sams

# AUTO RADIO SERVICE DATA


**Audiovox** *C-977B, ID-400B*

**Chrysler** *4048366*

**Clarion** *PE-663C*

**Craig** *T606*

**Delco** *90BFP2/PK2, 91YFP2*

**Ford** *D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series) D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)*

**Panasonic** *CR-4520EU*


*REPRODUCED THROUGH THE COURTESY OF THE MANUFACTURER*

HOWARD W. SAMS & CO., INC.
INDIANAPOLIS INDIANA

***FIRST EDITION***
***FIRST PRINTING-SEPTEMBER,1979***




Library of Congress Catalog Card Number: 49-11493

AUTO RADIO SERVICE DATA

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# GENERAL SERVICING INFORMATION

The following information applies to all tape units in this volume, and should be followed before any adjustments are made or trouble diagnosis is attempted. Any exceptions or additions will be found in the detailed servicing procedures for each tape unit.

## POWER SOURCES

Many tape units require full supply voltage for proper operation. Be sure the supply voltage is maintained at the rated value under load while making adjustments.

## CLEANING

All head faces should be cleaned with head cleaner or methyl alcohol to remove dust and accumulated oxide. (An applicator may be fashioned from absorbent cotton.) Do not use a screwdriver or any metallic object near the head faces.

CAUTION: *Avoid getting head cleaner on any plastic surface.*

Clean capstans, pressure rollers, and tape guides with alcohol using a soft lint-free cloth. Also use alcohol to remove oil and grease from drive belts and other driving surfaces.

## LUBRICATING

Clean all surfaces before lubricating. Apply a few drops of #20 machine oil to all bearings and rotating bushings. Apply a thin film of light, nonhardening grease to all cam surfaces and pawls, if they have been factory lubricated. Always wipe excess oil or grease from parts that have been lubricated.

CAUTION: *Oil and grease must be kept off all driving surfaces as well as any parts which may transfer oil or grease to them.*

## DEMAGNETIZING

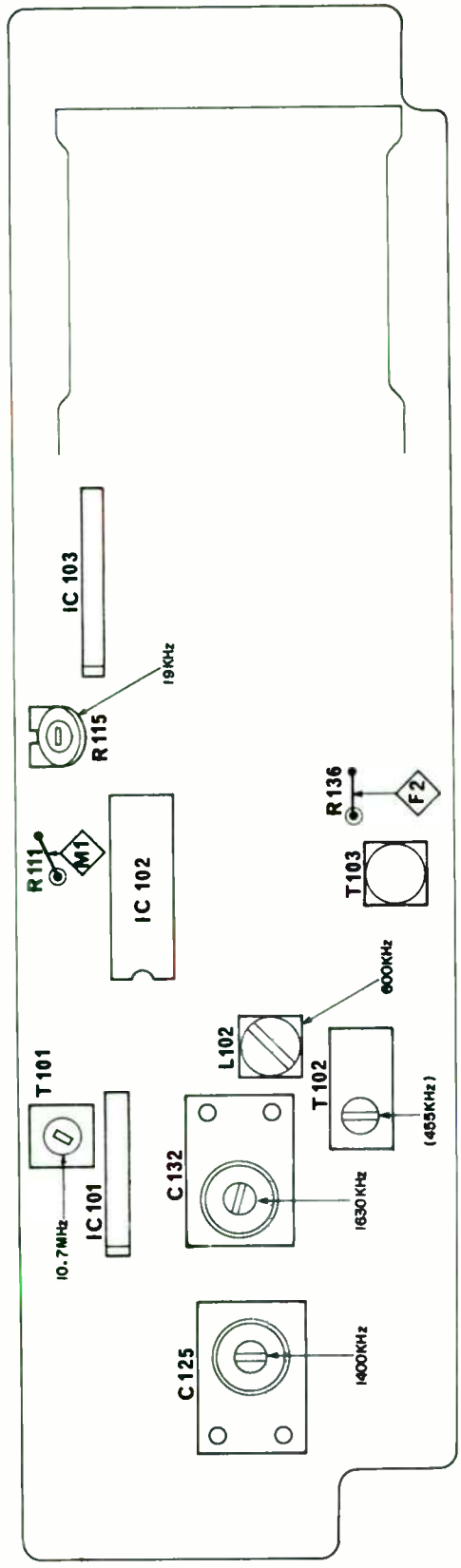
Heads require demagnetizing at regular intervals to maintain high-frequency response, dynamic range, and low distortion. (Follow instructions included with the demagnetizing unit.) After demagnetizing the heads, keep all screwdrivers and other metallic objects away from the head faces. Tape guides may also require occasional demagnetizing.

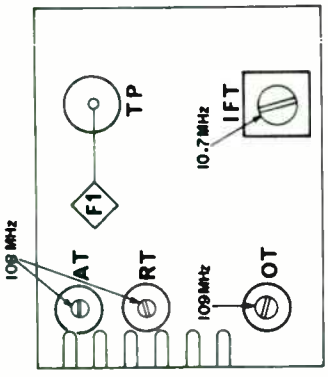
IMPORTANT: *Be sure to demagnetize the heads after making resistance measurements in the head circuits.*

## CARTRIDGES

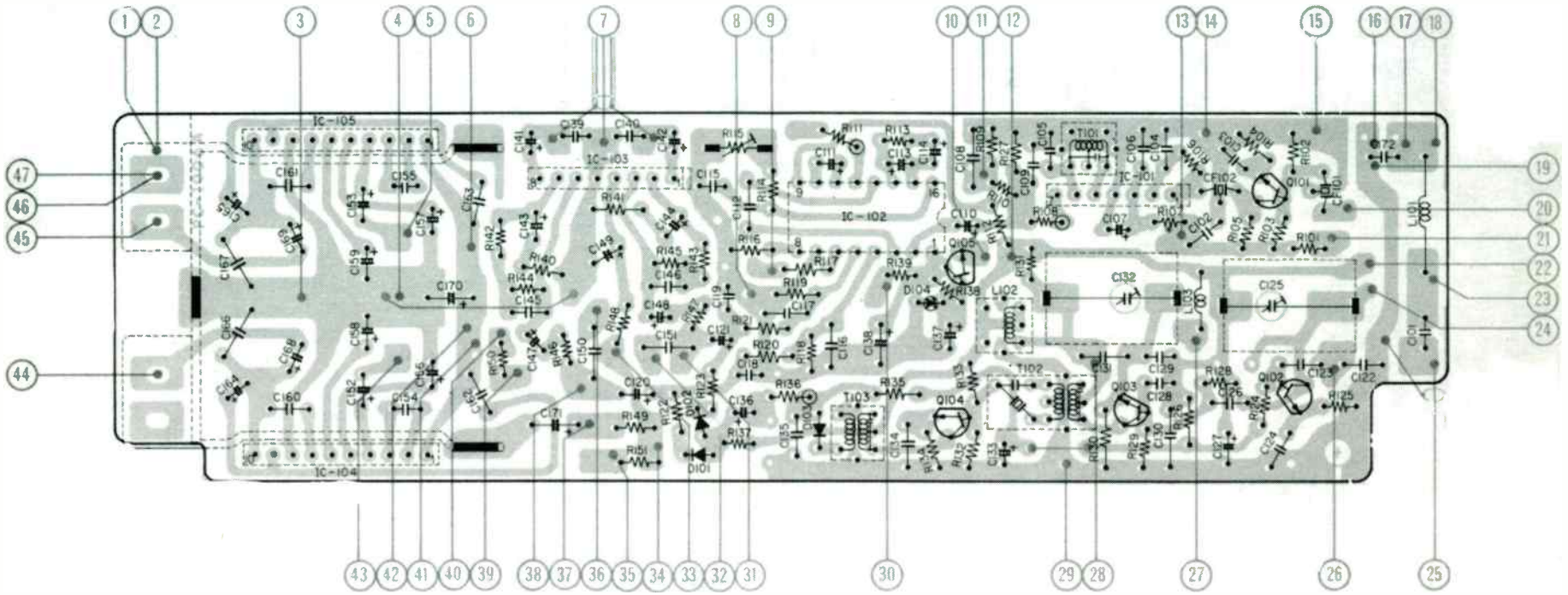
Many problems associated with tape units result from defective cartridges. Always try a cartridge known to be good before attempting repairs.

Pages 5-12 Courtesy of AUDIOVOX CORP.

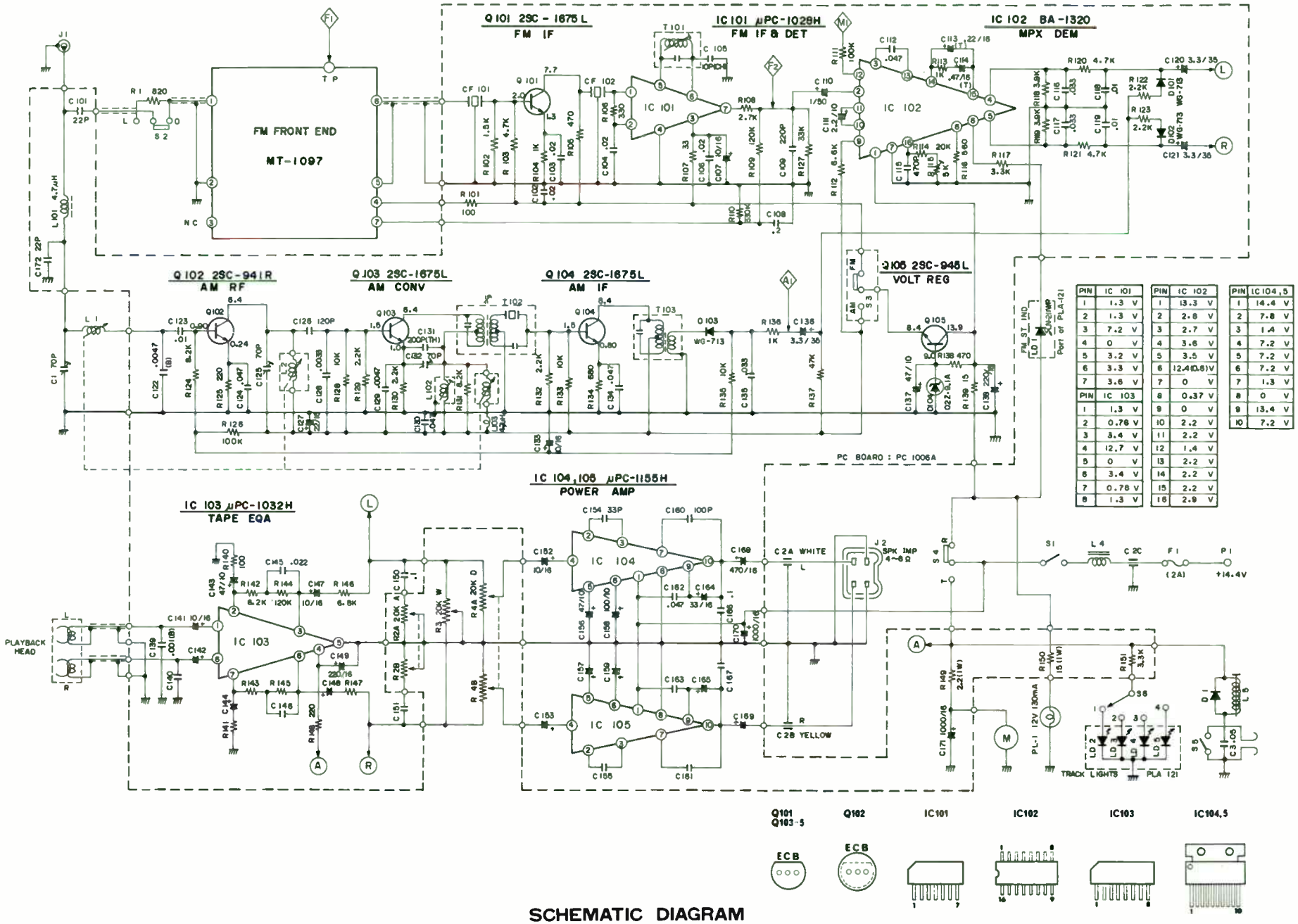



ALIGNMENT LOCATION DETAIL




**PARTS ASSEMBLY DIAGRAM**



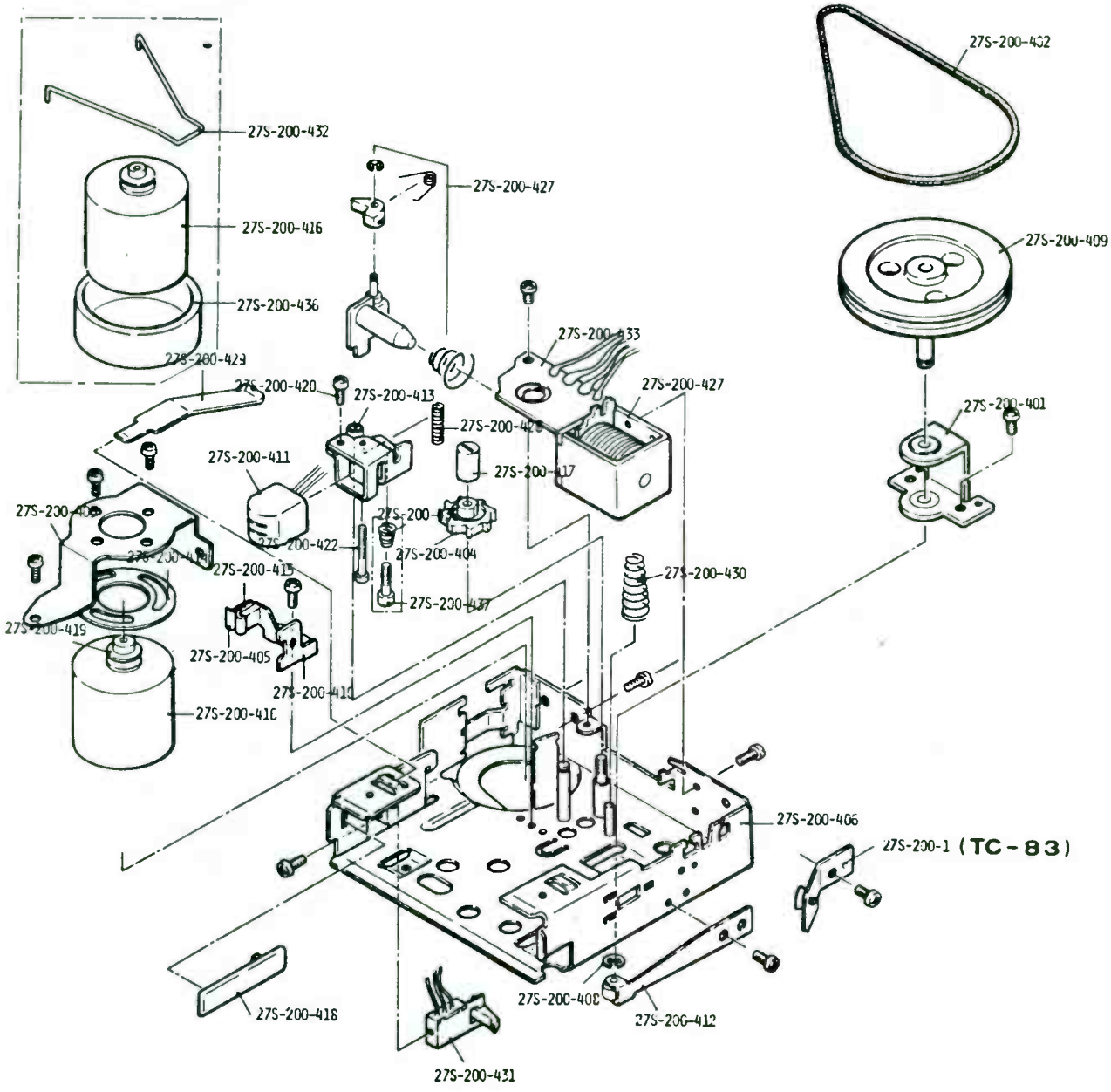

| PIN | IC 101 |
|---|---|
| 1 | 1.3 V |
| 2 | 1.3 V |
| 3 | 7.2 V |
| 4 | 0 V |
| 5 | 3.2 V |
| 6 | 3.3 V |
| 7 | 3.6 V |

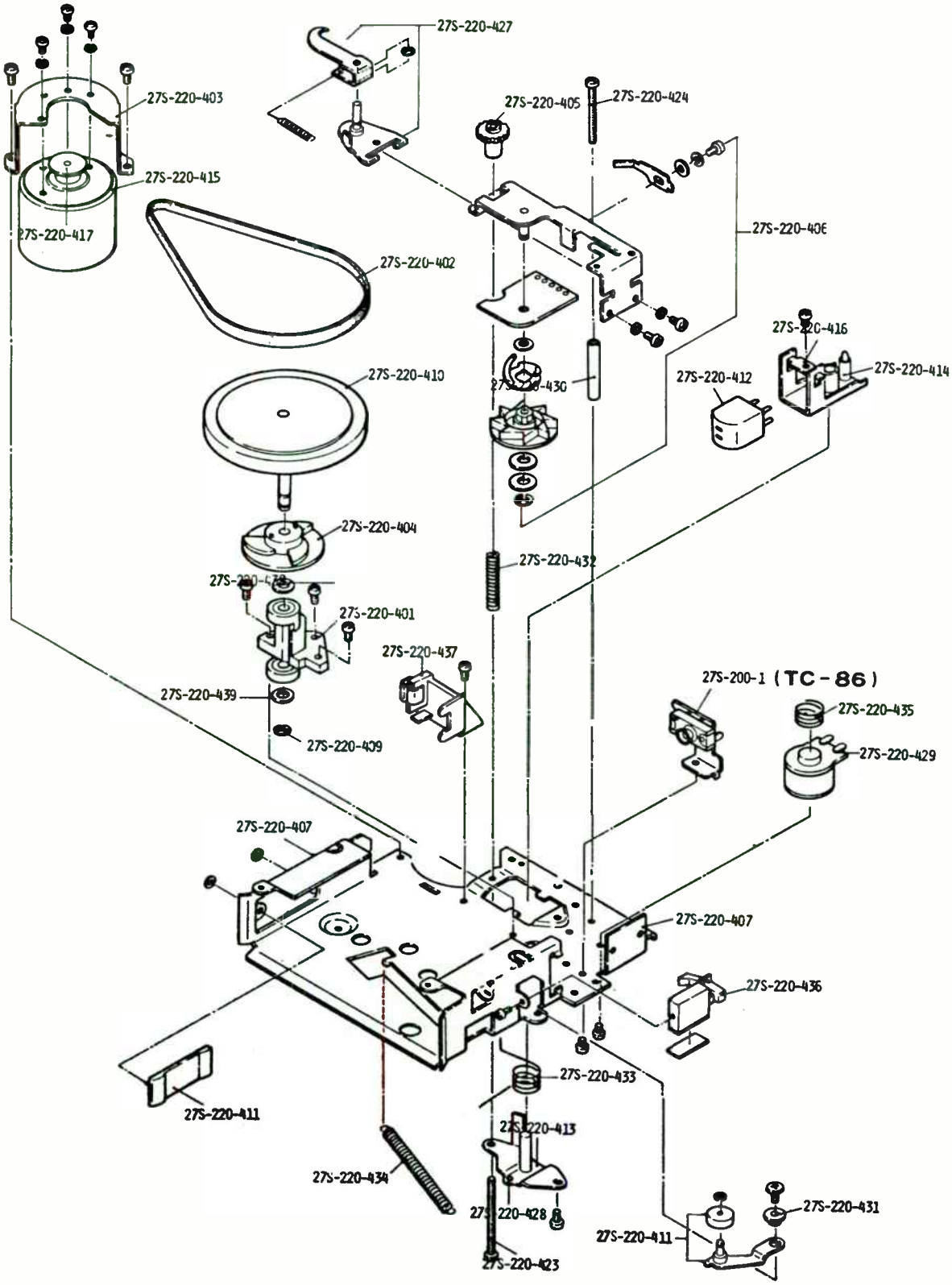
| PIN | IC 103 |
|---|---|
| 1 | 1.3 V |
| 2 | 0.78 V |
| 3 | 3.4 V |
| 4 | 12.7 V |
| 5 | 0 V |
| 6 | 3.4 V |
| 7 | 0.78 V |
| 8 | 1.3 V |

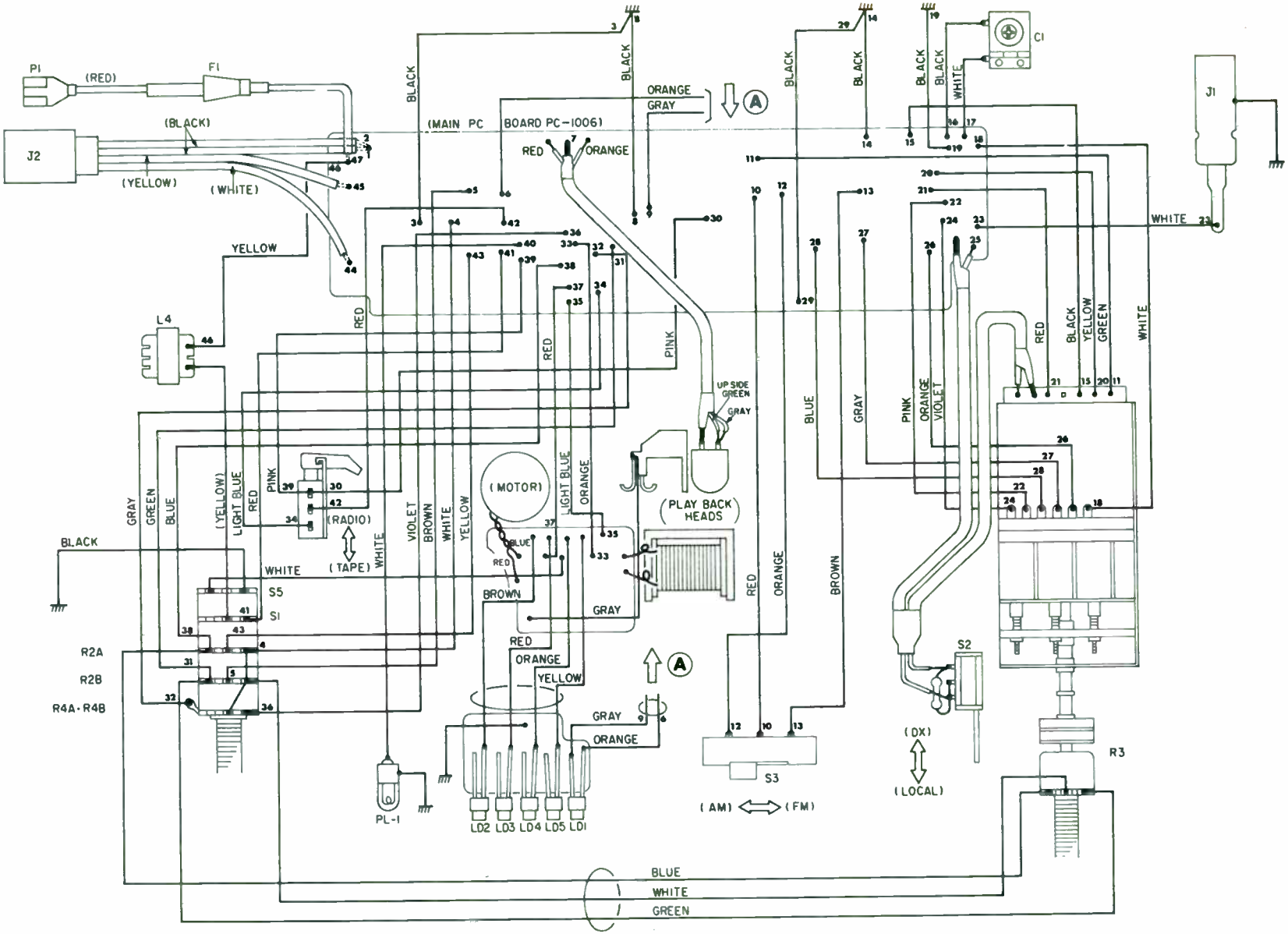
| PIN | IC 102 |
|---|---|
| 1 | 13.3 V |
| 2 | 2.6 V |
| 3 | 2.7 V |
| 4 | 3.6 V |
| 5 | 3.5 V |
| 6 | 12.4(0.8)V |
| 7 | 0 V |
| 8 | 0.37 V |
| 9 | 0 V |
| 10 | 2.2 V |
| 11 | 2.2 V |
| 12 | 1.4 V |
| 13 | 2.2 V |
| 14 | 2.2 V |
| 15 | 2.2 V |
| 16 | 2.9 V |

| PIN | IC 104,5 |
|---|---|
| 1 | 14.4 V |
| 2 | 7.8 V |
| 3 | 1.4 V |
| 4 | 7.2 V |
| 5 | 7.2 V |
| 6 | 7.2 V |
| 7 | 1.3 V |
| 8 | 0 V |
| 9 | 13.4 V |
| 10 | 7.2 V |

## SCHEMATIC DIAGRAM








**WIRING DIAGRAM**

| Reference No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **ELECTRICAL PARTS** | | | |
| **CAPACITORS** | | (Unlisted capacitors are ceramic type, 50V. See schematic diagram for specific values.) | |
| C-1 | 27S-200- 1 | 70PF, max., trimmer : TC-86 or TC-83 | 1 |
| C-2A, B, C | 27S-200- 2 | 1,000PF × 3, feed-thru : FC-30 | 3 |
| C-105 | 27S-200- 3 | 10PF, 50V, NPO, ceramic | 1 |
| C-107, 133, 141, 142, 147 148, 152, 153 | 27S-200- 4 | 10uF, 16V, electrolytic : | 8 |
| C-108 | 27S-200- 5 | 0.2uF, 12V, semi-conductor : | 1 |
| C-110 | 27S-200- 6 | 1uF, 50V, electrolytic : | 1 |
| C-111 | 27S-200- 7 | 2 .2uF, 10V, tantalum : | 1 |
| C-112, 124, 134, 162, 163 | 27S-200- 8 | 0.047uF, 25V, semi-conductor : | 5 |
| C-113 | 27S-200- 9 | 0.22uF, 16V, tantalum : | 1 |
| C-114 | 27S-200-10 | 0.47uF, 16V, tantalum : | 1 |
| C-115 | 27S-200-11 | 470PF, 50V, polyethylene : | 1 |
| C-116, 117, 135 | 27S-200-12 | 0.033uF, 25V, semi-conductor : | 3 |
| C-118, 119, 123 | 27S-200-13 | 0.01uF, 25V, semi-conductor : | 3 |
| C-120, 121, 136 | 27S-200-14 | 3.3uF, 35V, electrolytic : | 3 |
| C-125, 132 | 27S-200-15 | 70PF, max., trimmer : TC-1 | 2 |
| C-127 | 27S-200-16 | 22uF, 16V, electrolytic : | 1 |
| C-128 | 27S-200-17 | 0.033uF, 50V, mylar : | 1 |
| C-129 | 27S-200-18 | 0.0047uF, 50V, mylar : | 1 |
| C-130 | 27S-200-19 | 0.047uF, 50V, mylar : | 1 |
| C-131 | 27S-200-20 | 200PF, 50V, N470, ceramic : | 1 |
| C-137, 143, 144, 156, 157 | 27S-200-21 | 47uF, 10V, electrolytic : | 5 |
| C-138, 149 | 27S-200-22 | 220uF, 16V, electrolytic : | 2 |
| C-145, 146 | 27S-200-23 | 0.022uF, 50V, mylar : | 2 |
| C-150, 151 | 27S-200-24 | 0.1uF, 12V, semi-conductor : | 2 |
| C-158, 159 | 27S-200-25 | 100uF, 10V, electrolytic : | 2 |
| C-164, 165 | 27S-200-26 | 33uF, 16V, electrolytic : | 2 |
| C-166, 167 | 27S-200-27 | 0.1uF 50V, mylar | 2 |
| C-168, 169 | 27S-200-28 | 470uF, 16V, electroytic : | 2 |
| C-170, 171 | 27S-200-29 | 1,000uF, 16V, electrolytic : | 2 |
| **COILS & CHOKES** | | | |
| L-1, 2, 3 | 27S-200-41 | Tuner Ass'y : MT-1097 | 1 |
| L-4 | 27S-200-42 | Choke, DC : NL-11 | 1 |
| L-101 | 27S-200-43 | Choke, ANT : SL-4.7P | 1 |
| L-102 | 27S-200-44 | Coil, AM OSC : OL-2201-1 | 1 |
| L-103 | 27S-200-45 | RF Choke : LH-4.7 | 1 |
| L-1, 2, 3 | 27S-200-46 | Tuner Ass'y : MT-2077 | 1 |
| **CONTROLS** | | | |
| R-2A, B, 4A, B, S-1, 5 | 27S-200-51 | Volume, Tone, On-Off & Ch Select SW : VR-288 | 1 |
| R-3 | 27S-200-52 | Balance : VR-287 | 1 |
| **MISCELLANEOUS** | | | |
| CF-101, 102 | 27S-200-61 | Ceramic Filter SFE-10.7MA-5 | 2 |
| LD-1, 2, 3, 4, 5 | 27S-200-62 | Ch. Indicators & FM ST Ind. Ass'y : PLA-121 | 1 |
| PL-1 | 27S-200-63 | Lamp, pilot : PL-1B | 1 |
| **RESISTORS** | | (Unlisted resistors are carbon insulated type, 1/4W. See schematic diagram for specific values.) | |
| R-1 | 27S-200-71 | 820, 10%, R-25 type, carbon | 1 |
| R-115 | 27S-200-72 | 5,000, semi-fixed : VR-158 | 1 |
| R-149 | 27S-200-73 | 2.2, 10%, 1W, metal-film | 1 |
| R-150 | 27S-200-74 | 15, 10%, 1W, metal-film | 1 |
| **SEMI-CONDUCTORS** | | | |
| D-101, 102, 103 | 27S-200-81 | Diode : WG-713 | 3 |
| D-104 | 27S-200-82 | Diode, zener : 02Z-9.1A | 1 |
| IC-101 | 27S-200-83 | IC, FM IF : uPC-1028H | 1 |
| IC-102 | 27S-200-84 | IC, MPX : BA-1320 | 1 |
| IC-103 | 27S-200-85 | IC, tape EQA : uPC-1032H | 1 |
| IC-104, 105 | 27S-200-86 | IC, power : uPC-1155H | 2 |
| Q-101, 103, 104 | 27S-200-87 | Transistor : 2SC-1675 | 3 |
| Q-102 | 27S-200-88 | Transistor : 2SC-941R | 1 |
| Q-105 | 27S-200-89 | Transistor : 2SC-945L | 1 |

| Reference No. | Part No. | Description | Q'ty |
|---|---|---|---|
| **SWITCHES** | | | |
| S-2 | 27S-200-101 | AM-FM : SW-128 | 1 |
| S-3 | 27S-200-102 | Local/Dx : SW-138 | 1 |
| **TRANSFORMERS** | | | |
| T-101 | 27S-200-111 | FM IFT : IT-1030 | 1 |
| T-102 | 27S-200-112 | AM IFT : IT-2201A | 1 |
| T-103 | 27S-200-113 | AM IFT : IT-2201B | 1 |
| **MECHANICAL PARTS** | | | |
| | 27S-200-301 | Bracket, deck : KR-15510 | 1 |
| | 27S-200-302 | Bracket, pulley : KR-15407 | 1 |
| | 27S-200 303 | Bracket, switch & indicator : MR-1535 | 1 |
| | 27S-200-304 | Cable Ass'y, battery & speaker cord : QS-1027A | 1 |
| | 27S-200-305 | Chassis, base : PR-15671 | 1 |
| | 27S-200-306 | Clamp battery & speaker cord : KR-30985 | 1 |
| | 27S-200-307 | Coupling, tuning shaft : KR-30921 | 1 |
| | 27S-300-308 | Cover, top : PR-15346A | 1 |
| | 27S-200-309 | Dog-Washer, tuning & volume shaft : KR-15543 | 2 |
| | 27S-200-310 | Dust Cover Ass'y : 27S-200 (for tuner No. MT-1097)) | 1 |
| | 27S-200-311 | Dust Cover Ass'y : 27S-210C (for tuner No. MT-2077) | 1 |
| | 27S-200-312 | E Ring : No. 1 | 2 |
| | 27S-200-313 | Escutcheon Ass'y, with AM/FM selector knob : 27S-200 | 1 |
| | 27S-200-314 | Holder, pilot lamp : PLH-27 | 1 |
| | 27S-200-315 | Insulator, fiber : KR-31373 | 1 |
| | 27S-200-316 | Insulator, fiber, tape/radio switch : KR-30080 | 1 |
| | 27S-200-317 | Joint, dial pointer : KR-14534 | 1 |
| | 27S-200-318 | Knob, local/dx : KN-304T | 1 |
| | 27S-200-319 | Nut, hex : N3/8", 3t | 1 |
| | 27S-200-320 | P.C. Board : PC-1006A | 1 |
| | 27S-200-321 | Pointer, dial : KR-12547C | 1 |
| | 27S-200-322 | Receptacle, antenna : YJ-6 | 1 |
| | 27S-200-323 | Screw, machine : P.B. 2 × 3 | 2 |
| | 27S-200-324 | Screw, machine : P.B. 2.6 × 4 | 2 |
| | 27S-200-325 | Screw, machine : P.P. 3 × 4 | 8 |
| | 27S-200-326 | Screw, machine : P.P. 3 × 6 (with lock washer) | 1 |
| | 27S-200-327 | Screw, tapping : P.P. 3 × 4 | 2 |
| | 27S-200-328 | Screw, tapping : P.P. 3 × 6 | 6 |
| | 27S-200-329 | Shaft, dust cover : KR-13590 | 1 |
| | 27S-200-330 | Spring, dust cover : KR-12601 | 1 |
| | 27S-200-331 | Spring, with dial string : KR-12763 | 1 |
| | 27S-200-332 | Sticker, model no. : 27S-200C (Model C-977B) | 1 |
| | 27S-200-333 | Sticker, model no. : 27S-200C (Model ID-400B) | 1 |
| | 27S-200-334 | Washer, lock : LW9 | 2 |
| **MECHANICAL PARTS (DECK)** | | | |
| | 27S-200-401 | Bearing, capstan : 960-3008-01 | 1 |
| | 27S-200-402 | Belt : 602-0042-01 | 1 |
| | 27S-200-403 | Bracket, motor : 630-1108-00 | 1 |
| | 27S-200-404 | Cam, channel change : 608-0043-00 | 1 |
| | 27S-200-405 | Contact, tape guide : 630-1080-00 | 1 |
| | 27S-200-406 | Chassis Ass'y, main : 960-3005-03 | 1 |
| D-1 | 27S-200-407 | Diode : 001-0153-00 | 1 |
| | 27S-200-408 | E Ring : 743-3000-00 | 1 |
| | 27S-200-409 | Flywheel 611-0044-01 | 1 |
| | 27S-200-410 | Guide tape 605-0039 00 | 1 |
| | 27S-200-411 | Head, playback : 011-0243-00 | 1 |
| | 27S-200-412 | Holder Ass'y, cartridge hold : 960-3006-00 | 1 |
| | 27S-200-413 | Holder Ass'y, head : 960-3122-00 | 1 |
| | 27S-200-414 | Insulator, fiber : 347-0764-00 | 1 |
| | 27S-200-415 | Insulator, tape guide : 631-0263-01 | |
| | 27S-200-416 | Motor : 020-0334-01 | 1 |
| | 27S-200-417 | Nut, area adjust : 631-0279-00 | 1 |

| Reference No. | Part No. | Description | Q'ty |
|---|---|---|---|
| | 27S-200-418 | Plate, cartridge slide : 631-0207-00 | 1 |
| | 27S-200-419 | Pulley, motor : 603-0049-00 | 1 |
| | 27S-200-420 | Screw, machine : 714-2605-81 | 2 |
| | 27S-200-421 | Screw, machine : 714-3004-81 | 4 |
| | 27S-200-422 | Screw. machine : 715-2616-11 | 1 |
| S-4 | 27S-200-423 | Screw, machine : 732-2604-11 | 2 |
| | 27S-200-424 | Screw, tapping : 702-2606-11 | 1 |
| | 27S-200-425 | Screw, tapping : 73 23005-80 731 | 5 |
| | 27S-200-426 | Screw, tapping : 731-3008-80 | 1 |
| | 27S-200-427 | Solenoid Ass'y, channel change : 015-0215-01 | 1 |
| | 27S-200-428 | Spring, azimuth : 750-1767-00 | 1 |
| | 27S-200-429 | Spring, cartridge retanining : 750-1764-00 | 2 |
| | 27S-200-430 | Spring, head height : 750-1853-00 | 1 |
| | 27S-200-431 | Switch : 013-3285-00 | 1 |
| | 27S-200-432 | Spring, motor retaining : 750-1814-00 | 1 |
| | 27S-200-433 | Switch Ass'y : 960-3121-00 | 1 |
| | 27S-200-434 | Washer, flywheel : 746-0626-00 | 1 |
| | 27S-200-435 | Washer, lock : 746-0030-00 | 1 |
| | 27S-200-436 | Spacer, motor coller : TD-506 | 1 |
| **MECHANICAL PARTS (DECK)** | | | |
| | 27S-220-401 | Bearing, capstan : 947-03-03 | 1 |
| | 27S-220-402 | Belt : 947-09-07 | 1 |
| | 27S-220-403 | Bracket, motor : 947-09-05 | 1 |
| | 27S-220-404 | Cam, capstan : 947-03-02 | 1 |
| | 27S-220-405 | Cam, head adjast : 947-02-03 | 1 |
| | 27S-220-406 | Cam Ass'y : 947-02-81 | 1 |
| | 27S-220-407 | Chassis, base : 947-01-08 | 1 |
| D-1 | 27S-220-408 | Diode : F14A | 1 |
| | 27S-220-409 | E Ring, flywheel : E-4 | 1 |
| | 27S-220-410 | Flywheel, with capstan : 94-03-04 | 1 |
| | 27S-220-411 | Guide, cartridge : KR-11441 | 1 |
| | 27S-220-412 | Head, playback : TD-12 | 1 |
| | 27S-220-413 | Holder Ass'y, cartridge : 947-06-82 | 1 |
| | 27S-220-414 | Holder Ass'y : head : 947-08-82 | 1 |
| | 27S-220-415 | Motor : MHT-7RF-2N | 1 |
| | 27S-220-416 | Plate Ass'y, with head holder shaft : 947-08-01 | 1 |
| | 27S-220-417 | Pulley, motor : 947-09-06 | 1 |
| | 27S-220-418 | Push Nut : SPN-2.0 | 1 |
| | 27S-220-419 | Retainer, head : 947-08-06 | 1 |
| | 27S-220-420 | Screw, machine : P.P. 2.6 × 4 | 1 |
| | 27S-220-421 | Screw, machine : P.P. 2.6 × 4 (with spring washer) | 3 |
| | 27S-220-422 | Screw, machine : P.P. 2.6 × 5 (with spring washer) | 4 |
| | 27S-220-423 | Screw, machine : P.P. 3 × 38 | 1 |
| | 27S-220-424 | Screw, machine : P.P. 3 × 32 | 1 |
| | 27S-220-425 | Screw, tapping : P.P. 3 × 5 | 3 |
| | 27S-220-426 | Screw, tapping : P.P. 3 × 6 | 4 |
| | 27S-220-427 | Select Plate Ass'y : 947-04-81 | 1 |
| | 27S-220-428 | Set Screw : M2 × 2.5 | 1 |
| | 27S-220-429 | Solenoid Ass'y, channel selector : 947-04-06 | 1 |
| | 27S-220-430 | Spacer, 8 cam bracket : 947-02-05 | 1 |
| | 27S-220-431 | Spacer, cartridge holder : 947-02-06 | 1 |
| | 27S-220-432 | Spring, head adjust : 947-02-06 | 1 |
| | 27S-220-433 | Spring, head height : 947-08-05 | 1 |
| | 27S-220-434 | Spring, head holder : 947-06-03- | 1 |
| | 27S-220-435 | Spring, solenoid : 947-04-07 | 1 |
| S-4 | 27S-220-436 | Switch, tape/radio : SW-139 | 1 |
| | 27S-220-437 | Tape Guide Ass'y : 947-05-81 | 1 |
| | 27S-220-438 | Terminal, ground: 151-05-18 | 1 |
| | 27S-220-439 | Washer, flywheel : 151-03-05 | 2 |
| | 27S-220-440 | Washer, plain : W2.6 | 2 |
| **INSTALLATION & ACCESSORY MODEL C-977B** | | | |
| | 27S-200-501 | Fuse : 3A | 1 |
| | 27S-200-502 | Knob, tone & balance : KN-27T | 2 |
| | 27S-200-503 | Knob, volume & tuning : KN-54VCR | 2 |
| | 27S-200-504 | Owner's Guide : 27S-200C(01) | 1 |
| | 27S-200-505 | Rear Support Strap : KR-1011 | 1 |
| | 27S-200-506 | Screw Bag, installation : 27S-200C(01) | 1 |
| | 27S-200-507 | Speaker Cord : QS-871 | 1 |
| | 27S-200-508 | Trimplate Bag : MR-13110 | 1 |
| **INSTALLATION & ACCESSORY MODEL ID-400B** | | | |
| | 27S-200-511 | "A" Lead Adaptor Bag : QS-579 | 1 |
| | 27S-200-512 | Back up Plate : MR-13267 | 1 |
| | 27S-200-513 | Fuse : 3A | 2 |
| | 27S-200-514 | Knob Bag (No. 1) : KN-73TCR (shallow) | 1 |
| | 27S-200-515 | Knob Bag (No. 2) : KN-61TCR (deep) | 1 |
| | 27S-200-516 | Knob Bag (No. 3) : KN-54V (front) | 1 |
| | 27S-200-517 | Owner's Guide : 27S-200C(02) | 1 |
| | 27S-200-518 | Rear Support Strap : KR-1011 u | 1 |
| | 27S-200-519 | Rubber Collar : MR-30074 | 1 |
| | 27S-200-520 | Screw Bag, installation : 27S-200C(02) | 1 |
| | 27S-200-521 | Spacer Bag : S-099 | 1 |
| | 27S-200-522 | Speaker Cord : QS-871 | 1 |
| | 27S-200-523 | Trimplate : FP-49 | 1 |
| | 27S-200-524 | Wire Nut Bag : S-100 | 1 |

Pages 13-28 Courtesy of CHRYSLER CORP.

AM ALIGNMENT PROCEDURE

A 3.2 ohm speaker or a 3.2 ohm, 10 watt resistive load must be connected across the receiver speaker leads during alignment. Connect an audio output meter across the output load. Connect a signal generator through a dummy antenna to the receiver antenna receptacle, see Figure 10. With the fader control adjusted to maximum resistance, slowly increase the signal generator output from zero to a level to maintain 1.80 volts (1 watt) on the audio output meter to prevent overloading. The power source voltage should be 13.2 volts. With the top and bottom covers installed, perform the following steps from AM alignment. The antenna trimer, C301 is located at the right rear corner of the radio. The adjustment is made through the tape cartridge slot using a long, thin screwdriver.

| Step | Test Signal Connection | Test Signal Freq. (400 Hz Mod. | Tuner Set To | Adjust for Max. Output in Order Shown |
|---|---|---|---|---|
| RF ALIGNMENT | | | | |
| 1. | Antenna recept. through dummy antenna, see Figure 10 | 1610 KHz | Hi-end Stop | C6B, C301, C6A See Figure 11 |
| | NOTE<br>DO NOT PERFORM STEPS 3, 4, 5, AND 6 UNLESS TUNER HAS BEEN TEMPERED WITH OR COMPONENTS HAVE BEEN REPLACED. BEFORE PROCEEDING WITH STEP 3, BACK TUNING CORES OUT OF TUNING COILS TO WHERE THEY JUST REMAIN IN COIL FORM, TO ELIMINATE THEIR EFFECT ON TRIMMER ADJUSTMENT. | | | |
| 2. | Antenna recept. through dummy antenna, see Figure 10 | 1610 KHz | Hi-end Stop | C6B, C301, C6A See Figure 11 |
| 3. | Antenna recept. through dummy antenna, see Figure 10 | 1000 KHz | 1000 KHz | L4, L3, L2 See Figure 11 |
| 4. | Antenna recept. through dummy antenna, see Figure 10 | 1610 KHz | Hi-end | C6B, C301, C6A see Figure 11 |
| 5. | Repeat steps 3 and 4 until no further increase, then cement cores in place; last adjustment should be step 4. | | | |
| ANTENNA TRIMMER | | | | |
| 6. | With radio installed and antenna fully extended, tune receiver to a weak station at approximately 1600 KHz. Adjust the antenna trimmer C301 for maximum signal volume. | | | |

## TAPE DECK ALIGNMENT PROCEDURE

Connect an AC VTVM and SCOPE through CHANNEL SWITCH BOX to RIGHT and LEFT CHANNEL OUTPUTS as shown in Figure 12 to perform the following procedure. Set volume control for convenient scope display and balance control to mid position.

| Step | Test Cartridge | Program | Adjustment |
|---|---|---|---|
| HEAD ADJUSTMENT | | | |
| 1 | RCA 340 | 2 & 6 | Activate selector switch until tracks 2 and 6 appear on scope (400 Hz). |
| AZIMUTH | | | |
| 2 | RCA 321 | 6 (8 KHz) | Azimuth adjustment screw for maximum indication on scope and VTVM. |
| HEIGHT | | | |
| 3 | RCA 321 | 2 (400 Hz) | Head height adjustment nut for minimum indication on Scope and VTVM. |
| Repeat steps and 2 and 3 for optimum adjustment and cement screw and nut. | | | |

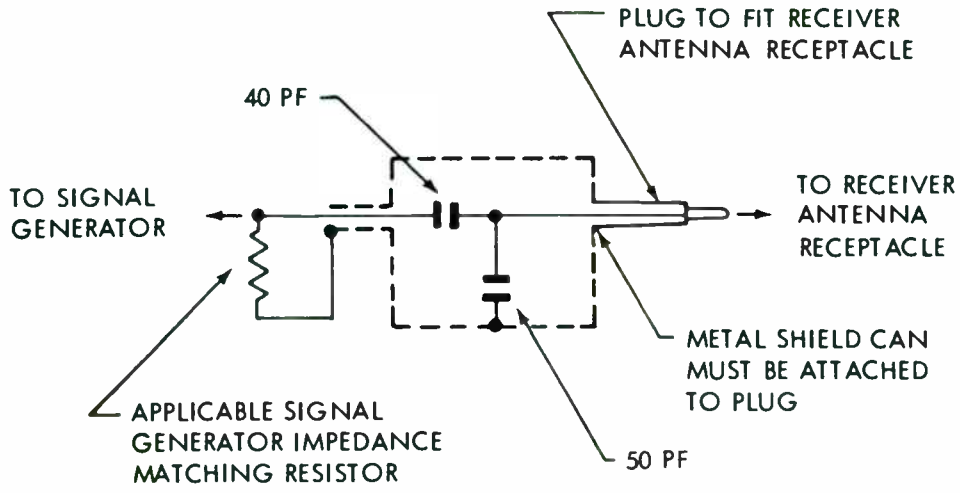



Figure 10. A. M. Dummy Antenna Detail

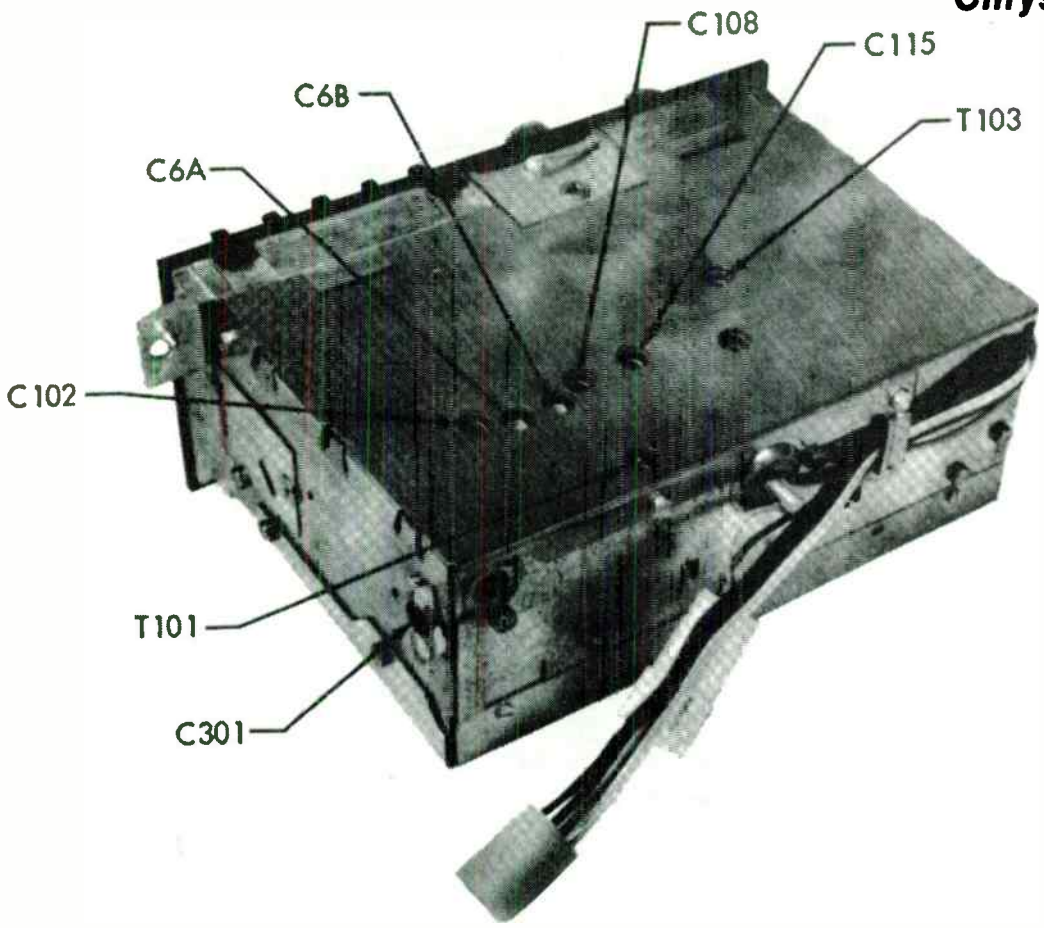



Figure 11. Alignment Locations

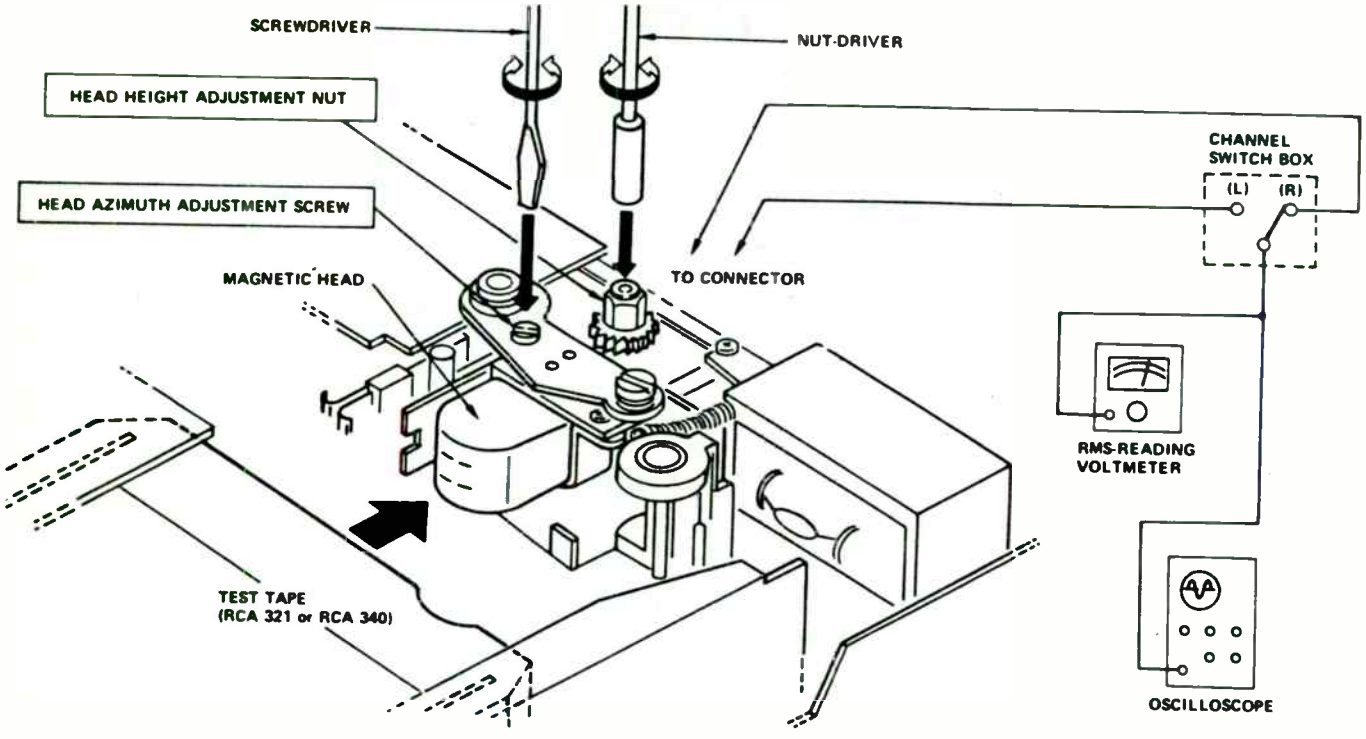
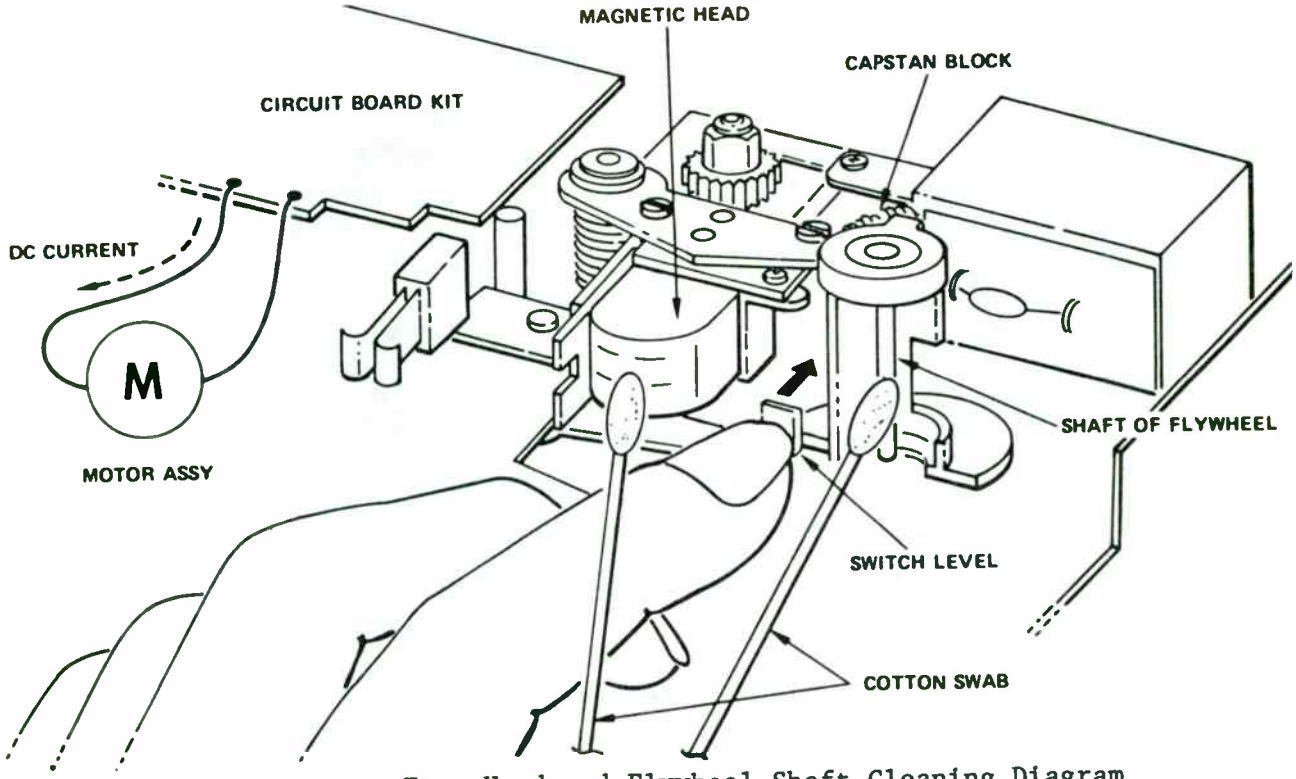
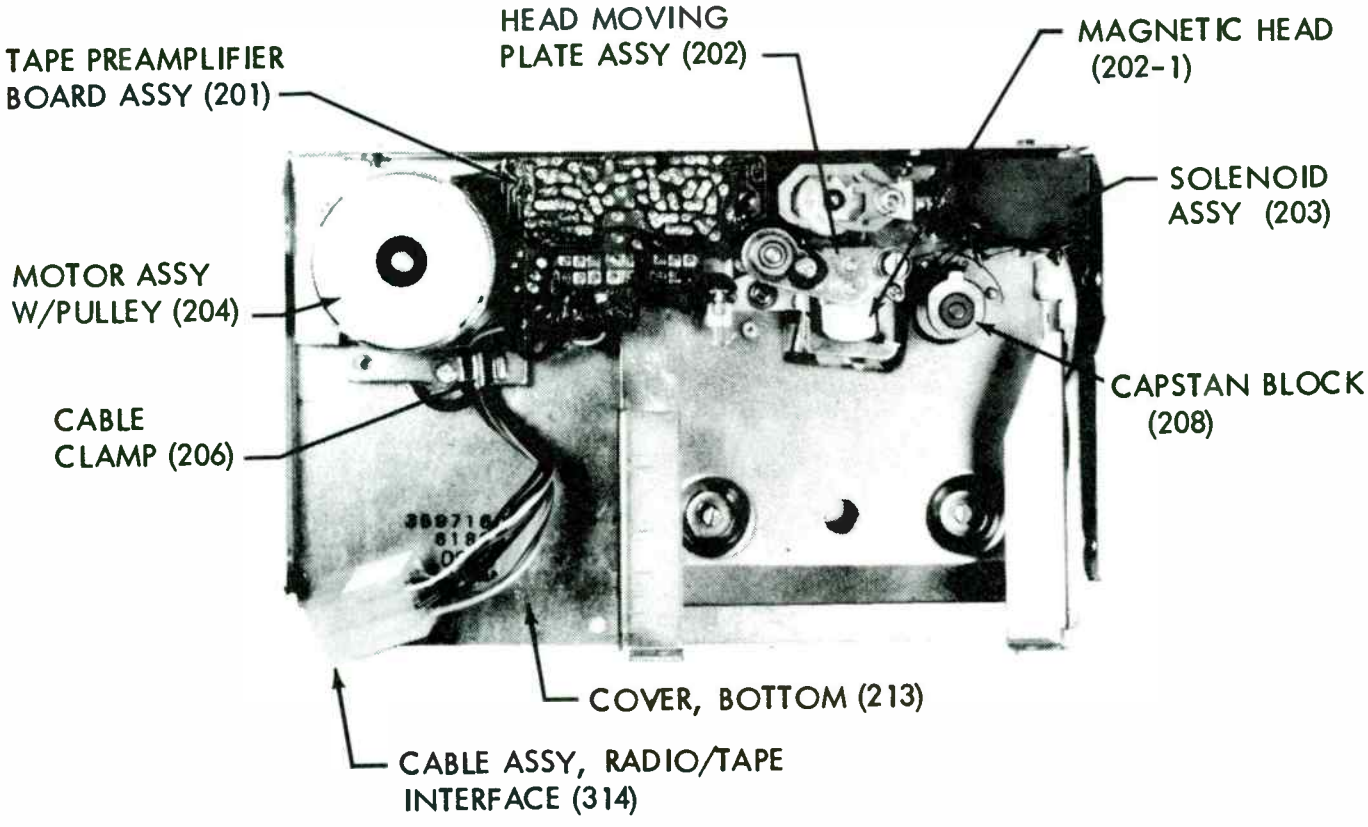


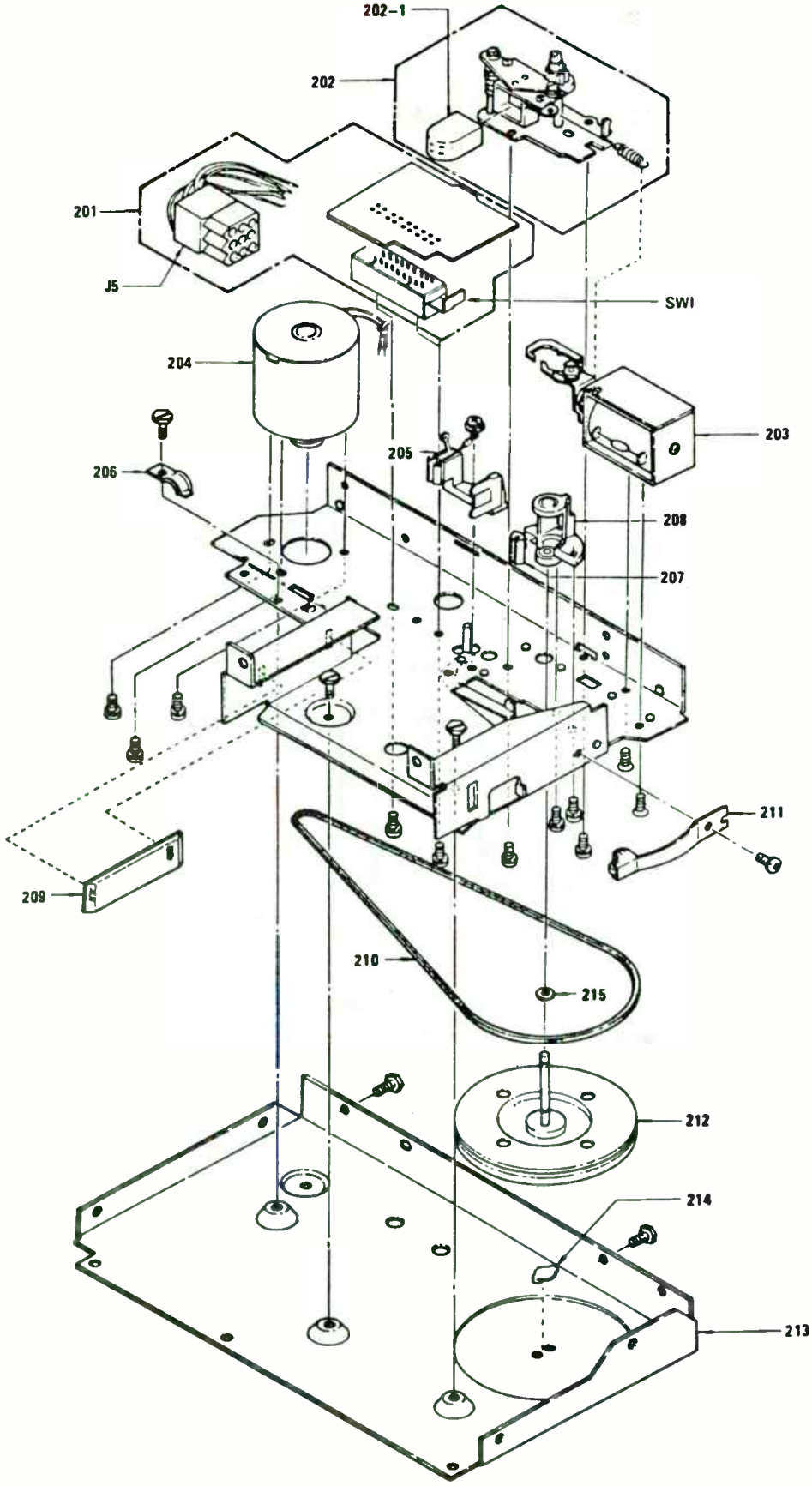

Figure 12. Tape Deck Alignment Detail



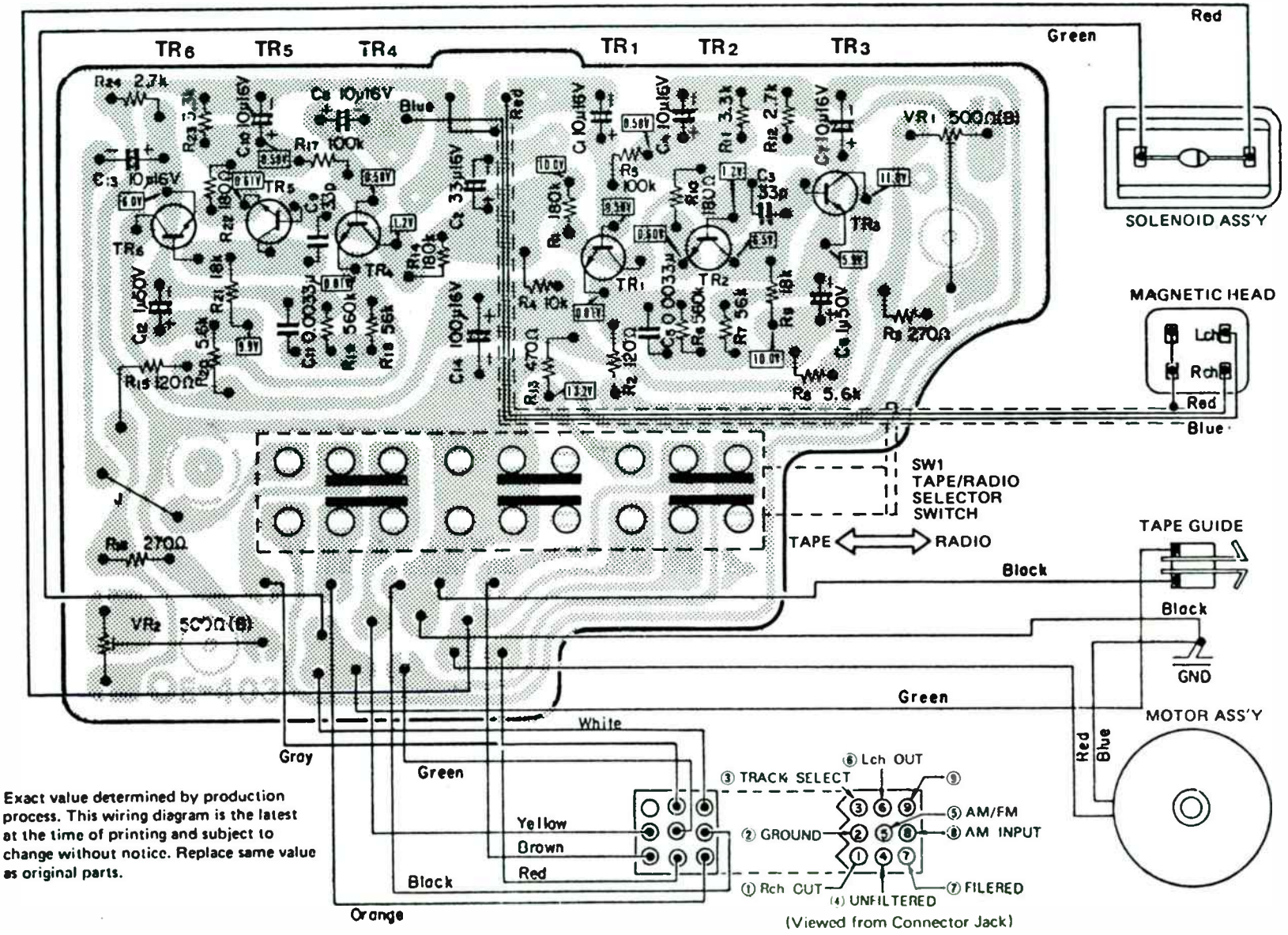

Tape Head and Flywheel Shaft Cleaning Diagram




Tape Mechanism Parts Location, Top View



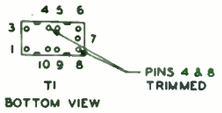

Tape Mechanism Assembly Exploded View



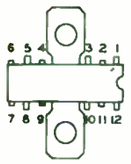

- Exact value determined by production process. This wiring diagram is the latest at the time of printing and subject to change without notice. Replace same value as original parts.

Printed Circuit Board, Tape Preamplifier Board

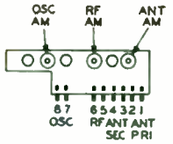

T2
BOTTOM VIEW



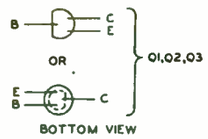

T1
BOTTOM VIEW




IC1 & IC2
TOP VIEW

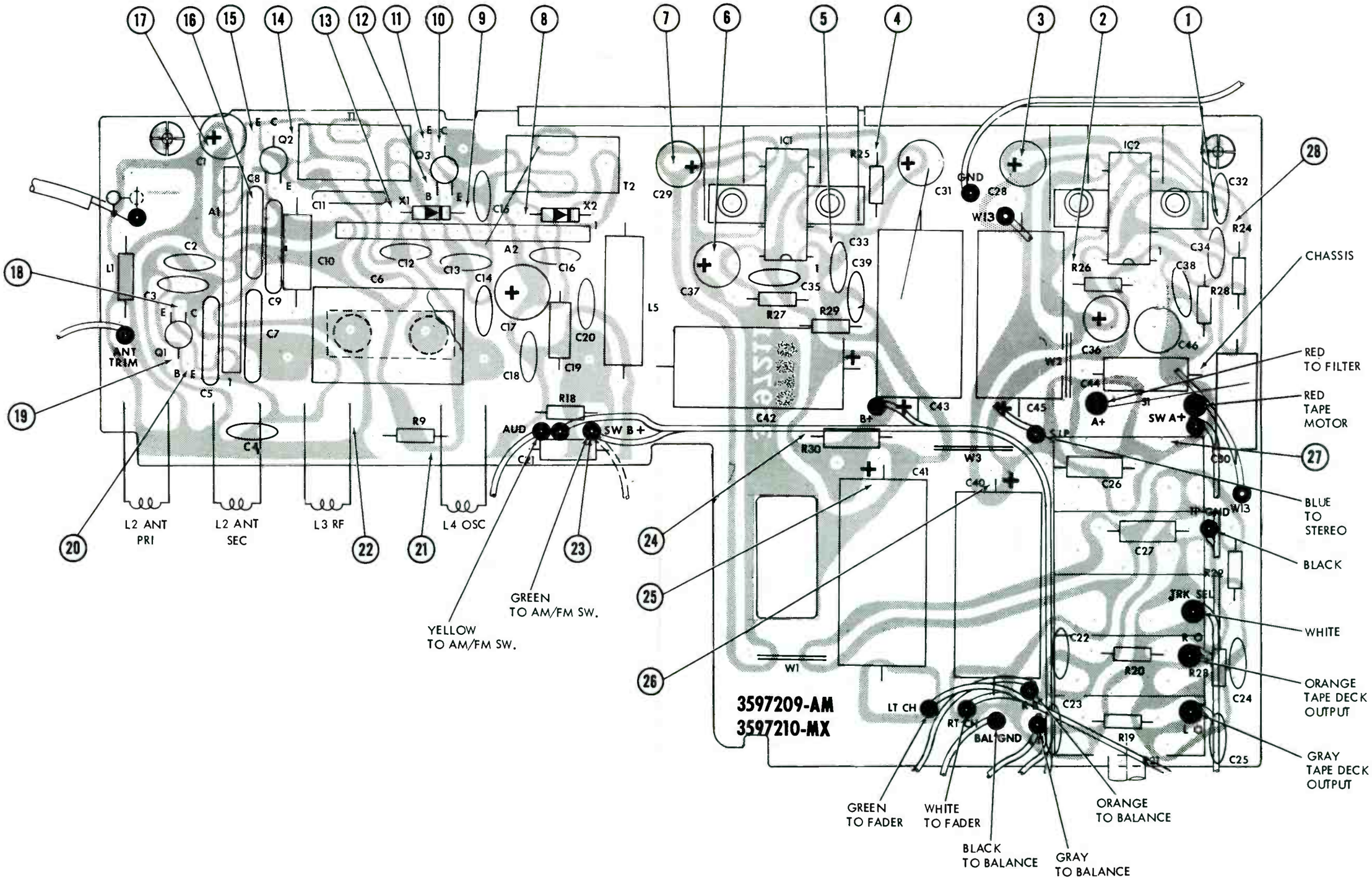


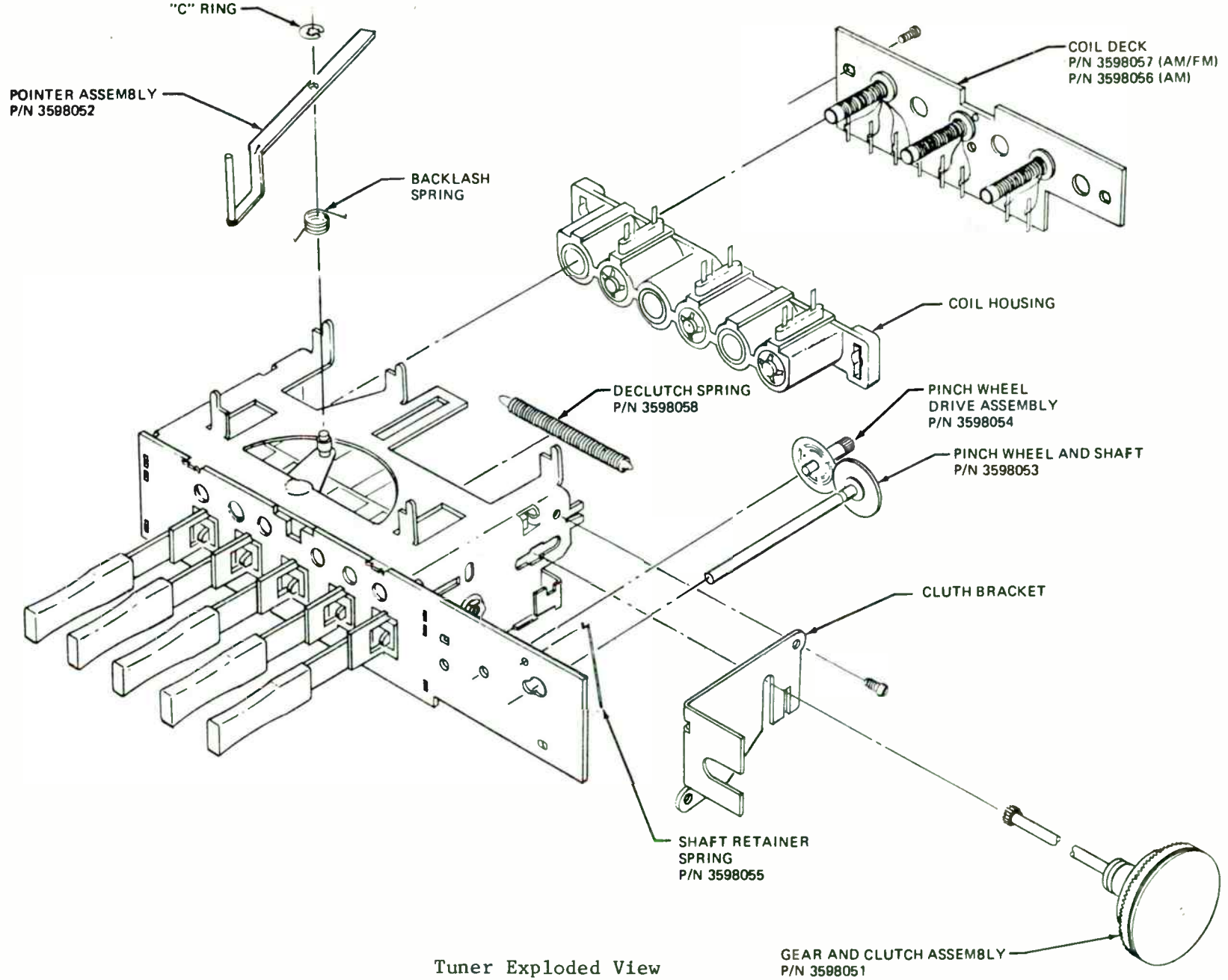

REAR VIEW OF TUNER




## NOTES:

1. ALL RESISTORS 1/4 WATT EXCEPT AS NOTED.
2. CAPACITANCE NOTED IN MICROFARADS EXCEPT AS NOTED
3. SEE SHEET 2 FOR PART TERMINATION CONFIGURATION.
4. /// INDICATES CHASSIS GROUND.
5. ⏚ INDICATES P.C. BOARD GROUND.
6. * VALUE VARIES - REPLACE WITH ORIGINAL VALUE.
7. INPUT VOLTAGE +13.2VDC; TUNING RANGE 535 TO 1610 KHz; INTERMEDIATE FREQ.: 262.5 KHz.
8. ALL DC VOLTAGES ±10%, MEASURED WITH VTVM, NEGATIVE LEAD GROUNDED, NO SIGNAL AT ANTENNA, VOLUME CONTROL AT CCW POSITION, SWITCH ON.
9. ALL AC SIGNAL CONDITIONS: 3.2Ω LOAD, VOLUME CONTROL MAX. C.W., TONE CONTROL MAX. C.W., OUTPUT REF 1.0 WATT. SIGNAL GENERATOR SHOULD BE PROPERLY TERMINATED.
10. ▭ INDICATES SIGNAL LEVEL REQUIRED FOR ONE WATT OUTPUT WITH MAX VOLUME CONDITIONS: 1610 KHz, 400 Hz 30%, MODULATION UNLESS OTHERWISE SPECIFIED.






Tuner Exploded View

REPLACEMENT PARTS LIST AM TAPE RADIO

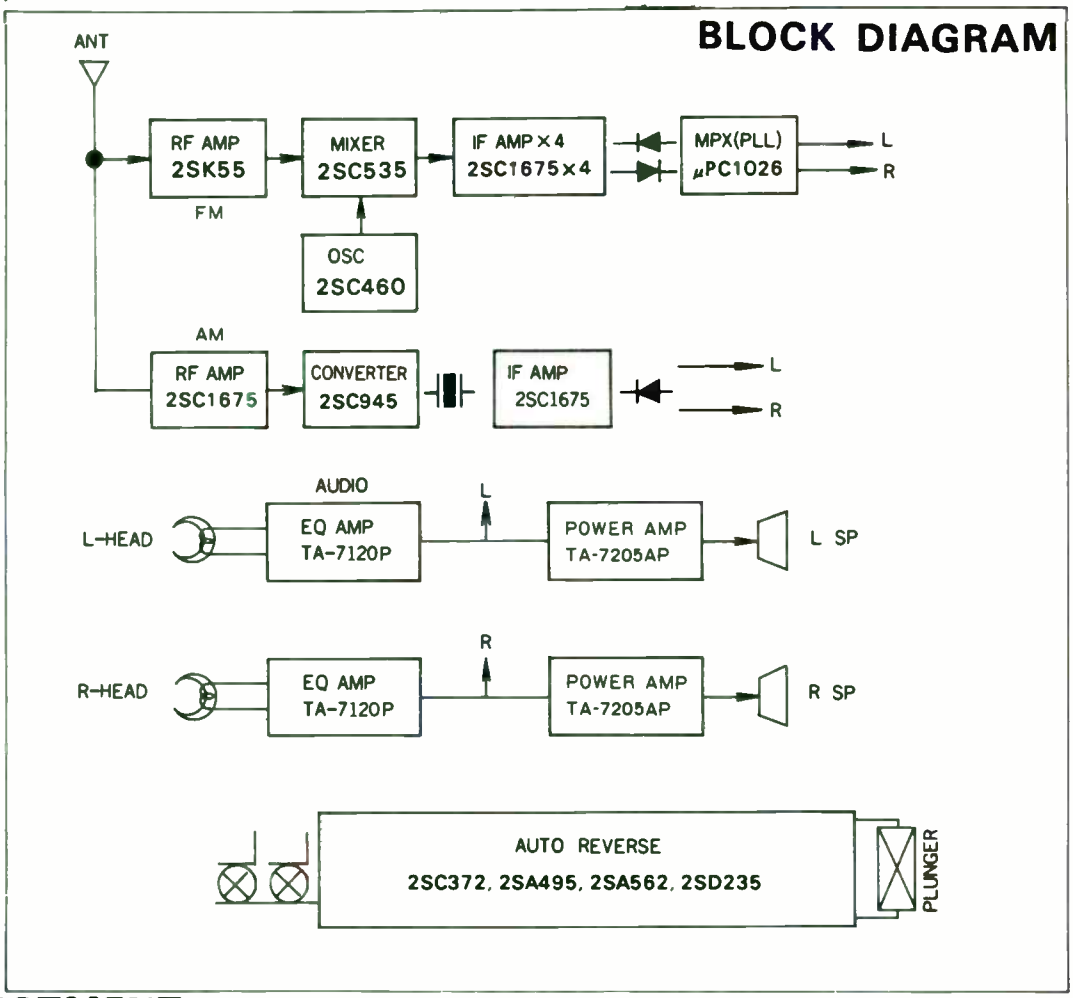
| Ref. No. | Part Number | Description | Suggested Price |
|---|---|---|---|
| | | DIODES, TRANSISTORS, ICS & MODULES (AUDIO BOARD ASSEMBLY P/N 3597209) | |
| X1 | 3596061 | Diode, Silicon | $0.20 |
| X2 | 3596062 | Diode, Germanium | 0.35 |
| Q1 | 3596067 | Transistor, NPN Silicon, RF Amp, TO-98 | 0.85 |
| Q1 | 3596070 | Transistor, NPN Silicon, RF Amp, TO-92 | 0.85 |
| Q2 | 3596068 | Transistor, NPN Silicon, Osc/Mixer, TO-98 | 0.80 |
| Q2 | 3596071 | Transistor, NPN Silicon, Osc/Mixer, TO-92 | 0.80 |
| Q3 | 3597103 | Transistor, NPN Silicon, IF Amp, TO-98 | 0.80 |
| Q3 | 3597104 | Transistor, NPN Silicon, IF Amp, TO-92 | 0.80 |
| IC1 | 3597049 | Integrated Circuit, Audio Output | 4.35 |
| IC1 | 3597280 | Integrated Circuit, Audio Output | 4.35 |
| IC1 | 3598173 | Integrated Circuit, Audio Output | 4.35 |
| IC2 | 3597049 | Integrated Circuit, Audio Output | 4.35 |
| IC2 | 3597280 | Integrated Circuit, Audio Output | 4.35 |
| IC2 | 3598173 | Integrated Circuit, Audio Output | 4.35 |
| A1 | 3597230 | Resistor Module, RF | 1.75 |
| A2 | 3597229 | Resistor Module, IF | 1.85 |
| | | DIODES, TRANSISTORS (PREAMPLIFIER BOARD ASSEMBLY P/N 3597832) | |
| X401 | YEAD030 | Diode | 0.20 |
| TR1 | 2SC644 | Transistor, NPN, Silicon, AF Amp | 0.80 |
| TR2 | 2SC828 | Transistor, NPN, Silicon, AF Amp | 0.80 |
| TR3 | 2SC828 | Transistor, NPN, Silicon, AF Amp | 0.80 |
| TR4 | 2SC644 | Transistor, NPN, Silicon, AF Amp | 0.80 |
| TR5 | 2SC828 | Transisotr, NPN, Silicon, AF Amp | 0.80 |
| TR6 | 2SC828 | Transistor, NPN, Silicon, AF Amp | 0.80 |
| | | COILS, FILTERS & TRANSFORMERS (AUDIO BOARD ASSEMBLY P/N 3597209) | |
| L1 | 3596331 | Inductor, RF, 2.2 uH | 0.45 |
| L5 | 3596247 | Inductor, Audio Filter, 50 MH | 1.25 |
| L301 | 3598911 | Choke, Supply Filter Assy | 2.65 |
| T1 | 3597234 | Transformer, IF Input | 2.80 |
| T2 | 3597247 | Transformer, IF Output | 2.90 |
| | | CAPACITORS (AM/AUDIO BOARD ASSEMBLY P/N 3597209) | |
| C1 | 3596823 | Capacitor, Electrolytic, 50 MF | 0.65 |
| C2 | 3596112 | Capacitor, Disc Ceramic, .0047 MF | 0.15 |
| C3 | 3596088 | Capacitor, Disc Ceramic, .0027 MF | 0.15 |
| C4 | 3597101 | Capacitor, Disc Ceramic, 100 PF | 0.15 |
| C5 | 3597296 | Capacitor, Disc Ceramic, 130 PF | 0.20 |

| Ref. No. | Part Number | Description | Suggested Price |
|---|---|---|---|
| | | CAPACITORS (Continued) (AM/AUDIO BOARD ASSEMBLY P/N 3597209) | |
| C6 | 3597232 | Capacitor, Dual Trimmer | $1.20 |
| C7 | 3596237 | Capacitor, Disc Ceramic, 220 PF | 0.20 |
| C8 | 3596083 | Capacitor, Disc Ceramic, .01 MF | 0.30 |
| C9 | 3596083 | Capacitor, Disc Ceramic, .01 MF | 0.30 |
| C10 | 3596421 | Capacitor, Mylar, .01 MF | 0.45 |
| C11 | 3596439 | Capacitor, Dipped Mica, 390 PF (Use with Tuner P/Ns 3599121 and 3599122) | 0.65 |
| C11 | 3597296 | Capacitor, Disc Ceramic, 130 PF (Use with Tuner P/Ns 3599123 and 3599124) | |
| C11 | 3597507 | Capacitor, Disc Ceramic, 240 PF (Use with Tuner P/Ns 3599123 and 3599124) | |
| C12 | 3596089 | Capacitor, Disc Ceramic, .05 MF | 0.25 |
| C13 | 3596089 | Capacitor, Disc Ceramic, .05 MF | 0.25 |
| C14 | 3596089 | Capacitor, Disc Ceramic, .05 MF | 0.25 |
| C15 | 3598377 | Capacitor, Disc Ceramic, 180 PF | 0.15 |
| C16 | 3596088 | Capacitor, Disc Ceramic, .0027 MF | 0.15 |
| C17 | 3597249 | Capacitor, Electrolytic, 200 MF | 0.80 |
| C18 | 3596089 | Capacitor, Disc Ceramic, .05 MF | 0.25 |
| C19 | 3596255 | Capacitor, Tant., 3.3 MF | 1.30 |
| C20 | 3596138 | Capacitor, Disc Ceramic, .001 MF | 0.15 |
| C21 | 3596419 | Capacitor, Mylar, .0039 MF | 0.45 |
| C22 | 3596821 | Capacitor, Disc Ceramic, .033 MF | 0.20 |
| C23 | 3596821 | Capacitor, Disc Ceramic, .033 MF | 0.20 |
| C24 | 3596819 | Capacitor, Disc Ceramic, .1 MF | 0.30 |
| C25 | 3596819 | Capacitor, Disc Ceramic, .1 MF | 0.30 |
| C26 | 3596883 | Capacitor, Mylar, .0047 MF | 0.45 |
| C27 | 3596883 | Capacitor, Mylar, .0047 MF | 0.45 |
| C28 | 3597043 | Capacitor, Electrolytic, 100 MF | 0.80 |
| C29 | 3597043 | Capacitor, Electrolytic, 100 MF | 0.80 |
| C30 | 3597251 | Capacitor, Electrolytic, 150 MF | 1.05 |
| C31 | 3597250 | Capacitor, Electrolytic, 150 MF | 1.05 |
| C32 | 3596088 | Capacitor, Disc Ceramic, .0027 MF | 0.15 |
| C33 | 3596088 | Capacitor, Disc Ceramic, .0027 MF | 0.15 |
| C34 | 3596822 | Capacitor, Disc Ceramic, 500 PF | 0.15 |
| C35 | 3596822 | Capacitor, Disc Ceramic, 500 PF | 0.15 |
| C36 | 3597043 | Capacitor, Electrolytic, 100 MF | 0.80 |
| C37 | 3596043 | Capacitor, Electrolytic, 100 MF | 1.10 |
| C38 | 3597380 | Capacitor, Disc Ceramic, .1 MF | 0.30 |
| C39 | 3597380 | Capacitor, Disc Ceramic, .1 MF | 0.30 |
| C40 | 3597252 | Capacitor, Electrolytic, 1500 MF | 1.80 |
| C41 | 3597252 | Capacitor, Electrolytic, 1500 MF | 1.80 |
| C42 | 3597252 | Capacitor, Electrolytic, 1500 MF | 1.80 |
| C43 | 3597252 | Capacitor, Electrolytic, 1500 MF | 1.80 |
| C44 | 3597264 | Capacitor, Mylar, .068 MF | 0.45 |
| C45 | 3597252 | Capacitor, Electrolytic, 1500 MF | 1.80 |
| C46 | 3597262 | Capacitor, Metal Mylar, .047 MF | 0.45 |
| C301 | 3598022 | Capacitor, Var. Mica, Antenna Trimmer | 0.75 |
| C301 | 3596033 | Capacitor, Var. Mica, Antenna Trimmer | 0.75 |

| Ref. No. | Part Number | Description | Suggested Price |
|---|---|---|---|
| | | CAPACITORS (PREAMPLIFIER BOARD ASSEMBLY P/N 3597832) | |
| C1 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | $0.80 |
| C2 | ECEA16V33L | Capacitor, Electrolytic, 33 MF | 0.80 |
| C3 | YECCD1H330KM | Capacitor, Ceramic, 33 PF | 0.20 |
| C4 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | 0.80 |
| C5 | YECQN1H332K | Capacitor, Polyester, .0033 MF | 0.20 |
| C6 | ECEA50V1L | Capacitor, Electrolytic, 1 MF | 0.80 |
| C7 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | 0.80 |
| C8 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | 0.80 |
| C9 | YECCD1H330KM | Capacitor, Polyester, 33 PF | 0.20 |
| C10 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | 0.80 |
| C11 | YECQN1H332K | Capacitor, Ceramic, .0033 MF | 0.20 |
| C12 | ECEA50V1L | Capacitor, Electrolytic, 1 MF | 0.80 |
| C13 | ECEA16V10L | Capacitor, Electrolytic, 10 MF | 0.80 |
| C14 | ECEA16V100L | Capacitor, Electrolytic, 100 MF | 0.80 |
| | | RESISTORS (AUDIO BOARD ASSEMBLY P/N 3597209) | |
| R9 | 3597091-432 | Resistor, ¼ Watt, 4.3K Ohms, ± 5% | 0.15 |
| R18 | 3597092-181 | Resistor, ¼ Watt, 180 Ohms, ± 10% | 0.15 |
| R19 | 3597092-153 | Resistor, ¼ Watt, 15K Ohms, ± 10% | 0.15 |
| R20 | 3597092-153 | Resistor, ¼ Watt, 15K Ohms, ± 10% | 0.15 |
| R21 | 3597215 | Control, Vol, Tone & Switches (Mal) | 7.85 |
| R21 | 3598342 | Control, Vol, Tone & Switches (CTS) | 7.85 |
| R22 | 3597092-332 | Resistor, ¼ Watt, 3.3K Ohms, ± 10% | 0.15 |
| R23 | 3597092-332 | Resistor, ¼ Watt, 3.3K Ohms, ± 10% | 0.15 |
| R24 | 3597091-180 | Resistor, ¼ Watt, 18 Ohms, ± 10% | 0.15 |
| R25 | 3597091-180 | Resistor, ¼ Watt, 18 Ohms, ± 10% | 0.15 |
| R26 | 3597092-101 | Resistor, ¼ Watt, 100 Ohms, ± 10% | 0.15 |
| R27 | 3597092-101 | Resistor, ¼ Watt, 100 Ohms, ± 10% | 0.15 |
| R28 | 3597092-2R2 | Resistor, ¼ Watt, 2.2 Ohms, ± 5% | 0.15 |
| R29 | 3597092-2R2 | Resistor, ¼ Watt, 2.2 Ohms, ± 5% | 0.15 |
| R30 | 3597559-270 | Resistor, ½ Watt, 27 Ohms, ± 10% | 0.15 |
| R301 | 3596258 | Control, Dual Fader, CTS | 3.60 |
| R301 | 3596795 | Control, Dual Fader, Centralab | 3.60 |
| R302 | 3597192 | Control, Balance, CTS | 2.00 |
| R302 | 3597216 | Control, Balance, Mallory | 2.00 |
| | | RESISTORS (PREAMPLIFIER BOARD ASSEMBLY P/N 3597832) | |
| R1 | ERD18VJ184 | Resistor, 1/8 Watt, 180K Ohms | 0.15 |
| R2 | ERD18VJ221 | Resistor, 1/8 Watt, 220 Ohms | 0.15 |
| R3 | ERD18VJ103 | Resistor, 1/8 Watt, 10K Ohms | 0.15 |
| R4 | ERD18VJ274 | Resistor, 1/8 Watt, 270K Ohms | 0.15 |
| R5 | ERD18VJ564 | Resistor, 1/8 Watt, 560K Ohms | 0.15 |
| R6 | ERD18VJ563 | Resistor, 1/8 Watt, 56K Ohms | 0.15 |
| R7 | ERD18VJ562 | Resistor, 1/8 Watt, 5.6K Ohms | 0.15 |
| R8 | ERD18VJ183 | Resistor, 1/8 Watt, 18K Ohms | 0.15 |

| Ref. No. | Part Number | Description | Suggested Price |
|---|---|---|---|
| | | RESISTORS (Continued) (PREAMPLIFIER BOARD ASSEMBLY P/N 3597832) | |
| R9 | ERD18VJ181 | Resistor, 1/8 Watt, 180 Ohms | $0.15 |
| R10 | ERD18VJ332 | Resistor, 1/8 Watt, 3.3K Ohms | 0.15 |
| R11 | ERD18VJ272 | Resistor, 1/8 Watt, 2.7K Ohms | 0.15 |
| R12 | ERD18VJ471 | Resistor, 1/8 Watt, 470 Ohms | 0.15 |
| R13 | ERD18VJ184 | Resistor, 1/8 Watt, 180K Ohms | 0.15 |
| R14 | ERD18VJ221 | Resistor, 1/8 Watt, 220 Ohms | 0.15 |
| R15 | ERD18VJ274 | Resistor, 1/8 Watt, 270K Ohms | 0.15 |
| R16 | ERD18VJ563 | Resistor, 1/8 Watt, 56K Ohms | 0.15 |
| R17 | ERD18VJ564 | Resistor, 1/8 Watt, 560K Ohms | 0.15 |
| R18 | ERD18VJ561 | Resistor, 1/8 Watt, 5.6K Ohms | 0.15 |
| R19 | ERD18VJ183 | Resistor, 1/8 Watt, 18K Ohms | 0.15 |
| R20 | ERD18VJ181 | Resistor, 1/8 Watt, 180 Ohms | 0.15 |
| R21 | ERD18VJ332 | Resistor, 1/8 Watt, 3.3K Ohms | 0.15 |
| R22 | ERD18VJ272 | Resistor, 1/8 Watt, 2.7K Ohms | 0.15 |
| | | TUNER PARTS | |
| 100 | 3598051 | Gear & Clutch Assy | 2.75 |
| 101 | 3598052 | pointer Assy | 0.50 |
| 102 | 3598053 | Pinch Wheel & Shaft | 1.15 |
| 103 | 3598054 | Pinch Wheel Drive Assy | 0.90 |
| 104 | 3598055 | Retainer Spring, Pinch Wheel Shaft | 0.05 |
| 105 | 3596860 | Pushbutton | 0.15 |
| 106 | 3598056 | Coil, Deck Assy (AM) | 4.50 |
| 107 | 3598058 | Declutch Plate | 0.10 |
| 108 | 3598059 | Slide Return Spring | 0.05 |
| 109 | 3598060 | Key Bias Spring | 0.10 |
| | | TAPE MECHANISM PARTS | |
| 200 | 3597160 | Tape Mechanism Assy, 8 Track | 87.75 |
| 201 | 3597832 | Tape Preamplifier Board Assy | 20.00 |
| 202 | YASFX036032 | Head Moving Plate Assy | 20.00 |
| 202-1 | YEAH1082SA | Magnetic Head | 15.00 |
| 203 | YASAX01008 | Solenoid Assy | 7.00 |
| 204 | 3597158 | Motor Assy w/Pulley | 21.00 |
| 205 | YEFX235101 | Tape Guide | 1.75 |
| 206 | YAFX016023 | Cable Clamp | 0.25 |
| 207 | YAFX025010 | Capstan Shoe | 0.15 |
| 208 | YEFX212104 | Capstan Block | 2.25 |
| 209 | YEFX223102 | Cartridge Guide | 1.30 |
| 210 | YEFR03019 | Rubber Belt | 0.90 |
| 211 | YEFX005241 | Spring | 1.35 |

| Ref. No. | Part Number | Description | Suggested Price |
|---|---|---|---|
| | | TAPE MECHANISM PARTS (Continued) | |
| 212 | YEFX213115 | Fly Wheel | $5.65 |
| 213 | YEFA05111 | Cover, Bottom | 1.75 |
| 214 | YEFX219104 | Thrust Sheet | 0.25 |
| 215 | YAFL02026 | Spacer | 0.15 |
| SW1 | YEAS07037 | Tape/Radio Selector Switch | 3.20 |
| J5 | YEAS01067 | Preamplifier Connector Assy | 3.75 |
| | | MISCELLANEOUS PARTS | |
| | 3598028 | Dial Mask | 0.35 |
| | 3598029 | Backdial | 0.20 |
| | 3597227 | Insulator, Top Cover | 0.35 |
| | 3597182 | Top Cover | 0.60 |
| | 3599063 | Cable Clip | 0.05 |
| | 3598910 | Bracket, Lamp Holder | 0.90 |
| | 3598235 | Lamp #1815 | 0.25 |
| | 3598272 | Diffuser, Lamp | 0.20 |
| | 3597223 | Retainer, Button | 0.05 |
| | 3598085 | Escutcheon Assy | 3.65 |
| | 3599122 | Tuner Assembly (GI) | |
| | 3599122 | Tuner Assembly (SHOJI) | |
| | 3596778 | Balance Control Knob | 0.30 |
| | 3597209 | AM/Audio P.C. Board Assy | 27.00 |
| | 3598091 | Sub Escutcheon Assy | 4.40 |
| | 3597206 | Chassis, Side Assy | |
| | 3598038 | Chassis, Rear | |
| | 3599010 | Cable Assy, Radio/Tape Interface (W4) | 0.75 |
| | 3597200 | Heatsink | 0.25 |
| | 3597225 | Fixed Chassis, Assy | |
| | 3597255 | Cable Assy, Speaker (W12) | 2.75 |
| | 3597269 | Cable, Power | 0.25 |
| | 3598398 | Connector, Antenna | 0.20 |
| | 3597191 | Pin, Hinge | 0.30 |
| | 3598461 | Door Tape | 0.90 |
| | 3597190 | Spring, Tape Door | 0.20 |




## ■ADJUSTMENT:

○ Radio section

**Adjustment of MW Tuner**

○ Instruments required for MW adjustment

1. Sweep generator (452.5KHz)
2. MW S.S.G
3. Oscilloscope
4. Millivolt metter
5. Dummy antenna (See Fig. 2)
6. Dummy load (4Ω resistor)

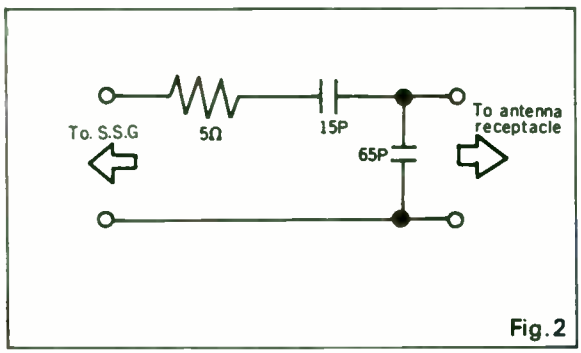


Fig.2

Adjusting IF section

1) Make connections as shown in the above Fig. 3 and set the dial pointer to the right end (maximum frequency point) of the dial, Volume control to minimum and tone control of high.

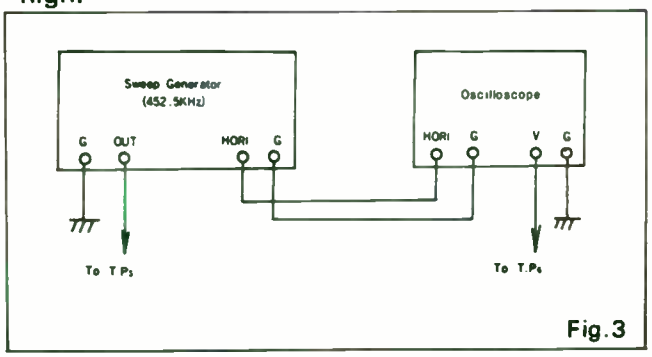


Fig.3

2) Adjust by turning the core of IFT201, so that the height of waveform becomes maximum with good symmetry, as shown in the right Fig. 4.

At this time, keep the output of the sweep generator as low as possible.

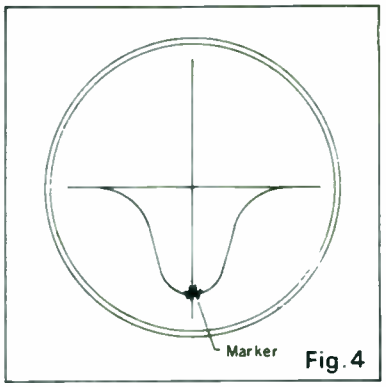


Fig. 4

Tracking Adjustment of RF Section

1) Setting frequency band width

Keep the dial pointer of the set at the right end of the dial, feed 1620KHz signal from AM S.S.G through ANT, and turn TC203 to receive this signal. Next bring the dial pointer to the left, set the S.S.G to 600KHz, and turn the core of L202 to receive this signal.

Repeat the above operation 2 ~ 3 times.

2) ANT, RF adjustment

Set the AM S.S.G to 1620KHz and receive this signal on the set. Now adjust by turning the trimmers TC201 (ANT trimmer), TC202 (RF trimmer) so that the output becomes maximum. At this time, keep the output of S.S.G as low as possible, volume control to max. and tone control to high.

**Adjustment of FM Section**

o Instruments required

1) FM S.S.G
2) Sweep generator (10.7MHz)
3) Oscilloscope
4) AC voltmeter (dB meter, etc.)
5) Dummy load (4Ω resistor)
6) FM stereo modulator

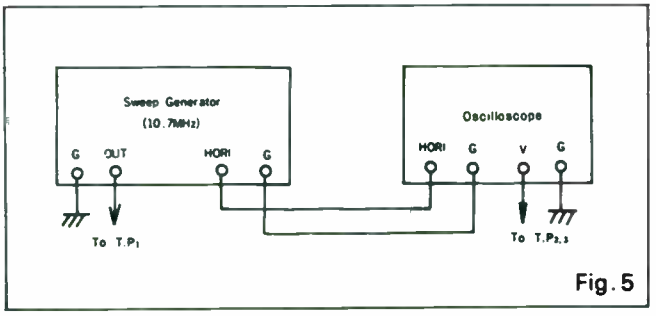


Fig. 5

Adjusting IF section

1) Make connections as shown in the above Fig. 5 bring the dial pointer of the set to the right end (maximum frequency point), volume control to min. and tone control to high.

2) Adjust by turning the core of IFT101 so that the waveform becomes maximum height with good symmetry. Next turn the primary side core of IFT104 so that the waveform becomes maximum height.

(See below Fig. 6)

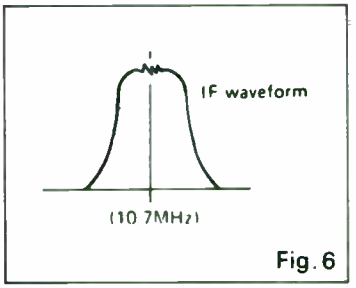


Fig. 6

At this time, adjust the center frequency to the resonance frequency of the ceramic filter. This frequency is indicated on ceramic filter by color code.

| Color | Center Frequency |
|---|---|
| Black | 10.64MHz±30KHz |
| Blue | 10.67MHz±30KHz |
| Red | 10.70MHz±30KHz |
| Orange | 10.73MHz±30KHz |
| White | 10.76MHz±30KHz |

3) Next perform S curve adjustment while observing TP3 waveform. Adjust by turning the secondary side core (black) of IFT105 to obtain a waveform having good symmetry and good linearity, as shown in the below Fig. 7.

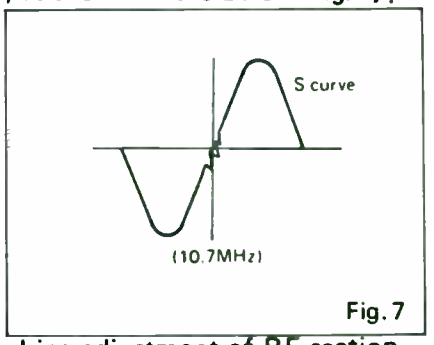


Fig. 7

Tracking adjustment of RF section

1) Setting band width

Keep the dial pointer of the set to the left end (minimum frequency point), feed 87.5 MHz signal from FM SSG though ANT, and turn the OSC trimmer TC103 to receive this signal.

2) ANT, RF adjustment

Set the S.S.G to 98MHz, and receive this signal. Now adjust by turning the ANT trimmer TC101 and RF trimmer TC102 so that the output becomes maximum. At this time, keep the output of S.S.G as low as possible.

Adjustment of Multiplex section
(Adjusting V.C.O)

This adjustment is for adjusting the frequency of the voltage controlled oscillator (V.C.O).

Connect TP4 to the Vertical terminal of oscilloscope and calibrated 19KHz signal (calibration use signal of stereo modulates) to the horizontal terminal.
Now adjust the semifixed potentiometer VR 102 so that the Lissajuous figure does not move.

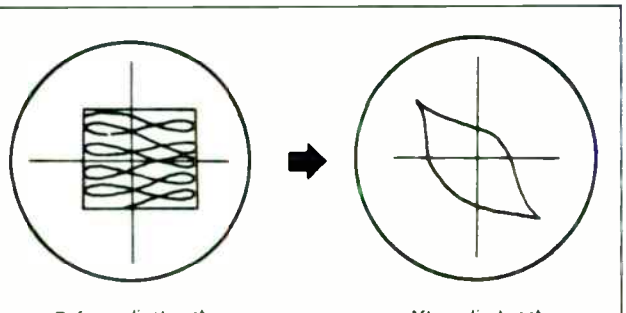



Fig. 8

NOTE: The Lissajuous figure will not become a circle because of sine wave and square wave.

## ■TROUBLESHOOTING:

◎AM circuit

| Symptom | Defective point and cause | Corrective action |
|---|---|---|
| No sound | o Transistor Q201~203 faulty | Replace |
| | o IFT201, 202 open | Replace |
| | o Tuning coil (RF·OSC) open | Replace |
| | o R208, 215 open | Replace |
| Volume is low | o Adjustment faulty | Readjust |
| Distortion | o Tuning ANT coil open | Replace |
| Sensitivity is poor | o Transistor Q201~203 deterioration | Replace |
| | o TC201~203 short | Replace |
| | o D202 deterioration | Replace |
| | o R212 faulty | Replace |
| | o Coil L202 open | Replace |
| Oscillates | o C203, 207, 208 faulty | Replace |
| | o R202, 213 faulty | Replace |

## ◎FM circuit

| Symptom | Defective point and cause | Corrective action |
|---|---|---|
| No sound | o Transistor Q101~107 faulty | Replace |
| | o IC101 faulty | Replace |
| | o Tuning coil open | Replace |
| | o IFT101, 104, 105 open | Replace |
| | o Coil L103 open | Replace |
| Volume is low<br>Distortion<br>Sensitivity is poor | o Trimmer TC101~103 faulty | Replace |
| | o Transistor Q101~107 deterioration | Replace |
| | o Adjustment faulty | Readjust |
| | o Diode D102, 103 deterioration | Replace |
| | o IC101 faulty | Replace |
| Oscillates | o C111, 112, 117, 118, 122, 126, 127, 129, 131, 145, 146 faulty | Replace |
| | o C102, 104, 107, 110 faulty | Replace |
| Separation is bad | o IC101 deterioration | Replace |
| | o C132, 135, 138, 140 faulty | Replace |
| | o R138, 139 faulty | Replace |
| Indicator does not light | o VR102 adjustment faulty | Readjust |
| | o Band switch faulty | Replace |
| | o C140 capacity down | Replace |
| | o IND, lamp open | Replace |
| | o R146 open | Replace |
| | o IC101 faulty | Replace |

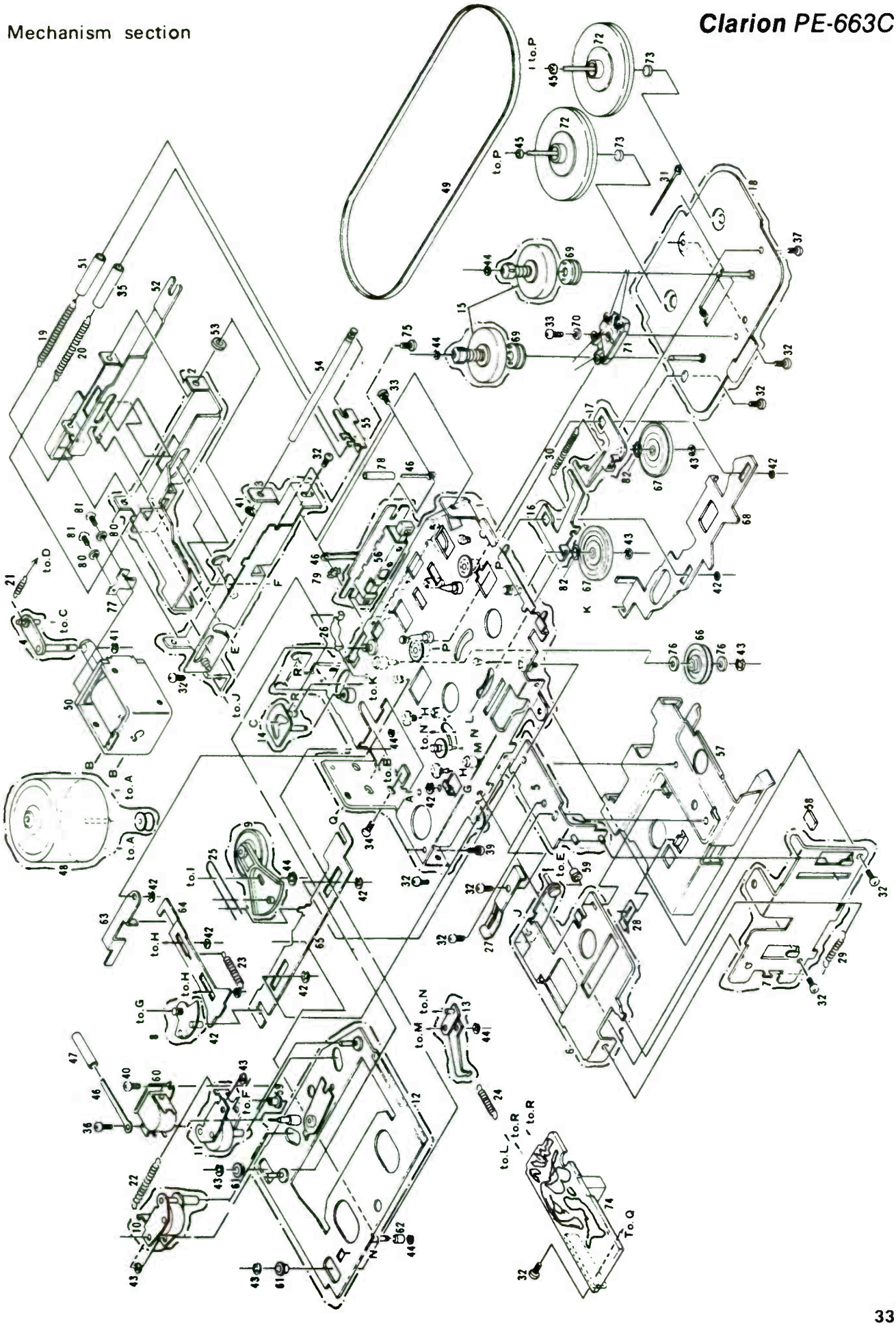
## ◎TAPE section

| Symptom | Defective point and cause | Corrective action |
|---|---|---|
| One channel (or both channels) does not work | o Head lead open | Replace |
| | o IC (IC301, 401) faulty | Replace |
| Volume is low | o IC (IC301, 401) faulty | Replace |
| | o C301, 401, 305, 405 faulty | Replace |
| Oscillates | o Head lead shield covering came off | Replace |
| | o C302, 402 capacity down | Replace |

## ◎Common section

| Symptom | Defective point and cause | Corrective action |
|---|---|---|
| No sound | o Blown Fase | Replace |
| | o Variable resistor·Switch section faulty | Replace |
| | o Coil L601, 602 faulty | Replace |
| | o Zener diode D601 short | Replace |
| | o R603 open | Replace |
| | o C601, 602 short | Replace |
| One channel does not work | o Power IC (IC302, 402) faulty | Replace |
| | o C316, 416 faulty | Replace |
| | o C315, 415 faulty | Replace |
| | o Speaker open | Replace |
| Volume is low or distortion | o Power IC302, 402 faulty | Replace |
| | o C316,416 faulty | Replace |
| | o C315, 415 faulty | Replace |
| | o Speaker faulty | Replace |
| Abnormal Sound is produced | o C601, 602 capacity down | Replace |
| | o Power IC (IC302, 402) faulty | Replace |
| | o C311, 411, 312, 412, 314, 414, 315, 415 faulty | Replace |

# Clarion PE-663C



## ◎Mechanism section

| REF NO | PART NO | DESCRIPTION | P.C.S |
|---|---|---|---|
| 1 | 960-3027-00 | Deck plate assembly | 1 |
| 2 | 960-3031-00 | Slide plate assembly | 1 |
| 3 | 960-3030-01 | Frame assembly | 1 |
| 4 | 960-3037-00 | Cam plate assembly | 1 |
| 5 | 960-3029-00 | Guide plate assembly | 1 |
| 6 | 960-3043-02 | Guide arm assembly | 1 |
| 7 | 960-3042-02 | Side panel assembly | 1 |
| 8 | 960-3045-00 | Off plate C assembly | 1 |
| 9 | 960-3046-00 | FF idler assembly | 1 |
| 10 | 960-3035-01 | Roller B assembly | 1 |
| 11 | 960-3034-01 | Roller A assembly | 1 |
| 12 | 960-3032-03 | Head plate assembly | 1 |
| 13 | 960-3044-00 | Arm assembly | 1 |
| 14 | 960-3038-00 | Cam assembly | 1 |
| 15 | 960-3036-02 | Reel base assembly | 2 |
| 16 | 960-3041-02 | Idler plate B assembly | 1 |
| 17 | 960-3040-02 | Idler plate A assembly | 1 |
| 18 | 960-3039-01 | Bottom plate assembly | 1 |
| 19 | 750-1794-00 | Eject lever spring | 1 |
| 20 | 750-1793-00 | Cartridge slot in spring | 1 |
| 21 | 750-1819-00 | Program cam spring | 1 |
| 22 | 750-1795-01 | Pinch roller pressure spring | 1 |
| 23 | 750-1799-01 | Lock off plate spring | 1 |
| 24 | 750-1797-00 | Head plate pressure spring | 1 |
| 25 | 750-1810-01 | F.F idler spring | 1 |
| 26 | 630-0931-00 | Plate spring | 1 |
| 27 | 630-1001-02 | Plate spring B | 1 |
| 28 | 630-1000-00 | Plate spring A | 1 |
| 29 | 750-1798-00 | Cartridge slot down spring | 1 |
| 30 | 750-1796-02 | Idler pressure spring | 1 |
| 31 | 750-1811-01 | F.F idler guide spring | 1 |
| 32 | 714-2603-81 | Machine screw (M2 6x3) | 10 |
| 33 | 714-2605-81 | Machine screw (M2 6x5) | 3 |
| 34 | 714-3004-81 | Machine screw (M3x4) | 2 |
| 35 | 820-3030-04 | Vinyl tube | 1 |
| 36 | 714-2004-81 | Machine screw (M2x4) | 1 |
| 37 | 714-2605-41 | Machine screw (M2 6x5) | 1 |
| 38 | 714-2605-81 | Machine screw (M2.6×6) | 1 |
| 39 | 732-2604-11 | Sems screw (M2.6×4) | 2 |
| 40 | 716-0286-00 | Screw | 1 |
| 41 | 743-3000-10 | E-ring | 2 |
| 42 | 743-2500-10 | E-ring | 8 |
| 43 | 743-2000-10 | E-ring | 7 |
| 44 | 743-1500-10 | E-ring | 6 |
| 45 | 746-0624-00 | Flat washer | 2 |
| 46 | 330-4896-00 | Lead clamp | 2 |
| 47 | 820-4020-02 | Vinyl tube | 1 |
| 48 | 960-3061-00 | Motor assembly | 1 |
| 49 | 602-0041-00 | Belt | 1 |
| 50 | 015-0216-00 | Plunger | 1 |
| 51 | 820-4020-04 | Vinyl tube | 1 |
| 52 | 630-1016-00 | Eject lever | 1 |
| 53 | 345-2651-00 | Rubber pad | 1 |
| 54 | 632-0716-00 | Eject shaft | 1 |
| 55 | 630-1019-00 | Hook plate | 1 |
| 56 | 013-0018A | Switch assembly | 1 |
| 57 | 606-0062-01 | Pack guide | 1 |
| 58 | 340-0398-00 | Spacer | 1 |
| 59 | 631-0234-01 | Guide roller | 2 |
| 60 | 011-0241-00 | Head | 1 |
| 61 | 610-0067-00 | Roller | 2 |
| 62 | 631-0231-00 | F.F roller | 1 |
| 63 | 630-1021-00 | Off plate B | 1 |
| 64 | 630-1020-00 | Off plate A | 1 |
| 65 | 630-1018-01 | F.F plate | 1 |
| 66 | 632-0789-00 | Tention roller | 1 |
| 67 | 632-0791-01 | Idler | 2 |
| 68 | 630-1017-00 | Change plate | 1 |
| 69 | 631-0224-00 | Detector drum | 2 |
| 70 | 746-0670-00 | Flat washer | 1 |
| 71 | 631-0236-00 | Detector | 1 |
| 72 | 611-0046-00 | Flywheel | 2 |
| 73 | 631-0222-00 | Thrust plate | 2 |
| 74 | 099-4642-03 | P.W.B | 1 |
| 75 | 716-0302-00 | Special screw | 1 |
| 76 | 746-0625-00 | Flat washer | 2 |
| 77 | 630-1057-00 | Plate spring | 1 |
| 78 | 820-4025-02 | Vinyl tube | 1 |
| 79 | 742-3000-20 | Toothed washer | 1 |
| 80 | 741-2600-21 | Spring washer | 2 |
| 81 | 714-2603-11 | Machine screw (M2.6×3) | 2 |
| 82 | 746-0621-00 | Spring washer | 2 |

| REF.NO. | PART NO. | DESCRIPTION | P.C.S |
|---|---|---|---|
| $D_{102,103}$ | 001-0020-00 | Diode(1N60) | 2 |
| $D_{602}$ | 001-0072-00 | Diode(10DC) | 1 |
| $D_{101}$ | 001-0130-00 | Diode(1S2790WT) | 1 |
| $D^{104,201,202}_{203,204,205}$ | 001-0151-00 | Diode(1S953) | 6 |
| $D_{601}$ | 001-0163-13 | Diode(RD8.2EC) | 1 |
| $TC_{201}$ | 004-1494-00 | Antenna trimmer | 1 |
| $TC_{101,102}$ | 004-1496-00 | Trimmer | 2 |
| $TC_{103}$ | 004-1502-00 | Trimmer | 1 |
| $TC_{202,203}$ | 004-1505-01 | Trimmer | 1 |
| $IFT_{101}$ | 005-0698-00 | IF-trans | 1 |
| $IFT_{202}$ | 005-0707-00 | IF-trans | 1 |
| $IFT_{201}$ | 005-0709-00 | IF-trans | 1 |
| $IFT_{104}$ | 005-0754-01 | IF-trans | 1 |
| $IFT_{105}$ | 005-0755-01 | IF-trans | 1 |
| $IFT_{102,103}$ | 005-0765-00 | Ceramic · filter | 2 |
| $L_{601}$ | 009-0603-00 | Choke | 1 |
| $L_{204}$ | 010-0930-00 | Coil | 1 |
| $L_{102}$ | 010-1180-00 | Coil | 1 |
| $L_{103,201}$ | 010-1570-01 | Coil | 2 |
| $L_{602}$ | 010-1610-00 | Coil | 1 |
| $L_{101}$ | 010-1708-00 | Coil | 1 |
| $L_{202}$ | 010-1729-00 | Coil | 1 |
| $L_{203}$ | 010-1730-00 | Coil | 1 |
| $VR_{102}$ | 012-3394-00 | Variable resistor (10KΩ) | 1 |
| $VR^{301,302}_{401,402}$ | 012-3534-00 | Variable resistor | 1 |
| $VR_{21}$ | 012-3598-00 | Variable resistor | 1 |
| $S_{101,102}$ | 013-3303-00 | Switch | 1 |
| $PL_{2,3}$ | 017-0313-01 | Pilotlamp | 2 |
| $PL_5$ | 017-0314-02 | Pilotlamp | 1 |
| $PL_4$ | 017-0314-03 | Pilotlamp | 1 |
| $PL_1$ | 017-0321-01 | Neon lamp | 1 |
| $CCT_{101}$ | 050-0010-00 | Component circuit | 1 |
| $IC_{301,401}$ | 051-0020-02 | IC(TA7120) | 2 |
| $IC_{302,402}$ | 051-0055-13 | Power IC (TA7205AP) | 2 |
| $IC_{101}$ | 051-0086-00 | IC(μPC1026C) | 1 |
| $Q_{103}$ | 102-0460-02 | Transistor (2SC460B) | 1 |
| $Q_{102}$ | 102-0535-02 | Transistor (2SC535B) | 1 |
| $Q_{202}$ | 102-0945-16 | Transistor (2SC945P) | 1 |
| $Q^{104,105,106}_{107,201,203}$ | 102-1675-11 | Transistor (2SC1675K) | 6 |
| $Q_{601}$ | 103-0227-18 | Transistor (2SD227R) | 1 |
| $Q_{101}$ | 108-0055-04 | FET(2SK55D) | 1 |
| $C_{212}$ | 042-0176-00 | Electrolytic capacitor (16V10μF TAN) | 1 |
| $C_{603}$ | 042-0178-00 | Electrolytic capacitor (16V1000μF) | 1 |
| $C_{309,409}$ | 042-0219-00 | Electrolytic capacitor (10V220μF) | 2 |
| $C^{130,135,138}_{315,435}$ | 043-0020-00 | Ceramic capacitor (12V0.2μF) | 5 |
| $C_{214}$ | 043-0088-00 | Ceramic capacitor (0.5PFCH) | 1 |
| $C^{133,139,143}_{144,317,417}$ | 180-1054-62 | Electrolytic capacitor (50V1μF) | 6 |

| REF.NO. | PART NO. | DESCRIPTION | P.C.S |
|---|---|---|---|
| $C_{405}$ | 180-2254-61 | Electrolytic capacitor (50V2.2μF) | 1 |
| $C_{217,305}$ | 180-2254-62 | Electrolytic capacitor (50V2.2μF) | 2 |
| $C_{213,215}$ | 180-2264-22 | Electrolytic capacitor (10V22μF) | 2 |
| $C_{22}$ | 180-2274-22 | Electrolytic capacitor (10V220μF) | 1 |
| $C_{21}$ | 180-3364-21 | Electrolytic capacitor (10V33μF) | 1 |
| $C_{602}$ | 180-3364-22 | Electrolytic capacitor (10V33μF) | 1 |
| $C_{604}$ | 180-3374-32 | Electrolytic capacitor (16V330μF) | 1 |
| $C_{301,401}$ | 180-4754-31 | Electrolytic capacitor (16V4.7μF) | 2 |
| $C_{403}$ | 180-4764-21 | Electrolytic capacitor (10V47μF) | 1 |
| $C^{303,308,313}_{408,413,601}$ | 180-4764-22 | Electrolytic capacitor (10V47μF) | 6 |
| $C_{316,416}$ | 180-4774-22 | Electrolytic capacitor (10V470μF) | 2 |
| $C^{122,123,124,125}_{126,127,128,129,131,202,216,310,410}$ | 141-1033-12 | Polyester capacitor (50V0.01μF) | 13 |
| $C_{132,307,407}$ | 141-1523-11 | Polyester capacitor (50V0.0015μF) | 3 |
| $C_{209}$ | 141-1823-11 | Polyester capacitor (50V0.0018μF) | 1 |
| $C_{312,412}$ | 141-2233-13 | Polyester capacitor (50V0.022μF) | 2 |
| $C_{207}$ | 141-3323-12 | Polyester capacitor (50V0.0033μF) | 1 |
| $C_{137}$ | 141-3333-14 | Polyester capacitor (50V0.033μF) | 1 |
| $C_{203}$ | 141-3923-12 | Polyester capacitor (50V0.0039μF) | 1 |
| $C_{208}$ | 141-3933-14 | Polyester capacitor (50V0.039μF) | 1 |
| $C^{141,142,147}_{306,406}$ | 141-4733-14 | Polyester capacitor (50V0.047μF) | 5 |
| $C_{304,404}$ | 141-5623-12 | Polyester capacitor (50V0.0056μF) | 2 |
| $C_{204}$ | 141-6823-12 | Polystylen capacitor (50V0.0068μF) | 1 |
| $C_{23}$ | 141-6833-14 | Polyester capacitor (50V0.068μF) | 1 |
| $C_{140}$ | 144-4712-17 | Mica capacitor (50V470PF) | 1 |
| $C_{104}$ | 151-1002-13 | Ceramic capacitor (10PFCH) | 1 |
| $C_{106,116}$ | 151-1507-13 | Ceramic capacitor (15PFCH) | 2 |
| $C_{119}$ | 151-4092-37 | Ceramic capacitor (4PFRH) | 1 |
| $C_{115}$ | 151-4092-70 | Ceramic capacitor (4PFWK) | 1 |
| $C_{101,103,106,107}$ | 151-5097-13 | Ceramic capacitor (5PFCH) | 4 |
| $C_{105}$ | 152-2202-13 | Ceramic capacitor (22PFCH) | 1 |
| $C_{114}$ | 152-2507-13 | Ceramic capacitor (25PFCH) | 1 |
| $C_{102,302,402}$ | 152-3302-13 | Ceramic capacitor (33PFCH) | 3 |
| $C_{311,411}$ | 152-4702-13 | Ceramic capacitor (47PFCH) | 2 |
| $C_{210}$ | 154-1512-50 | Ceramic capacitor (150PFTH) | 1 |
| $C_{201}$ | 156-6802-13 | Ceramic capacitor (68PFCH) | 1 |
| $C_{314,414}$ | 160-1012-05 | Ceramic capacitor (100PFB) | 2 |
| $C^{111,112,113,117,118,120,121,145,146}$ | 160-1022-05 | Ceramic capacitor (50V0.001μFB) | 9 |
| $C_{206}$ | 160-1512-05 | Ceramic capacitor (150PFB) | 1 |
| $C_{109,110}$ | 160-3312-05 | Ceramic capacitor (330PFB) | 2 |
| $R_{602}$ | 110-1022-41 | Solid resistor (½W1KΩ) | 1 |
| $R_{130,136}$ | 110-1032-31 | Solid resistor (¼W10KΩ) | 2 |
| $R_{140}$ | 110-1042-31 | Solid resistor (½W100KΩ) | 1 |
| $R_{23}$ | 110-1222-41 | Solid resistor (½W1.2KΩ) | 1 |
| $R_{146}$ | 110-1512-41 | Solid resistor (¼W150Ω) | 1 |
| $R_{214}$ | 110-1532-31 | Solid resistor (¼W15KΩ) | 1 |
| $R_{105}$ | 110-4722-31 | Solid resistor (¼W4.7KΩ) | 1 |

## ◎Main section

| REF.NO. | PART NO. | DESCRIPTION | P.C.S |
|---|---|---|---|
| | 380-3632-02 | Knob | 1 |
| | 380-3618-00 | Knob | 1 |
| | 940-0127A | Escutcheon assembly | 1 |
| | 290-2567-01 | Label | 1 |
| | 013-0023A | Switch assembly | 1 |
| | 714-2604-81 | Machine screw (M2.6x4) | 3 |
| | 714-3004-81 | Machine screw (M3x4) | 25 |
| | 852-4972-04 | Extension lead | 1 |
| | 286-4031-01 | Setplate | 1 |
| | 376-0807-00 | Dial pointer | 1 |
| | 017-0314-02 | Pilotlamp | 1 |
| | 017-0314-03 | Pilotlamp | 1 |
| | 285-0656-00 | Guide label | 1 |
| | 380-3617-00 | Knob | 1 |
| | 743-3000-00 | E-ring | 2 |
| | 330-6038-00 | Switch lever | 1 |
| | 374-0707-01 | Back plate | 1 |
| | 017-0313-01 | Pilotlamp | 2 |
| | 345-2671-01 | Pilot holder | 1 |
| | 099-4994-00 | P.W.8 | 1 |
| | 345-2759-01 | Pilot holder | 1 |
| | 722-0231-00 | Hex. nut | 2 |
| | 745-0514-01 | Flat washer | 2 |
| | 012-0019A | Variable resistor assembly | 1 |
| | 716-0308-00 | Lock screw | 1 |
| | 285-0674-02 | Guide label | 1 |
| | 746-0668-01 | Special washer | 2 |
| | 330-6039-01 | F.F lever 8 | 1 |
| | 335-0894-00 | F.F lever roller | 1 |
| | 750-1676-01 | Spring | 1 |
| | 313-0978-00 | Heat sink | 1 |
| | 051-0055-13 | IC (TA7205AP) | 2 |
| | 830-0500-53 | Dial cord | 1 |

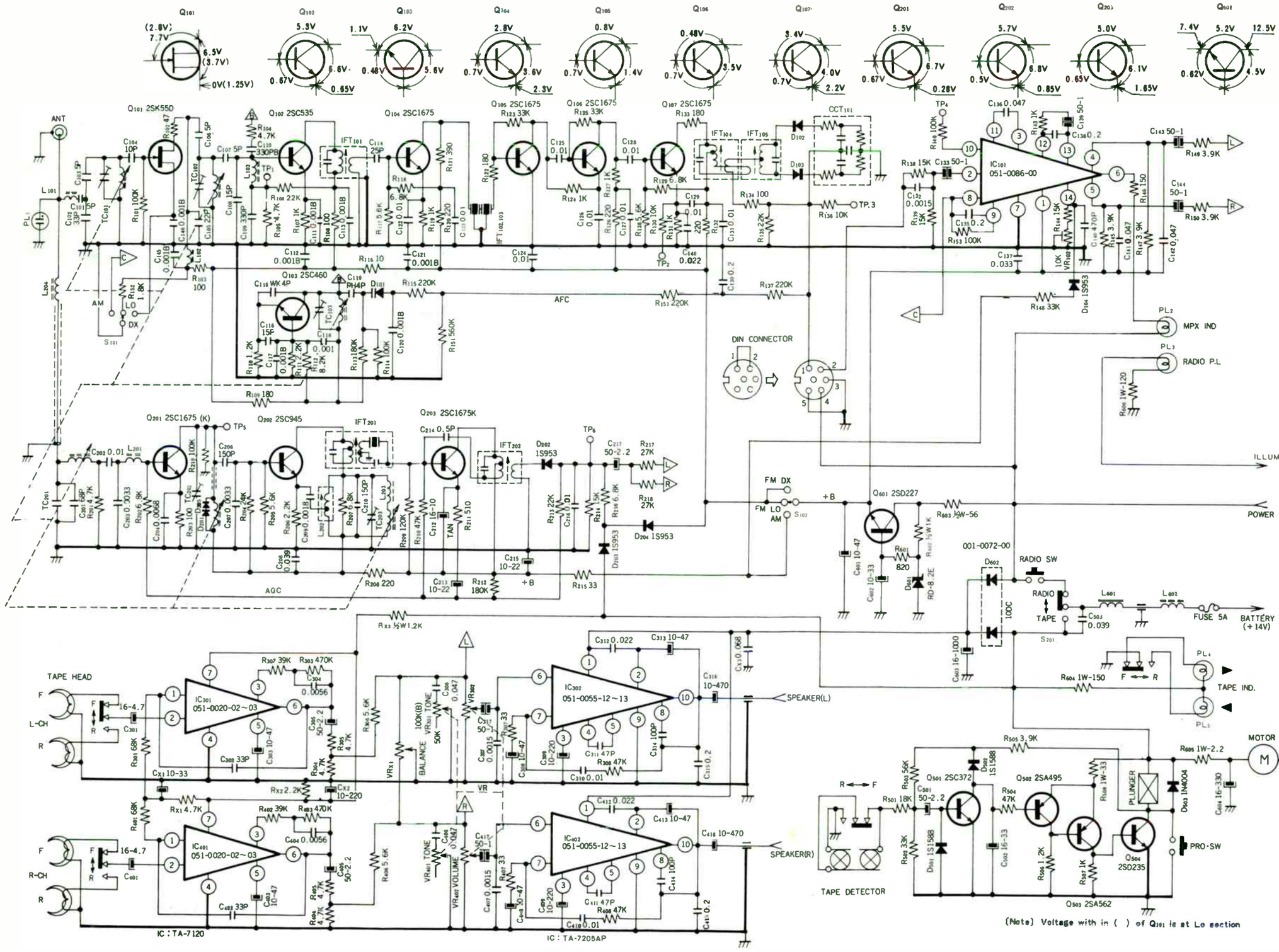
| REF.NO. | PART NO. | DESCRIPTION | P.C.S |
|---|---|---|---|
| | 741-2600-21 | Spring washer | 1 |
| | 012-3598-00 | Variable resistor | 1 |
| | 745-0514-02 | Flat washer | 2 |
| | 335-0913-00 | Universal joint A | 1 |
| | 335-0912-00 | Universal joint B | 2 |
| | 311-0907-01 | Lower case | 1 |
| | 714-3006-81 | Machine screw (M3x6) | 1 |
| | 340-0400-00 | Spacer | 1 |
| | 335-0460-00 | Pulley | 1 |
| | 285-0160-00 | Guide label | 1 |
| | 933-0107-01 | 6 coil $\mu$ tuner | 1 |
| | 330-5830-01 | Shield case | 1 |
| | 330-6037-01 | Tuner bracket | 1 |
| | 099-4996-00 | P.W.B | 1 |
| | 092-0522-00 | Antenna receptacle | 1 |
| | 099-4995-00 | P.W.B | 1 |
| | 944-0501-00 | Filter assembly | 1 |
| | 335-0818-00 | Lead holder | 1 |
| | 930-0443-01 | Tape mechanism | 1 |
| | 099-4706-03 | P.W.B | 1 |
| | 010-1610-00 | Filter coil | 1 |
| | 850-1865-02 | A-lead | 1 |
| | 120-0050-03 | Fuse (5A) | 1 |
| | 850-1957-00 | A-lead | 1 |
| | 851-2057-05 | Speaker lead | 1 |
| | 852-5322-00 | Extension lead | 1 |
| | 290-2870-00 | Label | 1 |
| | 347-0630-00 | Insulator sheet | 1 |
| | 310-0886-02 | Upper case | 1 |
| | 850-1580-01 | A-lead | 1 |
| | 285-0667-00 | Guide label | 1 |
| | 004-1494-00 | Antenna trimmer | 1 |
| | | | |

## ◎Mechanism section electrical parts

| REF.NO | PART NO. | DESCRIPTION | P.C.S |
|---|---|---|---|
| $D_{S01,S02}$ | 001-0112-00 | Diode(1S1588) | 2 |
| $D_{S03}$ | 001-0153-00 | Diode(1N4004) | 1 |
| $SW_{102}$ | 013-2690-05 | Switch | 1 |
| $Q_{S02}$ | 100-0495-25 | Transistor (2SA495Y) | 1 |
| $Q_{S03}$ | 100-0562-25 | Transistor (2SA562Y) | 1 |
| $Q_{S01}$ | 102-0372-15 | Transistor (2SC372-O) | 1 |
| $Q_{S04}$ | 103-0235-85 | Transistor (2SD235LBY) | 1 |
| $R_{S07}$ | 111-1021-22 | Film resistor (¼W1KΩ) | 1 |
| $R_{S06}$ | 111-1221-22 | Film resistor (¼W1.2KΩ) | 1 |

| REF NO | PART NO | DESCRIPTION | P.C.S |
|---|---|---|---|
| $R_{S01}$ | 111-1831-21 | Film resistor (¼W18KΩ) | 1 |
| $R_{S02}$ | 111-3331-21 | Film resistor (¼W33KΩ) | 1 |
| $R_{S05}$ | 111-3921-21 | Film resistor (¼W3 9KΩ) | 1 |
| $R_{S04}$ | 111-4731-21 | Film resistor (¼W47KΩ) | 1 |
| $R_{S03}$ | 111-5631-21 | Film resistor (¼W56KΩ) | 1 |
| $R_{S08}$ | 114-3302-51 | Film resistor (1W33Ω) | 1 |
| $C_{S03}$ | 165-3934-02 | Ceramic capacitor (0 039$\mu$FYG) | 1 |
| $C_{S01}$ | 181-2253-62 | Electrolytic capacitor (50V2 2$\mu$F) | 1 |
| $C_{S02}$ | 181-3363-32 | Electrolytic capacitor (16V33$\mu$F) | 1 |

## ■CIRCUIT DIAGRAM:



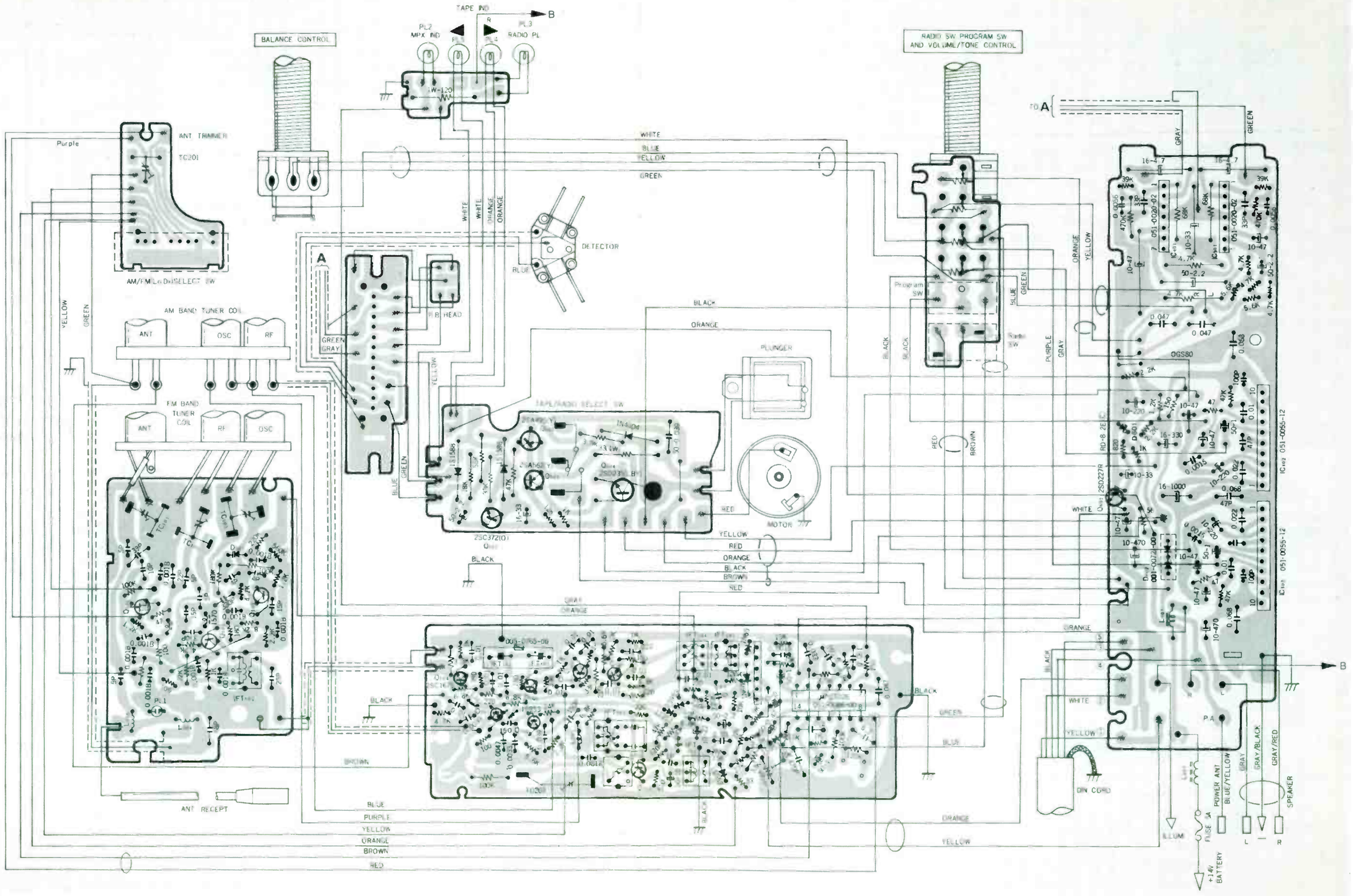







PE-663C

## ■PRINTED WIRING BOARD:



Pages 41-48 Courtesy of CRAIG CORP.

# ALIGNMENT PROCEDURE

EQUIPMENT REQUIRED

1) POWER SUPPLY (14V DC)
2) V.T.V.M.
3) AM & FM SIGNAL GENERATOR
4) SWEEP GENERATOR (455kHz - 10.7 MHz)
5) OSCILLOSCOPE
6) FM STEREO MODULATOR
7) DIGITAL FREQUENCY COUNTER

NOTES:

* Non-Metalic tools should be used.
* Keep Generator signal level as low as possible to avoid clipping.
* Volume control should be set to minimum unless otherwise specified.
* Set Tone Control to maximum treble.
* Standard Modulation is 400Hz at 30% amplitude for AM. (1kHz at 22.5Hz deviation for FM.)
* Connect low side of Signal source and output indicator to chassis ground unless otherwise specified.

AM

| STEP | ADJUSTING CIRCUIT | CONNECTIONS INPUT | CONNECTIONS OUTPUT | GEN. FREQ'CY | DIAL SETTING | ADJUST | ADJUST FOR |
|---|---|---|---|---|---|---|---|
| 1 | AM IF | Connect Signal Generator, thru dummy Ant. to antenna receptacle | Connect Scope, VTVM to audio output, with a 4 Ohm dummy load in place. | 455 kHz (30% Mod.) | OFF station | T601,T602 T603,T604 | Maximum Output |
| 2 | AM OSC | | | 500 kHz ± 10 kHz | Low End | L602 | |
| 3 | | | | 1690 kHz ± 10 kHz | High End | C607 | |
| 4 | AM RF | | | 1400 kHz | 1400 kHz | C701,C603 | |
| 5 | REPEAT ADJUSTMENTS FOR BEST RESULTS | | | | | | |

FM/FM MPX

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1 | FM IF | Connect Sweep Generator to "TP" | Connect Oscilloscope to TP-1 | 10.7 MHz | Off Station | T401 | Max. Output |
| 2 | DETECTOR | | | | | T402 | Symetrical "S" Curve |
| 3 | BAND | Connect FM Signal Gen. thru dummy Ant. to antenna receptacle | Connect VTVM to Audio output with a 4 Ohm dummy load in place | 87 MHz (Mod.) | Low End | C416 | Max. Output |
| 4 | 19 kHz PILOT | Frequency Counter to TP-2 | | | Off Station | R502 | Obtain a reading of 19.0 kHz |
| 5 | STEREO SEPARATION | Connect FM Signal Gen. w/Stereo Gen. thru dummy Ant. to Antenna receptacle | Connect VTVM to Audio output with a 4 Ohm dummy load in place | 98 MHz (Mod.) | 98 MHz | R443 | Minimum R(L) output when L (R) signal is Modulated |

# PARTS PRICE LIST

**SUBJECT TO CHANGE WITHOUT NOTICE. USE ALL AVAILABLE NUMBERS AND COMPLETE DESCRIPTION WHEN ORDERING, INCLUDING MODEL NUMBER**

**[THESE PRICES HAVE BEEN REVISED AS OF 7-20-78].**

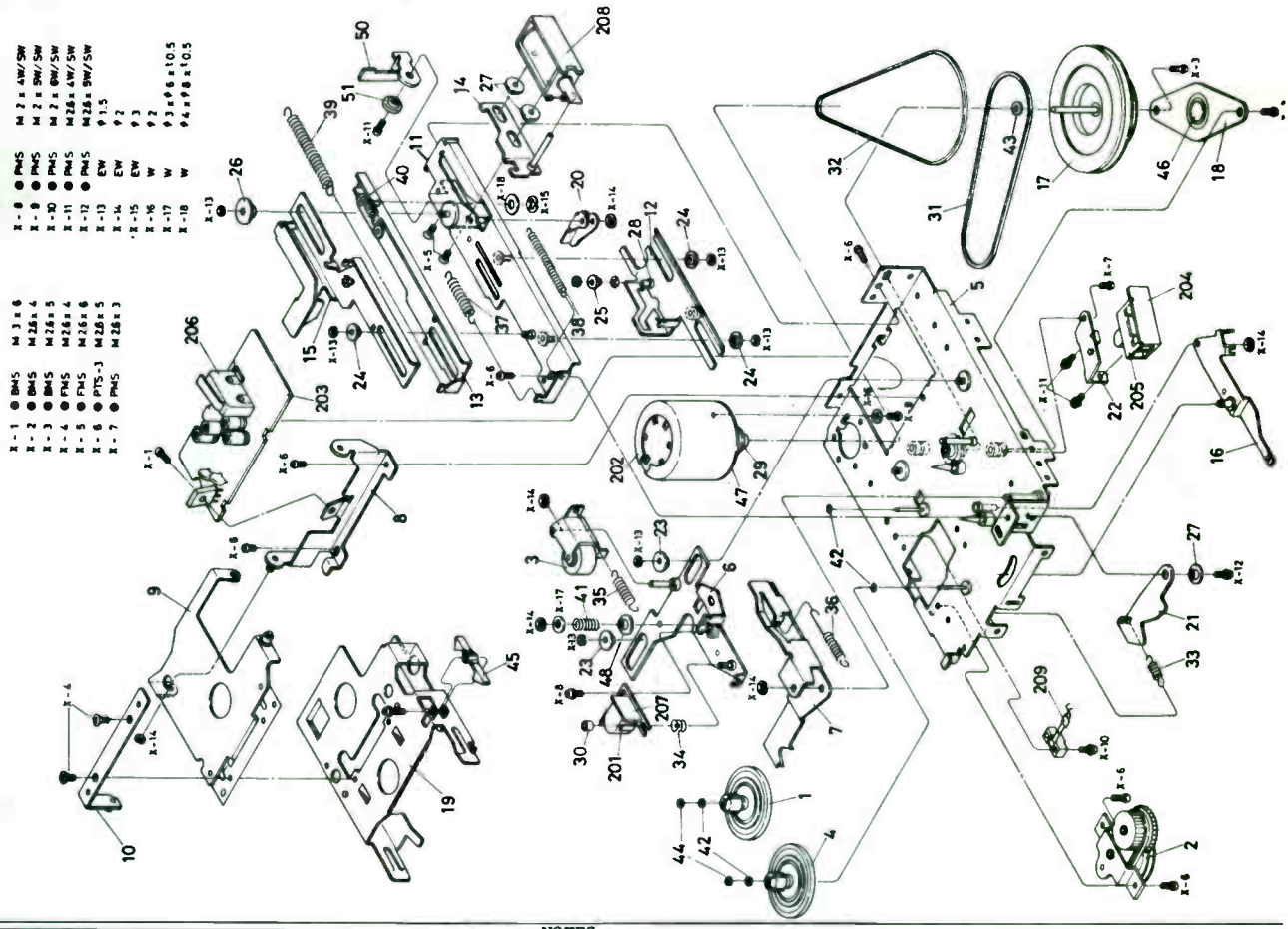
## PACKAGING

| REF. NO. | CRAIG KEY NO. | DESCRIPTION | MFR'S SUGG RET. PRICE |
|---|---|---|---|
| | T606001 | Individual Carton | 1.75 |
| | S606002 | Styrofoam, Left | .70 |
| | S606003 | Styrofoam, Right | .70 |
| | S606004 | Styrofoam, Front | .30 |
| | 3516004 | Adjust Driver | .70 |
| | 3148020 | Knob, TONE/FADER | .75 |
| | 3148021 | Knob, VOL/TUNING | .80 |
| | 3128053 | "L" Bracket Strap | .25 |
| | 3128054 | Bkt, Perforated Mtg Strap | .40 |
| | 9744100 | Gasket | 1.10 |
| | S601003 | Ass'y, Mtg Hardware Kit | 1.50 |
| | T606083 | Ass'y, Trim Plate(complete) | 2.60 |
| | S680007 | Trim Plate(stripped) | 2.10 |
| | S606085 | Index Label(R), FADER/TUNING | .45 |
| | T606084 | Index Label(L), VOL/BAL/TONE | .45 |
| | S606620 | Ass'y, 9P Pwr/SP Conn(car side) | 3.95 |
| | XFU002 | Spare Fuse, 2A | .30 |
| | S606808 | Power Harness, Clock B+ | 1.20 |

## COILS, TRIMMERS & TRANSF.

| REF. NO. | CRAIG KEY NO. | DESCRIPTION | MFR'S SUGG RET. PRICE |
|---|---|---|---|
| L301 | W120671 | Choke Coil, 2mH | 1.40 |
| L302 | S606671 | Choke Coil, 1mH | 1.60 |
| L303 | T100043 | Choke Coil, 1mH 0.5A | 1.15 |
| L402 | S606672 | RF Coil | .70 |
| L404 | S606673 | RF Coil | .70 |
| L406 | S606674 | RF Coil | .70 |
| L601 | W130675 | Peaking Coil, 5uH | .65 |
| L602 | W130674 | AM OSC Coil | .95 |
| L701 | W130673 | Peaking Coil, 6.8uH | .65 |
| L801 | S606675 | Peaking Coil, 0.35uH | .90 |
| T401 | S606641 | FM IFT (Green) | 1.20 |
| T402 | S200070 | FM IFT (Orange) | 1.20 |
| T601 | W130642 | AM IFT (Black) | .95 |
| T602,604 | W130643 | AM IFT (White) | .95 |
| T603 | W130644 | AM IFT (Orange) | .95 |
| C416 | S606676 | OSC Trimmer Cap | 1.20 |
| C603 | L600675 | Trimmer Cap, 50pF | 1.50 |
| C607 | S606677 | Trimmer Cap, 60pF | 1.90 |
| C701 | S606670 | Mica Trimmer(AM ANT), 100pF | 1.55 |
| C321~329 | S606601 | Ass'y, Feed Thru Cap | 4.50 |
| CF401,402 | S606678 | Ceramic Filter, 10.7 MHz | 1.50 |
| X801 | S606722 | Crystal, 2.304 MHz | 5.85 |
| SL301 | S601073 | SOLENOID, EJECT | 3.90 |

# MECHANISM



| Pin No. | IC601 | IC501 | IC101 IC201 | IC102 IC202 | IC401 | | Q405 | Q501 |
|---|---|---|---|---|---|---|---|---|
| 1 | 2.55 | 9 | 1.9 | 14.25 | 0 | E | 1.3 | 9 |
| 2 | 1.45 | 2.95 | 0.6 | 7.65 | 2 | B | 2 | 9.65 |
| 3 | 0.7 | 4.75 | 0.01 | 1.45 | 0 | C | 7.95 | 14.25 |
| 4 | 0 | 6 | 0 | 5.25 | 0 | | | |
| 5 | 9.65 | 6 | 0.6 | 5.3 | 0.7 | | | |
| 6 | 0.7 | 0.75 | 6.25 | 7.8 | 2.05 | | | |
| 7 | 2.08 | 0 | 10.25 | 14.12 | 3.65 | | | |
| 8 | 2.2 | 2.3 | | 0 | 5.2 | | | |
| 9 | 12.4 | 2.25 | | 13 | 4.85 | | | |
| 10 | 2.15 | 1.5 | | 7 | 3.65 | | | |
| 11 | 0 | 2.25 | | | 2.05 | | | |
| 12 | 11.45 | 2.25 | | | 9 | | | |
| 13 | 3.56 | 2.25 | | | 2 | | | |
| 14 | 1.36 | 2.8 | | | 2 | | | |
| 15 | 11.6 | | | | | | | |
| 16 | 11.45 | | | | | | | |

NOTES:

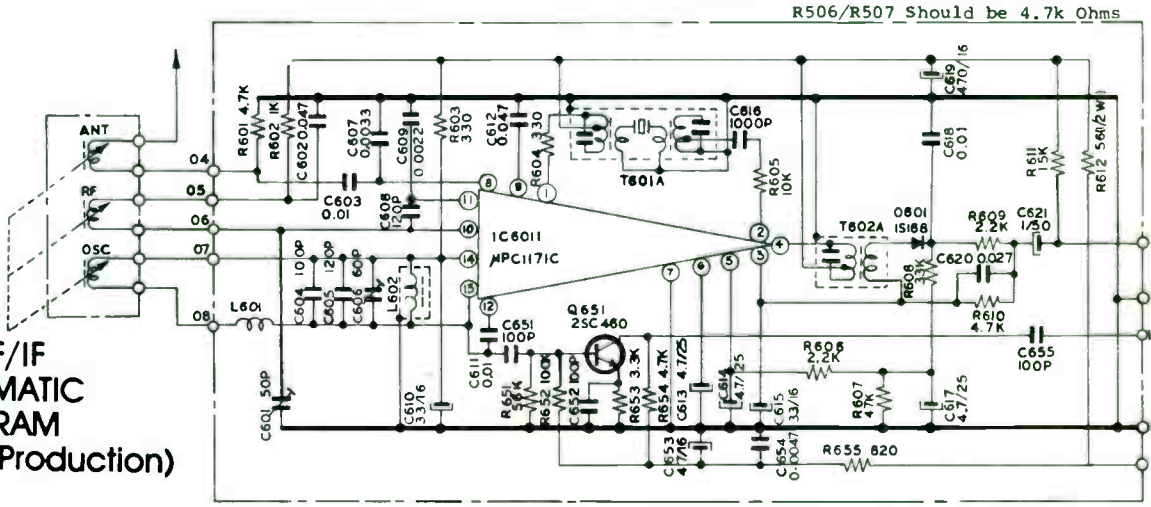
(1) Both EARLY and LATE production PCB's are inter-changeable.

| REF. NO. | Craig KEY NO. | DESCRIPTION |
|---|---|---|
| C601 | L600675 | Trimmer, 50pF |
| T601A | S606642 | AM IFT |
| T602A | S606643 | AM IFT |
| C606 | S606677 | Trimmer, 60pF |
| IC6011 | uPC1171C | I.C., AM RF/IF |

(2) IC501 uses three different types of IC's in production which are interchangeable with the following modifications:

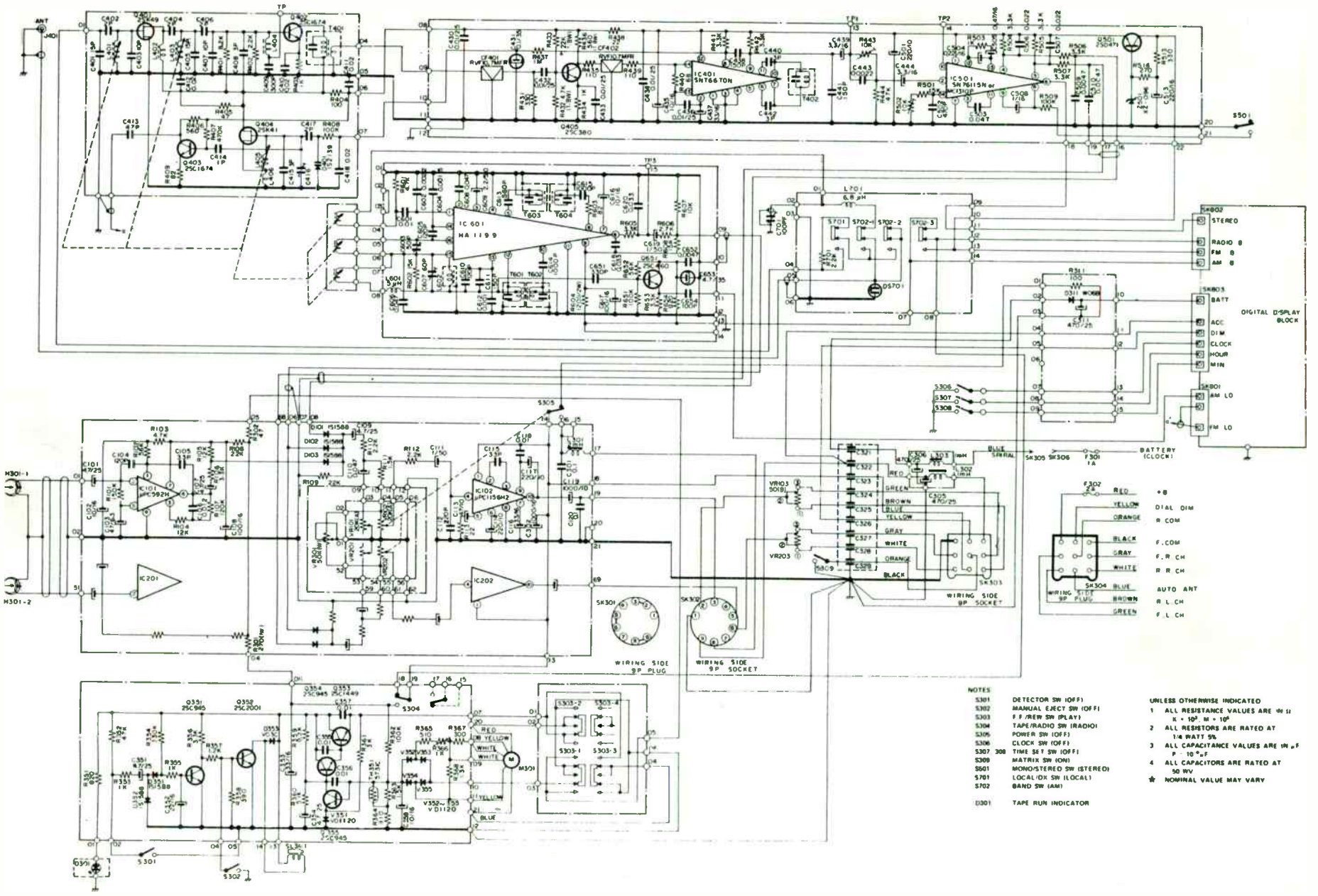
SN76115N or MC1310P: R504/R505 should be 3.9k Ohms
R506/R507 Should be 3.3k Ohms

uPC1026: R504/R505 should be 3.3k Ohms
R506/R507 Should be 4.7k Ohms

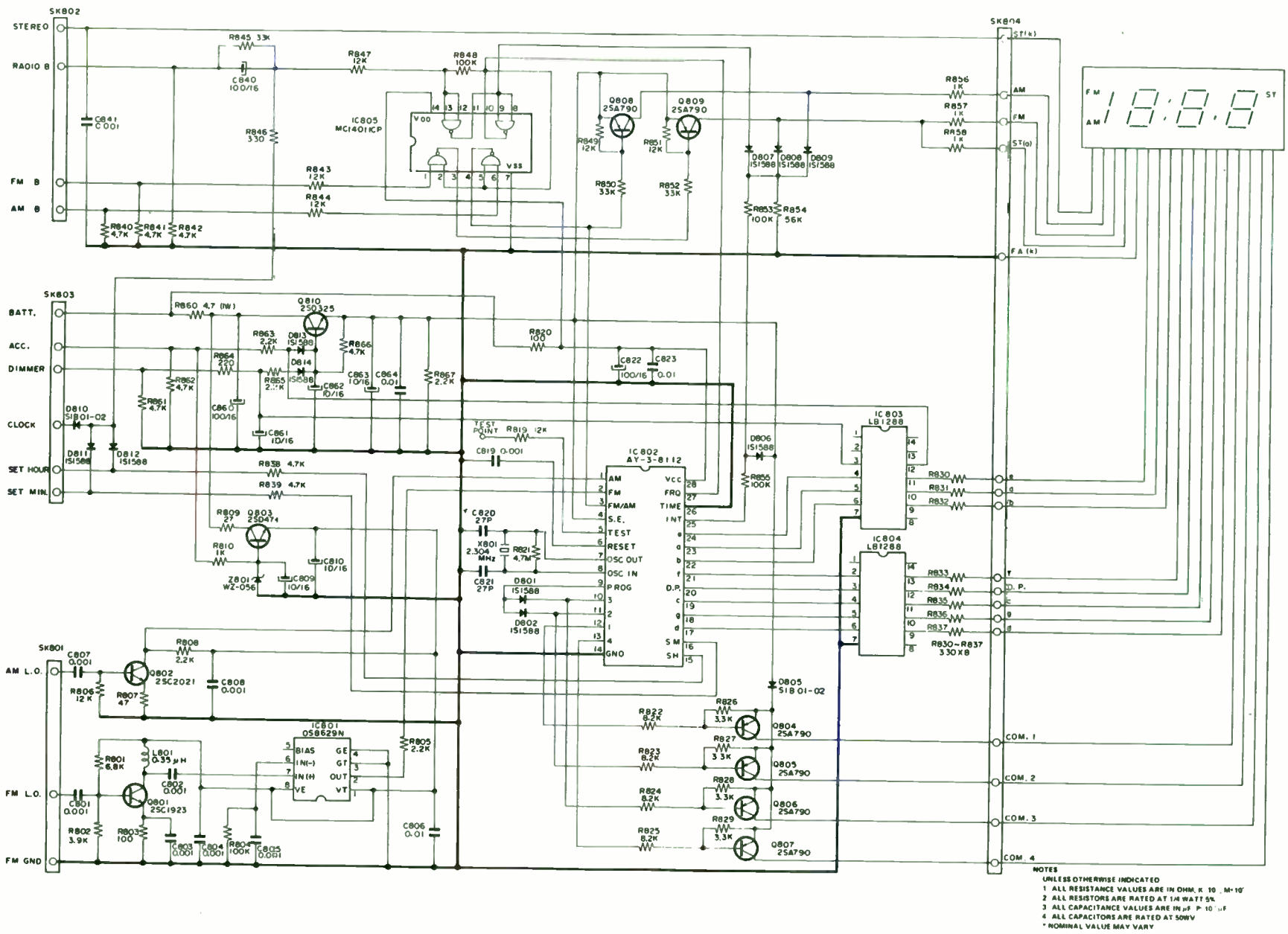



## AM RF/IF SCHEMATIC DIAGRAM (Late Production)

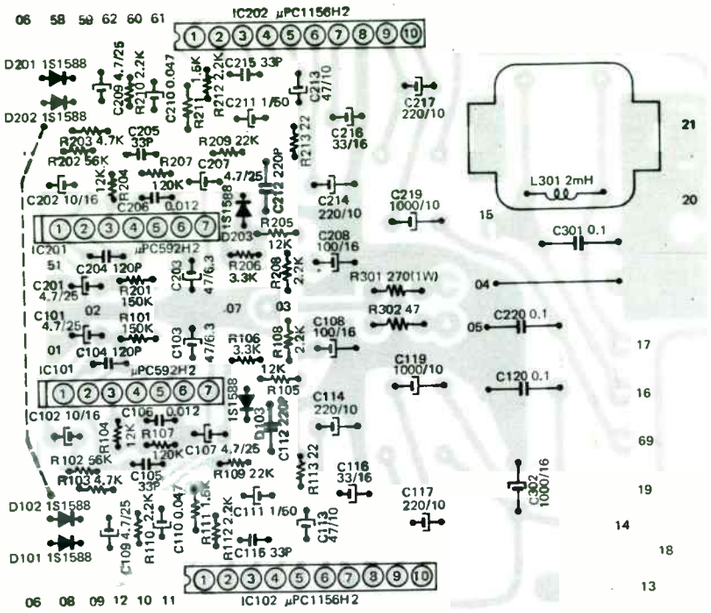
# TUNER/AUDIO SCHEMATIC DIAGRAM



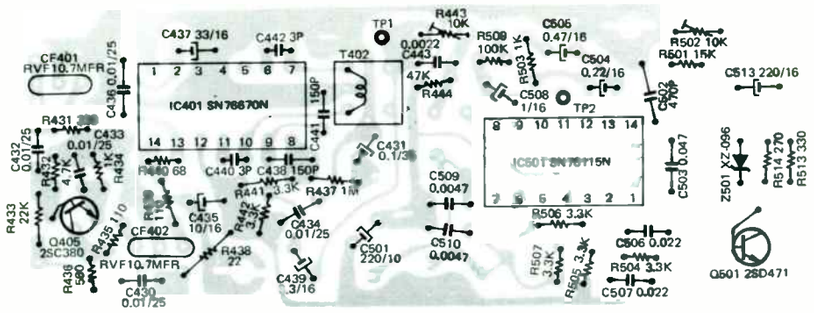

## LOGIC (Clock) SCHEMATIC



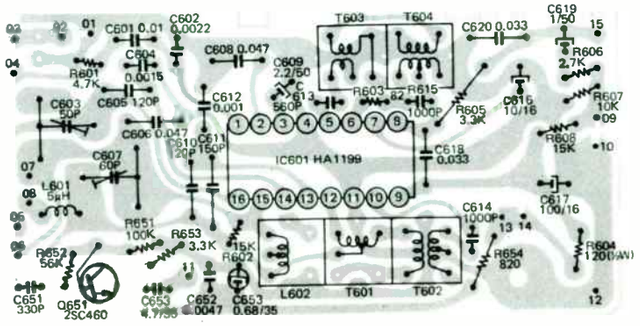
## AUDIO AMP PCB



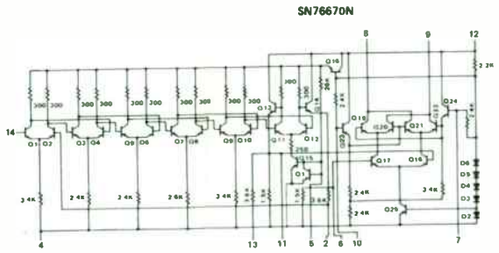

## FM IF/MPX PCB



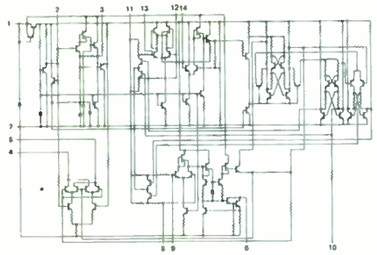

## AM RF/IF PCB



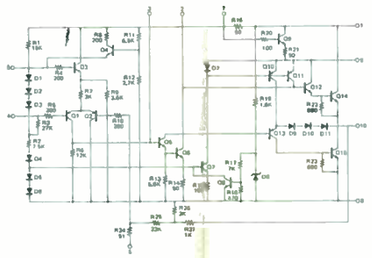

## SN76670N



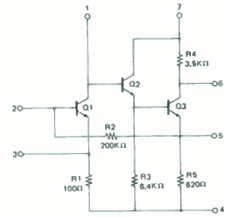
## SN76115N



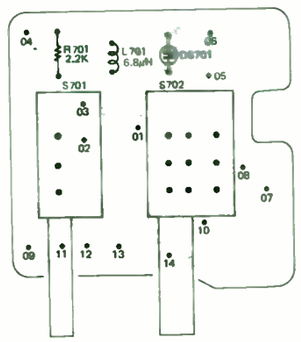
## µPC592H



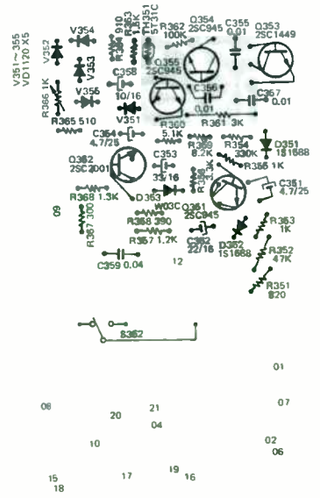
## µPC1156H2



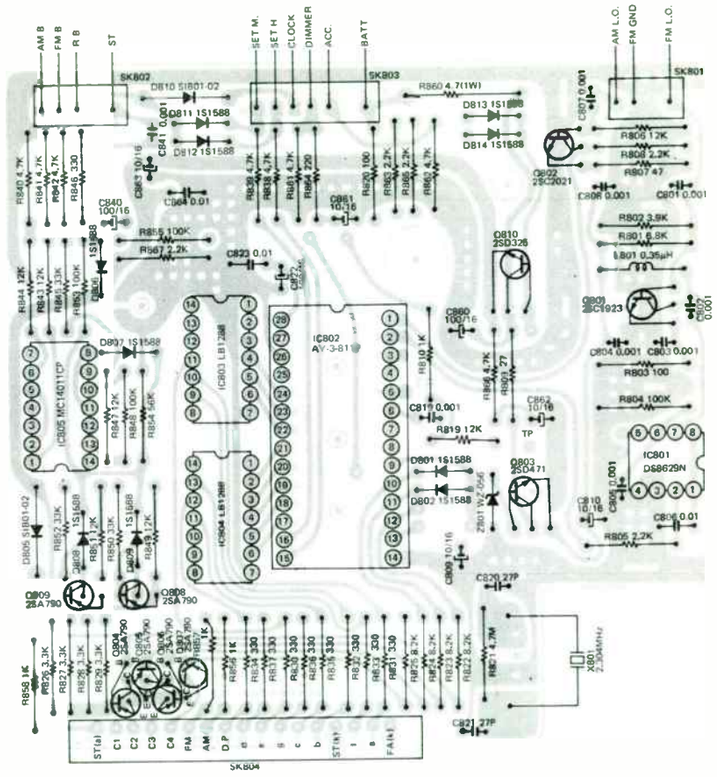

## SWITCH PCB



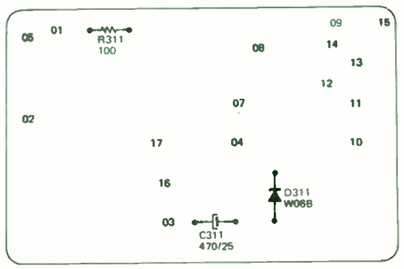

## REGULATOR PCB



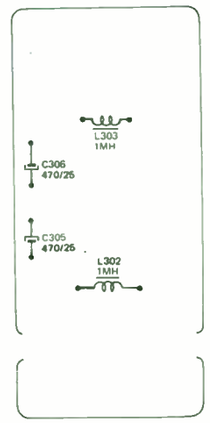

## LOGIC (Clock) PCB




## POWER/RELAY PCB




## FILTER PCB



## CABINET & CHASSIS

| REF. NO. | CRAIG KEY NO. | DESCRIPTION | MFR'S SUGG RET. PRICE |
|---|---|---|---|
| | NSP | Radio Chassis | ---- |
| | T606026 | Button, EJECT | 1.25 |
| | T606027 | Button w/Lever, AM/FM Select | 2.30 |
| | T606028 | Button w/Lever, LOC/DX | 2.30 |
| | NSP | Shield Case, Bottom | ---- |
| | T606345 | Lever(A), DX/LOC | 1.05 |
| | T606346 | Lever(B), BAND Select | 1.05 |
| | NSP | Lead Clamp | ---- |
| | S601038 | Washer, Cont Shaft Locator | .30 |
| | T601015 | Clamp, Ant Cable | .40 |
| | T606061 | Front Panel | 2.90 |
| | NSP | Bkt, Cass Carrier Strap | ---- |
| | NSP | Upper Plate | ---- |
| | T606397 | Bkt, Push Sw Mtg | 1.05 |
| | T606398 | Bkt, Leaf Sw Mtg | 1.05 |
| | NSP | Bkt, Display/CHASSIS Strap | ---- |
| | T606388 | Guide Plate, F.F./REW Lever | .50 |
| | T606347 | Lever, DX/LOC switch | .85 |
| | NSP | Bkt, Power Supply PCB Mtg | ---- |
| | T606041 | Cassette Door | 1.40 |
| | NSP | Shield Case, Top | ---- |
| | NSP | Shield Plate | ---- |
| | S606291 | Grounding Plate Spr | .45 |
| | W130050 | Top Case | 2.35 |
| | W130051 | Bottom Case | 1.75 |
| | W130062 | Rear Panel | 1.80 |
| | W130380 | Clamp, Power Harness Mtg | .45 |
| | NSP | Heat Sink | ---- |
| | T601030 | Shaft, Cassette Door | .25 |
| | T606240 | Spacer, DX/LOC Lever | .35 |
| | 3137051 | Special Screw | .25 |
| | 3148020 | Knob, TONE/FADER | .75 |
| | T606083 | Ass'y, Trim Plate | 2.60 |
| | 9744100 | Gasket | 1.10 |
| | T606010 | Ass'y, Nose Panel(Escutcheon) | 3.60 |
| | T606029 | Knob, F.F./REW | .95 |
| | | Screw, PH M2x3 | .25 |
| | T606030 | Button, STEREO/MONO | .95 |
| | T606031 | Button, MATRIX | .95 |
| | T606011 | Index Plate, "TIME" | .95 |
| | T606032 | Button, Time Set | .60 |
| | 3148021 | Knob, VOL/TUNING | .80 |
| | S606370 | Coupler(A), Tuner | .65 |
| | S606371 | Coupler(B), Tuner | .50 |
| | S606372 | Coupler(C), Tuner | .65 |
| | T606801 | Adhesive label | .30 |
| | W120801 | Seal, Hd Adj Hole | .30 |
| | S606801 | Adhesive Label | .25 |
| | T606802 | Rating Label(model No.) | .65 |
| | NSP | Label, Antenna Trimmer | ---- |
| | S606803 | Adhesive Label | .45 |
| | T606277 | Spr, Cass Door | .30 |
| | T606278 | Spr, EJECT Button | .30 |
| | T606241 | Spacer | .30 |
| | S606708 | Fiber Sheet | .25 |
| | NSP | Vinyl Shrink Tubing | .40 |
| | S606804 | Digital Display | 38.40 |
| | T606803 | Ass'y, Tape Ind LED | 2.95 |
| | S200063 | Push Sw, MATRIX, MONO/ST | 2.55 |
| | T606532 | Push Sw, LOC/DX | 2.85 |
| | T606533 | Push Sw, BAND Select | 3.65 |
| | T606534 | Leaf Sw, Time Set/EJECT | 2.95 |
| | S606615 | Antenna Receptacle | 2.80 |
| | S606607 | 9P Pwr & SP Conn So(unit side) | 1.75 |
| | W110608 | Ass'y, 9P Conn(Powerplay adpt) | 4.75 |
| | 3516043 | 9P Socket ONLY | 1.95 |
| | 3516044 | 9P Dummy Plug | 1.60 |
| | S606807 | Power Cord, Clock (B+) | .40 |
| | S606805 | Wire Lead(A) | .45 |
| | S606806 | Wire Lead(B) | .45 |
| | S606519 | Ass'y, AM/FM RF Tuner w/Comp | 22.95 |
| | T606570 | VR, VOL/BAL/TONE w/Sw | 9.95 |
| | T606571 | VR, 50 Ohms, FADER Cont | 7.95 |
| | S606601 | Ass'y, Feed Thru Cap | 4.50 |
| | S606670 | Mica Trimmer(C701), 100pF | 1.55 |
| | S606525 | Ass'y, AMP PCB w/Comp | 27.81 |
| | T606519 | Ass'y, Power Supp PCB w/Comp | 4.60 |
| | T606520 | Ass'y, Sw PCB w/Comp | 9.20 |
| | S606520 | Ass'y, Logic/Clock PCB w/Comp | 79.85 |
| | S606521 | Ass'y, Filter PCB w/Comp | 5.95 |
| | S606522 | Ass'y, AM RF/IF PCB W/Comp | 19.95 |
| | S606523 | Ass'y, FM IF/MPX PCB w/Comp | 20.91 |
| | T606521 | PCB, VOL/BAL/TONE Cont Mtg | .45 |

## MECHANISM

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | T601064 | Reel, Take-Up | 2.40 | 31 | T601091 | B E L T, Take-Up | .95 |
| 2 | T601066 | Ass'y, Idler | 3.15 | 32 | T606208 | B E L T, Drive | 1.05 |
| 3 | T606258 | Pinch Roller | 1.95 | 33 | 3511118 | Spr, Center F.F./REW Lever | .30 |
| 4 | T606460 | Supply Reel | 2.95 | 34 | T601097 | Spr, Head Adjust | .30 |
| 5 | NSP | Main Chassis(Mechanism) | ---- | 35 | T606270 | Spr, Pinch Roller | .30 |
| 6 | T606266 | Ass'y, Head Slide | 2.35 | 36 | T606271 | Spr, Hd Slide | .45 |
| 7 | T606341 | Arm, Head Slide | 1.60 | 37 | T606272 | Spr, Top Slide Plate | .40 |
| 8 | T606395 | Bkt, Cass Carrier | 1.60 | 38 | T606273 | Spr, Middle Slide Plate | .40 |
| 9 | T606380 | Cassette Carrier | 3.00 | 39 | T606274 | Spr, Bottom Slide Plate | .60 |
| 10 | T606381 | Fitting Plate, Cass Housing | .60 | 40 | T606275 | Spr, Lock Lever | .30 |
| 11 | T606415 | Frame, EJECT Mechanism | 5.30 | 41 | T606276 | Spr, Hd Base | .40 |
| 12 | T606382 | Slide Plate(Top), EJECT | 2.50 | 42 | T606236 | Thrust Washer, M1.6x3.5 | .25 |
| 13 | T606383 | Slide Plate(middle), EJECT | 2.75 | 43 | T606237 | Thrust Washer, M2.2x5.0 | .25 |
| 14 | T606384 | Slide Plate, Solenoid | 1.05 | 44 | T606238 | Thrust Washer | .25 |
| 15 | T606385 | Slide Plate(bottom), EJECT | 1.80 | 45 | T606800 | Cassette Stopper | .30 |
| 16 | T606342 | Lever, F.Fwd/REW | 1.85 | 46 | 3137049 | Thrust Washer | .25 |
| 17 | T606205 | F L Y W H E E L | 3.75 | 47 | T601041 | Cushion, Motor Mtg | .25 |
| 18 | T606267 | Flywheel Base | .95 | 48 | S200056 | Insulating Washer | .25 |
| 19 | T606386 | Cassette Housing | 2.75 | 50 | T606344 | Lever, Micro Switch | .65 |
| 20 | T606343 | Lock Lever | .85 | 51 | T606239 | Spacer, Sw Lever | .40 |
| 21 | T606387 | Center Plate, F.F./REW Lever | .65 | 201 | T606503 | H E A D | 9.95 |
| 22 | T606396 | Bkt, F.Fwd Switch | .60 | 202 | T606500 | M O T O R | 16.95 |
| 23 | T606231 | Spacer, Head Base | .40 | 203 | T606517 | Ass'y, Motor Governor PCB w/Comp | 15.95 |
| 24 | T606232 | Spacer, EJECT Plate | .40 | 204 | T606518 | PCB, F.Fwd/REW Sw Mtg | .40 |
| 25 | T606233 | Spacer, EJECT Plate | .35 | 205 | T606531 | Slide Sw, FWD/REW | 3.40 |
| 26 | T606234 | Spacer, EJECT Plate | .40 | 206 | T606530 | Micro Switch | 2.75 |
| 27 | T606235 | Spacer, Center F.F./Rew Lever | .35 | 207 | T606516 | PCB, Head.Terminal | .25 |
| 28 | T606260 | Roller, EJECT Plate | .35 | 208 | S601073 | S O L E N O I D | 3.90 |
| 29 | T100040 | Motor Pulley | .85 | 209 | T601101 | Sensor Sw, Tape End | 1.75 |
| 30 | T601088 | Special Nut, Azimuth Adj | .25 | | | | |

NSP: Non-Serviceable Part

## MISCELLANEOUS ELECTRICAL

| | | | |
|---|---|---|---|
| SK301 | 3516044 | 9P Dummy Plug ONLY | 1.60 |
| SK302 | 3516043 | 9P So ONLY, POWERPLAY Adapt | 1.95 |
| SK801 | S606621 | 3P Conn Plug(KSA-3X) | .65 |
| SK802 | S606622 | 4P Conn Plug(KSA-4X) | .70 |
| SK803 | S606623 | 6P Conn Plug(KSA-6X) | 1.05 |
| | S606809 | 17P Flexible EPC Conn | 2.25 |
| | S606608 | 28P So, Clock IC Mtg | 2.25 |
| SK303 | S606607 | 9P Pwr & SP Conn So(unit side) | 1.75 |
| SK304 | S606620 | 9P Pwr & SP Conn (car side) | 3.95 |
| | S606612 | Ass'y, 4P Conn So w/Harness | 2.50 |
| | S606613 | Ass'y, 3P Conn So w/Harness | 1.95 |
| | S606614 | Ass'y, 6P Conn So w/Harness | 2.65 |
| SK306 | S606808 | Power Harness, Clock B+ (So) | 1.20 |
| SK305 | S606807 | Power Harness, Clock B+(plug) | .40 |
| DS701 | 3148142 | Neon Lamp | .70 |
| S301 | T601101 | Sensor Sw, Tape End | 1.75 |
| S302 | T606534 | Leaf Sw, EJECT | 2.95 |
| S303 | T606531 | Slide Sw, F.FWD/REW | 3.40 |
| S304 | T606530 | Micro Sw, RADIO/TAPE | 2.75 |
| S305 | | Main Power Sw(see VOL Cont) | |
| S306 | | Clock Switch(see VOL Cont) | |
| S307 | | Leaf Sw, HOUR Set | |
| S308 | T606534 | Leaf Sw, MINUTE Set | 2.95 |
| S309 | S200063 | Push Sw, MATRIX | 2.55 |
| S501 | S200063 | Push Sw, MONO/ST | 2.55 |
| S701 | T606532 | Push Sw, LOC/DX | 2.85 |
| S702 | T606533 | Push Sw, AM/FM Select | 3.65 |
| F301 | XFU001 | Fuse, 1A | .25 |
| F302 | XFU002 | Fuse, 2A | .30 |
| VR101,201 | | VR, TONE Cont 20k Ohm x 2 | |
| VR102,202 | | VR, VOLUME Cont 20k Ohm x 2 | |
| VR301 | T606570 | VR, BALANCE Cont 30k Ohm w/Sw | 9.95 |
| VR103,203 | T606571 | VR, FADER Cont 50 Ohms | 7.95 |
| R443,502 | S601085 | Semi-Var Res, 10k Ohms | .75 |
| R366 | T601105 | Semi-Var Res, 1k Ohms | .75 |
| SK804 | S606609 | 17P So for EPC Conn | 2.95 |

## SEMICONDUCTORS

| | | | |
|---|---|---|---|
| Q351,354, 355 | 2SC945 | Transistor | 1.50 |
| Q352 | 2SC2001 | " | 1.45 |
| Q353 | 2SC1449 | " | 1.50 |
| Q401 | 2SK49 | F.E.T. | 1.50 |
| Q402,403 | 2SC1674 | Transistor | 1.35 |
| Q404 | 2SK41 | F.E.T. | 1.75 |
| Q405 | 2SC380 | Transistor | 1.50 |
| Q501,803 | 2SD471 | " | 1.10 |
| Q651 | 2SC460 | " | 2.30 |
| Q801 | 2SC1923 | " | 1.75 |
| Q802 | 2SC2021 | " | 1.70 |
| Q804,805, 806,807, 808,809 | 2SA790 | Transistor | 1.35 |
| Q810 | 2SD325 | " | 1.85 |
| IC101,201 | uPC592H | I.C., Pre-AMP | 1.95 |
| IC102,202 | uPC1156H | I.C., AMP | 5.25 |
| IC401 | SN76670N | I.C., FM IF | 4.75 |
| IC501 | MC1310P / SN76115 | I.C., MPX | 5.70 |
| IC601 | HA1199 | I.C., AM IF | 5.25 |
| IC801 | DC8629N | I.C., FREQUENCY COUNTER | 13.95 |
| IC802 | AY38112 | L.S.I., CLOCK | 28.85 |
| IC803,804 | LB1288 | I.C., Segment driver | 4.35 |
| IC805 | MC14011CP | I.C., DECODER | 5.00 |
| D101,102, 103,201, 202,203, 351,352, 801,802, 806,807, 808,809, 811,812, 813,814 | 1S1588 | Diode(1SS53 may be used) | .85 |
| D301 | T606803 | L.E.D., Tape Indicator | 2.95 |
| D311 | W06B | Diode | .95 |
| D353 | W03C | " | .95 |
| D401 | 1S1239 | Vari-Cap Diode | 1.30 |
| D805,810 | S1B0102 | Diode | 1.05 |
| Z501 | XZ096 | Zener Diode | .75 |
| Z801 | WZ056 | " " | .75 |
| TH351 | 5T31C | Thermistor | .95 |
| V351,352, 353,354, 355 | VD1120 | Varistor | .65 |

NOTE: *For R366,R443,R502 see"MISCELLANEOUS ELECTRICAL"
*SUBJECT TO CHANGE WITHOUT NOTICE

## CAPACITORS

| | |
|---|---|
| C440,442 | Ceramic, 3pF/50V |
| C820,821 | " 27pF/50V |
| C105,115,205,215 | " 33pF/50V |
| C654 | " 100pF/50V |
| C104,204,610 | " 120pF/50V |
| C438,441,611 | " 150pF/50V |
| C112,212 | " 220pF/50V |
| C651 | " 330pF/50V |
| C613 | " 560pF/50V |
| C614,615,801,802, 803,804,805,807, 808,819,841 | Ceramic, 1,000pF/50V |
| C118,218,430,432, 433,434,436 | Ceramic, 0.01uF/25V |
| C355,356,357,806, 823,864 | Ceramic, 0.01uF/50V |
| C502 | Styrol, 470pF/50V |
| C431 | Tantalum, 0.1uF/35V |
| C653 | " 4.7uF/25V |
| C110,210 | Aluminum, 0.047uF/25V |
| C605 | Mica, 120pF/50V |
| C701 | Mica Trimmer, 100pF (S606670) |
| C612 | Polyester Film, 0.001uF/50V |
| C604 | " " 0.0015uF/50V |
| C443,602 | " " 0.0022uF/50V |
| C509,510,652 | " " 0.0047uF/50V |
| C601 | " " 0.01uF/50V |
| C106,206 | " " 0.012uF/50V |
| C506,507 | " " 0.022uF/50V |
| C618,620 | " " 0.033uF/50V |
| C503,606,608 | " " 0.047uF/50V |
| C120,220,301 | " " 0.1uF/50V |
| C103,203 | Electrolytic, 4.7uF/6.3V |
| C113,213 | " 47uF/10V |
| C114,117,214,217, 501 | Electrolytic, 220uF/10V |
| C119,219 | " 1,000uF/10V |
| C504 | " 0.22uF/16V |
| C505 | " 0.47uF/16V |
| C508 | " 1uF/16V |
| C439,444 | " 3.3uF/16V |
| C102,202,358,435, 616,809,810,861, 862,863 | Electrolytic, 10uF/16V |
| C352 | " 22uF/16V |
| C116,216,353,437 | " 33uF/16V |
| C108,208,617,822, 840,860 | Electrolytic, 100uF/16V |
| C513 | " 220uF/16V |
| C302 | " 1,000uF/16V |
| C101,107,109,201, 207,209,351,354 | Electrolytic, 4.7uF/25V |
| C305,306,311 | " 470uF/25V |
| C111,211,619 | " 1uF/50V |
| C609 | " 2.2uF/50V |
| C603,607,701 | (See MISCELLANEOUS ELECT. PARTS) |

## RESISTORS ( 25¢ each or noted )

| | | | |
|---|---|---|---|
| R436 | 560 Ohm, 1/8W | R106,206, 356,441, 442,504, 505,506, 507,605, 653,826, 827,828, 829 | 3.3k Ohm, ¼W |
| R432 | 4.7k Ohm, 1/8W | R802 | 3.9k " " |
| R433 | 22k " " | R103,203, 601,838, 839,840, 841,842, 861,862, 866 | 4.7k Ohm, ¼W |
| R113,213, 438 | 22 Ohm, ¼W | R360 | 5.1k " " |
| R302,807 | 47 " " | R801 | 6.8k " " |
| R440 | 68 " " | R359,822, 823,824, 825 | 8.2k Ohm, ¼W |
| R603 | 82 " " | R607 | 10k " " |
| R311,803, 820 | 100 Ohm, ¼W | R104,105, 204,205, 806,843, 844,847, 849,851, 819 | 12k Ohm, ¼W |
| R435,439 | 110 " " | R602,608 | 15k Ohm, ¼W |
| R864 | 220 " " | R109,209 | 22k " " |
| R514 | 270 " " | R809 | 27k " " |
| R367 | 300 " " | R845,850,852 | 33k " " |
| R431,513, 830,831, 832,834, 835,836, 837,846, 833 | 330 Ohm, ¼W | R444,352 | 47k " " |
| R358 | 390 " " | R102,202, 652,854 | 56k Ohm, ¼W |
| R365 | 510 " " | R362,509,651, 804,848, 853,855 | 100k Ohm, ¼W |
| R436 | 560 " " | R107,207 | 120k " " |
| R351,654 | 820 " " | R101,201 | 150k " " |
| R364 | 910 " " | R354 | 330k " " |
| R434,503, 353,355, 810,856, 851,858 | 1k Ohm, ¼W | R437 | 1M " " |
| R357 | 1.3k Ohm, ¼W | R821 | 4.7M " " |
| R368 | 1.3k " " | R604 | 120 " ½W |
| R111,211, 363 | 1.5k Ohm, ¼W | R860 | 4.7 " 1W |
| R108,110, 112,208, 210,212, 701,805, 808,863, 865,867 | 2.2k Ohm, ¼W | | |
| R606 | 2.7k " " | | |
| R361 | 3k " " | | |
| R301 | 270 " 1W | | |

TURN VOLUME CONTROL FULLY CW. CONNECT AC VOLTMETER ACROSS SPEAKER LEADS. KEEP INPUT SIGNAL FROM SIGNAL GENERATOR LOW TO MINIMIZE AGC ACTION.

**USE FIGURES 2-6** **AM ALIGNMENT PROCEDURE**

| STEP | GENERATOR FREQUENCY | GENERATOR COUPLING | TUNER SETTING | ADJUST FOR PEAK |
|---|---|---|---|---|
| 1 | MODULATED 262 KHZ | THRU - 1MFD. INTO ANTENNA SOCKET | HI-END STOP | 1ST SECONDARY<br>2ND SECONDARY<br><br>1ST PRIMARY<br>2ND PRIMARY |
| 2* | MEASURE DEPTH OF OSC. CORE WITH RADIO TUNED TO HI-END STOP. SHOULD BE 1 3/8". | | | |
| 3 | MODULATED 1615 KHZ | THRU 82 PF INTO ANTENNA SOCKET | HI-END STOP | TRIMMER |
| 4* | MODULATED 600 KHZ | THRU 82 PF | 600 KHZ | CORES* |

*EXCEPT CHEVETTE

**USE FIGURE 6 CONNECT VTVM @ SPEAKERS** **MONAURAL AM/FM**

| STEP | INPUT | GENERATOR COUPLING | TUNER SETTING | ADJUSTMENT |
|---|---|---|---|---|
| 1 | MEASURE DEPTH OF OSC. CORE L1C WITH POINTER SET TO 108 MHZ ON DIAL (SHOULD BE 1 3/8") | | | |
| 2 | MODULATED 108 MHZ | WITH GENERATOR CONNECTED TO ANTENNA INPUT | 108 | PEAK FM OSC, RF, ANT TRIMMERS FOR MAXIMUM |
| 3 | 88 MHZ MODULATED | DIRECT TO ANTENNA SOCKET WITH MINIMUM OUTPUT | 88 | PEAK OSC, RF & ANT COILS FOR MAXIMUM |
| 4 | 99 MHZ MODULATED (WEAK) | DIRECT TO ANTENNA SOCKET | TUNE RADIO TO GENERATOR | PEAK MIXER AND PHASE COIL |

# ALIGNMENT

## 2700cc SERIES (VARICAP) (SECTION C)

FM STEREO
FM/TAPE
FM/DIGITAL
FM/CB

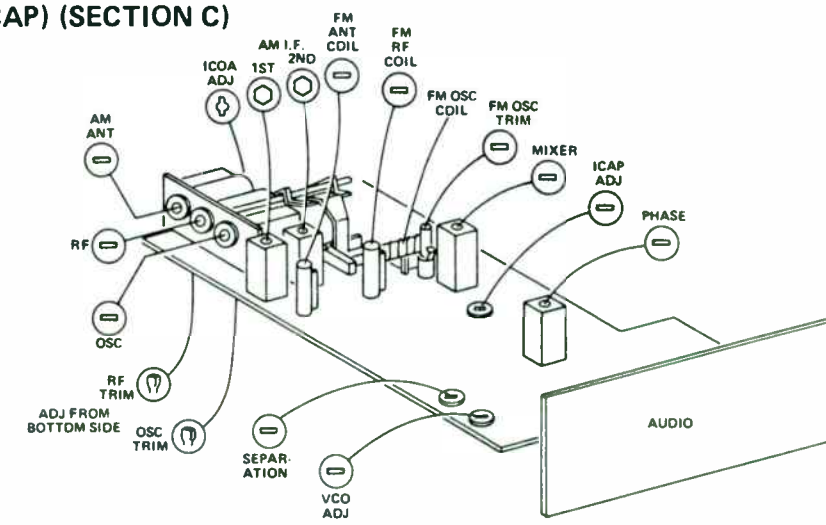



FIGURE 2

## CHEVETTE AM (SECTION J)

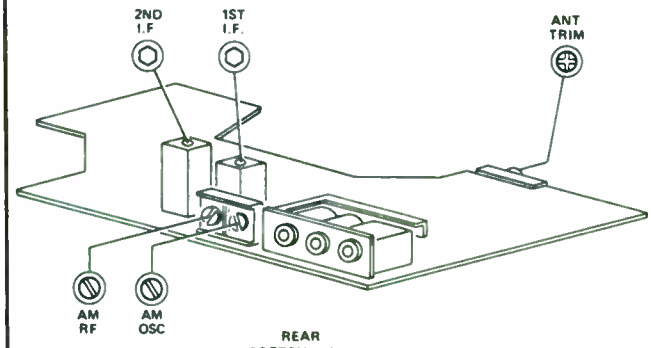



FIGURE 3

## CORPORATE AM (SECTION A)

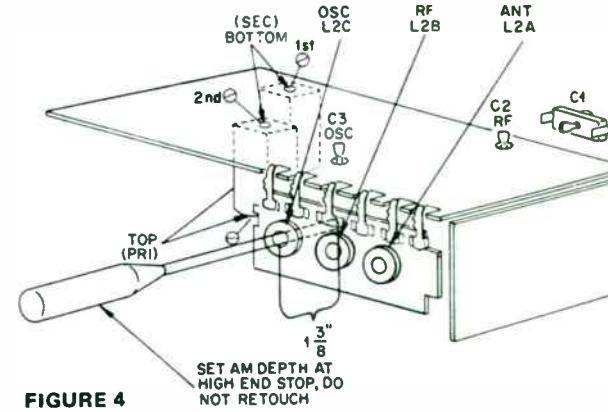



FIGURE 4

## CHEVETTE AM-FM (BOTTOM-REAR VIEW) (SECTION K & L)

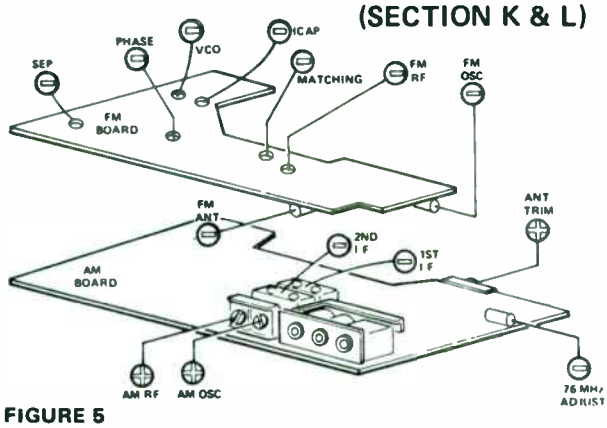



FIGURE 5

## MONO AM-FM (SECTION B)

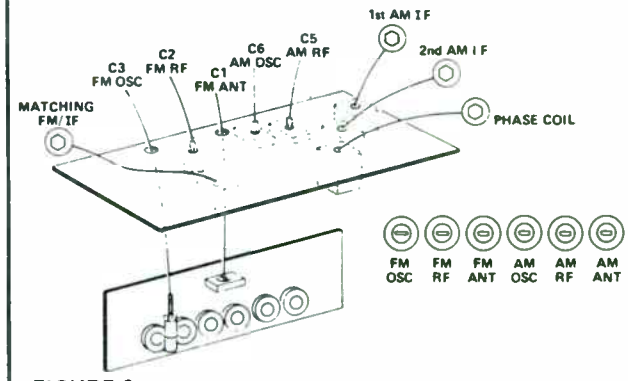



FIGURE 6

*NOTE: DO NOT ADJUST CHEVETTE OSC, RF, OR ANT.CORES

**IMPORTANT:** Ant. trimmer should be repeaked after radio is installed in car(ant. capacities vary from 60 pf to 90 pf). Use weak station or noise near 1400KHz.

# PARTS LIST AM/FM

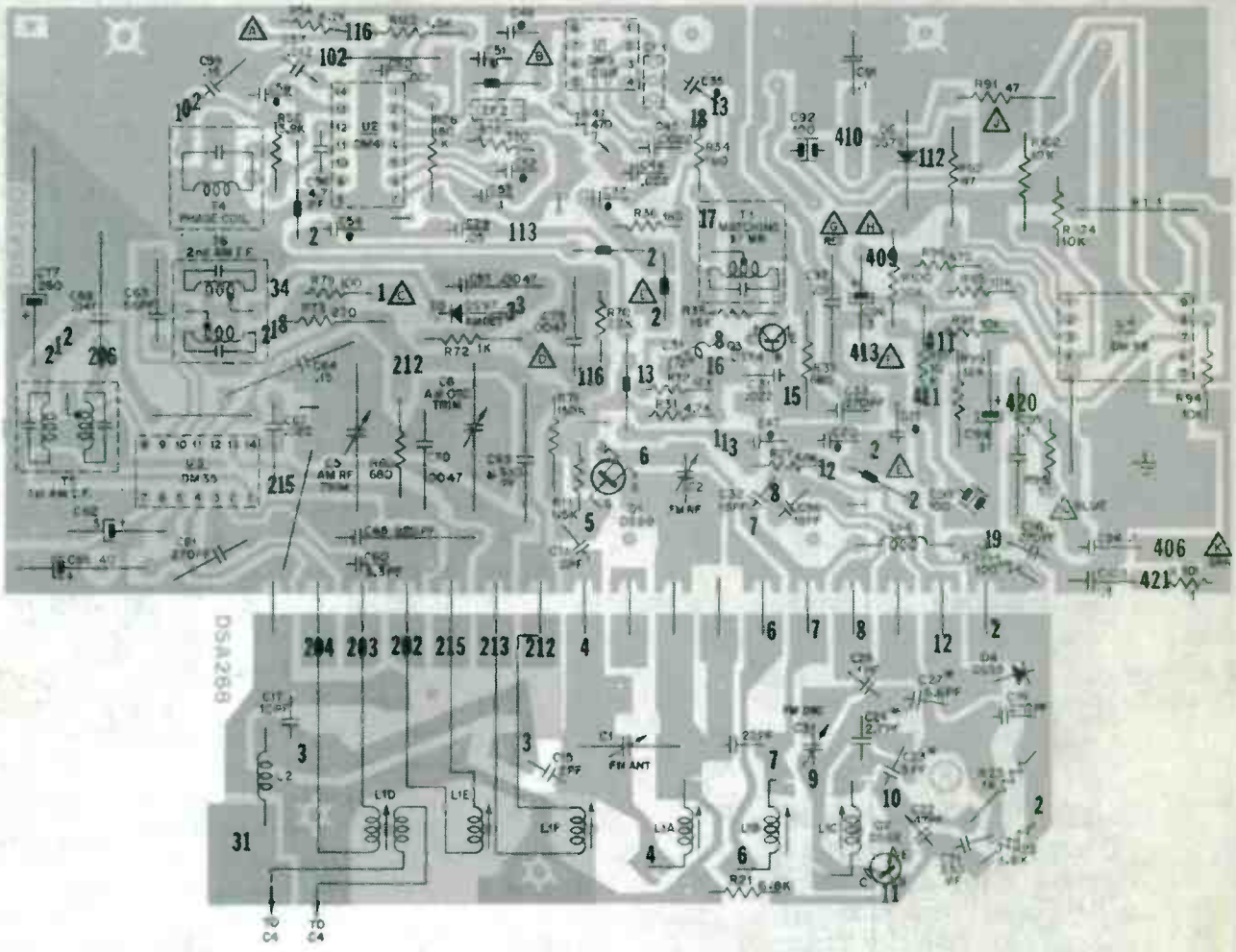
| Illus. No. | Service No. | Description |
|---|---|---|
| **SEMICONDUCTORS** | | |
| D3 | DS-97 | DIODE, AM DETECTOR |
| D4 | DS-55 | DIODE, AFC |
| D6 | DS-79 | DIODE, SPIKE SUPPRESSION, DS-79 |
| Q1 | DS-88 | TRANSISTOR, FM RF, DS-88 J-FET |
| Q2 | DS-82 | TRANSISTOR, FM OSC., DS-82 |
| Q3 | DS-74 | TRANSISTOR, FM MIXER, DS-74 |
| U1 | DM-9 | MODULE, GAIN BLOCK |
| U2 | DM-41 | MODULE, LIMITER & QUADRATURE DETECTOR, DM-41 |
| U3 | DM-35 | MODULE, AM IF, AND AGC |
| U4 | DM-98 | MODULE, ICBA, BRIDGE AUDIO |
| **COILS & TRANSFORMERS** | | |
| CF1 | 1223695 | FILTER CERAMIC (10.7MHZ) RED DOT |
| CF2 | 1223695 | FILTER CERAMIC (10.7MHZ) RED DOT |
| L1 | *16005264 | COILS, CIRCUIT BRD. WITH TRIMMERS |
| L2 | 7934553 | CHOKE, ANTENNA |
| L3 | 7939202 | CHOKE, INPUT |
| L31 | 7291800 | CHOKE, FILTER |
| T1 | 9340289 | TRANSFORMER, MATCHING |
| T4 | 7311554 | PHASE, TRANSFORMER |
| T5 | 7898449 | 1ST IF, AM |
| T6 | 9349372 | 2ND IF, AM |
| **CAPACITORS** | | |
| C1 | 9340022 | TRIMMER, FM ANTENNA |
| C2 | 7312524 | TRIMMER, FM RF |
| C3 | 9348040 | TRIMMER, FM OSCILLATOR |
| C4 | 9343451 | TRIMMER, AM ANTENNA |
| C5 | 7936524 | TRIMMER, AM RF |
| C6 | 7311368 | TRIMMER, AM OSC. |
| C7 | 9341267 | ELECTROLYTIC, 1000 MFD |
| C15 | 9347655 | 10.7 BYPASS |
| C20 | 9347655 | 10.7 BYPASS |
| C23 | 9341538 | 3 PF, 100V, DIPPED MICA |
| C24 | 7898542 | 2.7 PF, 100V, TUBE CERAMIC, N330 |
| C27 | 9342657 | 5.6 PF, 100V, TUBE CERAMIC, N750 |
| C35 | 9347655 | 10.7 BYPASS |
| C37 | 9347655 | 10.7 BYPASS |
| C43 | 9347655 | 10.7 BYPASS |
| C48 | 9347655 | 10.7 BYPASS |
| C51 | 9347655 | 10.7 BYPASS |
| C52 | 9347655 | 10.7 BYPASS |
| C54 | 9347655 | 10.7 BYPASS |
| C59 | 9347655 | 10.7 BYPASS |
| C62 | 7296348 | 3 MFD., 10V, TANTALUM |
| C66 | 9340269 | 40 MFD., 16V, TANTALUM |
| C69 | 7297598 | 330 PF, 100V, CERAMIC, N180 |
| C77 | 7936628 | 250 MFD., 16V, ELECTROLYTIC |
| C92 | 9349947 | 100 MFD., 16V, NON-POLAR |
| C96 | 7296348 | 3 MFD., 10V, TANTALUM |
| C98 | 9349947 | 100 MFD., 16V, NON-POLAR |
| C99 | 7296348 | 3 MFD., 10V, TANTALUM |
| C105 | 7296348 | 3 MFD., 10V, TANTALUM |
| **CONTROLS** | | |
| R1 | *16005075 | CONTROL, VOLUME, TONE & SWITCH |
| R139 | *16005076 | CONTROL, FADER (INCLUDES MANUAL SHAFT BUSHING) |

| Illus. No. | Service No. | Description |
|---|---|---|
| **TUNER PARTS** | | |
| 2 | 16005960 | BACKPLATE ASM., POINTER BRACKET |
| 4 | 7275426 | BEARING PLATE, MANUAL SHAFT, REAR |
| 5 | *16005264 | BOARD WITH TUNING COILS & TRIMMERS |
| 7 | 7287724 | BUSHING, COIL HOUSING INSULATOR SLEEVE |
| 8 | 9345969 | BUSHING, MANUAL SHAFT |
| 9 | 9345044 | CLUTCH DISC., ADJUSTABLE (INCL. TREADLE BAR ASM.) |
| 10 | 7314017 | CORE, AM TUNING |
| 11 | 7938110 | CORE, FM TUNING |
| 14 | 9345971 | DRIVE SHAFT, MANUAL (INCLUDES WORM GEAR) |
| ° 15 | *16005279 | ESCUTCHEON ASM. |
| • 15A | 16001986 | SLIDE BAR (BLACK) |
| ☆ 15 | *16005045 | ESCUTCHEON ASM. |
| ☆ 15A | 16001985 | SLIDE BAR (CHROME) |
| 16 | 1223108 | FINGER BAR PKG., DECLUTCHING |
| 19 | 1224142 | HOUSING ASM., COIL (INCL. BELL CRANK & CORE BAR ASM.) |
| 18 | 1223678 | LINK, CORE BAR CONNECTING |
| 21 | 9348981 | NUT, DRIVE SHAFT SPACER |
| 21 | 7279805 | NUT, MANUAL SHAFT BUSHING |
| 22 | 9343150 | PLATE ASM., "T" SHUTTLE GUIDE |
| 23 | 16005051 | PLATE ASM., "T" SHUTTLE ACTUATOR |
| 26 | 9349287 | POINTER ASM., DIAL |
| ☆ 27 | 9349753 | PUSHBUTTON (1/PKG.) |
| ° 27 | 7930367 | PUSHBUTTON (1/PKG.) |
| 29 | 1223106 | RETAINER PKG., "E" RING (10/PKG.) (POINTER ASM.) |
| 30 | 1223109 | RETAINER PKG., "E" RING (10/PKG.) (BRKT. ASM., SHUTTLE ACTUATOR) |
| 33 | 1223699 | SET SCREW & NUT PKG., TREADLE PIVOT BEARING |
| 34 | 1223227 | SHUTTLE, INTERLOCK (MISC. HARDWARE PKG.) |
| 35 | 7313139 | SLIDE ASM., TUNER |
| 36 | 9343624 | SLIDE, PUSHBUTTON |
| 39 | 7270344 | SPRING, DRIVE SHAFT RETAINER |
| 40 | 9342554 | SPRING, FINGER BAR RETURN |
| 18 | 1223557 | SPRING, CORE BAR CONNECTING LINK (MISC. HARDWARE PKG.) |
| 42 | 7302802 | SPRING, TUNER SLIDE RETURN |
| 43 | 16002266 | SPRING, TREADLE BEARING |
| 46 | 7313679 | SPRING, POINTER RETURN |
| 48 | 7930814 | SPRING, OVERCENTER, ANTI-RATTLE |
| 49 | *16005041 | SWITCH, AM/FM SELECTOR (S2) |
| 9 | 9345044 | TREADLE BAR ASM., (INCL. CLUTCH) |
| **MISCELLANEOUS** | | |
| I1 | 16002741 | LAMP, DIAL LIGHT |
| 53 | *16005052 | RADIATOR PKG., HEAT SINK |
| XL1 | 16004776 | SOCKET & LEAD ASM., DIAL LIGHT |
| J1 | *16005378 | SOCKET, ANTENNA CONNECTOR |
| 56 | 1224144 | BRACKET PKG., 12/PIN MOUNT & GUIDE |
| J2 | 1224150 | CONNECTOR PKG., 12/PIN FOR BENCH HOOK-UP |
| P2 | 12004451 | CONNECTOR ASM., 12/PIN, ON RADIO |

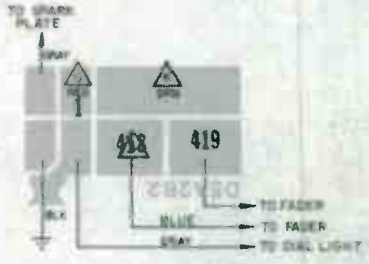
☆ 90BFP2, 90BFPK2
° 91YFP2

# SERVICE AIDS

AM/FM



VOLUME & TONE
CONTROL BOARD
(COPPER VIEW)



POWER BOARD
(COPPER VIEW)

**NOTICE**

GROUND PROBE BEFORE MAKING MEASUREMENTS ON IC. ALSO, DO NOT SHORT IC PINS TOGETHER OR TO GROUND OR IC MAY BE DESTROYED.

● SPECIAL BYPASS CAPACITOR SEE PARTS LIST.

* SPECIAL CAPACITORS, SEE PARTS LIST

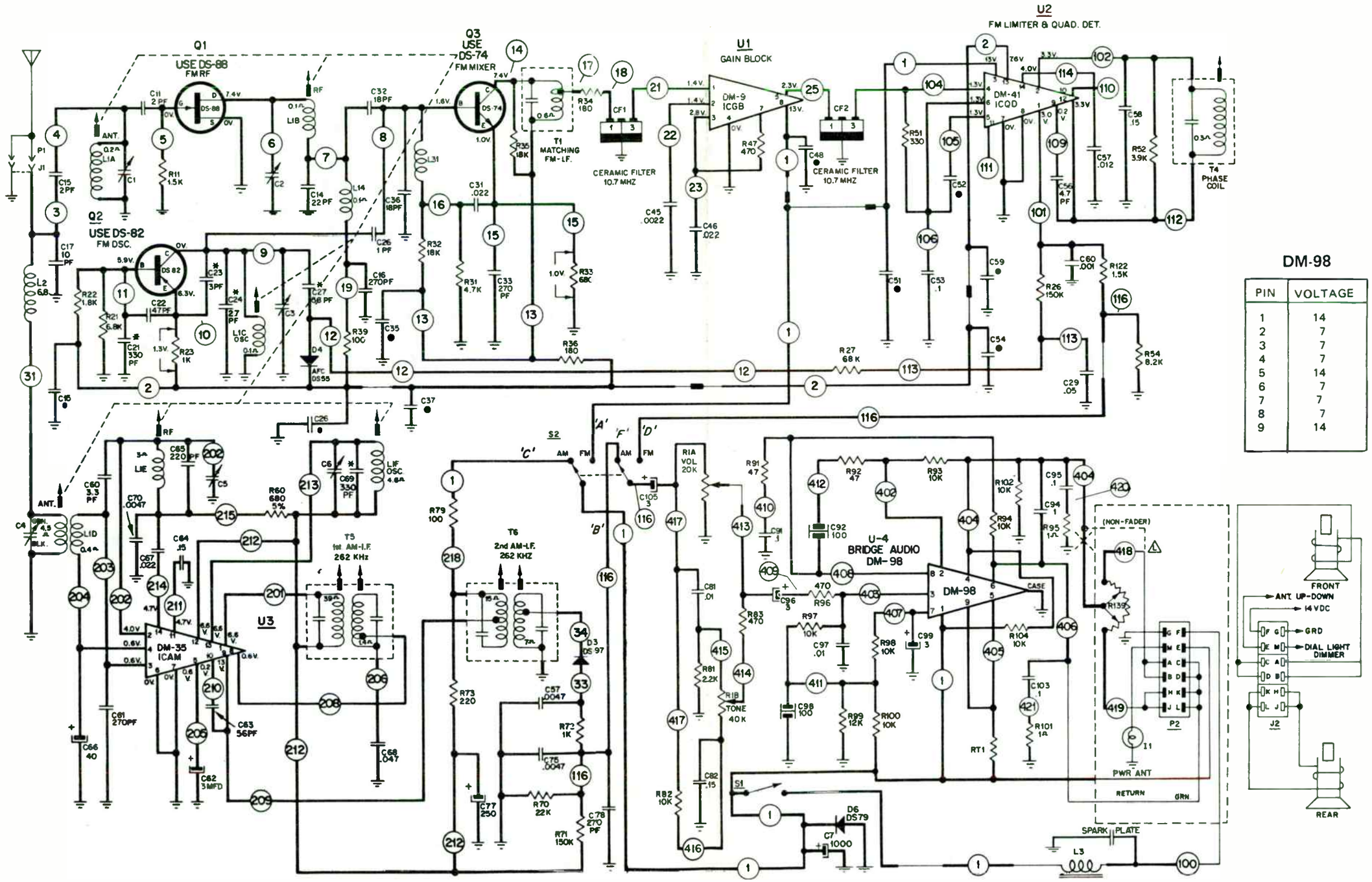
**VOLTAGES MEASURED WITH A VTVM, NO SIGNAL AND 14 VOLTS APPLIED TO RADIO.**

90BFP2
90BFPK2
91YFP2

**UNLESS OTHERWISE NOTED:**

ALL RESISTORS ARE ± 10%, ½ WATT.

ALL CAPACITORS ARE SHOWN IN MFD AND ARE 75 VOLT OR HIGHER EXCEPT ELECTROLYTICS AND THOSE NOTED BY AN *




**DM-98**

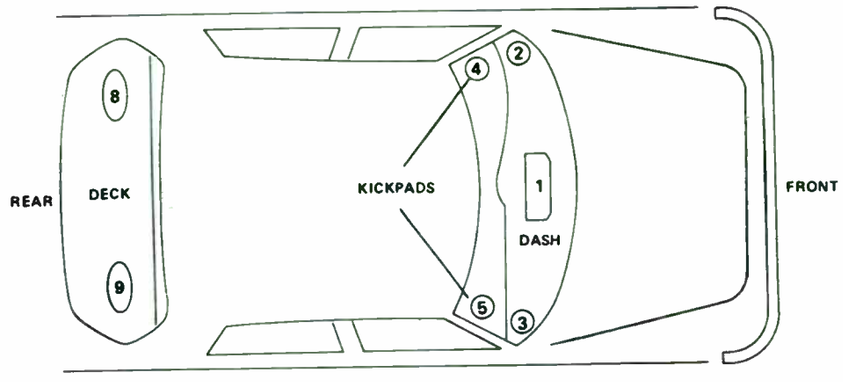
| PIN | VOLTAGE |
|---|---|
| 1 | 14 |
| 2 | 7 |
| 3 | 7 |
| 4 | 7 |
| 5 | 14 |
| 6 | 7 |
| 7 | 7 |
| 8 | 7 |
| 9 | 14 |

# COMPLETE SPEAKER LISTING

**SPEAKER LOCATION GUIDE**
(TO BE USED WITH SPEAKER LIST)

**SPEAKER CODES:**
A - 6 x 9 (Deep Basket)
B - 6 x 9 (Shallow Basket)
C - 4 x 10
D - 4 x 6
E - 3½ Round
X - 6 x 9 Extended Range

**CAR CODES:**
HATCHBACK .....H
PASSENGER CARS ...C
STATION WAGONS ..W
TRUCKS .....T




| CAR NAME | LOCATION & SPEAKER CODE | CAR CODE | SERVICE SPEAKER NO. | BRACKET NO. |
|---|---|---|---|---|
| CENTURY | 2E & 3E | CW | 16000680 | 7936043 |
| | 8A & 9A | C | 9348870 | |
| | 8C or 9C | W | 7898980 | |
| LE SABRE & ELECTRA | 2D & 3D | CW | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| | 8X or 9X | C | 16004150 | |
| REGAL | 2E & 3E | C | 16000680 | |
| | 8C & 9C | C | 7898980 | |
| RIVIERA | 2D & 3D | C | 16005880 | |
| | 8C & 9C | C | 7898980 | |
| SKYLARK (SEE NOVA) | | | | |
| SKYHAWK (SEE MONZA) | | | | |
| DEVILLE AND FLEETWOOD | 2D & 3D | C | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| ELDORADO | 2D & 3D | C | 16005880 | |
| | 8C or 9C | C | 7898980 | |
| SEVILLE | 2E & 3E | C | 16002296 | |
| | 8C or 9C | C | 7898980 | |
| MALIBU AND MONTE CARLO | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 7898980 | |
| | 2E or 3E | CW | 16001981 | |
| MONTE CARLO | 8C & 9C | C | 7898980 | |
| CHEVETTE | 9C | C | 9349090 | |
| | 1A | C | 9349921 | |
| CHEVROLET | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| | 2D & 3D | CW | 7897421 | |
| CAMARO | 1C | C | 7933921 | 7932455 |
| | 9A | C | 9348870 | |



# COMPLETE SPEAKER LISTING

| CAR NAME | LOCATION & SPEAKER CODE | CAR CODE | SERVICE SPEAKER NO. | BRACKET NO. |
|---|---|---|---|---|
| MONZA, SUNBIRD, SKYHAWK AND STARFIRE | 1C | HCW | 16002011 | 7930557 |
| | 9A | HC | 9348870 | |
| | 9C | CW | 9349690 | |
| CORVETTE | 2D & 3D | C | 16005880 | |
| | 8A & 9A | C | 16005641 | |
| NOVA, SKYLARK AND OMEGA | 1C | HC | 9349690 | 7298516 |
| | 8A & 9A | C | 9348870 | |
| | 9C | H | 9349690 | |
| LEMANS | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C & 9C | W | 7898980 | |
| | 2E & 3E | CW | 7895000 | |
| GRAND PRIX | 1C | C | 7896870 | |
| | 2E & 3E | C | 7895000 | |
| | 8A & 9A | C | 7898980 | |
| CATALINA & BONNEVILLE | 2D & 3D | CW | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| FIREBIRD | 1C | C | 16004162 | 7932768 |
| | 9A | C | 9348870 | |
| SUNBIRD (SEE MONZA) | | | | |
| PHOENIX | 1C | HC | 7933931 | 7298516 |
| | 8A & 9A | C | 9348870 | |
| | 9C | H | 9349690 | |
| 88 AND 98 | 2E & 3E | CW | 16003523 | |
| | 8A & 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| CUTLASS & CUTLASS SUPREME | 2E & 3E | CW | 16000680 | |
| CUTLASS | 8A & 9A | C | 9348870 | |
| CUTLASS SUPREME | 8C & 9C | CW | 7898980 | |
| TORONADO | 2D & 3D | C | 16005880 | |
| | 8C & 9C | C | 7898980 | |
| OMEGA (SEE NOVA) | | | | |
| STARFIRE (SEE MONZA) | | | | |
| EL CAMINO | 2E & 3E | T | 16001981 | |
| | 1C | T | 7896870 | |
| CHEVY PICK-UP | 1C | T | 7938401 | |
| BLAZER, SUBURBAN | 1C | T | 7938401 | |
| | 8C or 9C | T | 7938401 | |
| STEP VAN | 1C | T | 7898980 | |
| "G" VAN | 2D & 3D | T | 7895010 | |
| | 8A & 9A | T | 9348870 | |
| | 8C & 9C | T | 7938401 | |
| STEEL TILT CAB | 1B | T | 7285671 | |
| | 2D & 3D | T | 1222940 | |
| ALUMINUM TILT CAB | 2C & 3C | T | 9349690 | |
| | 8C or 9C | T | 9349690 | |
| MEDIUM DUTY | 2C & 3C | T | 9349690 | |
| | 8C | T | 7938401 | |

# PARTS LIST AM/FM

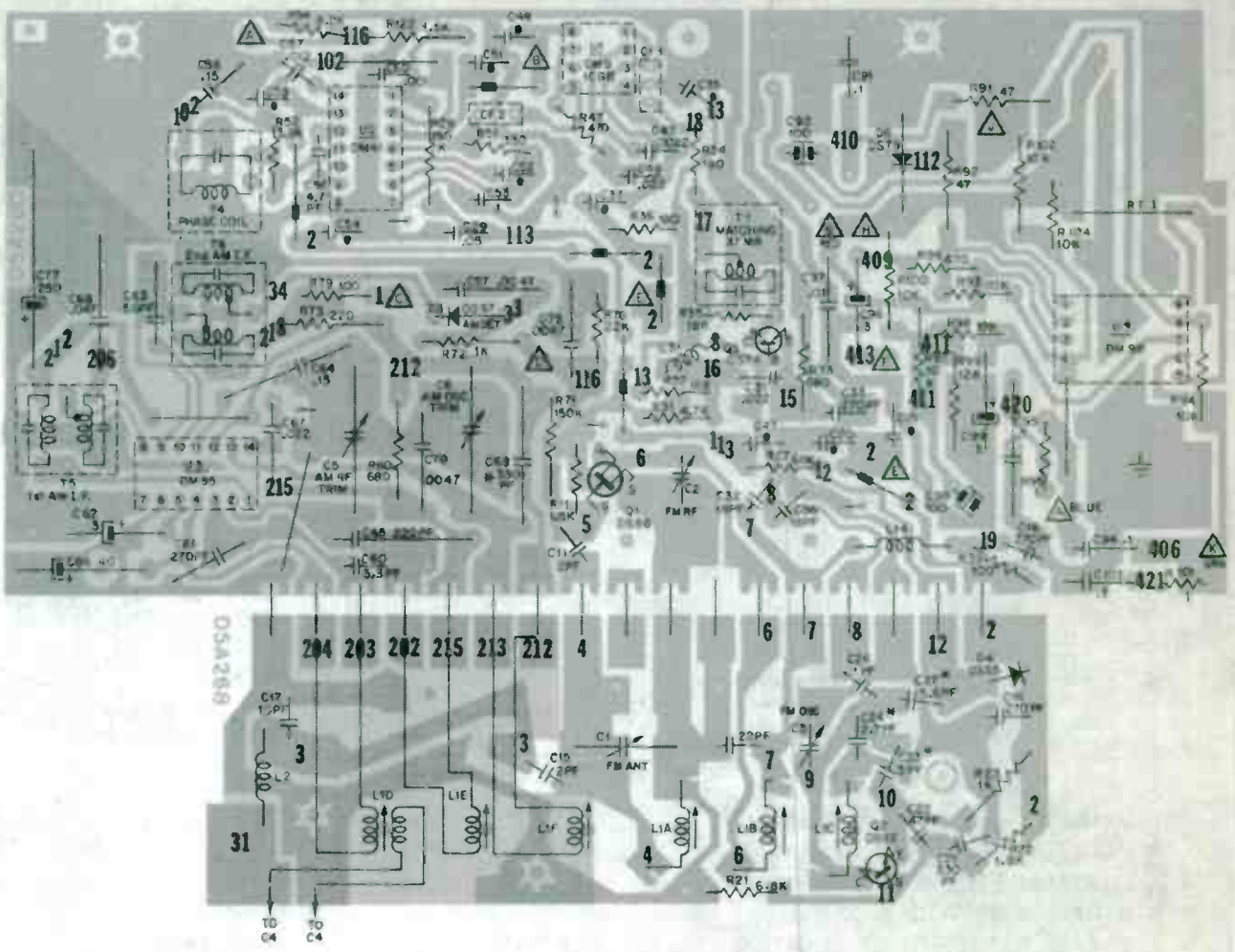
| Illus. No. | Service No. | Description |
|---|---|---|
| **SEMICONDUCTORS** | | |
| D3 | DS-97 | DIODE, AM DETECTOR |
| D4 | DS-55 | DIODE, AFC |
| D6 | DS-79 | DIODE, SPIKE SUPPRESSION, DS-79 |
| Q1 | DS-88 | TRANSISTOR, FM RF, DS-88 J-FET |
| Q2 | DS-82 | TRANSISTOR, FM OSC., DS-82 |
| Q3 | DS-74 | TRANSISTOR, FM MIXER, DS-74 |
| U1 | DM-9 | MODULE, GAIN BLOCK |
| U2 | DM-41 | MODULE, LIMITER & QUADRATURE DETECTOR, DM-41 |
| U3 | DM-35 | MODULE, AM IF, AND AGC |
| U4 | DM-98 | MODULE, ICBA, BRIDGE AUDIO |
| **COILS & TRANSFORMERS** | | |
| CF1 | 1223695 | FILTER CERAMIC (10.7MHZ) RED DOT |
| CF2 | 1223695 | FILTER CERAMIC (10.7MHZ) RED DOT |
| L1 | *16005264 | COILS, CIRCUIT BRD. WITH TRIMMERS |
| L2 | 7934553 | CHOKE, ANTENNA |
| L3 | 7939202 | CHOKE, INPUT |
| L31 | 7291800 | CHOKE, FILTER |
| T1 | 9340289 | TRANSFORMER, MATCHING |
| T4 | 7311554 | PHASE, TRANSFORMER |
| T5 | 7898449 | 1ST IF, AM |
| T6 | 9349372 | 2ND IF, AM |
| **CAPACITORS** | | |
| C1 | 9340022 | TRIMMER, FM ANTENNA |
| C2 | 7312524 | TRIMMER, FM RF |
| C3 | 9348040 | TRIMMER, FM OSCILLATOR |
| C4 | 9343451 | TRIMMER, AM ANTENNA |
| C5 | 7936524 | TRIMMER, AM RF |
| C6 | 7311368 | TRIMMER, AM OSC. |
| C7 | 9341267 | ELECTROLYTIC, 1000 MFD |
| C15 | 9347655 | 10.7 BYPASS |
| C20 | 9347655 | 10.7 BYPASS |
| C23 | 9341538 | 3 PF, 100V, DIPPED MICA |
| C24 | 7898542 | 2.7 PF, 100V, TUBE CERAMIC, N330 |
| C27 | 9342657 | 5.6 PF, 100V, TUBE CERAMIC, N750 |
| C35 | 9347655 | 10.7 BYPASS |
| C37 | 9347655 | 10.7 BYPASS |
| C43 | 9347655 | 10.7 BYPASS |
| C48 | 9347655 | 10.7 BYPASS |
| C51 | 9347655 | 10.7 BYPASS |
| C52 | 9347655 | 10.7 BYPASS |
| C54 | 9347655 | 10.7 BYPASS |
| C59 | 9347655 | 10.7 BYPASS |
| C62 | 7296348 | 3 MFD., 10V, TANTALUM |
| C66 | 9340269 | 40 MFD., 16V, TANTALUM |
| C69 | 7297598 | 330 PF, 100V, CERAMIC, N180 |
| C77 | 7936628 | 250 MFD., 16V, ELECTROLYTIC |
| C92 | 9349947 | 100 MFD., 16V, NON-POLAR |
| C96 | 7296348 | 3 MFD., 10V, TANTALUM |
| C98 | 9349947 | 100 MFD., 16V, NON-POLAR |
| C99 | 7296348 | 3 MFD., 10V, TANTALUM |
| C105 | 7296348 | 3 MFD., 10V, TANTALUM |
| **CONTROLS** | | |
| R1 | *16005075 | CONTROL, VOLUME, TONE & SWITCH |
| R139 | *16005076 | CONTROL, FADER (INCLUDES MANUAL SHAFT BUSHING) |

| Illus. No. | Service No. | Description |
|---|---|---|
| **TUNER PARTS** | | |
| 2 | 16005960 | BACKPLATE ASM., POINTER BRACKET |
| 4 | 7275426 | BEARING PLATE, MANUAL SHAFT, REAR |
| 5 | *16005264 | BOARD WITH TUNING COILS & TRIMMERS |
| 7 | 7287724 | BUSHING, COIL HOUSING INSULATOR SLEEVE |
| 8 | 9345969 | BUSHING, MANUAL SHAFT |
| 9 | 9345044 | CLUTCH DISC., ADJUSTABLE (INCL. TREADLE BAR ASM.) |
| 10 | 7314017 | CORE, AM TUNING |
| 11 | 7938110 | CORE, FM TUNING |
| 14 | 9345971 | DRIVE SHAFT, MANUAL (INCLUDES WORM GEAR) |
| • 15 | *16005279 | ESCUTCHEON ASM. |
| • 15A | 16001986 | SLIDE BAR (BLACK) |
| ☆ 15 | *16005045 | ESCUTCHEON ASM. |
| ☆ 15A | 16001985 | SLIDE BAR (CHROME) |
| 16 | 1223108 | FINGER BAR PKG., DECLUTCHING |
| 19 | 1224142 | HOUSING ASM., COIL (INCL. BELL CRANK & CORE BAR ASM.) |
| 18 | 1223678 | LINK, CORE BAR CONNECTING |
| 21 | 9348981 | NUT, DRIVE SHAFT SPACER |
| 21 | 7279805 | NUT, MANUAL SHAFT BUSHING |
| 22 | 9343150 | PLATE ASM., "T" SHUTTLE GUIDE |
| 23 | 16005051 | PLATE ASM., "T" SHUTTLE ACTUATOR |
| 26 | 9349287 | POINTER ASM., DIAL |
| ☆ 27 | 9349753 | PUSHBUTTON (1/PKG.) |
| • 27 | 7930367 | PUSHBUTTON (1/PKG.) |
| 29 | 1223106 | RETAINER PKG., "E" RING (10/PKG.) (POINTER ASM.) |
| 30 | 1223109 | RETAINER PKG., "E" RING (10/PKG.) (BRKT. ASM., SHUTTLE ACTUATOR) |
| 33 | 1223699 | SET SCREW & NUT PKG., TREADLE PIVOT BEARING |
| 34 | 1223227 | SHUTTLE, INTERLOCK (MISC. HARDWARE PKG.) |
| 35 | 7313139 | SLIDE ASM., TUNER |
| 36 | 9343624 | SLIDE, PUSHBUTTON |
| 39 | 7270344 | SPRING, DRIVE SHAFT RETAINER |
| 40 | 9342554 | SPRING, FINGER BAR RETURN |
| 18 | 1223557 | SPRING, CORE BAR CONNECTING LINK (MISC. HARDWARE PKG.) |
| 42 | 7302802 | SPRING, TUNER SLIDE RETURN |
| 43 | 16002266 | SPRING, TREADLE BEARING |
| 46 | 7313679 | SPRING, POINTER RETURN |
| 48 | 7930814 | SPRING, OVERCENTER, ANTI-RATTLE |
| 49 | *16005041 | SWITCH, AM/FM SELECTOR (S2) |
| 9 | 9345044 | TREADLE BAR ASM., (INCL. CLUTCH) |
| **MISCELLANEOUS** | | |
| I1 | 16002741 | LAMP, DIAL LIGHT |
| 53 | *16005052 | RADIATOR PKG., HEAT SINK |
| XL1 | 16004776 | SOCKET & LEAD ASM., DIAL LIGHT |
| J1 | *16005378 | SOCKET, ANTENNA CONNECTOR |
| 56 | 1224144 | BRACKET PKG., 12/PIN MOUNT & GUIDE |
| J2 | 1224150 | CONNECTOR PKG., 12/PIN FOR BENCH HOOK-UP |
| P2 | 12004451 | CONNECTOR ASM., 12/PIN, ON RADIO |

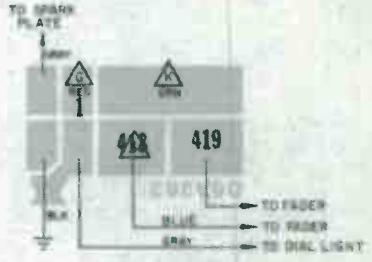
☆ 90BFP2, 90BFPK2
• 91YFP2

# SERVICE AIDS

AM/FM



VOLUME & TONE
CONTROL BOARD
(COPPER VIEW)



POWER BOARD
(COPPER VIEW)

**NOTICE**

GROUND PROBE BEFORE MAKING MEASUREMENTS ON IC. ALSO, DO NOT SHORT IC PINS TOGETHER OR TO GROUND OR IC MAY BE DESTROYED.

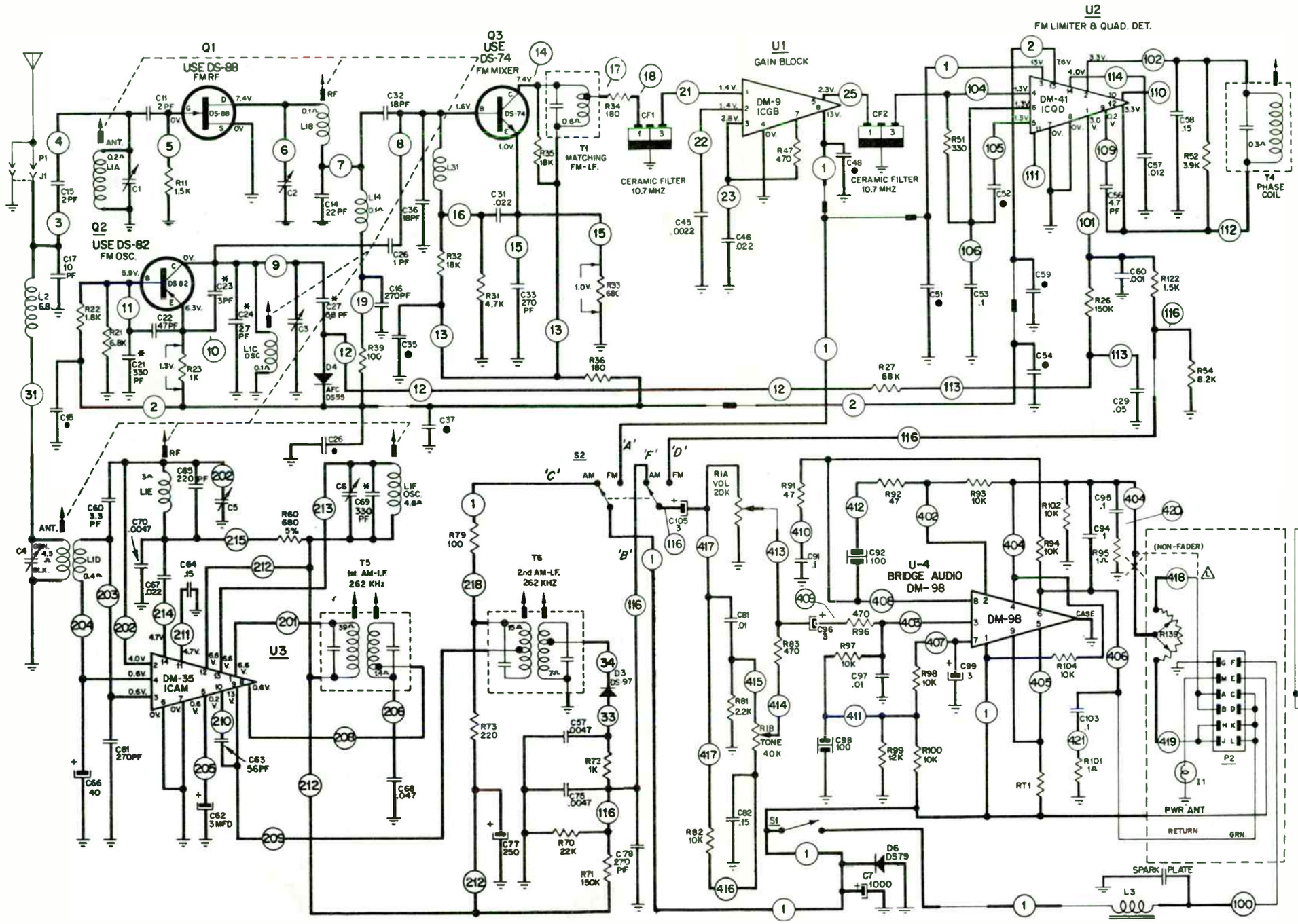
● SPECIAL BYPASS CAPACITOR SEE PARTS LIST.

* SPECIAL CAPACITORS, SEE PARTS LIST

**VOLTAGES MEASURED WITH A VTVM, NO SIGNAL AND 14 VOLTS APPLIED TO RADIO.**

90BFP2
90BFPK2
91YFP2

**UNLESS OTHERWISE NOTED:**
ALL RESISTORS ARE ± 10%, ½ WATT.
ALL CAPACITORS ARE SHOWN IN MFD AND ARE 75 VOLT OR HIGHER EXCEPT ELECTROLYTICS AND THOSE NOTED BY AN *




| PIN | VOLTAGE |
|---|---|
| 1 | 14 |
| 2 | 7 |
| 3 | 7 |
| 4 | 7 |
| 5 | 14 |
| 6 | 7 |
| 7 | 7 |
| 8 | 7 |
| 9 | 14 |

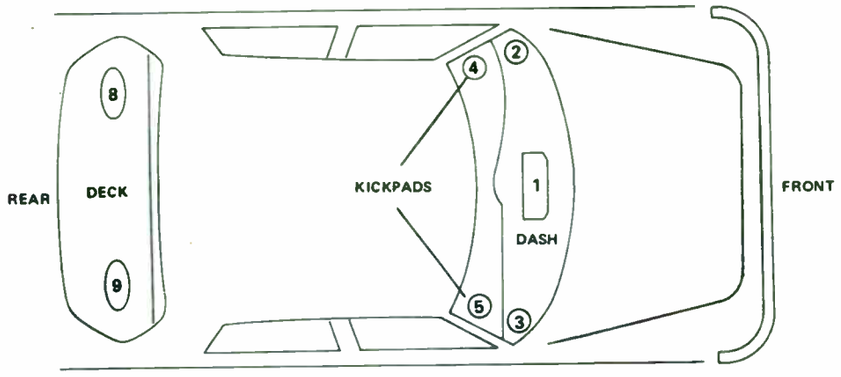
DM-98

# COMPLETE SPEAKER LISTING

## SPEAKER LOCATION GUIDE
(TO BE USED WITH SPEAKER LIST)

**SPEAKER CODES:**
A - 6 x 9 (Deep Basket)
B - 6 x 9 (Shallow Basket)
C - 4 x 10
D - 4 x 6
E - 3½ Round
X - 6 x 9 Extended Range

**CAR CODES:**
HATCHBACK .....H
PASSENGER CARS ...C
STATION WAGONS ..W
TRUCKS .....T




| CAR NAME | LOCATION & SPEAKER CODE | CAR CODE | SERVICE SPEAKER NO. | BRACKET NO. |
|---|---|---|---|---|
| CENTURY | 2E & 3E | CW | 16000680 | 7936043 |
| | 8A & 9A | C | 9348870 | |
| | 8C or 9C | W | 7898980 | |
| LE SABRE & ELECTRA | 2D & 3D | CW | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| | 8X or 9X | C | 16004150 | |
| REGAL | 2E & 3E | C | 16000680 | |
| | 8C & 9C | C | 7898980 | |
| RIVIERA | 2D & 3D | C | 16005880 | |
| | 8C & 9C | C | 7898980 | |
| SKYLARK (SEE NOVA) | | | | |
| SKYHAWK (SEE MONZA) | | | | |
| DEVILLE AND FLEETWOOD | 2D & 3D | C | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| ELDORADO | 2D & 3D | C | 16005880 | |
| | 8C or 9C | C | 7898980 | |
| SEVILLE | 2E & 3E | C | 16002296 | |
| | 8C or 9C | C | 7898980 | |
| MALIBU AND MONTE CARLO | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 7898980 | |
| | 2E or 3E | CW | 16001981 | |
| MONTE CARLO | 8C & 9C | C | 7898980 | |
| CHEVETTE | 9C | C | 9349090 | |
| | 1A | C | 9349921 | |
| CHEVROLET | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| | 2D & 3D | CW | 7897421 | |
| CAMARO | 1C | C | 7933921 | 7932455 |
| | 9A | C | 9348870 | |







# COMPLETE SPEAKER LISTING

| CAR NAME | LOCATION & SPEAKER CODE | CAR CODE | SERVICE SPEAKER NO. | BRACKET NO. |
|---|---|---|---|---|
| MONZA, SUNBIRD, SKYHAWK AND STARFIRE | 1C | HCW | 16002011 | 7930557 |
| | 9A | HC | 9348870 | |
| | 9C | CW | 9349690 | |
| CORVETTE | 2D & 3D | C | 16005880 | |
| | 8A & 9A | C | 16005641 | |
| NOVA, SKYLARK AND OMEGA | 1C | HC | 9349690 | 7298516 |
| | 8A & 9A | C | 9348870 | |
| | 9C | H | 9349690 | |
| LEMANS | 1C | CW | 7896870 | |
| | 8A or 9A | C | 9348870 | |
| | 8C & 9C | W | 7898980 | |
| | 2E & 3E | CW | 7895000 | |
| GRAND PRIX | 1C | C | 7896870 | |
| | 2E & 3E | C | 7895000 | |
| | 8A & 9A | C | 7898980 | |
| CATALINA & BONNEVILLE | 2D & 3D | CW | 16005880 | |
| | 8A or 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| FIREBIRD | 1C | C | 16004162 | 7932768 |
| | 9A | C | 9348870 | |
| SUNBIRD (SEE MONZA) | | | | |
| PHOENIX | 1C | HC | 7933931 | 7298516 |
| | 8A & 9A | C | 9348870 | |
| | 9C | H | 9349690 | |
| 88 AND 98 | 2E & 3E | CW | 16003523 | |
| | 8A & 9A | C | 9348870 | |
| | 8C or 9C | W | 1224050 | 7896318 |
| CUTLASS & CUTLASS SUPREME | 2E & 3E | CW | 16000680 | |
| CUTLASS | 8A & 9A | C | 9348870 | |
| CUTLASS SUPREME | 8C & 9C | CW | 7898980 | |
| TORONADO | 2D & 3D | C | 16005880 | |
| | 8C & 9C | C | 7898980 | |
| OMEGA (SEE NOVA) | | | | |
| STARFIRE (SEE MONZA) | | | | |
| EL CAMINO | 2E & 3E | T | 16001981 | |
| | 1C | T | 7896870 | |
| CHEVY PICK-UP | 1C | T | 7938401 | |
| BLAZER, SUBURBAN | 1C | T | 7938401 | |
| | 8C or 9C | T | 7938401 | |
| STEP VAN | 1C | T | 7898980 | |
| "G" VAN | 2D & 3D | T | 7895010 | |
| | 8A & 9A | T | 9348870 | |
| | 8C & 9C | T | 7938401 | |
| STEEL TILT CAB | 1B | T | 7285671 | |
| | 2D & 3D | T | 1222940 | |
| ALUMINUM TILT CAB | 2C & 3C | T | 9349690 | |
| | 8C or 9C | T | 9349690 | |
| MEDIUM DUTY | 2C & 3C | T | 9349690 | |
| | 8C | T | 7938401 | |

Pages 57-108 Courtesy of FORD MOTOR CO.

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series) D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)

ALIGNMENT INFORMATION

FM ALIGNMENT

## EQUIPMENT

1. Power Supply — Hewlett Packard 6285A or equivalent.
2. A-C VTVM — Hewlett Packard 400H or equivalent.
3. FM Generator — Boonton 202H or equivalent.
4. Oscilloscope — Tektronix 504 or equivalent.
5. RF Voltmeter or Detector Probe (See diagram A for information on building an RF detector probe.).
6. Varactor supply voltage from AM tuner panel.
7. Distortion Analyzer — Hewlett Packard 330B or equivalent.

## SERVICE NOTES

Before proceeding with the FM alignment, read the Service Notes and follow preliminary information steps 1 through 3 under VARACTOR POWER SUPPLY ALIGNMENT to determine whether the varactor voltages are within acceptable limits.

Use a VTVM with an input impedance of 1 megohm or greater for voltage measurements.

## PRELIMINARY INFORMATION

1. Connect RF signal generator through dummy antenna to antenna input jack J801. (Refer to Diagram C for dummy antenna configuration.) Use 400 Hz modulation, ±25 kHz deviation signal at frequency indicated and keep generator output at 1 millivolt in complete FM alignment procedure (except where otherwise indicated).
2. Use test point P102 (22) for indication of FM audio output.

## PARTIAL FM ALIGNMENT PROCEDURE FOLLOWING PARTS REPLACEMENT

When replacing a component on the FM tuner panel, alignment should be performed only on the component replaced. The procedure in each case is shown in simplified chart form below.

| PART REPLACED | GENERATOR SETTING | ADJUSTMENT FOR MAX. OUTPUT |
|---|---|---|
| T103 | 88MHz | T103 |
| VC103 | 108 MHz | VC103 |
| VC101, VC102 | 108MHz | Only the capacitor or capacitors replaced |
| T101, T102 | 88 MHz | Only the coil or transformer replaced |
| VRAC103 | 108 MHz | VC103 |
| | 88 MHz | T103 |
| VRAC101 VRAC102 | 108MHz | The associated capacitor (VC101 or VC102) |
| | 92MHz | The associated coil or transformer (T101 or T102) |
| T105 FM Detector Coil | Follow procedure as explained in COMPLETE FM ALIGNMENT PROCEDURE. | |

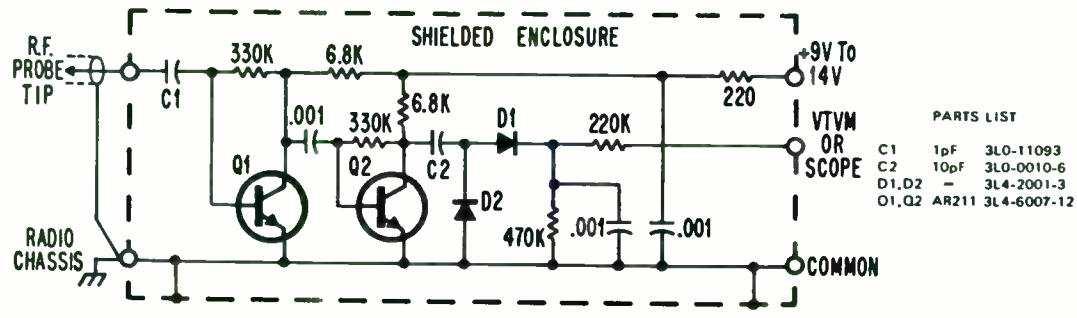



DIAGRAM A. RF DETECTOR PROBE SCHEMATIC

## COMPLETE FM ALIGNMENT PROCEDURE

| STEP | PROCEDURE |
|---|---|
| 1 | Connect VTVM or scope to test point P102 (22) for indication of FM audio output. |
| 2 | Apply 1.8 to 2.0 VDC from low impedance source (50 ohms or less) to base of Q101 to defeat AGC or ground collector of Q104. |
| 3 | Connect RF voltmeter or scope to output of F102 (junction of F102 and R132). (If RF voltmeter is not available, use detector probe suggested in Diagram A.) |
| 4 | Pull out high end pushbutton to unlock. Manually tune radio to 108 MHz for varactor tuning voltage into FM panel P101 (14) of +6.5 VDC on VTVM. Push the button in to lock-in voltage setting. |
| 5 | Set generator to 108MHz. |
| 6 | Adjust oscillator trimmer VC103, antenna trimmer VC101, and RF trimmer VC102 for max. output on scope or meter. Adjust generator output as needed to prevent limiting in N101. |
| 7 | Pull out low end pushbutton to unlock. Manually tune radio to 88MHz for varactor tuning voltage of 0.75 VDC on VTVM. Push the button in to lock-in voltage setting. |
| 8 | Set generator to 88MHz. |
| 9 | Adjust oscillator transformer T103, antenna coil T101 and RF transformer T102 for max. output on scope or meter. |
| 10 | Repeat steps 5 and 6. If output reading on scope or meter is within 1 dB of max. output, no further tuning is required. If output reading is not within limit specified, repeat steps 6 through 10 until output is within the limit. |
| 11 | Tune radio to 98MHz. Set generator to 98MHz, 75KHz deviation, and 1 millivolt output. Record audio output level. |
| 12 | Align FM detector as follows:<br>a. Adjust generator frequency for max. output at pin 4 of IC101.<br>b. Set generator to 75KHz deviation, 400Hz modulated signal at 1 millivolt output.<br>c. Adjust FM detector coil T105 for max. output on scope of meter.<br>d. Adjust generator frequency for min. distortion in output indication.<br>e. At null point, readjust T105 for max. output on scope or meter. |

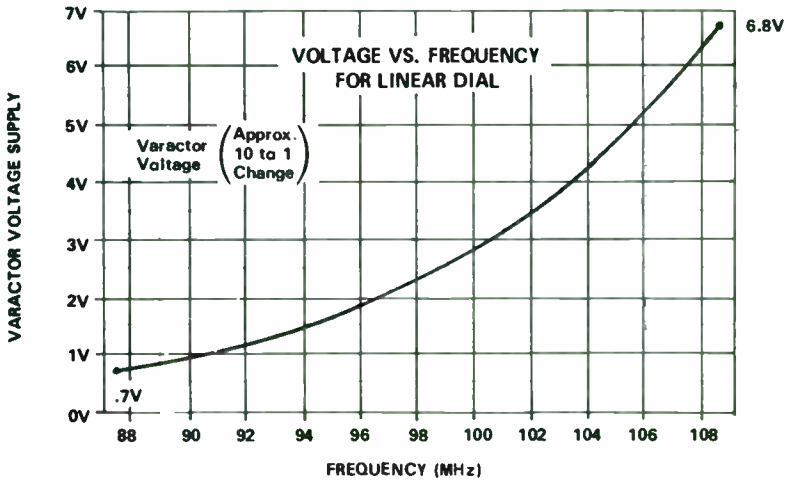



DIAGRAM B. FM VOLTAGE TUNING CHART

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)

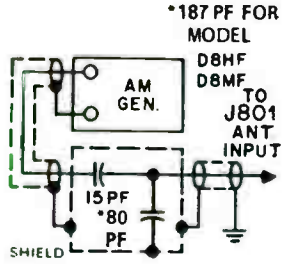
## AM ALIGNMENT

### PRELIMINARY INFORMATION

1. Disassemble radio as required.
2. Connect +14 VDC output from power supply to A+ cable lead, and negative lead of power supply to chassis ground.
3. Connect VTVM or scope to R203 for indication of AM audio output (junction of C212, C213 and R203). (See step 5)
4. Connect AM signal generator as directed in AM ALIGNMENT procedure. (See diagram D for the dummy antenna circuit and for value of shunt capacitor to be used to obtain desired antenna pre-trim.)
5. Depress AM mode push button for AM operation.

NOTE: Antenna trimmer VC104 is preset using a dummy antenna of total series and shunt capacitance as specified in diagram D. No further adjustment in the vehicle is recommended.

### AM ALIGNMENT PROCEDURE

| STEP | SPECIAL INSTRUCTIONS | SIGNAL GENERATOR | | RECEIVER | |
|---|---|---|---|---|---|
| | | CONNECTION TO RECEIVER | DIAL SETTING | DIAL SETTING | ADJUST |
| 1 | Follow preliminary instructions. | To Q202 base (converter) thru .1MF capacitor. | 262.5KHz | 1000KHz | T202 for max. |
| 2 | Same as step 1. | Same as step 1. | 262.5KHz | 1000KHz | T202 for max. |
| 3 | Same as step 1. | Same as step 1. | 262.5KHz | 1000KHz | T201 for max. |
| 4 | Same as step 1. | Same as step 1. | 262.5KHz | 1000KHz | T201 for max. |
| 5 | Reassemble radio with exception of cover. Connect +14 VDC to A+ cable lead of radio. Remove J202 from P401 on fader panel & connect a 3.2 ohm load resistor between the blue or yellow lead of J202 & black leads or set fader control to mid-range & connect the 3.2 ohm load resistor between either pin 4 or pin 5 of output socket P804 & chassis gnd. Connect VTVM or scope across load resistor. Set volume control to max. & adjust generator as the alignment proceeds to maintain 1.8V RMS across the load resistor. | Thru dummy antenna (diagram D) to antenna input   DIAGRAM D. AM DUMMY ANTENNA | 1610KHz | 1610KHz | 1. VC201 (osc.) max.<br>2. VC202 (R. F.) max.<br>3. VC104 (ant.) max.<br>(Repeat) |
| PERFORM THE FOLLOWING ALIGNMENT PROCEDURE ONLY IF TUNING COIL OR CORES HAVE BEEN REPLACED. FACTORY INSTALLED TUNER ASSEMBLIES ARE FACTORY ALIGNED. | | | | | |
| 1 - 4 | Same as above. | | | | |
| 5 | Remove bezel & sub dial. Rotate screw part of all three AM cores counterclockwise as much as possible; then follow step 5 above except do not reassemble bezel and sub dial. ** | Thru dummy antenna to antenna input. (Refer to diagram D for dummy antenna.) | 1610KHz | 1610KHz | 1. VC201 (osc.) max.<br>2. VC202 (R. F.) max.<br>3. VC104 (ant.) max.<br>(Repeat) |
| 6 | Tune coils by adjusting screw part of each core. | Same as step 5. | 1000KHz | 1000KHz | 1. L302 (osc.) max.<br>2. L303 (R. F.) max.<br>3. L301 (ant.) max.<br>(Repeat) |
| 7 | Repeat adjustments in steps 5 and 6, if necessary, to improve dial tracking. | | | | |
| 8 | After dial tracking is completed, cement brass screw part of each core to its grommet on carriage housing. Reassemble sub dial, bezel, and cover. | | | | |

**CAUTION: Avoid scratching sub dial on removal.

## MPX ALIGNMENT

### EQUIPMENT

Frequency Counter — Itron 600 or equivalent.

### SERVICE NOTES

Good multiplex operation requires proper alignment of FM RF, I.F., and detector circuits. See Troubleshooting Procedure before proceeding to determine whether multiplex alignment is necessary.

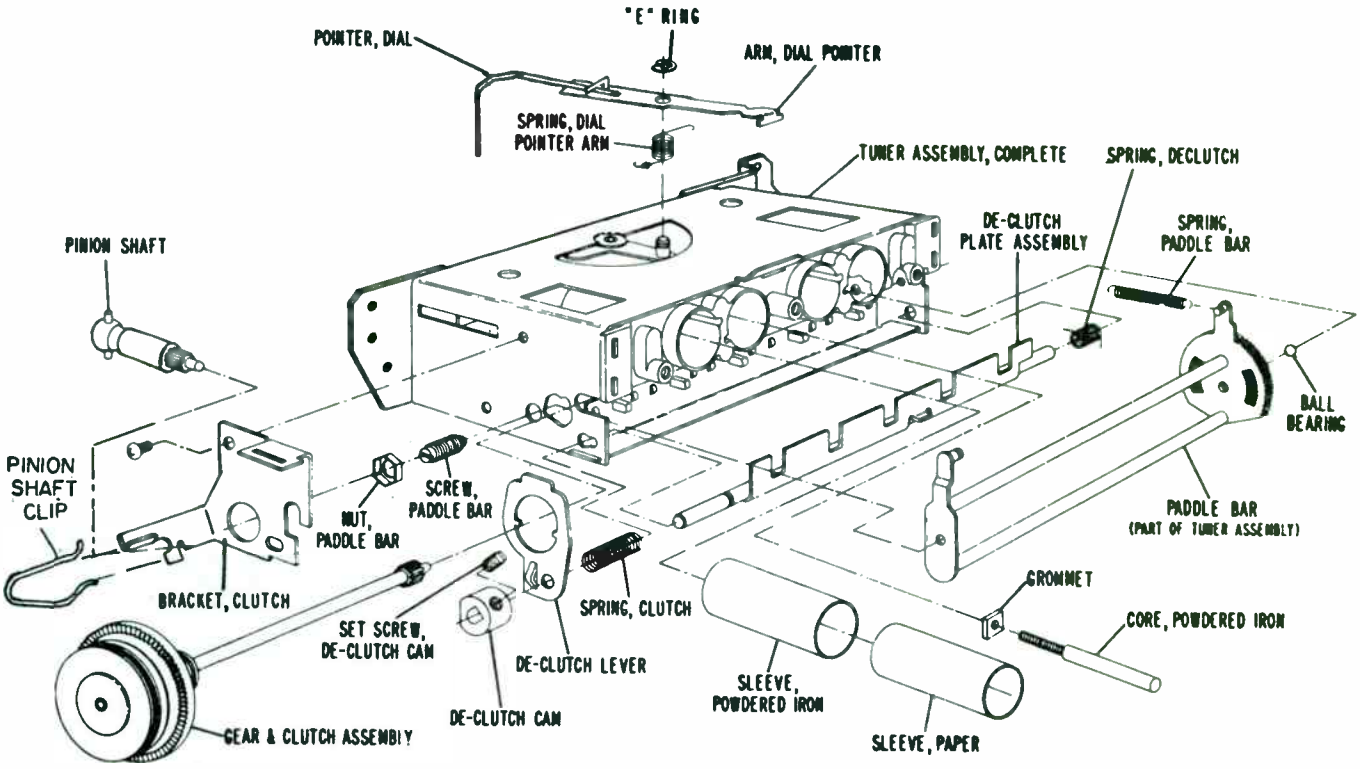
This phase-locked loop IC multiplex decoder system is quite simple to align as only adjustment of the 76KHz oscillator is required. This system also provides inherent rejection of unwanted signals, such as SCA, and rejection of supply line transients since the IC has an internal power supply regulator.

### PRELIMINARY INFORMATION

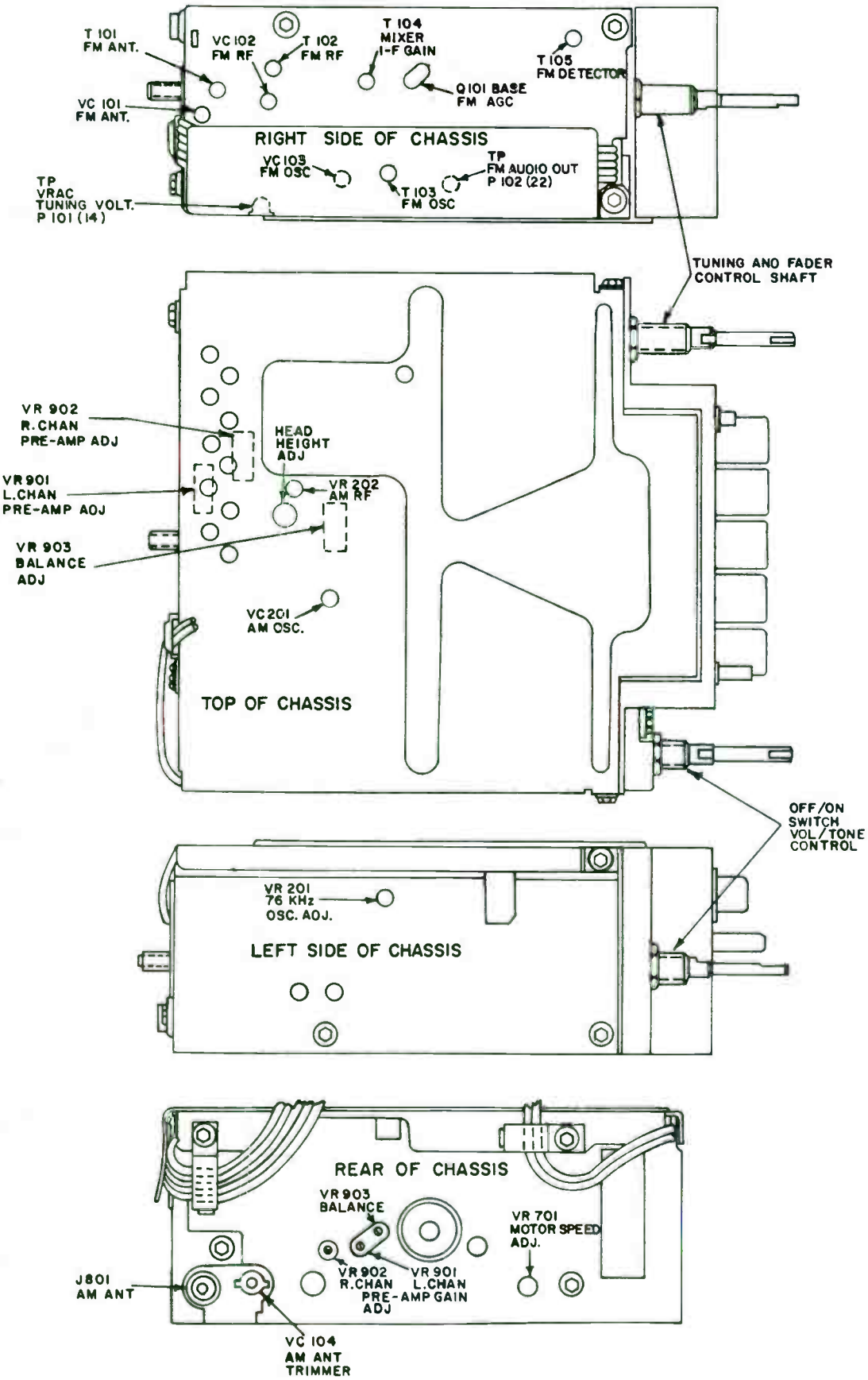
1. Connect +14 VDC output from power supply to A+ cable lead, and negative lead of power supply to radio chassis.
2. Use 76KHz oscillator test point (pin 11, IC201) for indication of oscillator output. (Do not short to adjacent pins when using pin 11 as test point.) (FM Mode)
3. Tune radio to unmodulated FM signal of about 1.0 mv (to quiet FM noise) or disconnect J201 (21 and 22) connector from FM panel.

### MPX ALIGNMENT PROCEDURE

| STEP | PROCEDURE |
|---|---|
| 1 | Connect frequency counter to 76KHz osc. test point. |
| 2 | Adjust 76KHz osc. control VR201 for 18,950 to 19,050 Hz on frequency counter. |




MECHANICAL TUNER-EXPLODED VIEW



## VARACTOR POWER SUPPLY ALIGNMENT

### PRELIMINARY INFORMATION

1. Disconnect J301 from FM panel and connect +14 VDC output from power supply to A+ cable lead, and negative lead of power supply to radio chassis.
2. Depress FM mode push button for FM operation.
3. To determine whether varactor power supply alignment is necessary, use VTVM to measure VRAC tuning voltage at P101 (14) under conditions listed below. (If any voltage measured is not within limits specified, proceed with COMPLETE VARACTOR ALIGNMENT procedure.)
   a. Dial pointer set to extreme high end (at stop) — output on VTVM should be 6.6 VDC or greater.
   b. Dial pointer set to 94MHz — output on VTVM should be 1.4 to 1.6 VDC.
   c. Dial pointer set to extreme low end (at stop) — output on VTVM should be 0.72 VDC or less

| STEP | PROCEDURES |
|---|---|
| 1 | Dissassemble radio as required |
| 2 | Set pointer to 98 MHz (lightly press a push button to release clutch).† Adjust core of L304 for 2.30 VDC on VTVM at J301 (14). |
| 3 | Check voltages at extreme ends of tuner travel. These voltages should be 0.72 VDC, or less at low end, and 6.6 VDC, or greater at the high end. |
| 4 | Adjustment of the core can be made at 98 MHz to meet this minimum tuning voltage range or to center the tuning voltage range. |

† It is necessary to release the clutch in order to remove the spring tension on the paddle bar at the extreme ends of the dial. This is done to get repeatability of dial end setting.

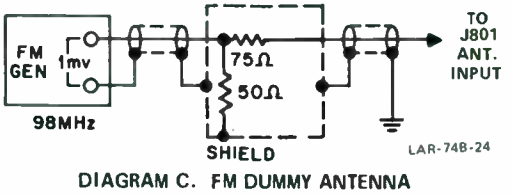



DIAGRAM C. FM DUMMY ANTENNA

## TAPE MOTOR SPEED ADJUSTMENT

The tape motor speed can be checked with a test alignment tape and following the instructions provided with the tape.

Method #1

1. Connect output of audio generator to horizontal input of an oscilloscope and the tape pre-amp output to vertical input.
2. Adjust audio generator frequency to 3KHz (+4–0%) and play a 3KHz test tape.
3. Adjust VR701 for identical frequency in the Lissajous pattern.

Method #2 (Alternate)

An alternate method for adjusting the tape motor speed is to use a cassette test alignment tape with a recorded 3KHz signal and a frequency counter. Follow procedure given below.

1. Connect a frequency counter to the output of the tape pre-amp panel (use output of radio or separate output to amplify signal if frequency counter input sensitivity is too high) at the left channel output (red wire) or right channel output (white wire, green optional).
2. Insert cassette test tape into tape player.
3. Adjust VR701 for 3KHz, +4–0% tolerance indication on meter.

## HEAD AZIMUTH ADJUSTMENT

The need for head azimuth adjustment is evidenced by poor high frequency response and a lower output. The azimuth adjustment actually tilts the head for proper alignment of the head with the tape track. To make the head azimuth adjustment, follow the procedure given below.

1. Play a test alignment tape with an azimuth test track (with frequency between 3KHz and 8KHz). Follow instructions provided with test tape. Connect VTVM to terminal 13 of J502 for left channel. Adjust azimuth adjust screw for maximum output. Seal screw head with Glyptol.
2. The head height is fixed; therefore, no adjustment is required; however, check tape guide attached to tape head to be sure guide is not bent. Avoid using magnetized tools near head and demagnetize head after adjusting.

## TAPE PRE-AMP GAIN ADJUSTMENT

Each amplifier section of tape pre-amp IC901 contains a gain adjustment control. This gain adjustment is required to compensate for differences in the tape head pick-up on each channel. To make these gain adjustments, play a test alignment tape having a standard 400 Hz test tone. Follow instructions provided with test tape. Either of the following instructions can be followed:

1. Connect a VTVM to terminal 13 of J502 for left channel and terminal 12 of J502 for right channel. Adjust VR901 and VR902 for 75 millivolts (rms).
2. Adjust VR901 and VR902 for equal outputs of 1.6 watts at P804 with volume at mid position and tone control at maximum clockwise position after balance control has been adjusted.

## BALANCE CONTROL ADJUSTMENT

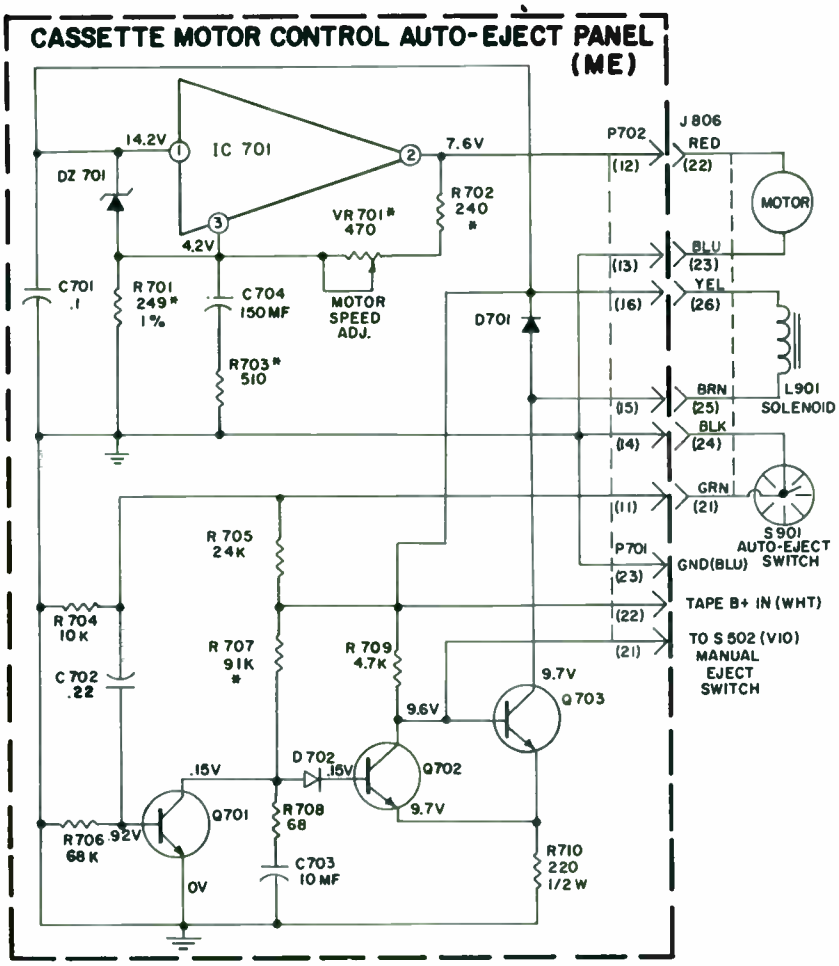
The balance control (VR903) is adjusted at the factory and normally does not require any further adjustment. The balance control is located on pre-amp panel and is visible through the hole in rear of unit. If the control is changed or misadjusted, it can be reset by following the procedure given below.

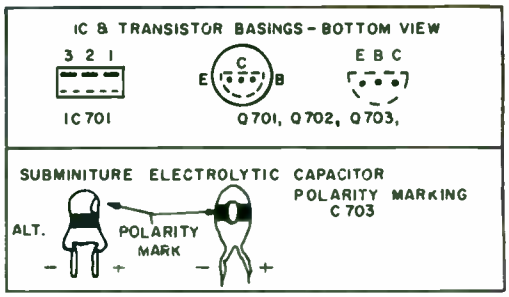
1. Remove cartridge from tape player.
2. With 1000 Hz, 30% modulated, 5 millivolt AM signal applied to J801 (antenna jack), adjust VR903 for equal output voltages on VTVM at J202 or P804.

## TAPE/RADIO SWITCH ADJUSTMENT

When the Tape/Radio switch S901 has been replaced or is out of adjustment, follow procedures indicated below.

1. Loosen switch assembly mounting screw.
2. Move switch assembly towards tape mechanism until the switch arm contacts the switch actuating arm protruding from the mechanism; continue moving the switch assembly until a click is heard as the switch is actuated; stop and tighten the switch assembly mounting screw. Recheck adjustment by inserting a cassette into player mechanism until it touches the eject arm; then press the cartridge in and switch should de-actuate (click) within 1/8" travel of cassette after it touches the eject arm.




NOTES:

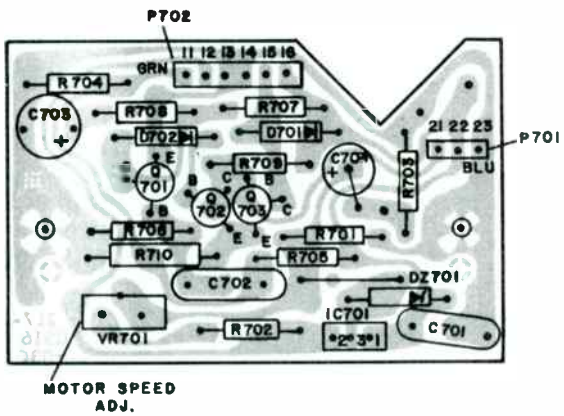
1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM AND +14.4 V. A+ SUPPLY WITH RADIO IN TAPE MODE & VOL. CONTROL SET TO MIN.
2. ALL RESISTORS ARE 1/4 W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE-MICROFARADS (MF) VALUES ABOVE ONE - PICOFARADS (PF)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

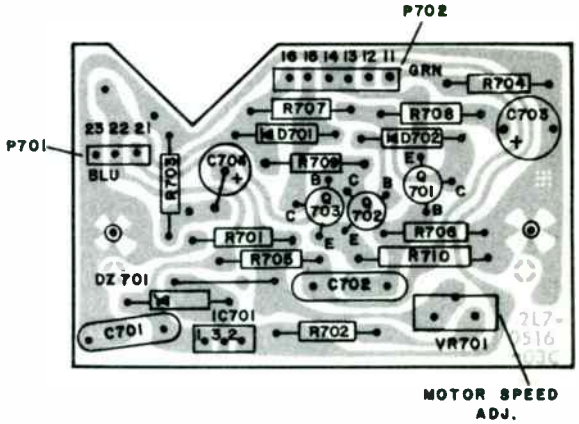
GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL

TOP COMPONENT VIEW




BOTTOM COPPER VIEW




CASSETTE MOTOR CONTROL/AUTO EJECT PANEL-SCHEMATIC DIAGRAM AND PARTS LOCATION AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODEL D8DF, D9AF(AA), D9EF(AA), D9VF(AA), AND D94F(AA)

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)

Cassette Motor Control/Auto Eject Panel
Transistors Voltage and Resistance Checks

Should suspicion or troubleshooting checks point to the possibility of a faulty transistor, it is recommended that voltage and resistance measurements be made at the terminals of the transistor on the panel before proceeding with replacement. Attempt to make sure the transistor is at fault to avoid an unnecessary replacement. The normal, averaged d-c voltage (to ground) values are given on the schematic; the d-c resistance (to ground) values are given in the accompanying chart and measured with a VTVM.

Cassette Tape Pre-Amp IC
Voltage and Resistance Checks

Should suspicion or troubleshooting checks point to the possibility of a faulty IC, it is recommended that voltage and resistance measurements be made at the terminals of the chip on the panel before proceeding with replacement. Attempt to make sure the IC is at fault to avoid an unnecessary replacement. The normal, averaged d-c voltage (to ground) values are given on the schematic; the d-c resistance (to ground) values are given in the accompanying chart and measured with a VTVM.

CASSETTE MOTOR CONTROL/AUTO EJECT PANEL TRANSISTORS
D-C RESISTANCE CHART

| TRANSISTOR | *RESISTANCE (OHMS) | | |
|---|---|---|---|
| | E | B | C |
| Q701 | 0 | 1.0K | **25K |
| Q702 | 220 | **12K | 1.1K |
| Q703 | 220 | 1.1K | 1.0K |

*All readings RX100 scale unless otherwise noted.
**RX1000 scale.

CASSETTE TAPE PRE-AMP IC AND MOTOR CONTROL IC
D-C RESISTANCE CHART

| | *RESISTANCE (OHMS) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| (PIN NO.) | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| IC901 | 1.5K | 1.4K | 0 | **11K | **11K | **200K | 1.8K | 1.4K |
| IC701 | 1.2K | 27 | 110 | - | - | - | - | - |

*All readings RX100 scale unless otherwise noted.
**RX1000 scale.

## AM TUNER PANEL RADIO SECTION TROUBLESHOOTING CHART

| TROUBLE SYMPTOM | PROBABLE CAUSE | CORRECTION |
|---|---|---|
| Dead AM reception-air signal | No signal fed into AM input | Check for broken or defective connection from Ant. trim. VC104 to P301 on FM panel to COIL/VAR. P. S. panel, to AM/MPX/AUDIO panel. |
| Poor sensitivity | 1. Misalignment<br>2. Defective L301, L303, C206, C207, VC202, N201 or N202 | 1. Perform necessary AM alignment.<br>2. Check RF and I. F. circuitry to locate defective component. |
| Oscillates with low or moderate input signal | Problem in AVC circuit | Locate defective C210, D201, C202, C209 or N202 and replace. |
| Dead AM reception-air check or signal generator | Open L101 or L301 primary | Replace. |
| Dead air check. Generator sens. 4.5Kμv. | Shorted C201 | Replace. |
| Dead air check. Generator sens. 10-15Kμv. | L301 secondary open | Replace. |

## AM TUNER AND VARACTOR POWER SUPPLY TROUBLESHOOTING CHART

| TROUBLE SYMPTOM | PROBABLE CAUSE | CORRECTION |
|---|---|---|
| No varactor tuning voltage | Open or shorted component in varactor oscillator or oscillator control circuitry | Locate cause through step-by-step voltage measurements from the output towards the oscillator. |
| Incorrect range on calibration | 1. Out of alignment on calibration<br>2. L306, L304 or core of L304 defective | 1. Perform alignment procedure for varactor power supply.<br>2. Repair or replace faulty component. |
| Insufficient range during alignment | 1. Improper alignment<br>2. Loading on J301 (14)<br>3. R311 increased in value<br>4. Low d-c voltage at cathode of D301 | 1. Repeat alignment before suspecting a faulty component.<br>2. Locate cause by resistance or voltage measurements.<br>3. Replace.<br>4. Replace defective D301 or C305. |

## FM TUNER PANEL TRANSISTORS D-C RESISTANCE CHART

| TRANSISTOR | *RESISTANCE (OHMS) | | |
|---|---|---|---|
| | E | B | C |
| Q101 | 330 | 1.4K | 1.3K |
| Q102 | 1.4K | 630 | 2K |
| Q103 | 2.4K | 2.5K | 2K |
| Q104 | 120 | 11K | 3K |

*All readings RX100 scale.

## AM TUNER AND VARACTOR P.S. TRANSISTORS D-C RESISTANCE CHART

| TRANSISTOR | *RESISTANCE (OHMS) | | |
|---|---|---|---|
| | E | B | C |
| Q201 | 300 | 1.2K | 2.2K |
| Q202 | 1.7K | 2.0K | 1.3K |
| Q203 | **3.0 | 850 | 2.1K |
| Q301 | 100 | 500 | 400 |
| Q302 | 0 | 400 | 500 |

*All readings RX100 scale unless otherwise noted. **RX1 scale.

## MPX AND AUDIO TRANSISTORS D-C RESISTANCE CHART

| TRANSISTOR | *RESISTANCE (OHMS) | | |
|---|---|---|---|
| | E | B | C |
| Q204 | 150 | 390 | **2.4K |
| Q205 | 150 | 250 | 750 |
| Q206 | 900 | 800 | 750 |
| Q207 | 1.3K | 750 | 150 |
| Q208 | 1.3K | 900 | 0 |
| Q209 | 150 | 250 | 750 |
| Q210 | 900 | 800 | 750 |
| Q211 | 1.3K | 750 | 150 |
| Q212 | 1.3K | 900 | 0 |

## FM TUNER PANEL IC AND NETWORK D-C RESISTANCE CHART

| PIN NO. | *RESISTANCE (OHMS) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| IC101 | 2.5K | 2.7K | 700 | 950 | 1K | 7K | 0 | 700 | 60 | 500 | 2.1K | 2.6K | 1.6K | 3K |
| N101 | 0 | 2.1K | 0 | 950 | * * | 0 | — | — | — | — | — | — | — | — |

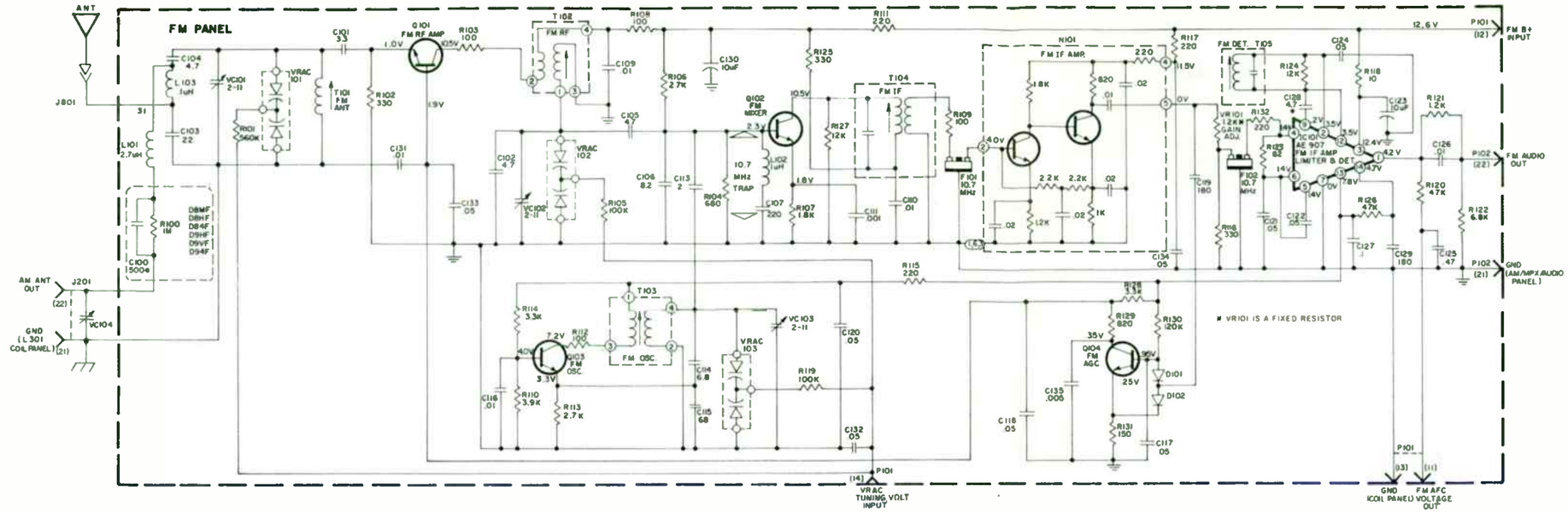
*All readings RX100 scale.

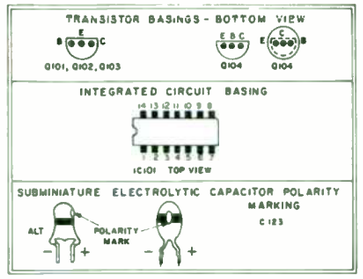
* * 300-12K

## MPX IC AND AUDIO NETWORKS D-C RESISTANCE CHART

| (PIN NO.) | *RESISTANCE (OHMS) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| IC201 | ** 22K | 1.4K | 1.4K | 1.2K | 1.2K | 1.3K | INF | 0 | 2.8K | 4K | 2.7K | 4K | 4.5K | 4.5K | 3K | 200 |
| N203 | 500 | 2500 | 3.9K | 0 | 210 | 210 | 390 | 150 | 270 | — | — | — | — | — | — | — |
| N204 | 500 | 2500 | 3.9K | 0 | 210 | 210 | 390 | 150 | 270 | — | — | — | — | — | — | — |

*All readings RX100 scale unless otherwise noted.
**RX1000 scale.



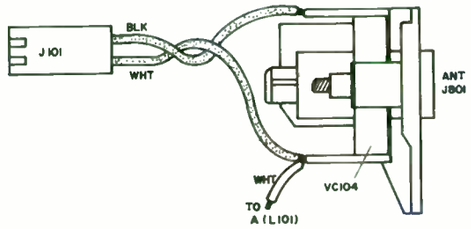

NOTES:

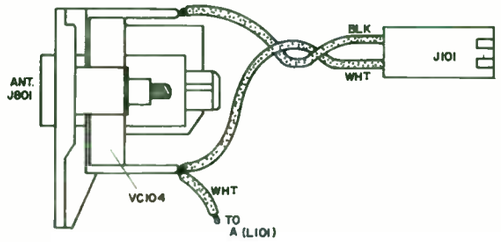
1. ALL VOLTAGES MEASURED WITH HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4 V. A + SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4 W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE - MICROFARADS (MF) VALUES ABOVE ONE - PICOFARADS (PF)
4. TUNING RANGE - FM 88 MHZ to 108 MHZ (I.F. 10.7 MHZ)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

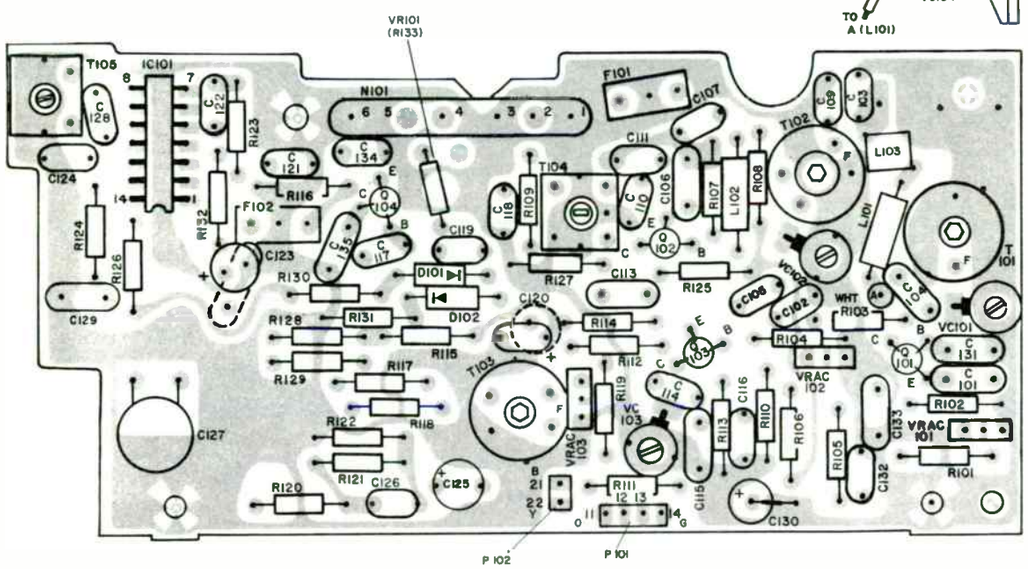
GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL




TOP COMPONENT VIEW




BOTTOM COPPER VIEW

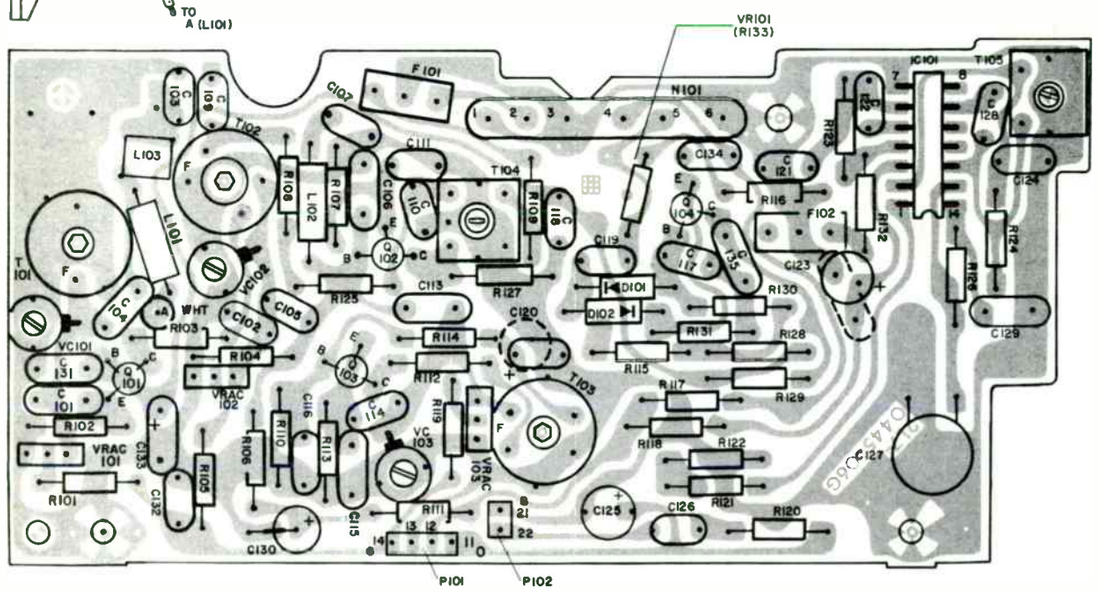
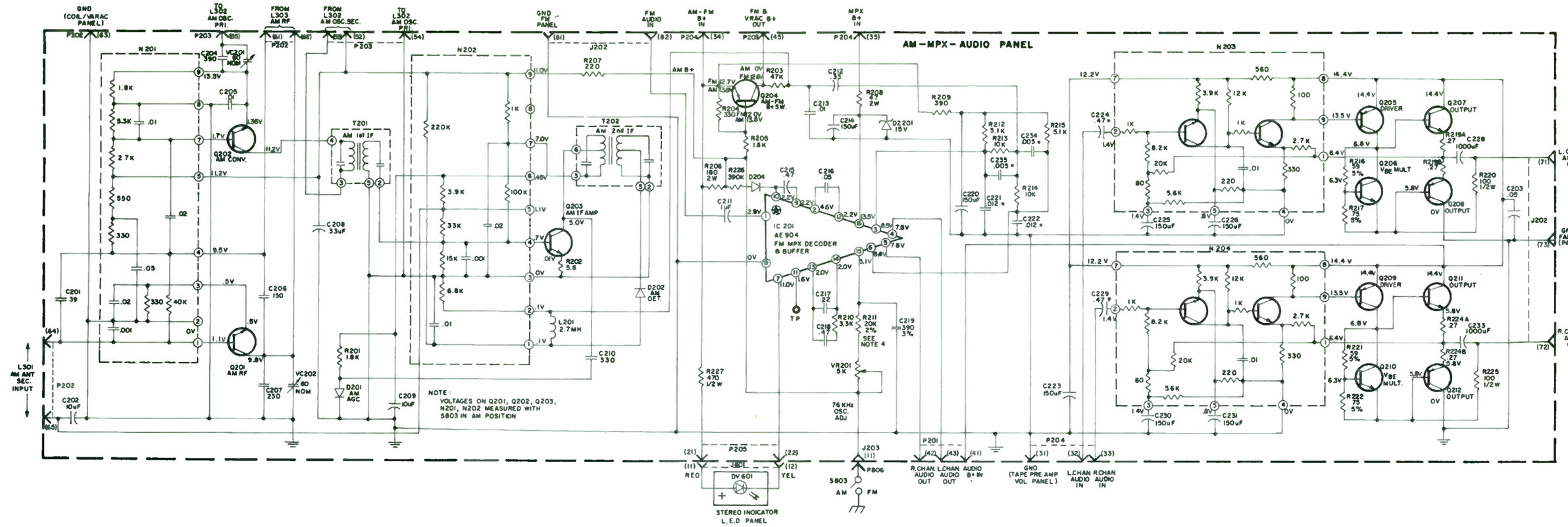
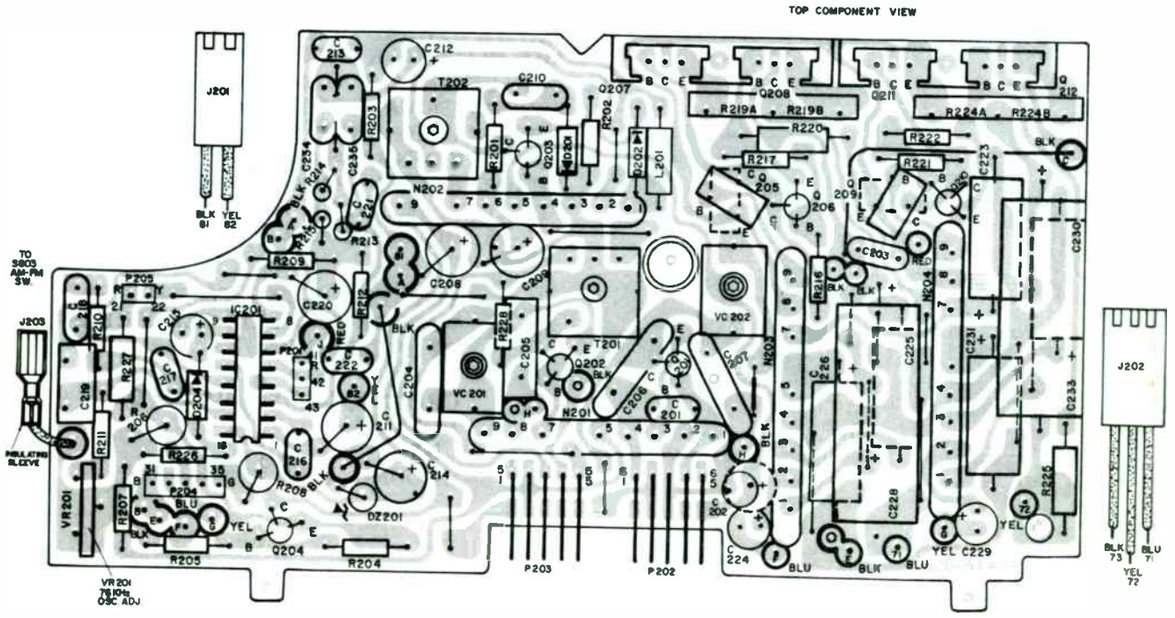



FIGURE 23. FM TUNER PANEL-SCHEMATIC DIAGRAM AND PARTS LOCATION

# Ford *D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)*



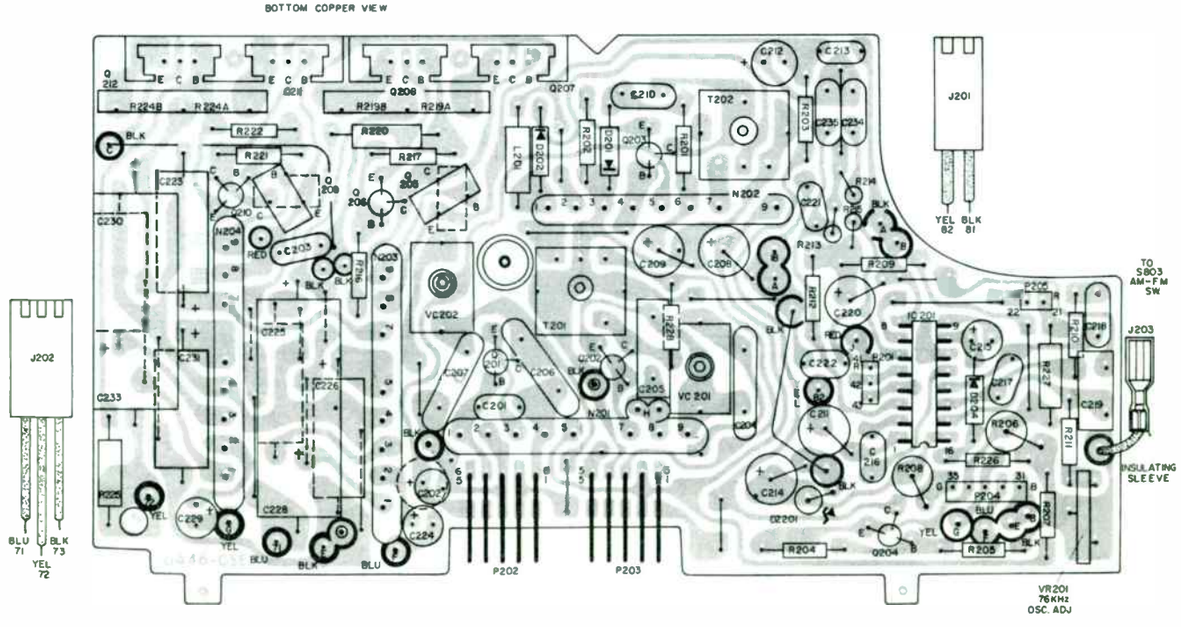
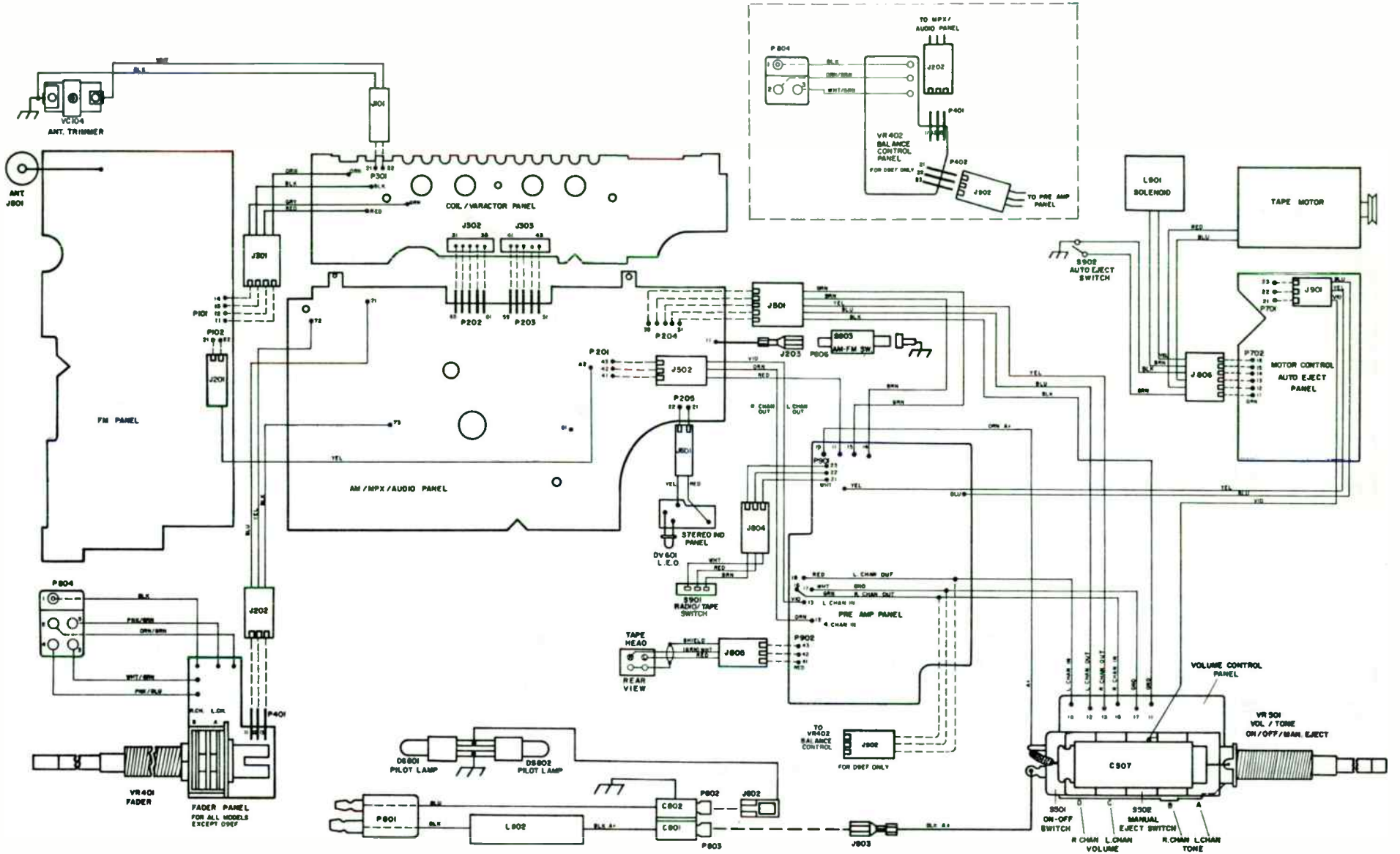
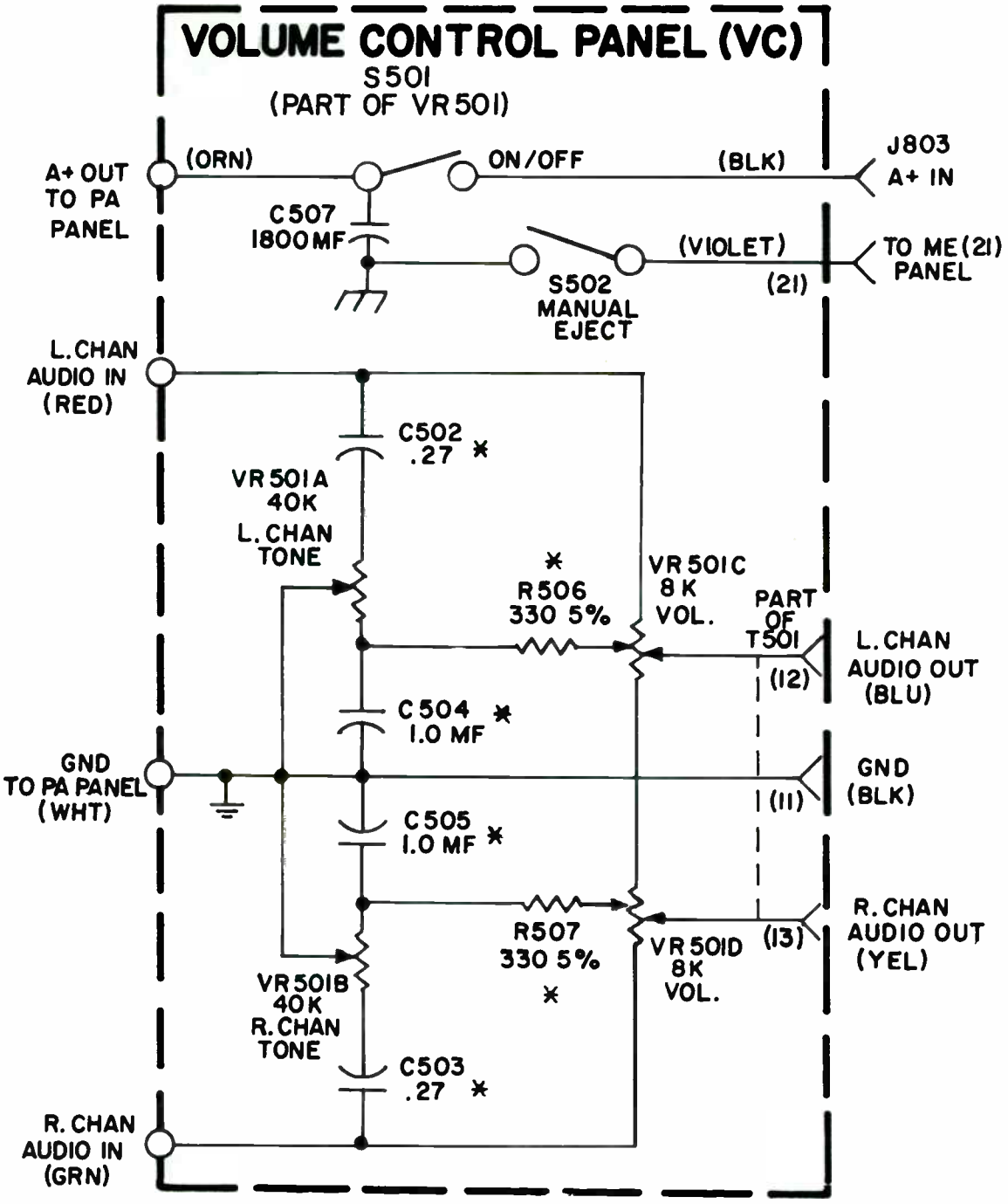



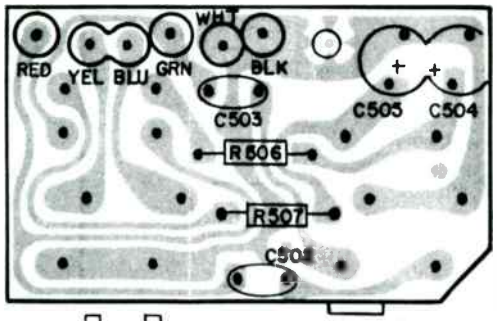

FIGURE 25. AM/MPX/AUDIO PANEL-SCHEMATIC DIAGRAM & PARTS LOCATION
AM-FM STEREO RADIO /TAPE PLAYER MODEL D8AF , D8HF , D8MF , D84F , AND D9AF(AA)

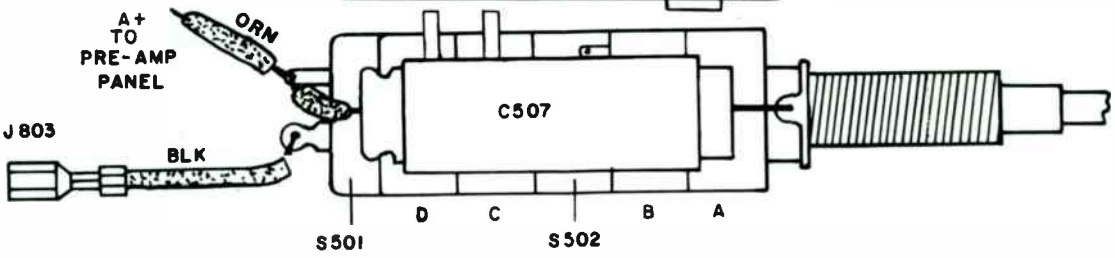


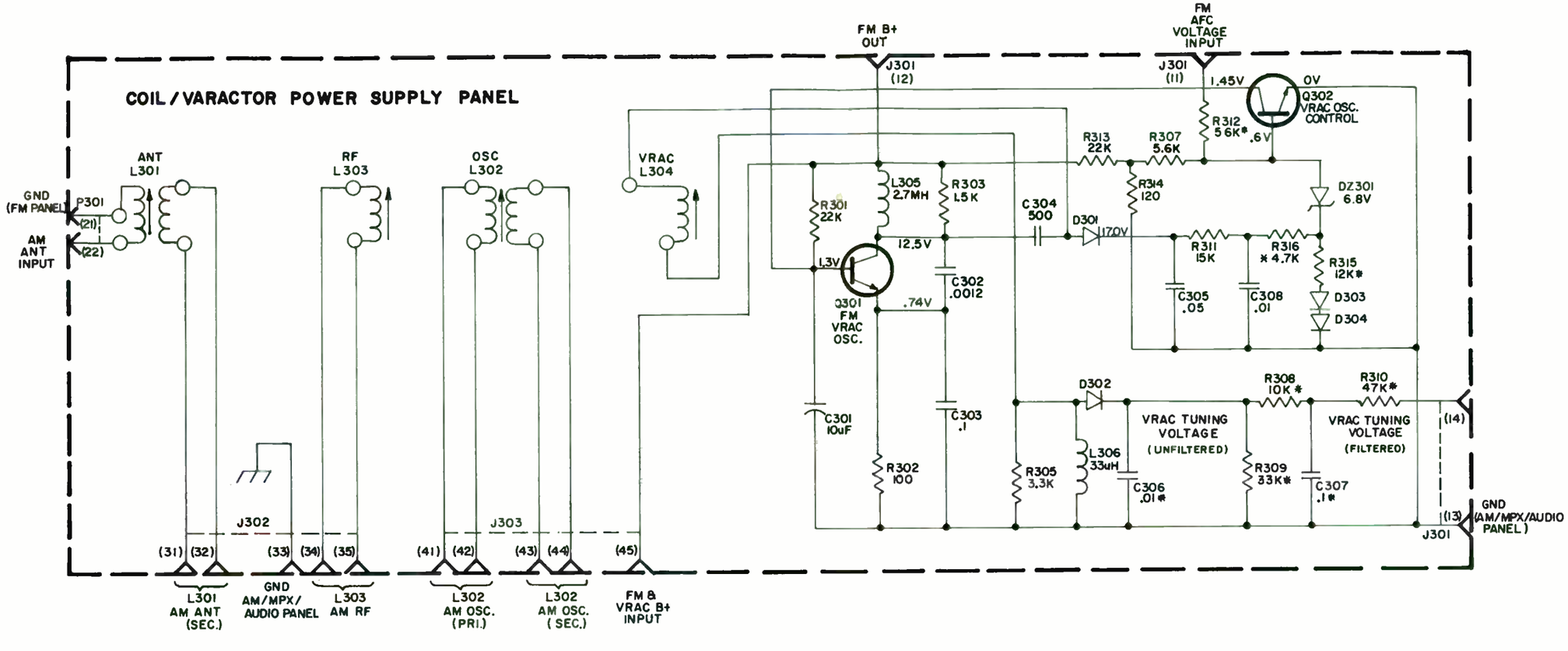

# CASSETTE WIRING DIAGRAM

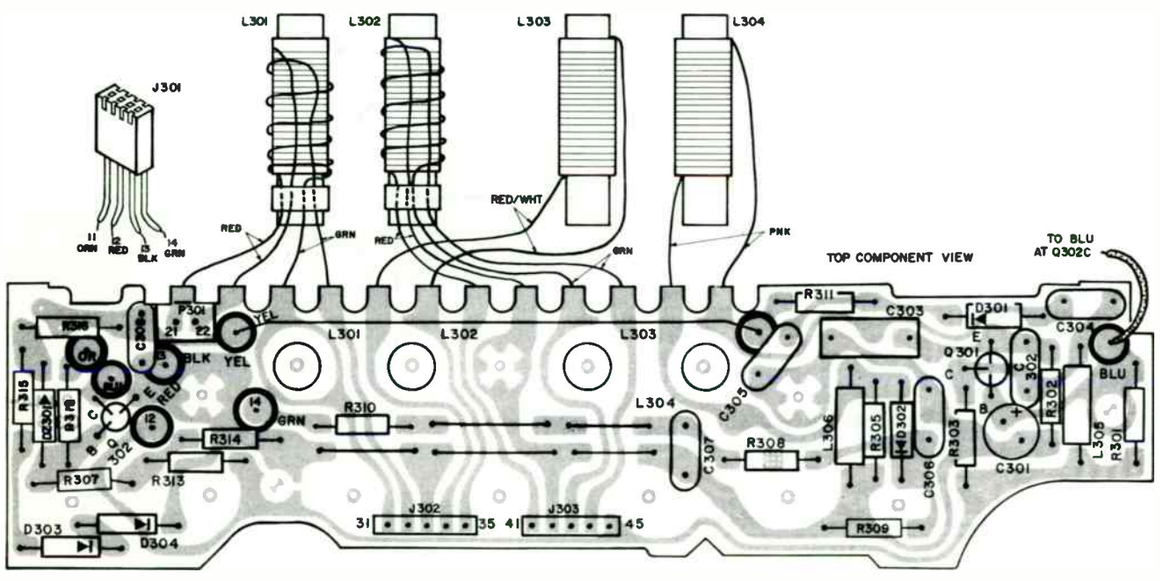
# VOLUME CONTROL PANEL (VC)





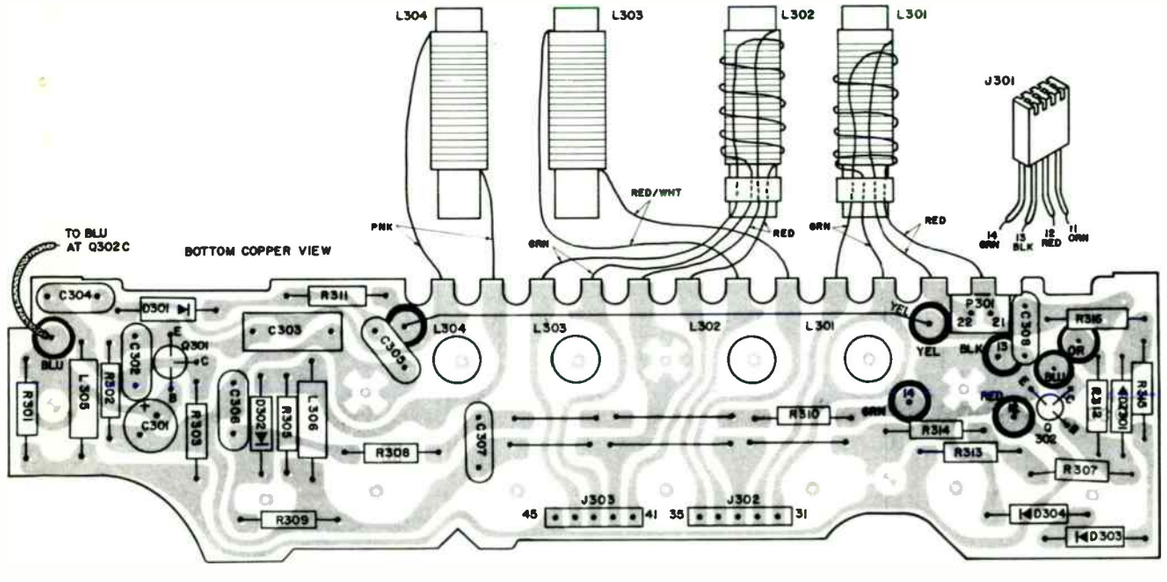
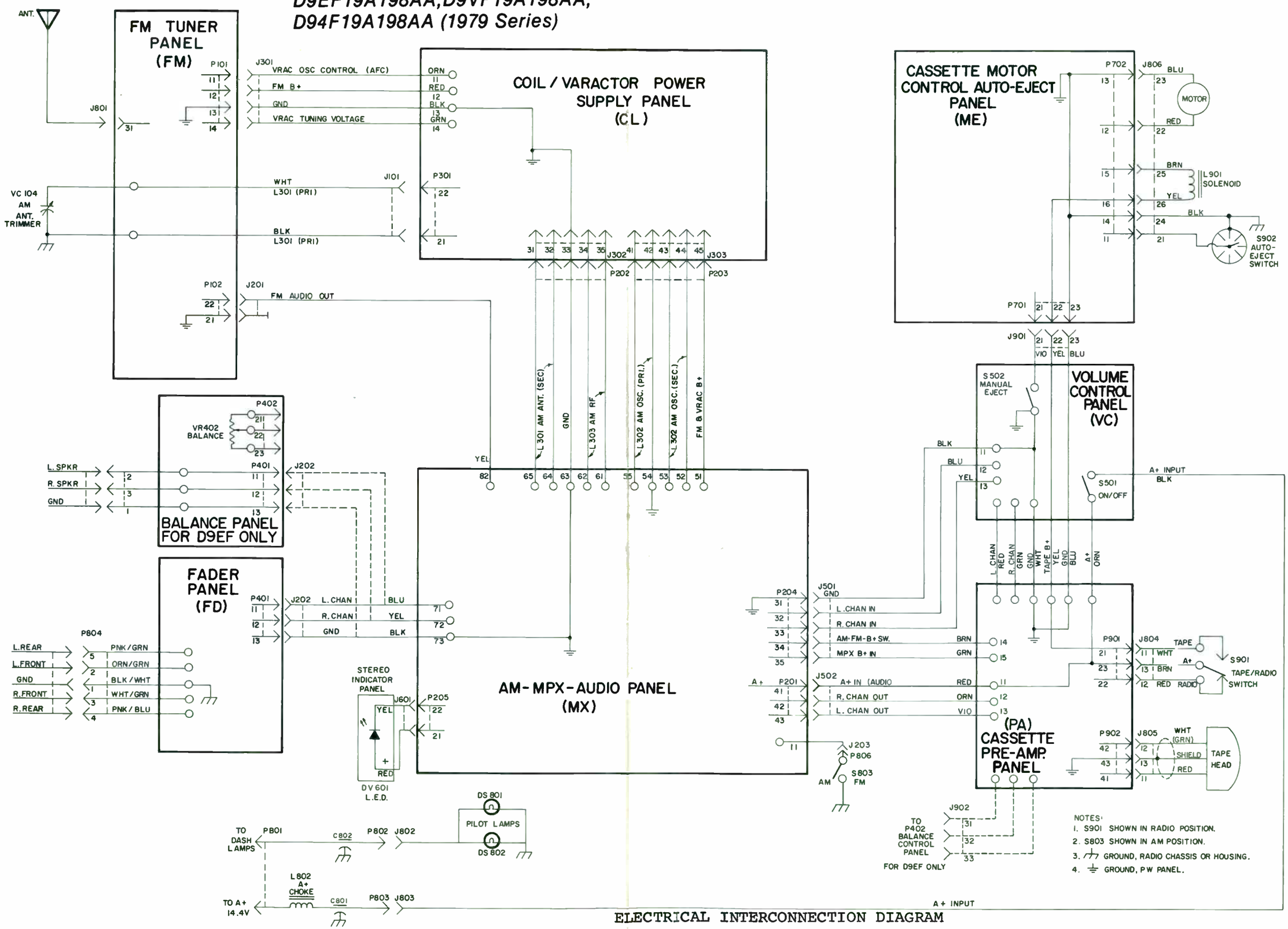




FIGURE 24. COIL/VARACTOR POWER SUPPLY PANEL-SCHEMATIC DIAGRAM AND PARTS LOCATION

# *Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)*




ELECTRICAL INTERCONNECTION DIAGRAM

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)

ELECTRICAL PARTS LIST

AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) AND D94F(AA)

New parts not previously carried are indicated by the symbol "#" following the number

| SYMBOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| | | CAPACITORS | |
| C101 | C | 3.3 pf ± .5/500V, FM RF input | 3L0-0006-13 |
| C102 | C | 4.7 pf ± .5/500V, FM RF | 3L0-0006-17 |
| C103 | C | 22 pf, 10%/500V, Ant. input | 3L0-0007-13 |
| C104 | C | 4.7 pf ± .5/500V, Ant. input | 3L0-0006-17 |
| C105 | C | 4.7 pf ± .5/500V, FM mixer input | 3L0-0006-17 |
| C106 | C | 8.2 pf ± .5/500V, FM mixer input divider | 3L0-0006-20 |
| C107 | C | 220 pf, 10%/500V, FM mixer 10.7 MHz trap | 3L0-0007-15 |
| C109 | C | .01 mf, 20%/16V, FM RF B- filter | 3L0-0008-21 |
| C110 | C | .01 mf, 20%/16V, FM mixer B+ filter | 3L0-0008-21 |
| C111 | C | .001 mf, 20%/50V, FM mixer emit. bypass | 3L0-0007-37 |
| C113 | C | 2.0 pf ± .25/500V, FM osc. cplg. | 3L0-0006-52 |
| C114 | C | 6.8 pf ± .5/500V, FM osc. tank | 3L0-0006-16 |
| C115 | C | 68 pf, 10%/100V, FM osc. tank | 3L0-0010-20 |
| C116 | C | .01 mf, 20%/16V, FM osc. base | 3L0-0008-21 |
| C117 | C | .05 mf +80-20%/10V, FM AGC filter | 3L0-0008-10 |
| C118 | C | .05 mf +80-20%/10V, FM AGC bypass | 3L0-0008-10 |
| C119 | C | 180 pf, 20%/500V, FM AGC cplg. | 3L0-0007-36 |
| C120 | C | .05 mf +80-20%/10V, FM osc. B+ bypass | 3L0-0008-10 |
| C121 | C | .05 mf +80-20%/10V, IC101 bypass | 3L0-0008-10 |
| C122 | C | .05 mf +80-20%/10V, IC101 bypass | 3L0-0008-10 |
| C123 | C | 10 mf, 20%/10V, IC101 B+ filter | 3L0-0011-4 |
| C124 | C | .05 mf +80-20%/10V, FM det. bypass | 3L0-0008-10 |
| C125 | C | .47 mf, 20%/10V, AFC filter | 3L0-0011-14 |
| C126 | C | .01 mf, 20%/16V, FM det. audio out. | 3L0-0008-21 |
| C127 | C | .1 mf +80-20%/10V, IC101 bypass | 3L0-0008-26 |
| C128 | C | 4.7 pf ± .5/500V, FM det. cplg. | 3L0-0006-17 |
| C129 | C | 180 pf, 20%/500V, IC101 bypass | 3L0-0007-36 |
| C130 | C | 10 mf/25V, FM B+ filter | 3L0-0030-6 |
| C131 | C | .01 mf, 20%/16V, FM RF base | 3L0-0008-21 |
| C132 | C | .05 mf +80-20%/25V, VRAC tuning volt. filter | 3L0-0008-39 |
| C133 | C | .05 mf +80-20%/10V, FM AGC bypass | 3L0-0008-10 |
| C134 | C | .05 mf +80-20%/10V, FM IF bypass | 3L0-0008-24 |
| C135 | C | .005 mf, 20%/100V, FM AGC bypass | 3L0-0007-22 |
| C201 | C | 39 pf, 10%/50V, RF feedback | 3L0-0007-50 |
| C202 | C | 10 mf/20V, AGC filter | 3L0-0011-04 |
| C203 | C | .05 mf/25V, Audio B+ | 3L0-0008-39 |
| C204 | C | 390 pf, 5%/100V, AM osc. tank | 3L0-0006-47 |
| C205 | C | .01 mf, 10%/50V, Osc. emitter bypass | 3L0-1001-8 |
| C206 | C | 150 pf, 10%/500V, Image rejection | 3L0-0006-5 |
| C207 | C | 230 pf, 5%/100V, RF tank | 3L0-0006-46 |
| C208 | C | 33 mf/16V. AM B+ filter | 3L0-0030-8# |
| C209 | C | 10 mf/10V, AGC filter | 3L0-0030-6# |
| C210 | C | 330 pf, 10%/500V, AGC coupling | 3L0-0007-1 |
| C211 | C | 1 mf/50V, FM audio input coupling | 3L0-0030-2# |
| C212 | C | .33 mf, 20%/10V, Audio input cplg. | 3L0-0011-6 |
| C213 | C | .01 mf +80-20%/25V, AM det. filter | 3L0-0008-16 |
| C214 | C | 150 mf/16V, B+ filter | 3L0-0009-45 |
| C215 | C | .47 mf, 20%/10V, Coupling IC201 | 3L0-0011-7 |
| C216 | C | .05 mf +80-20%/25V, Coupling IC201 | 3L0-0008-39 |
| C217 | C | .22 mf, 30%/3V, DC filter | 3L0-0008-30 |
| C218 | C | .47 mf, 30%/3V, DC filter | 3L0-0008-14 |
| C219 | C | 390 pf, 3%/100V, 76 KHz osc. tuning | 3L0-0010-17 |
| C220 | C | 150 mf/16V, B+ filter | 3L0-0009-45 |
| C221 | C | .012 mf, 20%/16V, De-emphasis, L. channel | 3L0-0008-57 |
| C222 | C | .012 mf, 20%/16V, De-emphasis, R. channel | 3L0-0008-57 |
| C223 | C | 150 mf/16V, Audio filter | 3L0-0009-45 |
| C224 | C | .47 mf, 20%/10V, Audio coupling, L. channel | 3L0-0011-7 |
| C225 | C | 150 mf/6V, Audio filter, L. channel | 3L0-0009-50 |
| C226 | C | 150 mf/6V, Audio filter, L. channel | 3L0-0009-50 |
| C228 | C | 1000 mf/16V, Audio coupling, L. channel | 3L0-0009-44 |
| C229 | C | .47 mf, 20%/10V, Audio coupling, R. channel | 3L0-0011-7 |
| C230 | C | 150 mf/6V, Audio filter, R. channel | 3L0-0009-50 |
| C231 | C | 150 mf/6V, Audio filter, R. channel | 3L0-0009-50 |
| C233 | C | 1000 mf/16V, Audio coupling, R. channel | 3L0-0009-44 |
| C234 | C | .005 mf, 20%/16V, Audio input coupling, R. channel | 3L0-0007-67 |
| C235 | C | .005 mf, 20%/16V, Audio input coupling, L. channel | 3L0-0007-67 |
| C301 | C | 10 mf/20V, VRAC osc. base | 3L0-0011-4 |
| C302 | C | .0012 mf, 10%/500V, VRAC osc. tank | 3L0-0007-20 |
| C303 | C | .1 mf, 10%/50V, VRAC osc. tank | 3L0-1001-15 |
| C304 | C | 500 pf, 10%/150V, VRAC osc. coupling | 3L0-0006-23 |
| C305 | C | .05 mf +80-20%/25V, VRAC rect. filter | 3L0-0008-39 |
| C306 | C | .01 mf +80-20%/25V, VRAC tuning volt. filter | 3L0-0008-16 |
| C307 | C | .1 mf +80-20%/16V, VRAC tuning volt. filter | 3L0-0008-62 |
| C308 | C | .01 mfd +80-20%/25V, VRAC supply filter | 3L0-0008-16 |

*Warranty Component Category

ELECTRICAL PARTS LIST

AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) AND D94F(AA)

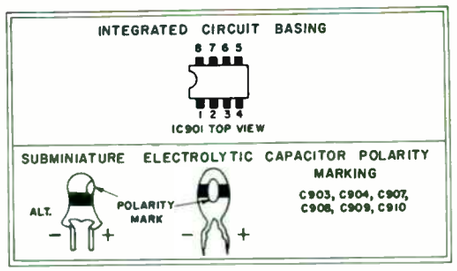
New parts not previously carried are indicated by the symbol "#" following the number.

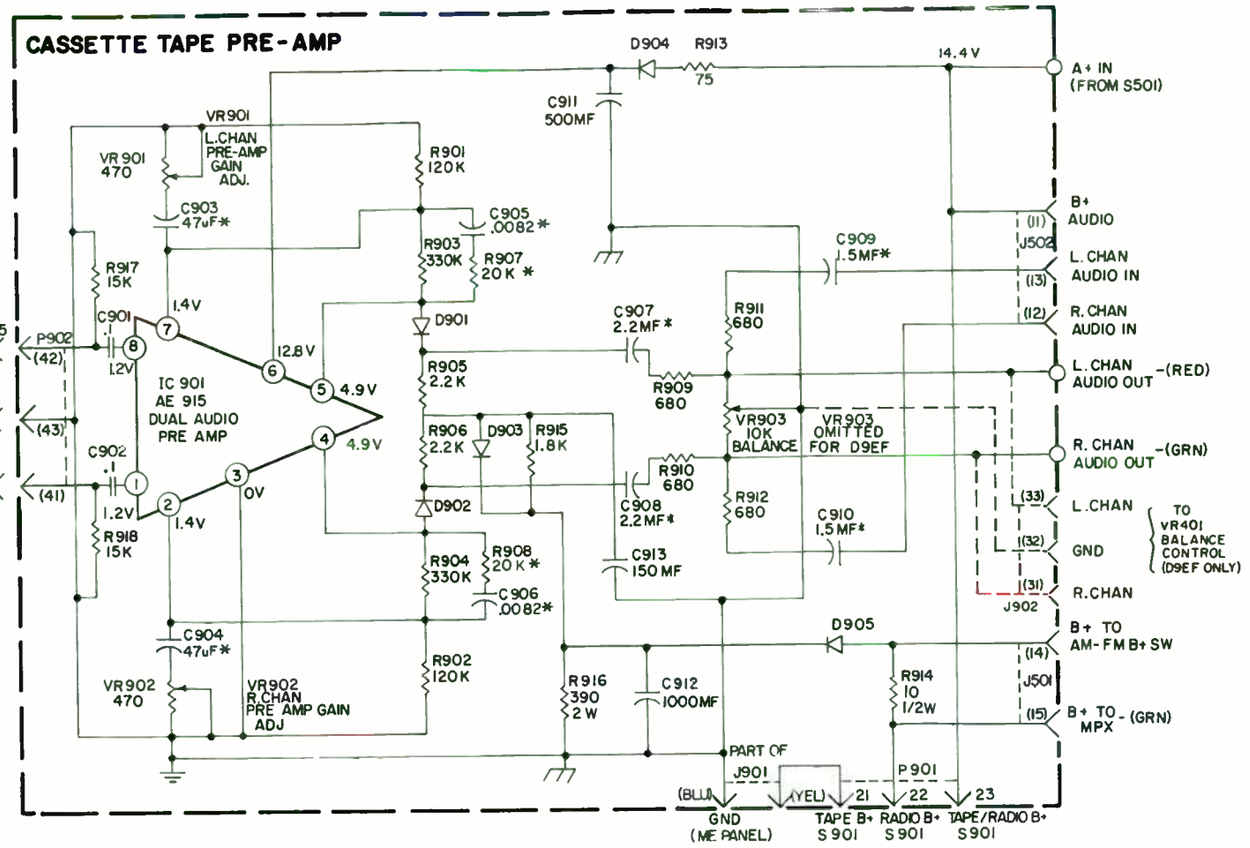
| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| C401 | C | 180 pf, 20%/50V, Left front speaker | 3L0-0006-25 |
| C402 | C | 180 pf/50V, Right rear speaker | 3L0-0006-25 |
| C403 | C | 180 pf/50V, Right front speaker | 3L0-0006-25 |
| C404 | C | 180 pf/50V, Left rear speaker | 3L0-0006-25 |
| C502 | C | .27 mf/3V, Hi-cut | 3L0-0008-45 |
| C503 | C | .27 mf/3V, Hi-cut | 3L0-0008-45 |
| C504 | C | 1.0 mf/35V, Bass boost, L. channel | 3L0-0011-29 |
| C505 | C | 1.0 mf/35V, Bass boost, R. channel | 3L0-0011-29 |
| C507 | C | 1800 mf/16V, A+ filter | 3L0-0009-60 |
| C701 | C | .1 mf/50V, IC701 B+ | 3L0-0008-64 |
| C702 | C | .22 mf/12V, Q701 base | 3L0-0008-65 |
| C703 | C | 10 mf/25V, Q702 bias | 3L0-0011-24 |
| C704 | C | 150 mf/16V, IC701 voltage stabilizer | 3L0-0011-30# |
| C801 | C | 1000 pf, A+ feedthru, Radio and Tape | 7L6-0536-1 |
| C802 | C | 1000 pf, A+ feedthru, Pilot light | 7L6-0536-1 |
| C901 | C | .1 mf/10V, Pre-amp input | 3L0-0008-11 |
| C902 | C | .1 mf/10V, Pre-amp input | 3L0-0008-11 |
| C903 | C | 47 mf/6V, Pre-amp gain, L. channel | 3L0-0011-11 |
| C904 | C | 47 mf/6V, Pre-amp gain, R. channel | 3L0-0011-11 |
| C905 | C | .0082 mf/50V, Pre-amp, L. channel | 3L0-0007-75 |
| C906 | C | .0082 mf/50V, Pre-amp, R. channel | 3L0-0007-75 |
| C907 | C | 2.2 mf/20V, Tape L. chan. out | 3L0-0011-34 |
| C908 | C | 2.2 mf/20V, Tape R. chan. out | 3L0-0011-34 |
| C909 | C | 1.5 mf/20V, Audio L. chan. in | 3L0-0011-31 |
| C910 | C | 1.5 mf/20V, Audio R. chan. in | 3L0-0011-31 |
| C911 | C | 500 mf/16V, A+ filter | 3L0-0009-65 |
| C912 | C | 1000 mf/16V, Pre-amp B+ filter | 3L0-0009-44 |
| C913 | C | 150 mf/16V, Audio filter | 3L0-0009-45 |
| VC101 | C | 1.7 to 10 pf, FM ant. trim. | 3L1-0004-1 |
| VC102 | C | 1.7 to 10 pf, AM RF trim. | 3L1-0004-1 |
| VC103 | C | 1.7 to 10 pf, FM osc. trim. | 3L1-0004-1 |
| VC104 | C | 25 to 150 pf, AM ant. D9EF | 3L1-0003-11 |
| VC104 | C | 12 to 46pf, AM ant. D8DF, D9AF, D9VF & D94F | 3L1-0003-12# |
| VC201 | C | 20 to 150 pf, AM osc. trim. | 3L1-0003-9 |
| VC202 | C | 20 to 150 pf, AM RF trim. | 3L1-0003-8 |
| | | DIODES | |
| D101 | P | FM AGC | 3L4-3002-31 |
| D102 | P | FM AGC | 3L4-3002-31 |
| D201 | P | AM AGC detector | 3L4-2003-1 |
| D202 | P | AM detector | 3L4-2003-1 |
| D204 | P | AM-FM B+ switching | 3L4-3002-10 |
| D301 | P | VRAC osc. rectifier | 3L4-3002-32 |
| D302 | P | VRAC osc. rectifier | 3L4-3002-32 |
| D303 | P | VRAC osc. control supply | 3L4-3002-7 |
| D304 | P | VRAC osc. control supply | 3L4-3002-7 |
| D701 | P | Solenoid shunt | 3L4-3002-30# |
| D702 | P | Q702 base | 3L4-3002-30# |
| D901 | P | L. channel switch | 3L4-3002-30# |
| D902 | P | R. channel switch | 3L4-3002-30# |

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| D903 | P | Bias, switching diodes | 3L4-3002-30 |
| D904 | P | Noise rejection | 3L4-2003-7 |
| D905 | P | AM-FM B+ switching | 3L4-3002-20 |
| DV601 | P | L.E.D. stereo indicator | 3L4-3004-2 |
| DZ201 | P | 27V Zener, IC201 protection | 3L4-3506-49 |
| DZ301 | P | 6.8 V Zener, VRAC supply regulation | 3L4-3506-43 |
| DZ301 | P | 6.8V Zener (option) | 3L4-3506-50# |
| DZ701 | P | 18V Zener, IC701 protection | 3L4-3506-45 |
| | | VARACTORS | |
| VRAC101 | P | FM ant. tuning (blue) | 3L4-3508-2 |
| VRAC102 | P | FM RF tuning (blue) | 3L4-3508-2 |
| VRAC103 | P | FM osc. tuning (white) | 3L4-3508-1 |
| | | PILOT LAMPS | |
| DS801 | K | #37 Pilot lamp | 3L4-0001-9 |
| DS802 | K | #37 Pilot lamp | 3L4-0001-9 |
| | | COILS | |
| L101 | D | 2.7 μh, RF choke, AM ant. | 3L2-0023-7 |
| L102 | D | 1 μh, 10.7 MHz trap | 3L2-0023-1 |
| L103 | D | RF choke | 3L2-0037-6 |
| L201 | D | 2.7 mh, 5%, RF choke | 3L2-0023-5 |
| L301 | D | AM ant. tuning | 3L2-0007-11 |
| L302 | D | AM osc. tuning | 3L2-0002-8 |
| L303 | D | AM RF tuning | 3L2-0007-10 |
| L304 | D | FM varac. osc. tuning | 3L2-0027-1 |
| L305 | D | 2.7 mh, 5%, RF choke | 3L2-0023-5 |
| L306 | D | 33 mh, 5%, VRAC osc. tank | 3L2-0023-4 |
| L802 | D | A+ choke (part of A+ cable assy.) | 7L6-0479-9 |
| L901 | R | Solenoid, Eject. (see cassette mechanism parts list) | |
| | | NETWORKS | |
| F101** | B | I.F. filter, 10.7 MHz | 3L5-5003-1 |
| F101** | B | I.F. filter, 10.7 MHz (opt.) | 3L5-5004-1# |
| F102** | B | I.F. filter, 10.7 MHz | 3L5-5003-1 |
| F102** | B | I.F. filter, 10.7 MHz (opt.) | 3L5-5004-1# |
| N101 | B | FM I.F. amp. | 3L5-0020-1 |
| N201 | B | AM RF/conv. | 3L5-1002-4 |
| N202 | B | AM if/det. | 3L5-0021-1 |
| N203 | B | Audio pre-amp, L. channel | 3L5-0011-7 |
| N204 | B | Audio pre-amp, R. channel | 3L5-0011-7 |
| | | TRANSISTORS | |
| Q101 | A | FM RF amp. (white, yellow) | 3L4-6007-35 |
| Q102 | A | FM mixer (green, yellow) | 3L4-6007-21 |
| Q103 | A | FM osc. (blue, yellow) | 3L4-6007-23 |
| Q104 | A | FM AGC (red) | 3L4-6007-4 |
| Q201 | A | AM RF amp. (white) | 3L4-6007-1 |
| Q202 | A | AM conv. (yellow) | 3L4-6007-2 |
| Q203 | A | AM I.F. amp. (green) | 3L4-6007-3 |
| Q204 | A | AM FM B+ switch | 3L4-6010-8 |
| Q204 | A | AM FM B+ switch (violet) (option) | 3L4-6010-4 |
| Q205 | A | Audio driver, L. channel | 3L4-6011-9 |

*Warranty Component Category

** Replace I.F. filters with same color code and part number as on filter removed or replace both with two having the same color code and part number.




NOTES:

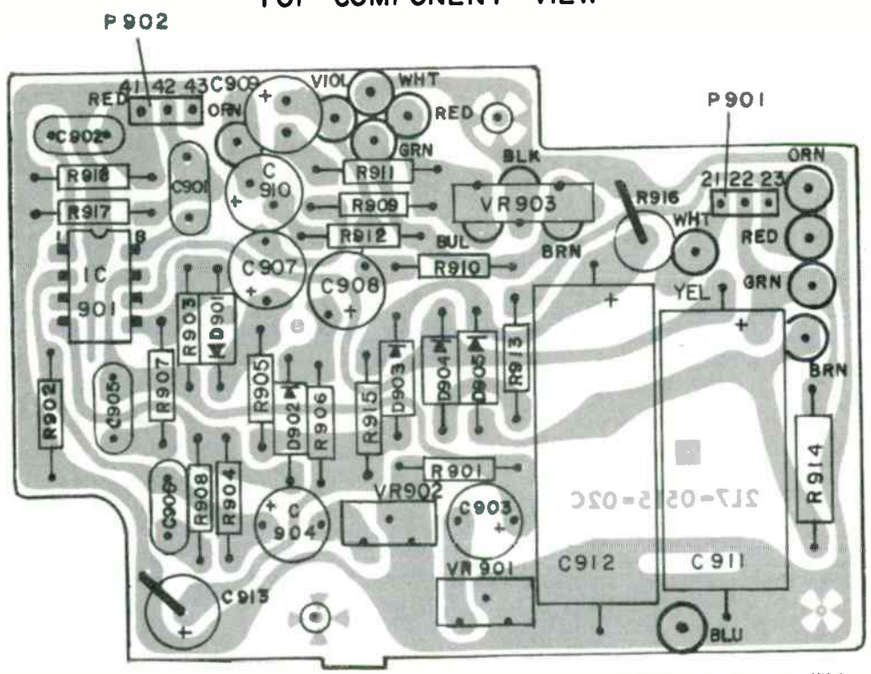
1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4V. A+ SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE-MICROFARADS (MF) VALUES ABOVE ONE-PICOFARADS (PF)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

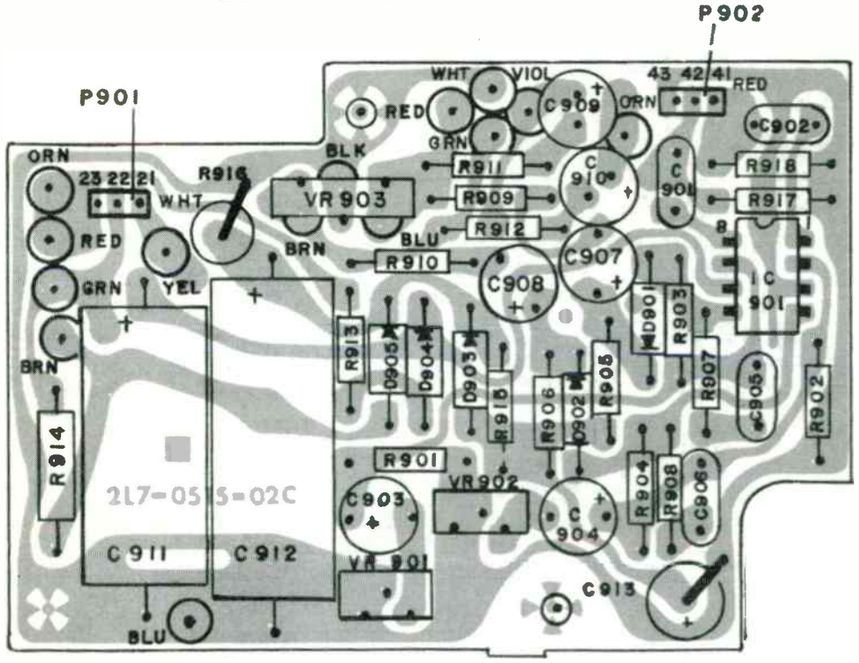
⏚ GROUND, RADIO CHASSIS OR HOUSING

⏚ GROUND, P.W. PANEL

TOP COMPONENT VIEW



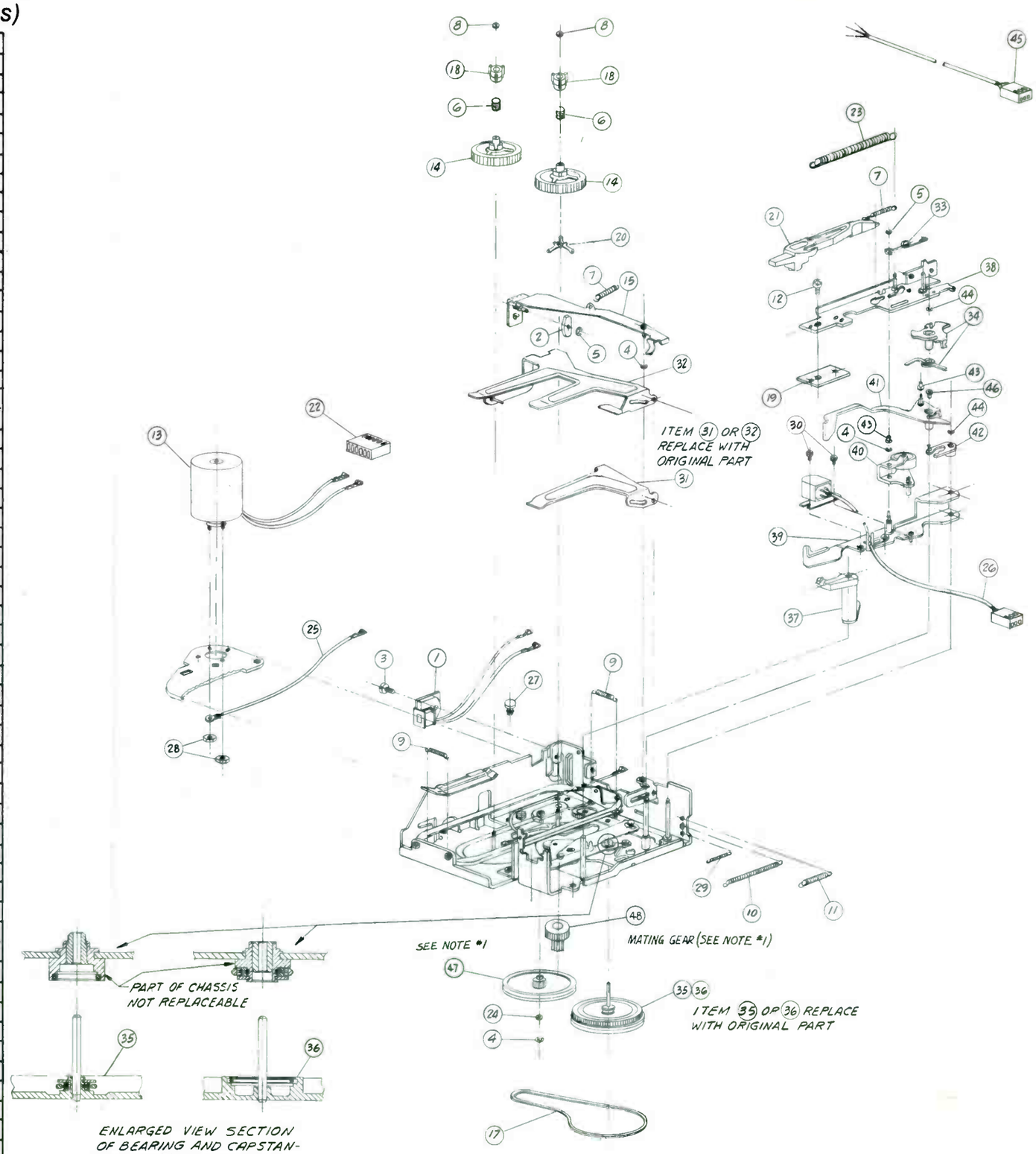

BOTTOM COPPER VIEW




CASSETTE PRE-AMP PANEL - SCHEMATIC DIAGRAM AND PARTS LOCATION

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)

| | | |
|---|---|---|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| 7L6 – 0742 – 48 | 48 | GEAR (BLACK) |
| 7L6 – 0742 – 47 | 47 | FLYWHEEL ASSY. |
| 7L6 – 0742 – 46 | 46 | BUSHING |
| 7L6 – 0742 – 45 | 45 | HEAD CABLE ASS'Y (WITHOUT HEAD) |
| 7L6 – 0742 – 44 | 44 | RING, RETAINING |
| 7L6 – 0742 – 43 | 43 | BUSHING |
| 7L6 – 0742 – 42 | 42 | ESCAPEMENT CAM ASS'Y |
| 7L6 – 0742 – 41 | 41 | EJECTOR LEVER ASS'Y |
| 7L6 – 0742 – 40 | 40 | PINCH ROLLER ASS'Y |
| 7L6 – 0742 – 39 | 39 | HEAD BRACKET ASS'Y |
| 7L6 – 0742 – 38 | 38 | SLIDE ASS'Y |
| 7L6 – 0742 – 37 | 37 | ACTUATOR FF/RWD |
| 7L6 – 0742 – 36 | 36 | CAPSTAN/FLYWHEEL ASS'Y II |
| 7L6 – 0742 – 35 | 35 | CAPSTAN/FLYWHEEL ASS'Y I |
| 7L6 – 0742 – 34 | 34 | EXTRACTION CAM & SPRING ASS'Y |
| 7L6 – 0742 – 33 | 33 | SPRING, PRESSURE ROLLER |
| 7L6 – 0742 – 32 | 32 | HOLD DOWN LEVER DOUBLE |
| 7L6 – 0742 – 31 | 31 | HOLD DOWN LEVER SINGLE |
| 7L6 – 0742 – 30 | 30 | SCREW, HEAD MTG. |
| 7L6 – 0742 – 29 | 29 | SPRING, IDLER |
| 7L6 – 0742 – 28 | 28 | HEX NUT |
| 7L6 – 0742 – 27 | 27 | CABLE CLAMP |
| 7L6 – 0742 – 26 | 26 | HEAD AND CABLE ASS'Y |
| 7L6 – 0742 – 25 | 25 | CABLE WITH CONTACT |
| 7L6 – 0742 – 24 | 24 | WASHER |
| 7L6 – 0742 – 23 | 23 | SPRING, SLIDE |
| 7L6 – 0742 – 22 | 22 | CONNECTOR HOUSING |
| 7L6 – 0742 – 21 | 21 | LEVER, OPERATING |
| 7L6 – 0742 – 20 | 20 | CONTACT, FLIP FLOP |
| 7L6 – 0742 – 19 | 19 | PLATE, SLIDE |
| 7L6 – 0742 – 18 | 18 | SPINDLE, SPLINE |
| 7L6 – 0742 – 17 | 17 | BELT, DRIVE |
| | | |
| 7L6 – 0742 – 15 | 15 | LEVER RELEASE ASS'Y |
| 7L6 – 0742 – 14 | 14 | DRIVE SPINDLE, SLIP CLUTCH |
| 7L6 – 0742 – 13 | 13 | MOTOR - PULLEY ASS'Y |
| 7L6 – 0742 – 12 | 12 | SCREW CR. RECESSED |
| 7L6 – 0742 – 11 | 11 | SPRING, EJECTOR |
| 7L6 – 0742 – 10 | 10 | SPRING, BRKT ASS'Y |
| 7L6 – 0742 – 9 | 9 | SPRING, LIFTER |
| 7L6 – 0742 – 8 | 8 | WASHER, PLASTIC |
| 7L6 – 0742 – 7 | 7 | SPRING, LEVER |
| 7L6 – 0742 – 6 | 6 | SPRING, COMPRESSION |
| 7L6 – 0742 – 5 | 5 | RING, RETAINING CORE |
| 7L6 – 0742 – 4 | 4 | RING, RETAINING |
| 7L6 – 0742 – 3 | 3 | SCREW, ELECTROMAGNET |
| 7L6 – 0742 – 2 | 2 | METAL CORE ELECTROMAGNET |
| 7L6 – 0742 – 1 | 1 | ELECTROMAGNET ASS'Y |
| 7L6 – 0769 – 1 | | CASSETTE TAPE MECHANISM ASS'Y |
| PART NO. | ITEM | DESCRIPTION |




ENLARGED VIEW SECTION OF BEARING AND CAPSTAN-FLYWHEEL ASSEMBLIES TYPES I AND II

CASSETTE TAPE MECHANISM EXPLODED VIEW

# Ford D8DF19A198AB, D9AF19A198AA, D9EF19A198AA, D9VF19A198AA, D94F19A198AA (1979 Series)

ELECTRICAL PARTS LIST

AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) AND D94F(AA)

New parts not previously carried are indicated by the symbol "#" following the number.

| SYMBOL | *WAR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| Q205 | A | Audio driver, L. channel (option) | 3L4-6011-14 |
| Q206 | A | Multiplier, L. channel (orange or blue) | 3L4-6010-6 |
| Q207 | A | AR24 NPN output, L.channel | 3L4-6012-5 |
| Q207 | A | AR28 NPN | 3L4-6012-6 |
| Q207 | A | AR38 NPN | 3L4-6012-8 |
| Q208 | A | AR25 PNP output, L.channel | 3L4-6013-5 |
| Q208 | A | AR27 PNP | 3L4-6013-6 |
| Q208 | A | AR37 PNP | 3L4-6013-8 |
| Q209 | A | Audio driver, R. channel | 3L4-6011-9 |
| Q209 | A | Audio driver, R. channel (option) | 3L4-6011-14 |
| Q210 | A | Multiplier, R. channel | 3L4-6010-6 |
| Q211 | A | AR24 NPN output, R.channel | 3L4-6012-5 |
| Q211 | A | AR28 NPN | 3L4-6012-6 |
| Q211 | A | AR38 NPN | 3L4-6012-8 |
| Q212 | A | AR25 PNP output, R.channel | 3L4-6013-5 |
| Q212 | A | AR27 PNP | 3L4-6013-6 |
| Q212 | A | AR37 PNP | 3L4-6013-8 |
| Q301 | A | FM VRAC osc. | 3L4-6007-14 |
| Q302 | A | VRAC osc. control | 3L4-6007-41 |
| Q701 | A | Auto eject. | 3L4-6007-9 |
| Q702 | A | Auto eject. | 3L4-6007-15 |
| Q703 | A | Eject solenoid control | 3L4-6010-3 |
| | | INTEGRATED CIRCUITS | |
| IC101 | S | AE907, FM I. F. amp. | 3L4-9007-1 |
| IC201*** | S | AE904-4, FM MPX decoder, use with 20K (R211) | 3L4-9004-4 |
| IC201*** | S | AE904-6, FM MPX decoder, use with 22K (R211) | 3L4-9004-6 |
| IC701 | S | AE922, Regulator, tape motor | 3L4-9022-1 |
| IC901 | S | AE915, Dual audio pre-amp. | 3L4-9015-1 |
| | | RESISTORS | |
| R101 | G | 560K 5% 1/4w, VRAC101 bias | |
| R102 | G | 330 ohms 5% 1/4w, Q101 emitter | |
| R103 | G | 100 ohms 5% 1/4w, Q101 collector | |
| R104 | G | 680 ohms 5% 1/4w, Q102 base bias | |
| R105 | G | 100K 5% 1/4w, VRAC102 bias | |
| R106 | G | 2.7K 5% 1/4w, Q102 base bias | |
| R107 | G | 1.8K 5% 1/4w, Q102 emitter | |
| R108 | G | 100 ohms 5% 1/4w, RF B+ | |
| R109 | G | 100 ohms 5% 1/4w, F101 input | |
| R110 | G | 3.9K 5% 1/4w, Q103 base bias | |
| R111 | G | 220 ohms 5% 1/4w, Mixer B+ | |
| R112 | G | 100 ohms 5% 1/4w, Q103 collector | |
| R113 | G | 2.7K 5% 1/4w, Q103 emitter | |
| R114 | G | 3.3K 5% 1/4w, Q103 base bias | |
| R115 | G | 220 ohms 5% 1/4w, Osc. B+ | |
| R116 | G | 330 ohms 5% 1/4w, F102 input divider | |
| R117 | G | 220 ohms 5% 1/4w, FM I. F. B+ | |
| R118 | G | 10 ohms 5% 1/4w, IC101 B+ | |
| R119 | G | 100K 5% 1/4w, VRAC103 bias | |
| R120 | G | 47K 5% 1/4w, AFC divider | |
| R121 | G | 1.2K 5% 1/4w, Audio compensating | |
| R122 | G | 6.8K 5% 1/4w, Audio compensating | |
| R123 | G | 82 ohms 5% 1/4w, IC101 input | |
| R124 | G | 12K 5% 1/4w, T105 shunt | |
| R125 | G | 330 ohms 5% 1/4w, Mixer B+ | |
| R126 | G | 47K 5% 1/4w, IC101 coupling | |
| R127 | G | 12K 5% 1/4w, Q102 collector load | |
| R128 | G | 3.3K 5% 1/4w, Q104 B+ | |
| R129 | G | 820 ohms 5% 1/4w, Q104 collector | |
| R130 | G | 120K 5% 1/4w, Q104 base bias | |
| R131 | G | 150 ohms 5% 1/4w, Q104 emitter | |
| R132 | G | 220 ohms 5% 1/4w, IC101 input | |
| R201 | G | 1.8K 5% 1/4w, AM AGC | |
| R202 | G | 5.6 ohms 5% 1/4w, Q203 emitter | 3L3R-9561210# |
| R203 | G | 47K 5% 1/4w, Q204 collector | |
| R204 | G | 330 ohms 5% 1/4w, Q204 B to E | |
| R205 | G | 1.8K 5% 1/4w, Q204 base bias | |
| R206 | G | 180 ohms 10% 2w, AM B+ | 66-11863626# |
| R207 | G | 220 ohms 5% 1/4w, AM B+ | |
| R208 | G | 47 ohms 10% 2w, B+ drop. | 66-04763626# |
| R209 | G | 390 ohms 5% 1/4w, Q204 emitter | |
| R210 | G | 3.3K 5% 1/4w, DC filter | |
| R211 | G | 22K 2% 1/4w, Osc. tuning AE904-6,-3 | 3L3-0028-3 |
| R211 | G | 20K 2% 1/4w, Osc. tuning AE904-4,-1 | 3L3-0028-4 |
| R212 | G | 5.1K 5% 1/4w, IC201 load L. channel | |
| R213 | G | 10K 5% 1/4w, Audio cplg. L. channel | |
| R214 | G | 10K 5% 1/4w, Audio cplg. R. channel | |
| R215 | G | 5.1K 5% 1/4w, IC201 load R. channel | |
| R216 | G | 59 ohms 5% 1/4w, Q206 bias | 3L3-0591210 |
| | G | 62 ohms 5% 1/4w, Q206 bias | 3L3-0621213 |
| R217 | G | 68 ohms 5% 1/4w, Q206 bias | 3L3-0681213 |
| | G | 75 ohms 5% 1/4w, Q206 bias | 3L3-0751213 |
| R219A, B | G | Dual .27 ohms 10% P.T.C., Q207 & Q208 emit. | 3L3-0004-6 |
| R220 | G | 100 ohms 5% 1/2w, Q208 base | |
| R221 | G | 59 ohms 5% 1/4w, Q210 bias | 3L3-0591210 |
| | G | 62 ohms 5% 1/4w, Q210 bias | 3L3-0621213 |
| R222 | G | 68 ohms 5% 1/4w, Q210 bias | 3L3-0681213 |
| | G | 75 ohms 5% 1/4w, Q210 bias | 3L3-0751213 |
| R224A, B | G | Dual .27 ohms 10% P.T.C., Q211 & Q212 emit. | 3L3-0004-6 |

*Warranty Component Category

*** Replace with same type as removed.

ELECTRICAL PARTS LIST

AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) AND D94F(AA)

New parts not previously carried are indicated by the symbol "#" following the number.

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| R225 | G | 100 ohms 5% 1/2w, Q212 base | |
| R226 | G | 390K 5% 1/4w, D204 bias | |
| R227 | G | 470 ohms 5% 1/2w, Stereo indicator B+ | |
| R301 | G | 22K 5% 1/4w, Q301 base bias | |
| R302 | G | 100 ohms 5% 1/4w, Q301 emit. | |
| R303 | G | 1.5K 5% 1/4w, L305 shunt | |
| R305 | G | 3.3K 5% 1/4w, L306 loading | |
| R307 | G | 5.6K 5% 1/4w, Q302 base | |
| R308 | G | 10K 5% 1/4w, VRAC supply filter | |
| R309 | G | 33K 5% 1/4w, VRAC supply load | |
| R310 | G | 47K 5% 1/4w, VRAC supply filter | |
| R311 | G | 15K 5% 1/4w, VRAC osc. control supply adj. | |
| R312 | G | 56K 5% 1/4w, Q302 base | |
| R313 | G | 22K 5% 1/4w, B+ divider | |
| R314 | G | 120 ohms 5% 1/4w, B+ divider | |
| R315 | G | 12K 5% 1/4w, D303 & D304 protect. | |
| R316 | G | 4.7K 5% 1/4w, VRAC osc. | |
| R505 | G | 390 ohms 10% 2w, Pre-amp. B+ | |
| R506 | G | 330 ohms 5% 1/4w, Vol. control tap L. channel | |
| R507 | G | 330 ohms 5% 1/4w, vol. control tap R. chan. | |
| R701 | G | 249 ohms 1% 1/4w, IC701 regulation | 3L3-0043-10 |
| R702 | G | 240 ohms 5% 1/4w, Motor speed control | |
| R703 | G | 510 ohms 5% 1/4w, Motor speed regulation | |
| R704 | G | 10K 5% 1/4w, Q701 bias | |
| R705 | G | 24K 5% 1/4w, Q701 bias | |
| R706 | G | 68K 5% 1/4w, Q701 bias | |
| R707 | G | 91K 5% 1/4w, Q702 bias | |
| R708 | G | 68 ohms 5% 1/4w, Q702 bias | |
| R709 | G | 4.7K 5% 1/4w, Q702 coll. | |
| R710 | G | 220 ohms 5% 1/2w, Q703 emit. | |
| R901 | G | 120K 5% 1/4w, pre-amp L. channel | |
| R902 | G | 120K 5% 1/4w, pre-amp R. channel | |
| R903 | G | 330K 5% 1/4w, pre-amp L. channel | |
| R904 | G | 330K 5% 1/4w, pre-amp R. channel | |
| R905 | G | 2.2K 5% 1/4w, D901 bias | |
| R906 | G | 2.2K 5% 1/4w, D902 bias | |
| R907 | G | 20K 5% 1/4w, pre-amp L. channel | |
| R908 | G | 20K 5% 1/4w, pre-amp R. channel | |
| R909 | G | 680 ohms 5% 1/4w, pre-amp output L. channel | |
| R910 | G | 680 ohms 5% 1/4w, pre-amp output R. channel | |
| R911 | G | 680 ohms 5% 1/4w, Audio input L. channel | |
| R912 | G | 680 ohms 5% 1/4w, Audio input R. channel | |
| R913 | G | 75 ohms 5% 1/4w, A+ input | |
| R914 | G | 10 ohms 5% 1/2w, Radio B+ switching | |
| R915 | G | 1.8K 5% 1/4w, D903 shunt | |
| R916 | G | 390 ohms 10% 2w, Pre-amp B+ | 66-13963626# |
| R917 | G | 15K 5% 1/4w, Tape input L. channel | |
| R918 | G | 15K 5% 1/4w, Tape input R. channel | |
| | | SWITCHES | |
| S501 | I | On/off switch | Part of VR501 |
| S502 | I | Manual eject. switch | Part of VR501 |
| S803 | I | AM/FM switch | 4L2-0022-1 |
| S901 | I | Tape/Radio switch assy. (cassette activated) | 3L8-0952 |
| S902 | I | Auto-eject, see cassette mechanism parts list | |
| | | CONTROLS | |
| VR101 | H | 1.2 K,FM IF gain adjust | |
| VR201 | H | 5K, 76KHz osc. adjust | 3L3-0027-5 |
| VR401 | H | Dual 35 ohms, Fader, D8DF, D9AF, D9VF & D94F | 3L3-0023-4 |
| VR402 | H | 10K Balance D9EF only | 3L3-0052-1# |
| VR501A, B, C, D | H, I | Dual 8K, Vol./40K Tone, S501 on/off switch & S502 auto-eject switch | 3L3-0039-2 |
| VR501 | H, I | Vol/Tone/On-Off/Eject, D9EF | 3L3-0039-3# |
| VR701 | H | 470 ohms Tape motor speed adjust | 3L3-0050-3 |
| VR901 | H | 470 ohms, Pre-amp gain adjust | 3L3-0050-3 |
| VR902 | H | 470 ohms, Pre-amp gain adjust | 3L3-0050-3 |
| VR903 | H | 10K 20%, Balance | 3L3-0040-1 |

*Warranty Component Category

** VR101 Replaced by fixed resistor

AM-FM STEREO RADIO/CASSETTE TAPE PLAYER
MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) and D94F(AA)
New parts not previously carried are indicated by the symbol "#" following the number.

| WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| M | Balance Control assy. D9EF only | 3L8-0997# |
| Z | Barrier, light (2), (Bezel & Sub-dial assy) | 2L7-0489-1 |
| L | Base plate, sub dial | 2L8-0675-1 |
| L | Bezel | 2L7-0502-1 |
| L | Bezel, D9EF | 2L7-0502-2# |
| L | Bezel, D94F | 2L7-0558-1# |
| L | Bezel assy. (Bezel, door, shaft and springs) and Light Barriers D8DF, D9AF & D9VF | 3L8-0926 |
| L | Bezel assy. D9EF | 3L8-1023# |
| L | Bezel assy. D94F | 3L8-1024# |
| Z | Bracket, ant. trimmer | 2L8-0655-1 |
| Z | Bracket, shuttle | 2L8-0510-1# |
| Z | Bracket, vol. | 2L8-0836-1# |
| O | Button, AM switch | 2L7-0406-4 |
| O | Button, FM switch | 2L7-0406-3 |
| O | Button, push (5 used) | 2L7-0270-1 |
| O | Button, Rev/Play/Fwd | 2L7-0503-2# |
| N | Cable assy., A+ choke and P.L. | 7L6-0479-9 |
| N | Cable assy., Audio to fader pan. | 4L1-0093-15 |
| N | Cable assy., Audio to FM panel | 4L1-0093-20# |
| N | Cable assy., Ant. trim. to Coil panel | 4L1-0093-17 |
| N | Cable assy., Coil panel to FM panel | 4L1-0093-11 |
| N | Cable assy., Vol. control to MPX panel | 4L1-0158-2 |
| N | Cable assy., Pre-amp to MPX pan. | 4L1-0158-1 |
| N | Cable assy., Speaker D8DF, D9AF, D9VF & D94F | 3L8-0886 |
| N | Cable assy., Speaker D9EF only | 3L8-1027# |
| N | Cable assy., Balance D9EF only | 4L1-0158-5# |
| N | Cable assy., PA & VC, panels to ME panel | 4L1-0158-4 |
| N | Cable assy., Radio/Tape switch | 4L1-0158-3 |
| Z | Cartridge stop and rivets | 424-9702 |
| Z | Clamp, Pre-Amp lead dress | 2L7-0514-1 |
| Z | Clamp, strain relief (A+ cable) | 2L8-0226-1 |
| Z | Clamp, strain relief (Speaker cable) | 2L8-0226-2 |
| Z | Clip, heat sink, Motor control panel | 2L8-0767-1 |
| Z | Clip, transistor, Audio output(2) | 2L8-0770-1# |
| Z | Clip, pinion shaft | 2L8-0704-1 |
| Z | Clip, Fader control | 2L8-0705-1 |
| Z | Clip, Wire dress (Vol. control) | 2L7-0523-2 |
| Z | Connector, F post | 2L8-0681-2# |
| Z | Connector, straight post | 2L8-0680-1# |
| D | Core, Ant. and RF | 2L8-0069-7 |
| D | Core, Ant. and RF (optional) | 2L8-0069-8 |
| D | Core, AM osc. | 2L8-0045-5 |
| D | Core, VARAC. osc. | 2L8-0069-16 |
| Z | Cover, housing (Top) | 2L8-0652-1 |
| Z | Cover assy., bottom | 7L6-0702-1 |
| Z | Door, Cassette tape | 2L8-0759-1 |
| Z | Door, Cassette tape D94F only | 2L8-0759-2# |
| Z | "E" Ring, AM-FM mode pushbutton | 1W60971-FA1 |
| L | Escutcheon assy. | 3L8-0927 |
| H | Fader control assy. | 3L8-0807 |
| L | Filter Assy., light | 3L8-0795 |
| L | Filter Assy., light D9EF only | 3L8-1025# |
| L | Filter, color | 2L7-0398-2 |
| L | Filter, color D9EF only | 2L7-0398-3# |

| *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| Z | Grommet (4) | 2L7-0022-1 |
| Z | Housing Assy., left side & back | 7L6-0582-4# |
| Z | Housing, left side & back D9EF only | 7L6-0582-5# |
| Z | Housing Assy., right side | 7L6-0593-1 |
| Z | Insulator, FM panel to housing | 5L4-0091-1 |
| Z | Insulator, Mica, Audio out. | 5L4-0112-1# |
| Z | Insulator, Mica, Motor Control IC701 | 5L4-0111-1 |
| Z | Nut, Vol. and Fader contr. mtg. | 28-14686-1 |
| Z | Pin, AM-FM mode P.B. (2) | 2L8-0413-1 |
| Z | Pin, Toggle, AM-FM mode P.B.(2) | 2L8-0557-1 |
| Q | Pinion Shaft | 2L7-0030-22 |
| Z | Pointer, dial | 2L8-0672-2 |
| M | P.W. Assy. Balance D9EF only | 3L8-0995# |
| M | P.W. Assy., Coil/Varactor w/ components | 3L8-0799 |
| M | P.W. Assy., Fader control w/ components D8DF, D9AF, D9VF & D94F | 3L8-0800 |
| M | P.W. Assy., FM panel w/ components D8DF | 3L8-0803 |
| M | P.W. Assy., FM panel D9AF | 3L8-1139# |
| M | P.W. Assy., FM panel D9EF | 3L8-1145# |
| M | P.W. Assy., FM panel D9VF,D94F | 3L8-0817# |
| M | P.W. Assy., L.E.D. stereo indicator | 3L8-0802 |
| M | P.W. Assy., Motor control/Auto eject w/components | 3L8-0949 |
| M | P.W. Assy., AM/MPX/AUDIO w/ components | 3L8-0793 |
| M | P.W. Assy., Cassette pre-amp & Vol. control panels (2 ea ) | 3L8-0928 |
| M | P.W. Assy., Pre-amp & Vol. control D9EF only | 3L8-1028# |
| Z | Receptacle assy., J302 & J303 (5 pin) | 2L7-0329-2 |
| Z | Retainer plate, Balance D9EF only | 2L8-0312-3# |
| Z | Retainer plate, Fader control | 2L8-0312-3 |
| Z | Retainer, Wire dress | 2L7-0449-1# |
| Z | Seal, light (2) bezel | 2L7-0052-6 |
| Z | Shaft, Tape door | 2L8-0415-2 |
| Z | Shaft, Tuning | 2L7-0281-1 |
| Z | Shaft, Tuning D9EF only | 2L7-0281-2# |
| Z | Shield, Fader control | 5L4-0070-1 |
| D | Sleeve, paper (4) | 5L4-0002-1 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (3) | 2L8-0138-1 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (optional) | 2L8-0138-2 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (optional) | 2L8-0138-3 |
| D | Sleeve, powdered iron, Varac. osc. | 2L8-0138-9 |
| Z | Socket, Ant. | 2L7-0139-3 |
| Z | Socket Assy., Pilot light (2) | 4L1-0095-3 |
| Z | Spacer, IC701 | 2L7-0508-1 |
| Z | Spring, AM-FM mode pushbuttons (2) | 2L8-0420-1 |
| Z | Spring, Tape door | 2L8-0763-1 |
| Z | Spring, Tension, tuning shaft | 2L8-0314-1 |

* Warranty Component Category





AM-FM STEREO RADIO/CASSETTE TAPE PLAYER

MODELS D8DF, D9AF(AA), D9EF(AA), D9VF(AA) and D94F(AA)

New parts not previously carried are indicated by the symbol "#" following the number.

| WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| L | Sub dial | 2L7-0453-1 |
| I | Switch assy., (S901 Radio/Tape Switch) | 3L8-0952 |
| Z | Support, AM/MPX/AUDIO panel | 2L7-0509-1 |
| Z | Support, pre-amp panel | 2L7-0513-1 |
| | Toggle, R.H. AM mode P.B. | 2L8-0404-1 |
| | Toggle, L.H. FM mode P.B. | 2L8-0405-1 |
| | Tuner assy., mechanical | 7L6-0579-1 |
| Z | Wire Guide, coil | 5L4-0078-3# |

**TUNER REPLACEMENT PARTS**
**All parts are Warranty Component Category F.**

| DESCRIPTION | SERVICE PART NO. |
|---|---|
| Arm, Dial pointer | 7L6-0423-44 |
| Ball Bearing, Paddle bar | 7L6-0150-7 |
| Bracket, Clutch | 2L8-0684-2 |
| De-clutch Cam | 7L6-0423-7 |
| De-clutch Lever | 7L6-0423-9 |
| De-clutch Plate Assy. | 7L6-0423-8 |
| Gear & Clutch Assy. | 7L6-0423-13 |
| Grommet, Carriage (4) | 7L6-0150-15 |
| Nut, Paddle bar | 7L6-0150-11 |
| Pointer, Dial | 2L8-0672-2# |
| Screw & Nut Assy., Paddle bar | 7L6-0423-15 |
| Screw, Paddle bar | 7L6-0423-16 |
| Set Screw, De-clutch cam | 7L6-0423-11 |
| Spring, Clutch | 7L6-0423-12 |
| Spring, De-clutch | 7L6-0423-10 |
| Spring, Pointer arm | 7L6-0150-51 |
| Tuner Assy., Mechanical | 7L6-0579-1 |

**CASSETTE TAPE PLAYER MECHANISM REPLACEMENT PARTS**

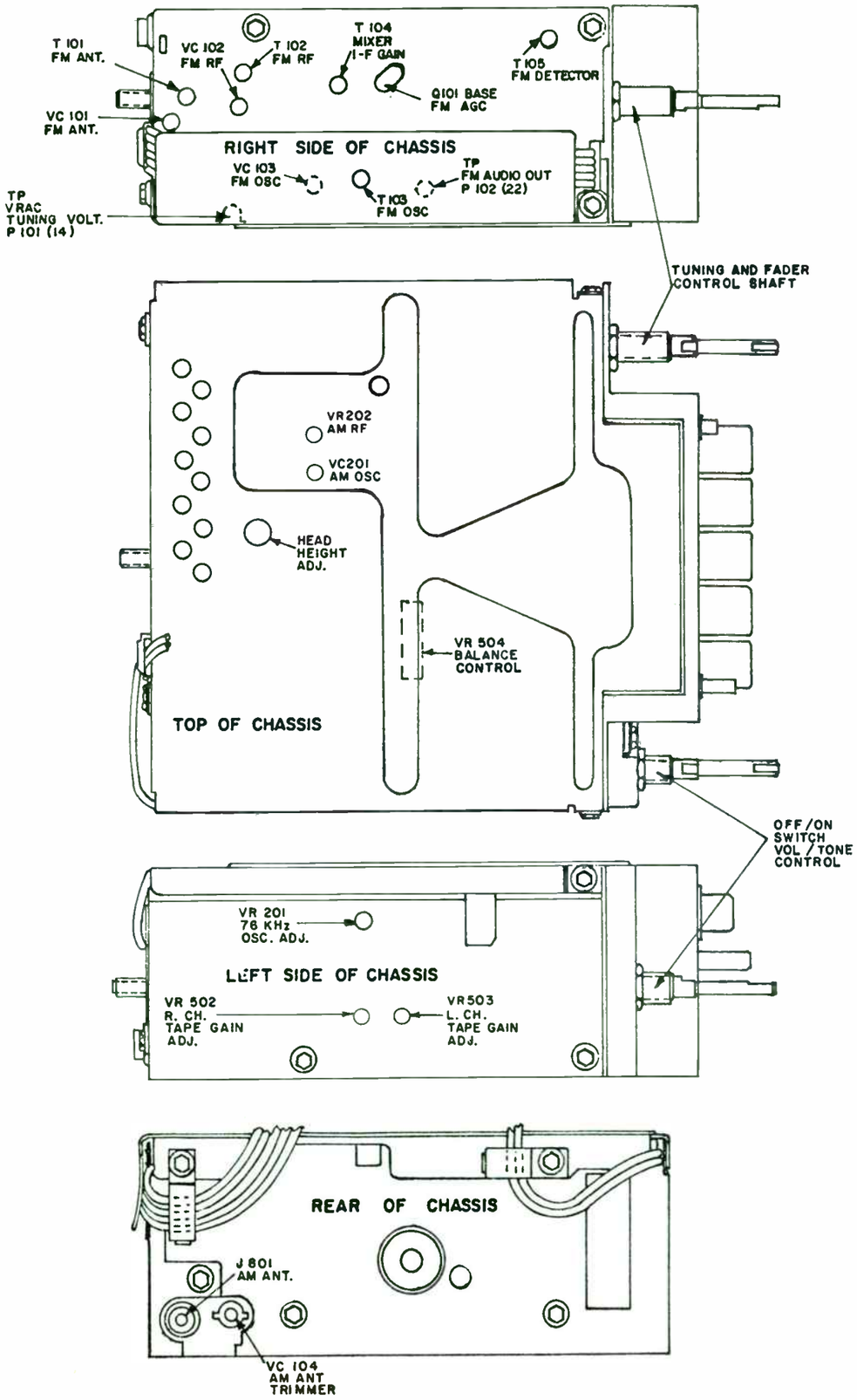
**AM-FM STEREO RADIO AND CASSETTE TAPE PLAYER MODEL D8DF, D9AF(AA), D9EF(AA), D9VF(AA), AND D94F(AA)**

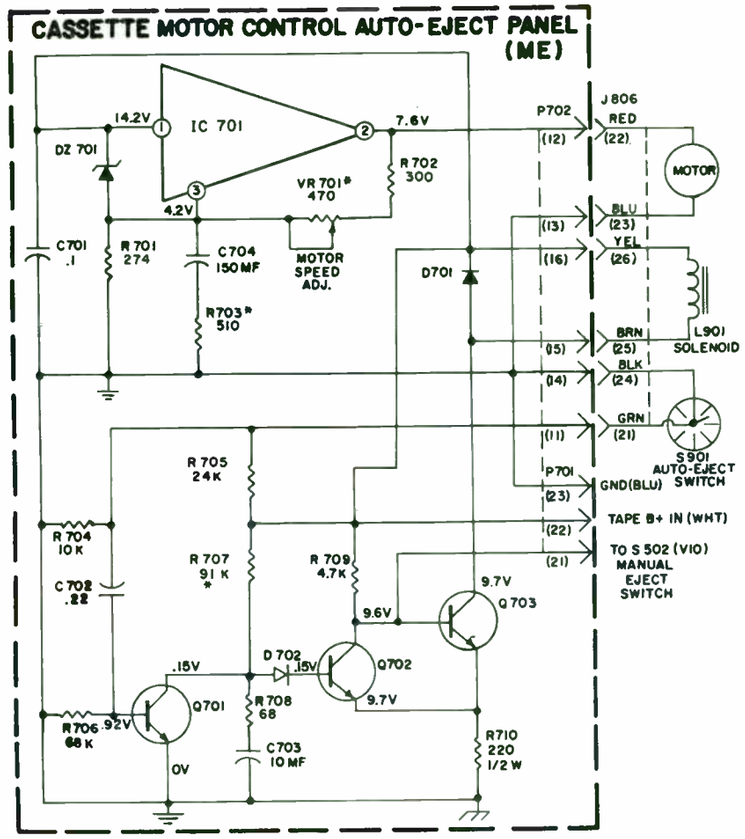
**New parts not previously carried are indicated by the symbol "#" following the number.**
**All parts are Warranty Component Category R.**

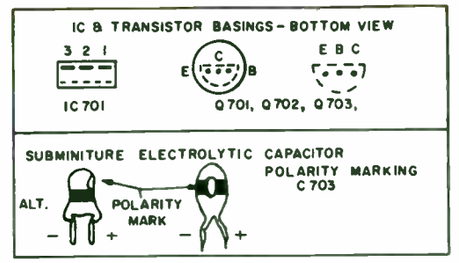
| ITEM | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| | Cassette Mechanism Assembly | 7L6-0769-1# |
| 1 | Electromagnet Assembly | 7L6-0742-01 |
| 2 | Metal Core Electromagnet | 7L6-0742-02 |
| 3 | Screw, Electromagnet | 7L6-0742-03 |
| 4 | Ring, Retaining | 7L6-0742-04 |
| 5 | Ring, Retaining Core | 7L6-0742-05 |
| 6 | Spring, Compression | 7L6-0742-06 |
| 7 | Spring, Lever | 7L6-0742-07 |
| 8 | Washer, Plastic | 7L6-0742-08 |
| 9 | Spring, Lifter | 7L6-0742-09 |
| 10 | Spring, Bracket assembly | 7L6-0742-10 |
| 11 | Spring, Ejector | 7L6-0742-11 |
| 12 | Screw CR. Recessed | 7L6-0742-12 |
| 13 | Motor-Pulley Assembly | 7L6-0742-13 |
| 14 | Drive Spindle, Slip clutch | 7L6-0742-14 |
| 15 | Lever Release Assembly | 7L6-0742-15 |
| 17 | Belt, Drive | 7L6-0742-17 |
| 18 | Spindle, Spline | 7L6-0742-18 |
| 19 | Plate, Slide | 7L6-0742-19 |
| 20 | Contact, Flip flop | 7L6-0742-20 |
| 21 | Lever, Operating | 7L6-0742-21 |
| 22 | Connector Housing | 7L6-0742-22 |
| 23 | Spring, Slide | 7L6-0742-23 |

| ITEM | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| 24 | Washer (optional) | 7L6-0742-24 |
| 25 | Cable with Contact | 7L6-0742-25 |
| 26 | Head and Cable Assembly | 7L6-0742-26 |
| 27 | Cable Clamp | 7L6-0742-27 |
| 28 | Hex Nut | 7L6-0742-28 |
| 29 | Spring, Idler | 7L6-0742-29 |
| 30 | Screw, Head mtg. | 7L6-0742-30 |
| 31 | Hold Down Lever, Single | 7L6-0742-31 |
| 32 | Hold Down Lever, Double | 7L6-0742-32 |
| 33 | Spring, Pressure roller | 7L6-0742-33# |
| 34 | Extraction Cam & Spring Assy. | 7L6-0742-34 |
| 35 | Capstan/Flywheel Assy. I | 7L6-0742-35 |
| 36 | Capstan/Flywheel Assy. II | 7L6-0742-36# |
| 37 | Actuator FF/RWD | 7L6-0742-37 |
| 38 | Slide Assembly | 7L6-0742-38 |
| 39 | Head Bracket Assembly | 7L6-0742-39 |
| 40 | Pinch Roller Assembly | 7L6-0742-40 |
| 41 | Ejector Lever Assembly | 7L6-0742-41 |
| 42 | Escapement Cam Assembly | 7L6-0742-42 |
| 43 | Bushing | 7L6-0742-43 |
| 44 | Ring, Retaining · | 7L6-0742-44 |
| 45 | Head Cable Assy. (without Head) | 7L6-0742-45 |
| 46 | Bushing | 7L6-0742-46 |
| 47 | Flywheel Assy. | 7L6-0742-47 |
| 48 | Gear (Black) | 7L6-0742-48 |

# Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)



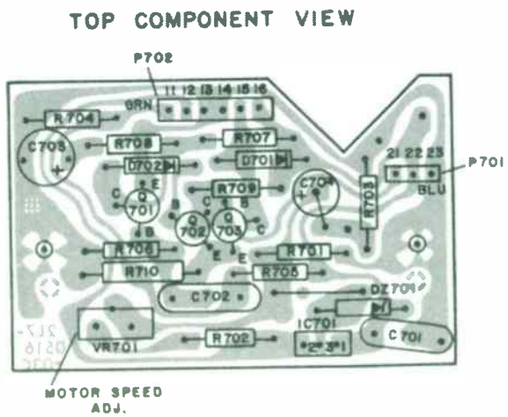

NOTES:

1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM AND +14.4 V. A+ SUPPLY WITH RADIO IN TAPE MODE & VOL. CONTROL SET TO MIN.
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K=1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE-MICROFARADS (MF) VALUES ABOVE ONE-PICOFARADS (PF)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL



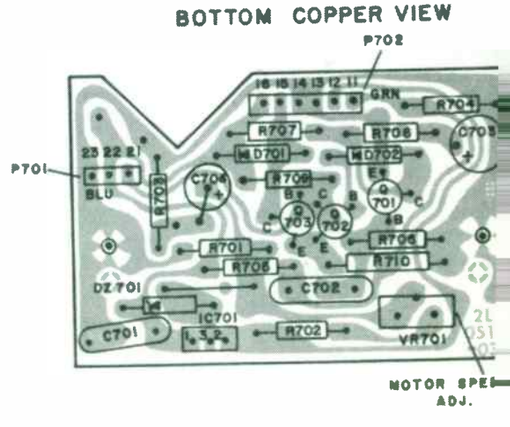
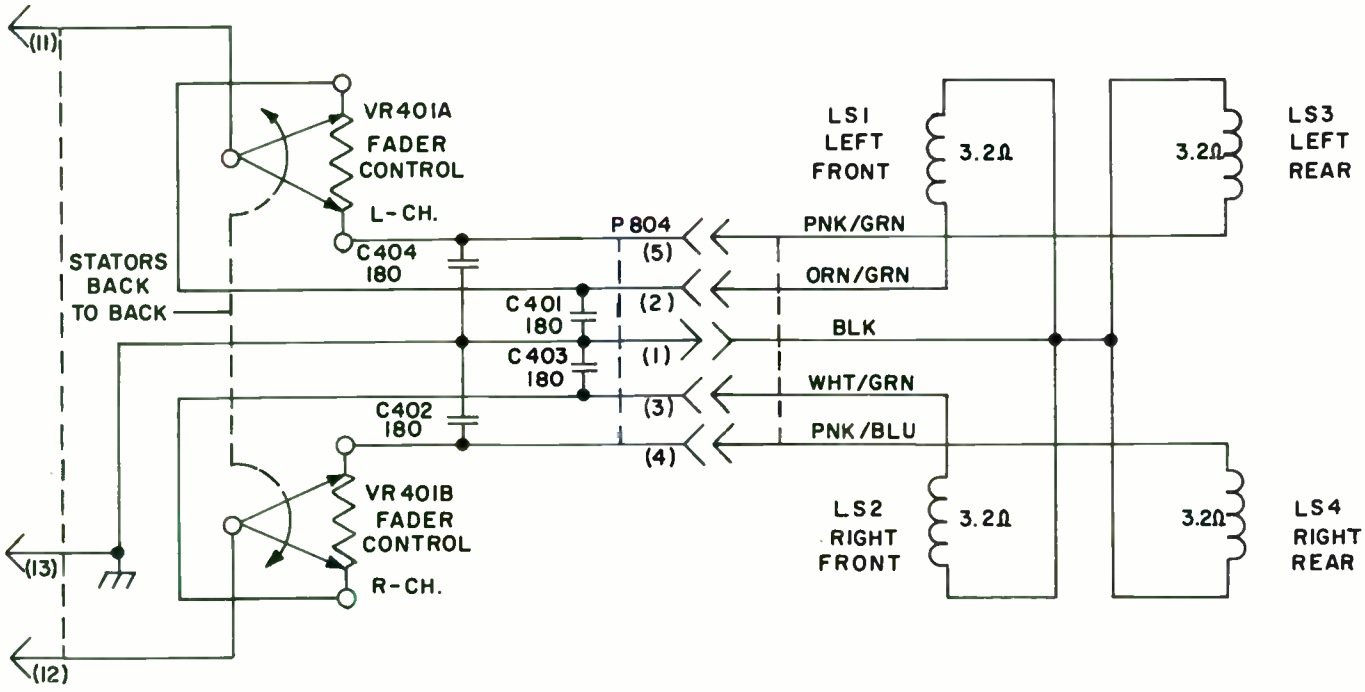
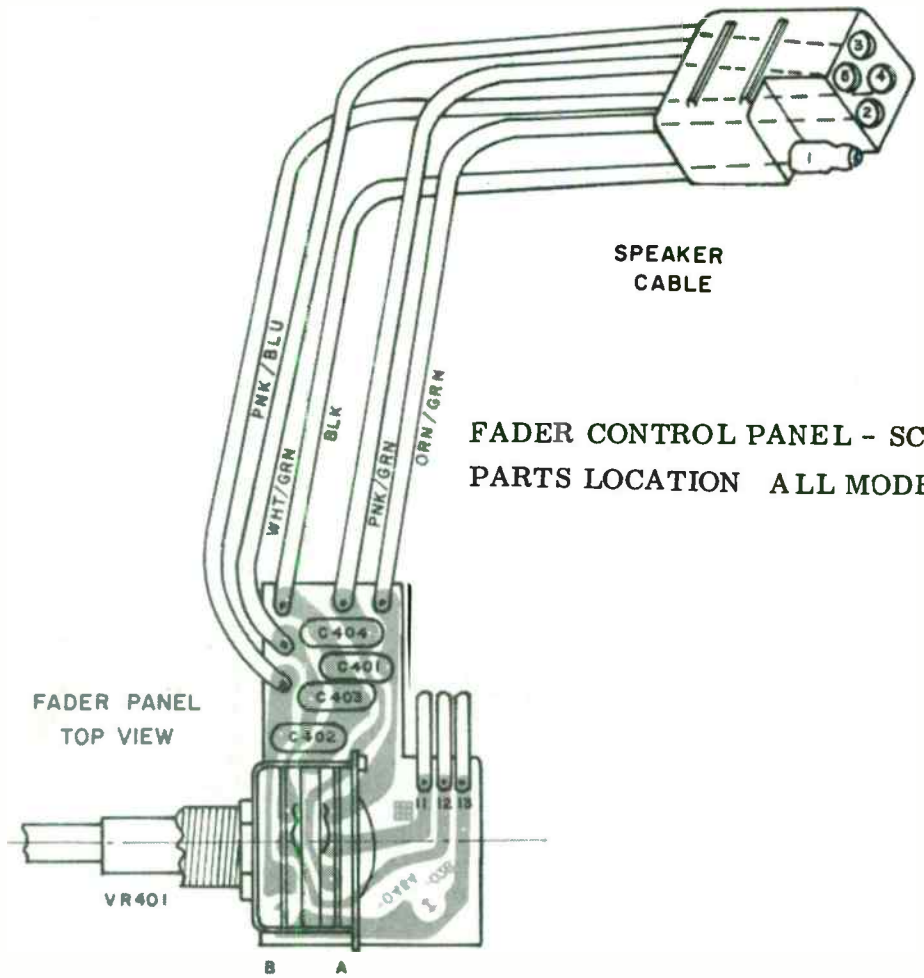




FIGURE 63. CASSETTE MOTOR CONTROL/AUTO EJECT PANEL-SCHEMATIC DIAGRAM AND PARTS LOCATION

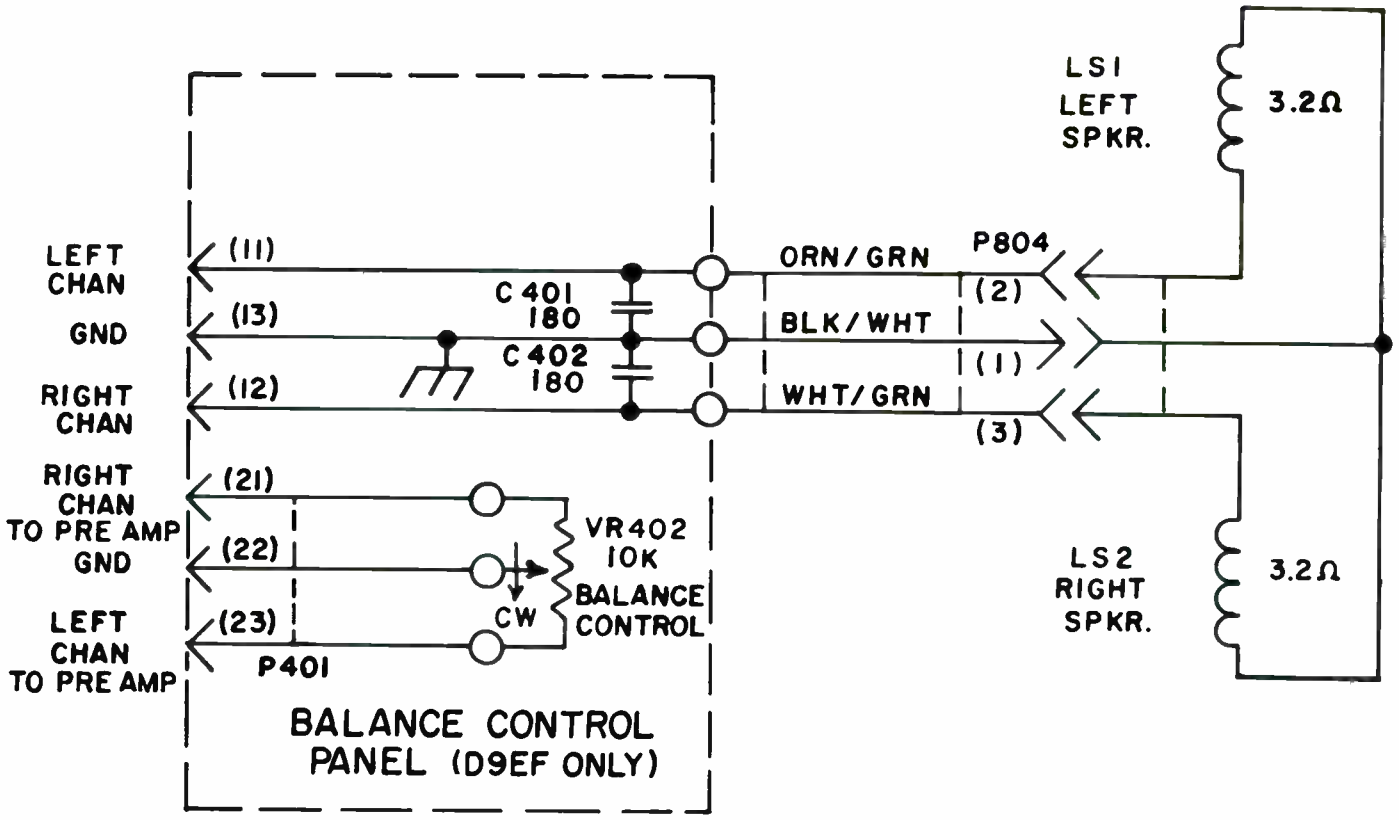
AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF(BA), D9DF, D9EF(BA), D9VF(BA) AND D94F(BA)

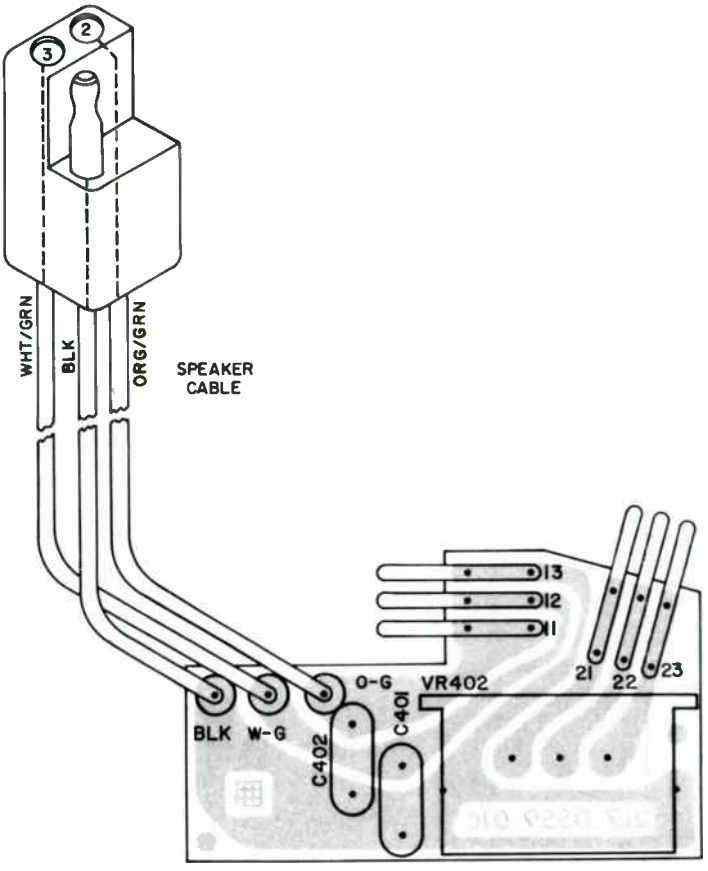
## Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)



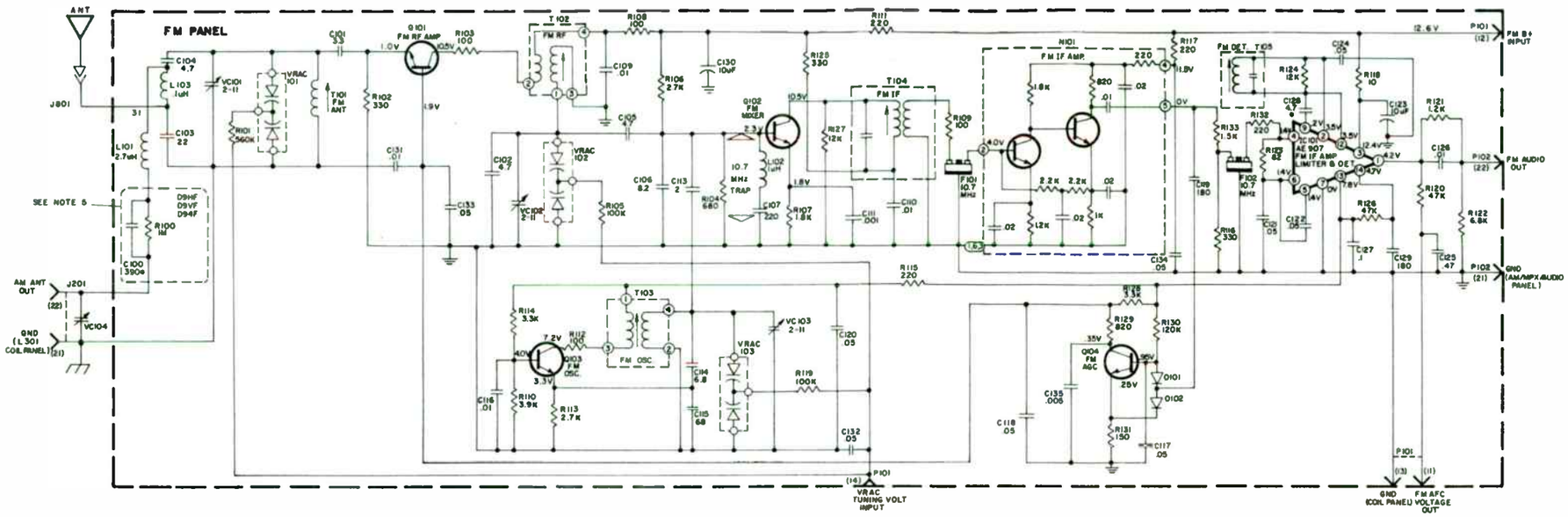

FADER CONTROL PANEL - SCHEMATIC DIAGRAM AND PARTS LOCATION ALL MODELS EXCEPT D9EF

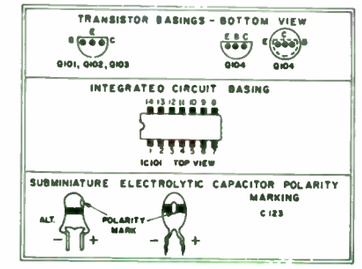



BALANCE PANEL
TOP VIEW

BALANCE CONTROL PANEL - MODEL D9EF ONLY




NOTES:

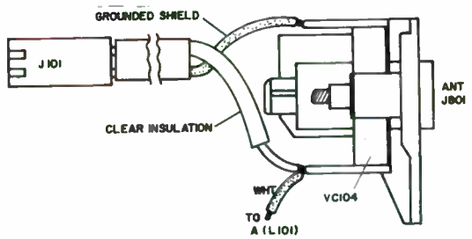
1. ALL VOLTAGES MEASURED WITH HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4V. A + SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4 W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE - MICROFARADS (MF) VALUES ABOVE ONE - PICOFARADS (PF)
4. TUNING RANGE - FM 88 MHZ to 108 MHZ (I.F. 10.7 MHZ)

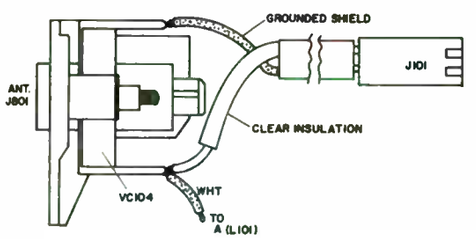
* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

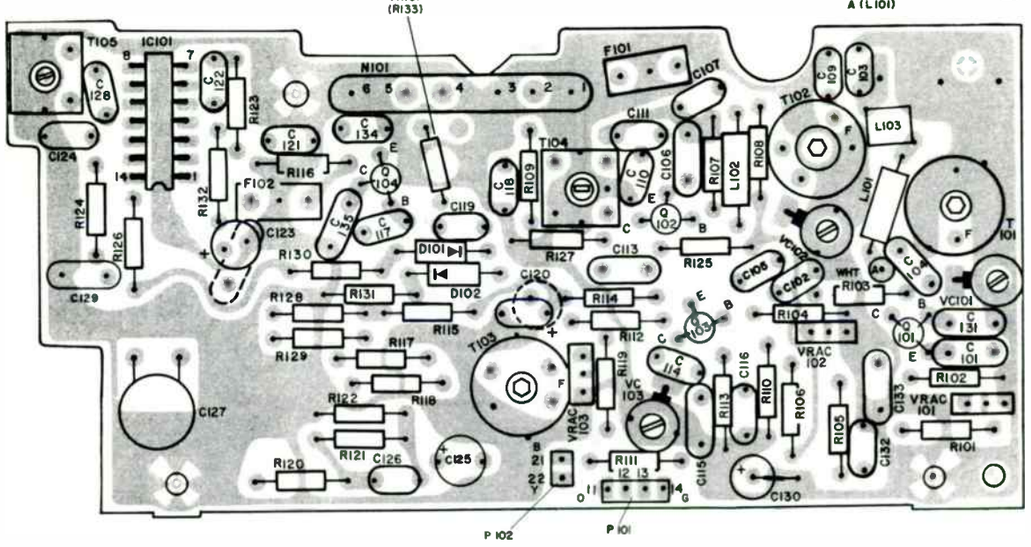
GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL

5. FOR ANTENNA CAPACITANCE LESS THAN 130 PF, ADD SHORTING WIRE TO CONNECT L101 TO VC104.



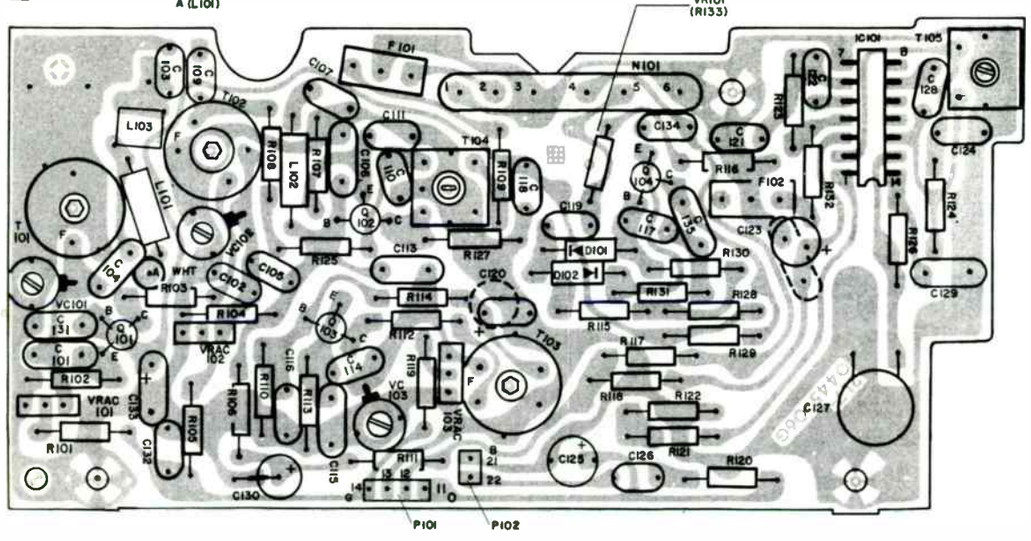
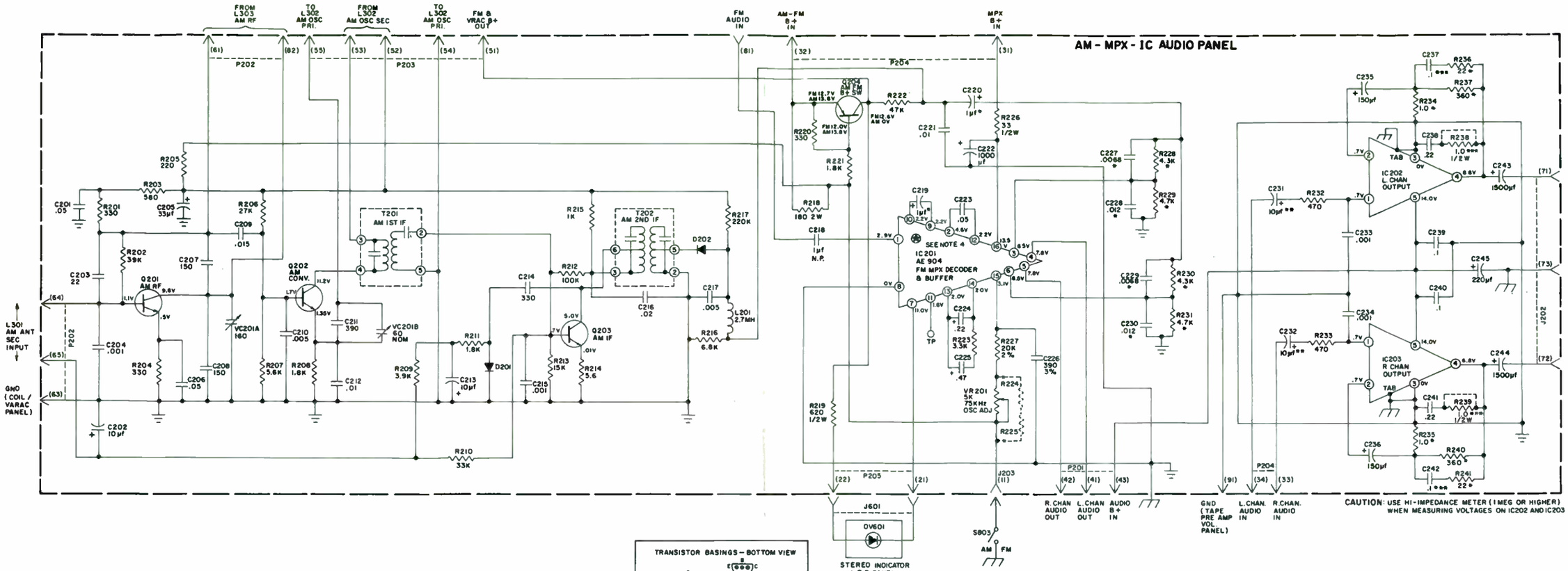
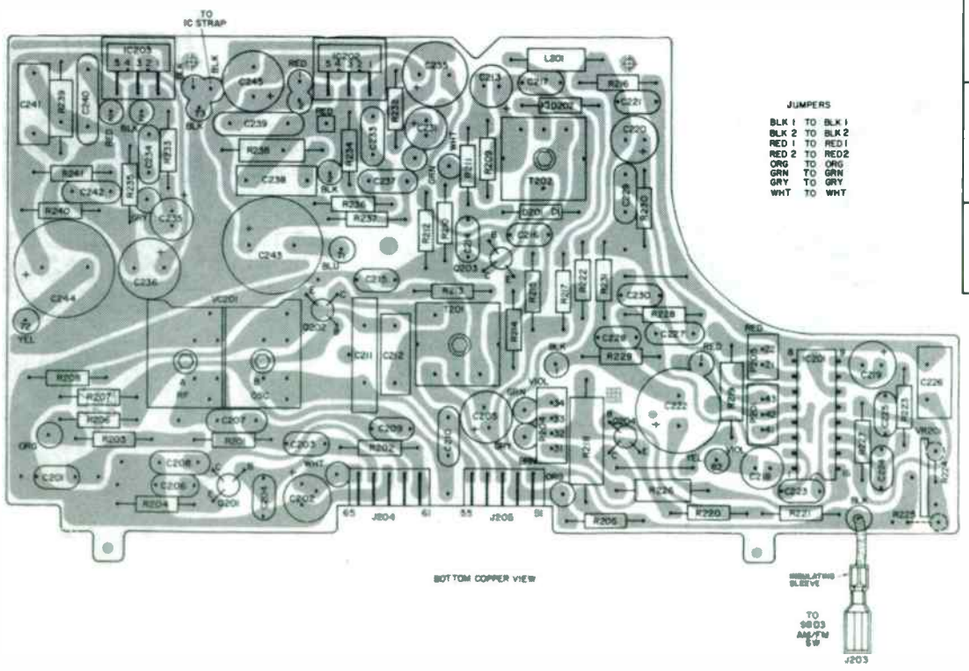




FIGURE 56. FM TUNER PANEL - SCHEMATIC DIAGRAM AND PARTS LOCATIONS

# Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)




JUMPERS

| | | |
|---|---|---|
| BLK 1 | TO | BLK 2 |
| BLK 2 | TO | BLK 1 |
| RED 1 | TO | RED 1 |
| RED 2 | TO | RED 2 |
| ORG | TO | ORG |
| GRN | TO | GRN |
| GRY | TO | GRY |
| WHT | TO | WHT |

TRANSISTOR BASINGS — BOTTOM VIEW

Q201, Q202, Q203

Q204

INTEGRATED CIRCUIT BASING

IC201 TOP VIEW

FRONT VIEW IC202 & IC203

| PIN | |
|---|---|
| 1 | INPUT + |
| 2 | INPUT − |
| 3 | GND |
| 4 | OUTPUT |
| 5 | B+ |

SUBMINI. ELECT. CAP. POLARITY MARKING

ALT

POLARITY MARK

NOTES:

1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4V. A+ SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE — MICROFARADS (MF) VALUES ABOVE ONE — PICOFARADS (PF)
4. WHEN DECODER OR ANY ASSOCIATED COMPONENTS ARE REPLACED, REPLACE R224 & R225 WITH VR 201.

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

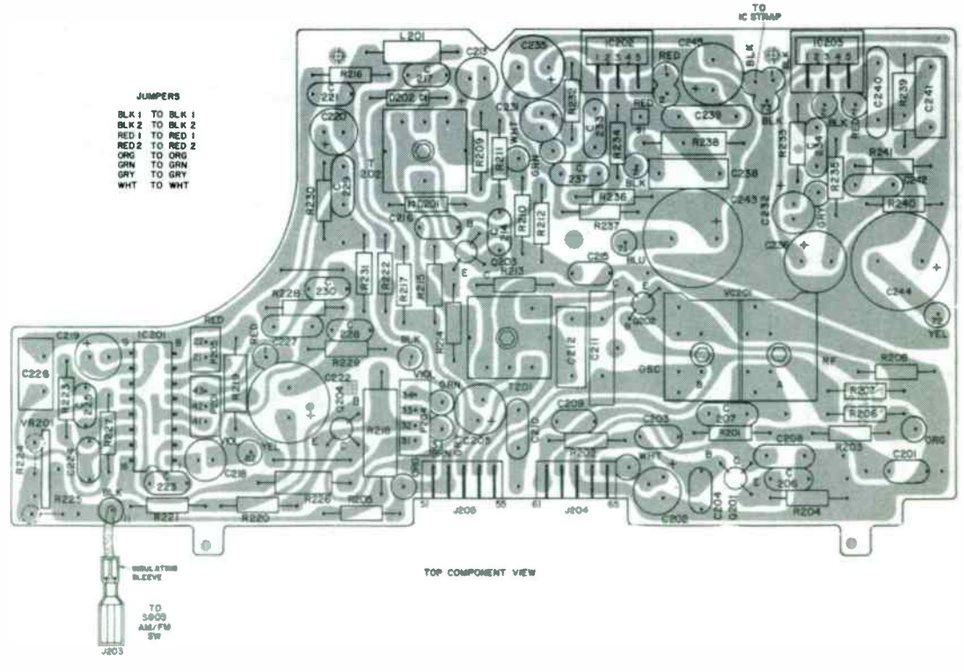
GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL

STRONG STEREO SIGNAL

** WHEN 3L4-9020-07 USED FOR IC, USE INPUT COUPLING CAPACITANCE C231 & C232 OF 2.2µf (3L3-0030-27).

*** WHEN 3L4-9020-03 USED, USE .05µf (3L0-0008-72) FOR C257 & C242 AND 2 SHORT JUMPERS FOR R238 & R239.




JUMPERS

| | | |
|---|---|---|
| BLK 1 | TO | BLK 2 |
| BLK 2 | TO | BLK 1 |
| RED 1 | TO | RED 2 |
| RED 2 | TO | RED 1 |
| ORG | TO | ORG |
| GRN | TO | GRN |
| GRY | TO | GRY |
| WHT | TO | WHT |

## TUNER REPLACEMENT PARTS

### 79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.
All parts are Warranty Component Category F.

| DESCRIPTION | SERVICE PART NO. |
|---|---|
| Arm, Dial pointer | 7L6-0423-44 |
| Ball Bearing, Paddle bar | 7L6-0150-7 |
| Bracket, Clutch | 2L8-0684-2 |
| De-clutch Cam | 7L6-0423-7 |
| De-clutch Lever | 7L6-0423-9 |
| De-clutch Plate Assembly | 7L6-0423-8 |
| Gear & Clutch Assembly | 7L6-0423-13 |
| Grommet, Carriage (4) | 7L6-0150-15 |
| Nut, Paddle bar | 7L6-0150-11 |
| Pointer, Dial | 2L8-0672-2 |
| Screw & Nut Assembly, Paddle bar | 7L6-0423-15 |
| Screw, Paddle bar | 7L6-0423-16 |
| Set Screw, De-clutch cam | 7L6-0423-11 |
| Spring, Clutch | 7L6-0423-12 |
| Spring, De-clutch | 7L6-0423-10 |
| Spring, Pointer arm | 7L6-0150-51 |
| Tuner Assembly, Mechanical | 7L6-0579-1 |

## CASSETTE TAPE PLAYER MECHANISM REPLACEMENT PARTS

### 79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.
All parts are Warranty Component Category R.

| ITEM | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| | Cassette Mechanism Assembly | 7L6-0769-1# |
| 1 | Electromagnet Assembly | 7L6-0742-01 |
| 2 | Metal Core Electromagnet | 7L6-0742-02 |
| 3 | Screw, Electromagnet | 7L6-0742-03 |
| 4 | Ring, Retaining | 7L6-0742-04 |
| 5 | Ring, Retaining Core | 7L6-0742-05 |
| 6 | Spring, Compression | 7L6-0742-06 |
| 7 | Spring, Lever | 7L6-0742-07 |
| 8 | Washer, Plastic | 7L6-0742-08 |
| 9 | Spring, Lifter | 7L6-0742-09 |
| 10 | Spring, Bracket assembly | 7L6-0742-10 |
| 11 | Spring, Ejector | 7L6-0742-11 |
| 12 | Screw CR. Recessed | 7L6-0742-12 |
| 13 | Motor-Pulley Assembly | 7L6-0742-13 |
| 14 | Drive Spindle, Slip clutch | 7L6-0742-14 |
| 15 | Lever Release Assembly | 7L6-0742-15 |
| 16 | Flywheel Assembly | 7L6-0742-16 |
| 17 | Belt, Drive | 7L6-0742-17 |
| 18 | Spindle, Spline | 7L6-0742-18 |
| 19 | Plate, Slide | 7L6-0742-19 |
| 20 | Contact, Flip flop | 7L6-0742-20 |
| 21 | Lever, Operating | 7L6-0742-21 |
| 22 | Connector Housing | 7L6-0742-22 |
| 23 | Spring, Slide | 7L6-0742-23 |

| ITEM | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| 24 | Washer (optional) | 7L6-0742-24 |
| 25 | Cable with Contact | 7L6-0742-25 |
| 26 | Head and Cable Assembly | 7L6-0742-26 |
| 27 | Cable Clamp | 7L6-0742-27 |
| 28 | Hex Nut | 7L6-0742-28 |
| 29 | Spring, Idler | 7L6-0742-29 |
| 30 | Screw, Head mtg. | 7L6-0742-30 |
| 31 | | |
| 32 | Hold Down Lever, Double | 7L6-0742-32 |
| 33 | Spring, Pressure roller | 7L6-0742-33# |
| 34 | Extraction Cam & Spring Assy. | 7L6-0742-34 |
| 35 | | |
| 36 | Capstan/Flywheel Assy. II | 7L6-0742-36# |
| 37 | Actuator FF/RWD | 7L6-0742-37 |
| 38 | Slide Assembly | 7L6-0742-38 |
| 39 | Head Bracket Assembly | 7L6-0742-39 |
| 40 | Pinch Roller Assembly | 7L6-0742-40 |
| 41 | Ejector Lever Assembly | 7L6-0742-41 |
| 42 | Escapement Cam Assembly | 7L6-0742-42 |
| 43 | Bushing | 7L6-0742-43 |
| 44 | Ring, Retaining | 7L6-0742-44 |
| 45 | Head Cable Assy. (without Head) | 7L6-0742-45 |
| 46 | Bushing | 7L6-0742-46 |
| 47 | Flywheel Assy. | 7L6-0742-47 |
| 48 | Gear (Black) | 7L6-0742-48 |

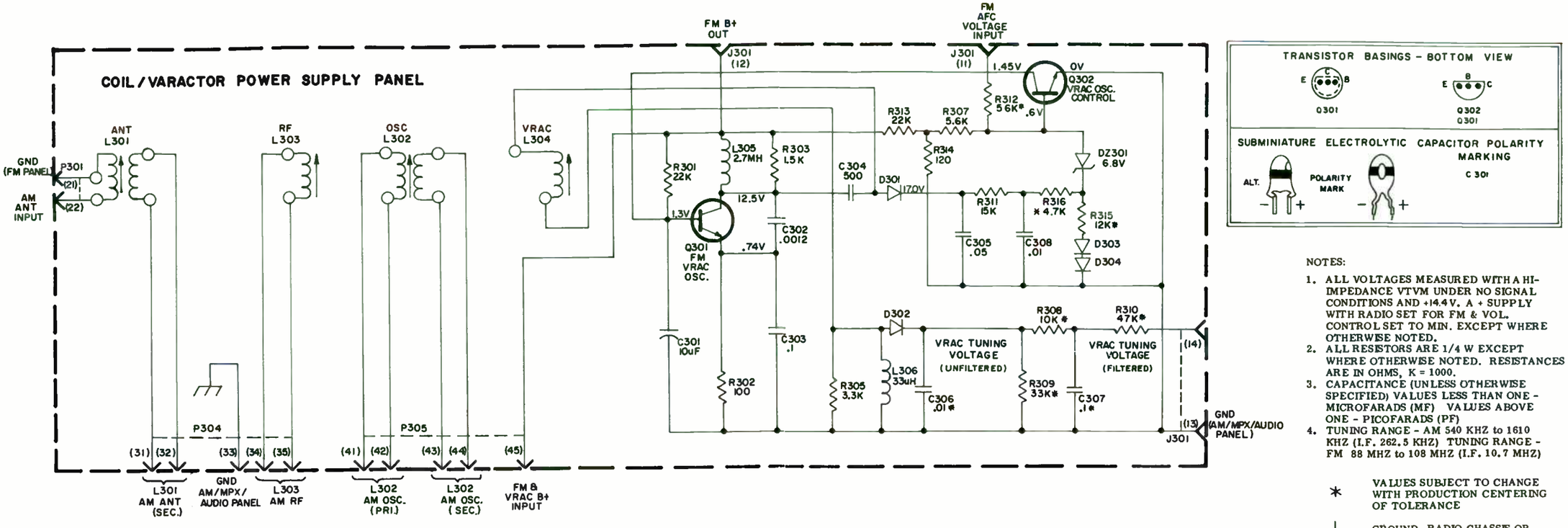
ELECTRICAL PARTS LIST

79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| | | CAPACITORS | |
| C100 | C | 390 pf/100V, AM ant. D9VF & D94F | 3L0-0010-24# |
| C101 | C | 3.3 pf ± .5/500V, FM RF input | 3L0-0006-13 |
| C102 | C | 4.7 pf ± .5/500V, FM RF | 3L0-0006-17 |
| C103 | C | 22 pf/500V, Ant. input | 3L0-0007-13 |
| C104 | C | 4.7 pf ± .5/500V, Ant. input | 3L0-0006-17 |
| C105 | C | 4.7 pf ± .5/500V, FM mixer input | 3L0-0006-17 |
| C106 | C | 8.2 pf ± .5/500V, FM mixer input divider | 3L0-0006-20 |
| C107 | C | 220 pf/500V, FM mixer 10.7 MHz trap | 3L0-0007-15 |
| C109 | C | .01 mf/16V, FM RF B+ filter | 3L0-0008-21 |
| C110 | C | .01 mf/16V, FM mixer B+ filter | 3L0-0008-21 |
| C111 | C | .001 mf/50V, FM mixer emit. bypass | 3L0-0007-37 |
| C113 | C | 2.0 pf ± .25/500V, FM osc. cplg. | 3L0-0006-52 |
| C114 | C | 6.8 pf ± .5/500V, FM osc. tank | 3L0-0006-16 |
| C115 | C | 68 pf/100V, FM osc. tank | 3L0-0010-20 |
| C116 | C | .01 mf/16V, FM osc. base | 3L0-0008-21 |
| C117 | C | .05 mf/10V, FM AGC filter | 3L0-0008-10 |
| C118 | C | .05 mf/10V, FM AGC bypass | 3L0-0008-10 |
| C119 | C | 180 pf/500V, FM AGC cplg. | 3L0-0007-36 |
| CF20 | C | .05 mf/10V, FM osc. B+ bypass | 3L0-0008-10 |
| C121 | C | .05 mf/10V, IC101 bypass | 3L0-0008-10 |
| C122 | C | .05 mf/10V, IC101 bypass | 3L0-0008-10 |
| C123 | C | 10 mf/10V, IC101 B+ filter | 3L0-0011-4 |
| C124 | C | .05 mf/10V, FM det. bypass | 3L0-0008-10 |
| C125 | C | .47 mf/10V, AFC filter | 3L0-0011-14 |
| C126 | C | .01 mf/16V, FM det. audio out. | 3L0-0008-21 |
| C127 | C | .1 mf/10V, IC101 bypass | 3L0-0008-26 |
| C128 | C | 4.7 pf ± .5/500V, FM det. cplg. | 3L0-0006-17 |
| C129 | C | 180 pf/500V, IC101 bypass | 3L0-0007-36 |
| C130 | C | 10 mf/25V, FM B+ filter | 3L0-0030-6# |
| C131 | C | .01 mf/16V, FM RF base | 3L0-0008-21 |
| C132 | C | .05 mf/25V, VRAC tuning volt. filter | 3L0-0008-39 |
| C133 | C | .05 mf/25V, FM AGC bypass | 3L0-0008-10 |
| C134 | C | .05 mf/10V, FM IF bypass | 3L0-0008-24 |
| C135 | C | .005 mf/100V, FM AGC bypass | 3L0-0007-22 |
| C201 | C | .05 mf/25V, B+ bypass | 3L0-0008-39 |
| C202 | C | 10 mf/20V, AGC filter | 3L0-0011-10 |
| C203 | C | 22 pf/500V, RF neut. | 3L0-0007-13 |
| C204 | C | .001 mf/50V, Q201 base | 3L0-0007-37 |
| C205 | C | 33 mf/16V, B+ filter | 3L0-0030-8# |
| C206 | C | .05 mf/10V, Q201 emit. | 3L0-0008-10 |
| C207 | C | 150 pf/50V N750, RF tank | 3L0-0006-28 |
| C208 | C | 150 pf/50V N750, temp. comp. | 3L0-0006-28 |
| C209 | C | .015 mf/25V, RF coupling | 3L0-0008-18 |
| C210 | C | .005 mf/100V, Q202 base | 3L0-0007-22 |
| C211 | C | 390 pf/50V N220, AM osc. | 3L0-0006-32 |
| C212 | C | .01 mf/50V, Q202 emit. | 3L0-1001-8 |
| C213 | C | 10 mf/10V, AGC filter | 3L0-0030-6# |
| C214 | C | 330 pf/500V, AGC coupling | 3L0-0007-1 |
| C215 | C | .001 mf/50V, Q203 base | 3L0-0007-37 |
| C216 | C | .02 mf/16V, B+ bypass | 3L0-0008-17 |
| C217 | C | .005 mf/100V, Audio filter | 3L0-0007-22 |
| C218 | C | 1.0 mf/50V, IC201 input | 3L0-0032-2# |
| C219 | C | 1.0 mf/35V, IC201 cplg. | 3L0-0011-3 |
| C220 | C | 1.0 mf/35V, Audio cplg. | 3L0-0011-3 |
| C221 | C | .01 mf/16V, AM det. filter | 3L0-0008-21 |
| C222 | C | 1000 mf/16V, B+ filter | 3L0-0030-25# |
| C223 | C | .05 mf/25V, IC201 cplg. | 3L0-0008-39 |
| C224 | C | .22 mf/3V, DC filter | 3L0-0011-15 |
| C225 | C | .47 mf/3V, DC filter | 3L0-0011-14 |
| C226 | C | 390 pf/100V, 75 KHz osc. | 3L0-0010-17 |
| C227 | C | .0068 mf/100V, Audio filter | 3L0-0007-55 |
| C228 | C | .012 mf/16V, De-emphasis | 3L0-0008-57 |
| C229 | C | .0068 mf/100V, Audio filter | 3L0-0007-55 |
| C230 | C | .012 mf/16V, De-emphasis | 3L0-0008-57 |
| C231 | C | 10 mf/10V, Audio cplg. | 3L0-0030-6# |
| C232 | C | 10 mf/10V, Audio cplg. | 3L0-0030-6# |
| C233 | C | .001 mf/50V, IC202 input | 3L0-0007-37 |
| C234 | C | .001 mf/50V, IC203 input | 3L0-0007-37 |
| C235 | C | 150 mf/16V, DC feedback | 3L0-0030-11# |
| C236 | C | 150 mf/16V, DC feedback | 3L0-0030-11# |
| C237 | C | .1 mf/12V, Audio stab. | 3L0-0008-67# |
| C238 | C | .22 mf/50V, Audio stab. | 3L0-1001-34# |
| C239 | C | .1 mf/50V, B+ bypass | 3L0-0008-71# |
| C240 | C | .1 mf/50V, B+ bypass | 3L0-0008-71# |
| C241 | C | .22 mf/50V, Audio stab. | 3L0-1001-34# |
| C242 | C | .1 mf/12V, Audio stab. | 3L0-0008-67# |
| C243 | C | 1500 mf/10V, L. ch. output | 3L0-0030-21# |
| C244 | C | 1500 mf/10V, R. ch. output | 3L0-0030-21# |
| C245 | C | 220 mf/16V, B+ filter | 3L0-0030-12# |
| C301 | C | 10 mf/20V, VRAC osc. base | 3L0-0011-4 |
| C302 | C | .0012 mf/500V, VRAC osc. tank | 3L0-0007-20 |
| C303 | C | .1 mf/50V, VRAC osc. tank | 3L0-1001-15 |
| C304 | C | 500 pf/150V, VRAC osc. coupling | 3L0-0006-23 |
| C305 | C | .05 mf/25V, VRAC rect. filter | 3L0-0008-39 |
| C306 | C | .01 mf/25V, VRAC tuning volt. filter | 3L0-0008-16 |
| C307 | C | .1 mf/16V, VRAC tuning volt. filter | 3L0-0008-62 |
| C308 | C | .01 mfd/25V, VRAC supply filter | 3L0-0008-16 |
| C401 | C | 180 pf/50V, Left front speaker | 3L0-0006-25 |
| C402 | C | 180 pf/50V, Right rear speaker | 3L0-0006-25 |
| C403 | C | 180 pf/50V, Right front speaker | 3L0-0006-25 |
| C404 | C | 180 pf/50V, Left rear speaker | 3L0-0006-25 |
| C501 | C | .068 mf/12V, Hi-cut | 3L0-0008-68# |
| C502 | C | .05 mf/12V, R. chan. cplg. | 3L0-0008-72# |
| C503 | C | .1 mf/12V, Bass boost, R. chan. | 3L0-0067-67# |
| C504 | C | .1 mf/12V, Bass boost, L. chan. | 3L0-0067-67# |
| C505 | C | .05 mf/12V, L. chan. cplg. | 3L0-0008-72# |
| C506 | C | .068 mf/12V, Hi-cut | 3L0-0008-68# |
| C507 | C | 2200 mf/16V, A+ filter | 3L0-0029-14# |
| C701 | C | .1 mf/50V, IC701 B+ | 3L0-0008-64 |
| C702 | C | .22 mf/12V, Q701 base | 3L0-0008-65 |
| C703 | C | 10 mf/25V, Q702 bias | 3L0-0011-24 |
| C704 | C | 150 mf/16V, IC701 Volt. stab. | 3L0-0030-11# |

*Warranty Component Category




TRANSISTOR BASINGS - BOTTOM VIEW




SUBMINIATURE ELECTROLYTIC CAPACITOR POLARITY MARKING



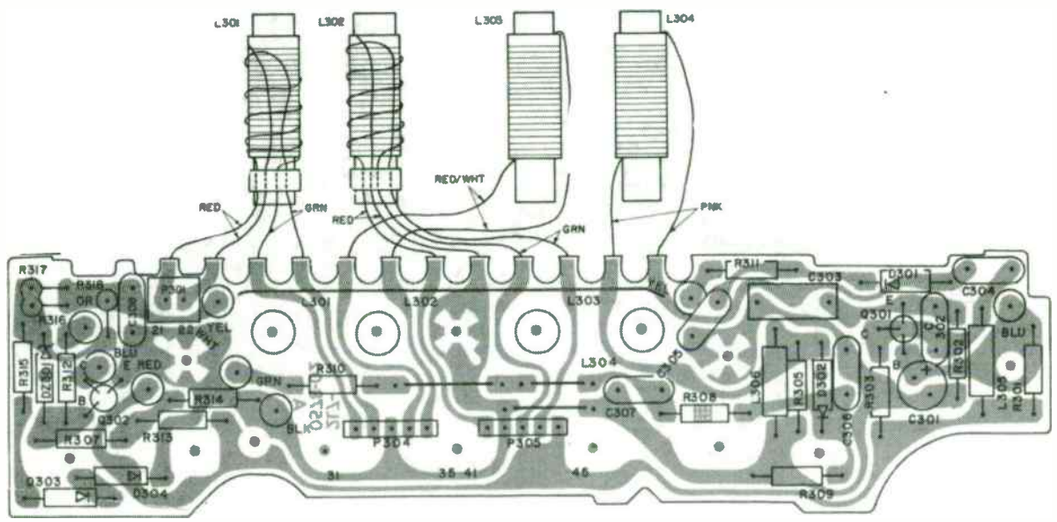

NOTES:

1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4 V. A + SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4 W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE - MICROFARADS (MF) VALUES ABOVE ONE - PICOFARADS (PF)
4. TUNING RANGE - AM 540 KHZ to 1610 KHZ (I.F. 262.5 KHZ) TUNING RANGE - FM 88 MHZ to 108 MHZ (I.F. 10.7 MHZ)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

GROUND, RADIO CHASSIS OR HOUSING

GROUND, P.W. PANEL



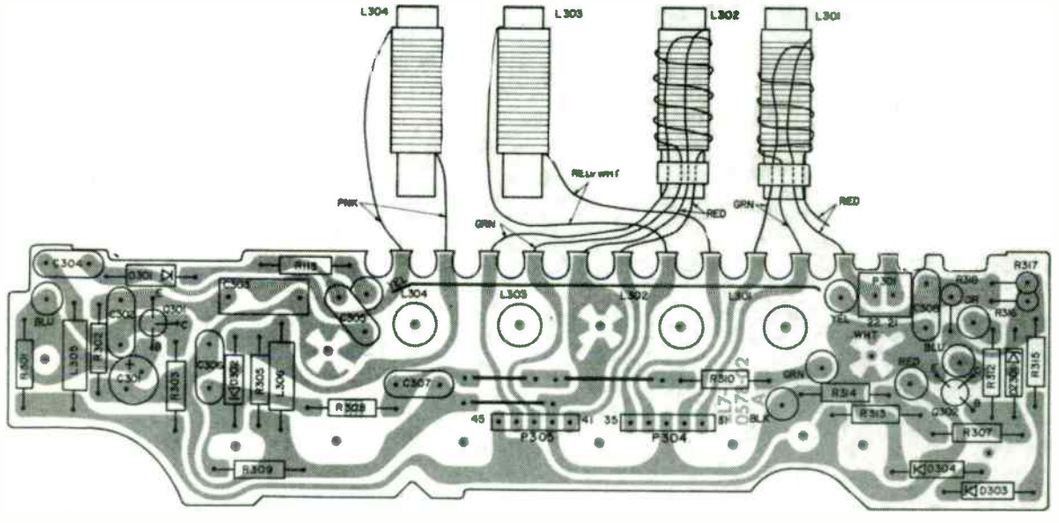
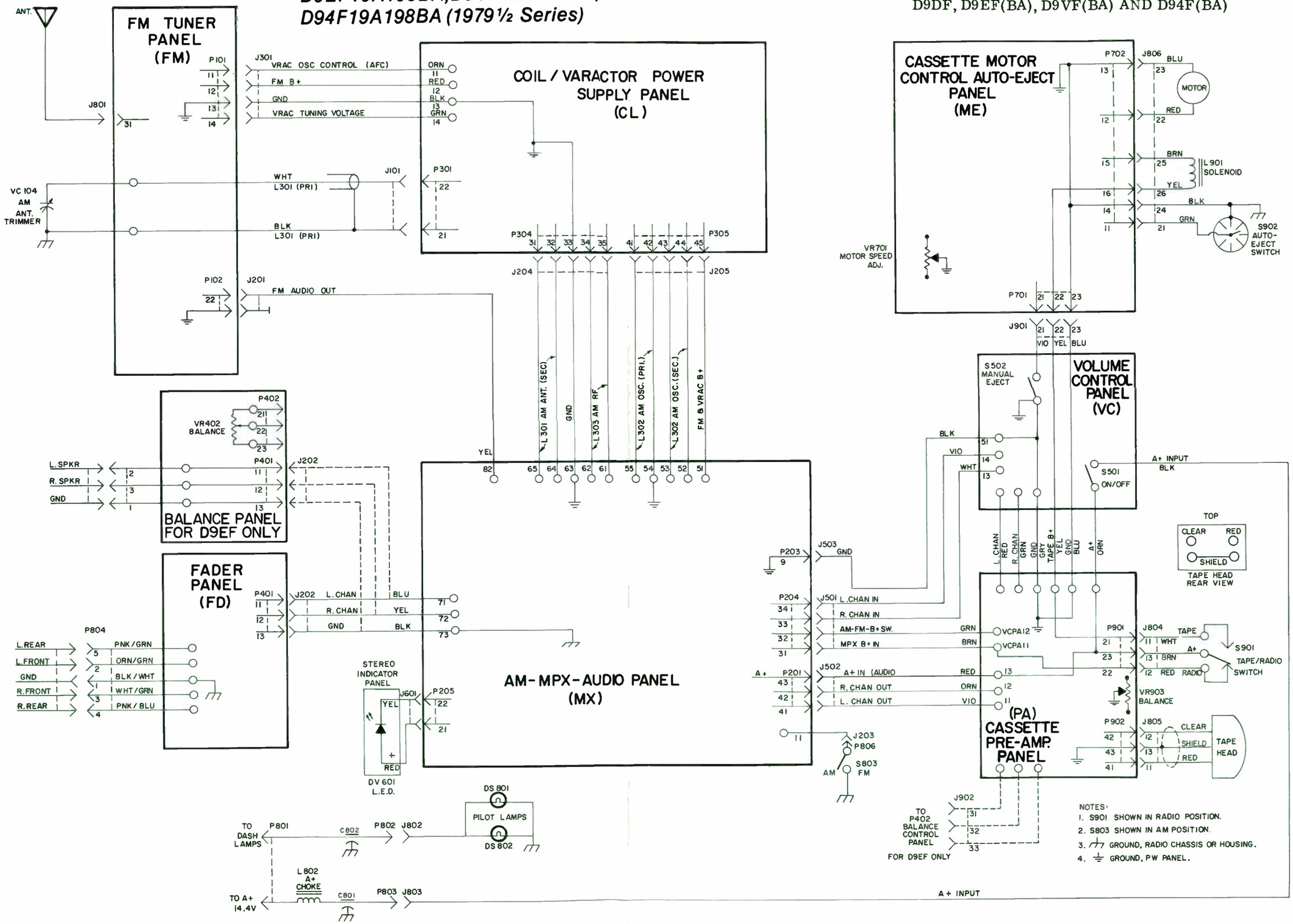




FIGURE 57. COIL/VARACTOR POWER SUPPLY PANEL - SCHEMATIC DIAGRAM AND PARTS LOCATION

# *Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)*

## ELECTRICAL INTERCONNECTION DIAGRAM
## AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF(BA) D9DF, D9EF(BA), D9VF(BA) AND D94F(BA)



# Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)

79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| C801 | C | 1000 pf/500V, A+ feedthru, R/T | 7L6-0536-1 |
| C802 | C | 1000 pf/500V, A+ feedthru, P.L. | 7L6-0536-1 |
| C901 | C | .1 mf/10V, Pre-amp. input | 3L0-0008-11 |
| C902 | C | .1 mf/10V, Pre-amp. input | 3L0-0008-11 |
| C903 | C | 47 mf/6V, Pre-amp. gain, L. chan. | 3L0-0011-11 |
| C904 | C | 47 mf/6V, Pre-amp. gain, R. chan. | 3L0-0011-11 |
| C905 | C | .0082 mf/50V, Pre-amp., L. chan. | 3L0-0007-75 |
| C906 | C | .0082 mf/50V, Pre-amp., R. chan. | 3L0-0007-75 |
| C907 | C | .22 mf/10V, Tape, L. chan. | 3L0-0011-15 |
| C908 | C | .22 mf/10V, Tape, R. chan. | 3L0-0011-15 |
| C909 | C | .1 mf/12V, Audio in., L. chan. | 3L0-0008-67# |
| C910 | C | .1 mf/12V, Audio in., R. chan. | 3L0-0008-67# |
| C911 | C | 500 mf/16V, A+ filter | 3L0-0009-65 |
| C912 | C | 1000 mf/16V, Pre-amp. B+ filter | 3L0-0009-44 |
| C913 | C | 33 mf/16V, Audio filter | 3L0-0030-8 |
| VC101 | C | 1.7 to 10 pf, FM ant. trim. | 3L1-0004-1 |
| VC102 | C | 1.7 to 10 pf, FM ant. trim. | 3L1-0004-1 |
| VC103 | C | 1.7 to 10 pf, FM osc. trim. | 3L1-0004-1 |
| VC104 | C | 85 pf nom. AM ant., D9AF, D9DF & D9EF | 3L1-0003-11 |
| VC104 | C | 25 pf nom. AM ant., D9VF & D94F | 3L1-0003-12 |
| VC201A, B | C | 160 pf nom. AM osc. trim. 60 pf nom. AM RF trim. | 3L1-0002-6 |
| | | DIODES | |
| D101 | P | FM AGC | 3L4-3002-31 |
| D102 | P | FM AGC | 3L4-3002-31 |
| D201 | P | AM AGC detector | 3L4-2003-1 |
| D202 | P | AM detector | 3L4-2003-1 |
| D301 | P | VRAC osc. rectifier | 3L4-3002-32 |
| D302 | P | VRAC osc. rectifier | 3L4-3002-32 |
| D303 | P | VRAC osc. control supply | 3L4-3002-7 |
| D304 | P | VRAC osc. control supply | 3L4-3002-7 |
| D701 | P | Solenoid shunt | 3L4-3002-30 |
| D702 | P | Q702 base | 3L4-3002-30 |
| D901 | P | L. channel switch | 3L4-3002-30 |
| D902 | P | R. channel switch | 3L4-3002-30 |
| D903 | P | Bias, Switching diodes | 3L4-3002-30 |
| D904 | P | Noise rejection | 3L4-2003-7 |
| D905 | P | AM-FM B+ switching | 3L4-3002-20 |
| DV601 | P | L.E.D. stereo indicator | 3L4-3004-2 |
| DZ301 | P | 6.8V Zener, VRAC supply regulation | 3L4-3506-43 |
| DZ301 | P | 6.8V Zener (option) | 3L4-3506-50# |
| DZ701 | P | 18V Zener, IC701 protection | 3L4-3506-45# |
| | | VARACTORS | |
| VRAC101 | P | FM ant. tuning (blue) | 3L4-3508-2 |
| VRAC102 | P | FM RF tuning (blue) | 3L4-3508-2 |
| VRAC103 | P | FM osc. tuning (white) | 3L4-3508-1 |
| | | PILOT LAMPS | |
| DS801 | K | #37 Pilot lamp | 3L4-0001-9 |
| DS802 | K | #37 Pilot lamp | 3L4-0001-9 |

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| | | COILS | |
| L101 | D | 2.7 μh, RF choke, AM ant. | 3L2-0023-7 |
| L102 | D | 1 μh, 10.7 MHz trap | 3L2-0023-1 |
| L103 | D | RF choke | 3L2-0037-6 |
| L201 | D | 2.7 mh, 5%, RF choke | 3L2-0023-14# |
| L301 | D | AM ant. tuning | 3L2-0007-11 |
| L302 | D | AM osc. tuning | 3L2-0002-8 |
| L303 | D | AM RF tuning | 3L2-0007-10 |
| L304 | D | FM varac. osc. tuning | 3L2-0027-1 |
| L305 | D | 2.7 mh, 5%, RF choke | 3L2-0023-5 |
| L306 | D | 33 mh, 5%, VRAC osc. tank | 3L2-0023-4 |
| L802 | D | A+ choke (part of A+ cable assy.) | 7L6-0479-9 |
| L901 | R | Solenoid, Eject. (see cassette mechanism parts list) | |
| | | NETWORKS | |
| F101 | B | I.F. filter, 10.7 MHz | 3L5-5003-1 |
| F102 | B | I.F. filter, 10.7 MHz | 3L5-5003-1 |
| N101 | B | FM I.F. amp. | 3L5-0020-1 |
| | | TRANSISTORS | |
| Q101 | A | FM RF amp. (white, yellow) | 3L4-6007-35 |
| Q102 | A | FM mixer (green, yellow) | 3L4-6007-21 |
| Q103 | A | FM osc. (blue, yellow) | 3L4-6007-23 |
| Q104 | A | FM AGC (red) | 3L4-6007-4 |
| Q201 | A | AM RF amp. (white) | 3L4-6007-1 |
| Q202 | A | AM conv. (yellow) | 3L4-6007-2 |
| Q203 | A | AM I.F. amp. (green) | 3L4-6007-3 |
| Q204 | A | AM FM B+ switch | 3L4-6010-4 |
| Q301 | A | FM VRAC osc. | 3L4-6007-14 |
| Q302 | A | VRAC osc. control | 3L4-6007-41 |
| Q701 | A | Auto eject. | 3L4-6007-9# |
| Q702 | A | Auto eject. | 3L4-6007-15# |
| Q703 | A | Eject solenoid control | 3L4-6010-3# |
| | | INTEGRATED CIRCUITS | |
| IC101 | S | AE907, FM I.F. amp. | 3L4-9007-1 |
| IC201 | S | AE904-5, FM MPX decoder | 3L4-9004-5# |
| IC202 | S | AE920-2, Audio output | 3L4-9020-2# |
| IC203 | S | AE920-2, Audio output | 3L4-9020-2# |
| IC701 | S | AE922, Regulator, tape motor | 3L4-9022-1 |
| IC901 | S | AE915, Dual audio pre-amp. | 3L4-9015-1 |
| | | RESISTORS | |
| | | All resistor values are in ohms and all resistors are 5% 1/4W except where otherwise indicated. | |
| R100 | G | 1 meg., AM ant., D9VF & D94F | |
| R101 | G | 560K, VRAC101 bias | |
| R102 | G | 330, Q101 emitter | |
| R103 | G | 100, Q101 collector | |
| R104 | G | 680, Q102 base bias | |
| R105 | G | 100K, VRAC102 bias | |
| R106 | G | 2.7K, Q102 base bias | |

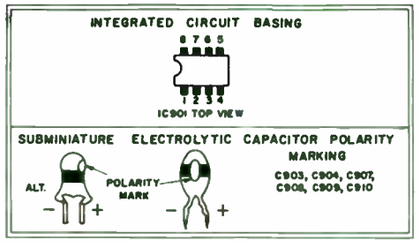
*Warranty Component Category

ELECTRICAL PARTS LIST
79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.

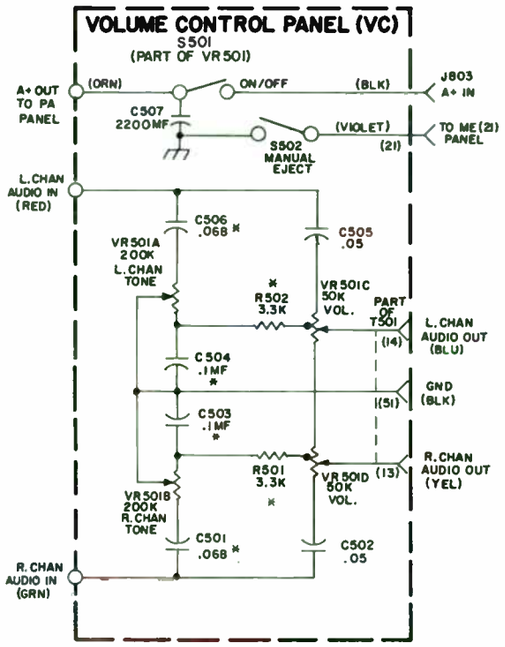
| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| R107 | G | 1.8K, Q102 emitter | |
| R108 | G | 100, RF B+ | |
| R109 | G | 100, F101 input | |
| R110 | G | 3.9K, Q103 base bias | |
| R111 | G | 220, Mixer B+ | |
| R112 | G | 100, Q103 collector | |
| R113 | G | 2.7K, Q103 emitter | |
| R114 | G | 3.3K, Q103 base bias | |
| R115 | G | 220, Osc. B+ | |
| R116 | G | 330, F102 input | |
| R117 | G | 220, FM I.F. B+ | |
| R118 | G | 10, IC101 B+ | |
| R119 | G | 100K, VRAC103 bias | |
| R120 | G | 47K, AFC divider | |
| R121 | G | 1.2K, Audio comp. | |
| R122 | G | 6.8K, Audio comp. | |
| R123 | G | 82, IC101 input | |
| R124 | G | 12K, T105 shunt | |
| R125 | G | 330, Mixer B+ | |
| R126 | G | 47K, IC101 coupling | |
| R127 | G | 12K, Q102 collector | |
| R128 | G | 3.3K, Q104 B+ | |
| R129 | G | 820, Q104 collector | |
| R130 | G | 120K, Q104 base | |
| R131 | G | 150, Q104 emitter | |
| R132 | G | 220, IC101 input | |
| R133 | G | 1.5K, RF gain | |
| R201 | G | 330, AM RF B+ | |
| R202 | G | 39K, Q201 bias | |
| R203 | G | 560, AM RF B+ | |
| R204 | G | 330, Q201 emit. | |
| R205 | G | 220, AM B+ | |
| R206 | G | 27K, Q202 bias | |
| R207 | G | 5.6K, Q202 base | |
| R208 | G | 1.8K, Q202 emitter | |
| R209 | G | 3.9K, AGC filter | |
| R210 | G | 33K, I.F. AGC | |
| R211 | G | 1.8K, AGC filter | |
| R212 | G | 100K, Q203 bias | |
| R213 | G | 15K, Q203 base | |
| R214 | G | 5.6, Q203 emitter | |
| R215 | G | 1K, I.F. B+ | |
| R216 | G | 6.8K, Audio filter | |
| R217 | G | 220K, AM det. bias | |
| R218 | G | 180, 10% 2W, AM B+ | 66-11863608# |
| R219 | G | 620, 10% 1/2W, Stereo ind. | |
| R220 | G | 330, Q204 B to E | |
| R221 | G | 1.8K, Q204 base | |
| R222 | G | 47K, Q204 collector | |
| R223 | G | 3.3K, DC filter | |
| R226 | G | 33, 10% 1/2W, B+ drop. | |
| R227 | G | 20K, 2% 1/4W, 75 KHz osc. | 3L3-0028-4 |
| R228 | G | 4.3K, Audio coupling | |
| R229 | G | 4.7K, L. chan. load. | |
| R230 | G | 4.3K, Audio coupling | |
| R231 | G | 4.7K, R. chan. load. | |
| R232 | G | 470, IC202 input | |
| R233 | G | 470, IC203 input | |
| R234 | G | 1.0, Audio stabilizer | 3L3R9101208# |
| R235 | G | 1.0, Audio stabilizer | 3L3R9101208# |
| R236 | G | 22, Audio stabilizer | |
| R237 | G | 360, Feedback divider | |
| R238 | G | 1.0, 10% 1/2W, Audio stabilizer | 3L3R9108208 |
| R239 | G | 1.0, 10% 1/2W, Audio stabilizer | 3L3R9108208 |
| R240 | G | 360, Feedback divider | |
| R241 | G | 22, Audio stabilizer | |
| R301 | G | 22K, Q301 base bias | |
| R302 | G | 100, Q301 emit. | |
| R303 | G | 1.5K, L305 shunt | |
| R305 | G | 3.3K, L306 loading | |
| R307 | G | 5.6K, Q302 base | |
| R308 | G | 10K, VRAC supply filter | |
| R309 | G | 33K, VRAC supply load. | |
| R310 | G | 47K, VRAC supply filter | |
| R311 | G | 16K, Q302 control supply | 3L3R3161208# |
| R312 | G | 56K, Q302 base | |
| R313 | G | 22K, B+ divider | |
| R314 | G | 120, B+ divider | |
| R315 | G | 12K, D303 & D304 protect. | |
| R316 | G | 10, Q302 control supply | |
| R317 | G | 6.2K, Q302 control supply | |
| R318 | G | 6.2K, Q302 control supply | |
| R501 | G | 3.3K, Vol. tap, R. chan. | |
| R502 | G | 3.3K, Vol. tap, L. chan. | |
| R701 | G | 274 ohms, 1% 1/4W, IC701 regulation | 3L3-0043 |
| R702 | G | 300 ohms, Motor speed control | |
| R703 | G | 510 ohms, Motor speed regulation | |
| R704 | G | 10K, Q701 bias | |
| R705 | G | 24K, Q701 bias | |
| R706 | G | 68K, Q701 bias | |
| R707 | G | 180K, Q702 bias | |
| R708 | G | 68, Q702 bias | |
| R709 | G | 220, Q703 emit. | |
| R710 | G | 220, 5% 1/2W, Q703 emit. | |
| R901 | G | 120K, Pre-amp., L. chan. | |
| R902 | G | 120K, Pre-amp., R. chan. | |
| R903 | G | 330K, Pre-amp., L. chan. | |
| R904 | G | 330K, Pre-amp., R. chan. | |
| R905 | G | 10K, D901 bias | |
| R906 | G | 10K, D902 bias | |
| R907 | G | 20K, Pre-amp., L. chan. | |
| R908 | G | 20K, Pre-amp., R. chan. | |
| R909 | G | 3K, Pre-amp. output, L. channel | |
| R910 | G | 3K, Pre-amp. output, R. channel | |
| R911 | G | 3K, Audio input, L. chan. | |
| R912 | G | 3K, Audio input, R. chan. | |
| R913 | G | 75 ohms, A+ input | |
| R914 | G | 10 ohms, 5% 1/2W, Radio B+ switching | |
| R915 | G | 1.8K, D903 shunt | |
| R916 | G | 390, 10% 2W, Pre-amp. B+ | 66-13963626# |
| R917 | G | 15K, Tape input, L. chan. | |
| R918 | G | 15K, Tape input, R. chan. | |
| | | SWITCHES | |
| S501 | I | On/Off switch | Part of VR501 |
| S502 | I | Manual eject. switch | Part of VR501 |
| S803 | I | AM/FM switch | 4L2-0022-1 |
| S901 | I | Tape/Radio switch assy. (cassette activated) | 3L8-0952 |
| S902 | I | Auto-eject, see cassette mechanism parts list | |
| | | CONTROLS | |
| VR201 | H | 5K, 76KHz osc. adjust | 3L3-0027-5 |
| VR401 | H | Dual 35 ohms, Fader, R. & L. channel | 3L3-0023-4 |
| VR402 | H | 200K, Balance, D9EF only | 3L3-0052-2# |

*Warranty Component Category









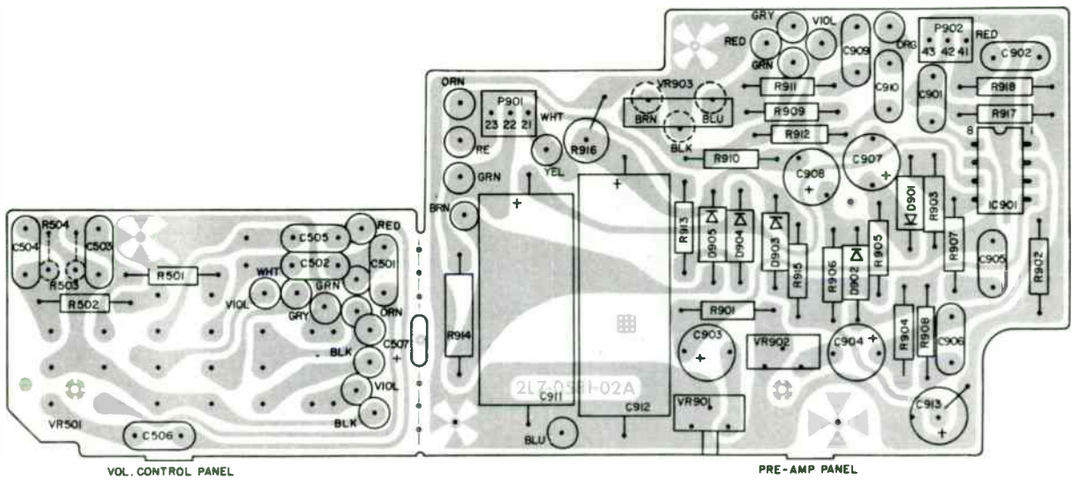

NOTES:

1. ALL VOLTAGES MEASURED WITH A HI-IMPEDANCE VTVM UNDER NO SIGNAL CONDITIONS AND +14.4V A+ SUPPLY WITH RADIO SET FOR FM & VOL. CONTROL SET TO MIN. EXCEPT WHERE OTHERWISE NOTED.
2. ALL RESISTORS ARE 1/4W EXCEPT WHERE OTHERWISE NOTED. RESISTANCES ARE IN OHMS, K = 1000.
3. CAPACITANCE (UNLESS OTHERWISE SPECIFIED) VALUES LESS THAN ONE-MICROFARADS (MF) VALUES ABOVE ONE-PICOFARADS (PF)

* VALUES SUBJECT TO CHANGE WITH PRODUCTION CENTERING OF TOLERANCE

⏚ GROUND, RADIO CHASSIS OR HOUSING

⏚ GROUND, P. W. PANEL



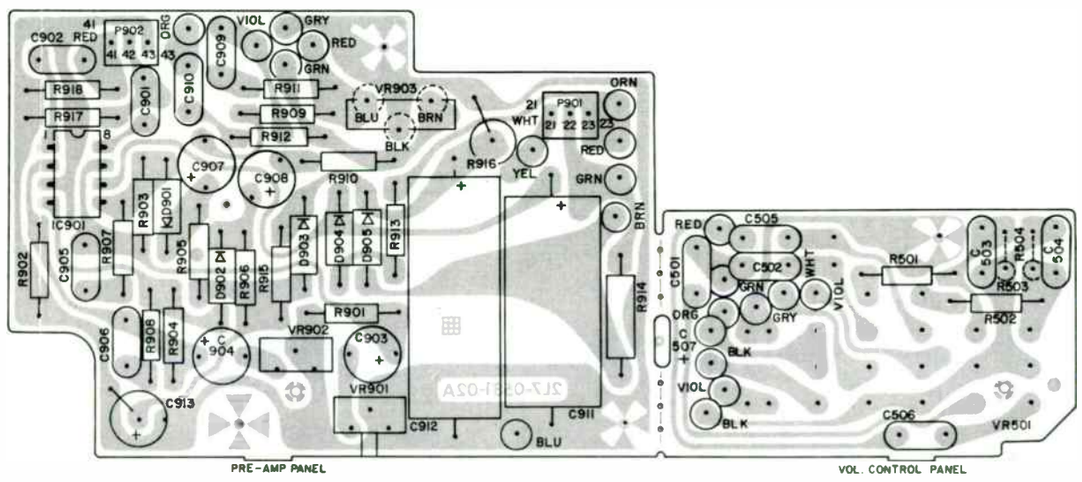




FIGURE 62. CASSETTE TAPE PRE-AMP PANEL AND VOLUME CONTROL PANEL - SCHEMATIC DIAGRAMS AND PARTS LOCATIONS

# Ford D9AF19A198BA, D9DF19A198AA, D9EF19A198BA, D9VF19A198BA, D94F19A198BA (1979½ Series)

| | | |
|---|---|---|
| | | |
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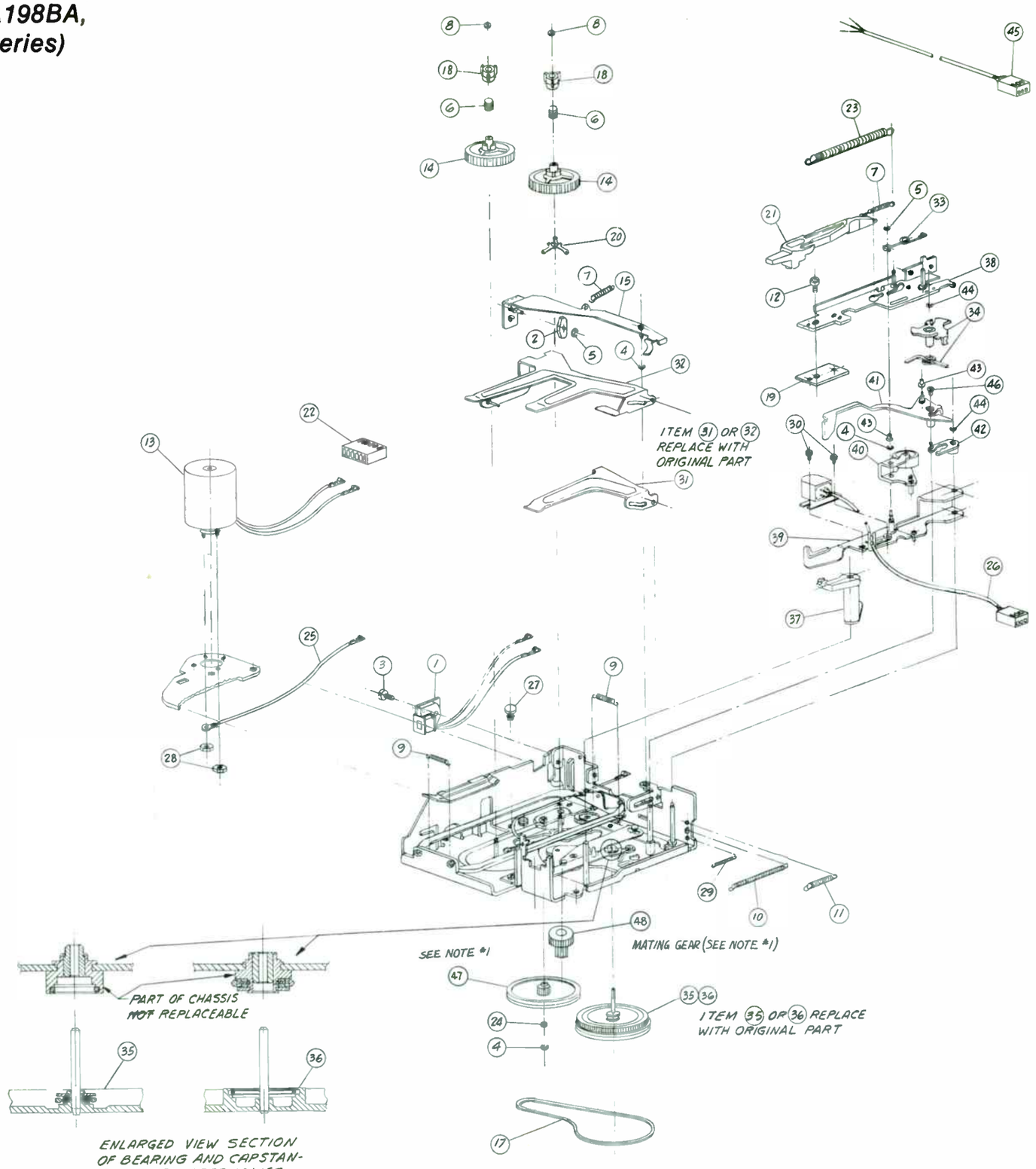
| | | |
| | | |
| | | |
| | | |
| 7L6 – 0742 – 48 | 48 | GEAR (BLACK) |
| 7L6 – 0742 – 47 | 47 | FLYWHEEL ASSY. |
| 7L6 – 0742 – 46 | 46 | BUSHING |
| 7L6 – 0742 – 45 | 45 | HEAD CABLE ASS'Y (WITHOUT HEAD) |
| 7L6 – 0742 – 44 | 44 | RING, RETAINING |
| 7L6 – 0742 – 43 | 43 | BUSHING |
| 7L6 – 0742 – 42 | 42 | ESCAPEMENT CAM ASS'Y |
| 7L6 – 0742 – 41 | 41 | EJECTOR LEVER ASS'Y |
| 7L6 – 0742 – 40 | 40 | PINCH ROLLER ASS'Y |
| 7L6 – 0742 – 39 | 39 | HEAD BRACKET ASS'Y |
| 7L6 – 0742 – 38 | 38 | SLIDE ASS'Y |
| 7L6 – 0742 – 37 | 37 | ACTUATOR FF/RWD |
| 7L6 – 0742 – 36 | 36 | CAPSTAN/FLYWHEEL ASS'Y II |
| 7L6 – 0742 – 35 | 35 | CAPSTAN/FLYWHEEL ASS'Y I |
| 7L6 – 0742 – 34 | 34 | EXTRACTION CAM & SPRING ASS'Y |
| 7L6 – 0742 – 33 | 33 | SPRING, PRESSURE ROLLER |
| 7L6 – 0742 – 32 | 32 | HOLD DOWN LEVER DOUBLE |
| 7L6 – 0742 – 31 | 31 | HOLD DOWN LEVER SINGLE |
| 7L6 – 0742 – 30 | 30 | SCREW, HEAD MTG. |
| 7L6 – 0742 – 29 | 29 | SPRING, IDLER |
| 7L6 – 0742 – 28 | 28 | HEX NUT |
| 7L6 – 0742 – 27 | 27 | CABLE CLAMP |
| 7L6 – 0742 – 26 | 26 | HEAD AND CABLE ASS'Y |
| 7L6 – 0742 – 25 | 25 | CABLE WITH CONTACT |
| 7L6 – 0742 – 24 | 24 | WASHER |
| 7L6 – 0742 – 23 | 23 | SPRING, SLIDE |
| 7L6 – 0742 – 22 | 22 | CONNECTOR HOUSING |
| 7L6 – 0742 – 21 | 21 | LEVER, OPERATING |
| 7L6 – 0742 – 20 | 20 | CONTACT, FLIP FLOP |
| 7L6 – 0742 – 19 | 19 | PLATE, SLIDE |
| 7L6 – 0742 – 18 | 18 | SPINDLE, SPLINE |
| 7L6 – 0742 – 17 | 17 | BELT, DRIVE |
| | | |
| 7L6 – 0742 – 15 | 15 | LEVER RELEASE ASS'Y |
| 7L6 – 0742 – 14 | 14 | DRIVE SPINDLE, SLIP CLUTCH |
| 7L6 – 0742 – 13 | 13 | MOTOR-PULLEY ASS'Y |
| 7L6 – 0742 – 12 | 12 | SCREW CR. RECESSED |
| 7L6 – 0742 – 11 | 11 | SPRING, EJECTOR |
| 7L6 – 0742 – 10 | 10 | SPRING, BRKT ASS'Y |
| 7L6 – 0742 – 9 | 9 | SPRING, LIFTER |
| 7L6 – 0742 – 8 | 8 | WASHER, PLASTIC |
| 7L6 – 0742 – 7 | 7 | SPRING, LEVER |
| 7L6 – 0742 – 6 | 6 | SPRING, COMPRESSION |
| 7L6 – 0742 – 5 | 5 | RING, RETAINING CORE |
| 7L6 – 0742 – 4 | 4 | RING, RETAINING |
| 7L6 – 0742 – 3 | 3 | SCREW, ELECTROMAGNET |
| 7L6 – 0742 – 2 | 2 | METAL CORE ELECTROMAGNET |
| 7L6 – 0742 – 1 | 1 | ELECTROMAGNET ASS'Y |
| 7L6 – 0769 – 1 | | CASSETTE TAPE MECHANISM ASS'Y |
| PART NO. | ITEM | DESCRIPTION |




CASSETTE TAPE MECHANISM - EXPLODED VIEW

ELECTRICAL PARTS LIST
79-1/2 AM-FM STEREO RADIO/CASSETTE TAPE PLAYER MODELS D9AF, D9DF, D9EF, D9VF AND D94F

New parts not previously carried are indicated by the symbol "#" following the number.

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| VR501A, B, C, D | H, I | Dual, 50K Vol./200K Tone, S501 on/off switch & S502 auto-eject switch | 3L3-0053-3# |
| VR501A, B, C, D | H, I | Dual, 50K Vol./200K Tone, D9EF only | 3L3-0053-4# |
| VR701 | H | 470 ohms, Tape motor speed adjust | 3L3-0050-3 |
| VR901 | H | 470 ohms, Pre-amp. gain adjust | 3L3-0050-3 |
| VR902 | H | 470 ohms, Pre-amp. gain adjust | 3L3-0050-3 |
| VR903 | H | 200K, Balance, D9AF, D9DF, D9VF & D94F | 3L3-0040-02# |

| SYM-BOL | *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|---|
| | | TRANSFORMERS | |
| T101 | E | FM ant. tuning | 3L2-0043-1 |
| T102 | E | FM RF tuning | 3L2-0028-3 |
| T103 | E | FM osc., tuning | 3L2-0028-2 |
| T104 | E | 10.7 MHz, FM I.F. | 3L2-0022-1 |
| T105 | E | 10.7 MHz, FM detector | 3L2-0030-3 |
| T201 | E | 262.5 KHz, AM 1st I.F. | 3L2-0014-4 |
| T202 | E | 262.5 KHz, AM 2nd I.F. | 3L2-0014-5 |

MECHANICAL AND ELECTRICAL MISCELLANEOUS PARTS LIST

79½ AM-FM STEREO RADIO/CASSETTE TAPE PLAYER

MODELS D9DF, D9AF(BA), D9EF(BA), D9VF(BA) and D94F(BA)

New parts not previously carried are indicated by the symbol "#" following the number.

| *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| Z | Spring, tension, tuning shaft | 2L8-0314-1 |
| Z | Strap, IC ground | 2L8-0835-1# |
| L | Sub-dial | 2L7-0453-1 |
| I | Switch assy., (S901 Radio/Tape Switch) | 3L8-1098# |
| Z | Support, pre-amp panel | 2L7-0513-1 |
| Z | Toggle, L.H. FM mode P.B. | 2L8-0404-1 |
| Z | Toggle, R.H. AM mode P.B. | 2L8-0405-1 |

| *WARR. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| F | Tuner assy., mechanical | 7L6-0579-1 |
| Z | Wafer, header (2 pin) Coil & MPXPW | 2L7-0573-2# |
| Z | Wafer, header (3 pin) MPX PW | 2L7-0573-3# |
| Z | Wafer, header (3 pin) Vol. PW | 2L7-0557-3# |
| Z | Wafer, header (4 pin) MPX PW | 2L7-0573-4# |
| Z | Wafer, header (5 pin) Coil PW | 2L7-0573-5# |
| Z | Wafer, header (6 pin) M.C. PW | 2L7-0573-6# |
| Z | Wire Guide, coil | 5L4-0078-3# |

MECHANICAL AND ELECTRICAL MISCELLANEOUS PARTS LIST
79½ AM-FM STEREO RADIO/CASSETTE TAPE PLAYER
MODELS D9DF, D9AF(BA), D9EF(BA), D9VF(BA) and D94F(BA)
New parts not previously carried are indicated by the symbol "#" following the number.

| *WAR R. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| M | Balance Control assy. D9EF only | 3L8-1111 |
| Z | Barrier, light (2), (Bezel & Sub-dial assy) | 2L7-0489-1 |
| L | Base plate, sub-dial | 2L8-0675-1 |
| L | Bezel, D9AF, D9DF & D9VF | 2L7-0502-1 |
| L | Bezel, D9EF | 2L7-0502-2# |
| L | Bezel, D94F | 2L7-0558-1# |
| L | Bezel assy. (Bezel, door, shaft & springs) & light barriers D8DF, D9AF & D9VF | 3L8-1093 |
| L | Bezel assy. D9EF | 3L8-1095# |
| L | Bezel assy. D94F | 3L8-1094# |
| Z | Bolt, mtg. | 2L8-0060-1# |
| Z | Bracket, ant. trimmer | 2L8-0655-1 |
| Z | Bracket, shuttle | 2L8-0510-1# |
| Z | Bracket, vol. | 2L8-0836-1# |
| O | Button, AM switch | 2L7-0406-6# |
| O | Button, FM switch | 2L7-0406-5# |
| O | Button, push (5 used) | 2L7-0270-1 |
| O | Button, Rev/Play/Fwd | 2L7-0503-2# |
| N | Cable assy., A+ choke and P.L. | 7L6-0479-9 |
| N | Cable assy., Audio to fader pan. | 4L1-0422-1# |
| N | Cable assy., Audio to FM panel | 4L1-0422-12# |
| N | Cable assy., Ant. trim. to Coil panel | 4L1-0424-1# |
| N | Cable assy., Coil panel to FM panel | 4L1-0422-2# |
| N | Cable assy., Pre-amp to MPX pan. | 4L1-0422-6# |
| N | Cable assy., Pre-amp & vol. to MPX panel | 4L1-0422-7# |
| N | Cable assy., Speaker D9DF, D9AF, D9VF & D94F | 3L8-1076# |
| N | Cable assy., Speaker D9EF only | 3L8-1113# |
| N | Cable assy., Balance D9EF only | 4L1-0422-9# |
| N | Cable assy., PA & VC, panels to ME panel | 4L1-0422-8# |
| N | Cable assy., Radio/Tape switch | 4L1-0422-11# |
| N | Cable assy., Stereo light | 4L1-0422-10# |
| Z | Cartridge stop and rivets | 424-9702 |
| Z | Clamp, Pre-amp lead dress | 2L7-0514-1 |
| Z | Clamp, strain relief (A+ cable) | 2L8-0226-1 |
| Z | Clamp, strain relief (Speaker cable) | 2L8-0226-2 |
| Z | Clip, heat sink, motor control panel | 2L8-0767-1 |
| Z | Clip, pinion shaft | 2L8-0704-1 |
| Z | Clip, Fader control | 2L8-0705-1 |
| Z | Clip, wire dress (Vol. control) | 2L7-0523-2 |
| Z | Connector, F post | 2L8-0681-2# |
| Z | Connector, straight post | 2L8-0680-1# |
| Z | Connector, right angle J204, J205 | 2L7-0549-5# |
| D | Core, Ant. and RF | 2L8-0069-7 |
| D | Core, Ant. and RF (optional) | 2L8-0069-8 |
| D | Core, AM osc. | 2L8-0045-5 |
| D | Core, VARAC. osc. | 2L8-0069-16 |
| Z | Cover, housing (top) | 2L8-0652-3# |
| Z | Cover assy., bottom | 7L6-0702-1 |
| Z | Door, Cassette tape | 2L8-0759-1 |
| Z | Door, Cassette tape D94F only | 2L8-0759-2# |
| Z | "E" Ring, AM-FM mode pushbutton | 1W60970-FA1# |
| L | Escutcheon assy. | 3L8-1092# |
| H | Fader control assy. | 3L8-1074# |

| *WAR R. | DESCRIPTION | SERVICE PART NO. |
|---|---|---|
| L | Filter assy., light | 3L8-1086# |
| L | Filter assy., light D9EF only | 3L8-1105# |
| L | Filter, color | 2L7-0398-2 |
| L | Filter, color D9EF only | 2L7-0398-3# |
| Z | Grommet (4) | 2L7-0022-1 |
| Z | Housing, left side & back | 2L8-0650-4# |
| Z | Housing assy., left side & back D9EF only | 7L6-0582-6# |
| Z | Housing assy., right side | 7L6-0593-1 |
| Z | Insulator, FM panel to housing | 5L4-0091-1 |
| Z | Insulator, Mica, motor control IC701 | 5L4-0111-1 |
| Z | Nut, Vol. and Fader controls mtg | 28-14686-1 |
| Z | Nut, mtg. | 2L8-0061-1# |
| Z | Pin, AM-FM mode P.B. (2) | 2L7-0582-01 |
| Z | Pin, Toggle, AM-FM mode P.B.(2) | 2L8-0557-1 |
| Q | Pinion Shaft | 2L7-0030-22 |
| Z | Pointer, dial | 2L8-0672-2 |
| M | P.W. assy., balance D9EF only | 3L8-1110# |
| M | P.W. assy., coil/varactor w/ components | 3L8-1071 |
| M | P.W. assy., fader control w/ components D8DF, D9AF, D9VF & D94F | 3L8-1062# |
| M | P.W. assy., FM panel w/ components D9AF | 3L8-1091# |
| M | P.W. assy., FM panel D9DF, D9EF | 3L8-1068# |
| M | P.W. assy., FM panel D9VF & D94F | 3L8-1088# |
| M | P.W. assy., L.E.D. stereo indicator | 3L8-1069# |
| M | P.W. assy., Motor control/Auto eject w/components | 3L8-1104# |
| M | P.W. assy., AM/MPX/AUDIO w/ components | 3L8-1070# |
| M | P.W. assy., cassette pre-amp & vol. control panels (2 panels) | 3L8-1099# |
| M | P.W. assy., pre-amp & vol. control D9EF only | 3L8-1107# |
| Z | Retainer plate, Balance D9EF | 2L8-0312-3 |
| Z | Retainer plate, fader control | 2L8-0312-3 |
| Z | Retainer, wire dress | 2L7-0449-1# |
| Z | Shaft, tape door | 2L8-0415-2 |
| Z | Shaft, tuning | 2L7-0281-1 |
| Z | Shaft, tuning D9EF only | 2L7-0281-2# |
| Z | Shield, fader control | 5L4-0070-1 |
| D | Sleeve, paper (4) | 5L4-0002-1 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (3) | 2L8-0138-1 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (optional) | 2L8-0138-2 |
| D | Sleeve, powdered iron, Ant., RF & AM osc. (optional) | 2L8-0138-3 |
| D | Sleeve, powdered iron, Varac. osc. | 2L8-0138-9 |
| Z | Socket, Ant. | 2L7-0139-3 |
| Z | Socket assy., pilot light (2) | 4L1-0095-3 |
| Z | Spacer, IC701 | 2L7-0508-1 |
| Z | Spacer, audio output | 2L7-0532-1# |
| Z | Spacer, Vol. D9EF | 2L8-0177-5 |
| Z | Spacer, tuning D9EF | 2L8-0177-6 |
| Z | Spring, AM-FM mode pushbuttons (2) | 2L8-0420-1 |
| Z | Spring, tape door | 2L8-0763-1 |

* Warranty Component Category

Pages 109-118 Courtesy of PANASONIC CONSUMER PARTS DIV.

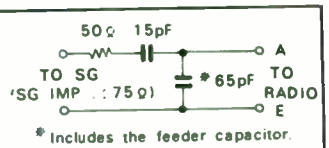
# ALIGNMENT INSTRUCTIONS

## ■ EQUIPMENT REQUIRED

- Signal Generator: AM 450 ~ 1700 kHz, 400 Hz Mod. @30%
  FM 10.7 MHz, 86 ~ 110 MHz, 400 Hz Mod. @30% Stereo Signal Generator
- Sweep Generator: 450 kHz, 10.7 MHz
- Antenna Pad: Refer to Fig. 1 and Fig. 3
- Indicator: Output meter (AC voltmeter or VTVM)
  Oscilloscope and Frequency Counter
- Power Source Voltage: DC 13.8 V (standard voltage for measurement)

## AM (I-F & RF) ALIGNMENT

- Set Volume Control at maximum, and Treble, Bass at maximum position.
- Set Band Selector Switch in the AM position.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 1)
- Keep the signal generator output low enough to prevent overloading the circuit.



* Includes the feeder capacitor.

Fig. 1 Antenna Pad

| | STEP | GENERATOR FREQUENCY | BAND SELECTOR SETTING | RADIO-DIAL SETTING | SIGNAL FEED POINT | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|---|
| IF | ❶ ~ ❹ | 450 kHz [Unmodulated or 400 Hz Mod.] | AM | Point of non-interference. (on/about 600 kHz) | Through pad (Fig. 1) to antenna receptacle. | Between Point ⑤ and ground or speaker terminals. | IFT104 / IFT101 | Adjust for maximum. |
| RF | ❺ | 510 kHz [400 Hz Mod.] | " | Low freq. end stop. | " | Output meter across speaker terminals. | L106 (OSC) | " |
| RF | ❻ | 1640 kHz [400 Hz Mod.] | " | High freq. end stop. | " | " | C113 (OSC) | " |
| RF | ❼ ~ ❽ | 1400 kHz [400 Hz Mod.] | " | Tune to signal. | " | " | C104 (RF) C101 (ANT) | " |

- When radio is installed in car, antenna fully extended, tune in a weak station near 1400 kHz and adjust C101 for minimum output.
- Refer to ANTENNA TRIMMER ALIGNMENT
- Repeat steps two or three times.

## FM I-F ALIGNMENT USING FM SIGNAL GENERATOR AND SWEEP GENERATOR

- Volume, Tone and Balance Control may be left in any position.
- Set Band Selector Switch in the FM position.
- Set DX/LOCAL Selector Switch in the DX position.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent overloading the circuit.

| | STEP | GENERATOR FREQUENCY | RADIO-DIAL SETTING | SIGNAL FEED POINT | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| FM IF | ❾ | 10.7 MHz | Point of non-interference. | Through pad (Fig. 3) to antenna receptacle | Vert. amp of scope to point ⑤, low side to ground. | IFT51 | Adjust for maximum amplitude and proper linearity between ±100 kHz markers. |
| FM IF | ❿ ~ ⓫ | " | " | " | " | IFT151 IFT152 | |

- Repeat step ❾, ❿ & ⓫ two or three times.

Fig. 2

## FM RF ALIGNMENT

- Set Volume Control at maximum, and Treble, Bass at maximum position.
- Set Band Selector Switch in the FM position.
- Set DX/LOCAL Selector Switch in the DX position.
- Set Balance Control in center.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output enough to prevent overloading the circuit.

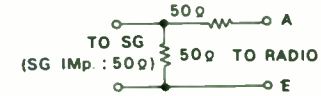


Fig. 3 Antenna Pad

| | STEP | GENERATOR FREQUENCY | RADIO-DIAL SETTING | SIGNAL FEED POINT | INDICATOR CONNECTION | ADJUST | REMARKS |
|---|---|---|---|---|---|---|---|
| FM RF | ⓬ | 87.0 MHz. [400 Hz] | Low freq. end stop. | Through pad (Fig. 3) to antenna receptacle. | Output meter across speaker terminals. | C75 (OSC) | Adjust for maximum. Repeat steps two or three times. |
| FM RF | ⓬ ~ ⓭ | 98.0 MHz [400 Hz Mod] | Tune to signal. | " | " | C65 (RF) C58 (ANT) | |

- In the step ⓬, adjust lower frequency at 87.0 MHz. The upper frequency will be within 108 ~110 MHz, because of design characteristics. It is nonadjustable.

## MULTIPLEX ALIGNMENT USING FM SIGNAL GENERATOR AND STEREO SIGNAL GENERATOR

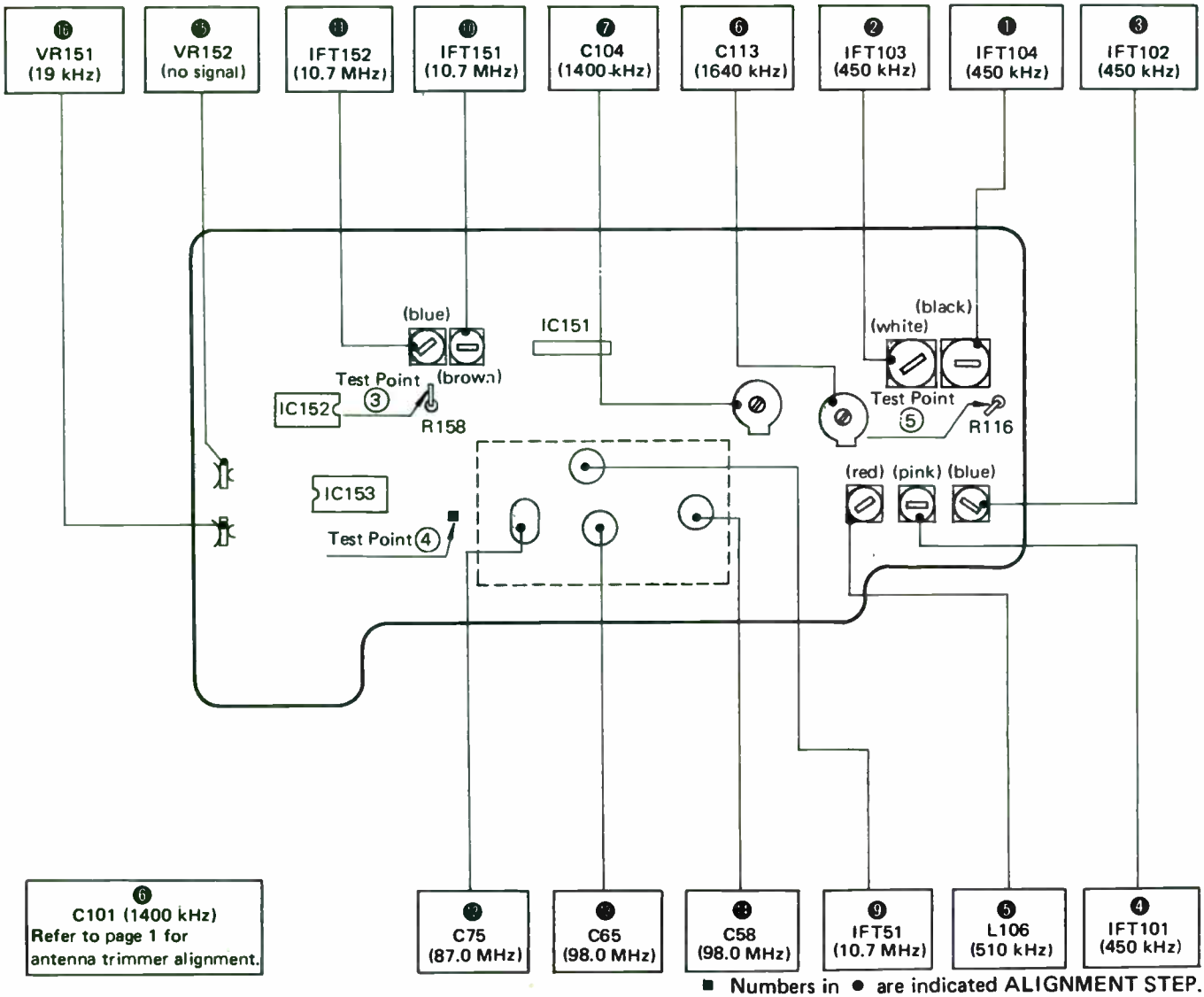
- Set Volume Control at maximum, and Treble, Bass at maximum position.
- Set Balance Control in center.
- Set DX/LOCAL Selector Switch in the DX position.
- Connect the signal generator to the antenna receptacle through the antenna pad. (Fig. 3)
- Keep the signal generator output low enough to prevent overloading the circuit.
- FM signal generator should be modulated by the stereo signal generator.

Modulation Level: 19 kHz, 10%
400 Hz, 30%
FM signal generator output level: 1 mV
FM signal generator frequency: 98 MHz

| | STEP | MODULATION FREQUENCY | INDICATOR | ADJUST | REMARKS |
|---|---|---|---|---|---|
| FM MPX | ⑮ | No signal input | Frequency counter to Test Point ④, low side to ground. | VR152 | Adjust to 19 kHz ± 30 Hz. |
| | ⑯ | 19 kHz, 400 Hz (Right Channel) | VTVM to right speaker terminals. | VR151 | Adjust for minimum. |
| | | 19 kHz, 400 Hz (Left Channel) | VTVM to left speaker terminals. | | Adjust for minimum. |

- Repeat steps two or three times.

NOTES: 1) Test Point ⑤ is negative side of C119 in the line of R116.
2) Test Point ③ is the R158 in the line of R165.
3) Test Point ④ is the terminal No. 12 of IC153.




■ Numbers in ● are indicated ALIGNMENT STEP.

# Replacement Parts List
# Model NO. CR-4520EU

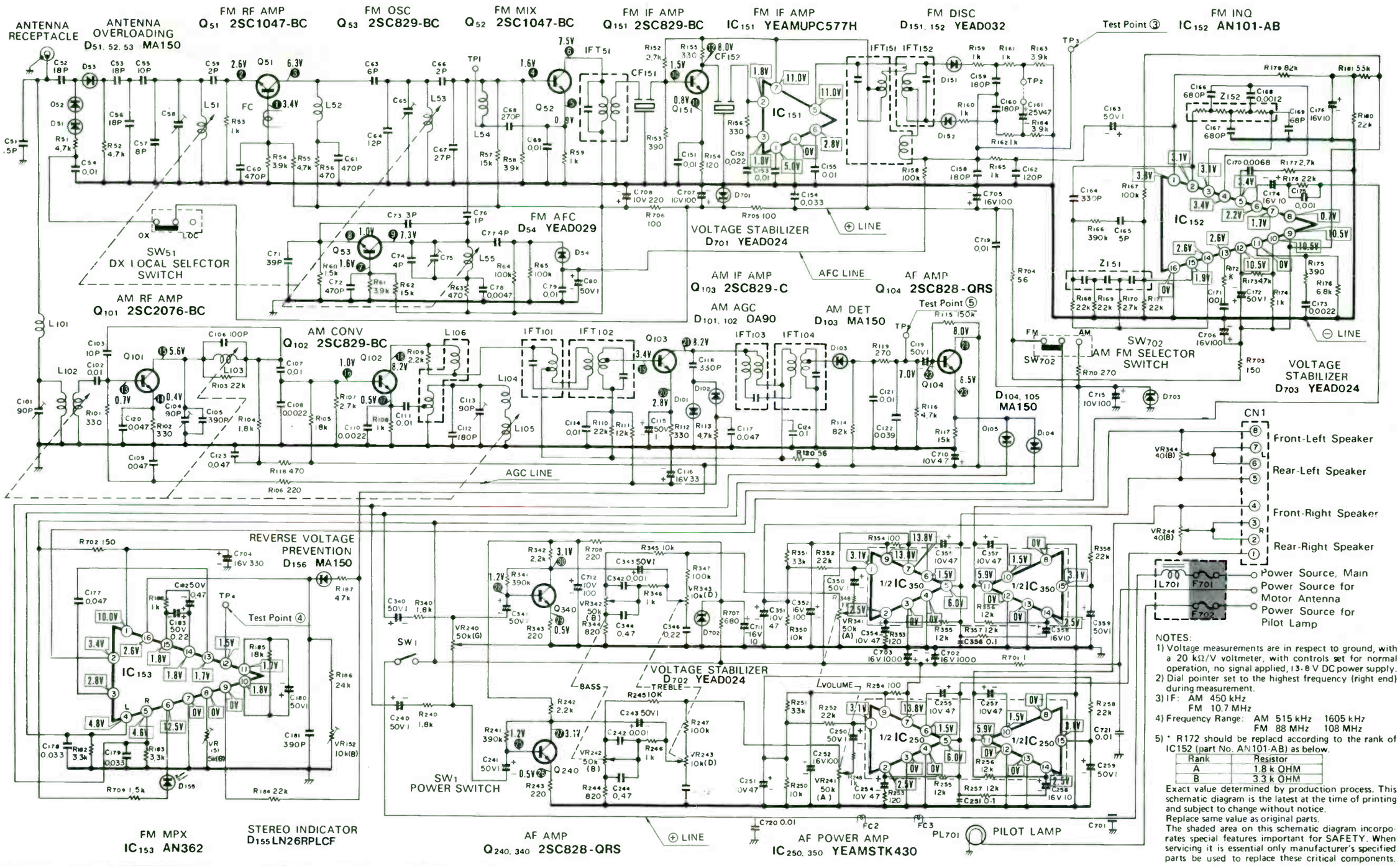
**NOTES:**

1. Be sure to make your orders of replacement parts according to this list.
2. Components identified by shaded area have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The column of Ref No indicates the located position of the parts on the EXPLODED VIEW, and see the cross section of the horizontal column (1 ~ up) and the vertical column (A ~ up).

| Ref. No. | Part No. | Part Name & Description | Pcs Set | Remarks |
|---|---|---|---|---|
| **MISCELLANEOUS** | | | | |
| PL701 (4-B) | YEAL25001W | Pilot Lamp | 1 | |
| F701 702 (3-A) | XBB1F50NS5 | Fuse, 5 A | 2 | |
| CN1 (3-C) | YEAT03202 | 8P Speaker Terminal | 1 | |
| PC1,2 (3-B) | YEAE01122 | PC Jointer, 4 P | 2 | |
| PC3,4 (3-A) (2-B) | YEAE01139 | PC Jointer, 3 P | 2 | |
| PC5 (4-B) (2-B) | YEAE01123A | PC Jointer, 7 P | 1 | |
| PC6 (3-C) (2-C) | YEAE01124A | PC Jointer, 6 P | 1 | |
| TP2 (4-B) | YEAE01083 | PC Jointer, 2 P | 1 | |
| M1 (4-B) | YEFK04189 | Pilot Lamp Holder | 1 | |
| M2 (2-C) | YEAA10019A | Anttenna Receptacle | 1 | |
| M3 (4-A) | YEAJ01241 | Power Supply Cord, w/Fuses | 1 | |
| M6 (1-C) | YEFA01265A | Chassis | 1 | |
| M7 (4-C) | YEFA03292 | Upper Cover | 1 | |
| M8 (1-C) | YEFA05164 | Bottom Cover | 1 | |
| M9 (3-A) | YEFX021700 | Mounting Bracket , PCB | 1 | |
| M10 (2-C) | YEFF01187 | Heat Sink | 1 | |
| M11 (2-C) | YEFX009068 | Joint , Tuner | 1 | |
| M12 (3-A) | YEFH01172 | Dial Pointer | 1 | |
| M13 (4-B) | YEFX021691 | Mounting Bracket , Pilot Lamp | 1 | |
| M14 (4-B) | YEFR04067 | Illumination Cap | 1 | |
| M15 (1-A) | YEFE17088 | Knob, AM/FM Selector | 1 | |
| M16 (1-A) | YEFE17087 | Knob, DX/LOCAL Selector | 1 | |
| M17 (1-A) | YEFE02026 | Knob, Balance Control | 1 | |
| M18 (1-A) | YEFC02479 | Escutcheon Ass'y | 1 | |
| M18-1 (2-A) | YEFS01133 | Pad | 1 | |
| M18-2 (2-A) | YEFJ08425 | Dial Plate | 1 | |
| M18-3 (2-A) | YEFX999144 | Blind Panel | 1 | |
| M18-4 (1-A) | YEFJ01096 | Ornament Plate | 1 | |
| M19 (2-A) | YEFJ10212 | Back Plate | 1 | |
| M20 (2-A) | YEFX021696 | Mounting Bracket , Switch | 1 | |
| M21 (3-C) | YEFX007085 | Cord Clamper | 1 | |
| M22 (3-C) | YEFX021699 | IC Mounting Bracket | 1 | |
| M23 (4-A) | YEAJ01100 | Power Supply Cord , Motor Antenna | 1 | |
| M24 (1-C) | YEFM01351A | Main Seal | 1 | |
| M25 (1-B) | YEJN01041 | Nut, Hexagon | 2 | |
| M26 (3-C) (2-C) | YEJS05004 | Screw | 4 | |
| M27 (2-B) | YEJS06002 | Screw | 4 | |
| M28 | XTB3 + 6FFXS | ⊕ Screw, Taptite 3mmø x 6mm | 2 | |
| M29 | XTB3 + 8FFXS | ⊕ Screw, Taptite 3mmø x 8mm | 11 | |
| M30 | XTB3 + 12FFXS | ⊕ Screw, Taptite 3mmø x 12mm | 2 | |
| M31 | XYN3 + F6FXS | ⊕ Screw w/Washer, 3mmø x 6mm | 1 | |
| **SWITCHES** | | | | |
| SW51 | YEAS07060 | DX/LOCAL Selector Switch | 1 | |
| SW702 | YEAS07059 | AM/FM Selector Switch | 1 | |
| **COMPONENT COMBINATIONS** | | | | |
| Z151 | EXF3SM03 | Capacitor Block, 330 PF x 3 | 1 | |
| Z152 | EXBS84472K | Resistor Block, 4.7k OHM x 4 | 1 | |
| **TUNER** | | | | |
| M50 | YEAU05244 | Tuner Ass'y | 1 | |
| M50-1 | YEFE10229 | Push Button | 5 | |

| Ref. No. | Part No. | Part Name & Description | Pcs Set | Remarks |
|---|---|---|---|---|
| **ICs** | | | | |
| IC151 | YEAMUPC577H | FM IF Amp | 1 | |
| IC152 | AN101 | FM INQ | 1 | |
| IC153 | AN362 | FM MPX Amp | 1 | |
| IC250,350 | YEAMSTK430 | AF Power Amp | 2 | |
| **TRANSISTORS** | | | | |
| Q51,52 | 2SC1047 | FM RF Amp, FM MIX | 2 | |
| Q53, 102, 151 103 | 2SC829 | FM OSC, AM Conv, FM IF Amp , AM IF Amp | 4 | |
| Q101 | 2SC2076 | AM RF Amp | 1 | |
| Q104, 240, 340 | 2SC828 | AF Amp | 3 | |
| **DIODES** | | | | |
| D51,52,53 | MA150 | Over-Loading | 7 | |
| 103,104,105 | | AM DET | | |
| 156 | | Reverse Voltage Prevention | | |
| D54 | YEAD029 | FM AFC | 1 | |
| D101,102 | OA90 | AM AGC | 2 | |
| D151,152 | YEAD032 | FM DISC | 2 | |
| D155 | LN26RPLCF | Stereo Indicator | 1 | |
| D701,702,703 | YEAD024 | Voltage Stabilizer | 3 | |

| Ref. No. | Part No. | Part Name & Description | Pcs Set | Remarks |
|---|---|---|---|---|
| **CAPACITORS** | | | | |
| C51 | YECCD1H150KM | 15 PF 50WV ±10% Ceramic | 1 | |
| C52 | YECCD1H180KM | 18 PF 50WV ±10% Ceramic | 1 | |
| C53 | YECCD1H180KM | 18 PF 50WV ±10% Ceramic | 1 | |
| C54 | ECKD1H103PF | 0.01 MFD 50WV +100,−0% Ceramic | 1 | |
| C55 | YECCD1H100JS | 10 PF 50WV ±5% Ceramic | 1 | |
| C56 | YECCD1H180KM | 18 PF 50WV ±10% Ceramic | 1 | |
| C57 | YECCD1H080DS | 8 PF 50WV ±0.5PF Ceramic | 1 | |
| C59 | YECCD1H020CM | 2 PF 50WV ±0.25PF Ceramic | 1 | |
| C60 | YECKD05471K | 470 PF 50WV ±10% Ceramic | 1 | |
| C61 | YECKD05471K | 470 PF 50WV ±10% Ceramic | 1 | |
| C63 | YECCD1H060DM | 6 PF 50WV ±0.5PF Ceramic | 1 | |
| C64 | YECCD1H120JU | 12 PF 50WV ±5% Ceramic | 1 | |
| C66 | YECCD1H020CM | 2 PF 50WV ±0.25PF Ceramic | 1 | |
| C67 | YECCD1H270KM | 27 PF 50WV ±10% Ceramic | 1 | |
| C68 | YECCD1H271JM | 270 PF 50WV ±5% Ceramic | 1 | |
| C69 | YECKD05103Z | 0.01 MFD 50WV +80,−20% Ceramic | 1 | |
| C71 | YECCD1H390KM | 39 PF 50WV ±10% Ceramic | 1 | |
| C72 | YECKD05471K | 470 PF 50WV ±10% Ceramic | 1 | |
| C73 | YECCD1H030DU | 3 PF 50WV ±0.5PF Ceramic | 1 | |
| C74 | YECCD1H040DU | 4 PF 50WV ±0.5PF Ceramic | 1 | |
| C76 | YECCD1H010CM | 1 PF 50WV ±0.25PF Ceramic | 1 | |
| C77 | YECCD1H040DU | 4 PF 50WV ±0.5PF Ceramic | 1 | |
| C78 | YECQN1H472K | 0.0047 MFD 50WV ±10% Polyester | 1 | |
| C79 | YECKD05103Z | 0.01 MFD 50WV +80,−20% Ceramic | 1 | |
| C80 | ECEA50V1L | 1 MFD 50WV Electrolytic | 1 | |
| C102 | ECKD1H103PF | 0.01 MFD 50WV +100,−0% Ceramic | 1 | |
| C103 | YECCD1H100FM | 10 PF 50WV ±1PF Ceramic | 1 | |
| C105 | YECCD1H391KM | 390 PF 50WV ±10% Ceramic | 1 | |
| C106 | YECCD1H101KM | 100 PF 50WV ±10% Ceramic | 1 | |
| C107 | YECQN1H103M | 0.01 MFD 50WV ±20% Polyester | 1 | |
| C108 | YECQN1H222K | 0.0022 MFD 50WV ±10% Polyester | 1 | |
| C109 | YFCQN1H473M | 0.047 MFD 50WV ±20% Polyester | 1 | |




NOTES:

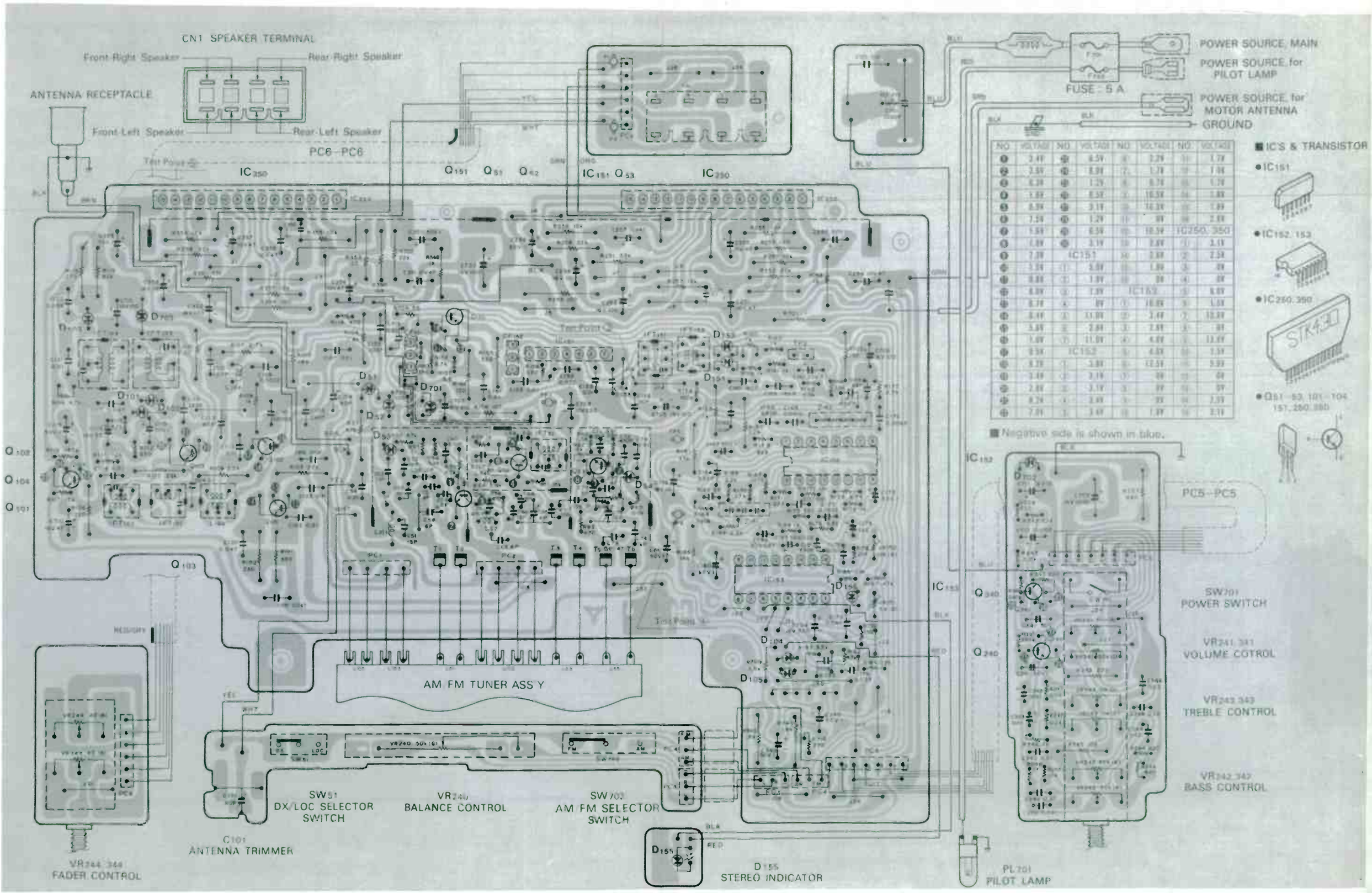
1) Voltage measurements are in respect to ground, with a 20 kΩ/V voltmeter, with controls set for normal operation, no signal applied, 13.8 V DC power supply.
2) Dial pointer set to the highest frequency (right end) during measurement.
3) IF: AM 450 kHz
   FM 10.7 MHz
4) Frequency Range: AM 515 kHz 1605 kHz
   FM 88 MHz 108 MHz
5) * R172 should be replacd according to the rank of IC152 (part No. AN101-AB) as below.

| Rank | Resistor |
|---|---|
| A | 1.8 k OHM |
| B | 3.3 k OHM |

Exact value determined by production process. This schematic diagram is the latest at the time of printing and subject to change without notice.
Replace same value as original parts.
The shaded area on this schematic diagram incorporates special features important for SAFETY. When servicing it is essential only manufacturer's specified parts be used to replace these critical components.

| | |
|---|---|
| R | 51 52 53 54 55 56 57 58 59 64 65 342 708 706 152 155 156 705 351 159 161 163 166 167 179 181<br>101 102 103 118 106 60 107 187 61 62 109 63 343 110 345 153 157 346 112 347 154 113 350 352 114 119 158 115 160 356 162 164 168 169<br>702 188 104 185 105 186 108 340 341 242 344 111 245 247 707 251 252 354 116 117 357 165 710 358 170 171 172 173 177 178 176 180<br>182 709 183 184 240 241 243 244 246 250 253 355 256 704 258 703 174 175 |
| C | 51 52 53 56 55 57 59 60 63 66 709 151 152 154 155 158 159 161 163 166 170 168 169 176<br>101 54 106 71 61 64 73 74 67 68 69 342 115 707 350 153 121 122 119 710 705 160 162 164 165<br>105 123 107 72 111 76 77 79 80 344 343 116 118 117 711 352 350 355 719 715<br>177 102 103 120 109 183 182 704 108 110 340 112 341 114 712 242 243 346 250 351 720 252 250 354 703 255 702 356 357 358 359 171 167 172 170 174 175<br>178 179 180 181 240 241 244 246 251 254 256 257 258 259 701 721 706 173 |

# Panasonic CR-4520EU



| Ref. No. | Part No. | Part Name & Description | | | | Pcs Set | Remarks |
|---|---|---|---|---|---|---|---|
| C110 | YECQN1H222K | 0.0022 MFD | 50WV | ±10% | Polyester | 1 | |
| C111 | YECQN1H103M | 0.01 MFD | 50WV | ±20% | Polyester | 1 | |
| C112 | YECCD1H181KT | 180 PF | 50WV | ±10% | Ceramic | 1 | |
| C114 | YECQN1H103M | 0.01 MFD | 50WV | ±20% | Polyester | 1 | |
| C115 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 | |
| C116 | ECEA16V33L | 33 MFD | 16WV | | Electrolytic | 1 | |
| C117 | YECQN1H473M | 0.047 MFD | 50WV | ±20% | Polyester | 1 | |
| C118 | YECCD1H331KM | 330 PF | 50WV | ±10% | Ceramic | 1 | |
| C119 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 | |
| C120 | YECQN1H473M | 0.047 MFD | 50WV | ±20% | Polyester | 1 | |
| C121 | YECQN1H103M | 0.01 MFD | 50WV | ±20% | Polyester | 1 | |
| C122 | YECQN1H393M | 0.039 MFD | 50WV | ±20% | Polyester | 1 | |
| C123 | YECQN1H473M | 0.047 MFD | 50WV | ±20% | Polyester | 1 | |
| C124 | ECQM1H104MZ | 0.1 MFD | 50WV | ±20% | Polyester | 1 | |
| C151 | ECKD1H103PF | 0.01 MFD | 50WV | +100,−0% | Ceramic | 1 | |
| C152 | YECQN1H223M | 0.022 MFD | 50WV | ±20% | Polyester | 1 | |
| C153 | YECKD05103Z | 0.01 MFD | 50WV | +80,−20% | Ceramic | 1 | |
| C154 | YECQN1H333M | 0.033 MFD | 50WV | ±20% | Polyester | 1 | |
| C155 | YECKD05103Z | 0.01 MFD | 50WV | +80,−20% | Ceramic | 1 | |
| C158 | YECCD1H181KM | 180 PF | 50WV | ±10% | Ceramic | 1 | |
| C159 | YECCD1H181KM | 180 PF | 50WV | ±10% | Ceramic | 1 | |
| C160 | YECCD1H181KM | 180 PF | 50WV | ±10% | Ceramic | 1 | |
| C161 | ECEA25V4R7L | 4.7 MFD | 25WV | | Electrolytic | 1 | |
| C162 | YECCD1H121KM | 120 PF | 50WV | ±10% | Ceramic | 1 | |
| C163 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 | |
| C164 | YECCD1H331KM | 330 PF | 50WV | ±10% | Ceramic | 1 | |
| C165 | YECCD1H050DM | 5 PF | 50WV | ±0.5PF | Ceramic | 1 | |
| C166 | ECQS1681JZ | 680 PF | 125WV | ±5% | Polystyrene | 1 | |
| C167 | ECQS1681JZ | 680 PF | 125WV | ±5% | Polystyrene | 1 | |
| C168 | YECQN1H122K | 0.0012 MFD | 50WV | ±10% | Polyester | 1 | |
| C169 | YECCD1H680KM | 68 PF | 50WV | ±10% | Ceramic | 1 | |
| C170 | YECQN1H682M | 0.0068 MFD | 50WV | ±20% | Polyester | 1 | |
| C171 | YFCQN1H103M | 0.01 MFD | 50WV | ±20% | Polyester | 1 | |
| C172 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 | |

| Ref. No. | Part No. | Part Name & Description | | | | Pcs Set |
|---|---|---|---|---|---|---|
| C173 | YECQN1H222K | 0.0022 MFD | 50WV | ±10% | Polyester | 1 |
| C174 | ECEA16V10L | 10 MFD | 16WV | | Electrolytic | 1 |
| C175 | YECQN1H102K | 0.001 MFD | 50WV | ±10% | Polyester | 1 |
| C176 | ECEA16V10L | 10 MFD | 16WV | | Electrolytic | 1 |
| C177 | YECQN1H473M | 0.047 MFD | 50WV | ±20% | Polyester | 1 |
| C178 | YECQN1H333M | 0.033 MFD | 50WV | ±20% | Polyester | 1 |
| C179 | YECQN1H333M | 0.033 MFD | 50WV | ±20% | Polyester | 1 |
| C180 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C181 | ECQS1391JZ | 390 PF | 125WV | ±5% | Polystyrene | 1 |
| C182 | ECEA50MR47 | 0.47 MFD | 50WV | | Electrolytic | 1 |
| C183 | ECEA50MR22 | 0.22 MFD | 50WV | | Electrolytic | 1 |
| C240 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C241 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C242 | YECQN1H102K | 0.001 MFD | 50WV | ±10% | Polyester | 1 |
| C243 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C244 | ECSF35ER47 | 0.47 MFD | 35WV | | Tantalum | 1 |
| C246 | ECSF35ER22 | 0.22 MFD | 35WV | | Tantalum | 1 |
| C250 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C251 | ECEA10V47L | 47 MFD | 10WV | | Electrolytic | 1 |
| C252 | ECEA16V100L | 100 MFD | 16WV | | Electrolytic | 1 |
| C254 | ECEA10V47L | 47 MFD | 10WV | | Electrolytic | 1 |
| C255 | ECEA10V47L | 47 MFD | 10WV | | Electrolytic | 1 |
| C256 | YECCD12104M | 0.1 MFD | 12WV | ±20% | Ceramic | 1 |
| C257 | ECEA10V47L | 47 MFD | 10WV | | Electrolytic | 1 |
| C258 | ECEA16V10L | 10 MFD | 16WV | | Electrolytic | 1 |
| C259 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C340 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C341 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C342 | YECQN1H102K | 0.001 MFD | 50WV | ±10% | Polyester | 1 |
| C343 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C344 | ECSF35ER47 | 0.47 MFD | 35WV | | Tantalum | 1 |
| C346 | ECSF35ER22 | 0.22 MFD | 35WV | | Tantalum | 1 |
| C350 | ECEA50V1L | 1 MFD | 50WV | | Electrolytic | 1 |
| C351 | ECEA10V47L | 47 MFD | 10WV | | Electrolytic | 1 |

| Ref. No. | Part No. | Part Name & Description | Pcs Set | Remarks |
|---|---|---|---|---|
| C352 | ECEA16V100L | 100 MFD 16WV Electrolytic | 1 | |
| C354 | ECEA10V47L | 47 MFD 10WV Electrolytic | 1 | |
| C355 | ECEA10V47L | 47 MFD 10WV Electrolytic | 1 | |
| C356 | YECCD12104M | 0.1 MFD 12WV ±20% Ceramic | 1 | |
| C357 | ECEA10V47L | 47 MFD 10WV Electrolytic | 1 | |
| C358 | ECEA16V10L | 10 MFD 16WV Electrolytic | 1 | |
| C359 | ECEA50V1L | 1 MFD 50WV Electrolytic | 1 | |
| C701 | YECCL510355 | 1000 PF Feedthrough | 1 | |
| C702 | ECEA16V1000L | 1000 MFD 16WV Electrolytic | 1 | |
| C703 | ECEA16V1000L | 1000 MFD 16WV Electrolytic | 1 | |
| C704 | ECEA16V330L | 330 MFD 16WV Electrolytic | 1 | |
| C705 | ECEA16V100L | 100 MFD 16WV Electrolytic | 1 | |
| C706 | ECEA16V100L | 100 MFD 16WV Electrolytic | 1 | |
| C707 | ECEA10V100L | 100 MFD 10WV Electrolytic | 1 | |
| C708 | ECEA10V220L | 220 MFD 10WV Electrolytic | 1 | |
| C710 | ECEA10V47L | 47 MFD 10WV Electrolytic | 1 | |
| C711 | ECEA16V10L | 10 MFD 16WV Electrolytic | 1 | |
| C712 | ECEA10V100L | 100 MFD 10WV Electrolytic | 1 | |
| C715 | ECEA10V100L | 100 MFD 10WV Electrolytic | 1 | |
| C719 | YECQN1H103M | 0.01 MFD 50WV Polyester | 1 | |
| C720 | YECKD05103Z | 0.01 MFD 50WV +80, −20% Ceramic | 1 | |
| C721 | YECKD05103Z | 0.01 MFD 50WV +80, −20% Ceramic | 1 | |

| Ref. No. | Part No. | Part Name & Description | | Pcs Set | Remarks |
|---|---|---|---|---|---|
| **VARIABLE CAPACITORS** | | | | | |
| C58, 65 | ECV1ZW06X32 | 6 PF | Trimmer | 2 | |
| C75 | YECTAT1397 | 50 PF | Trimmer | 1 | |
| C101,104,113 | YECTT1090 | 90 PF | Trimmer | 3 | |
| **VARIABLE RESISTORS** | | | | | |
| VR151 | EVNJ0AA00B53 | 5k OHM (B) | Semi-fixed | 1 | |
| VR152 | EVNJ0AA00B14 | 10k OHM (B) | Semi-fixed | 1 | |
| VR240 | EVAHH1S10G54 | 50k OHM (G) | Balance Control | 1 | |
| VR241,341 | EWKXVBS01913 | 50k OHM (A) | Volume Control | 1 | |
| 242, 342 | | 50k OHM (B) | Bass Control | | |
| 243,343 | | 10k OHM (D) | Treble Control | | |
| w/SW701 | | with Power Switch | | | |
| VR244,344 | EVMXCAS43B81 | 40 OHM (B) | Fader Control | 1 | |
| **COILS, TRANSFORMERS AND CERAMIC FILTERS** | | | | | |
| L52 | YELT04C5R6K | FM RF Coil | | 1 | |
| L54 | YELT03C011 | FM RF Coil | | 1 | |
| L101 | YELT04C8R2K | Loading Coil | | 1 | |
| L104 | YELT06N5R6 | AM RF Coil | | 1 | |
| L106 | YELL07S069 | AM OSC Coil | | 1 | |
| IFT51 | YEIF07S7049 | FM IFT | | 1 | |
| IFT101 | YEIA07S7076A | AM IFT | | 1 | |
| IFT102 | YEIA07S7077B | AM IFT | | 1 | |
| IFT103 | YEIA10S7091 | AM IFT | | 1 | |
| IFT104 | YEIA10S7092 | AM IFT | | 1 | |
| IFT151 | YEIF07S7048 | FM IFT | | 1 | |
| IFT152 | YEIF07S7047 | FM IFT | | 1 | |
| CF151,152 | YEIN09N5007 | Ceramic Filter | | 2 | |
| FC1, 2, 3 | YEAZQ5BRH002 | Ferrite Core | | 3 | |

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**For models covered before 1970, see the Annual Index.**

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