



Service Manual

Nakamichi T-100 Audio Analyzer



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1. GENERAL

1.1. Control Functions

The Nakamichi T-100 control functions are shown below:

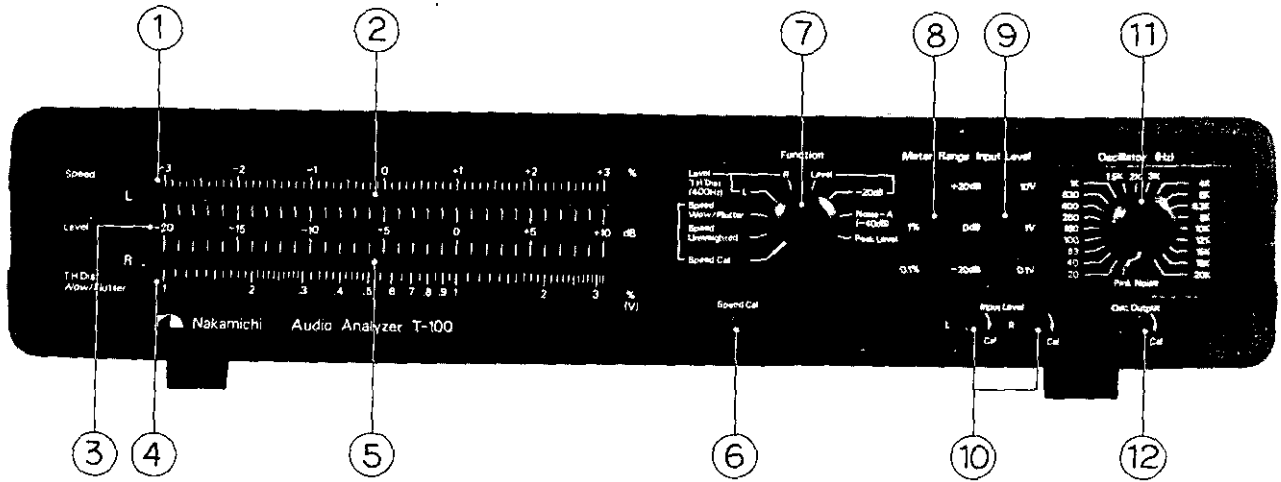


Fig. 1.1 Front View

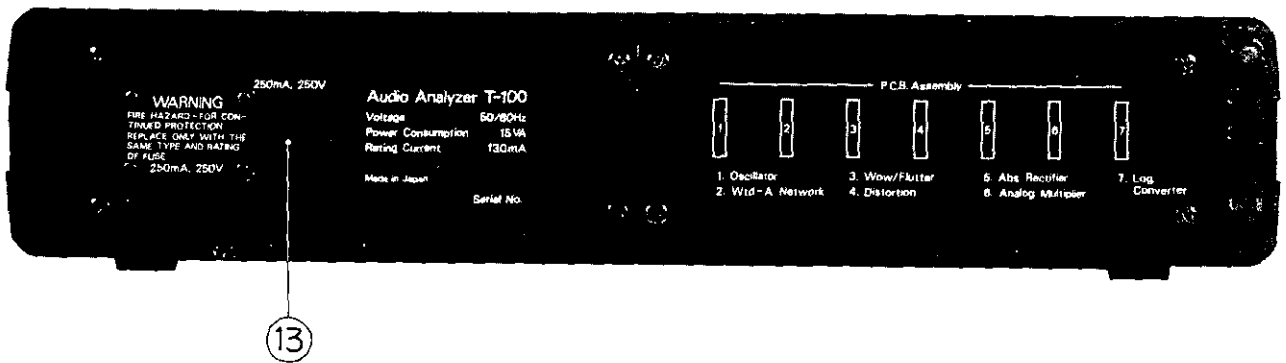


Fig. 1.2 Rear View

1. Speed Deviation Scale
2. Top Indicator
3. Level Scale
4. Bottom Indicator
5. Total Harmonic Distortion/Wow & Flutter Scale
6. Speed Calibration Control
7. Function Control
8. Meter Range Switch
9. Input Level Switch
10. Input Level Controls
11. Oscillator Control
12. Oscillator Output Control
13. Fuse
14. Power Switch
15. AC Cord Connector
16. Input Jacks
17. Oscillator Output Jacks
18. Scope Output Jacks

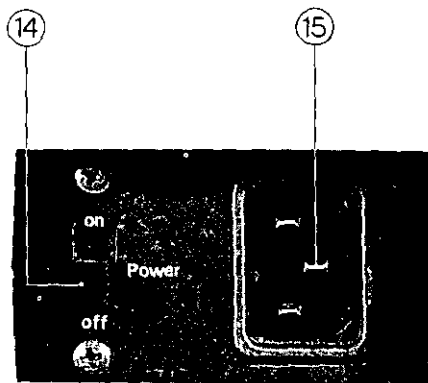


Fig. 1.3 Side View (Right)

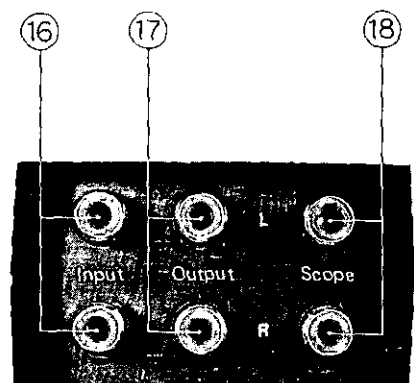


Fig. 1.4 Side View (Left)

1.2. Voltage Selector

Voltage selector is installed on the rear panel for Other Version of the Nakamichi T-100. This voltage selector can select either 120 V or 220 - 240 V at customer's disposal.

1.3. Functions

T-100 contains 9 functions the details of which are as follows:

Figs. 1.5 - 1.13 show the signal path in each function.

(1) Speed Cal

Calibrates top indicator for zero speed deviation.

(2) Speed Unweighted

Selects speed deviation in the top indicator and unweighted wow & flutter peak on the bottom indicator.

(3) Speed Wow/Flutter

Selects speed deviation on the top indicator and weighted wow & flutter peak on the bottom indicator.

(4) Level T.H. Distortion L

Selects left channel level on the top indicator and left channel total harmonic distortion on the bottom indicator.

(5) Level T.H. Distortion R

Selects right channel level on the top indicator and right channel total harmonic distortion on the bottom indicator.

(6) Level

Selects left channel level on the top indicator and right channel level on the bottom indicator.

(7) Level -20 dB

Decreases oscillator output by 20 dB while simultaneously making the indicators 20 dB more sensitive.

Selects left channel level on the top indicator and right channel level on the bottom indicator.

(8) Noise -40 dB

Displays left channel A-weighted noise on the top indicator and right channel A-weighted noise on the bottom indicator.

Makes the display 40 dB more sensitive.

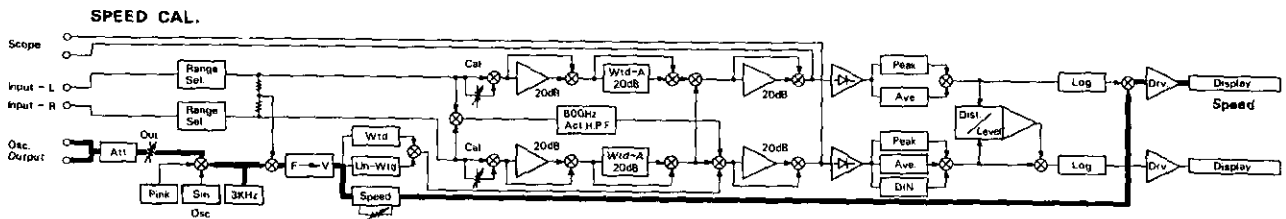


Fig. 1.5

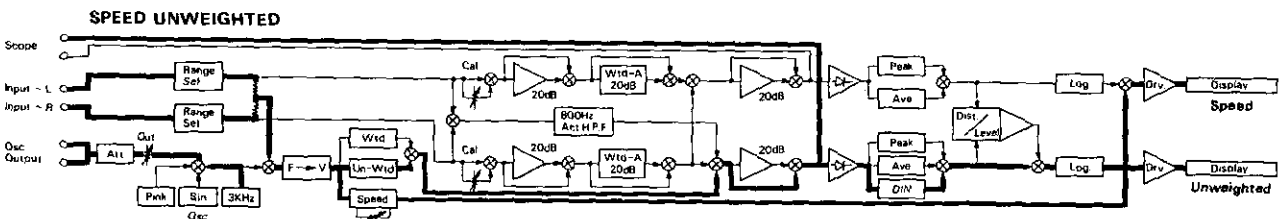


Fig. 1.6

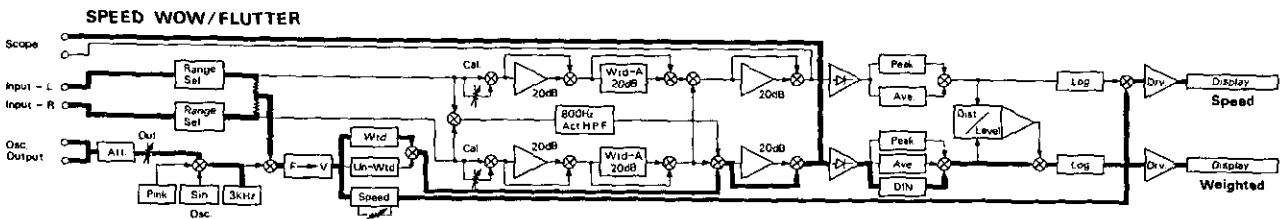


Fig. 1.7

(9) Peak

Selects peak-reading ballistics for the level display. Selects left channel level on the top indicator, right channel level on the bottom indicator. When the left and right input level controls are turned to maximum, the sensitivity of

the display is the same as when the function control is set to "level".

However, by turning the input level controls counter-clockwise, you can reduce the sensitivity to any intermediate value.

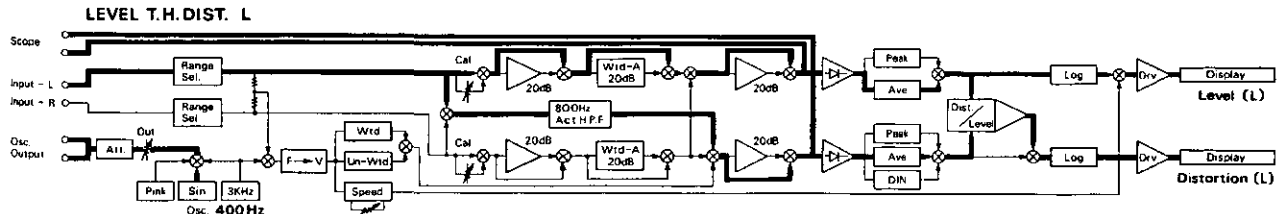


Fig. 1.8

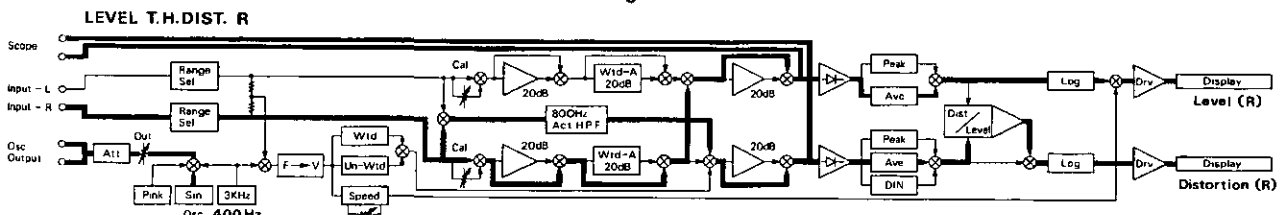


Fig. 1.9

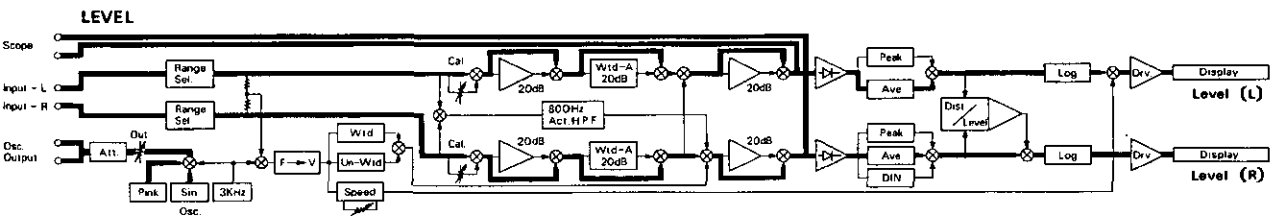


Fig. 1.10

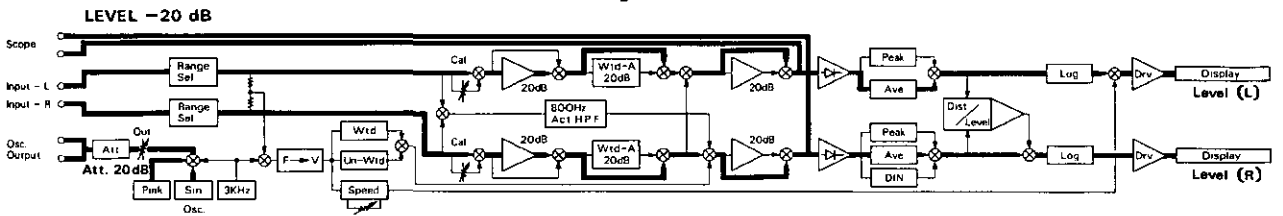


Fig. 1.11

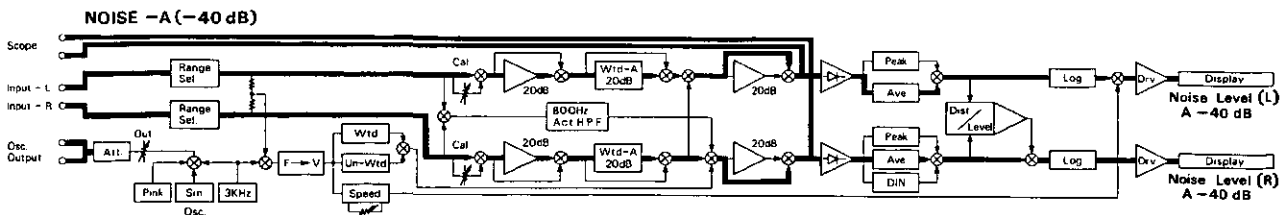


Fig. 1.12

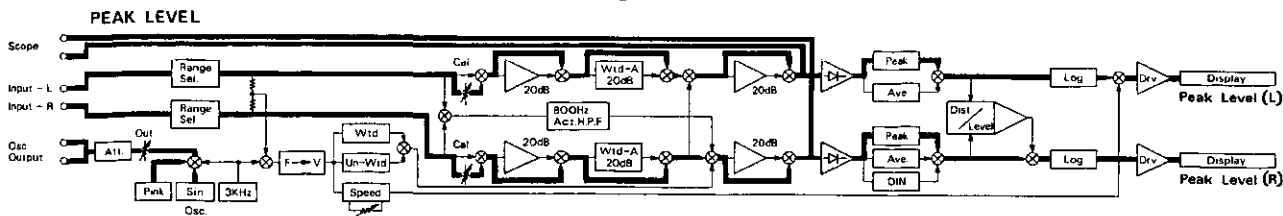


Fig. 1.13

1.4. How To Read Signals

In the Switch P.C.B. circuit, preceding 9 functions are symbolized as follows:

- A: Speed Cal.
- B: Speed Unweighted
- C: Speed Wow/Flutter (DIN WTD)
- D: Level T.H. Dist. (400 Hz) L
- E: Level T.H. Dist. (400 Hz) R
- F: Level 0 dB
- G: Level -20 dB
- H: Noise IHF-A (-40 dB)
- I: Peak Level

Functions A to I are combined and described logically such as $A + B + C$, $\overline{A + B + C}$, etc. The meaning of these signals are:

- $A + B + C$: will be "H" (i.e., will be effective) if function A OR B OR C is selected.
- $\overline{A + B + C}$: will be "L" (i.e., will be effective) if function A OR B OR C is selected.

- Notes: 1. If the function other than A, B, or C is selected, signals $A + B + C$ and $\overline{A + B + C}$ become open in the Switch P.C.B. circuit, but in the next stage -10 V or +10 V bias is applied to signal $A + B + C$ or $\overline{A + B + C}$. Thus, the "L" or "H" level is obtained.
2. "H" and "L" levels should be as follows:
 "H": +6.5 V - +10 V
 "L": -10 V - -7.5V

Fig. 1.14 shows the actual circuit. Common terminal of the Function Switch is connected to +10 V or -10 V and terminals A, B and C become inputs of DIODE OR Gate.

1.5. Semiconductor Switch

Circuits are controlled by the semiconductor switch of FET and transistor. Below shown is the table for the semiconductor switch and equivalent mechanical switch.

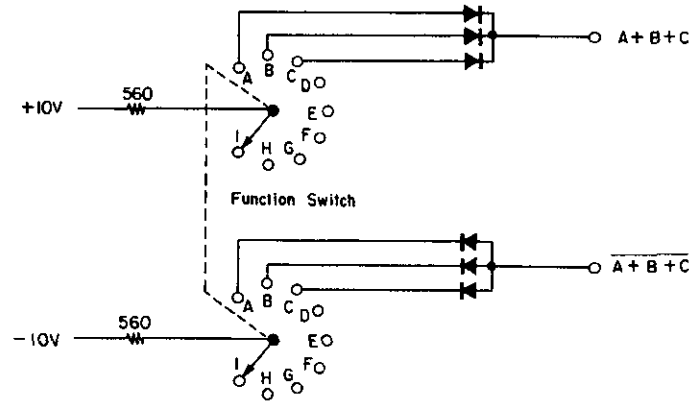


Fig. 1.14

Table 1.1

	Circuit	Control Input	Mechanical Switch
FET		High (+10V)	ON
		Low (-10V)	OFF
Transistor		High (+10V)	ON
		Low (-10V)	OFF

2. REMOVAL PROCEDURES

2.1. Top Cover Ass'y, Bottom Cover Ass'y and Synthesis Mechanism Ass'y with Power Supply Ass'y

Refer to Fig. 2.1.

- (1) Remove F01, F02 and F03, then disassemble F04 (Top Cover Ass'y) and F05 (Acrylic Cover).
- (2) Remove F06 and F07, then disassemble F08 (Bottom Cover Ass'y) and F09 (Synthesis Mechanism Ass'y with Power Supply Ass'y).

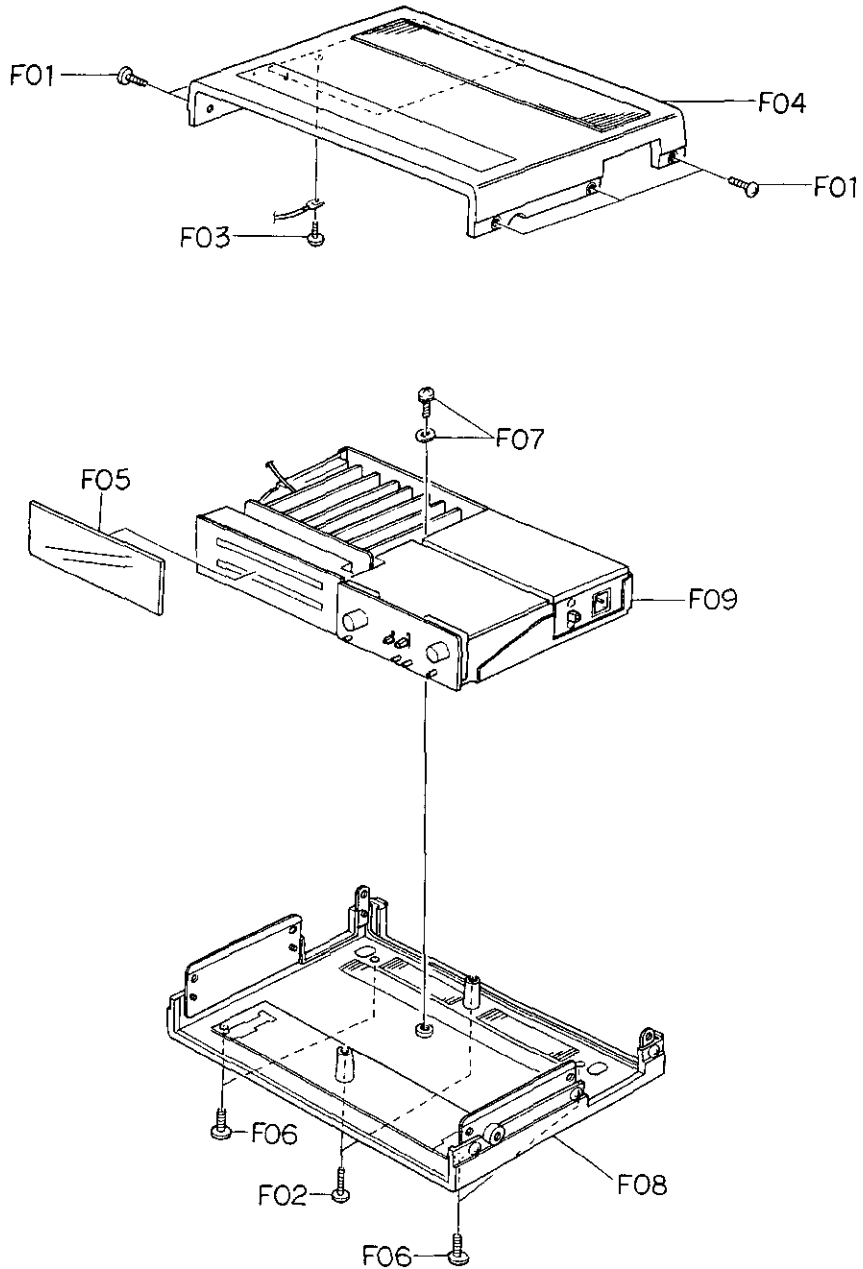


Fig. 2.1

2.2. Power Supply Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
- (2) Remove F01, then disassemble F02 (Power Supply Box Cover).
- (3) Remove F03, F04 and F05, then disassemble F06 (Power Supply Ass'y).

2.3. Connector P.C.B. Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
- (2) Remove F05 and F07, then disassemble F08 (Rear Panel B Ass'y).
- (3) Remove F09, then disassemble F10 (Connector P.C.B. Ass'y).

2.4. Switch Control Ass'y and Bar-graph Holder Ass'y

Refer to Fig. 2.2.

- (1) Refer to Fig. 2.1. Remove Top Cover Ass'y and Bottom Cover Ass'y referring to item 2.1.
- (2) Remove F11, then disassemble F12 (Switch Control Ass'y).
- (3) Remove F13, then disassemble F14 (Bar-graph Holder Ass'y).

2.5. 6P Pin Jack Ass'y

Refer to Fig. 2.2.

- (1) Remove F10 (Connector P.C.B. Ass'y) referring to item 2.3.
- (2) Remove F15, then disassemble F16 (Shield Plate), F17 (6P Pin Jack Ass'y) and F18 (Pin Jack Name Plate).

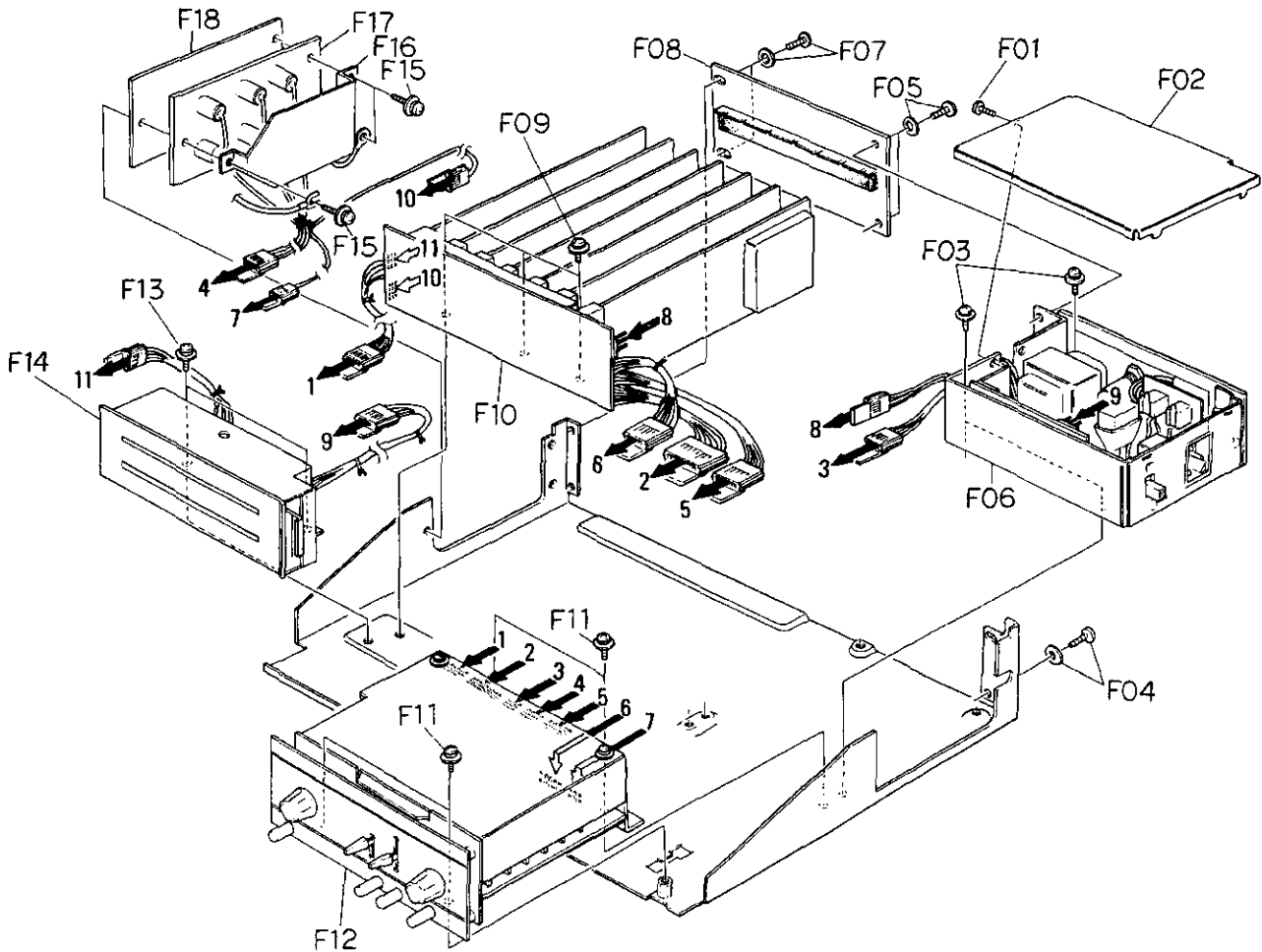


Fig. 2.2

2.6. Switch P.C.B. Ass'y and Volume P.C.B. Ass'y

Refer to Fig. 2.3.

- (1) Refer to Fig. 2.2. Remove Switch Control Ass'y referring to item 2.4.
- (2) Remove F01, then disassemble F02 (Rotary Switch Knob Ass'y).
- (3) Pull out F03 (Slide Switch Knob) and F04 (Calibration Knob).
- (4) Remove F05, then disassemble F06 (Front Panel Ass'y) and F07 (Front Panel Stud).

- (5) Remove F08, then disassemble F09 (Switch P.C.B. Insulator), F10 (Wire Holder 583) and F11 (Switch P.C.B. Holder Ass'y).
- (6) Remove F12 and F13, then disassemble F14 (Switch P.C.B. Ass'y).
- (7) Remove F15, then disassemble F16 (Volume P.C.B. Ass'y) and F17 (Switch Holder).

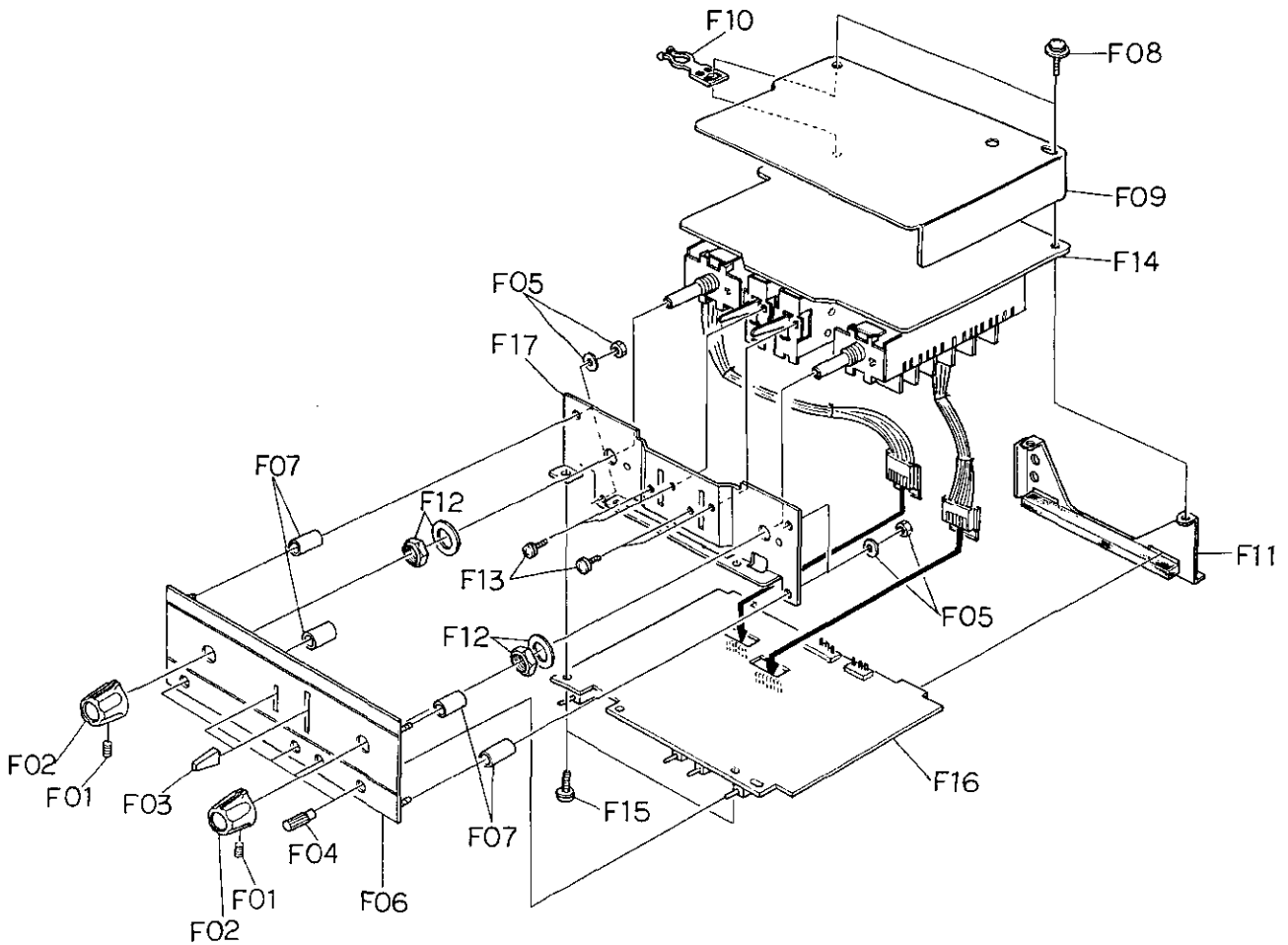


Fig. 2.3

2.7. Display P.C.B. Ass'y and Bar-graph

Refer to Fig. 2.4.

- (1) Refer to Fig. 2.2. Remove Bar-graph Holder Ass'y referring to item 2.4.
- (2) Remove F01, then disassemble F02 (Shield Cover Ass'y)
- (3) Remove F03, then disassemble F04 (Display P.C.B. Ass'y) and F05 (Display P.C.B. Insulator).

- (4) Remove F06, then disassemble F07 (Scale Panel Ass'y).
- (5) Remove F08, then disassemble F09 (8P Plug P.C.B. Ass'y).
- (6) Remove F10 and F11 (Pressure Plate Ass'y), then disassemble F12 (Bar-graph) and F13 (Bar-graph Holder Ass'y).

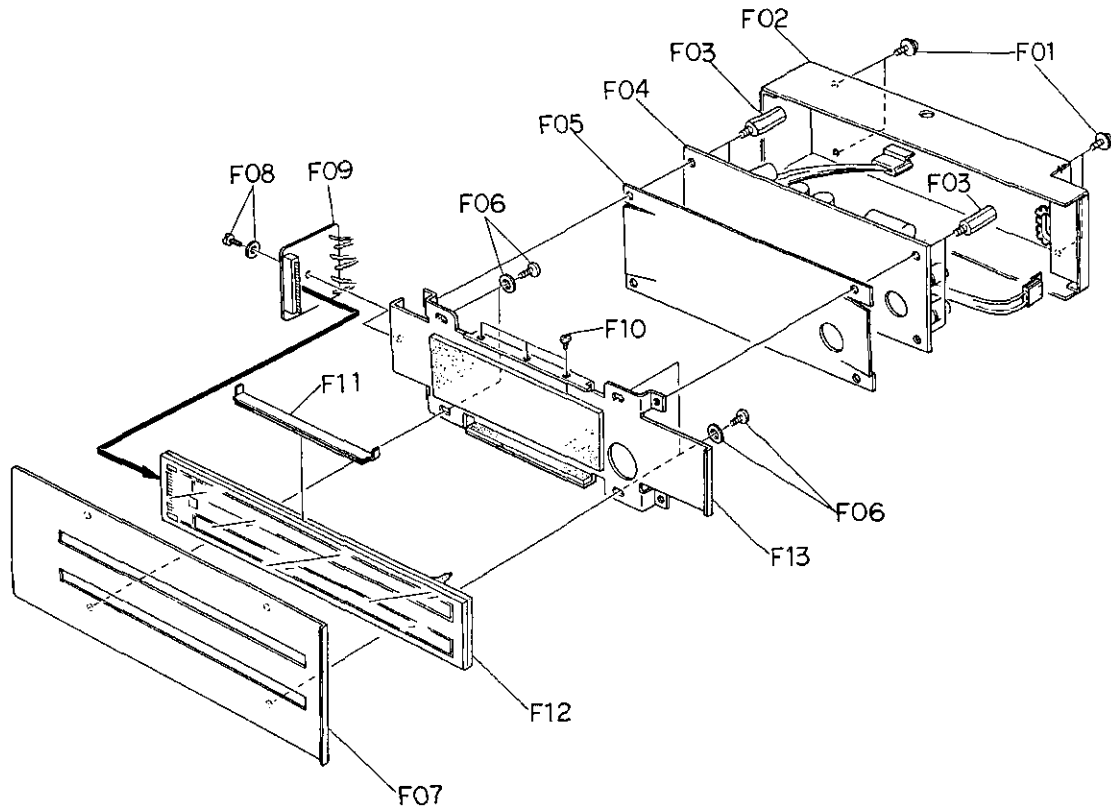


Fig. 2.4

2.8. Power Supply P.C.B. Ass'y and Power Transformer
Refer to Fig. 2.5.

- (1) Refer to Fig. 2.2. Remove Power Supply Ass'y referring to item 2.2.
- (2) Remove F01, then disassemble F02 (Power Supply P.C.B. Ass'y).
- (3) Remove F03 and F04, then disassemble F05 (Power Transformer).

2.9. Rear Panel A Ass'y, Power Switch and AC Inlet
Refer to Fig. 2.5.

- (1) Refer to Fig. 2.2. Remove Power Supply Ass'y referring to item 2.2.
- (2) Remove F06 and F07, then disassemble F08 (Rear Panel A Ass'y).
- (3) Remove F09 and F10, then disassemble F11 (Power Switch).
- (4) Remove F12 and F13, then disassemble F14 (Power Supply Name Plate).
- (5) Remove F15 and F16 (Inlet Holder), then disassemble F17 (AC Inlet).

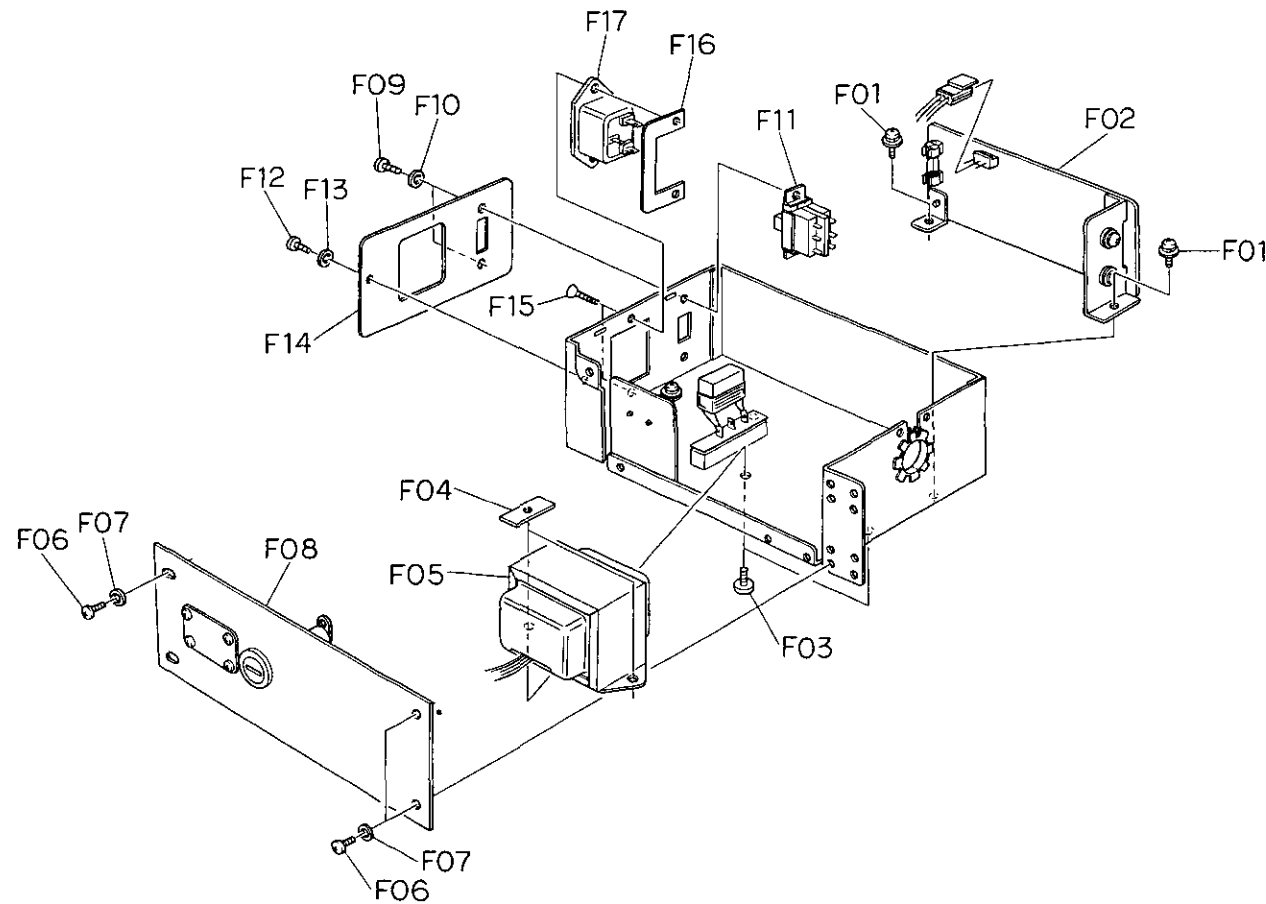


Fig. 2.5

3. MEASUREMENT INSTRUMENTS

- | | |
|--|-------------------------------|
| (1) Oscillator 20 Hz – 20 kHz | |
| Level Deviation: | ±0.1 dB or less |
| Distortion: | 0.1% or less |
| Output Voltage: | 3.16 V or more |
| (2) VTVM | |
| (3) DC Voltmeter | |
| Input Impedance: | 100 k-ohm or more |
| Accuracy: | 1% or less |
| Resolving Ability: | 0.1 mV or less |
| (4) Distortion Meter | |
| Minimum Range: | 0.01% or less (at full-scale) |
| Frequency: | 400 Hz |
| (5) Oscilloscope | |
| (6) Standard Distortion Generator | |
| Fundamental Frequency: | 400 Hz |
| Distortion Rate: | 0.1%, 0.3%, 1%, 3% |
| Output Voltage: | 3.16 V or more |
| (7) Standard Wow and Flutter Generator | |
| Center Frequency: | 3,000 Hz |
| Wow Frequency: | 4 Hz |
| Wow: | 1% (peak) |
| Output Voltage: | 100 mV or more |
| (8) Frequency Counter | |

4. PARTS LOCATION FOR ELECTRICAL ADJUSTMENT

4.1. Current Type

Note: In the current type, VR701 and VR801 on the Absolute Rectifier P.C.B. Ass'y are removed.

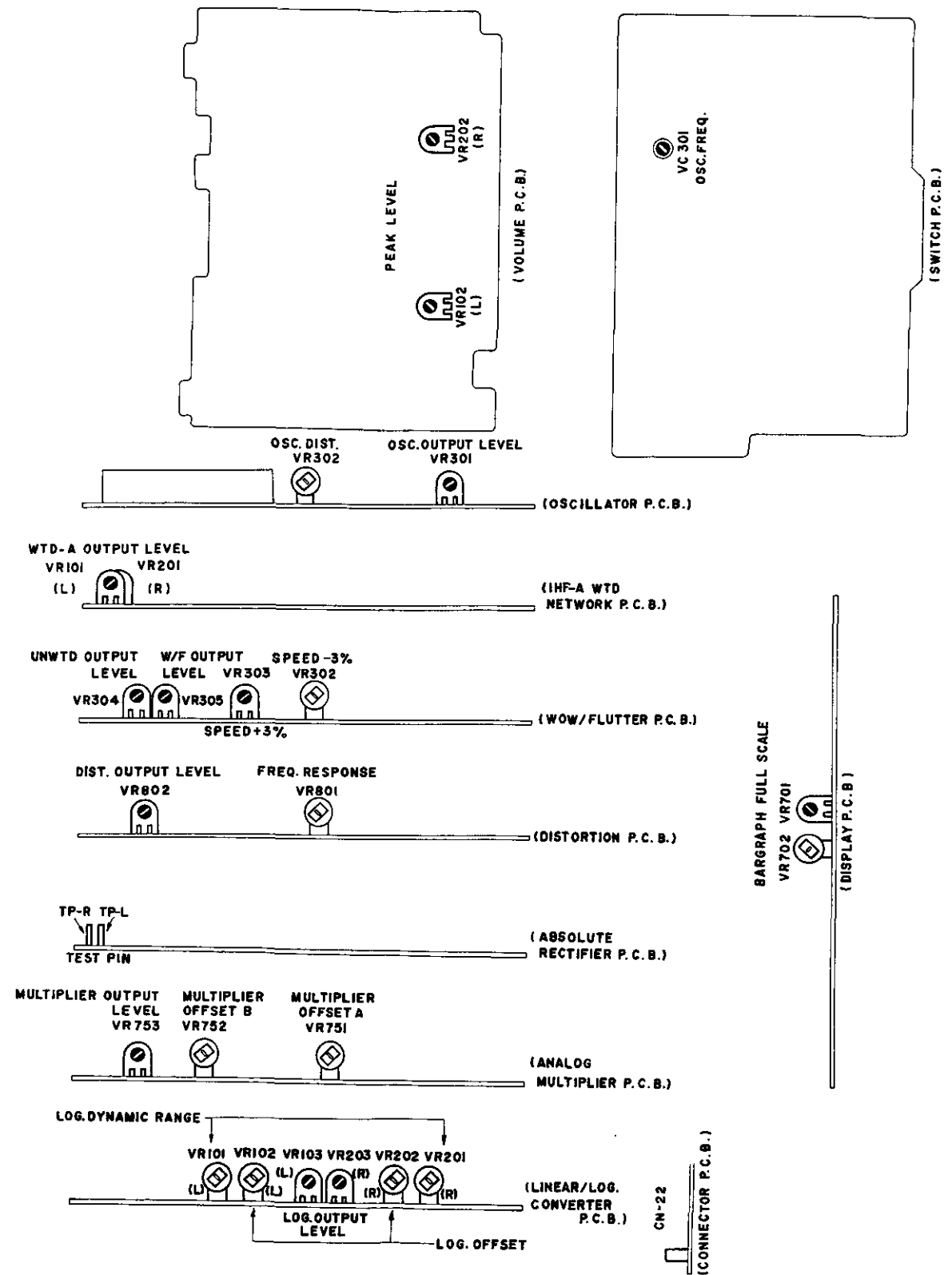


Fig. 4.1

4.2. Previous Type

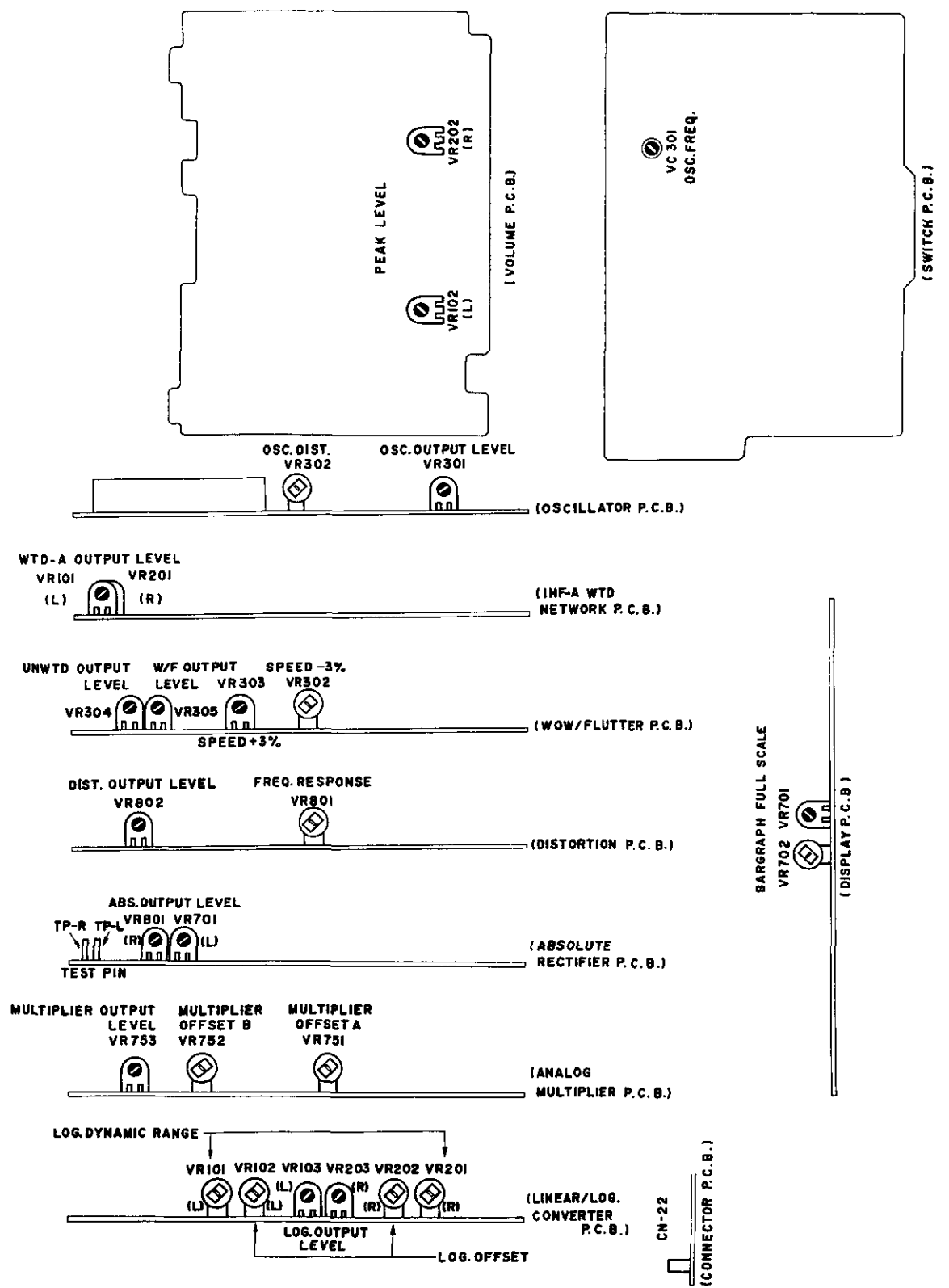


Fig. 4.2

5. ADJUSTMENT AND MEASUREMENT INSTRUCTIONS

5.1. Current Type

Note: In the current type, absolute output level adjustment is removed.

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Oscillator Frequency		Frequency Counter to Oscillator OUTPUT Jacks	Function - Level Oscillator - 400 Hz Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Switch P.C.B. VC301	Adjust VC301 to obtain 400 Hz on the Frequency Counter.
2	Oscillator Distortion		Distortion Meter to Oscillator OUTPUT Jack	Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Osc. P.C.B. VR302	Adjust VR302 to obtain 0.06% - 0.07% distortion. Note: Connect an Oscilloscope to the Output of the Distortion Meter and check to insure that no humming noise is included in the signal.
3	Oscillator Output Level		VTVM to Oscillator OUTPUT Jacks	Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Osc. P.C.B. VR301	Adjust VR301 to obtain 1.2 V on the VTVM.
4	Log. Output Level	Oscillator to INPUT Jacks	DC Voltmeter to CN22-1, CN22-2	Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Linear/Log. Converter P.C.B. VR103, VR203	Feed in 1 kHz 1 V and adjust VR103 (VR203) to obtain 2.18 V on the DC Voltmeter.
5	Bargraph Full Scale	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Display P.C.B. VR701	Feed in 1 kHz 1 V and adjust VR701 so that the Bargraph indicates 0 dB. Note: Adjust VR702 only if circuit is repaired.

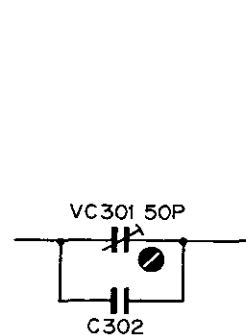


Fig. 5.1.1.
1. Oscillator Frequency

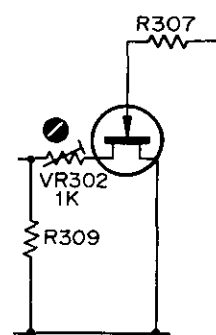


Fig. 5.1.2
2. Oscillator Distortion

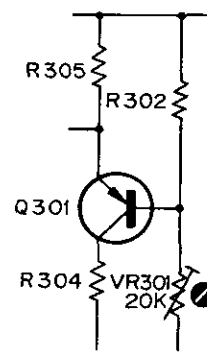


Fig. 5.1.3
3. Oscillator Output Level

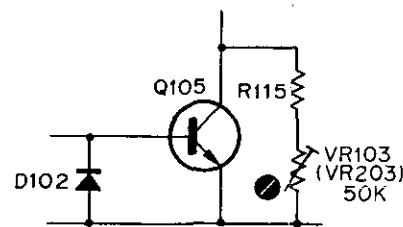


Fig. 5.1.4
4. Log. Output Level

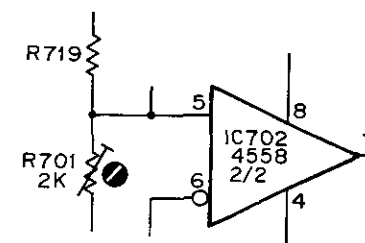


Fig. 5.1.5
5. Bargraph Full Scale

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
6	Log. Output Level Log. Dynamic Range Log. Offset	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Linear/Log. Converter P.C.B. VR103, VR203 VR102, VR202 VR101, VR201	Feed in 1 kHz +10 dB (3.16 V), 0 dB (1 V), -10 dB (316 mV), or -20 dB (100 mV) and check whether the Bargraph indicates +10 dB, 0 dB, -10 dB, or -20 dB. (Allowance of error is within ±1 segment on the Bargraph.) If above is not obtained perform the following steps: 1. Feed in +10 dB (3.16 V), and adjust VR103 for the left channel and VR203 for the right channel to obtain +10 dB on the Bargraph. 2. Feed in -10 dB (316 mV) and adjust VR102 for the left channel and VR202 for the right channel to obtain -10 dB on the Bargraph. 3. Feed in -20 dB (100 mV) and adjust VR101 for the left channel and VR201 for the right channel to obtain -20 dB on the Bargraph. 4. Repeat above steps 1 - 3 until the error between input level and indicated value on the Bargraph becomes within ±1 segment on the Bargraph in each input level.
7	Peak Level	Oscillator to INPUT Jacks		Function - Noise-A (-40 dB) Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Volume P.C.B. VR102, VR202	Feed in 1 kHz 0 dB (1 V) and adjust VR102 (VR202) to obtain 0 dB on the Bargraph.
8	WTD-A Output Level	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 10 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	IHF-A WTD Network P.C.B. VR101, VR201	Feed in 1 kHz -20 dB (100 mV) and adjust VR101 (VR201) to obtain 0 dB on the Bargraph.
9	Speed	Oscillator and Frequency Counter to INPUT Jacks		Function - Wow/Flutter Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR302, VR303	1. Feed in 2,910 Hz ±1 Hz 1 V and adjust VR302 to obtain -3% speed on the Bargraph. 2. Feed in 3,090 Hz ±1 Hz 1 V and adjust VR303 to obtain +3% speed on the Bargraph.
10	UNWTD Output Level	Standard Wow/Flutter Generator to INPUT Jacks		Function - Unweighted Meter Range - 1% Input Level - 1V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR304	1. Set the Standard Wow/Flutter Generator to the following modes: Center Frequency - 3 kHz Wow Frequency - 4 Hz Wow/Flutter - 1% (peak) Output Level - 0.5 to 2 V 2. Adjust VR304 to obtain 1% wow/flutter on the Bargraph.

Note: Turn the Speed Calibration Control fully counterclockwise, then turn it clockwise approximately 7-1/2 times to set the Control to the center position.

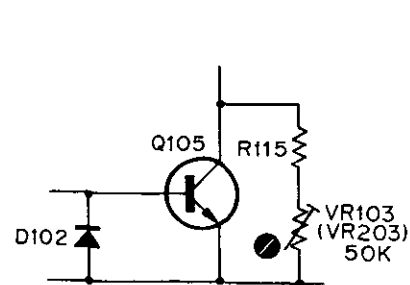


Fig. 5.1.6
6. Log. Adjustment

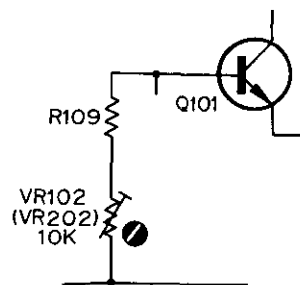


Fig. 5.1.7
6. Log. Adjustment

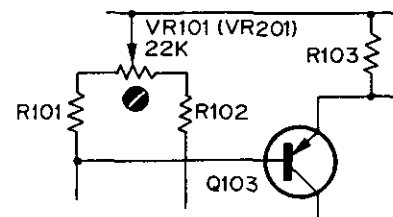


Fig. 5.1.8
6. Log. Adjustment

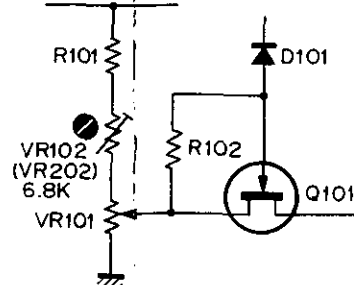


Fig. 5.1.9
7. Peak Level

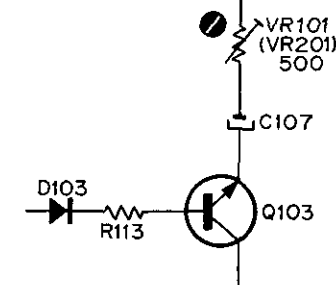


Fig. 5.1.10
8. WTD-A Output Level

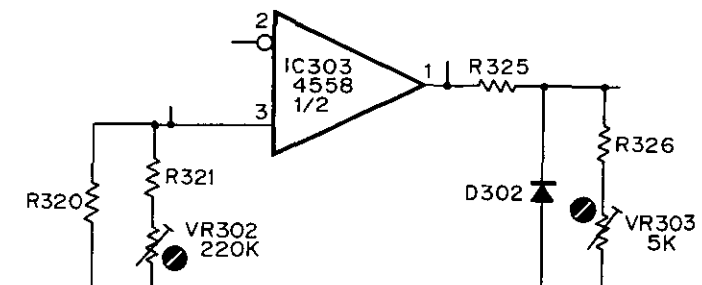


Fig. 5.1.11
9. Speed

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
11	Wow/Flutter Output Level	Standard Wow/Flutter Generator to INPUT Jacks		Function - Wow/Flutter Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR305	1. Set the Standard Wow/Flutter Generator to the following modes: Center Frequency - 3 kHz Wow Frequency - 4 Hz Wow/Flutter - 1% (peak) Output Level - 0.5 to 2 V 2. Adjust VR305 to obtain 1% wow/flutter on the Bargraph.
12	Frequency Response Distortion Output Level	Oscillator and Frequency Counter to INPUT Jacks	VTVM to SCOPE OUTPUT Jack	Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Distortion P.C.B. VR801, VR802	1. Feed in 2.5 kHz ± 10 Hz 100 mV and read the level on the VTVM. 2. Feed in 760 Hz ± 10 Hz 100 mV and adjust VR801 to obtain the same level as above step 1. 3. Repeat above steps 1 and 2 until the difference of the levels between steps 1 and 2 becomes 0. 4. Feed in 2.5 kHz ± 10 Hz 100 mV and adjust VR802 to obtain 2.87 V on the VTVM.
13	Multiplier Output Level	Standard Distortion Generator to INPUT Jacks		Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Analog Multiplier P.C.B. VR753, VR751, VR752	1. Set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V) 1% distortion. 2. Adjust VR753 to obtain 1% T.H. Distortion on the Bargraph. 3. Set the output of the Distortion Generator to 0 dB (1 V) or -10 dB (316 mV) and check to insure that the Bargraph indicates 0 dB or -10 dB with a tolerance of ± 1 segment. 4. Set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V), 0 dB (1 V), or -10 dB (316 mV) in 3%, 0.3%, or 0.1% distortion. Then check to insure that the tolerance of the Bargraph against the input level is within the following specified range: Tolerance: 0.3%, 1%, 3% ± 1 segment 0.1% ± 2 segments 5. If above does not comply with the specified one, following adjustments are required: a. Set the distortion of the Distortion Generator to 3%. Adjust VR751 so that the indicated distortion on the Bargraph stays the same when the output of the Distortion Generator is changed from +10 dB (3.16 V) to -10 dB (316 mV). b. Set the distortion of the Distortion Generator to 1% and adjust VR751 in the same manner as above step a. c. Set the distortion of the Distortion Generator to 0.3% and adjust VR752 in the same manner as above step a. d. Set the distortion of the Distortion Generator to 0.1% and adjust VR752 in the same manner as above step a. e. Repeat above steps a - d until specified tolerance is obtained. f. After the above steps are completed, set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V) 1% distortion and adjust VR753 to obtain 1% distortion on the Bargraph.

Note: Turn the Speed Calibration Control fully counterclockwise, then turn it clockwise approximately 7-1/2 times to set the Control to the center position.

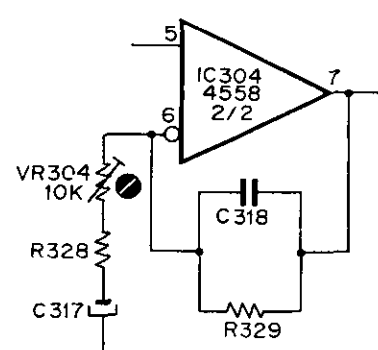


Fig. 5.1.12
10. UNWTD Output Level

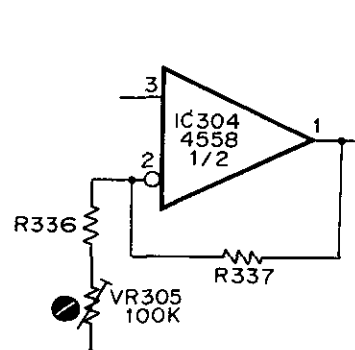


Fig. 5.1.13
11. Wow/Flutter Output Level

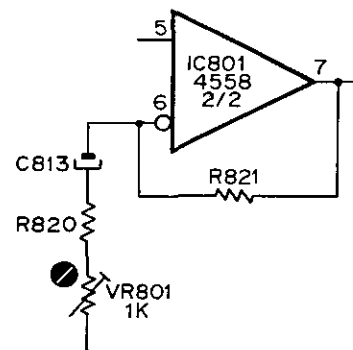


Fig. 5.1.14
12. Frequency Response and Distortion Output Level

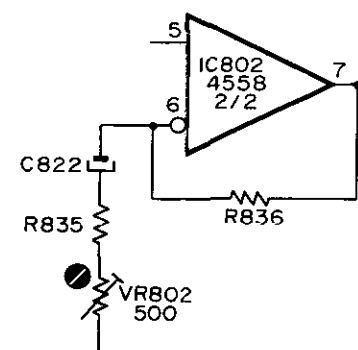


Fig. 5.1.15
13. Multiplier Output Level

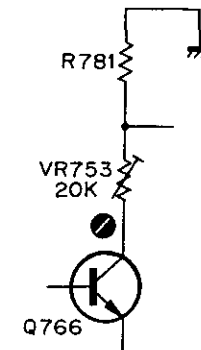


Fig. 5.1.16
13. Multiplier Output Level

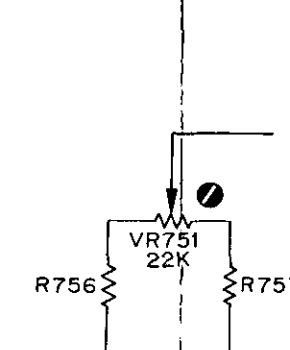


Fig. 5.1.17
13. Multiplier Output Level

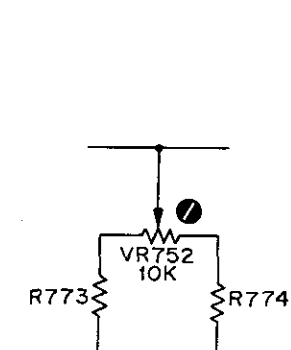


Fig. 5.1.18
13. Multiplier Output Level

5.2 Previous Type

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
1	Oscillator Frequency		Frequency Counter to Oscillator OUTPUT Jacks	Function - Level Oscillator - 400 Hz Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Switch P.C.B. VC301	Adjust VC301 to obtain 400 Hz on the Frequency Counter.
2	Oscillator Distortion		Distortion Meter to Oscillator OUTPUT Jack	Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Osc. P.C.B. VR302	Adjust VR302 to obtain 0.06% - 0.07% distortion. Note: Connect an Oscilloscope to the Output of the Distortion Meter and check to insure that no humming noise is included in the signal.
3	Oscillator Output Level		VTVM to Oscillator OUTPUT Jacks	Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Osc. P.C.B. VR301	Adjust VR301 to obtain 1.2 V on the VTVM.
4	Absolute Output Level	Oscillator to INPUT Jacks	DC Voltmeter to TP-L, TP-R (Absolute Rectifier P.C.B.)	Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Absolute Rectifier P.C.B. VR701, VR801	Feed in 1 kHz 1 V and adjust VR701 (VR801) to obtain -1.5 V on the DC Voltmeter. Note: Input level should be measured with connecting T-100.
5	Log. Output Level	Oscillator to INPUT Jacks	DC Voltmeter to CN22-1, CN22-2	Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Linear/Log. Converter P.C.B. VR103, VR203	Feed in 1 kHz 1 V and adjust VR103 (VR203) to obtain 2.18 V on the DC Voltmeter.
6	Bargraph Full Scale	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Display P.C.B. VR701	Feed in 1 kHz 1 V and adjust VR701 so that the Bargraph indicates 0 dB. Note: Adjust VR702 only if circuit is repaired.

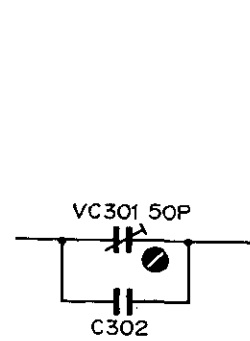


Fig. 5.2.1
1. Oscillator Frequency

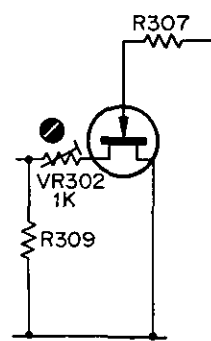


Fig. 5.2.2
2. Oscillator Distortion

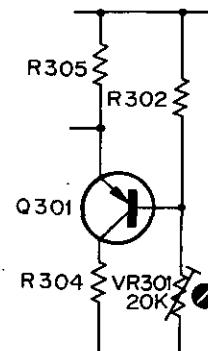


Fig. 5.2.3
3. Oscillator Output Level

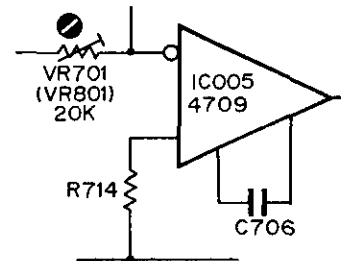


Fig. 5.2.4
4. Absolute Output Level

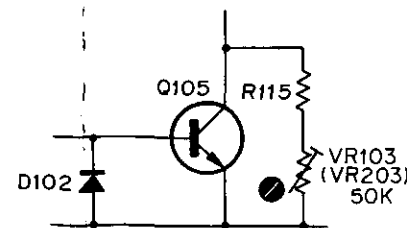


Fig. 5.2.5
5. Log. Output Level

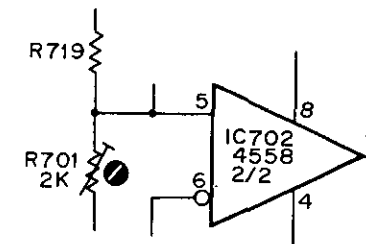


Fig. 5.2.6
6. Bargraph Full Scale

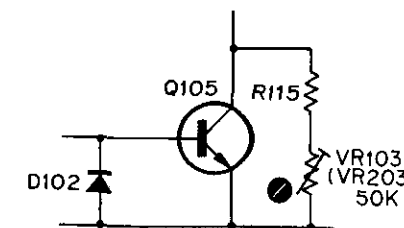


Fig. 5.2.7
7. Log. Adjustment

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
7	Log. Output Level Log. Dynamic Range Log. Offset	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Linear/Log. Converter P.C.B. VR103, VR203 VR102, VR202 VR101, VR201	Feed in 1 kHz +10 dB (3.16 V), 0 dB (1 V), -10 dB (316 mV), or -20 dB (100 mV) and check whether the Bargraph indicates +10 dB, 0 dB, -10 dB, or -20 dB. (Allowance of error is within ±1 segment on the Bargraph.) If above is not obtained perform the following steps: 1. Feed in +10 dB (3.16 V), and adjust VR103 for the left channel and VR203 for the right channel to obtain +10 dB on the Bargraph. 2. Feed in -10 dB (316 mV) and adjust VR102 for the left channel and VR202 for the right channel to obtain -10 dB on the Bargraph. 3. Feed in -20 dB (100 mV) and adjust VR101 for the left channel and VR201 for the right channel to obtain -20 dB on the Bargraph. 4. Repeat above steps 1 - 3 until the error between input level and indicated value on the Bargraph becomes within ±1 segment on the Bargraph in each input level.
8	Peak Level	Oscillator to INPUT Jacks		Function - Noise-A (-40 dB) Meter Range - 1% Input Level - 1 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	Volume P.C.B. VR102, VR202	Feed in 1 kHz 0 dB (1 V) and adjust VR102 (VR202) to obtain 0 dB on the Bargraph.
9	WTD-A Output Level	Oscillator to INPUT Jacks		Function - Level Meter Range - 1% Input Level - 10 V Speed Cal. VR - Not specified Input Level VR - Max. Osc. Output VR - Max.	WTD (IHF-A) Network P.C.B. VR101, VR201	Feed in 1 kHz -20 dB (100 mV) and adjust VR101 (VR201) to obtain 0 dB on the Bargraph.
10	Speed	Oscillator and Frequency Counter to INPUT Jacks		Function - Wow/Flutter Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR302, VR303	1. Feed in 2,910 Hz ±1 Hz 1 V and adjust VR302 to obtain -3% speed on the Bargraph. 2. Feed in 3,090 Hz ±1 Hz 1 V and adjust VR303 to obtain +3% speed on the Bargraph.
11	UNWTD Output Level	Standard Wow/Flutter Generator to INPUT Jacks		Function - Unweighted Meter Range - 1% Input Level - 1V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR304	1. Set the Standard Wow/Flutter Generator to the following modes: Center Frequency - 3 kHz Wow Frequency - 4 Hz Wow/Flutter - 1% (peak) Output Level - 0.5 to 2 V 2. Adjust VR304 to obtain 1% wow/flutter on the Bargraph.

Note: Turn the Speed Calibration Control fully counterclockwise, then turn it clockwise approximately 7-1/2 times to set the Control to the center position.

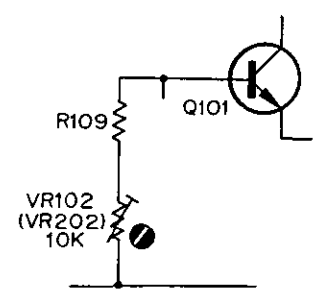


Fig. 5.2.8
7. Log. Adjustment

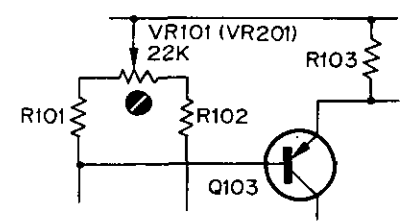


Fig. 5.2.9
7. Log. Adjustment

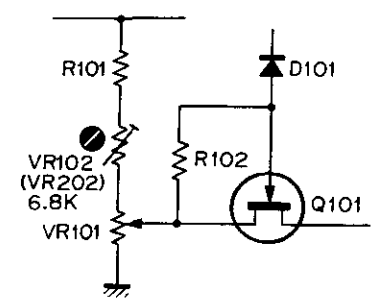


Fig. 5.2.10
8. Peak Level

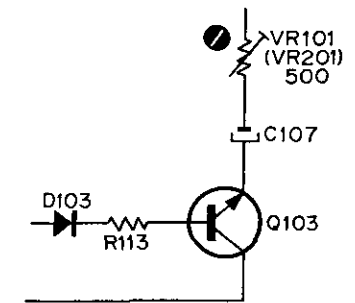


Fig. 5.2.11
9. WTD-A Output Level

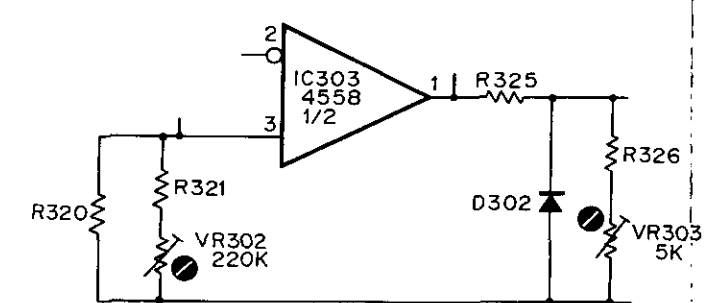


Fig. 5.2.12
10. Speed

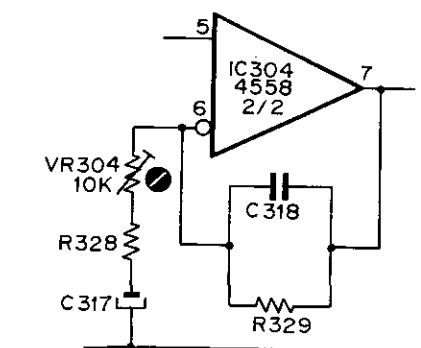


Fig. 5.2.13
11. UNWTD Output Level

STEP	ITEM	SIGNAL SOURCE	OUTPUT CONNECTION	MODE	ADJUSTMENT	REMARKS
12	Wow/Flutter Output Level	Standard Wow/Flutter Generator to INPUT Jacks		Function - Wow/Flutter Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Wow/Flutter P.C.B. VR305	<ol style="list-style-type: none"> Set the Standard Wow/Flutter Generator to the following modes: Center Frequency - 3 kHz Wow Frequency - 4 Hz Wow/Flutter - 1% (peak) Output Level - 0.5 to 2 V Adjust VR305 to obtain 1% wow/flutter on the Bargraph.
13	Frequency Response Distortion Output Level	Oscillator and Frequency Counter to INPUT Jacks	VTVM to SCOPE OUTPUT Jack	Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Distortion P.C.B. VR801, VR802	<ol style="list-style-type: none"> Feed in 2.5 kHz \pm10 Hz 100 mV and read the level on the VTVM. Feed in 760 Hz \pm10 Hz 100 mV and adjust VR801 to obtain the same level as above step 1. Repeat above steps 1 and 2 until the difference of the levels between steps 1 and 2 becomes 0. Feed in 2.5 kHz \pm10 Hz 100 mV and adjust VR802 to obtain 2.87 V on the VTVM.
14	Multiplier Output Level	Standard Distortion Generator to INPUT Jacks		Function - T.H. Dist. Meter Range - 1% Input Level - 1 V Speed Cal. VR - Center (See note) Input Level VR - Max. Osc. Output VR - Max.	Analog Multiplier P.C.B. VR753, VR751, VR752	<ol style="list-style-type: none"> Set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V) 1% distortion. Adjust VR753 to obtain 1% T.H. Distortion on the Bargraph. Set the output of the Distortion Generator to 0 dB (1 V) or -10 dB (316 mV) and check to insure that the Bargraph indicates 0 dB or -10 dB with a tolerance of \pm1 segment. Set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V), 0 dB (1 V), or -10 dB (316 mV) in 3%, 0.3%, or 0.1% distortion. Then check to insure that the tolerance of the Bargraph against the input level is within the following specified range: Tolerance: 0.3%, 1%, 3% \pm1 segment 0.1% \pm2 segments If above does not comply with the specified one, following adjustments are required: <ol style="list-style-type: none"> Set the distortion of the Distortion Generator to 3%. Adjust VR751 so that the indicated distortion on the Bargraph stays the same when the output of the Distortion Generator is changed from +10 dB (3.16 V) to -10 dB (316 mV). Set the distortion of the Distortion Generator to 1% and adjust VR751 in the same manner as above step a. Set the distortion of the Distortion Generator to 0.3% and adjust VR752 in the same manner as above step a. Set the distortion of the Distortion Generator to 0.1% and adjust VR752 in the same manner as above step a. Repeat above steps a - d until specified tolerance is obtained. After the above steps are completed, set the output of the Distortion Generator to 400 Hz +10 dB (3.16 V) 1% distortion and adjust VR753 to obtain 1% distortion on the Bargraph.

Note: Turn the Speed Calibration Control fully counterclockwise, then turn it clockwise approximately 7-1/2 times to set the Control to the center position.

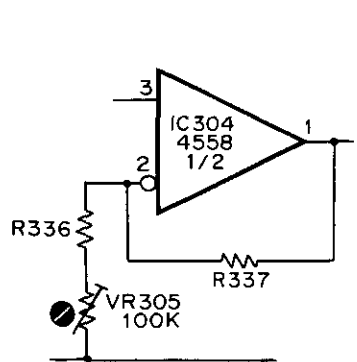


Fig. 5.2.14
12. Wow/Flutter Output Level

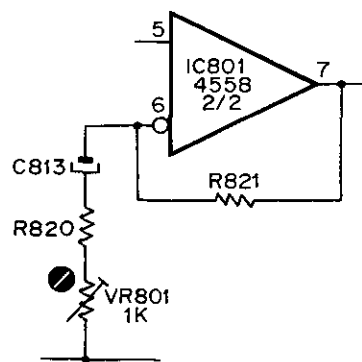


Fig. 5.2.15
13. Frequency Response and Distortion Output Level

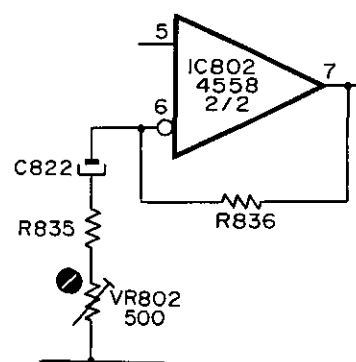


Fig. 5.2.16

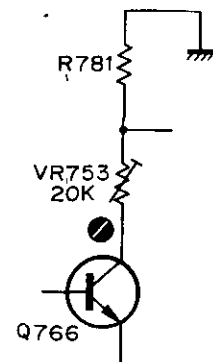


Fig. 5.2.17
14. Multiplier Output Level

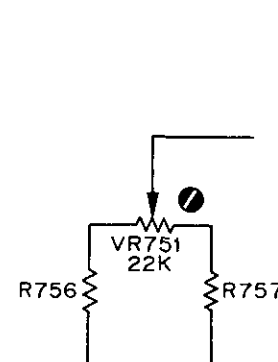


Fig. 5.2.18
14. Multiplier Output Level

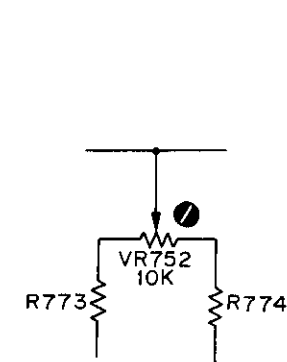


Fig. 5.2.19
14. Multiplier Output Level

6. MOUNTING DIAGRAMS, CIRCUIT DIAGRAMS AND PARTS LIST

Note: Mounting diagram shows a dip side view of the printed circuit board.

6.1. IC Block Diagrams

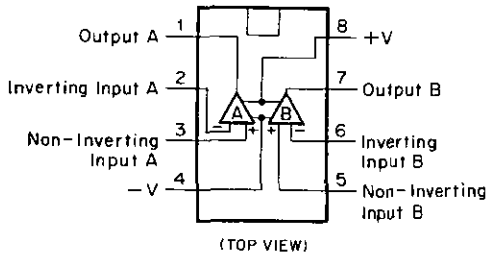


Fig. 6.1.1 OP Amp. IC 4558

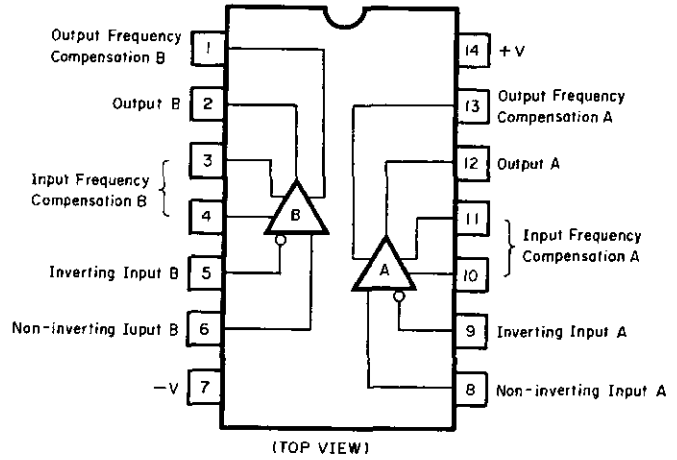


Fig. 6.1.2 OP Amp. IC 4709

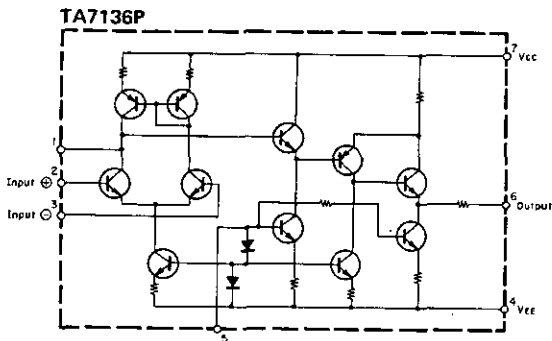


Fig. 6.1.3 OP Amp. IC TA7136P

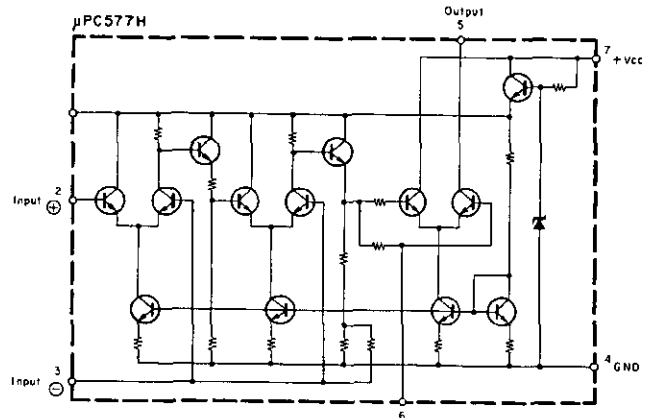


Fig. 6.1.4 FM IF Amp. IC μPC577H

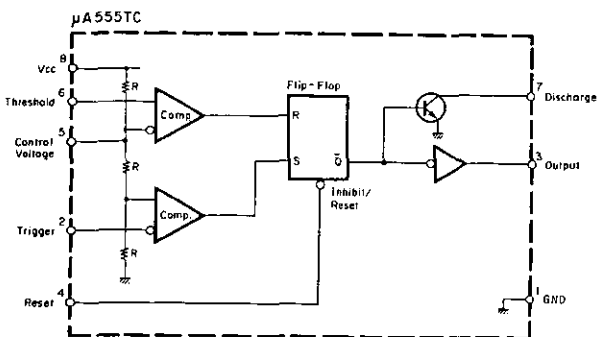


Fig. 6.1.5 Timer IC μA555TC

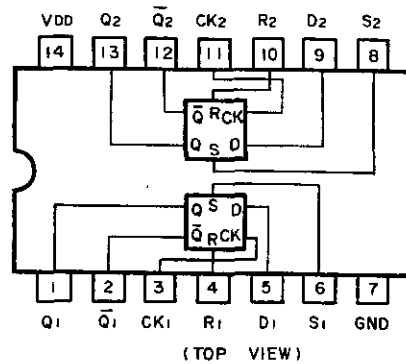


Fig. 6.1.6 D-Type Flip-Flop C-MOS IC TC4013BP

6.2. Connector P.C.B. Ass'y

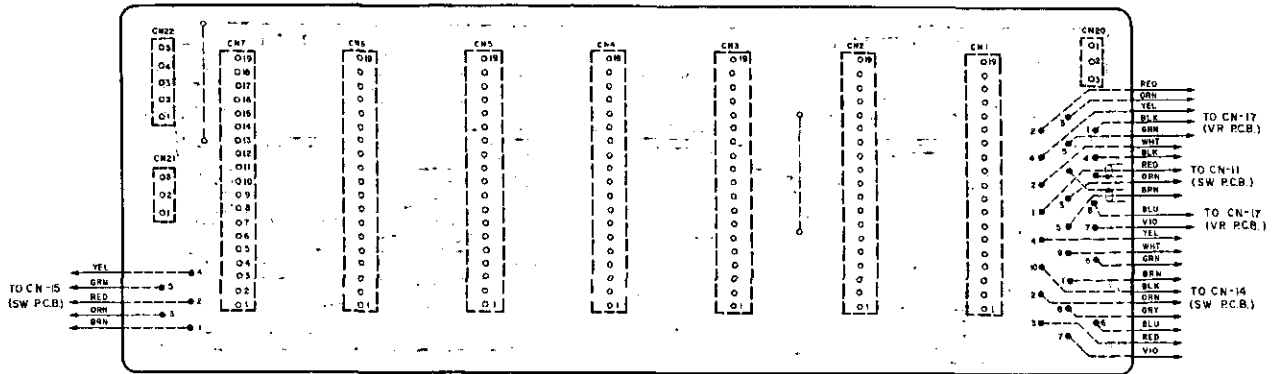


Fig. 6.2.1

Schematic Ref. No.	Part No.	Description
	BA03893A	Connector P.C.B. Ass'y
	0B07751B	Connector P.C.B.
	BA03808A	19P Connector Ass'y (7 pcs.)
	0B08435A	CN Connector A (1 pce.)
	0B08436A	CN Connector B (1 pce.)
	0B08437B	CN Connector C (1 pce.)
	0B08438A	CN Connector D (1 pce.)
	0B08185A	3P-T Post (2 pcs.)
	0B08183A	5P-T Post (1 pce.)

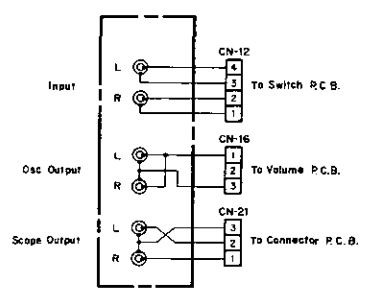
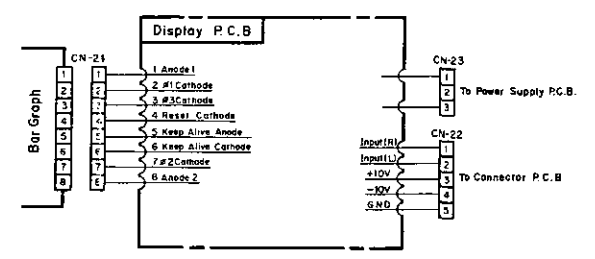
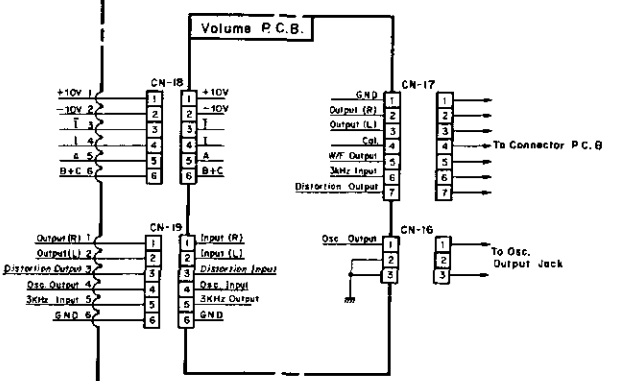
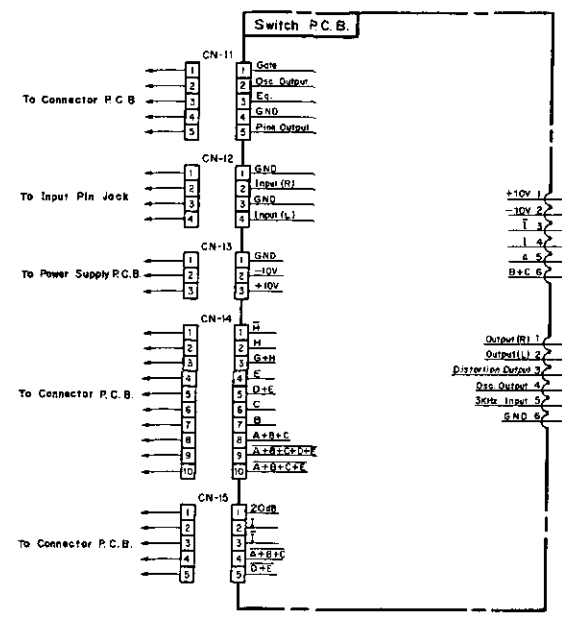
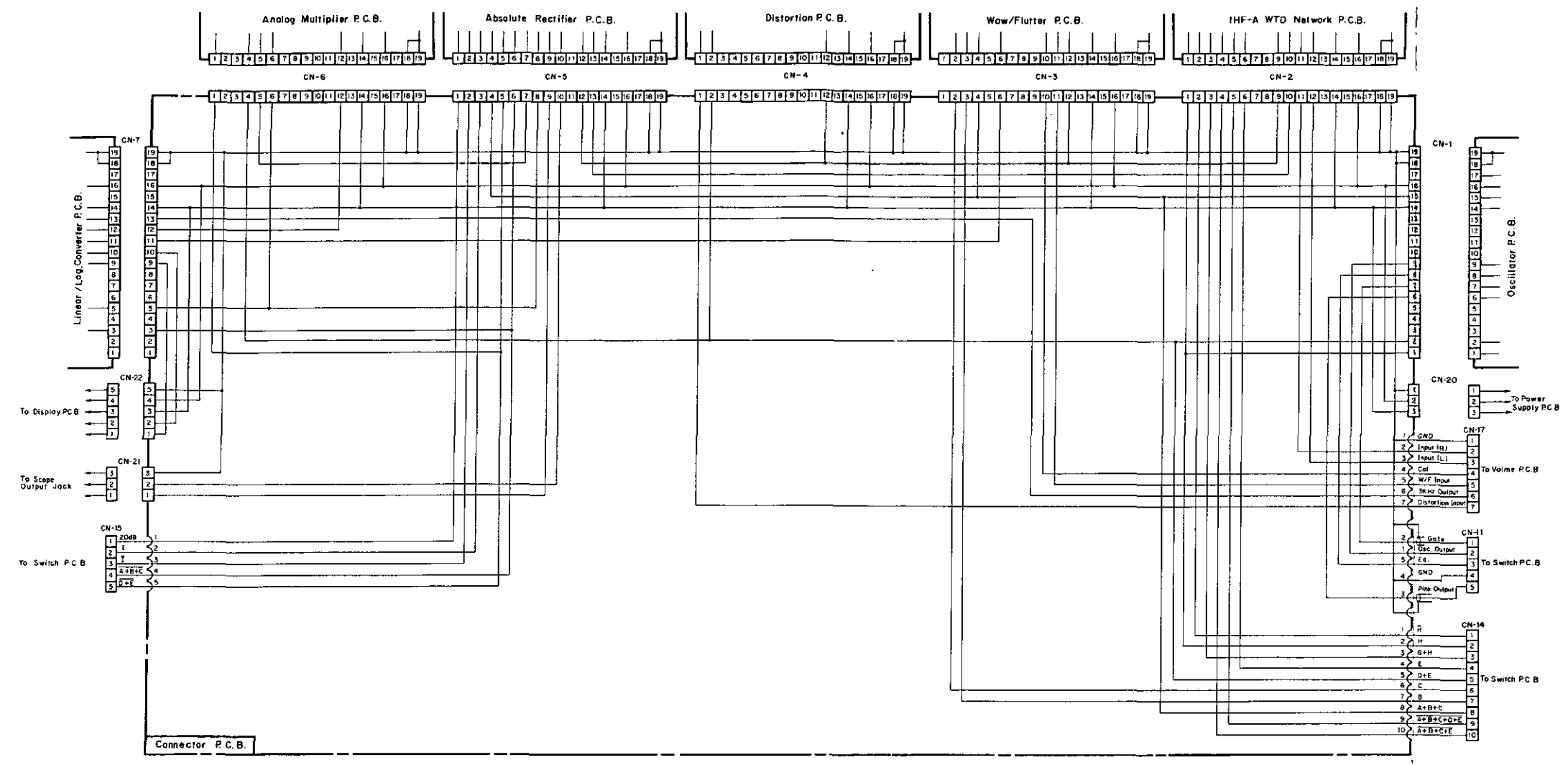


Fig. 6.2.2 Connecting Diagram

6.3. Power Supply P.C.B. Ass'y

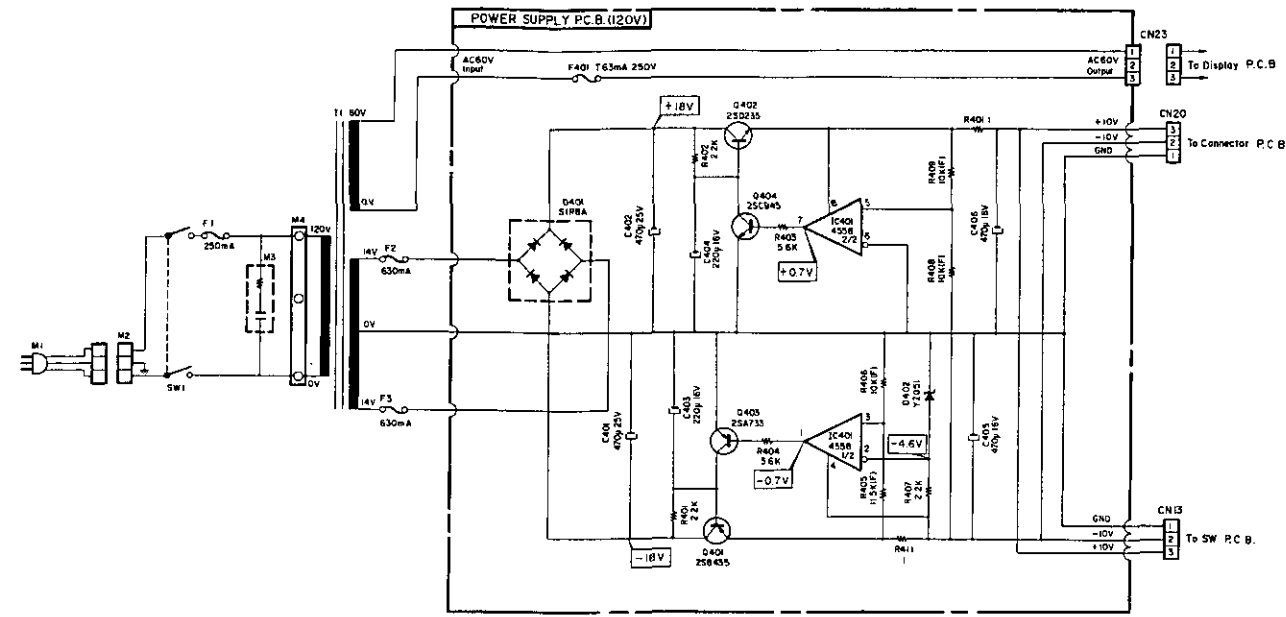


Fig. 6.3.1 120 V

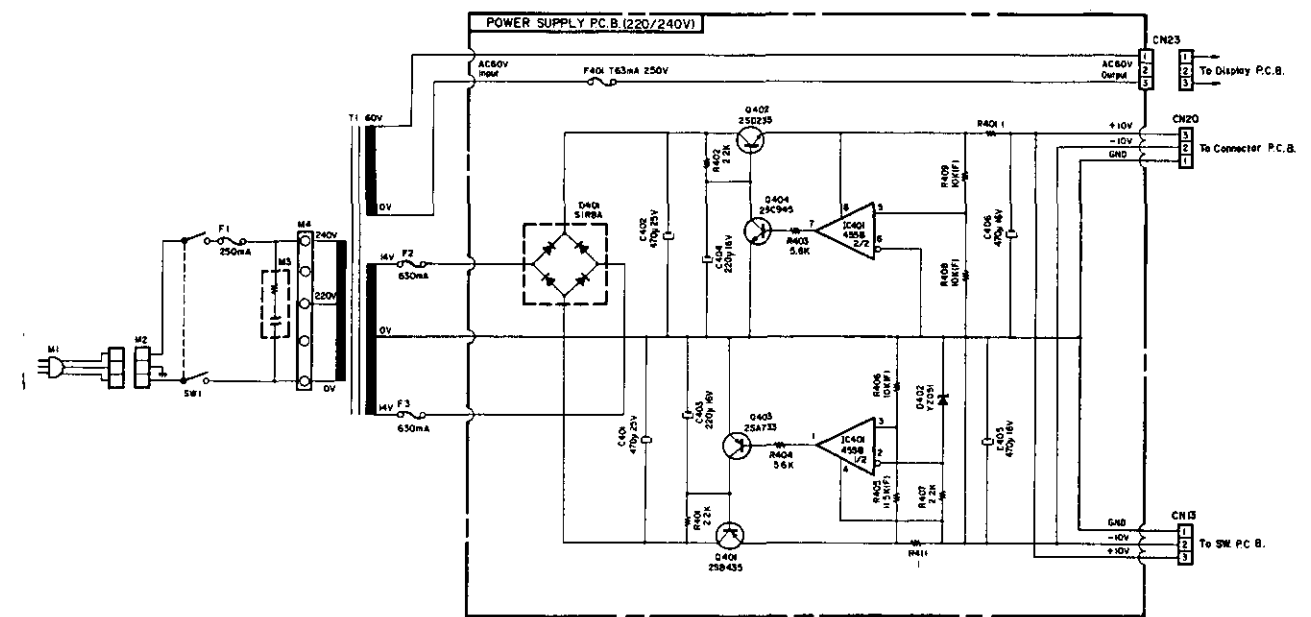


Fig. 6.3.3 220 V/240 V

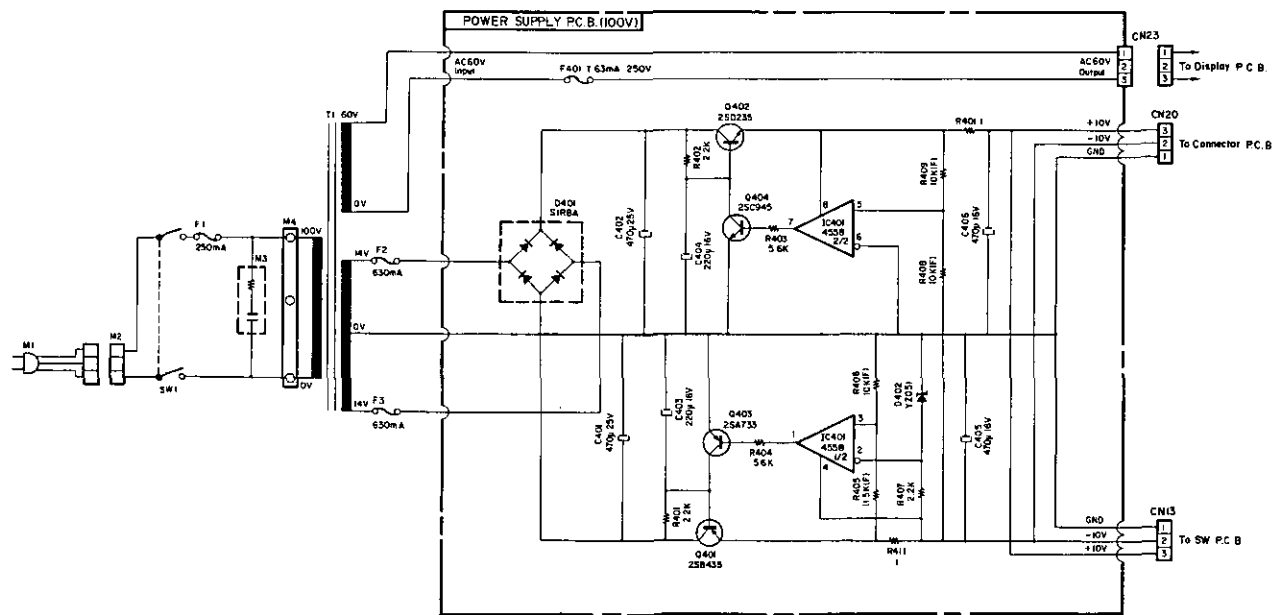


Fig. 6.3.2 100 V

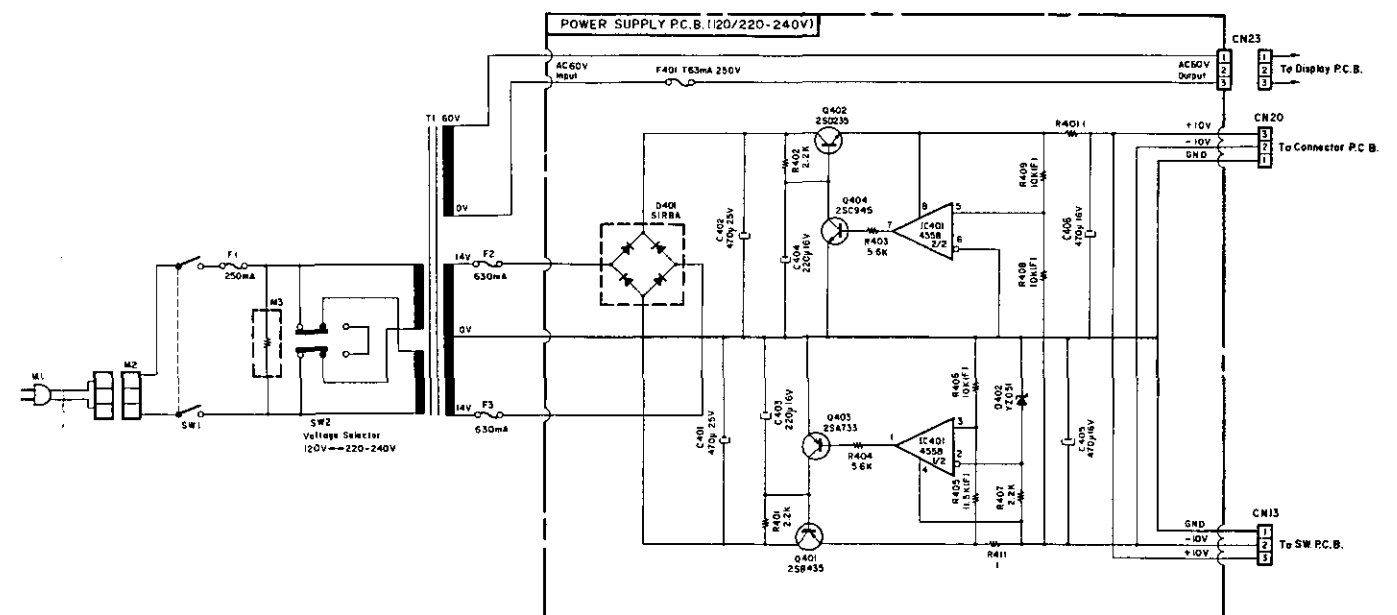


Fig. 6.3.4 120 V/120-240 V

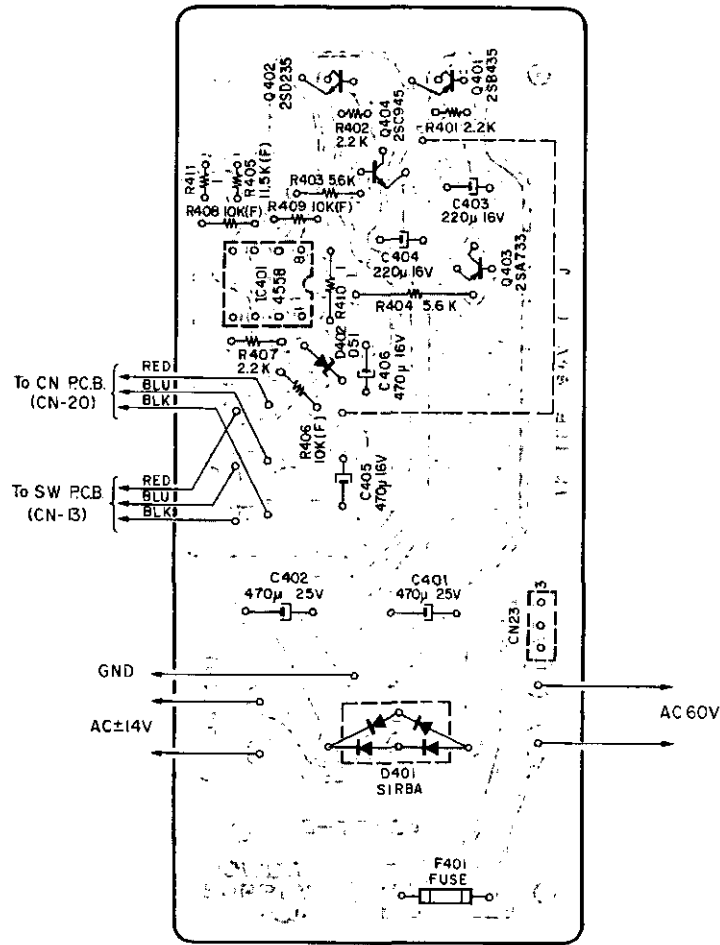


Fig. 6.3.5

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03892A	Power Supply P.C.B. Ass'y	CN23	0B08185A	3P-T Post
	0B07742B	Power Supply P.C.B.		0B08345A	Fuse T 63mA 250V (1 pce.)
IC401	0B06124B	IC RC4558D		0B08349A	Fuse Clip (2 pcs.)
Q401	0B06011A	Transistor 2SB435		0B08430A	P-S Connector A 3PH (1 pce.)
Q402	0B01823A	Transistor 2SD235		0B08431A	P-S Connector B 3PH (1 pce.)
Q403	0B06013A	Transistor 2SA733		0B08077B	Motor Governor P.C.B. Holder (1 pce.)
Q404	0B06100A	Transistor 2SC945 (A)		0J03740B	Heat Sink E1 (1 pce.)
D401	0B06088A	Diode Bridge 1SRBA 1A 100V		0E00606A	Screw M3x6 Philips Pan Head (3A) (3 pcs.)
D402	0B06058A	Zener Diode YZ051		0E00608A	Screw M3x10 Philips Pan Head (3A) (3 pcs.)
R401,402	0B05566A	Carbon Resistor 2.2K ERD-25V J		0E00507A	Nut Hex. M3 (2 pcs.)
R403,404	0B01887A	Carbon Resistor 5.6K ERD-25T J		0B05206A	Glass Tube 12mm (4 pcs.)
R405	0B09071A	Metal Film Resistor 11.5K ERO-25CK F		0M03773A	Fuse Label T 63mA (1 pce.)
R406,408	0B09014A	Metal Film Resistor 10K ERO-25CK F			
R410,411	0B05941A	Fail Safe Type Resistor 1 ERD-14F J			
C401,402	0B01401A	Electrolytic Capacitor 470µ 25V			
C403,404	0B01398A	Electrolytic Capacitor 220µ 16V			
C405,406	0B01392A	Electrolytic Capacitor 470µ 16V			

6.4. Wow & Flutter P.C.B. Ass'y

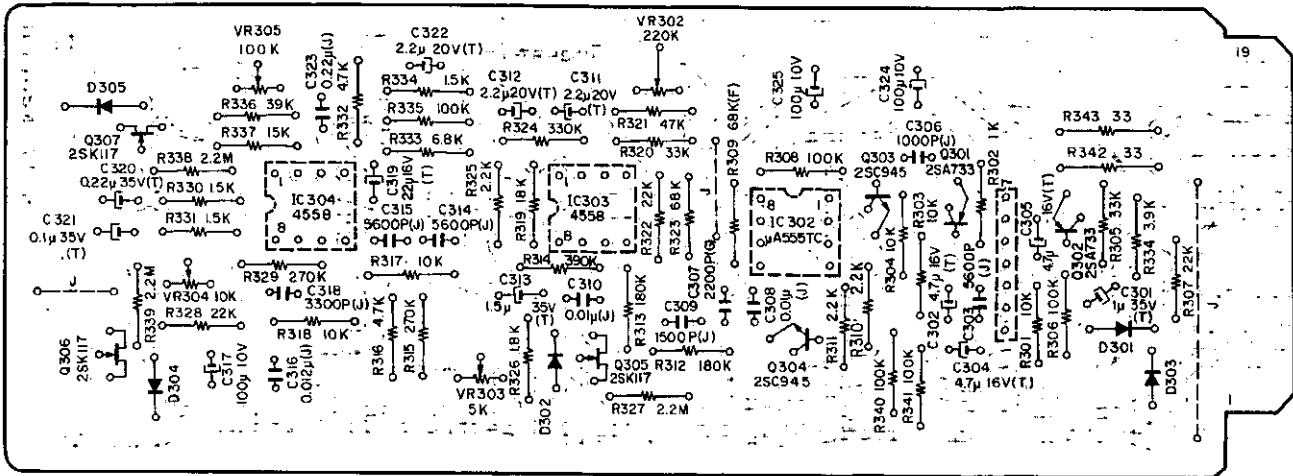
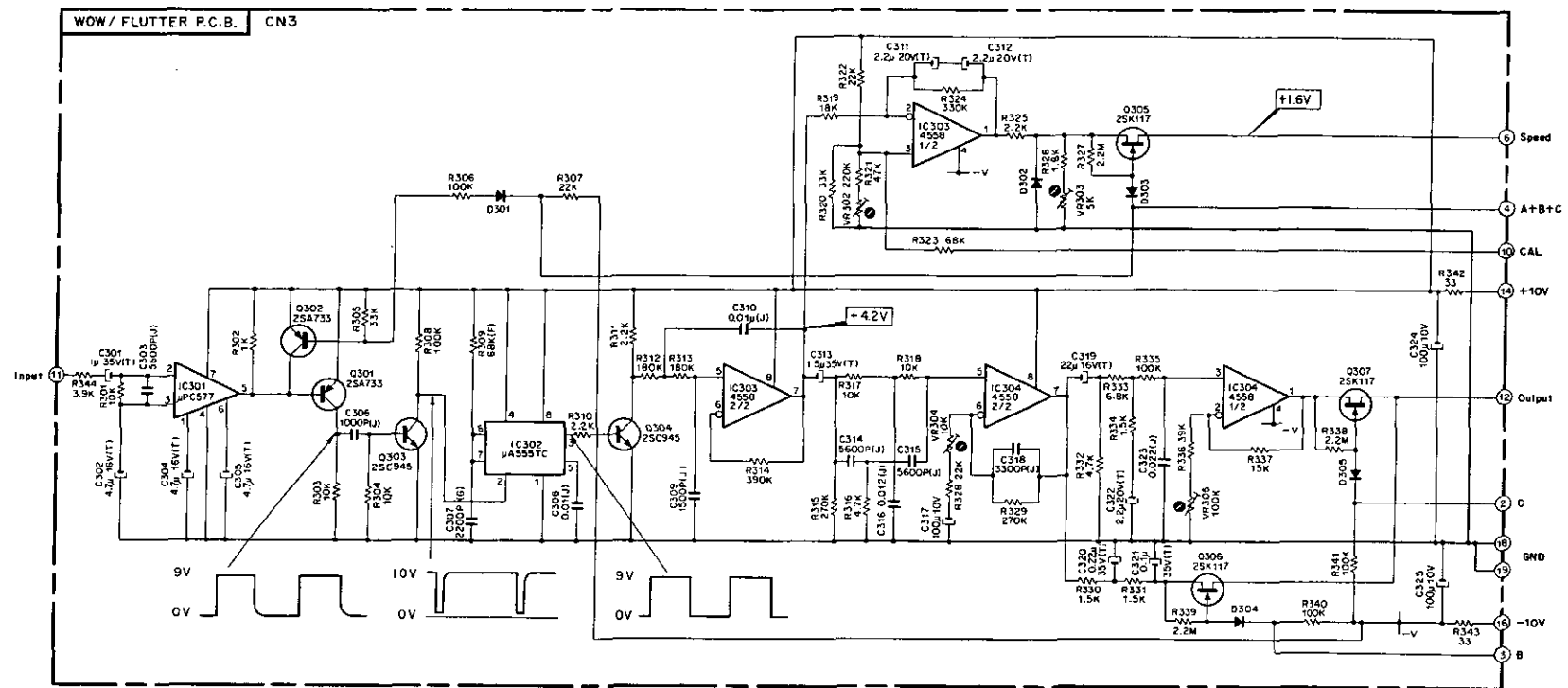


Fig. 6.4.1

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03884A	Wow & Flutter P.C.B. Ass'y	R326	0B05614A	Carbon Resistor 1.8K ERD-25T J
	0B07749B	Wow & Flutter P.C.B.	R327,338	0B05641A	Carbon Resistor 2.2M ERD-25T J
IC301	0B06114A	IC μ PC577H	339		
IC302	0B06137A	IC μ A555TC	R330,331	0B05698A	Carbon Resistor 1.5K ERD-25T J
IC303,304	0B06124B	IC RC4558D	334		
Q301,302	0B06013A	Transistor 2SA733	R333	0B01682A	Carbon Resistor 6.8K ERD-25T J
Q303,304	0B06100A	Transistor 2SC945 (A)	R336	0B01854A	Carbon Resistor 39K ERD-25T J
Q305,306	0B06129A	FET 2SK117	R337	0B01683A	Carbon Resistor 15K ERD-25T J
D301-305	0B01909A	Silicon Diode 1S1555 (5 pcs.)	R342,343	0B01713A	Carbon Resistor 33 ERD-25T J
VR302	0B07188A	Semi-fixed Volume 220K (B)	R344	0B05675A	Carbon Resistor 3.9K ERD-25T J
VR303	0B09059A	Semi-fixed Volume 5K (B)	C301	0B05638A	Tantalum Capacitor 1 μ 35V
VR304	0B07162A	Semi-fixed Volume 10K (B)	C302,304	0B05657A	Tantalum Capacitor 4.7 μ 16V
VR305	0B09060A	Semi-fixed Volume 100K (B)	305		
R301,303	0B01888A	Carbon Resistor 10K ERD-25T J	C303,314	0B05659A	Mylar Capacitor 5600P 50V J
304,317			315		
318			C306	0B05550A	Mylar Capacitor 1000P 50V J
R302	0B01857A	Carbon Resistor 1K ERD-25T J	C307	0B09035A	SP Capacitor 2200P 50V G
R305,320	0B05509A	Carbon Resistor 33K ERD-25T J	C308,310	0B05681A	Mylar Capacitor 0.01 μ 50V J
R306,308	0B01889A	Carbon Resistor 100K ERD-25T J	C309	0B05653A	Mylar Capacitor 1500P 50V J
335,340			C311,312	0B05598A	Tantalum Capacitor 2.2 μ 20V
341			322		
R307,322	0B05615A	Carbon Resistor 22K ERD-25T J	C313	0B05639A	Tantalum Capacitor 1.5 μ 35V
328			C316	0B05843A	Mylar Capacitor 0.012 μ 50V J
R309	0B09013A	Metal Film Resistor 68K ERO-25CK F	C317,324	0B05885A	Electrolytic Capacitor 100 μ 10V
R310,311	0B05622A	Carbon Resistor 2.2K ERD-25T J	325		
325			C318	0B01914A	Mylar Capacitor 3300P 50V J
R312,313	0B05640A	Carbon Resistor 180K ERD-25T J	C319	0B05636A	Tantalum Capacitor 22 μ 16V
R314	0B05676A	Carbon Resistor 390K ERD-25T J	C320	0B05772A	Tantalum Capacitor 0.22 μ 35V
R315,329	0B05620A	Carbon Resistor 270K ERD-25T J	C321	0B05781A	Tantalum Capacitor 0.1 μ 35V
R316,332	0B01846A	Carbon Resistor 4.7K ERD-25T J	C323	0B05582A	Mylar Capacitor 0.022 μ 50V J
R319	0B05560A	Carbon Resistor 18K ERD-25T J	0B05202A	Glass Tube 25mm (2 pcs.)	
R321	0B05641A	Carbon Resistor 47K ERD-25T J			
R323	0B05692A	Carbon Resistor 68K ERD-25T J			
R324	0B05627A	Carbon Resistor 330K ERD-25T J			



Conditions:
 Input Signal — 3000 Hz ($\pm 0.1\%$), 30 mV or more
 Input Range SW — 0 dB
 Function Control — Speed Unweighted

Fig. 6.4.2 Note: Diode is 1SS53, 1S953 or 1S1555 unless otherwise specified.

6.5. Switch P.C.B. Ass'y

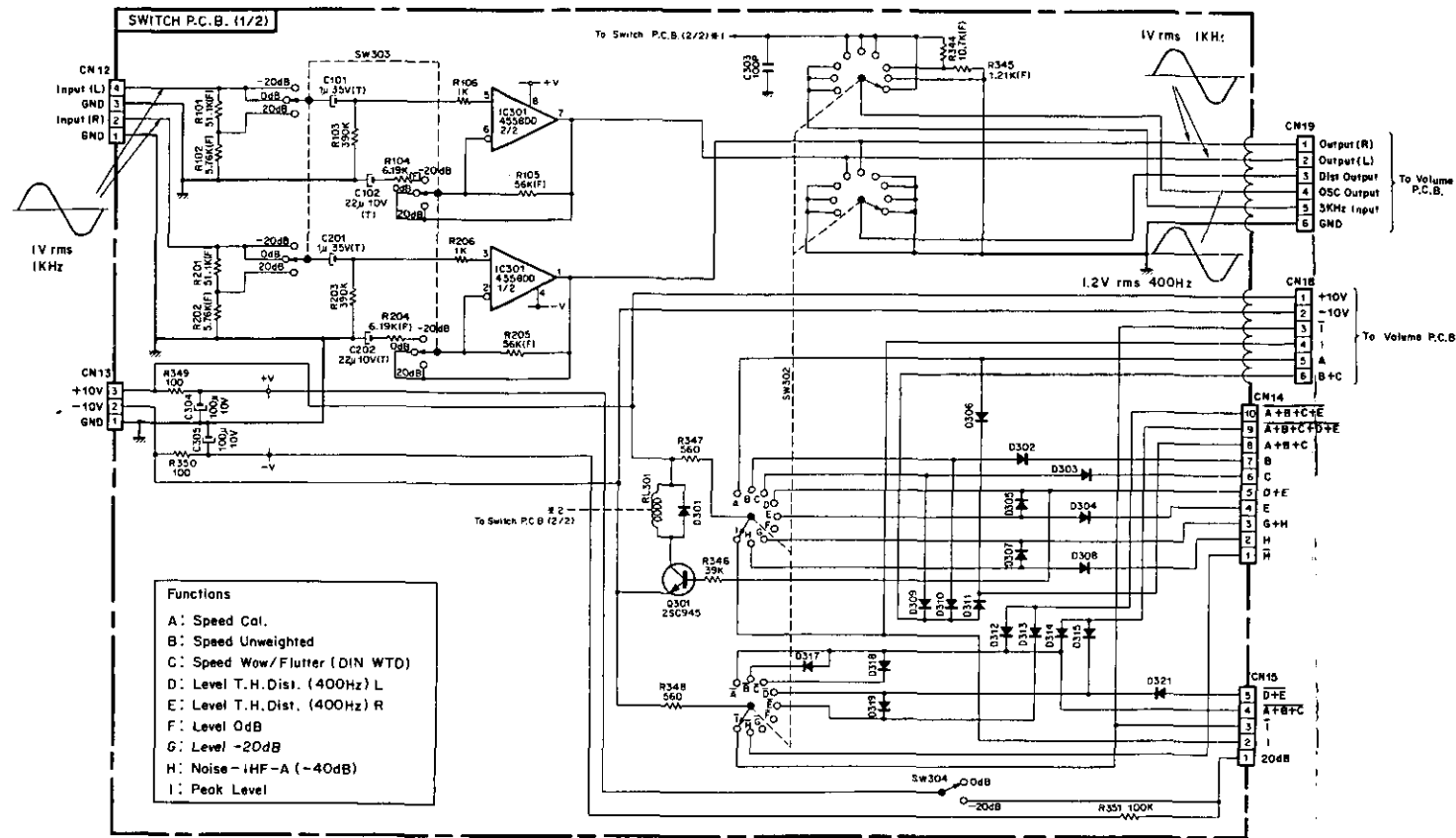


Fig. 6.5.1

Switch P.C.B. Ass'y

Conditions:
 Input Signal - 1 V rms 1 kHz
 Input Range SW - 0 dB
 Function Control - Level
 Oscillator Control - 400 Hz

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

6.6. Oscillator P.C.B. Ass'y

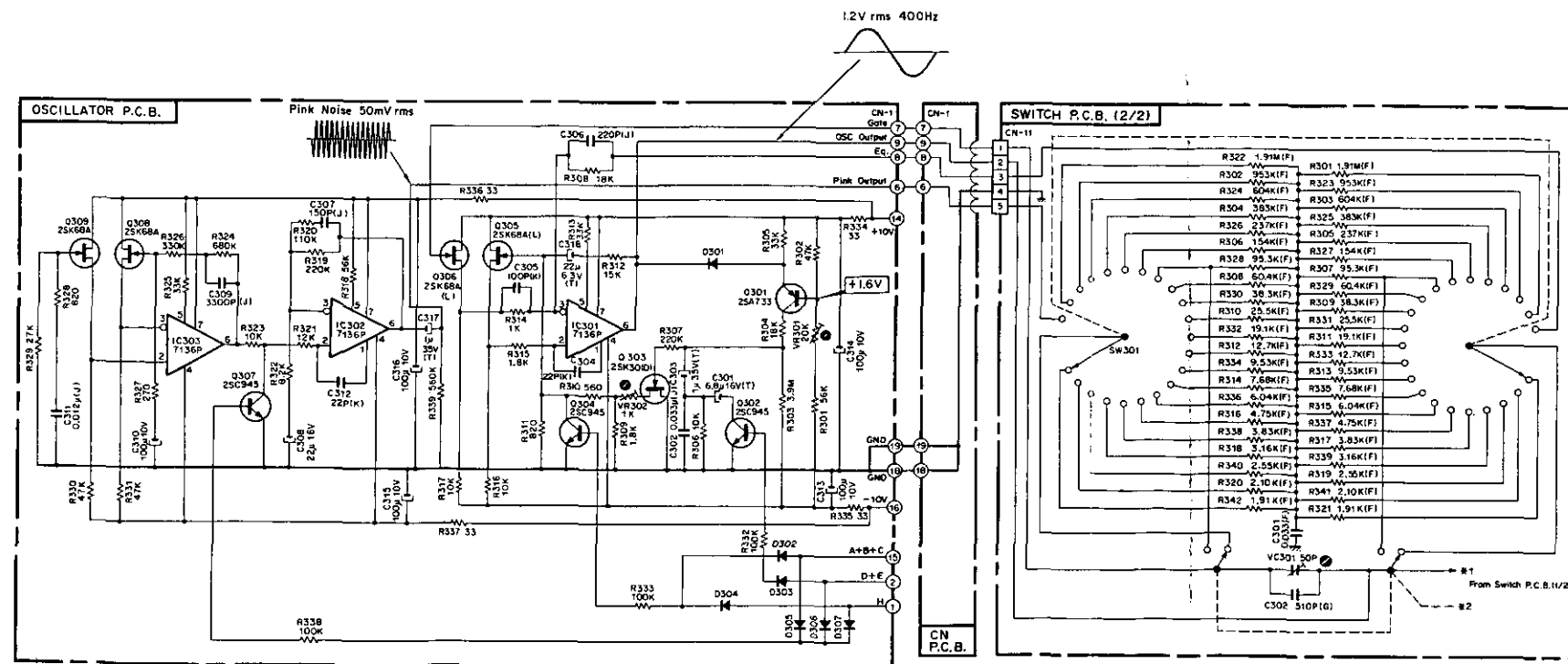


Fig. 6.6.1

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

Oscillator P.C.B. Ass'y

Conditions:
 Function Control - Level
 Oscillator Control - 400 Hz
 Osc. Output Control - Max.

Schematic Ref. No.	Part No.	Description
	BA03890A	Switch P.C.B. Ass'y
IC301	0B07740B	Switch P.C.B.
Q301	0B06146A	IC RC4558DD
D301-315	0B06100A	Transistor 2SC945 (A)
317-319	0B01909A	Silicon Diode 1S1555 (19 pcs.)
321		
R101,201	0B05985A	Metal Film Resistor 51.1K ERO-25CK F
R102,202	0B05978A	Metal Film Resistor 5.76K ERO-25CK F
R103,203	0B05676A	Carbon Resistor 390K ERD-25T J
R104,204	0B09011A	Metal Film Resistor 6.19K ERO-25CK F
R105,205	0B09012A	Metal Film Resistor 56K ERO-25CK F
R106,206	0B01857A	Carbon Resistor 1K ERD-25T J
R301	0B05993A	Metal Film Resistor 1.91M ERO-25CK F
R302	0B05992A	Metal Film Resistor 953K ERO-25CK F
R303	0B05991A	Metal Film Resistor 604K ERO-25CK F
R304	0B05990A	Metal Film Resistor 383K ERO-25CK F
R305	0B09066A	Metal Film Resistor 237K ERO-25CK F
R306	0B05988A	Metal Film Resistor 154K ERO-25CK F
R307	0B05987A	Metal Film Resistor 95.3K ERO-25CK F
R308	0B05986A	Metal Film Resistor 60.4K ERO-25CK F
R309	0B09008A	Metal Film Resistor 38.3K ERO-25CK F
R310	0B05984A	Metal Film Resistor 25.5K ERO-25CK F
R311	0B05983A	Metal Film Resistor 19.1K ERO-25CK F
R312	0B05999A	Metal Film Resistor 12.7K ERO-25CK F
R313	0B05981A	Metal Film Resistor 9.53K ERO-25CK F
R314	0B05980A	Metal Film Resistor 7.68K ERO-25CK F
R315	0B05979A	Metal Film Resistor 6.04K ERO-25CK F
R316	0B05977A	Metal Film Resistor 4.75K ERO-25CK F
R317	0B05976A	Metal Film Resistor 3.83K ERO-25CK F
R318	0B05975A	Metal Film Resistor 3.16K ERO-25CK F
R319	0B09065A	Metal Film Resistor 2.55K ERO-25CK F
R320	0B09064A	Metal Film Resistor 2.10K ERO-25CK F
R321	0B09063A	Metal Film Resistor 1.91K ERO-25CK F
R322	0B09030A	Metal Film Resistor 1.91M ERO-25VK F
R323	0B09029A	Metal Film Resistor 953K ERO-25VK F
R324	0B09028A	Metal Film Resistor 604K ERO-25VK F
R325	0B09027A	Metal Film Resistor 383K ERO-25VK F
R326	0B09070A	Metal Film Resistor 237K ERO-25VK F
R327	0B09025A	Metal Film Resistor 154K ERO-25VK F
R328	0B09024A	Metal Film Resistor 95.3K ERO-25VK F
R329	0B09023A	Metal Film Resistor 60.4K ERO-25VK F
R330	0B09022A	Metal Film Resistor 38.3K ERO-25VK F
R331	0B09021A	Metal Film Resistor 25.5K ERO-25VK F
R332	0B09020A	Metal Film Resistor 19.1K ERO-25VK F
R333	0B09019A	Metal Film Resistor 12.7K ERO-25VK F
R334	0B09018A	Metal Film Resistor 9.53K ERO-25VK F
R335	0B09017A	Metal Film Resistor 7.68K ERO-25VK F
R336	0B09016A	Metal Film Resistor 6.04K ERO-25VK F
R337	0B09015A	Metal Film Resistor 4.75K ERO-25VK F
R338	0B05998A	Metal Film Resistor 3.83K ERO-25VK F
R339	0B05997A	Metal Film Resistor 3.16K ERO-25VK F
R340	0B09069A	Metal Film Resistor 2.55K ERO-25VK F
R341	0B09068A	Metal Film Resistor 2.10K ERO-25VK F
R342	0B09067A	Metal Film Resistor 1.91K ERO-25VK F
R343	0B05982A	Metal Film Resistor 10.7K ERO-25CK F
R345	0B05971A	Metal Film Resistor 1.21K ERO-25CK F
R346	0B01854A	Carbon Resistor 39K ERD-25T J
R347,348	0B05575A	Carbon Resistor 560 ERD-25T J
R349,350	0B01679A	Carbon Resistor 100 ERD-25T J
R351	0B01889A	Carbon Resistor 100K ERD-25T J
VC301	0B01250A	Trimmer Capacitor 50P
C101,201	0B05638A	Tantalum Capacitor 1μ 35V

Schematic Ref. No.	Part No.	Description
C102,202	OB09044A	Tantalum Capacitor 22μ 10V
C301	OB09233A	PP Capacitor 0.033μ 100V F
C302	OB09057A	SP Capacitor 510P 50V G
C303	OB05892A	Ceramic Capacitor 100P 50V K
C304,305	OB05885A	Electrolytic Capacitor 100μ 10V
RL301	OB07171A	Relay 24V
SW301	OB07196A	Rotary Switch
SW302	OB07197A	Rotary Switch
SW303	OB08400A	Lever Switch
SW304	OB08399A	Lever Switch
CN11,15	OB08303A	5P-S Post
CN12	OB08375A	4P-S Post
CN13	OB08184A	3P-S Post
CN14	OB08286A	10P-S Post
	OB08439A	Switch Connector A 6PH (1 pce.)
	OB08440A	Switch Connector B 6PH (1 pce.)
	BA03882A	Oscillator P.C.B. Assy
IC301,302,303	OB07743B OB06068A	Oscillator P.C.B. IC 7136P
Q301	OB06013A	Transistor 2SA733
Q302,304,307	OB06100A	Transistor 2SC945 (A)
Q303	OB06001A	FET 2SK30 (D)
Q305,306	OB06159A	FET 2SK68A (L)
Q308,309	OB06067A	FET 2SK68A
D301-307	OB01909A	Silicon Diode 1S1555 (7 pcs.)
VR301	OB09061A	Semi-fixed Volume 20K (B)
VR302	OB09083A	Semi-fixed Volume 1K (B)
R301,318	OB05508A	Carbon Resistor 56K ERD-25T J
R302,330,331	OB05641A	Carbon Resistor 47K ERD-25T J
R303	OB05964A	Carbon Resistor 3.9M ERD-25T J
R304,308	OB05560A	Carbon Resistor 18K ERD-25T J
R305,313,325	OB05509A	Carbon Resistor 33K ERD-25T J
R306,316,317,323	OB01888A	Carbon Resistor 10K ERD-25T J
R307,319	OB05625A	Carbon Resistor 220K ERD-25T J
R309,315	OB05614A	Carbon Resistor 1.8K ERD-25T J
R310	OB05575A	Carbon Resistor 560 ERD-25T J
R311,328	OB01680A	Carbon Resistor 820 ERD-25T J
R312	OB01683A	Carbon Resistor 15K ERD-25T J
R314	OB01857A	Carbon Resistor 1K ERD-25T J
R320	OB09072A	Carbon Resistor 110K ERD-25T J
R321	OB05771A	Carbon Resistor 12K ERD-25T J
R322	OB01856A	Carbon Resistor 8.2K ERD-25T J
R324	OB05868A	Carbon Resistor 680K ERD-25T J
R326	OB05627A	Carbon Resistor 330K ERD-25T J
R327	OB05645A	Carbon Resistor 270 ERD-25T J
R329	OB05743A	Carbon Resistor 27K ERD-25T J
R332,333,338	OB01889A	Carbon Resistor 100K ERD-25T J
R334,335,336,337	OB01713A	Carbon Resistor 33 ERD-25T J
R339	OB05784A	Carbon Resistor 560K ERD-25T J
C301	OB05769A	Tantalum Capacitor 6.8μ 16V
C302	OB05583A	Mylar Capacitor 0.033μ 50V J
C303,317	OB05638A	Tantalum Capacitor 1μ 35V
C304,312	OB05806A	Ceramic Capacitor 22P 50V K
C305	OB05892A	Ceramic Capacitor 100P 50V K
C306	OB05532A	SP Capacitor 220P 50V J
C307	OB09073A	SP Capacitor 150P 50V J
C308	OB01862A	Electrolytic Capacitor 22μ 16V
C309	OB01914A	Mylar Capacitor 3300P 50V J
C310,313,316	OB05885A	Electrolytic Capacitor 100μ 10V
C311	OB05843A	Mylar Capacitor 0.012μ 50V
C318	OB09119A	Tantalum Capacitor 22μ 6.3V
	OB08507A	Oscillator Shield Plate (1 pce.)
	OB08405A	Oscillator Shield Case E1 (1 pce.)
	OB05202A	Glass Tube 25mm (4 pcs.)

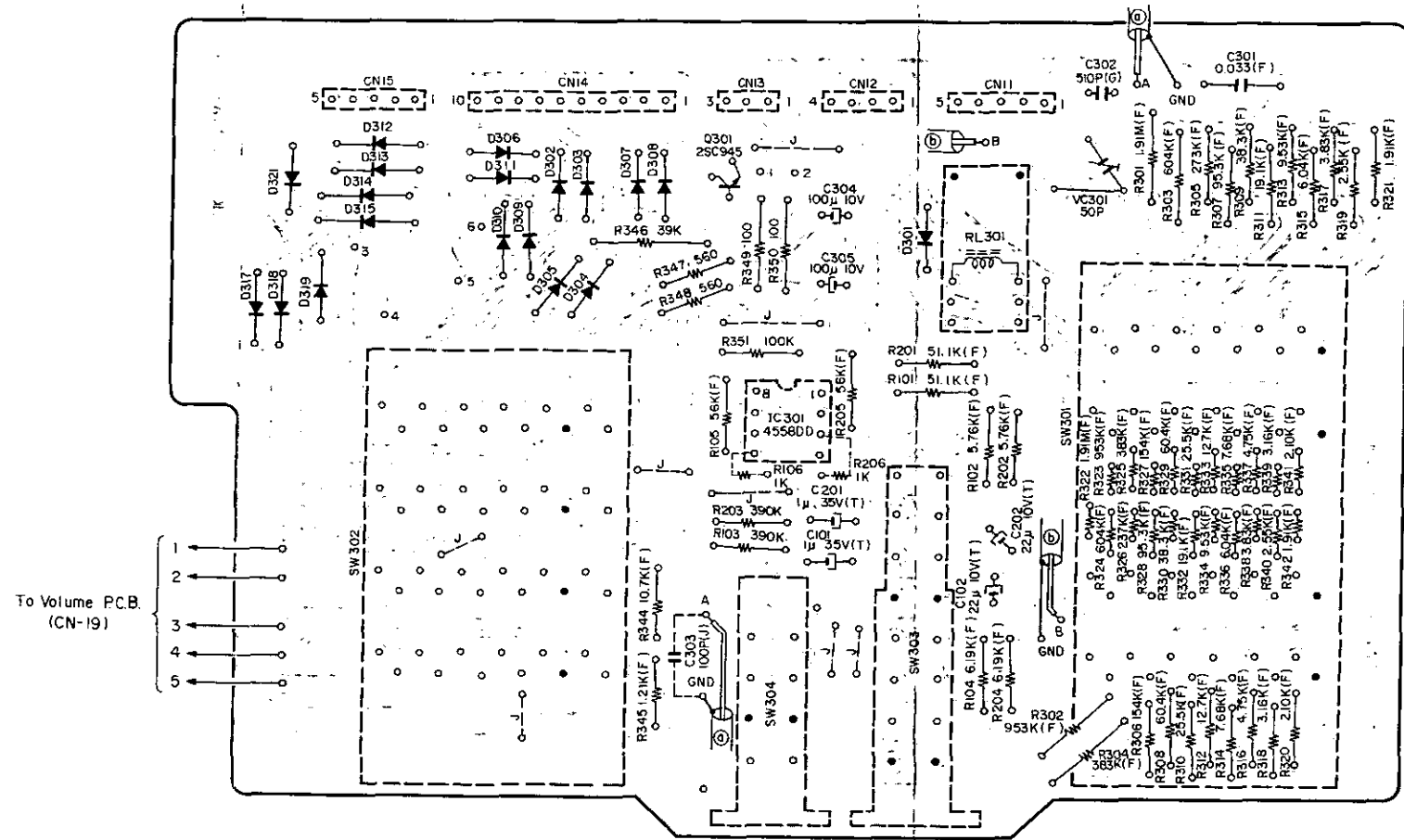


Fig. 6.5.2

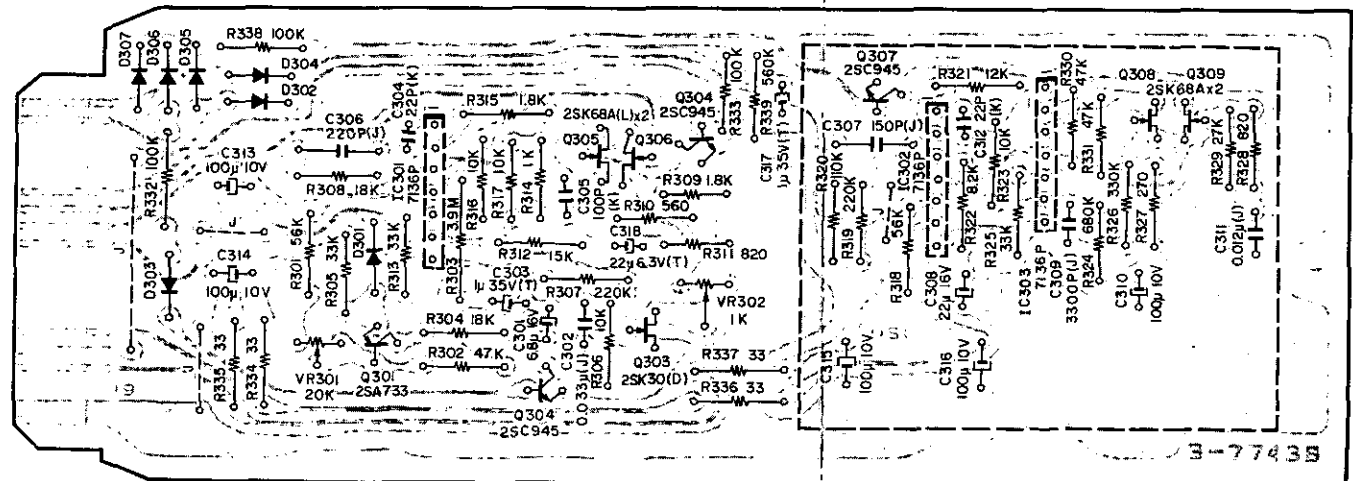


Fig. 6.6.2

6.7. Absolute Rectifier P.C.B. Ass'y

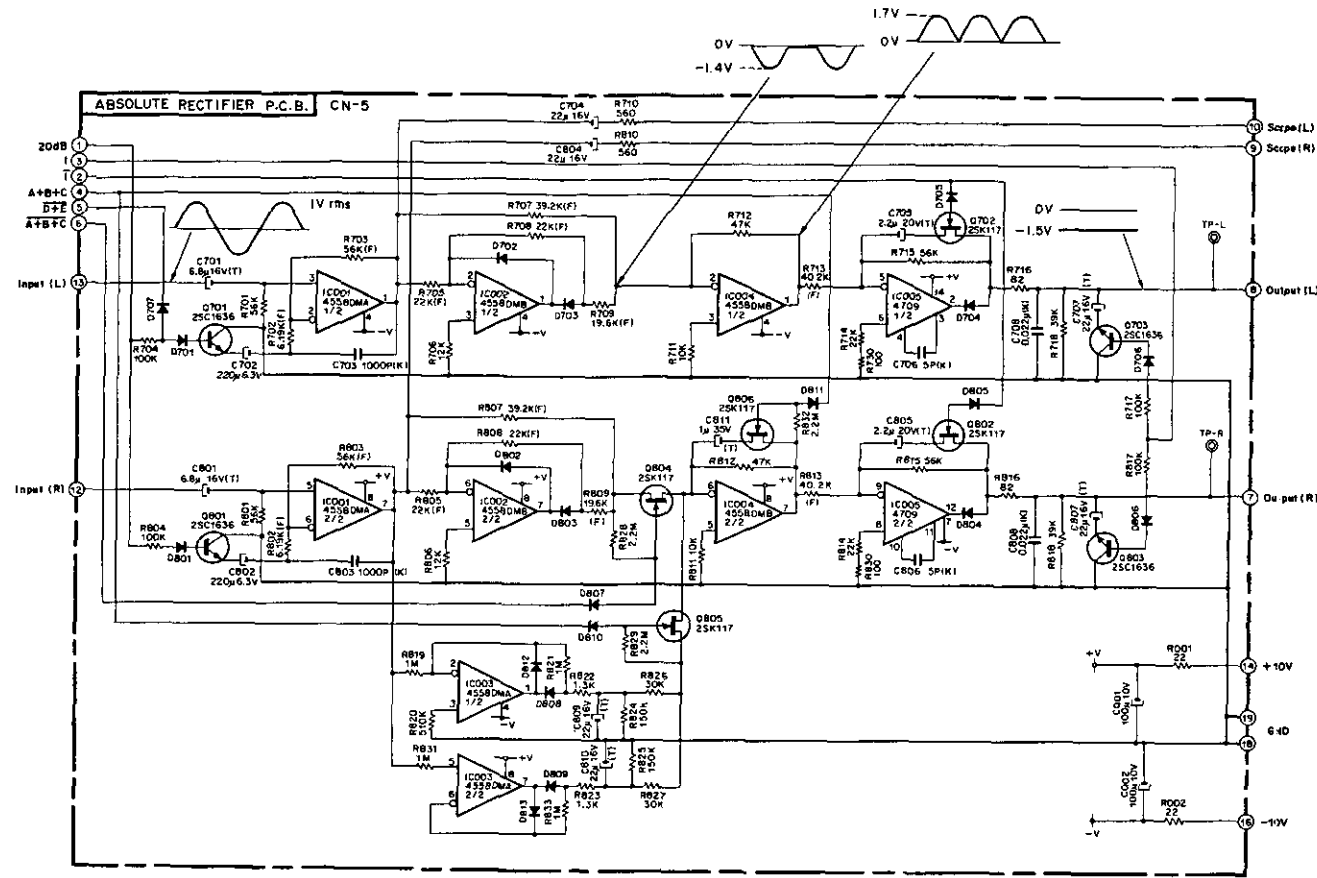


Fig. 6.7.1 Current Type

Conditions:
 Input Signal - 1 V rms 1 kHz
 Input Range SW - 0 dB
 Meter Range SW - 0 dB
 Function Control - Level

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

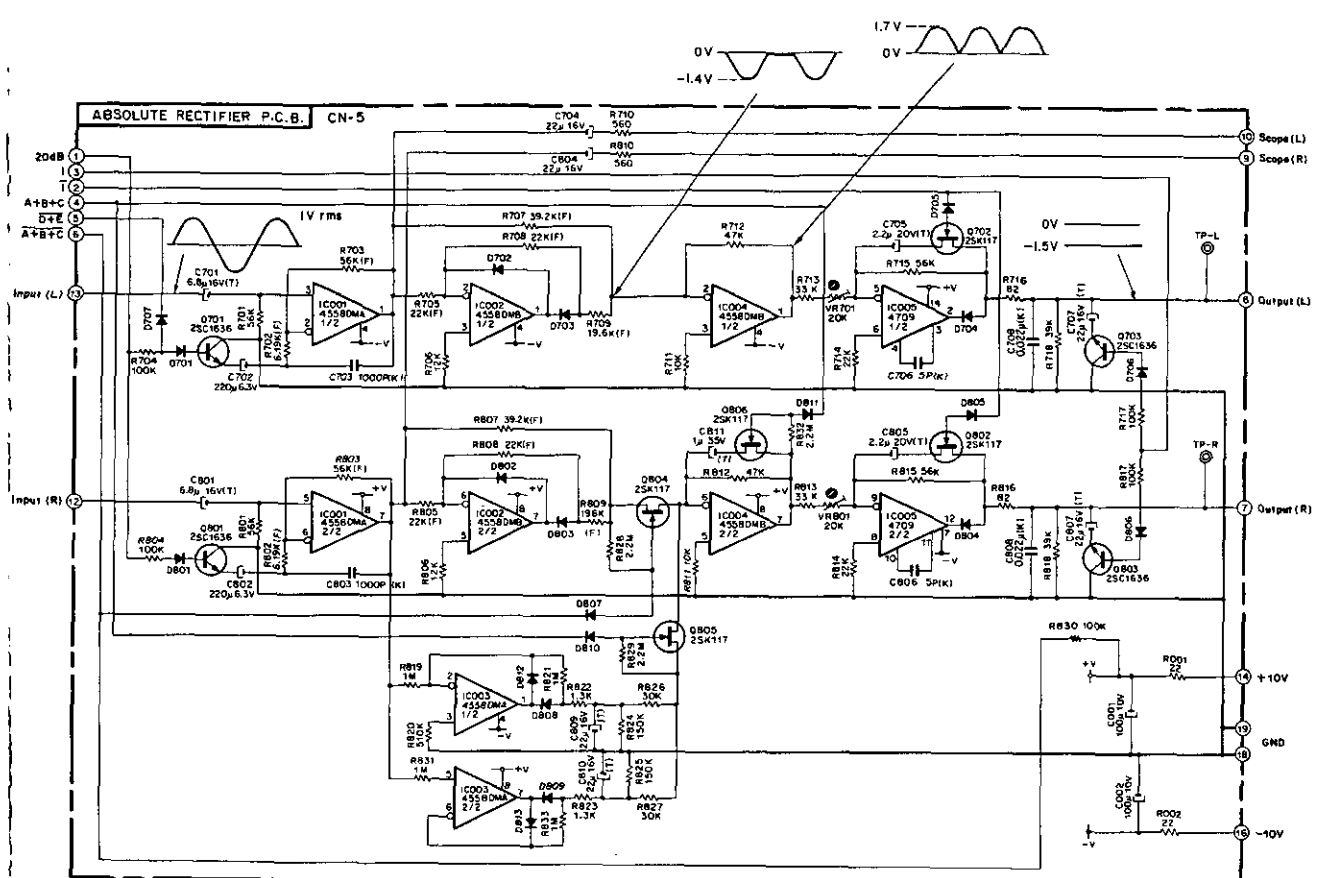


Fig. 6.7.3 Previous Type

Conditions:
 Input Signal - 1 V rms 1 kHz
 Input Range SW - 0 dB
 Meter Range SW - 0 dB
 Function Control - Level

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

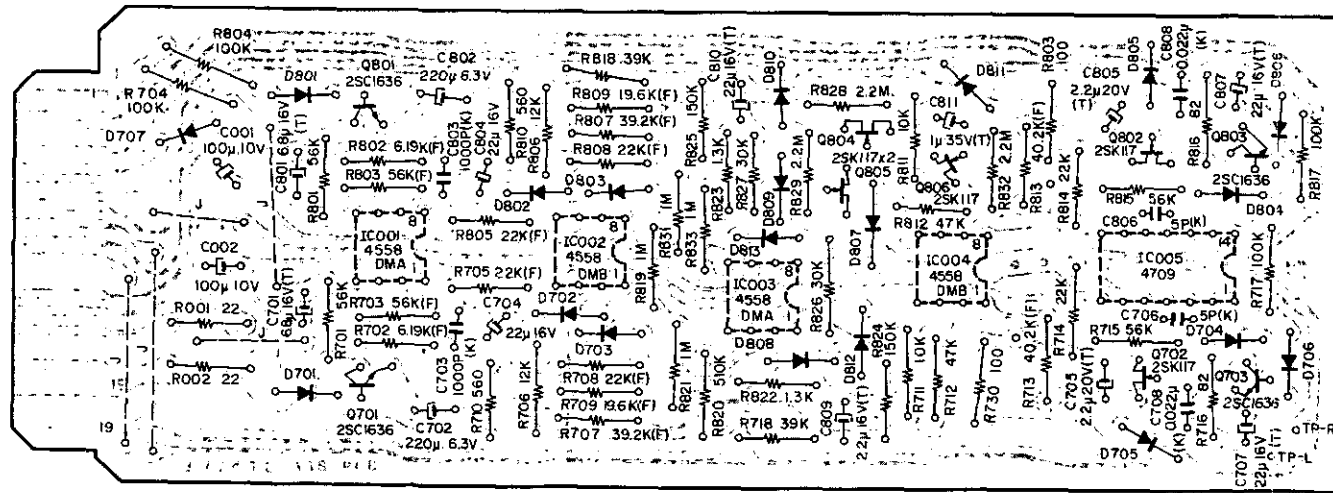


Fig. 6.7.2 Current Type

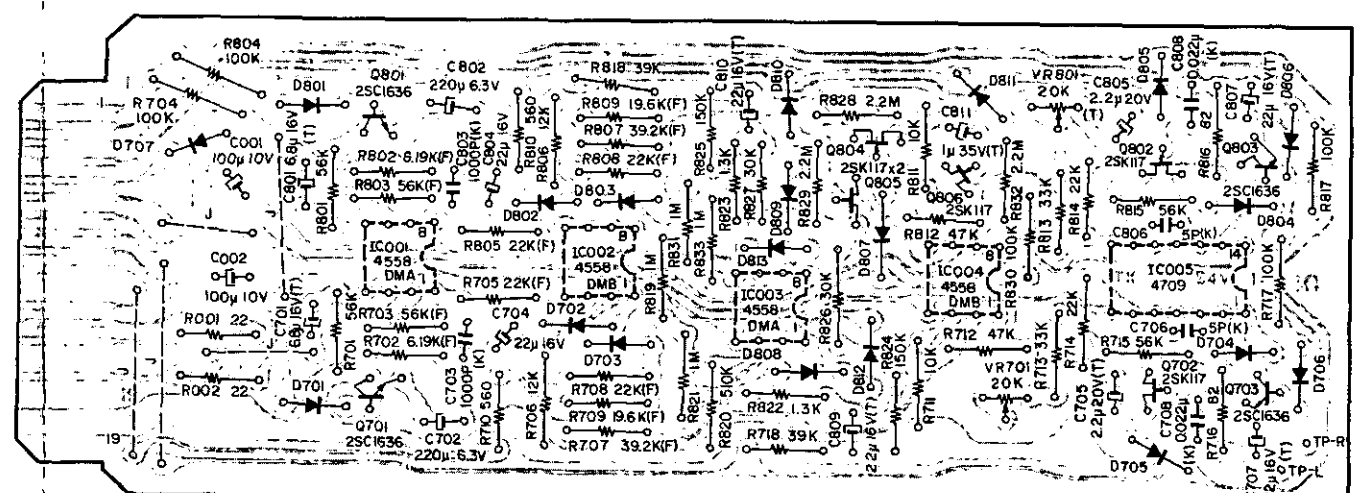
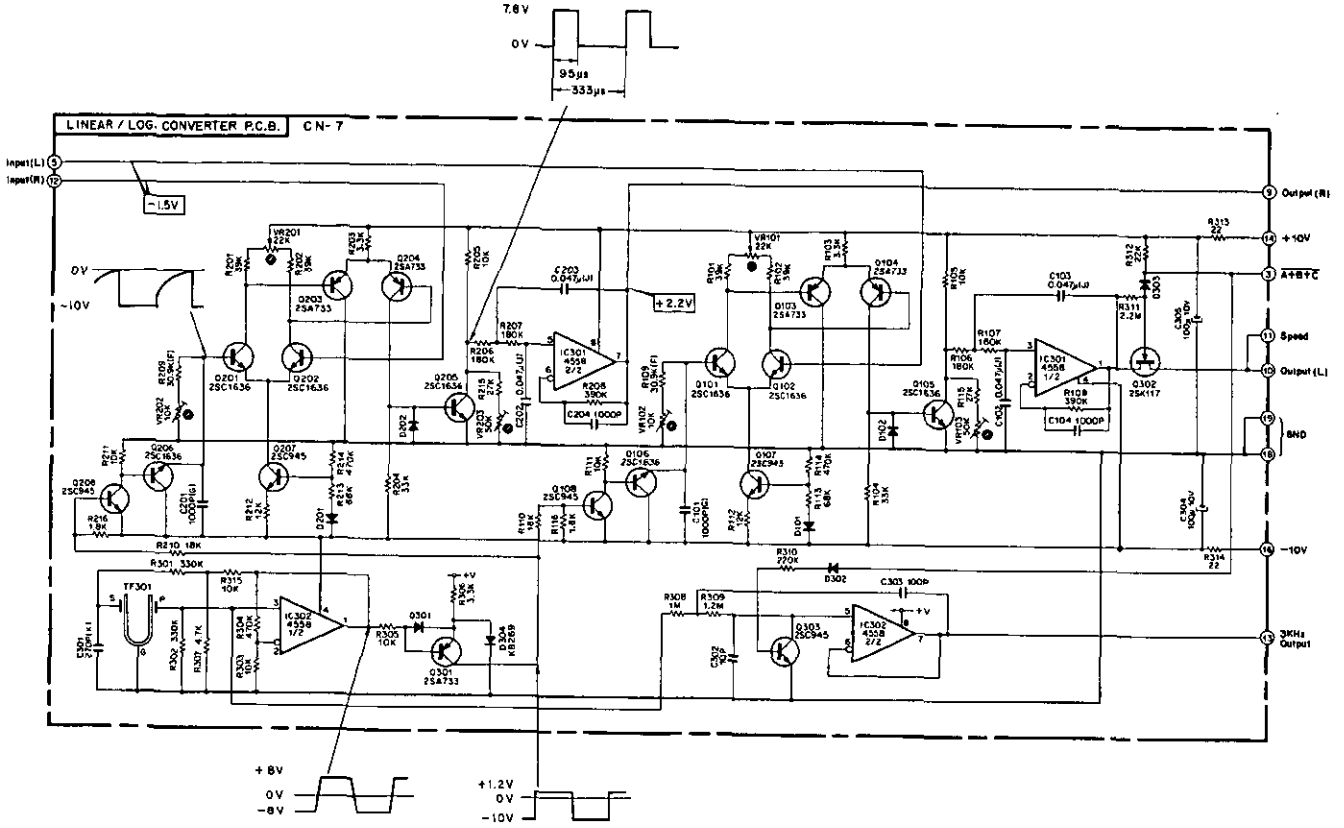


Fig. 6.7.4 Previous Type

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03886B	Absolute Rectifier P.C.B. Ass'y Current Type		BA03886B	Absolute Rectifier P.C.B. Ass'y Previous Type
	OB07745C	Absolute Rectifier P.C.B.		OB07745C	Absolute Rectifier P.C.B.
IC001,003	OB06160A	IC RC4558DMA	IC001,003	OB06160A	IC RC4558DMA
IC002,004	OB06151A	IC RC4558DMB	IC002,004	OB06151A	IC RC4558DMB
IC005	OB06027A	IC 4709	IC005	OB06027A	IC 4709
D701-707 801-813	OB01909A	Silicon Diode 1S1555 (20 pcs.)	D701-707 801-813	OB01909A	Silicon Diode 1S1555 (20 pcs.)
Q701,703 801,803	OB06070A	Transistor 2SC1636	Q701,703 801,803	OB06070A	Transistor 2SC1636
Q702,802 804,805 806	OB06129A	FET 2SK117	Q702,802 804,805 806	OB06129A	FET 2SK117
R001,002	OB05579A	Carbon Resistor 22 ERD-25T J	VR701,801	OB09061A	Semi-fixed Volume 20K
R701,801	OB05508A	Carbon Resistor 56K ERD-25T J	R001,002	OB05579A	Carbon Resistor 22 ERD-25T J
R702,802	OB09011A	Metal Film Resistor 6.19K ERO-25CK F	R701,715	OB05508A	Carbon Resistor 56K ERD-25T J
R703,715 803,815	OB09012A	Metal Film Resistor 56K ERO-25CK F	801,815		
R704,717 804,817	OB01889A	Carbon Resistor 100K ERD-25T J	R702,802	OB09011A	Metal Film Resistor 6.19K ERO-25CK F
R705,708 805,808	OB05968A	Metal Film Resistor 22K ERO-25CK F	R703,803	OB09012A	Metal Film Resistor 56K ERO-25CK F
R706,806	OB05771A	Carbon Resistor 12K ERD-25T J	R704,717 804,817 830	OB01889A	Carbon Resistor 100K ERD-25T J
R707,807	OB09080A	Metal Film Resistor 39.2K ERO-25CK F	R705,708 805,808	OB05968A	Metal Film Resistor 22K ERO-25CK F
R709,809	OB09051A	Metal Film Resistor 19.6K ERO-25CK F	R706,806	OB05771A	Carbon Resistor 12K ERD-25T J
R710,810	OB05575A	Carbon Resistor 560 ERD-25T J	R707,807	OB09080A	Metal Film Resistor 39.2K ERO-25CK F
R711,811	OB01888A	Carbon Resistor 10K ERD-25T J	R709,809	OB09051A	Metal Film Resistor 19.6K ERO-25CK F
R712,812	OB09135A	Metal Film Resistor 47K ERO-25CK F	R710,810	OB05575A	Carbon Resistor 560 ERD-25T J
R713,813	OB09136A	Metal Film Resistor 40.2K ERO-25CK F	R711,811	OB01888A	Carbon Resistor 10K ERD-25T J
R714,814	OB05615A	Carbon Resistor 22K ERD-25T J	R712,812	OB05641A	Carbon Resistor 47K ERD-25T J
R716,816	OB05631A	Carbon Resistor 82 ERD-25T J	R713,813	OB05509A	Carbon Resistor 33K ERD-25T J
R718, 818	OB01854A	Carbon Resistor 39K ERD-25T J	R714,814	OB05615A	Carbon Resistor 22K ERD-25T J
R730,830	OB01679A	Carbon Resistor 100 ERD-25T J	R716,816	OB05631A	Carbon Resistor 82 ERD-25T J
R819,821 831,833	OB05776A	Carbon Resistor 1M ERD-25T J	R718,818	OB01854A	Carbon Resistor 39K ERD-25T J
R820	OB09054A	Carbon Resistor 510K ERD-25T J	R819,821 831,833	OB05776A	Carbon Resistor 1M ERD-25T J
R822,823	OB09074A	Carbon Resistor 1.3K ERD-25T J	R820	OB09054A	Carbon Resistor 510K ERD-25T J
R824,825	OB05626A	Carbon Resistor 150K ERD-25T J	R822,823	OB09074A	Carbon Resistor 1.3K ERD-25T J
R826,827	OB09075A	Carbon Resistor 30K ERD-25T J	R824,825	OB05626A	Carbon Resistor 150K ERD-25T J
R828,829 832	OB05671A	Carbon Resistor 2.2M ERD-25T J	R826,827	OB09075A	Carbon Resistor 30K ERD-25T J
C001,002	OB05885A	Electrolytic Capacitor 100μ 10V	R828,829 832	OB05671A	Carbon Resistor 2.2M ERD-25T J
C701,801	OB05769A	Tantalum Capacitor 6.8μ 16V	C001,002	OB05885A	Electrolytic Capacitor 100μ 10V
C702,802	OB01394A	Electrolytic Capacitor 220μ 6.3V	C701,801	OB05769A	Tantalum Capacitor 6.8μ 16V
C703,803	OB04025A	Ceramic Capacitor 1000P 50V K	C702,802	OB01394A	Electrolytic Capacitor 220μ 6.3V
C704,804	OB01862A	Electrolytic Capacitor 22μ 16V	C703,803	OB04025A	Ceramic Capacitor 1000P 50V K
C705,805	OB05598A	Tantalum Capacitor 2.2μ 20V	C704,804	OB01862A	Electrolytic Capacitor 22μ 16V
C706,806	OB05905A	Ceramic Capacitor 5P 50V K	C705,805	OB05598A	Tantalum Capacitor 2.2μ 20V
C707,807 809,810	OB05636A	Tantalum Capacitor 22μ 16V	C706,806	OB05905A	Ceramic Capacitor 5P 50V K
C708,808	OB04062A	Mylar Capacitor 0.022μ 50V K	C707,807 809,810	OB05636A	Tantalum Capacitor 22μ 16V
C811	OB05638A	Tantalum Capacitor 1μ 35V	C708,808	OB04062A	Mylar Capacitor 0.022μ 50V K
TP-L, R	OB03924A	Gate Pin	C811	OB05638A	Tantalum Capacitor 1μ 35V
	OB05202A	Glass Tube 25mm (2 pcs.)	TP-L, R	OB03924A	Gate Pin
				OB05202A	Glass Tube 25mm (2 pcs.)

6.8. Linear/Log. Converter P.C.B. Ass'y



Conditions:
 Input Signal – 1 V rms 1 kHz
 Input Range SW – 0 dB
 Meter Range SW – 0 dB
 Function Control – Level

Fig. 6.8.1

Note: Diode is 1SS53, 1S953 or 1S1555 unless otherwise specified.

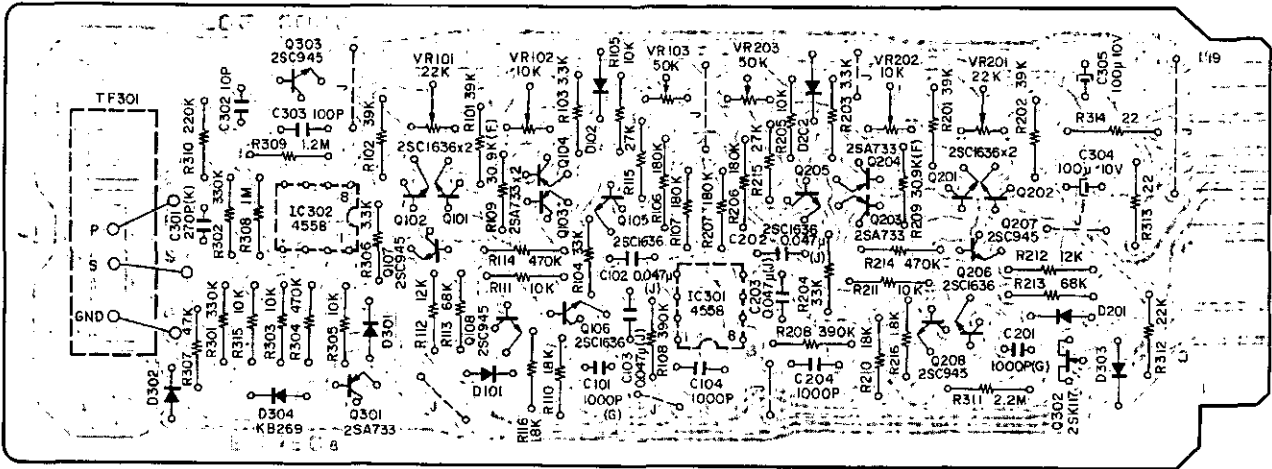
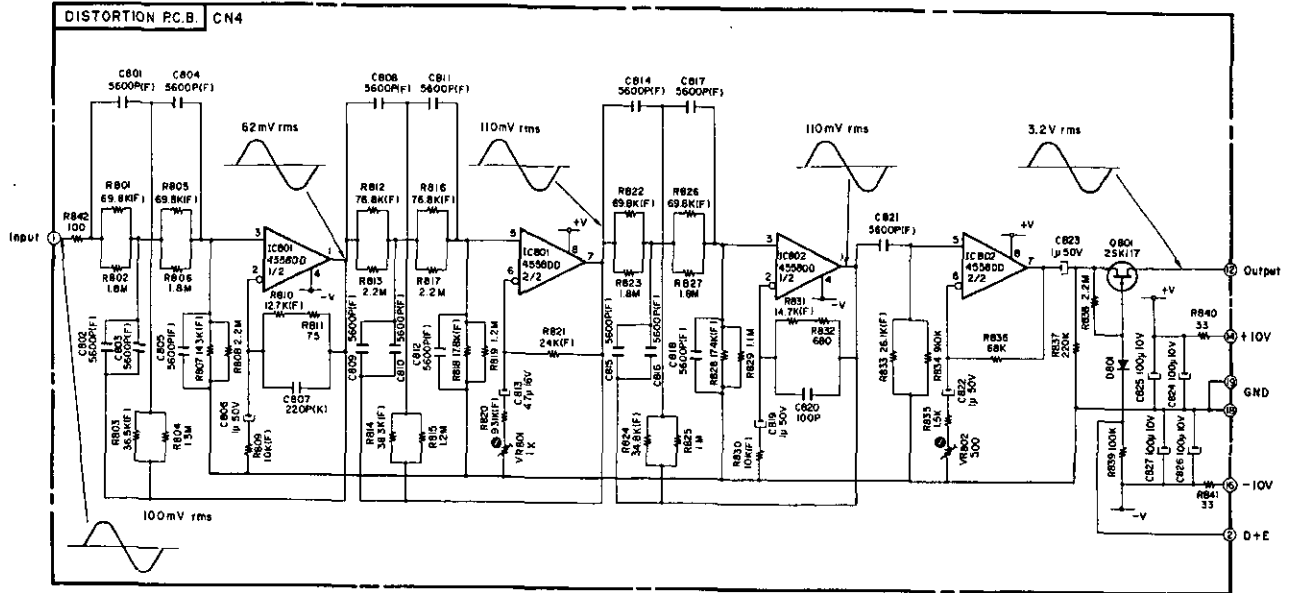


Fig. 6.8.2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03888A	Linear/Log. Converter P.C.B. Ass'y	R112,212	OB05771A	Carbon Resistor 12K ERD-25T J
	OB07750B	Linear/Log. Converter P.C.B.	R113,213	OB05692A	Carbon Resistor 68K ERD-25T J
IC301,302	OB06124B	IC RC4558D	R114,214	OB01684A	Carbon Resistor 470K ERD-25T J
Q101,102	OB06070A	Transistor 2SC1636	304		
105,106			R115,215	OB05743A	Carbon Resistor 27K ERD-25T J
201,202			R116,216	OB05614A	Carbon Resistor 1.8K ERD-25T J
205,206			R301,302	OB05627A	Carbon Resistor 330K ERD-25T J
Q103,104	OB06013A	Transistor 2SA733	R307	OB01846A	Carbon Resistor 4.7K ERD-25T J
203,204			R308	OB05776A	Carbon Resistor 1M ERD-25T J
301			R309	OB05962A	Carbon Resistor 1.2M ERD-25T J
Q107,108	OB06100A	Transistor 2SC945 (A)	R310	OB05625A	Carbon Resistor 220K ERD-25T J
207,208			R311	OB05671A	Carbon Resistor 2.2M ERD-25T J
303			R312	OB05615A	Carbon Resistor 22K ERD-25T J
Q302	OB06129A	FET 2SK117	R313,314	OB05579A	Carbon Resistor 22 ERD-25T J
D101,102	OB01909A	Silicon Diode 1S1555	C101,201	OB09043A	SP Capacitor 1000P 50V G
201,202			C102,103	OB05796A	Mylar Capacitor 0.047μ 50V J
301,302			202,203		
303			C104,204	OB04025A	Ceramic Capacitor 1000P 50V
D304	OB01702A	Varistor KB269	C301	OB09076A	Ceramic Capacitor 270P 50V K
VR101,201	OB07185A	Semi-fixed Volume 22K (B)	C302	OB09077A	Ceramic Capacitor 10P 50V
VR102,202	OB07191A	Semi-fixed Volume 10K (B)	C303	OB01288A	Ceramic Capacitor 100P 50V
VR103,203	OB07166A	Semi-fixed Volume 50K (B)	C304,305	OB05885A	Electrolytic Capacitor 100μ 10V
R101,102	OB01854A	Carbon Resistor 39K ERD-25T J	TF301	OB08404A	Micro Fork
201,202				OB05204A	Tube F 13mm (2 pcs.)
R103,203	OB01681A	Carbon Resistor 3.3K ERD-25T J		OB08461B	T.F. Holder (1 pce.)
306				OB08462A	T.F. Pin (1 pce.)
R104,204	OB05509A	Carbon Resistor 33K ERD-25T J		OB05202A	Glass Tube 25mm (2 pcs.)
R105,111	OB01888A	Carbon Resistor 10K ERD-25T J			
205,211					
303,305					
315					
R106,107	OB05640A	Carbon Resistor 180K ERD-25T J			
206,207					
R108,208	OB05676A	Carbon Resistor 390K ERD-25T J			
R109,209	OB09055A	Metal Film Resistor 30.9K ERO-25CK F			
R110,210	OB05560A	Carbon Resistor 18K ERD-25T J			

6.9. Distortion P.C.B. Ass'y



Conditions:
 Input Signal – 100 mV rms 1 kHz
 Input Range SW – 0 dB
 Function Control – Level T.H. Dist. L or R

Fig. 6.9.1

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

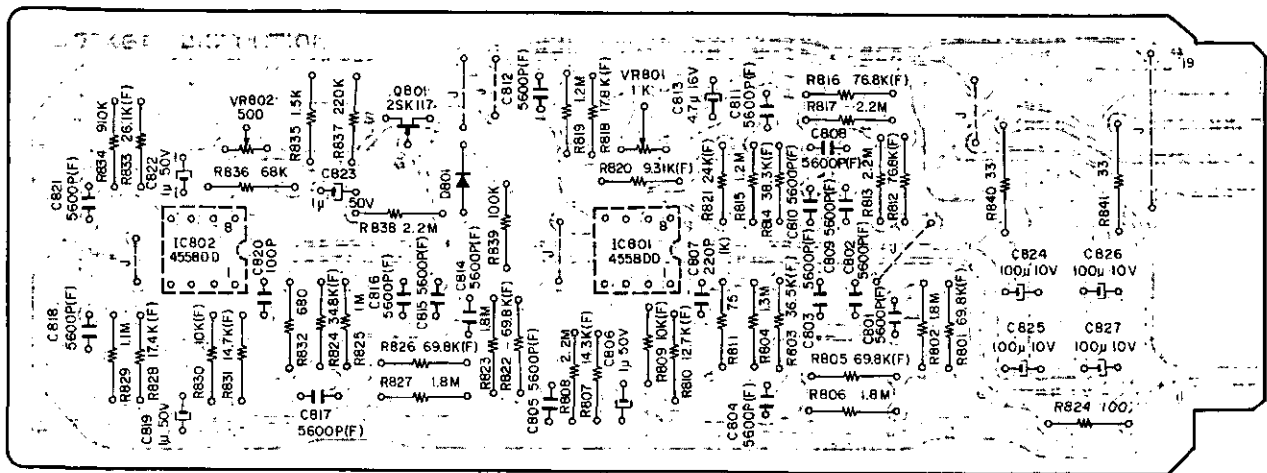
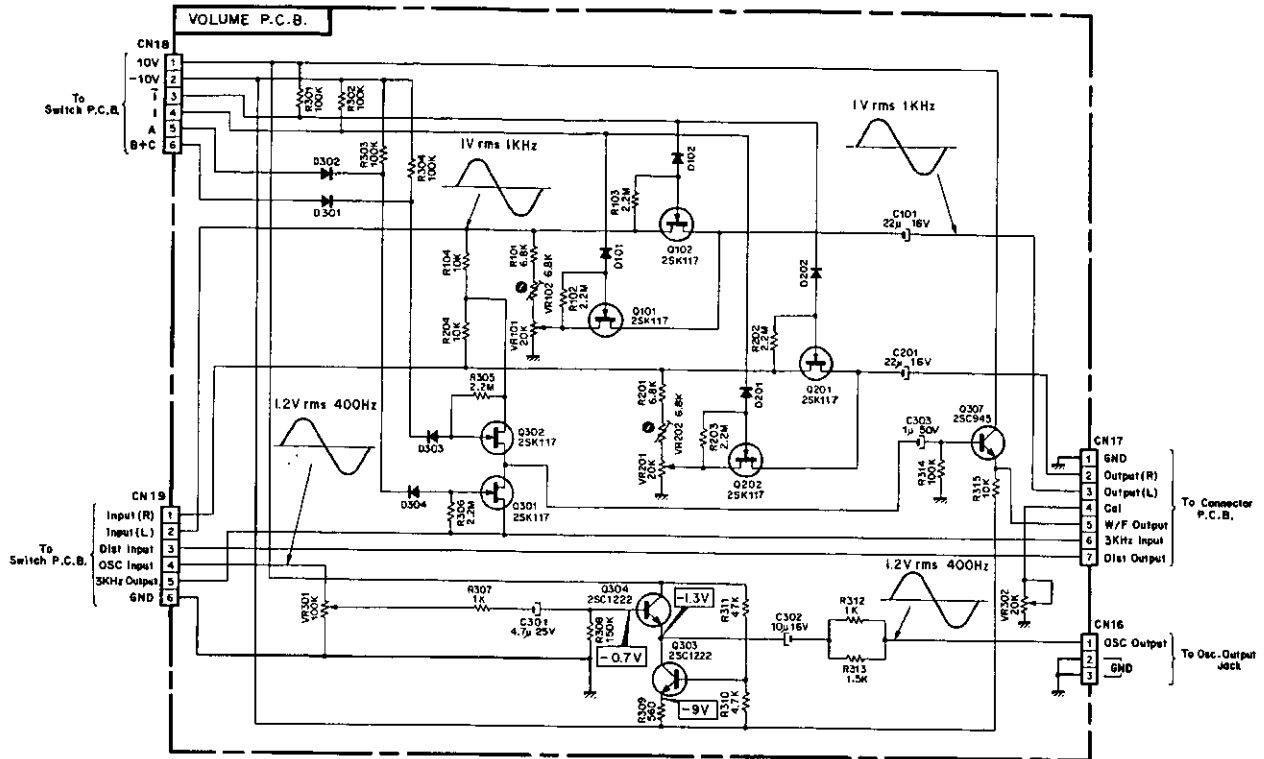


Fig. 6.9.2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03885A	Distortion P.C.B. Ass'y	R836	0B05692A	Carbon Resistor 68K ERD-25T J
	0B07746B	Distortion P.C.B.	R837	0B05625A	Carbon Resistor 220K ERD-25T J
IC801,802	0B06146A	IC RC4558DD	R839	0B01889A	Carbon Resistor 100K ERD-25T J
Q801	0B06129A	FET 2SK117	R840,841	0B01713A	Carbon Resistor 33 ERD-25T J
D801	0B01909A	Silicon Diode 1S1555	R842	0B01679A	Carbon Resistor 100 ERD-25T J
VR801	0B07192A	Semi-fixed Volume 1K (B)	C801-805	0B09232A	PP Capacitor 5600P 100V F (16 pcs.)
VR802	0B01883A	Semi-fixed Volume 500 (B)	808-812		
R801,805	0B09009A	Metal Film Resistor 69.8K ERO-25CK F	814-818		
822,826			821		
R802,806	0B05680A	Carbon Resistor 1.8M ERD-25T J	C806,819	0B01405A	Electrolytic Capacitor 1μ 50V
823,827			822,823		
R803	0B09007A	Metal Film Resistor 36.5K ERO-25CK F	C807	0B05879A	Ceramic Capacitor 220P 50V K
R804	0B05963A	Carbon Resistor 1.3M ERD-25T J	C813	0B01389A	Electrolytic Capacitor 4.7μ 16V
R807	0B06000A	Metal Film Resistor 14.3K ERO-25CK F	C820	0B01288A	Ceramic Capacitor 100P 50V
R808,813	0B05671A	Carbon Resistor 2.2M ERD-25T J	C824,825	0B05885A	Electrolytic Capacitor 100μ 10V
817,838			826,827		
R809,830	0B09014A	Metal Film Resistor 10K ERO-25CK F		0B05202A	Glass Tube 25mm (2 pcs.)
R810	0B05999A	Metal Film Resistor 12.7K ERO-25CK F			
R811	0B05959A	Carbon Resistor 75 ERD-25T J			
R812,816	0B09010A	Metal Film Resistor 76.8K ERO-25CK F			
R814	0B09008A	Metal Film Resistor 38.3K ERO-25CK F			
R815,819	0B05962A	Carbon Resistor 1.2M ERD-25T J			
R818	0B09003A	Metal Film Resistor 17.8K ERO-25CK F			
R820	0B05970A	Metal Film Resistor 9.31K ERO-25CK F			
R821	0B09005A	Metal Film Resistor 24.0K ERO-25CK F			
R824	0B09006A	Metal Film Resistor 34.8K ERO-25CK F			
R825	0B05776A	Carbon Resistor 1M ERD-25T J			
R828	0B09002A	Metal Film Resistor 17.4K ERO-25CK F			
R829	0B05961A	Carbon Resistor 1.1M ERD-25T J			
R831	0B09001A	Metal Film Resistor 14.7K ERO-25CK F			
R832	0B05794A	Carbon Resistor 680 ERD-25T J			
R833	0B09053A	Metal Film Resistor 26.1K ERO-25CK F			
R834	0B05960A	Carbon Resistor 910K ERD-25T J			
R835	0B05698A	Carbon Resistor 1.5K ERD-25T J			

6.10. Volume P.C.B. Ass'y



Conditions:
 Input Signal – 1 V rms 1 kHz
 Input Range SW – 0 dB
 Function Control – Level
 Oscillator Control – 400 Hz
 Osc. Output Control – Max.

Fig. 6.10.1

Note: Diode is 1SS53, 1S953 or 1S1555 unless otherwise specified.

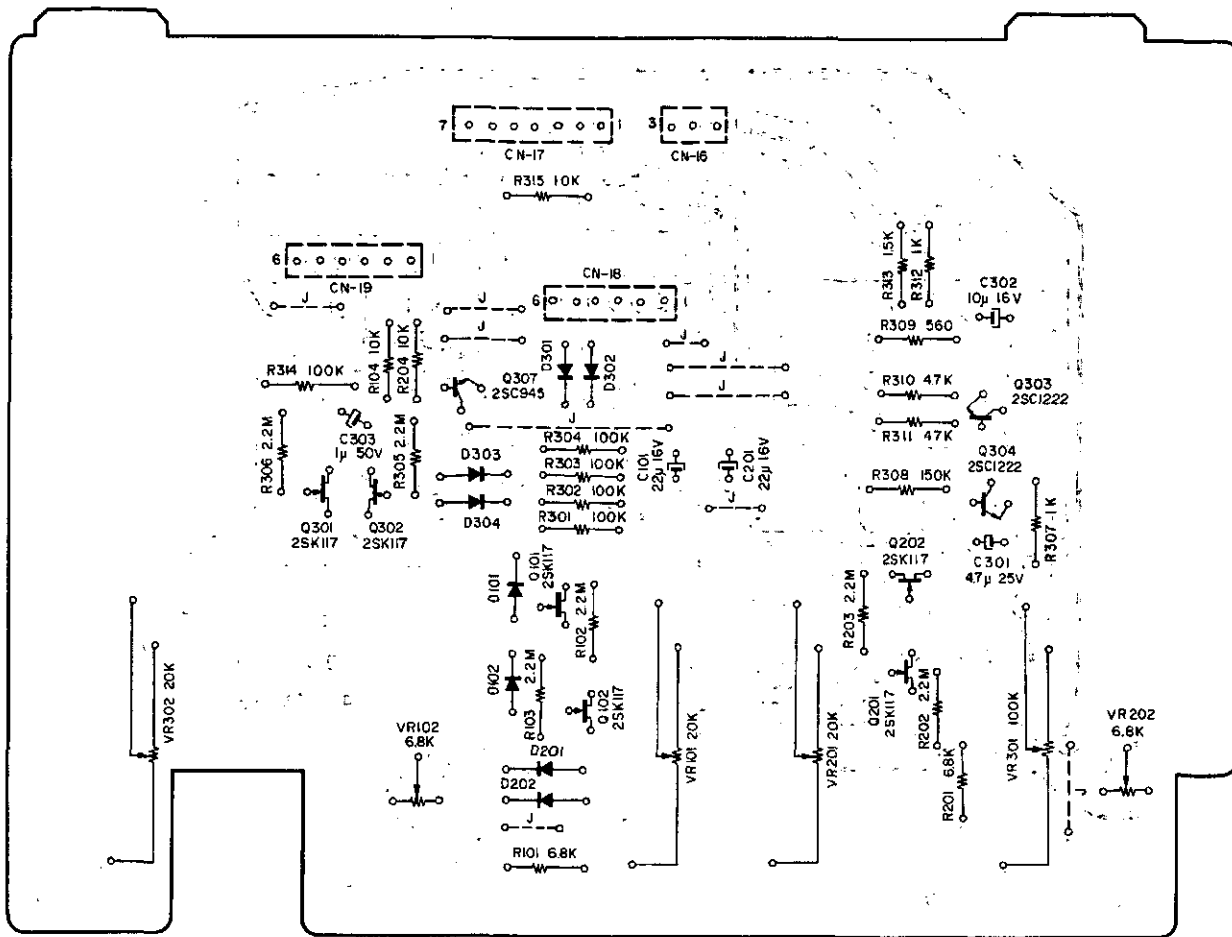
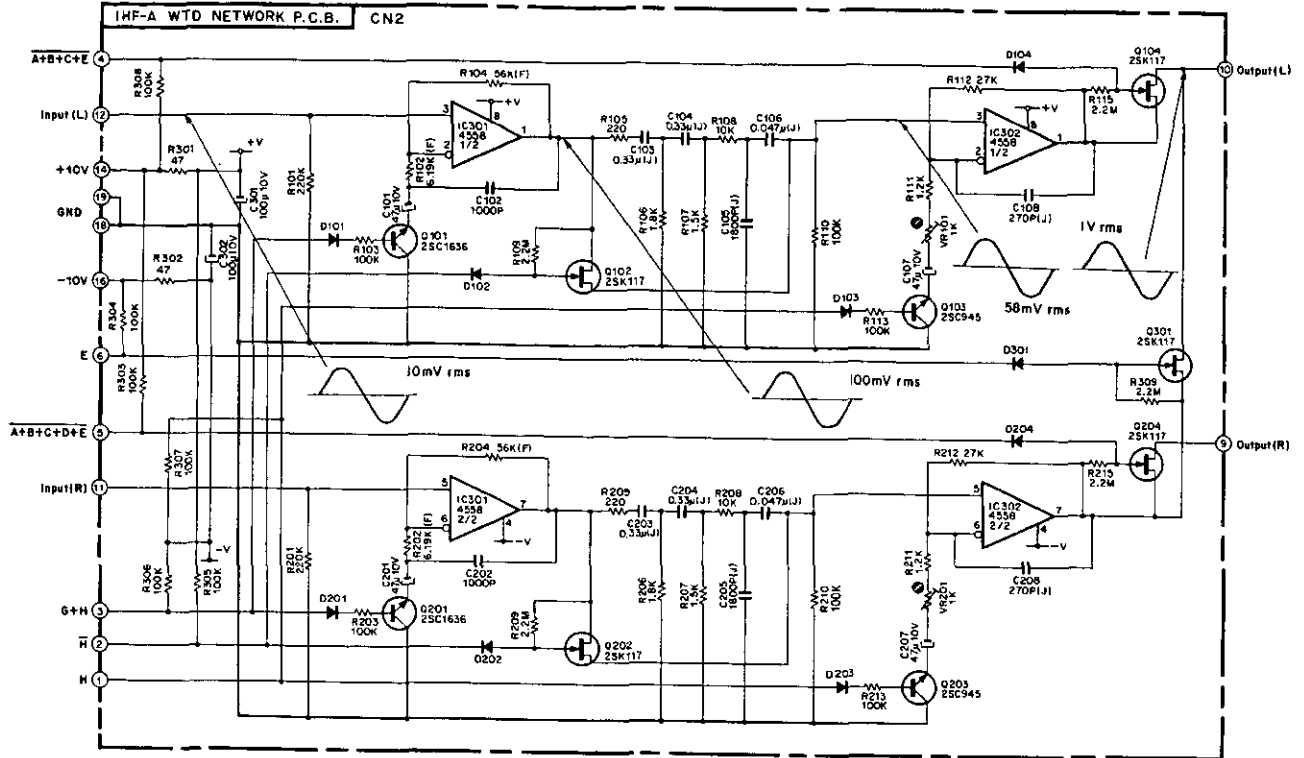


Fig. 6.10.2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03891A	Volume P.C.B. Ass'y	R301,302	OB01889A	Carbon Resistor 100K ERD-25T J
	OB07741B	Volume P.C.B.	303,304		
D101,102	OB01909A	Silicon Diode 1S1555	314		
201,202			R307,312	OB01857A	Carbon Resistor 1K ERD-25T J
301,302			R308	OB05626A	Carbon Resistor 150K ERD-25T J
303,304			R309	OB05575A	Carbon Resistor 560 ERD-25T J
Q101,102	OB06129A	FET 2SK117	R310	OB01846A	Carbon Resistor 4.7K ERD-25T J
201,202			R311	OB05641A	Carbon Resistor 47K ERD-25T J
301,302			R313	OB05698A	Carbon Resistor 1.5K ERD-25T J
Q303,304	OB06062A	Transistor 2SC1222	C101,201	OB01862A	Electrolytic Capacitor 22μ 16V
Q307	OB06100A	Transistor 2SC945 (A)	C301	OB01402A	Electrolytic Capacitor 4.7μ 25V
VR101,201	OB07194A	Volume 20K	C302	OB01412A	Electrolytic Capacitor 10μ 16V
302			C303	OB01405A	Electrolytic Capacitor 1μ 50V
VR102,202	OB09124A	Semi-fixed Volume 6.8K (B)	CN16	OB08184A	3P-T Post
VR301	OB07195A	Volume 100K	CN17	OB08451A	7P-T Post
R101,201	OB01682A	Carbon Resistor 6.8K ERD-25T J	CN18, 19	OB08442A	6P-B Post
R102,103	OB05671A	Carbon Resistor 2.2M ERD-25T J			
202,203					
305,306					
R104,204	OB01888A	Carbon Resistor 10K ERD-25T J			
315					

6.11. IHF-A WTD Network P.C.B. Ass'y

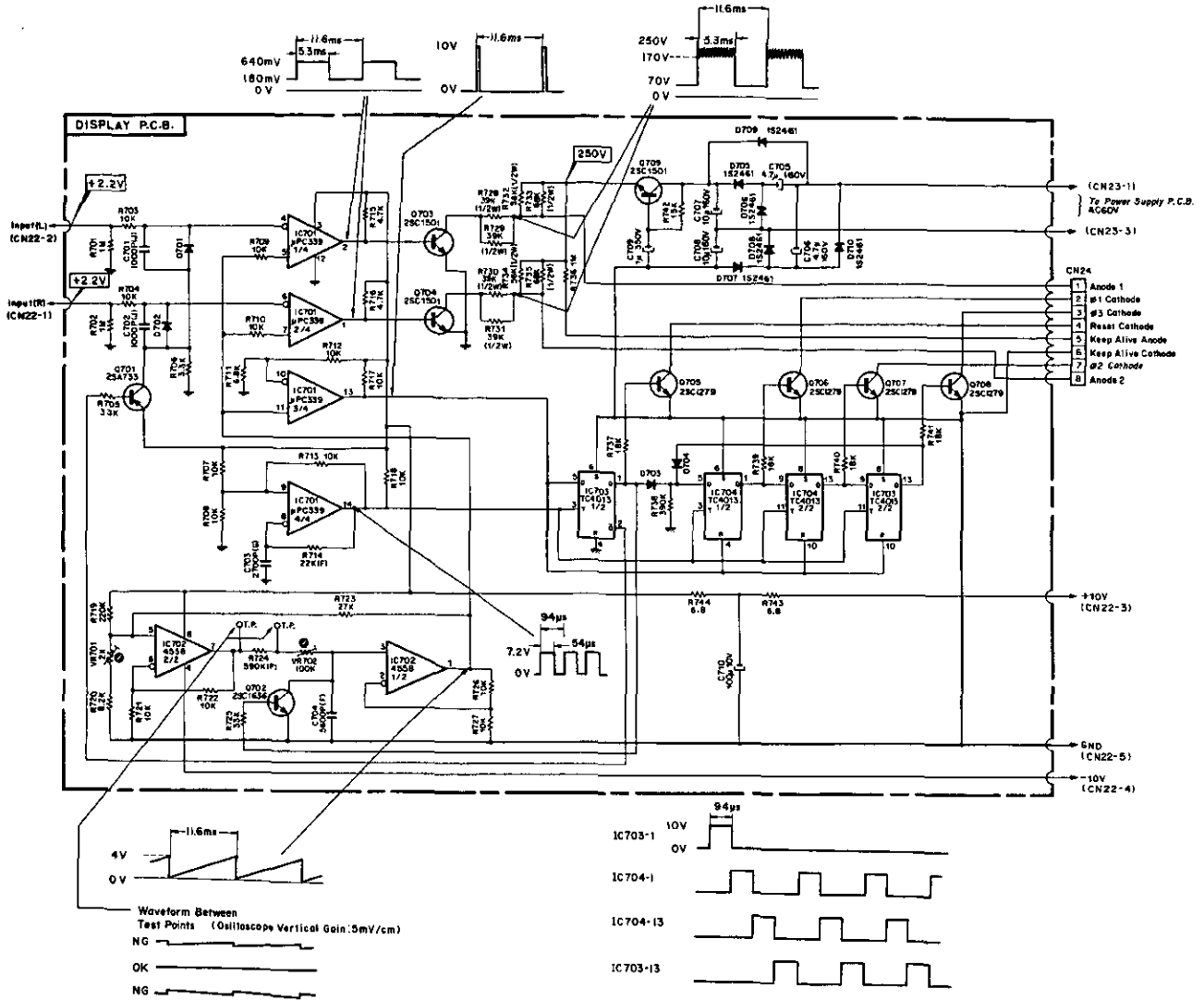


Conditions:
 Input Signal - 10 mV rms 1 kHz
 Input Range SW - 0 dB
 Function Control - Noise-A

Fig. 6.11.1

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

6.12. Display P.C.B. Ass'y



Conditions:
 Input Signal - 1 V rms 1 kHz
 Input Range SW - 0 dB
 Meter Range SW - 0 dB
 Function Control - Level

Fig. 6.12.1

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

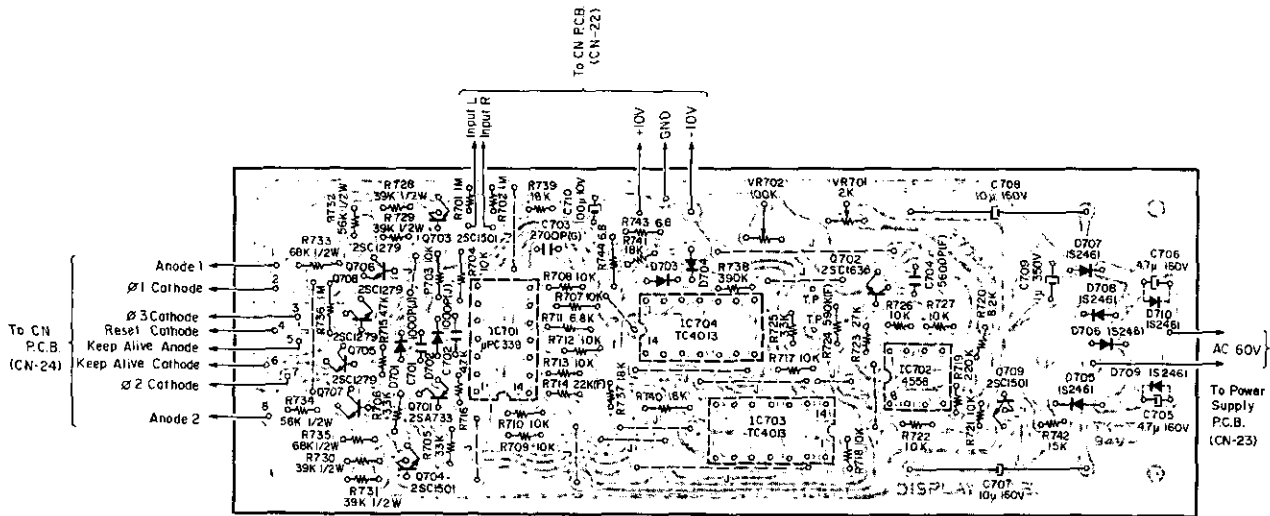
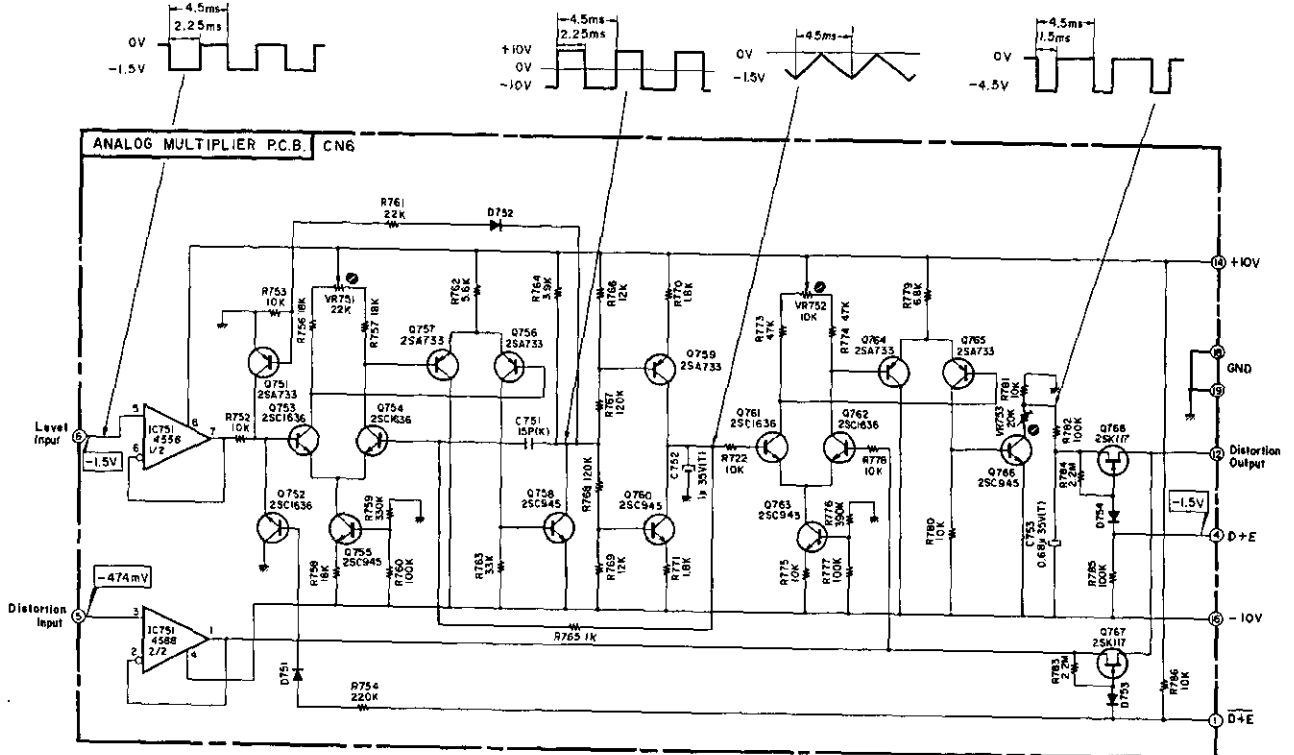


Fig. 6.12.2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03889A	Display P.C.B. Ass'y	R724	0B09390A	Metal Film Resistor 590K CN15K2E F
	0B07744B	Display P.C.B.	R728,729	0B09123A	Carbon Resistor 39K ERD-50T J
IC701	0B06132A	IC μ PC339	730,731		
IC702	0B06124B	IC RC4558D	R732,734	0B09129A	Carbon Resistor 56K ERD-50T J
IC703,704	0B06133A	IC TC4013BP	R733,735	0B09130A	Carbon Resistor 68K ERD-50T J
Q701	0B06013A	Transistor 2SA733	R737,739	0B05561A	Carbon Resistor 18K ERD-25V J
Q702	0B06070A	Transistor 2SC1636	740,741		
Q703,704	0B06136A	Transistor 2SC1501	R738	0B05595A	Carbon Resistor 390K ERD-25V J
709			R742	0B05591A	Carbon Resistor 15K ERD-25V J
Q705,706	0B06134A	Transistor 2SC1279	R743,744	0B05857A	Carbon Resistor 6.8 ERD-25T J
707,708			C701,702	0B05550A	Mylar Capacitor 1000P 50V J
D701,702	0B01909A	Silicon Diode 1S1555	C703	0B09041A	SP Capacitor 2700P 50V G
703,704			C704	0B09232A	PP Capacitor 5600P 100V F
D705,706	0B06136A	Silicon Diode 1S2461	C705,706	0B09382A	Electrolytic Capacitor 4.7 μ 160V
707,708			C707,708	0B09040A	Electrolytic Capacitor 10 μ 160V
709,710			C709	0B09038A	Electrolytic Capacitor 1 μ 350V
VR701	0B09062A	Semi-fixed Volume 2K (B)	C710	0B05885A	Electrolytic Capacitor 100 μ 10V
VR702	0B07220A	Semi-fixed Volume 100K (B)	0B03924A	Gate Pin (2 pcs.)	
R701,702	0B05564A	Carbon Resistor 1M ERD-25V J	0B08428A	D-P Connector A (1 pce.)	
736			0B08429A	D-P Connector B (1 pce.)	
R703,704	0B01833A	Carbon Resistor 10K ERD-25V J	0B05203A	Glass Tube 30mm (8 pcs.)	
707,708					
709,710					
712,713					
717,718					
721,722					
726,727					
R705,725	0B01879A	Carbon Resistor 33K ERD-25V J			
R706	0B01793A	Carbon Resistor 3.3K ERD-25V J			
R711	0B01877A	Carbon Resistor 6.8K ERD-25V J			
R714	0B05968A	Metal Film Resistor 22K ERO-25CK F			
R715,716	0B01795A	Carbon Resistor 4.7K ERD-25V J			
R719	0B05596A	Carbon Resistor 220K ERD-25V J			
R720	0B01878A	Carbon Resistor 8.2K ERD-25V J			
R723	0B05538A	Carbon Resistor 27K ERD-25V J			

6.13. Analog Multiplier P.C.B. Ass'y



Conditions:
 Input Signal – 1 V rms 400 Hz
 Distortion 1%
 Input Range SW – 0 dB
 Meter Range SW – 1%
 Function Control – Level T,H, Dist, L or R

Fig. 6.13.1

Note: Diode is 1S553, 1S953 or 1S1555 unless otherwise specified.

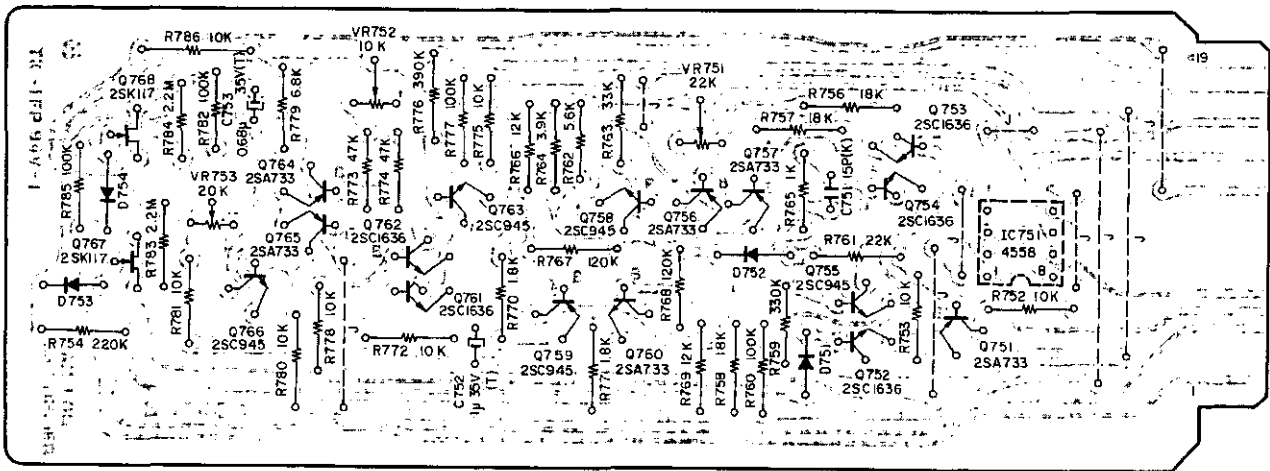


Fig. 6.13.2

Schematic Ref. No.	Part No.	Description	Schematic Ref. No.	Part No.	Description
	BA03887A	Analog Multiplier P.C.B. Ass'y	R773,774	0B05641A	Carbon Resistor 47K ERD-25T J
	0B07748B	Analog Multiplier P.C.B.	R776	0B05676A	Carbon Resistor 390K ERD-25T J
IC751	0B06124B	IC RC4558D	R779	0B01682A	Carbon Resistor 6.8K ERD-25T J
D751,752	0B01909A	Silicon Diode 1S1555	R783,784	0B05671A	Carbon Resistor 2.2M ERD-25T J
753,754			C751	0B05887A	Ceramic Capacitor 15P 50V K
Q751,756	0B06013A	Transistor 2SA733	C752	0B05638A	Tantalum Capacitor 1μ 35V
757,759			C753	0B05773A	Tantalum Capacitor 0.68μ 35V
764,765			0B05204A	Tube F 13mm (2 pcs.)	
Q752,753	0B06070A	Transistor 2SC1636			
754,761					
762					
Q755,758	0B06100A	Transistor 2SC945 (A)			
760,763					
766					
Q767,768	0B06129A	FET 2SK117			
VR751	0B07185A	Semi-fixed Volume 22K (B)			
VR752	0B07184A	Semi-fixed Volume 10K (B)			
VR753	0B09061A	Semi-fixed Volume 20K (B)			
R752,753	0B01888A	Carbon Resistor 10K ERD-25T J			
772,775					
778,780					
781,786					
R754	0B05625A	Carbon Resistor 220K ERD-25T J			
R756,757	0B05560A	Carbon Resistor 18K ERD-25T J			
758					
R759	0B05627A	Carbon Resistor 330K ERD-25T J			
R760,777	0B01889A	Carbon Resistor 100K ERD-25T J			
782,785					
R761	0B05615A	Carbon Resistor 22K ERD-25T J			
R762	0B01887A	Carbon Resistor 5.6K ERD-25T J			
R763	0B05509A	Carbon Resistor 33K ERD-25T J			
R764	0B05675A	Carbon Resistor 3.9K ERD-25T J			
R765	0B01857A	Carbon Resistor 1K ERD-25T J			
R766,769	0B05771A	Carbon Resistor 12K ERD-25T J			
R767,768	0B05621A	Carbon Resistor 120K ERD-25T J			
R770,771	0B05614A	Carbon Resistor 1.8K ERD-25T J			

7. MECHANISM ASS'Y AND PARTS LIST

7.1. Synthesis

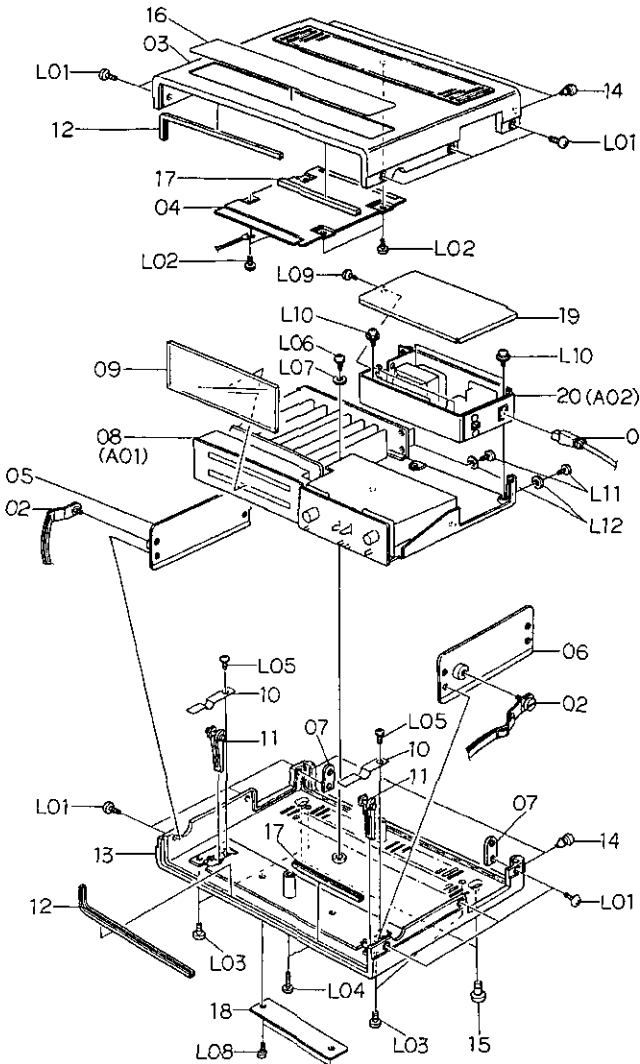


Fig. 7.1

Schematic Ref. No.	Part No.	Description	Q'ty
		Synthesis	
01	0B08422A	Power Cord (U.S.A., Canada & Others)	1
	0B08424A	Power Cord (UK & Australia)	1
	0B08423A	Power Cord (Sweden)	1
	0B08425A	Power Cord (Japan)	1
02	HA03735A	Shoulder Belt Ass'y	1
03	HA03734A	Top Cover Sub Ass'y	1
04	0J03758A	P.C.B. Guide Plate	1
05	JA03206B	Side Holder L Ass'y	1
06	JA03205B	Side Holder R Ass'y	1
07	0J03761A	Cover Holder	2
08	JA03326A	Synthesis Mechanism Ass'y	1
09	0H03568F	Acrylic Cover	1
10	0J03762A	Leg Spring	2
11	0A03282D	Leg	2
12	0J03768B	Acrylic Cover Holder	2
13	HA03733A	Bottom Cover Sub Ass'y	1
14	0A03283A	Rubber Foot	4
15	0H03437A	Rubber Foot	2
16	0H03569D	BD Name Plate	1
17	0J03891A	Cover Spacer	2
18	0M03875A	Caution Name Plate	1
19	0J03745C	Power Supply Box Cover	1
20	JA03213A	Power Supply Ass'y (U.S.A.)	1
	JA03215A	Power Supply Ass'y (UK & Australia)	1
	JA03216A	Power Supply Ass'y (Sweden)	1
	JA03441A	Power Supply Ass'y (Canada)	1
	JA03217A	Power Supply Ass'y (Japan)	1
	JA03340A	Power Supply Ass'y (Others 1)	1
	JA03334A	Power Supply Ass'y (Others 2)	1
-	0M03705A	Power Cord Label (UK & Australia)	1
L01	0E00713A	Screw M3x6 Philips Truss Head (Bronze)	12
L02	0E00502A	Screw M3x5 Philips Pan Head	4
L03	0E00738A	Screw M4x6 Philips Binding Head (Bronze)	4
L04	0E00818A	Screw M3x8 Philips Binding Head (Black Chromate)	2
L05	0E00776A	Screw M2.6x3 Philips Pan Head (Bronze)	2
L06	0E00667A	Screw M4x6 Philips Pan Head (2A)	1
L07	0E00141A	Washer 4mm	1
L08	0E00774A	BT Screw M2.6x5 Philips Pan Head (Bronze)	2
L09	0E00778A	Screw M2.6x5 Philips Binding Head (Bronze)	1
L10	0E00606A	Screw M3x6 Philips Pan Head (3A)	4
L11	0E00540A	Screw M3x5 Philips Binding Head (Bronze)	3
L12	0E00157A	Washer 3mm (Black Plastics)	3

7.2. Synthesis Mechanism Ass'y (A01)

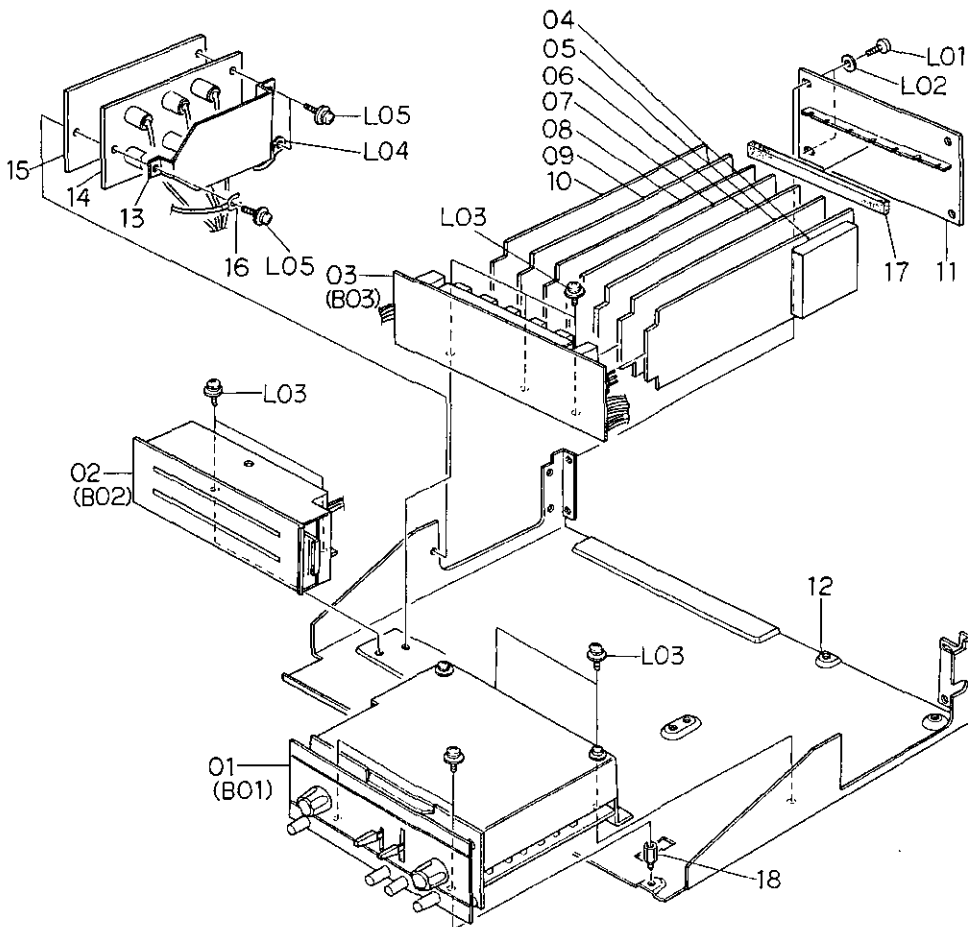


Fig. 7.2

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty
A01	JA03326A	Synthesis Mechanism Ass'y	1	17	0J03774A	P.C.B. Pad	1
				18	0J03756A	Switch Stud	2
01	JA03218A	Switch Control Ass'y	1	-	0M04053A	Input Indication Label	1
02	JA03219A	Bar-graph Holder Ass'y	1	L01	0E00540A	Screw M3x5 Philips Binding Head (Bronze)	2
03	JA03221A	Connector Ass'y	1	L02	0E00157A	Washer 3mm (Black Plastics)	2
04	BA03882A	Oscillator P.C.B. Ass'y	1	L03	0E00606A	Screw M3x6 Philips Pan Head (3A)	9
05	BA03883A	IHF-A WTD Network P.C.B. Ass'y	1	L04	0E00037A	Earth Lug B-5	1
06	BA03884A	Wow & Flutter P.C.B. Ass'y	1	L05	0E00607A	Screw M3x8 Philips Pan Head (3A)	3
07	BA03885A	Distortion P.C.B. Ass'y	1				
08	BA03886B	Absolute Rectifier P.C.B. Ass'y	1				
09	BA03887A	Analogue Multiplier P.C.B. Ass'y	1				
10	BA03888A	Linear/Log. Converter P.C.B. Ass'y	1				
11	JA03202D	Rear Panel B Ass'y	1				
12	JA03220A	Main Chassis Sub Ass'y	1				
13	0J03778B	Shield Plate	1				
14	BA03897A	6P Pin Jack Ass'y	1				
15	0H03566D	Pin Jack Name Plate	1				
16	0B08446A	Cord with Terminal A	1				

7.3. Power Supply Ass'y (A02)

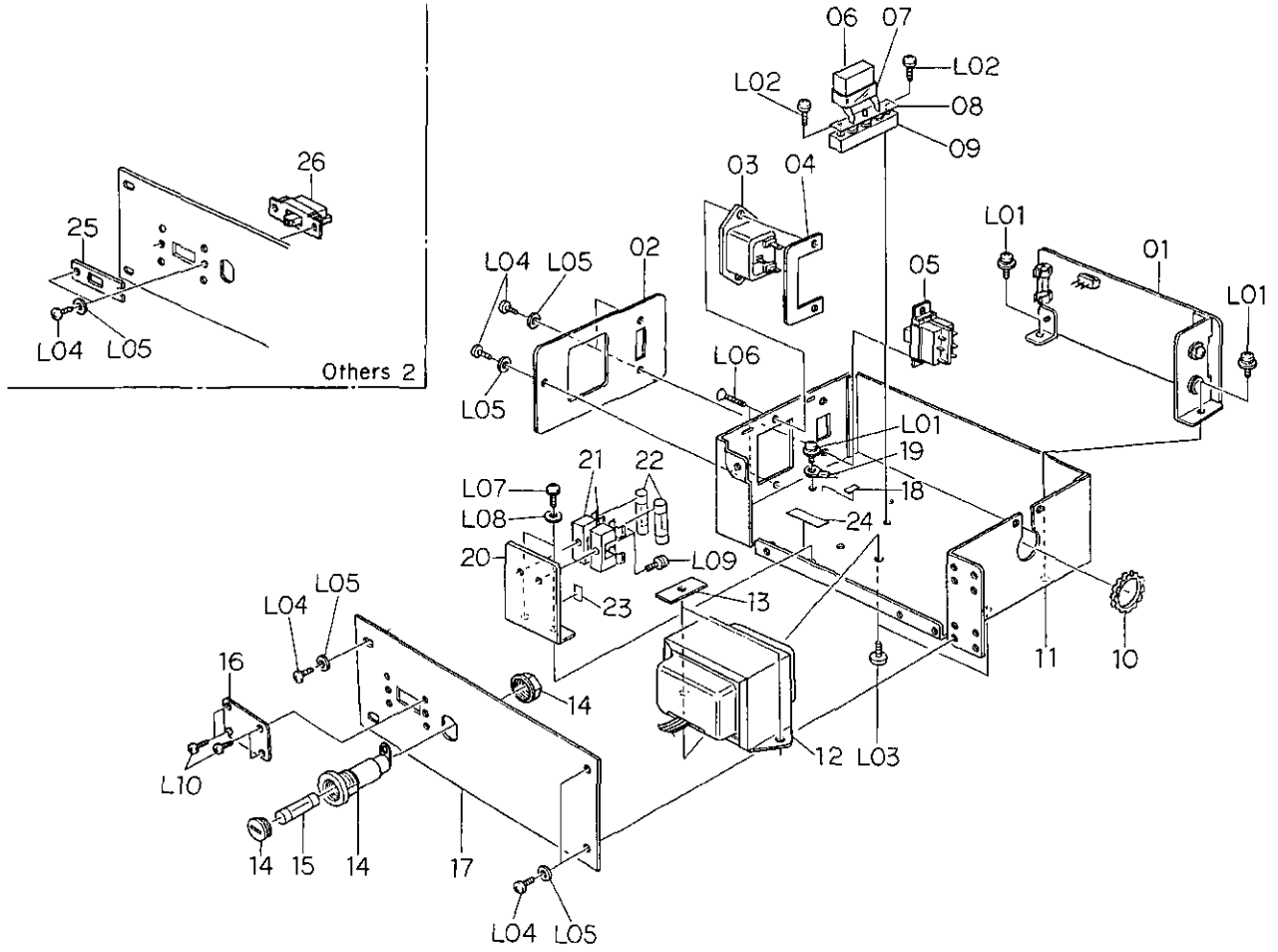


Fig. 7.3

Schematic Ref. No.	Part No.	Description	Q'ty	Schematic Ref. No.	Part No.	Description	Q'ty	
A02	JA03213A	Power Supply Ass'y (U.S.A.)	1	*21	0B08048A	Fuse Holder (Except for U.S.A. & Others 2)	2	
	JA03215A	Power Supply Ass'y (UK & Australia)	1	22	0B08161U	Fuse 630mA, T 250V (Sweden, UK, Australia & Others 1)	2	
	JA03216A	Power Supply Ass'y (Sweden)	1		0B08161A	Fuse 630mA, T 250V (Japan)	2	
	JA03441A	Power Supply Ass'y (Canada)	1	0B08608A	Fuse 250mA 250V (Canada)	1		
	JA03217A	Power Supply Ass'y (Japan)	1	23	0M03745A	Fuse Label 630mA Tx2 (Sweden, UK, Japan, Australia & Others 1)	1	
	JA03340A	Power Supply Ass'y (Others 1)	1		0M03970A	Fuse Label 250mA (Canada)	1	
	JA03334A	Power Supply Ass'y (Others 2)	1		0M03971A	Fuse Caution Label (Canada)	1	
01	BA03895A	Power Supply P.C.B. Ass'y (U.S.A. & Canada)	1	24	0B03947A	Voltage Selector Lock Plate (Others 2)	1	
	BA03892A	Power Supply P.C.B. Ass'y (UK, Australia, Sweden, Japan & Others 1 & 2)	1	25	0B07092U	Voltage Selector Switch (Others 2)	1	
02	0H03567D	Power Supply Name Plate	1	26	0B08447A	Cord with Terminal B	1	
03	0B08414A	A.C. Inlet	1	19	0M03794A	Voltage Seal 100V (Japan)	1	
04	0J03742A	Inlet Holder	1	—	0M03795A	Voltage Seal 120V (U.S.A. & Canada)	1	
05	0B07172A	Power Switch (U.S.A. & Canada)	1	—	0M03797A	Voltage Seal 240V (UK & Australia)	1	
	0B07092A	Power Switch (UK, Sweden, Australia, Others 1 & 2)	1	—	0M03796A	Voltage Seal 220V (Sweden & Others 1)	1	
06	0B07305A	Power Switch (Japan)	1	—	0M03955A	Voltage Seal B (Others 2)	1	
	0B08342A	Spark Killer (U.S.A. & Canada)	1	—	0M03899A	Serial Number Plate	1	
	0B08240A	Spark Killer (UK, Australia & Others 1)	1	—	0J03644A	Chobert Rivet	2	
	0B08445A	Spark Killer (Sweden)	1	—	0M03458B	Pass Label	1	
	0B08363A	Spark Killer (Japan)	1	—	0M03959A	File Number Label B (Canada)	1	
	0B08240U	Spark Killer (Others 2)	1	—	0E00606A	Screw M3x6 Philips Pan Head (3A)	3	
*07	0B08359A	Spark Killer Cover	2	L01	0E00510A	Screw M3x8 Philips Pan Head (2A)	2	
08	0B08410A	3P Terminal Insulator (U.S.A. & Canada)	1	L02	0E00738A	Screw M4x6 Philips Binding Head	2	
	0B08268U	5P Terminal Insulator 05 (UK, Sweden, Australia & Others 1)	1	L03	0E00540A	Screw M3x5 Philips Binding Head (Bronze)	8	
	0B08030U	3P Terminal Insulator (Japan)	1	*L04	0E00157A	Washer 3mm (Black Plastics)	8	
	0B08270U	3P Terminal Insulator 05 (Others 2)	1	L06	0E00518A	Screw M3x8 Philips Countersunk	2	
09	0B08024U	3P Terminal Strip (U.S.A., Canada, Japan & Others 2)	1	*L07	0E00622A	Screw M3x5 Philips Pan Head (2A)	2	
	0B08025U	5P Terminal Strip (UK, Sweden, Australia & Others 1)	1	*L08	0E00183A	Washer 3.5mm	2	
10	0B08503A	Free Bushing 143mm	1	*L09	0E00612A	Screw M3x6 Philips Pan Head (2A)	2	
11	0J03737E	Power Supply Box	1	*L10	0E00773A	BT Screw M2x4 Philips Pan Head (Bronze)	4	
12	0B06573A	Power Transformer (U.S.A. & Canada)	1	L11				
	0B06574A	Power Transformer (UK, Sweden, Australia & Others 1)	1					
	0B06572A	Power Transformer (Japan)	1					
	0B06590A	Power Transformer (Others 2)	1					
	13	0C01162B	Bolt Receptacle Plate		2			
	14	0B08418A	Fuse Holder (U.S.A. & Japan)		1			
		0B08421A	Fuse Holder (UK, Sweden, Australia & Others 1 & 2)		1			
15	0B08419A	Fuse 250mA 250V (U.S.A. & Japan)	1					
	0B08360A	Fuse 125mA 250V (UK, Sweden, Australia & Others 1 & 2)	1					
16	0M03874B	Fuse Caution Name Plate (U.S.A., UK, Sweden, Australia, Others 1 & Japan)	1					
	0M03972A	Caution Name plate (Canada)	1					
17	0J03747J	Rear Panel A	1					
18	0M03700A	Ground Label	1					
20	0J03744B	Fuse Holder Plate (Except for U.S.A. & Others 2)	1					

*: Depends on the versions.

7.4. Switch Control Ass'y (B01)

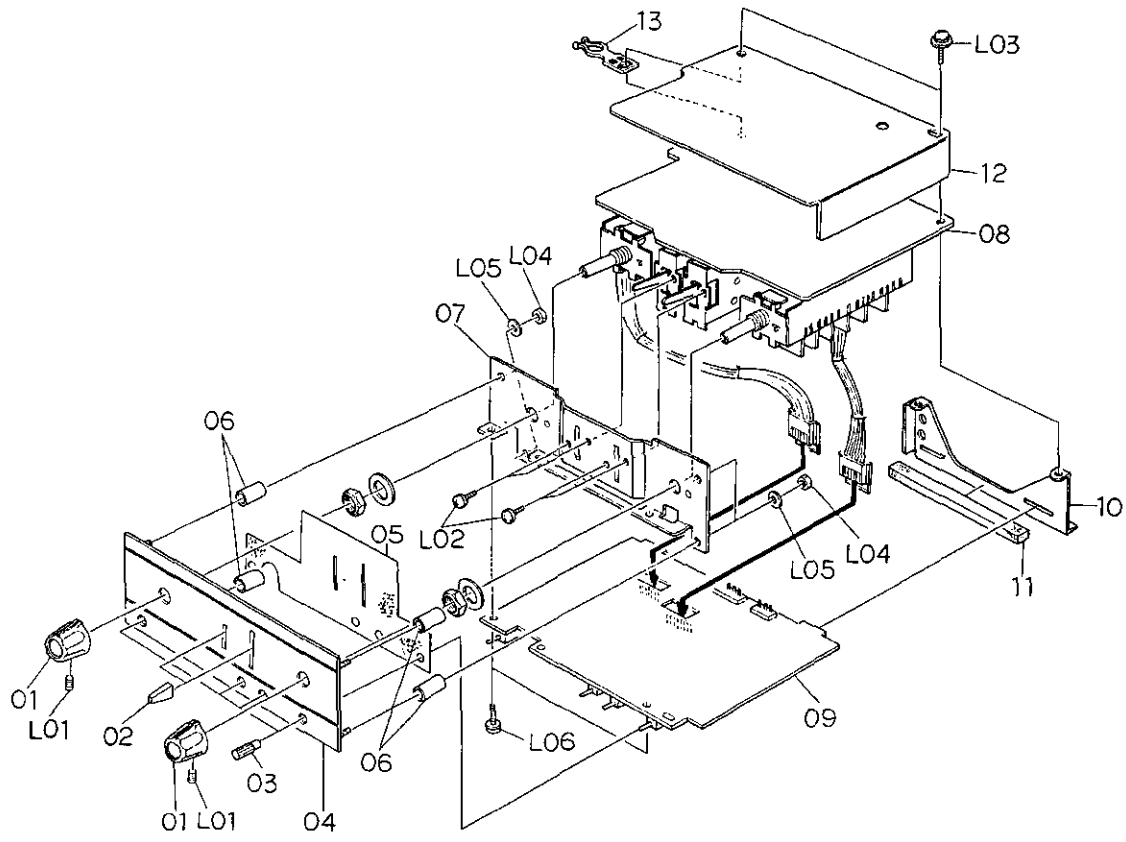


Fig. 7.4

Schematic Ref. No.	Part No.	Description	Q'ty
B01	JA03218A	Switch Control Ass'y	1
01	HA03729C	Rotary Switch Knob Ass'y	2
02	0H03565A	Slide Switch Knob	2
03	0H03564B	Calibration Knob	4
04	HA03730B	Front Panel Ass'y	1
05	0J03769A	Front Panel Himelon	1
06	0J03886A	Front Panel Stud	4
07	0J03746B	Switch Holder	1
08	BA03890A	Switch P.C.B. Ass'y	1
09	BA03891A	Volume P.C.B. Ass'y	1
10	0J03741D	Switch P.C.B. Holder	1
11	0J03773A	Volume P.C.B. Cushion	1
12	0J03901B	Switch P.C.B. Insulator	1
13	0B08516A	Wire Holder 583	1
L01	0E00774A	Screw M4x4 Cup Point (Hex. Socket Head)	2
L02	0E00622A	Screw M3x5 Philips Pan Head (2A)	4
L03	0E00607A	Screw M3x8 Philips Pan Head (3A)	2
L04	0E00718A	Nut Hex. M3	4
L05	0E00030A	Washer 3mm	4
L06	0E00510A	Screw M3x8 Philips Pan Head (2A)	2

7.5. Bar-graph Holder Ass'y (B02)

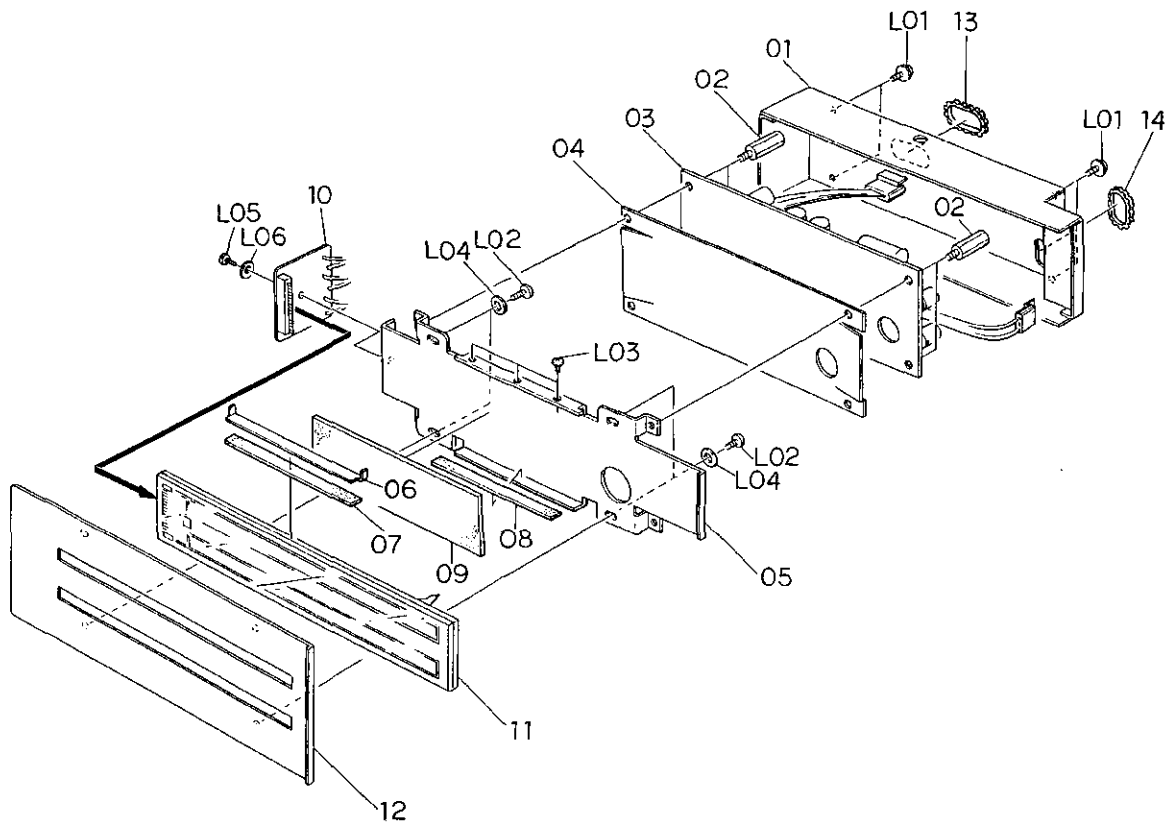


Fig. 7.5

Schematic Ref. No.	Part No.	Description	Q'ty
B02	JA03219A	Bar-graph Holder Ass'y	1
01	JA03204B	Shield Cover Ass'y	1
02	0J03755A	Bar-graph Stud	4
03	BA03889A	Display P.C.B. Ass'y	1
04	0J03772A	Display P.C.B. Insulator	1
05	0J03753B	Bar-graph Holder	1
06	0J03754A	Pressure Plate	1
07	0J03775B	Bar-graph Cushion A	1
08	0J03776B	Bar-graph Cushion B	1
09	0J03777B	Bar-graph Cushion C	1
10	BA03894A	8P Plug P.C.B. Ass'y	1
11	0B08416A	Bar-graph	1
12	JA03203C	Scale Panel Ass'y	1
13	0B08417A	Free Bushing 52mm	1
14	0B08426A	Free Bushing 41mm	1
L01	0E00606A	Screw M3x6 Philips Pan Head (3A)	4
L02	0E00778A	Screw M2.6x5 Philips Binding Head	4
L03	0E00826A	Screw M2x2.2 Philips Pan Head	3
L04	0E00183A	Washer 3mm	4
L05	0E00166A	Screw M2x4 Cylinder Head	1
L06	0E00779A	Washer 2mm (Bakelite)	1

7.6. Connector Ass'y (B03)

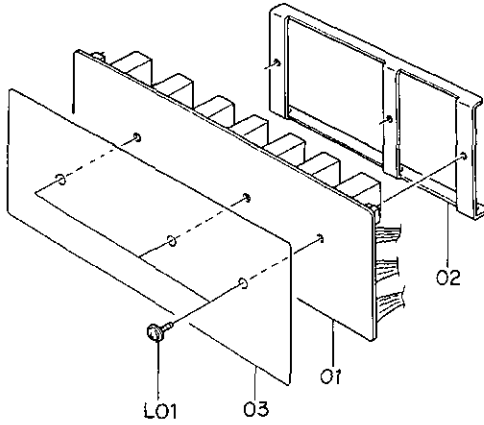


Fig. 7.6

Schematic Ref. No.	Part No.	Description	Q'ty
B03	JA03221A	Connector Ass'y	1
01	BA03893A	Connector P.C.B. Ass'y	1
02	QJ03750A	Connector P.C.B. Holder	1
03	QJ04024A	P.C.B. Insulator	1
L01	0E00607A	Screw M3x8 Philips Pan Head (3A)	3

9. WIRING DIAGRAM

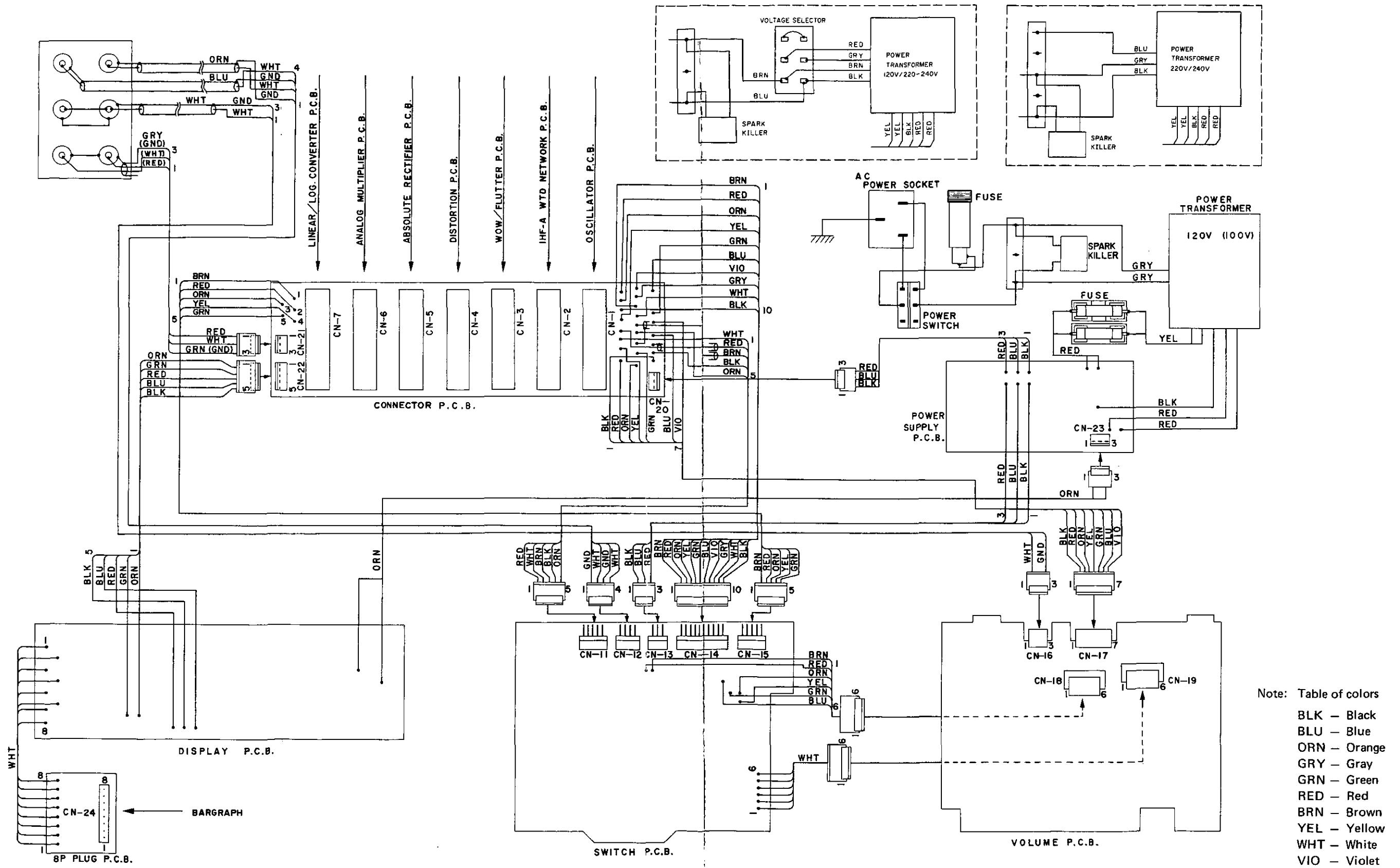


Fig. 9

10. TROUBLESHOOTING

10.1. Notes

- (1) Referring to the Owner's Manual, operate the Audio Analyzer T-100, and establish which circuit is in trouble.
- (2) Remove the covers, the printed-circuit boards, etc., and visually check the parts, wiring or conductive pattern of the printed-circuit board for abnormalities. Various abnormalities may be found through visual check such as burnt elements, broken wires, cold soldering and loose connections of connectors.
- (3) Check to insure whether the outputs +10 V and -10 V of the Power Supply Circuit are correct.
- (4) Check to insure whether the output AC 60 V of the Power Supply Circuit is correct.
- (5) Check the operation of circuits having trouble with a VOM or an oscilloscope according to the circuit diagram.

10.2. Troubleshooting

10.2.1. Indicators do not indicate proper value when Function Control is set to "Level"

Conditions: Input Signal - 1 kHz 1 V rms for L and R channels

Input Level SW - 0 dB
Meter Range SW - 0 dB
Function Control - Level

- (1) 1 V rms is not obtained at IC301-3 and -5 on Switch P.C.B.
 - (a) Poor contact or disconnection of connector CN-12
 - (b) Defective Input Level Switch
- (2) 1 V rms is not obtained at Outputs (L) and (R) on Switch P.C.B.
 - (a) Defective IC301
- (3) 1 V rms is not obtained at Inputs (L) and (R) on Volume P.C.B.
 - (a) Poor contact or disconnection of wire of CN-19
- (4) 1 V rms is not obtained at Outputs (L) and (R) on Volume P.C.B.
 - (a) Abnormality of logic signals or defective bilateral switch Q102 or 202
- (5) 1 V rms is not obtained at Inputs (L) and (R) on IHF-A WTD Network P.C.B.
 - (a) Poor contact or disconnection of wire of CN-17
- (6) 1 V rms is not obtained at Outputs (L) and (R) on IHF-A WTD Network P.C.B. (or Inputs (L) and (R) on Absolute Rectifier P.C.B.)
 - (a) Defective IC301 or 302
 - (b) Abnormality of logic signals or defective bilateral switch Q102, 202, 104, 204 or 301
 - (c) Bilateral switch Q306 or 307 on Wow & Flutter P.C.B. or Q801 on Distortion P.C.B. is ON
- (7) -1.5 V DC is not obtained at Outputs (L) and (R) on Absolute Rectifier P.C.B.
 - (a) Defective IC001, 002, 003, 004 or 005
 - (b) Abnormality of logic signals or defective bilateral switches
 - (c) Defective D703, 704, 803 or 804
- (8) 1 V rms is not obtained at Inputs (L) and (R) on Linear/Log. Converter P.C.B.
 - (a) Abnormality of logic signals or defective bilateral switches on Analog Multiplier P.C.B.
- (9) Incorrect operating waveform at IC302-1 on Linear/Log. Converter P.C.B. (refer to Fig. 6.8.1)
 - (a) Defective IC302
 - (b) Defective Micro Fork TF301 or disconnection of lead wire
- (10) Incorrect operating waveform at collectors Q105 and 205 on Linear/Log. Converter P.C.B. (refer to Fig. 6.8.1)
 - (a) Defective exponential waveform generator
 - (b) Defective differential amp. circuit
- (11) +2.2 V DC is not obtained at Outputs (L) and (R) on Linear/Log. Converter P.C.B.
 - (a) Defective L.P.F. circuit
 - (b) Abnormality of logic signals or defective bilateral switch Q302
 - (c) Bilateral switch Q305 on Wow & Flutter P.C.B. is ON
- (12) +2.2 V DC is not obtained at Inputs (L) and (R) on Display P.C.B.
 - (a) Poor contact or disconnection of wire of CN-22
- (13) Approx. 60 V AC is not obtained at AC voltage input on Display P.C.B.
 - (a) Poor contact or disconnection of wire of CN-23
- (14) Approx. 250 V DC is not obtained at emitter of Q709 on Display P.C.B.
 - (a) Defective high-voltage generator
 - (b) Defective ripple filter
- (15) Incorrect operating waveforms at various parts
 - (a) Defective ICs
 - (b) Defective transistors or bilateral switches
- (16) When all of the above are normal, this will indicate
 - (a) Poor contact or disconnection of wire of CN-24
 - (b) Defective Bar-graph, etc.

10.2.2. Indicators do not indicate the proper value when Function Control is set to "Level T.H. Dist. L or R"

Conditions: Input Signal — 400 Hz 1 V rms (Distortion: 1% @ 1 kHz)
 Input Level SW — 0 dB
 Meter Range SW — 0 dB
 Function Control — Level T.H. Dist. L or R

- (1) 400 Hz 1 V rms is not obtained at Input on Distortion P.C.B.
 - (a) Poor contact or disconnection of wire of CN-19 or CN-17 on Volume P.C.B.
- (2) 1 kHz 320 mV rms is not obtained at Output on Distortion P.C.B. (or Input (R) on Absolute Rectifier P.C.B.)
 - (a) Defective active filter circuit (IC801 or 802)
 - (b) Abnormality of logic signals or defective bilateral switch Q801 on Distortion P.C.B.
 - (c) Abnormality of logic signals on IHF-A WTD Network P.C.B. or Wow & Flutter P.C.B.
- (3) 400 Hz 1 V rms is not obtained at Output (L) on IHF-A WTD Network P.C.B. (or Input (L) on Absolute Rectifier P.C.B.)
 - (a) Abnormality of logic signals on IHF-A WTD Network P.C.B.
- (4) -1.5 V DC and -580 mV DC are not obtained at Output (L) and Output (R) on Absolute Rectifier P.C.B. (or Input (L) and Input (R) on Analog Multiplier P.C.B.)
 - (a) Abnormality of logic signals on Absolute Rectifier P.C.B.
- (5) -1.5 V DC is not obtained at Output on Analog Multiplier P.C.B. (or Input (R) on Linear/Log. Converter P.C.B.)
 - (a) Defective IC751, VF Converter or differential amp. circuit (refer to operating waveform in Fig. 6.13.1)
 - (b) Abnormality of logic signals or defective bilateral switch
- (6) +2.2 V DC is not obtained at Output on Linear/Log. Converter P.C.B.
 - (a) Abnormality of logic signals on Linear/Log. Converter P.C.B.
 - (b) Abnormality of logic signals on Wow & Flutter P.C.B.

10.2.3. Indicator does not indicate the proper value when Function Control is set to "Speed Cal."

Condition: Function Control — Speed Cal.

- (1) Sine wave 3 kHz approx. 0.7 V rms is not obtained at 3 kHz Output on Linear/Log. Converter P.C.B.
 - (a) Abnormality of logic signals, or short circuit of Q303
 - (b) Defective IC302
- (2) 3 kHz approx. 0.7 V rms is not obtained at W/F Output on Volume P.C.B.
 - (a) Poor contact or disconnection of wire of CN-19
 - (b) Abnormality of logic signals or defective bilateral switch Q302
 - (c) Defective Q307
- (3) 3 kHz approx. 0.7 V rms is not obtained at Input on Wow & Flutter P.C.B.
 - (a) Poor contact or disconnection of wire of CN-17
- (4) Incorrect operating waveform at IC302-3 on Wow & Flutter P.C.B. (refer to Fig. 6.4.2)
 - (a) Defective limiter circuit, differential circuit or VF converter circuit
 - (b) Abnormality of logic signals
 - (c) Defective Q302
- (5) +1.6 V rms (varied by Speed Cal. VR302 on Wow & Flutter P.C.B.) is not obtained at Speed on Wow & Flutter P.C.B.
 - (a) Defective L.P.F. circuit or DC amp. circuit
 - (b) Defective VR302 on Volume P.C.B.
 - (c) Abnormality of logic signals on Linear/Log. Converter P.C.B.

10.2.4. Indicators do not indicate the proper value when Function Control is set to "Noise-A"

Conditions: Input Signal — 1 kHz 100 mV rms for L and R channels
 Input Level SW — -20 dB
 Meter Range SW — 0 dB
 Function Control — Noise-A

- (1) 1 V rms is not obtained at Outputs (L) and (R) on IHF-A WTD Network P.C.B.
 - (a) Abnormality of logic signals or defective bilateral switch Q101, 102, 104, 201, 202 or 204
 - (b) Defective D101, 102, 103, 201, 202 or 203
- (2) Disconnect input signals. But still appearance of unwanted oscillation on Scope Out indicates;
 - (a) Abnormality of logic signals or defective Q304 on Oscillator P.C.B.
 - (b) Defective D304 on Oscillator P.C.B.

10.2.5. Indicators do not indicate the proper value when Function Control is set to "Peak Level"

Conditions: Input Signal – 1 kHz 1 V rms for L and R channels

Input Level SW – 0 dB

Meter Range SW – 0 dB

Function Control – Peak Level

- (1) 640 mV rms is not obtained at Inputs (L) and (R) on Absolute Rectifier P.C.B.
 - (a) Abnormality of logic signals or defective bi-lateral switch Q101 or 201 on Volume P.C.B.
 - (b) Defective D101 or 201 on Volume P.C.B.
- (2) –1.5 V DC is not obtained at Outputs (L) and (R) on Absolute Rectifier P.C.B.
 - (a) Abnormality of logic signals or defective bi-lateral switch Q702, 703, 802 or 803
 - (b) Defective D705, 706, 805 or 806

10.2.6. Indicator does not indicate the proper speed value when Function Control is set to "Speed Wow/Flutter" or "Speed Unweighted"

Conditions: Input Signal – 3 kHz $\pm 0.1\%$ 30 mV rms or more

Input Level SW – 0 dB

Speed Cal. Control – Center position

Function Control – Speed Wow/Flutter or Speed Unweighted

- (1) 3 kHz signal is not obtained at W/F Output on Volume P.C.B. (or Input on Wow & Flutter P.C.B.)
 - (a) Abnormality of logic signals or defective bi-lateral switch Q301 or 302 on Volume P.C.B.
- (2) +1.6 V DC is not obtained at Speed on Wow & Flutter P.C.B.
 - (a) Abnormality of logic signals on Wow & Flutter P.C.B. or Linear/Log. Converter P.C.B.

10.2.7. Indicator does not indicate the proper wow/flutter value when Function Control is set to "Speed Wow/Flutter" or "Speed Unweighted"

Conditions: Input Signal – 3 kHz (modulated with 4 Hz sine wave by 1%)

4 Hz : 380 mV rms

3 kHz: 760 mV rms

Input Level SW – 0 dB

Meter Range SW – 0 dB

Function Control – Speed Wow/Flutter or Speed Unweighted

- (1) 4 Hz 1 V peak-to-peak is not obtained at Output on Wow & Flutter P.C.B. (or Input (R) on Absolute Rectifier P.C.B.)
 - (a) Defective IC304

- (b) Abnormality of logic signals or defective bi-lateral switch Q306 or 307 on Wow & Flutter P.C.B.

- (c) Abnormality of logic signals on Distortion P.C.B. or IHF-A WTD Network P.C.B.

- (2) –1.5 V DC is not obtained at Output (L) on Absolute Rectifier P.C.B.

- (a) Defective IC003

- (b) Abnormality of logic signals or defective bi-lateral switch Q804 or 805

- (3) –1.5 V DC is not obtained at Output (L) on Analog Multiplier P.C.B.

- (a) Abnormality of logic signals

10.2.8. Oscillator Outputs do not show the proper value when Function Control is set to "Level" and Oscillator Control is set to "20 Hz – 20 kHz"

Conditions: Oscillator Control – 20 Hz – 20 kHz

Oscillator Output Control – Max.

Function Control – Level

- (1) 1.2 V rms is not obtained at OSC Output on Oscillator P.C.B.

- (a) Poor contact or disconnection of wire of CN-11 on Switch P.C.B.

- (b) Abnormality of logic signals or defective bi-lateral switch Q302 or 304

- (c) Defective IC304, Q301, 303, 305 or 306

- (2) 1.2 V rms is not obtained at pin 4 of CN-19 on Volume P.C.B.

- (a) Poor contact or disconnection of wire of CN-19

- (3) 1.2 V rms is not obtained at pin 1 of CN-16 on Volume P.C.B.

- (a) Defective VR301

- (b) Defective Q303 or 304

- (4) 1.2 V rms is not obtained at Oscillator Output Jacks

- (a) Poor contact or disconnection of wire of CN-16

10.2.9. Oscillator Outputs do not show the proper value when Function Control is set to "Level" and Oscillator Control is set to "Pink Noise"

Conditions: Oscillator Control – Pink Noise

Oscillator Output Control – Max.

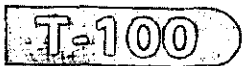
Function Control – Level

- (1) Noise of 50 mV rms is not obtained at Pink Output on Oscillator P.C.B.

- (a) Poor contact or disconnection of wire of CN-11 on Switch P.C.B.

- (b) Abnormality of logic signals or defective bi-lateral switch Q307

- (c) Defective IC302, 303, Q308 or 309



11. SPECIFICATIONS

General

Input Impedance	50 kilohms
Scope Out	Low Impedance

Oscillator (CR-type spot oscillator)

Spot Frequencies	20, 40, 63, 100, 160, 250, 400, 630, 1 k, 1.5 k, 2 k, 3 k, 4 k, 5 k, 6.3 k, 8 k, 10 k, 12 k, 15 k, 18 k, 20 kHz plus pink noise (± 2 dB, 20 – 20,000 Hz)
Output Voltage	1.2 V max. (variable)
Level Deviation	± 0.2 dB (20 – 20,000 Hz)
Output Distortion	Less than 0.3% (20 – 20,000 Hz) Less than 0.01% 400 Hz (for THD measurement)
Frequency Accuracy	$\pm 2\%$
Output Impedance	600 ohms

Level Measurement

Range	-80 dB – +30 dB (ref.: 0 dB = 1 V)
Frequency Response	20 – 20,000 Hz ± 0.3 dB
Ballistics	Average (rms): 0.3 sec ("VU") Peak: 10 ms rise time 2 sec fall time (DIN peak)

Wow & Flutter Measurement

Center Frequency	3 kHz
Input Level Range	3 mV – 30 V
Indication	DIN peak (wtd or unwtd, selectable)
Frequency Range	0.2 – 200 Hz
Calibration (test signal)	3 kHz ± 4.5 Hz ($\pm 0.15\%$)
Tape Speed Range	$\pm 3\%$

Distortion Meter

Measurement frequency	400 Hz
Input Voltage Range	100 mV – 30 V
Distortion Range	0.01% – 0.3%, 0.1% – 3%
Automatic Input Control Range	20 dB (-10 dB – +10 dB)
Frequency Characteristics	800 Hz – 10 kHz (± 0.3 dB)
Residual Noise	90 dB (input range: 0 dB) 85 dB (input range: -20 dB)

Noise Level Measurement

Frequency Characteristics	IHF-A Curve
Range	-100 dB – -10 dB (0 dB = 1 V)
Indication	Average Value
Power Requirements	100, 120, 220 – 240 Volts AC, 50/60 Hz
Power Consumption	15 VA
Dimensions	343(W) x 75(H) x 240(D) millimeters 13½(W) x 3(H) x 9½(D) inches
Weight	4.3 kilograms, 9.5 pounds

- Specifications and appearance design are subject to change for further improvement without notice.

T-100

Service Manual

Nakamichi T-100

Nakamichi Corporation

1-153 Suzukicho, Kodaira, Tokyo
Phone: (0423) 42-1111
Telex: 2832610 (NAKAM J)
Cable: NAKAMICHI KOKUBUNJI

Nakamichi U.S.A. Corporation

220 Westbury Avenue
Carle Place, N.Y. 11514
Phone: (516) 333-5440

1101 Colorado Avenue
Santa Monica, Calif. 90401
Phone: (213) 451-5901
Telex: 652429 (NAKREI SNM)

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