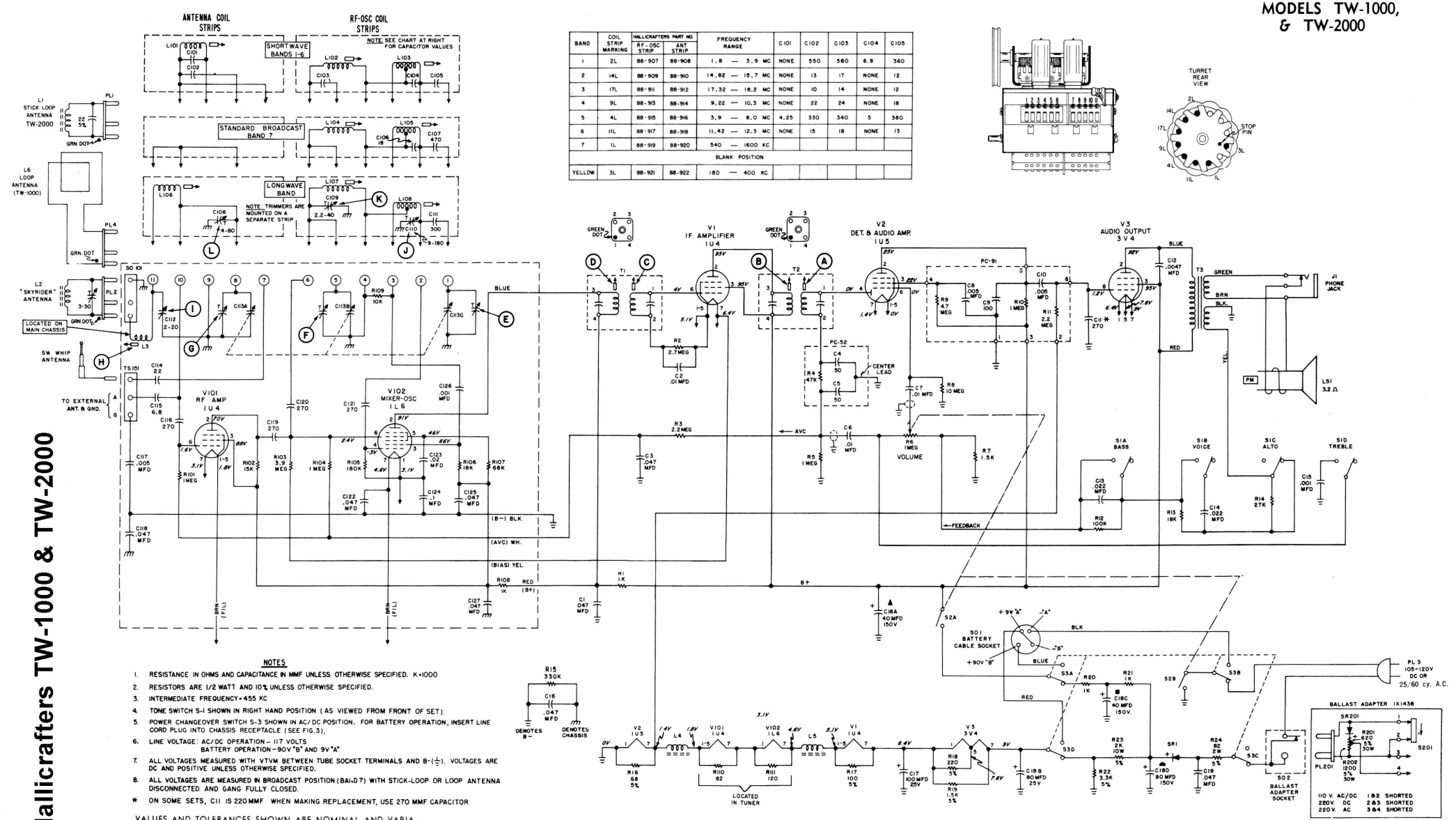
MODELS TW-1000, & TW-2000



BAND	COIL STRIP MARKING	HALLICRAFTERS PART NO. RF-OSC STRIP	HALLICRAFTERS PART NO. ANT STRIP	FREQUENCY RANGE	C101	C102	C103	C104	C105
1	2L	88-907	88-908	1.8 — 3.9 MC	NONE	550	560	6.8	360
2	14L	88-909	88-910	14.62 — 15.7 MC	NONE	13	17	NONE	12
3	17L	88-911	88-912	17.32 — 18.2 MC	NONE	10	14	NONE	12
4	9L	88-913	88-914	9.22 — 10.3 MC	NONE	22	24	NONE	18
5	4L	88-915	88-916	3.9 — 8.0 MC	4.25	330	340	5	380
6	11L	88-917	88-918	11.42 — 12.3 MC	NONE	15	18	NONE	13
7	1L	88-919	88-920	540 — 1600 KC					
BLANK POSITION									
YELLOW	3L	88-921	88-922	180 — 400 KC					

NOTES

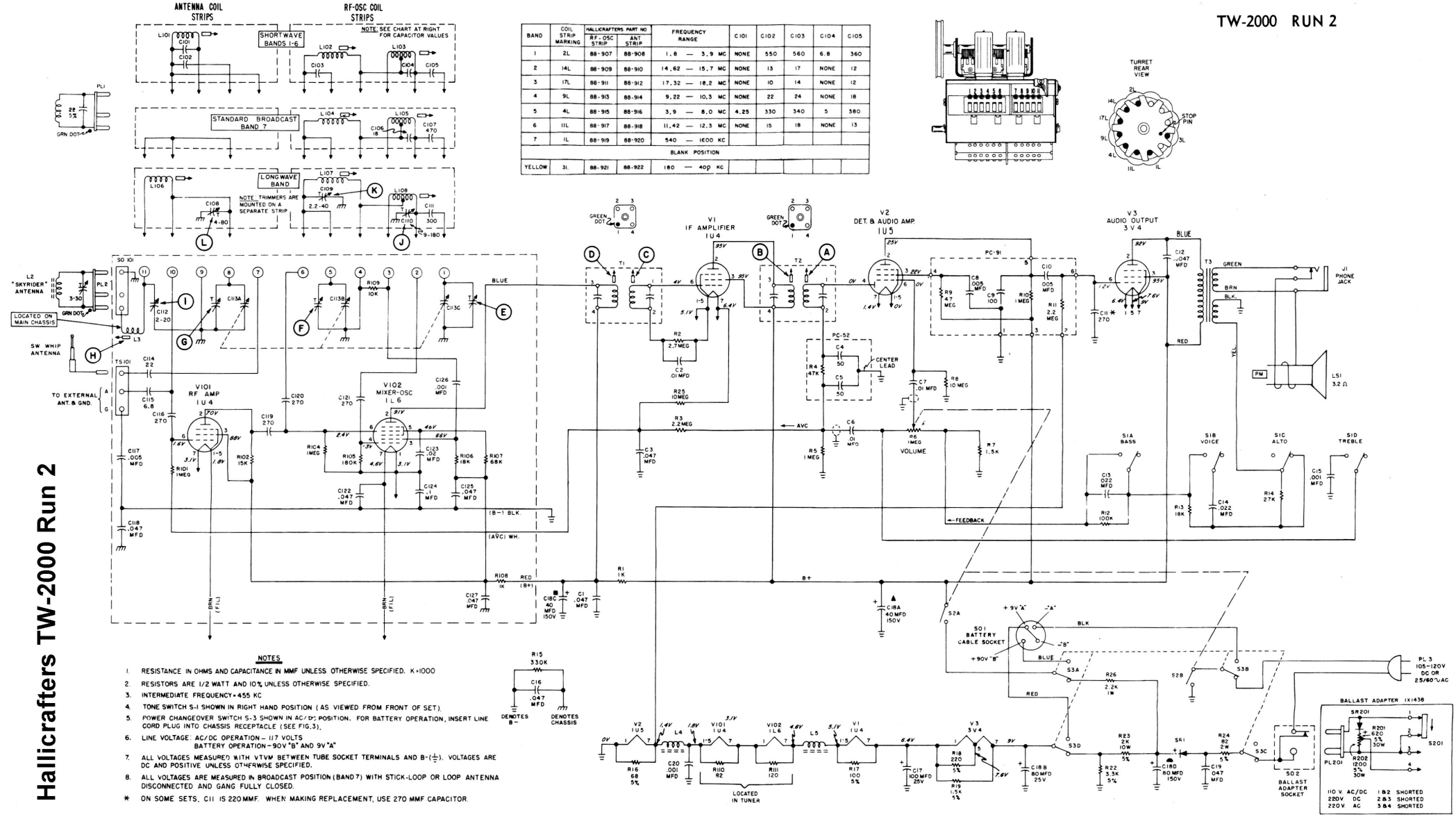
1. RESISTANCE IN OHMS AND CAPACITANCE IN MMF UNLESS OTHERWISE SPECIFIED. K=1000
2. RESISTORS ARE 1/2 WATT AND 10% UNLESS OTHERWISE SPECIFIED.
3. INTERMEDIATE FREQUENCY = 455 KC
4. TONE SWITCH S-1 SHOWN IN RIGHT HAND POSITION (AS VIEWED FROM FRONT OF SET).
5. POWER CHANGEOVER SWITCH S-3 SHOWN IN AC/DC POSITION. FOR BATTERY OPERATION, INSERT LINE CORD PLUG INTO CHASSIS RECEPTACLE (SEE FIG.3).
6. LINE VOLTAGE: AC/DC OPERATION — 117 VOLTS
   BATTERY OPERATION — 90V "B" AND 9V "A"
7. ALL VOLTAGES MEASURED WITH VTVM BETWEEN TUBE SOCKET TERMINALS AND B-(⏚). VOLTAGES ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED.
8. ALL VOLTAGES ARE MEASURED IN BROADCAST POSITION (BAND 7) WITH STICK-LOOP OR LOOP ANTENNA DISCONNECTED AND GANG FULLY CLOSED.

* ON SOME SETS, C11 IS 220 MMF WHEN MAKING REPLACEMENT, USE 270 MMF CAPACITOR.

VALUES AND TOLERANCES SHOWN ARE NOMINAL AND VARIATIONS MAY BE FOUND. IT IS RECOMMENDED THAT THE VALUE OF ANY REPLACEMENT CORRESPOND TO THE NOMINAL VALUE OF THE PART BEING REPLACED.

Hallicrafters TW-1000 & TW-2000

TW-2000 RUN 2



BAND	COIL STRIP MARKING	HALLICRAFTERS PART NO		FREQUENCY RANGE	C101	C102	C103	C104	C105
		RF-OSC STRIP	ANT STRIP						
1	2L	88-907	88-908	1.8 — 3.9 MC	NONE	550	560	6.8	360
2	14L	88-909	88-910	14.62 — 15.7 MC	NONE	13	17	NONE	12
3	17L	88-911	88-912	17.32 — 18.2 MC	NONE	10	14	NONE	12
4	9L	88-913	88-914	9.22 — 10.3 MC	NONE	22	24	NONE	18
5	4L	88-915	88-916	3.9 — 8.0 MC	4.25	330	340	5	380
6	11L	88-917	88-918	11.42 — 12.3 MC	NONE	15	18	NONE	13
7	1L	88-919	88-920	540 — 1600 KC					
BLANK POSITION									
YELLOW	3L	88-921	88-922	180 — 409 KC					

NOTES

1. RESISTANCE IN OHMS AND CAPACITANCE IN MMF UNLESS OTHERWISE SPECIFIED. K=1000
2. RESISTORS ARE 1/2 WATT AND 10% UNLESS OTHERWISE SPECIFIED.
3. INTERMEDIATE FREQUENCY = 455 KC
4. TONE SWITCH S-1 SHOWN IN RIGHT HAND POSITION (AS VIEWED FROM FRONT OF SET).
5. POWER CHANGEOVER SWITCH S-3 SHOWN IN AC/DC POSITION. FOR BATTERY OPERATION, INSERT LINE CORD PLUG INTO CHASSIS RECEPTACLE (SEE FIG.3).
6. LINE VOLTAGE: AC/DC OPERATION — 117 VOLTS
   BATTERY OPERATION — 90V "B" AND 9V "A"
7. ALL VOLTAGES MEASURED WITH VTVM BETWEEN TUBE SOCKET TERMINALS AND B-(⏚). VOLTAGES ARE DC AND POSITIVE UNLESS OTHERWISE SPECIFIED.
8. ALL VOLTAGES ARE MEASURED IN BROADCAST POSITION (BAND 7) WITH STICK-LOOP OR LOOP ANTENNA DISCONNECTED AND GANG FULLY CLOSED.

* ON SOME SETS, C11 IS 220 MMF. WHEN MAKING REPLACEMENT, USE 270 MMF CAPACITOR.

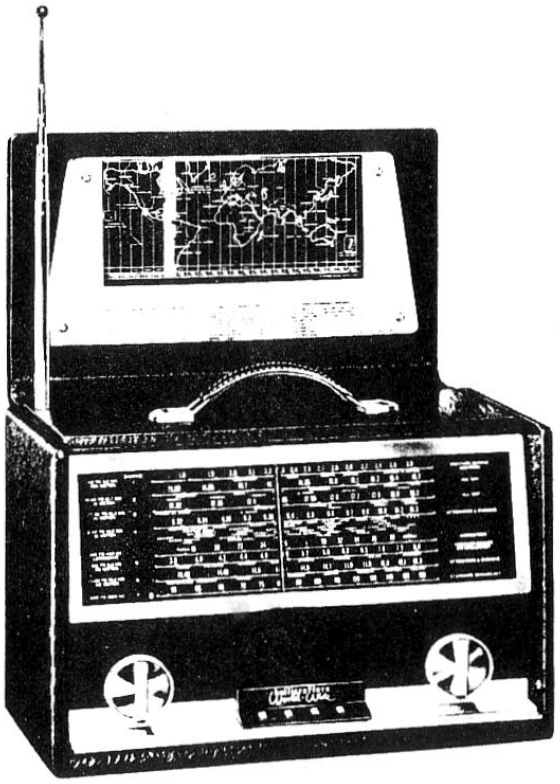


Fig. 1. Model TW-1000

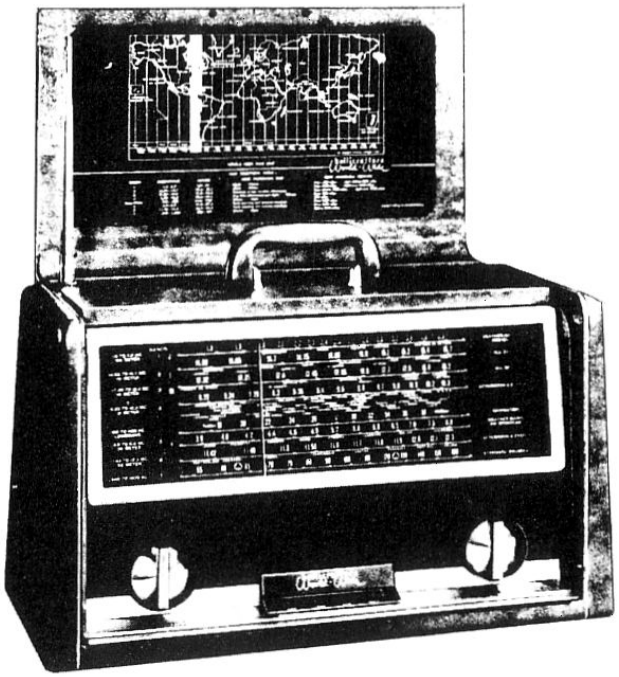


Fig. 2 Models TW2000 & TW2000 (Run 2)

TECHNICAL SPECIFICATIONS

TUBES AND RECTIFIERS . . . . . 5 tubes plus 1 selenium rectifier

POWER SUPPLY . . 105-120 volt DC or 25/60 cycle AC; 90V "B" / 9V "A" battery pack; 220 volt AC/DC with Ballast Adapter 1X1438.

POWER CONSUMPTION . . . . . 20 watts

SPEAKER. . . . . 5 X 7 inch oval; 3.2-ohm voice coil

HEADPHONE OUTPUT IMPEDANCE . . . . . 3.2 ohms

INTERMEDIATE FREQUENCY . . . . . 455 KC

ANTENNA . . . . . Stick-loop and *Skyrider for BC and LW bands, whip for SW bands, and terminals for long wire for use on all bands. Note: Front cover loop antenna is used on TW-1000 in place of stick-loop.

* The removable Skyrider antenna provides reception in automobiles, trains, steel constructed buildings, etc. where satisfactory reception is normally impossible. The Skyrider is located on the back cover and has an extension cable and suction cups for window mounting.

FREQUENCY COVERAGE

Band	Frequency Range
1	1.8 - 3.9 MC
2	14.62 - 15.7 MC
3	17.32 - 18.2 MC
4	9.22 - 10.3 MC
5	3.9 - 8.0 MC
6	11.42 - 12.3 MC
7	540 - 1600 KC
LW	180 - 400 KC

MODEL COMPARISON

Models TW-1000, TW2000 and TW2000 (Run 2) are electrically identical except for the built-in broadcast/longwave antenna and tuner. The TW-1000 uses a conventional loop antenna concealed in the front cover while the TW2000 and TW2000 (Run 2) employ a stick-loop antenna which mounts on the top of the chassis. (See Fig. 8.) Physical differences between models are readily apparent by reference to Figs. 1 and 2.

TUNING DIAL

To tune bands 1 thru 7, set the Band Selector knob so that the red band indicator at the left side of the dial is opposite the desired band. To tune the longwave band, rotate the Band Selector knob fully clockwise so that the yellow band indicators become visible at the left side of the dial.

NOTE: BAND SELECTOR CONTROL SET FULLY CLOCKWISE.

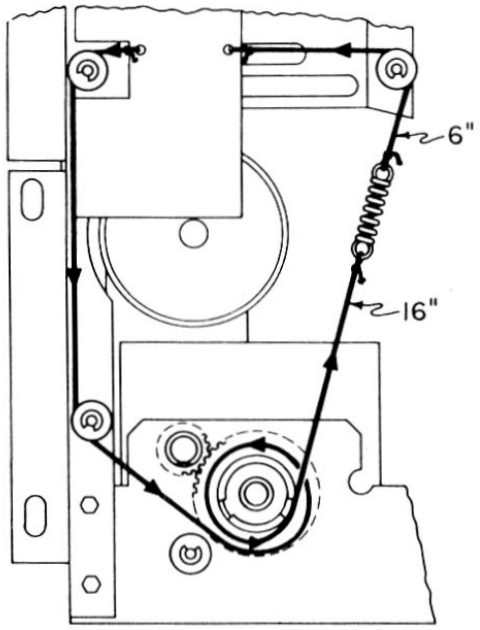


*Fig. 3. **Band Indicator Plate Stringing Diagram***

REMOVING CHASSIS AND FRONT PANEL ASSEMBLY FROM CABINET

The chassis and front panel assembly are removable from the cabinet as a unit:

1. Remove the three screws at the bottom of the cabinet.
2. Remove the two hex nuts at the rear of the front panel assembly (one on each side).
3. Unplug the whip antenna lead. On model TW-1000, also unplug the loop antenna cable.
4. Slide the chassis and front panel assembly out through the front of the cabinet.

TUNER SERVICE

GENERAL

The Dynamic Turret Tuner employed in the "World-Wide" portable consists of a 1U4 RF amplifier stage and a 1L6 mixer-oscillator stage.

Band selection is accomplished by rotation of the tuner turret assembly, which has a separate set of two snap-in coil strips for each band. One strip contains the antenna coil and the other contains the RF and oscillator coils. (See Fig. 7). Coils can be identified as to band by the number stamped on the outside of the coil strip. Refer to the chart at the top of the schematic diagram for cross reference of coil marking, band, and frequency range.

Extreme care must be exercised in handling or servicing the tuner. Location and lead dress of components and wiring are usually very critical. Parts location and ground connections should be as originally made. The tuner was carefully aligned at the factory and should normally not require complete realignment under normal operating conditions.

Replacement of tubes (especially 1L6 mixer-oscillator) may cause some slight detuning of the tuner circuits. When replacing the 1L6, it may be necessary to touch up the oscillator slug adjustments. Replacement of the tuning gang may require complete realignment of the receiver.

NOTE: Models TW-2000 (Run 2) have a removable button plug to the right of the Band Selector knob which provides access to the oscillator slugs without removing the baffle board and dial assemblies.

Be sure that the coils are properly paired for the indicated band and that the coils follow proper sequence. Refer to chart at top of schematic diagram.

REMOVING TUNER FROM CHASSIS

a. Remove front control knobs by pulling in a forward direction.

b. Remove dial escutcheon by removing the screws at sides and bottom.

c. Remove dial scale by removing (4) screws at front of dial and (1) screw at rear.

d. Disconnect the speaker leads.

e. Remove baffle board assembly by removing the (2) long and (2) short machine screws.

f. Remove large gear and pulley assembly by removing (2) Allen Head set screws, in models TW-1000 and TW-2000. In (the) TW-2000 (Run 2) remove the roll pin in the shaft and one Allen Head set screw.)

g. Disconnect the tuner leads.

h. Remove (2) screws at front of chassis and (2) studs at rear of chassis holding tuner in place.

i. Lift out tuner at rear and remove.

REMOVING TUNER TURRET ASSEMBLY

a. Remove tuner from chassis as outlined above.

b. Remove the front and rear turret retainer springs by depressing straight end of spring from tab on tuner chassis end plate.

c. Grasp turret shaft at front and rear and remove turret from tuner assembly.

d. For reassembly, position turret so that the stop at the rear end of turret is facing outward from the tuner assembly. Then press turret into position and replace front and rear turret retaining springs.

REMOVING SNAP-IN COIL STRIPS

Insert a screwdriver blade between the coil retainer spring and the turret end plate. Twist the blade away from the turret and lift the end of the coil upward and remove.

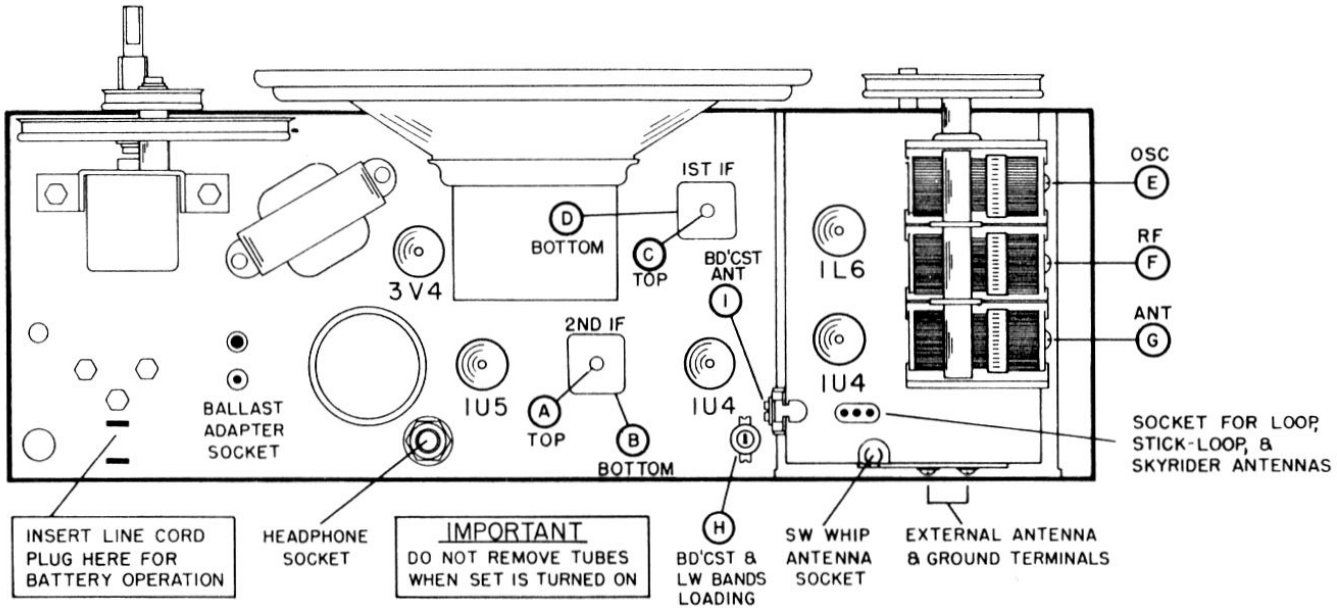


*Fig. 4. **Top View of Chassis Showing Location of Alignment Adjustments and Tubes***

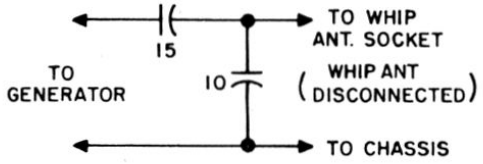


*Fig. 5. **Dummy Antenna for Bands 1 and 5***

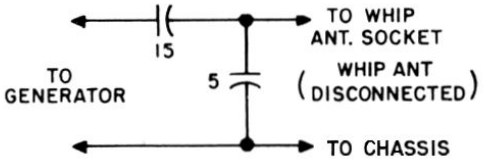


*Fig. 6. **Dummy Antenna for Bands 2, 3, 4 and 6***

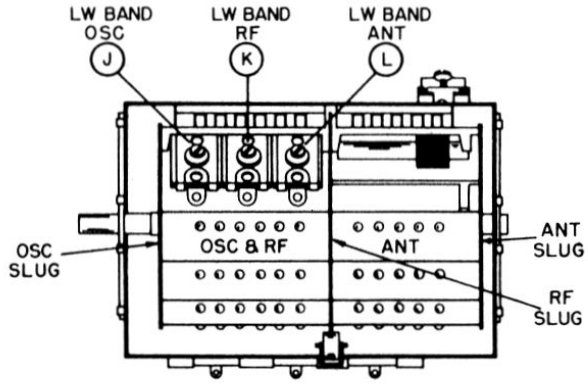


*Fig. 7. **Bottom View of Tuner Showing Location of Alignment Adjustments***

ALIGNMENT INSTRUCTIONS

- Be sure both the set and the signal generator are thoroughly warmed up before starting alignment.
- Use an accurate signal generator which has a modulated output and covers 455 KC to 17.55 MC.
- Set the volume control at maximum and disconnect the SW whip antenna. On model TW-1000, raise the front cover to place the loop antenna in its operating position.
- Connect the output meter across the speaker voice coil.
- To avoid AVC action, use lowest output setting of signal generator which gives satisfactory reading on meter (approx. 50 milliwatts).
- The local oscillator frequency is higher than the signal frequency on bands 1, 7, & LW (8). The local oscillator is lower than the signal frequency on all other bands.
- To adjust the oscillator slugs on the TW-1000 and TW-2000, it will be necessary to first remove the baffle board and dial assemblies by following Steps (a) thru (e) under "Removing Tuner from Chassis" The oscillator slugs are accessible thru the opening at the front of the tuner (see Fig. 11).

  Note: Models TW-2000 (Run 2) have a removable button plug to the right of the Band Selector knob which provides access to the oscillator slugs without removing the baffle board and dial assemblies.
- The RF and antenna slugs are accessible thru the opening at the rear of the tuner. (See Figs. 7 and 8.) Note that it is necessary to unclip and remove the antenna coil strip of the band being aligned to gain access to the RF slug.
- Refer to Figs. 4 and 7 for location of alignment adjustments. The alignment adjustments are also shown on the schematic diagram.

ALIGNMENT PROCEDURE

Step	Signal Generator Connections	Generator Frequency	Band Selector Setting	Receiver Dial Setting	Adjust for Maximum Output
1	High side thru .1 mfd capacitor to stator plates of center section of tuning gang. Low side to chassis.	455 KC	7	1000 KC	A and B (2nd IF) C and D (1st IF)
2	Radiate gen. signal into stick-loop or loop antenna.	1500 KC	7	1500 KC	E (oscillator trimmer on gang)
3	Same as Step 2.	1400 KC	7	1400 KC	F (RF trimmer on gang)
4	Same as Step 2.	600 KC	7	600 KC	Oscillator and RF slugs.
5	Connect dummy antenna as shown in Fig. 5.	2.0 MC	1	2.0 MC	Oscillator, RF, and antenna slugs.
6	Same as Step 5.	3.5 MC	1	3.5 MC	G (antenna trimmer on gang)
7	Same as Step 2.	600 KC	7	600 KC	H (loading coil on main chassis)
8	Same as Step 2.	1400 KC	7	1400 KC	I (antenna trimmer on side of tuner)
9	Connect dummy antenna as shown in Fig. 6.	15.0 MC	2	15.0 MC	Oscillator slug
10	Same as Step 9.	14.8 MC	2	14.8 MC	RF and antenna slugs
11	Same as Step 9.	18.0 MC	3	18.0 MC	Oscillator slug
12	Same as Step 9.	17.55 MC	3	17.55 MC	RF and antenna slugs
13	Same as Step 9.	10.0 MC	4	10.0 MC	Oscillator slug
14	Same as Step 9.	9.5 MC	4	9.5 MC	RF and antenna slugs
15	Same as Step 5.	4.0 MC	5	4.0 MC	Oscillator slug
16	Same as Step 5.	5.2 MC	5	5.2 MC	RF and antenna slugs
17	Same as Step 9.	12.0 MC	6	12.0 MC	Oscillator slug
18	Same as Step 9.	11.6 MC	6	11.6 MC	RF and antenna slugs
19	Same as Step 2.	400 KC	Long Wave	400 KC	J (oscillator trimmer)
20	Same as Step 2.	360 KC	Long Wave	360 KC	K (RF trimmer) and L (antenna trimmer)
21	Same as Step 2.	200 KC	Long Wave	200 KC	Oscillator, RF, and antenna slugs
22	Unplug stick-loop or loop antenna and plug "Skyrider" antenna in its place. Radiate gen. signal into "Skyrider".	1400 KC	7	1400 KC	Trimmer screw on end of "Skyrider" antenna.

REPLACEMENT BATTERY PACKS

Eveready	Ray-O-Vac	General	Burgess
752	AB995	343	G6B60

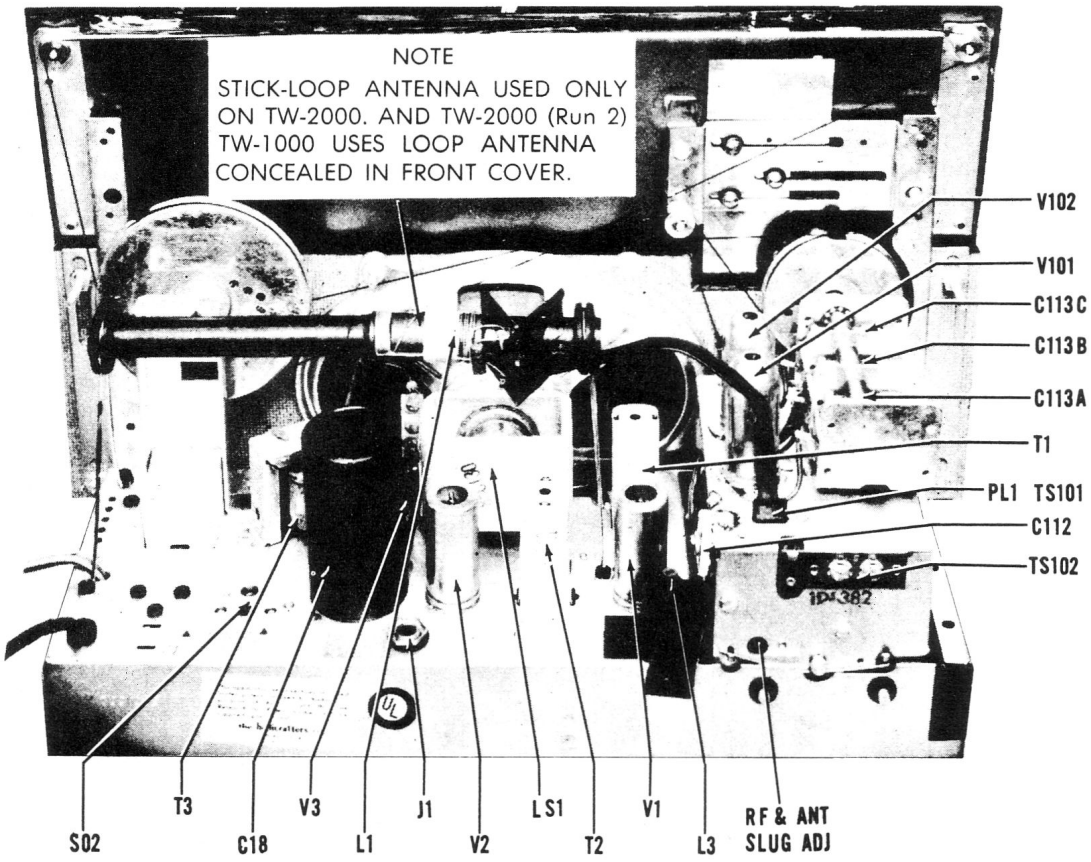


Fig. 8. Top View of Chassis Showing Component Location

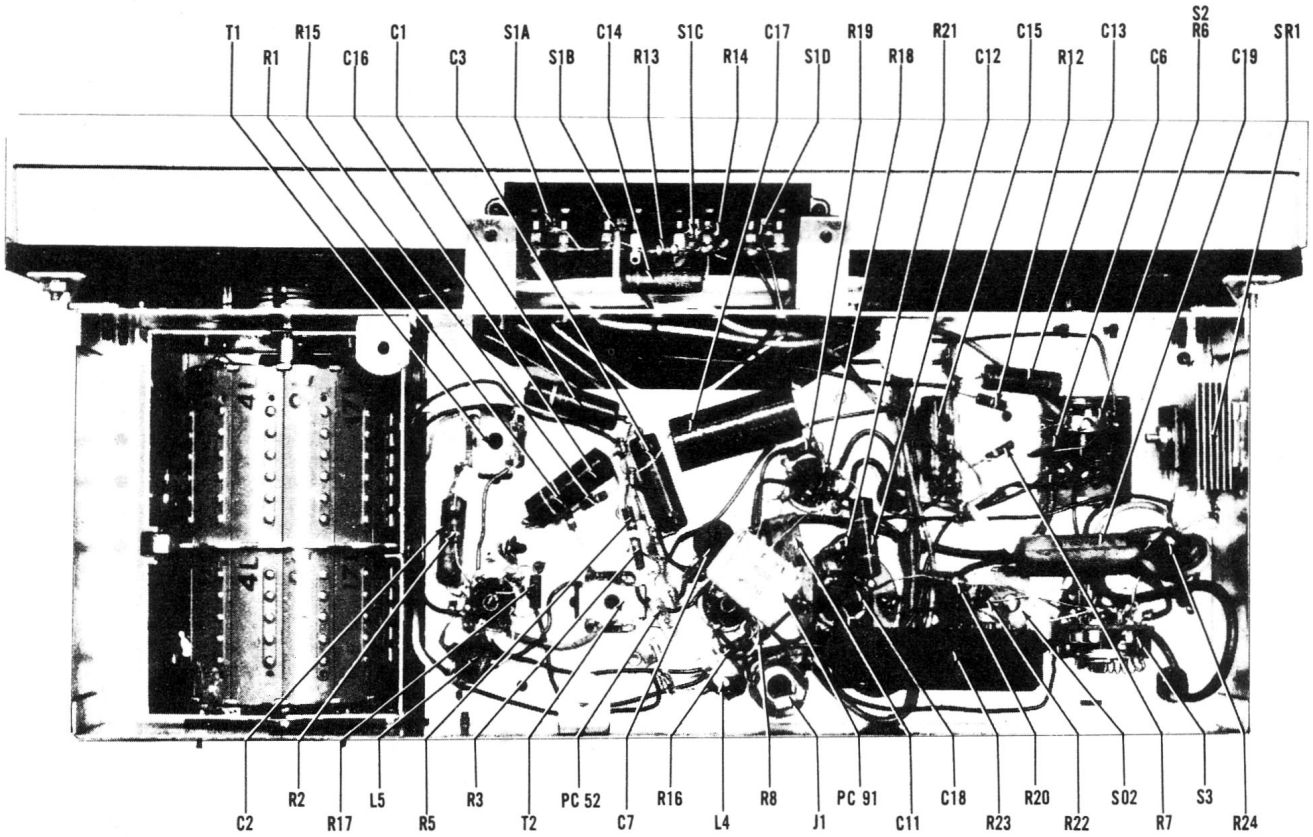


Fig. 9. Bottom View of Chassis Showing Component Location

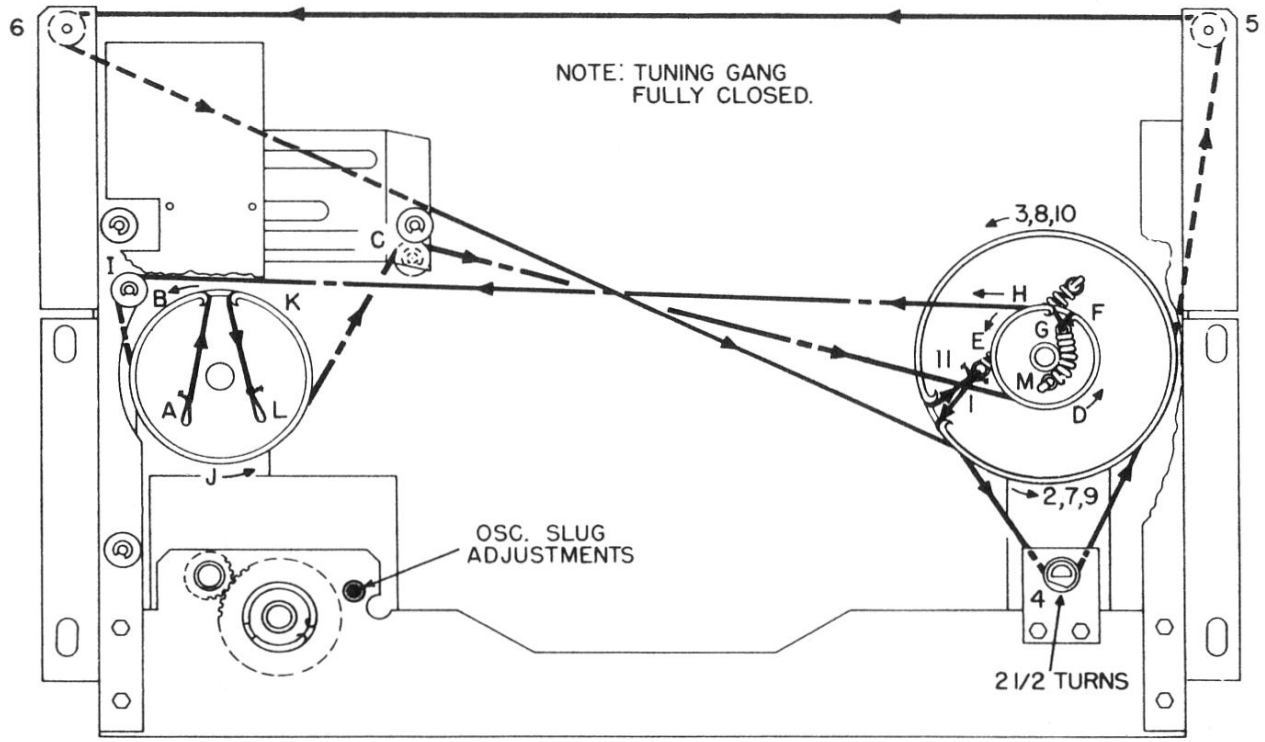


Fig. 11. ***Dial Pointer and Tuning Gang Stringing Diagram***

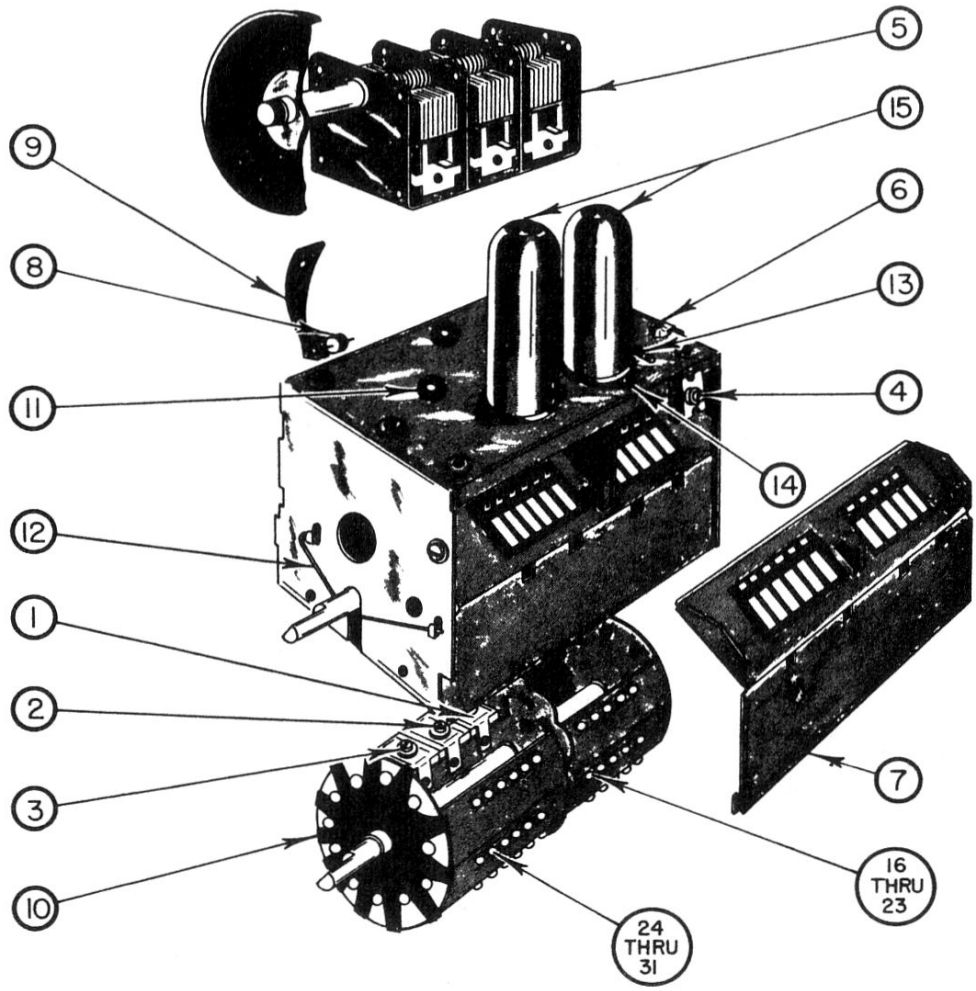


Fig. 10. Exploded View of Dynamic Turret Tuner

COILS AND TRANSFORMERS

L-1	Antenna, stick-loop (includes cable, plug, grommets, and capacitor)	57D197
L-2	Antenna, "Skyrider"; complete	57C170
L-3	Coil, antenna loading	51B1586
L-4,5	Choke, RF	53A265
L-6	Antenna, loop (less cable and plug)	57C169
T-1,2	Transformer, IF	50C242
T-3	Transformer, audio output	55C198

DYNAMIC TURRET TUNERS 1D1382 & 1-2175

Schematic Symbol	Ref. No. on Fig. 10	Description	Cross Reference	Hallicrafters Part Number
		Dynamic turret Turner Assembly complete with tubes .....Models TW1000. TW2000.	31L-301	1D1382
		Dynamic turret Turner Assembly complete with tubes .....Model TW2000 (Run 2)		1-2175

COIL STRIPS

NOTE: The coil strips are supplied complete with capacitors and cores. The capacitors and cores may also be ordered separately.

1L	16	Antenna coil strip, band 7	31L-201	88-920
2L	17	Antenna coil strip, band 1	31L-202	88-908
		Core	20E-035	121-406
		550 mmfd. 3%, 300 V.; silver mica	13B-088	121-407
4L	18	Antenna coil strip, band 5	31L-203	88-916
		Core	20E-035	121-406
		330 mmfd. 3%, 300V.; silver mica	13B-091	121-408
		4.25 mmfd. ± .5 mmfd., NPO; ceramic disc	13D-226	121-409
9L	19	Antenna coil strip, band 4	31L-204	88-914
		Core	20E-035	121-406
		22 mmfd. 5%, N330; ¼" ceramic disc	13L-8S220J	121-410
11L	20	Antenna coil strip, band 6	31L-205	88-918
		Core	20E-035	121-406
		15 mmfd. 5%, N80; ¼" ceramic disc	13L-8L150J	121-411
14L	21	Antenna coil strip, band 2	31L-206	88-910
		Core	20E-035	121-406
		13 mmfd. 5%, N80; ¼" ceramic disc	13L-8L130J	121-412
17L	22	Antenna coil strip, band 3	31L-207	88-912
		Core	20E-035	121-406
		10 mmfd. 5%, NPO; ¼" ceramic disc	13L-8C100J	121-413
3L	23	Antenna coil strip, LW band	31L-208	88-922
		Core	20E-042	121-414
1L	24	RF/osc. coil strip, band 7	31L-251	88-919
		Core	20E-035	121-406
		470 mmfd. 3%, 300V.; silver mica	13B-085	121-415
		18 mmfd. 5%, N330; ¼" ceramic disc	13L-8S180J	121-416
2L	25	RF/osc. coil strip, band 1	31L-252	88-907
		Core	20E-035	121-406
		360 mmfd. 3%, 300V.; silver mica	13B-086	121-417
		560 mmfd. 3%, 300V.; silver mica	13B-087	121-418
		6.8 mmfd. ± .5 mmfd., NPO; ceramic	13D-215	121-419
4L	26	RF/osc. coil strip, band 5	31L-253	88-915
		Core, 3/8" long	20E-035	121-406
		Core, 5/8" long	20E-038	121-420
		380 mmfd. 3%, 300V.; silver mica	13B-089	121-421
		340 mmfd. 3%, 300V.; silver mica	13B-090	121-422
		5 mmfd. ± .5 mmfd., NPO; ceramic	13L-8C050K	121-423
9L	27	RF/osc. coil strip, band 4	31L-254	88-913
		Core, 3/8" long	20E-035	121-406
		Core, 1/2" long	20E-036	121-424
		18 mmfd. 5%, N330; ¼" ceramic disc	13L-8S180J	121-416
		24 mmfd. 5%, N750; ¼" ceramic disc	13L-8U240J	121-425
11L	28	RF/osc. coil strip, band 6	31L-255	88-917
		Core	20E-035	121-406
		18 mmfd. 5%, N330; ¼" ceramic disc	13L-8S180J	121-416
		13 mmfd. 5%, N80; ¼" ceramic disc	13L-8L130J	121-412
14L	29	RF/osc. coil strip, band 2	31L-256	88-909
		Core	20E-035	121-406
		17 mmfd. 5%, N330; ¼" ceramic disc	13L-8S170J	121-426
		12 mmfd. 5%, NPO; ¼" ceramic disc	13L-8C120J	121-427
17L	30	RF/osc. coil strip, band 3	31L-257	88-911
		Core, 1/2" long	20E-036	121-424
		Core, 3/8" long	20E-035	121-406
		12 mmfd. 5%, NPO; ¼" ceramic disc	13L-8C120J	121-427
		14 mmfd. 5%, N80; ¼" ceramic disc	13L-8L140J	121-428
3L	31	RF/osc. coil strip, LW band	31L-258	88-921
		Core, 3/8" long	20E-035	121-406
		Core, 1/2" long	20E-042	121-414
		300 mmfd. 5%, 300V.; silver mica	13B-093	121-429

N - neg.-temp. coef. NPO - zero temp. coef.