

Service Manual

COMPACT
disc
DIGITAL AUDIO

MASH*
multi-stage noise shaping

CD Stereo System
SA-AK15

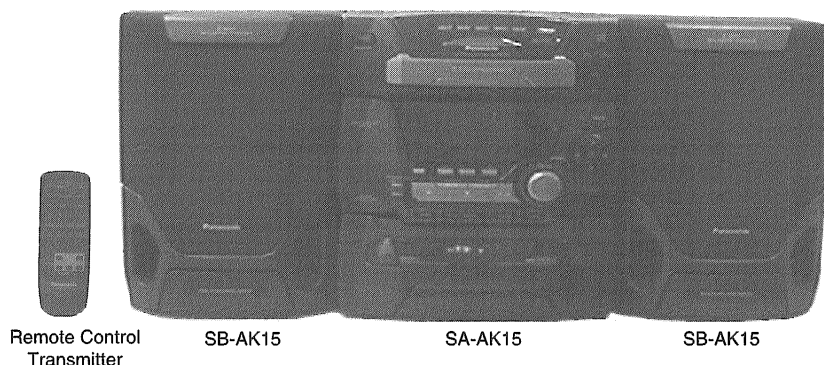
Colour

(K) ... Black Type

Area

Suffix for Model No.	Area	Colour
(P)	U.S.A.	(K)

* MASH is a trademark of NTT.



Remote Control
Transmitter

SB-AK15

SA-AK15

SB-AK15

System	Music Center	Speaker
SC-AK15 (P)	SA-AK15 (P)	SB-AK15 (P)

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

Specifications

Amplifier Section

1 kHz continuous power output, both channels driven	2 x 30 W (THD 1.5%, 6 Ω)
RMS power output 80 Hz ~ 20 kHz both channels driven	2 x 25 W (THD 1%, 6 Ω)
Total harmonic distortion Half power at 1 kHz	0.1% (6 Ω)
Frequency response AUX	20 Hz - 20 kHz (-3 dB)
Input sensitivity and impedance AUX	250 mV, 14 kΩ

FM Tuner Section

Frequency range	87.9 - 107.9 MHz (200 kHz steps) 87.5 - 108.0 MHz (100 kHz steps)
Sensitivity (For 500 mW)	23.3 dBf (4.0 μV, IHF '58)
Total harmonic distortion	
MONO	0.3 %
STEREO	0.5 %
S/N	
MONO	60 dB
STEREO	60 dB
Image rejection at 98.1 MHz	40 dB
Stereo separation at 1 kHz	30 dB
Antenna terminal(s)	75 Ω (unbalanced)

AM Tuner Section

Frequency range	520 - 1710 kHz
Sensitivity	
(500 mW)	280 μV/m
(S/N 20 dB)	630 μV/m
Image rejection at 1000 kHz	40 dB

CD Section

Sampling frequency	44.1 kHz
Decoding	16 bit linear
Beam source/wave length	Semiconductor laser / 780 nm
Number of channels	2 channels, Stereo
Frequency response	20 Hz - 20 kHz (+1 dB, -2 dB)

S/N

CD UNIT OUT	95 dB (JIS A)
Wow and flutter	Below measurable limit
Digital filter	8 fs
D/A converter	MASH (1 bit DAC)

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 (1 ⁷ / ₈ ips)
Frequency response at DECK OUT	
NORMAL	35 Hz - 14 kHz(+1 dB, -3 dB)
HIGH POSITION	35 Hz - 14 kHz(+1 dB, -3 dB)
S/N ratio (NORMAL type tape)	50 dB (A weighted)
Wow and flutter	0.14 % (WRMS)
Fast forward and rewind times	Approx. 120 seconds with C-60 cassette tape

General

Power consumption	95 W
Power supply	AC 120 V, 60 Hz
Dimensions (W x H x D)	270 x 330 x 290 mm (10 ⁵ / ₈ " x 13" x 11 ¹³ / ₃₂ ")
Weight	7.0 kg(15.4 lb)

Notes :

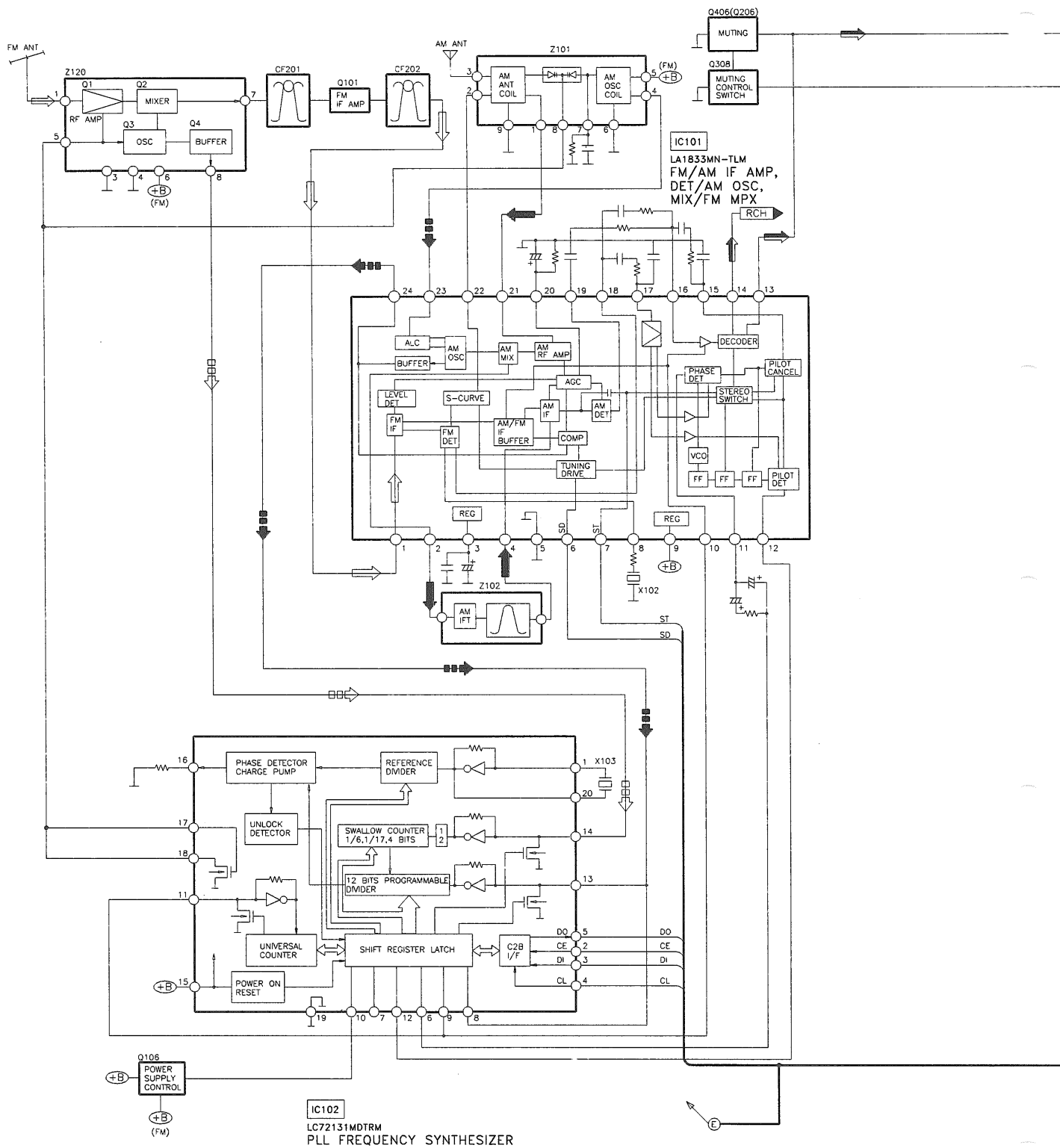
- Specifications are subject to change without notice.
Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

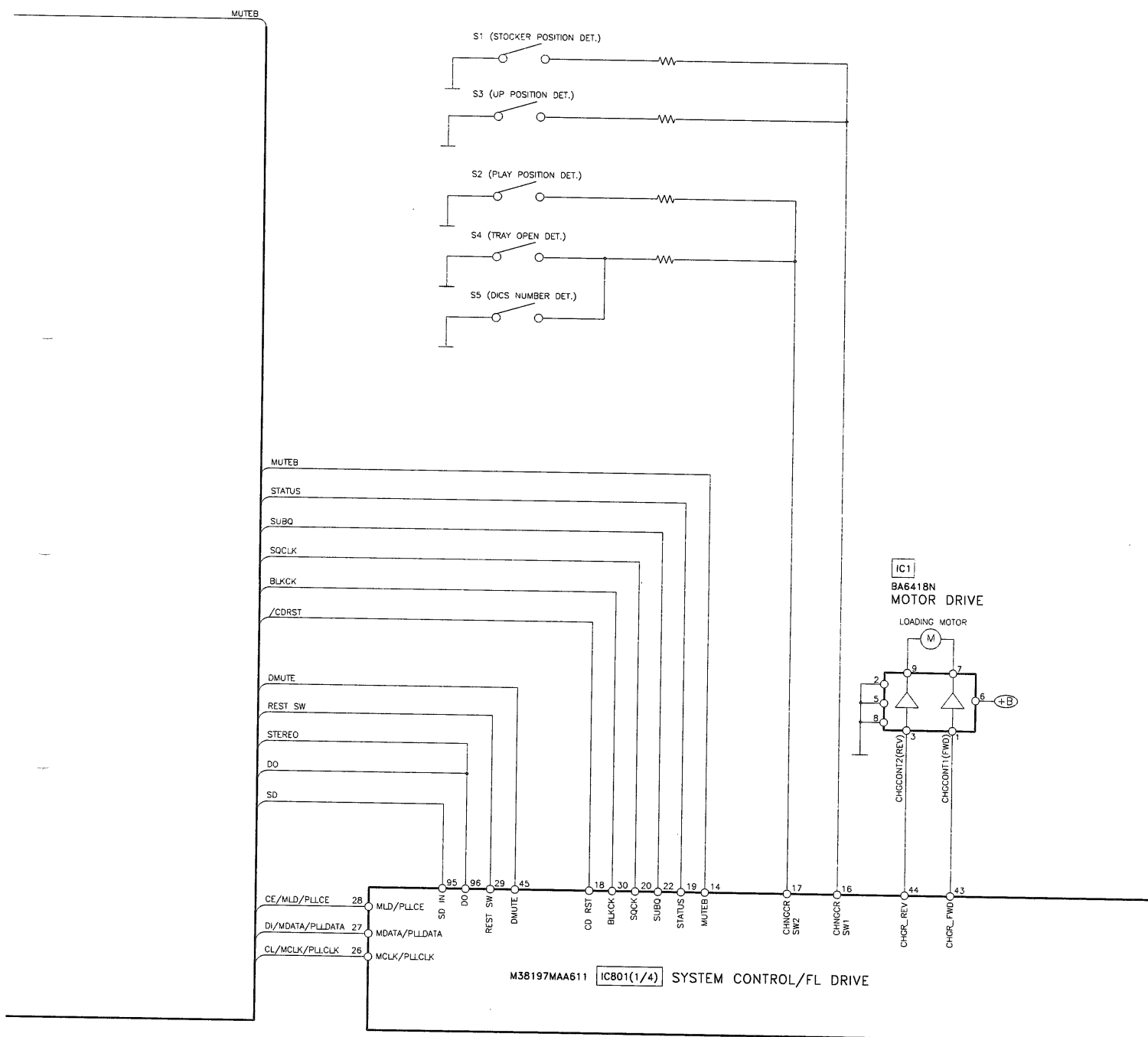
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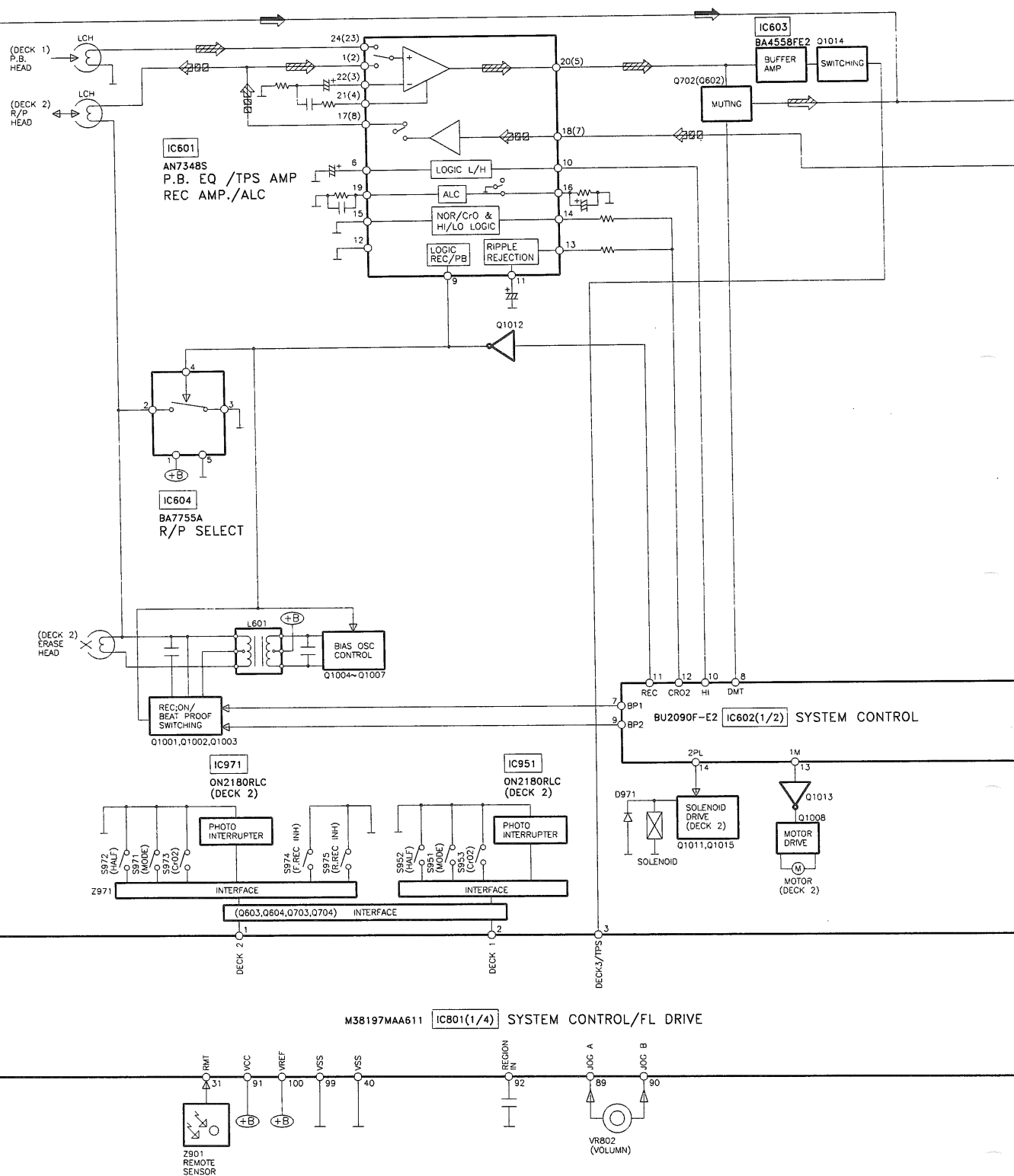
Panasonic®

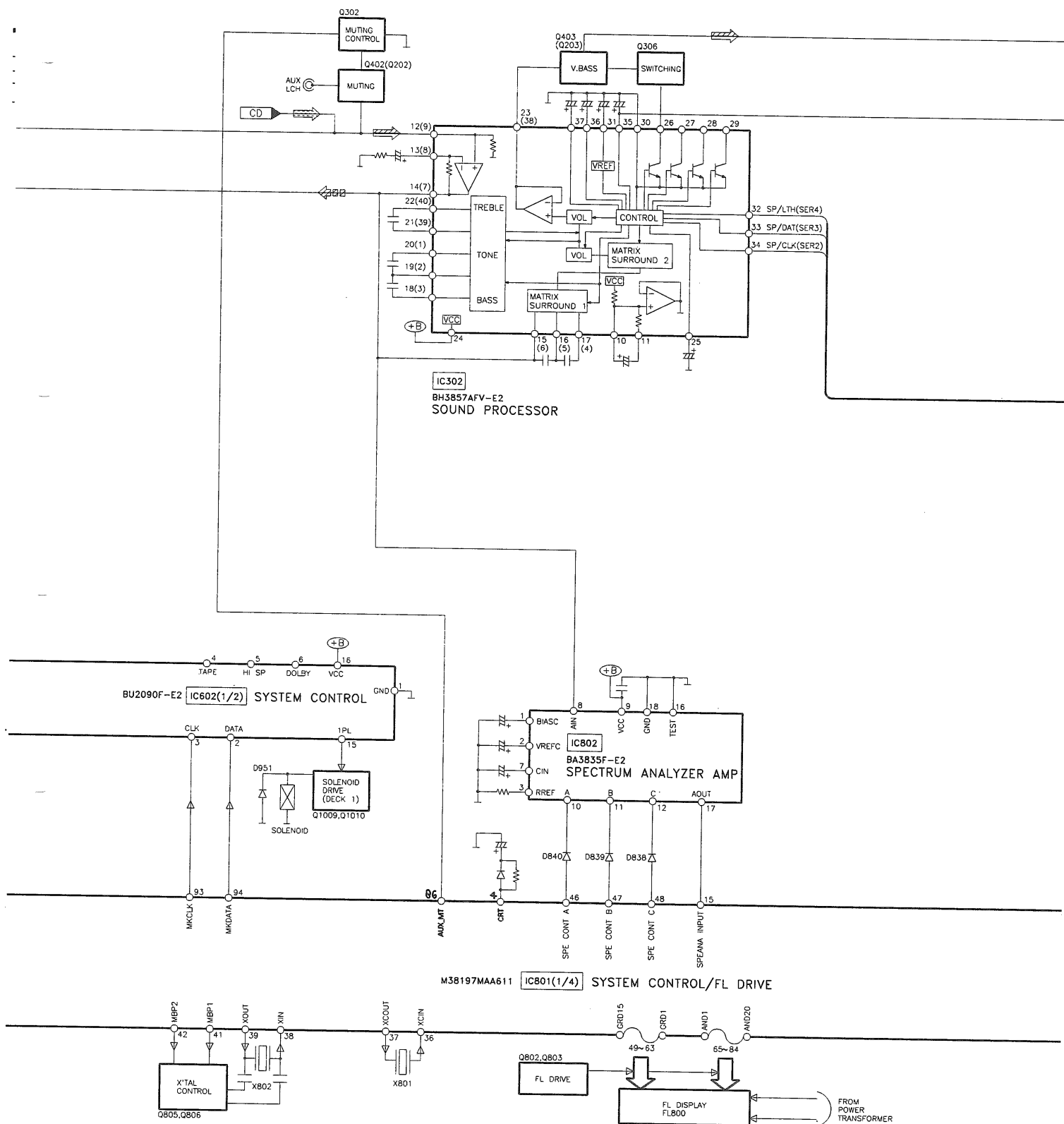


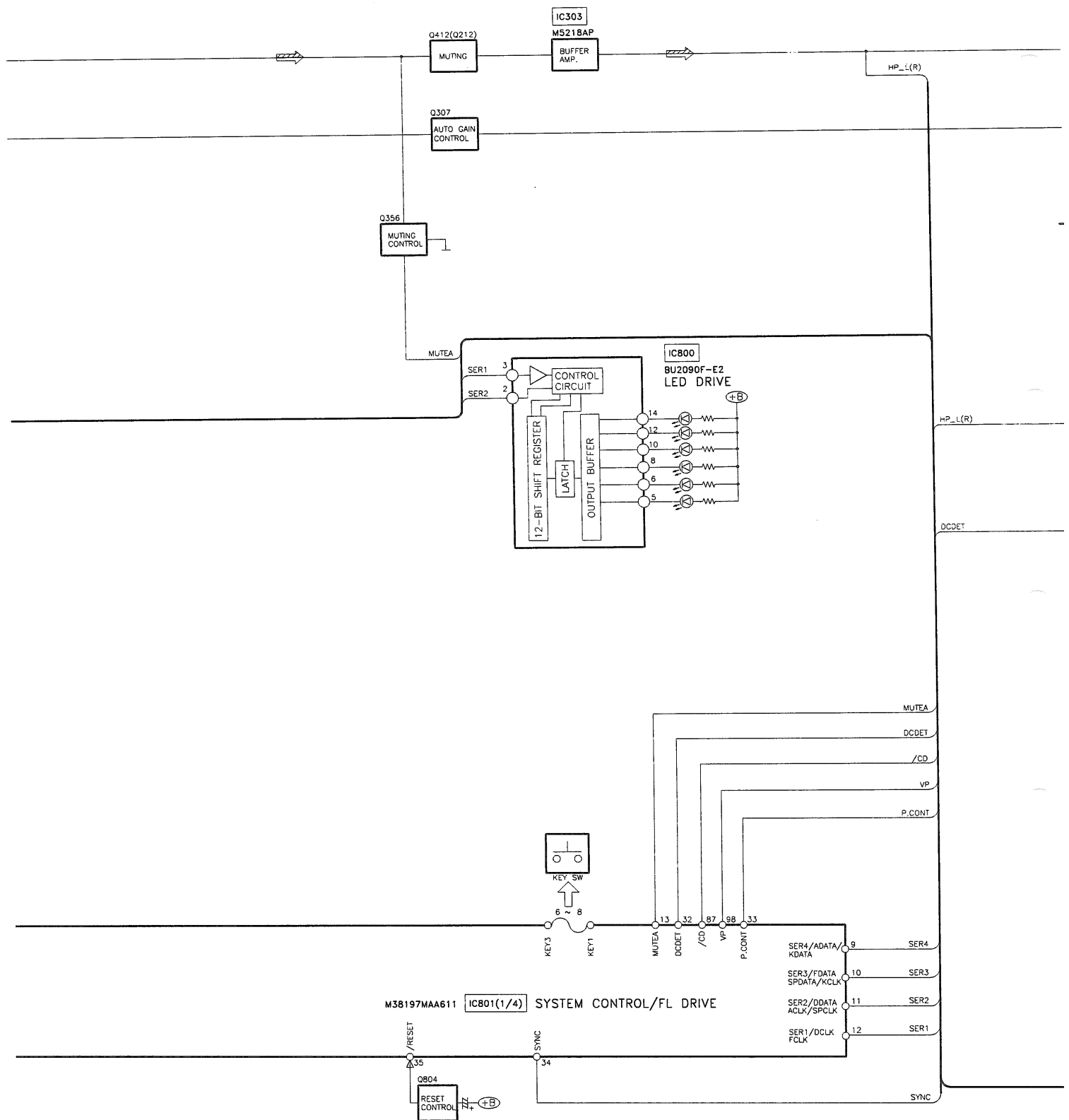


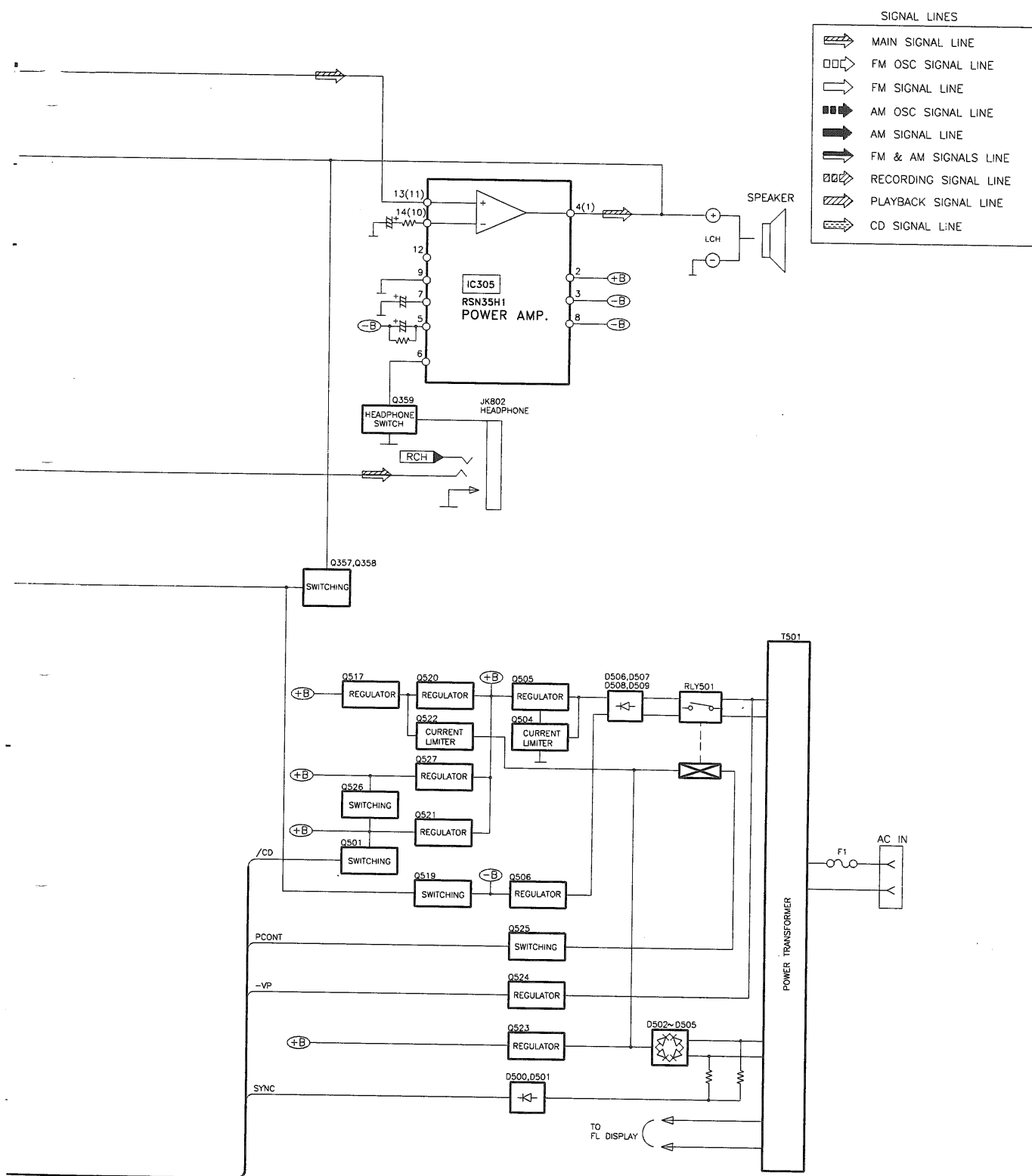




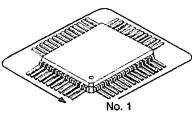
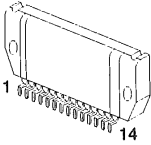
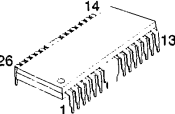
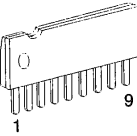
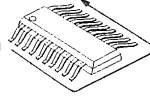
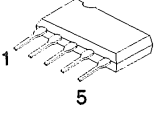
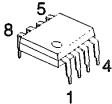
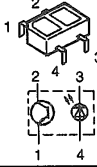
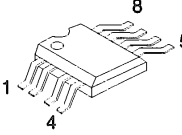
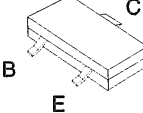
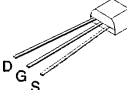
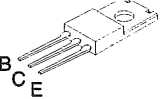
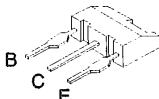
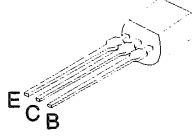
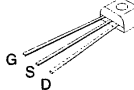

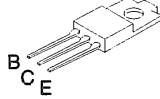
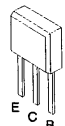
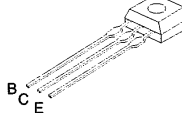
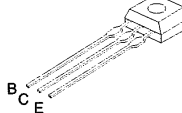
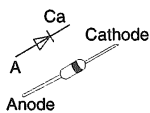
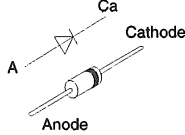
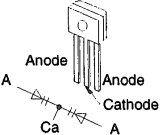
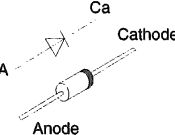
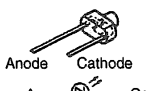
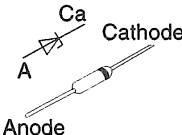
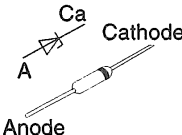








■ Terminal Guide of IC's, Transistors and Diodes

M38197MAA611(100P) MN662746RPK1(80P) 	RSN35H1 	AN8780SBE2 	BA6218N 	BA3835F-E2(18P) AN8837SBE1 (28P) BU2090F-E2 (16P) AN7348S (24P) BH3857AFV-E2 (40P) LA1833MN-TLM (24P) LC72131MDTRM (20P) 	
BA7755A 	M5218AP 	0N2180RLC 	BA4558FE2 	2SA1037AKSTX DTC114YKA146 	2SJ40CDTA 
2SD2395E 2SB1566E 	2SB1238Q 	KTA12710YTA KTC32030YTA 	2SK544F-AC 	2SD2144STA 	KTD2058YGRTA 
2SC2784FTA 	2SA933SSTA 2SC2786MTA 2SC2787FL1TA 2SC2787LTA 2SD1450STA KRA102MTA KRA110MTA KRC104MTA 	KRC110MTA KRC111MTA KRC114MTA KTC3199GRTA 	RVD1SS133TA 1SS291TA MA165TA 	1D3E 1N5402BM21 	
SVC211SPA-AL 	RL1N4003N02 	LNJ301MPUJAD 	MTZJ12BTA MTZJ15CTA MTZJ30DTA MTZJ3R6BTA MTZJ5R1BTA MTZJ5R6BTA MTZJ6R8ATA 	MTZJ8R2BTA MTZJ9R1BTA 	

■ Schematic Diagram

(All schematic diagrams may be modified at any time with the development of new technology)

Note :

< for Servo Circuit > (Page 35)

• S701 : Reset switch

< for Panel circuit, Led Circuit and Operation Circuit > (Page 43 ~ 45)

- | | |
|---|---|
| • S800 : Display, demonstration select switch | • S819 : DISC 4 select switch |
| • S802 : V. Bass switch | • S820 : 3D space EQ switch |
| • S803 : FM mode switch | • S821 : Tune/time adjust up switch |
| • S804 : Random play switch | • S822 : DISC 3 select switch |
| • S805 : Memory/set switch | • S823 : Tuner select switch |
| • S806 : Deck 1 open switch | • S824 : Tuner mode select switch |
| • S807 : Disc next open switch | • S825 : DISC 2 select switch |
| • S808 : 3D space EQ adjust left switch | • S826 : CD select switch |
| • S809 : Tape Edit switch | • S827 : Tune/time adjust down switch |
| • S810 : Disc tray open/close switch | • S828 : DISC 1 select switch |
| • S811 : 3D space EQ adjust down switch | • S829 : Tape select switch |
| • S812 : Record select switch | • S830 : Play timer/REC timer select switch |
| • S813 : CD manager switch | • S831 : Power switch |
| • S814 : 3D space EQ adjust right switch | • S832 : AUX select switch |
| • S815 : Reverse mode select switch | • S833 : Clock/timer select switch |
| • S816 : DISC 5 select switch | • VR802 : Encoder volume control |
| • S817 : 3D space EQ adjust up switch | |
| • S818 : Deck 2 open switch | |

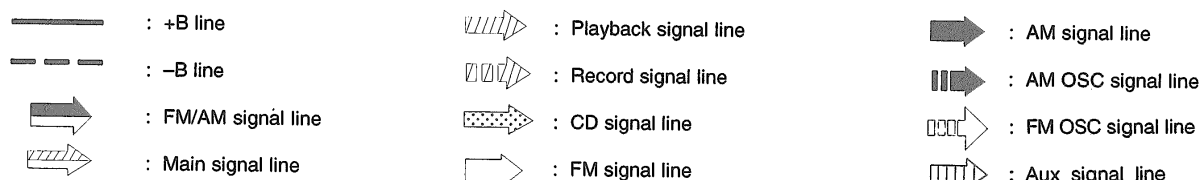
< for Deck circuit, Mechanism (Deck 1) circuit and Mechanism (Deck 2) circuit > (Page 36 - 37)

- S951 : Deck 1 Mode detect switch.
- S952 : Deck 1 Tape detect switch.
- S953 : Deck 1 CrO₂ detect switch.
- S971 : Deck 2 Mode detect switch.
- S972 : Deck 2 Tape detect switch.
- S973 : Deck 2 CrO₂ detect switch.
- S974 : Deck 2 Record detect switch.
- S975 : Deck 2 Record detect switch.

< for Loading Motor circuit, Detecting Switch (1) Circuit and Detecting Switch (2) Circuit > (Page 33)

- S1, S4 : Leaf switch.
- S2, S3, S5 : Mecha switch.

•Signal line




•The voltage value and waveforms are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis.

Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the tester or the measuring unit.

No mark : Playback << >>.....Rec { } : Tuner (()) : CD < > FM () AM

•Importance safety notice:

Components identified by  mark have special characteristics important for safety. Furthermore, special parts which have purposes of fire-retardant (resistors), high-quality sound (capacitors), low-noise (resistors), etc. are used. When replacing any of components, be sure to use only manufacturer's specified parts shown in the parts list.

Caution !

IC, LSI and VLSI are sensitive to static electricity. Secondary trouble can be prevented by taking care during repair.

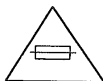
•Cover the parts boxes made of plastics with aluminium foil.

•Put a conductive mat on the work table.

•Ground the soldering iron.

•Do not touch the pins of IC, LSI or VLSI with fingers directly.

CAUTION : FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE F1 1.6A 125V FUSE



RISK OF FIRE-REPLACE FUSE AS MARKED.

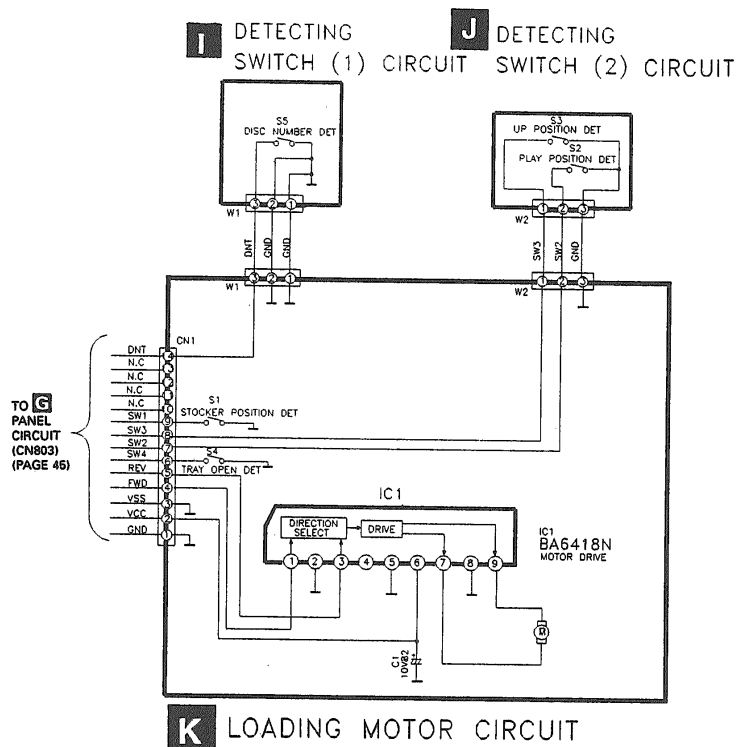
FUSE CAUTION



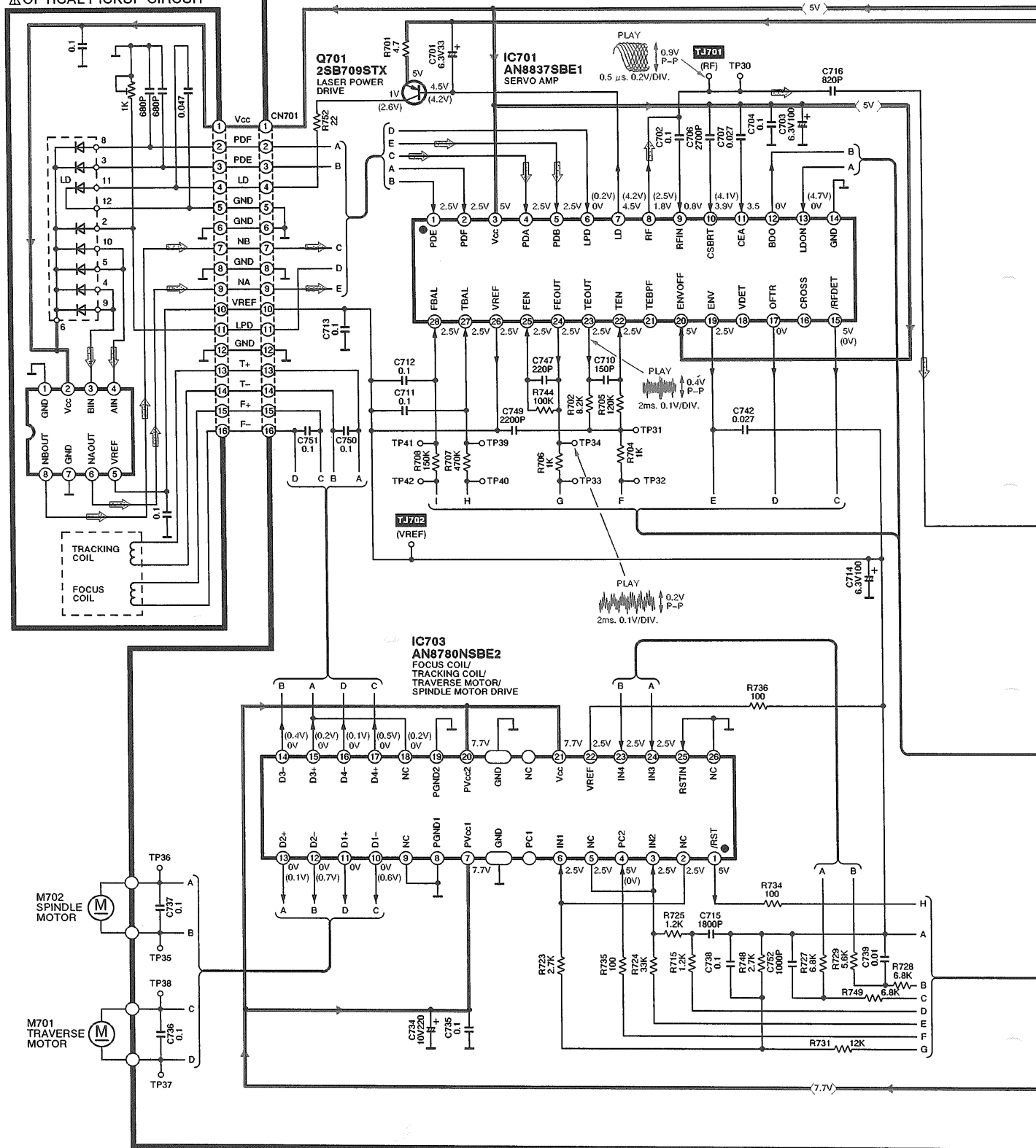
These symbols located near the fuse indicates that the fuse used is a fast operating type. For continued protection against fire hazard, replace with the same type fuse. For fuse rating, refer to the marking adjacent to the symbol.

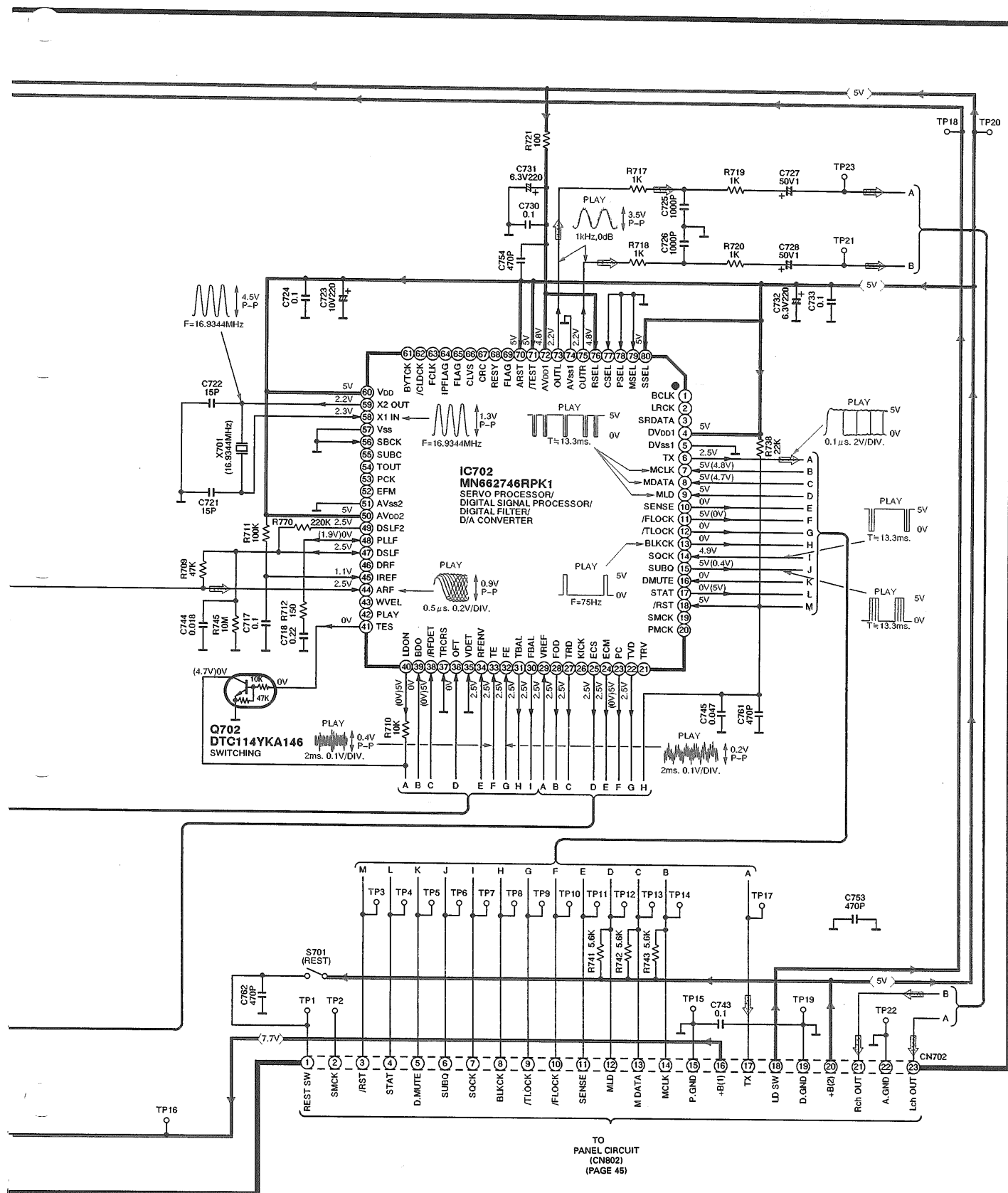


Ce symbole indique que le fusible utilisé est à rapide. Pour une protection permanente, n' utiliser que des fusibles de même type. Ce dernier est indiqué là où le présent symbole est apposé.

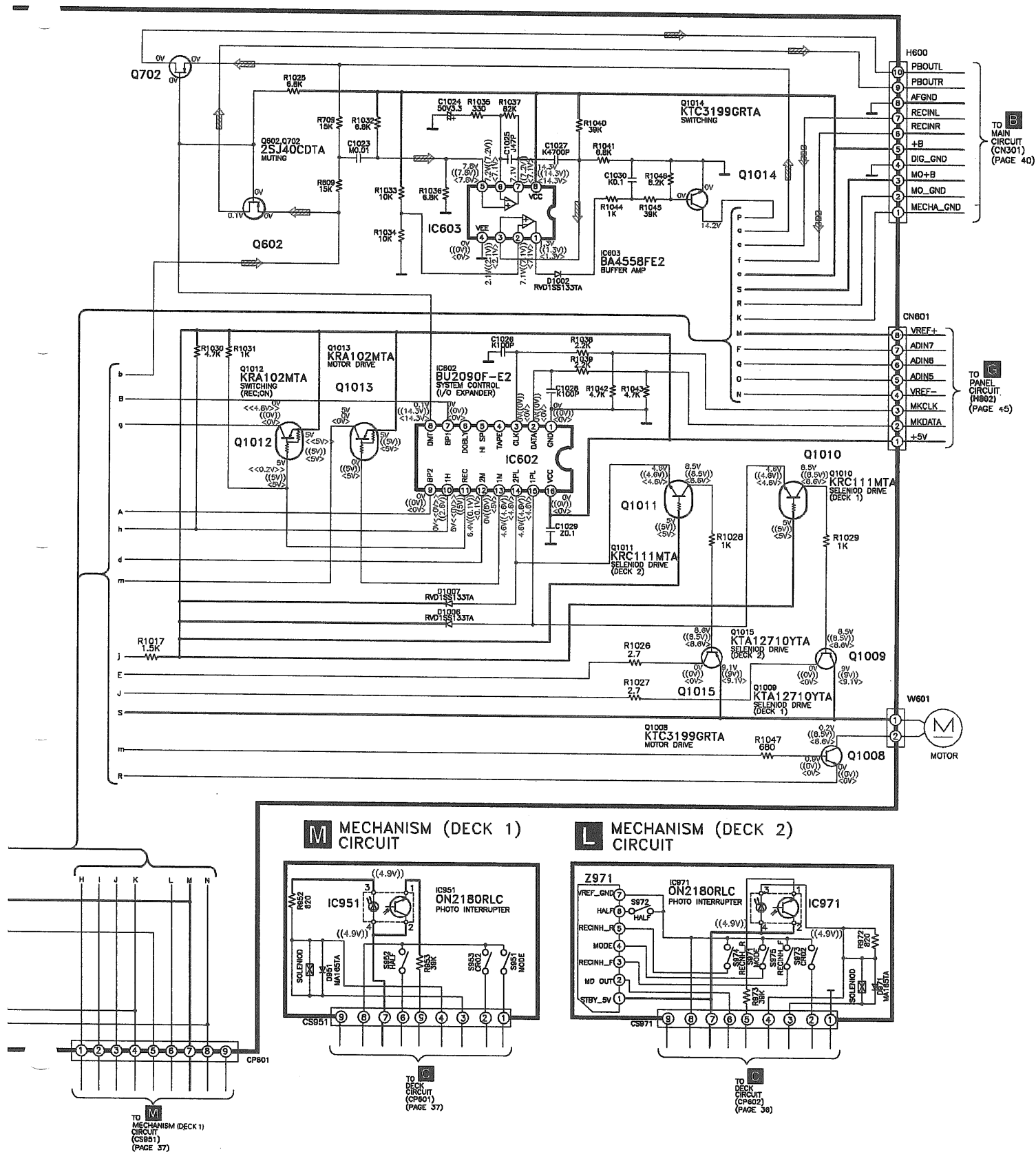


A CD SERVO CIRCUIT

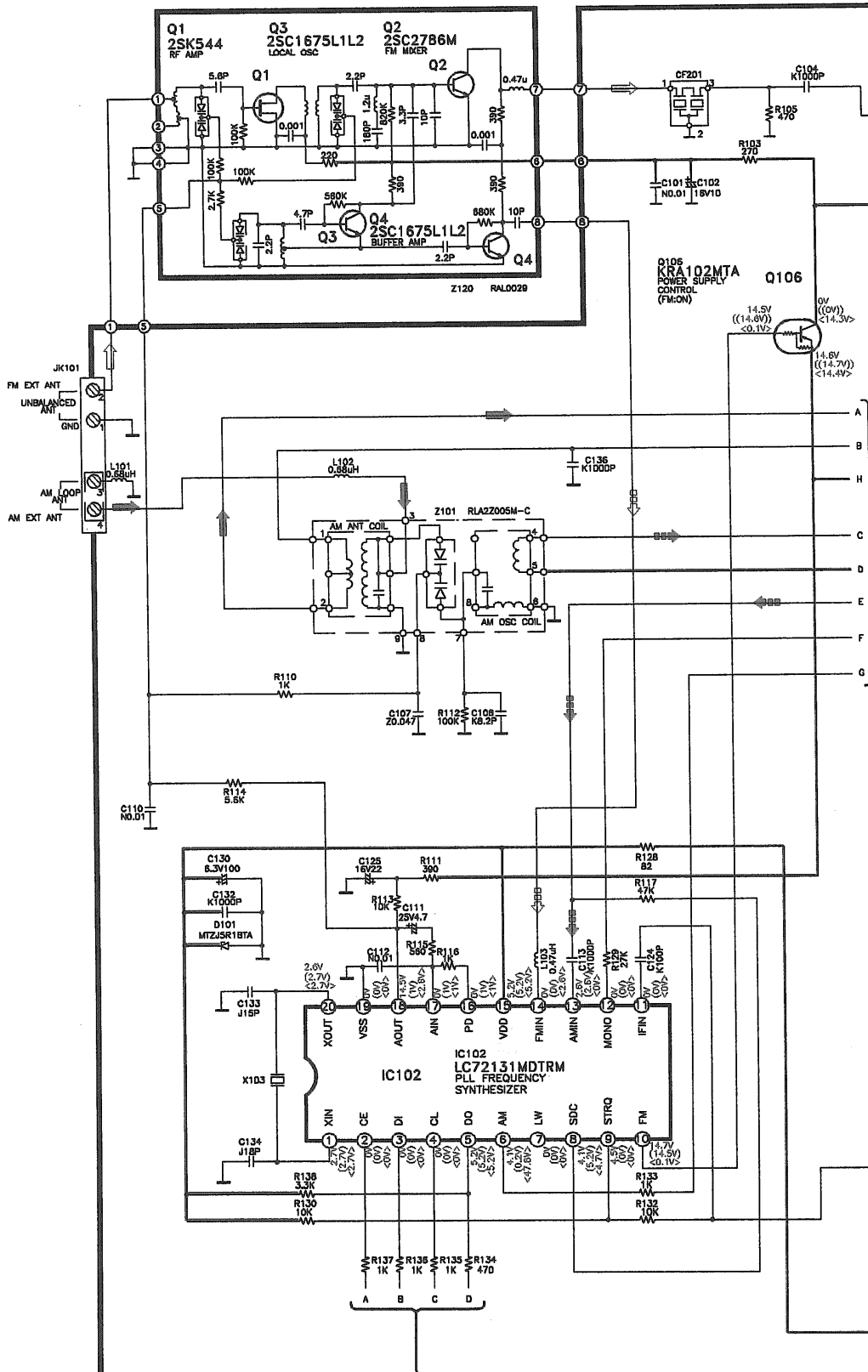


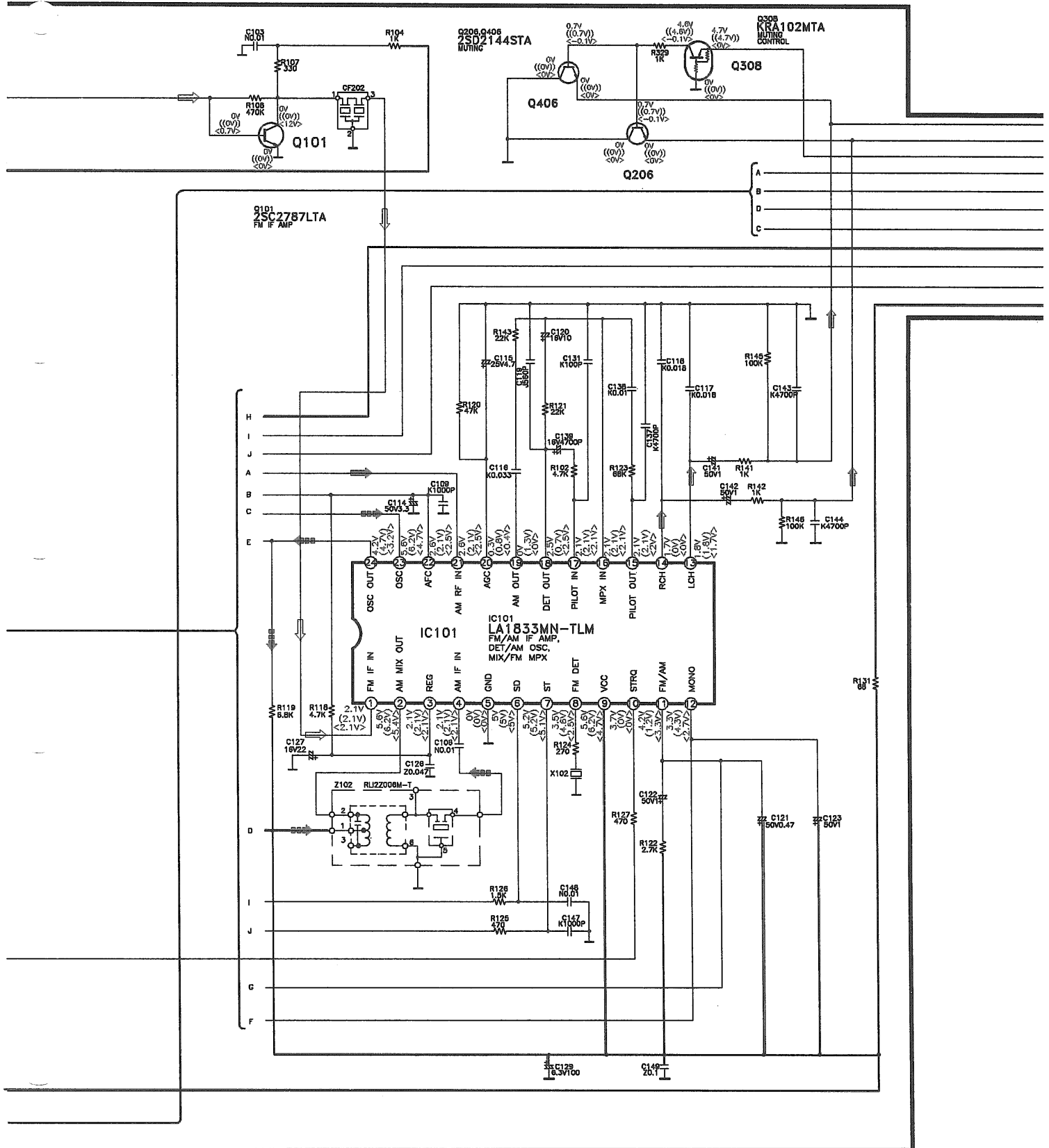




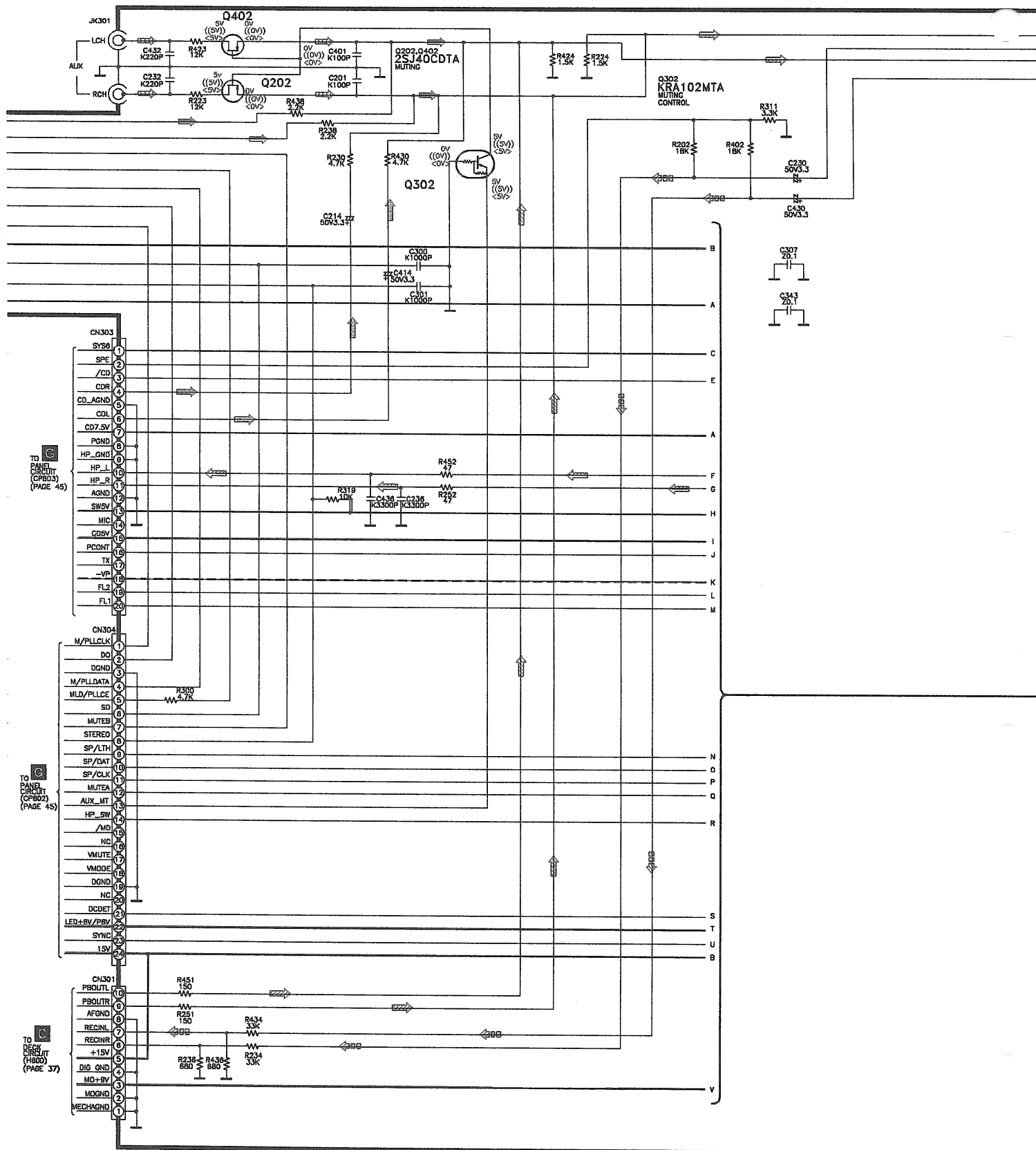


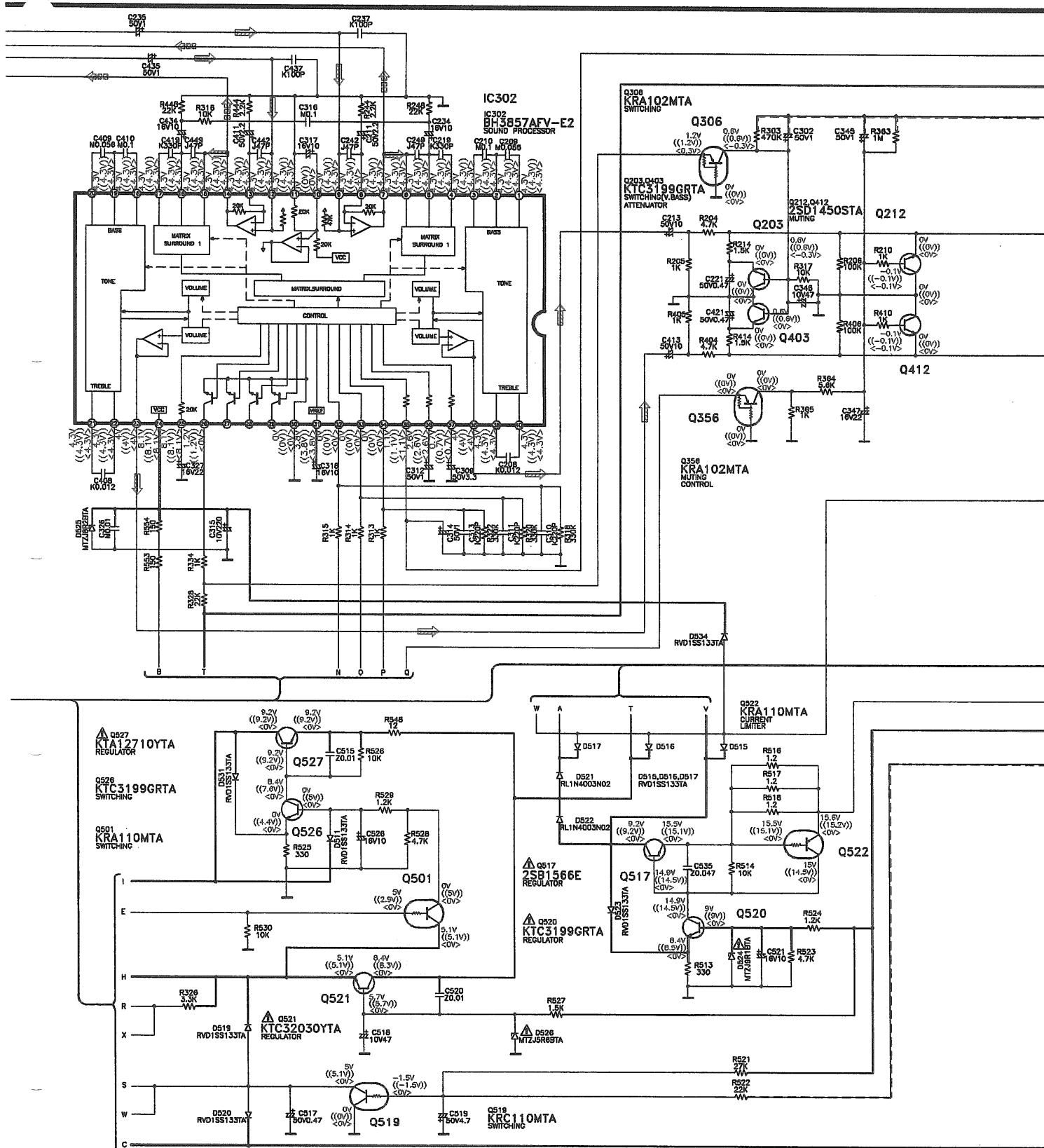
H TUNER PACK CIRCUIT

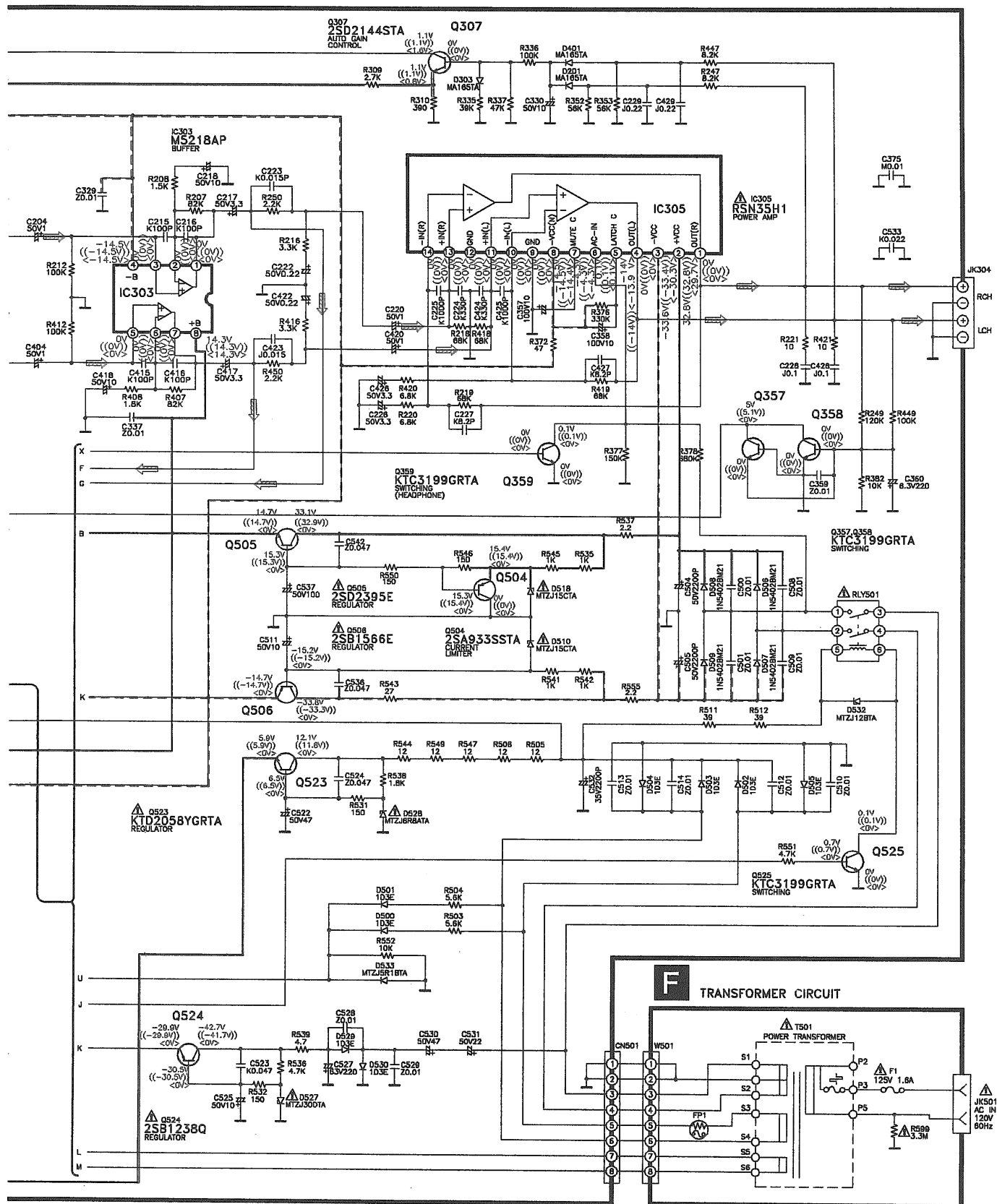
B MAIN CIRCUIT




B MAIN CIRCUIT

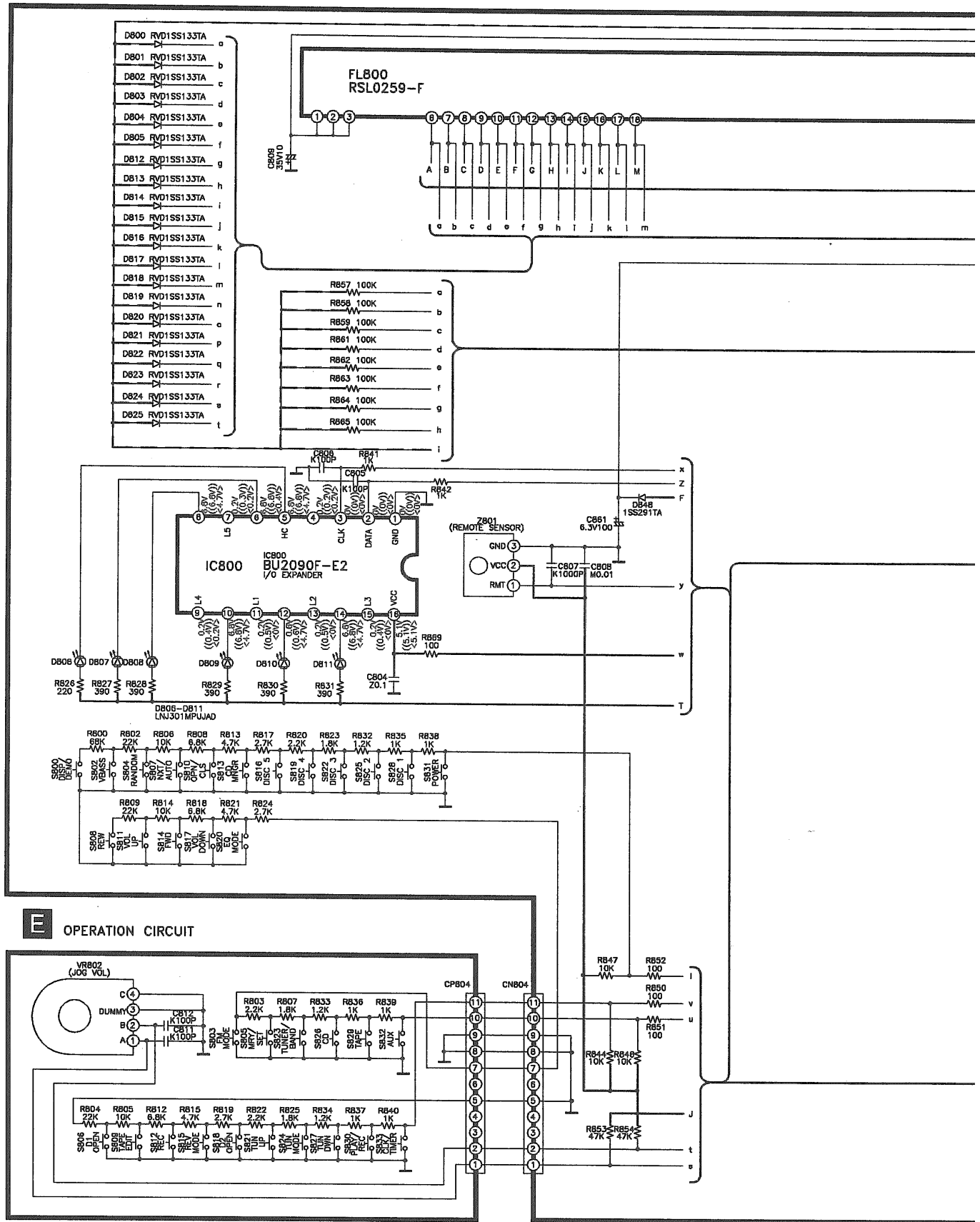


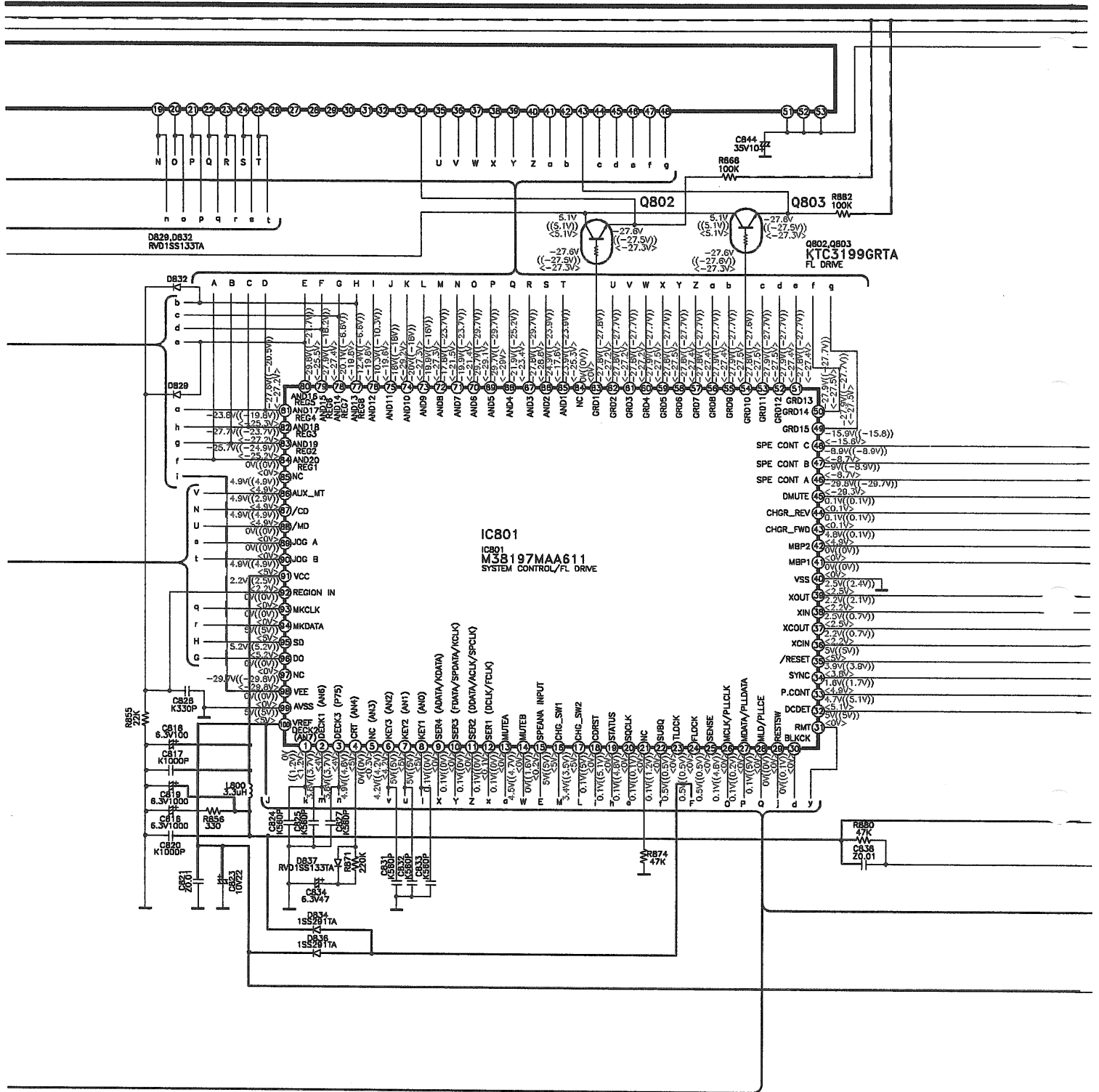


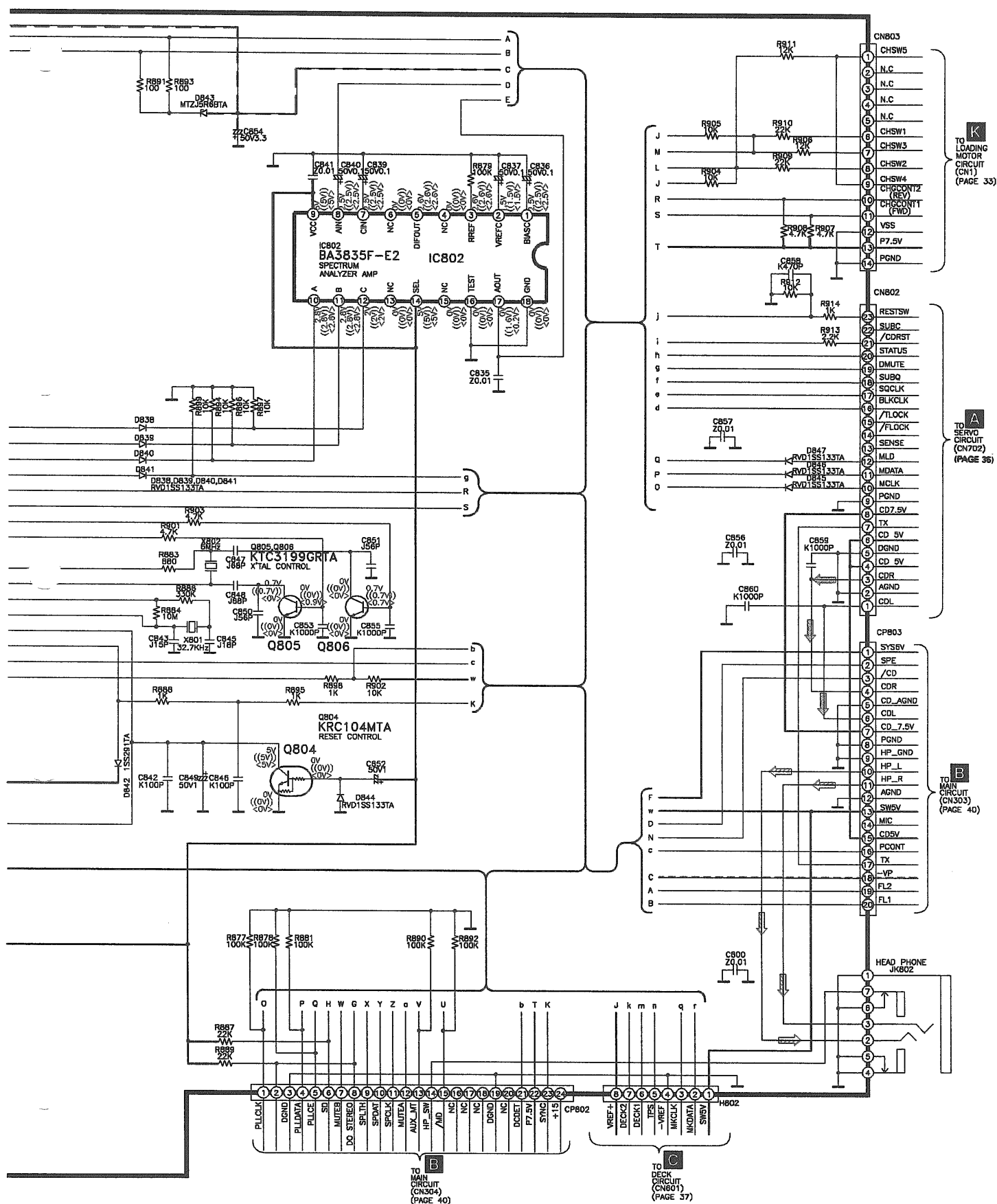




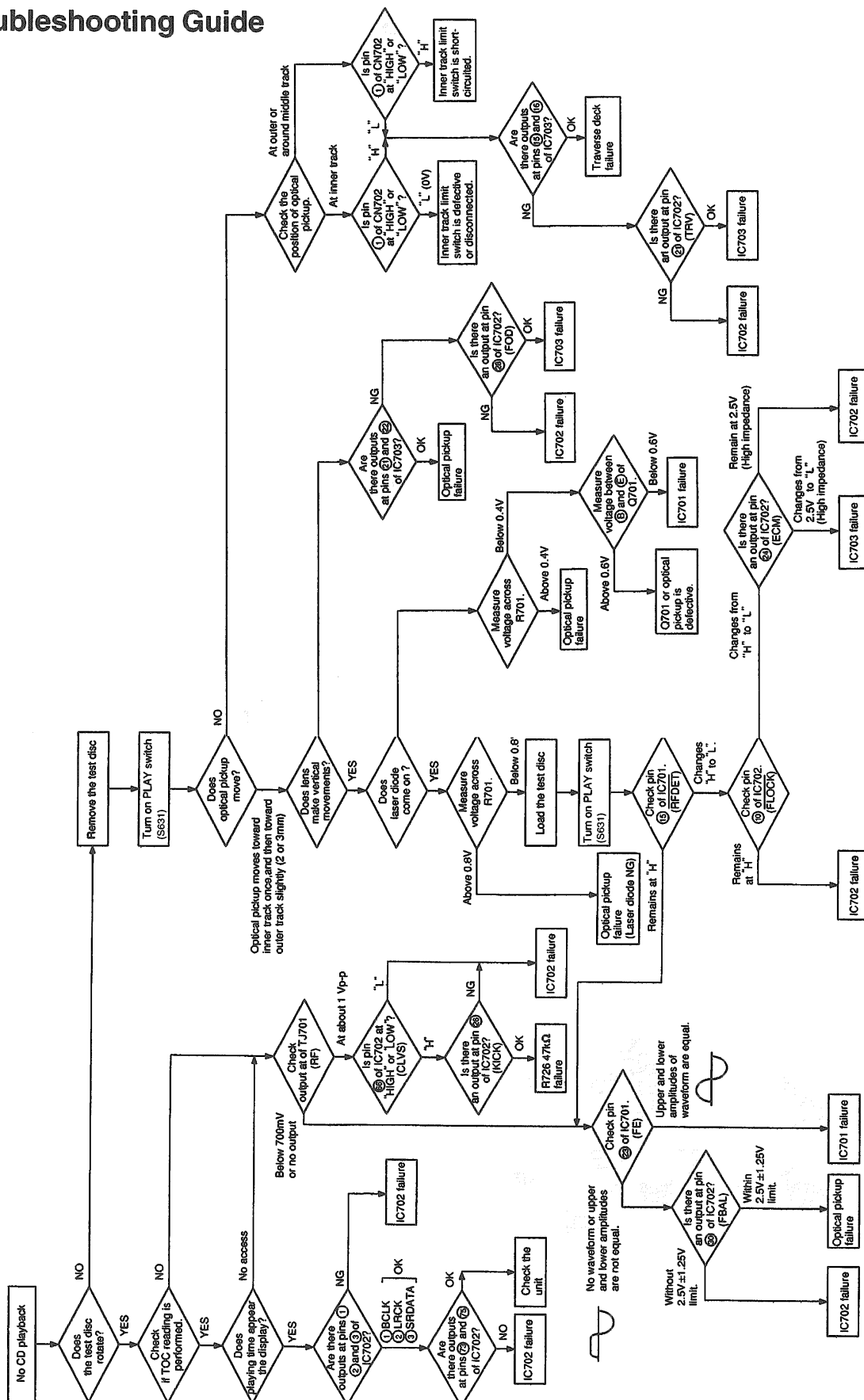
PANEL CIRCUIT





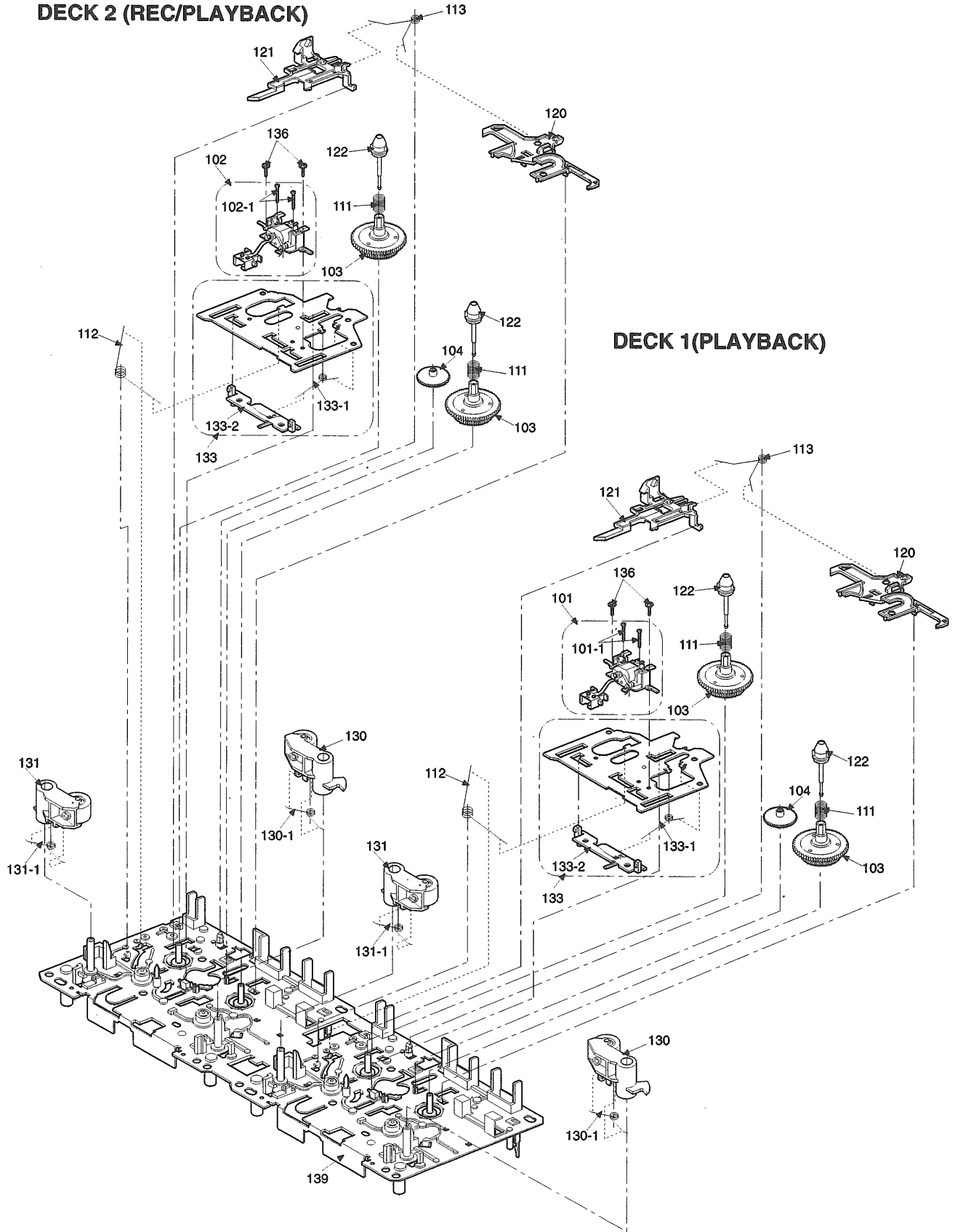


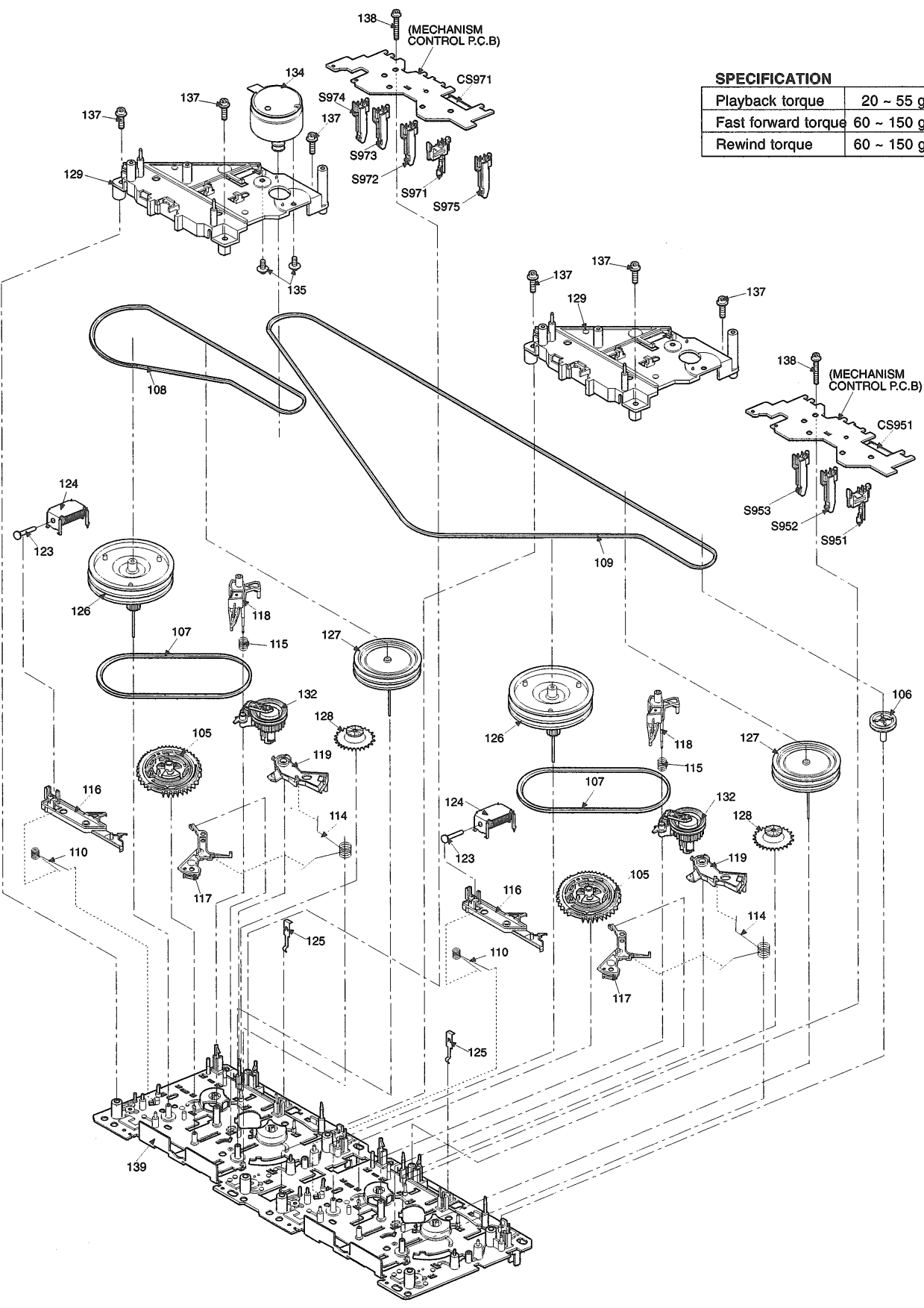
Troubleshooting Guide



Mechanism Parts Location (RAA3407)

DECK 2 (REC/PLAYBACK)

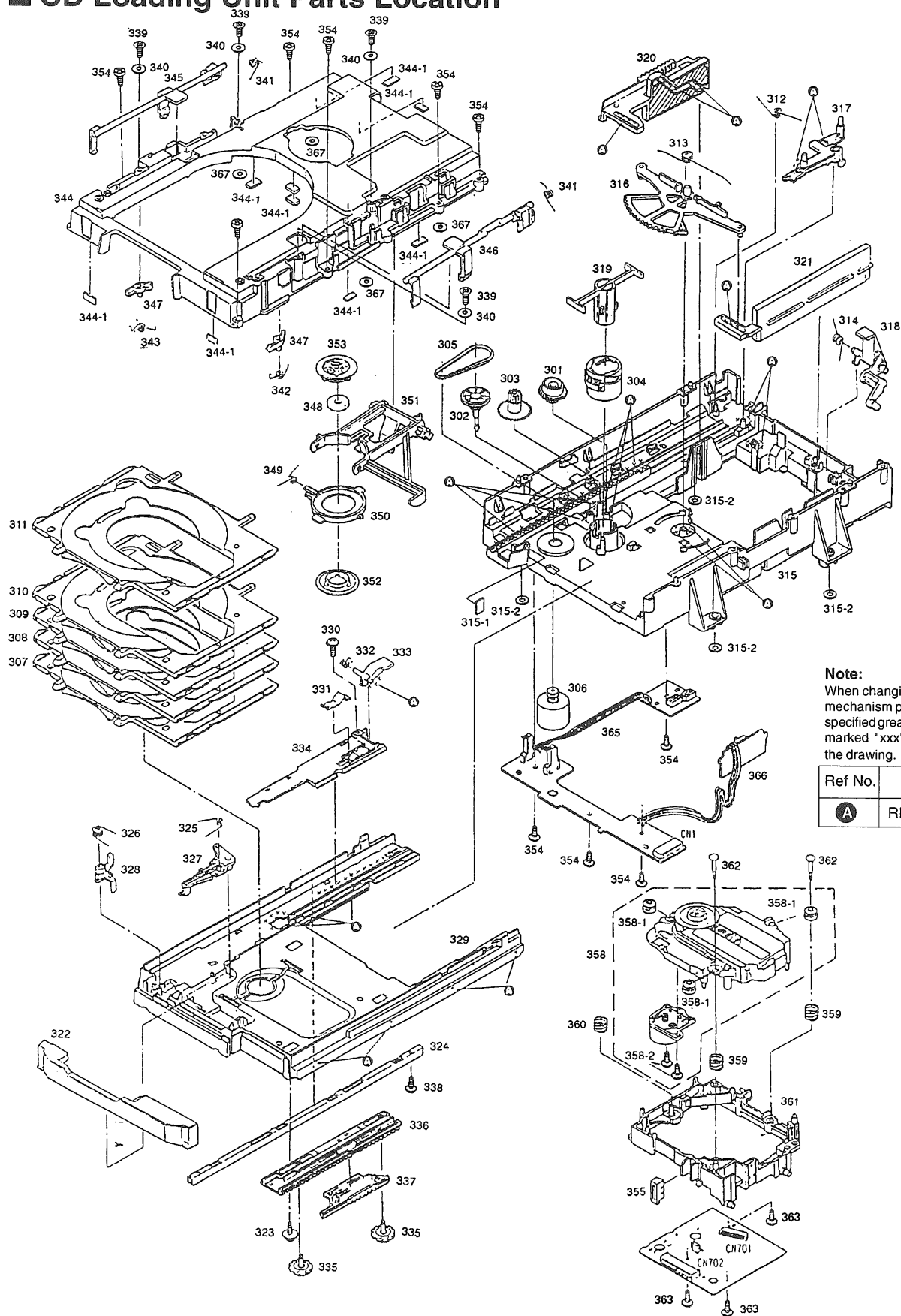




SPECIFICATION

Playback torque	20 ~ 55 g \cdot cm
Fast forward torque	60 ~ 150 g \cdot cm
Rewind torque	60 ~ 150 g \cdot cm

CD Loading Unit Parts Location


Note:

When changing the loading mechanism parts, apply the specified grease to the areas marked "xxx" as shown in the drawing.

Ref No.	Part No.
A	RFKXPG671

Cabinet Parts Location

