



RCA VICTOR

BERKSHIRE "SECRETARY"

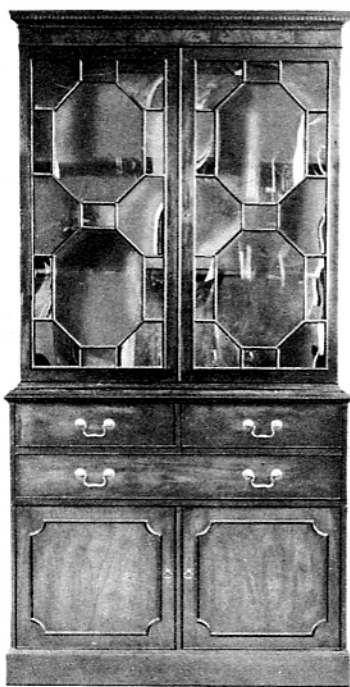
Models B3-A, B3-B

Radio-Phonograph Combination

Mfr. No. 274

SERVICE DATA

No. CCP-3-49



PH351

RADIO CORPORATION OF AMERICA
CONSUMER CUSTOM PRODUCTS DEPT.
RCA VICTOR DIVISION
745 FIFTH AVE., NEW YORK 22, N. Y.

Refer to the following Service Data Publications for information on various components.

- Berkshire Tuner-Amp. Assembly
 Service Data—1948..No. CCP-2)
 - TU-1—Tuner
 - PPAU-1—Pre-amplifier
 - AAPU-1—Amplifier and Power Supply
- Berkshire Record Changer (Thorens Mod. CD-40)
 (Service Data—1948..No. CCP-4)
 Berkshire Record Changer (Garrard Mod. RC-65)
 (Service Data—No. CCP-6-49)

INTRODUCTION

The Berkshire "Secretary" is produced in two different models, the differences being as listed below.

Models	Cabinet	Record Changer	Pickup
B3-A	Antique Mahogany	Thorens Mod. CD-40	G. E. Variable Reluctance
B3-B	Antique Mahogany	Garrard Mod. RC-65	G. E. Variable Reluctance

This instrument is designed and built to custom standards, and includes the following units:

Radio Tuner Unit.....	TU-1
Amplifier and Power Supply.....	AAPU-1
Phonograph Pre-amplifier.....	PPAU-1
Record Changer.....	Garrard Mod. RC-65 or Thorens Mod. "Concert" CD-40

SPECIFICATIONS

Cabinet—

Height.....	85 in.
Width.....	43 in.
Depth.....	22 in.
Weight.....	445 lbs.

Power Supply Rating—

Radio Position.....	105/125 volts, 60 cycles, 400 watts max.
Phono. Position.....	105/125 volts, 60 cycles, 400 watts max.

Radio Tuning Ranges—

BC.....	540-1625 kc
SW-1.....	1.590- 4.050 mc
SW-2.....	3.950- 9.500 mc
SW-3.....	9.450-11.750 mc
SW-4.....	11.670-15.200 mc
SW-5.....	15.080-17.750 mc
SW-6.....	17.680-21.500 mc
SW-7.....	21.400-22.500 mc
FM.....	88-108 mc

Mechanical Operation—

The electrically driven band switch is controlled by a series of push buttons located directly below the dial window.

The instrument also has a group of fourteen push button keys located at the bottom edge of the control panel. These keys control the "On-Off" switch, Television (not used in this series), Phonograph, Manual tuning and the ten remaining keys automatically select either Broadcast AM or FM stations.

Audio Power Output—

Undistorted.....	40 watts
Maximum.....	50 watts

Loudspeaker—

Duo-cone (MI-11411).....	15" PM
Voice coil impedance.....	15 ohms at 400 cycles
Power handling capacity.....	20 watts

One, two, or three additional 15 ohm speakers can be connected directly to the output of the amplifier by substituting a speaker for each resistor connected across the amplifier output.

Record Changer—

Type (Garrard) single post intermixing (specifications same as Thorens listed below)	
Type (Thorens MOD. "Concert" CD-40).....	Single post intermixing
Record capacity (ten 10 in., or eight 10 and 12 in., records intermixed)	
Type pickup.....	Variable reluctance
Drive motor.....	Adjustable speed governor type induction motor

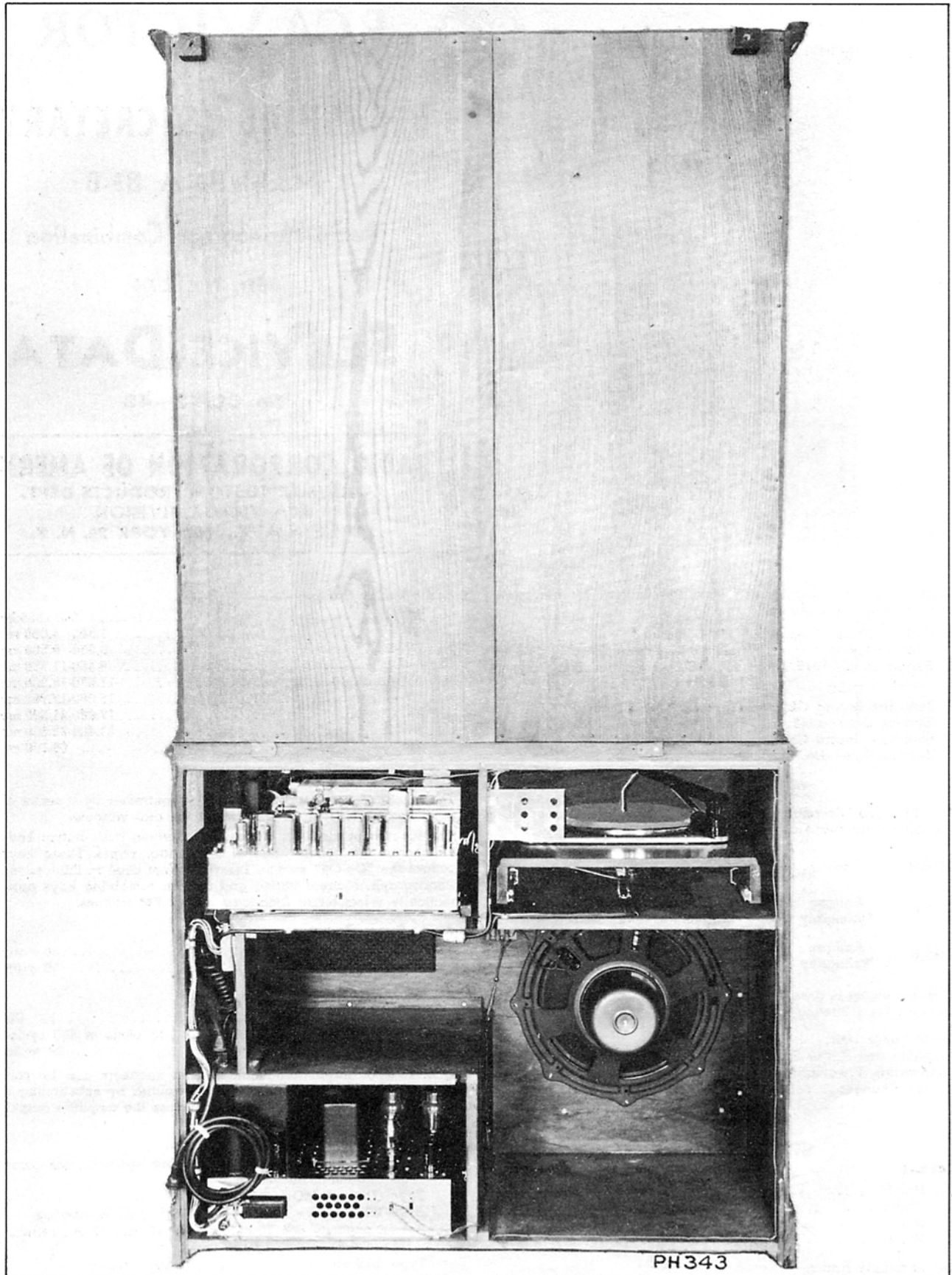
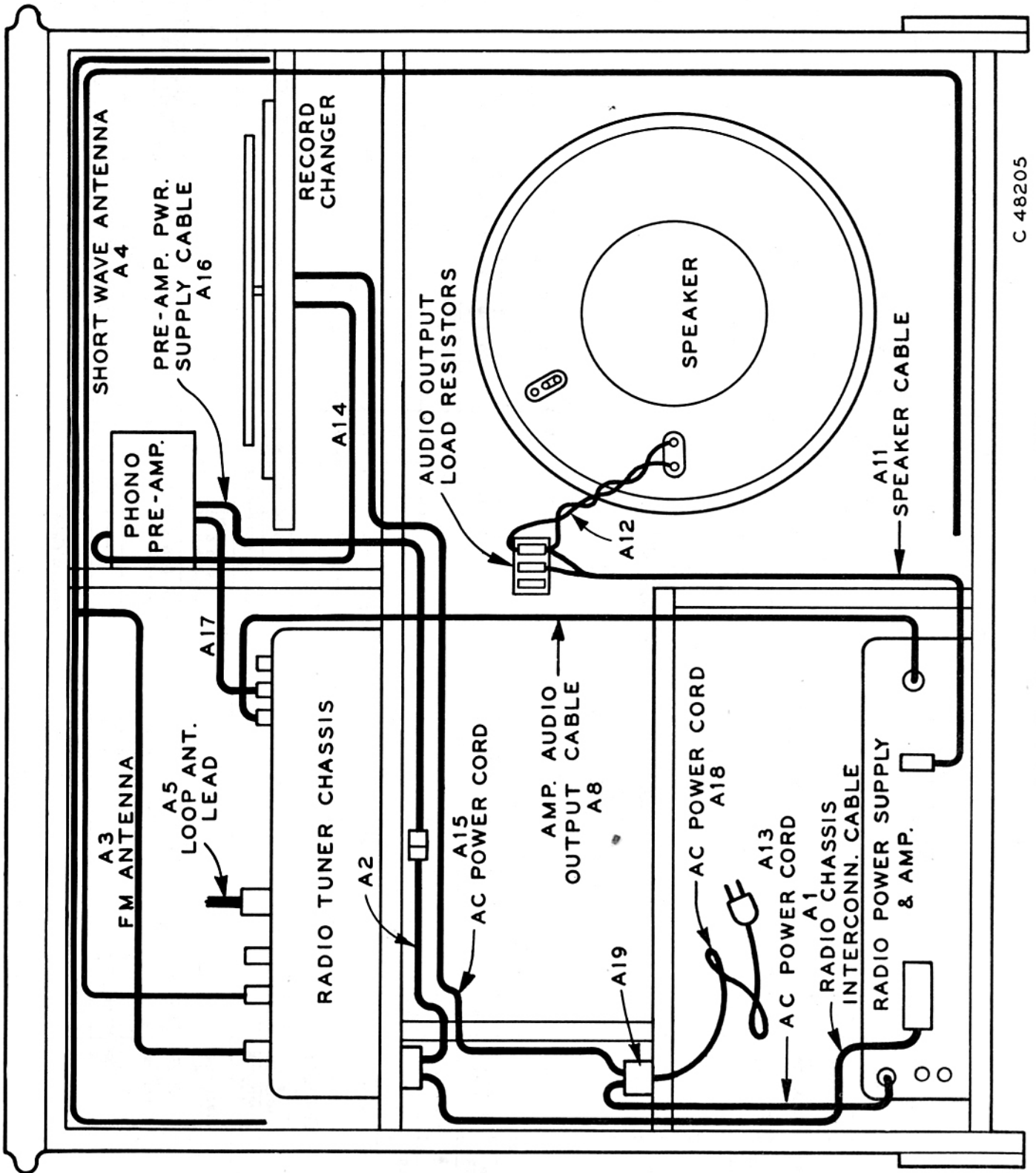


Fig. 1—Rear View of Cabinet



C 48205

Fig. 2—Rear View Showing Interconnecting Cables

BERKSHIRE MODELS B3-A, B3-B, "Secretary"

CABLE NO.	FROM	TO	LENGTH OF LEADS OR WIRE IN CABLE					WIRE SIZE ACCORDING TO COLOR AND NUMBER ON PLUG												FIG. NO.	DRAWING REFERENCE		
			PLUG TO	PLUG	MODELS					TERMINAL NO.													
					B1	B2	B3	B4	B5	1	2	3	4	5	6	7	8	9	10			11	12
A1	POWER AMPLIFIER	RECEIVER TUNER	P6	30"	30"	33"	130"	48"	BLACK B & S #18 *20 PLUG 5 ORANGE B & S #20 *12 PLUG 5 BROWN B & S #12 *18 PLUG 5 WHITE B & S #12 *18 PLUG 5 BROWN B & S #12 *18 PLUG 5 GREEN POWER B & S #20 *18 PLUG 5 YELLOW B & S #20 *18 PLUG 5 BLUE B & S #20 *18 PLUG 5 YELLOW B & S #20 *18 PLUG 5 RED B & S #18 *18 PLUG 5	4	MS 729												
A2	RECEIVER TUNER	PRE-AMPLIFIER	P5	63"	12"	20"	12"	12"	BLACK #20 PLUG 5 WHITE #20 PLUG 5 BROWN #20 PLUG 5	5	MS 729-A												
A3	F M FOLDED DIPOLE ANT.	RECEIVER TUNER		Y-60" Z-102"	Y-51" Z-46"	Y-58" Z-25"	Y-51" Z-38 1/2"	Y-58" Z-25"	(R C A BRIGHT PIX-WIRE) (*18 WIRE COVERED)	6	MS 729-B												
A4	SW. ANT.	RECEIVER TUNER		BROWN 180"	BROWN 180"	BROWN 180"	BROWN 180"	BROWN 180"	(*18 WIRE COVERED)	NO DRAWING													
A5	AM LOOP	RECEIVER TUNER	LOOP	4 PURPLE 51"	4 PURPLE 52"	4 PURPLE 49 1/2"	4 PURPLE 35"	4 PURPLE 23"	BLUE #18 *18 PURPLE #22 *22	7	MS 729-C												
A6	RECEIVER TUNER	RELAY	J5	72"	96"				SHIELDED B & S *18 (19 STRANDS .010)	10	MS 729-F												
A7	RELAY	RELAY	TELEVISION POWER RELAY							NO DRAWING													
A8	POWER AMPLIFIER	RECEIVER TUNER	J4	38"	136"	38"	56"	41"	SHIELDED B & S *20 (10 STRANDS *30)	11	MS 729-G												
A9	RECEIVER TUNER	CABINET	J3	52"					SHIELDED B & S *18 (19 STRANDS .010)	8	MS 729-D												
A10	RECEIVER TUNER	TEL. TUNER	RADIO J2	36"	20"				SHIELDED B & S *20 FLEXIBLE RUBBER COVERED LO CAP (40 MMF/FT.)	10	MS 729-F												
A11	POWER AMP.	NET WORK	J402	90"	56"	42"	40"	54"	TWISTED PAIR B & S *18 (16 STRANDS .010) PURPLE COLOR	12	MS 729-H												
A12	NETWORK	SPEAKER		8"	8"	8"	8"	8"	TWISTED PAIR B & S *18 (16 STRANDS .010) PURPLE COLOR	13	MS 729-I												
A13	POWER AMPLIFIER	CONNECTOR "A"																					
A14	PICKUP	PRE-AMPLIFIER	PICK UP	64"	64"	64"	64"	64"	SHIELDED B & S *18 (19 STRANDS .010) (SAME AS MS 729-F WITHOUT LUGS)	16	MS 729-F												
A15	PHONO MOTOR	CONNECTOR "A"	A.C. PLUG	72"	72"	72"	72"	72"	PARALLEL CONDUCTOR #18 AWG (VINYL. BROWN INSULATION)	16	MS 729-L												
A16	PRE-AMPLIFIER	RECEIVER TUNER	PRE-AMP	12"	12"	12"	12"	12"	BLACK RED BROWN WHITE B & S #20 *20 B & S #20 *20	9	MS 729-E												
A17	PRE-AMPLIFIER	RECEIVER TUNER	PRE-AMP	12"	12"	12"	12"	12"	SHIELDED B & S *20 FLEXIBLE RUBBER COVERED (30 MMF/FT.) (SAME AS MS 729-F WITHOUT LUGS)	14	MS 729-F												
A18	A.C. LINE	CONNECTOR "A"	A.C. PLUG	84"	96"	84"	84"	84"	(2 CONDUCTOR B & S #16) (SIMPLEX TIREX 600 VOLT INSULATION)	14	MS 729-J												
A19	A.C. THREE	CONNECTOR	RECEPTACLE						(G.E. "MONOWATT" OR APPROVED EQUIVALENT)	15	MS 729-K												

Fig. 3—Radio Chassis Cable Chart

7-582800

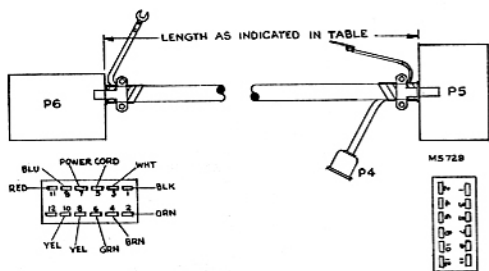


Fig. 4

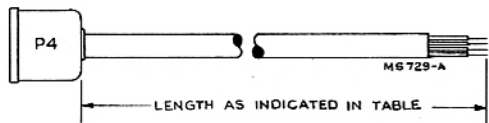


Fig. 5

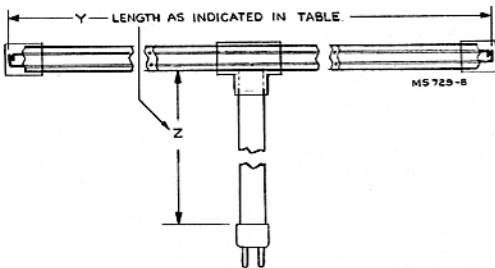


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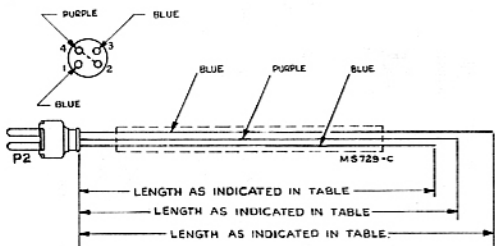
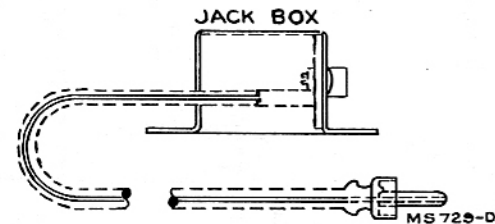


Fig. 7



LENGTH AS INDICATED IN TABLE

Fig. 8

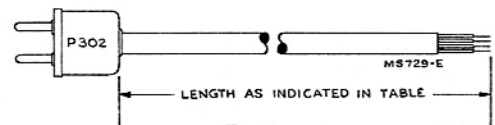
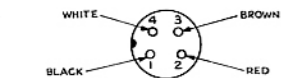


Fig. 9

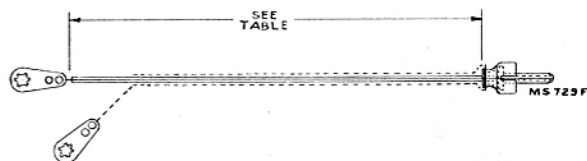


Fig. 10



Fig. 11

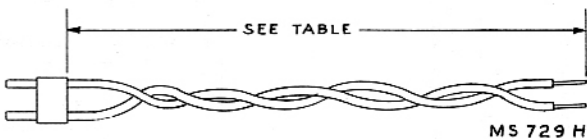


Fig. 12

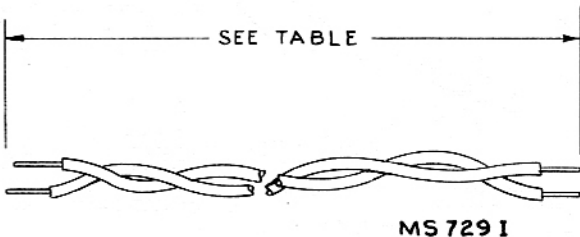


Fig. 13

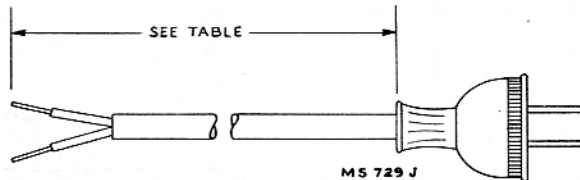
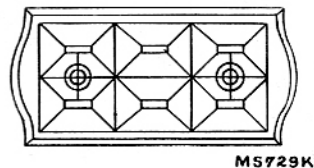


Fig. 14



Three Connector Power Receptacle

Fig. 15

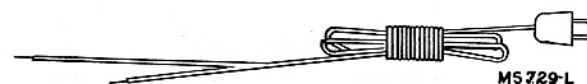


Fig. 16

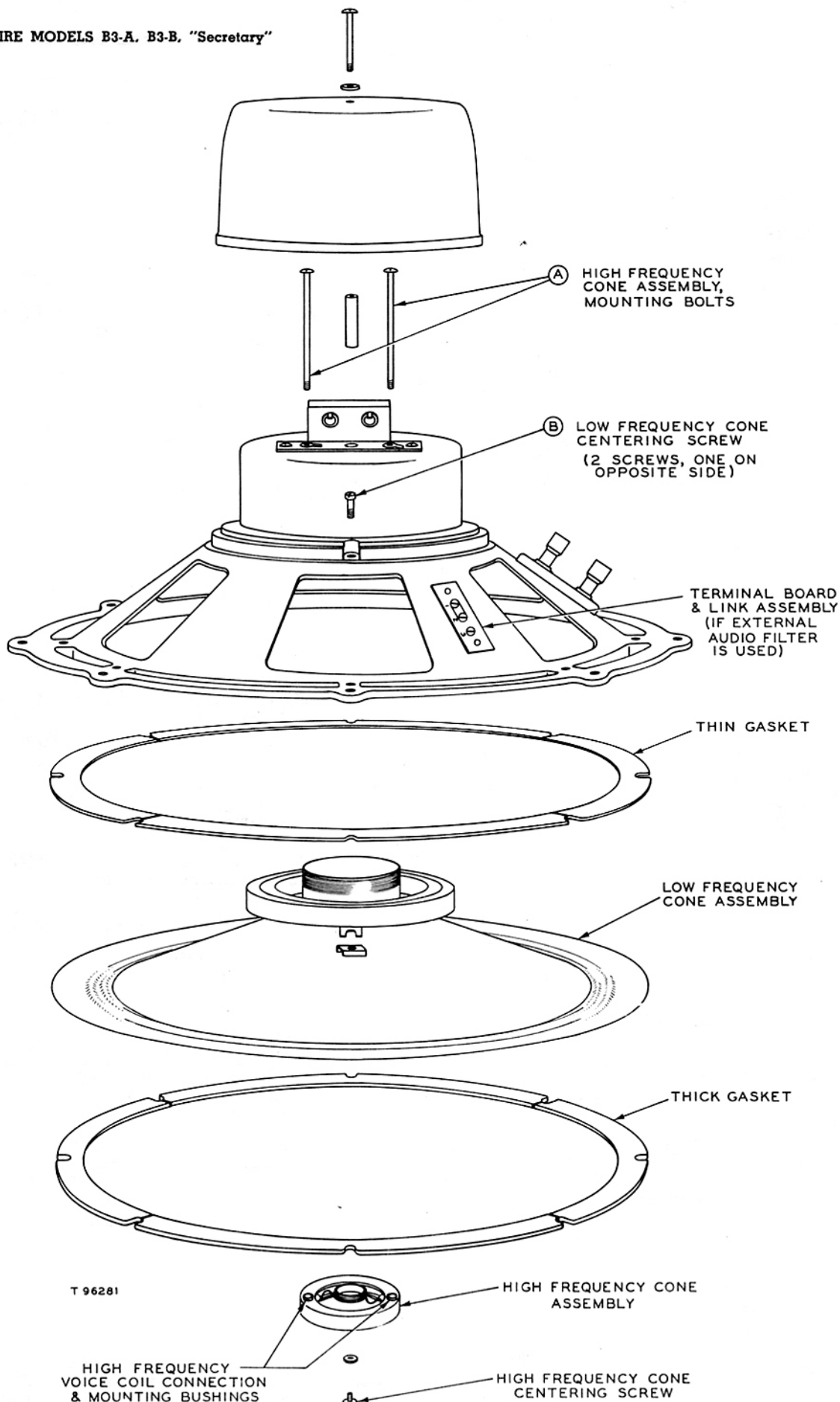


Fig. 17—Exploded View of Speaker

RECEIVER TUNER

POWER AMPLIFIER

BERKSHIRE MODELS B3-A, B3-B, "Secretary"

NOTE: See Page 13 for the original Schematic Diagram of the Power Amplifier.

The serial numbers of amplifiers connected according to schematic on Page 13 are listed below.

P-11	P-69	P-144	P-326
P-16	P-71	P-145	P-347
P-18	P-76	P-147	P-383
P-19	P-78	P-148	P-399
P-20	P-80	P-149	P-418
P-21	P-82	P-151	P-426
P-22	P-83	P-155	P-433
P-23	P-84	P-160	P-444
P-24	P-88	P-161	P-456
P-25	P-90	P-162	P-458
P-27	P-91	P-170	P-462
P-28	P-92	P-174	P-488
P-29	P-93	P-178	P-494
P-30	P-94	P-188	P-515
P-31	P-97	P-190	P-517
P-32	P-99	P-195	P-525
P-34	P-100	P-203	P-533
P-36	P-101	P-204	P-550
P-37	P-102	P-205	P-555
P-41	P-103	P-206	P-575
P-42	P-107	P-209	P-594
P-44	P-108	P-212	P-638
P-45	P-109	P-223	P-640
P-46	P-111	P-228	P-660
P-49	P-112	P-230	P-662
P-50	P-113	P-241	P-670
P-52	P-115	P-246	P-676
P-53	P-116	P-271	P-682
P-54	P-118	P-273	P-715
P-55	P-122	P-280	P-741
P-58	P-123	P-281	P-770
P-60	P-125	P-282	P-821
P-61	P-126	P-285	P-858
P-62	P-127	P-290	P-891
P-65	P-135	P-294	P-913
P-66	P-139	P-303	P-918
P-67	P-142	P-304	P-974
P-68	P-143	P-314	

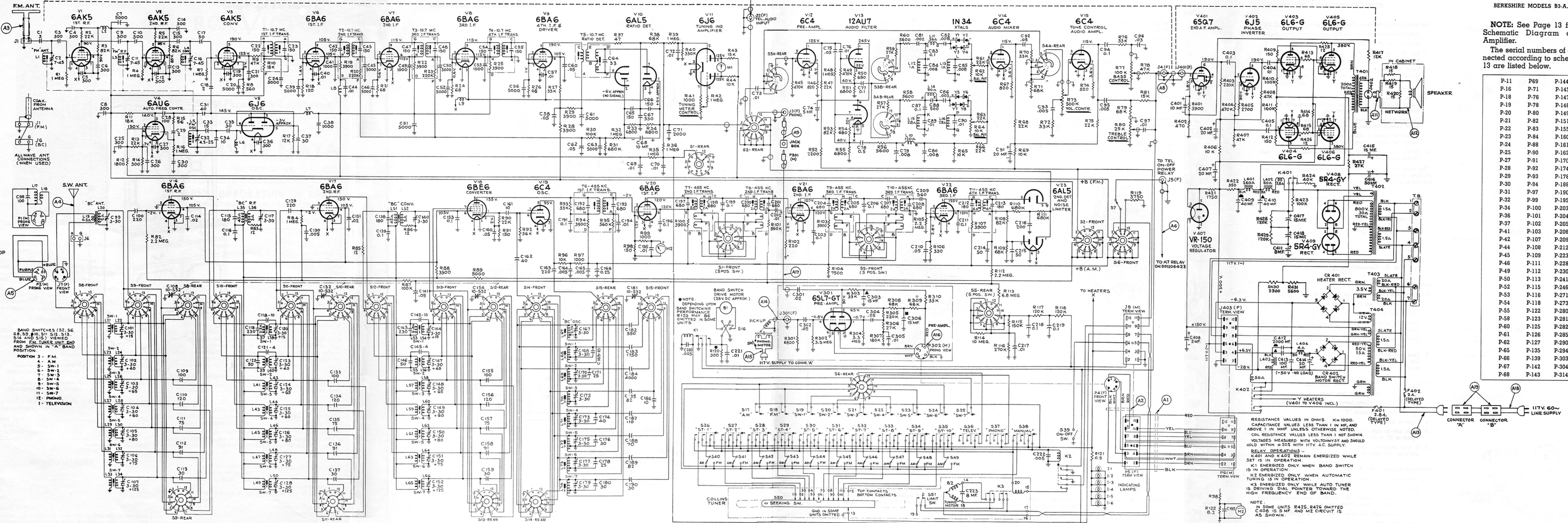


Fig. 18—Overall Schematic Diagram of Radio Unit

For best protection use the "slow blow" type fuse having rating indicated. Ordinary fuses of same rating may blow from sudden current surges.

RESISTANCE VALUES IN OHMS. K=1000. CAPACITANCE VALUES LESS THAN 1 IN MF, AND ABOVE 1 IN MMF, UNLESS OTHERWISE NOTED. VOLTA GE VALUES LESS THAN 1 NOT SHOWN. VOLTAGES MEASURED WITH VOLTMETER AND SHOULD HOLD WITHIN ± 20% WITH 117V A.C. SUPPLY.

RELAY OPERATIONS - K401 AND K402 REMAIN ENERGIZED WHILE SET IS IN OPERATION. K1 ENERGIZED ONLY WHEN BAND SWITCH IS IN OPERATION. K2 ENERGIZED ONLY WHEN AUTOMATIC TUNING IS IN OPERATION. K3 ENERGIZED ONLY WHILE AUTO TUNER IS DRIVING DIAL POINTER TOWARD THE HIGH FREQUENCY END OF BAND.

NOTE: IN SOME UNITS R425, R426 OMITTED AS SHOWN.

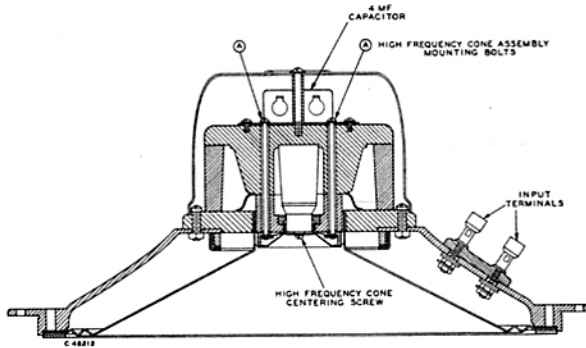


Fig. 19

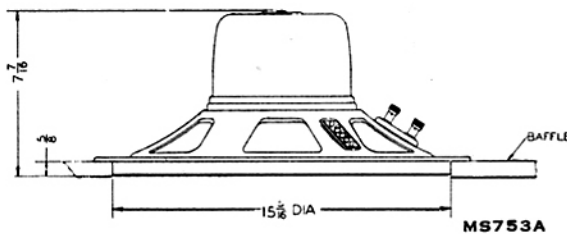
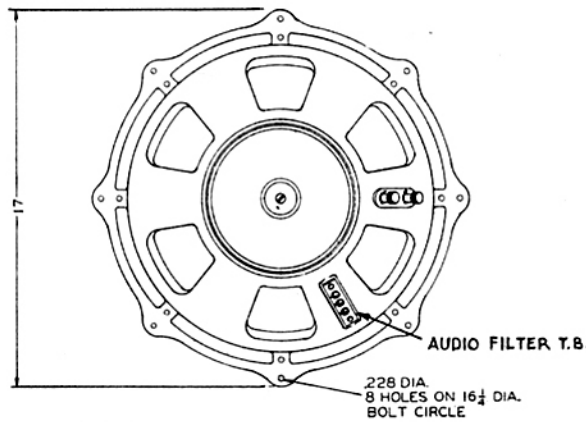


Fig. 20

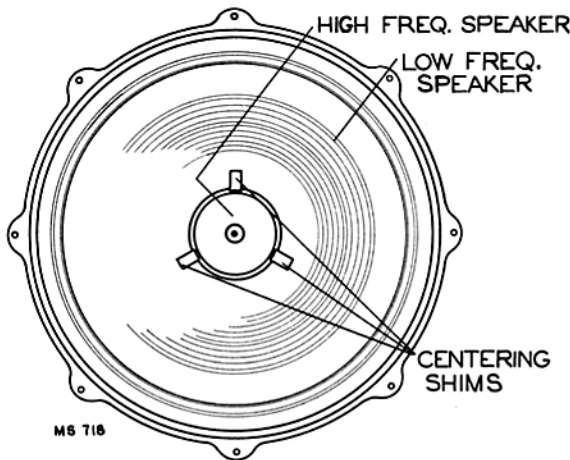


Fig. 21

Replacing High Frequency Cone (see Figures 17, 19 and 24)—

1. Remove center screw in the high frequency cone assembly.
2. Remove the two screws "A."
3. Lift the entire high frequency cone assembly out. (If it sticks, pry loose around center hole of center disc.)
4. *Place the new cone assembly in place, insert the two screws "A." (Keep yellow spot on cone assembly adjacent to small yellow spot in core for correct phasing.) Do not tighten.
5. Open link on side of speaker housing and insert a variable signal of 1000 to 2000 cycles between terminals 1 and 3. Move cone assembly for clear tone.
6. Tighten the two screws "A," then try the signal again to make certain the assembly has not moved.
7. When the signal is clear, draw the center screw up snug but do not distort center disc.
8. Check for clear signal again. If the signal is not clear repeat operations 6 to 8.

*The voice coil assembly on the high frequency cone is very delicate, therefore extreme care should be taken when inserting voice coil into air gap.

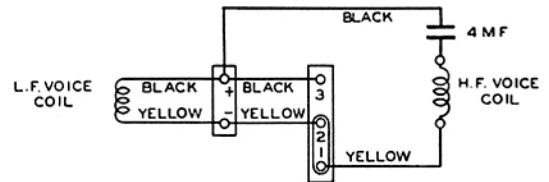


Fig. 22—Connection Diagram of Speaker

Servicing Speaker (MI-11411)—

Centering High Frequency Cone (see Figures 19 and 24)—

1. Loosen center screw in the high frequency cone assembly.
2. Loosen the two screws "A" a few turns.
3. Open link on side of speaker housing and insert a variable signal of 1000 to 2000 cycles between terminals 1 and 3.
4. Sweep the 1000 to 2000 cycle signal and move assembly for clear tone.
5. First tighten the two screws "A," then the center screw. (Do not draw the center screw up too tight or the cone may become distorted.)

Centering the Low Frequency Cone (see Figure 21)—

1. Loosen two screws "B" a few turns.
2. Insert .0001 inch shims between pole piece and voice coil.
3. Tighten the two screws "B."
4. Remove the shims.
5. Open link on side of speaker housing and insert a variable signal of 50 to 1000 cycles to check for clarity of tone.
6. If tone remains distorted repeat steps 1 to 5 and if not corrected the cone should be replaced.

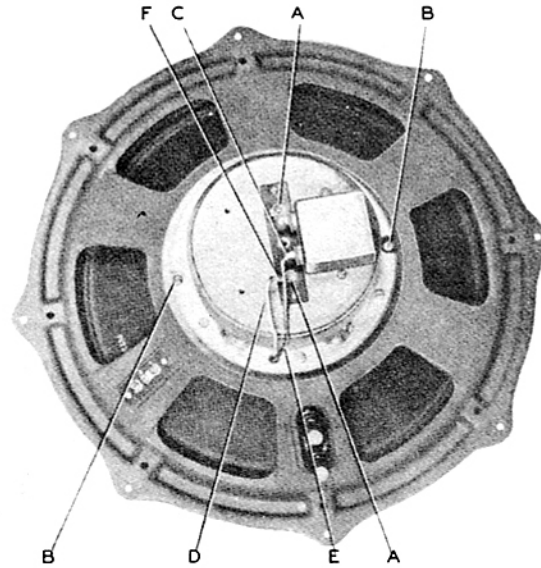
Replacing Cones in Speaker (MI-11411)—

Low Frequency Cone (see Figures 17 and 24)—

1. Remove the entire defective cone from the speaker housing.
2. Remove the two screws "B," unsolder leads from terminals and remove the entire cone assembly.
3. Clean thoroughly the entire edge of the speaker housing.
4. Clean low frequency air gap (use masking tape folded back to back with sticky side out).
5. Cement the thin gasket to the edge of the speaker housing.

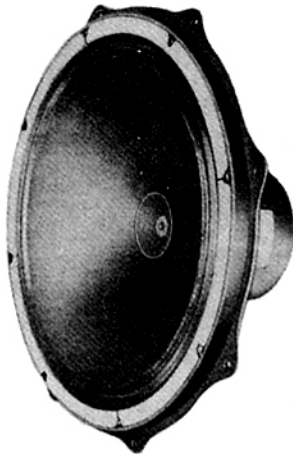
BERKSHIRE MODELS B3-A, B3-B, "Secretary"

6. Apply cement to the upper side of the thin gasket. (Dupont household cement, or equivalent.)
7. Place low-frequency cone in place, using .0001 inch shims (as shown in Figure 21).
8. Solder leads to terminals. (Black to "C" on capacitor and yellow to "F" on terminal board for proper phasing.)
9. Replace screws "B," but do not tighten.
10. Apply cement to the under side of the outer edge of the cone and press in place.
11. Apply cement along the upper side of the outer edge of the cone, press the thick gasket into place and tighten screws "B."
12. Apply pressure along the edge of the cone occasionally, to make certain the assembly is seated properly.
13. Allow the speaker to dry for a few hours.
14. Open link and apply a variable signal of 50-1000 cycles between terminals 2-3 and test for distortion.



PH359

Fig. 24



PH359B

Fig. 23



PH359A

Fig. 25

PARTS LIST

STOCK No.	DESCRIPTION	STOCK No.	DESCRIPTION
	MI-11411 DUO-CONE LOUDSPEAKER		
47974	Capacitor—Fixed paper, wax impregnated, 4 mf. 100 v. drawn shell container, side mtg. rivet lug term.	72199	Cone—High frequency cone and voice coil assembly
72198	Cone—Low frequency cone assembly; comprising cone and voice coil assembly, and gaskets	31048	Connector—Single contact audio connector, male
		18303	Resistor—Fixed, wire wound, 15 ohms, 10 watts (R-418, R-419, R-420)

Prices and replacement parts are available from RCA Replacement Parts Department, Camden, N. J.

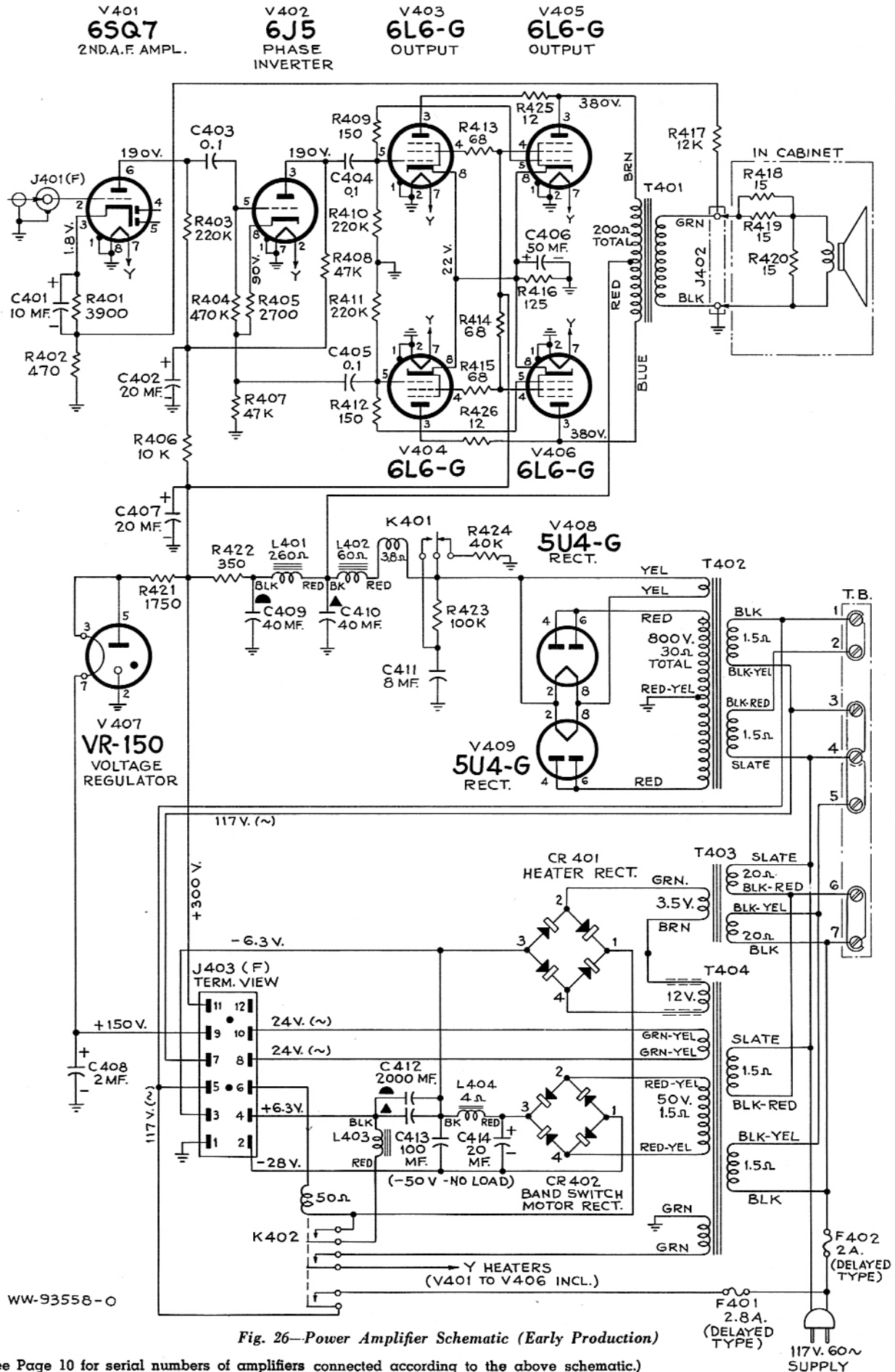
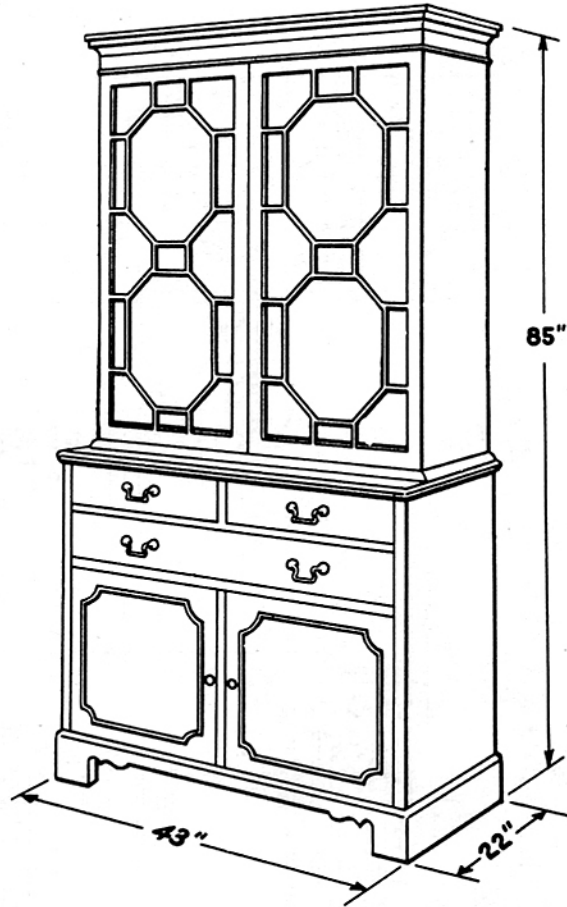


Fig. 26—Power Amplifier Schematic (Early Production)

(See Page 10 for serial numbers of amplifiers connected according to the above schematic.)



MS751

Fig. 27—Cabinet Dimensions