

Philco Radio & Television Corp.

Model: 42-395

Chassis:

Year: Pre 1945

Power:

Circuit:

IF:

Tubes:

Bands:

Resources

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ELECTRIC PUSH-BUTTON TUNING ADJUSTMENTS

The electric push-button tuning mechanism consists of ten (10) push-buttons. Six of the push-buttons are used for selecting standard broadcast stations, one for the power control (ON-OFF) and three (3) for selecting the standard, shortwave and FM tuning bands.

Viewing the front of the cabinet from left to right the first push-button is the power control (ON-OFF); the next six (6) push-buttons for standard broadcast stations, and the eighth, ninth and tenth for selecting the standard, shortwave and FM tuning bands, respectively.

When setting up stations on the push-buttons the lowest frequency station is set up for reception on the second push-button from the left and the remaining stations according to increasing frequency in the next five push-buttons. The push-buttons are adjusted by the pads located on the rear of the chassis. The frequency range covered by each push-button and the procedure for adjusting is listed in the adjacent tabulation. The second push-button from the left can also be adjusted for reception of the sound channel of a television program received by special Philco television radios. This push-button may also be used in conjunction with a Philco wireless Record Player. The procedure for setting up these models is included in the instructions supplied with each model.

Paddles right to left from rear	Circuit	Buttons left to right from front	Frequency Range
1	Ant. Osc.	1	ON-OFF
2	Ant. Osc.	2	.540 to 1000 KC
3	Ant. Osc.	3	.600 to 1200 KC
4	Ant. Osc.	4	.650 to 1300 KC
5	Ant. Osc.	5	.850 to 1500 KC
6	Ant. Osc.	6	.900 to 1600 KC
		7	.900 to 1600 KC
		8	Standard Band
		9	Shortwave Band
		10	F.M. Band

FOR CHANGES SEE INDEX

SPECIFICATIONS

MODEL 42-395, CODE 121

Model 42-395, Code 121, is a nine (9) tube A. C. operated super-heterodyne designed for reception of standard, shortwave and frequency modulation broadcast stations, and the sound of a television program tuned in by special Philco television radios. The radio incorporates ten (10) electric push buttons which automatically tune six stations in the standard broadcast band and selects the standard, shortwave and frequency modulation bands; Philco built-in Super Aerial System for standard and shortwave reception; the Philco F M Dipole Aerial for frequency modulation reception; three tuning bands; two intermediate frequency stages; two tone controls (Treble and Bass); push-pull pentode audio output stage driven by a phase inverter audio amplifier stage; Philco Loktal tubes and a fourteen (14) inch electro-dynamic speaker.

Power Supply: 115 volts, 60 cycle A. C.

This model can also be operated on 115 volt, 25 cycle or 220 volts, 60 cycle A. C. current. To do this it is necessary to change the power transformers as indicated in the replacement parts list.

Power Consumption:

Intermediate Frequency: Standard and shortwave bands 455 KC; Frequency Modulation 4.3 MC.

Tuning Band Frequencies: 540 to 1720 KC; 9 to 15.5 MC; 42 to 50 MC (FM).

Audio Output: 4 watts.

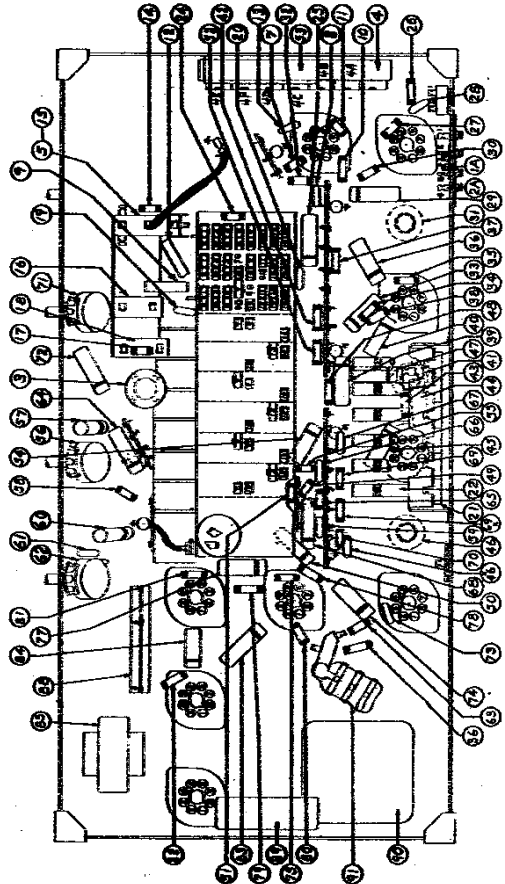


Fig. 2—Locations of Parts—Under Chassis Model 42-395

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MODEL 42-395

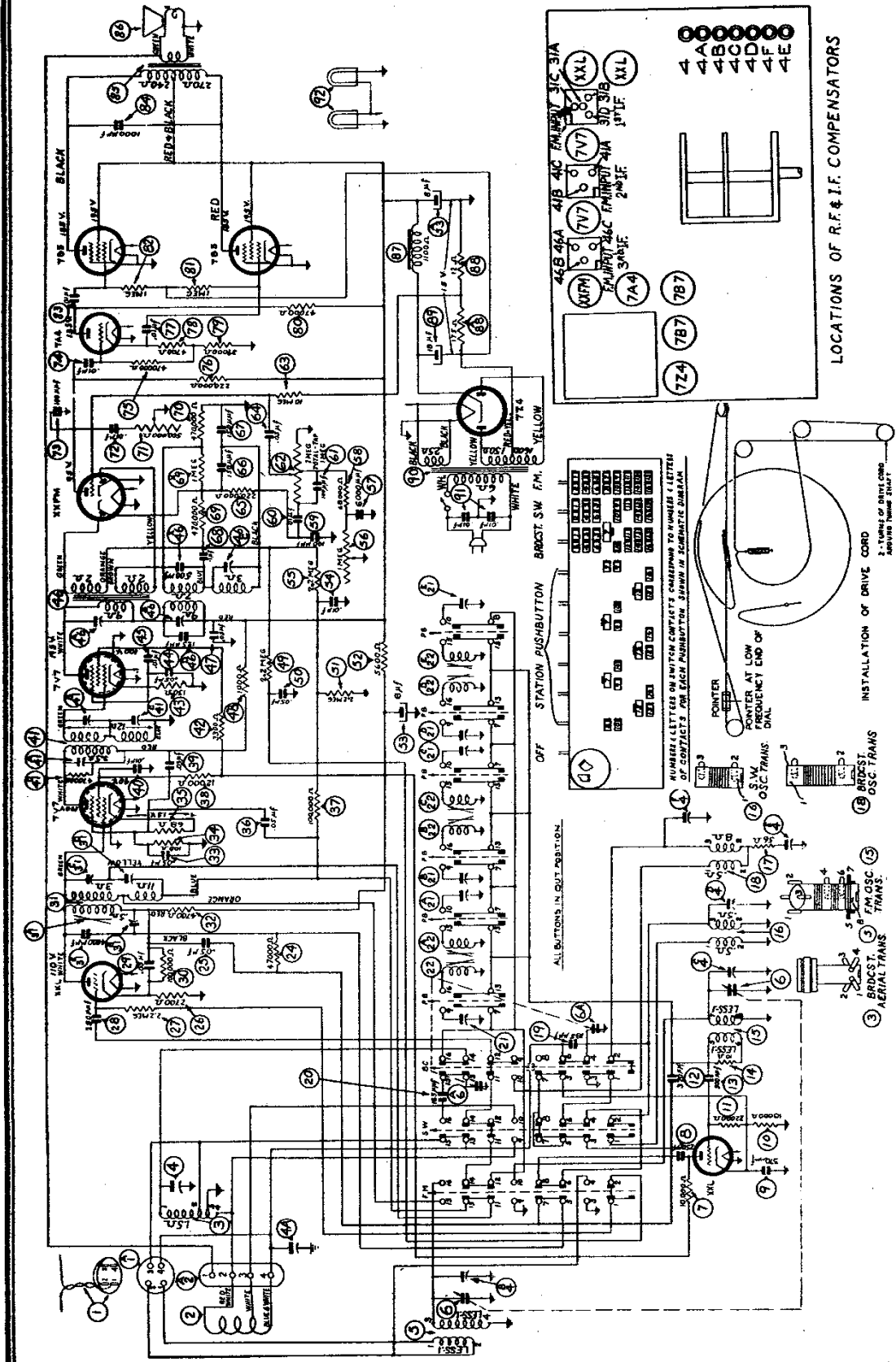


Fig. 1—Schematic Diagrams—Model 42-395, Code 121

The D. C. voltages indicated at the tube elements in the above diagram were measured with a 1000 ohms per voltmeter. Philco Model 027. Line voltage 115 volts A. C. No signal being received—range switch broadcast.

AM IF PEAK 455 KC
FM IF PEAK 4.3 MC

October, 1941

MODEL 42-395

STANDARD AND S. W. BANDS ALIGNING PROCEDURE

Operations in Order	SIGNAL GENERATOR	RECEIVER	Adjust Compensators in Order	Special Instructions
1	Output Connections High side to No. 4 terminal loop panel	Dial Setting 580 KC	46B, 41C, 31C, 31A	
2	Use loop on generator	Control Settings Vol. max. push-button "IN"	4F, 4	Note A
3	Use loop on generator	"	4E	Roll Tuning Condensers Note B
4	Use loop on generator	Readjust as given in Operation 2		
5	Use loop on generator	15 MC	4D, 4A	Note C

FREQUENCY MODULATION ALIGNING PROCEDURE

Note: The Frequency Modulation Circuits Must Be Adjusted With the Dipole Aerial Connected.

NOTE

1. Wire from F. M. oscillator transformer (15) to compensator 4C must be short, also the blue wire from F. M. oscillator transformer (15) to the tuning capacitor (4A).
2. Wire from compensator (4A) to the lug No. 3 of the loop aerial terminal panel 2A must be short.
3. Wires from lugs 3 and 4 of the loop aerial terminal panel (2A) to the short-wave push button lugs 10 and 13 of the push button which must have one wire from lug 10 to the blue wire from the F. M. oscillator transformer (15).
4. All wires from the lugs of the F. M. oscillator transformer (15) should be dressed away from the push button switch and the wires of the F. M. aerial transformer (5) which is part of the F. M. oscillator transformer (15).
5. The black wire from the first I. F. transformer (31) to lug 5 of the F. M. push button must be dressed along the chassis and away from the orange and yellow lead of the I. F. transformer.

F. M. BAND ALIGNING PROCEDURE

Operations in Order	SIGNAL GENERATOR	RECEIVER	Adjust Compensators in Order	Special Instructions
1	Output Connections 2nd I. F. F. M. input connection	Dial Setting 580 KC	46C (Note D) 46A (Note E)	
2	4th I. F. F. M. input connection	Control Settings Vol. max. F. M. push-button "IN"	41A, 41B (Note F)	
3	High side to No. 1 contact, F. M. socket. Ground to No. 2 contact	"	31B, 31D (Note F)	
4	Use test loop on generator; place near dipole aerial	F. M. push-button "IN"	4C (Note G)	Roll tuning condenser when adjusting 4E. See Note B
5	"	F. M. push-button "IN"	4C oscillator	

EXTERNAL AERIAL CONNECTIONS

The built-in aerial system is designed to operate without an outside aerial or ground and to give exceptionally high receiving performance of stations in the standard, shortwave, or FM bands.

To operate the radio in steel reinforced buildings and other shielded locations where signal strength is weak, an external aerial is recommended. Three different types of aerial combinations are available, to improve reception on the standard, shortwave, or FM bands.

1—For Additional Sensitivity on Frequency Modulation only:
*Philco Dipole Outdoor Aerial, Part No. 45-2926.

The plug at the end of the transmission line is inserted in the socket at the back of the chassis in place of the plug connected to the FM loop in the cabinet.

- 2—For Additional Sensitivity on ALL ranges:
*Philco Dipole Outdoor Aerial, Part No. 45-2926.
Philco Aerial Coupler, Part No. 45-1361.
- 3—For Additional Sensitivity on Standard Broadcast and Shortwave only in Areas where FM reception is not available:
Philco Safety Aerial, Part No. 40-6370.
Philco Aerial Coupler, Part No. 45-1361.

NOTE A.—DIAL CALIBRATION: In order to adjust the frequency of the broadcast to the proper dial position, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer at the low frequency end of the broadcast scale.

NOTE B.—When adjusting the low frequency compensator of the broadcast or the aerial padders of the high frequency tuning range; the receiver tuning condenser should be adjusted for maximum output, then vary the tuning compensator of the receiver for maximum output. Now turn the tuning condenser to minimum capacity and adjust the compensator tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until maximum output reading is obtained.

NOTE C.—Adjust compensator (4D) to the second maximum output position (maximum capacity). The aerial compensator (4A) must also be adjusted to maximum on the first signal peak by rolling the tuning condenser. (See Note B.)

NOTE D.—With the signal generator set to 4.3 MC, signal indication is observed on the output meter.

NOTE E.—Turn the signal generator first to approximately 4.3 MC (4.42 MC). A signal peak should be observed on the output meter at approximately each of the following frequencies: 4.3 MC, 4.35 MC, 4.4 MC, 4.45 MC, 4.5 MC, 4.55 MC, 4.6 MC, 4.65 MC, 4.7 MC, 4.75 MC, 4.8 MC, 4.85 MC, 4.9 MC, 4.95 MC, 5.0 MC. The peaks are unequal in amplitude, but all must be adjusted. This is done by slightly turning padders and then turning signal generator above and below 4.3 to observe peaks. After equalizing the peaks, the output meter should show zero reading at 4.3 MC. The output meter should be adjusted to zero after this adjustment is made. Padder No. 46A should be reset to equal peaks as given above.

NOTE F.—Adjust padders 41A, 41B, 31B, and 31D for equal signal peaks and equal frequency spacing each side of 4.3 MC.

NOTE G.—The dial scale numbers are listed in terms of megacycles for the standard broadcast band, 48.5 to 88. Set the tuning dial pointer to 85 on the F. M. scale. Adjust padder (3C) to the point where minimum signal indication is observed on the output meter.

NOTE H.—In order to adjust padder (4B) the signal generator should be set to 4.3 MC. Adjust padder (4B) to maximum output reading on either of these peak signals above 48.5 MC (48.625 MC). Adjust padder (4B) to maximum output reading on the meter. After this adjustment is made, padder No. 46A should be reset to equal peaks as given above.

Connect the single wire lead-in of the aerial to the "black" terminal on the aerial coupler.

*Accessories for this aerial are the Philco Aerial Mast Kit, the Philco Reflector Kit and Philco High Efficiency Transmission Line. See Service Bulletin No. 396 on Dipole Aerials.

NOTE: When installing the FM Philco Outdoor Dipole Aerial, it is very important that the aerial compensating condensers of the standard and shortwave band are repadded.

Audio Output Meter: Terminal No. 1 is provided on the loop aerial panel for connecting one end of the audio output meter to the voice coil of the speaker. The other end of the meter should be connected to the chassis. When using sections, the lowest A. C. scale of the meter must be used. (9 to 10 inches control.) The audio output meter can also be connected between the plate of the output tube and the chassis.

When aligning the R. F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet and dipole aerial lead. Do not remove the receiving loop from the cabinet. It is necessary when adjusting the padders that the receiver be set in the cabinet.

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REPLACEMENT PARTS—Model 42-395, Code 121

Schem. No.	Description	Part No.	Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1A.	F. M. Dipole Aerial (Mounted in Cabinet)	78-1394	22A.	Push-Button Oscillator Transformer (900 to 1600 KC)	32-3779	51.	Resistor (2.2 megohms)	33-52239
1B.	Socket F. M. Dipole Aerial	27-6181	22B.	Push-Button Oscillator Transformer (850 to 1600 KC)	32-3779	52.	Resistor (5000 ohms)	33-25639
2.	Loop Aerial (Broadcast and Shortwave)	78-1395	22C.	Push-Button Oscillator Transformer (850 to 1600 KC)	32-3779	53.	Electrolytic Condenser (8 mfd, 475 volts)	30-2526
	Mtg. Screw	W-288FE11	22D.	Push-Button Oscillator Transformer (800 to 1200 KC)	32-3780	53A.	Electrolytic Condenser (8 mfd, 475 volts)	
	Mtg. Sleeve	56-1545	22E.	Push-Button Oscillator Transformer (540 to 1000 KC)	32-3780		Mtg. Clamp	56-1466
	Mtg. Sleeve	28-2906				54.	Condenser (.01 mfd, 400 volts)	30-4572
	Spring Washer	28-1185				55.	Resistor (3.2 megohms)	33-52289
	Mtg. Washer	W-425FA3				56.	Bias Tone Control	33-5479
	Mtg. Washer	W-648FA3				57.	Condenser (.005 mfd, 400 D. C.)	30-4281
2A.	Terminal Panel (Loop Aerial)	38-8070				58.	Mica Condenser (8000 ohms)	33-36889
	Mtg. Rivet	W-207				59.	Mica Condenser (100 mfd)	60-110157
3.	Broadcast Aerial Transformer	32-3790				60.	Condenser (.01 mfd, 400 volts)	30-4572
4.	Compensator (Broadcast Aerial)	28-6002				61.	Mica Condenser (100 mfd)	60-110157
4A.	Compensator (Short Wave Aerial)	31-6443	23.	Push-Button Switch	W-523FA3	62.	Volume Control	33-61839
	Part of 4			Mtg. Screw	33-34739	63.	Resistor (10 megohms)	30-4519
4B.	Compensator (F. M. Aerial) Part of 4		24.	Resistor (47000 ohms)	30-4518	64.	Condenser (.05 mfd, 200 volts)	30-4519
4C.	Compensator (F. M. Oscillator) Part of 4		25.	Condenser (.05 mfd, 400 volts)	30-4518	65.	Resistor (200000 ohms)	33-42239
4D.	Compensator (S. W. Oscillator) Part of 4		26.	Resistor (2700 ohms)	33-22739	66.	Condenser (150 mfd)	60-118137
4E.	Compensator (Broadcast, Oscillator 580 KC) Part of 4		27.	Resistor (2.2 megohms)	33-52239	67.	Mica Condenser (150 mfd)	60-118137
4F.	Compensator (Broadcast, Oscillator 1500 KC) Part of 4		28.	Mica Condenser (250 mfd)	60-125257	68.	Condenser (1 mfd, 200 volts)	30-4518
5.	F. M. Aerial Transformer (Part of 15)	28-5002	29.	Resistor (100000 ohms)	30-4518	69.	Resistor (470000 ohms)	32-44739
	Mtg. Clip	31-2592	30.	Resistor (100000 ohms)	33-41039	69X.	Resistor (1 megohm)	33-51039
6.	Tuning Condenser (F. M. Section)		31.	First I. F. Transformer	32-3828	70.	Resistor (47000 ohms)	32-44739
6A.	Tuning Condenser (Broadcast, S. W. Section) Part of 6			Mtg. Nut	W-2157	71.	Treble Tone Control	33-5489
	Driver Drum	78-1293	31A.	Primary Compensator (iron core) Part of 31		72.	Condenser (.01 mfd, 400 volts)	30-4572
	Drive Cord (Pointer)	31-2576	31B.	Primary Compensator (4.3 KC) Part of 31		73.	Condenser (.01 mfd, 400 volts)	30-4572
	Spring	28-8963	31C.	Secondary Compensator (455 KC) Part of 31		74.	Resistor (47000 ohms)	33-44739
	Drive Cord (Tuning Coad.)	31-2903	31D.	Secondary Compensator (4.3 KC) Part of 31		75.	Resistor (200000 ohms)	33-42239
	Spring	28-8751	31E.	Condenser (4000 mfd) Part of 31		76.	Resistor (4700 ohms)	33-52339
	Drive Shaft	56-6184	32.	Resistor (4700 ohms)	33-24739	77.	Condenser (.01 mfd, 400 volts)	30-4518
	"C" Washer	28-2943	33.	Condenser (.05 mfd, 200 volts)	30-4519	78.	Resistor (4700 ohms)	33-34739
	Mtg. Grommet	27-4586	34.	Resistor (100 ohms)	33-11039	79.	Resistor (39000 ohms)	33-34739
	Mtg. Sleeve	56-1505	35.	Resistor (88 ohms)	33-08839	80.	Resistor (4700 ohms)	33-10339
	Mtg. Screw	W-1351FA3	36.	Condenser (.05 mfd, 200 volts)	30-4518	81.	Resistor (1 megohm)	33-51039
	Pointer (Dial)	59-2531	37.	Resistor (100000 ohms)	33-41039	82.	Resistor (1 megohm, 1000 volts)	30-4601
7.	Resistor (10000 ohms)	33-51039	38.	Resistor (12000 ohms)	30-4518	83.	Condenser (.005 mfd, 1000 volts)	30-4601
8.	Mica Condenser (250 mfd)	60-125257	39.	Condenser (.05 mfd, 400 volts)	30-4572	84.	Mica Condenser (100 mfd)	32-44739
9.	Mica Condenser (370 mfd)	30-1110	40.	Condenser (.01 mfd, 400 volts)	32-3836	85.	Output Transformer	33-6189
10.	Resistor (16000 ohms)	33-31039	41.	Second I. F. Transformer	32-3836	86.	Speaker	36-1650
11.	Resistor (39000 ohms)	33-32339	41A.	Primary Compensator (4.3 KC) Part of 41			Cone Assembly (for Speaker 36-1530)	36-1481
12.	Mica Condenser (370 mfd)	60-1110	41B.	Secondary Compensator (4.3 KC) Part of 41			Cable (Speaker)	41-3610
13.	Mica Condenser (500 mfd)	30-1110	41C.	Secondary Compensator (455 KC) Part of 41			Mtg. Washer	W-194FA3
14.	Resistor (10 ohms)	33-01039	41D.	Resistor (47000 ohms) Part of 41	33-34739		Mtg. Nut	W-2157
15.	F. M. Oscillator Transformer	32-3792	42.	Resistor (3900 ohms)	33-23339	87.	Field Coil (Replace Speaker 36-1530)	33-3416
	Mtg. Clip	28-5002	43.	Resistor (150 ohms)	33-11539	88A.	Bias Resistor (12 ohms)	10837A
	Mtg. Clip	28-5002	44.	Condenser (.05 mfd, 400 volts)	30-4518	89.	Bias Resistor (175 ohms) Part of 88	30-2517
16.	S. W. Oscillator Transformer	33-5002	45.	Condenser (.01 mfd, 400 volts)	30-4572		Electrolytic Condenser (18 mfd, 475 volts)	56-1456
	Mtg. Clip	28-5002	46.	Third I. F. Transformer	32-3828	90.	Power Transformer (115 volts, 60 cycles)	32-8192
17.	Resistor (50 ohms)	33-05334		Mtg. Nut	W-2157		Power Transformer (115 volts, 25 cycles)	32-9209
18.	Broadcast Oscillator Transformer	32-3791	46A.	Primary Compensator (4.3 KC) Part of 46		91.	Power Line Filter Condenser (.01-.01 mfd)	39030DG
19.	Mica Condenser (185 mfd)	20-018511	46B.	Primary Compensator (455 KC) Part of 46		92.	Dial Lamps	34-2141
20.	Mica Condenser (185 mfd)	20-018511	46C.	Secondary Compensator (4.3 KC) Part of 46			Socket Assembly	78-1395
21.	Push Button Station Padder (900 to 1600 KC)	31-6440	46D.	Mica Condenser (125 mfd) Part of 46	60-150227		Miscellaneous Parts—Model 42-395	
21A.	Push-Button Station Padder (900 to 1600 KC) Part of 21		46X.	Condenser (500 mfd)	30-4518	54-4128	Bezels	W-287FB26
21B.	Push-Button Station Padder (850 to 1600 KC) Part of 21		47.	Condenser (.05 mfd, 400 volts)	33-21039		Screw	L-3199
21C.	Push-Button Station Padder (850 to 1300 KC) Part of 21		48.	Resistor (2.2 megohm)	33-52239		Cabinet	10837A
21D.	Push-Button Station Padder (600 to 1300 KC) Part of 21		49.	Resistor (2.2 megohm)	33-52239		Dial Scale	27-5789
21E.	Push-Button Station Padder (540 to 1000 KC) Part of 21		50.	Condenser (.05 mfd, 200 volts)	30-4518		Background Reflector	27-9984
22.	Push-Button Oscillator Transformer (900 to 1600 KC)	32-3779					Rubber Channel	54-4114

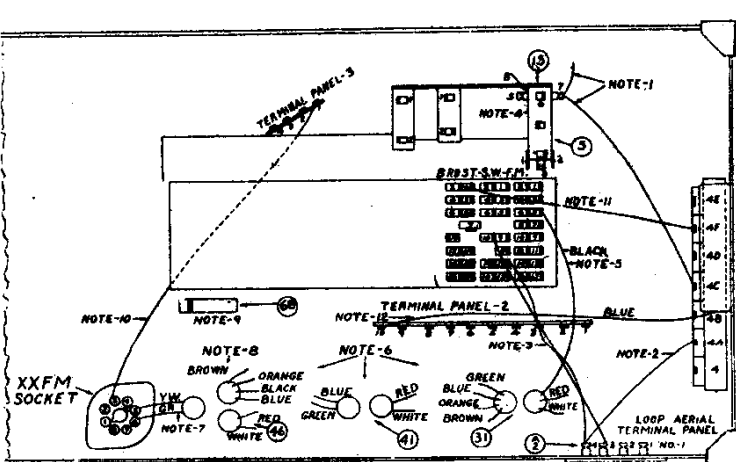


Fig. 3—Critical Wiring Locations—

F. M. Aligning Model 42-395