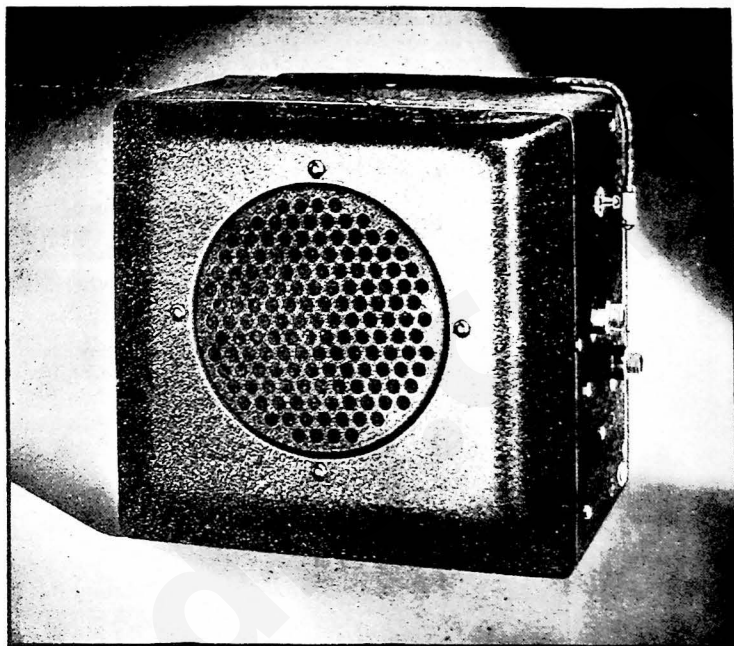


POLICE MODELS 822P AND 822PV

DESIGNED and constructed to meet the exacting requirements of the emergency Police and Fire Services, where dependability and the ability to withstand the gruelling rigors of continuous operation are paramount. These two models are the results of many years of actual field experience and the best engineering skill in the radio industry, coupled with the production facilities of the world's largest radio factories.



RADIO FREQUENCY RANGE

The Model 822P is a fixed frequency, crystal controlled Radio designed for the medium high frequencies. These are the frequencies used by the Municipal Police, State Police, Marine Fire, Geophysical and Temporary Service and the Forestry, Forest Fire Control, Flood Control, National Park Service, Coast Guard Service, etc. (1550 K. C. to 3600 K. C.).

The Model 822PV is a variable frequency Radio, designed for use in these same services when it is necessary to receive signals from transmitters operating on different frequencies within these bands. The Model 822PV normally covers the frequency band of 1550 K. C. to 2550 K. C. It can be obtained for use on the higher frequencies, 2300 K. C. to 3600 K. C., on special order at a slight increase in cost.

CAR AERIAL

These Radios are equipped with a special, high impedance, universal antenna transformer, designed to operate at maximum efficiency on every recognized type of car aerial. Besides simplifying installation, this feature facilitates the interchange of Radios for service, in cars equipped with different kind of aerials. No aerial adjustment is required.

CIRCUIT

The circuits of these models are practically the same. Both are highly developed superheterodynes, using seven tubes, including the full wave rectifier. The coils, condensers and all component parts are designed to minimize any change in the electrical characteristics, due to changes in temperature and humidity.

CRYSTAL CONTROL

The Model 822P, in addition to utilizing all the precautions requisite for circuit stability, uses a sealed, precision QUARTZ CRYSTAL to control the oscillator circuit and hold it on the required frequency. This feature is indispensable in any fixed frequency Receiver used for emergency service.

TUBE EQUIPMENT

The tubes used in these special Radios are: 78 Tube — Tuned R. F. Amplifier with A. V. C., 6A7 Tube — First Detector — Oscillator Modulator with A. V. C., 78 Tube — I. F. Amplifier, 75 Tube — Second Detector A. V. C. and "Q" Relay Stage, 75 Tube — First A. F. Amplifier with "Q" Control, 41 Tube — Power Output Stage, 84 Tube — Full Wave Rectifier.

A. V. C.

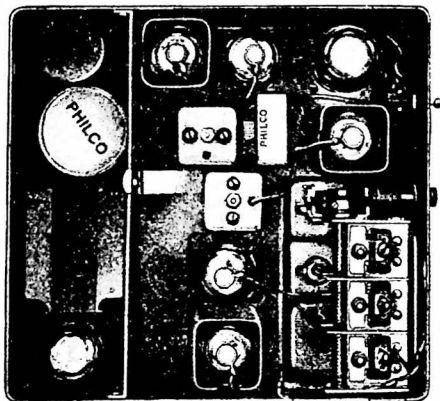
Both the R. F. stage and the first detector, oscillator modulator stage have full, automatic volume control supplied by the diode detector. The many advantages of A. V. C. in an auto radio have been recognized for years. Philco has always used A. V. C. in all of its Auto Radio Receivers.

"Q" CIRCUIT

The Radio also has a "Q" or carrier relay circuit. The function of this circuit is to completely silence the Radio when tuned off carrier, or when the carrier goes off the air. The correct values of the resistor network have been determined and used for satisfactory city operation where it is desirable to exclude street car noises, etc. A switch is provided on the end of the Radio housing

POLICE MODELS 822P AND 822PV (CONTINUED)

to open or close this circuit, since, when in remote sections of the territory, where the police transmitter signal may be very weak, a slight additional sensitivity can be obtained with the "Q" circuit cut out. This "Q" circuit should not be confused with the conventional squelch circuit. The "Q" relay circuit operates on a carrier field strength equivalent to approximately five microvolts in the antenna. A carrier below this strength is almost of insufficient strength to give satisfactory reception, especially in noisy locations.



A Well-Planned, Compact Radio Layout

The operation of the "Q" circuit is entirely automatic and is accomplished solely through the use of ingenious circuit and tube arrangements. No mechanical relays are used.

DYNAMIC TYPE SPEAKER

The new, high flux density, permanent magnet, dynamic speaker is used to give clarity of reproduction and the best articulation possible. The audio and the speaker circuits are especially designed to give the best reproduction of the voice frequencies. The Receiver and the speaker are capable of delivering considerably greater undistorted output than is normally required. Being a permanent magnet speaker, no current is required for energizing the speaker field, thus reducing the operating current more than one ampere.

PHILCO "LONG LIFE" POLICE TYPE VIBRATOR

A full wave, self contained power supply is used. For this particularly rigorous service, which very often requires continuous twenty-four hour service, day after day, week after week, Philco has developed a new circuit and a new highly improved, heavy duty "Long Life" police type vibrator. The greatly improved results have surpassed all expectations. The Vibrator, in normal operation, should approximate a minimum of at least 2000 hours service. The life of this new vibrator should be comparable with, if not in ex-

cess of, that of dynamotors which are sometimes used in this same service. Greater dependability, fewer replacements annually and low service costs make this Philco "Long Life" Vibrator one of the greatest contributions to Police Auto Radio.

TUNING CONDENSER The tuning condenser plates are double spaced and special, low loss insulation is used on the stator sections. The tuning condenser is mounted inside the housing, on live rubber. This is a patented PHILCO feature that prevents the development of any microphonic trouble in the Radio.

CONDENSER DRIVE The condenser worm drive gear ratio (Model 822PV) is 16:1. This eliminates practically all back lash and, due to the mechanism used, prevents the tuning condenser from detuning from vibration. This high gear ratio also makes accurate tuning much easier.

In the Model 822P, a self locking worm drive with a gear ratio of 48:1 permits accurate adjustment of the tuning condenser and eliminates the necessity of using any other locking device on the condenser.

CONTROL UNIT The control unit for Model 822PV is designed for installation on the bottom flange of the instrument board. It contains the "ON-OFF" switch and the volume and tuning control knobs. The calibrated scale is illuminated. The Model 822P fixed frequency Radio utilizes a single control knob, which is mounted on the instrument board. This controls the "ON-OFF" switch and the volume. No tuning device is required.

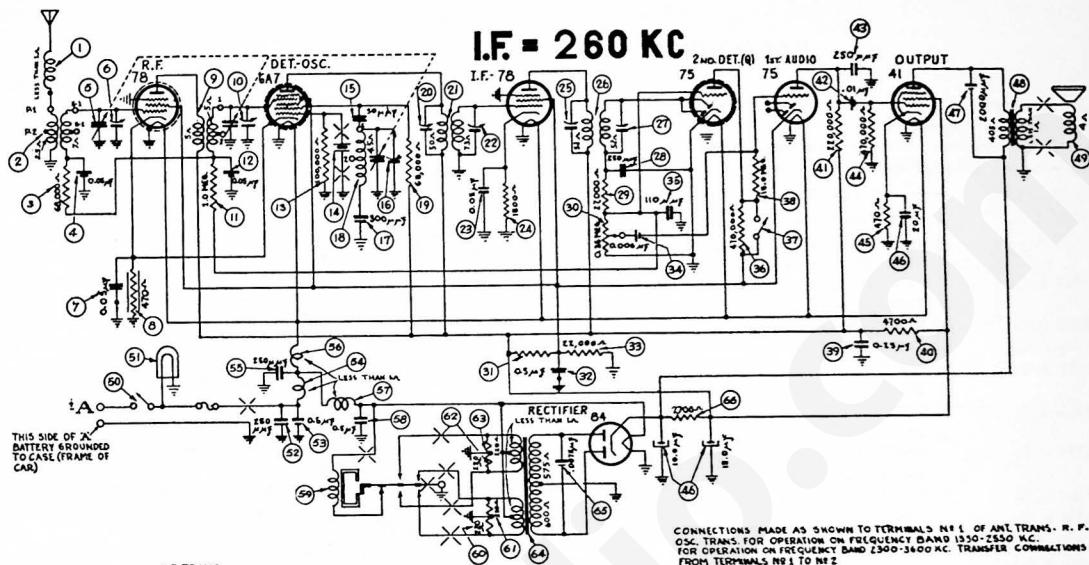
CONTROL SHAFTS, CONNECTIONS The volume control coupler and (in the case of the 822PV) the tuning control coupler, the "A" battery and the antenna connector, are located on one end of the housing. The shafts are the rapid coupling type with the locking gland nut at the Radio end. The "A" battery and the antenna connections are the quick, detachable, bayonet locking type, with the "A" fuse placed in the "A" lead.

HOUSING, PLATING, FINISH. Both are compact, rugged, single unit Receivers, housed in containers approximately 9 inches wide, 8 1/4 inches high, and 7 inches deep. The chassis, housing and covers are all heavy steel and, after plating to prevent rusting, are painted a black wrinkle finish.

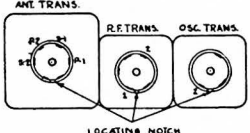
MOUNTING BRACKETS The hanger brackets which are securely riveted to the Radio, hook on to a dash bracket. A single bolt at the bottom fastens the Radio securely to the dash. This makes the installation and removal of the Radio a simple, rapid operation. The hanger brackets on these Models are on the same centers as the brackets on the Models 821P and 821PV (Philco's 1940 Police Models) permitting a quick and easy exchange of these Radios for service.

Address your inquiries to the nearest Philco Auto Radio Distributor, or to the "Parts and Service Division", Philco Radio & Television Corporation, Tioga and "C" Streets, Philadelphia, Pa.

POLICE MODELS 822P AND 822PV (CONTINUED)

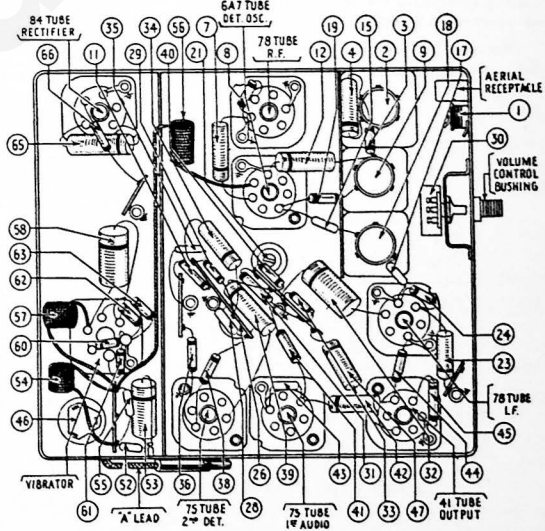


CONNECTIONS MADE AS SHOWN TO TERMINALS NO. 1 OF ANT. TRANS. R. F. OSC. TRANS. FOR OPERATION ON FREQUENCY BAND 1330-2330 K.C. FOR OPERATION ON FREQUENCY BAND 2300-3600 K.C. TRANSFER CONNECTIONS FROM TERMINALS NO. 1 TO NO. 2



PARTS LIST — MODEL 822P

No.	Description	Part No.	No.	Description	Part No.
(1)	Antenna Choke	38-8005	(22)	Padder (Sec. 1st I. F. Trans.)	
(2)	Antenna Transformer	65-0348	(23)	Condenser (.05 Mfd.)	61-0101
(3)	Resistor (68,000 ohms)	33-368154	(24)	Resistor (1500 ohms)	33-215334
(4)	Condenser (.5 Mfd.)	61-0111	(25)	Padder (Pri. 2nd I. F. Trans.)	
(5)	Tuning Condenser	31-2031	(26)	Second I. F. Transformer	32-2027
(6)	Antenna Padder (on Tun. Cond.)		(27)	Padder (Sec. 2nd I. F. Trans.)	
(7)	Condenser (.05 Mfd.)	61-0101	(28)	Condenser (250 Mmfd.)	60-125157
(8)	Resistor (470 ohms)	33-147336	(29)	Resistor (27,000 ohms)	33-327154
(9)	R. F. Transformer	32-2596	(30)	Volume Control (350,000 ohms)	67-0055
(10)	R. F. Padder (on Tun. Cond.)		(31)	Resistor (47,000 ohms)	33-347434
(11)	Resistor (1,000,000 ohms)	33-510154	(32)	Condenser (.5 Mfd.)	61-0134
(12)	Condenser (.05 Mfd.)	61-0101	(33)	Resistor (22,000 ohms)	33-329234
(13)	Resistor (100,000 ohms)	33-410154	(34)	Condenser (6000 Mmfd.)	61-0103
(14)	Crystal		(35)	Condenser (110 Mmfd.)	60-111137
	1875 K.C. Crystal	45-2101	(36)	Resistor (470,000 ohms)	33-447334
	Frequencies 1596-1610-1626 K.C.		(37)	"Q" Switch	42-1140
	1908 K.C. Crystal	45-2194	(38)	Resistor (15,000,000 ohms)	33-615154
	Frequencies 1630-1634-1642		(39)	Condenser (.25 Mfd.)	61-0125
	1658-1666 K.C.		(40)	Resistor (4700 ohms)	33-247334
	1953 K.C. Crystal	45-2195	(41)	Resistor (220,000 ohms)	33-422334
	Frequencies 1674-1682-1690		(42)	Condenser (.01 Mfd.)	61-0120
	1698-1706-1712 K.C.		(43)	Condenser (250 Mmfd.)	60-125157
	2658 K.C. Crystal	45-2196	(44)	Resistor (470,000 ohms)	33-447154
	Frequencies 2382-2390-2406		(45)	Resistor (470 ohms)	33-147436
	2414 K.C.		(46)	Filter Condenser (10-15-20 Mfd.)	61-0089
	2696 K.C. Crystal	45-2197	(47)	Condenser (.2000 Mmfd.)	61-0133
	Frequencies 2422-2430-2442		(48)	Output Transformer	32-7881
	2450 K.C.		(49)	Cone and Voice Coil	91-0218
	2734 K.C. Crystal	45-2198	(50)	On-Off Switch	42-1188
	Frequencies 2458-2466-2474		(51)	Pilot Lamp	34-9040
	2482-2490 K.C.		(52)	Condenser (250 Mmfd.)	60-125157
	3000 K.C. Crystal	45-2230	(53)	Condenser (.5 Mfd.)	61-0106
	Frequency 2726 K.C.		(54)	"A" Choke	32-1644
	2618 K.C. Crystal	45-2231	(55)	Condenser (250 Mmfd.)	60-125157
	Frequencies 2342-2350-2358		(56)	Filament Choke	32-2657
	2366-2374 K.C.		(57)	Vibrator Choke	65-0204
	2578 K.C. Crystal	45-2251	(58)	Condenser (.5 Mfd.)	61-0106
	Frequencies 2310-2318-2326		(59)	Vibrator (220 ohms)	41-3300
	2334 K.C.		(60)	Resistor (220 ohms)	33-122334
	2500 K.C. Crystal	45-2663	(61)	Resistor (220 ohms)	33-122334
	Frequency 2238 K.C.		(62)	Resistor (220 ohms)	33-122334
(15)	Condenser (50 Mmfd.)	60-050137	(63)	Resistor (220 ohms)	33-122334
(16)	Oscillator Padder (on Tun. Cond.)		(64)	Power Transformer	33-7820
(17)	Condenser (300 Mmfd.)	60-130337	(65)	Condenser (7500 Mmfd.)	61-0127
	Oscillator Transformer	32-2597	(66)	Resistor (2700 ohms)	33-227434
(18)	Resistor (68,000 ohms)	33-368334		Housing	38-8777
(19)	Padder (Pri. 1st I. F. Trans.)			Wiring Side Cover	38-8768
(20)	Padder (Pri. 1st I. F. Trans.)				
(21)	First I. F. Transformer	32-2026			



No.	Description	Part No.	No.	Description	Part No.
	Tube Side Cover	38-8783		Volume Knob	27-4208
	5 Prong Socket	27-6035		Mounting Plate	28-4650FA3
	6 Prong Socket	27-6036		Aerial Lead	41-3191
	7 Prong Socket	27-6037		Radio Housing	38-8777
	Speaker Unit	73-0063-3		Fuse	1227
	Speaker Clamp	38-3131FA3		Fuse Insulator	27-1789
	Speaker Mounting Nut	W124FA3		Crystal Mtg. Clamp	38-8792
	Speaker Mounting Screw	W1582FA4		Crystal Mtg. Clamp	
	Grille Assembly	36-3910		Screw	W1974FA3
	Control	42-5891		Crystal Socket	38-8790
	Volume Shaft	28-8620		Cover Mtg. Screw	W2212FA4

POLICE MODELS 822P AND 822PV (CONTINUED)

PADDING PROCEDURE — MODEL 822P

The Receivers, when used with the proper crystals, can be adjusted for any specified frequency between 1550 K. C. and 3600 K. C. Different crystals are used to obtain these frequencies. The crystal frequency, however, is no indication of the Receiver frequency adjustment.

FREQ. OF CRYSTAL	RECEIVER FREQ.	PART No. CRYSTAL
1875 K. C.	1596-1610-1626 K. C.	45-2101
1908 K. C.	1630-1634-1642	
	1650-1658-1666 K. C.	45-2194
1953 K. C.	1674-1683-1690	
	1698-1706-1712 K. C.	45-2195
2578 K. C.	2310-2318-2326-2334 K. C.	45-2251
2618 K. C.	2342-2350-2358-2366-2374 K. C.	45-2231
2658 K. C.	2382-2390-2398	
	2406-2414 K. C.	45-2196
2696 K. C.	2422-2430-2442	
	2450 K. C.	45-2197
2734 K. C.	2458-2466-2474	
	2482-2490 K. C.	45-2198
3000 K. C.	2726 K. C.	45-2230
3360 K. C.	3105 K. C.	45-2496

The I. F. stages can be tuned to any frequency between 242 K. C. and 278 K. C.

The I. F. frequency used in each Receiver is the difference between the frequency of the crystal in the Receiver and the frequency of the transmitter, i.e., the transmitter frequency is 2422 K. C., the crystal used is 2696 K. C., the difference is 274 K. C., which is the frequency to which the I. F. amplifier must be tuned.

The Receiver must be padded while warm and repadded after it has been operated for several hours.

The Receiver "Q" switch must be in the off position, cutting out the carrier relay circuit.

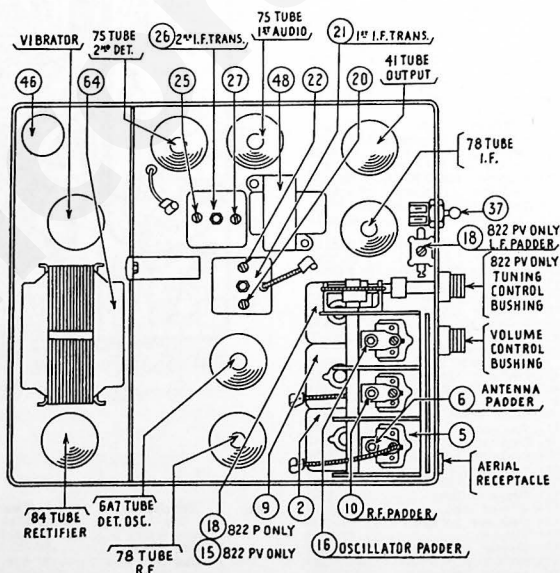
I. F. STAGES — The signal generator must be set exactly to the predetermined frequency and the generator lead connected to the grid cap of the 6A7 detector oscillator tube in series with a 0.5 mfd. condenser. Adjust padders 20, 22, 25 and 27 on the first and second I. F. transformers for maximum reading on the output meter.

R. F. STAGE — Tune the signal generator to the frequency of the transmitter and connect the output of the signal generator to the grid cap of the R. F. tube in series with a 0.5 mfd. condenser. Turn the tuning condenser to the input frequency and adjust padders 16 and 18 for maximum reading on the output meter. Notice the position of the padders. They should be out as far as possible, yet with sufficient tension to keep them firmly in place. If the padders are too tight, turn the tuning condenser plates in mesh slightly and repad 16 and 18. If the padders are too loose, turn the tuning condenser plates out of mesh slightly and repad 16 and 18. Repeat these adjustments until the correct padding settings are obtained.

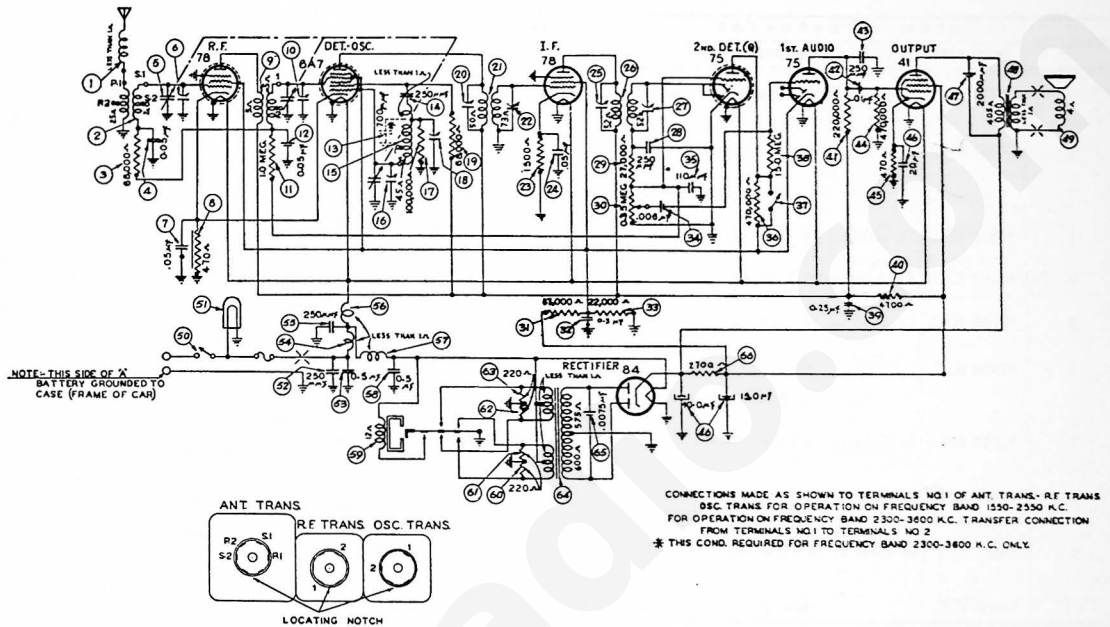
Special attention must be given to the adjustment of the oscillator padder 16, which should be backed off the peak slightly to obtain stable crystal operation.

ANTENNA STAGE — Connect the antenna lead, Part No. 41-3191, to the antenna receptacle on the Receiver in series with a 55 mmfd. condenser and set the signal generator to the frequency of the transmitter. Adjust padders 6, 21, 23, 24 and 26 for maximum reading on the output meter.

DO NOT OPEN THE CRYSTAL HOLDER. If for any reason whatever it has been opened, the crystal plates should be very carefully cleaned with carbon tetrachloride. After cleaning, the crystal must not be touched by the fingers. Use a clean cloth for handling.

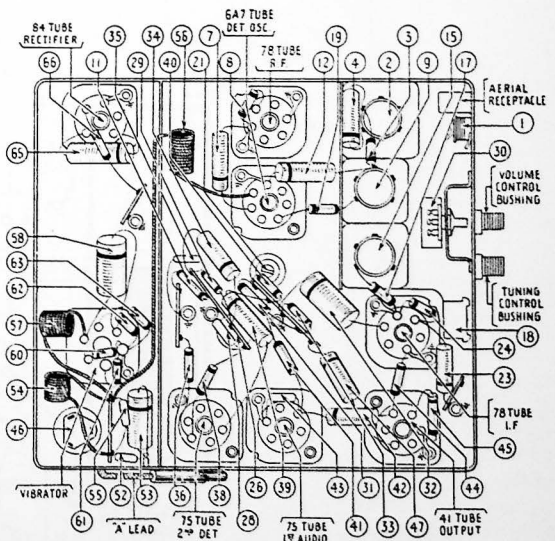


POLICE MODELS 822P AND 822PV (CONTINUED)



PARTS LIST — MODEL 822PV

No.	Description	Part No.	No.	Description	Part No.
(1)	Antenna Choke	33-9005	(46)	Filter Condenser (10-15-20 Mfd.)	61-0089
(2)	Antenna Transformer	65-0348	(47)	Condenser (2000 Mmfd.)	61-0123
(3)	Resistor (68,000 ohms)	33-368154	(48)	Output Transformer	32-7831
(4)	Condenser (.05 Mfd.)	61-0111	(49)	Cone and Voice Coil	91-0218
(5)	Tuning Condenser	33-2031	(50)	On-Off Switch	42-1318
(6)	Antenna Padder (on Tun. Cond.)	33-147336	(51)	Pilot Lamp	34-2040
(7)	Condenser (.05 Mfd.)	61-0101	(52)	Condenser (250 Mmfd.)	60-125157
(8)	Resistor (470 ohms)	33-147336	(53)	Condenser (.5 Mfd.)	61-0106
(9)	R. F. Transformer (on Tun. Cond.)	32-2596	(54)	"A" Choke	32-1644
(10)	R. F. Padder (on Tun. Cond.)	33-410154	(55)	Condenser (250 Mmfd.)	60-125157
(11)	Resistor (1,000,000 ohms)	33-510154	(56)	Filament Choke	65-0204
(12)	Condenser (.05 Mfd.)	61-0101	(57)	Vibrator Choke	65-0204
(13)	Condenser (700 Mmfd.)	60-170134	(58)	Condenser (.5 Mfd.)	61-0106
(14)	Condenser (250 Mmfd.)	60-125157	(59)	Vibrator	41-3300
(15)	Oscillator Transformer	32-2598	(60)	Resistor (220 ohms)	33-122334
(16)	Oscillator Padder (on Tun. Cond.)	33-410154	(61)	Resistor (220 ohms)	33-122334
(17)	Resistor (100,000 ohms)	33-410154	(62)	Resistor (220 ohms)	33-122334
(18)	Low Frequency Padder	33-410154	(63)	Resistor (220 ohms)	33-122334
(19)	Resistor (68,000 ohms)	33-368334	(64)	Power Transformer	32-7820
(20)	Padder (Pri. 1st I. F. Trans.)	60-125157	(65)	Condenser (7500 Mmfd.)	61-0127
(21)	First I. F. Transformer	32-2026	(66)	Resistor (2700 ohms)	33-297434
(22)	Padder (Sec. 1st I. F. Trans.)	33-215334		Housing	38-8777
(23)	Resistor (1500 ohms)	33-215334		Wiring Side Cover	38-8768
(24)	Condenser (.05 Mfd.)	61-0101		Tube Side Cover	38-8788
(25)	Padder (Pri. 2nd I. F. Trans.)	33-215334		5 Prong Socket	27-6035
(26)	Second I. F. Transformer	32-2027		6 Prong Socket	27-6036
(27)	Padder (Sec. 2nd I. F. Trans.)	60-125157		7 Prong Socket	27-6037
(28)	Condenser (250 Mmfd.)	33-327154		Speaker Unit	78-0063-3
(29)	Resistor (270,000 ohms)	33-327154		Speaker Clamp	28-3181FA3
(30)	Volume Control (350,000 ohms)	67-0033		Speaker Mounting Nut	W124FA3
(31)	Resistor (47,000 ohms)	33-347434		Speaker Mounting Screw	W182PA4
(32)	Condenser (.5 Mfd.)	61-0134		Grille Assembly	36-3910
(33)	Resistor (22,000 ohms)	33-322334		Control (Low Frequency)	42-5739
(34)	Condenser (6000 Mmfd.)	61-0103		Control (High Frequency)	42-5751
(35)	Condenser (110 Mmfd.)	60-111137		Dial (Low Frequency)	42-5736
(36)	Resistor (470,000 ohms)	33-447334		Tuning and Volume Shaft	28-8740
(37)	"Q" Switch	42-1140		Tuning and Volume Knob	27-4521
(38)	Resistor (15,000,000 ohms)	33-615154		Mounting Plate	28-4650FA3
(39)	Condenser (.25 Mfd.)	61-0125		Aerial Lead	41-8191
(40)	Resistor (4700 ohms)	33-247334		Radio Housing	38-8777
(41)	Resistor (220,000 ohms)	33-422334		Fuse	38-7927
(42)	Condenser (.01 Mfd.)	61-0120		Fuse Insulator	27-7290
(43)	Condenser (250 Mmfd.)	60-125157		Crystal Mtg. Clamp	38-8792
(44)	Resistor (470,000 ohms)	33-447154		Screw	W1974FA3
(45)	Resistor (470 ohms)	33-147436		Crystal Socket	38-8790
				Cover Mtg. Screw	W2921FA4



POLICE MODELS 822P AND 822PV (CONTINUED)

PADDING PROCEDURE — MODEL 822PV

OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	*260 K. C.	To Grid of 78 Tube—I. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	25 - 27
2	*260 K. C.	To Grid of 6A7 Tube	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	20 - 22 25 - 27
FOR FREQUENCIES BETWEEN 1550 K. C. AND 2550 K. C.					
3	*2550 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	16 - 10
4	*1650 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser to 1650 K. C.	18 Note 1
5	*2550 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	16 - 10
6	*2400 K. C.	Note 2	55 Mmfd. Condenser Note 2	Turn Tuning Condenser to 2400 K. C.	6
FOR FREQUENCIES BETWEEN 2550 K. C. AND 3600 K. C.					
7	*3600 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	16 - 10
8	*2400 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Set Tuning Condenser at 2400 K. C.	18 Note 1
9	*3600 K. C.	To Grid of 78 Tube—R. F. Stage	.1 Mfd. Condenser in Series with Generator Lead	No Antenna Connection Turn Tuning Condenser Plates out of mesh as far as they will go	16 - 10
10	*3400 K. C.	Note 2	55 Mmfd. Condenser Note 2	Set Tuning Condenser at 3400 K. C.	6

Adjust for maximum reading on the output meter.

NOTE 1—Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then re-adjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 2—Connect the antenna lead, Part No. 41-3191, to the antenna receptacle on the Receiver in series with a 55 mmfd. condenser.

* The Receiver "Q" switch must be in the off position, cutting out the carrier relay circuit.

