

## Hallicrafters, Inc.

**Model:** EC-306

**Chassis:**

**Year:** Pre 1950

**Power:**

**Circuit:**

**IF:**

**Tubes:**

**Bands:**

### Resources

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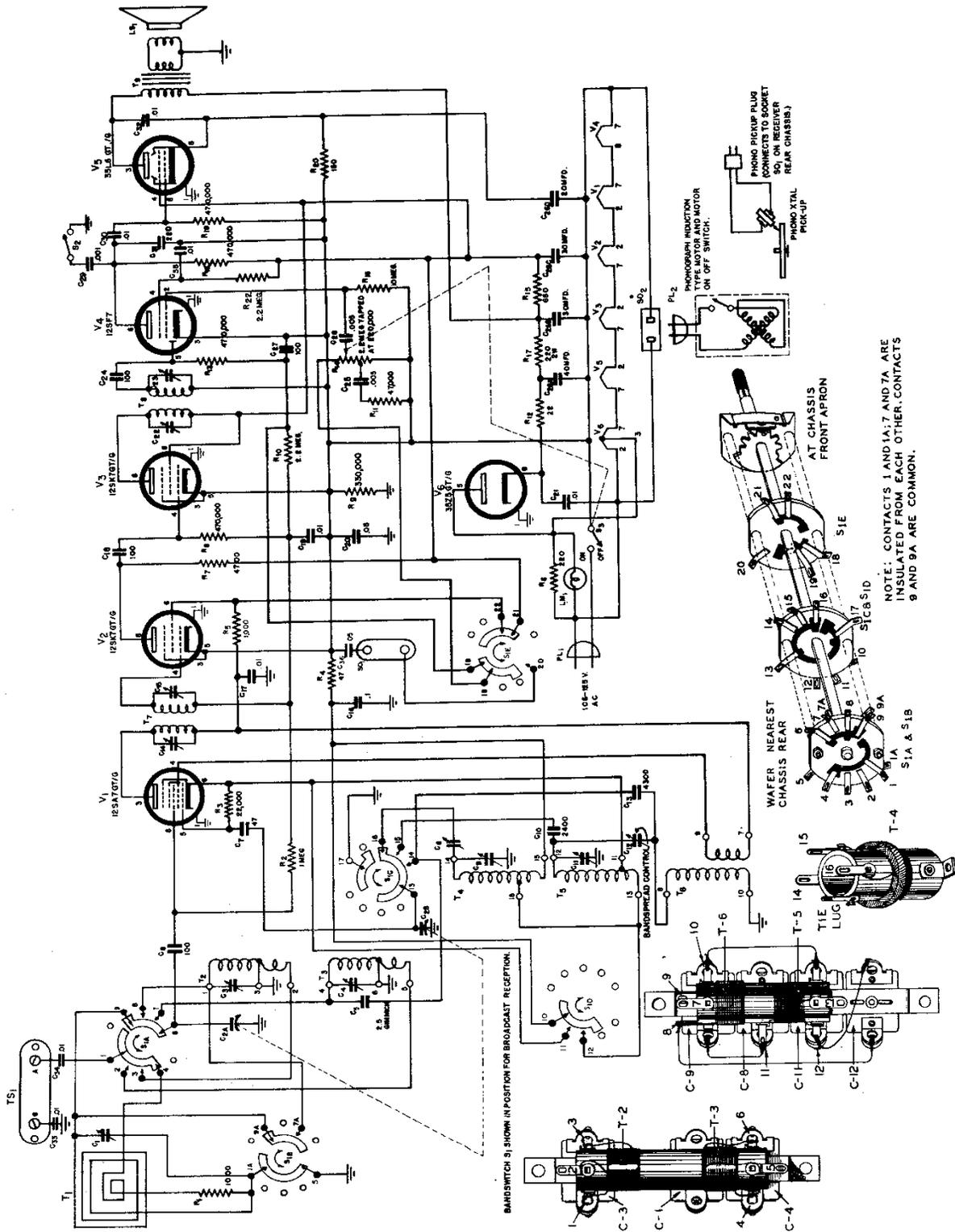
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MODELS EC-306,  
EX-306

THE HALLCRAFTERS CO.



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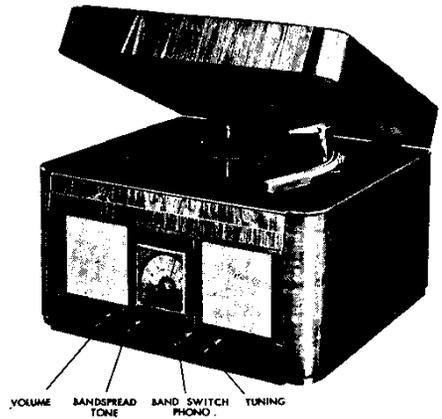
RECORD CHANGER: For EC-306, GI Model 205, RCD.CH. 15-5  
For EX-306, GI Model 204, RCD.CH. 15-1

THE HALLICRAFTERS CO.

MODELS EC-306,  
EX-306



Model EX-306 Front view of receiver showing control locations.



Model EC-306 Front view of receiver showing control locations.

**GENERAL:** The EC-306 and EX-306 are six tube AC, table model radio-phonographs.

These receivers incorporate a superheterodyne circuit and are capable of receiving both domestic and short-wave reception in three bands as follows: Band #1, domestic broadcast, 540 kc 1625 kc (position 2). Band #2, short wave range #1, 2.2 to 7.1 mc (position 3). Band #3, short wave range #2, 6.9 to 22 mc. (position 4).

Both models have built in antennas, plus provisions for external antenna and ground systems.

**PHONOGRAPH:** Position #1 on band switch is for "phono" operation. The record changer is of the automatic type and will handle either ten twelve inch or twelve ten inch records. Detailed Service instructions for the automatic changers are available on request. The EC-306 uses changer model 205 and the EX-306 uses changer model 204.

**POWER SUPPLY DATA:** Both receiver models are designed to operate from a line voltage of 105 to 125 volts AC 50-60 cycles with a power drain of 30 watts nominal. Power to the receivers is supplied through the line cord extending from the rear of the cabinets.

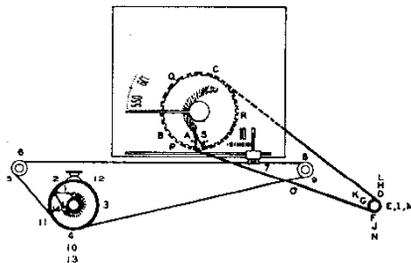
**TUBE TYPES AND FUNCTIONS:** 12SA7GT/G-mixer-oscillator; 2-12SK7GT/G's as I-F amplifiers; 12SF7-Detector, AVC and First audio amplifier; 35L6GT/G-Audio power amplifier; 35Z5GT/G-Power rectifier.

**DETAILED SERVICE INFORMATION**

IF FREQUENCY	RECEIVER OVERALL SELECTIVITY	IMAGE RATIO	*RECEIVER OVERALL SENSITIVITY	AUDIO OUTPUT
455kc	8.5kc wide at 6db down 16kc wide at 20db down 32kc wide at 40db down (for 500 milliwatt output)	65:1 at 1000kc (loop) 20:1 at 2.5mc (ant.) 8:1 at 7.0mc (ant.) 6:1 at 15.0mc (ant.) 3:1 at 20.0mc (ant.)	45 microvolt at 1000 kc 80 microvolt at 2.5 mc 35 microvolt at 6mc 140 microvolt at 8mc 50 microvolt at 20mc	0.8 watt with less than 10% distortion

\*Readings for 500 milliwatt constant output. Speaker disconnected and replaced with a 3.2 ohm load resistor. Signal from generator modulated 30% at 400 cycles.

**HOW TO RESTRING DIAL CORDS**



Dial cable stringing procedure; main tuning is indicated by letters, and band spread tuning is indicated by numbers.

To restring the main tuning dial cord, cut a 25" length of 18 lb test dial cord and tie one end to the tension spring of the main tuning capacitor drive pulley at position "A" on the diagram. Following the letters "A" through "S", wind the cord on the pulley and knob drive shaft. At position "S", stretch the tension spring and tie the cord securely. Cut off the excess cord. Note that three turns are wound on the knob drive shaft.

To restring the bandspread tuning dial cord, cut a 30" length of the dial cord and follow the procedure as explained above, except start at position "1" on the diagram and proceed through position "14". Then turn knob pulley maximum clockwise, slide pointer to 100 and insert cord in clip on pointer. Note that the knob pulley has two turns.

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EX-306

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# ALIGNMENT INSTRUCTIONS

**EQUIPMENT:**

1. Signal Generator capable of ranges indicated in the ALIGNMENT CHART, including a 400 cycle audio modulator.
2. Output meter capable of handling 1 watt of audio power.
3. Standard RMA dummy antenna consisting of a 200 mmf condenser in series with a 20uh r-f choke, the choke being shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.
4. Non-metal screw-driver.

**CONNECTIONS:** Connect the Sig. Gen. "cold" lead to "G" on the antenna terminal strip except for i-f adjustments (see chart below); the "hot" lead is connected as indicated in the chart.

Connect the output meter across voice coil of the speaker and adjust the meter for 3 ohm impedance.

**Caution:** Set the meter at a sufficiently high range to prevent possible damage from overload. Band 3 must be aligned before band 2 in all instances.

**CONTROL SETTINGS:** After allowing about a ten minute warm up period, set the receiver's control as follows:

- VOLUME control at full clockwise.
- BANDSPREAD tuning control at "0", (min. cap.).

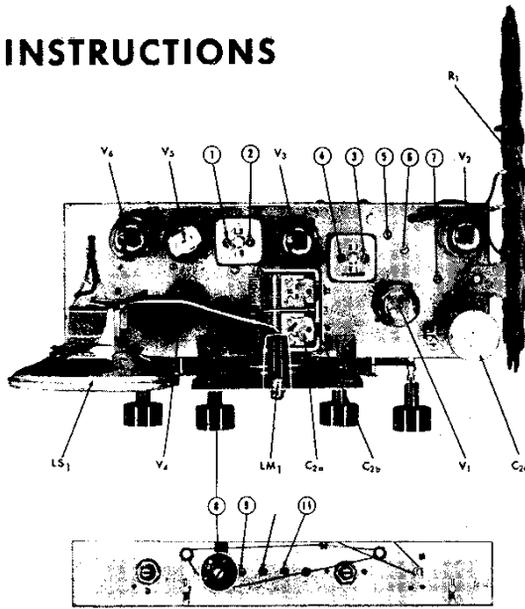


Fig. 6. Top and front views of the receiver showing tube locations and location of padder, trimmer and i-f adjustment points.

**ALIGNMENT CHART**

DUMMY ANT. IN SERIES WITH SIG. GENERATOR	CONNECTION OF SIG. GENERATOR OUTPUT TO RECEIVER	SIGNAL GEN. FREQUENCY SETTING	BAND SWITCH SETTING	RECEIVER DIAL SETTING	ADJUST SLUG PADDER, OR TRIMMER NO.	TRIMMER DESCRIPTION	TYPE OF ADJUSTMENT MAKE ADJUSTMENT FOR:	STEP NO.
<b>IF ADJUSTMENT</b>								
None	**On mixer section stator of tuning condenser gang	455kc	Range 1 (Broadcast)	1625kc	3 & 4 1 & 2	Diode IF Input IF	Maximum output Maximum Output Repeat steps 1 & 2	1 2 3
<b>RANGE 1 (Broadcast band)—</b>								
Standard	Couple to loop aerial	1500kc	Range 1 (Broadcast)	1500kc	11	Osc. Trimmer	Maximum output	4
RMA		1500kc		1500kc	6	Antenna shunt trimmer	Maximum output	5
Dummy*		600kc		600kc	10	Osc. padder	Maximum output Repeat step 4	6 7
<b>RANGE 3 (Short wave range 6.9 to 22mc)—</b> Align oscillator for this band with bandspread indicator drive pulley set screw loose and pointer set at zero. After completing the OSCILLATOR alignment, tighten the screws securely without changing the pointer setting from zero.								
Standard	"A" on antenna terminal strip	22mc	Range 3	22mc	8	Bandspread & Osc. trimmer	Maximum output	8
RMA		20mc		20mc	†5	Antenna shunt trimmer	Maximum output	9
Dummy*								
<b>RANGE 2 (Short wave range 2.2 to 7.1mc)—</b>								
Standard*	"A" on antenna terminal strip	6mc	Range 2	6mc	9	Osc. trimmer	Maximum output	10
RMA		6mc		6mc	7	Antenna shunt trimmer	Maximum output	11
Dummy*								

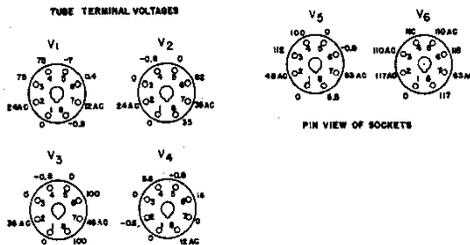
**NOTE:** Bandspread indicator MUST be at ZERO when making all adjustments.

Band 2 oscillator trimmer (9) must be set AFTER bandspread trimmer (8) (Range 3 oscillator trimmer) is aligned.

\*Standard RMA dummy antenna consists of a 200mmf condenser in series with a 20uh r-f choke, the choke being shunted by a 400 mmf condenser in series with a 400 ohm carbon resistor.

\*\*Connect Sig. Gen. ground lead to receiver negative return, not to chassis. This applies only for I-F adjustment.

†When making these adjustments turn tuning capacitor slowly back and forth.



ALL VOLTAGES ARE POSITIVE DC UNLESS OTHERWISE SPECIFIED. VOLTAGES TAKEN WITH A VACUUM TUBE VOLTMETER; NO SIGNAL BEING RECEIVED; NEG. METER LEAD TO B-(AT VOLUME CONTROL TUBE TO APPROX. 100KΩ AC LINE 117 VOLTS.

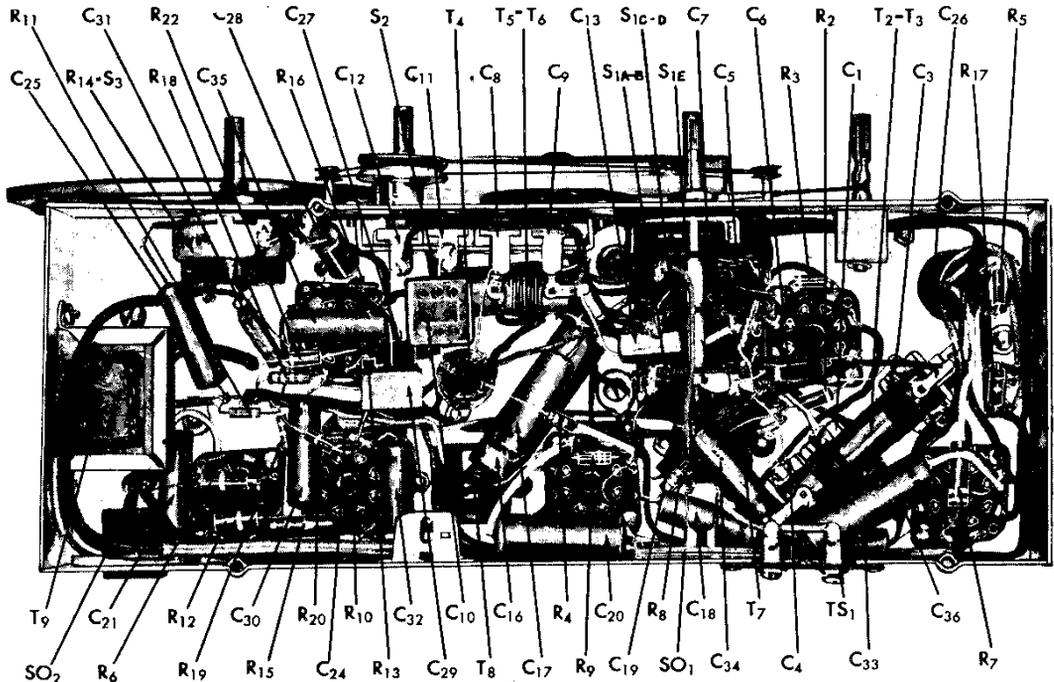
ALL VOLTAGES ARE ±10% OR 1 VOLT, WHICH EVER IS GREATER.

RESISTANCE VALUES ARE IN OHMS; MICA CAPACITOR VALUES ARE IN MMF; PAPER CAPACITOR VALUES ARE IN DECIMAL EQUIVALENTS OF MMF; ELECTROLYTIC CAPACITOR VALUES ARE IN MFD.

- DENOTES UNFIELDED UNIT ASSEMBLY.
- DENOTES MECHANICAL GANGING.

THE HALLICRAFTERS CO.

MODELS EC-306,  
EX-306



Model EC-306 and EX-306 bottom view of chassis showing location of component parts.

REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER	REF. NO.	DESCRIPTION	HALLICRAFTER'S PART NUMBER
<b>CAPACITORS</b>					
C-1, 3 & 4	Antenna trimmers; 3 section unit	44A162	S-1	Bandswitch; rotary; 3 section, 4 position	60B251
C-2	Main tuning capacitor; 2 sections, ganged; 12.3 to 354.6 mmf, each section; air	48B165	S-2	Tone control switch	60A246
C-5	2.5mm gimnick; twisted insulated leads. NOT FURNISHED AS A REPLACEMENT PART SHOWN FOR REFERENCE ONLY.		S-3	Receiver on/off switch; part of resistor R-14 assembly. NOT FURNISHED AS A SEPARATE REPLACEMENT PART. SEE LISTING REF. NO. R-14.	
C-6, 18, 24 & 27	100 mmf; 20%; 500 vdcw; mica	CM20A101M	<b>TRANSFORMERS</b>		
C-7	47 mmf; 20%; 500 vdcw; mica	CM20A470M	T-1	Antenna loop assembly; includes resistor R-1.	57C104
C-8, 9, 11 & 12	Oscillator trimmer; 4 section	44B161	T-2 & 3	Mixer coil assembly for short wave bands, both short wave ranges	51B814
C-10	2400 mmf; 20%; 500 vdcw; mica	CM30A242M	T-4	Oscillator coil for local broadcast band	51A811
C-13	4300 mmf; 10%; 500 vdcw; mica	CM35A432K	T-3 & 6	Oscillator coil assembly for short wave bands, both short wave ranges	51B815
C-14 & 15	Trimmers for IF transformer, T-7. NOT A REPLACEABLE PART. Furnished with replacement transformer T-7. SEE LISTING REF. No. T-7.		T-7	Input IF transformer; 455kc; trimmer tuned	50B196-5
C-16	0.1 mfd; +40-15%; 600 vdcw; tubular paper	46AX104J	T-8	Diode IF transformer; 455kc; trimmer tuned	50B196-2
C-17, 19, 21, 30, 32, 33, 34, 35 & 36	0.01 mfd; 20%; 600 vdcw; tubular paper	46AX103F	T-9	Audio output transformer; matches output tube to 3 ohm voice coil of PM speaker	55B080-2
C-28	0.001 mfd; +40 -15%; 600 vdcw; tubular paper	46AZ502J	T-10	Autotransformer, 220 to 110 volts, AC, 50-60 cycles	52B145
C-20	0.05 mfd; +40 -15%; 600 vdcw; tubular paper	46AY503J	<b>TERMINAL STRIPS</b>		
C-22 & 23	Trimmers for IF transformer, T-8. NOT A SEPARATE REPLACEMENT PART. FURNISHED WITH REPLACEMENT TRANSFORMER T-8. SEE LISTING REF. NO. T-8.		TS-1	External antenna and ground connector strip	88A569
C-26A, B, C & D	Electrolytic; 4 section unit; sect. A— 40 mfd, 150 vdcw; sect. B & C— are each 30 mfd, 150 vdcw; Sect. D— 20 mfd, 25 vdcw	45B095	<b>MISCELLANEOUS COMPONENTS COMMON TO BOTH MODELS</b>		
C-29	0.001 mfd; 20%; 500 vdcw; tubular paper	46AZ102H	QUANT. IN EQUIPMENT	DESCRIPTION	HALLICRAFTER'S PART NUMBER
C-31	220 mmf; 20%; 500 vdcw; mica	CM20A221M	1	Pilot lamp dial socket; bayonet base	86A036-1
C-25	0.005 mfd; 20%; 600 vdcw; tubular paper	46AZ502J	1	Bracket; tuning capacitor mounting	67B581
<b>PILOT LAMPS</b>					
LM-1	6/8 volt @ 150 ma; brown bead; bayonet base; G.E. type 47	39A004	1	Bracket; tuning shaft mounting	67A582
<b>LOUD SPEAKER</b>					
LS-1	Loud Speaker	85B036	1	Steel tuning shaft	74A176
<b>PLUGS</b>					
PL-1	Line cord with two prong plug; 6 ft cord	87A078	1	Acetate dial window	22B161
<b>RESISTORS</b>					
R-1 & 5	1000 ohm; 20%; 1/2 watt; carbon; (NOTE: R-1 is included with antenna loop transformer ref. no. T-1, but is available as a separate replacement part.)	RC20A102M	1	Main tuning dial scale pointer	82A106
R-2	1 megohm; 20%; 1/2 watt; carbon	RC20AE105M	1	Bandspread tuning dial scale pointer	82A107
R-3 & 11	47,000 ohm; 20%; 1/2 watt; carbon	RC20AE473M	1	Calibrated dial scale	83B271
R-4	47 ohm; 20%; 1/2 watt; carbon	RC20AE470M	1	Drive pulley	26A022
R-6	220 ohm; 20%; 1 watt; carbon	RC20AE221M	2	Idle pulley	26A023
R-7	4700 ohm; 20%; 1 watt; carbon	RC20AE472M	1	Line cord lock	76A299
R-8, 13, 18 & 19	470,000 ohm; 20%; 1/2 watt; carbon	RC20AE474M	1	Electrolytic capacitor (C-26) hold down clamp	76A300
R-9	330,000 ohm; 20%; 1/2 watt; carbon	RC20AE334M	1	Cam for switch, S—	77A207
R-10	2.2 megohm; 20%; 1/2 watt; carbon	RC20AE225M	6	Tube sockets; octal; Amphenol type MIP-8	6A256
R-12	22 ohm; 20%; 1 watt; carbon	RC30AE220M	1	Receptical, Phono	10A015
R-14 & S-3	VOLUME control; 2.2 megohm, tapered at 220,000 ohm, variable; includes SPST toggle action switch, S-3 on rear	25A561	1	Receptical, Motor	88A072
R-15	680 ohm; 20%; 1 watt; carbon	RC30AE681M	3	Knob, bakelite, walnut finish	15B067-2
R-16	10 megohm; 20%; 1/2 watt; carbon	RC20AE106M	1	Knob, bakelite, walnut finish with dot	15B076-1
R-17	470 ohm; 20%; 1/2 watt; carbon	RC20AE471M	<b>MISCELLANEOUS COMPONENTS FOR MODEL EC-306 ONLY</b>		
R-20	150 ohm; 20%; 1/2 watt; carbon	RC20AE151M	1	Cabinet, wood	66F325
R-22	2.2 megohm; 20%; 1/2 watt; carbon	RC20AE225M	1	**Record Changer	115C001-1
<b>MISCELLANEOUS COMPONENTS FOR MODEL EX-306 ONLY</b>					
			1	Cabinet, wood	66F326
			1	**Record Changer	115C003-1

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