

Service Information



NAKAMICHI

Model Nakamichi 420 (Power Amplifier)

Serial No. from 4504581

Subject Addition of Protector Circuit

No. NR-0010 (1/5)
Date 1 September, 1977

I. General:

A. Purpose:

A protector circuit has been added to prevent speakers from breakage, as the breakage of transistors in 420 would induce possible breakage of speakers.

Note: When the protector circuit is activated (speaker terminals shorted with relay contacts), the power supply for 420 is required to be once switched off so as to release the protecting function. The power should again be supplied for at least 5 minutes after switching off.

B. Modification:

Current power block circuit has partly been modified in parallel with an addition of the protector circuit.

Refer to Fig. 1, assembled Protector P.C.B. Ass'y.

Modified Parts

Part No. BA03811A Power Block P.C.B. Ass'y resistors R034 and R035 (560 Ω) have been shorted with a jumper wire (both channels).
Rear Panel Ass'y Part No. has been changed from JA03839A to JA03839B (including Protector P.C.B. Ass'y).

Additional Parts

BA03865A Protector P.C.B. Ass'y 1 pce.
OJ03688A E.P. Stud B 2 pcs.

C. Principle of Operation:

The protector circuit aims at protecting the speaker with a shortcut from the speaker terminals to GND by operating the relay in Protector P.C.B. Ass'y when D.C. voltage is impressed between speaker terminals against any possible accident.

The time length required for protector to operate are specified as below according to D.C. voltages (either plus or minus) impressed between the speaker terminals:

<u>D.C. Voltage between Speaker Terminals</u>	<u>Time required till Protector operates</u>
34V DC	approx. 0.5 sec \pm 30%
20V DC	approx. 1 sec \pm 30%
15V DC	approx. 2 sec \pm 30%
10V DC	approx. 2.5 sec \pm 30%
5V DC	approx. 4 ~ 10 sec

Once the protector circuit is activated, the protecting state is retained until the power supply to 420 is disconnected to release it. The power should be supplied after power capacitors are fully discharged (for approximately 5 minutes or more).

Note: The protector circuit in 420 may occasionally be activated if a high transient D.C. voltage is delivered from the preamplifier connected with 420 at the time when the power supply for the preamplifier is turned on.

The cause is not from any trouble in 420.

For its countermeasure, the power for 420 is recommended to be supplied last of all.

II. Parts List:

Part No. BA03865A Protector P.C.B. Ass'y 1 pce.
 0J03688A E.P. Stud B 2 pcs.

<u>Schematic Ref. No.</u>	<u>Part No.</u>	<u>Description</u>
	BA03865A	Protector P.C.B. Ass'y
	OB07727A	Protector P.C.B.
Q401,402	OB06078A	Transistor 2SC1400
403		
Q404	OB06074A	Transistor 2SA750
D401,402	OB01909A	Silicon Diode 1S1555
D403	OB06109A	Silicon Diode GP08B
ZD401	OB06073A	Zener Diode 10S
ZD402	OB06002A	Zener Diode 15R
R401,402	OB01921A	Carbon Resistor 330K ERD-25V J
R403,404	OB05650A	Carbon Resistor 12K ERD-25V J
407		
R405,406	OB01781A	Carbon Resistor 1K ERD-25V J
R408	OB05593A	Carbon Resistor 150K ERD-25V J
R409,410	OB01920A	Carbon Resistor 100K ERD-25V J
R411,414	OB05607A	Carbon Resistor 180 ERD-25V J
R412	OB01795A	Carbon Resistor 4.7K ERD-25V J
R413,415	OB01833A	Carbon Resistor 10K ERD-25V J
C401,402	OB05885A	Electrolytic Capacitor 100 μ F 10V
C403	OB01290A	Ceramic Capacitor 0.01 μ F 50V
RY401	OB07171A	Relay HB-2T

III. Mounting Diagram and Schematic Diagram:

Refer to Figs. 2 and 3.

IV. Modification Procedures for the Current Models:

Following shows the way how to assemble the Protector P.C.B. Ass'y in the current Models.

A. Parts to be required:

Part No. BA03865A	Protector P.C.B. Ass'y	1 pce.
OJ03688A	E.P. Stud B	2 pcs.

B. Modification Procedures:

Refer to Fig. 1.

1. Disassemble the Top Cover by removing five screws.
2. Remove two screws from the Output P.C.B. Ass'y and replace with E.P. Studs.
3. Assemble the Protector P.C.B. Ass'y.
4. Solder the signal wires (WHT,WHT) of the Protector P.C.B. Ass'y to the speaker terminal (output terminal) plus side of both channels.
5. Solder the RED wire of the Protector P.C.B. Ass'y to the plus terminal (RED wires are already soldered) of the capacitor C1 22,000 μ F 42V.
6. Solder the BLU wire of the Protector P.C.B. Ass'y to the minus terminal (BLU wires are already soldered) of the capacitor C2 22,000 μ F 42V.
7. Bind these wires at an appropriate point.
8. Short the resistors R034 and R035 (560 Ω) of both channels on the Power Block P.C.B. Ass'y with a jumper wire from the dip side of the printed circuit board.
9. Assemble the Top Cover.

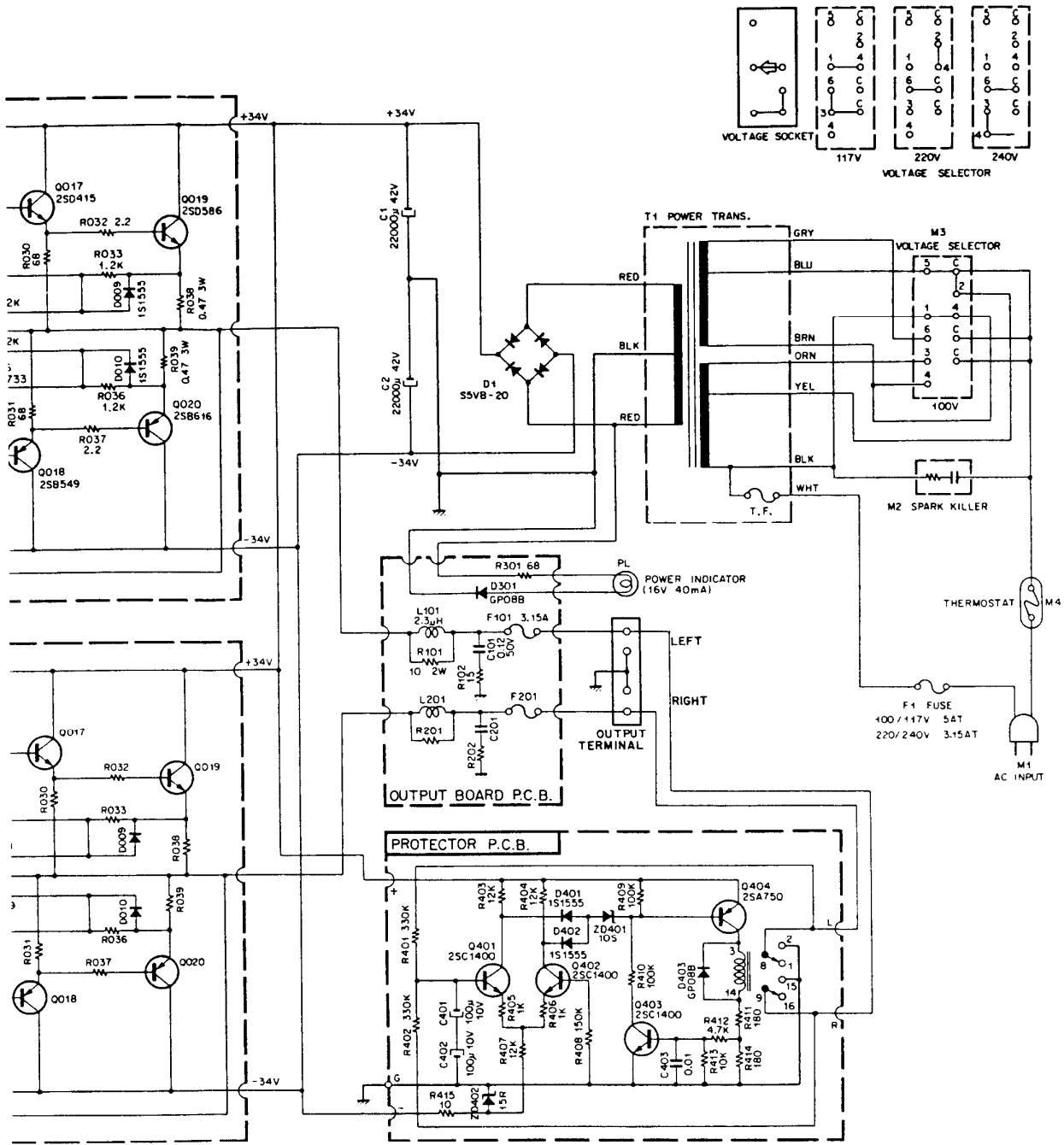


Fig. 3