

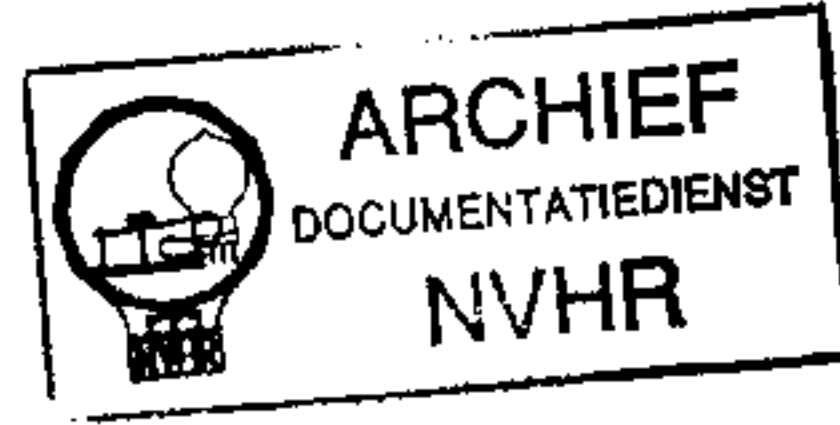
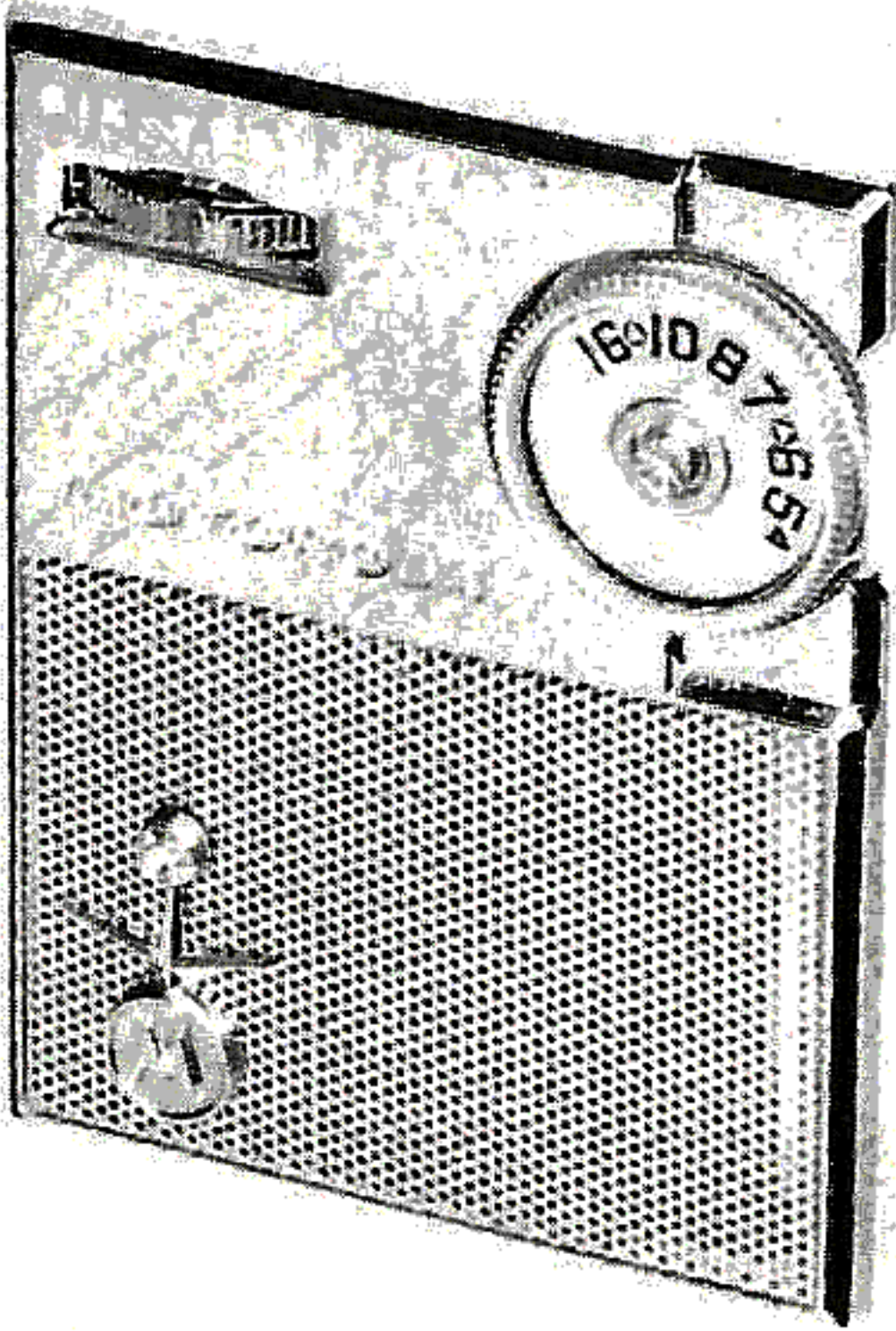
PHOTOFACT® Folder

with CIRCUITRACE®
TRADE MARK

MOTOROLA MODEL
X21W (Ch. HS-876)

Met dank aan Jef Bos

Ned. Ver. v. Historie v/d Radio



| | | |
|--------------|--|--|
| TRADE NAME | Motorola Model X21W (Ch. HS-876) | |
| MANUFACTURER | Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois | |
| TYPE SET | Battery Operated Transistorized Portable AM Receiver | |
| POWER SUPPLY | 6 Volts DC | RATING 6MA @ 6 Volts DC (No Signal, Min. Volume) |
| TUNING RANGE | BROADCAST 532-1620KC | 10MA @ 6 Volts DC (Signal, Normal Volume) |

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, A2, A3, A5 GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8967, 8988, 8989
WALSCO #2515, 2531, 2543
A4, A6 GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

| | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|----|---------------------------|----------------------------|--------------------------|-------------------|------------|--|
| 1. | Loop | 455KC (400v Mod) | Tuning gang fully open | Across voice coil | A1, A2, A3 | Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. |
| 2. | " | 1620KC | " | " | A4 | " |
| 3. | " | 532KC | Tuning gang fully closed | " | A5 | " |
| 4. | " | 1400KC | 1400KC Signal | " | A6 | " |
| 5. | " | 600KC | 600KC Signal | " | A7 | Adjust for maximum output by sliding antenna winding along ferrite core. Repeat steps 2, 3, 4, 5 if necessary. |

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 KF720

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TRANSISTORS

| ITEM No. | ORIG. TYPE | USE | REPLACEMENT DATA | | | NOTES |
|----------|------------|------------------|------------------|-------------------|-------------------|--|
| | | | RCA PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| X1 | 2SA52 | Converter | | | | PNP PNP PNP PNP PNP PNP |
| X2 | 2SA49 | 1st IF Amplifier | | | | |
| X3 | 2SA53 | 2nd IF Amplifier | | | | |
| X4 | 2SB54 | Driver | 2N406 | | | |
| X5 | 2SB56 | Output | 2N408 | | | |
| X6 | 2SB56 | Output | 2N408 | | | |

ELECTROLYTIC CAPACITORS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | | NOTES |
|----------|--------|-------|-------------------|------------------|---------------------------|------------------|------------------|------------------|-------|
| | CAP. | VOLT. | MOTOROLA PART No. | AEROVOX PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | PYRAMID PART No. | SPRAGUE PART No. | |
| C1 | 8 | 5 | 23K646733 | | | | | | |
| C2 | 1 | 10 | 23P60019A15 | | | TT12X1 | | | |
| C3 | 20 | 3 | 23P60019A16 | | | | | | |
| C4A | 20 | 5 | 23P60019A17 | | | | | | |
| B | 50 | 5 | | | | | | | |

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

| ITEM No. | RATING | REMARKS | REPLACEMENT DATA | | | | | |
|----------|--------|---------|------------------|--------------------|---------------------------|------------------|------------------|------------------|
| | | | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | ELMENCO PART No. | MALLORY PART No. | SPRAGUE PART No. |
| C5 | 10000 | | C80V103AM | DM-103 | H-05S1 | | TA-110 | TG-S10 |
| C6 | 5000 | | C80V502AM | DM-502 | H-05D5 | | TA-150 | TG-D50 |
| C7 | 6.8 | | NPO-DI 6.8 | DTZ-6R8 | C10V68C | CCTO-6R8 | CNO-568 | 10TCC-V68 |
| C8 | 50000 | | C80V503AM | DA-503 | H-05S5 | | TA-150 | TG-S50 |
| C9 | 20000 | | C80V203AM | DA-203 | H-05S2 | | TA-120 | TG-S20 |
| C10 | 4.7 | | NPO-DI 4.7 | DTZ-4R7 | C10V47C | CCTO-4R7 | CNO-547 | 10TCC-V47 |
| C11 | 50000 | | C80V503AM | DA-503 | H-05S5 | | TA-150 | TG-S50 |
| C12 | 10000 | | C80V103AM | DM-103 | H-05S1 | | TA-110 | TG-S10 |
| C13 | 10000 | | C80V103AM | DM-103 | H-05S1 | | TA-110 | TG-S10 |
| C14 | 5000 | | C80V502AM | DM-502 | H-05D5 | CCD-502 | TA-250 | TG-D50 |
| C15 | 20000 | | C80V203AM | DA-203 | H-05S2 | | TA-120 | TG-S20 |

CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|----------|------------|-------|-------------------|--------------------|--------------------|------------------|------------------|--------------------|
| | RESISTANCE | WATTS | MOTOROLA PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | CTS-IRC PART No. | MALLORY PART No. | |
| R1 | 5000Ω | 1/4 | 18P60019A20 | B16-214 | | | | Volume and Switch |

RESISTORS

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

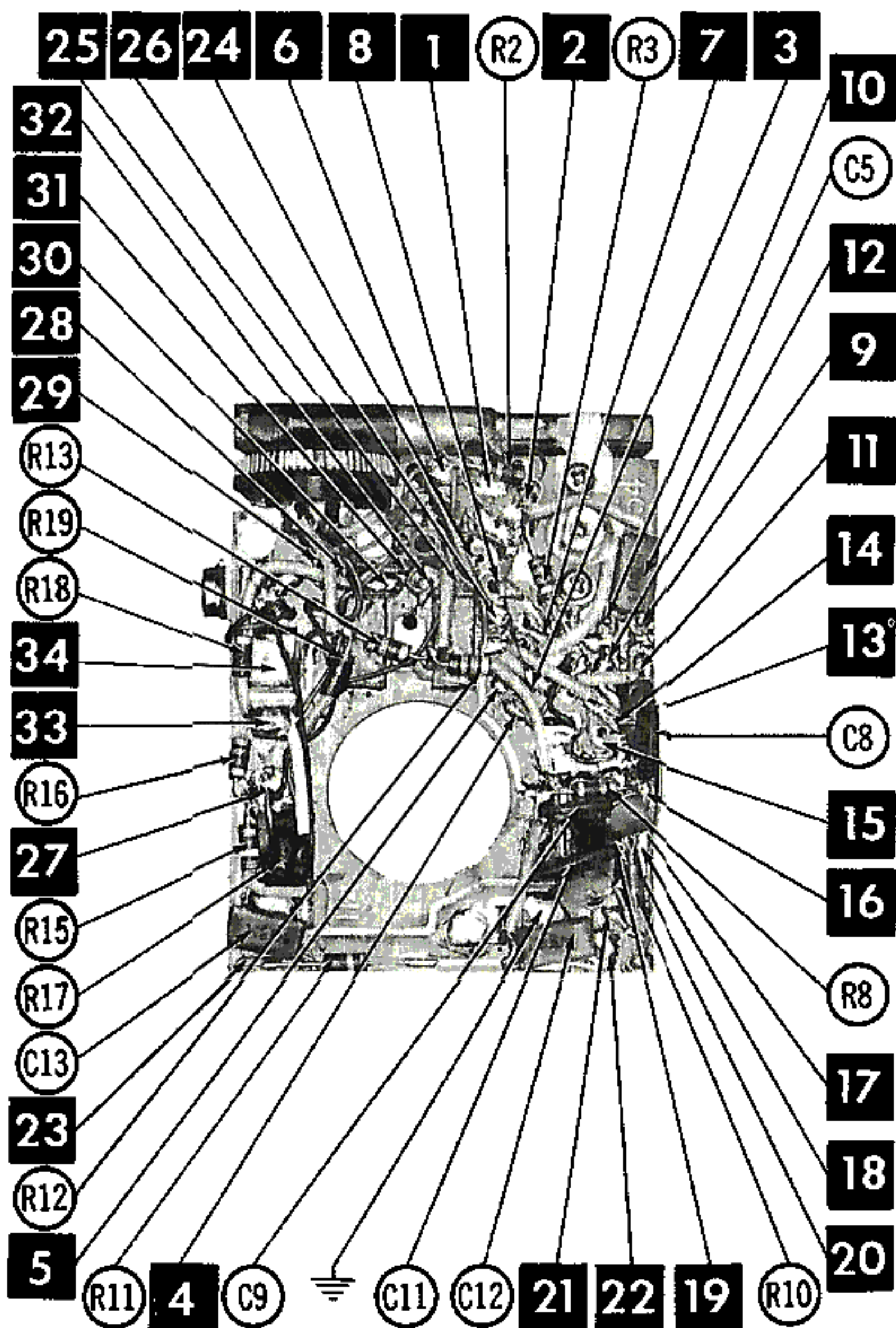
| ITEM No. | RATING | REPLACEMENT DATA | | | ITEM No. | RATING | REPLACEMENT DATA | | |
|----------|--------|------------------|---------------------|---------|----------|-------------|------------------|---------------------|---------------|
| | | IRC PART No. | WORKMAN TV PART No. | REMARKS | | | IRC PART No. | WORKMAN TV PART No. | REMARKS |
| R2 | 10K | | | | R11 | 470Ω | | | |
| R3 | 33K | | | | R12 | 18K | | | |
| R4 | 2200Ω | | | | R13 | 5800Ω | | | |
| R5 | 47K | | | | R14 | 1000Ω | | | |
| R6 | 6800Ω | | | | R15 | 3900Ω | | | |
| R7 | 1000Ω | | | | R16 | 330Ω | | | |
| R8 | 6800Ω | | | | R17 | Temp. Comp. | | | Pt. #6K644680 |
| R9 | 15K | | | | R18 | 10Ω | | | |
| R10 | 1000Ω | | | | R19 | 220Ω | | | |

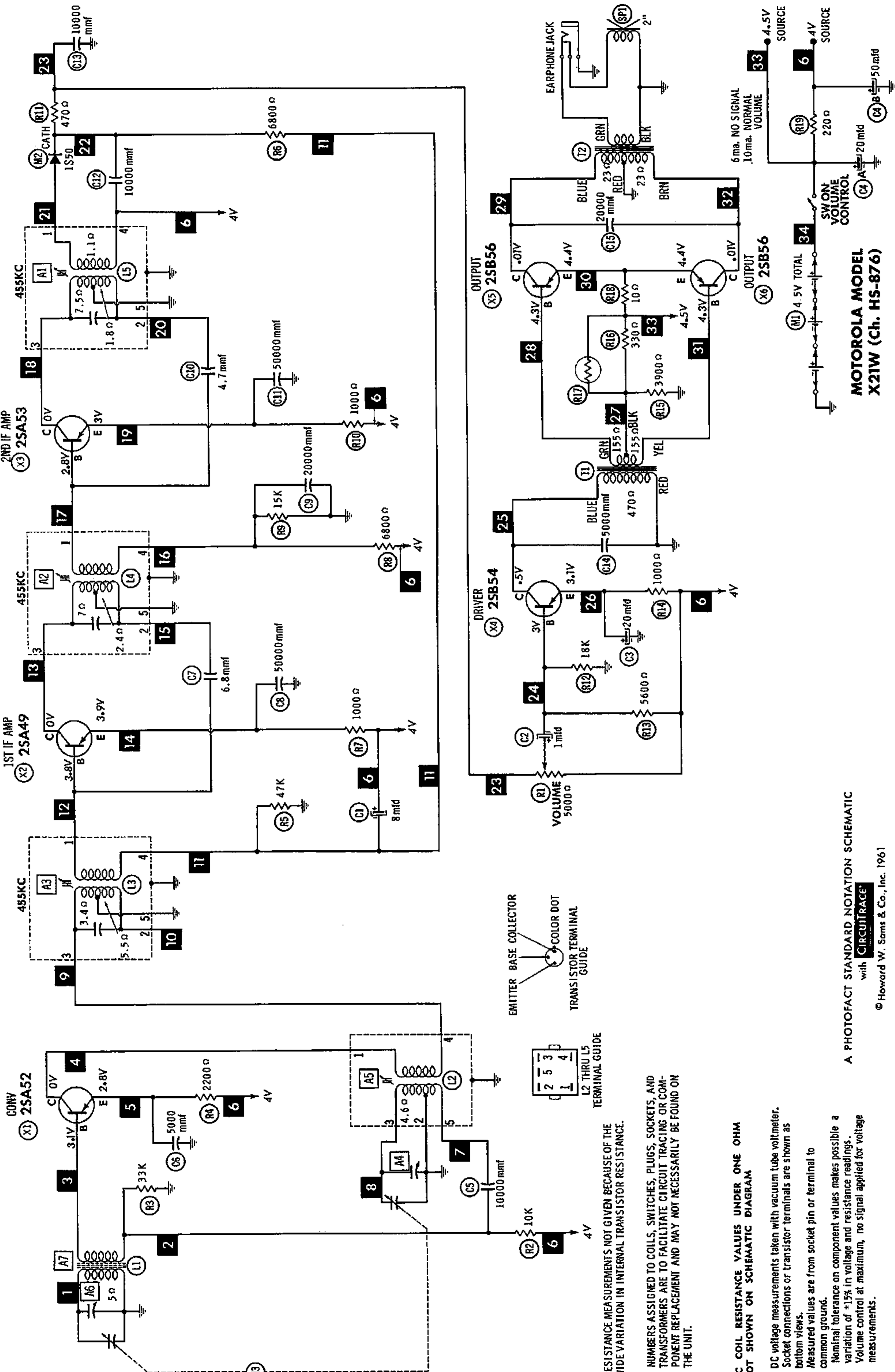
PRINTED BOARD

A Howard W. Sams

CIRCUITRACE
—Trade Name—

Photo



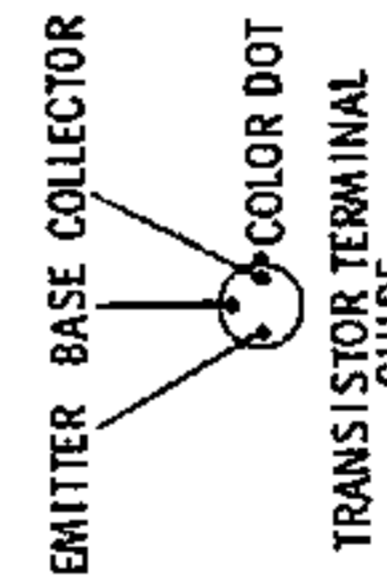
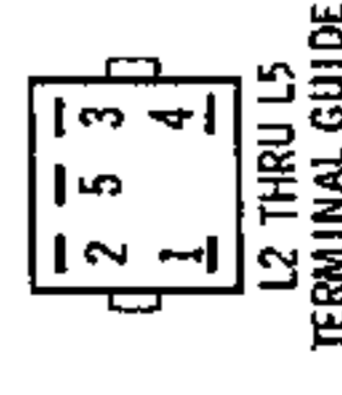


A PHOTOFACT STANDARD NOTATION SCHEMATIC with **CIRCUITRACE**
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- DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
1. DC voltage measurements taken with vacuum tube voltmeter.
 2. Socket connections or transistor terminals are shown as bottom views.
 3. Measured values are from socket pin or terminal to common ground.
 4. Nominal tolerance on component values makes possible a variation of $\pm 15\%$ in voltage and resistance readings.
 5. Volume control at maximum, no signal applied for voltage measurements.

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.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA | | | | | NOTES |
|----------|--|-------------------|----------------|-----------------|------------------|---------------------|-------|
| | | MOTOROLA PART No. | Merit PART No. | Miller PART No. | Stancor PART No. | Workman TV PART No. | |
| L1 | Loopstick Oscillator 1st IF 2nd IF 3rd IF | 24P60019A05 | | | | | |
| L2 | | 24P60019A06 | | | | | |
| L3 | | 24P60019A07 | | | | | |
| L4 | | 24P60019A08 | | | | | |
| L5 | | 24P60019A09 | | | | | |

TRANSFORMER (DRIVER)

| ITEM No. | TURNS RATIO | | REPLACEMENT DATA | | | | | NOTES |
|----------|-------------|------|-------------------|----------------|------------------|---------------------|----------------|-------|
| | | | MOTOROLA PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| | PRI. | SEC. | | | | | | |
| T1 | 2.7 | 1 | 25P60019A10 | | | | | |

TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE | | REPLACEMENT DATA | | | | | NOTES |
|----------|-----------|------|-------------------|----------------|------------------|---------------------|----------------|-------|
| | | | MOTOROLA PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | |
| | PRI. | SEC. | | | | | | |
| T2 | 1000Ω CT | 6-8Ω | 25P60019A11 | | | | | |

SPEAKER

| ITEM No. | TYPE | | | REPLACEMENT DATA | | NOTES |
|----------|------|-------|------------|-------------------|---------------|-------|
| | | | | MOTOROLA PART No. | QUAM PART No. | |
| | SIZE | FIELD | V. C. IMP. | | | |
| SP1 | 2" | PM | 6-8Ω | 50B60545A01 | | |

BATTERIES

| ITEM No. | VOLTAGE | MOTOROLA PART No. | REPLACEMENT DATA | | | | | | NOTES |
|----------|---------|-------------------|------------------|-----|----------|-----|---------|--------|-------------|
| | | | BURGESS | | EVEREADY | | MALLORY | | |
| | | | "A" | "B" | "A" | "B" | "A" | "B" | |
| M1 | 1.5V | | | N | | 904 | | M-910F | 3 Required. |

SIGNAL DIODES

| ITEM No. | ORIG. TYPE | REPLACEMENT DATA | | | | NOTES |
|----------|------------|-------------------|---------------------------|-------------------|-------------------|--------------------|
| | | MOTOROLA PART No. | GENERAL ELECTRIC PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| M2 | 1S50 | 48P60019A12 | | 1N60 | 1N60 | Detector (Pigtail) |

MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA PART No. | NOTES |
|----------|------------------------------|----------------------------|--|
| M3 | Tuning Cap. Printed Board | 19P60019A13 84P60019A04 | 2 Gang Early Versions, Less All Components, Includes Earphone Jack Holder, & Battery Terminals, & Battery Terminal Mounting Eyelets |
| | Printed Board | 1P60019A51 | Late Versions, Same as above |

CABINETS & CABINET PARTS

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

| NAME | PART NO. | DESCRIPTION |
|---------------|-------------|----------------|
| Dial Scale | 34P60019A27 | |
| Knob | 36P60019A28 | |
| Knob | 36P60019A32 | Tuning |
| Cabinet Back | 16P60019A38 | Volume |
| Cabinet Back | 1V60030A57 | Early Versions |
| Cabinet Front | 16P60019A37 | Late Versions |

2SB54 2SB56 2SB56

CHASSIS—TOP VIEW

