



OVER THE SOLDERING IRON

RCA VICTOR

PREPARED FOR THE INFORMATION OF RCA
VICTOR DISTRIBUTORS' SERVICE MANAGERS

SERVICE DIVISION - RCA MANUFACTURING COMPANY INC. - CAMDEN, N.J. MARCH 17, 1939.

AUTOMATIC RECORD CHANGER - 1938-39 VICTROLAS Friction Finger Adjustment

Erratic tripping action or premature tripping is generally caused by improper adjustment of the friction clutch mechanism. The friction should be just enough to prevent slippage and yet not too tight as to cause the needle to jump grooves from a lateral bind. In order to provide an ideally uniform surface of contact for friction, a stainless steel bushing is now incorporated on the trip lever friction finger Stock #31116. This lever is identified as part number 7 in the automatic record changer diagram of the Model U-125 Service Note. It is recommended that Stock #31116 be replaced wherever unstable friction adjustment has been encountered.

TURNTABLE FLUTTER OR WOW Models U125, U128, U130, Etc.

It has been found possible to prevent any flutter or ripple wow that may possibly be experienced on these Victrolas by use of a specially designed motor coupling assembly. This assembly has an auxiliary flexible rubber coupling, as illustrated above, which mechanically filters the higher frequency speed variations. The Unit is covered by Stock #31146. It can be used to remove "flutter" or "ripple" which is reproduced as wow or speed variations occurring several times (4-8) per turntable revolution. Its effect on the more common type of "once-around" wow is not appreciable. When installing motor using this coupling, first assemble motor support in cabinet with motor screws loose. Move motor around until the hub of coupling #31146 can be pushed up around turntable spindle sleeve as a centering pilot. Tighten motor mounting screws securely. Lower coupling #31146 on motor shaft to normal position and tighten set screws.



REPLACEMENT PARTS - Models U-112 and Late U-111

The parts and prices listed in service note No. 13A - 1938 include only the exceptions and revisions as referred to the standard list appearing in the U-111 Service Note No. 13 - 1938. For parts not listed in the No. 13A Bulletin, refer to No. 13.

GOVERNOR PARTS - VICTROLA MOTORS

Governor weights and springs are now stocked for replacement use and can be obtained by ordering in conformance with the following information:-

Stock #32912 - One weight and spring for governor assembly Stock #31623

Stock #32913 - " " " " " " " Stock #31624

Stock #32914 - " " " " " " " Stock #11703

Stock #32915 - " " " " " " " Stock #32034

When installing the governor weights and springs, always allow clearance between the spring and its retaining washers, so that the ends of the spring are free to slide back and forth; as otherwise proper governing action will not be obtained. The total clearance for spring movement should be in the order of .008 inches.

For other components of governor motors refer to page 6 - "Over the Soldering Iron" issue of October 13, 1938.

OVERMODULATION OR DISTORTION - Model VA-20

On some records, and particularly with pickup units having relatively high voltage output, an occasional case may be encountered where distortion occurs at advanced volume control (VA-20) settings. This condition can be eliminated by effecting the following circuit changes:-

Remove - Self bias resistor R-2 and associated bypass capacitor C-4 from cathode circuit of 6A8 modulator-oscillator stage.

Install- (1) Connection between 6A8 cathode (K) and shell (SH) (or chassis).

(2) A 10 megohm resistor Stock #13601 between "modulator grid" and cathode (K) on 6A8 socket (or chassis).

(3) A .0025 mfd capacitor stock #5107 in series with green lead from arm of volume control to "modulator grid."

(4) A 120,000 ohm resistor Stock #13734 across the volume control from terminal 1 to terminal 3.

The overmodulation condition can also be avoided by operating the VA-20 volume control at a retarded position, and regulating volume by means of the receiver control. The above changes however, effect a foolproof cure, and should be incorporated on any instruments being serviced.

Alignment Kinks

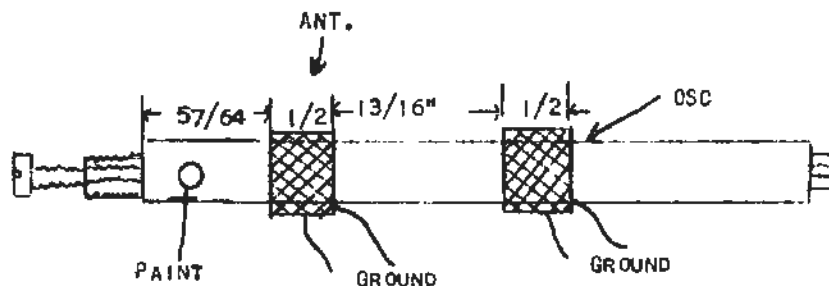
Models 94BK2 and 94BT2

Before aligning these receivers, it is suggested that the following trimmer and core adjustments be pre-set to the mechanical dimensions given below:

1. The three trimmer condensers C30, C3, and C2 on rear apron should be set to maximum capacity (screws turned full clockwise) and then unscrew each about $1/4$ turn.
2. Unscrew L4 to its minimum inductance position (screw all way out) and then screw in 8 full turns.
3. Unscrew L6 to its minimum inductance position (screw all way out) and then screw in 6 full turns. Do not run this adjustment screw in too far (more than 12 to 15 turns) as the Core will contact a lug on this coil at plus "B" potential causing a high resistance short and no signal (dead set).
4. Screw L9 all the way in and then unscrew 13 full turns (about $3/8$ inch of threads exposed).

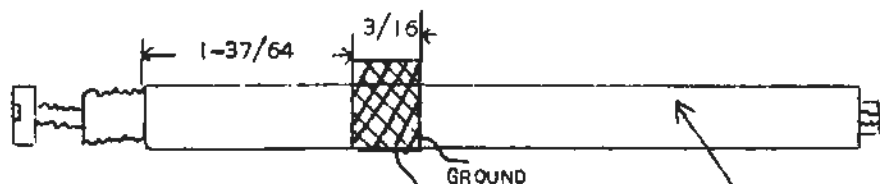
These pre-settings will assist in quicker alignment, especially if the adjustments have been tampered with or new parts installed.

When servicing these receivers, do not shift the positions of either the oscillator section (front) or antenna section (rear) on any of the four tandem push button coil assemblies, since their positions on the form governs the tracking between the two circuits. The illustrations below show the proper spacings of coils. If necessary, seal the coils securely to the form with wax to the dimensions shown.



The coils are coded with a spot of paint as follows:-

Black - Stock #32250
 White - Stock #32251
 Red - Stock #32252
 Green - Stock #32253



STOCK #32254

REVISED MOTOR COMPONENTS - Model R-93-A

The various parts of the turntable and rotor assembly have been assigned separate stock numbers and are now available for service purposes as follows:-

Obsoleted Parts

| | | |
|-------|---------|--|
| 30240 | ROTOR - | Laminations and Turntable complete for 60 cycle operation. |
| 30376 | ROTOR - | " " " " " 50 " " |
| 30241 | ROTOR - | " " " " " 25 " " |

Superseded By

| | | | |
|-------|--------------|--|---------|
| 33003 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 60 Cycle operation ----- | \$ 5.25 |
| 33004 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 50 Cycle operation ----- | \$ 5.25 |
| 33005 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 25 Cycle operation ----- | \$ 6.70 |
| 30242 | - TURNTABLE | - Finished turntable Plate ----- | \$ 1.70 |
| 30243 | - CAP | - Turntable Spindle Cap ----- | \$ 0.35 |
| 30392 | - MOUNTING | - 3 Rubber Spacers and 1 Rubber Bushing for Mounting Turntable Plate ----- | \$ 0.25 |

REVISED MOTOR COMPONENTS - Model U-101

The various parts of the turntable and rotor assembly have been assigned separate stock numbers and are now available for service purposes as follows:-

Obsoleted Parts

| | | |
|-------|---------|--|
| 30388 | ROTOR - | Laminations and Turntable Complete for 60 Cycle operation. |
| 30389 | ROTOR - | " " " " " 50 " " |
| 30390 | ROTOR - | " " " " " 25 " " |

Superseded By

| | | | |
|-------|--------------|--|---------|
| 33003 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 60 Cycle operation ----- | \$ 5.25 |
| 33004 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 50 Cycle operation ----- | \$ 5.25 |
| 33005 | - LAMINATION | - Rotor laminations, frame and shaft assembled, For 25 Cycle operation ----- | \$ 6.70 |
| 30391 | - TURNTABLE | - Finished turntable Plate ----- | \$ 2.20 |
| 30393 | - CAP | - Turntable Spindle Cap ----- | \$ 0.35 |
| 30392 | - MOUNTING | - 3 Rubber Spacers, and 1 Rubber Bushing for Mounting Turntable Plate ----- | \$ 0.25 |

CABINET INTERIOR FINISH

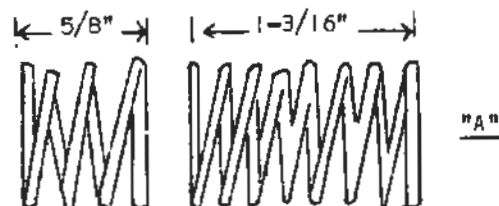
The finish used on the RCA cabinet interiors is a "quick drying" aluminum spray. One gallon of this finish may be easily prepared by mixing:- 25.6 oz. of Manila gum; 76.8 oz. of whiting; 6.4 oz. of Aluminum Powder; and 90 fluid oz. of alcohol. The mixture should be applied with a spray gun.

RECORD DAMAGE - Model D 22-1

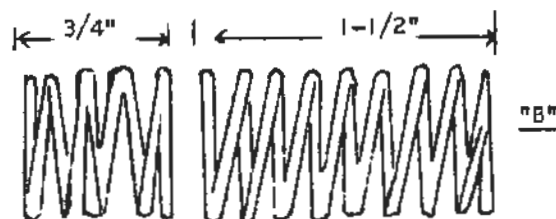
Records containing heavy bass response in the region from 50 to 80 cycles may be subject to damage from groove or wall breakdown as a result of mechanical-acoustic feedback into the pickup unit. Subsequent playing of records so damaged results in abnormal distortion during the low frequency passages. This condition can be rectified by removing or displacing the mechanical and electrical resonances, and the undesired mechanical coupling that contribute either singly, are which may be accumulative. The following operations should be carried out to effect the necessary remedy:-

- (1) Install rumble filter Stock #12037 adjacent to phono compensation pack, connecting it between terminals #2 and #6. Orient filter for minimum hum pickup.
- (2) Check lateral movement of tone arm and adjust its associated parts to prevent any tendency to bind. The tone arm rear lateral bearing, the twist of the pickup cable where it passes through this bearing, and the adjustment of the friction finger should be especially noted.
- (3) The pickup unit should be examined and adjusted to assure that it is correctly centered, that the attachment of centering spring to the armature is secure, and that the clamping of the spring to the magnet assembly is solid.
- (4) The motor mounting springs should have the proper flexibility. To be certain that these are correct, use Stock #4562 which includes the following:-

Spring combination "A" corresponding to dimensions shown should be installed on each of two motor mounting studs supporting field coil assembly of motor (nearest rear of cabinet) with $5/8$ " spring above motor board and $1\ 3/16$ " spring below.



Spring combination "B" corresponding to dimensions shown should be installed on motor stud at end of gear case (nearest front of cabinet) with $3/4$ " spring above motor board and $1\ 1/2$ " spring below.



- (5) The motor board mounting springs should have the proper flexibility and be assembled correctly. The specified springs are Stock #3763. The $3/4$ inch (length) springs should be installed below the motor board, and the others installed above.
- (6) See that damaged records are removed from customer's collection as these records will continue to produce distortion when played on the corrected instrument.

DISMOUNTING SPEAKER - Model U-132

Unless the following specified procedure is used in attempting to remove the speaker from the cabinet, some trouble may be encountered and abnormal time required:-

1. Remove two chassis mounting bolts from bottom cross rail.
2. Remove two cross rail mounting bolts and lift out cross rail entirely.
3. Remove four speaker mounting screws. Hole is provided in angular shelf for the removal of top screw.
4. Place yoke of speaker in cutout at lower edge of angular shelf, tilt speaker forward and lift out.

OUTPUT TUBE FAILURE - Models 9T, 9K2 and 9K3

Replacement of 6L6 and 5Z4 tubes, power transformers and overheated electrolytic capacitors is sometimes occasioned by "leakage" of the audio coupling capacitor of the 6L6 grid circuit. Such leakage causes the 6L6 grid to assume a positive bias resulting in excess plate current, which in turn causes damage to the rectifier, filter and transformer. This source of failure should be carefully checked in cases where other causes are not definitely isolated; and the capacitor replaced if necessary.

NOISY VOLUME CONTROLS

Volume controls are oftentimes unnecessarily replaced because of apparent noisy operation. Inasmuch as such noise is frequently due to excessive d-c grid current flowing in the volume control and first audio stage, it is good practice to replace or test the tube associated with the volume control to assure that any abnormal grid current condition does not exist; before exchanging the volume control.

RETAINING RING AND WASHER FOR TURNTABLE

Models R93B, R93C, U104, U111, R89 & VA20

The small retaining ring (spring) and flat steel washer employed to retain the turntable to the spindle of the motor on the above models is stocked for replacement as - Stock #33041 - Ring - Retaining ring and metal washer to mount turntable plate. This is part of assembly Stock #31040. A quantity of this item should be kept on hand at all times to facilitate service on the record playing instruments concerned.

DI-POLE ANTENNA CONNECTORS

The RCA stock #9605 Di-Pole Antenna has a "female" connector on its cable for attachment to the receiver. Although most receivers have a corresponding "male" connector, some use a female which precludes proper interconnection of the cable and receiver. In such cases, an adaptor as illustrated should be used. A limited quantity of these are available upon request to "Accessory and Test Equipment Division", RCA Manufacturing Company, Inc., Camden, New Jersey.



FREQUENCY DRIFT - Model 150
Service Test Oscillator

Two simple circuit modifications can be made to materially reduce frequency drift of the fixed oscillator stage of the Model 150 oscillator, as caused by high humidity and temperature variations. These modifications should be accomplished as follows:-

- (1) Replace capacitor C-26 with a Stock #33365 capacitor, which has a high negative temperature coefficient. Since C-26 is located inside the fixed oscillator assembly, it is necessary to remove the shield from this assembly in order to effect the change.
- (2) Remove the shielded cable which is connected between the fixed oscillator coil and S3-C17, and replace this lead with an open lead, preferably rubber covered.

The negative coefficient capacitor gives considerably less dependence on temperature, and the open wire gives less dependence on humidity; and therefore, bring about good stability under adverse conditions.

RE-FELTING VICTROLA TURNTABLES

It is not necessary to replace complete turntables of the type employed on Models R-93B, R-93C, U-111, U-125, U-128, U-132, etc. where the covering is damaged, since simple and economical repair is possible. The material of the covering is a pulverized felt, commonly termed "flock", which is applied during manufacture by applying a varnish undercoater to the turntable and spraying the "flock" onto the coated surface.

The "flock" and required varnish undercoater are available for service repair use and are available as standard stock items as follows:-

Stock #32729 - Flock for automatic turntable used in Models U-125, U-128, U-130, U-132, U-134, etc. Packed in 1/2 pound package. Net Price - \$1.00.

Stock #32730 - Flock for turntable employed on record players R-93B, R-93C, VA-20 and R-89. Packed in 1/2 pound package. Net Price - \$1.00.

Stock #32731 - Varnish Undercoater for applying "Flock" to turntables above. Supplied in 1 pint container. Net Price - \$1.00.

To effect repair of a damaged spot, apply slight amount of undercoater and then sprinkle or dust the "flock" material over same, allowing it to dry. Blow away the excess. Should it be necessary to re-coat the entire turntable, this may best be done by placing the turntable in a sealed container or carton, after the undercoater is applied, and forming a cloud of the "flock" within the container, with an air jet, allowing it to settle uniformly on the turntable. If compressed air is available, the flock can be sprayed upon the turntable by holding a quantity in the hand and blowing a stream of air through it so as to spray it upon the turntable plate. The turntable should be spun during the operation to get best uniformity of covering.

OSCILLATION OR INSTABILITYModels 96T4, 96T5 and 96T6

Should an oscillating, squealing, or blocking tendency be experienced on these models it is possible that it results from use of a very short length of wire antenna, causing this circuit to resonate in the I-F range. This may be avoided by increasing length of the antenna, or adding a 100 mfd. capacitor directly across the antenna-ground input terminals. In the event that these operations fail to effect a remedy:-

- (1) See that the 0.1 mfd. capacitor C-37 mounted under I-F transformer is kept well away from oscillator coils by dressing same close to rear corner of chassis over the I-F leads.
- (2) Dress the diode bus lead running from "B" of 2nd I-F transformer to 6SQ7 socket toward chassis away from oscillator coils. Dress 270 mmfd. molded capacitor C-14 over the bus lead.
- (3) Add a 0.25 mfd. 200 volt capacitor in parallel with the high capacity electrolytic filter section.

REPLACEMENT DRIVE MOTOR - Stock #13854Models 0-11, 0-12 and 0-15

The spring wound motor Stock #13854 now supplied for replacement in these portable Victrolas has several mechanical revisions affecting a number of components. It is, therefore, essential to identify the motor being serviced before ordering replacement parts for same. The revised motor as currently supplied can be identified by the rubber sleeve associated with the spindle; the earlier motor does not carry this sleeve. The following parts are for use on the revised motor only; similar parts for the earlier motors, and the remaining parts for both types are given by the 0-11, 0-12 and 0-15 Service Notes:-

| | | |
|------------|-------------|--|
| Stk. 33366 | - Gear | - Intermediate Drive Gear and Shaft |
| " 33367 | - Spindle | - Turntable Spindle and Drive Gears |
| " 33368 | - Turntable | - Complete with Black Cover |
| " 33369 | - " | - " " Brown " |
| " 33370 | - " | - " " Blue Cover |
| " 33371 | - Cap | - Turntable Spindle Cap |
| " 33372 | - Sleeve | - Rubber Drive Sleeve, and Metal Damper Plate. |
| " 33373 | - Bearing | - One set Governor Shaft Bearings. |

IMPORTANT - When ordering a complete replacement motor Stock #13854 for use on earlier instruments having the motor with sleeveless spindle, it will be necessary to order the proper turntable as listed above. The earlier turntable does not fit the revised motor.

SERVICE NOTES - Models HF-8A and U-134A

All information published in Service Notes No. 28 for Models HF-8 and U-134 applies to these models, except that referring to remote control. This device is not incorporated on the "A" models. No formal Service Notes will be issued to cover these instruments.

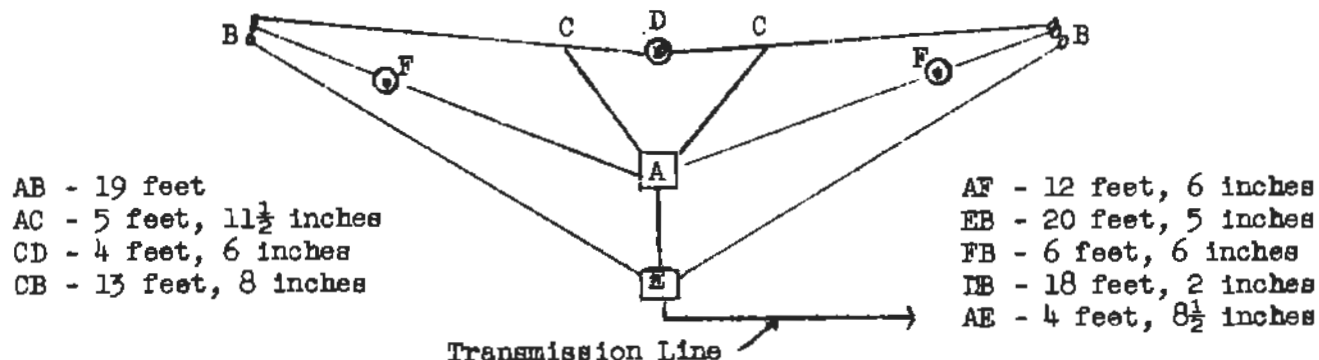
DISTRIBUTORS' CABINET REPAIR KIT - Stock #31165

A complete assortment of the various materials employed in the manufacture and finishing of RCA cabinets has been assembled in kit form for distributors' use in effecting competent repairs where necessary. Since several types of lacquers are employed, it is important that the original be matched in making a repair. Cabinets are code marked by the letters "C", "P" or "Z" stamped inside or at the rear to identify the particular finish used. This mark should be checked and the proper lacquer as identified below used for repair purposes. It is recommended that every distributor take advantage of the availability of these materials; inasmuch as they will greatly facilitate service on cabinets and assure the desired duplication of a factory job. The complete kit assembled carries Stock #31165 at a net price of \$17.25. The contents of the kit, which may also be obtained singly, are as follows:-

| <u>Stock No.</u> | <u>Quantity</u> | <u>Description</u> | <u>Net Price</u> | <u>Remarks</u> |
|------------------|-----------------|---|------------------|---|
| 31166 | 1 Qt. | Animal Glue | \$1.25 | Heat and add water if necessary. |
| 31167 | 12 pcs. | Stick Shellac - Four Colors | 1.60 | Used for burning-in. |
| 31168 | 1 Qt. | Lacquer - Type "C" | .75 | No mixing required; apply with spray as is. |
| 31169 | 1 Qt. | Lacquer - Type "P" | .75 | " " |
| 31170 | 1 Qt. | Lacquer - Type "Z" | .75 | " " |
| 31171 | 1 Qt. | Lacquer Sealer - "C" | .75 | " " |
| 31172 | 1 Qt. | Lacquer Sealer - "P" | .75 | " " |
| 31173 | 1 Qt. | Lacquer Sealer - "Z" | .75 | " " |
| 31174 | 1 Can | Stain Powder-Soluble in water | .25 | Dissolve in 3/4 gallon of hot water. |
| 31175 | 1 Can | Stain Powder-Soluble in Water | .25 | " " |
| 31176 | 1 Qt. | Filler - Walnut Dark | .45 | No mixing required; apply with brush and wipe. |
| 31177 | 24 Shts. | Wet-o-Dry 4/0 Sandpaper | .10 | |
| 31178 | 1 Pt. | Rubbing Compound | .65 | No mixing required; apply with rubbing oil. |
| 31179 | 1 Qt. | Rubbing Oil | .40 | Use with rubbing compound |
| 31180 | 1 Qt. | Polish | 1.05 | Apply as is with soft cloth. |
| 31181 | 1 Qt. | Padding Lacquer | .90 | No mixing required. |
| 31182 | 1 Qt. | Padding Reducer | .50 | No mixing required, Use to thin padding lacquer. |
| 31183 | 1 qt. | Lacquer Blending Stain | 1.25 | Apply with spray as is to darken light spots. |
| 31184 | 6 Shts. | Heart Walnut Veneer - 20" x 10" | 2.00 | For replacing faulty sections of veneer. |
| 31185 | 6 Shts. | Butt Walnut Veneer - 20" x 10" | 2.00 | " " |
| 31186 | 6 Shts. | Stripe Walnut Veneer-20" x 10" | 2.00 | " " |
| 31187 | 1 Can | Stain Powder (Red) Soluble in Alcohol | .25 | Mix with quantity alcohol required to give desired shade. |
| 31188 | 1 Can | Stain Powder (Black) Soluble in Alcohol | .25 | " " " |

SPIDER WEB ANTENNA - Dimensions

The following information giving correct dimensions of the Spider Web Antenna will enable an accurate check and correction where difficulty is encountered in obtaining the proper suspension. Measurements are given from end loops of leads to centers of holes in insulators.

SERVICE NOTE CORRECTIONS

Model 94BP-4 - Price of Stock #31251 Tube socket should be \$0.25 instead of \$4.10.

Model 95X Series - Add to Parts List - Stock #32948 Band Switch; Stock #32949 Dial Lamp Socket; Stock #32666 Tuning Knob Retaining Spring; and Stock #32667 Volume Control or Range Switch Knob Retaining Spring.

Model 95X6 - Electrolytic capacitor C-13 should have + (positive) indicated on side next to cathode (K) of rectifier, instead of as shown.

Over The Soldering Iron - On Page 4 under "Motor Bracket Flexible Mount - Model November 10, 1938" U-125" replacement part number is 31541 instead of 31451 as given.

Models 99T and 99K - Change Stock #31312 Switch to read "For Model 99T only". Add Stock #32229 Station selector Push Button Switch "For Model 99K Only".

Models 910KG, U126 and U128 - Change stock #31312 Switch to read "For Models U126 and U128 Only. Add Stock #32229 Station Selector Push Button Switch "For Model 910KG only".

Model 98K - Change - Station Selector Push Button Switch - to Stock #32229.

Model VA-20 - Motors Stock #32508 and #32643 should be rated at 85 volts and not 110 volts. Ratings on stator and rotor should also be changed to 85 volts.

Model R-89 - Motors Stock #31924 and #31923 and their components should be rated at 60 volts instead of 105-125 volts.

Service Division
RJA Manufacturing Company, Inc.