

Service Information

Model Nakamichi CR-7/7A/7E/70
 (Discrete Head Cassette Deck)
 Serial No. from A13008677 -
 Subject Modification of Record Eq.
Amp. Circuit



Nakamichi

No. OOD-M-0298 (1/3)
 Date 22 May 1987

1. General

1.1. Purpose

The record eq. amp. circuit in the Main P.C.B. Ass'y has been improved because of the following reason.

Nakamichi performs level calibration and bias calibration at 400 Hz and 15 kHz respectively, after determining the record equalizer and the peaking of record current so that flat overall frequency response is obtained on the reference ZX, reference SX and reference EXII tapes complying with the IEC Standard.

Some cassette tapes on the market have frequency response raised in the high-frequency range (above 15 kHz) under the name of improvement. Such tapes account for slightly below 20% of the market, according to our survey. These tapes, although conforming to the IEC Standard, have characteristics far from those of the reference tapes used by Nakamichi. When such a cassette tape is loaded in the CR-7/7A/7E/70 and, after auto calibration, music is recorded with Dolby NR set to C-type, the played back music has the auditory effect of "decreased frequency response in the high frequency range". Actually this decrease in frequency characteristics occurs around the range of 1 kHz to 10 kHz. (Of course the frequency response on the CR-7/7A/7E/70 is within specification).

> (Load of crap)

We have made changes to the record equalizer circuit and record current peaking circuit of the CR-7/7A/7E/70 so that the practical problems will not occur with the cassette tapes featuring raised response in the high-frequency range (above 15 kHz). With these changes, we believe that you will have no more complaints about decreased response at high frequencies.

When a cassette tape with raised response at high frequencies (above 15 kHz) is used, the problem is not severe if the tape requires small bias current, such as Type I. However, when the cassette tape requires large bias current, such as Type II or IV, considerable overbias must be applied to make the 15 kHz response flat. Such overbias would have adverse effects, even on level calibration. The result would be a decrease in 1 kHz - 10 kHz response, particularly noticeable if C-type Dolby NR is selected.

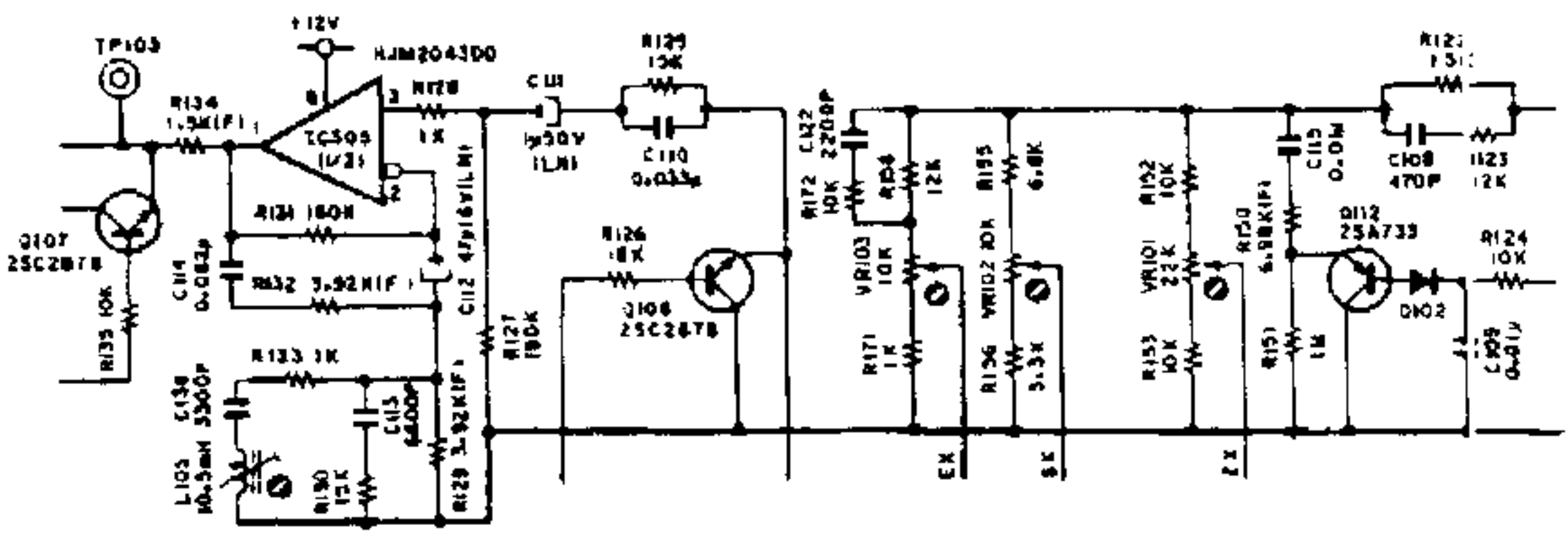
We recommend that you make the circuit changes described only against a complaint voiced from your customers. We do not think it necessary for you to make the circuit changes also for the CR-7/7A/7E/70 units stored in your stock.

Steve
SOS-293-3420

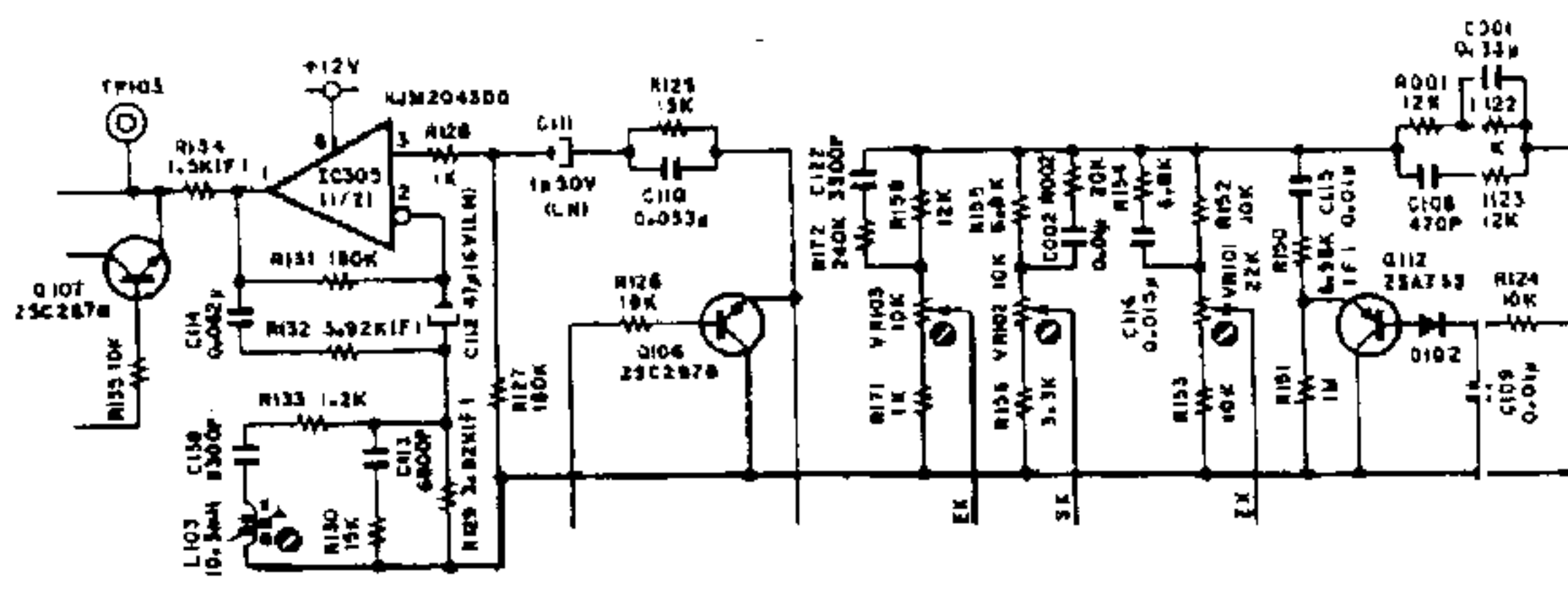
1.2. Modification

The following parts have been modified in the Main P.C.B. Ass'y.
Refer to Fig. 1.

<u>Ref. No.</u>	<u>Current Part No.</u>	<u>New Part No.</u>	<u>Description</u>	<u>Q'ty</u>
	BA05932A	BA05932A	Main P.C.B. Ass'y	1
(Rec. Eq. Amp.)				
R133,233	OB09677A	-	Carbon Resistor 1K 1/6W J	2
R133,233	-	OB09679A	Carbon Resistor 1.2K 1/6W J	2
(Rec. Cal.)				
R001,003	(None)	OB09703A	Carbon Resistor 12K 1/6W J	2
R002,004	(None)	OB09708A	Carbon Resistor 20K 1/6W J	2
R003,002	OB09705A	-	Carbon Resistor 15K 1/6W J	2
R122,222	-	OB09677A	Carbon Resistor 1K 1/6W J	2
R154,254	(None)	OB09697A	Carbon Resistor 6.8K 1/6W J	2
R172,272	OB09701A	-	Carbon Resistor 10K 1/6W J	2
R172,272	-	OB09732A	Carbon Resistor 240K 1/6W J	2
C001,003	(None)	OB41304A	Metalized Mylar Capacitor 0.33μ 50V J	2
C002,004	(None)	OB05681A	Mylar Capacitor 0.01μ 50V J	2
C116,216	(None)	OB41096A	Mylar Capacitor 0.015μ 50V J	2
C122,222	OB01802A	-	Mylar Capacitor 2200P 50V J	2
C122,222	-	OB41088A	Mylar Capacitor 3300P 50V J	2



(Before Modification)



(After Modification)

Fig. 1

1.3. Compatibility (of new Main P.C.B. Ass'y with current one): Possible.

2. Modification Procedures for Current Models

2.1 Parts Required

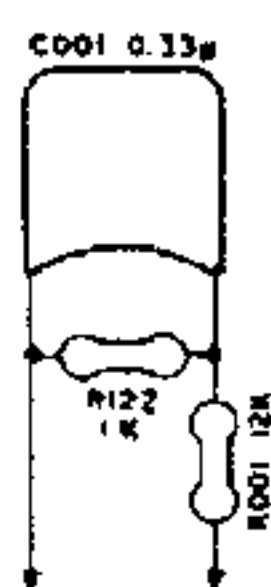
Ref. No.	Part No.	Description	Q'ty
R133,233	OB09679A	Carbon Resistor 1.2K 1/6W J	2
R001,003	OB09703A	Carbon Resistor 12K 1/6W J	2
R002,004	OB09708A	Carbon Resistor 20K 1/6W J	2
R122,222	OB09677A	Carbon Resistor 1K 1/6W J	2
R154,254	OB09697A	Carbon Resistor 6.8K 1/6W J	2
R172,272	OB09732A	Carbon Resistor 240K 1/6W J	2
C001,003	OB41304A	Metalized Mylar Capacitor 0.33 μ 50V J	2
C002,004	OB05681A	Mylar Capacitor 0.01 μ 50V J	2
C116,216	OB41096A	Mylar Capacitor 0.015 μ 50V J	2
C122,222	OB41088A	Mylar Capacitor 3300P 50V J	2

2.2. Modification Procedures

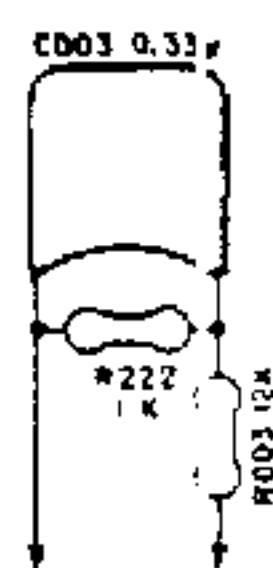
Apply the following modifications to the current Main P.C.B. Ass'y.

Refer to Fig. 2.

- (1) Remove R133, 233 (1 K).
- (2) Remove R122, 222 (15 K).
- (3) Remove R172, 272 (10 K).
- (4) Remove C122, 222 (Mylar Capacitor 2200P).
- (5) Mount R133, 233 (1.2 K).
- (6) Mount R172, 272 (240 K).
- (7) Mount C122, 222 (Mylar Capacitor 3300P).
- (8) Connect C001, 003 (Metalized Mylar Capacitor 0.33 μ), R122, 222 (1 K) R001, 003 (12 K) as follows and insert them into the places where R12 and R222 were mounted,



(R122)



(R222)

- (9) Mount R154, 254 (6.8 K).
- (10) Mount C116, 216 (Mylar Capacitor 0.015 μ).
- (11) Mount R002, 004 (20 K).
- (12) Mount C002, 004 (Mylar Capacitor 0.01 μ).
- (13) Perform re-adjustment using new reference tapes.

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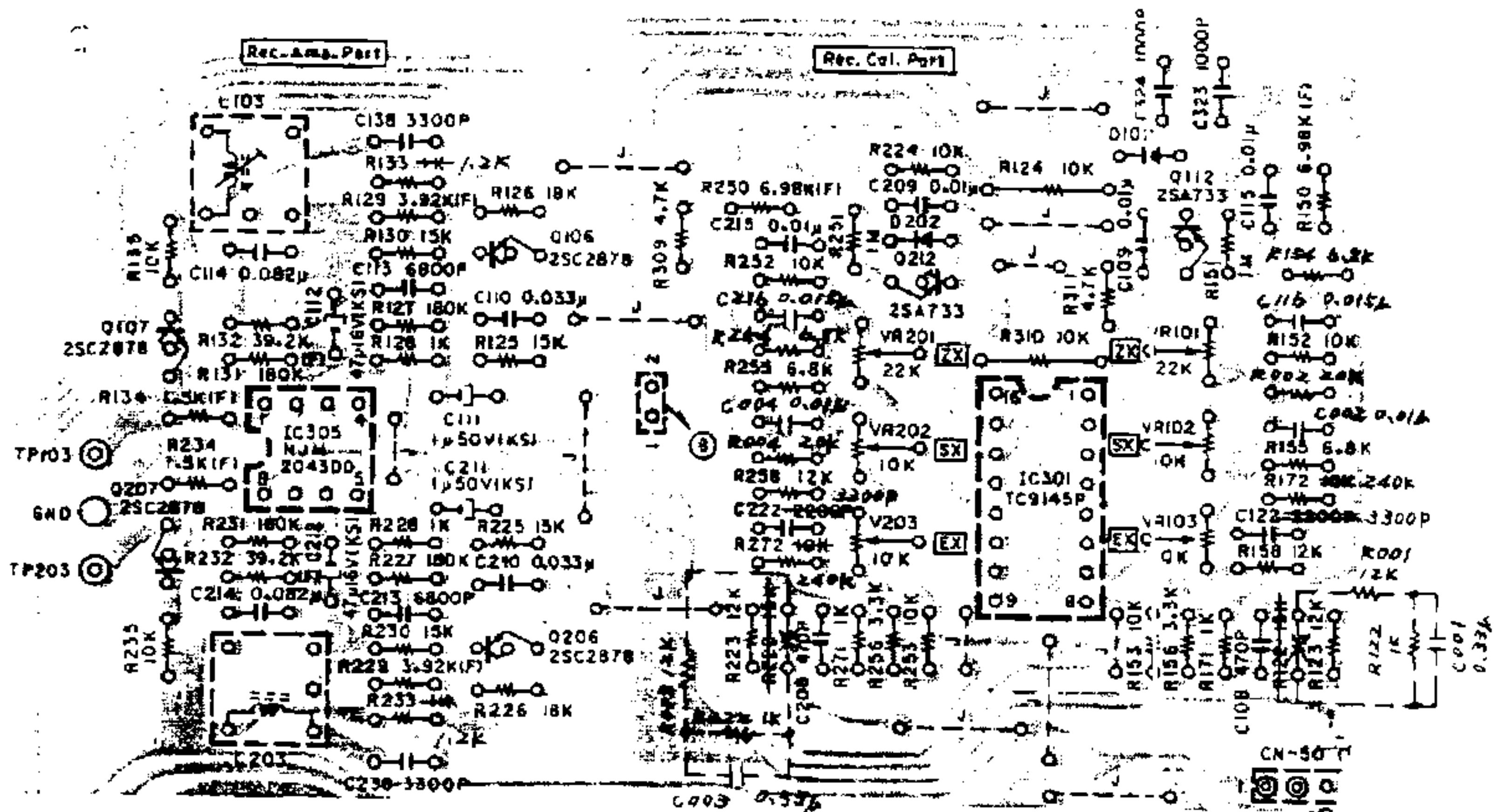


Fig. 2 (Main P.C.B. Ass'y)

- Notes: 1. Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.
2. The word "DOLBY" and the Double-D-Symbol are trademarks of Dolby Laboratories Licensing Corporation.