Service Manual

Closer Relations through
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NISSAN Automobile Genuine Diversity Radio
Model RN-9030M
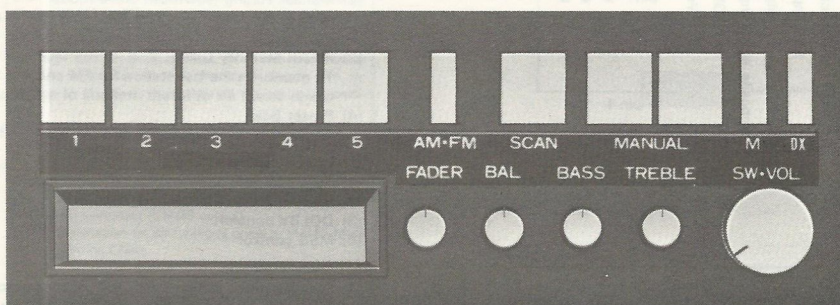
■ SPECIFICATIONS:

Circuit system:	Superheterodyne
Tuning system:	Electronic tuning
Receive range:	AM 530 to 1,620kHz
	FM 87.9 to 107.9MHz
Intermediate frequency:	
	AM 450kHz
	FM 10.7MHz
Quieting sensitivity:	AM Less than 33dB
	(at 20dB S/N)
	FM Less than 18dB
	(at 30dB S/N)
Selectivity:	AM More than 50dB
	(at ±10kHz detune)
Separation:	FM More than 15dB
	(at 1kHz)
Fidelity:	AM 100Hz 0±3dB
(Bass, treble=flat)	1kHz 0dB
	4kHz −14±5dB
	FM 70Hz 0±3dB
	1kHz 0dB
	7kHz −18±5dB
Auto tuning stop sensitivity:	
	AM DX 32±6dB
	LO 52±8dB
	FM DX 32±6dB
	LO 52±8dB

Load impedance:	4Ω×4
Power output:	3.0W×4
	(at 3% distortion)
	More than 5.0W×4
	(at max. output)
Power supply voltage:	
	DC 13.2V (10.8V to 15.6V)
	Negative ground
Current consumption:	
	Less than 5A
	(at max. output)
Dimensions:	Width 160mm
	Height 52mm
	Depth 130mm
Weight:	830g

■ COMPONENT:

● **RN-9030M-A**

Main unit   1

■EXPLANATION OF IC's:

■MPX-NC-V 051-0633-00 MPX with FM noise canceller

Absolute Maximum Ratings

Power voltage	Vcc max (Ta=25°C)	16V
Allowable power dissipation	P_D max (Ta=25°C)	920mW
Operating temperature	Topg	−20~70°C
Storage temperature	Tstg	−40~80°C

Terminal Connection Drawing
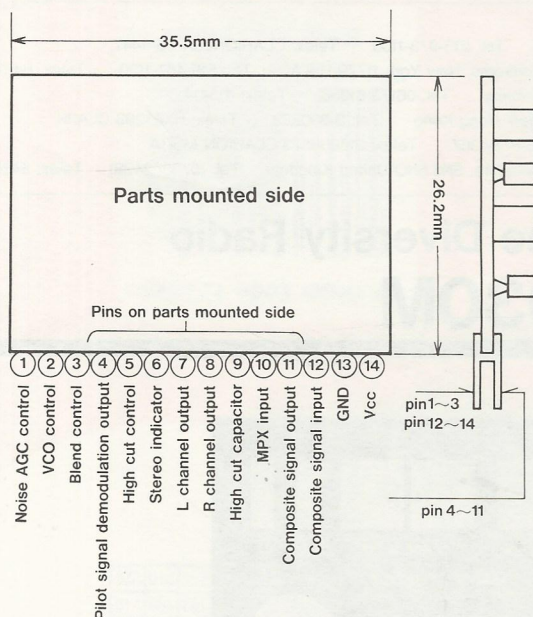
No.	Name of terminal	Description
14	Vcc	Power terminal. Recommended Voltage; 12V.
13	GND	Ground terminal.
12	Composite signal input	Composite signal demodulated by FM demodulator is input.
11	Composite signal output	Output from this terminal is the composite signal, the pulse type noise of which has been suppressed by the noise canceller.
10	MPX In	Input terminal of MPX circuit.
9	High cut capacitor	Capacitor used for attenuating high frequency component of composite signal is connected.
8	R channel output	Audio signal output of R channel.
7	L channel output	Audio signal output of L channel.
6	Stereo indicator	Stereo indicator LED is connected.
5	High cut control	When voltage, less than 1.2V is applied to this terminal, the high frequency component of composite signal is attenuated.
4	Pilot signal demodulation output	When this terminal is grounded, the audio output becomes monaural. For the stereo output, open this terminal.
3	Blend control	When this terminal is set to 0V, both L and R audio signals are mixed, thus producing the monaural mode. When a voltage of more than 1.8V is applied, the stereo output with the maximum separation is produced.
2	V.C.O. control	When voltage of more than 7V is applied to this terminal, V.C.O. for PLL MPX stops oscillating.
1	Noise A.G.C. control	When this terminal is set to "H", the gain of noise A.G.C. is set to a level suitable for the weak electric current field.

■µPD1708G-017 051-0713-00 PLL Frequency Synthesizer & Controller

I Outline

§1 Receive Frequency, Channel Space, Reference Frequency, Intermediate Frequency

FM Band

Frequency Range	Channel Space	Reference Frequency	Intermediate Frequency
87.9~107.9MHz	200kHz	25kHz	10.7MHz
87.5~107.9MHz	100kHz	25kHz	10.7MHz
76.0~ 90.0MHz	100kHz	25kHz	−10.7MHz
87.604~107.900MHz	86kHz (Note)	5kHz	−10.7MHz

Note: The frequency closest to the normal channel plan can be attained by stepping up or down the intended frequency by 80kHz or 90kHz each (maximum error ±4kHz). Blanks are displayed for the 10kHz digit is expresed by 0 to 4 or "5" is displayed for the digits from 5 to 9 while none is displayed for the 1kHz digit.

AM Band

Frequency Range	Channel Space	Reference Frequency	Intermediate Frequency
530~1,620kHz	10kHz	10kHz	450kHz
530~1,620kHz	5kHz	5kHz	450kHz
522~1,629kHz	9kHz	9kHz	450kHz
531~1,602kHz	9kHz	9kHz	450kHz

§2 Channel Selection

(1) Automatic Tuning (sawtooth wave mode)
   Scan-up/down··········5 consecutive second reception
   Seek-up/down··········To keep the same channel once received
(2) Manual Tuning (sawtooth wave mode)
   Manual-up/down ······Stepped shift by push-switch or continuous shift if depressed for 0.5sec or more and released.
(3) Preset Memory Call
   To memorize the last station for FM and AM bands each by six button switches, which select six different stations of each band.
(4) Preset Scan
   To receive the preset channels for 5 seconds each out of the station.

§3 Tape Function

(1) Tape run indication
(2) METAL control
(3) DOLBY control
(4) MSS control

§4 Clock Function

(1) 12-hour clock display (with AM/PM indicators)
   The colon display is selectable either for 1Hz flashing or continuous illumination.

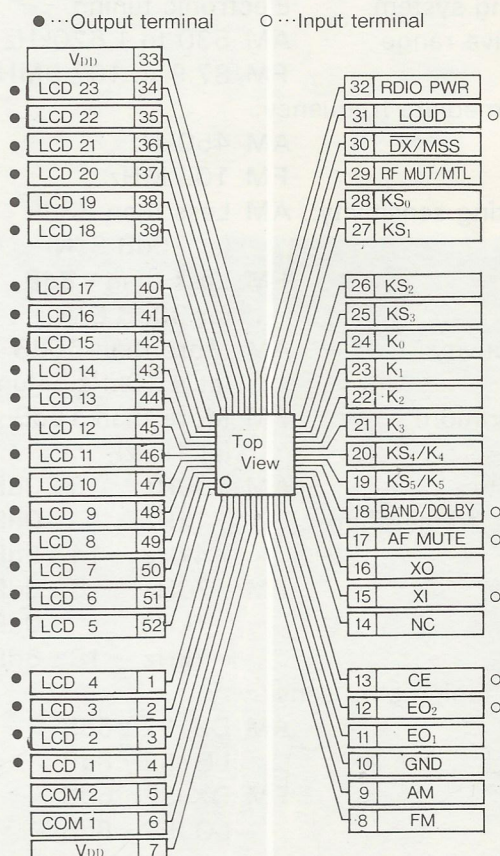### §5 Other Functions

(1) LOUDNESS control

II Absolute Maximum Ratings

Power Voltage	V_DD max	6V
Output Current	I_O max	−10mA

III Terminal Construction

● ···Output terminal   ○ ···Input terminal

Terminal Description

Terminal No.	Symbol	Terminal Name	Function
1~4 34~52	LCD1 LCD23	LCD Segment Symbol	LCD segment signal output terminals (each LCD has the 1/2 duty 1/2 bias, frame frequency 100Hz, drive voltage V_{DD})
5 6	COM2 COM1	LCD Common Signal	LCD common output terminals.
7 33	V_{DD}	Power Input	Device power terminals that supply 5V±10% during the device operation. The power can be selectively supplied to No. 7 or No. 33 terminal. The V_{DD} rise time should be 500ms or less (0→4.5V). If V_{DD} failed to drop fully to 0V because of an extremely long rise time and further it rose to 4.5V from below the operating voltage, the status of initialization diode switch may not be read correctly. In such a case use the CE terminal to read the correct status of the diode switch.
8	FM	FM VCO Input	Input terminal to receive FM local oscillator output. DC power must be cut out by the capacitor to protect the built-in AC amplifier.
9	AM	AM VCO Input	Input terminal to receive AM local oscillator output. DC power must be cut out by the capacitor to protect the built-in AC amplifier.
10	GND	Ground	Connect this terminal to the ground of the set.
11 12	EO$_1$ EO$_2$	Error Out Output	Charge pump outputs of phase detector composing PLL. If any part divided from the oscillation frequency exceeds the reference frequency, the high-level signals are output from both terminals or the low-level signals in the reverse case or the floating starts when both coincide with each other. Since the same signals are output to both terminals at a time, it is allowed to connect both to LPFs (low-pass filters) of AM or FM.
13	CE	Chip Enable	Device select signal input terminal; it must be set to the high level to drive the PLL or to the low level to stop it. Either the clock or the blank display can be chosen by the diode matrix during the low-level operation.
15 16	XI XO	Crystal Oscillators	4.5MHz crystal oscillators must be connected here.
17	AF MUTE	Mute Output	Muting signal output terminal, active high, to erase shock noise caused by the PLL unlocking or by the tape/radio switching (CMOS output). More information on its timing is given in the AF Mute Output Timing Chart.
18	BAND/ DOLBY	BAND & DOLBY Output Terminal	RADIO mode: It can be used as the FM/AM band switching signal output terminal; the high level signal is output if the FM band is chosen or the low-level signal if the AM band is selected. TAPE mode: It can be used as the DOLBY ON/OFF signal output terminal; the high-level signal is output if " ⊓⊓ " is displayed on the LCD panel or the low-level signal if the display is out. The low-level signal (AM band or DOLBY OFF) is output at the initial power input (V_{DD} rise) (CMOS output)
19 20	KS$_5$/K$_5$ KS$_1$/K$_1$	Key Return Signal Source & Key Return Signal Input	These can be used as the key return signal sources to read in the status of initialization diode matrix upon the initial power input (V_{DD} rise) or when returned from the back up condition (CE low to high) only. Otherwise these terminals function as the key return signal input terminals for key matrix. Connect the pull-down resistor. (CMOS input/output)
21 24	K$_3$ K$_0$	Key Return Signal Input	Key return signal input terminals for key matrix. Connect the pull-down resistor. (CMOS input)
25 28	KS$_3$ KS$_0$	Key Return Signal Sources	Key return signal output terminals for the key matrix. No diodes need be provided on the key source side that prevent reverse current flow, for the sink current is reduced as much as possible for the convenience of configuration. (CMOS output)
29	RF MUTE METAL	RF MUTE & METAL Output Terminal	RADIO mode: It can be used as the stop sensing control signal output terminal for automatic tuning. If any of the automatic tuning keys (SEEK DOWN, SEEK UP, SCAN DOWN, SCAN UP) is depressed, the high level is effected about 60ms later from the AF-MUTE and it is kept during the search. TAPE mode: It can be used as the METAL ON/OFF signal output terminal. The high-level signal is output while "MTL" is displayed on the LCD panel or the low-level signal if the display is out. The low-level signal is output upon the initial power input (V_{DD} rise). (CMOS output)
30	DX/MSS	LOCAL/DX & MSS Output Terminal	RADIO mode: It can be used as the stop sensing control signal output terminal for automatic tuning. The low-level signal is output with "DX" displayed on the LCD panel if it failed to find any station within one-cycle search from the frequency currently being received, or the high-level signal is output while "DX" is out. TAPE mode: It can be used as the MSS ON/OFF signal output terminal. The high-level signal is output while "MSS" is displayed on the LCD panel or the low-level signal is output if "MSS" is out. The low-level signal is output upon the initial power input (V_{DD} rise). (CMOS output)

| Terminal No.	Symbol	Terminal Name	Function
31	LOUDNESS	LOUDNESS Output Terminal	LOUDNESS signal output terminal; the high-level signal is output while "LOU" is displayed on the LCD panel or the low-level signal if "LOU" is out. The low-level signal is output upon the initial power input (V_{DD} rise). (CMOS output)
32	RADIO POWER	RADIO ON/OFF Output Terminal	RADIO power ON/OFF signal output terminal when the momentary key method is chosen as the radio power supply (with the diode switch RADSW=ON). When RADIO is ON, the high-level signal is output or the low-level if the switch is off. (CMOS output)

IV Key Matrix

§1 Key Matrix Arrangement

Input Terminals Output Terminals	K$_5$(19)	K$_4$(20)	K$_3$(21)	K$_2$(22)	K$_1$(23)	K$_0$(24)
KS$_0$(28)	SEEK DOWN	SEEK UP	PRESET SCAN	LOUDNESS	0ADJ	ME
KS$_1$(27)	MD	MU	M4	M3 (DOLBY)	M2 (METAL)	M1 (MSS)
KS$_2$(26)	SCAN DOWN	SCAN UP	M6	M5	RCAL	BAND
KS$_3$(25)			MODE	SD (REW)	STEREO (F/T)	RADIO ON/OFF
KS$_4$(20)			FMBND1	FMBND0	AMBND1	AMBND0
KS$_5$(19)			CELDSP	PRIORITY	RADSW	CLKSEL

Those in parenthesis denote the terminal numbers.

☐ : Momentary switch

▨ : Alternate or transistor switch

▩ : Diode matrix (to be shorted or kept open with diode)

☐ : Open

§2 Switch Connection

Momentary switch   Alternate switch   Diode matrix   Transistor switch
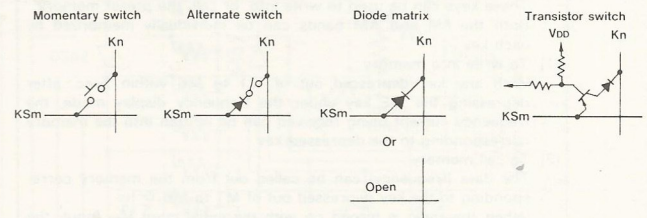
§3 Initialization Diode Matrix

Eight diode matrices are provided for initialization, and the status of each matrix is read in only upon the initial power input to V_{DD} (Power-ON reset) or if the CE terminal level changes between low and high (CE reset); otherwise the status of diode matrices are ignored.

Symbol	Functions
FMBND1 FMBND0	Both are the switches to set the receive FM band frequency range and the channel spaces as shown below. <table><tr><td>FMBND1</td><td>FMBND0</td><td>Frequency Range</td><td>Channel Space</td></tr><tr><td>0</td><td>0</td><td>87.9~107.9MHz</td><td>200kHz</td></tr><tr><td>0</td><td>1</td><td>87.5~107.9MHz</td><td>100kHz</td></tr><tr><td>1</td><td>0</td><td>76.0~ 90.0MHz</td><td>100kHz</td></tr><tr><td>1</td><td>1</td><td>87.604~107.900MHz</td><td>86kHz</td></tr></table>
AMBND1 AMBND0	Switches to set the receive AM band frequency range and the channel spaces as shown below. <table><tr><td>AMBND1</td><td>AMBND0</td><td>Frequency Range</td><td>Channel Space</td></tr><tr><td>0</td><td>0</td><td>530~1,620kHz</td><td>10kHz</td></tr><tr><td>0</td><td>1</td><td>530~1,620kHz</td><td>5kHz</td></tr><tr><td>1</td><td>0</td><td>522~1,629kHz</td><td>9kHz</td></tr><tr><td>1</td><td>1</td><td>531~1,602kHz</td><td>9kHz</td></tr></table>
RADSW	Switch to select the radio power supply between the momentary key method and the alternate method. 0······Alternate (CE terminal to be used) 1······Momentary (CE terminal always set to high level and RADIO ON/OFF key to be used)
CLKSEL	Switch to select if the clock function is attached. 0······Not attached 1······Attached
PRIORITY	Switch to select the priority display mode if the clock function is attached. Either of the following two priority modes is displayed about 5sec. later when the other display mode is called. 0······Clock display 1······Frequency display
CELDSP	Switch to select if clocks need be displayed when the clock function is attached and while RADIO is off. 0······Blanks 1······Clock display

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§4 Mode Switches

Unlike the initialization switches, the mode switches are always operable (in the table below "1" indicates the switch is turned ON or OFF if "0" is shown).

Symbol	Functions
MODE	To select either the RADIO mode or the TAPE mode; 1······TAPE mode 0······RADIO mode
SD (REW)	RADIO mode: It can be used as the station detector input under SEEK, SCAN and PRESET-SCAN. This must be turned off about 50ms after locking PLL. SEEK, SCAN or PRESET-SCAN is automatically stopped as if the intended station has been detected if this switch has been found OFF by each of five detections that were made every 1ms. TAPE mode: It can be used as the tape direction display input switch. "◁" is displayed on the LCD panel when this switch is turned on.
STEREO (F/F)	RADIO mode: It can be used as the stereo signal input switch; when it is turned off, "ST" is displayed on the LCD panel but this display is kept out while the clocks are displayed or under the automatic tuning or PRESET-SCAN (the AF-MUTE terminal is active). TAPE mode: It can be used as the tape direction display input switch. "▷" is displayed on the LCD panel when this switch is turned on.

§5 Momentary Switch

Symbol	Functions
MU MD	Keys for the manual tuning or the clock adjustment. ○Frequency display With each depression the frequency can be stepped up (MU) by one step (channel space) or down (MD). The frequency can be continuously stepped up or down by depressing the keys for 0.5sec. or more. ○Clock display With the MU or MD key depressed together with the ME key, the minute digit or the hour digit can be adjusted.
M1 ~ M6	RADIO mode: These keys can be used to write into, or call, the preset memory. Both the FM and AM bands can be individually memorized by each key. (1) To write into memory With any key depressed out of M1 to M6 within 5sec. after depressing the ME key under the frequency display mode, the frequency current being received can be written into the memory corresponding to the depressed key. (2) To call memory The data (frequency) can be called out from the memory corresponding to the key depressed out of M1 to M6. When the radio is turned on with the initial input V_{DD} input, the lowest AM band frequency can be called. The table below shows the frequencies that are stored in the corresponding memories of M1 to M6 keys for the convenience of mass production of the sets.

Band	Frequency Range	M1	M2	M3	M4	M5	M6
FM	87.9 ~ 107.9MHz	87.9	90.1	98.1	106.1	107.9	87.9
FM	87.5 ~ 107.9MHz	87.9	90.1	98.1	106.1	107.9	87.9
FM	76.0 ~ 90.0MHz	76.0	78.0	83.0	88.0	90.0	76.0
FM	87.604 ~ 107.900MHz	(Note) 87.6	(Note) 89.3	(Note) 93.6	(Note) 97.9	(Note) 99.6	(Note) 87.6
AM	530 ~ 1,620kHz	530	600	1,000	1,400	1,610	530
AM	522 ~ 1,629kHz	531	603	999	1,404	1,629	1,620
AM	531 ~ 1,602kHz	531	603	999	1,404	1,602	531

Note: The frequencies shown above are for display purpose only and differ from the actual frequencies that can be received.

TAPE mode:
M1 to M3 can be used to switch MSS, METAL and DOLBY; the other keys M4 to M6 are invalid.
○M1 (MSS)
Can be used to switch MSS.
With every depression both the MSS terminal output and the "MSS" display on the LCD panel are inverted.
With "MSS" kept on, the high-level signal is output from the MSS terminal or the low-level signal if "MSS" is out.
○M2 (METAL)
Can be used to switch METAL.
With every depression both the METAL terminal output and the "METAL" display on the LCD panel are inverted.
With "METAL" kept on, the high-level signal is output from the METAL terminal or the low-level signal if "METAL" is out.
○M3 (DOLBY)
Can be used to switch DOLBY.
With every depression both the DOLBY terminal output and the "□□" display on the LCD panel are inverted.
With "DOLBY" kept on, the high-level signal is output from the DOLBY terminal or the low-level signal if "DOLBY" is out.

Symbol	Functions
SEEK UP SEEK DOWN	Automatic tuning key to hold the current frequency even after the SD switch is turned off during the automatic tuning. This mode can be further held on even if any of the LOUDNESS, 0ADJ or ME keys is depressed, but the automatic tuning stops and it changes to the operation corresponding to any key that has been depressed.
SCAN UP SCAN DOWN	Automatic tuning key to hold the current frequency for 5 seconds after the SD key is depressed during the automatic tuning; the same frequency reception continues if either the SCAN UP or SCAN DOWN key is depressed during the above 5-sec. period. Or the automatic tuning suspended by the SD key is restored if no keys are depressed for the period of 5sec. The automatic tuning continues even if the LOUDNESS, 0ADJ or ME key is depressed, but the scanning stops if the ME key is depressed during the 5-sec. reception, and the set is changed to allow the memory write. The automatic tuning stops with the depression of any other key and changes to the operation specified by the depressed key.
ME	Preset memory write key or it can be used to adjust the clock if it is displayed. Frequency display mode: This key can be used to write new frequencies into the preset memory. When it is depressed, "ME" is displayed on the LCD panel and it keeps on for 5 sec. even after this key is released. If any of M1 to M6 keys was depressed while "ME" was kept on, the displayed frequency is written into the memory corresponding to the depressed key. To release the memory write mode, depress any key other than M1 to M6, ME and LOUDNESS. Clock display mode: Both the "minutes" and "hours" digits can be adjusted by depressing either the MU or MD key together with this ME key. If the MD key was depressed together with the ME key, the clock is advanced by one hour with each depression or it continues at a speed of 4 hours/sec. until the MD key is released after it has been depressed for 0.5sec. or longer. This hour correction does not affect either the minute-digits or the second-digits (and the display remains out). The clock advances by one minute with every depression of the MU key together with the ME key or it continues at a speed of 8 min/sec. until the MU key is released after it has been depressed for 0.5sec. or longer. While they are not displayed, the seconds are reset by every minute correction to 0. No carry-over to the hour unit takes place, however.
0ADJ	This key can be used to set the clock on the hour. As it is depressed, the second counter insider is reset, and the clock is reset to 0min. 0sec. by rounding off the minute digit even if it is less or more than 29. In the latter case the minute display is carried over to the hour digit or the clock is advanced by one hour.
BAND	To switch the frequency band from FM to AM with each depression. The lowest AM frequency is called upon the initial power input (V_{DD} rise).
PRESET SCAN	Automatic preset scan key to start the scanning from the channel next to the preset channel being received (or from M1 if no preset channels being received) and receive the preset channel for 5 seconds that is selected when the SD switch is turned off. The same preset channel can be continued by the PRESET SCAN key before the above period of 5 seconds elapses. The scanning continues even if the LOUDNESS, 0ADJ or ME key is depressed during the automatic preset scan mode, or the automatic preset scan stops if any other key is depressed, and it changes to the operation as specified by the depressed key.
LOUDNESS	To be used to switch LOUDNESS; the LOUDNESS output terminal and the "LOU" display on the LCD panel are inverted with every depression. The high-level signal is output from the LOUDNESS terminal while "LOU" is kept on or the low-level signal if the display is out. The "LOU" display is out upon the initial power input (V_{DD} rise) and the low-level frequency is output from the LOUDNESS terminal.
RCAL	Key to switch the display and valid under the RADIO mode only. With this key depressed, the clock display changes to the frequency display or vice versa, provided that the priority mode display is restored (according to PRIORITY of the diode matrix) 5sec. after this key is depressed. This key is invalid if no clocks are provided (CLKSEL=0).

Note 1: The frequency is changed after confirming the PLL lock under the automatic tuning and PRESET SCAN modes. If, therefore, PLL is unlocked under either mode, the same frequency is held on until PLL is locked again. The momentary keys (other than RADIO OFF) cannot be controlled while the alternate switch is available.
To change the frequency during the set adjustment as PLL seems to be unlocked, use the memory buttons (M1~M6) or MU or MD to set the PLL data without worrying about its unlocking.

Note 2: If the frequency band is changed to the original band during the automatic tuning or PRESET SCAN mode, or if the power supply is resumed, the station finally being received is called out.

Ⅴ LCD Drive Wave

COM1 ─→ [A] ⎱
COM2 ─→ [B] ⎰ LCD Terminal

(a) [A] "OFF" [B] "OFF"

(b) [A] "ON" [B] "OFF"

(c) [A] "OFF" [B] "ON"

(d) [A] "ON" [B] "ON"
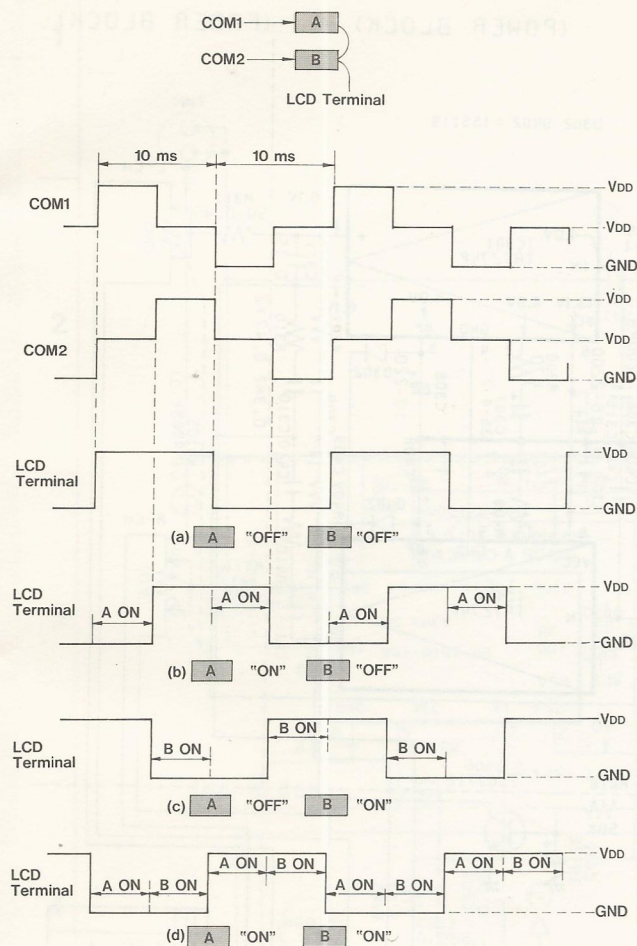
■TA7274P 051-0735-00 Voice signal power amplifier (BTL 12W)

Figure
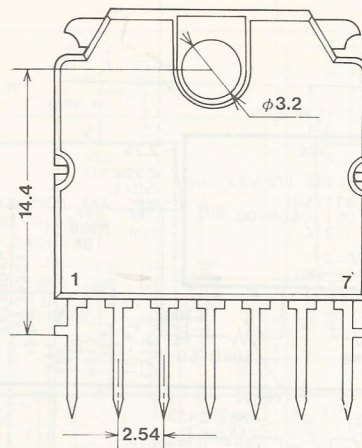
Absolute Maximum Ratings (Ta=25°C)

Operating supply voltage	Vcc opr	18V
Output current (Instantaneous value)	Io (peak)	4.5A
Allowable power dissipation	P_D	15W

Electrical Characteristics
(Unless otherwise specified, Vcc=13.2V, f=1kHz, R_L=4Ω, Ta=25°C)

Item	Symbol	Measuring condition	Min.	Typ.	Max.	Unit
Non-signal current	I_{CCO}	$V_{IN}=0$	—	80	—	mA
Output power	P_{OUT}	THD=10%	10	12	—	W
Total harmonic distortion	THD	$P_{OUT}=5W$	—	0.4	—	%
Voltage gain	G_V	Rf=0Ω	51.5	53.5	55.5	dB
Output noise voltage	V_{NO}	Rg=10kΩ, BW=20Hz～20kHz	—	0.9	2.0	mVrms
Ripple rejection	R·R	f_{ripple}=100Hz, Rg=600Ω	—	50	—	dB
Input resistance	R_{IN}	f=1kHz	—	30	—	kΩ
Output offset voltage	Voffset	$V_{IN}=0$	—	0	0.3	V

Terminal Connection Diagram and Block Diagram

① INPUT
② AC earth (Negative feedback)
③ Ripple rejection
④ GND
⑤ Output (Anti-phase)
⑥ Vcc
⑦ Output (In-phase)

Protector muting bias

RN-9030M
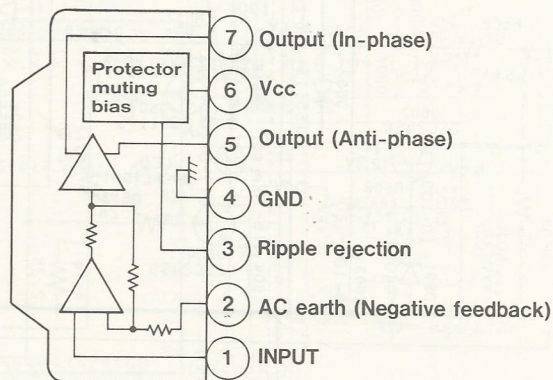
EXPLODED VIEW • PARTS LIST:

◎Main section
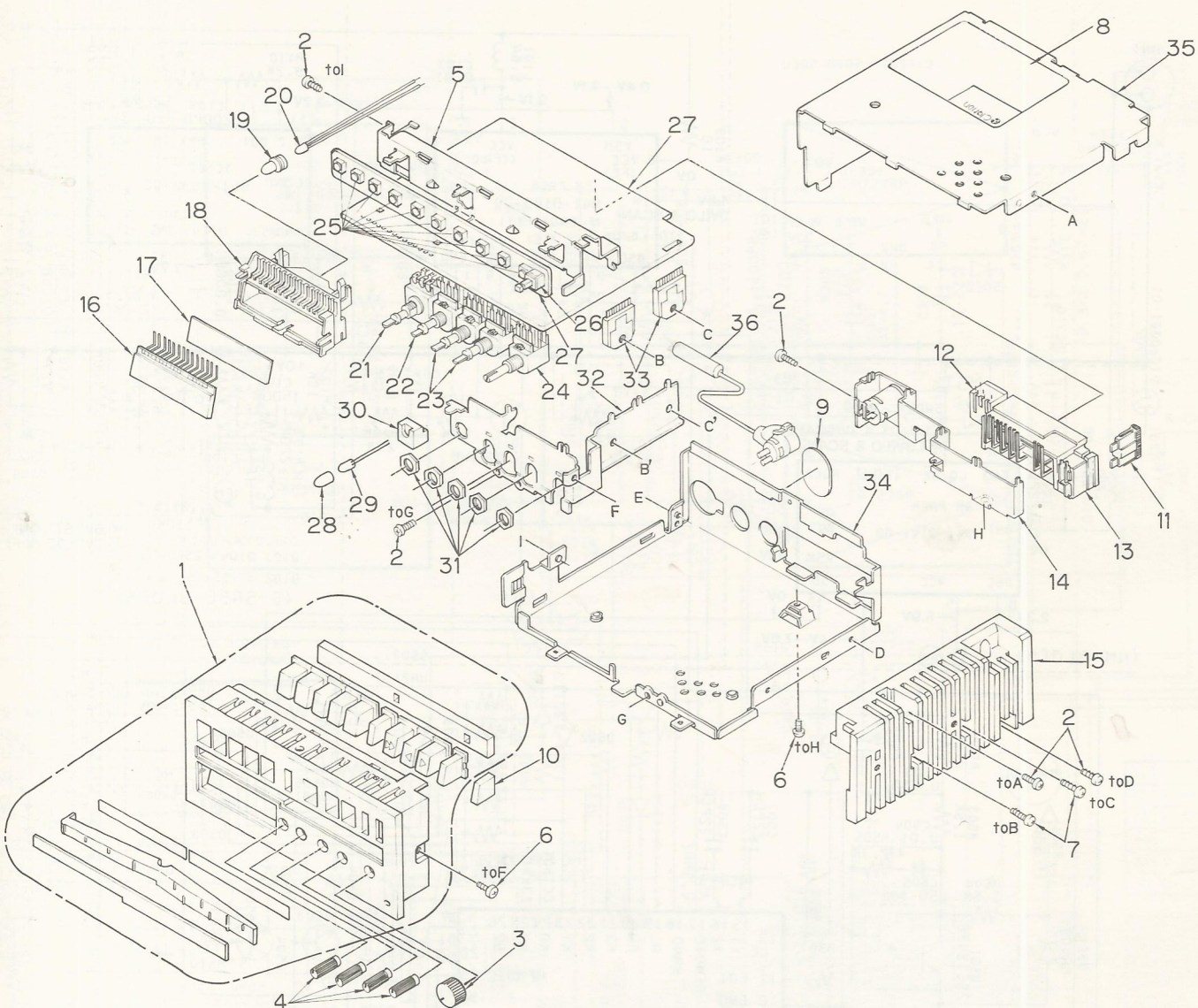
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	940-0503A	Escutcheon ass'y	1	19	345-3667-08	P.L cap	1
2	731-3006-80	Tap tight (M3x6)	5	20	017-0367-00	Pilot lamp	1
3	380-4654-01	Knob (POWER)	1	21	012-4350-00	Variable resistor (FADER)	1
4	380-4655-00	Knob	4	22	012-4352-00	Variable resistor (BAL)	1
5	330-8235-01	P.W.B holder	1	23	012-4351-00	Variable resistor (BASS, TRE)	2
6	714-3006-81	Machine screw (M3x6)	2	24	012-4353-00	Variable resistor (POWER)	1
7	714-3010-81	Machine screw (M3x10)	2	25	013-3776-00	Switch	10
8	286-5602-02	Set plate	1	26	013-3670-01	Switch (DX/LOC)	1
9	290-2567-01	Label	1	27	099-7427-00	P.W.B	1
10	380-4661-00	Knob (DX/LOC)	1	28	345-2830-68	P.L cap	1
11	060-0057-04	Fuse (5A)	1	29	017-0345-00	Pilot lamp	1
12	074-0713-00	Outlet socket (DIN 5P)	1	30	345-4067-00	P.L holder	1
13	074-0714-32	Outlet socket (S-10P, 6P)	1	31	722-0282-00	Nut (M7)	5
14	330-8209-01	DIN holder	1	32	330-8210-01	IC holder	1
15	313-1229-01	Heat sink	1	33	051-0735-00	Power IC (TA7274P)	2
16	379-0092-00	Indicator (LCD)	1	34	311-1186-01	Lower case	1
17	335-1993-00	Reflector	1	35	310-1222-01	Upper case	1
18	335-1992-00	LCD holder	1	36	093-0857-01	Antenna jumper	1

RN-9030M

■AM TUNER PACK: 941-0141-00
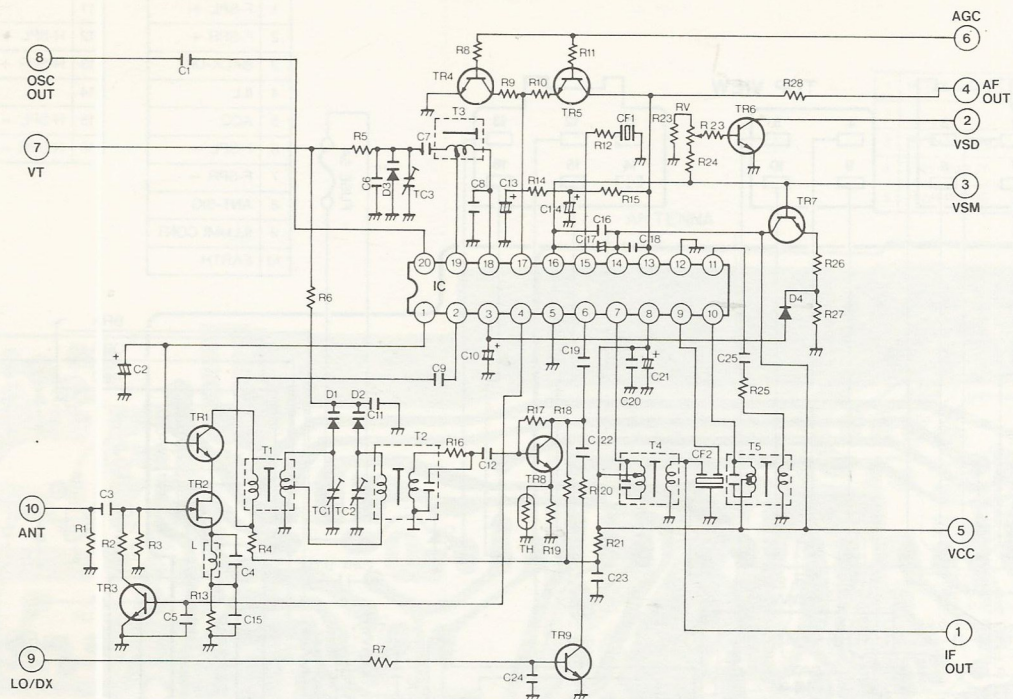
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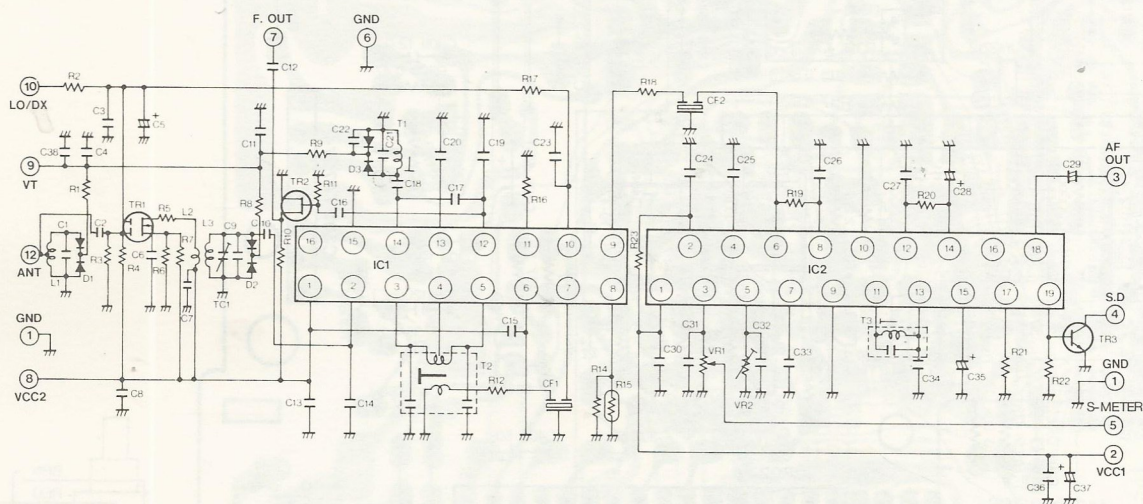
PARTS LIST:

◎Electrical section

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
$D_{1,102,301\ 302,401,402\ 502\sim508,602\ 604,605,607}$	001-0330-00	Diode (1SS119)	17
D_{303}	001-0356-00	Diode (1SS184)	1
$D_{608\sim611}$	001-0360-00	Diode (S5566B)	4
$D_{103,104}$	001-0361-00	Diode (1SS198)	2
$D_{601,603,606}$	001-0424-19	Diode (MA4056)	3
$D_{2,3,501}$	001-0424-24	Diode (MA4091)	3
L_{601}	009-0643-00	Choke	1
L_{103}	010-2046-44	Coil (1μH)	1
L_{101}	010-2047-67	Coil (5.6μ-10)	1
L_{102}	010-2047-86	Coil (220μ-10)	1
L_{201}	010-2053-00	Coil	1
RY_{601}	014-0520-00	Relay	1
PL_{201}	017-0321-01	Pilot lamp (NEON)	1
CCT_{501}	050-0093-03	Component circuit	1
IC_{302}	051-0606-00	IC (BT3S501)	1
IC_{102}	051-0633-00	IC (NC-MPX)	1
IC_{501}	051-0713-00	IC (μPD1708G-017)	1
$IC_{301,401}$	051-0735-00	IC (TA7274P)	2
X_{501}	061-1037-00	Crystal (4.5MHz)	1
Q_1	100-0684-50	Transistor (2SA684RS)	1
$Q_{505,603}$	100-1175-60	Transistor (2SA1175)	2
Q_{501}	102-1545-02	Transistor (2SC1545B)	1
$Q_{102,103,104,301\ 401,502\sim504\ 601,602,604}$	102-2458-50	Transistor (2SC2458YGRBL)	11
Q_{606}	102-2712-07	Transistor (2SC2712G)	1
$Q_{3,5}$	103-1225-50	Transistor (2SD1225)	2
$Q_{302,402}$	103-1450-00	Transistor (2SD1450)	2
$Q_{506,507}$	125-0001-02	Transistor (UN2112)	2
$Q_{2,4,6}$	125-2003-02	Transistor (RN1202)	3
$Q_{101,508,605}$	125-2005-02	Transistor (UN2212)	3
$R_{311,411}$	032-0074-11	Film resistor (5W0.47Ω)	2
R_{617}	111-1001-81	Film resistor (½Ws10Ω)	1
R_1	111-2291-81	Film resistor (½Ws2.2Ω)	1
R_{616}	111-3901-82	Film resistor (½Ws39Ω)	1
R_3	111-4711-81	Film resistor (½Ws470Ω)	1
R_{103}	116-1001-10	Chip resistor (10Ω)	1
$R_{102,107,113,301\ 302,303,401,402\ 403,602,608}$	116-1031-10	Chip resistor (10kΩ)	11
$R_{115,315}$	116-1041-10	Chip resistor (100kΩ)	2
$R_{111,312,412\ 603,615}$	116-1231-10	Chip resistor (12kΩ)	5
$R_{105,601}$	116-1531-10	Chip resistor (15kΩ)	2
R_{313}	116-1821-10	Chip resistor (1.8kΩ)	1
$R_{114,612,613,614}$	116-2221-10	Chip resistor (2.2kΩ)	4
R_{514}	116-1541-10	Chip resistor (150k)	1
R_{106}	116-2731-10	Chip resistor (27kΩ)	1
R_{112}	116-4701-10	Chip resistor (47Ω)	1
R_{408}	116-4711-10	Chip resistor (470Ω)	1
$R_{116,314}$	116-4721-10	Chip resistor (4.7kΩ)	2
$R_{104,506,611}$	116-4731-10	Chip resistor (47kΩ)	3
R_{607}	116-5611-10	Chip resistor (560Ω)	1
R_{616}	116-5631-10	Chip resistor (56kΩ)	1
$R_{116,117}$	116-6821-10	Chip resistor (6.8kΩ)	2
R_{110}	116-8221-10	Chip resistor (8.2kΩ)	1
$C_{309,310,409,410}$	043-0122-00	Ceramic capacitor (12V0.3μF)	4
$C_{113,114}$	043-0165-20	Ceramic capacitor (16V0.1μF)	2
C_{107}	160-1522-05	Ceramic capacitor (1500pF)	1
$C_{504,506,509}$	171-1033-06	Ceramic capacitor (0.01μF)	3
C_{502}	171-2233-06	Ceramic capacitor (0.022μF)	1
C_{101}	174-1800-13	Ceramic capacitor (18pF CH)	1
$C_{201,507,508}$	175-2202-00	Ceramic chip capacitor (22pF CH)	3
$C_{103,202,203}$	177-1032-05	Ceramic chip capacitor (0.01μF K)	3
$C_{306,406}$	177-1222-05	Ceramic chip capacitor (1200pF K)	2
C_{105}	177-2222-05	Ceramic chip capacitor (2200pF K)	1
C_{115}	177-3332-05	Ceramic chip capacitor (0.033μF K)	1
C_{104}	177-6812-05	Ceramic chip capacitor (680pF K)	1
C_{106}	177-6822-05	Ceramic chip capacitor (0.0068μF)	1
$C_{110,111}$	177-6835-06	Ceramic chip capacitor (0.068μF F)	2
C_{115}	173-1041-10	Polyester capacitor (0.068μF U)	1
$C_{607\sim609}$	173-1042-10	Polyester capacitor (50V0.1μF)	3
$C_{311,411,415}$	173-1542-10	Polyester capacitor (50V0.15μF K)	3
C_{102}	173-3332-10	Polyester capacitor (50V0.033μF)	1
C_{503}	173-5632-10	Polyester capacitor (0.056μF)	1
C_{315}	042-0348-00	Electrolytic capacitor (16V2200μF)	1
$C_{312,412,405}$	179-1053-62	Electrolytic capacitor (50V1μF)	3
$C_{314,603,604}$	179-1063-32	Electrolytic capacitor (16V10μF)	3
C_{606}	179-1073-33	Electrolytic capacitor (16V100μF)	1
$C_{501,610}$	179-2263-32	Electrolytic capacitor (16V22μF)	2
$C_{308,408}$	179-2273-23	Electrolytic capacitor (10V220μF)	2
C_{407}	179-4753-62	Electrolytic capacitor (50V4.7μF)	1
$C_{1,2,109,313}$	179-4763-22	Electrolytic capacitor (10V47μF)	4
$C_{108,303,304,305\ 403,404}$	182-1053-62	Electrolytic capacitor (50V1μF)	6
$C_{204,505}$	182-1056-62	Electrolytic capacitor (50V1μF NP)	2
$C_{302,402,605}$	182-1063-32	Electrolytic capacitor (16V10μF)	3
C_{602}	182-1073-22	Electrolytic capacitor (10V100μF)	1
C_{307}	182-4753-52	Electrolytic capacitor (35V4.7μF)	1
$C_{301,401}$	182-4756-32	Electrolytic capacitor (16V4.7μF NP)	2
C_{112}	182-4763-12	Electrolytic capacitor (6.3V47μF)	1
C_{601}	182-4743-62	Electrolytic capacitor (50V0.47μF)	1

● How to read resistor

Resistors are deleted from the table of electric components, (except metal film resistors and special resistors). They can be converted to product Nos. as follows.
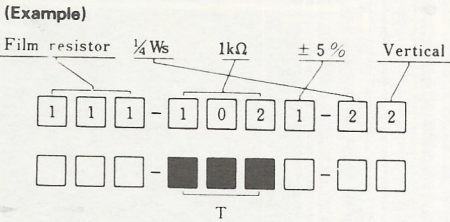
Film resistor (Carbon film resistor)
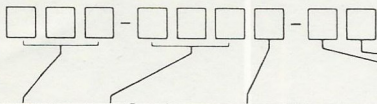
Classifi-cation	Resistance *		Tolerance of the value of resistance		Rated power			Shape	
		0		0				0	
	Example	1	± 5 %	1	⅛W	Approx. 3.7mm		1	Hori-zontal
	33Ω≒330	2		2	¼Ws	Approx. 6.5mm		2	Vertical
	33kΩ≒333	3		3				3	
1 1 1		4		4	½W	Approx. 9mm		4	
				7	⅙W	Approx. 3.5mm			
				8	½Ws	Approx. 6.6mm			
				9	¼Wss	Approx. 3.2mm			

(Example)

Film resistor   ¼Ws   1kΩ   ± 5%   Vertical

Note 1. The first two of three digits representing resistance are effective digits and the last one represents number of "0" following this.
Unit is given in ohm (Ω).

Example of conversion of resistance ■■■□

Note) R : Resistance, T : Converted value

R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T
Ω		Ω		Ω		Ω		kΩ		kΩ		kΩ		MΩ		MΩ		MΩ	
0 1	108	1 0	109	10	100	100	101	1 0	102	10	103	100	104	1.0	105	10	106	100	107
0 15	158	1 5	159	15	150	150	151	1.5	152	15	153	150	154	1.5	155	15	156	150	157

COLOR	BLK	BRN	RED	ORG	YEL	GRN	BLU	PUR	GRY	WHT	GOLD	SILVER	NO COLOR
1st color band	0	1	2	3	4	5	6	7	8	9			
2nd color band	0	1	2	3	4	5	6	7	8	9			
3rd color band	10^0	10^1	10^2	10^3	10^4	10^5	10^6				10^{-1}	10^{-2}	
4th color band											± 5 % (J)	±10% (K)	±20% (M)

*

4th color band (tolerance of the value of resistance)
3rd color band (number of ZEROS)
2nd color band (second digit) } Resistance
1st color band (First digit)

RN-9030M

CIRCUIT DIAGRAM:

RN-9030M

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PRINTED WIRING BOARD:

Liquid Crystal Display

MANUAL TUNING

FADER

TOP VIEW

1	F-SPL +	11
2	F-SPR +	12
3	BACK-UP	13
4	ILL	14
5	ACC	15
6	F-SPL −	16
7	F-SPR −	
8	ANT-SIG	
9	ILLUMI CONT	
10	EARTH	

11	F-SPL +	
12	F-SPR +	
13	R-SPR +	
14	ILL	
15	R-SPL −	
16	R-SPR −	

1	POWER SUPPLY (for AMP)
2	
3	SIGNAL GND
4	L-ch INPUT
5	R-ch INPUT

FUSE 5A

ANTENNA

FM TUNER PACK 941-0143-00

AM TUNER PACK 941-0141-00

IC501 μPD1708G-017

IC301 TA7274P

IC401 TA7274P