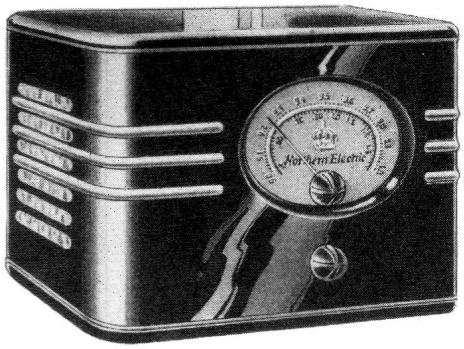
Models 320, 320A

The "Glamis"

Radio Receiver



Specifications

Frequency Range:

525—1600 K.C.

Tubes:

Type	Function
6K7	R.F. Amplifier
6J7	Detector
12A7	Output Amplifier and Rectifier

Power Supply:

Model 320: 105 to 125 volts A.C. 60 cycles
Model 320A: 105 to 125 volts A.C. 25-60 cycles

Controls:

Upper—Tuning control
Lower—Volume control

Cabinet:

Metal table model.

GENERAL:—This model is an a-c operated radio receiver using a tuned-radio frequency circuit, and covering the broadcast band only. The cabinet is of metal, in a horizontal table model "personal" style with the loudspeaker mounted on the end. The dial scale, with the calibrations printed in red, in megacycles, is of the oval airplane type with edge lighting.

The a-c load rating at 115-volts line is 18 watts for both the 25 and 60 cycle models. The model 320 operates on 60 cycles and the model 320-A on frequencies from 25 to 60 cycles.

The tuning range is from 525 to 1600 kilocycles.

CIRCUIT:—(Refer to Fig. 2—Schematic Circuit Diagram).

The circuit is of the tuned-radio-frequency type, item 1 and 2 comprising the antenna transformer and items 11 and 12 the r-f transformer. The antenna and r-f sections of the tuning capacitor gang are items 3 and 5 respectively, and their trimmers are items 4 and 6.

Volume control is effected by the potentiometer in the cathode circuit of the type 6K7 r-f amplifier tube. When the volume control is in its maximum position here is minimum bias on the tube and hence it has maximum gain. At the same time the entire resistance of the volume control is shunting the antenna primary, item 1, to ground. When the volume control is in its minimum position its entire resistance is introduced into the type 6K7 cathode circuit causing the tube's bias to be a maximum, and at the same time it shorts the antenna to ground.

The second detector is of the biased type and employs a type 6J7 tube. The bias is provided by the drop across resistor, item 29, connected in the power transformer ground return, and is filtered by resistor and condenser, items 15 and 14. Resistor, item 18, acts as a screen dropping resistor, and together with capacitor, item 16, as a hum filter. Capacitor, item 17, is an r-f filter on the plate of the detector.

The detector is resistance-capacitance coupled to the type 12A7 output amplifier, through item 20, 21 and 22. Resistor, item 24, and capacitor, item 23, filter the bias to the type 12A7 tube, which is obtained from the resistors, items 29 and 30, in the ground return of the power transformer.

The rectifier and filter circuits are of the convetional half-wave type, and items 27 and 28 are the electrolytic filter capacitors.

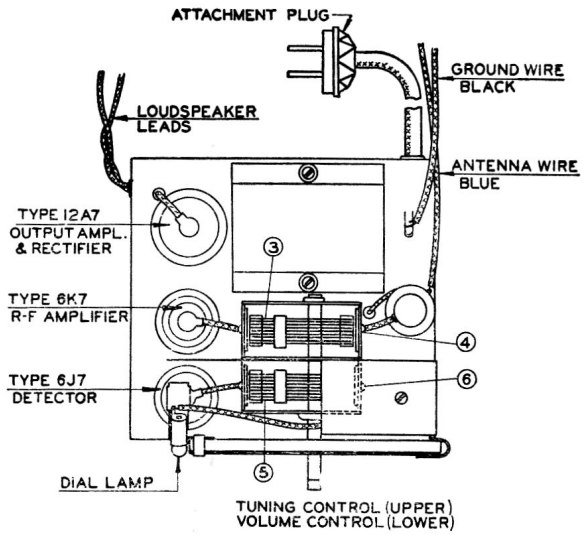
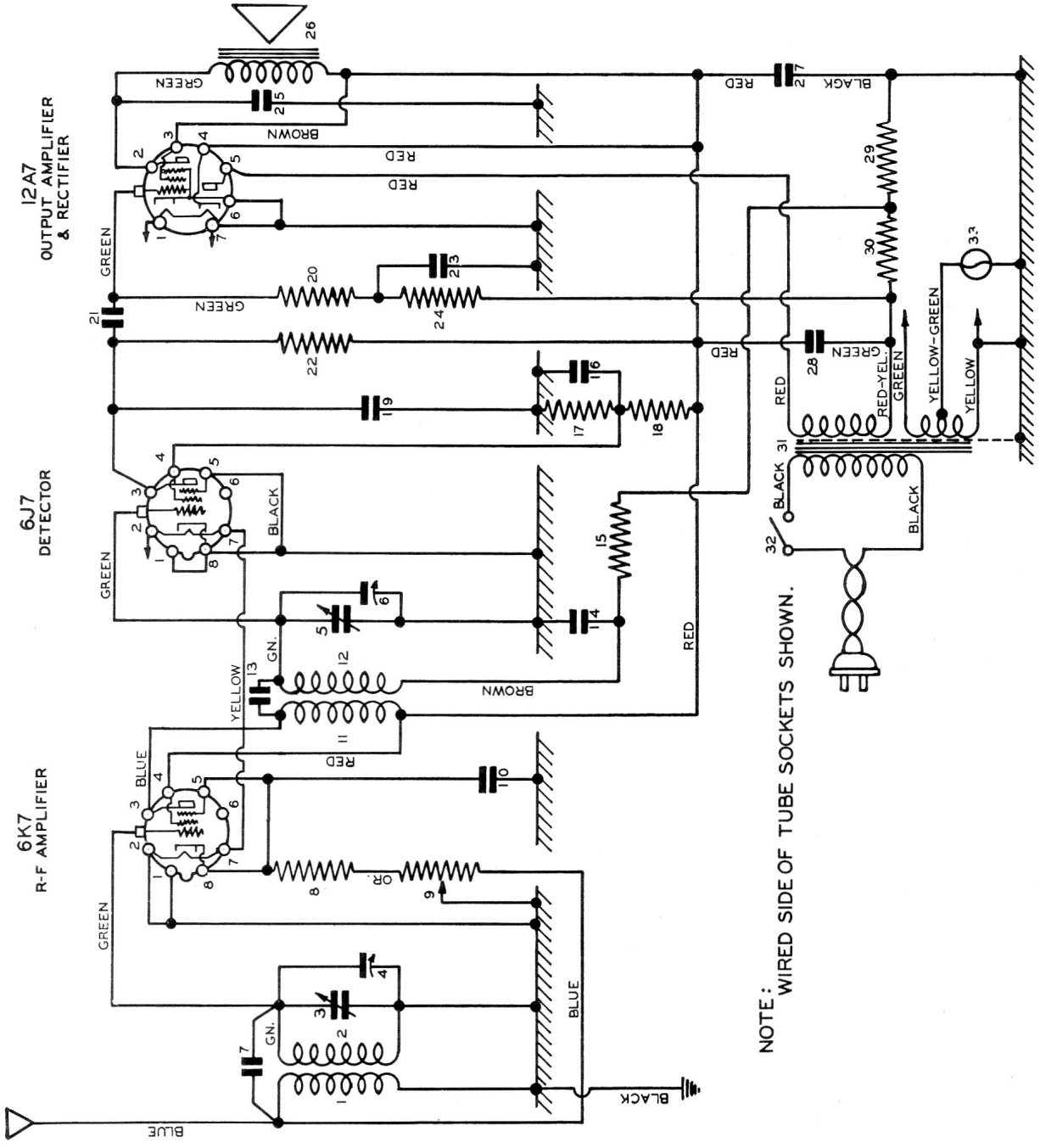


Fig. 1.—Chassis Layout Showing Aligning Positions.



Schematic Circuit Diagram. Model 320 Receiver

REPLACEMENT PARTS LIST

Schematic Designation	Value and Description	Part No.
1	Ant. Trans. Pri.	K-2901
2	Ant. Trans. Sec.	K-2901
3	Tuning Cap. Ant. Sect. 352-3 mmf.	K-2903
4	Trimmer Cap. Ant. Sect. 2.5-20 mmf.	K-2903
5	Tuning Cap. R-F Sct. 352-3 mmf.	K-2903
6	Trimmer Cap. R-F Sect. 2.5-20 mmf.	K-2903
7	Coupling Cap. Ant. Sect. 6 mmf.	Part of K-2901
8	Resistor, 300 ohms, ½ watt.	K-2226-20
9	Volume Control, ½ meg.	K-2926
10	Capacitor, .05 mf, 175 volts.	K-2227-8
11	R.F. Trans. Pri.	K-2902
12	R.F. Trans. Sec.	K-2902
13	Coupling Cap. 6 mmf.	K-2902
14	Capacitor, .1 mf, 175 volts.	K-2227-9
15	Resistor, ½ watt, 2 meg.	K-2226-1
16	Capacitor, .1 mf, 175 volts.	K-2227-9
17	Resistor, ½ meg, ½ watt.	K-2226-3
18	Resistor, 1 meg, ½ watt.	K-2226-2
19	Capacitor, mica, 100 mmf.	K-1611-2
20	Resistor, 1 meg, ½ watt.	K-2226-2
21	Capacitor, .005 mf, 175 volts.	K-2227-4
22	Resistor, ½ meg, ½ watt.	K-2226-3
23	Capacitor, .05 mf, 175 volts.	K-2227-8
24	Resistor, 1/10 meg, ½ watt.	K-2226-5
25	Capacitor, .002 mf, 175 volts.	K-2227-1
26	Loudspeaker assembly.	K-2953
27	Capacitor, dry elec, 16 mf, 130 volts.	K-2904
28	Capacitor, dry elec, 30 mf, 135 volts.	K-2904
29	Resistor, 100 ohms, ½ watt.	K-2226-24
30	Resistor, 580 ohms, ½ watt.	K-2226-37
31	Power Transformer, 60 cycle.	K-2179-14
31A	Power Transformer, 25 cycle.	K-2179-15
32	Power Switch (Mounted on 9).	
33	Dial Lamp—6.3 volts.	K-2589-3

MISCELLANEOUS:—

Sockets, octal base	K-1924-1
Sockets, seven contact	K-1221-5
Dial scale, glass	K-2943
Dial scale clips	K-2836
Paper backing for dial scale	K-2944
Dial Gasket	K-2945
Dial Pointer Assembly	K-2968-2
Insulation Terminal (single)	K-2594
Knob for Tuning	K-2830-3
Knob for Volume Control	K-2830-1
Felt Washers for Knobs	K-2491-4
Felt Feet for Cabinet	K-2954-4
Speaker Mounting Screw (flower head)	K-2971-1
Dial Lamp Socket	K-2835
Tuning Wrench (All Models)	K-836
Insulation Terminal Strip	K-2180

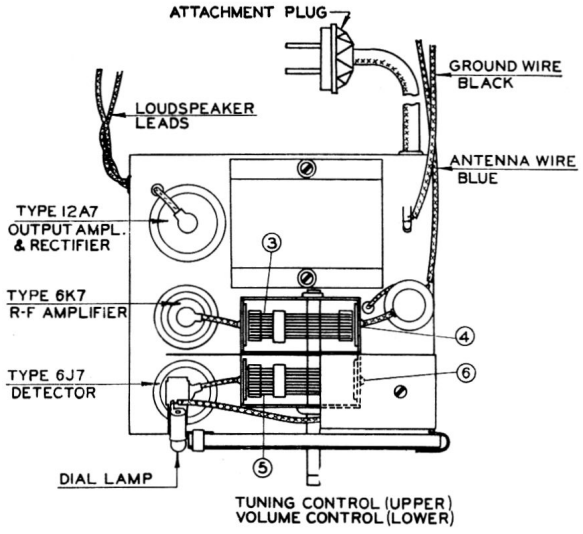
ALIGNING INSTRUCTIONS

R.F. ALIGNMENT:

(*a*) Connect the output of the signal generator through 100 mmf. mica capacitor to the antenna (blue) lead. Ground the black (ground) lead of the receiver.

(*b*) Check that the indicator pointer lines up with the end of the calibration when the gang is turned all in. The pointer is of the push-on type and can be forced around as required.

(*c*) Set the signal generator and receiver at 1400 kilocycles. Adjust trimmers, items 4 and 6, for maximum signal.



Chassis Layout Showing Aligning Positions.

SOCKET RESISTANCE READINGS TO GROUND — OHMS

TUBE	Top Cap Cont. Grid	Pin No. 1 Shell	Pin No. 2 Heater	Pin No. 3 Plate	Pin No. 4 Screen	Pin No. 5	Pin No. 6	Pin No. 7 Heater	Pin No. 8 Cathode
Type 6K7 R-F Amplifier	4.5	0	0	2 meg.	2 meg.	(Suppressor) 300	—	10 (approx.)	300
Type 6J7 Detector	2 meg.	0	1.7	2½ meg.	1 meg.	(Suppressor) 0	—	10 (approx.)	0
Type 12A7 Output Amplifier & Rectifier	1.1 meg.	(Heater).1.7	(Plate) 2 meg.	(Screen) 2 meg.	(Rectifier Cathode) 2 meg.	795 (60-cy.) 840 (25-cy.)	0	0	—

All readings are taken with volume control maximum, set disconnected from line. The pin numbers correspond with those shown on the schematic circuit diagram.

SOCKET VOLTAGE AND CURRENT READINGS

	VOLTAGES				CURRENTS—M.A.		
TUBE	Heater (a-c)	Plate	Screen	Cathode	Screen	Plate	
						Normal Bias	Bias red. 4½ V.
Type 6K7	6	117	117	3	2.0	7.6	10.6
Type 6J7	6	15	18	—	.03	.14	.21
Type 12A7	12.5	107	117	12†	1.5	7.1	9.7

† Across items 29 and 30.