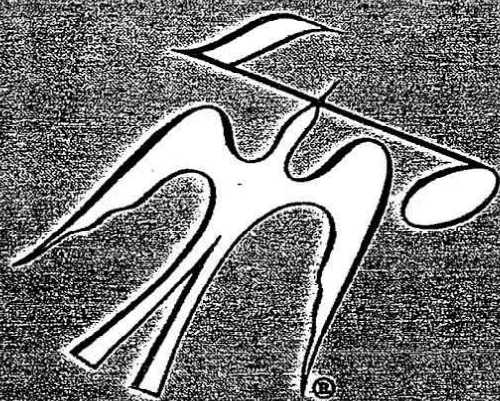
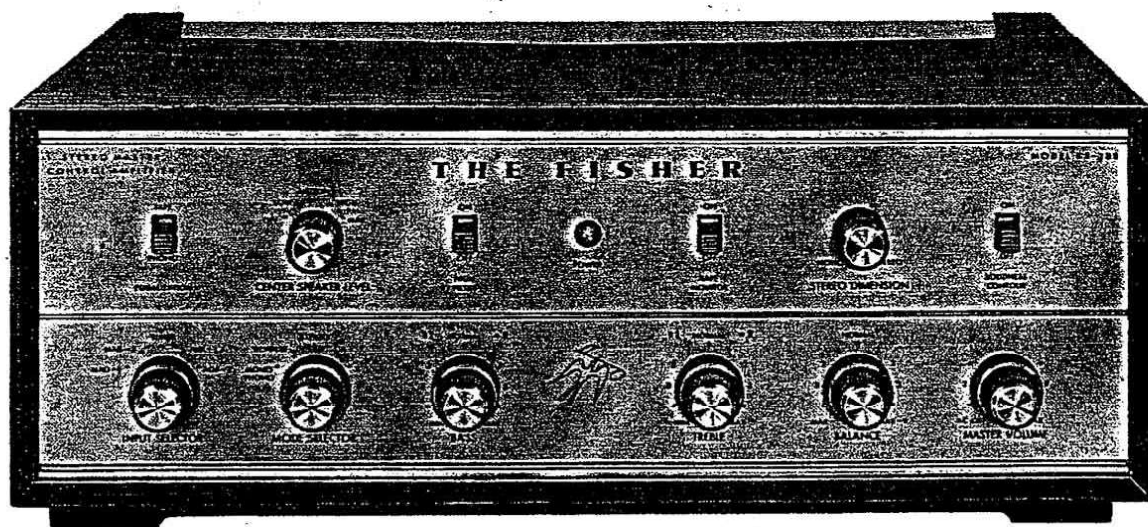


# Service Manual

# THE FISHER



# KX-200

# PARTS DESCRIPTION LIST

## CAPACITORS

10% tolerance for all fixed capacitors, unless otherwise noted or marked.

Symbol	Description	Part No.
C1	Electrolytic, 200uf, 250V	C50180-20
C2	Electrolytic, 2 Section: A—40uf, 500V B—200uf, 250V	C50180-19
C3	Electrolytic, 3 Section: A—40uf, 300V B—40uf, 400V C—40uf, 450V	C50180-26
C4	Electrolytic, 2 Section: A—1000uf, 35V B—1000uf, 35V	C50180-37
C5, 6	Ceramic, .01uf, 20%, 500V	C50089-3
C7, 8	Mylar, .022uf, 400V	C50197-28
C9, 10	Ceramic, 24uf, 5%, N150, 1000V	C50070-8
C11, 12	Mylar, .022uf, 400V	C50197-28
C13, 14	Mylar, .047uf, 400V	C50197-30
C15, 16	Ceramic, 68uf, N750, 1000V	C50070-16
C17, 18	Mylar, .022uf, 250V	C50197-49
C19, 20, 21, 22	-047-630V Mylar, .047uf, 400V	C50197-30
C23, 24	Ceramic, 390uf, 1000V	C50072-6
C25, 26	Electrolytic, 50uf, 70V	C50283-2

## RESISTORS

In ohms, 10% tolerance, 1/2 Watt, unless otherwise noted. K=Kilohm, M=Megohm.

Symbol	Description	Part No.
R1, 2	Dep. Carbon, 47K, 5%, 1/2 W	R33DC473J
R3, 4	Dep. Carbon, 10K, 5%, 1/2 W	R33DC103J
R5, 6	Glass, 2.2K, 5%, 1W	R30G222J
R7, 8	Glass, 330K, 5%, 1W	R30G334J
R9, 10	Dep. Carbon, 220K, 5%, 1/2 W	R33DC224J
R11, 12	Dep. Carbon, 100K, 5%, 1/2 W	R33DC104J
R13, 14	Dep. Carbon, 2.2M, 5%, 1/2 W	R33DC225J
R15, 16	Composition, 560K, 5%	RC20BF564J
R17, 18	Composition, 10M	RC20BF106K
R19, 20	Dep. Carbon, 2.2M, 5%, 1/2 W	R33DC225J
R21, 22	Dep. Carbon, 820, 5%, 1/2 W	R33DC821J
R23, 24	Dep. Carbon, 220K, 5%	R33DC224J
R25, 26	Composition, 3.3M, 5%	RC20BF335J
R27, 28	Dep. Carbon, 47K, 5%, 1/2 W	R33DC473J
R29, 30	Dep. Carbon, 820, 5%, 1/2 W	R33DC821J
R31, 32	Dep. Carbon, 220K, 5%, 1/2 W	R33DC224J
R33, 34	Dep. Carbon, 22K, 5%, 1/2 W	R33DC223J
R35, 36	Dep. Carbon, 10K, 5%, 1/2 W	R33DC103J
R37, 38	Dep. Carbon, 1K, 5%, 1/2 W	R33DC102J
R39, 40	Dep. Carbon, 220, 5%, 1/2 W	R33DC221J
R41, 42	Dep. Carbon, 330K, 5%, 1/2 W	R33DC334J
R43, 44	Dep. Carbon, 82K, 5%, 1/2 W	R33DC823J
R45, 46	Dep. Carbon, 68K, 5%, 1/2 W	R33DC683J
R47, 48	Dep. Carbon, 680K, 5%, 1/2 W	R33DC684J
R49, 50	Dep. Carbon, 1K, 5%, 1/2 W	R33DC102J
R51, 52	Dep. Carbon, 270K, 5%, 1/2 W	R33DC274J

R53, 54, 55, 56	Composition, 68K	RC20BF683K
R57, 58	Dep. Carbon, 270K, 5%, 1/2 W	R33DC274J
R59, 60	Dep. Carbon, 1K, 5%, 1/2 W	R33DC102J
R61, 62, 63, 64	Composition, 10, 5%	RC20BF100J
R65, 66	Composition, 680, 5%	RC20BF681J
R67, 68	Wirewound, 10, 5W	R779-103
R69	Composition, 390, 5%	RC20BF391J
R70	Glass, 1.8K, 4W	RP4W182K
R71	Composition, 1K	RC20BF102K
R72	Composition, 2.2K	RC20BF222K
R73	Composition, 100K	RC20BF104K
R74	Composition, 220K	RC20BF224K
R75	Wirewound, 15, 5W	R719-106
R76, 77	Composition, 8.2K	RC20BF822K
R78, 79	Composition, 39K	RC20BF393K

## POTENTIOMETERS

Symbol	Description	Part No.
P01, 2	Potentiometer, Dual, 1M, Bass & Treble	R50160-93
P03	Potentiometer, Dual, 500K, Volume	R50160-92
P04	Potentiometer, 1M, Dimension	R50160-111
P05	Potentiometer, 500K, Balance	R50160-110
P06, 7	Potentiometer, 25K, DC Balance	R50103-2
P08, 9	Potentiometer, 5K, Channel A & B Bias	R50103-4

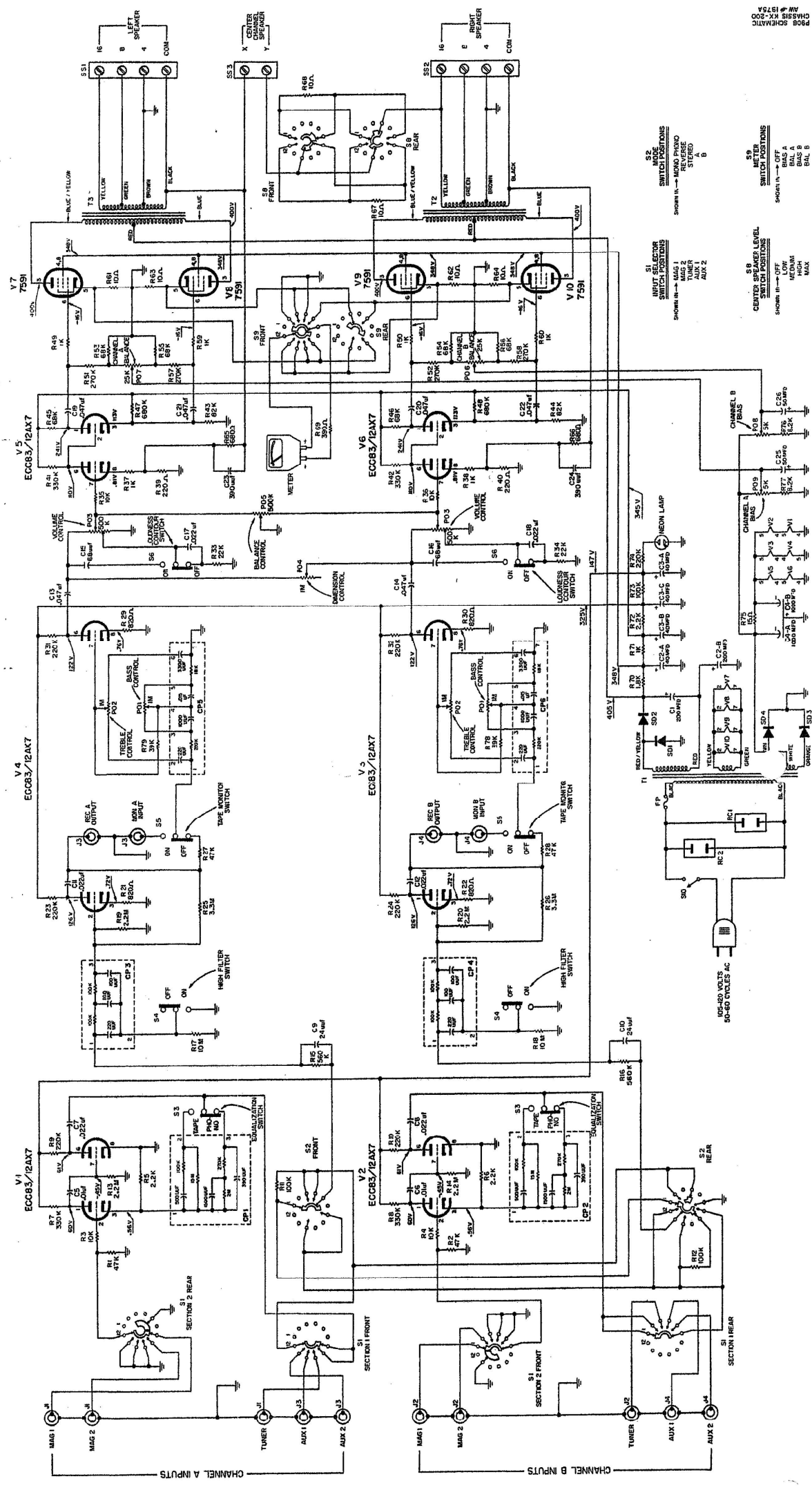
## SWITCHES

Symbol	Description	Part No.
S1	Switch, Input Selector	S908-113
S2	Switch, Mode Selector	S908-118
S3, 4, 5, 6	Switch, Slide	S50200-5
S8	Switch, Center Speaker Level	S908-111
S9	Switch, Meter	S908-117
S10	Switch, Power	Part of P03

## MISCELLANEOUS

Symbol	Description	Part No.
CP1, 2	Printed Circuit, Phono, Tape Equalization	PC50187-3
CP3, 4	Printed Circuit, High Filter	PC50187-2
CP5, 6	Printed Circuit, Tone Control	PC50187-4
FP	Fuse, 3.2 Amp, Slo-Blo	F3319
SD1, 2	Silicon Diode, High Voltage	SR806-126
SD3, 4	Silicon Diode, Filament & Bias	SR851-122
T1	Transformer, Power	T908-115
T2	Transformer, Output Channel B	T908-116-2
T3	Transformer, Output Channel A	T908-116-1
—	Neon Lamp	I557-144
—	Meter	M908-119
—	Dress Panel	A5908-108
—	Tube Shield	E3287
—	Knob, Dummy Dual	E50324
—	Knob, Dual Rear	E50221
—	Knob, Dual Front	E50323
—	Knob	E50325-1
—	Line Cord	W50023-1
—	Fuse Holder	X563-151

# SCHEMATIC DIAGRAM



**S1 INPUT SELECTOR SWITCH POSITIONS**  
 SHOWN IN → MAG 1  
 MAG 2  
 AUX 1  
 AUX 2

**S2 MODE SWITCH POSITIONS**  
 SHOWN IN → MONO PHONO  
 REVERSE  
 STEREO  
 A  
 B

**S3 CENTER SPEAKER LEVEL SWITCH POSITIONS**  
 SHOWN IN → OFF  
 LOW  
 MEDIUM  
 MAX

**S4 SPEAKER SWITCH POSITIONS**  
 SHOWN IN → OFF  
 BAS A  
 BAS B  
 BAL A  
 BAL B

105-60 VOLTS AC  
 50-60 CYCLES AC

# ADJUSTMENTS • AMPLIFIER

Turn all of the front panel controls as follows:

Input Selector	: Tuner
Mode Selector	: Stereo
Bass (Both)	: Normal
Treble (Both)	: Normal
Balance	: Normal
Master Volume	: AC OFF
Equalization	: Phono
Center Speaker Level	: Medium
High Filter	: OFF
Tape Monitor	: OFF
Stereo Dimension	: Stereo
Loudness Contour	: OFF

Note that the "Center Speaker Level" control is turned to "Medium."

Now rotate the chassis so that the meter can be read. Cut a one-inch length of bare wire and bend hooks in both ends. Use a screwdriver to loosen both screws at the "X" and "Y" center speaker terminals. Short these terminals together with the bare wire and tighten the screws — be sure the ends of the wire are not touching the chassis.

Adjust the bias and balance controls as follows:

Bias A	— Fully clockwise
Bias B	— Fully clockwise
Bal A	— Approximately in the center of rotation
Bal B	— Approximately in the center of rotation

Turn the KX-200 on by rotating the volume control clockwise until the switch clicks — but keep the control in its minimum position. Do not turn it any further clockwise than is necessary to actuate the ON-OFF switch.

Note that the slot in the meter switch shaft acts as a pointer. Use a screwdriver to turn the switch to the "Bias A" position. Rotate the "Bias A" chassis control until the meter pointer moves up to the "Bias" line on the meter face.

Turn the meter switch to "Bal A" and adjust the "Bal A" control until the meter pointer rests at the "Bal" line. Rotate the control completely through its range to be sure it is adjusted properly. Note that near the ends of its range the meter pointer will flicker. The final position of the control should *not* be at the end of rotation.

Turn the meter switch to "Bias B" and rotate the chassis "Bias B" control until the meter pointer moves up to the "Bias" line.

Turn the meter switch to the "Bal B" position and rotate the chassis "Bal B" control until the meter pointer rests on the "Bal" line.

Finally turn the meter switch back to the "Bias A" position. The pointer may have moved of the "Bias" line — this is normal. Simply repeat the entire adjustment procedure. The following simplified table can be used.

**IMPORTANT NOTE:** If line voltage is low it may not be possible to move the pointer to the "Bias" line in steps 1 and 3. If so, adjust the bias controls until the pointer rests at the left edge of the red portion of the scale, near the Bias line.

If you cannot achieve balance, interchange one of the 7591 output tubes from each channel. Be sure to turn off the amplifier and turn the meter switch to the OFF position before unplugging any tubes.

After you complete the bias and balance adjustments turn off the amplifier and remove the power cord from the outlet. Turn the meter switch to the OFF position. Remove the shorting wire from the center speaker "X" and "Y" terminals.

The following simplified table can be used.

Step	Meter Switch	Adjust	Meter Pointer
1	Bias A	Bias A Control	Bias
2	Bal A	Bal A Control	Bal
3	Bias B	Bias B Control	Bias
4	Bal B	Bal B Control	Bal
5	Repeat Steps 1-4		
6	OFF		

Does not go on (pilot lamp and tubes do not light).

- Check:
- Fuse F1.
  - AC plug and line cord.
  - Wall outlet (use test lamp in AC OUTLET on rear of chassis).
- Test:
- Power switch S7 (part of R87).

Does not go on (pilot lamp does not light – tubes light).

- Check:
- Neon lamp (I1) or substitute.
- Test:
- Voltages at: CR1, CR2, C1, C2-B; R70, R71, C2-A; R71, R72, C3-A; R72, R73, C3-B; R73, R74, C3-C.

Fuse blows as soon as replaced.

- Check:
- CR1, CR2, CR3, CR4, C1, C2, C4 and T1, T2, T3.

Distortion  
Hum, Weak or  
No audio output (both channels) in any position of INPUT selector switch.

- Set TAPE MONITOR to OFF position.
  - Set BALANCE, TREBLE and BASS controls to NORMAL position.
  - Set DIMENSION control to STEREO position.
  - Remove plugs from rear-chassis REC OUTPUT and MON INPUT jacks (for hum).
  - Remove plugs from rear-chassis TAPE HEAD, PHONO, TUNER and AUX jacks (for hum).
- Test:
- B-plus voltages at: CR1, CR2, C1, C2-B; R70, R71, C2-A; R71, R72, C3-A; R72, R73, C3-B; R73, R74, C3-C.
  - Bias and DC Filament-supply voltages at: CR3, CR4; R75, C4-A, C4-B; R91, C25, R92, C26.

Distortion  
Hum, Weak or  
No audio output (LEFT channel only) in any position of INPUT selector switch.

- Set BALANCE, TREBLE and BASS controls to NORMAL positions.
  - Set TAPE MONITOR to OFF position.
  - Remove plugs from rear-chassis REC OUTPUT and MON INPUT jacks (for hum).
  - Remove plugs from rear-chassis TAPE HEAD, PHONO, TUNER and AUX jacks (for hum).
- Check:
- Speaker connections
  - BIAS voltage adjustment (R91).
  - BALANCE adjustment (R89).
- Test:
- V4, V5, V7, V8 or substitute (filament leakage test for hum—gas test for distortion).

Distortion  
Hum, Weak or  
No audio output (RIGHT channel only) in any position of INPUT selector switch.

- Set BALANCE, TREBLE and BASS controls to NORMAL positions.
  - Set TAPE MONITOR to OFF position.
  - Remove plugs from rear-chassis REC OUTPUT and MON INPUT jacks (for hum).
  - Remove plugs from rear-chassis TAPE HEAD, PHONO, TUNER and AUX jacks (for hum).
- Check:
- Speaker connections
  - BIAS voltage adjustment (R92).
  - BALANCE adjustment (R90).
- Test:
- V3, V6, V9, V10 or substitute (filament leakage test for hum—gas test for distortion).

Distortion  
Hum, Weak or  
No audio output (LEFT channel only) PHONO and TAPE HEAD position of INPUT selector switch.

- Test:
- V1 or substitute (filament leakage test for hum—gas test for distortion).
  - Voltages at socket of V1.

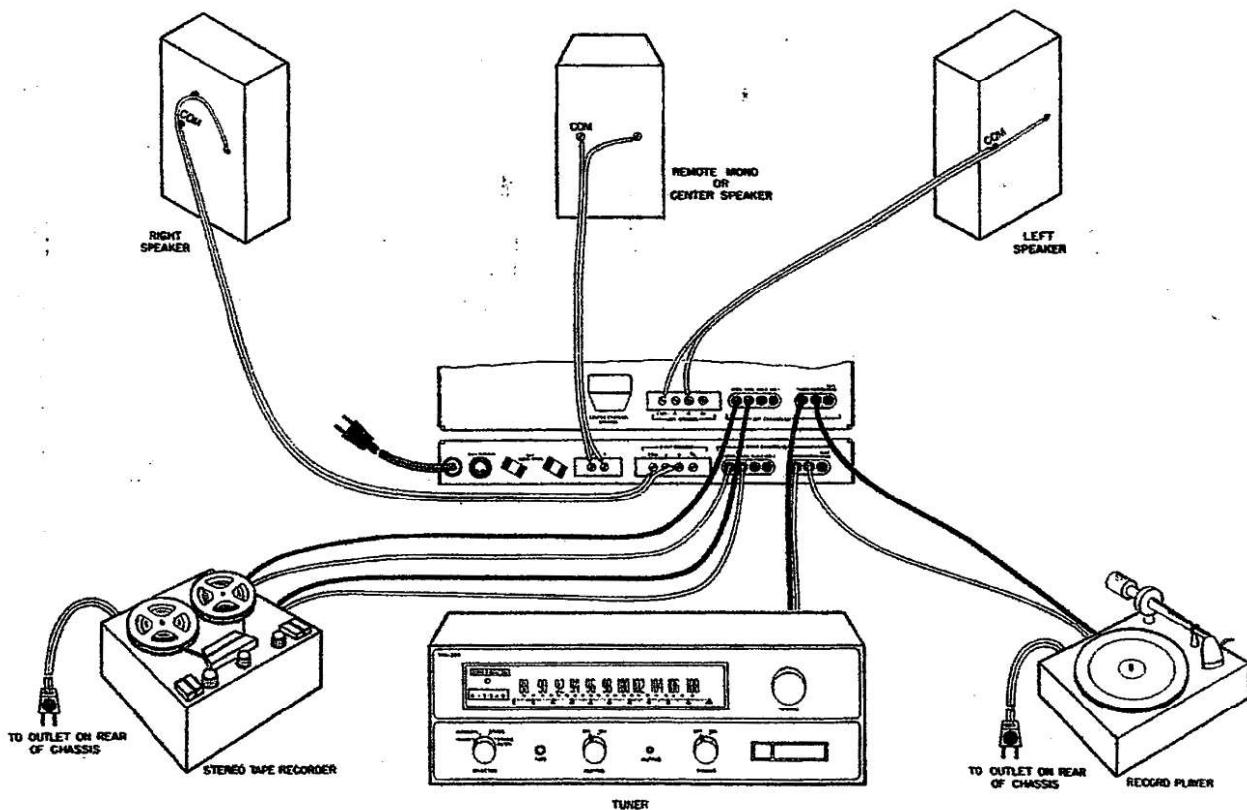
Distortion  
Hum, Weak or  
No audio output (RIGHT channel only) PHONO and TAPE HEAD positions of INPUT selector switch.

- Test:
- V2 or substitute (filament leakage test for hum—gas test for distortion).

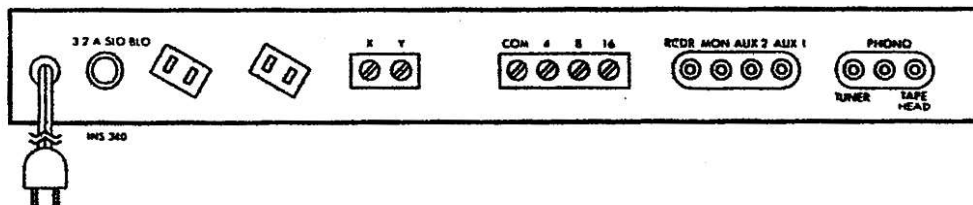
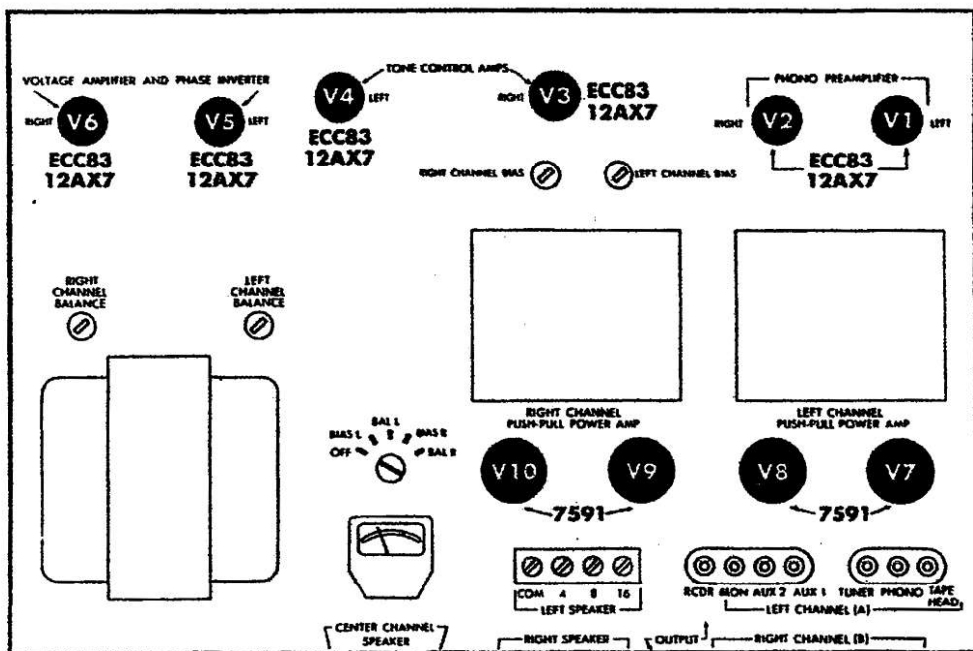
Distortion  
Hum, Weak or  
No audio output (either channel) only one position of SELECTOR.

- Reverse (interchange) LEFT and RIGHT channel plugs—first at rear-chassis jacks; then at component output jacks

# COMPONENT CONNECTIONS



# CHASSIS LAYOUT



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