

RCA Victor STORE RECORDER R-92

SERVICE NOTES



SERVICE DIVISION

RCA Victor Company, Inc.

Camden, N. J., U. S. A.

A RADIO CORPORATION OF AMERICA SUBSIDIARY

REPRESENTATIVES IN PRINCIPAL CITIES

RCA VICTOR MODEL R-92

STORE RECORDER

SERVICE NOTES

ELECTRICAL SPECIFICATIONS

Voltage Rating.....	115 Volts
Frequency Rating.....	60 Cycles
Power Consumption.....	95 Watts
Type and Number of Radiotrons.....	2 RCA-56, 1 RCA-53, 1 RCA-80—Total 4
Type of Microphone.....	Two-Button, Carbon Type
Microphone Impedance.....	200 Ohms Each Button (Average)
Pickup Impedance.....	7 Ohms at 1000 Cycles
Turntable Speed.....	33 $\frac{1}{3}$ R.P.M. and 78 R.P.M.

PHYSICAL SPECIFICATIONS

Height.....	14 Inches
Width.....	14 Inches
Length.....	18 $\frac{1}{2}$ Inches

This dealer recording instrument is a special recording unit designed primarily for making home recording records in dealers' stores. The unit consists of a special recording head and suspension arm assembly, a three-stage amplifier and a suitable power supply. Of special interest is the inclusion of two level indicating

lamps which permit the proper recording level to be maintained at all times. A class "B" output stage provides sufficient power to operate the recorder at its optimum level. A two-button microphone permits a high fidelity to be obtained in the recording of all types of programs.

DESCRIPTION OF ELECTRICAL CIRCUIT

The sound to be recorded is picked up by the two-button carbon microphone which changes the sound vibrations to electrical voltage variations of corresponding frequency and dynamic range. The microphone is transformer coupled to the grid of the RCA-56 first audio amplifier. Microphone current is obtained from across a 500 ohm section of the bleeder system of the power supply.

The output of the first audio stage is resistance coupled to the RCA-56 second stage audio amplifier, which in turn is transformer coupled to the grid of the RCA-53 class B output stage.

The output of the RCA-53 is transformer coupled

to the recording head, which transforms the electrical voltage variations into mechanical vibrations and thereby cuts the home recording record. A feature of the output system is the two neon level indicating lamps. They are both connected between the center tap and one side of the output transformer through a resistance network. Full brilliancy in one lamp with occasional flashes of the second lamp indicates the proper amount of power for recording.

The power supply consists of an RCA-80 full wave rectifier and the necessary power transformer, choke and filter capacitors. The power supply furnishes plate and grid voltages to all tubes and the microphone.

SERVICE DATA

Except for the replacement of defective Radiotrons, very little service work will be required in conjunction with this instrument. Figure 1 shows the schematic circuit diagram, Figure 2 the wiring diagram, and Figure 3 the various socket voltages. Figure 4 shows the assembly wiring diagram.

(1) Voltage Readings

The following voltages are those at the tube sockets while the recorder is in operating condition. No allowance has been made for current drawn by the meter and if low resistance meters are used, such allowances must be made.

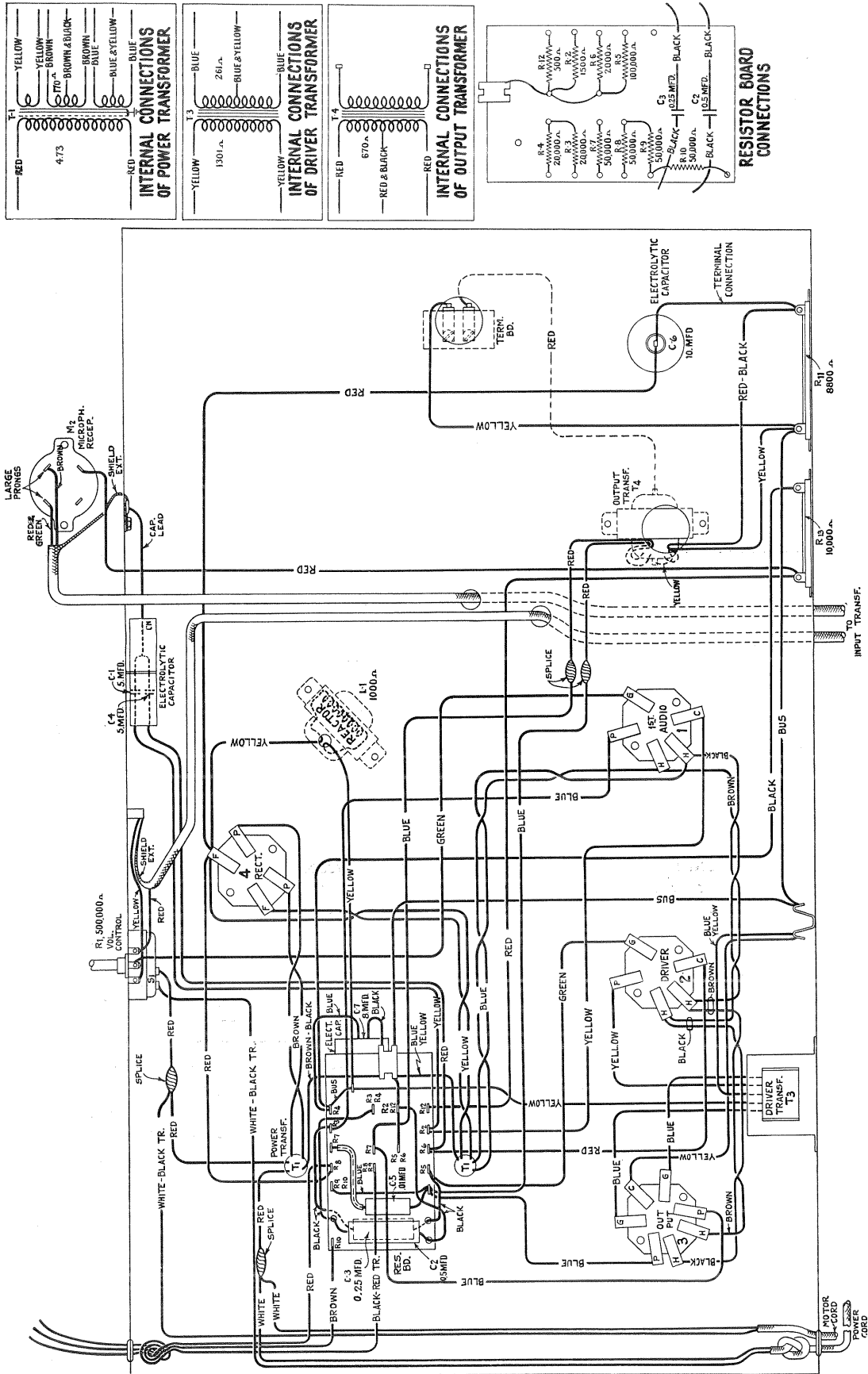


Figure 2—Wiring Diagram

(2) Service Data on Magnetic Pickup

The Magnetic Pickup used in this combination instrument is of a new design with an improved frequency range. While in physical appearance it is similar to that of the older type, details of construction are considerably different. It consists essentially of a chromium steel magnet, two thin pole pieces, a mechanism support and bracket, a coil, and an armature that is damped by means of an anchored damping block.

The use of the anchored damping block eliminates any bad peaks in the frequency range. The frequency-

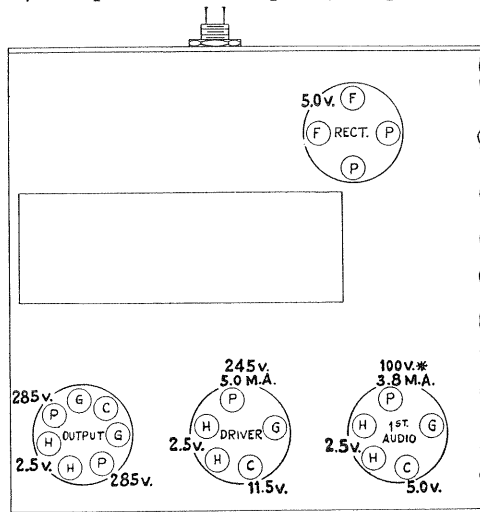


Figure 3—Voltage Readings at Radiotron Sockets

response characteristic is substantially flat from 50 to 5,000 cycles.

(3) Replacing Magnet Coil, Pivot Rubbers, Armature or Damping Block

In order to replace a defective coil or the hardened pivot rubbers (see Figure 6), it is necessary to proceed as follows:

- Remove the pickup cover by removing the center holding screw and needle screw.
- Remove the pickup magnet and the magnet clamp by pulling them forward.
- Unsolder the coil leads and remove the mechanism assembly from the back plate by releasing the two mounting screws and the damping block clamping screw.

RADIOTRON SOCKET VOLTAGES

Radiotron No.	Cathode to Ground, Volts	Plate to Ground, Volts	Plate Current, M. A.	Heater Volts
RCA-56—1st A. F.	5.0	100*	3.8	2.5
RCA-56—2nd A. F.	11.5	245	5.0	2.5
RCA-53—Power	—	285	30.0	2.5
RCA-80—Rectifier	Total Rectified Voltage—290 Volts			5.0

*Calculated—High Resistance Circuit.

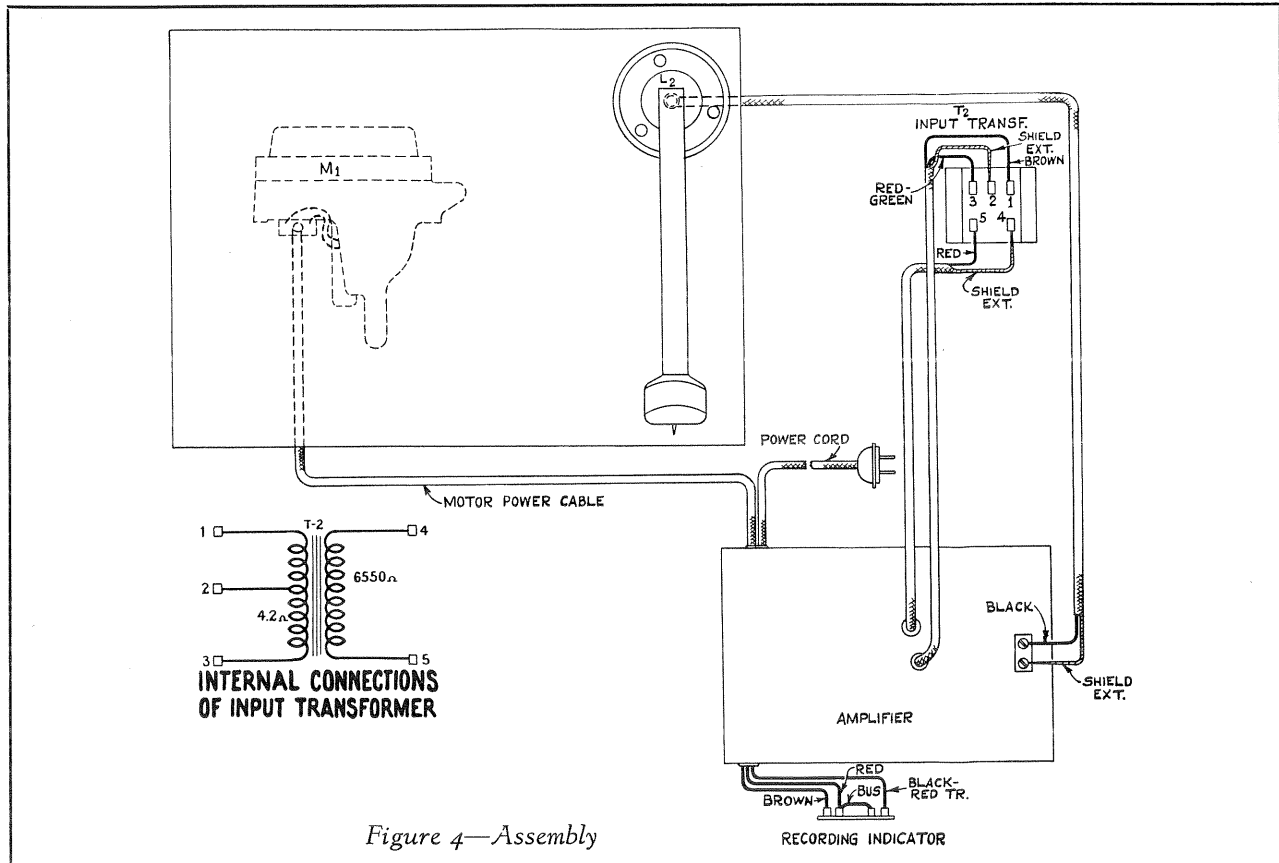


Figure 4—Assembly

- (d) Remove screws A and B, Figure 6, and then remove the mechanism assembly from the pole pieces.
- (e) The coil or the front pivot rubber may now be removed and replaced. If it is desired to replace the rear pivot rubber, then the end of the armature soldered to the mechanism support must be unsoldered and the damping block removed. The rear pivot rubber now may be replaced. After putting the pivot rubbers in place a new damping block should be fastened to the armature as outlined in instructions on replacing the damping block.

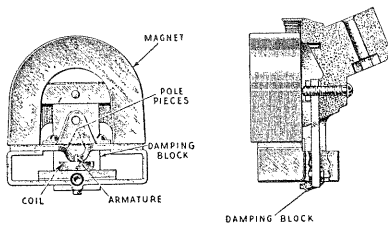


Figure 5

- (f) The mechanism should now be reassembled, except for the magnet, which must be magnetized. After being magnetized, the mechanism—with the pole pieces upward—should be placed so that the magnet may be slid from the magnetizer onto the pole pieces without breaking physical contact. After placing the pole pieces on the magnet, the entire assembly should be remagnetized thoroughly, being careful not to change the polarity obtained by the initial magnetization.
- (g) After assembling to the mechanism, the entire assembly should be fastened to the back plate by means of the screws provided, making sure the damping block is securely clamped. At the same time, the metal dust cover must be placed in position.
- (h) After remagnetizing, it is necessary to correctly center the armature. This may be done quite accurately by feeling its play after the needle is inserted. A little practice will quickly show which way an adjustment is necessary to have the armature centered properly. The adjustment is made by loosening screws A and B (Figure 6), and sliding the mechanism slightly in relation to the pole pieces.
- (i) The cover may be now replaced over the entire assembly, and the pickup returned to the tone arm.

In assembling, it may be desirable to check the armature air gap by means of a small Feeler Gauge. This air gap should be .009" on each side of the armature. However, a little practice with the needle in place will quickly disclose whether or not the armature is centered.

(4) Replacing the Damping Block

If it is desired to replace the damping block, it may be done in the following manner:

- (a) Disassemble the pickup as described under the preceding section.

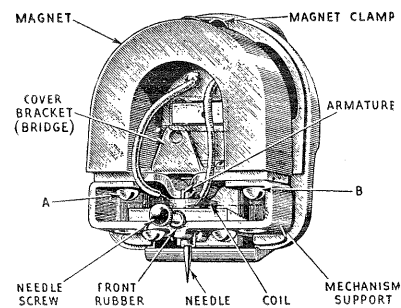


Figure 6

- (b) Remove the armature entirely by unsoldering it at its joint with the mechanism support.
- (c) Remove the damping block from the armature and clean the bushing for holding the damping block with emery paper.
- (d) Insert the armature through the new block so that it occupies the same position as that of the old. Also ascertain that the block is in correct vertical alignment with the armature. It will be noted that the hole in the damping block is somewhat smaller than the diameter of the armature. This is done so that a snug fit will be obtained.
- (e) After properly locating the damping block, a soldering iron should be applied to the armature so that the block will melt slightly at its point of contact with the armature. A special tip, constructed as shown in Figure 7, will prove desirable for fusing the block in place. The iron should be applied long enough to slightly melt the block and cause a small bulge on both sides, but should not be applied long enough to cause any bubbling. The pickup should then be reassembled as described in the preceding section.

Only rosin core solder should be used for soldering the coil leads in the pickup. Also rosin core solder should be satisfactory for resoldering the end of the spring in the hole in the mechanism, since both these parts have been previously tinned. In case the parts are not well tinned, it will be necessary to scrape the end of the spring and the hole in the mechanism until bright. These parts may now be tinned by using as a flux a water solution of zinc chloride (commonly

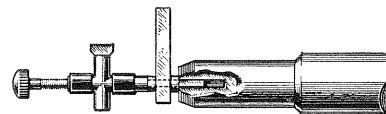


Figure 7

called acid flux). After tinning, dip the parts in water to wash off the acid flux and thereby prevent serious subsequent corrosion. After making sure that the pivot rubbers and damping block are properly in place, as described under (e) above, the armature may now be soldered in place in the mechanism by using rosin core solder, since the parts are now tinned. Care must be exercised to get the needle hole perfectly square with respect to the mechanism, or otherwise it will be difficult if not impossible to center the armature in the air gap as explained under (h).

REPLACEMENT PARTS

Insist on genuine factory tested parts, which are readily identified and may be purchased from authorized dealers

Stock No.	DESCRIPTION	List Price	Stock No.	DESCRIPTION	List Price
AMPLIFIER ASSEMBLIES					
3787	Capacitor—0.01 mfd. (C5)	\$0.30	3385	Coil—Pickup coil	\$0.50
6648	Capacitor—0.25 mfd. (C3) . . . . .	.42	4383	Cover—Pickup cover . . . . .	.34
3772	Capacitor—0.5 mfd. (C2) . . . . .	.32	3836	Cover—Pickup back cover . . . . .	.34
4498	Capacitor—8.0 mfd. (C7)	1.25	4497	Pickup—Magnetic pickup unit complete (L2)	4.60
7590	Capacitor—10.0 mfd. (C6)	1.40	4384	Plate—Pickup lifter adjustment plate, spring and screw—Located in arm . . . . .	.20
6824	Capacitor pack—Comprising two 5.0 mfd. (C1, C4) . . . . .	.94	3387	Screw—Pickup mounting screw assembly—Comprising one screw, one nut and one washer—Package of 10 . . . . .	.40
6552	Reactor—Filter reactor (L1)	1.04	3388	Screw—Pickup needle holding screw—Package of 10 . . . . .	.60
3114	Resistor—50,000 ohms—Carbon type— $\frac{1}{4}$ watt (R8, R9, R10)—Package of 5	1.00	3419	Screw—Pickup cover holding screw—Package of 10 . . . . .	.40
4396	Resistor—500 ohms—Carbon type— $\frac{1}{2}$ watt (R12)—Package of 10	2.00	TURNTABLE ASSEMBLIES		
3047	Resistor—1500 ohms—Carbon type— $\frac{1}{2}$ watt (R2)—Package of 5	1.00	3346	Bushing—Speed shifter lever bushing—Package of 4 . . . . .	.66
3526	Resistor—2000 ohms—Carbon type— $\frac{1}{2}$ watt (R6)—Package of 5	1.00	3344	Cover—Grease retainer cover—Package of 2 . . . . .	.70
6303	Resistor—20,000 ohms—Carbon type— $\frac{1}{2}$ watt (R3, R4)—Package of 5	1.00	4394	Lever—Speed shifter lever . . . . .	.38
3594	Resistor—50,000 ohms—Carbon type— $\frac{1}{2}$ watt (R7)—Package of 5	1.00	3341	Pin—Groov-pin—Package of 2 . . . . .	.56
3252	Resistor—100,000 ohms—Carbon type— $\frac{1}{2}$ watt (R5)—Package of 5	1.00	3338	Ring—Clamp ring assembly—Comprising spring, latch lever and stud . . . . .	.50
4398	Resistor—10,000 ohms—6.5 watts (R13) . . . . .	.74	3343	Sleeve—Sleeve complete with ball race	2.86
4400	Resistor—8800 ohms—10.5 watts (R11) . . . . .	.68	3347	Spring—Speed shifter lever spring—Package of 2 . . . . .	.30
4399	Socket—4-contact socket . . . . .	.44	7668	Turntable—Complete less shift lever	8.34
6300	Socket—4-contact Radiotron socket . . . . .	.35	3340	Washer—Thrust washer—Package of 2 . . . . .	.56
7484	Socket—5-contact Radiotron socket . . . . .	.35	MOTOR ASSEMBLIES		
3719	Socket—7-contact Radiotron socket . . . . .	.30	4395	Mounting assembly—Motor mounting assembly—Comprising 3 studs, 9 washers, 3 cushions . . . . .	.38
6551	Transformer—Driver transformer (T3)	1.48	9510	Motor—105–120 volt 60-cycle motor complete	27.44
6556	Transformer—Output transformer (T4)	1.50	8942	Rotor and shaft for motor	7.00
9026	Transformer—Power transformer (T1)	4.80	8945	Spindle—Turntable spindle and fibre gear for motor	4.68
4401	Volume control (R1)	1.10	MISCELLANEOUS ASSEMBLIES		
MICROPHONE ASSEMBLIES					
4403	Cord—Microphone cord . . . . .	.62	4391	Box—Needle box . . . . .	.70
3216	Cushions—Microphone rubber cushions—Package of 6 . . . . .	.24	3261	Bushing—Record drive bushing—Package of 5 . . . . .	.40
4500	Housing—Microphone housing	3.15	4392	Knob—Volume control knob—Package of 5 . . . . .	.75
4499	Mechanism—Microphone mechanism	6.80	4385	Lifter—Pickup lifter mechanism complete	3.00
4501	Microphone complete	7.50	4387	Screw—No. 6–32– $\frac{1}{4}$ " headless set screw for pickup lifter cam—Package of 10 . . . . .	.25
4402	Plug—Microphone cord plug . . . . .	.28	4388	Screw—No. 6–32– $\frac{3}{16}$ " headless set screw for pickup lifter cam—Package of 10 . . . . .	.25
RECORDING INDICATOR ASSEMBLIES					
4381	Escutcheon—Recorder indicator escutcheon . . . . .	.72	4389	Screw—No. 6–32– $\frac{3}{16}$ " headless set screw for pickup lifter cam—Package of 10 . . . . .	.25
4161	Lamp—Neon lamp . . . . .	.56	4390	Screw—No. 6–32– $\frac{1}{8}$ " headless set screw for pickup lifter cam—Package of 10 . . . . .	.25
4164	Screen—Recording indicator lamp screen . . . . .	.18	4393	Screw—No. 8–32– $\frac{5}{16}$ " headless set screw for volume control knob—Package of 10 . . . . .	.25
4382	Screw—Screen escutcheon and terminal board mounting screw assembly—Comprising two screws, two spacers, two nuts and two lockwashers . . . . .	.20	4386	Spring—Pickup lifter spring—Package of 10 . . . . .	.20
PICKUP AND ARM ASSEMBLIES					
4496	Arm—Pickup arm complete	4.70	6226	Transformer—Input transformer (T2)	2.75
3417	Armature—Pickup armature . . . . .	.72			
3733	Back—Pickup housing back . . . . .	.60			