

RADIO-PHONOGRAPH MODELS 41-603, 41-604, 41-605, 41-607

SPECIFICATIONS

Models 41-603, 41-604, 41-605, 41-607 are Radio-Phonograph combinations which are similar in design with the exception of the cabinets, phonograph mechanism and speaker.

RADIO SECTION

The same radio circuit is used in each model. The chassis base layout of the Model 41-603, however, differs from the 41-604, 41-605, 41-607. Features of the design included in the radio are the Philco Built-in American and Overseas Aerial System; two tuning bands, covering 540 to 1720 K. C. and 9 to 12 M. C.; two-position tone control; automatic volume control; Philco Loktal tubes and a Beam Power Pentode Audio Output Stage.

In addition the volume control, power control and radio to phonograph switch are incorporated in a new type single unit which is used in all models.

INTERMEDIATE FREQUENCY: 455 K. C.

POWER SUPPLY: 115 Volts, 60 cycle A. C.

POWER CONSUMPTION: 40 watts, Models 41-603, 41-604.
45 watts, Models 41-605, 41-607.

PHILCO TUBES USED: XXD. Converter: two 7B7, 1 F. Amplifiers: 7C6, 2nd Detector, 1st audio A. V. C.; 35A5, Audio Output and a 35Z3 Rectifier.

AERIAL CONNECTIONS: In addition to the Loop Aerial System in each Model, provisions for connecting an outside aerial are located on the rear of the chassis. When operating the radio in steel reinforced buildings and other shielded locations where station signal strength is weak, an outside aerial is recommended. The Philco 1941 Outdoor Aerial, Part No. 45-2817 is specially designed for this model. This Outdoor Aerial can be easily connected by inserting the plug attached to the transformer unit into the socket at the rear of the chassis. A ground connection is not required with either type of installation.

PHONOGRAPH SECTION

Models 41-603 and 41-604 use the same type phonograph mechanism. This mechanism consists of a manually operated crystal pickup and 115 volt, 60 cycle turntable motor. In addition an automatic motor starting switch is included which starts the motor when the pickup is lifted from its rest.

The phonograph mechanism of the Models 41-605 and 41-607 consists of an Automatic Record Changer which plays twelve 10-inch records or ten 12-inch records at one loading. The record changer can also be manually operated. A crystal pickup is provided on the changer which operates through the audio system of the radio. The same automatic Record Changer is used in both of these models. The service procedure for adjusting the Automatic Record Changer will be found on page 135.

ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure is used for both models:

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Models 077 or 177.
2. **ALIGNING INDICATOR:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Models 027 and 028 circuit testers contain both these meters.
3. **TOOLS:** Philco Fiber Screw Driver, Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Audio Output Meter: If this type of aligning meter is used, connect it to the voice coil terminals of the speaker or from the plate of the 35A5 tube to the chassis. Adjust the meter for the 0 to 10 volt scale.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, make the following connections: Attach the negative (—) terminal of the voltmeter to any point in the circuit where the A. V. C. voltage can be obtained. Connect the positive (+) terminal of the vacuum tube voltmeter to the chassis.

Signal Generator: When adjusting the I. F. padders, the high side of the signal generator is connected through a .1 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to 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 signal generator is then placed close to the loop of the radio.

The receiver can be adjusted in the cabinet or removed from the cabinet.

When adjusting the radio outside the cabinet the loop aerial should be placed in approximately the same position around or near the chassis as when assembled.

After connecting the aligning instruments adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in the schematic diagram.

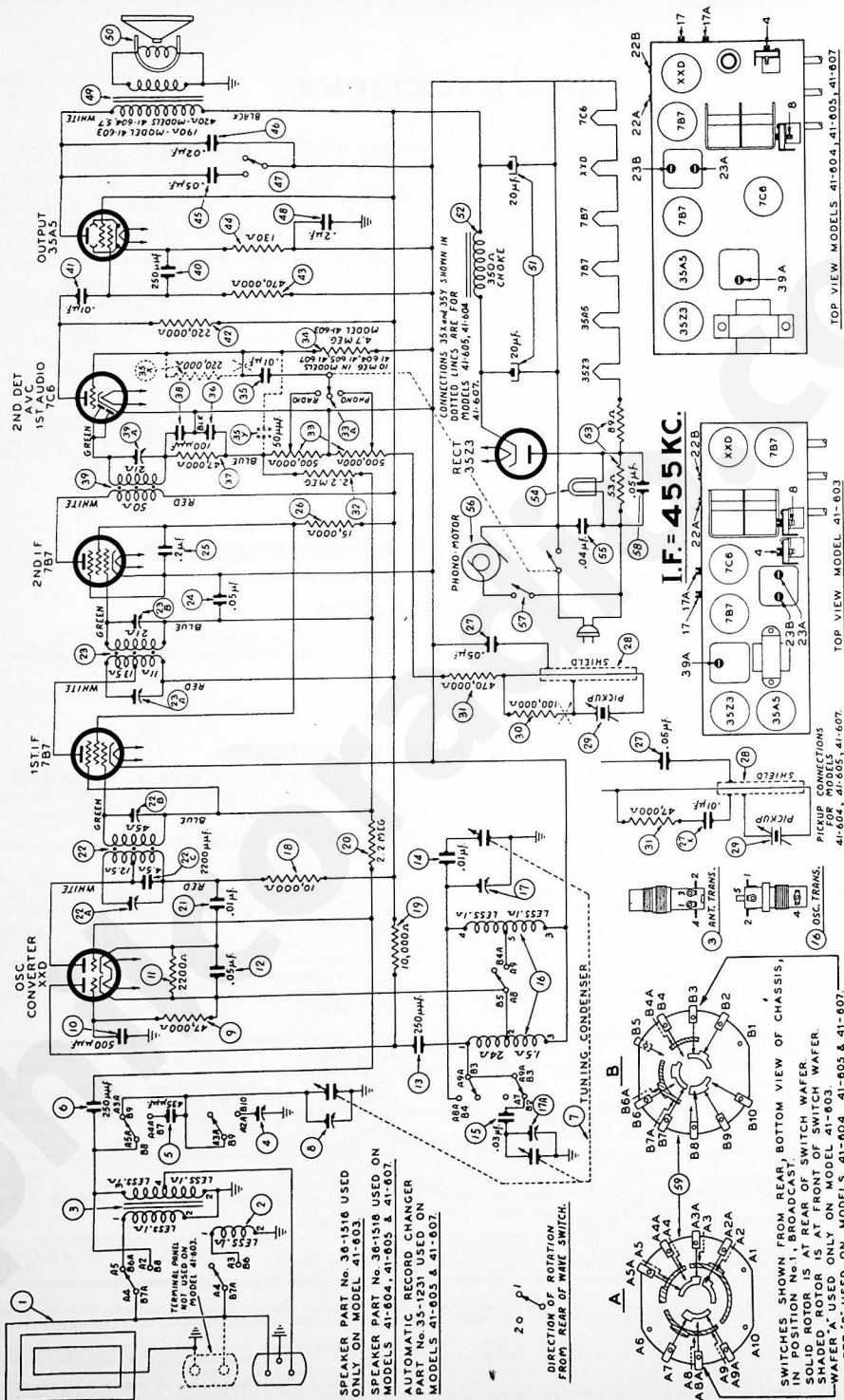
If the indicating meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in order	
1	Ant. Section of tuning	455 K. C.	540 K. C. Tuning Cond. Closed	Vol Max. Range Switch Brdcast.	39A, 23A, 23B, 22A, 22B	
2	Loop see above instructions	1600 K. C.	1600 K. C.	Vol Max. Range Switch Brdcast.	17A	Note A
3	Loop see above instructions	1500 K. C.	1500 K. C.	Vol Max. Range Switch Brdcast.	8	
4	Loop see above instructions	12 M. C.	12 M. C.	Range Switch "S. W."	17, 4	Roll (8) for Max. Note B

NOTE A: — DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, set the tuning pointer on the small dot below 550 K. C.

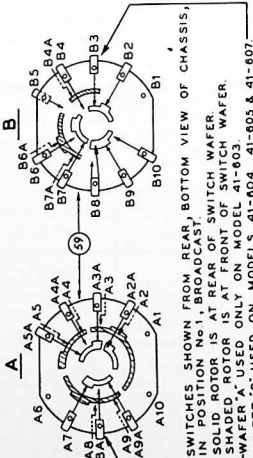
NOTE B: — When adjusting oscillator compensator 17A, tune for maximum on the first signal peak from Tight position (compensator closed). When adjusting the aerial padder 4 of the high frequency tuning range; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or left and again vary the receiver 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.

RADIO PHONOGRAPH MODELS 41-603, 41-604, 41-605, 41-607 (CONTINUED)



SPEAKER PART No. 38-1516 USED ONLY ON MODEL 41-603
 SPEAKER PART No. 38-1518 USED ON MODELS 41-604, 41-605 & 41-607
 AUTOMATIC RECORD CHANGER PART No. 35-1231 USED ON MODELS 41-605 & 41-607

20 01
 DIRECTION OF ROTATION FROM REAR OF WAFFER SWITCH.



SWITCHES SHOWN FROM REAR, BOTTOM VIEW OF CHASSIS, IN POSITION No. 1, BROADCAST. SOLID ROTOR IS AT REAR OF SWITCH WAFER. SHADED ROTOR IS AT FRONT OF SWITCH WAFER. WAFER 'A' USED ONLY ON MODEL 41-605. WAFER 'B' USED ON MODELS 41-604, 41-605 & 41-607.

I.F. = 455 KC.

SCHEMATIC DIAGRAM MODELS 41-603 41-604 41-605 & 41-607

TOP VIEW, MODELS 41-604, 41-605, 41-607

TOP VIEW, MODEL 41-603

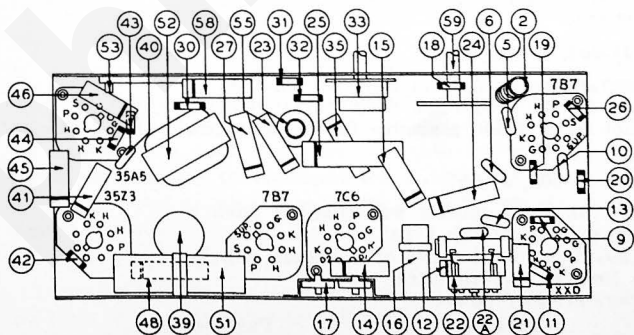
PICKUP CONNECTIONS 41-604, 41-605, 41-607

RADIO PHONOGRAPH MODELS 41-603, 41-604, 41-605, 41-607 (CONTINUED)

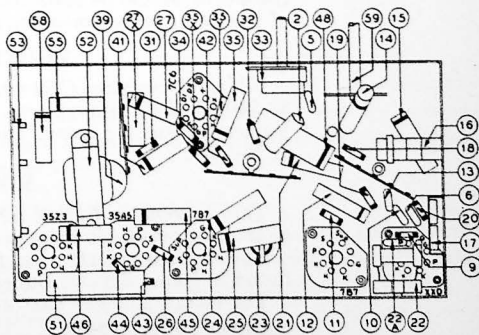
Replacement Parts — Models 41-603, 41-604, 41-605, 41-607

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Aerial (Model 41-603)	76-1099	25	Condenser (.2 mfd, 400)	30-4594	42	Resistor (220,000 ohms, 1/2 watt)	33-422339
	Loop Aerial (Model 41-604)	76-1097	26	Resistor (15,000 ohms, 1/2 watt)	33-315339	43	Resistor (470,000 ohms, 1/2 watt)	33-447339
	Loop Aerial (Model 41-605P)	76-1118	27	Condenser (.05 mfd, 200 volt)	30-4519	44	Resistor (130 ohms, 1/2 watt)	33-113336
	Loop Aerial (Model 41-607P)	76-1140	27X	Condenser (.01 mfd, 400 volt) (Models 41-605, 41-607 only)	30-4572	45	Condenser (.05 mfd, 400 volts)	30-4518
2	Aerial Transformer (S. W. (Model 41-603))	32-3517	28	Pickup Cable (Model 41-603)	41-3543	46	Condenser (.02 mfd, 400 volts)	30-4516
	Aerial Transformer (S. W. (Models 41-604, 41-605, 41-607))	32-3520		Pickup Cable (Models 41-604, 41-605, 41-607)	41-3548	47	Tone Control Switch	42-1562-2
3	Aerial Transformer (Broadcast) (Model 41-603)	32-3514	29	Crystal Pickup & Tone Arm Complete (Models 41-603, 41-604)	35-2169	48	Condenser (.2 mfd, 200 volts)	30-4536
	Aerial Transformer (Broadcast) (Models 41-604, 41-605, 41-607)	32-3519		Crystal cartridge (Models 41-603, 41-604)	34-2204	49	Output Transformer (Model 41-603)	32-8126
4	Compensating Condenser (S. W.)	31-6367		Crystal cartridge (Models 41-605, 41-607)	35-2204		Output Transformer (Models 41-604, 41-605, 41-607)	32-8127
5	Mica Condenser (435 mmfd)	30-1185	30	Resistor (100,000 ohms, 1/2 watt) (Model 41-603 only)	33-410339	50	Cone Assembly (for speaker 36-1516-3) (Model 41-603)	36-4165
6	Mica Condenser (250 mmfd)	60-125157		Condenser (.01 mfd) (Model 41-604)	30-4572		Cone Assembly (for speaker 36-1518-4) (Models 41-604, 41-605, 41-607)	36-4171
7	Tuning Condenser (Models 41-603, 41-604)	31-2490	31	Resistor (470,000 ohms, 1/2 watt) (Model 41-603)	33-447339	51	Electrolytic Condenser (20-20 mfd) Model 41-603	30-2491
	Tuning Condenser (Models 41-605, 41-607)	31-2491		Resistor (47,000 ohms, 1/2 watt)	33-347339		Electrolytic Condenser (20-20 mfd) Model 41-604	30-2403
	Tuning Shaft	31-2370	32	Resistor (2.2 megohms)	33-522339	52	Filter choke	32-7960
	Tuning Cord	31-2489	33	Volume Control (Model 41-603)	33-5414	53	Resistor (53-89 ohms)	33-3394
	Spring (Tuning Cord)	28-8954	34	Resistor (4.7 megohms) (Model 41-603)	33-547339	54	Pilot lamp	34-2058
8	Compensating Condenser	31-6375		Resistor (10 megohms) (Models 41-604, 41-605, 41-607)	33-610339	55	Condenser (.04 mfd, 400 volts)	30-4119
9	Resistor (47,000 ohms, 1/2 watt)	33-347339	35	Condenser (.01 mfd, 400 volts)	30-4572	56	*Phonograph motor (115 volts, 60 cycle) (Models 41-603, 41-604)	35-1222
10	Mica Condenser (500 mmfd)	60-150157	35X	Resistor (220,000 ohms) (Models 41-604, 41-605, 41-607)	33-422339		Phonograph motor (115 volts, 50 cycle) (Models 41-603, 41-604)	35-1250
11	Resistor (2200 ohms, 1/2 watt)	33-222339	35Y	Condenser (50 mmfd) (Models 41-604, 41-605, 41-607)	60-050157		Phonograph motor (115 volts, 60 cycle) (Models 41-605, 41-607)	35-1252
12	Condenser (.05 mfd)	30-4519	36	Mica Condenser (100 mmfd) (Part of 39)	33-522339		Phonograph motor (115 volts, 50 cycle) (Models 41-605, 41-607)	35-1251
13	Mica Condenser (250 mmfd)	60-125157	37	Resistor (47,000 ohms, 1/2 watt)	33-347339		Motor Connecting Plug and wires (Chassis 41-605, 41-607)	41-3590
14	Condenser (.01 mfd)	30-4572	38	Mica Condenser (100 mmfd) (Part of 39)	33-522339		Motor Connecting Plug and wires (Chassis 41-604)	41-3547
15	Condenser (.03 mfd)	30-4449	39	3rd I. F. Transformer (Model 41-603)	32-3510		Plug (motor) Model 41-604	27-4863
16	Oscillator Transformer	32-3506		3rd I. F. Transformer (Models 41-604, 41-605, 41-607)	32-3538			
17	Compensating Condenser Dual	31-6355	40	Mica Condenser (250 mmfd)	60-125157			
18	Resistor (10,000 ohms, 1/2 watt)	33-310339	41	Condenser (.01 mfd)	30-4572			
19	Resistor (10,000 ohms, 1/2 watt)	33-310339						
20	Resistor (2.2 megohms, 1/2 watt)	33-522339						
21	Condenser (.01 mfd)	30-4572						
22	1st I. F. Transformer (Models 41-603, 41-604, 41-605, 41-607)	32-3508						
23	2nd I. F. Transformer (Model 41-603)	32-3509						
	2nd I. F. Transformer (Models 41-604, 41-605, 41-607)	32-3537						
24	Condenser (.05 mfd, 200 volt)	30-4519						

* Two types of 115 volt, 60 cycle motors are used on Models 41-603, 41-604, Part 35-1222 and 35-1240-12; turntable for Motor 35-1222 is Part No. 35-3044, turntable for motor 35-1240-12 is 35-3047-12.



MODEL 41-603
PART LOCATIONS — UNDERSIDE OF CHASSIS



MODELS 41-604, 41-605, 41-607
PART LOCATIONS — UNDERSIDE OF CHASSIS

RADIO PHONOGRAPH MODELS 41-603, 41-604, 41-605, 41-607 (CONTINUED)

Replacement Parts — (Continued)

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
57	Motor Switch (Model 41-603)	42-1521	Parts for Models 41-603, 41-604 Only				Automatic Record Changer with Motor 115 volts, 50 cycle	35-1241
	Motor Switch (Model 41-604)	42-1536		Cable (Speaker) (Model 41-603)	41-3544		Bolts (Changer Mtg.)	W-2225
58	Condenser (.05 mfd, 200 volts)	30-4519		Cable (Speaker) (Model 41-604)	41-3546		Rubber Mtg. (Changer)	54-4034
59	Range Switch (Model 41-603)	42-1593		Cabinet (Model 41-603)	10503A		Spring (Changer Mtg.)	28-8970
	Range Switch (Models 41-604, 41-605)	42-1603		Cabinet (Model 41-604)	10504A		Washer (Changer Mtg.)	W-1715
	Range Switch (Model 41-607)	42-1612		Knob (Tuning)	27-4809		Nuts (Changer Mtg.)	W-149
MISCELLANEOUS PARTS				Knob (Band Switch)	27-4005		Cable (Speaker)	41-3546
Used in All Models				Plug (Motor) Model 41-604	27-4863		Cabinet (Model 41-605)	10505A
	Dial Scale (Model 41-603)	27-5619		Nut (Speaker Mtg.)	W-1743		Cabinet (Model 41-607)	10507A
	Dial Scale (Models 41-604, 41-605, 41-607)	27-5663		Socket Assembly (Pilot Lamp)	38-9825		Knob (Tuning 41-605)	24-4820
	Dial Pointer (all models)	27-4868		Sleeve (Speaker Mtg.)	28-5665		Knob (Band Switch—Volume)	54-4012
	Cord (power)	L-3199		Sleeve (Loop Mtg.) 41-604	56-1907		Knob (Tuning 41-607)	27-4809
	Rubber Grommet (tuning Cond. Mtg.)	27-4610		Sleeve (Loop Mtg., 41-604)	28-2257		Knob (Band Switch—Volume) Model 41-607	27-4005
	Rubber Grommet (Sw. and Padder Mtg.)	27-4596		Spring Washer (Loop Mtg.)	28-4186		Switch Plate (Tone Control)	56-1793
	Socket (tubes)	55-0575		Screw (Loop Mtg.)	W-722		Socket Assembly (Pilot Lamp)	76-1116
	Socket (aerial)	27-6145		Screw (Switch Plate Mtg.)	W-560		Speaker	36-1518
	Screw (Chassis Mtg.)	W-2030		Screw (Motor Mtg.)	W-89		Sleeve (Loop Mtg.—2 required)	28-2257
	Screw (Speaker Mtg.)	W-658		Switch Plate	56-1793		Sleeve (Loop Mtg.—1 required)	56-1907
	Washer (Chassis Mtg.)	W-410		Rubber Grommet (Speaker Mtg.)	27-4596		Spring Washer (Loop Mtg.)	28-4186
				Speaker (Model 41-603)	36-1516		Washer (Loop Mtg.)	W-151
				Speaker (Model 41-604)	36-1518		Screw (Loop Mtg.)	W-288
				Parts for Models 41-605, 41-607 Only				
				Automatic Record Changer with Motor 115 volts, 60 cycle	35-1231			

PRODUCTION CHANGES

PHILCO MODELS 41-603, 41-604, 41-605, 41-607

To improve the operating performance of Model 41-605, the speaker was attached to the cabinet with rubber mountings in later production. Four each of the following parts are required:

Rubber Grommet	Part No. 27-4596
Sleeve	Part No. 28-5665
Washer	Part No. W-151

To mount the speaker with these parts, insert a rubber grommet with a metal sleeve into each mounting hole of the speaker. The flanged end of the sleeve should be towards the baffle. Mount the speaker on the four bolts of the baffle with the washer and nut.

MODELS 41-604, 41-605, 41-607

Filament resistor (53) on diagram changed from Part No. 33-3394 to 33-3409-2. This change was made due to production wiring arrangement. Values remain the same. The pilot lamp socket assembly for these models is 76-1178.

MODELS 41-605, 41-607

The Automatic Record Changer on these models was changed from a gear drive turntable type to a rim drive turntable type.

The service information for adjusting both types of changers will be found in Radio Service Bulletins No. 358 and No. 358A.

The record changer part numbers are as follows:

Changer Power Supply	Part No.	Part No.
115 volts, 60 cycle	35-1231	35-1266
115 volts, 50 cycle	35-1241	35-1267