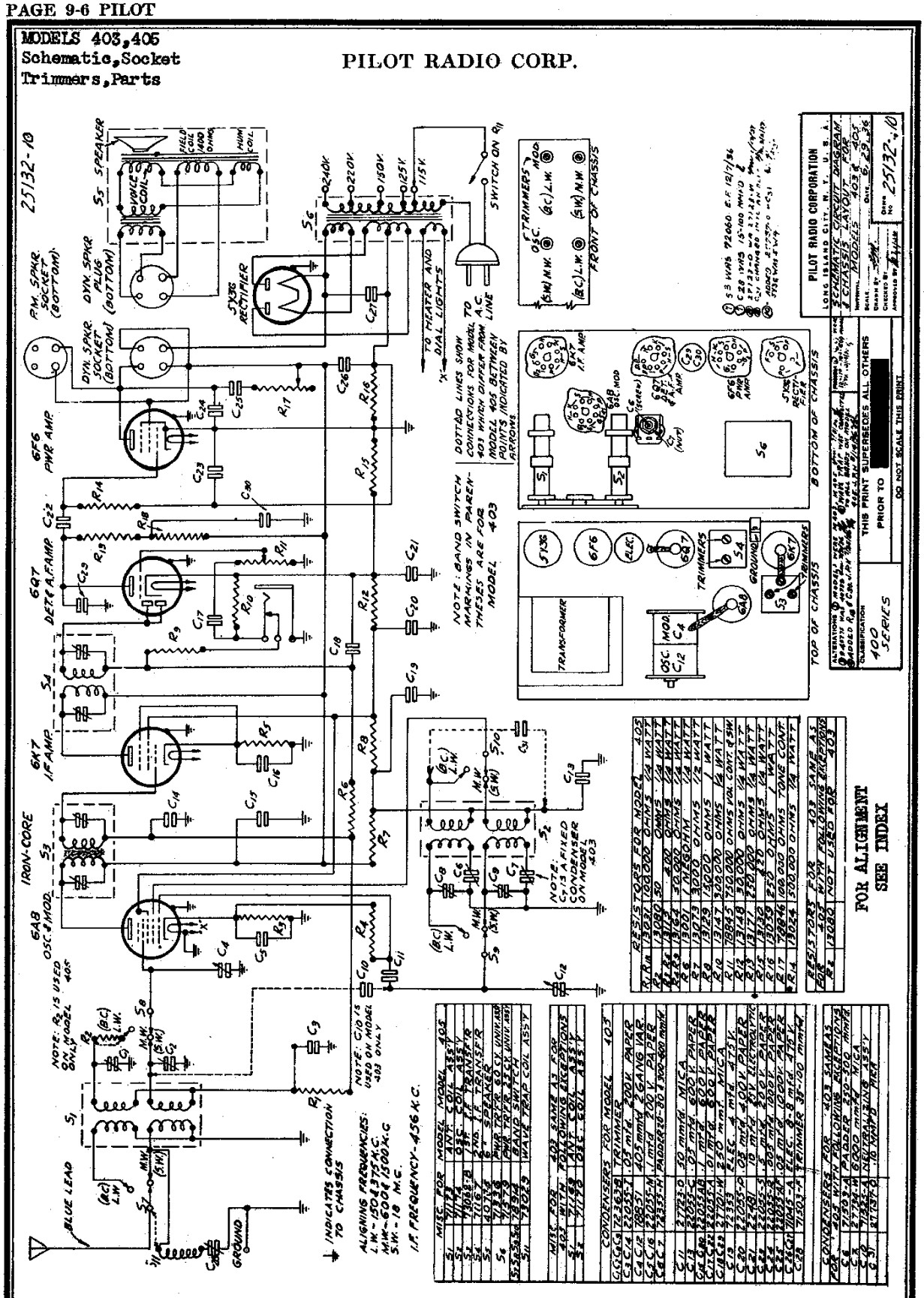
MODELS 403,405
Schematic,Socket
Trimmers,Parts

PILOT RADIO CORP.



SERVICE INFORMATION FOR PILOT MODELS 403 AND 405

REMOVAL OF CHASSIS FROM CABINET:

To remove the chassis from the cabinet proceed as follows:

Be certain that the line cord is removed from the power outlet socket.

Remove the knobs and felt washers from the controls on the front panel, and loosen the set screw on the tuning knob.

Remove the speaker plug from the socket at the rear of the chassis.

Remove the four mounting screws, located underneath the cabinet and pull chassis out.

REALIGNMENT: If the receiver requires alignment, the procedure outlined below should be followed. In the schematic diagram sheet, the location and function of the various alignment capacitors are clearly illustrated. For best results, an external modulated oscillator with adequate frequency range and a visual output meter, should be used.

Before connecting the chassis to the power line, reconnect the speaker cable in its socket at the rear of the chassis.

I. F. ALIGNMENT: When aligning the Intermediate Frequency Amplifier, the external oscillator must be set at 456 kc. The Band Switch should be in the position marked "Broadcast", and the tuning condenser should be set at maximum capacity. When aligning the receiver on all positions, the volume control and the tone control should be turned to the maximum clockwise position. Connect the antenna lead of the external oscillator to the control grid of the 6K7 tube in the I. F. Amplifier through a .1 mfd. fixed condenser. Connect the ground lead of the external oscillator to the chassis. The I. F. alignment trimmers are located at the top of the shielded I. F. Transformers. Rotate the adjusting screw of each capacitor on I. F. Unit No. 2 slowly until maximum output is noted. Following this, connect the external oscillator leads to the control grid of the 6A8 tube. Adjust each trimmer on I. F. Unit No. 1 for maximum gain.

During these operations, use the least possible input to prevent broadening of the reasonance peaks.

In order to obtain the most accurate realignment of the I. F. amplifier, it is essential to repeat the alignment process in all I. F. Units, with the external oscillator leads connected to the control grid of the 6A8 tube.

WAVE TRAP ADJUSTMENT: With the oscillator still set at 456 kc., connect the oscillator to the antenna through a 200 mmfd. condenser. Then adjust the wave trap condenser for minimum deflection on the output meter.

BROADCAST ALIGNMENT: After the I. F. amplifier is completely realigned, connect the external oscillator leads to the receiver antenna and ground through a .0002 mfd. condenser. Leave the Band Switch in the "Broadcast" position and place the tuning control pointer at the 1500 kc. mark. Tune the external oscillator to 1500 kc. Adjust the broadcast band oscillator trimmer to maximum response.

Next adjust the interstage alignment trimmer for maximum response. Finally adjust the antenna section trimmer in the same manner.

Next adjust the 600 kc. padder condenser, located in the center of the chassis on the under side. Set the external oscillator at 600 kc. Rock the receiver tuning control around the resonance position, and at the same time adjust the padder condenser for the highest peak.

Now repeat the 1500 kc. trimmer adjustment, following in every detail the procedure previously described.

The alignment frequencies are as follows:

Longwave Band —800 meters (375 kc.)
Broadcast Band —200 meters (1,500 kc.)
Band 1—16.7 meters (18,000 kc.)

BAND 1: Align Band 1 in a similar manner using a 400-ohm non-inductive resistor in place of the .0002 mfd. condenser. The alignment frequency is 18,000 kc. (16.7 meters).

The alignment of Band 1 requires greater care due to the higher frequencies covered by this band. Rotate the tuning condenser of the receiver until the dial pointer is co-incidental with the 18,000 kc. indication on the dial scale. Adjust the oscillator trimmer condenser for maximum sensitivity. Proceed next to align the detector section. In doing this it is essential to rock the tuning control back and forth about the resonance position and at the same time to adjust the trimmer for the highest resonant peak.

THE LONG WAVE ALIGNMENT procedure in the Model 405 is similar to that of the broadcast. Turn the Band Switch to the Long Wave position. The alignment frequency is 375 kc. Adjust the padder condenser at 150 kc. Use a .0002 mfd. condenser in the antenna lead from the external oscillator.

REMOVAL OF BAND SELECTOR SWITCH ASSEMBLY: Should it be necessary to remove the switch assembly, it is advisable to realign the receiver after reinstalling it.

CAUTION: When making repairs on the receiver, use only ROSIN CORE SOLDER. NEVER USE SOLDERING PASTE OR ACID FLUXES OF ANY TYPE.

RECEIVER DESCRIPTION

Operating Voltages—115, 125, 150, 220, 240 volts, Alternating Current.
Frequency Rating—50 to 60 cycles.
Power Consumption—60 watts.
Tubes—1 type 6A8, 1 type 6K7, 1 type 6Q7, 1 type 6F6, 1 type 5W4.
Undistorted Power Output—3 watts.
Intermediate Frequency—456 kc.
Tube Functions—
Type 6A8: Electron emission control oscillator-detector.
Type 6K7: I. F. amplifier.
Type 6Q7: Duo-diode detector amplifier.
Type 6F6: Class "A" power pentode.
Type 5W4: Full-wave rectifier for power supply.

VOLTAGES

The D. C. Voltages measured at the tube sockets of the set should be read with a high resistance voltmeter of at least 1000 ohms per volt.

	OSC. DET.	I. F.	DIODE	POWER	
	Type 6A8	Type 6K7	DET. Type 6Q7	PENTODE Type 6F6	RECTIFIER Type 5W4
Plate	230	230	105*	205	
Cathode	4.	3.5	1.3		320
Screen	85	85		230	
Filament	6.3	6.3	6.3	6.3	5.

***Voltages measured through 250,000 ohm plate resistor.**
Speaker field voltage 90 volts. All plate voltages measured to cathode.
All screen voltages measured to cathode.
All cathode voltages measured to chassis frame.

Range, Model 423

16 - 555 m. (18,800 - 540 kc)

Range, Model 425

16 - 555 m. (18,800 - 540 kc)
731 - 2140 m. (410 - 140 kc.)

(MODEL 425 IS SOLD OUTSIDE THE U. S. A. ONLY)

REMOVAL OF CHASSIS FROM CABINET:

To remove the chassis from the cabinet proceed as follows:

Be certain that the line cord is removed from the power outlet socket.

Remove the "slip-on" knobs and felt washers from the controls and loosen the set screw on the tuning knob.

Remove the speaker plug from the cable socket.

Remove the four mounting screws, located underneath the cabinet.

REALIGNMENT: Should the receiver require realignment, the procedure outlined below should be followed. For best results an external modulated oscillator with adequate frequency range, and a visual output meter, should be used.

Before connecting the chassis to the power line, reconnect the speaker cable in its socket.

The R. F. alignment trimmer condensers are mounted on the side of the R. F. shields.

I. F. ALIGNMENT: When aligning the Intermediate Frequency Amplifier, the external oscillator must be set at 456 kc. The Band Selector Switch should be in the position marked "Broadcast", and the tuning condenser should be set at maximum capacity. Connect the "antenna" lead of the external oscillator to the control grid of the type 6K7 tube in the I. F. Amplifier stage through a .1 mfd. fixed condenser. Connect the "ground" lead of the external oscillator to the receiver ground lead. The I. F. alignment capacitors are located at the side of the shielded I. F. Transformers. Rotate the adjusting screw of each capacitor on I. F. Unit No. 2 slowly until maximum output is noted. On completion of this operation, remove the external oscillator lead from the type 6K7 I. F. amplifier tube and connect it in the same manner to the control grid at the top of the type 6A8 tube.

Now rotate each adjustment screw on I. F. Unit No. 1 for maximum output. During these operations, use the least possible input to prevent broadening of the resonance peaks.

In order to obtain the most accurate realignment of the I. F. amplifier, it is essential to repeat the alignment process in both I. F. Units.

BROADCAST ALIGNMENT: After the I. F. amplifier is completely realigned, connect the external oscillator leads to the receiver antenna and ground leads. Insert a 200 mmf. condenser in series with the antenna lead. Set the Band Selector Switch in the "Broadcast" position and place the tuning control pointer at the 1500 kc. mark. Adjust the broadcast band oscillator trimmer.

Next adjust the interstage alignment trimmer for maximum response. Finally adjust the antenna section trimmer in the same manner.

Next adjust the 600 kc. padder condenser, located on the top of the oscillator coil. Set the external oscillator at 600 kc. Rotate the receiver tuning control until resonance is indicated. Then rock the tuning control back and forth about this resonance position, and at the same time adjust the padder condenser for the highest resonance peak.

Now repeat the 1500 kc. trimmer adjustment, following in every detail the procedure previously described.

ALIGNMENT OF THE SHORT WAVE-BANDS:— The procedure in aligning the short wave-bands is identical with that for the broadcast with the exception of the adjustment of the padder condenser. Insert a 400 ohm non-inductive resistor in series with the antenna lead. The alignment frequencies are as follows:

Band 2: 50 Meters—(6,000 kc.)
Band 1: 16.6 Meters—(18,000 kc.)

When aligning Band 2, set the Band Selector Switch in the position marked "Band 2". Set the tuning control pointer at 50 meters. Adjust the oscillator alignment capacitor on Band 2 for maximum output. Next adjust the interstage and antenna section alignment capacitors for maximum output.

To align Band 1, set the Band Selector Switch in the position marked "Band 1". Set the tuning control pointer at the 16.6 meter mark. Set the external oscillator at 16.6 meters. Adjust the oscillator section alignment capacitor on Band 1 for maximum output.

Proceed next to align the interstage section of Band 1. In doing this, it is essential to rock the tuning control back and forth about the resonance position and at the same time to adjust the trimmer for the highest resonance peak. Next align the antenna section for maximum sensitivity.

LONG WAVE MODEL 425

The above alignment positions refer to the Model 423 only, which is calibrated in frequency. The alignment points for the Model 425, which is calibrated in meters only, is as follows:

Long Wave	Align at 750 meters.
	Pad at 2,000 meters.
Broadcast	Align at 200 meters.
	Pad at 500 meters.
Band 1	Align at 17 meters.

The Long Wave alignment procedure is similar to that for the Broadcast. A 200 mmf. condenser should be used in series with the antenna lead in aligning this band.

CAUTION: When making repairs on the receiver, use only ROSIN CORE SOLDER. NEVER USE SOLDERING PASTE OR ACID FLUXES OF ANY TYPE.