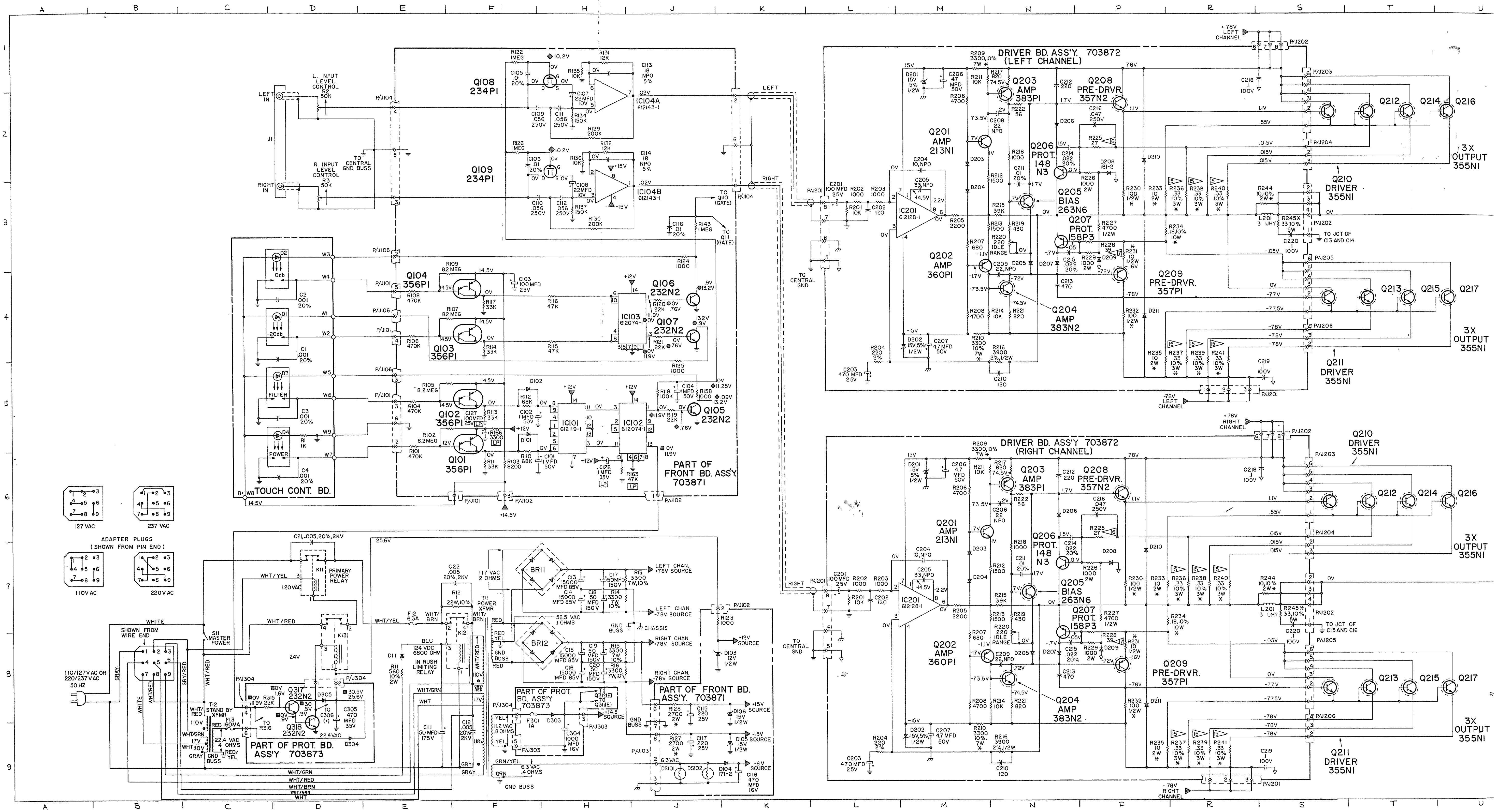
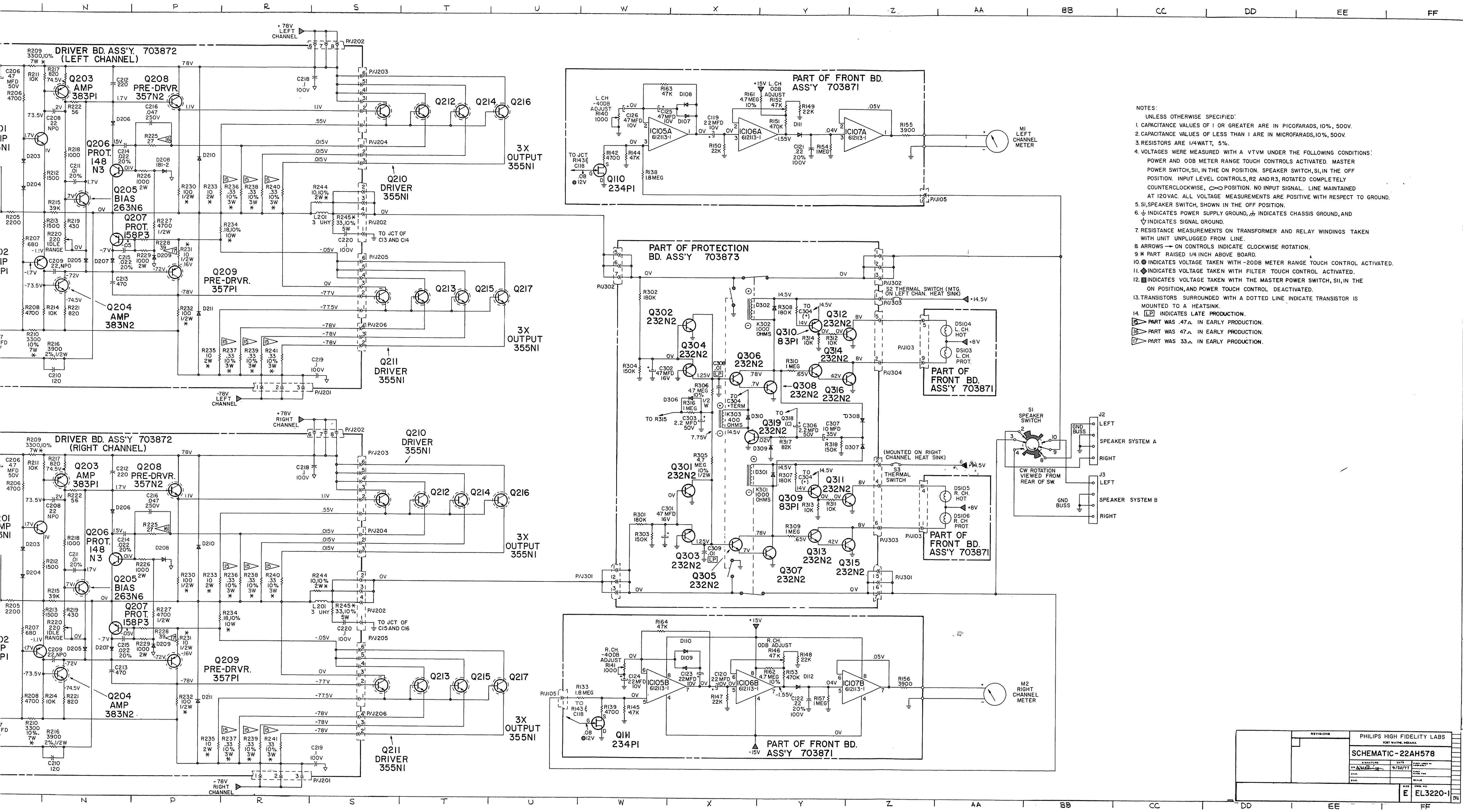

DRIVER BD. ASS'Y. 703872
(LEFT CHANNEL)
DRIVER BD. ASS'Y 703872
(RIGHT CHANNEL)
TOUCH CONT. BD.
PART OF FRONT BD. ASS'Y. 703871
PART OF PROT. BD. ASS'Y 703873
PART OF PROT. BD. ASS'Y 703873
PART OF FRONT BD. ASS'Y. 703871
Q108 234P1
Q109 234P1
Q104 356P1
Q103 356P1
Q102 356P1
Q101 356P1
Q106 232N2
Q107 232N2
Q105 232N2
IC104A 612143-1
IC104B 612143-1
IC103 612074-1
IC101 612119-1
IC102 612074-1
L. INPUT LEVEL CONTROL R2 50K
R. INPUT LEVEL CONTROL R3 50K
LEFT IN
RIGHT IN
TO CENTRAL GND BUSS
Q201 AMP 213N1
Q202 AMP 360P1
Q203 AMP 383P1
Q204 AMP 383N2
Q205 BIAS 263N6
Q206 PROT. 148 N3
Q207 PROT. 158P3
Q208 PRE-DRVR. 357N2
Q209 PRE-DRVR. 357P1
Q210 DRIVER 355N1
Q211 DRIVER 355N1
Q212
Q213
Q214
Q215
Q216
Q217
3X OUTPUT 355N1
IC201 612128-1
+78V LEFT CHANNEL
-78V LEFT CHANNEL
+78V RIGHT CHANNEL
-78V RIGHT CHANNEL
TO CENTRAL GND
ADAPTER PLUGS (SHOWN FROM PIN END)
127 VAC
237 VAC
110VAC
220VAC
110/127VAC OR 220/237VAC 50 HZ
SHOWN FROM WIRE END
S11 MASTER POWER
K11 PRIMARY POWER RELAY
K131
K121
IN RUSH LIMITING RELAY
T11 POWER XFMR
T12 STAND BY XFMR
BR11
BR12
Q317 232N2
Q318 232N2
LEFT CHAN. +78V SOURCE
LEFT CHAN. -78V SOURCE
RIGHT CHAN. +78V SOURCE
RIGHT CHAN. -78V SOURCE
+12V SOURCE
+15V SOURCE
-15V SOURCE
+14.5 SOURCE
+8V SOURCE
GND BUSS
CHASSIS

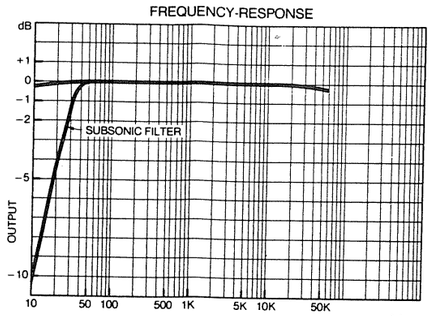


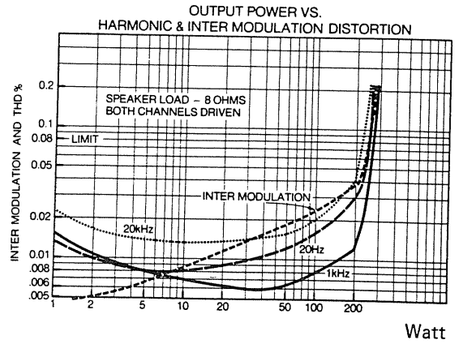
NOTES:

UNLESS OTHERWISE SPECIFIED:

1. CAPACITANCE VALUES OF 1 OR GREATER ARE IN PICOFARADS, 10%, 500V.
2. CAPACITANCE VALUES OF LESS THAN 1 ARE IN MICROFARADS, 10%, 500V.
3. RESISTORS ARE 1/4 WATT, 5%.
4. VOLTAGES WERE MEASURED WITH A VTVM UNDER THE FOLLOWING CONDITIONS: POWER AND 0DB METER RANGE TOUCH CONTROLS ACTIVATED. MASTER POWER SWITCH, S11, IN THE ON POSITION. SPEAKER SWITCH, S1, IN THE OFF POSITION. INPUT LEVEL CONTROLS, R2 AND R3, ROTATED COMPLETELY COUNTERCLOCKWISE, ∞ POSITION. NO INPUT SIGNAL. LINE MAINTAINED AT 120VAC. ALL VOLTAGE MEASUREMENTS ARE POSITIVE WITH RESPECT TO GROUND.
5. S1, SPEAKER SWITCH, SHOWN IN THE OFF POSITION.
6. ⏚ INDICATES POWER SUPPLY GROUND, ⊥ INDICATES CHASSIS GROUND, AND ▽ INDICATES SIGNAL GROUND.
7. RESISTANCE MEASUREMENTS ON TRANSFORMER AND RELAY WINDINGS TAKEN WITH UNIT UNPLUGGED FROM LINE.
8. ARROWS → ON CONTROLS INDICATE CLOCKWISE ROTATION.
9. * PART RAISED 1/4 INCH ABOVE BOARD.
10. ● INDICATES VOLTAGE TAKEN WITH -20DB METER RANGE TOUCH CONTROL ACTIVATED.
11. ◆ INDICATES VOLTAGE TAKEN WITH FILTER TOUCH CONTROL ACTIVATED.
12. ■ INDICATES VOLTAGE TAKEN WITH THE MASTER POWER SWITCH, S11, IN THE ON POSITION, AND POWER TOUCH CONTROL DEACTIVATED.
13. TRANSISTORS SURROUNDED WITH A DOTTED LINE INDICATE TRANSISTOR IS MOUNTED TO A HEATSINK.
14. [LP] INDICATES LATE PRODUCTION.
15▷ PART WAS .47Ω IN EARLY PRODUCTION.
16▷ PART WAS 47Ω IN EARLY PRODUCTION.
17▷ PART WAS 33Ω IN EARLY PRODUCTION.

REVISIONS	PHILIPS HIGH FIDELITY LABS FORT WAYNE, INDIANA
	SCHEMATIC-22AH578
SIGNATURE: DR [signature]	DATE: 9/20/77
CHK.	FIRST USED IN ASSEMBLY
ENG.	FIRST MADE FOR
	SCALE
SIZE: E	DWG. NO: EL3220-1





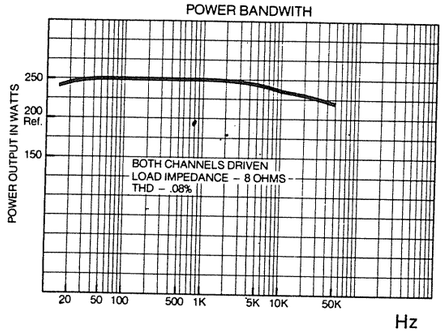
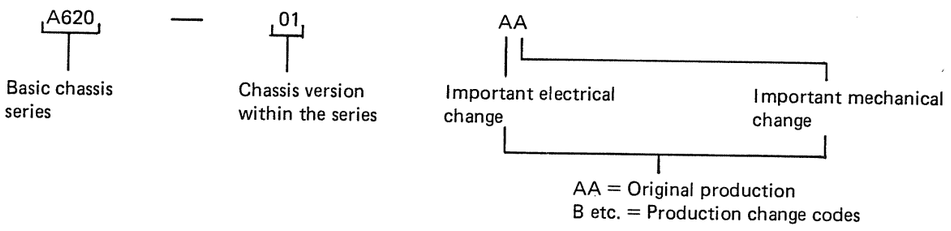


Fig. 3

CHASSIS IDENTIFICATION



INSTRUCTIONS FOR SERVICING AND REPLACING PARTS

Driver and output transistor replacement

Since transformerless quasi complementary output circuitry is utilized in this chassis, extreme care should be exercised when servicing or replacing the transistors. It is imperative that the transistors be isolated from the heat sink by means of a mica insulator coated on both sides with Dow-Corning DC4 silicon grease, or equivalent

When replacing a driver or output transistor, make certain the replacement transistor has the same beta range (i.e., Orange or Red) as the defective transistor. The beta range of the transistor is indicated by a red or orange dot (or lettering) on the top of the case. Failure to replace a defective driver or output transistor with one having the same beta characteristics could be detrimental to the performance of the power amplifier.

After servicing or replacing one or more of the output transistors, the Quiescent Current Adjustment must be performed in the affected channel. Misadjustment of the output transistors will cause crossover distortion and possible premature failure of the output transistors.

Driver board assembly service position

For ease in troubleshooting and servicing the components located on the driver board assembly, disassemble the chassis as follows:

1. Remove the cabinet top (1) and bottom pan from the power amplifier.
2. Remove the four safety screens from the large heat sink to which the driver board assembly, that is to be serviced, is mounted to.
3. To obtain additional slack for the wires connected to the thermal switch (mounted on the large heat sink), remove the wires from the nylon tie located on the bottom of the chassis.
4. Remove the eight screws securing the large heat sink to the chassis. The driver board assembly/heat sink can now be removed from the chassis by gently rocking it back and forth while, at the same time, lifting it up and out of the chassis. When the driver board assembly/heat sink is released from the chassis, be careful not to damage the wires connected to the thermal switch.
5. The driver board assembly/heat sink can now be laid down along side the chassis.
6. Connect the extender cables between P201 and J201, and between P202 and J202. Power can now be applied to the chassis, when it is in the driver board assembly service position, for troubleshooting the circuitry contained on the driver board assembly. For extender cable fabrication instructions, see "Extender Cable Fabrication".
7. To reassemble, reverse the preceding steps.

Extender cable fabrication

A set (two cables) of extender cables must be fabricated to power the chassis when in the Driver Board assembly position. Fabrication of a single cable is as follows:

1. The materials required to fabricate a single extender cable are listed below:

Qty	Description
8	127 mm lengths of insulated 18 gauge solid wire
1	4822 265 30151, 8-pin male connector
1	4822 265 30155, 8-pin female connector

2. Prepare the eight lengths of wire by removing 6 mm of insulation from each end.
3. Tin the wire ends, as well as the connector terminals on the male and female connectors.
4. Using one of the prepared lengths of wire, connect pin 1 of the male connector to pin 1 of the female connector. Continue wiring the connectors in this manner until the remaining seven pins of each connector have been connected to one another.

Replacement of components secured to chassis by rivets

1. Bore out the rivets using a drill bit slightly larger in diameter than the rivet, see Figure. 4.
2. Punch out the remainder of the rivet with a nail set or prick punch.
3. Remove the defective components.
4. Install the new component by securing it with another rivet, or suitable screw and nut.

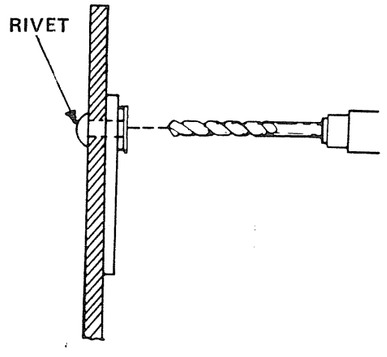


Fig. 4

ADJUSTMENTS

Quiescent current adjustment

To adjust the direct coupled quasi complementary output stage, perform the following adjustment on each Driver Board assembly:

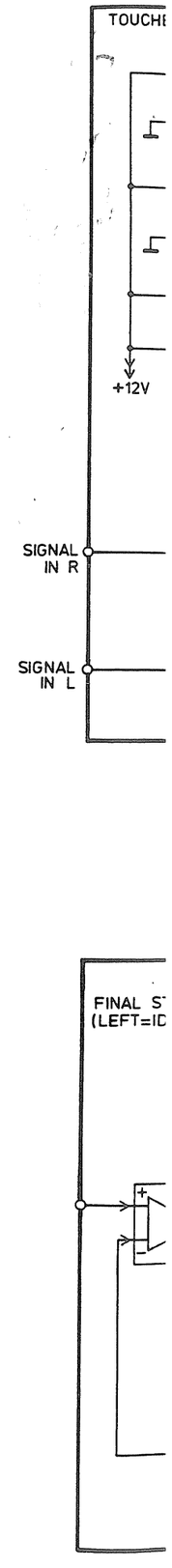
1. Place the speaker switch to the "Off" position.
2. Rotate the level controls completely counterclockwise (no input signal).
3. Connect a DC VTVM across R234.
4. Adjust R220 (Idle Range) to read 45 mV, ± 5 mV, on the DC VTVM as soon as the amplifier is turned On (cold).

Note: This adjustment must be performed in the affected channel when any of the output transistors are replaced. Misadjustment will cause crossover distortion and possible premature failure of the output transistor(s).

Level meter adjustment

To adjust the level meters perform the following adjustments, left channel and (right channel), on the front board assembly:

1. Disconnect J105 from P105.
2. With the "0 dB" (X1) meter range activated, couple a 200 mV, 1,000 Hz signal to pin 2 (1) of P105.
3. Connect an AC VTVM to the positive terminal of C119 (IC120), and adjust R140 (R141) until 105 mV is indicated on the meter.
4. Connect J105 to P105.
5. Connect an AC VTVM to the left (right) channel speaker system "A" terminals, and place the speaker switch in the "A" position.
6. Rotate the left (right) channel level control to mid-position. Apply a 1,000 Hz signal to the left (right) channel input jack and adjust the generator output until 40 VAC is indicated on the AC VTVM.
7. Adjust R152 (R146) until 0 dB is indicated on the power amplifiers left (right) channel level meter.



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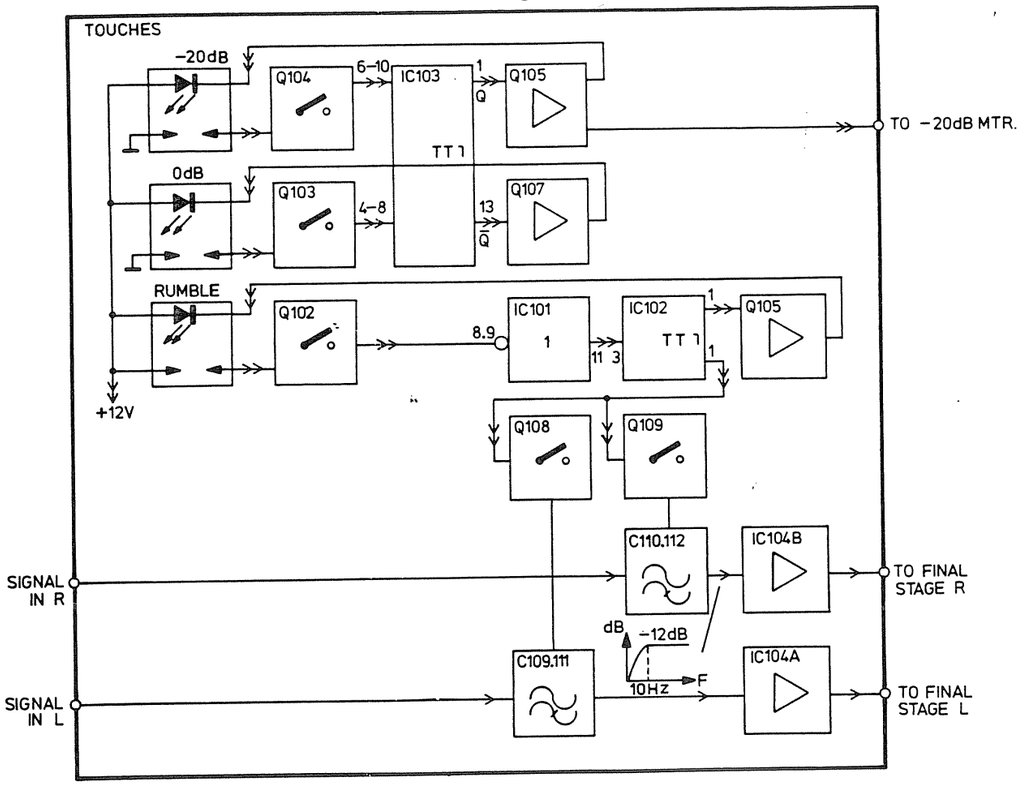

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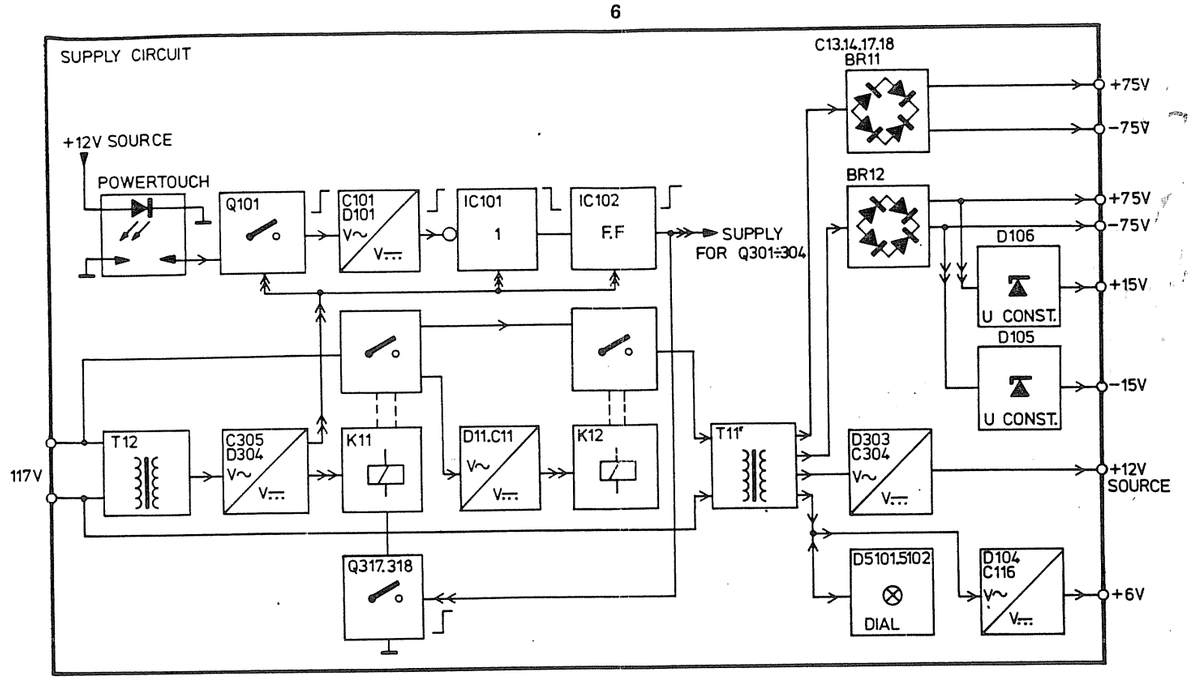
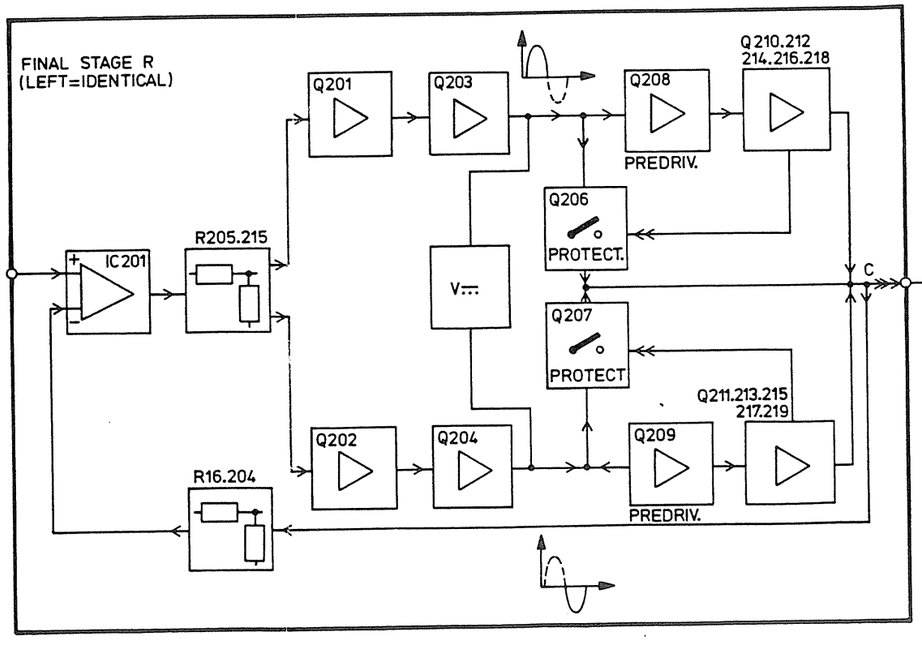




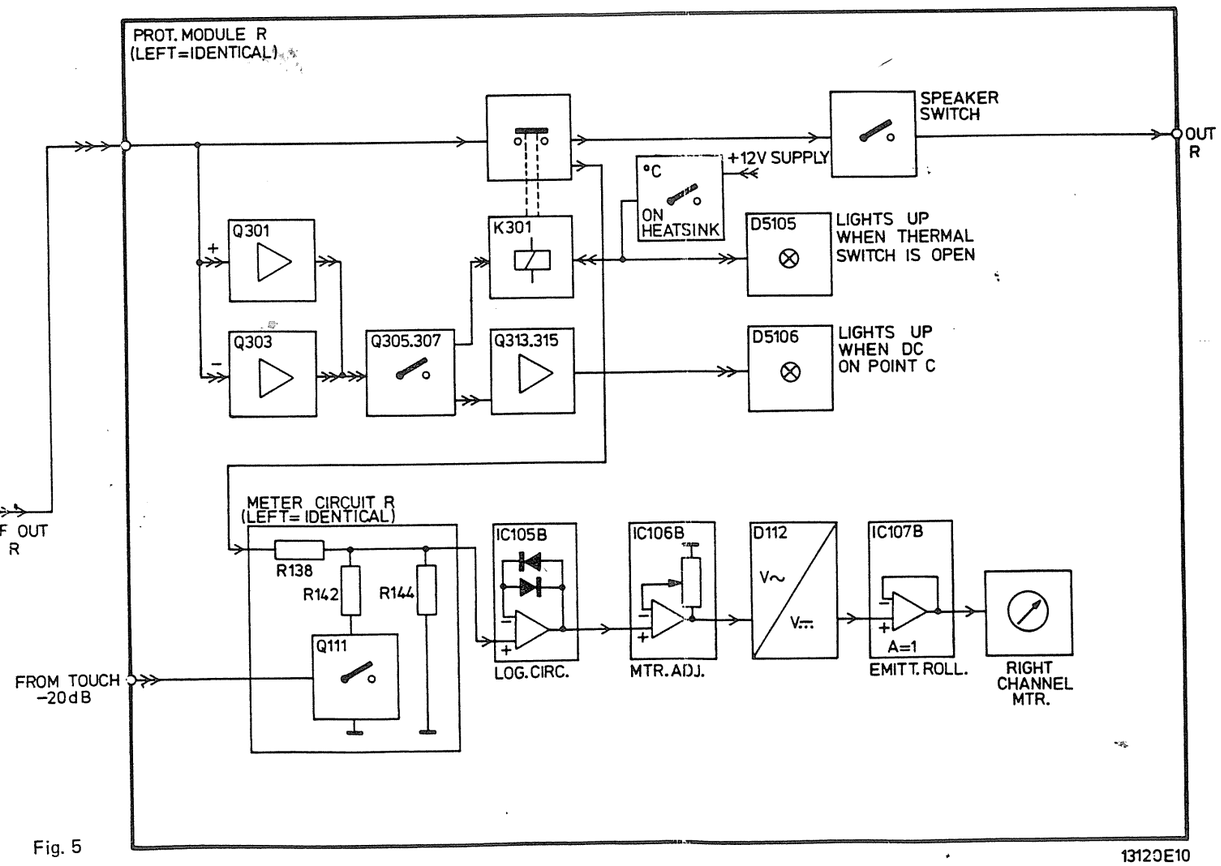
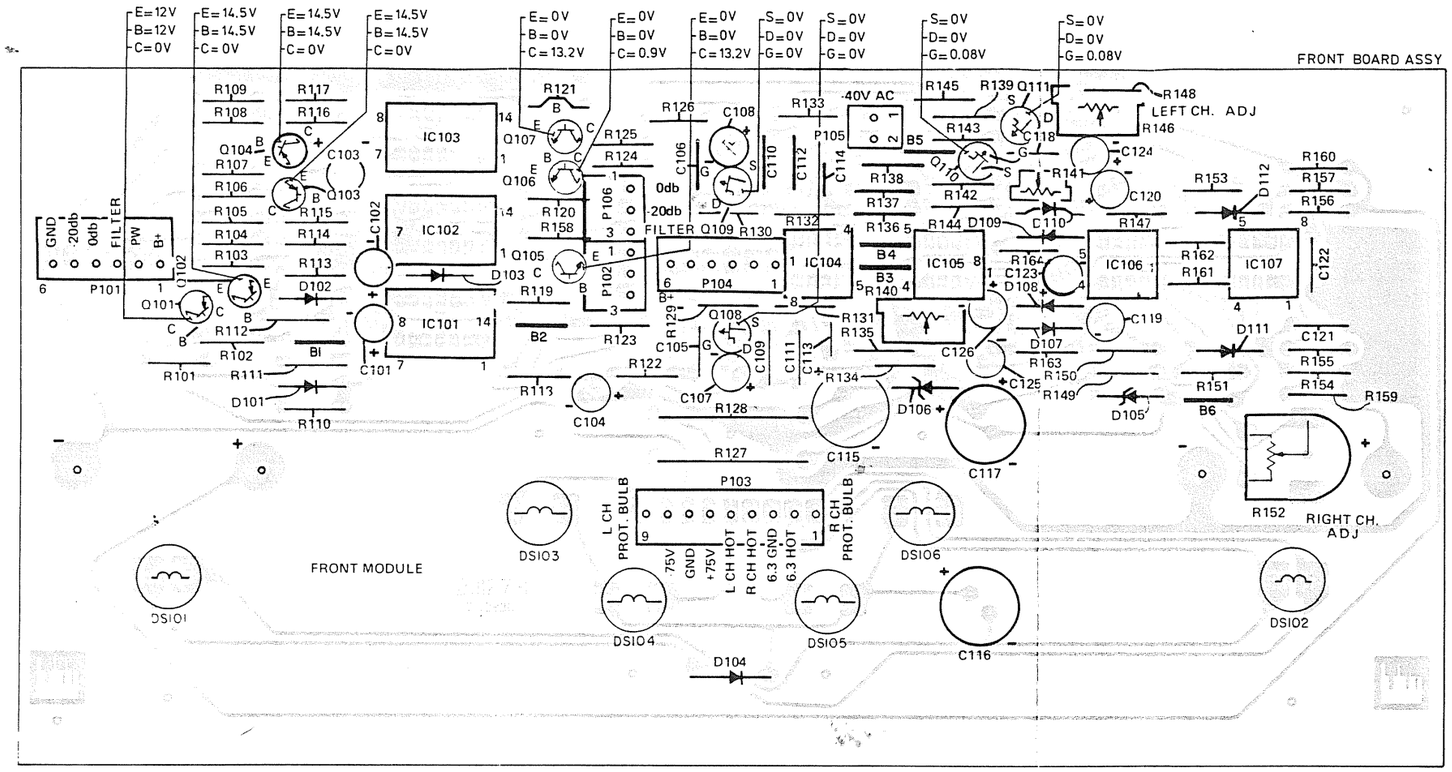
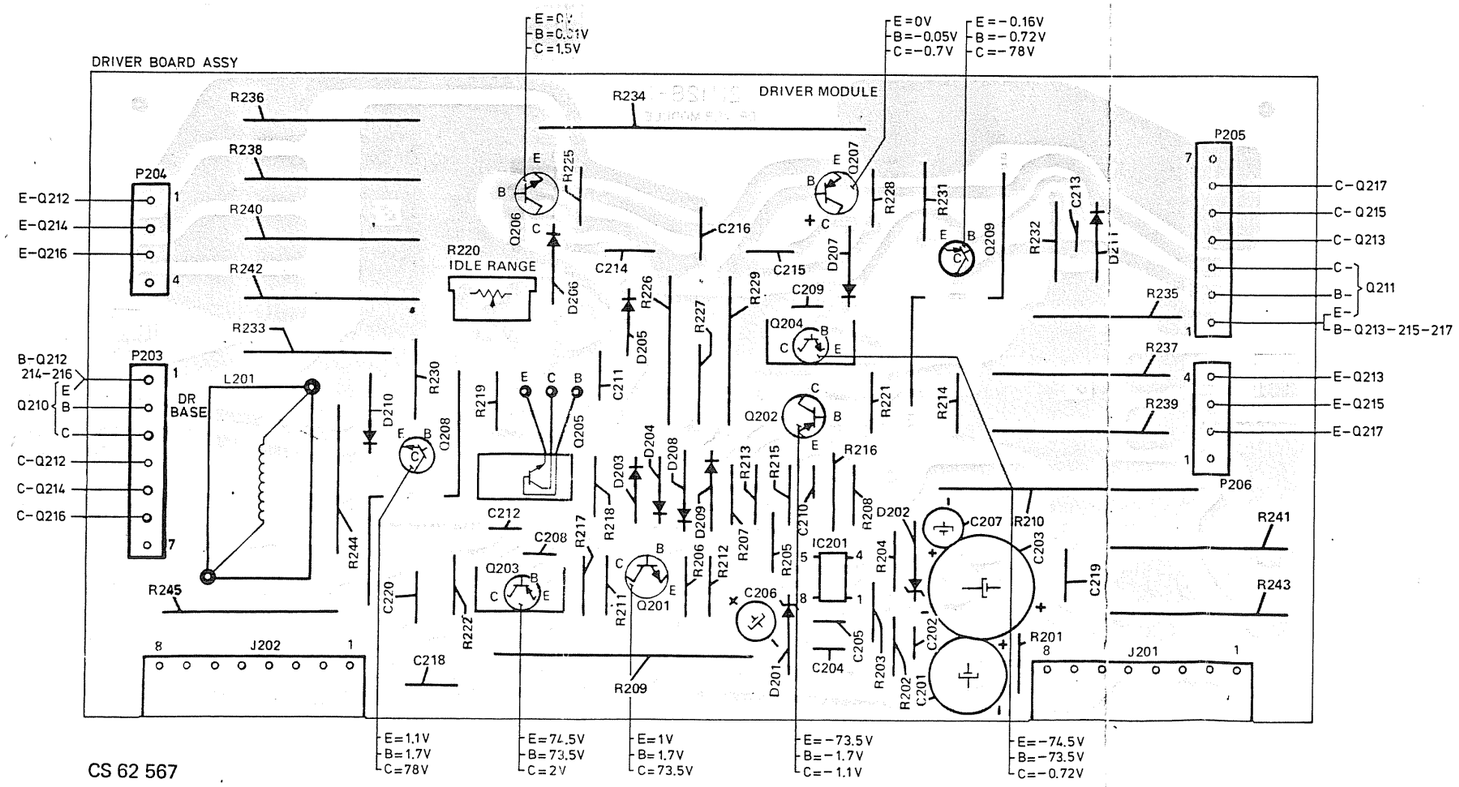


Fig. 5

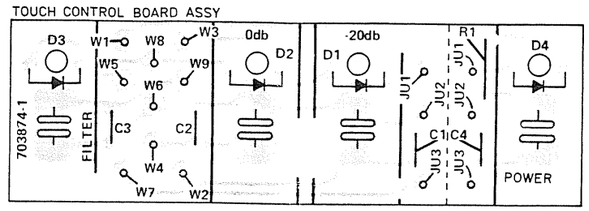
13120E10

CS 62 566





CS 62 567



	E	B	C
Q301	0V	0V	1.25V
Q302	0V	0V	1.25V
Q303	16V	0V	1.25V
Q304	0V	0V	1.25V
Q305	0.7V	1.25V	0.78V
Q306	0.7V	1.25V	0.78V
Q307	0V	0.7V	0.78V
Q308	0V	0.7V	0.78V
Q309	14.5V	14V	0V
Q310	14.5V	14V	0V
Q311	0V	0V	8V
Q312	0V	0V	8V
Q313	0.42V	0.65V	8V
Q314	0.42V	0.65V	8V
Q315	0V	0.42V	8V
Q316	0V	0.42V	8V
Q317	0.9V	1.6V	0.9V
Q318	0V	0.9V	0.9V

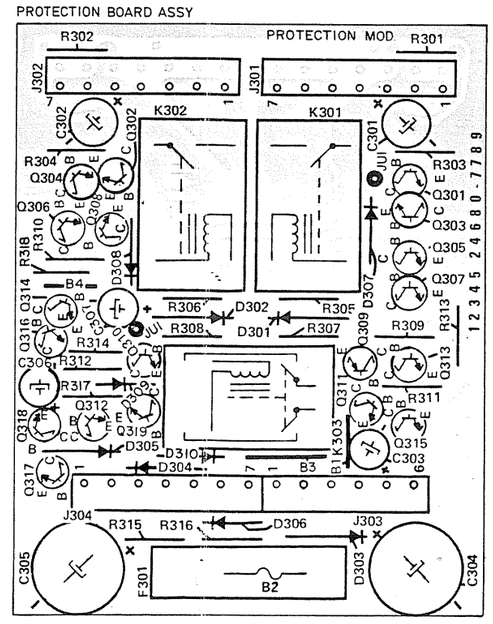


Fig. 6