

RADIO-PHONOGRAPH MODELS 41-623, 41-624 AND 41-625

SPECIFICATIONS

Models 41-623, 41-624, 41-625 are radio phonograph combinations which are similar in design with the exception of the cabinets, phonograph mechanism and speaker.

RADIO SECTION

The same seven (7) tube superheterodyne radio circuit is used in each model. Features of 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 8.9 to 12 M. C., two position tone control, automatic volume control, beam power pentode audio output stage, permanent magnet speaker, and Philco Loktal tubes.

INTERMEDIATE FREQUENCY: 455 K. C.

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

POWER CONSUMPTION: 41-623, 41-624 70 watts
41-625 75 watts

AUDIO OUTPUT: 1 Watt.

PHILCO TUBES USED: XXD. Converter and Phonograph pre-amplifier; 50L6GT. Oscillator; two 7B7, I. F. Amplifier; 7C6, 2nd Detector, 1st Audio, A. V. C.; 50L6GT, Audio Output, and a 50Y6GT, Rectifier.

OUTSIDE 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 41-623 and 41-624 use the same type phonograph mechanism. This mechanism consists of a manually operated Philco Light Beam reproducer and a 115 volt, 60 cycle rim drive turntable motor. In addition an automatic motor starting switch is included which starts the motor when the reproducer is lifted from its rest.

The phonograph mechanism of the Model 41-625 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. The Philco Light-Beam reproducer is provided on the changer and operates through the audio system of the radio. The service procedure for adjusting the automatic record changer will be found in radio service Bulletin No. 358 and 358A.

CABINET DIMENSIONS:

	Height	Width	Depth
41-623	12"	17 $\frac{1}{2}$ "	12 $\frac{1}{2}$ "
41-624	37"	24 $\frac{3}{4}$ "	13 $\frac{1}{4}$ "
41-625	38"	26 $\frac{3}{4}$ "	18"

ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure is used for the three models:

EQUIPMENT REQUIRED

1. SIGNAL GENERATOR: Covering the frequency range of the receiver, such as Philco Models 070 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 or 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 50L6GT 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 aerial 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 Setting	Adjust Compensators in Order	
1	Ant. Section of tuning	455 K. C.	540 K. C. Tuning Cond. Closed	Vol. Max. Range Switch Brdcast.	39A, 36A, 35A, 35B	Note A
2	Loop see above instructions	1600 K. C.	1600 K. C.	Vol. Max. Range Switch Brdcast.	3B	Note B
3	Loop see above instructions	1500 K. C.	1500 K. C.	Vol. Max. Range Switch Brdcast.	3A	
4	Loop see above instructions	12 M. C.	12 M. C.	Range Switch "S. W."	3C, 3	Roll (3) for Max. Note C

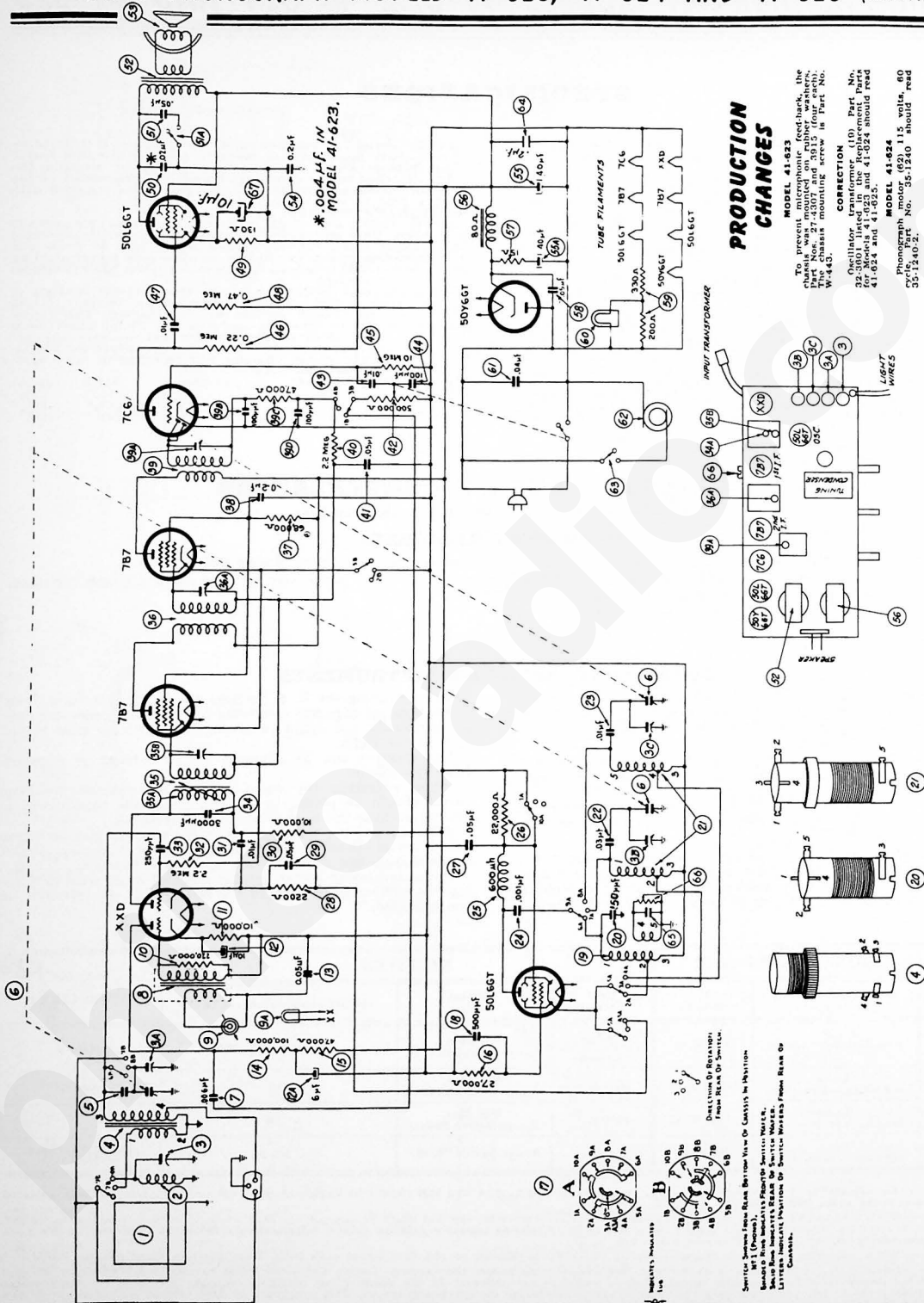
NOTE A: — To adjust the I. F. circuit properly, compensators 36A, 35A and 35B should be depadded first. All compensators are then adjusted to maximum in the order 39A, 36A, 35A and 35B.

NOTE B: — 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 C: — When adjusting oscillator compensator 3C, tune for maximum on the first signal peak from Tight position (compensator closed).

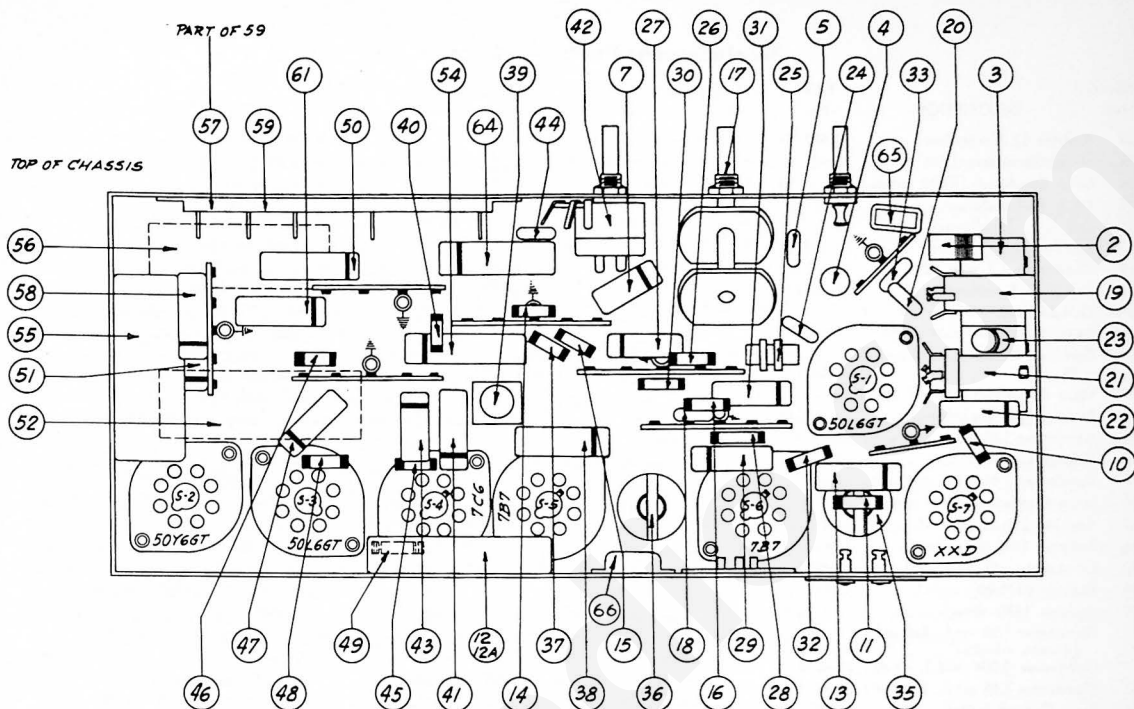
When adjusting the aerial padder 3 of the high frequency tuning range; the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output. Now turn the compensator slightly to the right or 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 41-623, 41-624 AND 41-625 (CONTINUED)



SCHEMATIC DIAGRAM—MODELS 41-623, 41-624, 41-625

RADIO PHONOGRAPH MODELS 41-623, 41-624 AND 41-625 (CONTINUED)



PART LOCATIONS — UNDERSIDE OF CHASSIS

Replacement Parts — Models 41-623, 41-624, 41-625

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
1	Loop Aerial (41-625)	76-1209	4	Broadcast Aerial Transformer (41-623)	32-3514	13	Condenser (.05 mfd.)	30-4519
	Sleeve (Mtg.)	28-3806		Clip Mtg.	28-5002	14	Resistor (100,000 ohms)	33-410339
	Sleeve (Mtg.)	56-1545	5	Condenser (214 mmfd.)	30-1131	15	Resistor (47,000 ohms)	33-347339
	Sleeve (Mtg.)	56-1907	6	Tuning Condenser	31-2522	16	Resistor (27,000 ohms)	33-327339
	Screw	W-288		Sleeve Mtg.	28-5583	17	Band Switch	42-1636
	Washer	W-425		Spring (Drive Cord)	28-8954	18	Mica Condenser (500 mmfd.)	60-150157
	Loop Aerial (41-624)	76-1184		Drive Shaft Assembly	31-2370	19	Oscillator Transformer (41-625, 41-624) Light-Beam Reproducer	32-3601
	Spring Washer Mtg.	28-4186	7	Condenser (.006 mfd., 400 volts)	30-4591		Oscillator Transformer (41-623 Light-Beam Reproducer)	32-3619
	Sleeve Mtg.	56-1545	8	Input Transformer (41-624, 41-625 Light-Beam Reproducer)	32-8163	20	Mica Condenser (150 mmfd.) (41-625, 41-624)	60-115337
	Sleeve Mtg.	28-3806		Input Transformer 41-623 Light-Beam Reproducer)	32-8165		Mica Condenser (150 mmfd.) (41-623)	60-115157
	Sleeve Mtg.	56-1907	9	Light-Beam Reproducer (41-625 changer)	35-2175	21	Oscillator Transformer (Tuning Bands)	32-3600
	Washer	W-151		Light-Beam Reproducer (41-624)	35-2281	22	Condenser (.03 mfd., 400 volt)	30-4517
	Screw	W-288		Light-Beam Reproducer (41-623)	35-2361	23	Condenser (.01 mfd., 400 volt)	30-4572
	Loop Aerial (41-623)	76-1099		Bumper Tone Arm 41-623, 41-624	54-4056	24	Mica Condenser (.001 mfd.)	30-1063
2	Short Wave Aerial Transformer (41-624, 41-625)	32-3520	9A	Light-Beam Reproducer Lamp (All Models)	34-2408	25	R. F. Choke	32-3615
	Short Wave Aerial Transformer (41-623)	32-3517		Resistor (220,000 ohms)	33-422339	26	Resistor (22,000 ohms)	33-322339
	Compensator (S. W. Aerial)	31-6402	10	Resistor (10,000 ohms)	33-310339	27	Condenser (.05 mfd., 200 volt)	30-4519
3A	Compensator (Broadcast Aerial) Part of 3		11	Electrolytic Condenser (6-10 mfd.)	30-2495	28	Resistor (2,200 ohms)	33-22339
3B	Compensator (Broadcast Oscillator) Part of 3		12A	Part of 12		29	Condenser (.05 mfd., 200 volt)	30-4519
3C	Compensator (S. W. Oscillator) Part of 3					30	Resistor (10,000 ohms)	33-310339
4	Broadcast Aerial Transformer (41-624, 41-625)	32-3519				31	Condenser (.01 mfd., 400 volt)	30-4572

Replacement Parts — (Continued)

SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.	SCHE. No.	DESCRIPTION	PART No.
32	Resistor (2.2 megohms)	33-522154	57	Resistor (15 ohms) Part of 59			Cabinet (41-623)	10528A
33	Mica Condenser (250 mmfd.)	60-125157	58	Condenser (.05 mfd., 400 volt)	30-4519		Cabinet (41-624)	10504B
34	Mica Condenser (3,000 mmfd.)	Part of 35	59	Filament Resistor (200-330 ohms)	33-3407		Cabinet (41-625)	10505B
35	1st I. F. Transformer	32-3616	60	Pilot Lamp	34-2068		Cord (Power)	L-3245
36	2nd I. F. Transformer	32-3617	61	Condenser (.04 mfd., 400 volt)	30-4119		Cable (Light-Beam Reproducer 41-624, 41-625)	41-3561
37	Resistor (68,000 ohms)	33-368339	62	Record Changer Motor Model 41-625 (115 volts, 60 cycle)	35-1275		Cable (Light-Beam Lamp from Chassis 41-624, 41-625)	41-3551
38	Condenser (.2 mfd., 200 volt)	30-4536		Record Changer Motor Model 41-625 (115 volts, 50 cycle)	35-1280		Cable (Chassis to Light-Beam Input Transformer 8)	41-3566
39	3rd I. F. Transformer	32-3618		Turntable (41-625)	35-3057		Cable and Plug (Record Changer from Chassis 41-624, 41-625)	41-3590
39A	Compensator Part of 39			Phono Motor 41-623 (115 volt, 60 cycle)	35-1265		Cable Tone Control (41-624, 41-625)	41-3620
39B	Mica Condenser Part of 39			Phono Motor 41-623 (115 volt, 50 cycle)	35-1278		Cable (Speaker) 41-624, 41-625	41-3546
39C	Resistor (47,000 ohms) Part of 39	33-347339		Turntable	35-3044		Cable (Speaker) 41-623	41-3567
39D	Mica Condenser Part of 39			Phono Motor 41-624 (115 volt, 60 cycle)	35-1240		Clip (Mtg. R. F. Coils)	28-5002
40	Resistor (2.2 megohms)	33-522339		Phono Motor 41-624 (115 volt, 50 cycle)	35-1250		Dial Scale	27-5682
41	Condenser (.05 mfd., 200 volt)	30-4519		Turntable	35-3044		Dial Pointer	54-4063
42	Volume Control	33-5405		Motor Plug	27-4885		Knob (Band Switch) 41-625	27-4809
43	Condenser (.01 mfd., 400 volt)	30-4572		Plug Shell	56-1619		Knob (Band Switch) 41-623, 41-624	27-4809
44	Mica Condenser (100 mfd.)	60-110157		Screw (Motor Mtg.)	W-89		Knob (Tuning Volume) 41-623, 41-624	27-4005
45	Resistor (10 megohms)	33-610339	63	Phono Power Switch (41-625 record changer)	42-1628		Screw (Chassis Mtg.) 41-625	W-2030
46	Resistor (220,000 ohms)	33-422339		Phono Power Switch (41-624)	42-1536		Screw (Chassis Mtg.) 41-623	W-443
47	Condenser (.01 mfd., 400 volt)	30-4572		Phono Power Switch (41-623)	42-1643		Spring (Tilt-Front) (41-624)	28-8973
48	Resistor (470,000 ohms)	33-447339	64	Condenser (.2 mfd.)	30-4594		Spring (Tilt-Front) 41-625	28-8971
49	Resistor (130 ohms)	33-113339	65	Condenser (.005 mfd.) (41-623)	60-250154		Speaker (41-624, 41-625)	36-1518
50	Condenser (.02 mfd., 400 volt) (41-624, 41-625)	30-4516	66	Variable Resistor (Light-Beam Reproducer Light)	33-5435		Grommet Mtg. Speaker	27-4596
	Condenser (.004 mfd.)	41-623 30-4578	67	Electrolytic Condenser (10 mfd., 250 volts)	30-2500		Fibre Washer	27-7467
51	Condenser (.05 mfd., 200 volt)	30-4519		Automatic Record Changer (41-625) (115 volt, 60 cycle)	35-1276		Nut	W-124
51A	Tone Control Switch	42-1562-2		Automatic Record Changer (41-625) (115 volt, 50 cycle)	35-1279		Washer	W-151
	Switch Plate	56-1793		Grommet Mtg.	54-4048		Speaker (41-623)	36-1538
	Screw (Mtg. Plate)	W-560		Spring Mtg.	28-8970		Socket Assembly (Pilot Lamp)	76-1178
52	Output Transformer (41-625, 41-624)	32-8127		Nut (Mtg.)	W-149		Socket-Moulded type (Tubes)	27-6151
	Output Transformer (41-623)	32-8126		Washer (Mtg.)	W-1715		Socket (Osc. Tube)	27-6162
53	Cone Assembly (Models 41-625, 41-624, for speaker 36-1518-4)	36-4171		Screw (Mtg.)	W-2225		Socket (Aerial)	27-6145
	Cone Assembly (Model 41-623, for speaker 36-1538-3)	36-4165					Washer (Chassis Mtg.)	W-410
54	Condenser (.2 mfd., 400 volt)	30-4594					Washer (Rubber Chassis)	27-4307
55	Electrolytic Condenser (40-40 mfd.)	30-2494						
	Electrolytic Condenser (40 mfd.) Part of 55							
56	Filter Choke	32-8155						

LIGHT-BEAM REPRODUCER ADJUSTMENTS

To reproduce the sound from a record, the light beam of the reproducer must be carefully positioned on the light sensitive cell. If the light beam is not carefully set, the sound reproduction will be distorted, weak or, if the light beam is completely on or off the cell, the phonograph will be silent.

If any of these conditions exist, the following adjustment procedure should be made:—

NOTE—These adjustments should be made with the power line voltage at 118 volts A. C.

A. ADJUSTING WIDTH OF LIGHT BEAM

To make this adjustment push the lamp socket assembly into its holder until a clear image of the lamp filament appears on the light cell. The socket should then be slightly pushed in beyond this point until the rectangular spot of light is $\frac{1}{2}$ " in width. The socket assembly is now rotated so that the spot of light is vertical.

B. POSITIONING THE LIGHT BEAM

To position the light beam on the light cell, turn the adjusting screw at the lower left side of the reproducer until the spot is half on the cell and half on the metal frame surrounding the cell.

C. ADJUSTING INTENSITY OF LAMP

When shipped from the factory, the lamp of the reproducer is adjusted for best operating efficiency. The intensity of the light from the lamp is adjusted by Compensator 66 located on the radio chassis. Under ordinary circumstances, an adjustment will not be necessary. When replacing the reproducer or lamp, however, there may be a tendency towards microphonic feedback. In this case the compensator is adjusted as follows:

1. Turn volume control on full and play a record.

2. While the record is playing, turn compensator 66 in the direction necessary to eliminate microphonic feedback. By turning the compensator the strength of the pick-up output is increased or decreased.

D. INSTALLING NEW LAMP

When installing a new lamp in the socket, there are two positions in which the lamp can be inserted. Ordinarily, either of these positions can be used. In some cases, however, due to the lamp filament being off center, the lamp must be inserted in the position that gives the best centering of the spot of light on the vibrating mirror.