



SERVICE MANUAL

MODEL ROYAL 755M / Royal 74

TRANSISTOR PORTABLE RADIO

CHASSIS 8MT41Z2

8MT41Z2 for 74

created a 9 volt DC power supply (Part Number S-64351) for 120 volts, which can be obtained through your Zenith dealer.

GENERAL

This transistor chassis is a superheterodyne receiver consisting of a tuned R.F. amplifier. It uses an individual oscillator and mixer to produce the 455 KC intermediate frequency (I.F.). The first and second I.F. stages are conventional. The diode detector (X1) is also source of AGC voltage, which is fed to the base of the mixer and then to the R.F. and first I.F. stage. The diode detector (X1) is followed by a driver stage and class "B" push-pull output stage which has inverse feedback. As you can see from the chart the output transistors are a matched pair and should one fail, both transistors must be replaced simultaneously as chances are they will not perform properly unless so matched.

tone SWITCH

An important new feature that adds to the rich tonal quality and performance of this receiver has been perfected by Zenith Engineers. (The HI-LO TONE SWITCH). In LO position the high register is reduced, emphasizing the lower tones. In HI position, both highs and lows are given full tonal response.

POWER SUPPLY

Power Supply Six Zenith type Z-7 1½ volt batteries or six type "C" 1½ volt dry cells
Frequency Range 540 to 1600 KC
Intermediate Frequency 455 KC
Sensitivity Approximately 75 microvolts/meter for 50 milliwatts output
Power Output Undistorted 500 milliwatts
Power Output Maximum 700 milliwatts
Speaker 4 inch P.M. Alnico V
Voice Coil Impedance 3.2 ohms at 400 cycles
Accessory Earphone B39-24 impedance 15 ohms at 1000 cycles

AC OPERATION

This receiver may be operated from the standard 120 volt alternating current (50/60 cycle) supply. To operate this receiver from an AC outlet Zenith engineers have

PRINTED CIRCUIT SERVICING

Servicing printed circuit sets is, in general, much the same as servicing ordinary receivers. However, certain tools and techniques are well suited for this type of work. The following items are especially useful:

1. Good pair of long-nose pliers
2. Sharp wire cutters
3. Small stiff glue brush (for solder removal)
4. Pencil type soldering iron with a small tip (25 watts or less)

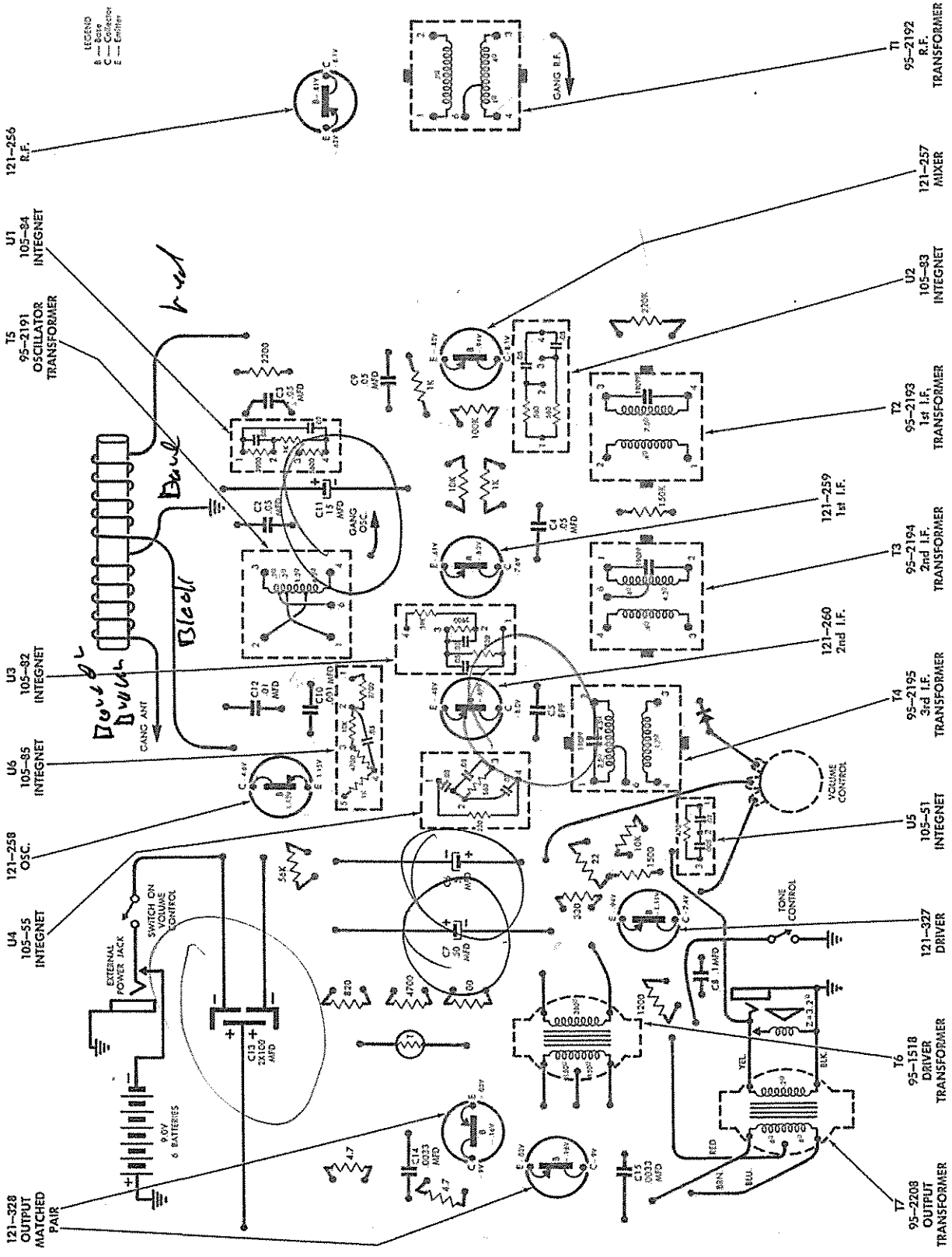
WARNING: Excessive heat may damage the printed circuit during component replacement if a soldering pencil, iron or gun of higher wattage rating is used.

5. Tin leads on component before soldering
6. Use only solder with extremely low melting point, for example (Kester "44")
7. Metal pick (soldering aid)

COMPONENT REPLACEMENT

Resistors and capacitors should be replaced by clipping out the defective part and neatly soldering in the new part. If a unit, such as the oscillator coil or I.F. transformer is to be moved, heat the mounting lugs with a pencil type soldering iron and move them away from the soldered connection with a long-nose pliers or metal pick. Continue heating the lugs and brush away the molten solder with a small stiff glue brush. Remove the defective unit by lifting it off the chassis. Before inserting the new unit, be certain that the lug holes are open and free from solder. Forcing a lug against a solder filled lug hole may break the bond between the chassis base and the printed wiring. It is, therefore, necessary to exercise care when replacing units.

An open or damaged section of printed circuit wiring can be replaced by soldering a short jumper wire across the points to be connected.



VIEWED FROM WIRING SIDE

CHASSIS, WIRING AND COMPONENTS

121-256
R.F.

121-257
MIXER

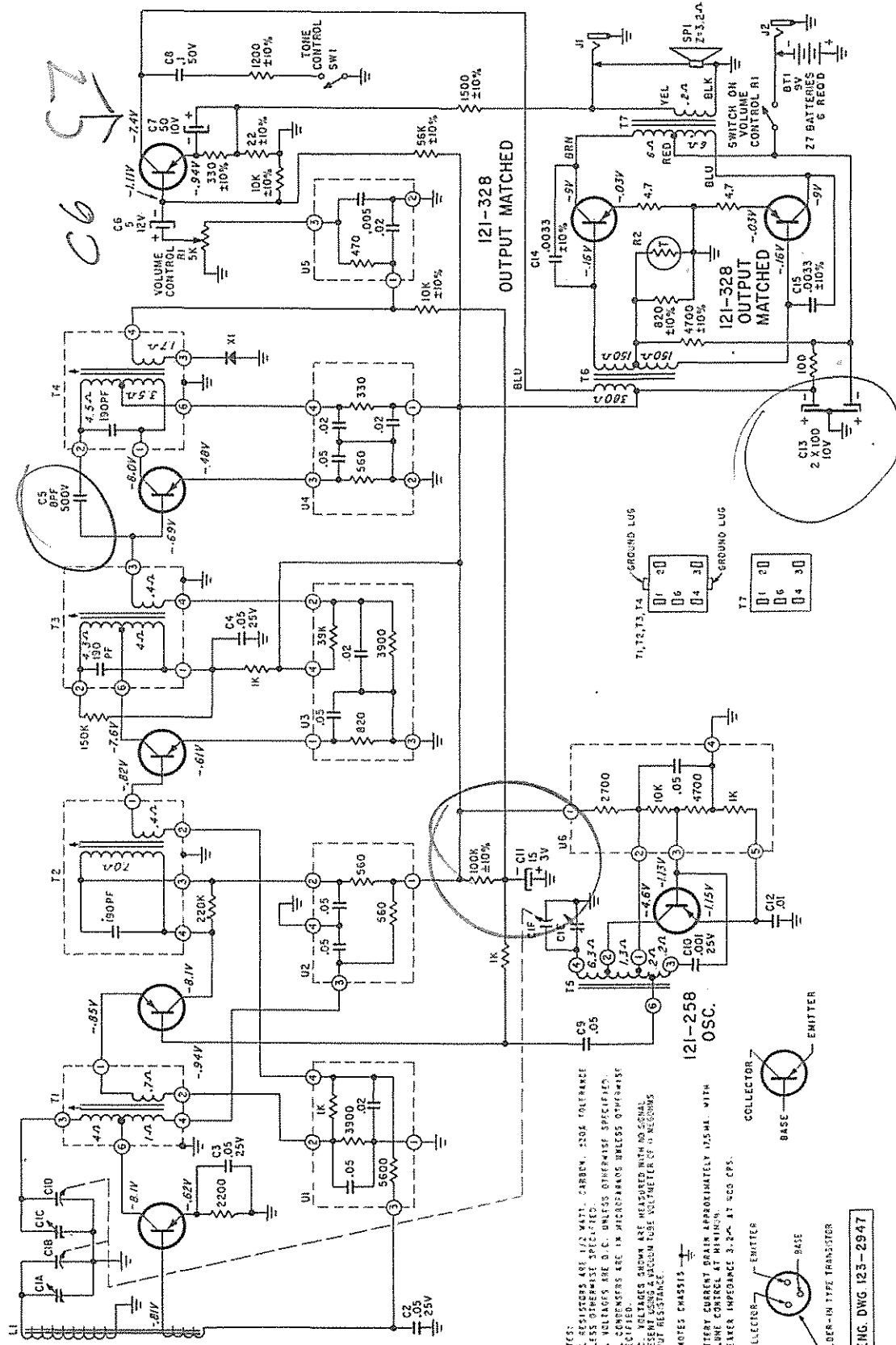
121-259
1ST I.F.

121-260
2ND I.F.

121-327
DRIVER

121-328
OUTPUT MATCHED

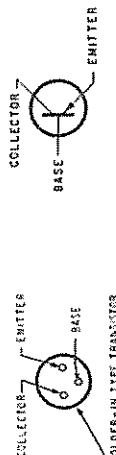
121-258
OSC.



NOTES:
 ALL RESISTORS ARE 1/2 WATT, CARBON, 250K TOLERANCE UNLESS OTHERWISE SPECIFIED.
 ALL VOLTAGES ARE D.C. UNLESS OTHERWISE SPECIFIED.
 ALL CAPACITORS ARE IN MICROGRAMS UNLESS OTHERWISE SPECIFIED.
 D.C. VOLTAGES SHOWN ARE MEASURED WITH NO SIGNAL.
 D.C. CURRENTS SHOWN ARE MEASURED WITH A MICROAMMETER OF 10 MEGOHMS INPUT RESISTANCE.

REMARKS CHASSIS

BATTERY CURRENT DRAIN APPROXIMATELY 0.5 AMPS. WITH VOLUME CONTROL AT MINIMUM.
 SPEAKER IMPEDANCE 3.2-4 AT 800 CPS.



ENG. DWG 123-2947

SCHEMATIC FOR CHASSIS 8MT41Z2

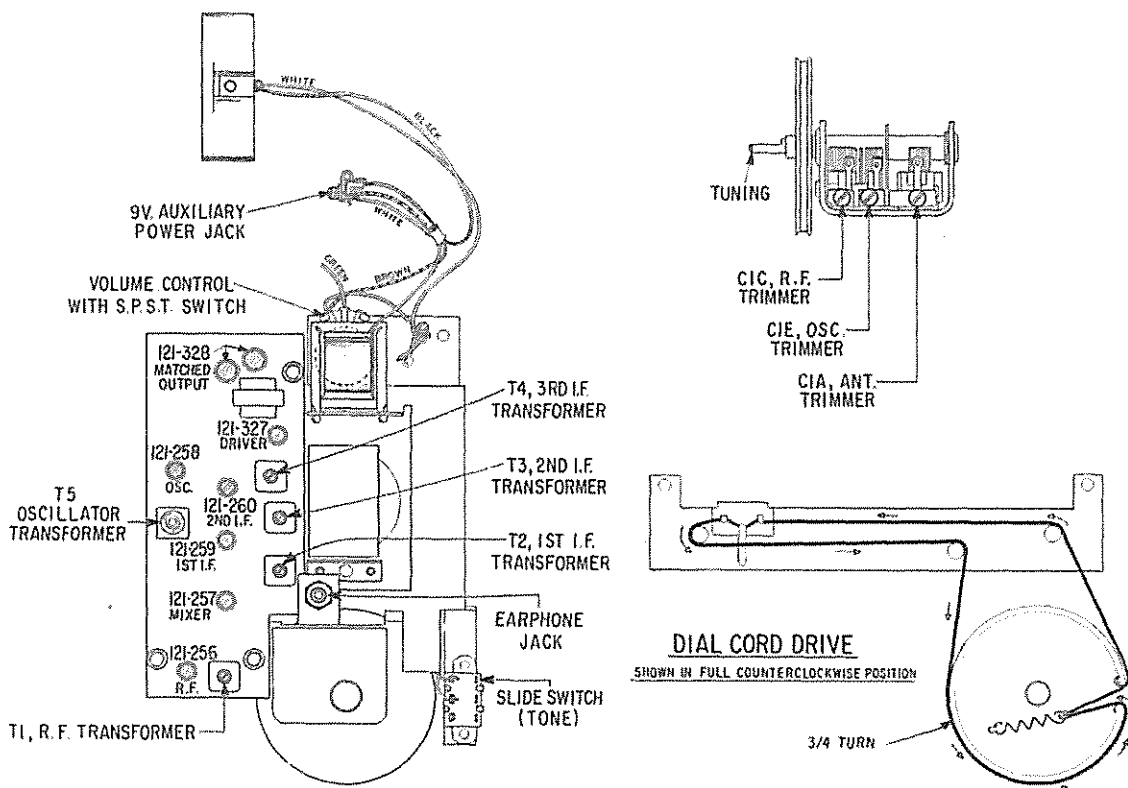
ALIGNMENT PROCEDURE

| OPERATION | CONNECT SIGNAL GENERATOR TO | INPUT SIGNAL FREQUENCY | SET DIAL AT | ADJUST | PURPOSE |
|-----------|---|------------------------|----------------|-------------------------------|-------------------------|
| 1 | One Turn Loosely Coupled To Wave-Magnet | 455 KC | 600 KC | T2, T3, T4 for Maximum Output | I. F. Alignment |
| 2 | | 1620 KC | Gang Wide Open | CIE | Set Oscillator to Scale |
| *3 | | 600 KC | 600 KC | T5 | Set Oscillator to Scale |
| 4 | | Repeat Steps 2 & 3 | | | |
| 5 | | 1400 KC | 1400 KC | CIC for Maximum Output | Align RF Stage |
| *6 | | 600 KC | 600 KC | T1 for Maximum Output | Align RF Stage |
| 7 | | Repeat Steps 5 & 6 | | | |
| 8 | | 1400 KC | 1400 KC | CIA for Maximum Output | Align Antenna |

*NOTE: Rock tuning condenser when making alignment under operations 3 and 6

CHASSIS INFORMATION CHART

| Chassis | Transistor Layout Label | Part No. | R.F. | Mixer | Osc. | 1st I.F. | 2nd I.F. | Crystal Diode Detector | Driver | Output-Output | Supplier |
|---------|-------------------------|-----------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|----------------------|-----------------------------------|----------|
| 8MT41Z2 | 102-9814 | Zenith Type E1A | 121-256 PNP 2N1631 | 121-257 PNP 2N1527 | 121-258 PNP 2N1525 | 121-259 PNP 2N1525 | 121-260 PNP 2N1525 | 103-44 or 403-1 | 121-327 PNP 2N407 | 121-328 Matched Pair PNP 2N70F | R.C.A. |



TRANSISTOR & TRIMMER LAYOUT

PARTS LIST

| PART NO. | DESCRIPTION | PRICE | PART NO. | DESCRIPTION | PRICE | P. |
|------------------------------|--|--------|--|--|-------|----|
| 8MT41Z2 CHASSIS PARTS | | | 95-2192 | R.F. Transformer | | 8: |
| 12-3959 | Miniature Jack Mounting Bracket | \$.05 | 95-2193 | 1st I.F. Transformer | 3.00 | 8: |
| 22-13 | .0033Mf. Disc Capacitor - 500V. (2 Required) | .25 | 95-2194 | 2nd I.F. Transformer | 3.00 | 8: |
| 22-2726 | 50 Mf. Electrolytic Capacitor - 10V. | 1.50 | 95-2195 | 3rd I.F. Transformer | 3.00 | 8: |
| or | | | 95-2208 | Audio Output Transformer | | 8: |
| 322-21 | 50 Mf. Electrolytic Capacitor - 10V. | | 103-44 | Crystal Diode | .50 | 9: |
| 22-2729 | .001 Mf. Disc Capacitor - 25V. | .25 | or | | | 11 |
| or | | | 403-1 | Diode | | 11 |
| 322-9 | .001 Mf. Disc Capacitor - 25V. | | 105-51 | Integnet | 1.00 | 1 |
| 22-2871 | 15 Mf. Electrolytic Capacitor - 3V. | 1.50 | or | | | |
| or | | | 405-1 | Integnet | | |
| 322-33 | 15 Mf. Electrolytic Capacitor - 3V. | | 105-55 | Integnet | .80 | |
| 22-2884 | 5 Mf. Electrolytic Capacitor - 12V. | 1.50 | 105-82 | Integnet | | 1 |
| or | | | 105-83 | Integnet | | |
| 322-22 | 5 Mf. Electrolytic Capacitor - 12V. | | 105-84 | Integnet | | 1. |
| 22-2987 | .1 Mf. Mylar Calacitor - 50V. | .35 | 105-85 | Integnet | | 1: |
| 22-3010 | .01 Mf. Disc Capacitor - 25V. | .45 | 113-10 | 6 - 32 x 3/16 x 1/4 Hex Head Machine Screw - Internal Shake- proof lockwasher (3 used on 22-5050) | .03 | 2: |
| or | | | 114-656 | 6 - 20 x 1/4 Hex Head Self-Tap Screw - Statuary Bronze - Flat Washer Attached | .03 | |
| 322-3 | .01 Mf. Disc Capacitor - 25V. | | 114-801 | 8 - 18 x 5/16 x 1/4 Hex Head Self-Tap Screw - Statuary Bronze (1 used on S-65489, and 4 used on 49-1038) | .03 | |
| 22-3034 | .05 Mf. Disc Capacitor - 25V. | .45 | 121-256 | Transistor (R.F.) | 1.10 | |
| 22-3062 | 2 x 100 Mf. Electrolytic Capacitor - 10V. | 2.25 | 121-257 | Transistor (Mixer) | 1.00 | |
| 22-3156 | 8 Pf. Disc Capacitor - 500V. | .25 | 121-258 | Transistor (Oscillator) | .80 | |
| 22-5050 | Three Section Variable Capacitor | 6.00 | 121-259 | Transistor (1st I.F.) | .95 | |
| 24-815 | Battery Cover | .25 | 121-260 | Transistor (2nd I.F.) | .95 | |
| 44-34 | Miniature Jack | .90 | 121-327 | Transistor (Driver) | .70 | |
| or | | | 121-328 | Transistor (Output) (Matched) (2 Required) | 1.75 | |
| 344-1 | Miniature Jack | | S-40140 | Contact Spring & Strip Assembly | .50 | |
| 44-54 | Jack | .75 | S-65489 | Antenna Assembly | | |
| 49-1038 | 4 Inch PM Speaker | | S-65765 | Pointer Guide Bracket Assembly | | |
| 54-560 | 1/4 - 32 x 3/8 Palnut - Cadmium (Mts. 44-34 or 344-1) | .03 | MODELS ROYAL 755LM & YM CABINET PARTS | | | |
| 63-1715 | 22 Ohm Resistor 1/2W. 10% | .17 | 14-6262 | Portable Cabinet - Model R755LM | | |
| 63-1744 | 100 Ohm Resistor 1/2W. 20% | .17 | 14-6263 | Portable Cabinet - Model R755YM | | |
| 63-1764 | 330 Ohm Resistor 1/2W. 10% | .17 | 16-2669 | Packing Carton | | |
| 63-1782 | 820 Ohm Resistor 1/2W. 10% | .17 | 26-927 | Dial Scale - Model R 755LM | | |
| 63-1786 | 1000 Ohm Resistor 1/2W. 20% | .17 | 26-928 | Dial Scale - Model R 755YM | | |
| | (2 Required) | .17 | 54-450 | Thread Forming Palnut (8 Mt. 57-4985) | .03 | |
| 63-1789 | 1200 Ohm Resistor 1/2W. 10% | .17 | 54-541 | Thread Forming Palnut (Used on 57-4985) | .03 | |
| 63-1792 | 1500 Ohm Resistor 1/2W. 10% | .17 | 54-586 | 10 - 48 Hex Nut (Used on 8MT41Z2) | .03 | |
| 63-1800 | 2200 Ohm Resistor 1/2W. 20% | .17 | 57-4985 | Escutcheon | | |
| 63-1813 | 4700 Ohm Resistor 1/2W. 10% | .17 | 57-4987 | Background Plate - Model R755LM | | |
| 63-1827 | 10K Ohm Resistor 1/2W. 10% | .17 | 57-5055 | Background Plate - Model R755YM | | |
| 63-1859 | 56K Ohm Resistor 1/2W. 10% | .17 | 59-636 | Dial Pointer | .50 | |
| 63-1869 | 100K Ohm Resistor 1/2W. 10% | .17 | 80-1091 | Drive Cord Tension Spring | .08 | |
| 63-1877 | 150K Ohm Resistor 1/2W. 20% | .17 | 80-1093 | Retaining Spring (2 Pt. of S-57523) | .10 | 1 |
| 63-1884 | 220K Ohm Resistor 1/2W. 20% | .17 | | | | |
| 63-3663 | Thermistor | 1.10 | | | | |
| 63-4530 | 4.7 Ohm Resistor 1/2W. 20% | .17 | | | | |
| | (2 Require d) | .17 | | | | |
| 63-5337 | Volume Control and Switch | 2.05 | | | | |
| 85-817 | Slide Switch | | | | | |
| 86-328 | Terminal | .03 | | | | |
| 95-1518 | Driver Transformer | 5.00A | | | | |
| 95-2191 | Oscillator Transformer | | | | | |