

SERVICE MANUAL

AM/FM STEREO TUNER

SANSUI TU-S7



● SPECIFICATIONS

FM Section

Tuning range	87.5 to 108 MHz
Usable sensitivity	
Mono IHF	10.5 dBf (1.8 μ V: T100)
DIN	0.9 μ V
50 dB quieting sensitivity	
Mono	14.5 dBf
Stereo	36.5 dBf
Signal to noise ratio at 65 dBf	
Mono	83 dB
Stereo	74 dB
Distortion at 65 dBf	
Mono	less than 0.07 % at 100 Hz less than 0.07 % at 1,000 Hz less than 0.07 % at 6,000 Hz
Stereo	less than 0.08 % at 100 Hz less than 0.08 % at 1,000 Hz less than 0.08 % at 6,000 Hz

Alternate channel selectivity (at 400 kHz)

	57 dB
Capture ratio	1.0 dB
Image response ratio	70 dB (at 98 MHz)
Spurious response ratio	80 dB (at 98 MHz)
Stereo separation	40 dB at 100 Hz 50 dB at 1,000 Hz 40 dB at 10,000 Hz
Frequency response Stereo	30 to 18,000 Hz +0.3 dB -1.0 dB
Antenna input impedance	300 ohms balanced 75 ohms unbalanced

AM Section

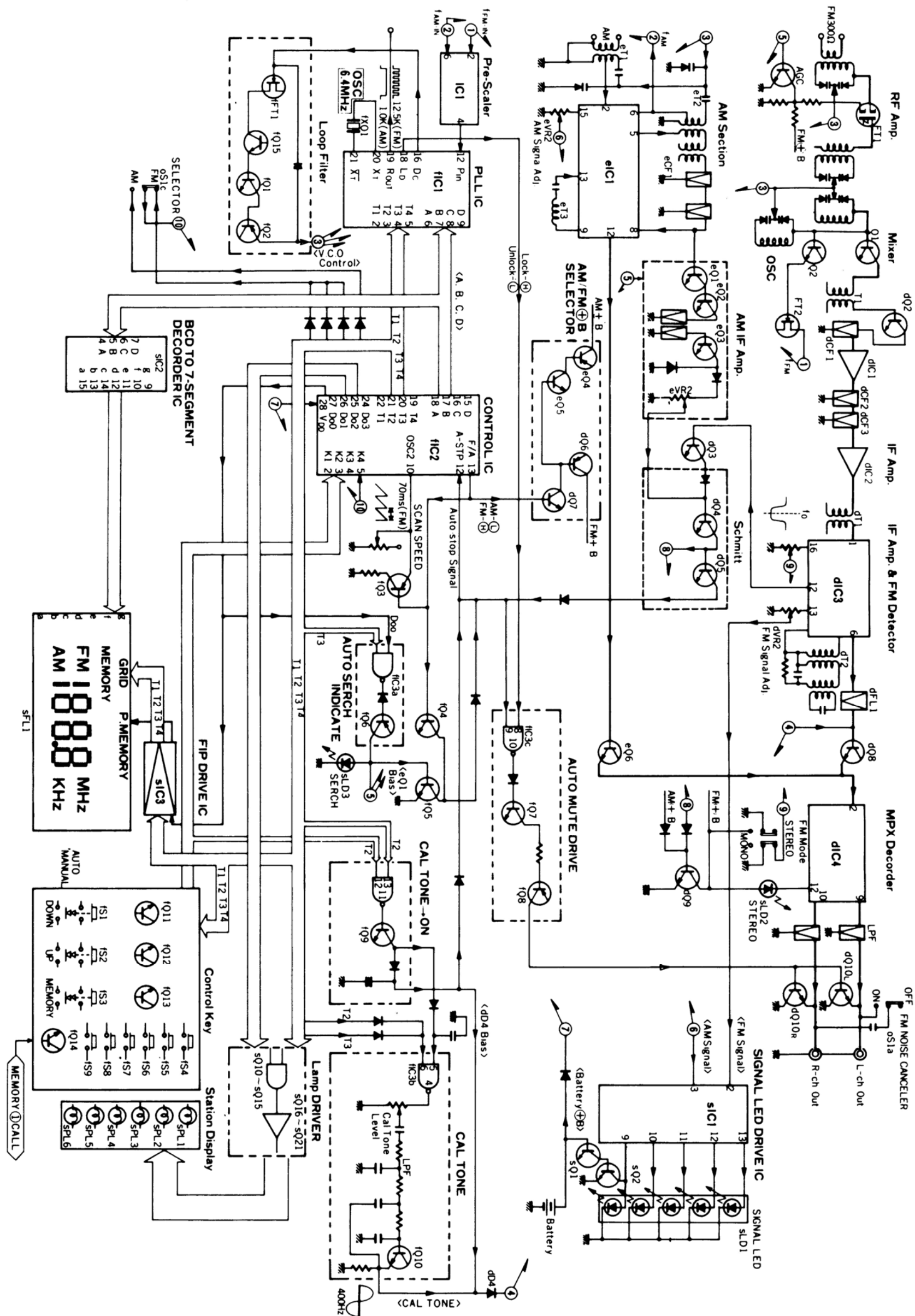
Tuning range	525 to 1,605 kHz (10 kHz) 531 to 1,602 kHz (9 kHz)
Usable sensitivity	56 dB/m
Selectivity (\pm 9 kHz)	30 dB
Signal to noise ratio	46 dB
Distortion (at 30 % Modulation, 80 dB/m)	less than 0.6 %
Image response ratio	45 dB at 1,000 kHz
IF response ratio	35 dB at 1,000 kHz

Others

Output voltage and impedance	
OUTPUT	0.5/2.2 kilohms
Power requirements	120, 220, 240 V (50/60 Hz)
For U.S.A. and Canada	120 V (60 Hz)
Power consumption	12 W
Dimensions	430 mm (16-15/16") W 83 mm (3-5/16") H 305 mm (12-1/8") D
Using rack mounting adaptors	480 mm (18-15/16") W 83 mm (3-5/16") H 305 mm (12-1/8") D
Weight	
Silver panel type	4.2 kg (9.3 lbs) net 5.1 kg (11.2 lbs) packed
Black panel type	4.3 kg (9.5 lbs) net 5.2 kg (11.5 lbs) packed

* Design and specifications subject to changes without notice for improvements.

1. BLOCK DIAGRAM



* See T-77 Service Manual for the fundamental operations of the PLL Circuit and the Control Circuit, because this tuner TU-S7 is of the same quartz PLL synthesizer type as in T-77.

2. OPERATIONS

2-1. Circuit to Call a Station in Memory Address No. 1 (See the schematic diagram on Page 10.)

When the AM/FM selection switch is operated, a broadcasting station stored in the FM memory address No. 1 or AM memory address No. 1 is received.

When the AM/FM selector switch $fS1c$ is switched, a trigger pulse is generated from the base of $fQ14$.

Therefore, $fQ14$ is turned on to realize the same state as when the key switch $fS4$ for the memory address No. 1 is on, so that a call command for the broadcasting station stored in the memory address No. 1 is generated.

2-2. Operation of Muting Controller (See the block diagram.)

The output signal from the tuner is controlled by turning on or off $dQ10L$ and $dQ10R$ of the tuner output section in accordance with the lockout detection signal from the PLL synthesizer IC and the tuning detection signal from the IF stage.

1) Muting operation in FM mode

The muting operation is performed in accordance with the tuning detection signal from the output terminal No. 12 of the FM detection IC ($dIC3$) and the lockout detection signal from the output terminal No. 18 of the PLL synthesizer IC ($fIC1$).

In detuning, the muting operates and no tuner output signal is generated; however, when the received frequency is tuned to a desired broadcasting station, the voltage at the output terminal No. 12 of $dIC3$ changes from H level to L level; accordingly, the collector voltage of $dQ3$ changes to H level, the collector voltage of $dQ4$ changes to L level, the collector voltage of $dQ5$ changes to H level, the terminal No. 9 of the NAND circuit $fIC3c$ changes to H level, respectively.

On the other hand, the lockout detection signal from the terminal No. 18 of the PLL synthesizer IC $fIC1$ changes to H level when locked; accordingly, the terminal No. 8 of $fIC3c$ changes to H level, the terminal No. 10 of $fIC3c$ changes to L level, the collector voltage of $fQ7$ changes to H level, the collector voltage of $fQ8$ changes to L level, the base voltages of $dQ10L$ and $dQ10R$ change to L level, respectively, to release the muting operation.

2) Muting operation in AM mode

The muting operation is performed in accordance with the tuning detection signal from the AM tuning detection circuit and the lockout detection signal from the PLL synthesizer IC. The operation of the muting driver is the same as in FM mode; however, in AM mode the muting operation is performed only while the automatic scanning is being performed.

In the ordinary operation in AM mode, the terminal No. 13 (FM/AM) of the control IC changes to L level, the collector voltage of $fQ4$ changes to H level, the collector voltage of $fQ5$ changes to H level, the input terminal of $fIC3c$ changes to H level; additionally,

the lockout detection signal changes to H level, the muting driver output changes to L level, respectively, to release the muting operation.

In the automatic scanning operation, the automatic search display circuit operates and the collector voltage of $fQ7$ changes to L level, the input terminal of $fIC3c$ changes to L level (until the AM tuning detection signal is applied), the audio muting driver output changes to H level, respectively, to begin muting operation.

2-3. Operation of AM Tuning Detection Circuit (See the block diagram.)

The AM tuning detection circuit is the one to obtain a tuning detection signal (an automatic stop signal) for stopping the automatic scanning operation in AM mode.

Since the bias voltage of this AM tuning detection circuit $eQ1$ is applied through the automatic search indicator, this circuit operates only while the automatic search is in operation.

The IF signal from $eCF1$ at the IF stage is tuning-detected through a narrow-band filter made up of $eQ1$, $eQ2$, and $eCF2$, rectified through a rectifier made up of $eD2$, $eD3$, waveform-shaped through a schmitt circuit made up of $dQ4$ and $dQ5$, and then applied to the terminal No. 12 of the control IC ($fIC2$) as a stop signal for automatic scanning.

However, it is impossible to detect an accurate tuning point by using only the AM tuning detection circuit from the standpoint of characteristics on AM radio waves.

In order to detect an accurate tuning point, a program is stored within the control IC ($fIC3$) so that the automatic scanning operation is not stopped except when the received frequency is integral multiples of 9 kHz.

2-4. Calibration Generator (See Fig. 2-1.)

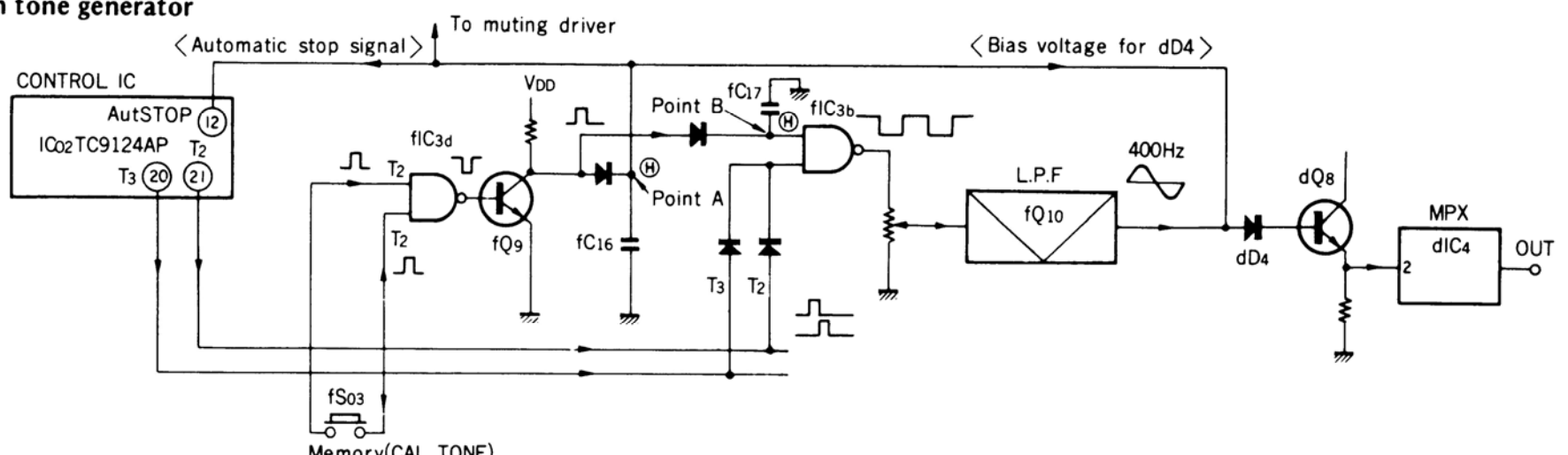
Fig. 2-1 shows a circuit to generate a 400-Hz signal for presetting a level in air check.

When depressing the key switch $fS03$, a digit signal $T2$ is applied to the two input terminals of the NAND circuit $fIC3d$, and the digit signal $T2$ is developed at the collector of $fQ9$. At the points A and B, the digit signal $T2$ is integrated by the respective condensers $fC16$ and $fC17$ into a H-level voltage.

One of the H-level voltage at the point A is applied to the terminal No. 12 of the control IC to stop the automatic search operation. Another of the H-level voltage at the point A is applied to the audio muting circuit to release the muting operation. The other of the H-level voltage at the point A is applied to the diode $dD4$ as a bias voltage to turn it on.

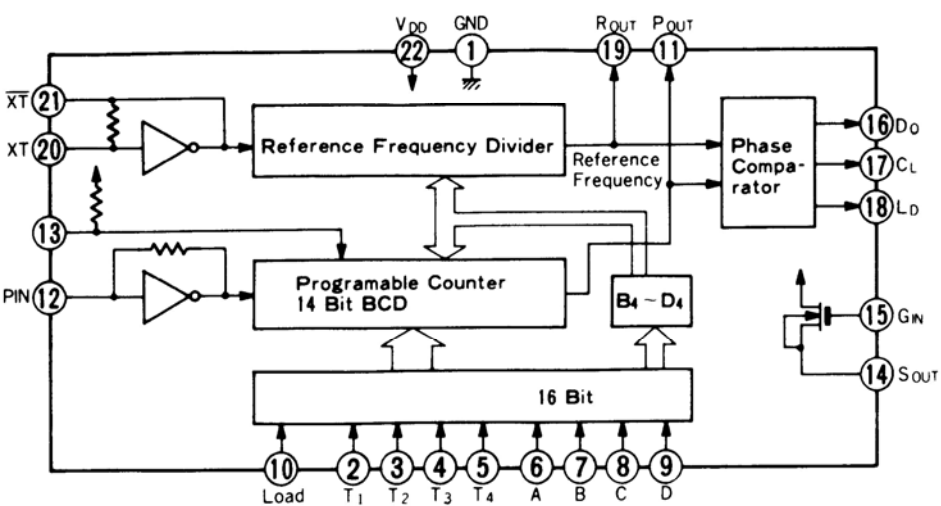
The H-level voltage at the point B and the digit signals $T2$ and $T3$ are applied to the NAND circuit $fIC3b$, and the output signal from $fIC3b$ changes into a 400 Hz sine wave signal, after passed through the low-pass filter $fQ10$. Since this 400 Hz calibration tone signal is applied to the $dQ8$ provided at the stage before the FM stereo demodulator IC, it is possible to take out this signal from the audio set, while the key switch is being depressed.

Fig. 2-1 Calibration tone generator

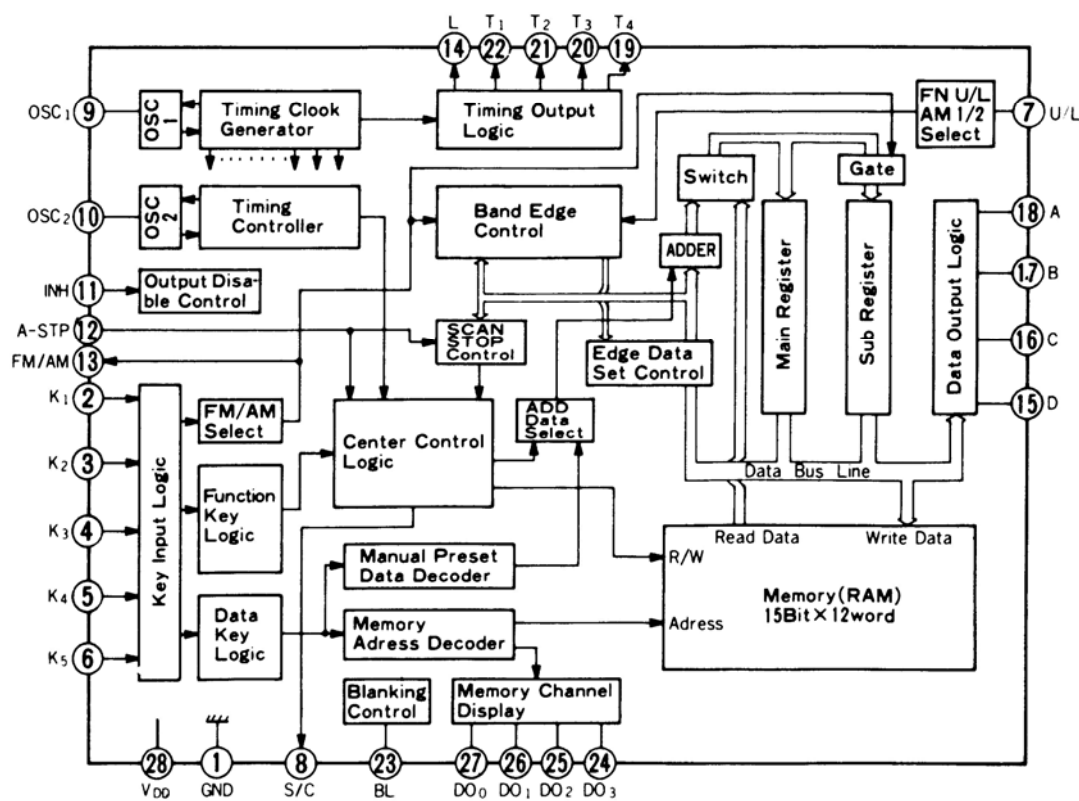


3. INTERIOR BLOCK DIAGRAM OF IC

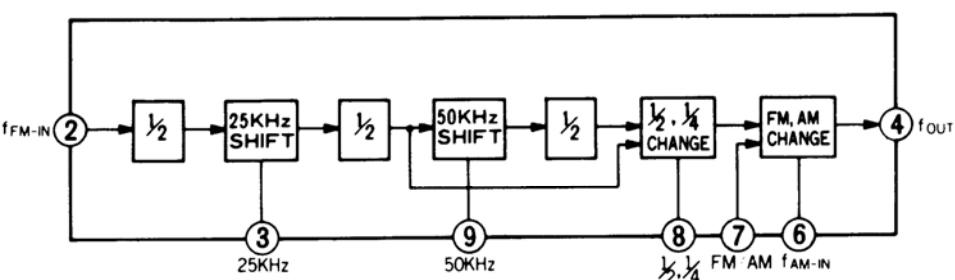
• TC9123P (PLL synthesizer IC)



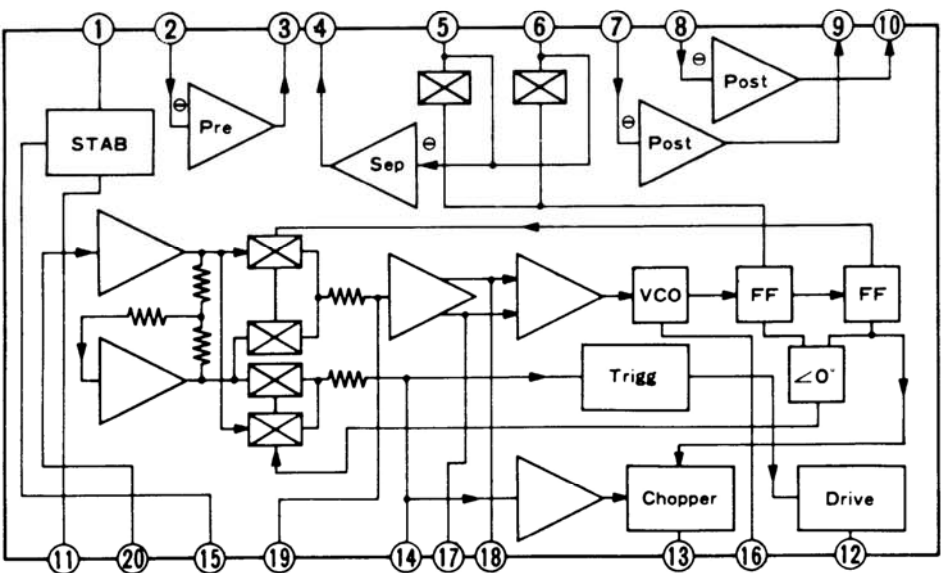
• TC9124P (Synthesizer control IC)



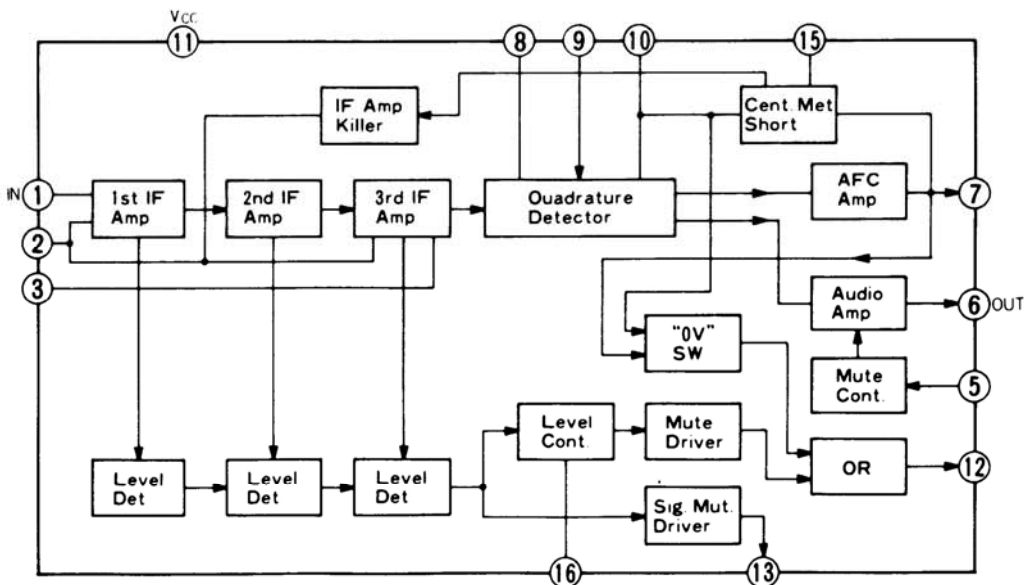
• TD6102P (Prescaler IC)



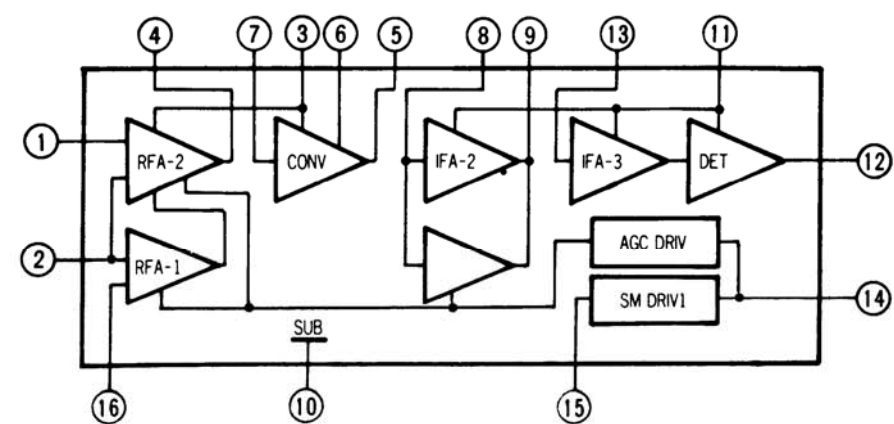
• LA3380 (MPX decoder IC)



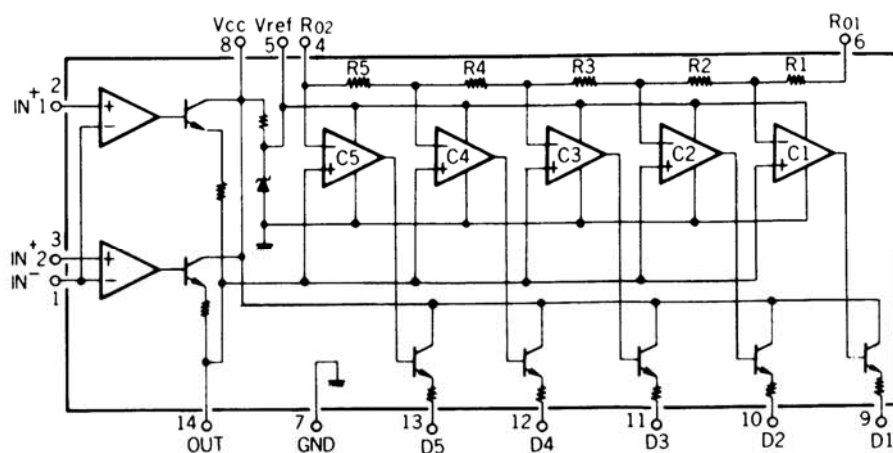
• HA12412 (IF amp. & FM detector IC)



• HA1197 (AM tuner IC)



• LB-1416 (Signal LED drive IC)



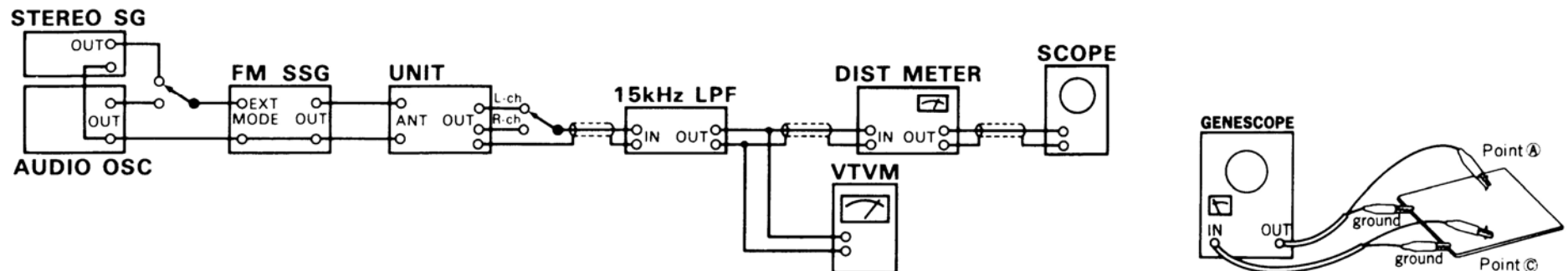
4. ADJUSTMENTS

4-1. FM Adjustment (See Top View on Page 6)

(1) FM IF, RF Adjustment & Dial Calibration

- Note: 1. Selector FM
 2. FM Mode MONO

3. Check that the DC voltage between the point E (fD1) on the substrate F-3425 and the ground is within $9 \pm 0.5V$.
 (If out of this allowable range, regulate the voltage by adjusting the mVR1 on the substrate F-3424.




STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS	
		FROM	TO					
1.	Reference Frequency Adj.	No Input	—	Between fTP1 (F-3425) & Earth. Freq. counter	fTC1 (F-3425)	6.400MHz		
2.	IF Coil Adj.	98MHz ANT Input 30dBf (24.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between Point (B) (dD1) & Earth. DC Volt Meter	T1, dT1 (F-3424)	Max. DC Volt (about DC 0.5V ~ 1V)		
3.	Discriminator Coil Adj. In case of using Genescope	1	No Input	Between dTP1 & dTP2. (F-3424) DC Volt Meter	dT2a (F-3424)	DC 0V ±0.1V	<ul style="list-style-type: none"> Repeat procedures as stated in 1 and 2. 	
		2	Output 80dB. Genescope	Point (A)	Between Point (C) (dR25) & Earth.	dT2b, dT2a (F-3424)		Steep linearity of S curve. Make symmetrical S curve.
3.	Discriminator Coil Adj. In case of using Dist meter	1	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	Between dTP1 & dTP2. (F-3424) DC Volt Meter	dT2a (F-3424)	<ul style="list-style-type: none"> Repeat procedures as stated in 1 and 2. Since the dT1 has already adjusted, perform only a fine adjustment in this procedure. 	
		2	Same as above	Same as above	OUTPUT L-CH or R-CH, Dist Meter	dT2a, dT2b dT1, T1 (F-3424)		Min. THD
4.	88MHz Dial Calibration	1	No Input	Display Indication	Tuning Knob	88MHz	<ul style="list-style-type: none"> Repeat procedures as stated in 4 and 5. 	
		2	No Input	Between Point (D) (eR1) & Earth. DC Volt Meter	T2 (F-3424)	3.0V ±0.1V		
5.	108MHz Dial Calibration	1	No Input	Display Indication	Tuning Knob	108MHz		
		2	No Input	Between Point (D) (eR1) & Earth. DC Volt Meter	TC4 (F-3424)	21.0V ±0.1V		
6.	98MHz RF Adj.	98MHz ANT Input Minimum value with sine wave. 1kHz (100% MOD.), FM SSG	ANT terminal 300Ω	OUTPUT L-CH or R-CH VTVM & SCOPE	TC1, TC2, TC3 (F-3424)	Max. Output		
7.	Signal Indicator Adj.	1	98MHz ANT Input 35dBf (29.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Signal Indicator	dVR2 (F-3424)	Make 3 indication segments lighting	
		2	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG	Same as above	Same as above	Confirm every 5 indication segments lighting	*	

* When the battery housed within the battery case on the rear panel is used up, the indicator lamp of the signal ① does not come on even during receiving.

(2) FM STEREO Adjustment

Note: 1. FM Mode Auto
 2. FM Noise Canceler OFF

STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS	
		FROM	TO					
1.	PLL VCO Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG. Pilot 19kHz (9% MOD.), L or R-MODE 1kHz + Pilot (100% MOD.), STEREO SG.	ANT terminal 300Ω	Stereo Indicator	dVR5 (F-3424)	Light indicator	Adjust the dVR5 within center of lighting level	
	PLL VCO Adj. In case of using Freq.	98MHz ANT Input 65dBf (59.8dB), FM SSG.No MOD.	Same as above	Between dTP3 (F-3424) & Earth. Freq. counter	dVR5 (F-3424)	76kHz ±100Hz		
2.	Pilot Canceler Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG. Pilot 19kHz (9% MOD.), STEREO SG.	Same as above	Between Point (F) (dR71) & Earth. VTVM & SCOPE	dVR3 (F-3424)	Min. Output (19 kHz)		
3.	L-CH Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG. Pilot 19kHz (9% MOD.), L-MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	OUTPUT L-CH. VTVM & SCOPE	—	Read the indication on VTVM		
				OUTPUT R-CH. VTVM & SCOPE	dVR4R (F-3424)	−50dB from the indication above		
	R-CH Separation Adj.	98MHz ANT Input 65dBf (59.8dB), FM SSG. Pilot 19kHz (9% MOD.), R-MODE 1kHz + Pilot (100% MOD.), STEREO SG.	Same as above	OUTPUT R-CH VTVM & SCOPE	—	Read the indication on VTVM		
				OUTPUT L-CH VTVM & SCOPE	dVR4L (F-3424)	−50dB from the indication above		
4.	Muting Level & Indicator Level Adj.	98MHz ANT Input 15dBf (9.8dB), FM SSG. Pilot 19kHz (9% MOD.), L or R-MODE 1kHz + Pilot (100% MOD.), L or R-MODE 1kHz Pilot (100% MOD.), STEREO SG.	Same as above	Stereo Indicator. OUTPUT L or R-CH. VTVM & SCOPE	dVR1 (F-3424)	Stereo indicator turns ON or Output Signal comes out		
5.	Calibration Level Adj.	1	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG.	Same as above	OUTPUT L-CH or R-CH VTVM & SCOPE	—	Read the indication on VTVM	
		2	—	—	Same as above	fVR2 (F-3425)	−10dB from the indication above.	• Cal, Tone Switch . . ON
6.	Scanning Speed Adj.	98MHz ANT Input 65dBf (59.8dB), 1kHz (100% MOD.), FM SSG.	ANT terminal 300Ω	Display Indication	fVR1 * (F-3425)	Tune the tuner to 98MHz by using the automatic search tuning operation.	• Perform the automatic search tuning operation by depressing the automatic tuning key.	
	Scanning Speed Adj. In case of using Scope	—	—	Between Pin (10) (fIC2) & Earth. SCOPE	fVR1 (F-3425)	Set one period of the waveform to 70 ms. 	• Perform the scanning opera- tion. • Set the TIME/ DIV knob of an oscilloscope to its 10 ms posi- tion.	

* In almost all cases, an accurate automatic search tuning operation is achieved by setting the fVR₁ to the middle position.

1) When the fVR₁ is rotated clockwise, the speed of scanning becomes fast.

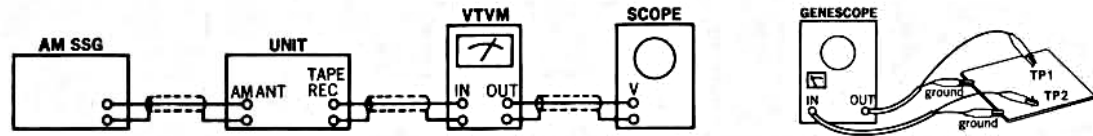
2) When the fVR₁ is rotated counterclockwise, the speed of scanning becomes slow. However, when excessively rotated, the scanning operation will stop.

* When the scanning speed is too fast, the tuning point is set beyond a frequency of a broadcasting station, without performing an accurate automatic search tuning.

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4-2. AM IF Adjustment & Dial Calibration

- Note: 1. Selector AM
 2. Make sure the attached loop antenna is connected to the terminal for AM antenna.



STEP	SUBJECT	FEED SIGNAL		MEASURE OUTPUT	ADJUST	ADJUST FOR	REMARKS
		FROM	TO				
1.	IF Coil Adj.	Output 40dB, Genescope	eTP1 (F-3424)	Between eTP2 (F-3424) & Earth.	eCF1, eT3 (F-3424)	Max. Waveform	
2.	531kHz Dial Calibration	1 No Input	-	Display Indication	Tuning Knob	531kHz	• Repeat procedures as stated in 2 and 3.
		2 No Input	-	Between Point (D) (eR1) & Earth. DC Volt Meter	eT2 (F-3424)	1.7V ±0.1V	
3.	1602kHz Dial Calibration	1 No Input	-	Display Indication	Tuning Knob	1602kHz	
		2 No Input	-	Between Point (D) (eR1) & Earth. DC Volt Meter	eTC1 (F-3424)	22.5V ±0.1V	
4.	603kHz RF Adj.	603kHz ANT Input 30dB, 400Hz (30% MOD.), AM SSG	ANT terminal	OUTPUT L-CH or R-CH VTVM & SCOPE	eT1 (F-3424)	Max. Output	
5.	1404kHz RF Adj.	1404kHz ANT Input 30dB, 400Hz (30% MOD.), AM SSG	Same as above	Same as above	eTC2 (F-3424)	Max. Output	
6.	Signal Indicator Adj.	1 999kHz ANT Input 30dB, 400Hz (30% MOD.), AM SSG	Same as above	Signal Indicator	eVR1 (F-3424)	Make 3 indication segments lighting	
		2 999kHz ANT Input 70dB, 400Hz (30% MOD.), AM SSG (or a broadcasting station)	Same as above	Same as above	Confirm every 5 indication segments lighting		
7.	Auto-Stop Level Adj.	Same as above	Same as above	Display Indication	eVR2 * (F-3424)	Set tuning frequency to 999kHz or a frequency of the broadcasting station.	• Perform the automatic search tuning operation by depressing the automatic tuning key.

* In almost all cases, an accurate automatic search tuning operation is achieved by setting the eVR₂ to the middle position.

- When the automatic stop operation fails, rotate the eVR₂ clockwise to raise the level of automatic stop operation.
- When the automatic stop is performed at a frequency one step this side of the frequency of the selected broadcasting station, rotate the eVR₂ counterclockwise to lower the level of automatic stop operation.

• Abbreviations

<Equipment>	
AM FM Generator Oscilloscope	Genescope
AM Standard Signal Generator	AM SSG
FM Standard Signal Generator	FM SSG
FM Stereo Generator	Stereo SG
Oscilloscope	Scope
Audio Oscillator	Audio Osc.
Distortion Meter	Dist. Meter

<Others>	
Antenna	ANT.
Modulation	MOD.
Total Harmonic Distortion	T.H.D.

◆ Selection of Intermediate Frequencies (FM)

- When the central frequency (shown by a color) of the ceramic filter is changed, the following connection must be made by using jumper wires.
- Unity the color marks of the FM ceramic filters (dCF1, dCF2, dCF3) on the F-3424 with the same color.

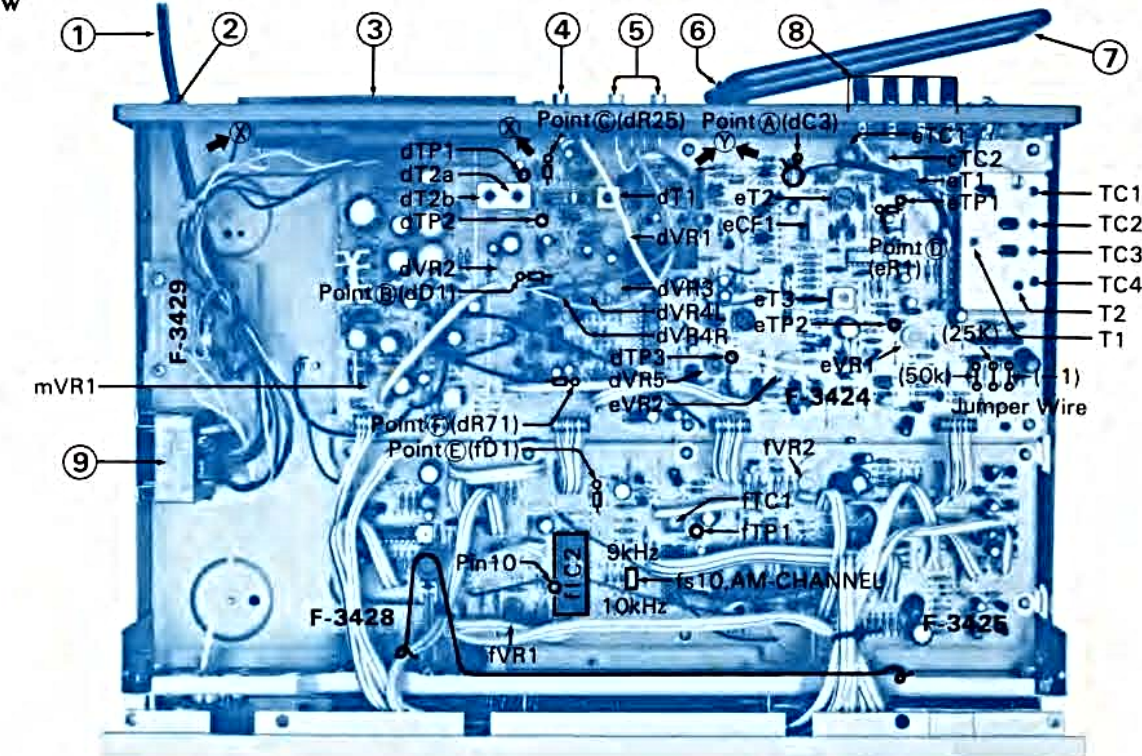
Colouring	Intermediate frequency	Connecting Position of Jumper wire on F-3424		
		JW6 (25k)	JW7 (50k)	JW5 (-1)
BLACK	10.650 MHz	-	○	○
RED	10.700 MHz	-	-	-
WHITE	10.750 MHz	-	○	-

5. OTHER PARTS

5-1. Front View



5-2. Top View



Parts List <Front View>

Parts No.	Stock No.	Description
3	07198200	Key Switch
4	07204000	Push Switch, power
6	07662900	Leg
7	07199400	Push Switch
8	07565200	Indicator Plate, signal
9	07198300	Key Switch, up, down
10	07563500	Station Base (A)
<Silver Model>		
1	07564550	Front Panel Ass'y
1-1	07564430	Plate Ass'y
1-2	07563800	Key Switch Knob, station memory
1-3	07553800	Push Switch Knob, selector, FM noise canceler, FM mode
1-4	07563710	Smoked Plate
1-5	07564100	Key Switch Knob, tuning
1-6	07564430	Smoked Plate, station display
2	07562310	Bonnet
5	53195000	Push Switch Knob, power
<Black Model>		
1	07670600	Front Panel Ass'y
1-1	07564430	Plate Ass'y
1-2	07670500	Key Switch Knob, station memory

Parts No.	Stock No.	Description
1-3	07554000	Push Switch Knob, selector, FM noise canceler, FM mode
1-4	07563710	Smoked Plate
1-5	07670900	Key Switch Knob tuning
1-6	07564430	Smoked Plate, station display
2	07715600	Bonnet
5	53196500	Push Switch Knob, power

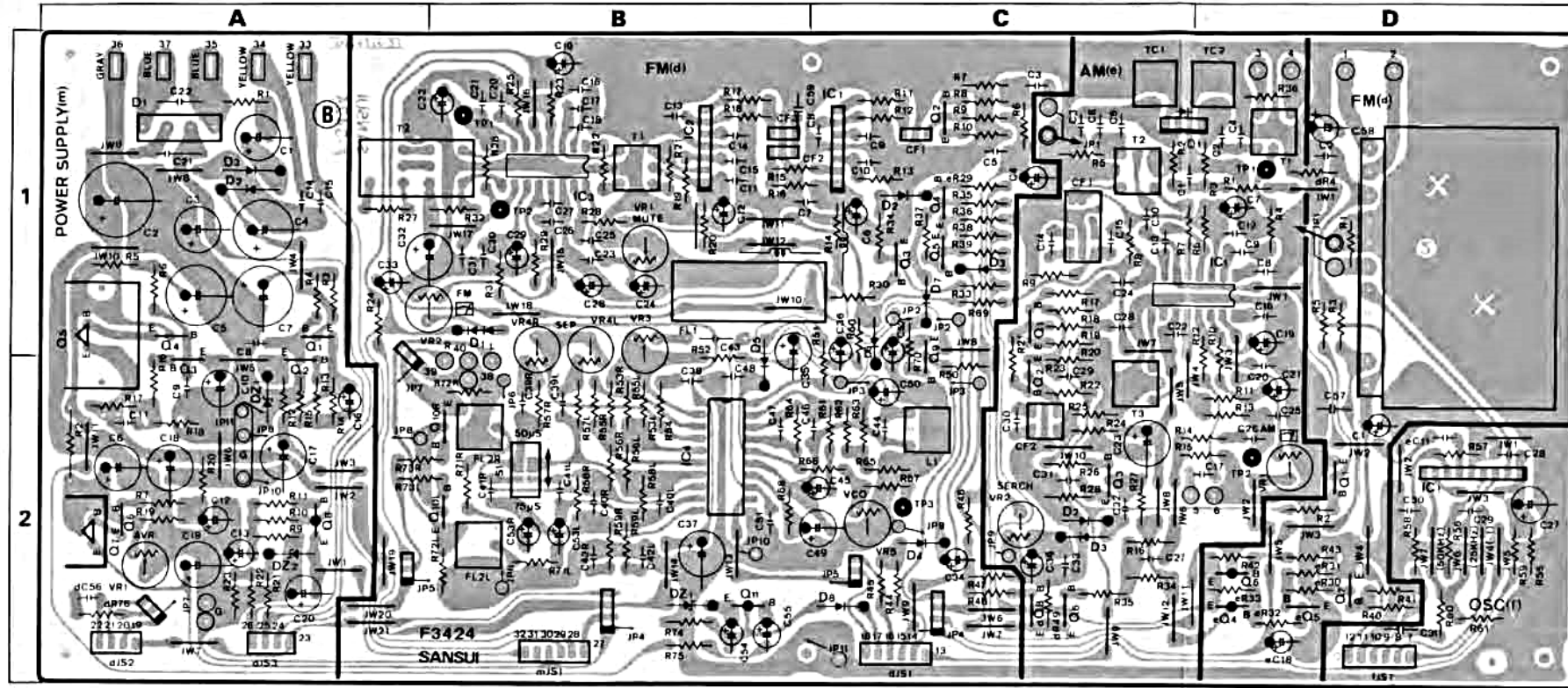
Parts List <Top View>

Parts No.	Stock No.	Description
1	38004700	Power Cord
2	39106000	Strain Relief
3	07563320	Battery Case Ass'y
4	07237500	1P Input Terminal, AM IF out
5	22005600	2P Input Terminal, output
6	07193200	Antenna Holder
7	07198900	Loop Antenna
8	22104000	Antenna Terminal
9	15002901	Power Transformer

PARTS LOCATION & PARTS LIST

F-3424 Tuner Circuit Board (Stock No. 00630101)
Component Side

• Since some of capacitors and resistors are omitted from parts lists in this Service Manual, refer to the Common Parts List for capacitors & resistors which was appended previously to each Sansui Manual.



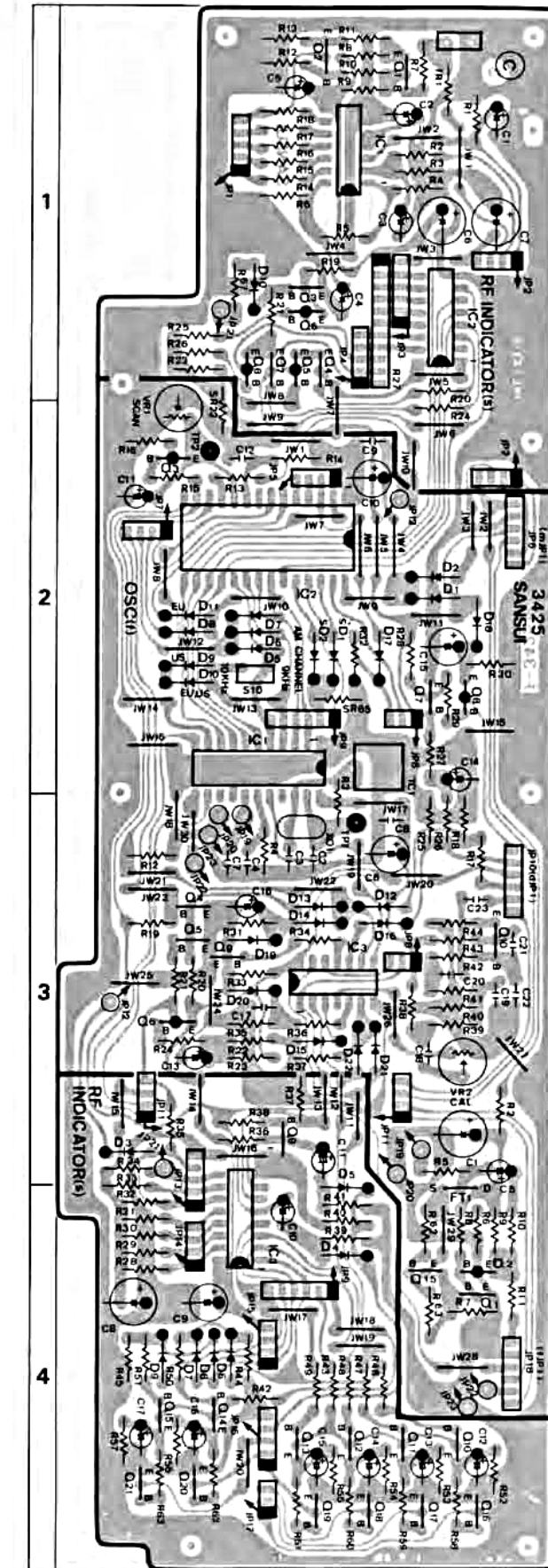
Parts List

Parts No.	Stock No.	Description
	07113200	FM Frontend Pack
•Transistor		
dQ1	07194800, 1	2SC1815 Y, GR
dQ2	03063400 ~ 2	2SC1674 M, L, K
dQ3	07194800, 1	2SC1815 Y, GR
dQ4	07194800, 1	2SC1815 Y, GR
dQ5	07194800, 1	2SC1815 Y, GR
dQ6	03033600 ~ 2	2SB560MP D, E, F
dQ7	07194800, 1	2SC1815 Y, GR
dQ8	03059501, 2	2SC945 Q, P
dQ9	07194800, 1	2SC1815 Y, GR
dQ10	03059501 ~ 3	2SC945 Q, P, K
dQ11	07194700, 1	2SA1015 Y, GR
•IC		
dIC1	03605400	μPC1163H
dIC2	03605400	μPC1163H
dIC3	07196000	HA12412
dIC4	07196100	LA3380
•Varistor		
dD1	03401500	MV-12
•Diode		
dD2 ~ 8	03111600	1S2473D
•Zener Diode		
dDZ1	03163900	RD6.2E-B
dC39	46074500	51pF 125V P.C.
dCF1	07257200	Ceramic Filter
dFL1	09105900	Adjustment Channel Filter
dFL2	07196400	Low Pass Filter
dL1S	07203000	FM RF Coil
dL1	42407200, 1	FM MPX Coil
dT1	42359300	FM IF Coil
dT2	07202600	FM IF Coil

Parts No.	Stock No.	Description
dVR1	10351500	Semi Variable Resistor 22kΩ (B)
dVR2	10351900	Semi Variable Resistor 100kΩ (B)
dVR3	10351900	Semi Variable Resistor 100kΩ (B)
dVR4	10351500	Semi Variable Resistor 22kΩ (B)
dVR5	10342700	Semi Variable Resistor 10kΩ (B)
dS1	07251100	Slide Switch
•Transistor		
eQ1	03062401	2SC1675 L
eQ2	03062400 ~ 2	2SC1675 M, L, K
eQ3	03062400 ~ 2	2SC1675 M, L, K
eQ4	03033600 ~ 2	2SB560MP D, E, F
eQ5	07194800, 1	2SC1815 Y, GR
eQ6	03059501, 2	2SC945 Q, P
•IC		
eIC1	03603900	HA1197
•Variable Capacitance Diode		
eD1	07197200	KV1226
•Diode		
eD2, 3	03111600	1S2473D
eC34	00330100	1μF 80V E.C.
eTC1, 2	12301000	Trimmer Capacitor 15pF
eCF2	07272000	Ceramic Filter
eT1	07198800	AM RF Coil
eT2	07198700	AM RF Coil
eT3	42306200	AM IF Coil
eCF1	07198500	AM IF Coil

Parts No.	Stock No.	Description
eVR1	10350900	Semi Variable Resistor 2.2kΩ (B)
eVR2	10351900	Semi Variable Resistor 100kΩ (B)
•IC		
fIC1	07197600	TD6102P
•Diode		
fD1	03117600	1S2473D
•Transistor		
mQ1	07194800, 1	2SC1815 Y, GR
mQ2	07194800, 1	2SC1815 Y, GR
mQ3	07194800, 1	2SC1815 Y, GR
mQ4	07194800, 1	2SC1815 Y, GR
mQ5	03083901 ~ 3	2SD313AL D, E, F
mQ6	07194800, 1	2SC1815 Y, GR
mQ7	03083901 ~ 3	2SD313AL D, E, F
mQ8	07194700, 1	2SA1015 Y, GR
•Diode		
mD1	03117000	RB-152
mD2, 3	03117700	10E-2
•Zener Diode		
mDZ1	03163900	RD6.2E-B
mDZ2	03163900	RD6.2E-B
	03164000	RD6.2E-C
mC22	00380500	10000pF 500V C.C.
mT1	15002901	Power Transformer
mVR1	10351100	Semi Variable Resistor 4.7kΩ (B)

6-2. F-3425 Control Circuit Board (Stock No. 00630201)
Component Side

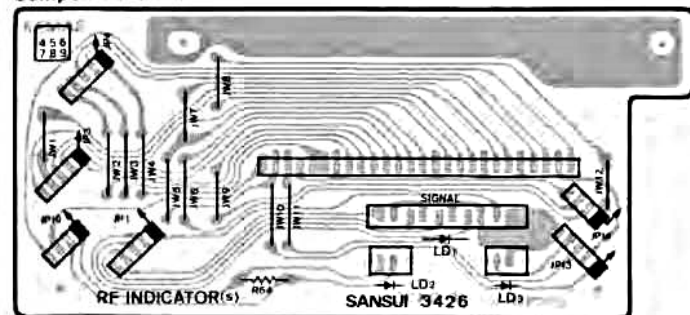


Parts List

Parts No.	Stock No.	Description
●Transistor		
fQ1	03059501, 2	2SC945 Q, P
fQ2	07197001, 2	2SA733A Q, P
fQ3	07194700, 1	2SA1015 Y, GR
fQ4	07197001, 2	2SA733A Q, P
fQ5	07194800, 1	2SC1815 Y, GR
fQ6	03059501, 2	2SC945 Q, P
fQ7	07194800, 1	2SC1815 Y, GR
fQ8	07194700, 1	2SA1015 Y, GR
fQ9	07197001, 2	2SA733A Q, P
fQ10	07194800, 1	2SC1815 Y, GR
fQ11	03059501, 2	2SC945 Q, P
fQ12	03068301, 2	2SC2320 E, F
fQ13	03068301, 2	2SC2320 E, F
fQ15	03059501, 2	2SC945 Q, P
●FET		
fFT1	03703001, 2	2SK117 Y, GR
●IC		
fIC1	07197800	TC9123P
fIC2	07197900	TC9124AP
fIC3	03604100	TC4011P
fXD1	07197100	Quartz Element
●Diode		
fD2	03117600	1S2473D
fD5 ~ 22	03117600	1S2473D
fC5	08451800	2.2μF 50V E.B.
fC11	00330100	1μF 80V E.C.
fTC1	12301000	Trimmer Capacitor 15pF
fVR1	10343300	Semi Variable Resistor 100kΩ (B)
fVR2	10351500	Semi Variable Resistor 22kΩ (B)
fS10	07255500	Slide Switch
●Transistor		
sQ1	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P

6-3. F-3426 Digitally Display Circuit Board (Stock No. 00630301)

Component Side

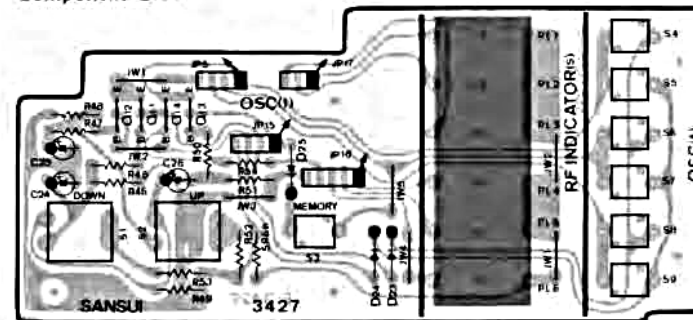


Parts List

Parts No.	Stock No.	Description
sFL1	07235200	FL Display Unit FIP7D8A
sLD1	07193500	Light Emitting Diode LN05203P
sLD2	07199000	Light Emitting Diode LN229RP
sLD3	07199000	Light Emitting Diode LN229RP

6-4. F-3427 Tuning Station SW. Circuit Board (Stock No. 00630401)

Component Side



Parts List

Parts No.	Stock No.	Description
●Transistor		
fQ11	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ12	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ13	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ14	03059501, 2	2SC945 Q, P
●Diode		
fD23~25	03117600	1S2473D
fS1	07198300	Push Switch, tuning (DOWN)
fS2	07198300	Push Switch, tuning (UP)
fS3	07198200	Push Switch, memory
fS4 ~ 9	07198200	Push Switch, station 1 ~ 5

● Note: The circuit board, F-3428 & F-3429 are not supplied as the assembled. However, the individual parts on the circuit board are provided by orders.

6-5. F-3428 Selector Sw. Circuit Board

Parts List

Parts No.	Stock No.	Description
oS1	07199400	Push Switch

6-6. F-3429 Power SW. Circuit Board

Parts List

Parts No.	Stock No.	Description
mR2	00181600	27Ω 1W N.I.R.
pC1	08302200	10000pF 125V C.C.
pC2	08302100	4700pF 125V C.C.

● Abbreviations

C.R. Carbon Resistor	E.L. Low Leak Electrolytic Capacitor
S.R. Solid Resistor	E.B. Bi-Polar Electrolytic Capacitor
Ce.R. Cement Resistor	E.BL. Low Leak Bi-Polar Electrolytic Capacitor
M.R. Metal Film Resistor	Ta.C. Tantalum Capacitor
F.R. Fusing Resistor	F.C. Film Capacitor
N.I.R. Non-Inflammable Resistor	M.P. Metallized Paper Capacitor
C.C. Ceramic Capacitor	P.C. Polystyrene Capacitor
C.T. Ceramic Capacitor, Temperature Compensation	G.C. Gimmick Capacitor
E.C. Electrolytic Capacitor	

7. REPLACEMENT OF MAIN PARTS (See the top view on Page 6.)

A. Replacement of Front Panel

- 1) Remove the bonnet.
- 2) Set the selector switch knob to AM position.
- 3) Remove the dial thread from the pulley A.
- 4) Unscrew the five screws and pull the front panel toward you.

B. Replacement of F-3427 key switch circuit board and F-3426 display circuit board

Remove the front panel in accordance with the procedure stated above, before replace these boards.

C. Replacement of Battery Casing

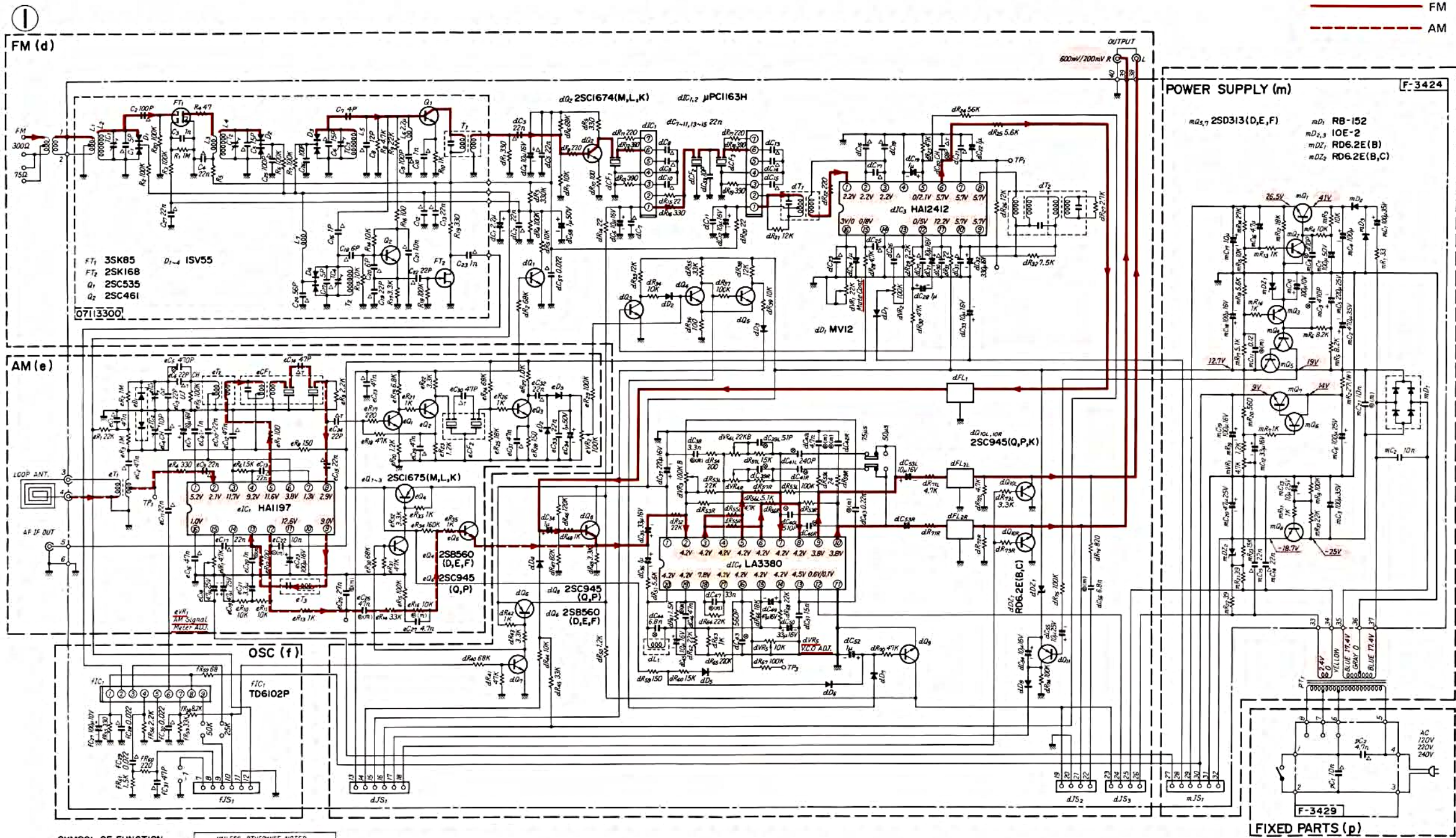
Push the battery casing backward by applying a force to the point ⊗ on the battery casing in the arrow direction.

D. Replacement of Loop Antenna Holder

Push the loop antenna holder backward by nipping the point ⊙ on the holder with a pair of wire pliers and by applying a force to it in the arrow direction.

• Design and specifications subject to change without notice for improvement.
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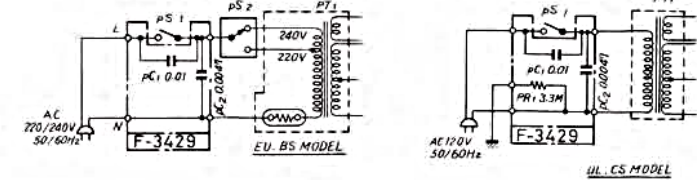
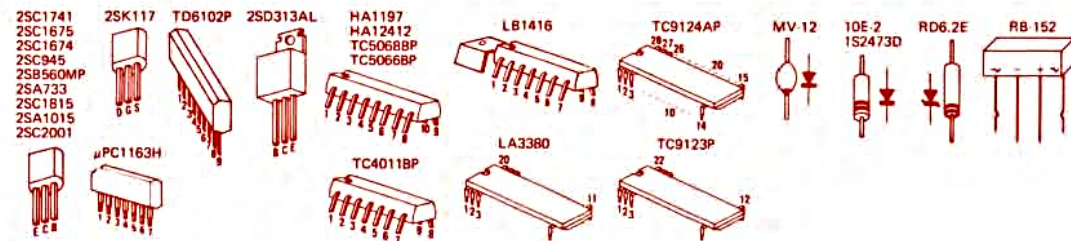
SCHEMATIC DIAGRAM 8-1. Tuner Section



SYMBOL OF FUNCTION
 (d) FM
 (e) AM
 (f) OSC
 (m) POWER SUPPLY
 (p) FIXED PARTS

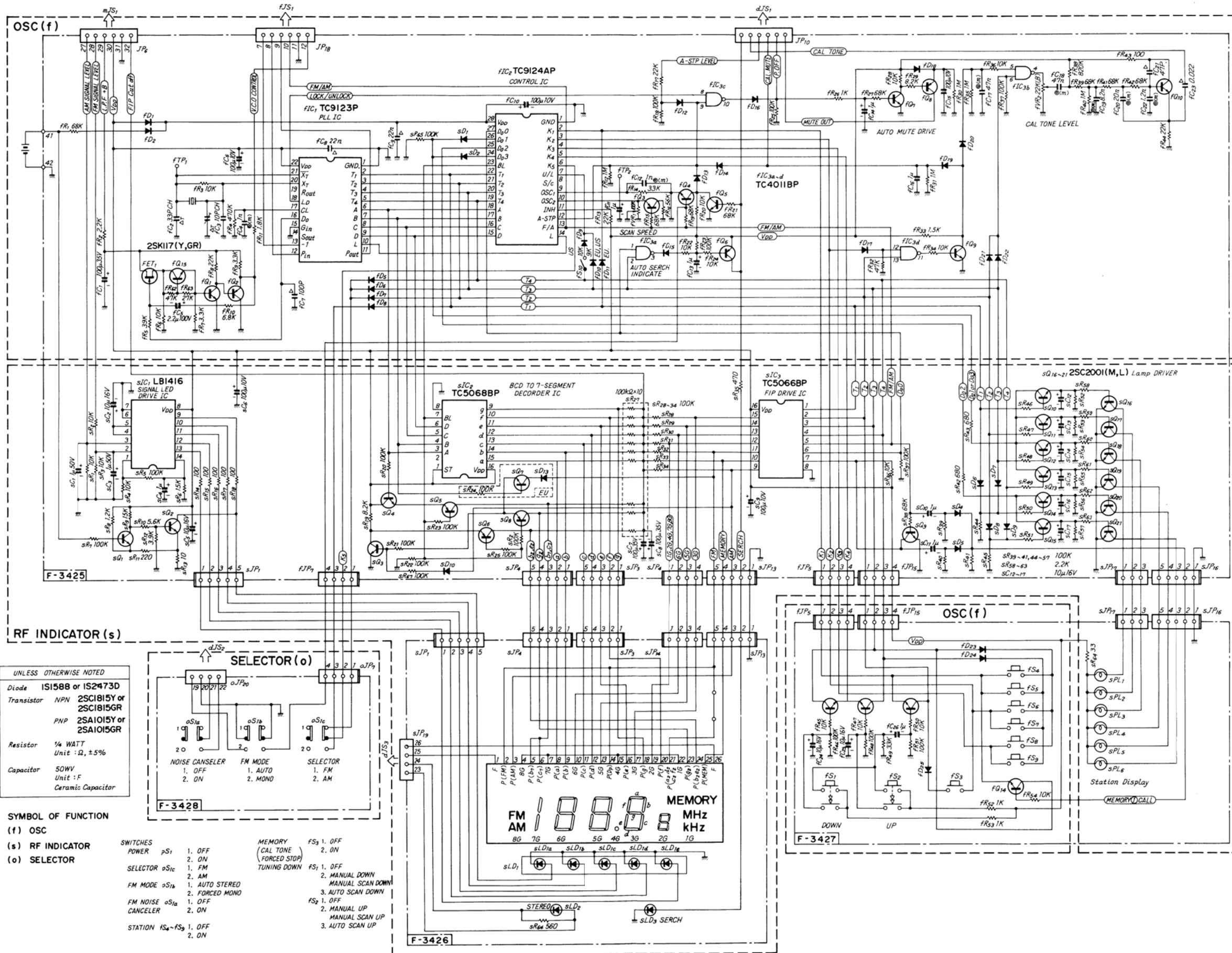
SYMBOL
 Δ Ceramic Capacitor
 ΔT Ceramic (Temperature Compensation)
 ⊗ Polystyrene
 ⊗(m) Mylar

UNLESS OTHERWISE NOTED
 Diode IS1588 or IS2473D
 Transistor NPN 2SC1815Y or 2SC1815GR
 PNP 2SA1015Y or 2SA1015GR
 Resistor 1/4 WATT Unit: Ω, ±5%
 Capacitor 50WV Unit: F



1
2
3
4
5

8-2. Control Section



NOTES

Notice when the user moves from 9 kHz to 10 kHz step area, or vice versa, in AM broadcasting frequency.

Programs are being broadcast under channel plans which, depending on the broadcasting area in the world, are characterized by different channels (frequency intervals) between broadcasting stations. In North, South, and Central America, this channel is 10 kHz whereas in the rest of these areas, it is 9 kHz.

This unit is a synthesizer tuner which varies the reception frequency for each 9 kHz or 10 kHz channel (frequency interval) during automatic reception. If the client uses the unit in an area with a different channel plan, he may not be able to receive AM stations. The unit he has purchased has been originally adjusted to the channel in that area. It is therefore necessary to change over the channel setting when he moves to an area with a different channel plan.

It is impossible to receive AM broadcasting in Automatic Tuning operation. In this case, use the AM 9 kHz/10 kHz selection switch (SW1) installed on the circuit board F-3425, in accordance with Table 9-1.

If diode fS10 is installed, change the position when the diode is connected.

Notice when the user moves from 50 kHz to 100 kHz step area, or vice versa, in FM broadcasting frequency.

In this case, change the positions where the Parts is connected on the circuit board F-3425, in accordance with Table 9-2.

In most of countries, frequency-step between two FM stations is 100 kHz, but in some areas of Europe, it is 50 kHz asides.)

9-1

Parts	10 kHz frequency step	9 kHz frequency step
Switch, S10	Set 10 kHz	Set 9 kHz
D9	Connect this diode	Remove this diode

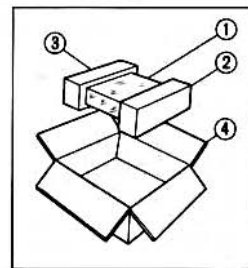
9-2

Parts	100 kHz frequency step	50 kHz frequency step
D11	Remove this diode	Connect this diode
D3	Remove this diode	Connect this diode
Q7	Remove this diode	Connect this diode
Q8	Remove this diode	Connect this diode

Diode (1S2473D) Stock No. 03117600
 Transistor (2SC1815) Stock No. 07194800

10. PACKING LIST

Parts No.	Stock No.	Description
1	91167610	Vinyl Cover
2	07562000	Styrofoam Packing (R)
3	07561900	Styrofoam Packing (L)
4	07726100	Carton Case (Silver Model)
	07726200	Carton Case (Black Model)



11. ACCESSORY LIST

Stock No.	Description
07644200	Operating Instruction
07198900	AM Loop Antenna
46051700	FM Antenna
38103300	PJP Cord
07193400	PJP Cord
07563000	Antenna Holder
07726600	Station Base Label
07563600	Station Base (B)
07726700	Rack Mounting Adaptor (Black Model Only)
	Battery x 2



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 3036 Kospaka St. Honolulu, Hawaii 96819 U.S.A.
 SANSUI ELECTRONICS (U.K.) LTD.: Unit 10A, Lyon Industrial Estate, Rockware Avenue, Greenford, Middx UB6, OAA, England
 SANSUI ELECTRONICS G.M.B.H.: Arabella center, 6 Frankfurt AM Main, Lyoner Strasse 44-48, West Germany

SCHEMATIC DIAGRAM & PARTS LIST

Sansui

SANSUI ELECTRIC CO., LTD.

14-1 Izumi 2-Chome, Suginami-ku, TOKYO 168, JAPAN
TELEPHONE: (03) 323-1111/TELEX: 232-2076

QUARTZ SYNTHESIZER
AM/FM STEREO TUNER

SANSUI TU-S7

Note:

This edition contains Parts List and Schematic Diagram only. Regular Service Manual will follow soon. Please use this issue for the time being, when servicing or ordering parts.

1. PARTS LIST

1-1. F-3424 Tuner Circuit Board

Parts No.	Stock No.	Description
	07113200	FM Frontend Pack FD216U18
●Transistor		
dQ1	07194800, 1	2SC1815 Y, GR
dQ2	03063400 ~ 2	2SC1674 M, U, K
dQ3	07194800, 1	2SC1815 Y, GR
dQ4	07194800, 1	2SC1815 Y, GR
dQ5	07194800, 1	2SC1815 Y, GR
dQ6	03033600 ~ 2	2SB560MP D, E, F
dQ7	07194800, 1	2SC1815 Y, GR
dQ8	03059501, 2	2SC945 Q, P
dQ9	07194800, 1	2SC1815 Y, GR
dQ10	03059501 ~ 3	2SC945 Q, P, K
dQ11	07194700, 1	2SA1015 Y, GR
●IC		
dIC1	03605400	μPC1163H
dIC2	03605400	μPC1163H
dIC3	07196000	HA12412
dIC4	07196100	LA3380
●Varistor		
dD1	03401500	MV-12
●Diode		
dD2 ~ 8	03111600	1S2473D
●Zener Diode		
dDZ1	03163900	RD6.2E-B
dC39	46074500	51pF 125V P.C.
dCF1	07257200	Ceramic Filter
dFL1	09105900	Adjustment Channel Filter
dFL2	07196400	Low Pass Filter
dL1S	07203000	FM RF Coil
dL1	42407200, 1	FM MPX Coil
dT1	42359300	FM IF Coil
dT2	07202600	FM IF Coil
dVR1	10351500	Semi Variable Resistor 22kΩ (B)
dVR2	10351900	Semi Variable Resistor 100kΩ (B)
dVR3	10351900	Semi Variable Resistor 100kΩ (B)
dVR4	10351500	Semi Variable Resistor 22kΩ (B)
dVR5	10342700	Semi Variable Resistor 10kΩ (B)
dS1	07251100	Slide Switch
●Transistor		
eQ1	03062401	2SC1675 L
eQ2	03062400 ~ 2	2SC1675 M, U, K
eQ3	03062400 ~ 2	2SC1675 M, U, K

Parts No.	Stock No.	Description
eQ4	03033600 ~ 2	2SB560MP D, E, F
eQ5	07194800, 1	2SC1815 Y, GR
eQ6	03059501, 2	2SC945 Q, P
●IC		
eIC1	03603900	HA1197
●Variable Capacitance Diode		
eD1	07197200	KV1226
●Diode		
eD2, 3	03111600	1S2473D
eC34	00330100	1μF 80V E.C.
eTC1, 2	12301000	Trimmer Capacitor 15pF
eCF2	07272000	Ceramic Filter
eT1	07198800	AM RF Coil
eT2	07198700	AM RF Coil
eT3	42306200	AM IF Coil
eCF1	07198500	AM IF Coil
eVR1	10350900	Semi Variable Resistor 2.2kΩ (B)
eVR2	10351900	Semi Variable Resistor 100kΩ (B)
●Diode		
fD1	03117600	1S2473D
●Transistor		
mQ1	07194800, 1	2SC1815 Y, GR
mQ2	07194800, 1	2SC1815 Y, GR
mQ3	07194800, 1	2SC1815 Y, GR
mQ4	07194800, 1	2SC1815 Y, GR
mQ5	03083901 ~ 3	2SD313AL D, E, F
mQ6	07194800, 1	2SC1815 Y, GR
mQ7	03083901 ~ 3	2SD313AL D, E, F
mQ8	07194700, 1	2SA1015 Y, GR
●Diode		
mD1	03117000	RB-152
mD2, 3	03117700	10E-2
●Zener Diode		
mDZ1	03163900	RD6.2E-B
mDZ2	03163900	RD6.2E-B
	03164000	RD6.2E-C
mC22	00380500	10000pF 500V C.C.
mT1	15002901	Power Transformer
mVR1	10351100	Semi Variable Resistor 4.7kΩ (B)

1-2. F-3425 Control Circuit Board

Parts No.	Stock No.	Description
•Transistor		
fQ1	03059501, 2	2SC945 Q, P
fQ2	07197001, 2	2SA733A Q, P
fQ3	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
fQ4	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ5	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ6	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
fQ7	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ8	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
fQ9	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ10	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ15	03059501, 2	2SC945 Q, P
•FET		
fFT1	03703001, 2	2SK117 Y, GR
•IC		
fIC1	07197800	TC9123P
	07197600	TD6102P
fIC2	07197900	TC9124AP
fIC3	03604100	TC4011P
fXO1	07197100	Quartz Element
•Diode		
fD2	03117600	1S2473D
fD5 ~ 22	03117600	1S2473D
fC5	08451800	2.2 μ F 50V E.B.
fC11	00330100	1 μ F 80V E.C.
fTC1	12301000	Trimmer Capacitor 15pF
fVR1	10343300	Semi Variable Resistor 100k Ω (B)
fVR2	10351500	Semi Variable Resistor 22k Ω (B)
fS10	07255500	Slide Switch
•Transistor		
sQ1	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ2	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ3	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ4	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ5	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
sQ6	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
sQ7	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ8	07194700, 1	2SA1015 Y, GR
	07197001, 2	2SA733A Q, P
sQ9	03059501, 2	2SC945 Q, P
sQ10	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ11	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ12	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ13	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ14	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ15	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
sQ16	07206900, 1	2SC2001 M, L
	07254900, 1	2SC1741 Q, R
sQ17	07206900, 1	2SC2001 M, L
	07254900, 1	2SC1741 Q, R

Parts No.	Stock No.	Description
sQ18	07206900, 1	2SC2001 M, L
	07254900, 1	2SC1741 Q, R
sQ19	07206900, 1	2SC2001 M, L
	07254900, 1	2SC1741 Q, R
sQ20	07206900, 1	2SC2001 M, U
	07254900, 1	2SC1741 Q, R
sQ21	07206900, 1	2SC2001 M, U
	07254900, 1	2SC1741 Q, R
•IC		
sIC1	03611600	LB1416
sIC2	07202200	TC5068BP
sIC3	07197300	TC6066BP
•Diode		
sD1 ~ 10	03117600	1S2473D
sR27	46050800	Block Resistor 100k Ω
sPL1 ~ 6	07193600	Pilot Lamp

1 3. F-3426 Digitally Display Circuit Board

Parts No.	Stock No.	Description
sFL1	07235200	FL Display Unit FIP7D8A
sLD1	07193500	Light Emitting Diode LN05203P
sLD2	07199000	Light Emitting Diode LN229RP
sLD3	07199000	Light Emitting Diode LN229RP

1 4. F-3427 Tuning Station Sw. Circuit Board

Parts No.	Stock No.	Description
•Transistor		
fQ11	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ12	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ13	07194800, 1	2SC1815 Y, GR
	03059501, 2	2SC945 Q, P
fQ14	03059501, 2	2SC945 Q, P
•Diode		
fD23 ~ 25	03117600	1S2473D
fS1	07198300	Push Switch, tuning (Down)
fS2	07198300	Push Switch, tuning (UP)
fS3	07198200	Push Switch, station 1 ~ 5
fS4 ~ 9	07198200	Push Switch

1 5. F-3428 Selector Sw. Circuit Board

Parts No.	Stock No.	Description
oS1	07199400	Push Switch

1 6. F-3429 Power Sw. Circuit Board

Parts No.	Stock No.	Description
mR2	00181600	27 Ω 1W N.I.R.
pC1	08302200	10000pF 125V C.C.
pC2	08302100	4700pF 125V C.C.

1-7. Packing Materials

Parts No.	Stock No.	Description
	07726100	Carton Case (Silver Model)
	07726200	Carton Case (Black Model)
	07561900	Styrofoam Packing (A)
	07562000	Styrofoam Packing (B)
	91167610	Vinyl Cover

1 8. Accessory Parts

Stock No.	Description
07644200	Operating Instruction
07198900	AM Loop Antenna
46051700	FM Antenna
38103300	PJP Cord
07193400	PJP Cord
07563000	Antenna Holder
07726600	Station Base Label
07563600	Station Base (B)
07726700	Rack Mounting Adaptor (Black Model Only)

1 9. Other Parts

Parts No.	Stock No.	Description
	07204000	Push Switch, power
	38004700	Power Supply Cord
	39106000	Strain Relief
	07565200	Indicator Plate, signal
	07563500	Station Base (A)
	07237500	1P Input Terminal, AM IF out
	22104000	Antenna Terminal
	07662900	Leg
	07563310	Battery Case Ass'y
	60360530	Dial Cord
	15002901	Power Transformer

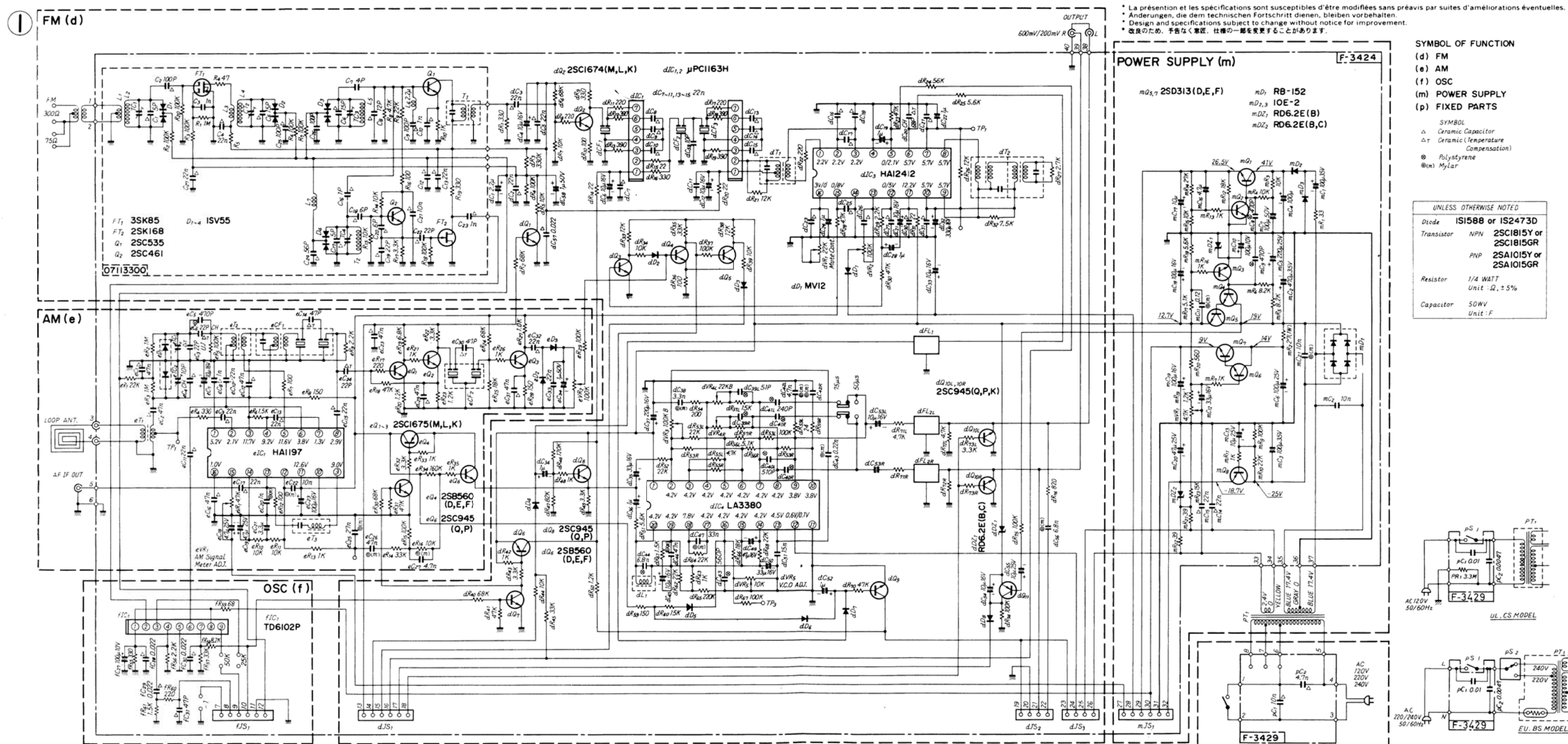
<Silver Model>		
Parts No.	Stock No.	Description
	07564550	Front Panel Ass'y
	07564430	Smoked Plate, station display
	07563800	Push Knob, selector, FM noise canceler, FM mode

Parts No.	Stock No.	Description
	07563710	Smoked Plate
	07563800	Push Knob, station, memory
	07564100	Push Knob, tuning
	53195000	Push Knob, power
	07562310	Bonnet

<Black Model>		
Parts No.	Stock No.	Description
	07670600	Front Panel Ass'y
	07564430	Smoked Plate, station display
	07554000	Push Knob, selector, FM noise canceler, FM mode
	07670900	Push Knob, tuning
	07670500	Push Knob, station, memory
	07563710	Smoked Plate
	53196500	Push Knob, power
	07715600	Bonnet

2. SCHEMATIC DIAGRAM

2-1. Tuner Section

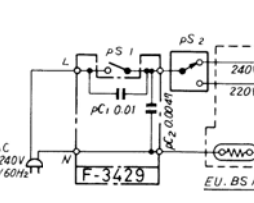
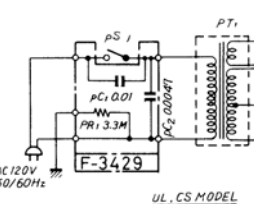


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 * Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.
 * Design and specifications subject to change without notice for improvement.
 * 改良のため、予告なく仕様、仕様の一部を変更することがあります。

SYMBOL OF FUNCTION
 (d) FM
 (e) AM
 (f) OSC
 (m) POWER SUPPLY
 (p) FIXED PARTS

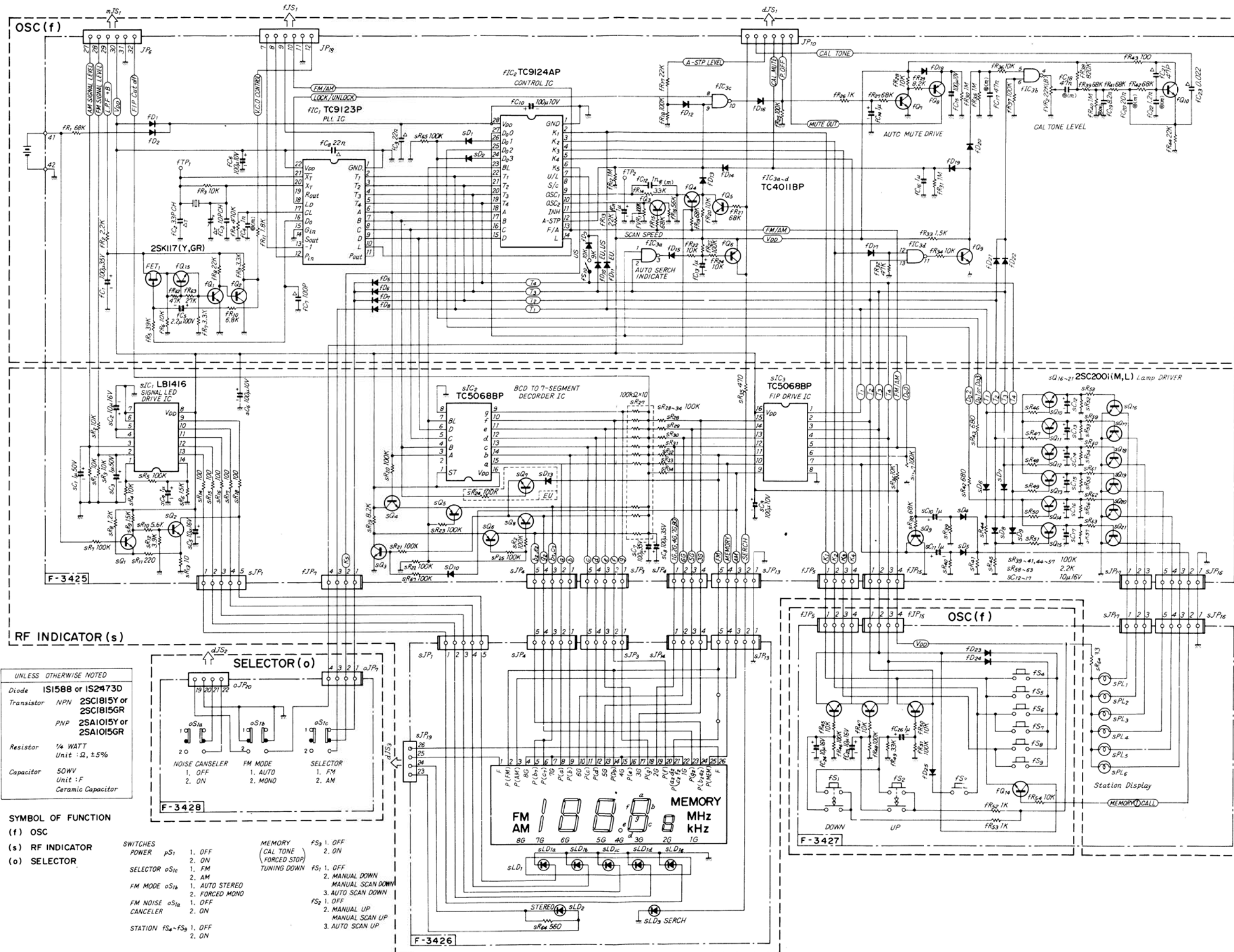
SYMBOL
 Δ Ceramic Capacitor
 Δr Ceramic (Temperature Compensation)
 ⊗ Polystyrene
 ⊗(m) Mylar

UNLESS OTHERWISE NOTED
 Diode IS1588 or IS2473D
 Transistor NPN 2SC1815Y or 2SC1815GR
 PNP 2SA1015Y or 2SA1015GR
 Resistor 1/4 WATT
 Unit Ω, ±5%
 Capacitor 50WV
 Unit :F



2. Control Section

• La présentation et les spécifications sont susceptibles d'être modifiées sans préavis par suites d'améliorations éventuelles.
 • Änderungen, die dem technischen Fortschritt dienen, bleiben vorbehalten.
 • Design and specifications subject to change without notice for improvement.
 • 改良のため、予告なく変更、仕様の一部を変更することがあります。



UNLESS OTHERWISE NOTED

Diode	IS158B or IS2473D
Transistor	NPN 2SC1815Y or 2SC1815GR
	PNP 2SA1015Y or 2SA1015GR
Resistor	1/4 WATT Unit: Ω, ±5%
Capacitor	SQWV Unit: F Ceramic Capacitor

SYMBOL OF FUNCTION

- (f) OSC
 - (s) RF INDICATOR
 - (o) SELECTOR
- | | | | |
|-------------|---------|---|-----------------|
| SWITCHES | POWER | pS1 | 1. OFF
2. ON |
| SELECTOR | oS10 | 1. FM
2. AM | |
| FM MODE | oS18 | 1. AUTO STEREO
2. FORCED MONO | |
| FM NOISE | oS12 | 1. OFF
2. ON | |
| STATION | FS4-FS9 | 1. OFF
2. ON | |
| MEMORY | FS3 | 1. OFF
2. ON | |
| TUNING DOWN | FS1 | 1. OFF
2. MANUAL DOWN
3. MANUAL SCAN DOWN | |
| | FS2 | 1. OFF
2. MANUAL UP
3. MANUAL SCAN UP | |