MASTER.

SM-480

"TEN" SERVICE MANUAL

CASSETTE DECK WITH ELECTRONIC TUNING TUNER

(AM/FM, MPX, SEARCH 6PB, AUTO-REVERSE)

Model CE-4431EX1

FEATURES

1. PLL Synthesizer system.
2. There are three tuning methods ; manual tuning, search tuning and memory preset button tuning.
3. For manual tuning, the frequency can be changed step by step by 10 kHz for AM and 100 kHz for FM with every on click.
4. Search tuning operations can be carried out in two directions, upward or downward, and search sensitivity can be also switched over to either mode "Local" or "Distant".
5. Memory preset tuning is available for 6 AM and 6 FM stations. (10 stations in all)
6. Built in noise blanker to kill any pulses form antenna for interference-free reception.
7. Tape select switch permits the use of either chrome on metal tapes.
8. Newly designed, easy loading system deck is adopted.

FUJITSU TEN LIMITED

REPAIRING PRECAUTIONS MOS IC

The following precautions are necessary for repairing PC boards containing MOS IC.
This model contains MOS ICs as follows:

RN-EID-MB8735X

1. MOS ICs should be stored or transported in conductive material so that all exposed leads are shorted together.
   MOS ICs must not be inserted into conventional stylo-form or plastic trays of the type used for storage and transportation of other semiconductor devices.
   Sometimes, several kilo-volt static may exist on an ungrounded bench surface and human body.
2. Therefore, MOS ICs should be placed on a grounded bench surface and the technicians should ground themselves prior to handling devices. This is done most effectively by having the technician wear a conductive wrist strap in series with 100k ohm to ground.
3. [illegible] on clothing should not be worn while handling MOS circuits.
4. Do not insert or remove MOS ICs with power applied.
5. Use a grounded soldering iron when soldering.
6. MOS ICs should be handled by their packages and not by the leads, if at all possible. Prior to touching the unit, the technician should touch an electrical ground to remove any static charge that may have been accumulated.

COMPOSITION

CE-4431EX1

Illus. No.	Part No.	Description	Q'ty	Illus. No.	Part No.	Description	Q'ty
1	CE-4431	Player unit	1	9	F6-N3-6S	Nut, M6	2
6	RN-MDP-1172	Trimplate	1	9	RN-MBO-6×20	Bolt, M6×20	1
7-1	RN-MYC-1016	Knob	2	9	RN-MTN-A6×16	Tapping Bolt, M6×16	1
7-2	RN-MYD-1031	Knob	2	10	RN-EWS-1046	Cord, speaker	1
8	RN-MXK-121	Installation manual	1	10	RN-EWP-1052	Cord, power	1
8	RN-MXW-117	Owners manual	1	10	RN-EWJ-3023	Cord, ground	1
9	RN-MSN-17	Nut, 3/8"	4	11	RN-MPF-1014	Nose pease	1
9	RN-MWS-1021	Washer		12	RN-MBF-1016	Bracket	1
9	RN-MET-1090	Stab Bolt	1				

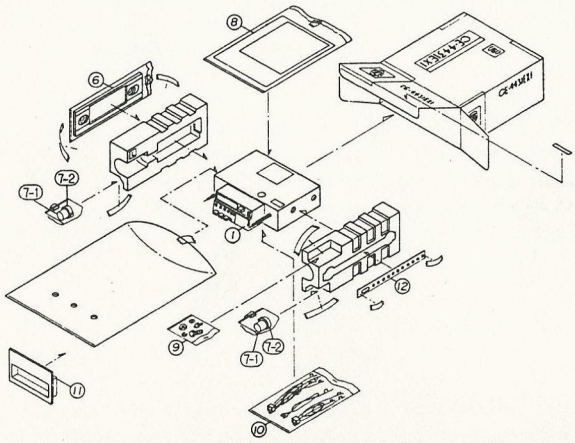


Fig. 1 (C91134431)

SPECIFICATIONS

〔CE-4431EX1〕

(RADIO SECTION)	AM	FM
TUNING RANGE	530 to 1620 kHz (10 kHz step)	87.9 to 107.9 MHz (100 kHz step)
INTERMEDIATE FREQUENCY	450 kHz	10.7 MHz
SENSITIVITY	26 dB or better (300mV output)	18 dB or better (at S/N 30 dB)
SENSITIVITY AT ELECTRONIC TUNING	Distant: 34±8 dB Local: 54±8 dB	Distant: 28±8 dB Local: 48±8 dB
LIMITING SENSITIVITY		8±8 dB
SEPARATION		25 dB or better (at 1 kHz)
ELECTRICAL FIDELITY	100 Hz: 0±3 dB (74 dBμ input, Refer. 400 Hz) 4 kHz: −15±4 dB (74 dBμ input, Refer. 400 Hz)	100 Hz: 0±3 dB (54 dBμ input, Refer. 400 Hz) 10 kHz: −15±4 dB (54 dBμ input, Refer. 400 Hz)

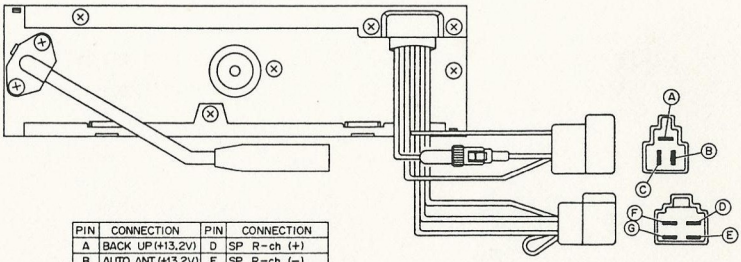
(CASSETTE DECK SECTION)

NUMBER OF TRACKS ····· 4-track 2-channels
TAPE CARTRIDGE ····· Stereo/Monaural compact cassette
TAPE SPEED ····· 4.76 cm/sec. (1-7/8", i.p.s.)
WOW & FLUTTER ····· 0.25% or less (WRMS)
CROSSTALK ····· 40 dB or better
SEPARATION ····· 30 dB or better
FREQUENCY RESPONSE ····· 125 Hz: 0±6 dB (Refer. 1 kHz)
8 kHz: 0±6 dB (Refer. 1 kHz)
EQUALIZATION ····· Normal: ····· t_1=3,180μsec., t_2=120μsec.
Crome and metal ····· t_1=3,180μsec., t_2=70μsec.
SIGNAL TO NOISE RATIO ····· 48 dB or better (with MTT-112B test tape)
TAKE-UP TORQUE ····· 40 to 70 g-cm

(COMMON SECTION)

LOAD IMPEDANCE ····· 4 ohm
OUTPUT POWER ····· 4W (THD=10%)
POWER INPUT ····· 12-volt car battery, negative terminal to ground
Voltage ····· 13.2 VDC
Current ····· Approx. 0.5 ampere (Back up current 100m ampere)
Approx. 1.4 ampere (Max.)
SEMICONDUCTOR ····· 11 ICs, 26 Transistors, 43 Diodes, 4 LEDs
DIMENSIONS ····· 180(W)×50(H)×120(D)mm (7-3/32", 1-31/32", 4-23/32")
WEIGHT ····· Unit—1.2 kg (2.6 lbs.)

CONNECTIONS



PIN	CONNECTION	PIN	CONNECTION
A	BACK UP (+13.2V)	D	SP R-ch (+)
B	AUTO ANT. (+13.2V)	E	SP R-ch (−)
C	POWER SUPPLY (+13.2V)	F	SP L-ch (+)
		G	SP L-ch (−)

Fig. 2 (C23134431)

BLOCK DIAGRAM

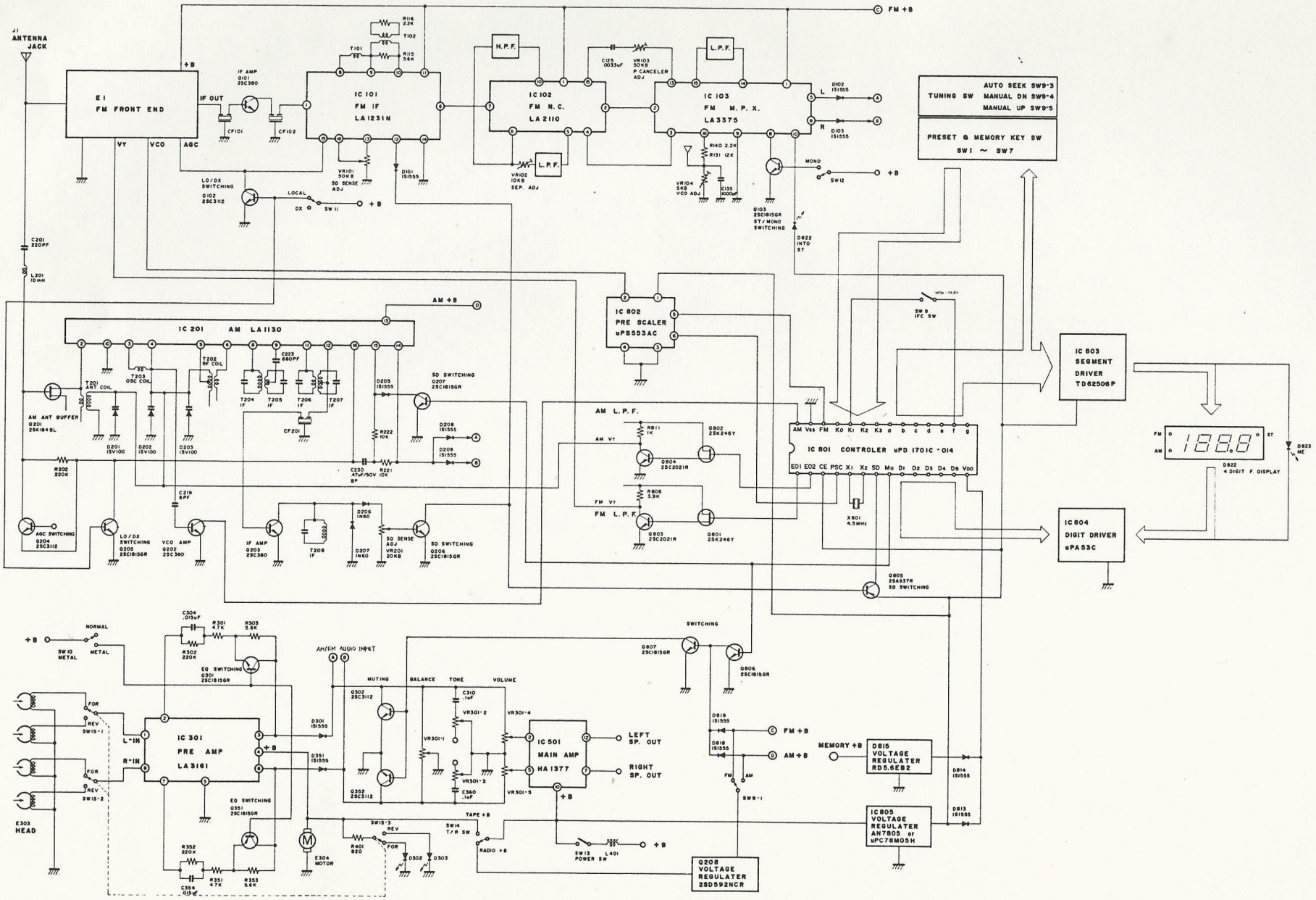


Fig. 3 (C91134431)

INSTRUMENT WIRING

[CE-4431EX1]

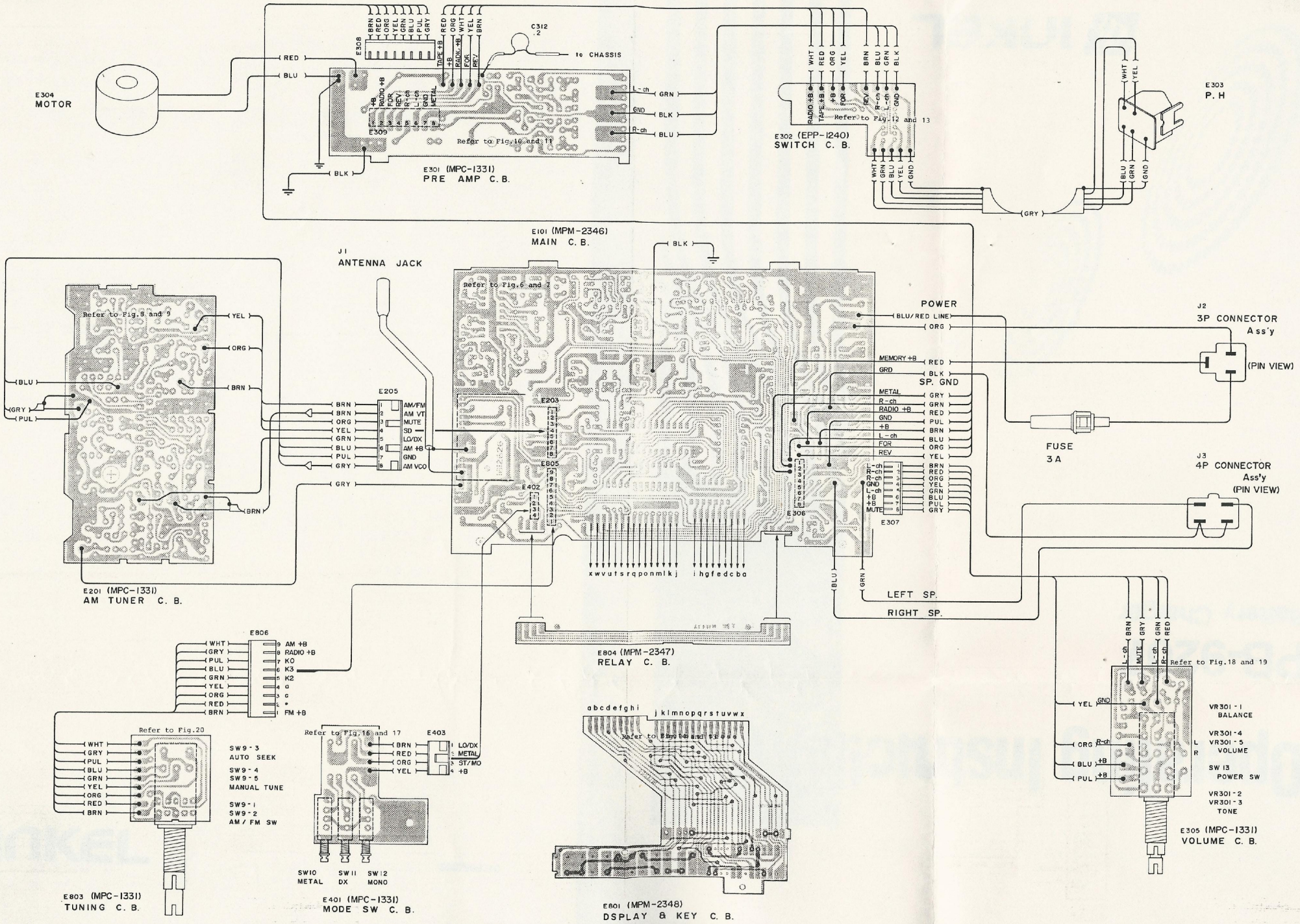
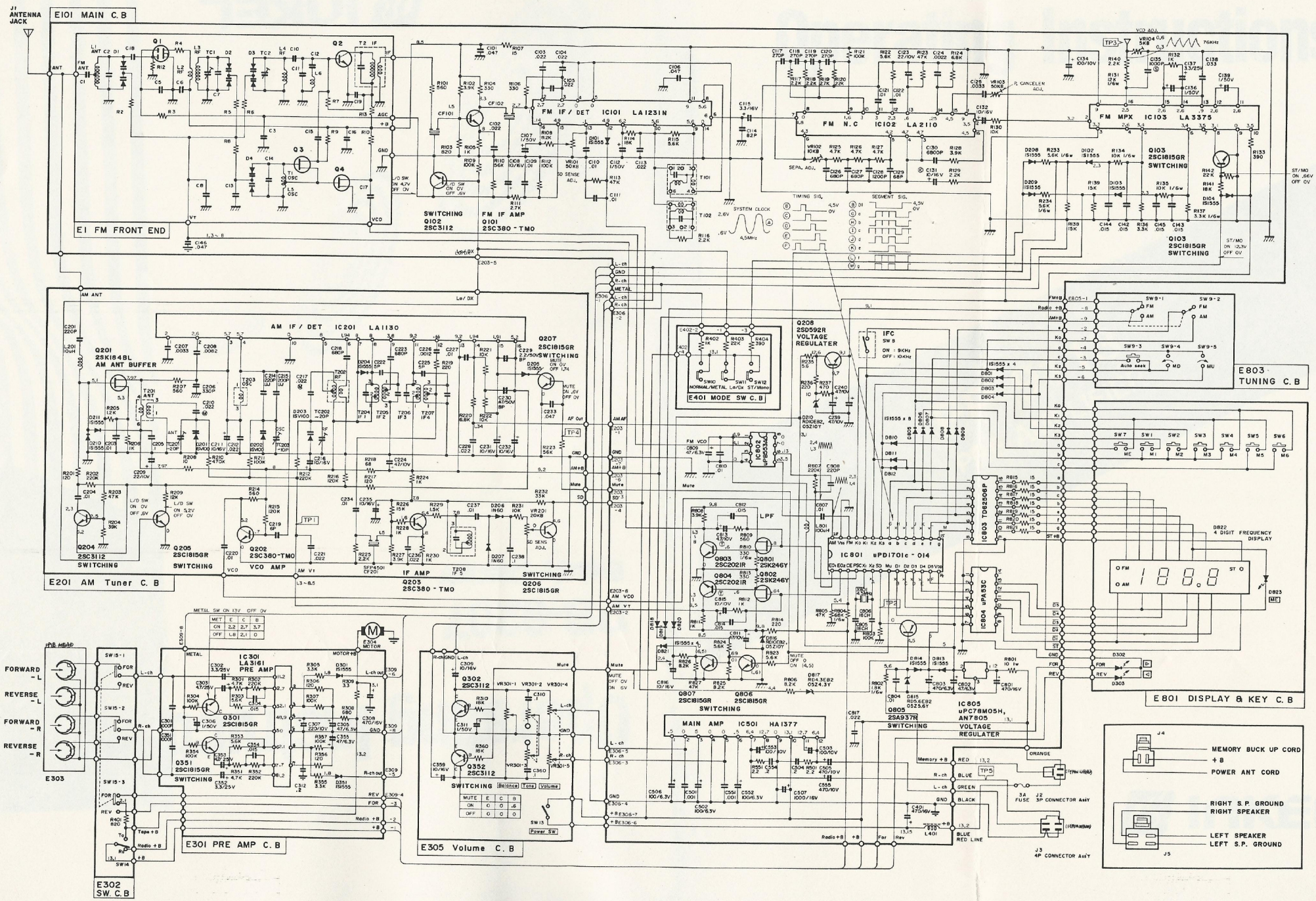


Fig. 4 (C27134431)

SCHEMATIC



NOTES: 1. All resistance in ohm K=10^3

2. All capacitance in μF, P=$\mu\mu$F

Fig. 5 (C24134431)

3. All inductance in henly, m=10^{-3}, μ=10^{-12}

4. DC voltage against the chassis measured with 100k ohm/volt meter, power supply set at +13.2 VDC, no signal input.

MAIN PC BOARD (BOTTOM VIEW)

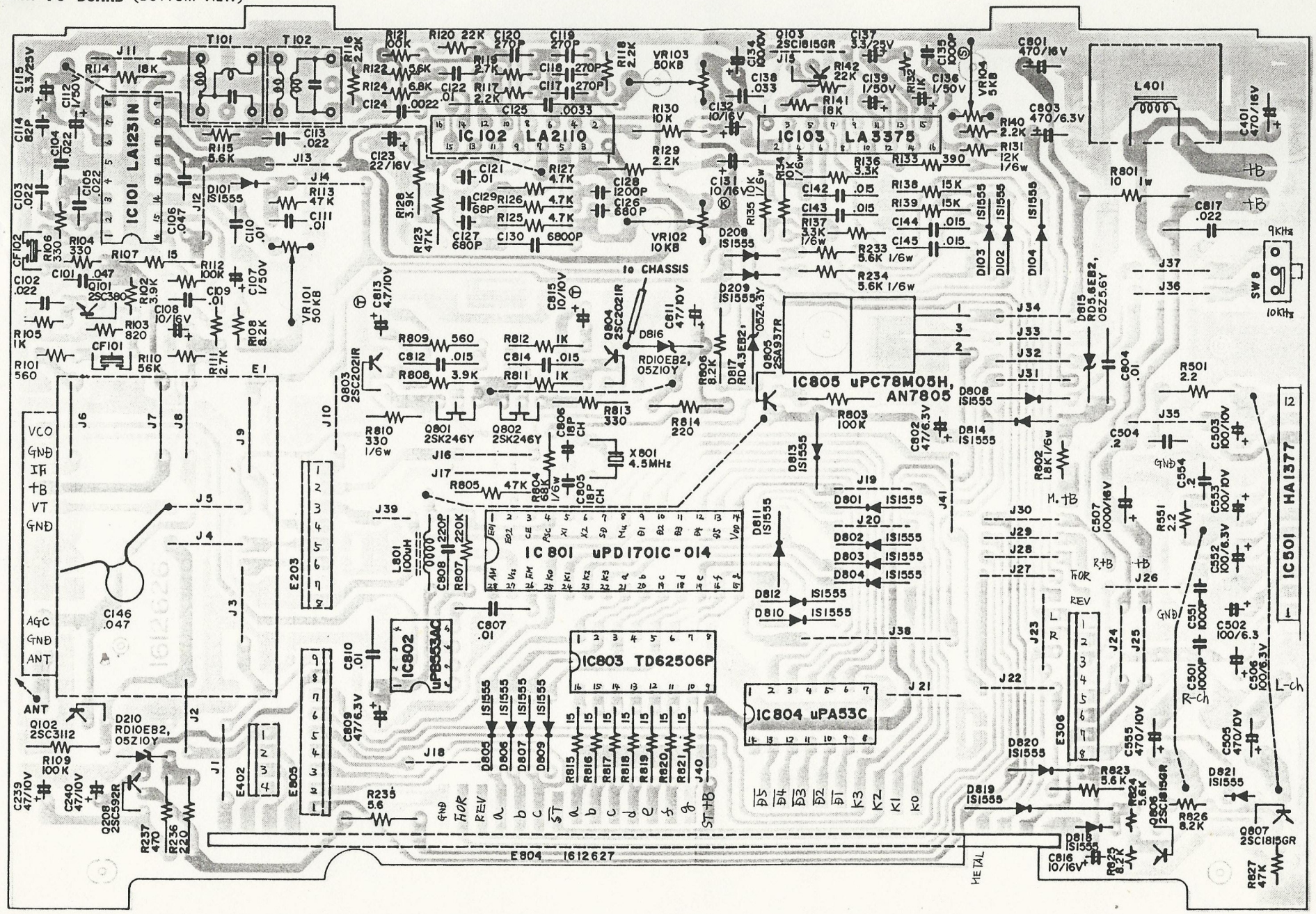


Fig. 6 (C27134431)

MAIN PC BOARD (TOP VIEW)

[CE-4431EX1]

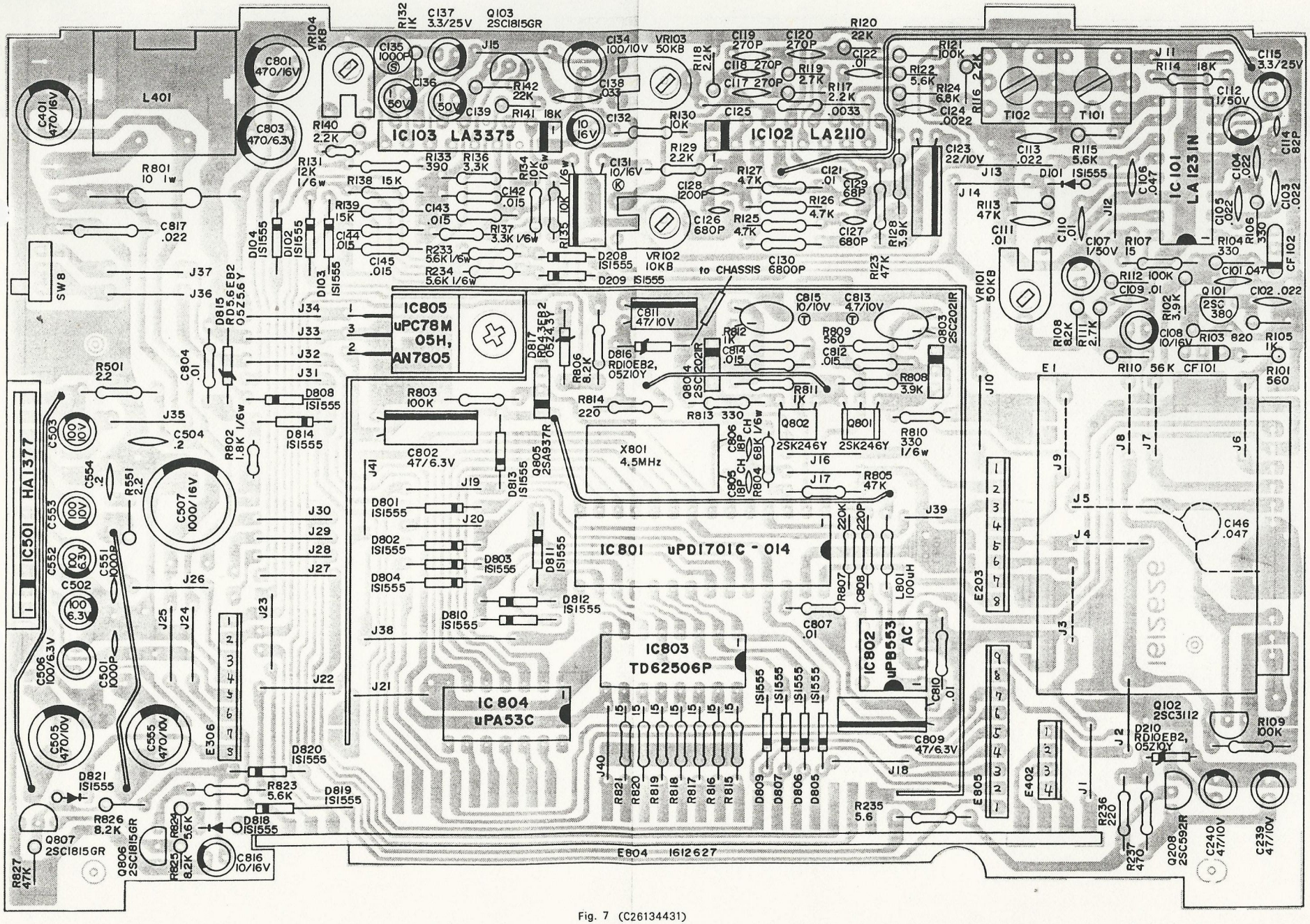


Fig. 7 (C26134431)

AM TUNER PC BOARD (BOTTOM VIEW)

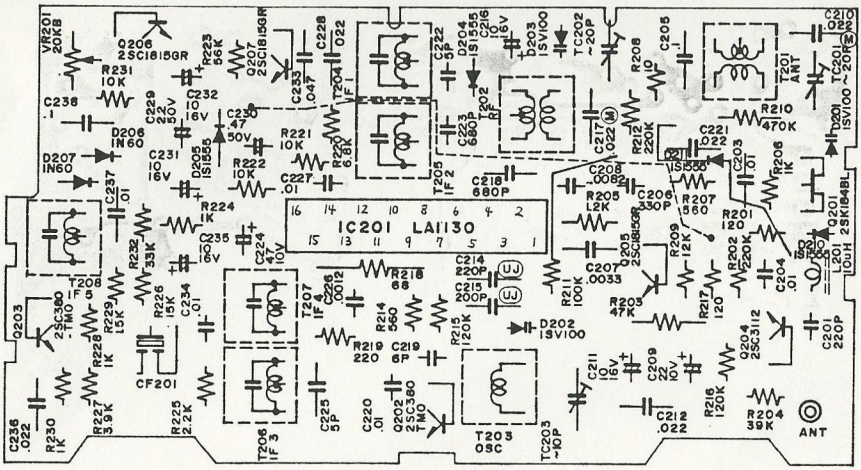


Fig. 8 (C27134431)

AM TUNER PC BOARD (TOP VIEW)

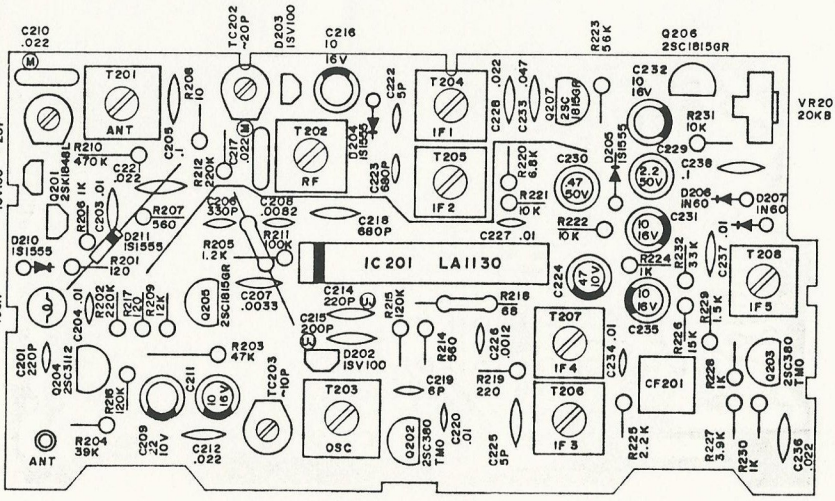


Fig. 9 (C26134431)

PRE AMP. PC BOARD (BOTTOM VIEW)

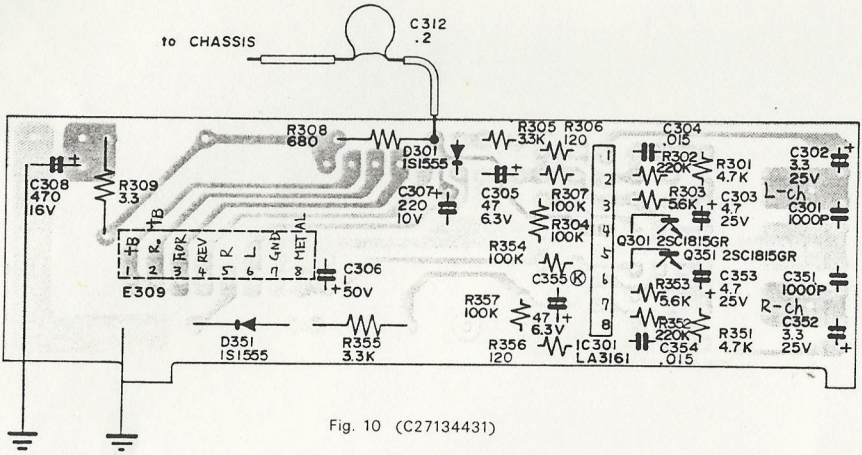


Fig. 10 (C27134431)

PRE AMP. PC BOARD (TOP VIEW)

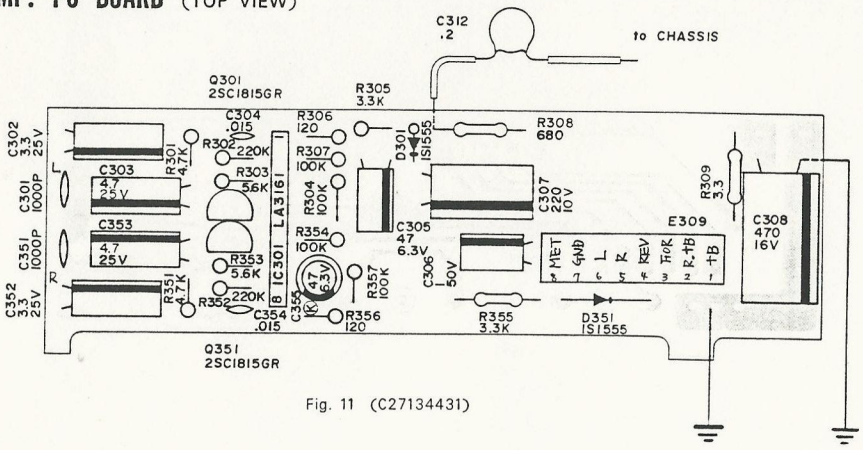


Fig. 11 (C27134431)

SW PC BOARD

(BOTTOM VIEW)

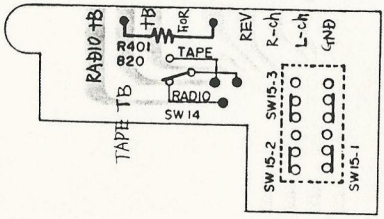


Fig. 12 (C27134431)

(TOP VIEW)

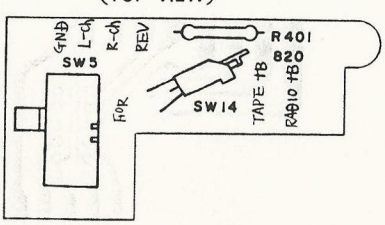


Fig. 13 (C26134431)

DISPLAY PC BOARD (BOTTOM VIEW)

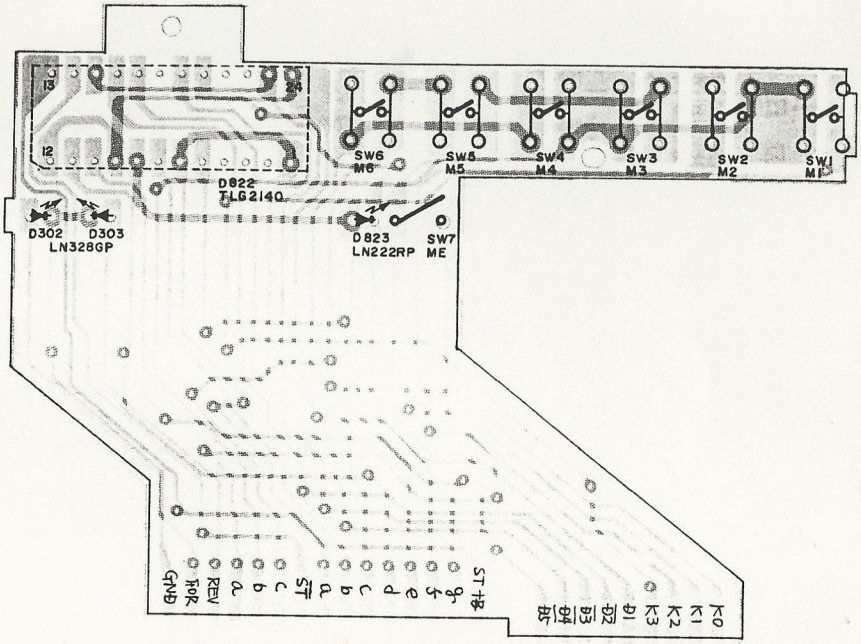


Fig. 14 (C27134431)

(TOP VIEW)

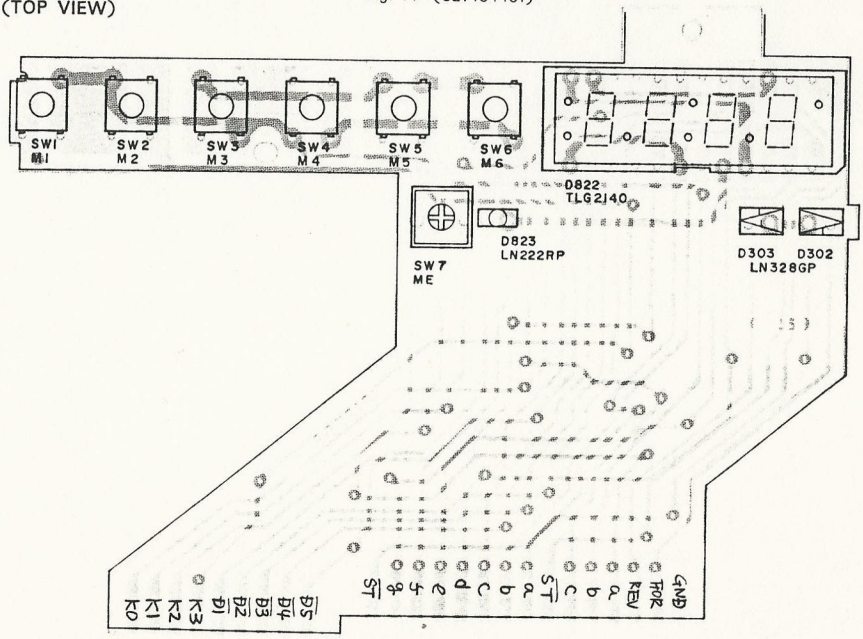


Fig. 15 (C26134431)

SW PC BOARD

(BOTTOM VIEW)

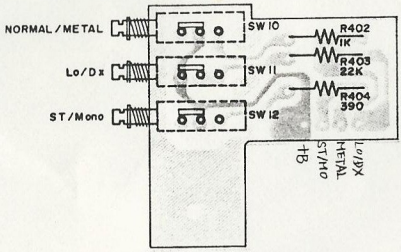


Fig. 16 (C27134431)

(TOP VIEW)

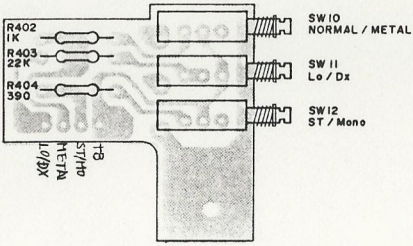


Fig. 17 (C26134431)

VR PC BOARD (BOTTOM VIEW)

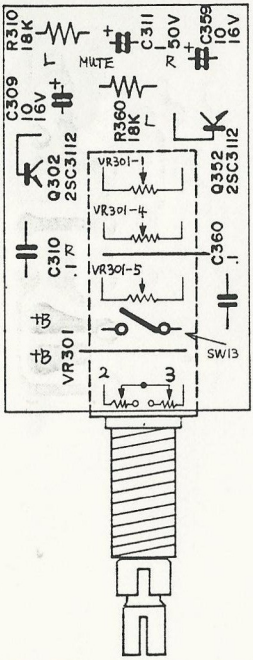


Fig. 18 (C27134431)

(TOP VIEW)

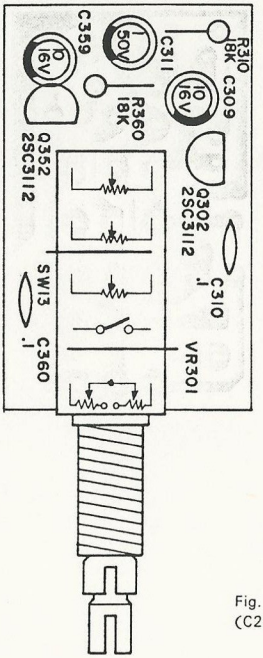


Fig. 19 (C26134431)

TUNING PC BOARD (BOTTOM VIEW)

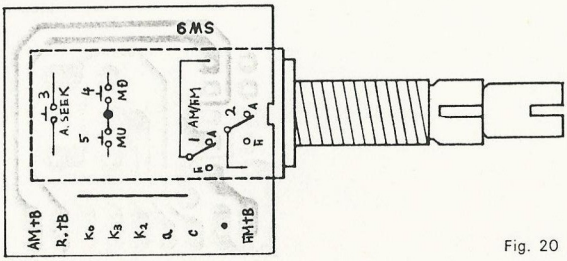
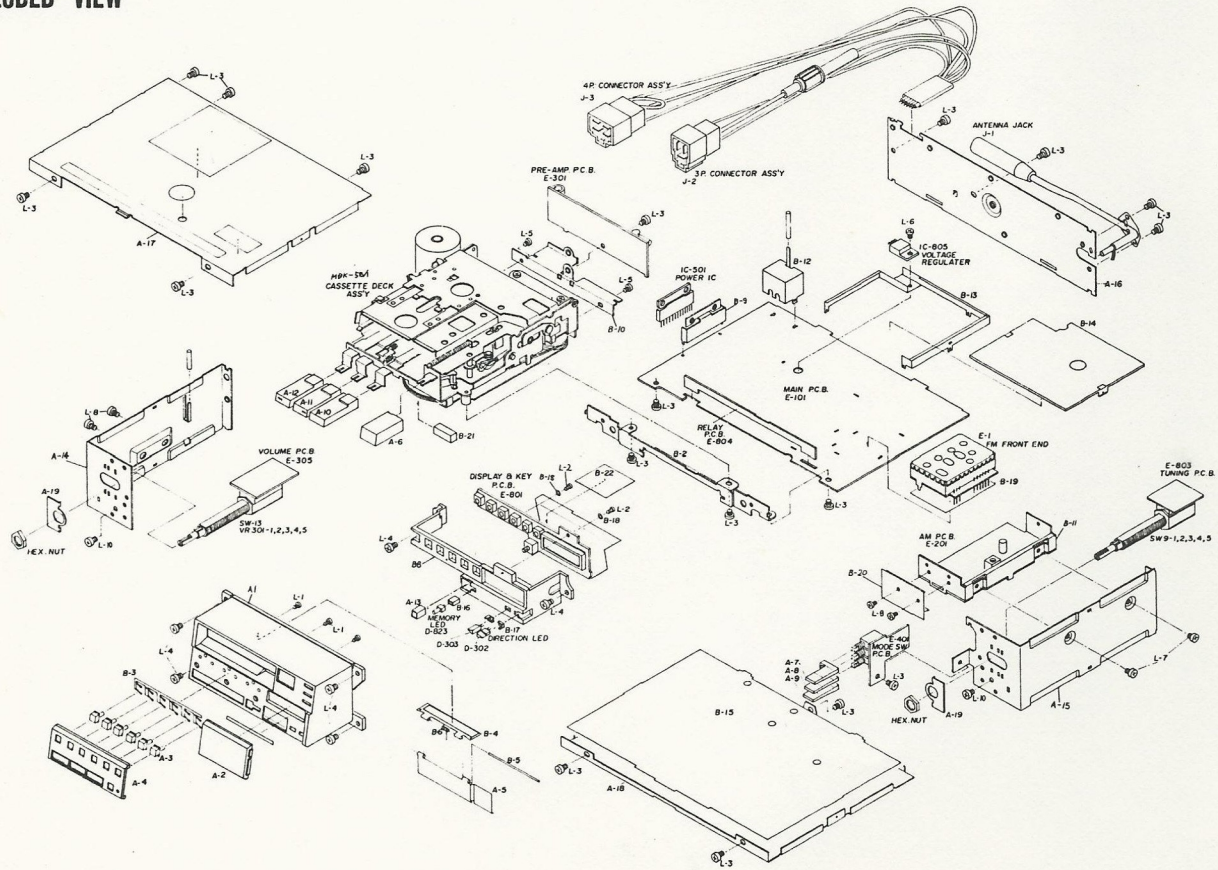


Fig. 20 (C27134431)

EXPLODED VIEW



NOTE: The switches with no ILLUS. NO. are not set up as service parts.

Fig. 21

EXPLODED VIEW (CASSETTE DECK UNIT)

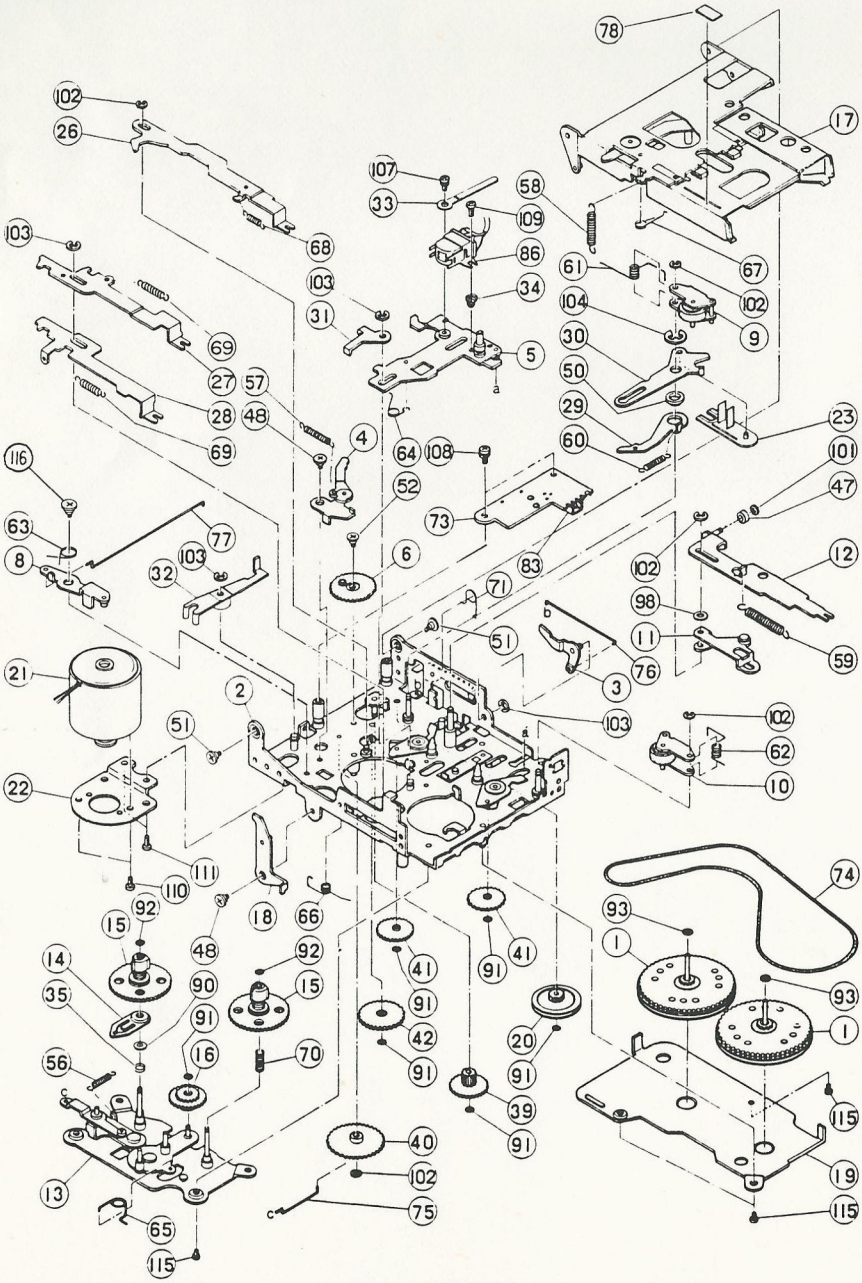


Fig. 22 (C28134431)

NOTE: The switches with no ILLUS. NO. are not set up as service parts.

SHAFT SPACING ADJUSTMENT

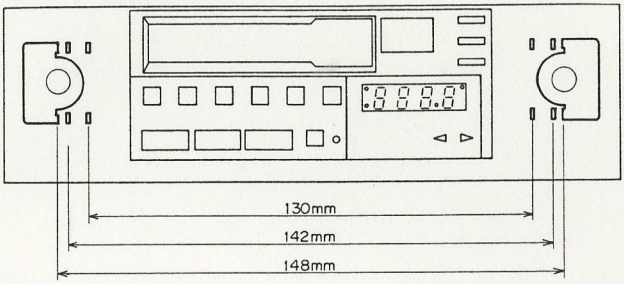


Fig. 23
(C33134431)

CLEANING

After extended use, the tape playback head and the drive capstan will build up a layer of iron oxide from the tape. The iron oxide layer on the tape head prevents the tape from making full contact with the head and the result is a gradual loss of high frequency response and an increased noise level.

The iron oxide deposit on the capstan can cause slippage (wow) which might be mistaken for more serious mechanical drive problems.

A cleaner pen or similar object like the alcohol moistened swab is used.

First, using the end of a pencil, press the rod in the cassette door back until it gives a click sound.

Rub the parts such as playback head, capstan and pinchroller thoroughly to remove all traces of dirt and grime.

After cleaning, always remember to press the eject button to return the rod to former position.

Do not use a solvent such as lighter fuel or lacquer thinner, which may cause damage to plastic parts or to instrument finish.

DEMAGNETIZATION

The head may become magnetized over a period of time. A magnetized head will record noise on a tape even when it is being used for playback. It is important that the head be demagnetized periodically.

The head can be demagnetized with a commercial demagnetizer (or degausser, as it is sometimes called.)

Such an instrument is not expensive, and represents a good investment for the owner who wants to keep his equipment in the best possible condition.

PLAYBACK HEAD ADJUSTMENT (Azimuth)

Normally the playback head is precisely aligned at the factory and further adjustment should not be required unless the playback head or its mounting components are replaced. Beware of excessive adjustment. because improper adjustment results in inferior performance. If the azimuth is unnecessarily varied, the angle gets out of order, which cause lowering of tonal quality.

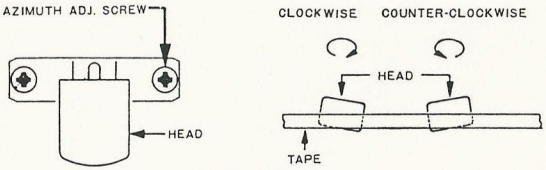


Fig. 24

Carefully adjust the azimuth adjust screw as shown in Fig. 24.

a. Connections : Refer to Fig. 24
b. Power supply : 13.2 VDC
c. Switch : Tape select NORMAL
d. Test tape : MTT-114 (10 kHz, −10 dB full track recording)

Alignment Prodedure

Insert a test tape for the azimuth adjustment and drive the screw a little once.

Adjust the playback head so as to get equal and maximum output or right and left channel in either track, loosening the screw.

AM ALIGNMENT

Pre-setting of the frequency at each adjustment point will make the tuning for adjustment easier.

AM Frequency to be pre-set: 530 kHz, 600 kHz, 1,000 kHz, 1,400 kHz, 1,250 kHz, 1,620 kHz

FM Frequency to be pre-set: 88.1 MHz, 98.1 MHz, 107.9 MHz

Standard adjustment condition

a. Power supply ·····13.2 VDC
b. AM/FM Changing switch···AM
c. Sensitivity switch ·····Distant. ( )
d. Tone control·····Maximum
e. Balance control ·····Center
f. Volume ·····Adjust to get 0.5W power output level
g. Load impedance·····4 ohm
h. Connections

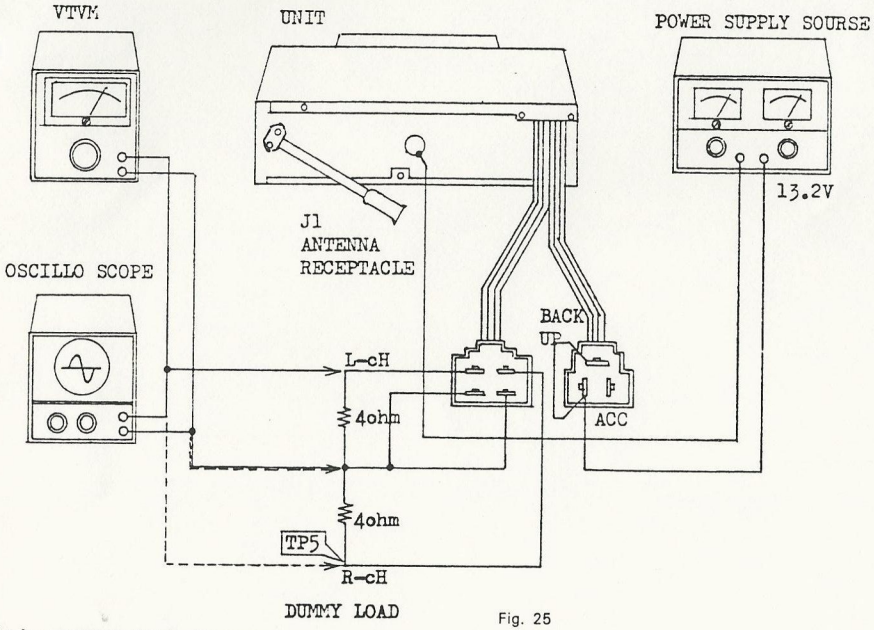


Fig. 25

(1) TUNING BIAS Alignment

(1-1) Connections

D.C VOLTAGE METER
Connect TP.1 in Fig. 29

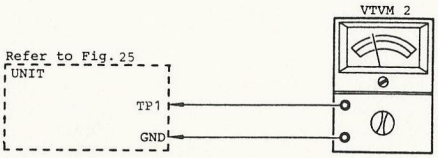


Fig. 26
(C33134431)

(1-2) Alignment (Refer to Fig. 29)

STEP	PURPOSE	SIGNAL GENERATOR FREQUENCY	FREQUENCY DISPLAY OF UNIT	ADJUSTMENT POINTS	PROCEDURE
1	Tuning bias (Precise adjustment)	—	1620 kHz	TC203 (OSC)	Adjust AM tuning bias for 8.5V
2		—	530 kHz	T203 (OSC)	Adjust AM tuning bias for 1.3V
3	Repeat steps 1 and 2 for alignment to stably obtain approx. 1.3V at 530 kHz and 8.5V at 1620 kHz as bias.				

(2) IF and TRACKING Alignment

(2-1) Connections

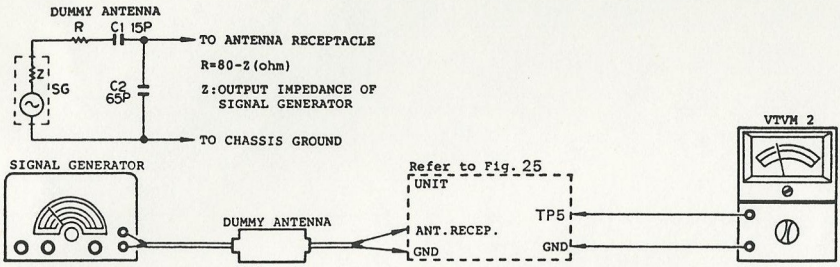


Fig. 27 (C33134431)

(2-2) Alignment (Refer to Fig. 25 and 29)

STEP	PURPOSE	SIGNAL GENERATOR FREQUENCY	FREQUENCY DISPLAY OF UNIT	ADJUSTMENT POINTS	PROCEDURE
4	Tracking (Preliminary adjustment)	600 kHz (400 Hz 30% AM)	600 kHz	T201, T202 (ANT, RF)	Adjust output voltage (TP5) for maximum. (See Fig. 25)
5		1250 kHz (400 Hz 30% AM)	1250 kHz	TC201, 202 (ANT, RF)	
6	Repeat steps 4 and 5.				
7	IF (Preliminary adjustment)	1250 kHz (400 Hz 30% AM)	1250 kHz	T204, T205 T206, T207	Adjust output voltage (TP5) for maximum. (See Fig. 25)
8	Tracking (Precise adjustment)	600 kHz (400 Hz 30% AM)	600 kHz	T201, T202 (ANT, RF)	Adjust output voltage (TP5) for maximum. (See Fig. 25)
9		1250 kHz (400 Hz 30% AM)	1250 kHz	TC201, 202 (ANT, RF)	
10	Repeat steps 8 and 9. (TC201 and TC202 adjustment should be always final.)				
11	IF (Precise adjustment)	1250 kHz (400 Hz 30% AM)	1250 kHz	T204, T205 T206, T207	Adjust output voltage (TP5) for maximum. (See Fig. 25)

NOTE: Variation characteristics (Voltage to Capacity) of three varactor diodes (D201, 202 and 203) do not coincide completely. In case there is a great difference in characteristic between each diode, a tracking error, i.e. sensitivity fluctuation, occurs.

In case a tracking error occurs, select the upper and lower limit tuning bias with the least tracking error within range of ±0.5V.

(3) SEEK Alignment

(3-1) Connections

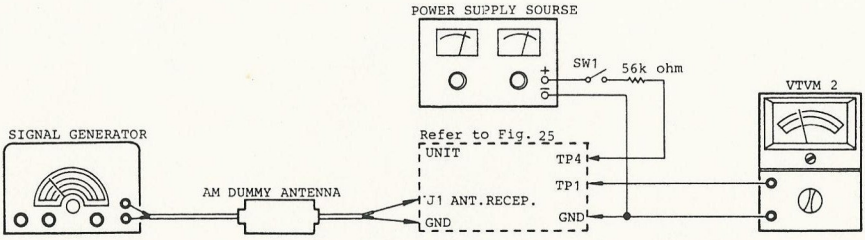


Fig. 28(C33134431)

SIGNAL GENERATOR	D.C VOLTAGE METER	POWER SUPPLY SOUSE
Antenna receptacle (J1)	Connect (TP2) in Fig. 33	Connect (TP4) in Fig. 29 through 56k ohm resister.

(3 - 2) Alignment (Refer to Fig. 29 and 33)

STEP	PURPOSE	SIGNAL GENERATOR FREQUENCY	FREQUENCY DISPLAY OF UNIT	ADJUSTMENT POINTS	PROCEDURE	SW. 1
12	Set the LOCAL/DISTANT selector switch in the DISTANT position. ( )					—
13	SEEK sensitivity	1000 kHz (400 Hz 30% AM)	1000 kHz	T208	Adjust D.C voltage (TP2) for maximum. (See Fig. 33)	ON
14		1000 kHz (400 Hz 30% AM)	1000 kHz	VR201	Adjust D.C voltage (TP2) for about 4.5V. (See Fig. 33)	ON

STEP	PURPOSE	SIGNAL GENERATOR		PROCEDURE	SW. 1
		FREQUENCY	OUTPUT LEVEL		
15	DISTANT sensitivity	1000 kHz (400 Hz 30% AM)	34 dBμ	Push SEEK button to start searching, and then adjust sensitivity so that the search tuning may stop right near 1000 kHz.	OFF
16	Set the LOCAL/DISTANT selector switch in the LOCAL position. ( )				OFF
17	LOCAL sensitivity	1000 kHz (400 Hz 30% AM)	54 dBμ (±8 dBμ)	Push SEEK button to start searching, and then adjust sensitivity so that the search tuning may stop right near 1000 kHz.	OFF

NOTE: Make sure that "DISTANT" search sensitivity is 34±8 dB at 600 kHz and 1400 kHz.
When the sensitivity does not come within the range of the specification, readjust the sensitivity.
Varying "DISTANT" search sensitivity at 1000 kHz within the range of ±8 dB.

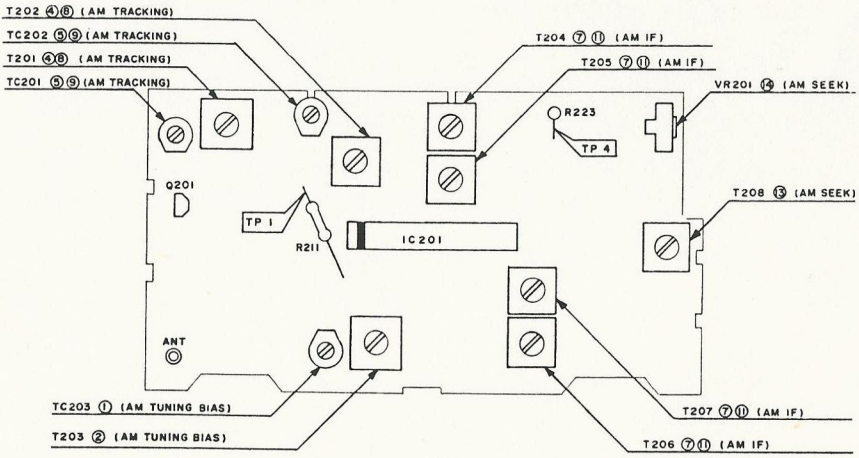


Fig. 29 (C33134431)

Standard adjustment condition

FM adjustment should be the same as in AM standard condition. (AM/FM selector switch is, however, in FM position.)

NOTE: Since the electronic tuner unit is employed at FM front end section, no tracking and receiving frequency range adjustment are required.

(4) IF Alignment

(4-1) Connections

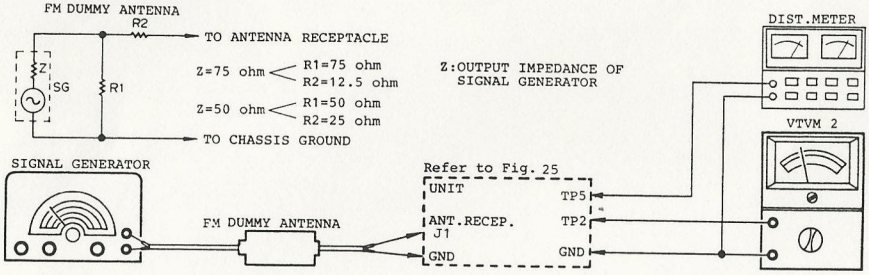


Fig. 30 (C33134431)

SIGNAL GENERATOR	D.C VOLT METER	DIST. METER
Antenna receptacle (J1)	Connect (TP2) in Fig. 33	Connect (TP5) in Fig. 25

(4-2) Alignment (Refer to Fig. 25 and 33)

STEP	PURPOSE	SIGNAL GENERATOR		ADJUSTMENT POINT	F. DISPLAY OF UNIT	PROCEDURE
		FREQUENCY	OUTPUT LEVEL			
18	IF	—	—	T 2	98.1 MHz	Adjust output voltage(TP5) of noise for maximum. (See Fig. 25)
19	IF	98.1 MHz ±70 kHz	54 dBμ	T101	98.1 MHz	Find out values of −Δf and +Δf whitch give TP2 the voltage of more than 4V by sweeping SG. Then, align IFT (T101) to give −f and +f same values.
20	Distortion	98.1 MHz	54 dBμ	T102	98.1 MHz	Adjust distortion (TP5) for much better. (See Fig. 25)
21	Repeat steps 19 and 20. (T101 adjustment should be always final.)					
22	IF	98.1 MHz ±70 kHz	54 dBμ	—	98.1 MHz	Check the width SD signal to be within 80 kHz − 128 kHz and the difference between −Δf and +Δf to be within 6 kHz.

(5) SEEK Alignment

(5-1) Connections

Refer to Fig. 30

(5 - 2) Alignment (Refer to Fig. 33)

STEP	PURPOSE	SIGNAL GENERATOR		ADJUSTMENT POINT	F. DISPLAY OF UNIT	PROCEDURE
		FREQUENCY	OUTPUT LEVEL			
23	Set the LOCAL/DISTANT selector switch in the DISTANT position. ( )					
24	Seek sensitivity	98.1 MHz (400 Hz 30%)	28 dBμ	VR101	98.1 MHz	Adjust D.C voltage (TP2) for about 4.5V. (See Fig. 33)
25	Set the LOCAL/DISTANT selector switch in the LOCAL position. ( )					
26	LOCAL Seek sensitivity	98.1 MHz (400 Hz 30%)	48±8 dBμ	Push seek button to actuate the searching, and then make sure that the output level of the SIGNAL GENERATOR wheh the searching function stops nearly at 98.1 MHz is less than 52 dBμ.		

NOTE: Make sure that "DISTANT" search sensitivity is 28±8 dB at 88.1 MHz and 107.9 MHz.
When the sensitivity does not come within the range of the specification, readjust the sensitivity.
Varying "DISTANT" search sensitivity at 98.1 MHz within the range of ±8 dB.

(6) MPX VCO Alignment

(6 - 1) Connections

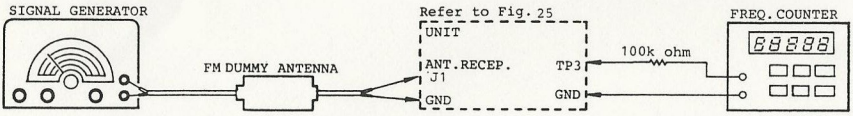


Fig. 31 (C33134431)

SIGNAL GENERATOR	FREQUENCY COUNTER
Antenna receptacle (J1)	Connect (TP3) in Fig. 33 through 100k ohm resister

(6 - 2) Alignment (Refer to Fig. 33)

STEP	SIGNAL GENERATOR		F. DISPLAY OF UNIT	ADJUSTMENT POINT	PROCEDURE
	FREQUENCY	OUTPUT LEVEL			
27	98.1 MHz (400 Hz 30%)	54 dBμ	98.1 MHz	VR104	Adjust the counter (TP3) for 75 kHz±50 Hz.

(7) PILOT CANCEL Alignment

(7 - 1) Connections

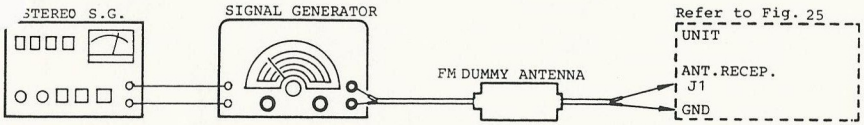


Fig. 32 (C33134431)

STEREO SIGNAL GENERATOR	SIGNAL GENERATOR
EXT. MOD. Terminal in the SIGNAL GENERATOR	Antenna receptacle (J1)

(7 - 2) Alignment (Refer to Fig. 33)

STEP	SIGNAL GENERATOR		F. DISPLAY OF UNIT	ADJUSTMENT POINT	PROCEDURE
	FREQUENCY	OUTPUT LEVEL			
28	98.1 MHz (No modulation, stereo mode)	54 dBμ	98.1 MHz	VR103	After making sure of "STEREO" display, adjust the pilot signal wave (19 kHz) for minimum

(8) SEPARATION Alignment

(8-1) Connections

Refer to Fig. 32.

(8-2) Alignment (Refer to Fig. 33)

STEP	STEREO SIGNAL GENERATOR		F. DISPLAY OF UNIT	ADJUSTMENT POINT	PROCEDURE
	FREQUENCY	OUTPUT LEVEL			
29	98.1 MHz (L-cH: 400 Hz 30% R-cH: No modulation)	54 dBμ	98.1 MHz	VR102	Adjust R-cH output level for minimum.
30	98.1 MHz (L-cH: No modulation R-cH: 400 Hz 30%)	54 dBμ	98.1 MHz	—	Make sure that separation is better than 25 dB.

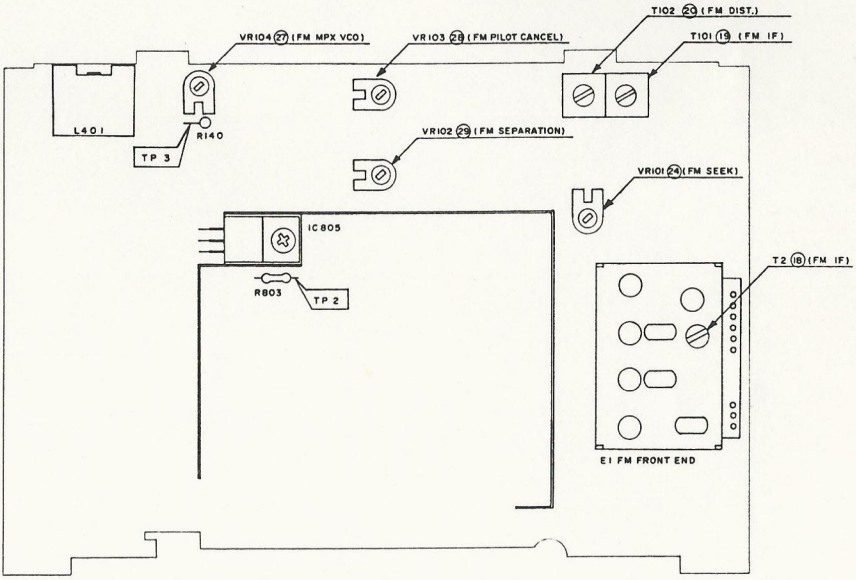


Fig. 33 (C33134431)

CONTROLLER IC (IC801)

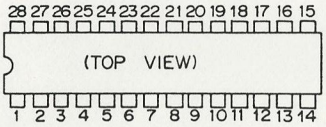


Fig. 34

1. Terminal Function

PIN No.	Symbol	Function
1 2	E01 E02	Output terminals for phase detector. Controls tuning bias. The output contents at both terminals are the same.
3	CE	Chip Enable input terminal
[illegible]	PSC	Pre-scaler control terminal
5 6	X 1 X 2	Crystal oscillation terminals. 4.5 MHz
7	SD	Station detector input terminal. When this terminal is in "H" level during SEEK tuning, the tuning stops.
8	MUTE	Mute signal output terminal. Used for suppressing noise generated when frequency changes. Active "H".
9 ~ 13	D 1 ~ D 5	Signal output terminals for frequency display lighting digits. D1 : Symbol digit D2 : Lower order digit ~ D5 : Higher order digit
14	VDD	Power supply terminal (+5V ±0.5V)
15 ~ 21	SEGg ~ SEGa	Segment signal output terminals for frequency display. Perform dynamic lighting, synchronous with D1 to D5.
22 ~ 25	K 3 ~ K 0	Key matrix input terminals (Refer to "Key Matrix" described later.)
26	FM	FM comparison frequency input terminal
27	GND	Ground terminal
28	AM	AM comparison frequency input terminal

[illegible]nction Outline

1. Receiving Frequency Range

Band	Frequency Range	Channel Space	Comparison Frequency	I.F. Frequency	Remarks
AM	530 to 1620 kHz 531 to 1602 kHz	10 kHz 9 kHz	10 kHz 9 kHz	450 kHz 450 kHz	changeable with SW8
FM	87.9 to 107.9 MHz	100 kHz	25 kHz	10.7 MHz	———

2. Tuning Function

a. Seek Tuning (SEEK): When the SEEK button is pressed, stations are tuned in the up direction in the saw-tooth wave mode. When a broadcasting station is received, it is held.

b. Manual Tuning (MU/MD): Rotary switch operated pulse count system manual tuning

c. Preset Memory Tuning: 6 AM and 6 FM stations can be stored in memory, using the six buttons.

3. Display

a. Display style

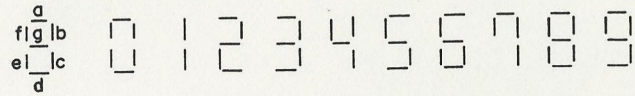


Fig. 35

Digit \ Segment	SEG a	SEG b	SEG c	SEG d	SEG e	SEG f	SEG g	Remarks
D 1	AM	—	FM(DP)	—	—	—	—	Symbol digit
D 2	a	b	c	d	e	f	g	Freq. 1st digit
D 3	a	b	c	d	e	f	g	Freq. 2nd digit
D 4	a	b	c	d	e	f	g	Freq. 3rd digit
D 5	—	b	c	—	—	ME	—	Freq. 4th digit

Active "H"

b. Symbol digit

Symbol	Function
AM	Indicates AM radio frequency.
FM (DP)	Indicates FM radio frequency, and decimal point.
ME	Indicates presettable conditions. (D823 lights up.)

4. Key matrix

Output \ Input	K_3	K_2	K_1	K_0	Remarks
SEG a	MU	MD	ME	—	Momentary switch
SEG b	M 1	M 2	M 3	M 4	
SEG c	—	SEEK	M 5	M 6	
SEG d	—	—	—	—	
SEG e	A	B	—	AM/FM	Lock switch
SEG f	P	ROT	BAND 1	—	For initial setting
SEG g	—	—	—	—	Diode matrix

a. Function

<table>
<tr><th>Symbol</th><th>Function</th></tr>
<tr><td>MU
(Manual Up)
MD
(Manual Down)</td><td>Manual tuning UP/DOWN switch.
Pulse generating rotary switch is used.
Each time the switch is turned ON once, the frequency is one step up and down. (AM : 10 kHz FM : 100 kHz). If the turn-on and the turn-off are over 3mS respectively, the frequency varies by the step corresponding to the number of applied pulses. When the switch remains ON, the frequency is up and down at a rate of 1 second per step. The turn-on and turn-off require 3mS or more respectively. This function is effective when the ROT switch is ON.</td></tr>
<tr><td>M1 to M6
(Memory)</td><td>Memory calling buttons in which one AM and one FM memories are corresponding to one MEMORY button respectively.
If any one of the M1 to M6 buttons is pressed within 5 seconds, following the ME button operation, the received band and frequency can be memorized.
In addition, for the initial setting, the following frequency is stored in memory beforehand :
<table>
<tr><th>Band</th><th>M 1</th><th>M 2</th><th>M 3</th><th>M 4</th><th>M 5</th><th>M 6</th></tr>
<tr><td>AM</td><td>530 kHz</td><td>610 kHz</td><td>1000 kHz</td><td>1400 kHz</td><td>530 kHz</td><td>530 kHz</td></tr>
<tr><td>FM</td><td>87.9 MHz</td><td>94.8 MHz</td><td>98.0 MHz</td><td>87.9 MHz</td><td>87.9 MHz</td><td>87.9 MHz</td></tr>
</table></td></tr>
<tr><td>ME
(Memory Enable)</td><td>Memory write button.
Any one of the M1 to M6 buttons is pressed within 5 seconds, following this button operation to write in memory. This function is valid when the ROT switch is ON.</td></tr>
<tr><td>SEEK</td><td>Auto-tuning switch.
This switch automatically selects stations in the higher frequency direction.
When the maximum frequency is reached, the frequency returns to the minimum frequency automatically. Thus, the same operation is repeated.
If "H" level signal of more than 45mS inputted to the SD terminal (Pin ⑦), its frequency is held.</td></tr>
<tr><td>A
B</td><td>The display is OFF according to the combination of A and B, which is switched to the clock or frequency display. In this circuit, A represents "ON" (D810) and B "OFF" to thereby designate the frequency display.</td></tr>
<tr><td>AM/FM</td><td>Receiving band selector switch.
ON = AM
OFF = FM</td></tr>
<tr><td>P (Priority)</td><td>Performs the initial setting for display priority.
In this circuit, this switch is turned ON (D812) to designate the frequency, display.</td></tr>
<tr><td>ROT (Rotary)</td><td>Sets manual tuning.
In this circuit, this switch is turned ON (D811) to designate the use of the rotary switch.
(Refer to "MU/MD" functions.)</td></tr>
<tr><td>BAND 1</td><td>Sets the frequency range and intermediate frequency for AM band.
ON = 531 to 1602 kHz (IF : 450 kHz/261 kHz)
OFF= 530 to 1620 kHz (IF : 450 kHz/260 kHz)
In this circuit, this switch is turned OFF. However, in case the channel space is shifted to 9 kHz, for example, this switch is so designed as to operate by turning it ON (SW8).</td></tr>
</table>

LA2110 (IC102) NOISE BLANKER

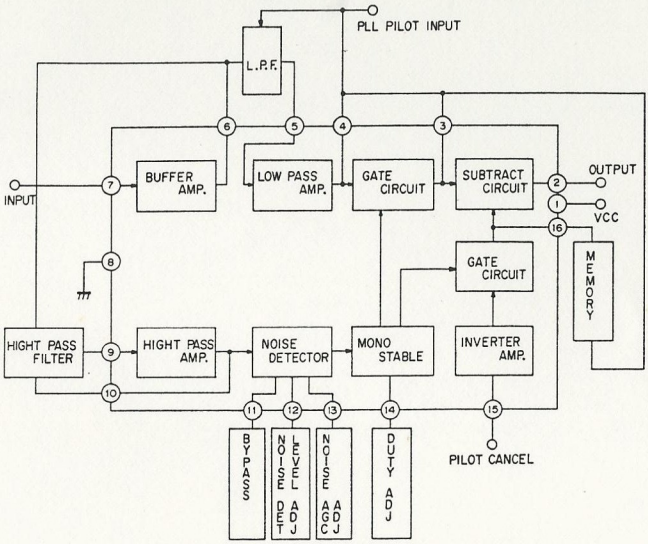


Fig. 36

LA3375 (IC103) FM MPX.

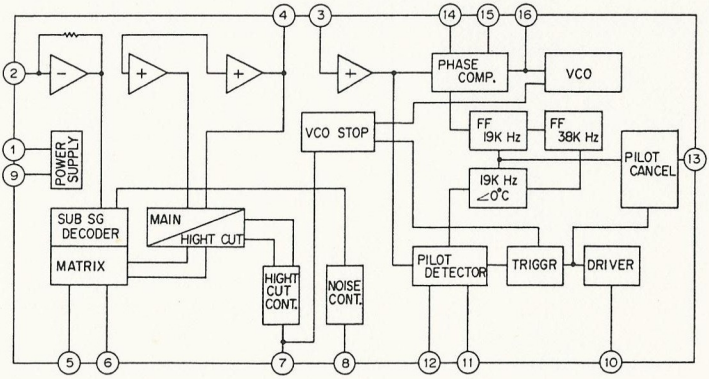


Fig. 37

LA1130 (IC201) AM TUNER

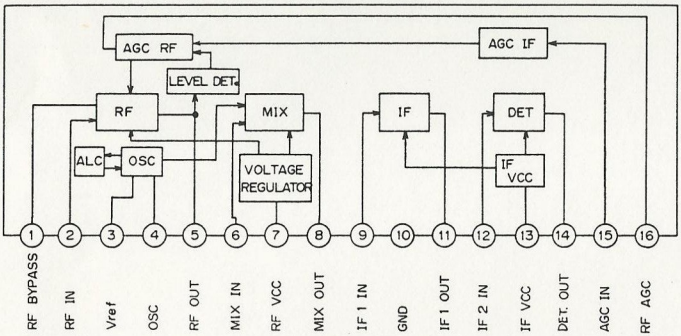


Fig. 38

LA3161 (IC301) PRE AMP.

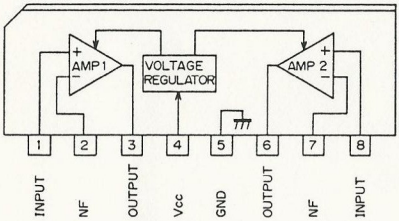


Fig. 39

HA1377 (IC501) POWER AMP.

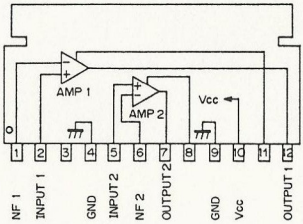


Fig. 40

μPB553AC (IC802) PRE SCALER

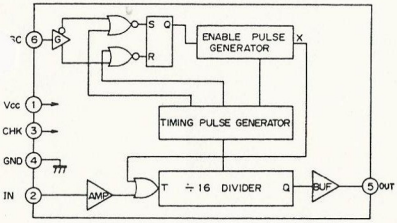


Fig. 41

TD62506P (IC803) SEGMENT DRIVER

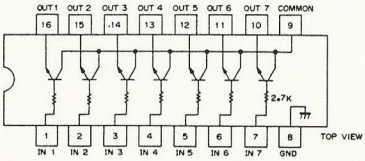
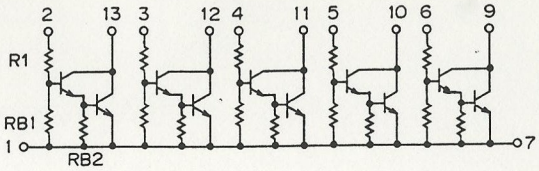


Fig. 42

μPA53C (IC804) DIGIT DRIVER



R1 : 20KΩ
RB1 : 20KΩ
RB2 : 2KΩ

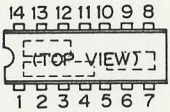


Fig. 43

AN7805 (IC805) VOLTAGE REGULATOR

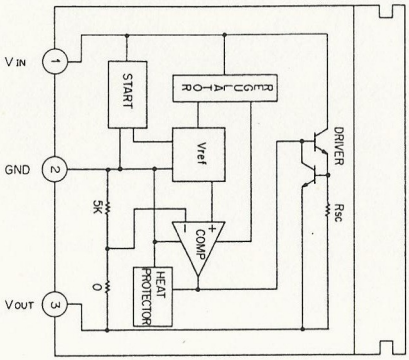


Fig. 44

PARTS LOCATION (IC102, 103, 201)

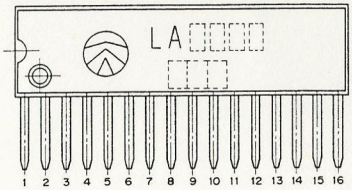


Fig. 45

REPLACEMENT PARTS LIST

Note: Main replacement parts are marked ○ in the remarks column.

Symbol No.	Stock No.	Description			Remark
CAPACITORS					
C101,106,146,233	RN-ECK-DFZ473Z	.047 μF	50V	ceramic	
C102~105, 113 212, 221, 236	RN-ECK-DFZ223Z	.022 μF	50V	ceramic	
C107, 112, 136 139, 306, 311	RN-ECE-M1R0V50-42	1 μF	50V	electrolytic	
C108,132,309,359	RN-ECE-M100V16-42	10 μF	16V	electrolytic	
C109~111, 122 203, 237	RN-ECK-DFZ103Z	.01 μF	50V	ceramic	
C114	RN-ECC-DSL820K-2	82 pF	50V	ceramic	
C115, 137	RN-ECE-M3R3V25-42	3.3 μF	25V	electrolytic	
117~120	RN-ECC-DSL271J-2	270 pF	50V	ceramic	
21, 204, 220 227, 234	RN-ECB-DBC103E	.01 μF	25V	ceramic	
C123	RN-ECE-M220V16-42	22 μF	16V	electrolytic	
C124	RN-ECK-DB222KY	.0022 μF	50V	ceramic	
C125	RN-ECC-TOX332M-3	.0033 μF	25V	ceramic	
C126,127,218,223	RN-ECK-DB681KY	680 pF	50V	ceramic	
C128, 226	RN-ECK-DB122K-2	.0012 μF	50V	ceramic	
C129	RN-ECC-DSL680K-2	68 pF	50V	ceramic	
C130	RN-ECC-NOX682M-3	.0068 μF	25V	ceramic	
C131,211,216,231 232,235,816	RN-ECE-M100V16-42	10 μF	16V	electrolytic	
C134, 503, 553	RN-ECE-M101V10-41	100 μF	10V	electrolytic	
C135	RN-ECQ-M102K50-05A	1000 pF	50V	styrol	
C138	RN-ECB-DOX333B	.033 μF	12V	ceramic	
C142~145	RN-ECC-NOX153M-3	.015 μF	25V	ceramic	
C201	RN-ECK-DB221KY	220 pF	50V	ceramic	
C205, 238	RN-ECB-DBC104B	.1 μF	12V	ceramic	
C206	RN-ECK-DB331KY	330 pF	50V	ceramic	
C207	RN-ECK-DB332KY	.0033 μF	50V	ceramic	
C208	RN-ECB-DOX822B	.0082 μF	12V	ceramic	
C209	RN-ECE-M220V10-3	22 μF	10V	electrolytic	
C210, 217	RN-ECF-R223V50	.022 μF	50V	mylar	
C214	RN-ECC-DUJ221J-2	220 pF	50V	ceramic	
C215	RN-ECC-DUJ201J-2	200 pF	50V	ceramic	
C219	RN-ECC-DSL060D-2	6 pF	50V	ceramic	
C222, 225	RN-ECC-DSL050D-2	5 pF	50V	ceramic	
C224	RN-ECE-M470V10-41	47 μF	10V	electrolytic	
C228	RN-ECB-DBC223E	.022 μF	25V	ceramic	
C229	RN-ECE-M2R2N50-41	2.2 μF	50V	electrolytic	
C230	RN-ECE-MR47N50-41	.47 μF	50V	electrolytic	
239, 240, 811	RN-ECE-M470V10-41	47 μF	10V	electrolytic	
301, 351	RN-ECB-DOX102E	1000 pF	25V	ceramic	
C302, 352	RN-ECE-M3R3V25-42	3.3 μF	25V	electrolytic	
C303, 353	RN-ECE-M4R7V25-42	4.7 μF	25V	electrolytic	
C304, 354	RN-ECB-DBC153E-1	.015 μF	25V	ceramic	
C305,355,802,809	RN-ECE-M470V6R3-42	47 μF	6.3V	electrolytic	
C307	RN-ECE-M221V10-41	220 μF	10V	electrolytic	
C308, 401, 801	RN-ECE-M471V16-51	470 μF	16V	electrolytic	
C310, 360	RN-ECB-DOX104M	.1 μF	12V	ceramic	
C312, 504, 554	RN-ECB-DBC204B	.2 μF	12V	ceramic	
C501, 551	RN-ECK-DB102KY	1000 pF	50V	ceramic	
C502, 506, 552	RN-ECE-M101V6R3-42	100 μF	6.3V	electrolytic	
C505, 555	RN-ECE-M471V10-41	470 μF	10V	electrolytic	
C507	RN-ECE-M102V16-51	1000 μF	16V	electrolytic	
C803	RN-ECE-M471V6R3	470 μF	6.3V	electrolytic	
C804, 807, 810	RN-ECC-NOX103N-3	.01 μF	25V	ceramic	
C805, 806	RN-ECC-DCH180J-2	18 pF	50V	ceramic	
C808	RN-ECC-NOB221K-3	220 pF	50V	ceramic	
C812, 814	RN-ECC-NOX153N-3	.015 μF	25V	ceramic	
C813	RN-ECY-M4R7V16-M1	4.7 μF	16V	tantalum	
C815	RN-ECY-M100V16-M1	10 μF	16V	tantalum	
C817	RN-ECC-NOX223N-3	.022 μF	25V	electrolytic	

Symbol No.	Stock No.	Description				Remark
VARIABLE CAPACITORS						
TC201, 202	RN-ECV-A20-70	20 pF			ceramic	
TC203	RN-ECV-A10-69	10 pF			ceramic	
RESISTORS						
R101, 809	RN-ERD-AE561JB	560 ohm	5%	¼W	carbon	
R102,128,227,808	RN-ERD-AE392JB	3.9k ohm	5%	¼W	carbon	
R103,105,132,206 224,228,230,402 811,812	RN-ERD-AE102JB	1k ohm	5%	¼W	carbon	
R104, 106, 813	RN-ERD-AE331JB	330 ohm	5%	¼W	carbon	
R107, 815~821	RN-ERD-AE150JB	15 ohm	5%	¼W	carbon	
R108,806,825,826	RN-ERD-AE822JB	8.2k ohm	5%	¼W	carbon	
R109,112,121,211 304,307,354,357 803	RN-ERD-AE104JB	100k ohm	5%	¼W	carbon	
R110, 223	RN-ERD-AE563JB	56k ohm	5%	¼W	carbon	
R111, 119	RN-ERD-AE272JB	2.7k ohm	5%	¼W	carbon	
R113, 123, 203 805, 827	RN-ERD-AE473JB	47k ohm	5%	¼W	carbon	
R114,141,310,360	RN-ERD-AE183JB	18k ohm	5%	¼W	carbon	
R115, 122, 303 353, 823, 824	RN-ERD-AE562JB	5.6k ohm	5%	¼W	carbon	
R116, 117, 118 129, 140, 225	RN-ERD-AE222JB	2.2k ohm	5%	¼W	carbon	
R120, 142, 403	RN-ERD-AE223JB	22k ohm	5%	¼W	carbon	
R124, 220	RN-ERD-AE682JB	6.8k ohm	5%	¼W	carbon	
R125, 126, 127 301, 351	RN-ERD-AE472JB	4.7 kohm	5%	¼W	carbon	
R130,221,222,231	RN-ERD-AE103JB	10k ohm	5%	¼W	carbon	
R131, 209	RN-ERD-AE123JB	12k ohm	5%	¼W	carbon	
R133, 404	RN-ERD-AE391JB	390 ohm	5%	¼W	carbon	
R134, 135	RN-ERD-AC103JA	10k ohm	5%	⅛W	carbon	
R136, 305, 335	RN-ERD-AE332JB	3.3k ohm	5%	¼W	carbon	
R137	RN-ERD-AC332JA	3.3k ohm	5%	⅛W	carbon	
R138, 139, 226	RN-ERD-AE153JB	15k ohm	5%	¼W	carbon	
R201, 217	RN-ERD-AE121JB	120 ohm	5%	¼W	carbon	
R202,212,302,807	RN-ERD-AE224JB	220k ohm	5%	¼W	carbon	
R204	RN-ERD-AE393JB	39k ohm	5%	¼W	carbon	
R205	RN-ERD-AE122JB	1.2k ohm	5%	¼W	carbon	
R207, 214	RN-ERD-AE561JB	560 ohm	5%	¼W	carbon	
R208	RN-ERD-AE100JB	10 ohm	5%	¼W	carbon	
R210	RN-ERD-AE474JB	470k ohm	5%	¼W	carbon	
R215, 216	RN-ERD-AE124JB	120k ohm	5%	¼W	carbon	
R218	RN-ERD-AE680JB	68 ohm	5%	¼W	carbon	
R219, 236, 814	RN-ERD-AE221JB	220 ohm	5%	¼W	carbon	
R229	RN-ERD-AE152JB	1.5k ohm	5%	¼W	carbon	
R232	RN-ERD-AE333JB	33k ohm	5%	¼W	carbon	
R233, 234	RN-ERD-AC562JA	5.6k ohm	5%	⅛W	carbon	
R235	RN-ERD-AE5R6JB	5.6 ohm	5%	¼W	carbon	
R237	RN-ERD-AE471JB	470 ohm	5%	¼W	carbon	
R306, 356	RN-ERD-AE101JB	100 ohm	5%	¼W	carbon	
R308	RN-ERD-AE681JB	680 ohm	5%	¼W	carbon	
R309	RN-ERD-AE3R3JB	3.3 ohm	5%	¼W	carbon	
R401	RN-ERD-AE821JB	820 ohm	5%	¼W	carbon	
R501, 551	RN-ERD-AE2R2JB	2.2 ohm	5%	¼W	carbon	
R801	RN-ERG-AG100J	10 ohm	5%	1W	metalic	
R802	RN-ERD-AC182JA	1.8k ohm	5%	⅛W	carbon	
R804	RN-ERD-AC683JA	68k ohm	5%	¼W	carbon	
R810	RN-ERD-AC331JA	330 ohm	5%	⅛W	carbon	
VARIABLE RESISTORS						
VR101, 103	RN-ERV-0N1-223	50k ohm			carbon	
VR102	RN-ERV-0N1-132	10k ohm			carbon	
VR104	RN-ERV-0N1-126	5k ohm			carbon	
VR201	RN-ERV-0N1-164	20k ohm			carbon	
VR301	RN-ERV-2R4-9				carbon	○
SEMICONDUCTORS						
IC101	RN-EIC-LA1231NS	FM IF amp., Det.			linear-monolithic IC	○
IC102	RN-EIC-LA2110	Noise blanker			linear-monolithic IC	○

Symbol No.	Stock No.	Description	Remark
IC103	RN-EIC-LA3375	Stereo MPX decoder linear-monolithic IC	○
IC201	RN-EIC-LA1130	AM IF amp., Det. linear-monolithic IC	○
IC301	RN-EIC-LA3161	Pre-amp. linear-monolithic IC	○
IC501	RN-EIC-HA1377A	Power-amp. linear-monolithic IC	○
IC801	RN-EID-μPD1701C	PLL & Controller digital monolithic IC	○
IC802	RN-EID-μPB553AC	Pre-scaler digital monolithic IC	○
IC803	RN-EIC-TD62506P	Transistor assy. linear-monolithic IC	○
IC804	RN-EIC-μPA53C	Transistor assy. linear-monolithic IC	○
IC805	RN-EIC-AN7805	Voltage regulator linear-monolithic IC	○
Q101, 202, 203	RN-EVS-2SC380-O	Silicon transistor	○
Q102,204,302,352	RN-EVS-2SC3112	Silicon transistor	○
Q103,205～207 301,351,806,807	RN-EVS-2SC1815-GR	Silicon transistor	○
[illegible]	RN-EVF-2SK184-BL	FET	○
[illegible], 802	RN-EVF-2SK246-Y	FET	○
Q803, 804	RN-EVS-2SC2021-QR	Silicon transistor	○
Q805	RN-EVS-2SA937-PQ	Silicon transistor	○
Q208	RN-EVS-2SD592-GR	Silicon transistor	○
D101～104, 204 205, 208～211 301, 351, 801～ 814, 818～821	RN-EDS-1S1555	Silicon diode	○
D201～203	RN-EDC-1SV100-OK	Varactor diode	○
D206, 207	RN-EDG-0A90	Germanium diode	○
D315	RN-EDT-RD5R6EB2	Zener diode, 5.6V	○
D816, 210	RN-EDT-RD100EB2	Zener diode, 10V	○
D817	RN-EDT-RD4R3EB2	Zener diode, 4.3V	○
D822	RN-EDP-TLG2140	Light emitting diode	○
D823	RN-EDP-LN222RP	Light emitting diode	○
D302, 303	RN-EDP-LN328GP	Light emitting diode	○
TRANSFORMERS			
T101	RN-ETF-1007	FM IF	
T102	RN-ETF-1008	FM IF	
T201	RN-ETX-1006	AM ANT	
T202	RN-ETA-1019	AM RF	
T203	RN-ETH-1011	AM OSC	
T204	RN-ETA-1015	AM IF	
T205	RN-ETA-1016	AM IF	
T206, 208	RN-ETA-1017	AM IF	
T207	RN-ETA-1018	AM IF	
COILS			
L201	RN-ELH-C100-11	Choke, 10 μH	
L401	RN-ELL-1012	Choke,	
L801	RN-ELH-C101-10	Choke, 100 μH	
CERAMIC FILTER			
[illegible] 101, 102	RN-EFC-F2-121	10.7 MHz	
[illegible]F201	RN-EFC-A2-128	450 kHz	
MISCELLANEOUS ELECTRICAL			
E1	RN-ETV-1009	FM Front-end	
E203	RN-EJU-S08V-738	8P connector	
E204	RN-EZE-EA-73	Terminal	
E205	RN-EWJ-3029	8P connector and lead assembly, for E805	
E303	RN-EHM-C44-53	P.B. Head	○
E304	RN-EDM-1021	DC motor	○
E306	RN-EJU-S08V-738	8P connector	
E307	RN-EWJ-3027	8P connector and lead assembly, for E306	
E308	RN-EWJ-3028	8P connector and lead assembly, for E309	
E309	RN-EJU-S08V-739	8P connector	
E402	RN-EJU-S04V-741	4P connector	
E403	RN-EWJ-3030	4P connector and lead assembly, for E402	
E404 (J-2)	RN-EWP-1053	3P connector and lead assembly, power	
E405 (J-3)	RN-EWS-1048	4P connector and lead assembly, speaker	
E805	RN-EJU-S09V-740	9P connector	
E806	RN-EWJ-3026	9P connector and lead assembly, for E805	
J1	RN-EJL-1013	Antenna receptacle	
SW1～SW6	RN-ESB-1N1-171	Push switch	○

Symbol No.	Stock No.	Description	Remark
SW 7	RN-ESB-1N1-145	Push switch	O
SW 8	RN-ESS-12-173	Slide switch	O
SW 9	RN-ERV-2P3-115	Rotary switch, tuning	O
SW10～SW11	RN-ESB-1L2-169	Push switch	O
X801	RN-EXC-1010	Crystal, 4.5 MHz	

Illus. No. (Fig. 21)	Stock No.	Description	Q'ty	Remark
MECHANICAL				
A－1	RN-MDP-1191	Escutcheon	1	O
A－2	RN-MNM-1078	Plate, display	1	O
A－3	RN-MYB-1212	Button	6	O
A－4	RN-MDP-1193	Sub-Escutcheon	1	O
A－5	RN-MCV-~~1250~~ 1237 1307	Door	1	
A－6	RN-MYB-1213	Button, eject	1	O
A－7	RN-MYB-1214	Button	1	O
A－8	RN-MYB-1215	Button	1	O
A－9	RN-MYB-1216	Button	1	O
A－10	RN-MYB-1217	Button	1	O
A－11	RN-MYB-1218	Button, FF	1	O
A－12	RN-MYB-1219	Button, REW	1	O
A－13	RN-MYB-1220	Button, MEMO	1	O
A－14	RN-MAD-1120	Chassis, L	1	
A－15	RN-MAD-1121	Chassis, R	1	
A－16	RN-MAD-1122	Chassis, rear	1	
A－17	RN-MAD-1123	Cover, top	1	
A－18	RN-MAD-1124	Cover, bottom	1	
A－19	RN-MWS-1022	Washer	2	
B－2	RN-MHE-1279	Holder	1	
B－3	RN-MSP-1022	Spring	1	
B－4	RN-MHE-1220	Holder	1	
B－5	RN-MSI-1042	Shaft	1	
B－6	RN-MSC-1160	Spring	1	
B－8	RN-MDP-1192	Holder	1	
B－9	RN-MHE-1221	Holder	1	
B－10	RN-MHE-1222	Holder	1	
B－11	RN-MHE-1223	Holder	1	
B－12	RN-MSB-1039	Shield case	1	
B－13	RN-MSB-1040	Shield case	1	
B－14	RN-MSB-1041	Shield case	1	
B－15	RN-MIP-1146	Insulator	1	
B－16	RN-MST-1043	Spacer (L)	1	
B－17	RN-MSE-1117	Spacer (R)	2	
B－18	RN-MWP-1047	Washer	2	
B－19	RN-MIP-1147	Insulator	1	
B－20	RN-MSB-1042	Shield plate	1	
B－21	RN-MST-1044	Spacer	1	
B－22	RN-MIP-1148	Insulator	1	
E－101	RN-MPM-2346	PC Board, main	1	
E－201	RN-MPC-1331	PC Board, AM tuner	1	
E－301		PC Board, pre-amp.	1	
E－305		PC Board, volume	1	
E－401		PC Board, switch	1	
E－803		PC Board, tuning	1	
E－801	RN-MPM-2348	PC Board, display	1	
E－804	RN-MPM-2347	PC Board, jumper	1	
ASSEMBLY MATERIAL				
L－1	F6-SNATP2-2×4	Screw, 2×4mm	3	
L－2	F6-SNATP2-2×6	Screw, 2×6mm	2	
L－3	RN-MET-1084	Special screw, 3×5mm	18	
L－4	RN-MET-133	Special screw, 3×6mm	6	
L－5	RN-MET-1085	Special screw, 2.6×5mm	2	
L－6	F6-SBD-2.6×5	Screw, 2.6×5mm	1	
L－7	F6-SBD-3×4	Screw, 3×4mm	2	
L－8	F6-SBD-3×6	Screw, 3×6mm	2	
L－9	RN-MET-1024	Special screw, 2.6×4mm	2	
L－10	RN-MET-1084	Special screw, 3×5mm	2	

CASSETTE DECK (RN-MDK-58/1)

Illus. No. (Fig. 22)	Stock No.	Description	Qt'y	Remark
1	RN-MUF-1009	Flywheel	2	
2	RN-MAS-1031	Chassis, main	1	
3	RN-MUL-1167	Lever, release	1	
4	RN-MUL-1168	Ratchet	1	
5	RN-MYT-1075	Chassis, select	1	
6	RN-MUG-1062	Gear, select	1	
8	RN-MUL-1170	Plate, latch	1	
9	RN-MKR-1016	Pinch roller (F)	1	
10	RN-MKR-1017	Pinch roller (R)	1	
11	RN-MHE-1235	Holder, reset	1	
12	RN-MUL-1171	Lever, eject	1	
13	RN-MHE-1236	Holder, reel	1	
14	RN-MHE-1237	Holder, detector	1	
15	RN-MRP-1062	Reel	2	
16	RN-MUG-1063	Gear, FF	1	
17	RN-MHE-1238	Holder, cassette	1	
18	RN-MUL-1172	Lever, support	1	
19	RN-MYT-1076	Holder	1	
20	RN-MRP-1063	Pulley, idle	1	
21	RN-EDM-1021	Motor	1	○
22	RN-MYT-1077	Sub-chassis	1	
26	RN-MUL-1173	Lever, program	1	
27	RN-MUL-1174	Lever, FF	1	
28	RN-MUL-1175	Lever, REW	1	
29	RN-MUL-1176	Lever, ratch	1	
30	RN-MUL-1177	Lever, invert	1	
31	RN-MUL-1178	Lever, push	1	
32	RN-MUL-1179	Lever, switch	1	
33	RN-MCE-1045	Clamp	1	
34	RN-MSP-1026	Spring, head adjust	1	
35	RN-MSC-1169	Spring, detector	1	
39	RN-MUG-1069	Gear, reduction	1	
40	RN-MUG-1065	Gear, final	1	
41	RN-MUG-1066	Gear	2	
42	RN-MUG-1067	Gear, detect	1	
47	RN-MST-1049	Spacer, eject	1	
48	RN-MSS-1010	Spacer, screw	2	
50	RN-MSS-1011	Spacer, ratch lever	1	
51	RN-MSS-1012	Spacer, screw	2	
52	RN-MSS-1013	Spacer, screw	1	
56	RN-MSC-1170	Spring, extension	1	
57	RN-MSC-1171	Spring, extension	1	
58	RN-MSC-1172	Spring, extension	1	
59	RN-MSC-1173	Spring, extension	1	
60	RN-MSC-1174	Spring, extension	1	
61	RN-MSC-1175	Spring, pinch roller	1	
62	RN-MSC-1176	Spring, pinch roller	1	
63	RN-MSC-1177	Spring, latch plate	1	
64	RN-MSC-1178	Spring, slide chassis	1	
65	RN-MSC-1179	Spring, FR	1	
66	RN-MSC-1180	Spring, brake	1	
67	RN-MSC-1181	Spring, stopper	1	
68	RN-MSC-1182	Spring, extension	1	
69	RN-MSC-1183	Spring, extension	2	
70	RN-MSC-1184	Spring, compression	1	
71	RN-MSC-1185	Spring, eject lock	1	
73	RN-EPP-1240	PC Board, with switch	1	
74	RN-MUB-1026	Belt	1	
75	RN-MSI-1045	Link, actuater	1	
76	RN-MSI-1046	Link, release	1	
77	RN-MSI-1047	Link, release	1	
78	RN-MIP-1153	Insulator	1	
83	RN-ESS-42-175	Switch, slide	1	○
86	RN-EHM-C44-53	Head	1	○
90	RN-MWP-1050	Washer, tefrom 3.6×6×0.3mm	1	
91	RN-MWP-1051	Washer, 1.2×3×0.25mm	6	
92	RN-MWP-1052	Washer, 1.6×3.2×0.25mm	2	
93	RN-MWP-1057	Washer	2	
98	RN-MWS-1023	Washer, 2.6×6×0.3mm	1	
101	F6-ER-1.5SUS	E-type ring, 1.5mm	1	

Illus .No. (Fig. 22)	Stock No.	Description	Qt'y	Remark
102	F6-ER-2.0SUS	E-type ring, 2mm	5	
103	F6-ER-2.5SUS	E-type ring, 2.5mm	4	
104	F6-ER-4.0SUS	E-type ring, 4mm	1	
107	RN-MET-1096	Special screw, 2×6mm	1	
108	RN-MET-1097	Special screw, 2.6×5mm	2	
109	F6-SBD-2×4S	Screw, 2×4mm	1	
110	RN-MET-1098	Special screw, 2.6×3mm	2	
111	RN-MET-1099	Special screw, 2.6×5mm	2	
115	RN-MET-1100	Special screw, 2.6×4mm	5	
116	RN-MET-1101	Special screw, 2.6×6mm	1	

NOTE : Modifications reserved !