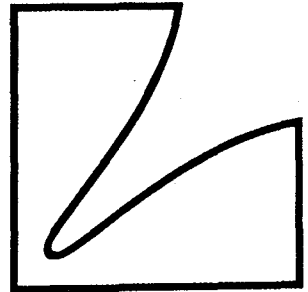


SERVICE MANUAL



AM/FM STEREO DC TUNER-AMPLIFIER **R-2040**



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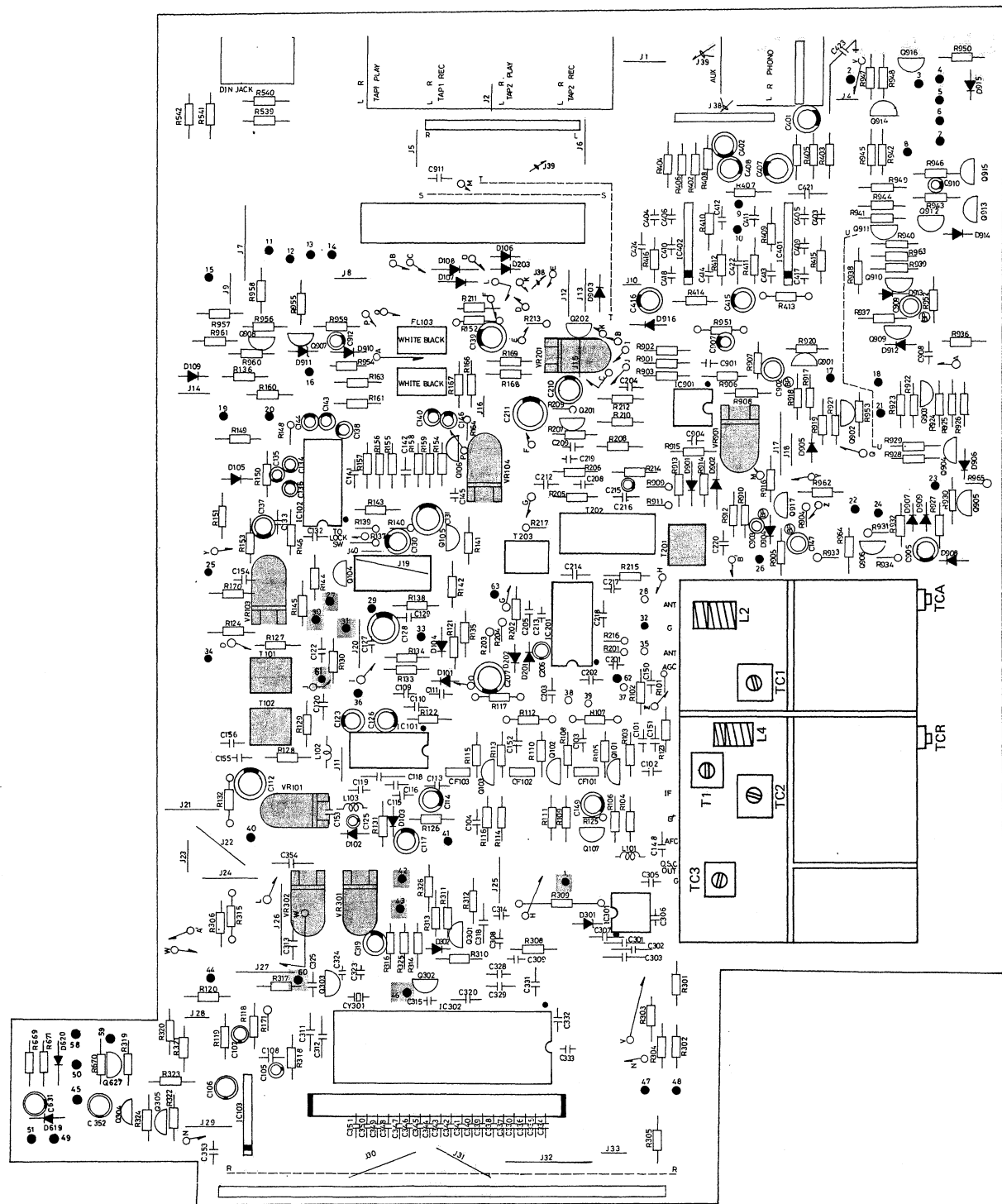
ALIGNMENT PROCEDURE

| STEP | SIGNAL GENERATOR | | DIAL (DISPLAY) SETTING | OUTPUT INDICATOR CONNECTED TO | ADJUST | ADJUST FOR |
|------|-----------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------|--------------------------------------|-------------------------|-----------------------|
| | CONNECTION TO | SET SIGNAL TO | | | | |
| 1 | Set Function Switch to 'FM' and Accutouch Switch off. | | | | | |
| 2 | FM tracking | | | | | |
| 3 | FM Signal generator across FM antenna connector (300 ohm) through matching network | Reduce the output level to minimum (interstion receiving condition) | Quiet | Tuning meter (Fig. 2) Pin 61 and 31. | T102 | Indicate center. |
| 4 | | 106 MHz at 1 KHz 100% (75 KHz) modulation, output level 3 μ V. | 106 MHz | | TC3 (OSC) TCR TCA | Maximum output level. |
| 5 | | 87.5 MHz at 1 KHz 100% (75 KHz) modulation, output level 3 μ V. | 87.5 MHz | | | |
| 6 | | 98 MHz at 1 KHz 100% (75 KHz) modulation, output level 3 μ V. | 98 MHz | T1 | Maximum output level. | |
| 7 | Repeat step 3 thru 7, till the most accurate tracking and the maximum sensitivity be secured. | | | | | |

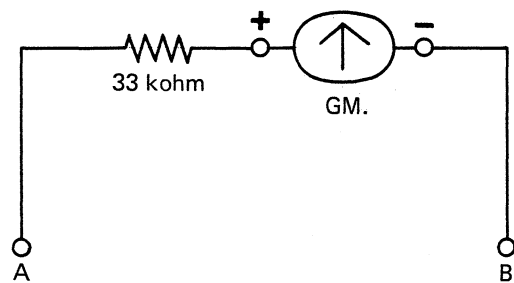
| STEP | SIGNAL GENERATOR | | DIAL (DISPLAY) SETTING | OUTPUT INDICATOR CONNECTED TO | ADJUST | ADJUST FOR |
|------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------|------------------------|-------------------------------------------|--------|--------------------------------------------------------------------|
| | CONNECTION TO | SET SIGNAL TO | | | | |
| | T. H. Distortion. | | | | | |
| 8 | MF Signal generator across FM antenna connector through (300 ohm) matching network. | 98 MHz at 1 KHz 100% (75 KHz) modulation, output level minimum. | 98 MHz | Tuning meter (Fig. 2) Pin 61 and 31. | T102 | Indicate center. |
| | | Output level 1 mV. | | | | |
| 9 | | | | Oscilloscope, AC Voltage meter, Tape out. | T101 | Minimum distortion. |
| 10 | Repeat step 8-9 to obtain correct T.H.D. minimum. | | | | | |
| 11 | FM Signal strength indicator. | | | | | |
| 12 | FM Signal generator across FM antenna connector through (300 ohm) matching network. | 98 MHz at 1 KHz 100% (75 KHz) modulation, output level 350 μ V. | 98 MHz | | VR101 | Set lighting of signal strength FL display to '5' segments. |
| 13 | M.P.X. | | | | | |
| 14 | FM Signal generator across FM antenna connect through (300 ohm) matching network. | 98 MHz no modulation output level 1 mV. | 98 MHz | Frequency counter Pin 27 and 30 (GND). | VR103 | Adjust at 76 KHz the frequency of PLL oscillation. (\pm 75 KHz) |
| | | 98 MHz at 19 KHz 10%, 1 KHz 90%, Left Chn. | | | | |
| 15 | | | | Oscilloscope AC Voltage meter, Tape out. | VR104 | Right Chn. output level to minimum. |
| 16 | | | | | | Left Chn. output level to minimum. |
| 17 | Repeat step 14-16 so as to get Balanced Separation. | | | | | |

| STEP | SIGNAL GENERATOR | | DIAL (DISPLAY) SETTING | OUTPUT INDICATOR CONNECTED TO | ADJUST | ADJUST FOR |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|------------------------|---------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------|
| | CONNECTION TO | SET SIGNAL TO | | | | |
| 18 | C.L.L. (Close loop locked) Tuning System. | | | | | |
| 19 | Set Accutouch Switch to OFF position. | | | | | |
| 20 | FM Signal generator across FM antenna connector (300 ohm) through matching network. | 98 MHz at 1 KHz 100% modulation, output level 1 mV. | 98 MHz | Tuning meter (Fig. 2) Pins 61 and 31. | | |
| | | Shift thr frequency of the FM signal generator to let tuning meter sway by +30 μ A. | | | VR901 | Tuning Flywheel is magnetic locked. When the Accutouch switch ON. |
| 21 | | | | | | |
| 22 | Shift the frequency of the FM signal generator to let the Tuning meter sway by -30 μ A in the same manner. Make sure . . . When Accutouch Switch is ON, CLL surely works. If not, Adjust VR901 and repeat step 19 thru 21. | | | | | |
| 23 | Digital Frequency Display (FM IF Offset). | | | | | |
| 24 | Accutouch switch-OFF. | | | | | |
| 25 | Connect with a wire Pins 60 and 1 (GND), Pins 43 and 42 (GND). | | | | | |
| 26 | FM signal generatoe across FM antenna connector (300 ohm) through matching network. | 98 MHz at 1 KHz 100% modulation, output level 1 mV. | 98 MHz | Tuning meter (Fig. 2) Pins 61 and 31. | VR301 | The last-digit display flashes during FM IF offset is being misaligned. Adjust VR301 slowly CW or CCW, till the flashing. |
| | | | | | | |

| STEP | SIGNAL GENERATOR | | DIAL (DISPLAY) SETTING | OUTPUT INDICATOR CONNECTED TO | ADJUST | ADJUST FOR |
|------|---------------------------------------------------------------------|----------------------------------------------------------------------------|------------------------|-----------------------------------------------------|------------|----------------------------------------------------------------------------------------------------------------------------------|
| | CONNECTION TO | SET SIGNAL TO | | | | |
| 27 | Set Function to AM. | | | | | |
| 28 | Bar Antenna at right angle to rear panel. | | | | | |
| 29 | AM tracking | | | | | |
| 30 | Standard radiating EXT antenna | 1400 KHz at 400 Hz 30% modulation, Field strength 50 dB/m-80 dB/m | 1400 KHz | Oscilloscope, AC Vol Voltage Meter, Tape out. | TC2 TC1 | Maximum AC Voltage Mater. |
| | | 600 KHz at 400 Hz 30% modulation, Field strength 50 dB/m-80 dB/m | 600 KHz | | | |
| 31 | | | | | | |
| 32 | Repeat steps 30 - 31 until the maximum sensitivity can be obtained. | | | | | |
| 33 | Signal strength indication. | | | | | |
| 34 | Standard radiating EXT antenna | 1000 KHz at 400 Hz 30% modulation, Field strength 80 dB/m | 1000 KHz | | VR201 | Set lighting of signal strength FL display to the '5' segments. |
| | | | | | | |
| 35 | Digital Frequency Display (AM IF offset) | | | | | |
| 36 | Connect with a wire Pins 43 and 42 (GND.), Pin 46 and 42 (GND.). | | | | | |
| 37 | Standard radiating EXT antenna. | 1000 KHz at 400 Hz 30% modulation, Field strength 50 dB/m-80 dB/m | 1000 KHz | | VR302 | The last-digit display flashes during AM IF offset is being misaligned. Adjust VR302 slowly CW or CCW, till the flashing ceases. |
| | | | | | | |



(Fig-1)

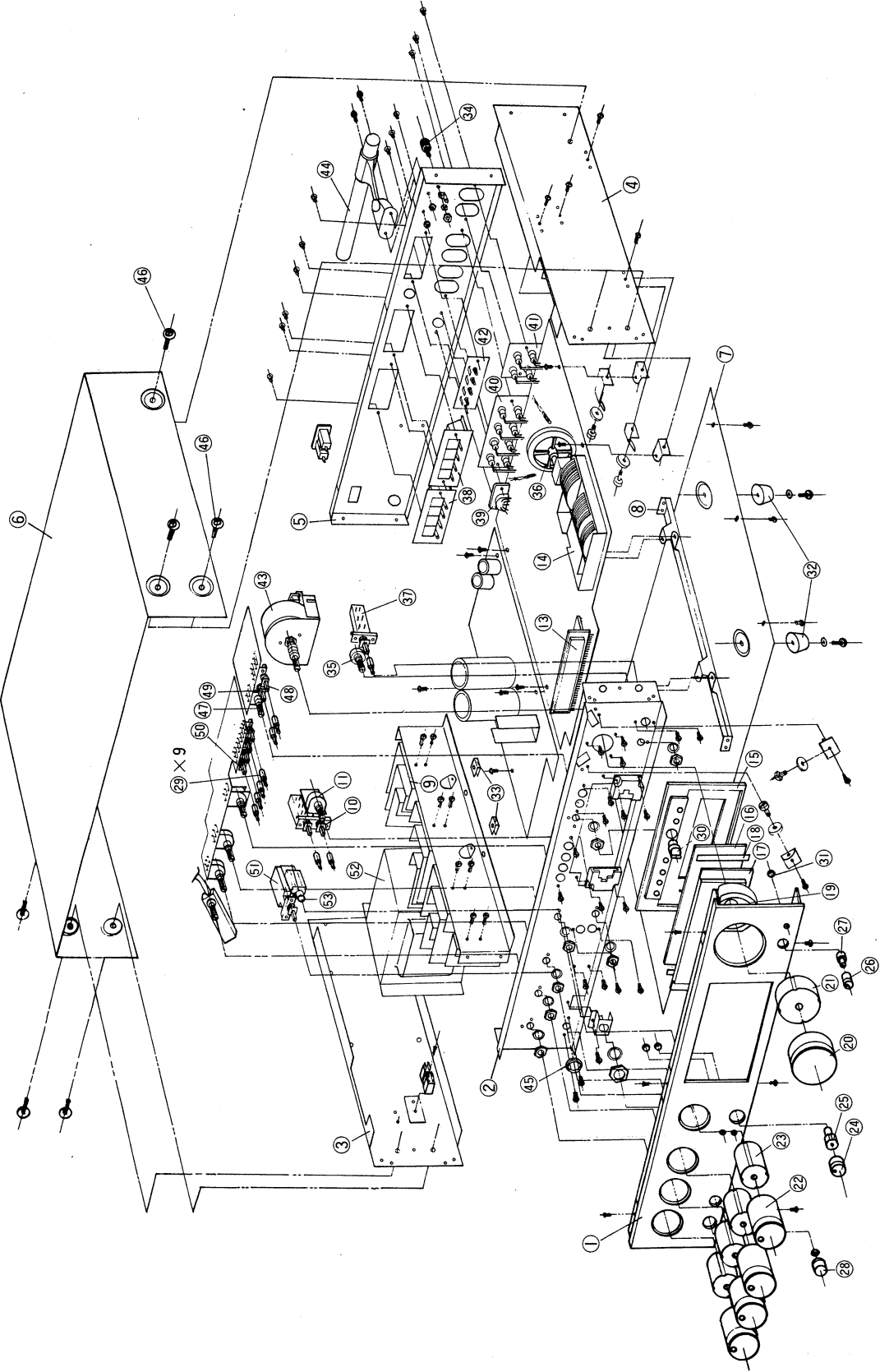


GM: Galvanometer ($\pm 100\mu A$)

(Fig-2)

REPLACEMENT PARTS

EXPLODED VIEW



PCB-19-1111 (RF)

| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|--------------|--------------|----------------|
| C214 | 17-5D203M | 0.02μ 50V Ce |
| C215 | 17-1.6E227Y | 220μ 16V El |
| C216 | 17-5D473M | 0.047μ 40V Ce |
| C217, C218 | 17-5D203M | 0.02μ 50V Ce |
| C219 | 17-5F152J | 0.0015μ 50V My |
| C220 | 17-2.5E107Y | 100μ 25V El |
| C301--303 | 17-5D104M | 0.1μ 50V Ce |
| C305 | 17-5D101K | 100p 50V Ce |
| C306--308 | 17-5D104M | 0.01μ 50V Ce |
| C309 | 17-5D680K | 68p 50V Ce |
| C311--313 | 17-5D104M | 0.1μ 50V Ce |
| C314 | 17-5D103M | 0.01μ 50V Ce |
| C315 | 17-5D104M | 0.02μ 50V Ce |
| C318 | 17-5D104M | 0.1μ 50V Ce |
| C319 | 17-5E474Y | 0.47μ 50V El |
| C320 | 17-5D104M | 0.1μ 50V Ce |
| C323 | 17-5D330K | 33p 50V Ce |
| C324 | 17-5D390K | 39p 50V Ce |
| C325 | 17-5D104M | 0.1μ 50V Ce |
| C326--351 | 17-5D204M | 0.02μ 50V Ce |
| C 401, C402 | 17-1.6E474Y | 47μ 16V El |
| C403, C404 | 17-5D470K | 47p 50V Ce |
| C405, C406 | 17-5D121K | 120p 50V Ce |
| C407, C408 | 17-0.63E107Y | 100μ 6.3V El |
| C409, C410 | 17-5D220K | 22p 50V Ce |
| C411, C412 | 17-5F272J | 0.0027μ 50V My |
| C413, C414 | 17-5D103M | 0.01μ 50V Ce |
| C415, C416 | 17-2.5E475Y | 4.7μ 25V El |
| C417, C418 | 17-5D101K | 100p 50V Ce |
| C421-424 | 17-5D104M | 0.1μ 50V Ce |
| C901 | 17-5D104M | 0.01μ 50V Ce |
| C902 | 17-1.6E225Y | 2.2μ 16V El |
| C903 | 17-5E474Y | 0.47μ 50V El |
| C904 | 17-5D104K | 1000p 50V El |
| C905 | 17-2.5E335Y | 3.3μ 25V El |
| C907 | 17-1.6E476Y | 47μ 16V El |
| C908 | 17-5D473M | 0.047U 50V Ce |
| C909, C910 | 17-1.6E106Y | 10μ 16V El |
| C911 | 17-5D473M | 0.047μ 50V Ce |
| C912 | 17-1.6E106Y | 10μ 16V El |
| [Transistor] | | |
| Q101 | TR-0233 | 2SC535 |
| Q102, Q103 | TR-0085 | 2SC1923 |
| Q104 | TR-0198 | 2SC1815 |
| Q105 | 30-2084-3 | BC549C |
| Q106, Q107 | TR-0085 | 2SC1923 |
| Q201, Q202 | TR-0198 | 2SC1815 |
| Q301 | 30-2019 | 2SC930 |
| Q302, Q303 | TR-0198 | 2SC1815 |
| Q304 | TR-0198 | 2SC1815 |
| Q901-Q905 | TR-0198 | 2SC1815 |
| Q906 | TR-0043 | 2SA733 |
| Q907-Q913 | TR-0198 | 2SC1815 |
| Q914 | TR-0043 | 2SA733 |
| Q915 | TR-0198 | 2SC1815 |
| Q916 | TR-0147 | 2SC1741 |
| Q917 | TF-0010 | 2SK40 |

| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|---------------------|---------------------|-----------------------------------|
| Q221 | 30-2078 | 2SD330 |
| [IC] | | |
| IC101 | TC-0089 | LA1231N |
| IC102 | TC-0094 | upc1161C |
| IC103 | TC-0085 | BA656 |
| IC201 | TC-0021 | HA1197 |
| IC301 | TC-0143 | DS8629 |
| IC302 | TC-0144 | LC7253 |
| IC401, 402 | TC-0120 | HA1457W |
| [Variable Resistor] | | |
| VR101 | 29-4023 | 50K ohm B |
| VR103 | 29-4022 | 5K ohm B |
| VR104 | 29-4056 | 200K ohm B |
| VR201 | 29-4082 | 50K ohm B |
| VR301, 302 | 29-4077 | 10K ohm B |
| V901 | 29-4082 | 50K ohm B |
| [Diode] | | |
| D101--107 | 30-1019 | Diode BAW 62 |
| D108 | 30-1002 | Diode IN4002 |
| D109 | 30-1019 | Diode BAW 62 |
| D201--203 | 30-1019 | Diode BAW 62 |
| D301 | 30-1058 | Zener Diode RD 5.1EB3 0.5W |
| D302 | 30-1019 | Diode BAW 62 |
| D901, D902 | 30-1010 | Diode IN60 |
| D903--D909 | 30-1019 | Diode BAW 62 |
| D910 | 30-1010 | Diode IN 60 |
| D911 | 30-1058 | Zener diode RD5.1EB3 0.5W |
| D912--915 | 30-1019 | Diode BAW 62 |
| [Coil, Filter] | | |
| L101 | 29-1038 | Inductor 40μH |
| L102 | 29-1039 | Inductor.18μH |
| L103 | 29-1038 | Inductor 40μH |
| L202 | 29-1051 | Inductor 2.2μH |
| CF101--102 | 29-3040 | Ceramic filter, SFE10.7MM |
| CF103 | 29-3044 | Ceramic filter, SFL10.7ML |
| T101 | 29-3047 | FM Det. transformer, secondary |
| T102 | 29-3046 | FM Det, transformer, primary |
| T201 | 29-3045 | AM OSC |
| T202 | 29-3032 | AM IFT with ceramic filter |
| T203 | 29-3029 | AM IFT* |
| FL102--103 | 29-3049 | Low pass filter, 19.38MHz |
| SW1 | 31-1117A 12-2076 | Function sw. Din jack |
| CY301 | 30-4001 | Crystal 4MHz |

PCB-19-1111 (RF)

| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|------------|---------------|-------------|
| R318 | 16-1/4CM123J | 12K ohm |
| R319 | 16-1/4CM473J | 47K ohm |
| R320 | 16-1/4CM103J | 10K ohm |
| R321 | 16-1/4CM821J | 820 ohm |
| R322 | 16-1/4CM560J | 56 ohm |
| R323, R324 | 16-1/4CM103J | 10K ohm |
| R401, R402 | | |
| R403, R404 | 16-1/4CM104J | 100K ohm |
| R405, R406 | 16-1/4CM222J | 2.2K ohm |
| R407, S408 | 16-1/4CM471J | 470 ohm |
| R409, R410 | 16-1/4CM273J | 27 ohm |
| R411, R412 | 16-1/4CM334J | 340K ohm |
| R413, R414 | 16-1/4CM471J | 470 ohm |
| R415, R416 | 16-1/4CM104J | 100K ohm |
| R539, R540 | 16-1/4CM154J | 150K ohm |
| R541, R542 | 16-1/4CM154J | 150K ohm |
| R669 | 16-1/4CM123J | 12K ohm |
| R670 | 16-1/4SCM683J | 68K ohm |
| R671 | 16-1/4CM103J | 10K ohm |
| R901, R902 | 16-1/4CM104J | 100K ohm |
| R903 | 16-1/4CM684J | 680K ohm |
| R904 | 16-1/4CU105J | 1M ohm |
| R905 | 16-1/4CM104J | 100K ohm |
| R906 | 16-1/4CM684J | 680K ohm |
| R907, R908 | 16-1/4CM472J | 4.7K ohm |
| R909 | 16-1/4CU102J | 1K ohm |
| R910 | 16-1/4CM153J | 15K ohm |
| R911, R912 | 16-1/4CM123J | 12K ohm |
| R913, R914 | 16-1/4CM103J | 10K ohm |
| R915 | 16-1/4CM154J | 150K ohm |
| R916, R917 | 16-1/4CM223J | 22K ohm |
| R918 | 16-1/4CM182J | 1.8K ohm |
| R919 | 16-1/4CM153J | 15K ohm |
| R920 | 16-1/4CM560J | 56 ohm |
| R921 | 16-1/4CM473J | 47K ohm |
| R922 | 16-1/4CM102J | 1K ohm |
| R923, R924 | 16-1/4CM103J | 10K ohm |
| R925, R926 | 16-1/4CM473J | 47K ohm |
| R927 | 16-1/4CM104J | 100K ohm |
| R928, R929 | 16-1/4CM103J | 10K ohm |
| R930 | 16-1/4CM153J | 15K ohm |
| R930 | 16-1/4CU333J | 33K ohm |
| R932 | 16-1/4CM472J | 4.7K ohm |
| R933 | 16-1/4CM223J | 22K ohm |
| R934, R936 | 16-1/4CM103J | 10K ohm |
| R937 | 16-1/4CM472J | 4.7K ohm |
| R938, R939 | 16-1/4CM104J | 100K ohm |
| R940 | 16-1/4CM473J | 47K ohm |
| R941 | 16-1/4CM103J | 10K ohm |
| R942 | 16-1/4CM473J | 47K ohm |
| R943 | 16-1/4CM103J | 10K ohm |
| R944 | 16-1/4CM474J | 470K ohm |
| R945 | 16-1/4CM103J | 10K ohm |
| R946 | 16-1/4CM101J | 100 ohm |
| R947, R948 | 16-1/4CM103J | 10K ohm |
| R949, R950 | 16-1/4CM103J | 10K ohm |
| R951 | 16-1/4CM101J | 100 ohm |
| R952 | 16-1/4CM473J | 47K ohm |
| R953 | 16-1/4CM183J | 1.8K ohm |
| R954 | 16-1/4CM224J | 220K ohm |
| R955 | 16-1/4CM103J | 10K ohm |

| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|------------------------------------|--------------|----------------|
| R956 | 16-1/4CM472J | 4.7K ohm |
| R957, R958 | 16-1/4CM103J | 10K ohm |
| R959 | 16-1/4CM471J | 470 ohm |
| R960 | 16-1/4CM103J | 10K ohm |
| R961 | 16-1/4CM472J | 4.7K ohm |
| R962 | 16-1/4CU564J | 560K ohm |
| R963 | 16-1/4CM472J | 4.7K ohm |
| R964 | 16-1/4CM103J | 10K ohm |
| R965 | 16-1/4CU104J | 100K ohm |
| [Capacitor] | | |
| C101 | 17-5D473M | 0.047μ 50V Ce |
| C102 | 17-5D103M | 0.1μ 50V Ce |
| C103, C104 | 17-5D473M | 0.047μ 50V Ce |
| C105 | 17-1.6E106Y | 10μ 16V El |
| C106, C107 | 17-2.5E335Y | 3.3μ 25V El |
| C108 | 17-5D203M | 0.02μ 50V Ce |
| C109, C110, C111 | 17-5D473M | 0.047μ 50V Ce |
| C112 | 17-5E474Y | 0.47μ 50V El |
| C113 | 17-5D473M | 0.047μ 50V Ce |
| C114 | 17-1.6E106Y | 10μ 16V El |
| C115, C116, C118, C119, C120, C122 | 17-5D473M | 0.047μ 50V Ce |
| C123 | 17-5E474Y | 0.47μ 50V El |
| C125 | 17-1.6E476Y | 47μ 16V El |
| C126 | 17-2.5E476Y | 4.7μ 25V El |
| C127 | 17-5D201K | 200p 50V Ce |
| C128 | 17-1.6E226Y | 22μ 16V El |
| C129 | 17-5U331J | 330p 50V St |
| C130 | 17-2.5E475Y | 4.7μ 25V El |
| C131 | 17-1.6E226Y | 22μ 16V El |
| C132 | 17-5F473J | 0.047μ 50V My |
| C133 | 17-5U471J | 470p 50V St |
| C134 | 17-1.60224M | 0.22μ 16V Ta |
| C135 | 17-1.60335M | 3.3μ 16V Ta |
| C136 | 17-1.60155M | 1.5μ 16V Ta |
| C137 | 17-5E474Y | 0.47μ 50V El |
| C138 | 17-1.6E226Y | 22μ 16V El |
| C139 | 17-1.6E227Y | 220μ 16V El |
| C140 | 17-1.6E226Y | 22μ 16V El |
| C141, C142 | 17-5F182J | 0.0018μ 50V My |
| C143, C144 | 17-5E105Y | 1μ 50V El |
| C145 | 17-5D121K | 120p 50V Ce |
| C146 | 17-5E476Y | 47μ 16V El |
| C147 | 17-5E474Y | 0.47μ 50V NON |
| C148 | 17-5D473M | 0.047μ 50V Ce |
| C149 | 17-1.6E476Y | 47μ 16V El |
| C150-154 | 17-5D473M | 0.047μ 50V Ce |
| C155, C156 | 17-5D203M | 0.02μ 50V Ce |
| C201 | 17-5D203M | 0.02μ 50V Ce |
| C202-204 | 17-5D473M | 0.047μ 50V Ce |
| C205 | 17-5D102K | 1000p 50V Ce |
| C206, C207 | 17-2.5E475Y | 4.7μ 25V El |
| C208, C209 | 17-5F183J | 0.018μ 50V My |
| C210 | 17-2.5E475Y | 4.7μ 25V El |
| C211 | 17-1.6E106Y | 10μ 16V El |
| C212 | 17-5D473M | 0.047μ 50V Ce |
| C213 | 17-5D104M | 0.01μ 50V Ce |

PARTS LIST . . . (P.C.B.)

REMARKS

Capacitor: My . . . Mylar, El . . . Electrolytic, St . . . Styrol, Ce . . . Ceramic
 Mi . . . Mica, Ta . . . Tantalum, Lp . . . Line pass (AC Cap.)
 Tm . . . Trimmer, Ac . . . AC Capacitor, Fi . . . Film Cap.
 Resistor: Rd . . . Carbon, Rc . . . Cement, Rm . . . Metal Film, Rf . . . Flame proof
 Ro . . . Oxid Metal,
 ±5%, 0.25W, unless specified otherwise.

PCB-19-1111 (RF)

| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|------------|--------------|-------------|
| [Resistor] | | |
| R101 | 16-1/4CU823J | 82K ohm |
| R102 | 16-1/4CM124J | 120K ohm |
| R103 | 16-1/4CM562J | 5.6K ohm |
| R104 | 16-1/4CM471J | 470 ohm |
| R105 | 16-1/4CM331J | 330 ohm |
| R106 | 16-1/4CM101J | 100 ohm |
| R107 | 16-1/4CN560J | 56 ohm |
| R108 | 16-1/4CM562J | 5.6K ohm |
| R109 | 16-1/4CM471J | 470 ohm |
| R110 | 16-1/4CM331J | 330 ohm |
| R111 | 16-1/4CM101J | 100 ohm |
| R107 | 16-1/4CN560J | 56 ohm |
| R108 | 16-1/4CM562J | 5.6K ohm |
| R109 | 16-1/4CM471J | 470 ohm |
| R110 | 16-1/4CM331J | 330 ohm |
| R111 | 16-1/4CM101J | 100 ohm |
| R112 | 16-1/4CN560J | 56 ohm |
| R113 | 16-1/4CM272J | 2.7K ohm |
| R114 | 16-1/4CM471J | 470 ohm |
| R115 | 16-1/4CM331J | 330 ohm |
| R116 | 16-1/4CM821J | 820 ohm |
| R117 | 16-1/4CN560J | 56 ohm |
| R118 | 16-1/4CM122J | 1.2K ohm |
| R119, R120 | 16-1/4CM472J | 4.7K ohm |
| R121 | 16-1/4CN560J | 56 ohm |
| R122 | 16-1/4CM331J | 330 ohm |
| R123 | 16-1/4CM104J | 100K |
| R124 | 16-1/4CM153J | 15K ohm |
| R125 | 16-1/4CU102J | 1K ohm |
| R126 | 16-1/4CU103J | 10K |
| R127 | 16-1/4CM152J | 1.5K ohm |
| R128 | 16-1/4CM153J | 15K ohm |
| R129 | 16-1/4CM221J | 220 ohm |
| R130 | 16-1/4CM153J | 15K ohm |
| R131 | 16-1/4CM101J | 100 ohm |
| R132 | 16-1/4CN820J | 82 ohm |
| R133 | 16-1/4CM563J | 56K ohm |
| R134 | 16-1/4CM123J | 12K ohm |
| R135 | 16-1/4CM473J | 47K ohm |
| R136 | 16-1/4CM682J | 6.8K ohm |
| R137 | 16-1/4CU473J | 47K ohm |
| R138 | 16-1/4CM562J | 5.6K ohm |
| R139 | 16-1/4CU103J | 10K ohm |
| R140 | 16-PCU824J | 820K ohm |
| R141 | 16-1/4CM682J | 6.8K ohm |
| R142 | 16-1/4CM332J | 3.3K ohm |
| R143 | 16-1/4CM333J | 33K ohm |
| R144 | 16-1/4CM104J | 100K ohm |
| R145 | 16-1/4CM103J | 10K ohm |
| R146 | 16-1/4CM153J | 15K ohm |

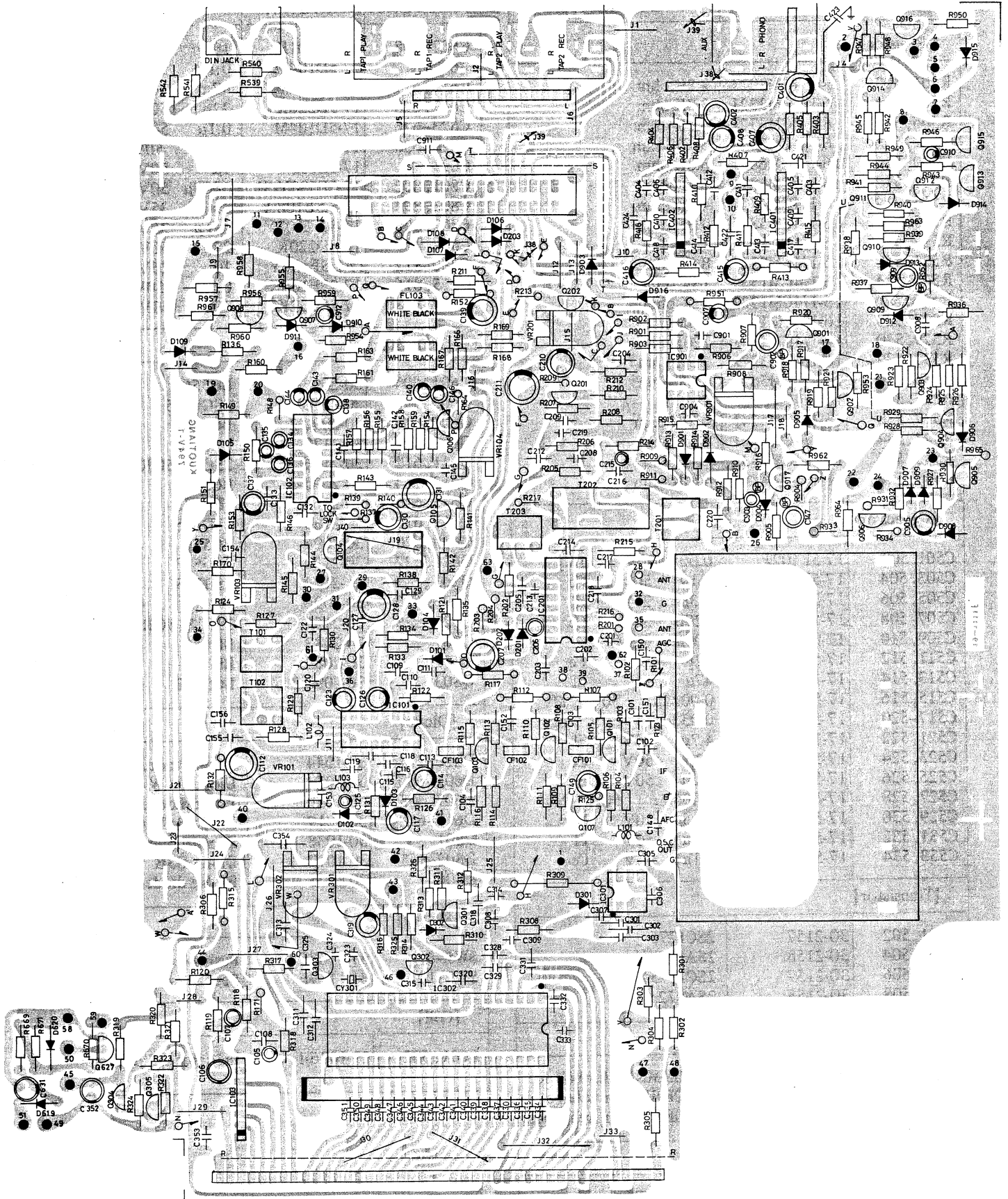
| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|------------|--------------|-------------|
| R148 | 16-1/4CM222J | 2.2K ohm |
| R149 | 16-1/4CM562J | 5.6K ohm |
| R150 | 16-1/4CM102J | 1K ohm |
| R151 | 16-1/4CM473J | 47K ohm |
| R152 | 16-1/4CN101J | 100 ohm |
| R153 | 16-1/4CM104J | 100K ohm |
| R154, R155 | 16-1/4CM822J | 8.2K ohm |
| R156 | 16-1/4CM273J | 27K ohm |
| R157, R158 | 16-1/4CM333J | 33K ohm |
| R159 | 16-1/4CM273J | 27K ohm |
| R160 | 16-1/4CM682J | 6.8K ohm |
| R161 | 16-1/4CM332J | 3.3K ohm |
| R163 | 16-1/4CM332J | 3.3K ohm |
| R164 | 16-1/4CU682J | 6.8K ohm |
| R166, R167 | 16-1/4CM392J | 3.9K ohm |
| R168, R169 | 16-1/4CM102J | 1K ohm |
| R170 | 16-1/4CM473J | 47K ohm |
| R172 | 16-1/4CU562J | 5.6K ohm |
| R201 | 16-1/4CU151J | 150 ohm |
| R202 | 16-1/4CM331J | 330 ohm |
| R203, R204 | 16-1/4CU103J | 10K ohm |
| R205 | 16-1/4CM272J | 2.7K ohm |
| R206 | 16-1/4CM273J | 27K ohm |
| R207 | 16-1/4CM154J | 150K ohm |
| R208 | 16-1/4CM273J | 27K ohm |
| R209 | 16-1/4CU122J | 1.2K ohm |
| R210 | 16-1/4CM271J | 270 ohm |
| R211 | 16-1/4CN221J | 220 ohm |
| R212 | 16-1/4CM104J | 100K ohm |
| R213 | 16-1/4CU473J | 47K ohm |
| R214 | 16-1/4CN221J | 220 ohm |
| R215 | 16-1/4CM470J | 47 ohm |
| R216 | 16-1/4CU151J | 1.5K ohm |
| R301, R302 | 16-1/4CM102J | 1K ohm |
| R303 | 16-1/4CM821J | 820 ohm |
| R304 | 16-1/4CM102J | 1K ohm |
| R305 | 16-1/4CN220J | 22 ohm |
| R306 | 16-1/4CM822J | 8.2K ohm |
| R308 | 16-1/4CM392J | 3.9K ohm |
| R310 | 16-1/4CM471J | 470 ohm |
| R311 | 16-1/4CM332J | 3.3K ohm |
| R312 | 16-1/4CM473J | 47K ohm |
| R313 | 16-1/4CM154J | 150K ohm |
| R314 | 16-1/4CM103J | 10K ohm |
| R315 | 16-1/4CM561J | 560 ohm |
| R316 | 16-1/4CM104J | 100K ohm |
| R317 | 16-1/4CM473J | 47K ohm |

PARTS LIST . . . (Cosmetic)

| ITEM | PARTS NO. | DESCRIPTION |
|------|-----------|---------------------------------------------|
| 1 | 11-8104 | Front panel |
| 2 | 11-6058 | Sub panel |
| 3 | 11-6057 | Side panel, left |
| 4 | | Side panel, right |
| 5 | 11-8110 | Rear panel |
| 6 | 50-1021 | Bonnet |
| 7 | 11-6059 | Bottom plate |
| 8 | 11-6056 | Channel |
| 9 | 11-5049 | Heat sink Ass'y |
| 10 | 31-1119F | Switch, Speaker |
| 11 | 29-4071 | Variable resistor, Balance |
| 12 | 31-1117A | Switch, Function |
| 13 | TT-0027 | Display |
| 14 | 33-2016 | Front End, FF233U12 |
| 15 | 11-8129 | Dressing plate |
| 16 | 11-8126 | Filter |
| 17 | 11-8127 | Protector (Transparent cover) |
| 18 | 28-2063 | Spacer |
| 19 | 28-2053 | Masking, Tuning Knob |
| 20 | 12-3063 | Knob, Tuning (out side) |
| 21 | 12-3064 | (in side) |
| 22 | 12-3065 | Knob, Volume (out side) |
| 23 | 12-3066 | (in side) |
| 24 | 12-3061 | Knob, Balance (out side) |
| 25 | 12-3062 | (in side) |
| 26 | 12-3077 | Knob, Muting (out side) |
| 27 | 12-3078 | (in side) |
| 28 | WJ-1090 | knob, Power |
| 29 | WJ-1129 | Knob, Mono, Subsonic, High cut, Loudness |
| | | Monitor, Tape selector, Speaker, Accutouch |
| 30 | WJ-1067 | Knob, Tape dubbing |
| 31 | 28-1036 | Protector, Accutouch |
| 32 | 28-1029 | Foot |
| 33 | 11-2183 | Bracket for heat sink |
| 34 | 11-2183 | Terminal, GND Ass'y |
| 35 | 29-4093F | Variable resistor, Muting threshold |
| 36 | 13-5006 | Drum, Dial cord |
| 37 | 31-111F | Switch, Accutouch |
| 38 | 12-2007 | Terminal, Speaker |
| 39 | 12-2052 | Terminal, DIN |
| 40 | 12-2052 | Terminal, (8P) |
| 41 | 12-2074 | (4P) |
| 42 | 12-2080 | Terminal, Antenna |
| 43 | UX-1009 | Fly wheel |
| 44 | 29-5010 | Bar antenna |
| 45 | 28-1037 | Protector, Power switch |
| 46 | 15-2051 | Special screw |
| 47 | 31-1051 | Switch, Dubbing |
| 48 | 31-1123F | Switch, Tape selector |
| 49 | 31-1123F | Switch, Tape monitor |
| 50 | 31-1107F | Switch, Mono, Sub sonic, Loudness, High cut |
| 51 | 31-1129A | Switch, Power |

| ITEM | PARTS NO. | DESCRIPTION |
|------|-----------|---------------------------------|
| 52 | 29-2050-5 | Power transformer, E(220V-240V) |
| | 29-2050-6 | Power transformer, U (120V) |
| 53 | 12-2078 | Head phone jack |

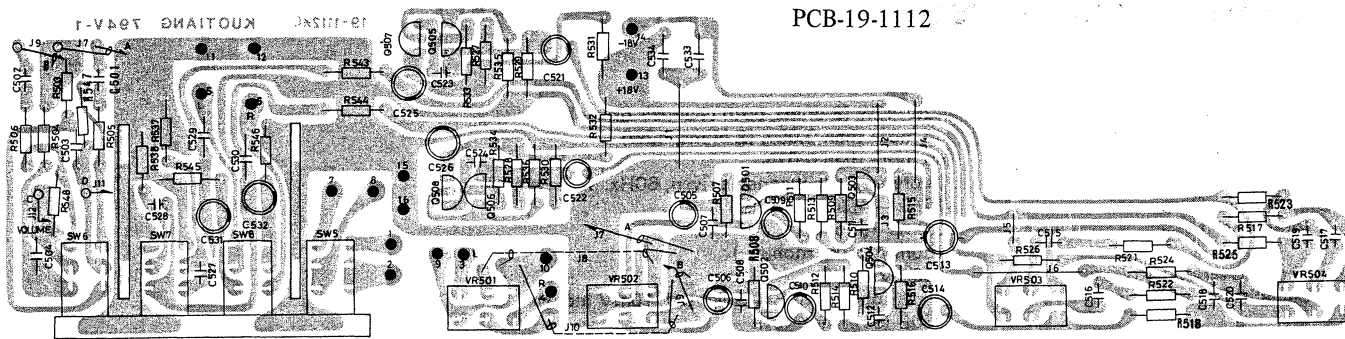
PCB-19-1111



PCB-19-1112 (Audio, Pre Amp.)

| SYMBOL NO. | PART NO. | DESCRIPTION |
|---------------------|--------------|----------------------------|
| [Resistor] | | |
| R501, 502 | 16-1/4CM222J | 2.2K ohm |
| R503, 504 | 16-1/4CM332J | 3.3K ohm |
| R505, 506 | 16-1/4CM472J | 4.7K ohm |
| R507, 508 | 16-1/4CM334J | 330K ohm |
| R509, 510 | 16-1/4CM682J | 6.8K ohm |
| R511, 512 | 16-1/4CM681J | 680 ohm |
| R513, 514 | 16-1/4CM472J | 4.7K ohm |
| R515, 516 | 16-1/4CM332J | 3.3K ohm |
| R517, 518 | 16-1/4CM123J | 12K ohm |
| R521, 522 | 16-1/4CM822J | 8.2K ohm |
| R523, 524 | 16-1/4CM153J | 15K ohm |
| R525, 526 | 16-1/4CM123J | 12K ohm |
| R527, 528 | 16-1/4CM155J | 1.5M ohm |
| R529, 530 | 16-1/4CM224J | 220K ohm |
| R531, 532 | 16-1/4CM332J | 3.3K ohm |
| R533, 534 | 16-1/4CM562J | 5.6K ohm |
| R535, 536 | 16-1/4CM390J | 39 ohm |
| R537, 538 | 16-1/4CM474J | 470K ohm |
| R543, 544 | 16-1/4CM472J | 4.7K ohm |
| R545, 546 | 16-1/4CM683J | 68K ohm |
| R547, 548 | 16-1/4CM474J | 470K ohm |
| [Capacitor] | | |
| C501, 502 | 17-5F102J | 0.001 μ 50V 1My |
| C503, 504 | 17-5D104M | 0.1 μ 50V Ce |
| C505, 506 | 17-2.5E335Y | 3.3 μ 25V El |
| C507, 508 | 17-5D221K | 220p 50V Ce |
| C509, 510 | 17-0.63E107Y | 100 μ 6.3V El |
| C511, 512 | 17-5D220K | 22p 50V Ce |
| C513, 514 | 17-1.6E476Y | 47 μ 16V El |
| C515, 516 | 17-5F222J | 0.0022 μ 50V My |
| C517-520 | 17-5F333J | 0.033 μ 50V My |
| C521, 522 | 17-2.5E475Y | 4.7 μ 25V El |
| C523, 524 | 17-5D220K | 22p 50V Ce |
| C525, 526 | 17-5E225Y | 2.2 μ 50V El |
| C527, 528 | 17-5F562J | 0.0056 μ 50V My |
| C529, 530 | 17-5F154J | 0.15 μ 50V My |
| C531, 532 | 17-5E225Y | 2.2 μ 50V El |
| C533, 534 | 17-5D104M | 0.1 μ 50V Ce |
| [Transistor] | | |
| Q501, 502 | 30-2157 | 2SC1775 |
| Q503, 504 | 30-2158 | 2SA872 |
| Q505, 506 | 30-2157 | 2SC1775 |
| Q507, 508 | 30-2158 | 2SA872 |
| [Variable Resistor] | | |
| VR501 | 29-4071 | VR50KMNX2 for balance |
| VR502 | 29-4097F | VR50K BX2 for volume |
| VR503, 504 | 29-4028 | VR50K BX2 for treble, bass |
| [Capacitor] | | |
| C601, 602 | 17-2.5E475Y | 4.7 μ 25V El |
| C605, 606 | 17-1.6E476Y | 47 μ 16V El |

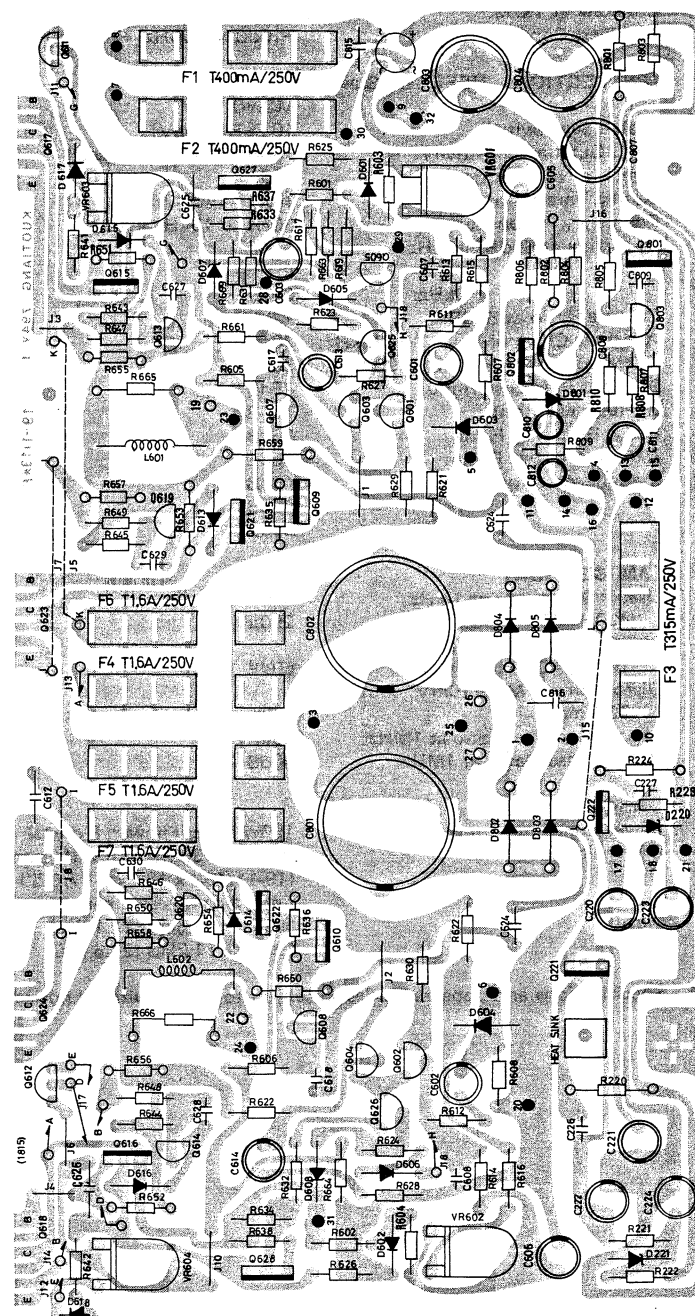
| SYMBOL NO. | PARTS NO. | DESCRIPTION |
|--------------|--------------|-----------------------|
| C607, 608 | 17-5D101K | 100p 50V Ce |
| C612 | 17-5D104M | 0.1 μ 50V Ce |
| C613, 614 | 17-1.6E476Y | 47 μ 16V El |
| C617, 618 | 17-5D220K | 22p 50V Ce |
| C623-626 | 17-5D104M | 0.1 μ 50V Ce |
| C627-630 | 17-5F104J | 10 μ 50V My |
| C631 | 17-5E105Y | 1 μ 50V El |
| C801, 802 | 17-5E588Y-S1 | 6800 μ 50V El |
| C803, 804 | 17-3.5E108 Y | 1000 μ 35V El |
| C807, 808 | 17-3.5E107Y | 100 μ 35V |
| C809 | 17-5D220K | 22p 50V Ce |
| C810-812 | 17-2.5E106Y | 10 μ 25V El |
| C815, 816 | 17-25F104K | 0.1 μ 250V Ce |
| C817, 818 | 17-5D222K | 2200p 50V Ce |
| [Transistor] | | |
| Q 601--604 | 30-2096 | BC556A |
| Q605 | 30-2156 | 2SC1815 |
| Q607, 608 | 20-2090-2 | BC546B |
| Q609, 610 | 30-2170 | 2N6556 |
| Q611, 612 | 30-2156 | 2SC1815GR |
| Q613, 614 | 30-2090-2 | BC546B |
| Q615, 616 | 30-2169 | 2N6553 |
| Q617, 618 | 30-2185 | 2SD845 |
| Q619, 620 | 30-2096 | BC556 |
| Q621, 622 | 30-2170 | 2N6553 |
| Q263, 624 | 31-2184 | 2SB755 |
| Q625, 626 | 30-2096 | BC556 |
| Q627, 628 | 30-2156 | 2SC1815GR |
| Q801 | 30-2083 | BD139 |
| Q802 | 30-2082 | BD140 |
| Q803 | 30-2090-2 | BC546B |
| [Diode] | | |
| D220, 221 | 30-1044 | Zener diode, 15V 0.5W |
| D601--606 | 30-1052 | Diode BAW 62 |
| D607, 608 | 30-1050 | Zener diode, 6.2V |
| D613--618 | 30-1019 | Diode BAW 62 |
| D801 | 30-1038 | Zener diode, 18V |
| D802-805 | 30-1017- 1 | Diode G3B |
| D806 | 30-1035 | Bridge diode W005 |
| [Switch] | | |
| SW5--8 | 31-1107F | Push sw. 4 key 2U |
| SW9, 10 | 31-1119F | Speaker sw. |
| [Coil] | | |
| L601, 602 | 29-1036-1 | Inductor 3.3 μ H |



PCB-19-1113 (Power Amp.)

| SYMBOL NO. | PARTS NO. | DESCRIPTION | |
|------------|--------------|-------------|-------|
| [Resistor] | | | |
| R220 | 16-1A100J | 10 ohm | 1W Rm |
| R221 | 16-1/4CM221J | 820 ohm | |
| R222 | 16-1/4CM152J | 1.5K ohm | |
| R223 | 16-1/4CM182J | 1.8K ohm | |
| R224 | 16-1A220J | 22 ohm | 1W Rm |
| R601, R602 | 16-1/4CM273J | 27K ohm | |
| R603, R604 | 16-1/4CM152J | 1.5K ohm | |
| R607, R608 | 16-1/4CM184J | 180K ohm | |
| R609 | 16-1/4CM684J | 680K ohm | |
| R611, R612 | 16-1/4CM684J | 680K ohm | |
| R613, R614 | 16-1/4CM223J | 22K ohm | |
| R615, R616 | 16-1/4CM152J | 1.5K ohm | |
| R617 | 16-1/4CM104J | 100K ohm | |
| R619 | 16-1/4CM223J | 22K ohm | |
| R621, R622 | 16-1/4CM273J | 27K ohm | |
| R623, R624 | 16-1/4CM223J | 22K ohm | |
| R625, R626 | 16-1/4CM103J | 10K ohm | |
| R627, 628 | 16-1/4CM102J | 1K ohm | |
| R629, R630 | 16-1/4CM152J | 1.5K ohm | |
| R631, R632 | 16-1/4CM332J | 3.3K ohm | |
| R634, R633 | 16-1/4CM122J | 1.2K oh, | |
| R635, R636 | 16-1/4CM150J | 15 ohm | |
| R637, 638 | 16-1/4CM470J | 47 ohm | |
| R641, R642 | 16-1/4CM561J | 560 ohm | |
| R643-646 | 16-1/4CM181J | 180 ohm | |
| R647, R648 | 16-1/4CM121J | 120 ohm | |
| R649, R650 | 16-1/4CM101J | 100 ohm | |
| R651, R652 | 16-1/2CM680J | 68 ohm | 1/2W |
| R653, R654 | 16-1/2CN680J | 68 ohm | 1/2W |
| R655-658 | 16-1003 | 0.22 ohm | 5W |
| R659, 660 | 16-1A100J | 10 ohm | 1W Rm |
| R661, R662 | 16-1/4CM223J | 22K ohm | |
| R663, R664 | 16-1/4CM103J | 10K ohm | |
| R665, R666 | 16-1A100J | 10 ohm | 1W Rm |
| R801, R802 | 16-1A100J | 10 ohm | 1W Rm |
| R803 | 16-1/4CM102J | 1K ohm | |
| R804 | 16-1/4CM681J | 680 ohm | |
| R805 | 16-1/4CM102J | 1K ohm | |
| R806 | 16-1/4CM681J | 680 ohm | |
| R807 | 16-1/4CM102J | 1K ohm | |
| R808, R809 | 16-1/4CM103J | 10K ohm | |
| R810 | 16-1/4CM184J | 180K ohm | |

PCB-19-1113



SPECIFICATIONS

[AUDIO SECTION]

RMS Output Power: 42W/42W (8 ohms, both channels driven)
 Total Harmonic Distortion: no more than 0.05% (8 ohms, 42W)
 Rated I.M.: no more than 0.07%
 (8 ohms, both channels driven, 60Hz: 7kHz = 4:1)
 Frequency Response: 15Hz – 40kHz (–1dB)
 Input Sensitivity: 2.2mV (phono)
 150mV (aux., monitor)
 Phono Overload Voltage: 130mV
 Signal-to-Noise Ratio: 85dB (phono, IHF-A weighted, 10mV input)
 95dB (aux, monitor)
 Residual Noise: 0.5mV
 Tone Control: Bass; ±10dB at 100Hz
 Treble; ±10dB at 10kHz
 Filters: Subsonic; 45Hz (6dB/oct)
 High cut; 7kHz (6dB/oct)
 Crosstalk at 1kHz: –60dB (aux, monitor)
 Loudness Control: +10dB at 100Hz, +7dB at 10kHz (VR: –30dB)

[FM SECTION] (IEEE/IHF Standard)

| | MONO | STEREO |
|---------------------------------|--------------------------|--------|
| Usable Sensitivity: | 10.8dB (1.9µV) | |
| 50dB Quieting Sensitivity: | 16dBf (3.5µV) (50µ sec.) | |
| Signal-to-Noise Ratio at 65dBf: | 75dB | |
| Muting Threshold: | 10µV – 500µV | |
| Frequency Response: | 30Hz to 15kHz (±1dB) | |
| Distortion at 65dBf 100Hz: | 0.2% | 0.3% |
| 1kHz: | 0.15% | 0.2% |
| 6kHz: | 0.4% | 0.4% |
| Capture Ratio at 65dBf: | 1.3dB | |
| Alternate Channel ±400kHz: | 70dB | |
| Selectivity 40kHz dev. ±300kHz: | 60dB | |
| Spurious Response Ratio: | 75dB | |
| IF Response Ratio: | 75dB | |
| Image Response Ratio: | 55dB | |
| AM Suppression Ratio: | 55dB | |
| Stereo Separation 100Hz: | 40dB | |
| 1kHz: | 45dB | |
| 10kHz: | 35dB | |

[AM SECTION]

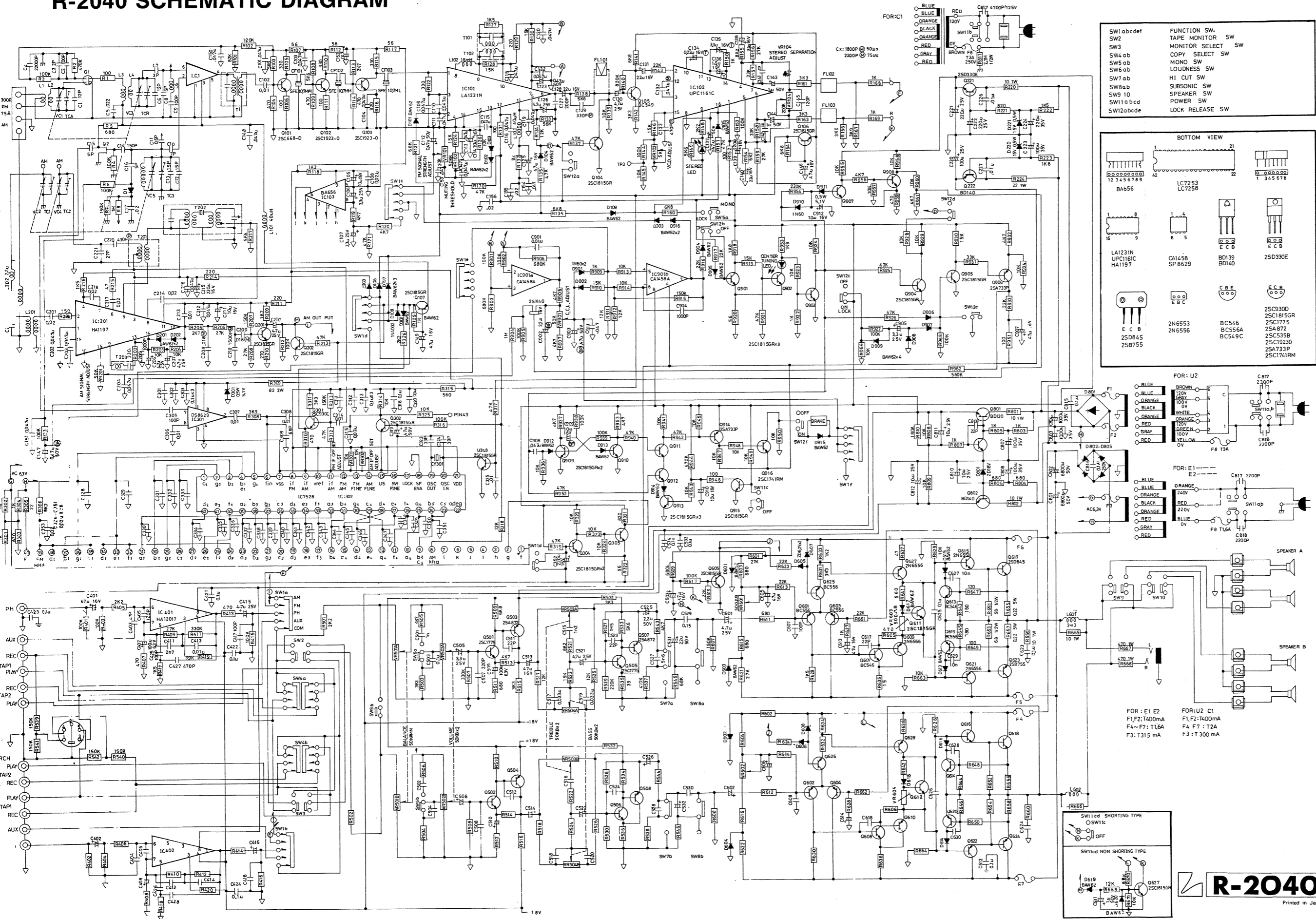
Usable Sensitivity at 1MHz,
 400Hz 30% mod.: 250µV/m
 Signal-to-Noise Ratio at 1MHz,
 10mV, 400Hz, 30% mod: 50dB
 Distortion at 1MHz 10mV, 400Hz
 30% mod: 0.5%
 Image Response Ratio at 1MHz: 50dB
 IF Response Ratio at 1MHz: 40dB

[GENERAL]

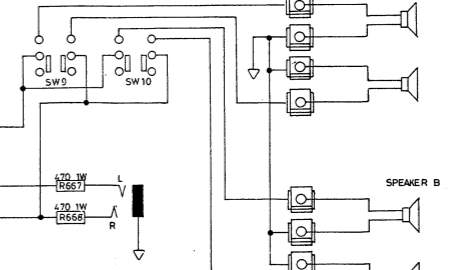
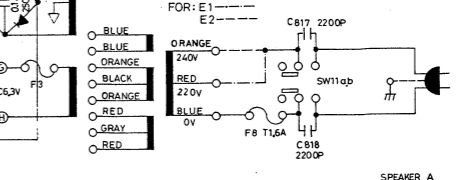
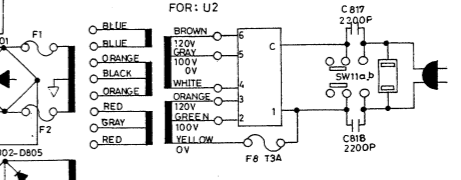
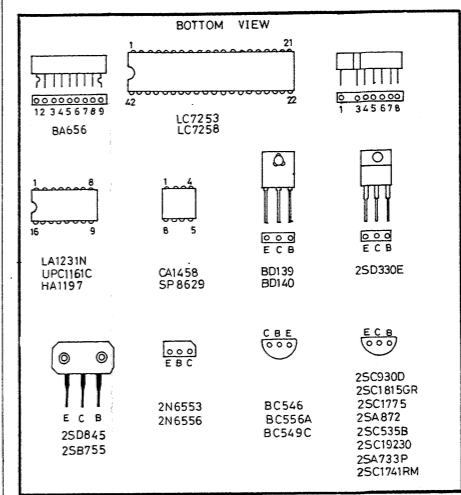
Power Consumption: 180W (at full power, 8 ohms)
 Dimensions: 500(W) x 330(D) x 115(H)mm
 (19-11/16" x 13" x 4-17/32")
 (including legs and rear protrusions)
 Weight: Net 9.6kgs (21.1 lbs.)
 Gross 11.2kgs (24.6 lbs.)

Specifications and appearance design subject to change without notice.

R-2040 SCHEMATIC DIAGRAM

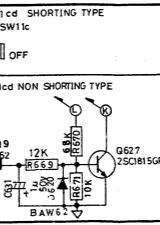


| | | |
|-----------|-------------------|-----------------|
| SW1abcdef | FUNCTION SW. | TAPE MONITOR SW |
| SW2 | MONITOR SELECT SW | COPY SELECT SW |
| SW3 | MONO SW | LOUDNESS SW |
| SW4ab | HI CUT SW | SUBSONIC SW |
| SW5ab | LOCK SW | SPEAKER SW |
| SW6ab | POWER SW | LOCK RELEASE SW |
| SW7ab | | |
| SW8ab | | |
| SW9 10 | | |
| SW11abcd | | |
| SW12abcde | | |



FOR: E1 E2
F1, F2: 1400mA
F4~F7: T1,6A
F3: T315 mA

FOR: U2 C1
F1, F2: 1400mA
F4 F7: T2A
F3: T 300 mA



R-2040
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