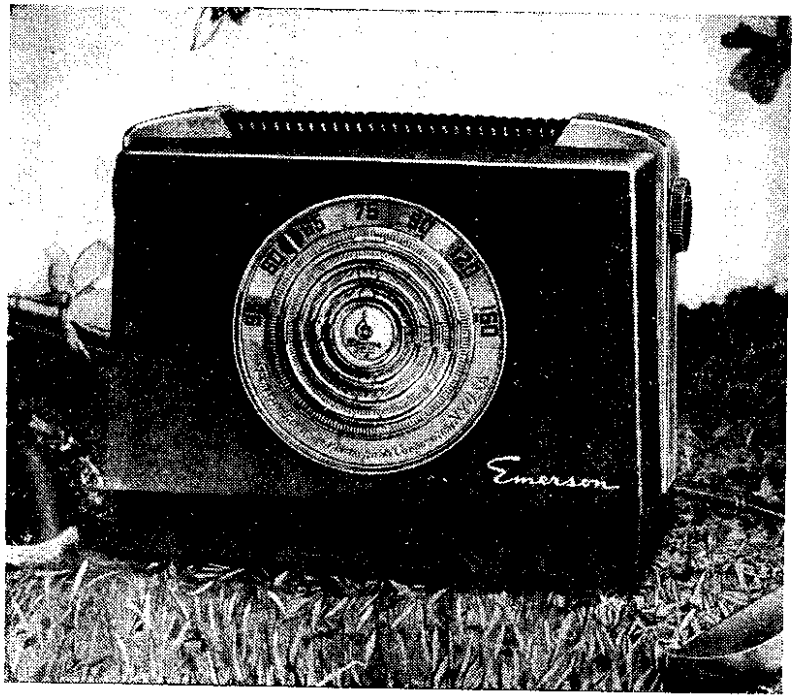
MODEL 613, Ch. 120085A, 120085B

SERVICE NOTES

MODEL: 613

CHASSIS MODELS 120085A, 120085B



DESCRIPTION

TYPE: Three way (battery, a.c., d.c.) portable superheterodyne.

FREQUENCY RANGE: 540-1620 KC.

TYPE OF TUBES:

1—1R5, pentagrid converter
1—1U4, i-f amplifier
1—1U5, detector, a.v.c., a-f amplifier
1—3V4, or 3Q4, power output
1—Selenium rectifier

POWER SUPPLY: "A" and "B" batteries, or a.c., or d.c.

VOLTAGE RATING:

Line operation—105-125 volts, a.c. or d.c.
Battery operation—1½ volts "A" supply
67½ volts "B" supply

POWER CONSUMPTION: Line operation, 20 watts

CURRENT CONSUMPTION:

"A" battery—.250 amp.
"B" battery—.009 amp.
117 volts a.c.—.170 amp.

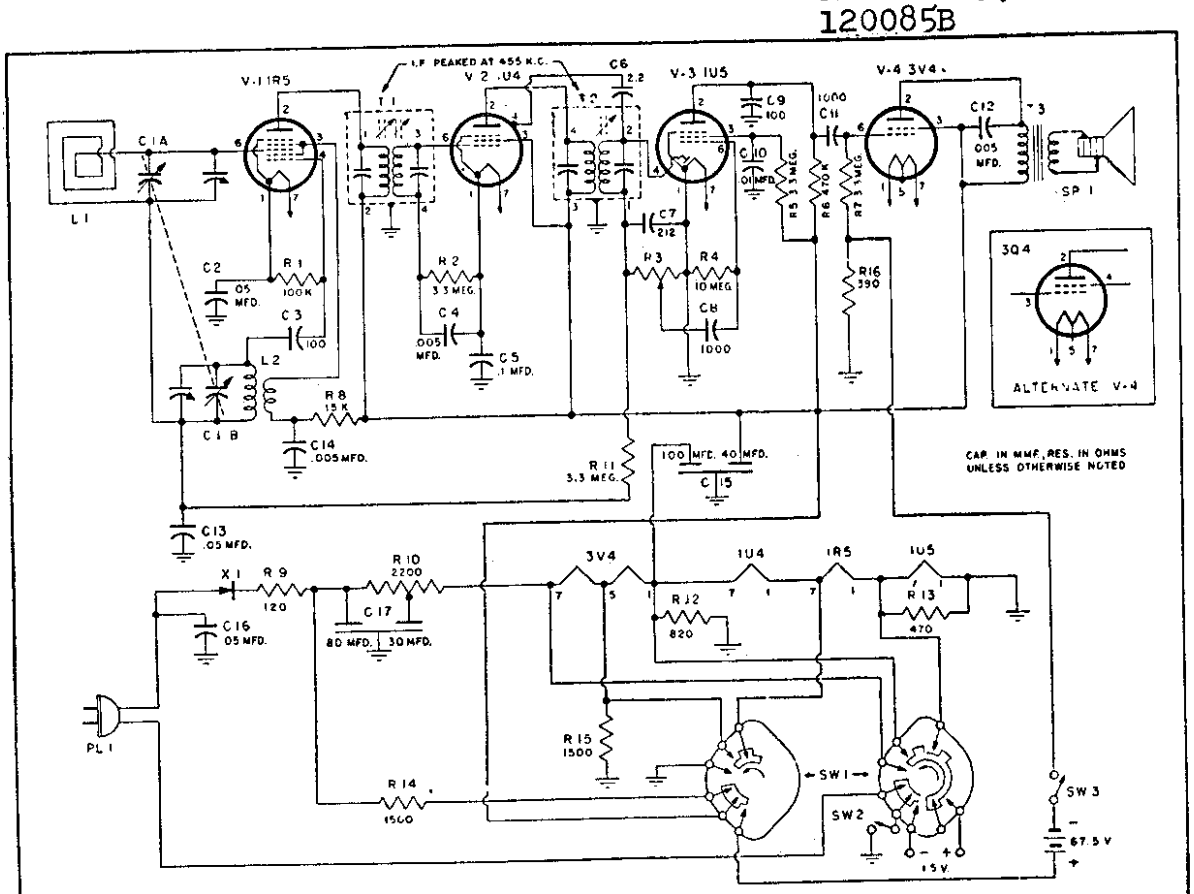
GENERAL NOTES

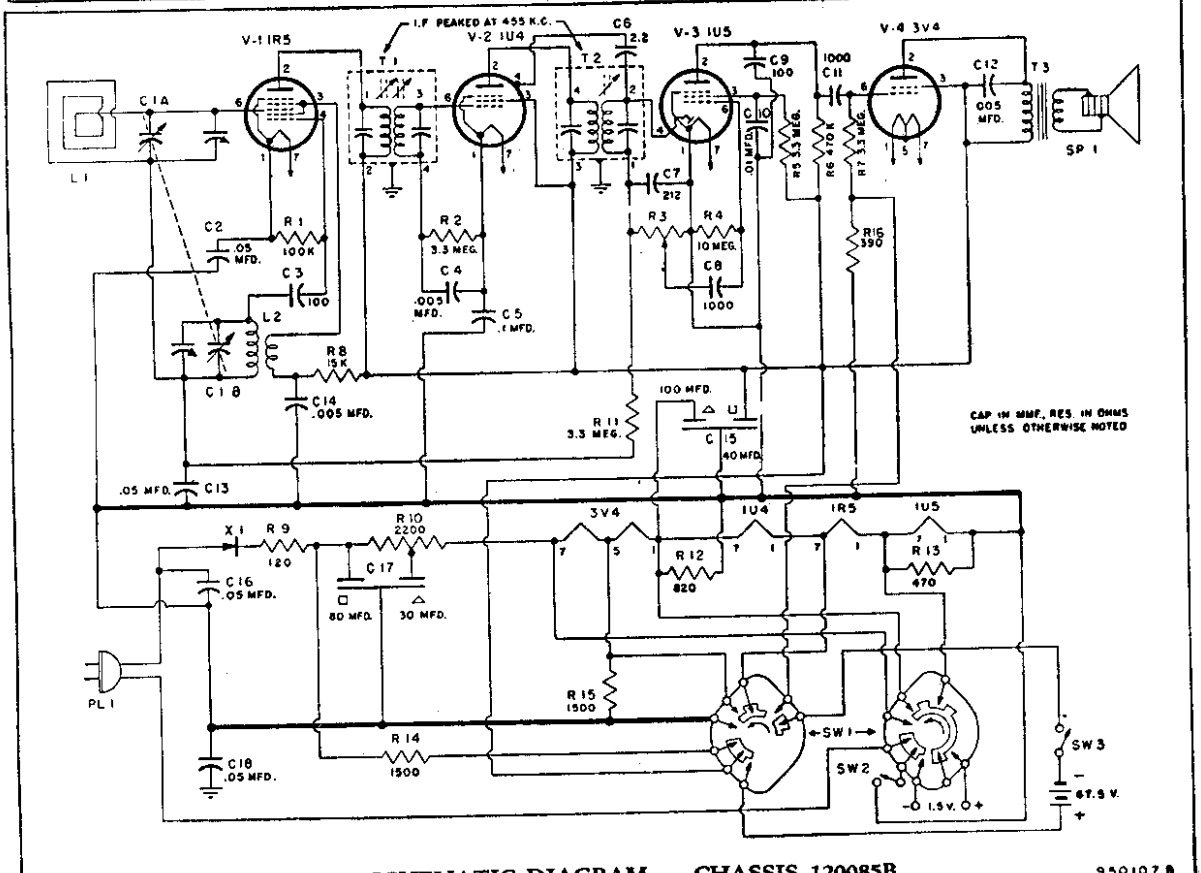
1. Line Operation: Open the rear cover which is held closed by the catch studs. Remove the line cord plug from its receptacle at the right side of the chassis (looking from the rear). Remove the line cord and insert the plug into a suitable outlet. When the power supply is d.c. and the receiver remains inoperative, remove the plug, turn it half-way around and reinsert in the outlet to obtain proper polarity.
2. Battery operation: Remove the line plug from the outlet and insert in the receptacle at the side of the chassis. The receiver will not operate from batteries if the plug is out of the chassis receptacle. Coil the loose portion of the line cord and store it carefully in the space provided.
3. Battery Complement: Replace "A" battery with standard "D" flashlight cell. Replace "B" battery with 67½ volt Eveready No. 467 or equivalent.
4. The color coding of the battery cable is as follows:

Red—B+	Yellow—A+
White—B—	Black—A—

5. If replacements are made in the r-f section of the circuit, carefully realign the receiver.
6. The receiver has a salf contained antenna and normally does not require an additional antenna connection. For installations in a location where reception is weak, connect an outside antenna to the colored lead at the rear of the cabinet. Do not use a ground connection.
7. The self-contained loop antenna has directional properties. After a station is tuned in, it is important that the set be rotated through a quarter turn to obtain the position which results in the greatest volume.

MODEL 613, Ch. 120085A, 120085B





MODEL 613, Ch. 120085A, 120085B

ALIGNMENT PROCEDURE

1. Use battery power when available. When a.c. power is used, connect the line cord through an isolation transformer if available. Otherwise connect a 0.1 mfd. condenser in series with the low side of the signal generator and B—.
2. Set the volume control at maximum. The output of the signal generator should be no higher than that necessary to obtain an output reading. Attenuate the signal input as alignment proceeds. Use an insulated alignment tool.
3. Maintain the loop in the same position relative to the chassis as when the receiver is in the cabinet.
4. Oscillator and antenna trimmers are reached from bottom of chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	0.1 mfd.	High side to grid (pin 6) of V1 (1R5). Low side to chassis.	455 KC.	Variable condenser fully open.	Across voice coil.	Primary and secondary of T2 and T1.	Adjust for maximum output. If a.c. is used, without an isolation transformer, reduce dummy antenna to 200 mmf., to reduce hum modulation.
2	200 mmf.	High side to external antenna lead. Low side to chassis.	1620 KC.	Variable condenser fully open.	Across voice coil.	Oscillator trimmer on C1B.	Adjust for maximum output.
3	200 mmf.	"	1400 KC.	Tune for maximum output.	Across voice coil.	Antenna trimmer on C1A.	Adjust for maximum output.

INSTRUCTIONS FOR VOLTAGE AND RESISTANCE READINGS

1. Voltage and resistance readings are measured for 117 volt a.c. line operation.
2. Socket connections are shown as bottom views. Measurements are taken from socket pin to chassis (chassis 120085A) or socket pin to common negative (chassis 120085B).
3. Voltages are in volts d.c. and resistances in ohms, unless otherwise indicated.
4. Measurements made with voltohmyst.
5. For voltage measurements, set volume control at maximum, with no signal applied.
6. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.

VOLTAGE READINGS

SYMBOL	TUBE TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V1	1R5	1.5	88	60	-3.2	1.5	0	2.8
V2	1U4	2.8	88	88	0	2.8	2.0	4.0
V3	1U5	0	43	18	.4	0	0	1.5
V4	3V4 or 3Q4	4.0	84	0	88	5.3	5.3	6.7

RESISTANCE READINGS

SYMBOL	TUBE TYPE	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7
V1	1R5	24	3600	18K	110K	24	5 meg.	36
V2	1U4	36	3600	3600	Inf.	36	3.2 meg.	44
V3	1U5	0	480K	3.5 meg.	1.2 meg.	1.2 meg.	12 meg.	24
V4	3V4 or 3Q4	44	4100	4 meg.	3600	58	4100	70

K=kilohms; Meg.=megohms; Inf.=infinity.

MODEL 613, Ch. 120085A, 120085B

REPLACEMENT PARTS LIST

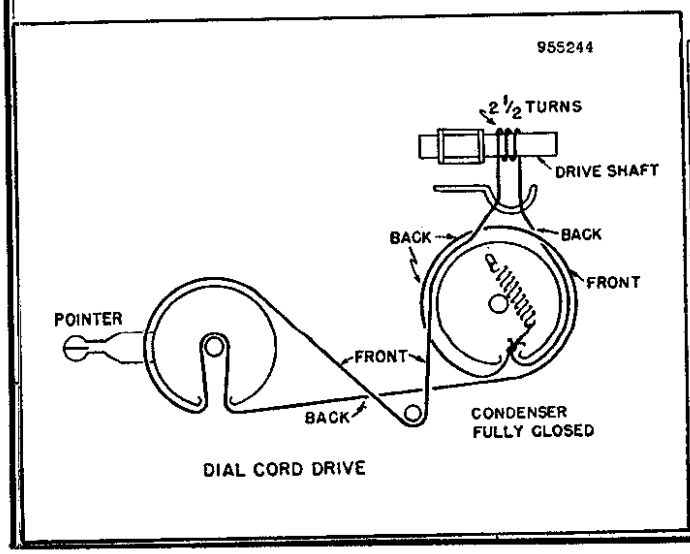
SYMBOL	†Part No.	DESCRIPTION
V1	1R5	Converter
V2	1U4	I-f amplifier
V3	1U5	Detector, a.v.c., a-f amplifier
V4	3V4 or 3Q4	Power output
X1	817012	Selenium rectifier
C1A, C1B	900057	Two-gang, variable condenser (used with loop ant. 700044). Alt. part 900047 (used with loop ant. 700041).
C2	920571	.05 mfd., 200 volt, paper
C3	928013	100 mmf., ceramic
C4	920470	.005 mfd., 150 volt, paper
C5	920573	.1 mfd., 200 volt, paper
C6	915005	2.2 mmf., ceramic
C7	928104	212 mmf., ceramic
C8	928003	1000 mmf., ceramic
C9	928013	100 mfd., ceramic
C10	920570	.01 mfd., 150 volt, paper
C11	928003	1000 mmf., ceramic
C12	920470	.005 mfd., 150 volt, paper
C13	920571	.05 mfd., 200 volt, paper
C14	928109	.005 mfd., ceramic
C15	925155* / 925136BΔ	40 mfd., 150 volt; 100 mfd., 25 volt, electrolytic
C16	920572	.05 mfd., 400 volt, paper
C17	Part of C15* / 925135BΔ	80-30 mfd., 150 volt, electrolytic
L1	700044	Loop antenna (Alt. part 700041)
L2	716031	Oscillator coil
R1	350970	100 kilohms, ½ watt
R2	351330	3.3 megohms, ½ watt
R3	390066	1 megohm, volume control
R4	351450	10 megohms, ½ watt
R5	351330	3.3 megohms, ½ watt
R6	351130	470 kilohms, ½ watt
R7	351330	3.3 megohms, ½ watt
R8	340770	15 kilohms, ½ watt
R9	394018	120 ohms, 3 watt
R10	394041	2200 ohms, wirewound
R11	351330	3.3 megohms, ½ watt
R12	340470	820 ohms, ½ watt
R13	340410	470 ohms, ½ watt
R14	340530	1500 ohms, ½ watt
R15	340530	1500 ohms, ½ watt
R16	340390	390 ohms, ½ watt
SP1	180060* / 180060BΔ	P.M. speaker, 4″
SW1	510044* / 510053Δ	Power-transfer switch
SW2, SW3	Part of R3	On-off switch
T1	720525	First i-f trans.
T2	720066	Second i-f trans.
T3	734053* / 734053BΔ	Output transformer
	583025* / 583026Δ	Line cord
	585009	Battery cable, "B"
	470261	Battery contact assembly, "A"

†Specify part numbers when ordering.
*Chassis 120085A only.
ΔChassis 120085B only.

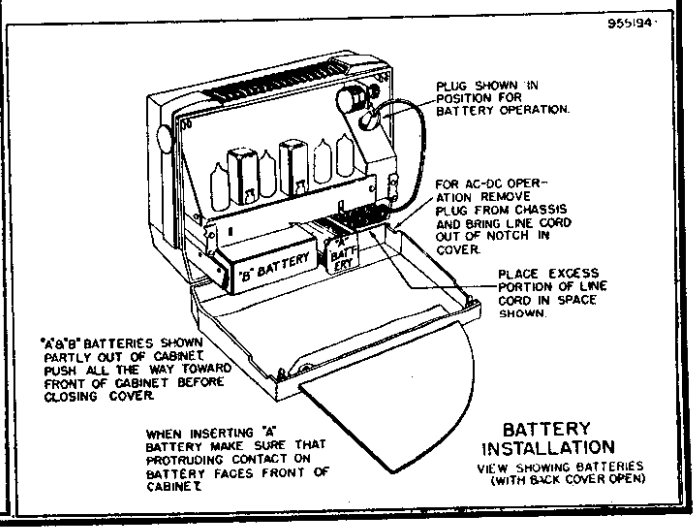
NOTE: Condensers C7, C8, C8, C10, and C11 may be combined in one ceramic unit, part number 928034.

CABINET AND DIAL PARTS

†Part No.	DESCRIPTION	†Part No.	DESCRIPTION
140236	Cabinet	530002	Drive cord (28″)
140237	Cabinet back	587023	Drive cord spring
460091	Knob	410514	Dial backplate
520096	Dial and grille	525043	Pointer
460123	Handle	280084	Pointer shaft
280083	Drive shaft	531319	Pointer pulley



DIAL CORD DRIVE



BATTERY INSTALLATION
VIEW SHOWING BATTERIES (WITH BACK COVER OPEN)