

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | NOTES |
|----------|-----------|------------------|----------------|-----------------|------------------|---------------------|
| | | BULOVA PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. |
| L1 | Loop Ant. | 60-15 ① | | | | |
| L2 | Osc. | 20-6 | | | | |
| L3 | Input IF | 24-9 | BC-356 | 13-PC1 | RTC-8841 | T814 |
| L4 | Output IF | 24-9 | BC-357 | 13-PC2 | RTC-8842 | T815 |

TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|----------|----------------|------|------------------|----------------|------------------|---------------------|----------------|-------|
| | | | BULOVA PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| | PRI. | SEC. | | | | | | |
| T1 | 2400Ω Tap ④ 9% | 3-4Ω | (Part of SP1) | | | | | S-16X |

SPEAKER

| ITEM No. | TYPE | | REPLACEMENT DATA | | NOTES |
|----------|-------|-------|------------------|---------------|---|
| | SIZE | FIELD | BULOVA PART No. | QUAM PART No. | |
| SP1 | 4" PM | 3-4Ω | 28-13 ‡ | 4A07 | ‡ Includes T1. Models 160, 180 Series. † Includes T1. Model 170 Series. |

MISCELLANEOUS

| ITEM No. | PART NAME | BULOVA PART No. | NOTES |
|----------|----------------|-----------------|-------|
| M1 | Tuning Cap. | 12-13 | |
| M2 | Clock Assembly | 80-15 | |
| | Clock | 80-10 | |
| | Clock | 80-12 | |

CABINETS & CABINET PARTS

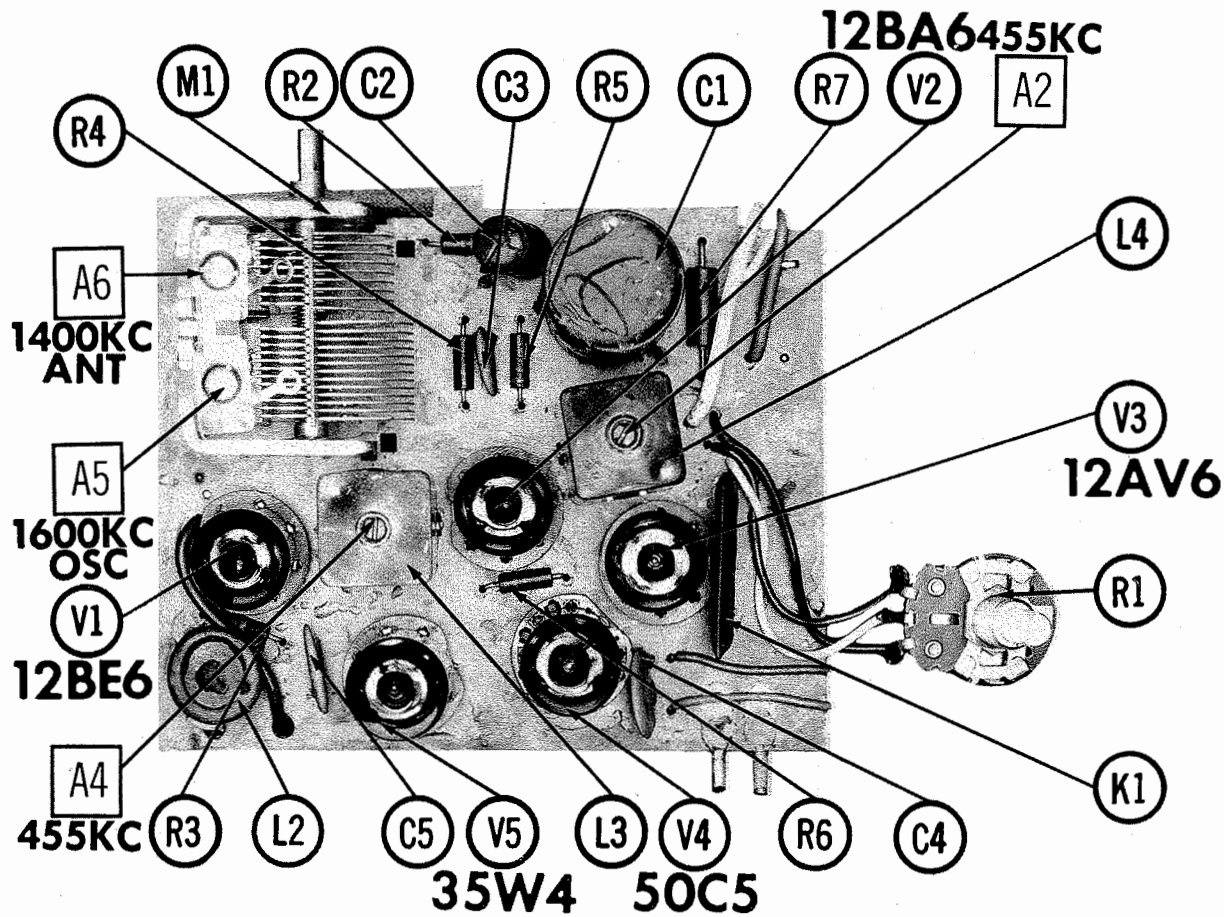
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

| NAME | PART NO. | DESCRIPTION |
|---------------|----------|--|
| Clock Crystal | 80-9 | Model 160 Series |
| Clock Crystal | 80-14 | Model 170 Series |
| Clock Knob | 78-31 | Model 180 Series |
| Clock Knob | 78-42B | Model 180 Series |
| Knob | 78-30 | Tuning, Volume, Model 180, 170 Series |
| Cabinet Back | 78-43 | Model 180 Series (Specify Color) |
| Cabinet Front | 70-78B | Model 180 Series (Specify Color) |
| Cabinet | 70-78 | Model 180 Series (Specify Color), Less Bezel |
| Cabinet | 70-78C | Model 180 Series (Specify Color), Complete |
| Cabinet | 70-58 | Model 162, Ebony, Complete |
| Cabinet | 70-57 | Model 170 Series (Specify Color), Complete |

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in Ten Colors
 Power Cord (Interlock Type) Use BELDEN No. 8874

CHASSIS—TOP VIEW



FOLDER 6
SET 561

PHOTOFACT® Folder

with CIRCUITRACE™

BULOVA MODELS 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199

BULOVA MODELS 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199



BULOVA MODELS 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199

| | |
|--------------|--|
| TRADE NAME | Bulova Models 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199 |
| SUPPLIER | Bulova Watch Co., Bulova Park, Flushing 70, N. Y. |
| TYPE SET | AC Operated 5 Tube AM Receiver With Electric Clock |
| POWER SUPPLY | 110 - 120 Volts AC, 60 |
| TUNING RANGE | BROADCAST 540 - 1600KC |
| | RATING 30 Watts, .32 Amp. @ 117 Volts AC |

ALIGNMENT INSTRUCTIONS

| ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT | | | | | |
|---|----------------------------|------------------------|-------------------|----------------|----------------------------|
| Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. | | | | | |
| Suggested Alignment Tools: A1 thru A4 GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989 WALSCO #2515, 2531, 2532 A5, A6..... GENERAL CEMENT #5004, 5008, 5009 WALSCO #2520 | | | | | |
| SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
| 1. High side thru .1mf to pin 7 (grid) of Converter. Low side to chassis. | 455KC (400v Mod.) | Tuning gang fully open | Across Voice Coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. " | 1600KC | 1600KC | " | A5 | " |
| 3. Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1400KC | 1400KC Signal | " | A6 | " |

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana



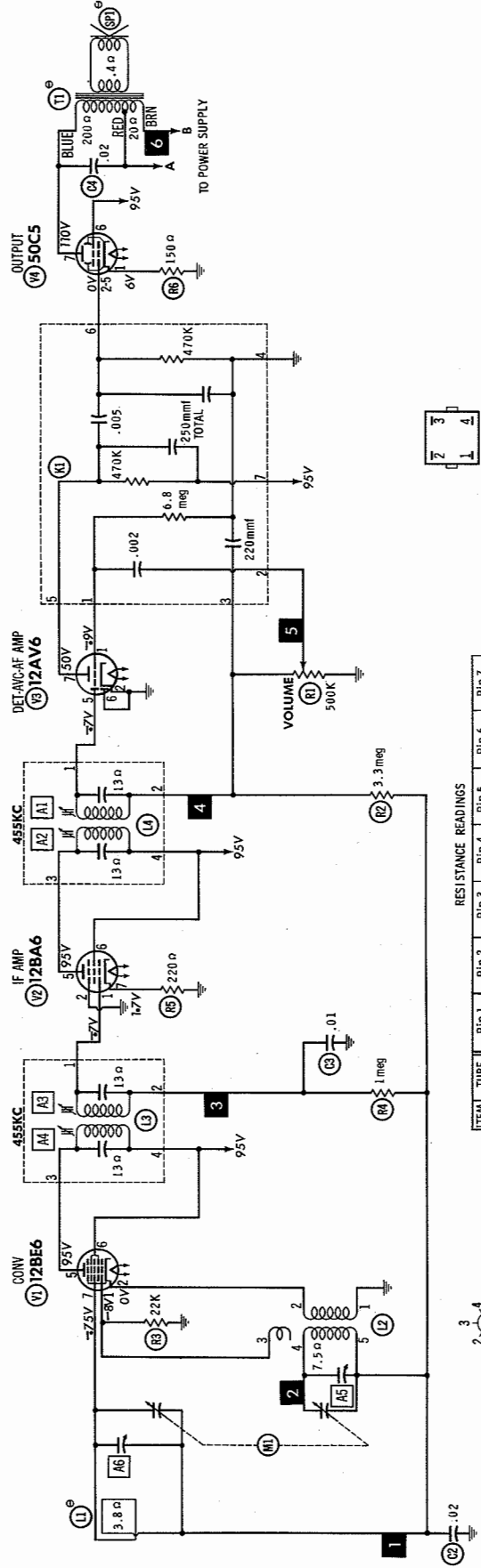
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KG991

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SET 561

FOLDER 6



| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin 6 | Pin 7 |
|------|-------|--------|-------|-------|-------|-------|-------|--------|
| V1 | 12BE6 | 22K | .8 | 30 | 20 | 11500 | 11500 | 3.8meg |
| V2 | 12BA6 | 4.8meg | 0 | 10 | 20 | 11500 | 11500 | 220 |
| V3 | 12AV6 | 6.8meg | 0 | 10 | 20 | 500K | 0 | 1470K |
| V4 | 50C5 | 150 | 470K | 30 | 80 | NC | 110 | 108 |
| V5 | 35W4 | NC | 80 | 110 | 110 | 108 | 108 | 108 |

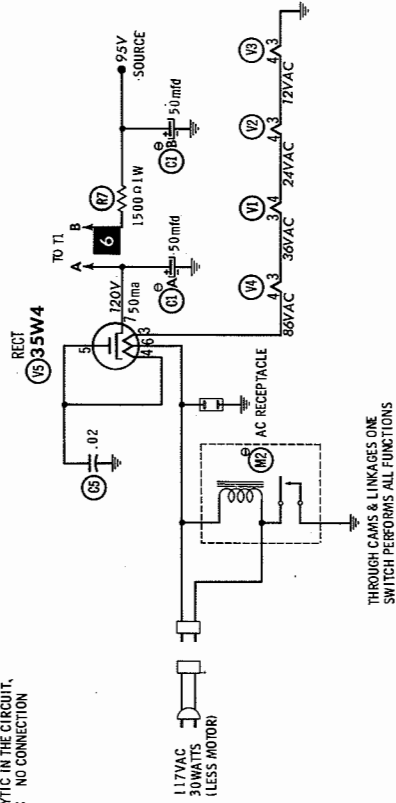
† THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
‡ MEASURED FROM PIN 7 OF V5.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured with 1000 ohm per volt voltmeter.
2. Socket connections for vacuum tube sockets are shown with vacuum tube pin numbers.
3. Resistor values are given in ohms, kilohms, or megohms.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of $\pm 1\%$ in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with **CIRCUITTRACE**
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BULOVA MODELS 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199

PARTS LIST AND DESCRIPTIONS

TUBES

| ITEM No. | USE | TYPE | USE | ITEM No. | TYPE |
|----------|----------------------|-------|------------------|----------|------|
| V1 | Converter | 12BE6 | Output Rectifier | V4 | 50C5 |
| V2 | IF Amplifier | 12BA6 | | V5 | 35W4 |
| V3 | Det. - AVC - AF Amp. | 12AV6 | | | |

PRINTED BOARD

A Howard W. Sams **CIRCUITTRACE** Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | REMARKS | REPLACEMENT DATA |
|----------|--------|---------|-------------------------|-----------------|------------------|
| C1A | 50 | PR2-085 | CORNELL-DUBIER PART No. | ELVACO PART No. | SPRAGUE PART No. |
| C1B | 50 | 150 | HERD6615 | QT2-9 | PWD221 |
| C2 | 50 | 150 | PR2-085 | QT2-9 | PWD221 |
| C3 | 50 | 150 | PR2-085 | QT2-9 | PWD221 |
| C4 | 50 | 150 | PR2-085 | QT2-9 | PWD221 |
| C5 | 50 | 150 | PR2-085 | QT2-9 | PWD221 |

Q Model 170 Series use Part #10-22.

FIXED CAPACITORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | REMARKS | REPLACEMENT DATA |
|----------|--------|---------|-------------------------|-----------------|------------------|
| C2 | .02 | 400V | CORNELL-DUBIER PART No. | ELVACO PART No. | SPRAGUE PART No. |
| C3 | .01 | | HERD6615 | QT2-9 | PWD221 |
| C4 | .02 | | HERD6615 | QT2-9 | PWD221 |
| C5 | .02 | | HERD6615 | QT2-9 | PWD221 |

CONTROLS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | REMARKS | REPLACEMENT DATA |
|----------|--------|---------|-------------------------|-----------------|------------------|
| R1A | 500K | | CORNELL-DUBIER PART No. | ELVACO PART No. | SPRAGUE PART No. |
| R1B | 500K | | HERD6615 | QT2-9 | PWD221 |
| R2 | 500K | | HERD6615 | QT2-9 | PWD221 |
| R3 | 500K | | HERD6615 | QT2-9 | PWD221 |
| R4 | 500K | | HERD6615 | QT2-9 | PWD221 |

All wattages 1/2 watt, or less, unless otherwise listed.

RESISTORS

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | REMARKS | REPLACEMENT DATA |
|----------|--------|---------|-------------------------|-----------------|------------------|
| R2 | 3.3meg | | CORNELL-DUBIER PART No. | ELVACO PART No. | SPRAGUE PART No. |
| R3 | 22K | | HERD6615 | QT2-9 | PWD221 |
| R4 | 1meg | | HERD6615 | QT2-9 | PWD221 |

COMPONENT COMBINATIONS

| ITEM No. | USE | DESCRIPTION | BULOVA PART No. | REPLACEMENT DATA |
|----------|----------------|--|-----------------|------------------|
| K1 | Audio Coupling | 220mmf, .002mfd, .005mfd, 470K, 470K, 6.8meg | | |
| | | | | |

FOLDER 6

BULOVA MODELS 140, 142, 143, 145, 146, 162, 170, 173, 176, 179, 180, 182, 183, 189, 190, 192, 193, 196, 197, 199

