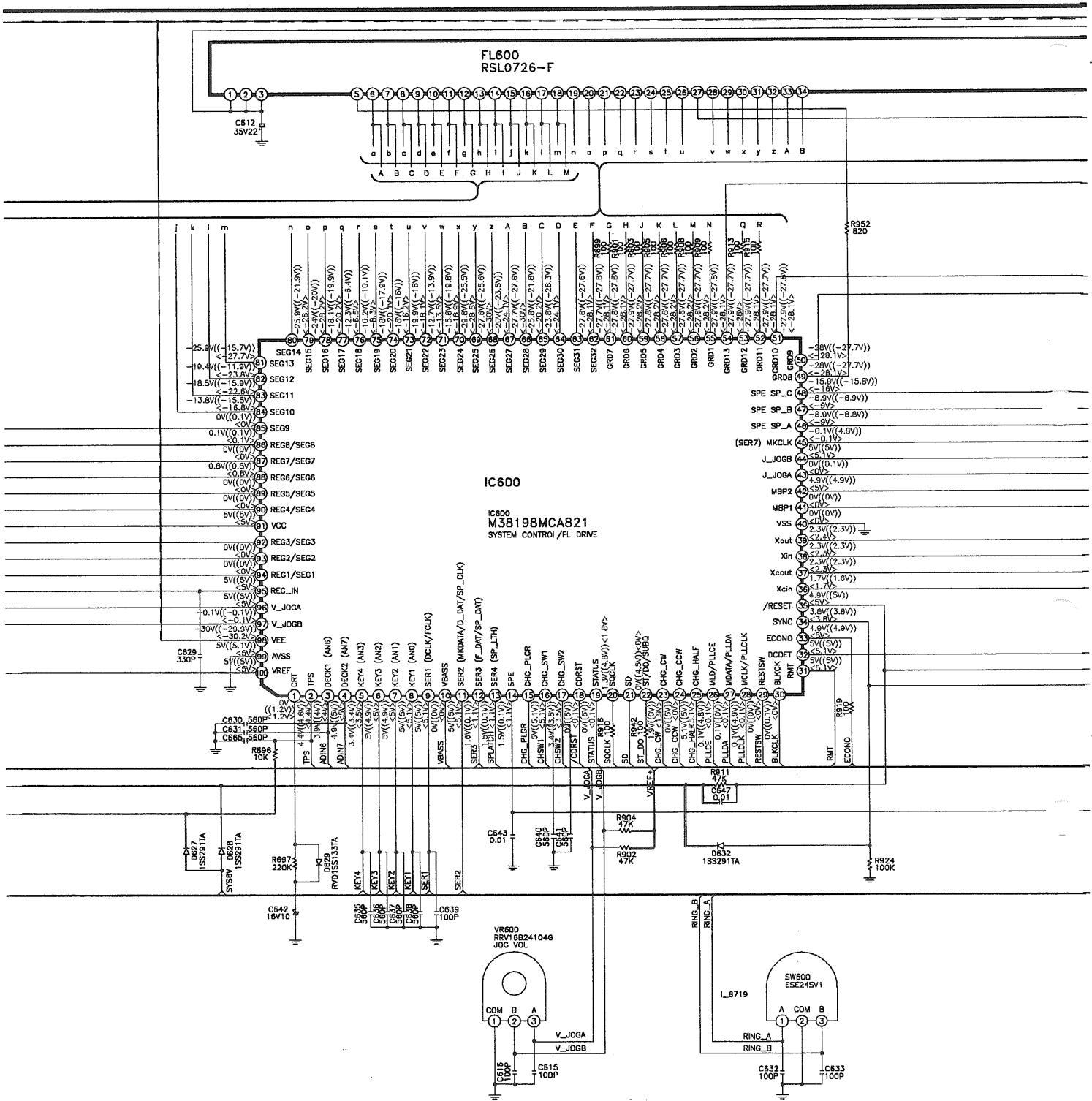


— : +B Line    - - - : -B Line    ⇨ : Main Signal Line    ⇨⇨ : MIC Signal Line

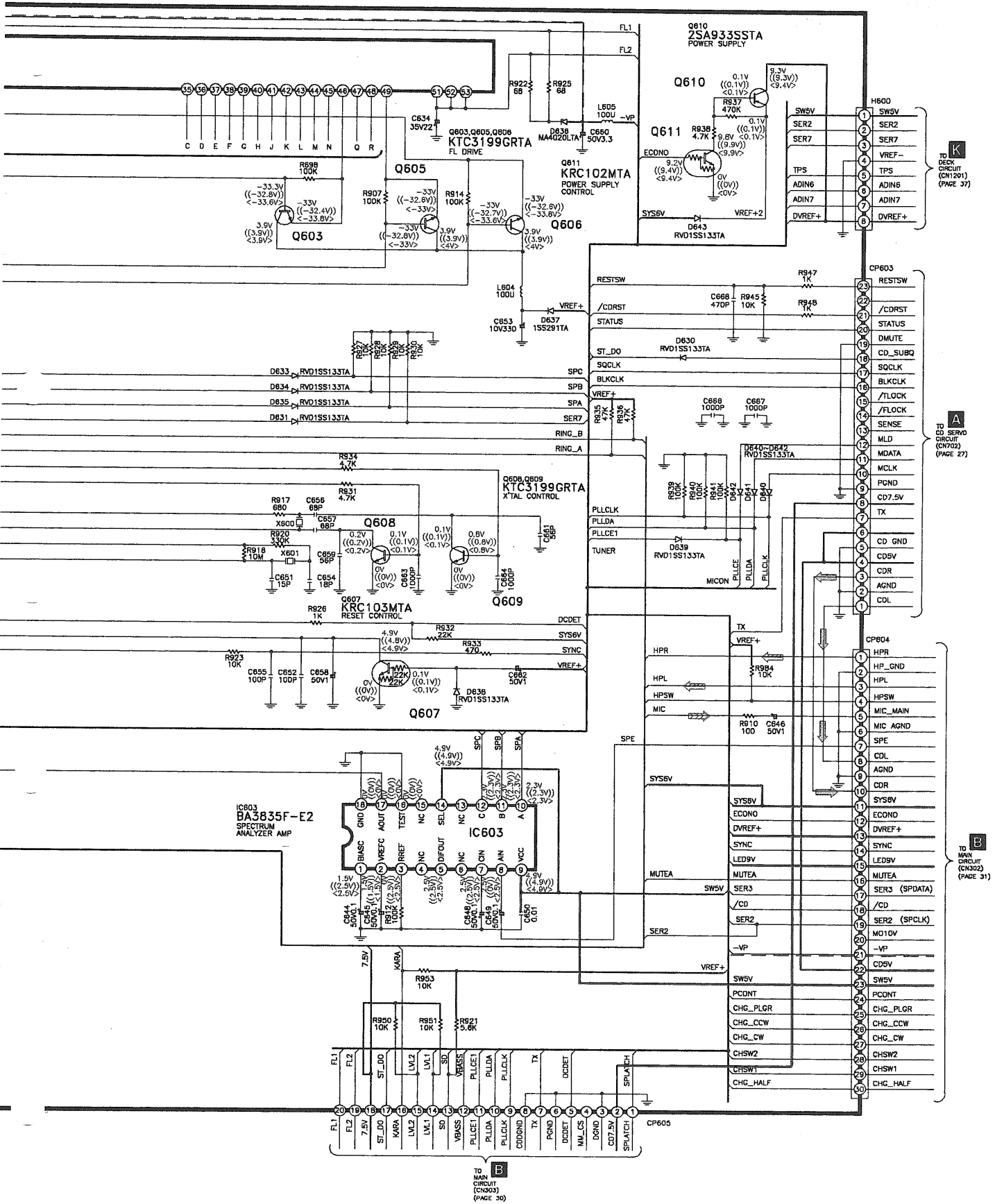




----- : +B Line      - - - - - : -B Line



: +B Line  
 : -B Line  
  $\Rightarrow$  : Main Signal Line  
  $\Rightarrow$  : CD Signal Line  
  $\Rightarrow$  : MIC Signal Line

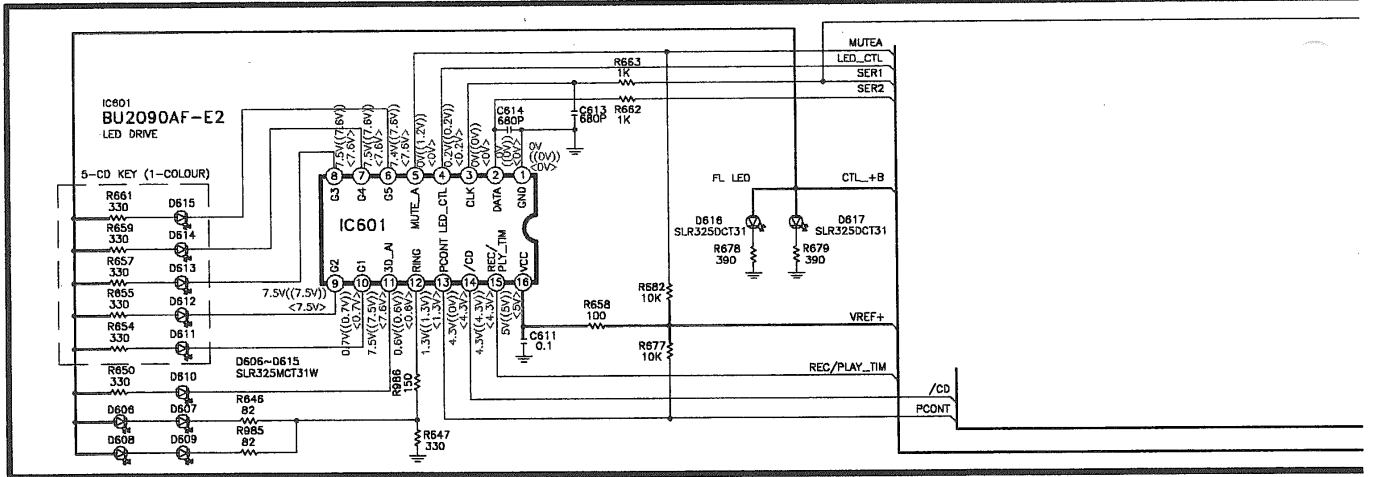


: +B Line

⇒ : Main Signal Line

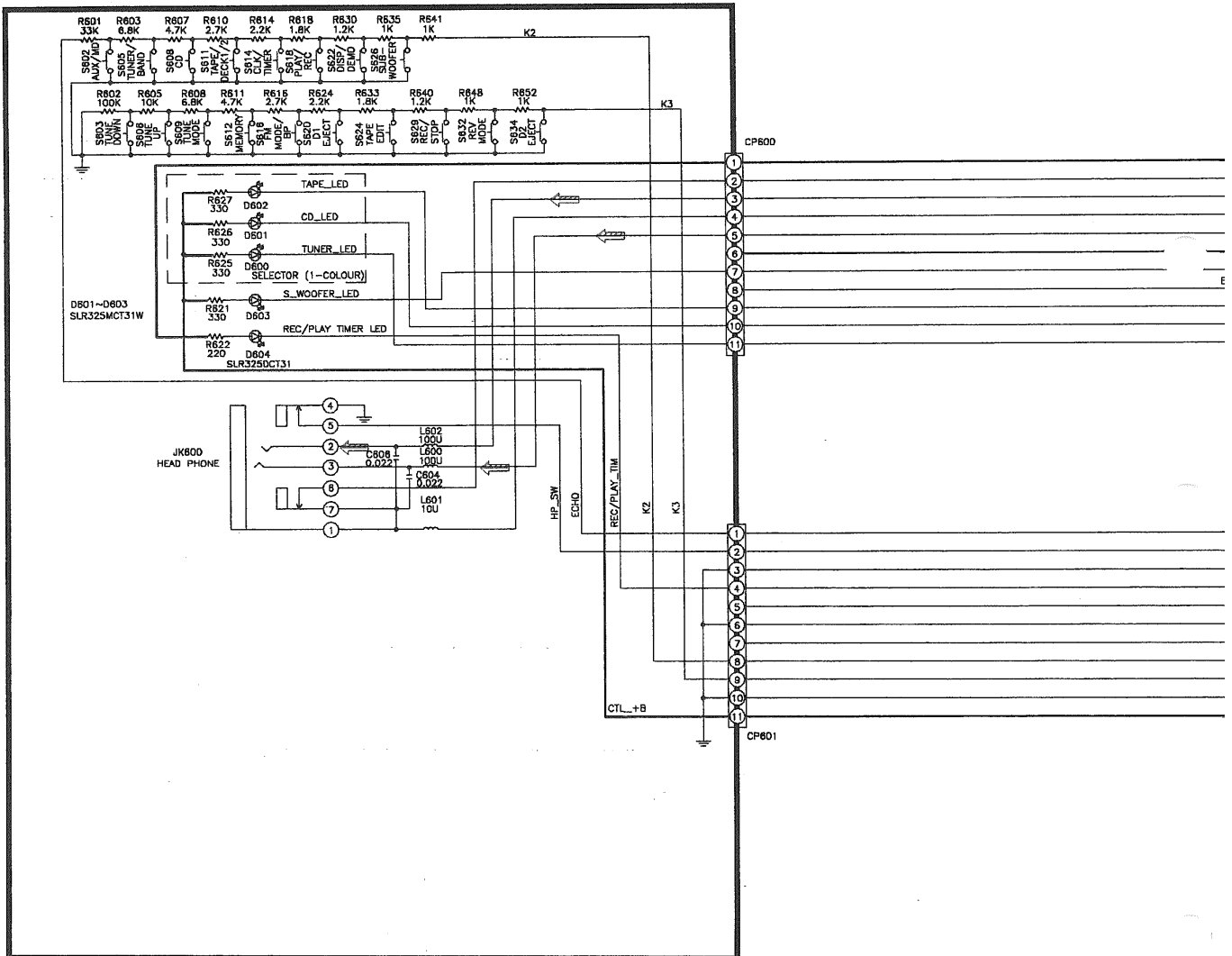
### C PANEL CIRCUIT ( P.C.Board on page 66 )

FOR GN ONLY

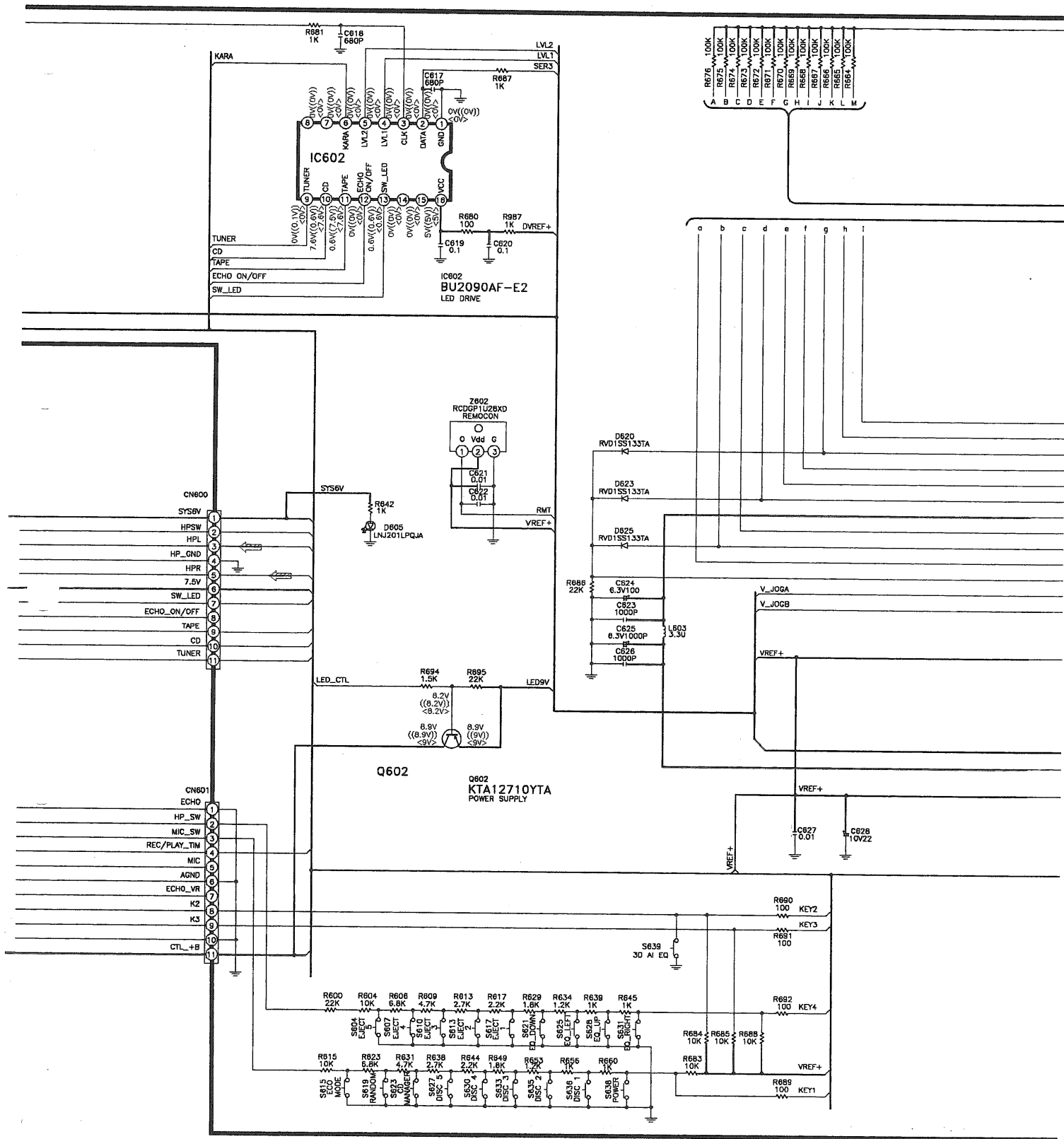


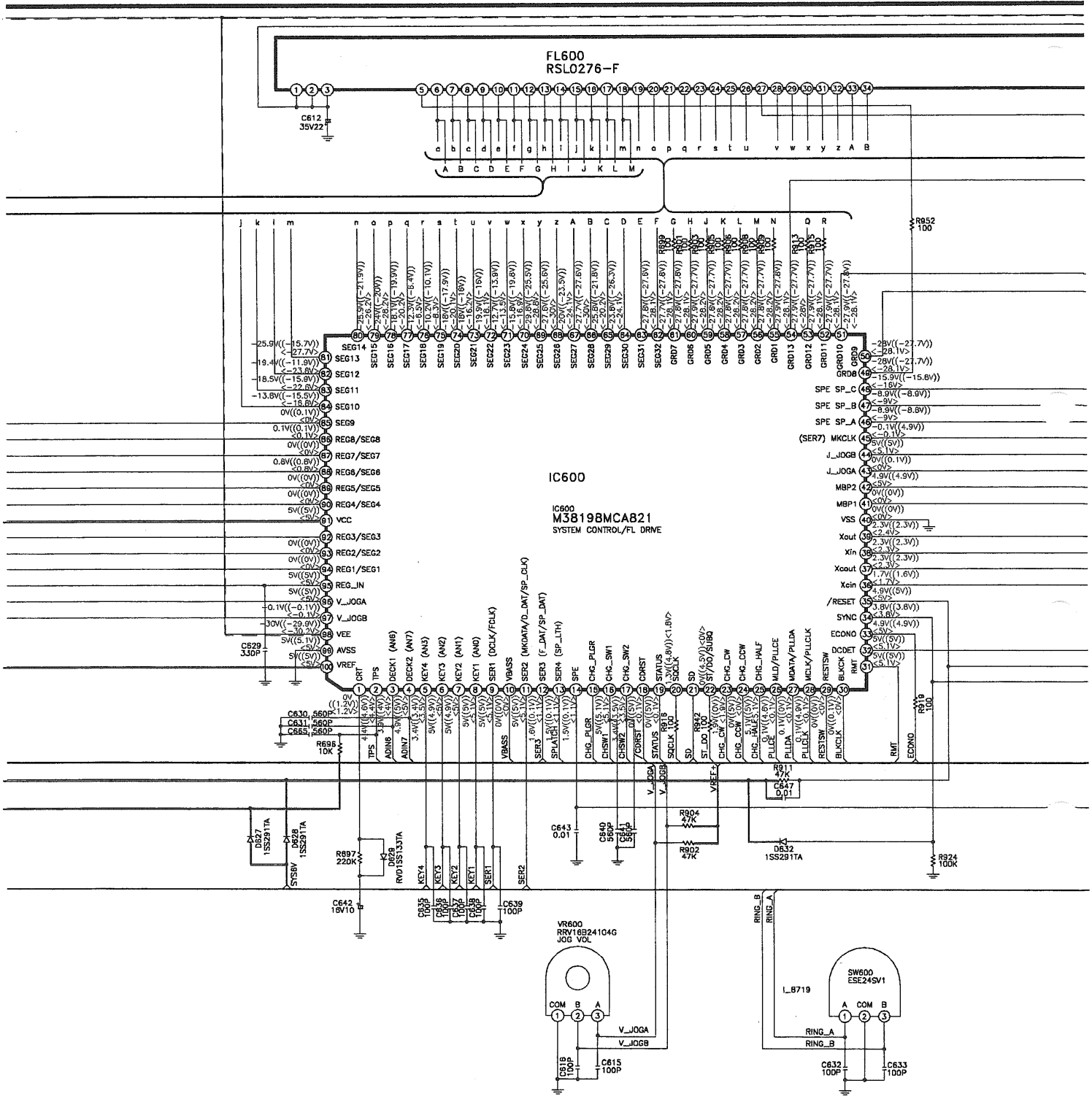
### D TACT SWITCH CIRCUIT ( P.C.Board on page 68 )

FOR GN ONLY

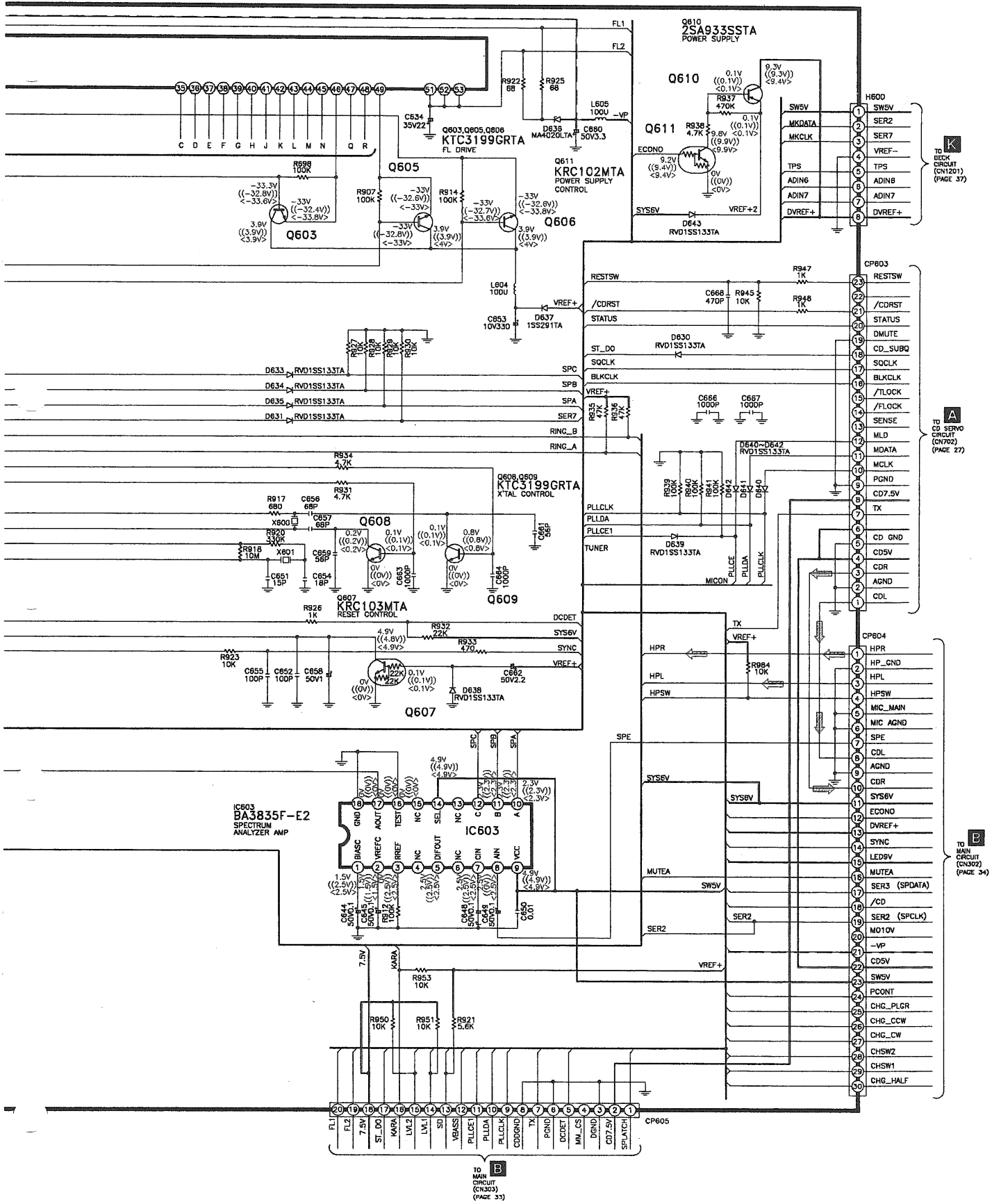


— : +B Line    - - - - : -B Line    ⇨ : Main Signal Line



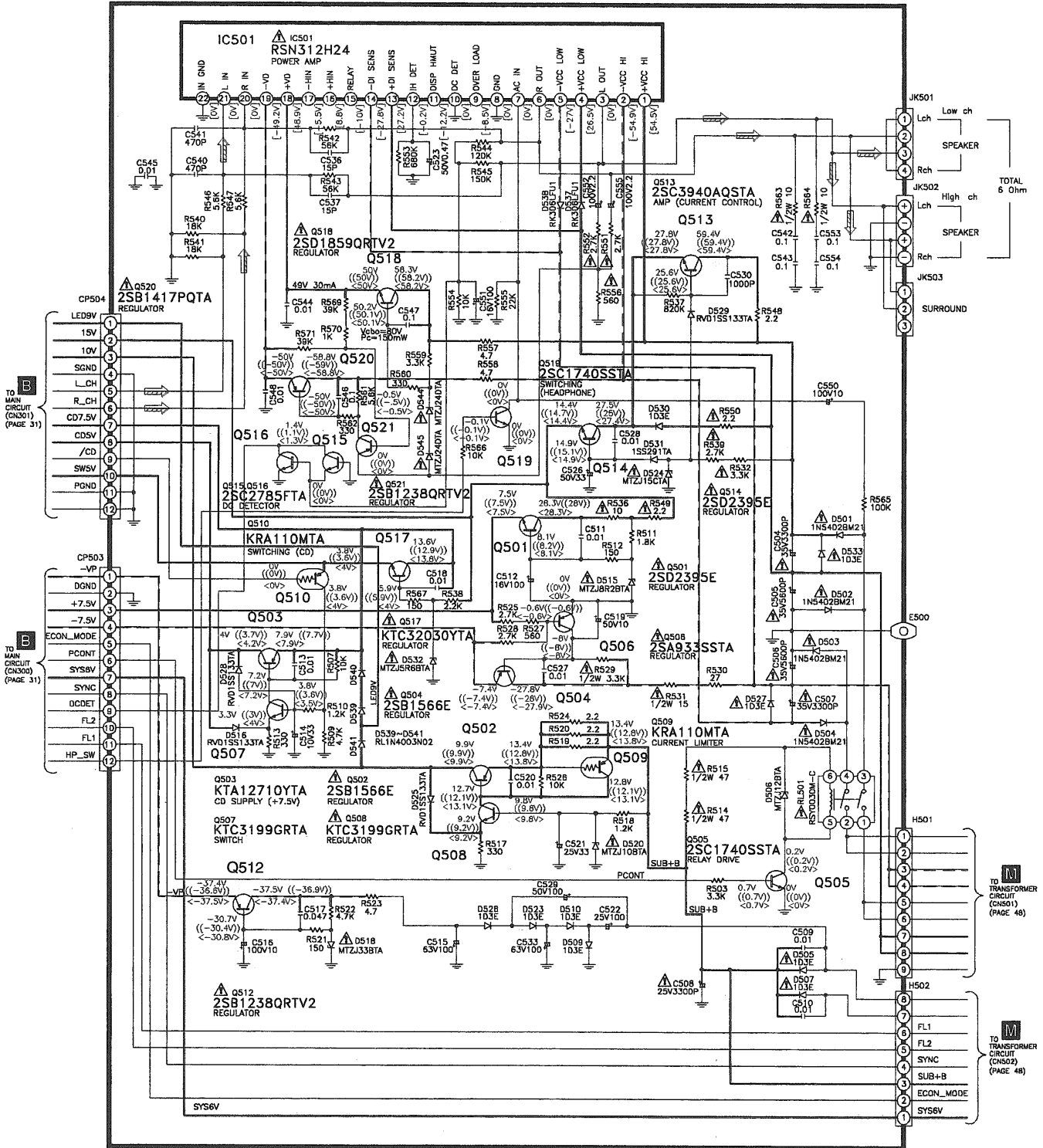


— : +B Line      — : -B Line  
— : Main Signal Line      — : CD Signal Line



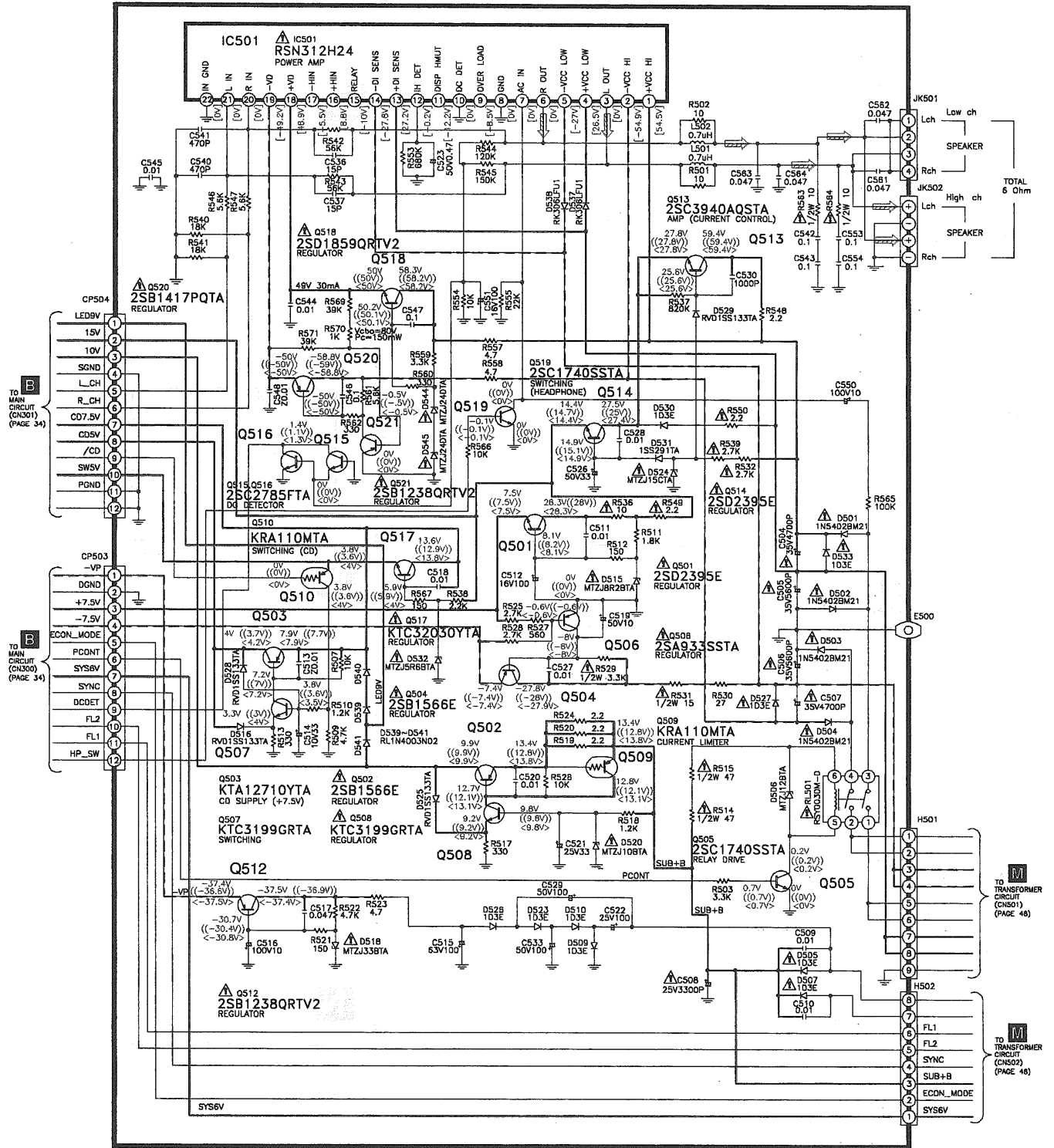
**L** POWER CIRCUIT ( P.C.Board on page 72 )  
FOR GC ONLY

— : +B Line    - - - - : -B Line    ⇨ : Main Signal Line



— : +B Line      ⇨ : Main Signal Line      - - - : -B Line

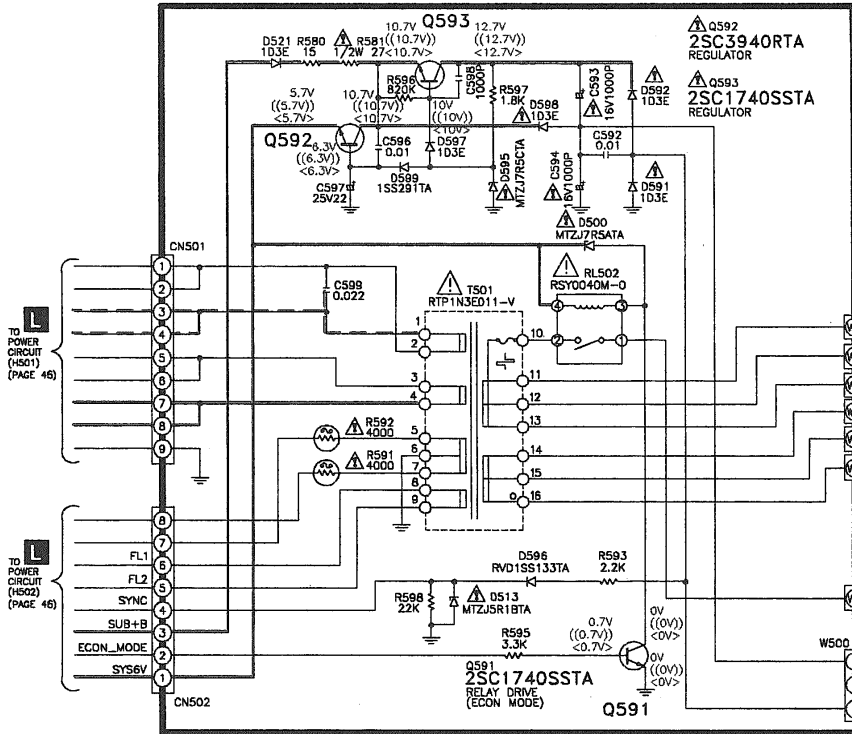
**L** POWER CIRCUIT ( P.C.Board on page 73 )  
FOR GN ONLY





— : +B Line      ⇨ : Main Signal Line      - - - : -B Line

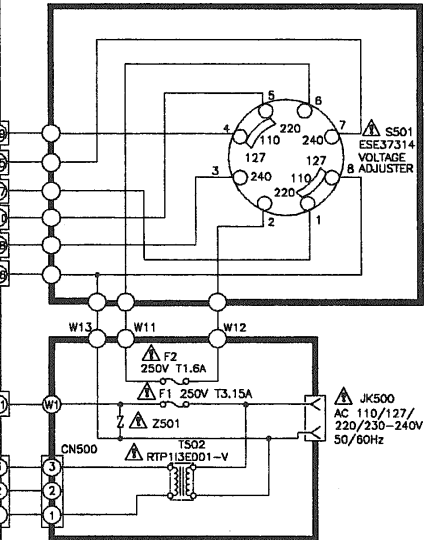
**M** TRANSFORMER CIRCUIT ( P.C.Board on page 74 )  
FOR GC ONLY



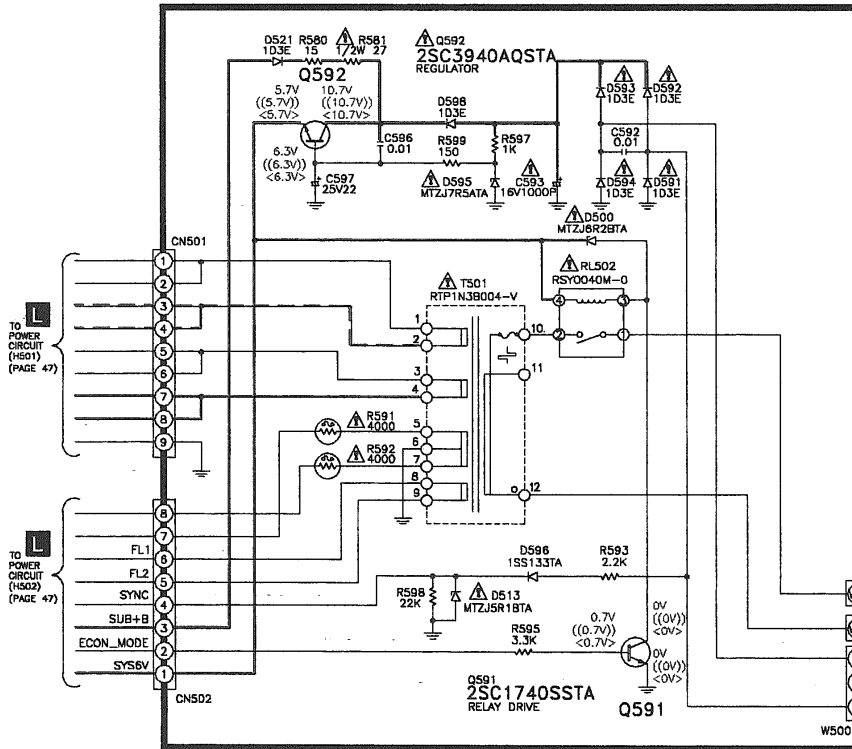
TO POWER CIRCUIT (HS01) (PAGE 46)

TO POWER CIRCUIT (HS02) (PAGE 46)  
FL1  
FL2  
SYNC  
SUB+B  
ECON\_MODE  
SYS6V

**O** VOLTAGE SELECTOR CIRCUIT ( P.C.Board on page 75 )  
FOR GC ONLY



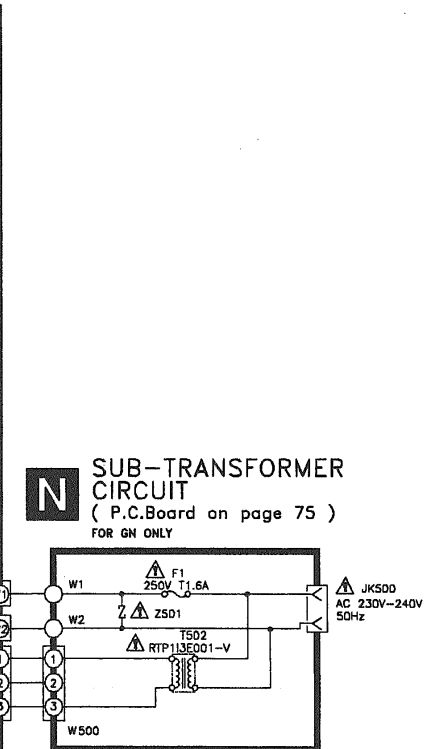
**M** TRANSFORMER CIRCUIT ( P.C.Board on page 74 )  
FOR GN ONLY



TO POWER CIRCUIT (HS01) (PAGE 47)

TO POWER CIRCUIT (HS02) (PAGE 47)  
FL1  
FL2  
SYNC  
SUB+B  
ECON\_MODE  
SYS6V

**N** SUB-TRANSFORMER CIRCUIT ( P.C.Board on page 75 )  
FOR GC ONLY



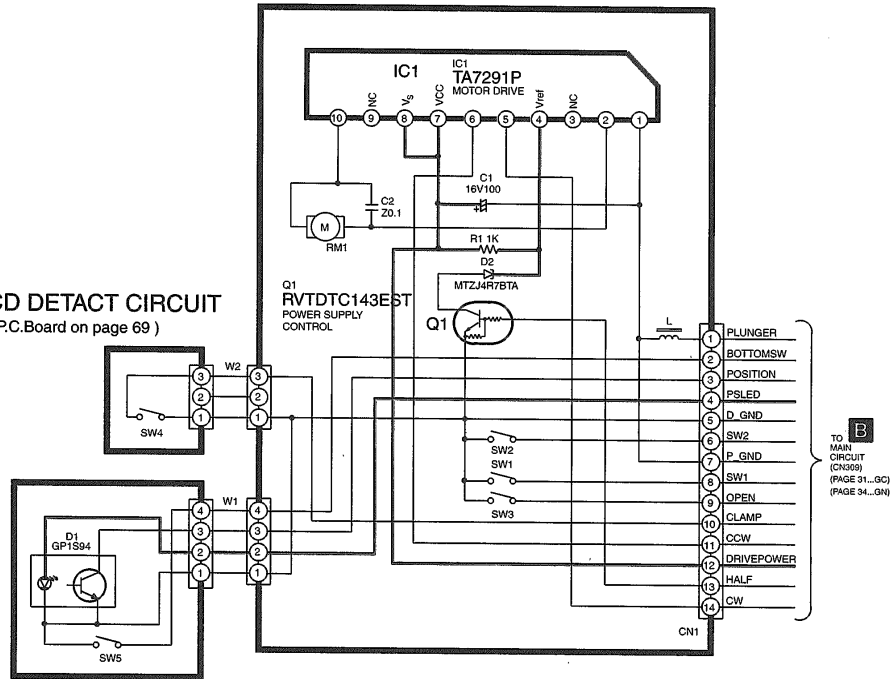
**N** SUB-TRANSFORMER CIRCUIT ( P.C.Board on page 75 )  
FOR GN ONLY

— : +B Line

⇨ : Main Signal Line

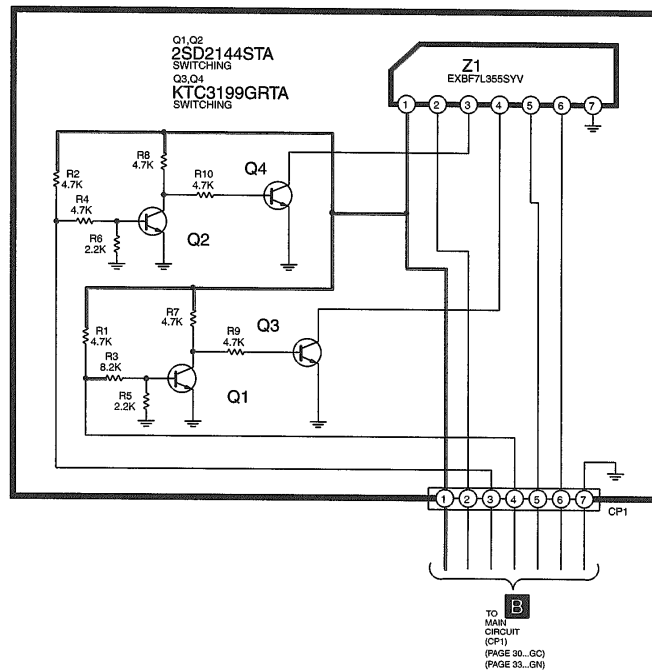
**G** MOTOR CIRCUIT  
( P.C.Board on page 69 )

**I** CD DETACT CIRCUIT  
( P.C.Board on page 69 )

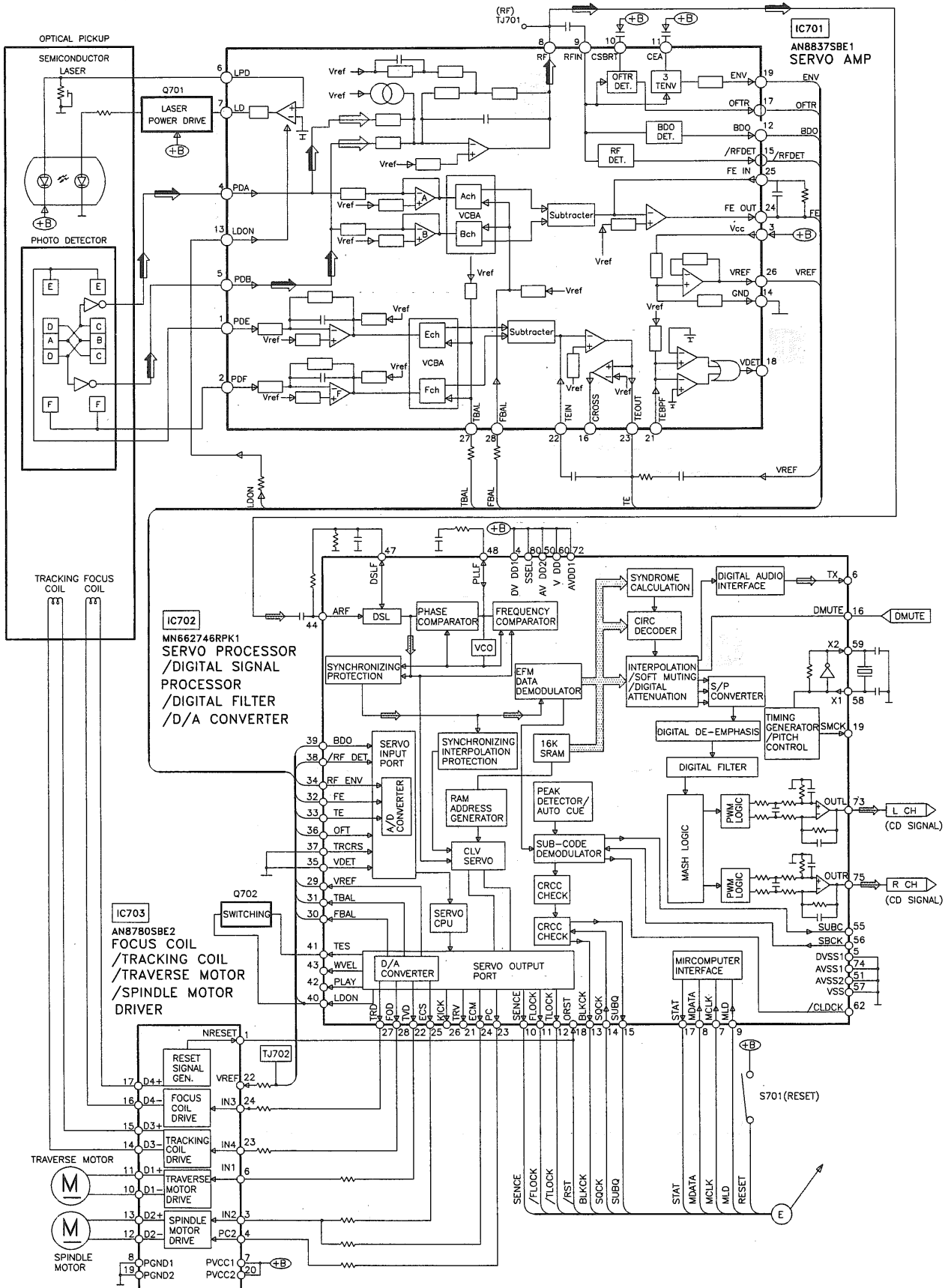


**H** SPINDLE POSITION CIRCUIT  
( P.C.Board on page 69 )

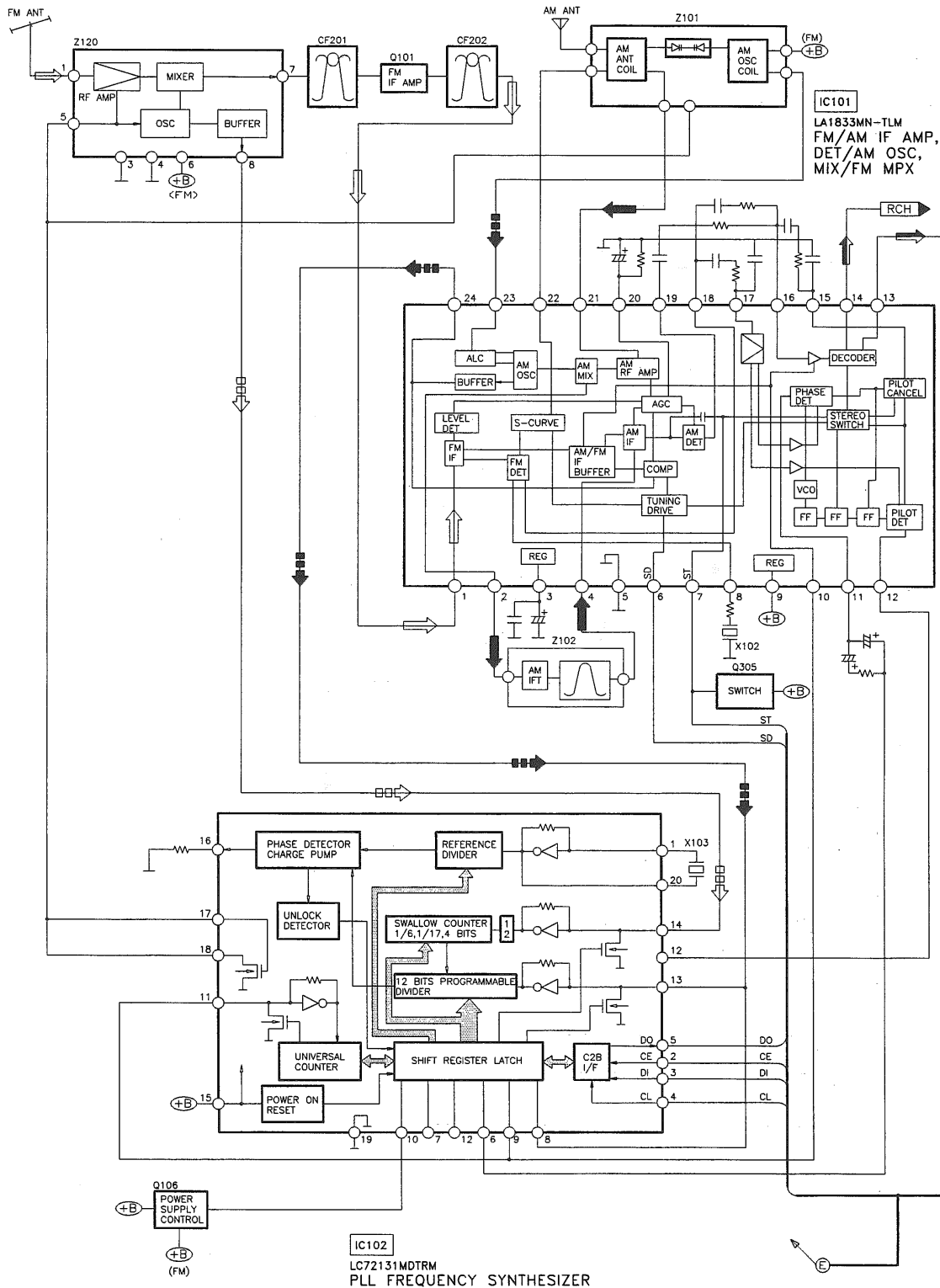
COUNTERMEASURE CIRCUIT  
( P.C.Board on page 61 )



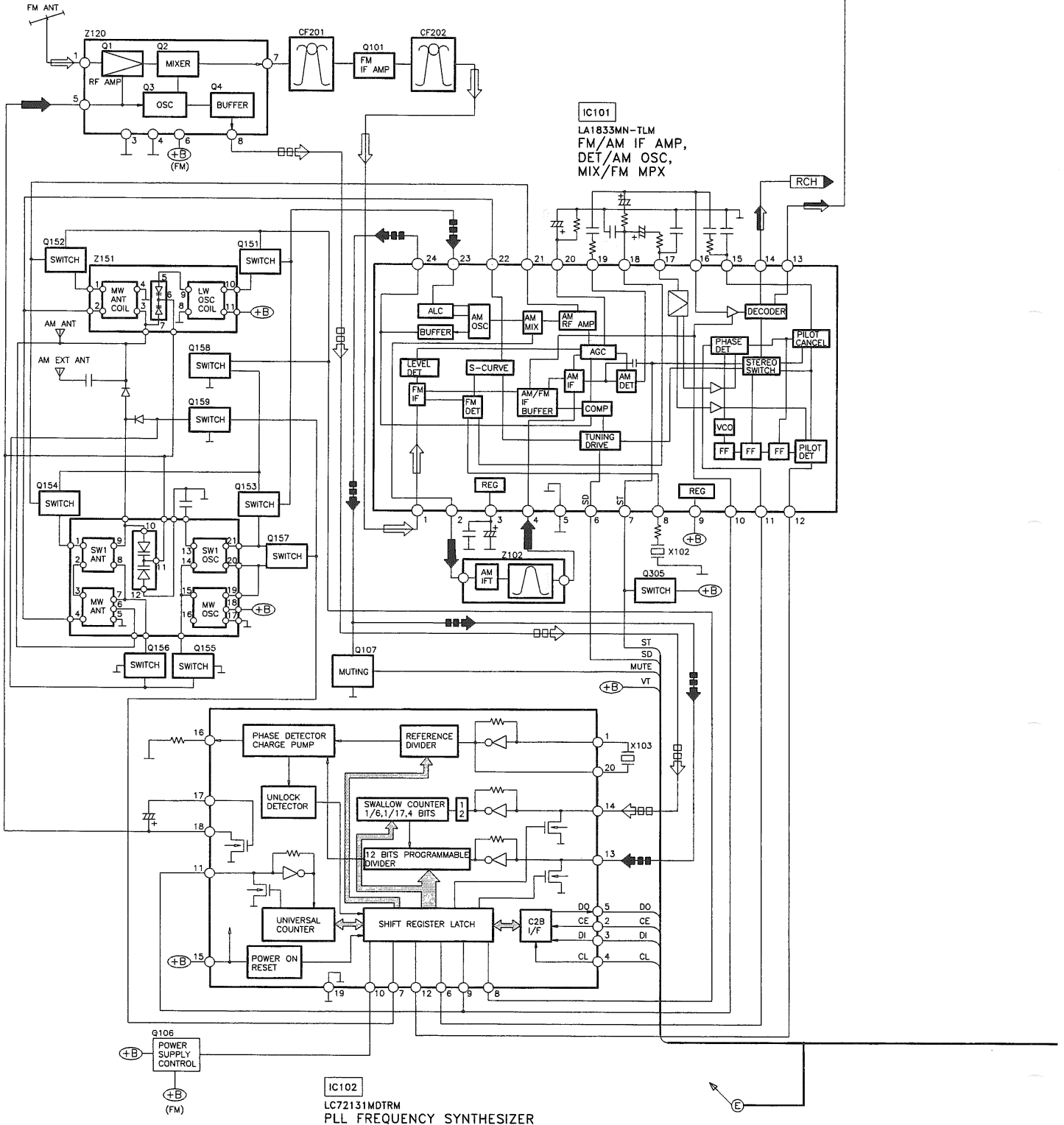
# Block Diagram



This page is only applicable for GN areas

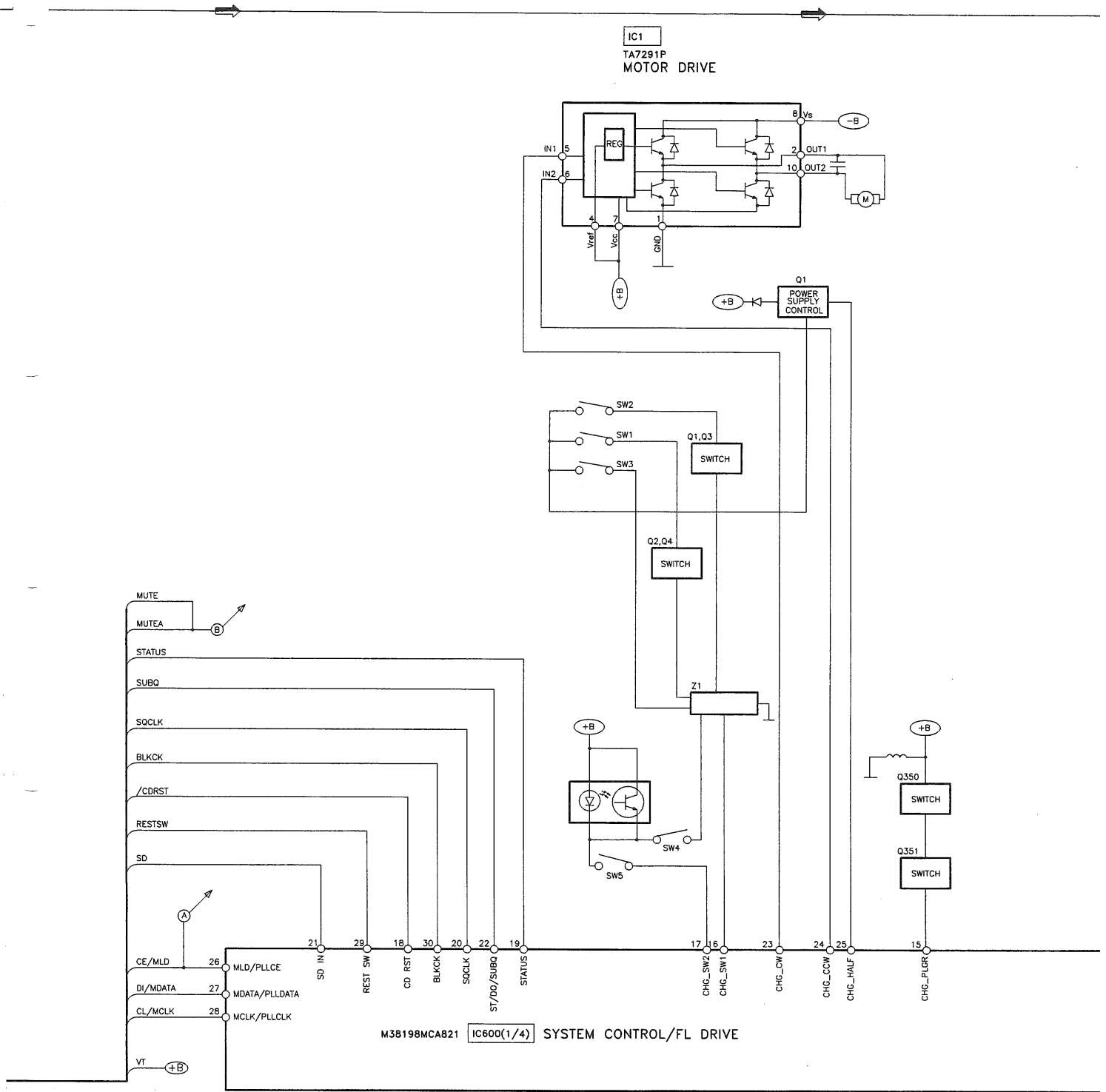


This page is only applicable for GC areas

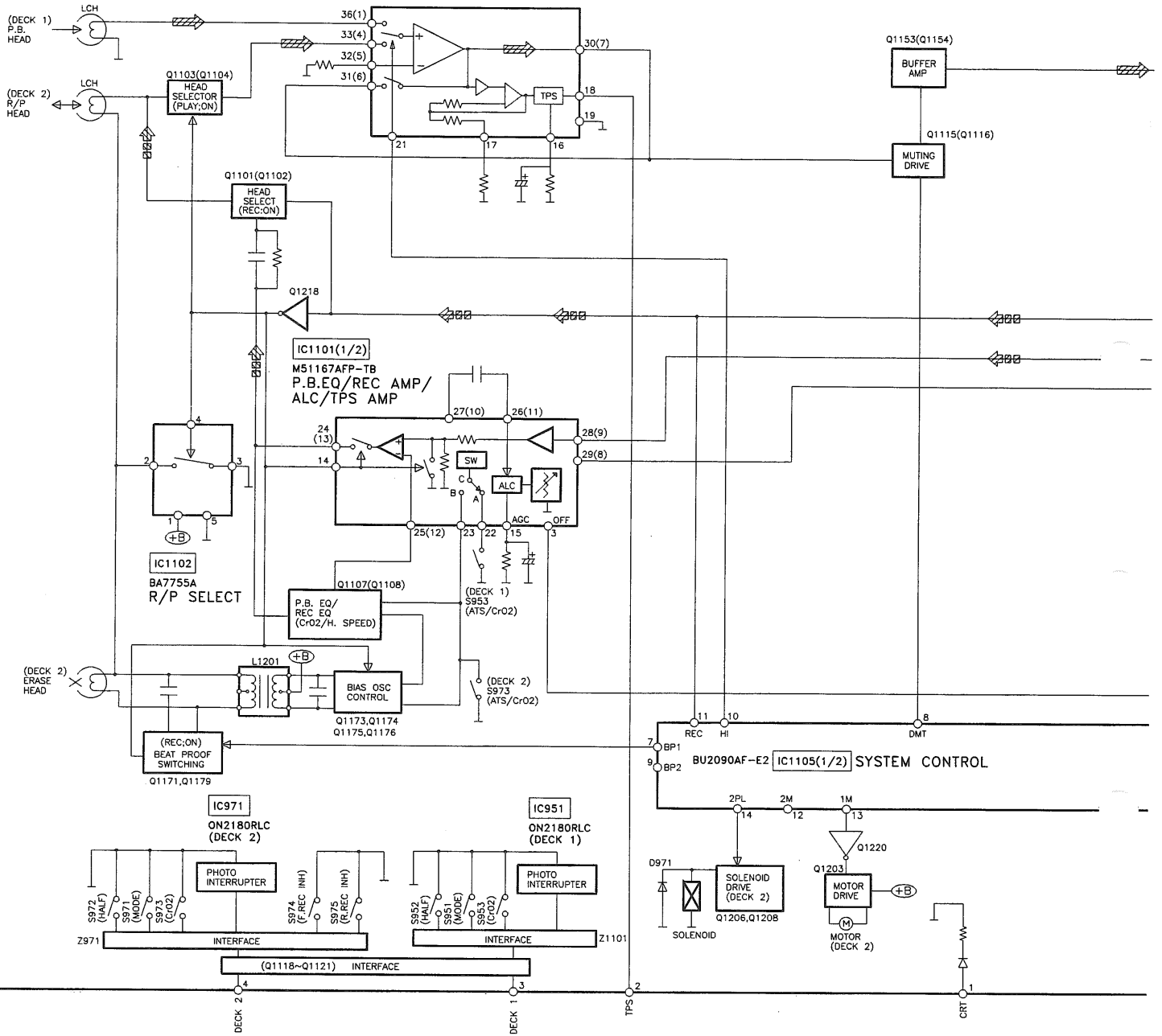


IC101  
LA1833MN-TLM  
FM/AM IF AMP,  
DET/AM OSC,  
MIX/FM MPX

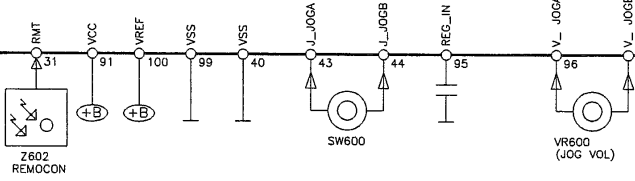
IC102  
LC72131MOTRM  
PLL FREQUENCY SYNTHESIZER

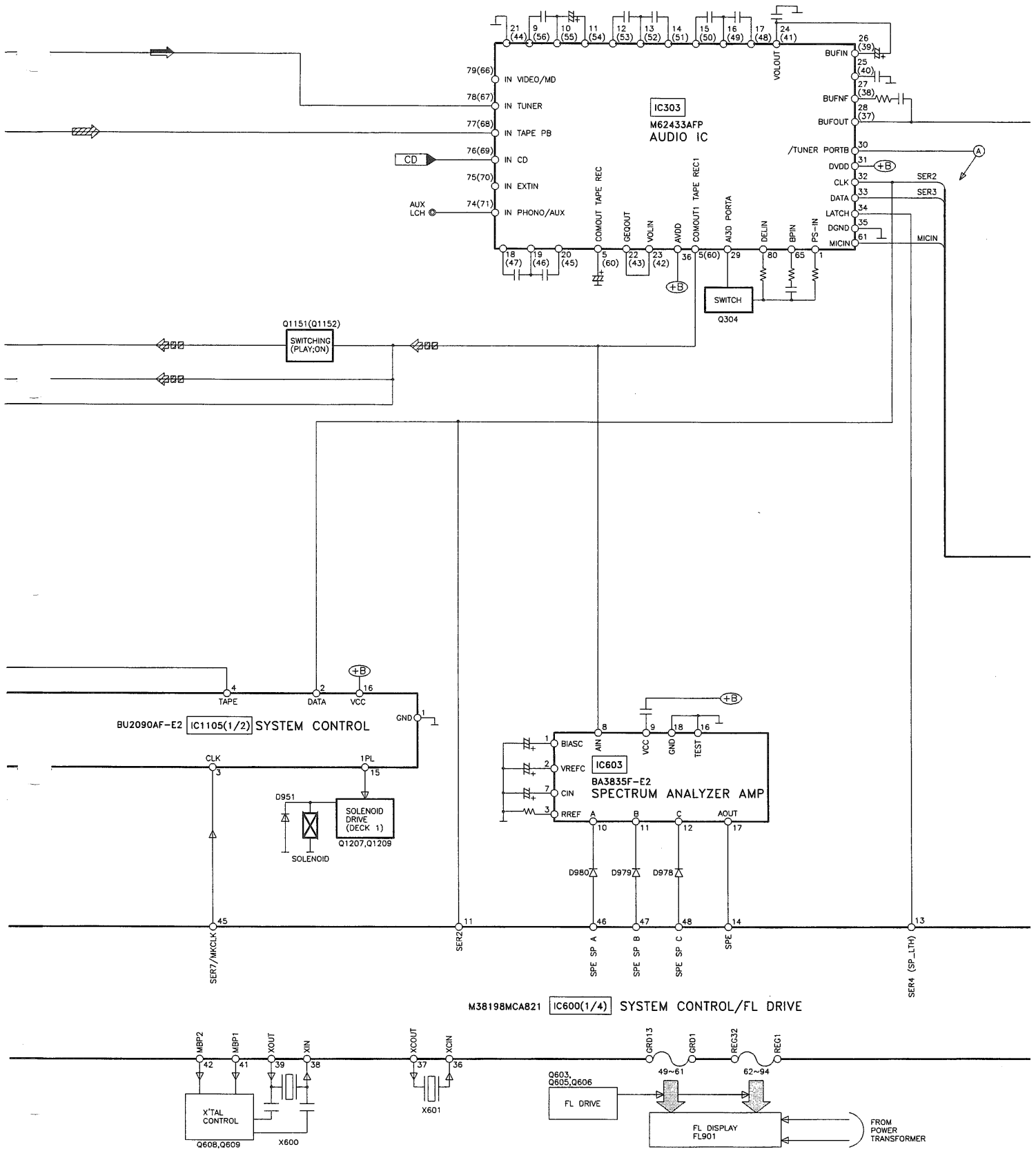


IC1101(1/2)  
M51167AFP-TB  
P.B.EQ/REC AMP/ALC/TPS AMP

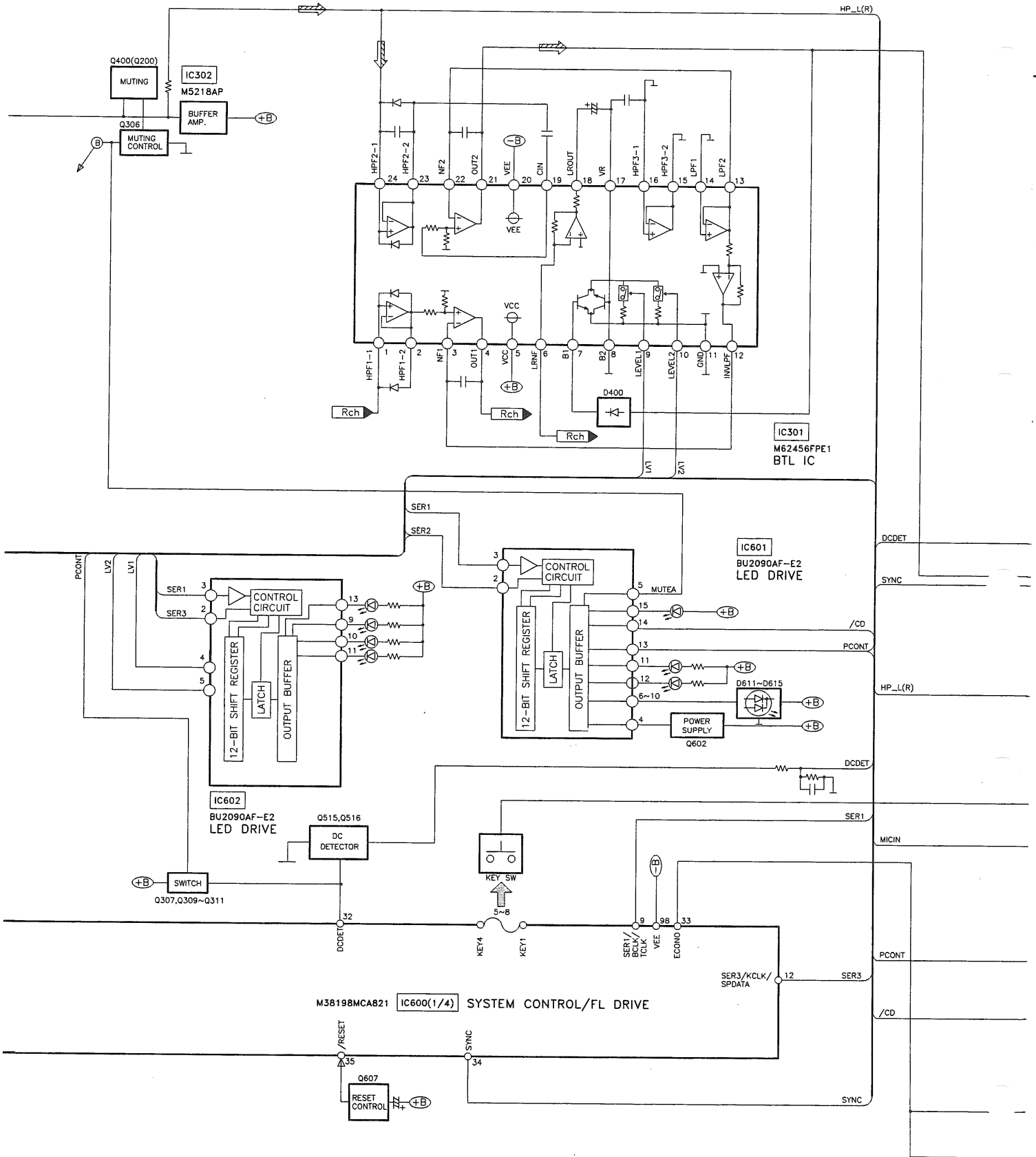


M38198MCA821 IC600(1/4) SYSTEM CONTROL/FL DRIVE









SIGNAL LINES

