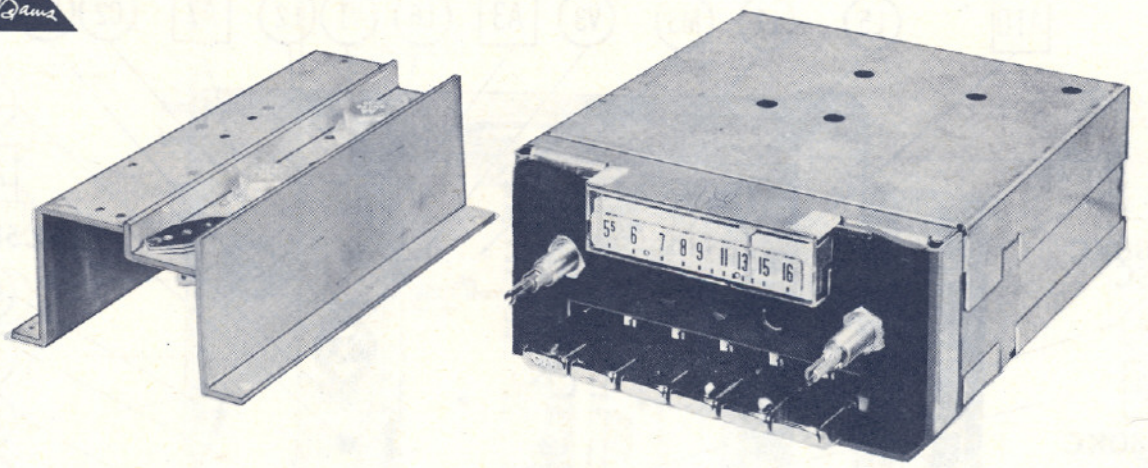
PHOTOFACT* Folder

# FORD MODEL 94MS (B9SF-18805-B)

FORD MODEL
94MS (B9SF-18805-B)



| | |
|---|---|
| TRADE NAME | Ford Model 94MS (B9SF-18805-B) (RF-IF Unit B9SF-18A801-B, Output Unit B9SF-19061-A) For 1959 Thunderbird Automobiles |
| MANUFACTURER | Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois |
| TYPE SET | Battery Operated 4 Tube Custom Built AM Automobile Receiver With Transistorized Output |
| POWER SUPPLY | 12 Volt Storage Battery |
| RATING | 2 Amp. @ 12.6 Volts DC |
| TUNING RANGE—BROADCAST | 535 - 1610KC |

## ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The top and bottom covers should be on receiver during 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 #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6, A7..... GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537
A8, A9, A10..... GENERAL CEMENT #9050L, 9150
WALSCO #2521

| | DUMMY ANTENNA | SIGNAL GENERATOR COUPLING | SIGNAL GENERATOR FREQUENCY | RADIO DIAL SETTING | OUTPUT METER | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| 1. | .1mfd | High side to antenna receptacle. Low side to chassis. | 262.5KC (400~ Mod.) | High frequency end stop | Across voice coil | A1, A2, A3, A4 | Adjust for maximum output. |
| 2. | Fig. 1 | High side thru dummy to antenna receptacle. | 1610KC | " | " | A5, A6, A7 | " |
| | Step 3 is unnecessary unless tuner has been tampered with or associated components have been replaced. Back tuning cores 1/4" out of coils. Repeat step 2. | | | | | | |
| 3. | Fig. 1 | High side thru dummy to antenna receptacle. | 1180KC | High frequency end stop | Across voice coil | A8, A9, A10 | Adjust for maximum output. Repeat steps 2 and 3 until no further improvement is noted. Cement cores. |
| 4. | " | " | 600KC at 5 microvolts | Tune to 600KC signal | " | R2 | Adjust for 1.79 Volts output. |
| 5. | With radio installed in car and antenna fully extended, tune in a weak station near 1200KC and adjust A7 for maximum output. | | | | | | |

PUSHBUTTON ADJUSTMENT

1. Pull pushbutton out.
2. Tune manually to desired station.
3. Press button in firmly.
4. Repeat for remaining buttons.

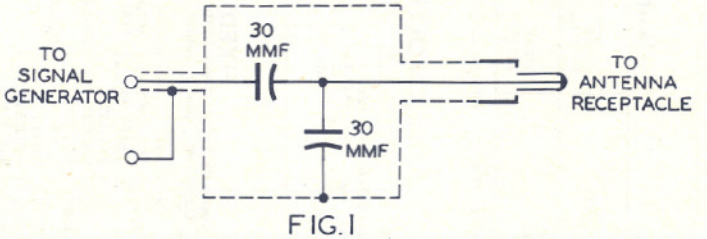



FIG. 1

FORD MODEL
94MS (B9SF-18805-B)

SET 447 FOLDER 5

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

# PARTS LIST AND DESCRIPTIONS

## TUBES ( GENERAL ELECTRIC, SYLVANIA )

| ITEM No. | USE | TYPE | NOTES |
|---|---|---|---|
| V1 | RF Amplifier | 12AF6 | |
| V2 | Converter | 12AD6 | |
| V3 | IF Amplifier | 12BL6 | |
| V4 | Det. - AVC - AF Amp. | 12AE6A | |

## TRANSISTORS

| ITEM No. | ORIG. TYPE | USE | REPLACEMENT DATA | | | | NOTES |
|---|---|---|---|---|---|---|---|
| | | | CBS PART No. | RCA PART No. | RAYTHEON PART No. | SYLVANIA PART No. | |
| X1 | 2N573 | Driver | | | 2N573 | | PNP |
| X2 | 2N176 | Output | 2N155 | 2N176 | | 2N176 | PNP Note 1 |
| X3 | 2N176 | Output | 2N155 | 2N176 | | 2N176 | PNP Note 1 |

Note 1. When replacing, coat both sides of insulator with DC-4 grease (Part #11M490487) or equivalent.

## 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. | |
| C1A | ■500 | 16 | 23B539261 | AFH2-02-10 | B0045 | WP200.5 | | TVL-2175 | |
| B | ▲100 | 16 | | | | | | | |

## 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 | | | REPLACEMENT DATA | | | | | | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| | CAP. | VOLT | TOL | MOTOROLA PART No. | AEROVOX PART No. | CENTRALAB PART No. | CORNELL-DUBILIER PART No. | MALLORY PART No. | SPRAGUE PART No. | |
| C2 | 20-180 | | | 20B560719 | | | | | | |
| C3 | 150 | | N750 10% | 21R121228 | N750-DI 150 | DTN-150 | C10T15U | CN7-315 | 5TCU-T15S 10%* | |
| C4 | 22 | | N150 10% | 21R120539 | | | | | | |
| C5 | .1 | 200 | | 8K129314 | P288N-1 | DF-104 | CUB2P1 | GEM-201 | 2TM-P1 | |
| C6 | 75-380 | | | 20K511136 | | | | | | |
| C7 | 22 | | N150 10% | 21R120539 | | | | | | |
| C8 | 400-520 | | | 20K560628 | | | | | | |
| C9 | 47 | | N750 5% | 21R125783 | | DTN-47 | C10Q47U | CN7-447 | 5TCU-Q47S 5%* | |
| C10 | 47 | | N750 10% | 21R114207 | N750-DI 47 | DTN-47 | C10Q47U | CN7-447 | 5TCU-Q47S 10%* | |
| C11 | 10000 | | | 21R482726 | BPD-01 | DD-103 | BYA10S1 | B-110 | 5HK-S1 | |
| C12 | 27 | | N150 10% | 21R119896 | | | | | | |
| C13 | 1500 | | | 21R125986 | BPD-0015 | DD-152 | BYA10D15 | B-215 | 5HK-D15 | |
| C14 | 1000 | | | 21R410127 | BPD-001 | DD-102 | BYA10D1M | B-210 | 5HK-D1 | |
| C15 | 10000 | | | 21R482726 | BPD-01 | DD-103 | BYA10S1 | B-110 | 5HK-S1 | |
| C16 | 5000 | | | 21R128634 | BPD-005 | DD-502 | BYA10D5 | B-250 | 5HK-D5 | |
| C17 | 220 | | | 21R410115 | BPD-00022 | DD-221 | L10T22 | B-322 | 5GA-T22 | |
| C18 | 220 | | | 21R410115 | BPD-00022 | DD-221 | L10T22 | B-322 | 5GA-T22 | |

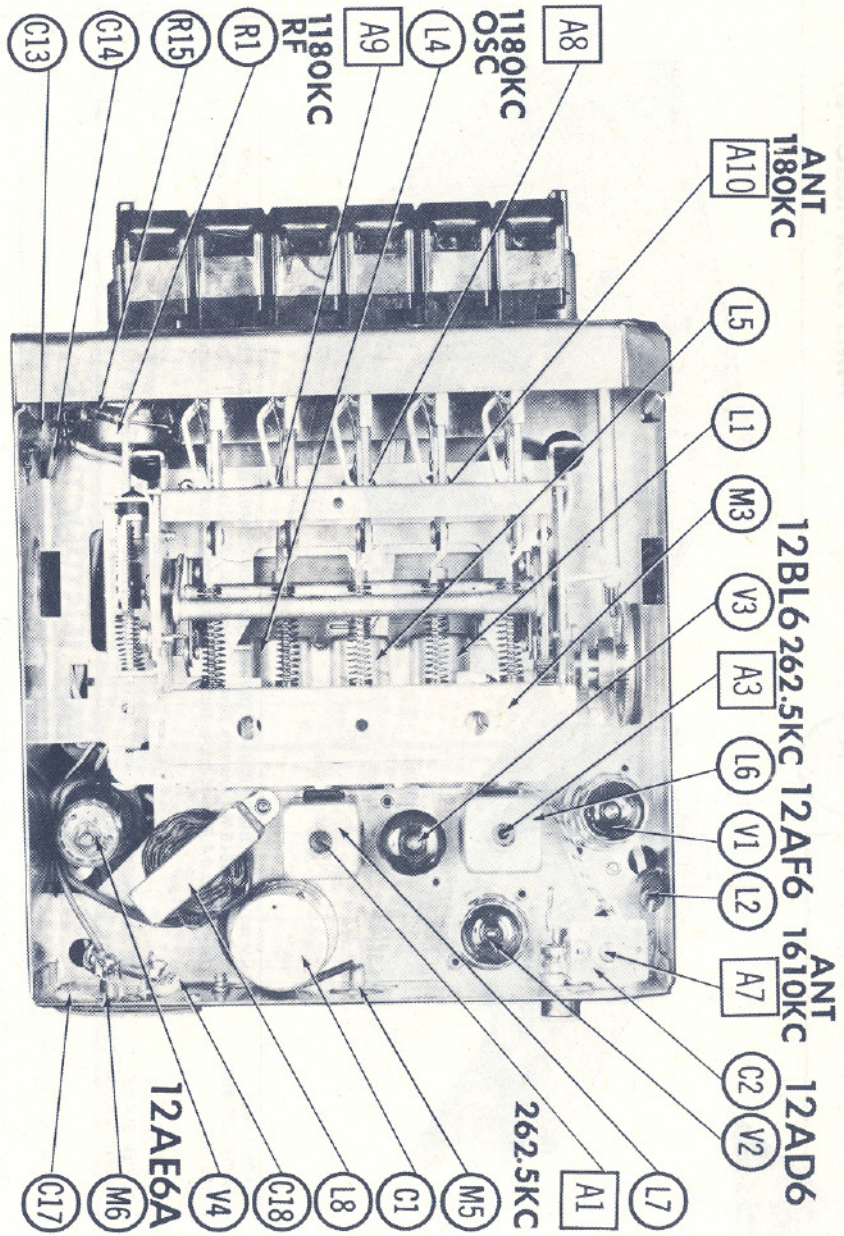
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

## CONTROLS

| ITEM No. | RATING | | REPLACEMENT DATA | | | | | INSTALLATION NOTES |
|---|---|---|---|---|---|---|---|---|
| | RESISTANCE | WATTS | MOTOROLA PART No. | CENTRALAB PART No. | CLAROSTAT PART No. | IRC PART No. | MALLORY PART No. | |
| R1A | 4meg | ½ | | | | | | Tone |
| B | 1.3meg | ½ | | | | | | Volume, Tap @ 750K ① |
| R2 | 1000Ω | 1(WW) | 18K732740 | | 39-1000 | | | Sensitivity |
| R3 | 400Ω | 1(WW) | 18B541877 | | | | | Balance, Stops at 130Ω on each end |

① Some versions may use 1meg tapped at 500K in this application (Part #18B562150).

# CHASSIS—TOP VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## RESISTORS

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

| ITEM No. | RATING OHMS | RATING WATT | MOTOROLA PART No. | NOTES |
|---|---|---|---|---|
| R4 | 3.3meg | | 6K119407 | |
| R5 | 22meg | | 6R118247 | |
| R6 | 1.5meg | | 6R6460 | |
| R7 | 1500Ω | | 6K127513 | |
| R8 | 4700Ω | | 6K121847 | |
| R9 | 1meg | | 6K124494 | |
| R10 | 3.9meg | | 6R490110 | |
| R11 | 2.2meg | | 6R3927 | |
| R12 | 33K | | 6K121704 | |
| R13 | 8.2meg | | 6R5585 | |
| R14 | 47K | | 6K121687 | |
| R15 | 82K | | 6K125179 | |
| R16 | 10meg | | 6K119408 | |
| R17 | 3900Ω | | 6K121931 | |
| R18 | 220Ω | | 6K127099 | |
| R19 | 330Ω | | 6K127940 | |
| R20 | 10Ω Cold | | 6K540634 | |
| R21 | .16Ω Cold | | 17K561999 | |
| R22 | 10Ω Cold | | 6K540634 | |
| R23 | .16Ω Cold | | 17K561999 | |

## COILS (RF-IF)

| ITEM No. | USE | REPLACEMENT DATA MOTOROLA PART No. | Gramer PART No. | Meissner PART No. | Merit PART No. | Miller PART No. | Ram PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|
| L1 | Ant. Tuning Coil | 24C535458 † | | | | | | † Part of M3 |
| L2 | Ant. Coil | 24A538910 | | | | | | |
| L3 | RF Choke | 24K560753 | 19-3075 | 19-3075 | TV-186 | 6172 | VP-2 | 67uh |
| L4 | RF Tuning Coil | 24C535459 † | | | | | | |
| L5 | Osc. Coil | 24C535456 † | | | | | | |
| L6 | Input IF | 24K562152 | 16-6752 | 16-6752 | BC-350 | 12-H2 | RF-3 | |
| L7 | Output IF | 24K562151 | 16-6754 | 16-6754 | BC-354 | 12-H6 | | |

## FILTER CHOKE

| ITEM No. | RATINGS CURRENT (Measured) | DC RES. | INDUCTANCE (0 CURRENT 1000 ~) | REPLACEMENT DATA MOTOROLA PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. |
|---|---|---|---|---|---|---|---|---|---|---|
| L8 | 2A | .3Ω | .004 Hy. | 25K560710 | | | | | | |

## TRANSFORMER (DRIVER)

| ITEM No. | TURNS RATIO PRI. | TURNS RATIO SEC. | REPLACEMENT DATA MOTOROLA PART No. | Halldorson PART No. | Merit PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| T1 | 8.5 | :1 SEC.2 | | 25C562133 | | | | | |
| | 8.5 | :1 | | | | | | | |

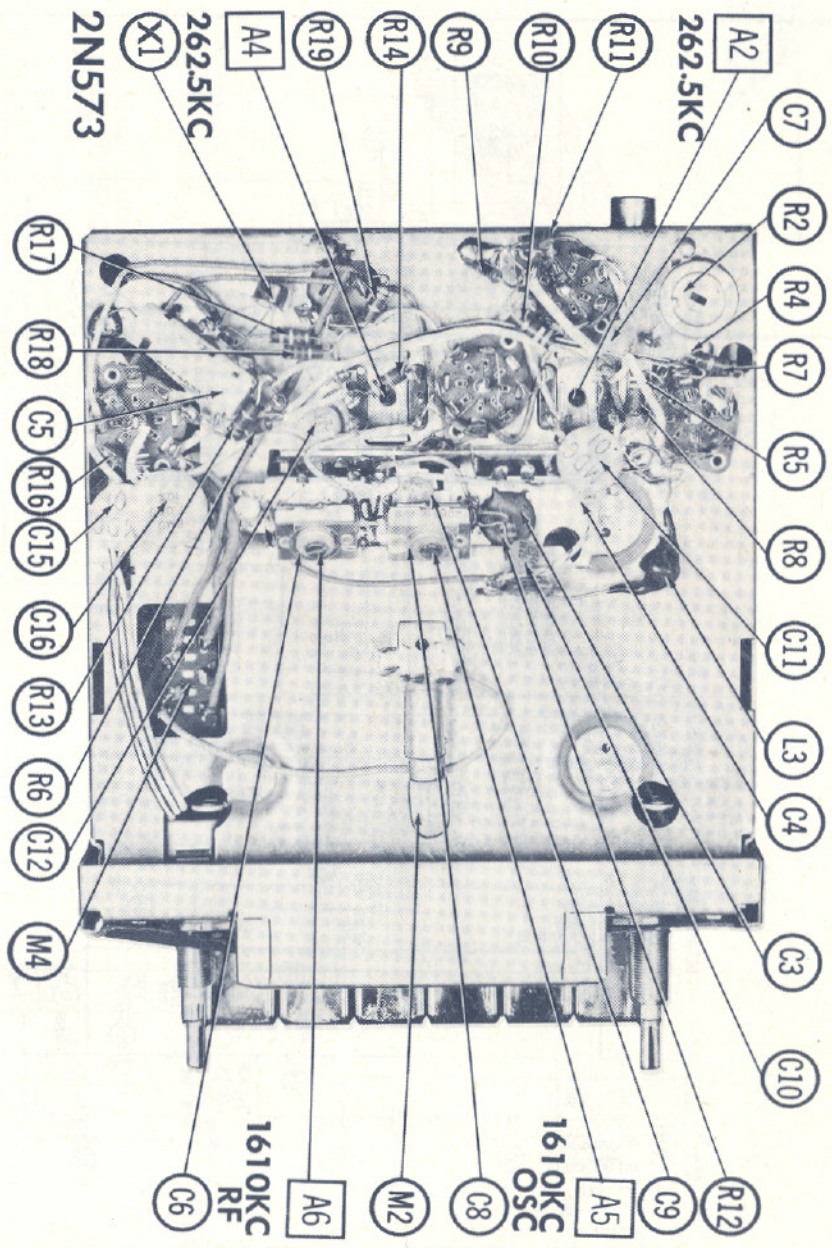
## TRANSFORMER (AUDIO OUTPUT)

| ITEM No. | IMPEDANCE PRI. | IMPEDANCE SEC. | REPLACEMENT DATA MOTOROLA PART No. | Halldorson PART No. | Merit PART No. | Ram PART No. | Stancor PART No. | Thordarson PART No. | Triad PART No. | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|
| T2 | 30Ω CT | 3-4Ω Tap @ 1Ω | 25C562122 | | | | | | | |

## SPEAKER

| ITEM No. | TYPE SIZE | TYPE FIELD | TYPE V. C. IMP. | REPLACEMENT DATA MOTOROLA PART No. | REPLACEMENT DATA QUAM PART No. | NOTES |
|---|---|---|---|---|---|---|
| SP1 | 6" x 9" | PM | 3-4Ω | 50D542405 | | |

# CHASSIS—BOTTOM VIEW



# PARTS LIST AND DESCRIPTIONS (Continued)

## FUSES

| ITEM No. | TYPE | RATING | REPLACEMENT DATA | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | MOTOROLA PART No. | | LITTELFUSE PART No. | | BUSS PART No. | |
| | | | FUSE | HOLDER | FUSE | HOLDER | FUSE | HOLDER |
| M1 | 7AG | 7½A 32V | 65R122346 | 9K561110 | 30707.5 (7AG 7½A 32V) | 155009 | SFE 7½ | HDH |

## MISCELLANEOUS

| ITEM No. | PART NAME | MOTOROLA PART No. | NOTES |
|---|---|---|---|
| M2 | Lamp | 65R533821 | #1891 |
| M3 | Tuner | 77D560626 | AF-229, Complete, Less Manual Tuning Shaft |
| M4 | Switch | 40A560051 | Power On-Off (DPST, Slide Type) |
| M5 | Spark Plate | 21A560232 | (Feed Thru Type) |
| M6 | Spark Plate | 21A560232 | (Feed Thru Type) |

## CABINETS & CABINET PARTS

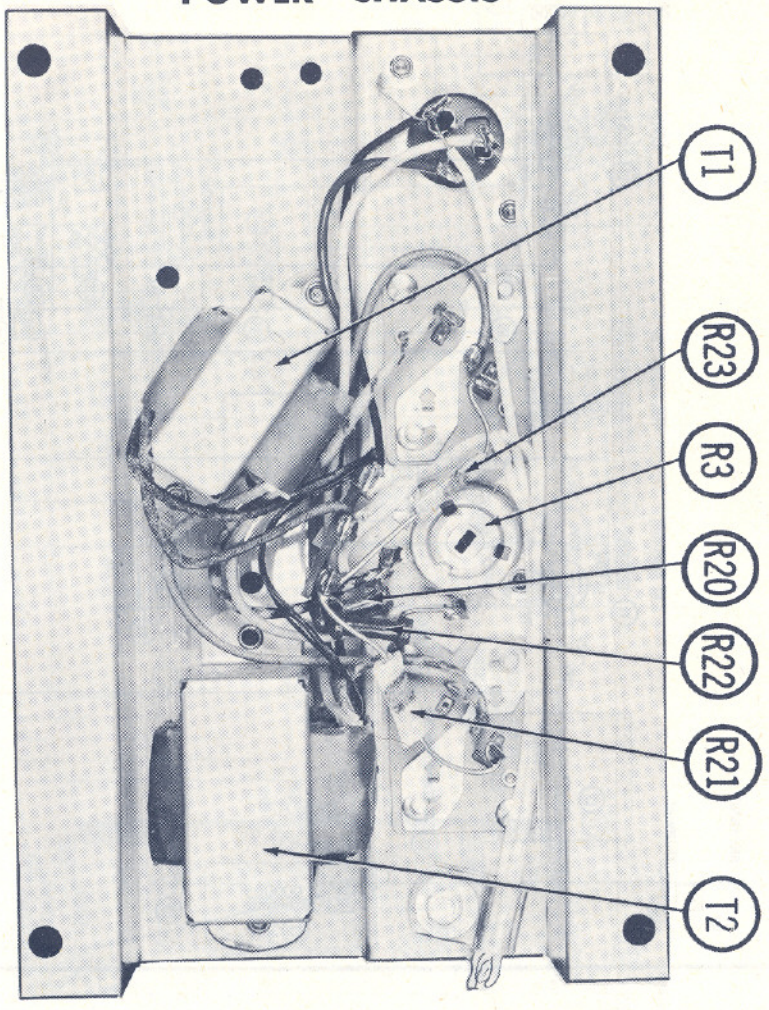
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

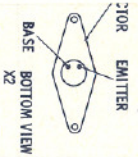
| NAME | PART NO. | DESCRIPTION |
|---|---|---|
| Knob | 36K561365 | Tuning, Volume |
| Knob | 36B560029 | Tone, Dummy |
| Pushbutton | 38B560075 | Station (5 used) |
| Pushbutton | 38K560076 | Off |
| Cover | 15C560003 | Top |
| Cover | 15C560000 | Bottom |
| Pointer | 52B560619 | |
| Dial Scale | 34K561366 | |
| Dial Scale | 64K561362 | Background |

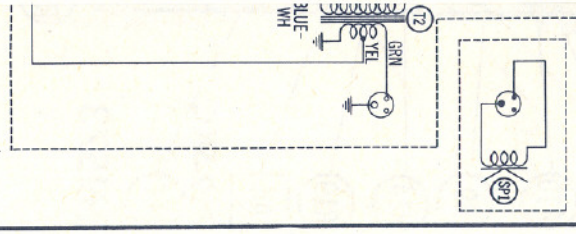
## WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

## POWER CHASSIS

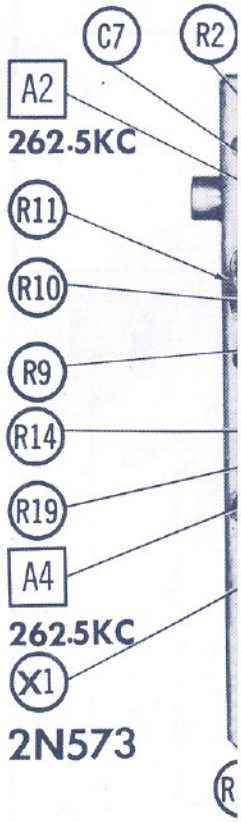



FORD MODEL 4MS (B9SF-18805-B)

## CHASSIS—BOTTOM VIEW

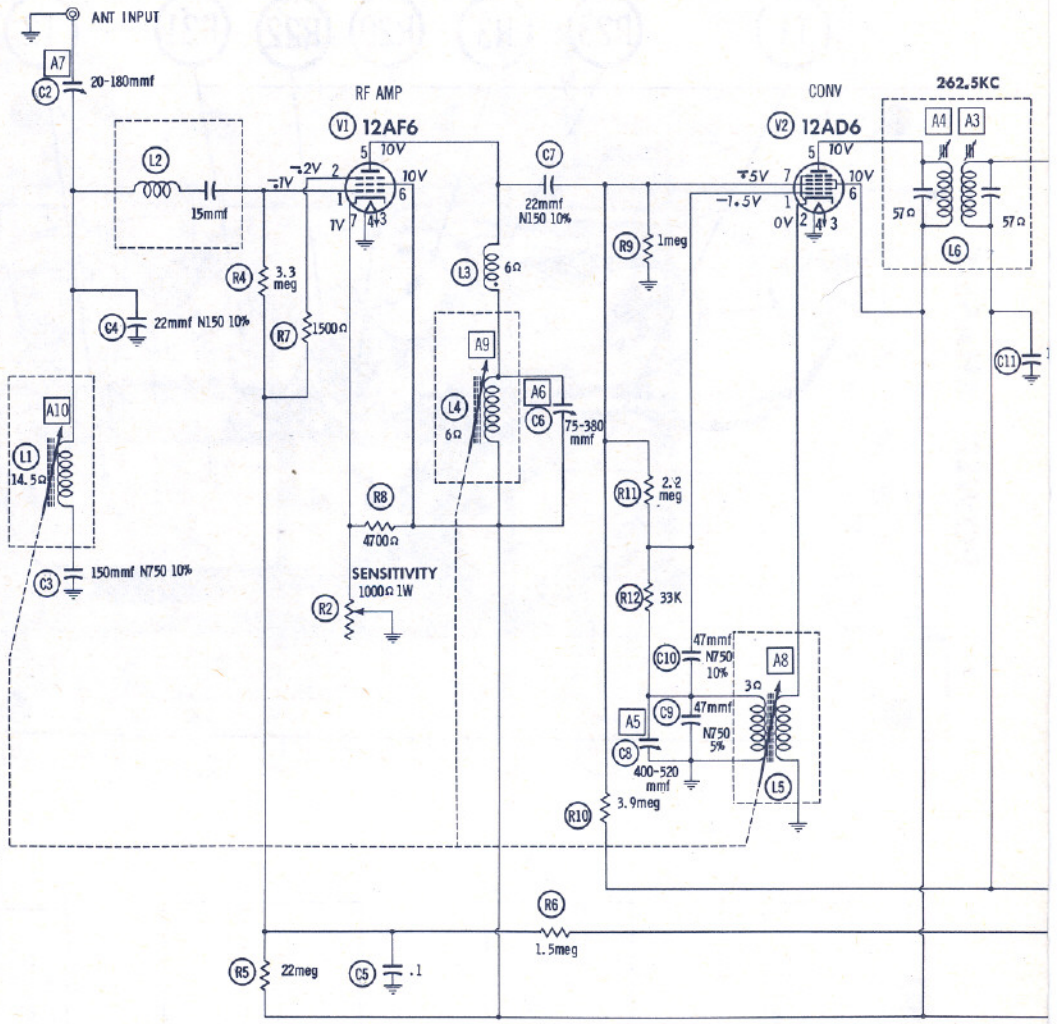



## PARTS LIST AND DESCRIPTIONS (Continued)

### RESISTORS

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

| ITEM No. | RATING OHMS | RATING WATT | MOTOROLA PART No. | NOTES |
|---|---|---|---|---|
| R4 | 3.3meg | | 6K119407 | |
| R5 | 22meg | | 6R182447 | |
| R6 | 1.5meg | | 6R6460 | |
| R7 | 1500Ω | | 6K127513 | |
| R8 | 4700Ω | | 6K121847 | |
| R9 | 1meg | | 6K124494 | |
| R10 | 3.9meg | | 6R490110 | |
| R11 | 2.2meg | | 6R3927 | |
| R12 | 33K | | 6K121704 | |
| R14 | 47K | | 6K121687 | |
| R15 | 82K | | 6K125179 | |
| R16 | 10meg | | 6K119408 | |
| R17 | 3900Ω | | 6K121931 | |
| R18 | 220Ω | | 6K127099 | |
| R19 | 330Ω | | 6K127940 | |
| R20 | 10Ω Cold | | 6K540634 | |
| R21 | .16Ω Cold | | 17K561999 | |
| R22 | 10Ω Cold | | 6K540634 | |




RESISTANCE READINGS

| ITEM | TUBE | Pin 1 | Pin 2 | Pin 3 | Pin 4 | Pin 5 | Pin |
|---|---|---|---|---|---|---|---|
| V1 | 12AF6 | 14meg | 11meg | 2.9Ω | 0Ω | †340Ω | †33( |
| V2 | 12AD6 | 33K | .6Ω | 2.9Ω | 0Ω | †390Ω | †33( |
| V3 | 12BL6 | 4.5meg | 0Ω | 2.9Ω | 0Ω | †380Ω | †33( |
| V4 | 12AE6A | 10meg | .2Ω | 0Ω | 2.9Ω | 1.3meg | 12m |

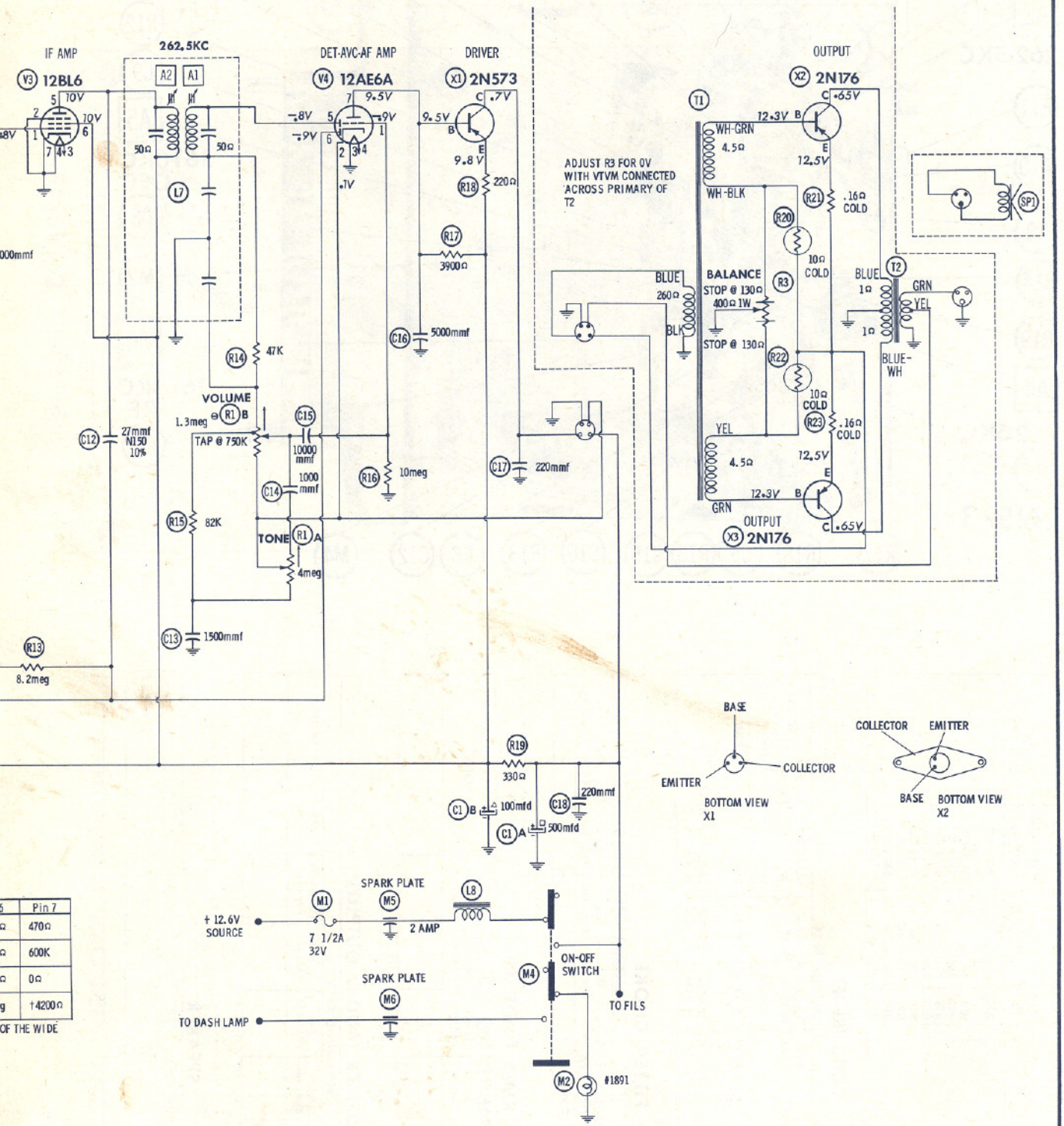
TRANSISTOR CIRCUIT RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
† MEASURED FROM JUNCTION OF R19 AND C1A.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC




| 6 | Pin 7 |
|---|---|
| Ω | 470Ω |
| Ω | 600K |
| Ω | 0Ω |
| g | †4200Ω |

OF THE WIDE

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes posssible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

**FORD MODEL 94MS (B9SF-18805-B)**