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Service Manual

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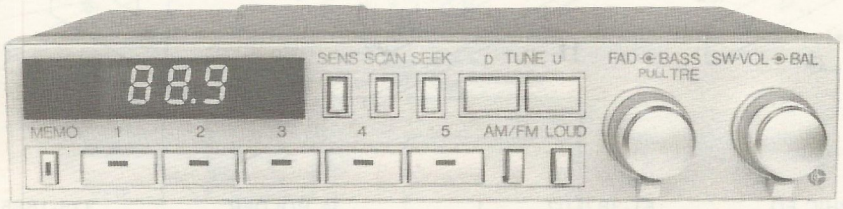
Mazda Automobile Genuine Electronic Tuner

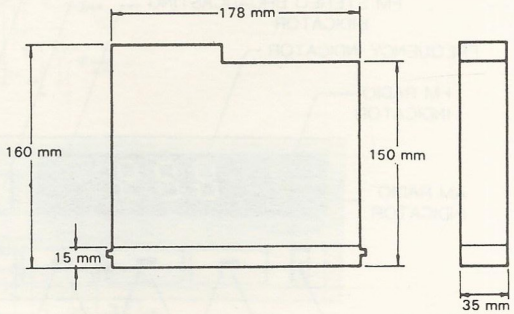
Model RT-9022I (UT-563I)



■SPECIFICATIONS:

Circuit system:	Superheterodyne	
Tuning system:	Electronic tuning	
Receive range:	AM	531 to 1,602kHz
	FM	87.9 to 107.9MHz
Intermediate frequency:		
	AM	450kHz
	FM	10.7MHz
Quieting sensitivity:	AM	Less than 35dB (at 20dB S/N)
	FM	Less than 18dB (at 30dB S/N)
Selectivity:	AM	More than 20dB (at ±10kHz detune)
Separation:	FM	More than 20dB
Fidelity:	AM	100Hz −1±4dB
(Bass, treble=flat)		400Hz 0dB
		4kHz −18±6dB
	FM	100Hz 0±4dB
		400Hz 0dB
		7kHz −18±6dB
Auto tuning stop sensitivity:		
	AM	DX 25~45dB
		LO 40~65dB
	FM	DX 28~44dB
		LO 45~75dB
Load impedance:	10kΩ	
Output level:	150mV (at max. output)	
Power supply voltage:	DC 13.2V (10.8V to 15.6V) Negative ground	
Current consumption:	Less than 3A (at max. output)	

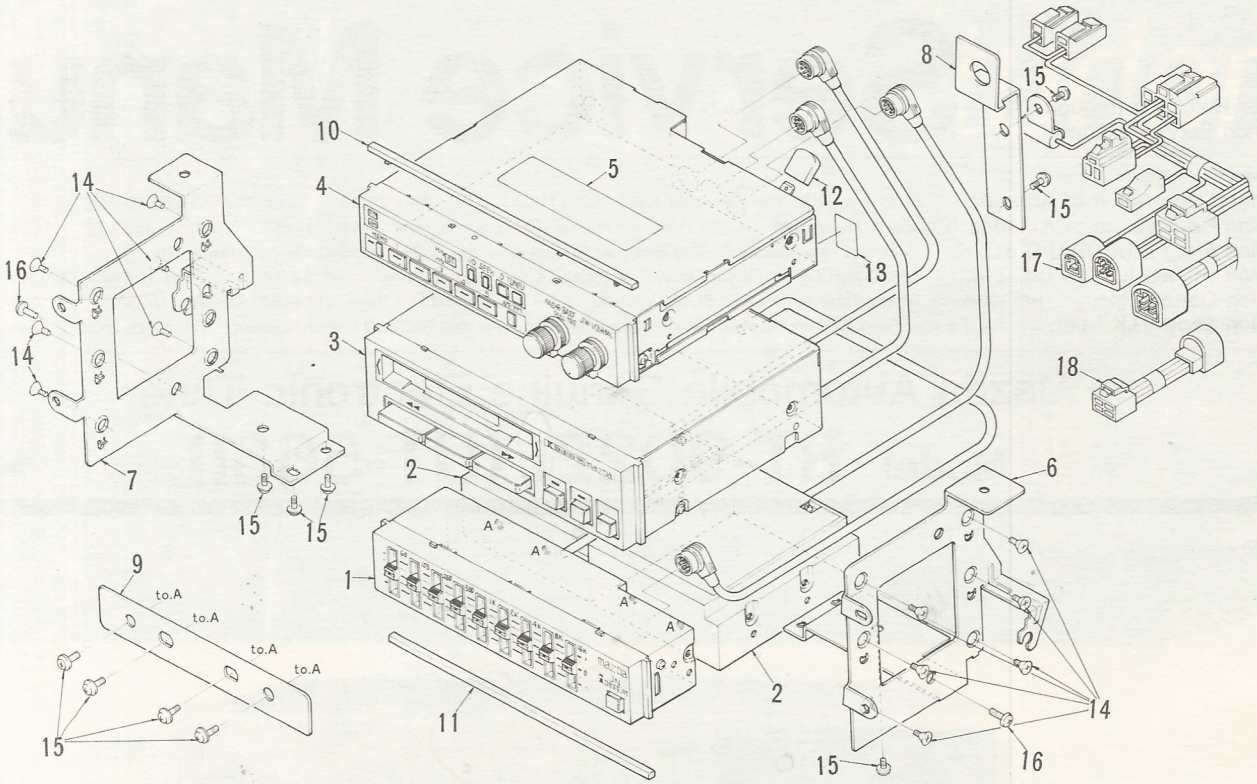
Dimensions:



Weight: 860g

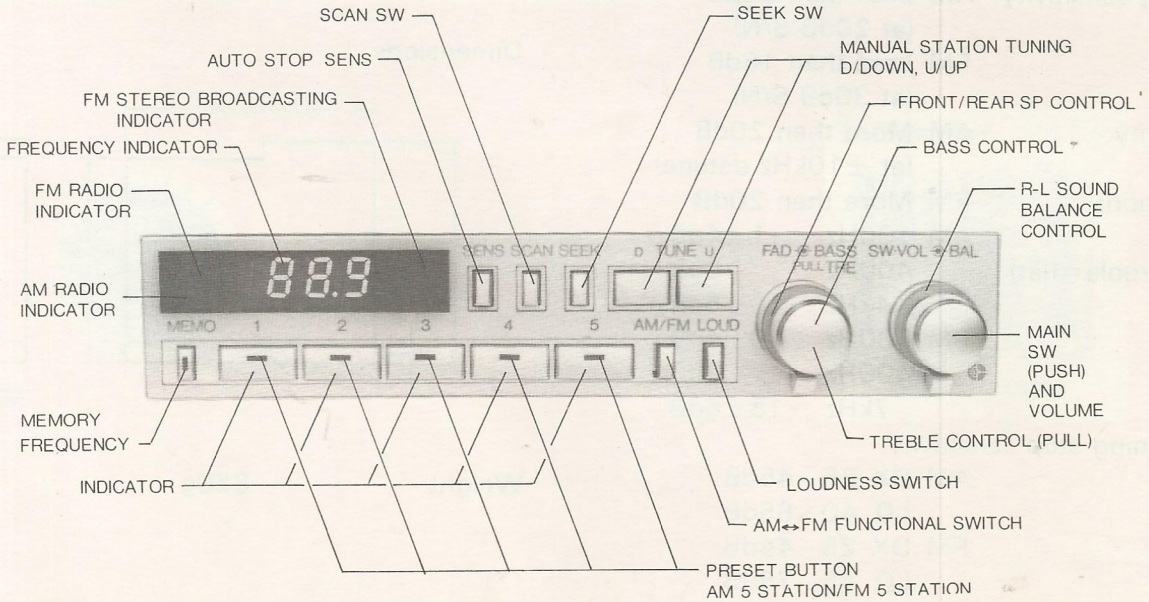
■COMPONENTS:

● UT-563I-02



① GRAPHIC EQ	ET-387I-02	1	⑩ HOLDER	335-1685-00	1
② POWER AMP	ET-386I-51	2	⑪ CUSHION	345-3639-00	1
③ DOLBY DECK	PT-8006I-B	1	⑫ CAP	345-3782-00	1
④ ELECTRONIC TUNER	RT-9022I-A	1	⑬ LABEL	347-0583-00	1
⑤ LABEL	290-3831-01	1	⑭ MACHINE SCREW	714-5008-41	12
⑥ MTG-BRKT	300-7067-00	1	⑮ SCREW	716-0417-00	10
⑦ MTG-BRKT	300-7068-00	1	⑯ MACHINE SCREW	714-5008-81	2
⑧ MTG-BRKT	300-7069-00	1	⑰ EXTENSION LEAD	852-8445-00	1
⑨ MTG-BRKT	300-7086-00	1	⑱ EXTENSION LEAD	852-8446-00	1

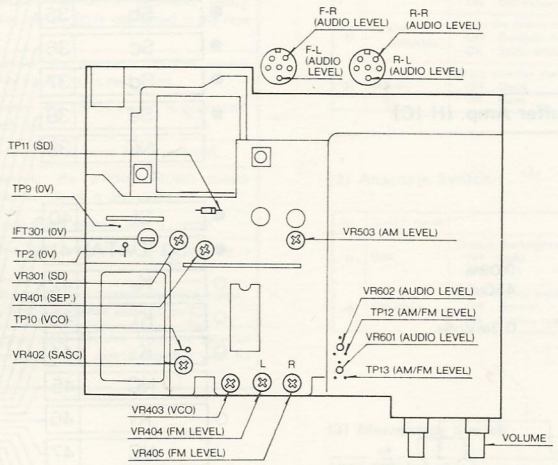
■OPERATION:



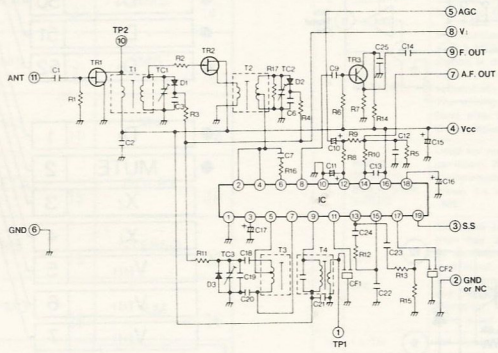
■ADJUSTMENT:

Item	Adjustment Process	Tools
‹AM› Output Level	1) Set the SSG input to 1,000kHz, 400Hz, 30% Modulation & 74dB. 2) Adjust the outputs of TP12 and TP13 to 75±11mV each by VR503.	● SSG ● V.T.V.M.
Audio Level	1) Follow the same input requirement of 1) above. 2) Adjust the DIN output both in L-CH and R-CH to 150±22mV by VR601 and VR602.	
‹FM› 0V	1) Set the SSG output to 98.1MHz, 400Hz, 30% modulation and 65dB. 2) Connect the digital tester to TP2 and TP9 and adjust the tester by IFT301 to read 0±0.03V.	● SSG ● Digital tester
SD	1) Set the SSG input to 33dB and connect the oscilloscope to TP11. 2) Adjust the oscilloscope waveform by VR301 to the point where the low level changes to the high level.	● SSG ● Oscilloscope
SASC	1) Fully turn VR402 clockwise. 2) Set the SSG input to 98.1MHz, 7kHz, 65dB and adjust its output to 77.5mV by VOLUME. 3) Adjust its output to −3dB by VR402 when the SSG input is set to 35dB.	● SSG ● V.T.V.M.
MPX (VCO)	1) Set the SSG input to 98.1MHz and 65dB without modulation. 2) Connect the frequency counter to TP10 and adjust the frequency by VR403 to read 76kHz±0.3kHz.	● SSG ● Frequency counter
Separation	1) Set the SSG input to 98.1MHz and the ST modulation to 65dB. 2) Get the optimum separation point by VR401.	● MPX SG ● SSG
Output Level	1) Set the SSG input to 55dB. 2) Adjust the outputs of both TP12 and TP13 by VR404 and VR405 to 75±11mV.	● SSG ● V.T.V.M.

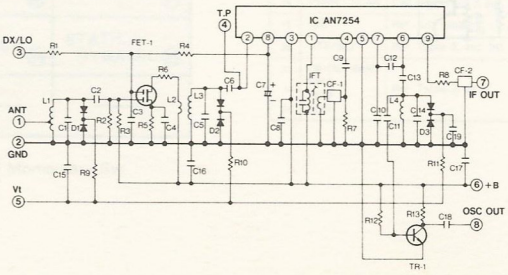
● ADJUSTMENT POINT



■AM TUNER PACK: 941-0103-06



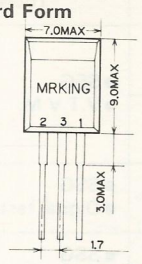
■FM TUNER PACK: 941-0124-01



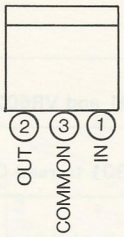
■EXPLANATION OF IC's:

■μPC78L05 051-0259-00 3 Terminal Voltage Regulator

Outward Form



Terminal Connection



Absolute Maximum Ratings (Ta=25°C)

Input Voltage	V_I	30V
Power Dissipation	P_D	800mW

Electrical Characteristics (V_{IN}=10V, I_{OUT}=40mA, 0°C≦Tj≦125°C, C_{IN}=0.33μF, C_{OUT}=0.1μF)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit
Output Voltage	V_O	Tj=25°C		4.6	5.0	5.4	V
Input Regulation	REG_{IN}	Tj=25°C	7V≦V_{IN}≦20V		55	200	mV
			8V≦V_{IN}≦20V		45	150	mV
Loud Regulation	REG_L	Tj=25°C	1mA≦I_{OUT}≦100mA		11	60	mV
			1mA≦I_{OUT}≦40mA		5.0	30	mV
Output Voltage	V_O	7V≦V_{IN}≦20V, 1mA≦I_{OUT}≦40mA		4.5		5.5	V
		V_{IN}=10V, 1mA≦I_{OUT}≦70mA		4.5		5.5	V
Noise Output Voltage	NL	Ta=25°C, 10Hz≦f≦100kHz			30		μV
Ripple Rejection Ratio		f=120Hz, 8V≦V_{IN}≦18V, Tj=25°C		40	50		dB

■H8D1525E 051-0552-01 Loudness Buffer Amp. (H-IC)

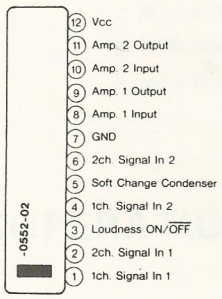
Absolute Maximum Ratings (Ta=25°C)

Supply Voltage	Vcc	20V

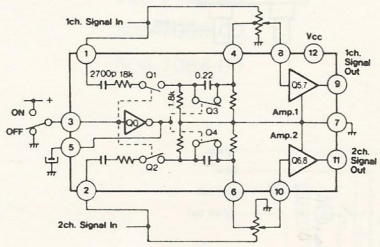
Electrical Characteristics

Loudness Effect	+10.0dB (f=100Hz) + 4.0dB (f=10kHz)	
Distortion	(f=1kHz, ⑨, ⑩ pin, Output 400mV)	0.08%
Total Gain	(f=1kHz, e_i=100mV, Loudness off, ⑨, ⑪ pin/	450mV
Noise Out	(Input short)	0.3mVrms

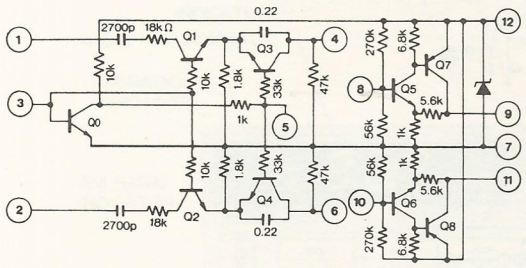
Terminal Connection



Block Diagram



Circuit Diagram



μPD1710G016-03 / μPD1710G216-03 051-0564-00
■μPD1710G027-03 / μPD1710G227-03 051-0564-01
μPD1710G521-03 051-0564-02

PLL Synthesizer & Controller

Due to convenience of management in parts number by IC manufacturers, the type names for μPD1710G016-03 and μPD1710G027-03 has changed as follows. Their performance, function and external view have not been changed through this alteration. Therefore, the parts numbers on Clarion side will not be changed.

051-0564-00
μPD1710G016-03 ➡ μPD1710G216-03
051-0564-01
μPD1710G027-03 ➡ μPD1710G227-03

I Absolute Maximum Ratings (Ta=25°C)

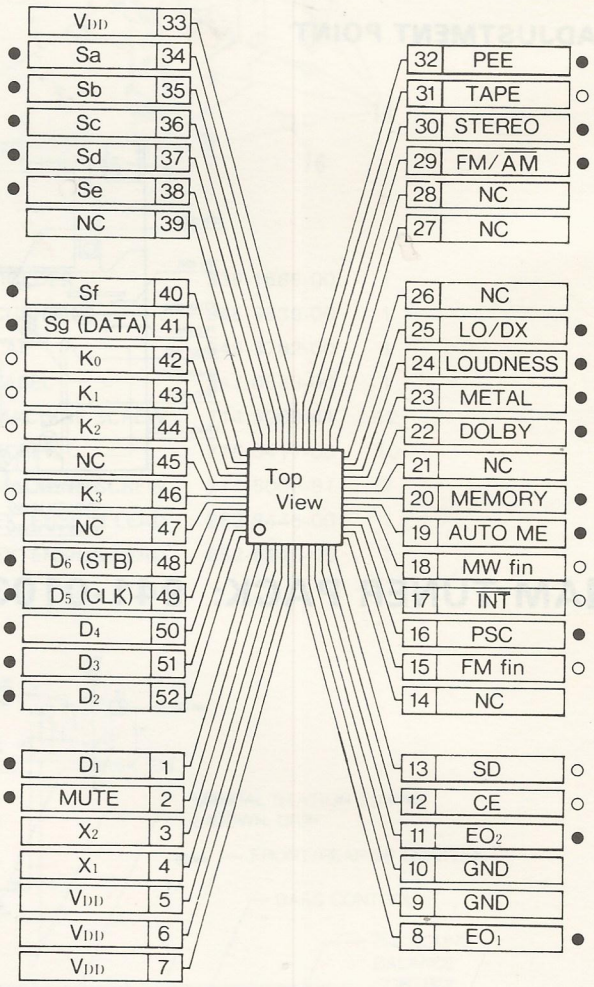
Supply Voltage	V_{DD}	−0.3~+6.0
Input Voltage	V_I	−0.3~+V_{DD}
Output Voltage	V_O	−0.3~+V_{DD}

II AM Frequency Range when Channel Space is 9kHz.

μPD1710G016-03	(051-0564-00)	522~1,611kHz
μPD1710G027	(051-0564-01)	522~1,629kHz
μPD1710G521-03	(051-0564-02)	531~1,602kHz

III Terminal Construction

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



Terminal Description

No.	Symbol	Terminal name	Function
1, 48~52	D1~D6	Digit Output	Digit signal output indicated.
2	MUTE	Mute Signal Output	Output terminal to erase a shock noise occuring when the lock of PLL is removed. It outputs a low signal in the mute ON state.
3, 4	X1, X2	X'tal	Terminal for connecting an crystal resonator. (4.5MHz)
5, 6, 7, 33	V_{DD}	Power Supply	Supply voltage of 5V±10% when the device functions. Moreover, in the backup state, the voltage can be dropped into 2.5V. (Pins 7 and 33 is internally connected; however, other pins form other circuits to which V_{DD} voltage should be applied.)
8, 11	EO1, EO2	Error Out	PLL error output. Same signals are output from EO1 and EO2 at the same time.
9, 10	GND		
12	CE	Chip Enable	When the device is used in the normal manner, set the signal into the high level. When the device is not used, set it into the low level. (Backup state is obtained in the low state.)
13	SD	Station Detector Input	Terminal for inputing a stop signal in the auto tuning state. Auto tuning stops when a high signal is input.
15	FMf	Pulse swallow type oscillating input	An output signal from the FM local oscillator (VCO) which is divided into 1/16 or 1/17 with μPB553AC is input.
16	PSC	Prescaler Control Output	Terminal for outputing a dividing ratio selectable signal, connected to the PSC terminal of μPB553AC.
17	$\overline{INT}$	$\overline{INT}$	Pull-up to V_{DD}.
18	AMf	AM oscillating Input	Input a local oscillating (VCO) of AM.
19	AUTO ME	AUTO MEMORY	Output a high level signal in the auto memory state.
20	ME	MEMORY	Output a high level signal in the memory write state.
22	DOLBY	DOLBY Output	Invert an output signal whenever depressing the DOLBY SW (momentary key switch 16).
23	MTL	METAL/NORMAL Output	Inverted whenever the METAL/NORMAL switch (momentary key switch 15) is depressed in the tape running state.
24	LD	Loudness Control Output	Inverted whenever the loudness ON/OFF switch (momentary key switch 14) is depressed.
25	LO/DX	Local/DX	Inverted whenever the Lo/Dx switch is depressed. (momentary key 13)
29	FM/$\overline{AM}$	FM BAND Output	Output a high level signal when FM is received.
30	ST	STEREO/MONORAL Output	Inverted whenever the STEREO/MONO switch (momentary key switch 20) is depressed.
31	TAPE	TAPE MODE Input	Input a high level signal when a tape is loaded.
32	PEE	PEE	Output a 30ms high level signal when the key is accepted.
34~38, 40, 41	Sa~Sg	Segment Output	Terminal for outputing an indicated segment signal, forming a key matrix together with K0 to K3.
42~44, 46	K0~K3	Key Return Signal Inputs	Key return signal input terminal from the external key matrix, forming a key matrix together with Sa to Sg.

Table-1

Ⅳ Key Matrix

	K3 Pin 46	K2 Pin 44	K1 Pin 43	K0 Pin 42
Sa Pin 34	AU ①	AD ②	SCAN ③	AMS ④
Sb Pin 35	MU (MA) ⑤	MD (HA) ⑥	M5 ⑦	M6 ⑧
Sc Pin 36	M1 ⑨	M2 ⑩	M3 ⑪	M4 ⑫
Sd Pin 37	Lo/Dx ⑬	LOUD ⑭	METAL ⑮	DOLBY ⑯
Se Pin 38	RECAL ⑰	PRESET SCAN ⑱	ME ⑲	STEREO ⑳
Sf Pin 40	FM FM1 BAND ㉑	FM2 ㉒	FM3 ㉓	AM ㉔
Sg Pin 41	DIM ㉕	FM SEL1 ㉖	FM SEL2 ㉗	PRIORITY ㉘
D1 Pin 1	——	MW SEL ㉙	BAND1 ㉚	BAND2 ㉛
D2 Pin 52	IF ㉜	CLOCK SEL ㉝	CH DISP ㉞	STATIC/ DYNAMIC ㉟
D3 Pin 51	BLANK ㊱	——	——	——

Diode Sw. Alternate Sw. Momentary Sw.

Table-2

(1) Diode Switch

These switches are set by shortcircuiting or opening an intersection on the matrix by the use of a diode.
In the following description, OFF and ON respectively mean open and shortcircuit. Note that this diode switch is read only when the V_{DD} terminal is initially powered and the CE terminal is changed from "low" to "high"; otherwise, the switch is ignored.

No.	Switch name	Description
㉖ ㉗	FM SEL1 FM SEL2	Select Area of FM FM SEL1 / FM SEL2 / Area / Frequency Range / Channel Space OFF / OFF / U.S.A. / 87.9~107.9MHz / 200kHz OFF / ON / Japan / 76.1~ 89.9MHz / 100kHz ON / OFF / Oceania / 87.9~107.9MHz / 100kHz ON / ON / —— / —— / ——
㉘	AM SEL	Select Channel space of AM AM SEL / Frequency Range / Channel Space OFF / 530~1,620kHz / 10kHz ON / ※ / 9kHz
㉚ ㉛	BAND1 BAND2	These 2 diode switches decide the positions of the alternate SW for selecting the band number and band selection as shown in the following table. i: BAND1 OFF, BAND2 OFF / Momentary Sw. used for band Selection: FM1 ㉑ FM2 ㉒ FM3 ㉓ AM ㉔ / Receiving Band: FM1,FM2,FM3,AM ii: ON, ON / FM ㉑ AM ㉔ / FM1,FM2,AM iii: OFF, ON / FM ㉑ AM ㉔ / FM1,FM2,FM3,AM iv: ON, OFF / BAND ㉑ / FM1,AM Whenever the key ㉑ (FM/FM1/BAND) is depressed in (i) to (iv) above, the following function is activated. (i) FM1 ㉑ : FM1 is selected (ii) FM ㉑ : Mode is changed in the order FM1→FM2→MW (iii) FM ㉑ : Mode is changed in the order FM1→FM2→FM3→MW (iv) BAND ㉑ : Mode is changed in the order FM1→MW
㉜	IF	Select IF of FM (MHz) IF SW. / U.S.A. / JAPAN / OCEANIA OFF / 10.700 / −10.700 / 10.700 ON / 10.725 / −10.675 / 10.725
㉝	CLOCK SEL	Select whether or not clock mode is used. OFF : Clock mode is not used. ON : Clock mode is used.
㉞	CH DISP	Select the indicating mode of the preset channel. OFF : Numerical indication ON : Dot indication
㉟	STATIC/ DYNAMIC	Select the driven mode of the indicator. OFF : Dynamic drive ON : Static drive
㊱	BLANK	Select whether the clock is indicated or not (blanking), when pin ㉛ is "High" OFF : Clock ON : Blank

Table-3

※ Ref. II AM Frequency Range when Channel Space is 9kHz.

(2) Alternate Switch

No	Switch name	Description
25	DIM	Change the brightness of indicator which is driven by Dynamic drive. OFF : Light ON : Dark
28	PRIORITY	Select priority mode of clock indication. OFF : Normal ON : Priority mode

Table-4

(3) Momentary Switch

No	Switch name	Description
1 2	AUTO UP AUTO DOWN	By depressing this switch, a station is continuously searched downward or upward and when the SD terminal (Pin 13) is set to "high", the corresponding frequency is held. By depressing the switch twice, auto-tuning stops.
3	SCAN	By depressing this switch, a station is continuously searched upward and when the SD terminal is set to "high", another station is continuously searched after the former station is received for 5 sec. Depressing this switch once again causes to stop the SCAN function.
4	AUTO MEMORY	By depressing the (MEMORY 18), (ME) lights up for about 5 sec. during which depress this AUTO MEMORY switch. At the time, the AUTO MEMORY lamp lights up and a broadcasting station is detected and memoried from the existing receiving frequency to higher frequency. When the receiving frequency is memorized by the presetting, the following memories are sequentially memorized; otherwise, memory is performed from M1 in sequence. The writing operation is terminated when the upper limit of a band comes in or M6 is written. Next, after M1 is called, (AUTO MEMORY) lamp does not light up and the sequential operation is terminated. When canceling this mode in the mid-operation, depress this switch once again.
5 6	MANUAL UP (MINUTE) MANUAL DOWN (HOUR)	Used for manual tuning. Whenever this switch is depressed, one step of frequency is stepped up/down. When this switch is depressed for 0.5 sec. or more, fast forward tuning is performed continuously until the switch is released. When it's indicating "Clock", thease keys are used for adjustment of time with depressing "ME".
7 ~ 12	M1 ~ M6	Since the switches of preset channels independently accord with FM1, FM2, FM3, and AM, then max. 30 stations can be memorized. By depressing this switch only, the required frequency is called and the corresponding station is received. When memorizing a frequency by means of this switch, first depress the (MEMORY 18) switch and then depress this switch while (ME) lamp lights up (for about 5 sec). Moreover, in the power on state, in all the preset memories, the lower limit frequency of each band is set.
13	Lo/Dx	Ref. Table-2, No. 25
14	LOUD	Ref. Table-2, No. 24
15	METAL	Ref. Table-2, No. 23
16	DOLBY	Ref. Table-2, No. 22
17	RECAL	Change indication mode, "Tuner" to "Clock", and reversional.
18	PRESET SCAN	Call preset for 5 sec. automatically.
19	ME	Ref. this table, 4., 7.
20	STEREO	Ref. Table-2, No. 30
21 ~ 24	FM/FM1/BAND FM2 FM3 MW	Ref. Table-3, ㉚ ㉛

Table-5

■PARTS LIST:

◎Electrical section

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
D_{805}	001-0429-00	Diode (S3V10)	1
D_{404}	001-0208-00	Diode (73N)	1
$D_{201\sim213,220,221,301,302,401,402,504,505,601}$	001-0294-00	Diode (1SS133T)	22
$D_{101,102,806}$	001-0360-00	Diode (S5566B)	3
$D_{501\sim503}$	001-0361-00	Diode (1SS198TE)	3
$D_{103,801,802,803}$	001-0376-48	Diode (MTZ9.1JC)	4
D_{804}	001-0376-43	Diode (MTZ8.2JA)	1
D_{807}	001-0379-00	Diode (S5566G)	1
IFT_{301}	005-0888-01	IF-transformer	1
L_{801}	009-0603-00	Choke	1
L_{802}	009-0625-00	Choke	1
L_{101}	010-1570-00	Coil	1
L_{502}	010-1898-00	Coil	1
L_{301}	010-1976-00	Coil	1
L_{503}	010-2052-00	Coil	1
L_{501}	010-2053-00	Coil	1
VR_{403}	012-4100-03	Variable resistor (5kΩ)	1
$VR_{401,404,405,601,602}$	012-4100-05	Variable resistor (20kΩ)	5
$VR_{502,503}$	012-4100-06	Variable resistor (50kΩ)	2
$VR_{301,402,501}$	012-4100-07	Variable resistor (100kΩ)	3
PL_{301}	017-0321-01	Pilot lamp	1
IC_{501}	051-0190-00	IC (H8D1362)	1
$IC_{101,102}$	051-0259-00	IC (μPC78L05)	2
IC_{103}	051-0281-01	IC (μPB553AC)	1
IC_{701}	051-0285-51	IC (NJM4558S)	1
IC_{203}	051-0306-00	IC (TD62105P)	1
IC_{202}	051-0329-00	IC (TD62506P)	1
IC_{301}	051-0363-00	IC (LA1140)	1
IC_{502}	051-0454-00	IC (H8D1362)	1
IC_{402}	051-0463-00	IC (μPD1256C)	1
IC_{401}	051-0467-00	IC (AC-Z)	1
IC_{601}	051-0524-00	IC (BT3S500)	1
IC_{602}	051-0552-00	IC (H8D1525B)	1
IC_{201}	051-0564-02	IC (μPD1710G521-03)	1
X_{101}	061-1053-00	Crystal-OSC (4.5MHz)	1
Q_{101}	102-1545-05	Transistor (2SC1545B)	1
$Q_{202\sim204,301,302,303,304,401,501,503,601,602,603\sim606,801,802,805,806}$	102-2458-25	Transistor (2SC2458Y)	20
$Q_{502,504}$	103-0655-05	Transistor (2SD655ETZ)	2
$Q_{803,804,807}$	103-1225-18	Transistor (2SD1225MQ)	3
Q_{101}	108-0161-25	Transistor (2SK161Y)	1
R_{901}	032-0018-00	Fuse resistor (2.2Ω)	1
R_{309}	032-0059-05	Film resistor (¼Ws22kΩ)	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
R_{420}	032-0059-06	Film resistor (¼Ws33kΩ)	1
R_{311}	032-0059-04	Film resistor (¼Ws15kΩ)	1
R_{519}	032-0059-57	Film resistor (¼Ws120kΩ)	1
$R_{811,812}$	111-1011-91	Film resistor (¼Wss100Ω)	2
$R_{822,823}$	111-2211-91	Film resistor (¼Wss220Ω)	2
R_{817}	111-4701-91	Film resistor (¼Wss47Ω)	1
R_{818}	111-4711-91	Film resistor (¼Wss470Ω)	1
$R_{806,809,820}$	111-4791-91	Film resistor (¼Wss4.7Ω)	3
R_{819}	111-6811-91	Film resistor (¼Wss680Ω)	1
R_{101}	114-3901-21	Film resistor (2W 39Ω)	1
R_{821}	114-6811-11	Film resistor (1W680Ω)	1
C_{413}	043-0147-00	Polyester capacitor (470pF)	1
$C_{822}^{809,813,817,818}$	173-1042-10	Polyester capacitor (50V0.1μF)	5
C_{518}	042-0174-00	Electrolytic capacitor (16V4.7μF TAN)	1
C_{514}	042-0176-00	Electrolytic capacitor (16V10μF TAN)	1
C_{515}	042-0262-00	Electrolytic capacitor (16V220μF)	1
C_{812}	042-0288-00	Electrolytic capacitor (16V1000μF)	1
$C_{101,819}$	042-0323-00	Electrolytic capacitor (16V470μF)	2
C_{690}	179-1073-22	Electrolytic capacitor (10V100μF)	1
C_{811}	179-1083-32	Electrolytic capacitor (16V1000μF)	1
C_{505}	179-2273-22	Electrolytic capacitor (10V220μF)	1
$C_{617,619}$	182-1043-62	Electrolytic capacitor (50V0.1μF)	2
$C_{315,404,414,504,511,512,592,605,606}$	182-1053-62	Electrolytic capacitor (50V1μF)	9
$C_{403,408,506}$	182-1056-62	Electrolytic capacitor (50V1μF NP)	3
$C_{106,107,316,415,516,520,590,603,604,609,610,614,806,808,824}$	182-1063-32	Electrolytic capacitor (16V10μF)	15
C_{406}	182-1066-22	Electrolytic capacitor (16V10μF NP)	1
C_{402}	182-2243-62	Electrolytic capacitor (50V0.22μF)	1
$C_{405,412}$	182-2246-62	Electrolytic capacitor (50V0.22μF NP)	2
$C_{601,602,611,612,701,702,703,704}$	182-2253-62	Electrolytic capacitor (50V2.2μF)	8
$C_{317,410,507,805,820,821}$	182-2263-32	Electrolytic capacitor (16V22μF)	6
$C_{620\sim623}^{607,608}$	182-3343-62	Electrolytic capacitor (50V0.33μF)	6
C_{807}	182-3363-22	Electrolytic capacitor (10V33μF)	1
C_{418}	182-4743-62	Electrolytic capacitor (50V0.47μF)	1
C_{411}	182-4746-62	Electrolytic capacitor (50V0.47μF NP)	1
C_{311}	182-4753-52	Electrolytic capacitor (35V4.7μF)	1
$C_{613,617}$	182-4763-12	Electrolytic capacitor (6.3V47μF)	2
$C_{815}^{103,304,616,618}$	182-4763-22	Electrolytic capacitor (10V47μF)	5
C_{113}	183-3353-62	Electrolytic capacitor (50V3.3μF)	1
C_{814}	183-3363-42	Electrolytic capacitor (25V33μF)	1
$C_{624\sim627}$	183-4753-52	Electrolytic capacitor (35V4.7μF)	4
$C_{801\sim804}^{102,103,115}$	183-4763-32	Electrolytic capacitor (16V47μF)	7

◎CHIP RESISTOR

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
R 301,317,502,610 816	116-1001-10	Chip resistor (1/8W10Ω)	5
R 103,813	116-1011-10	Chip resistor (1/8W100Ω)	2
R 109,418,505,590 815	116-1021-10	Chip resistor (1/8W1kΩ)	5
R 107,303,314,316 407,411,511,513 612~615,810 851	116-1031-10	Chip resistor (1/8W10kΩ)	14
R 201,202,601,602 603,604,611,617 619,622,628,853	116-1041-10	Chip resistor (1/8W100kΩ)	12
R 208	116-1221-10	Chip resistor (1/8W1.2kΩ)	1
R 209,210,403,412 504,801	116-1231-10	Chip resistor (1/8W12kΩ)	6
R 317,404,417,419 824,825	116-1531-10	Chip resistor (1/8W15kΩ)	6
R 616,620,621,629	116-1541-10	Chip resistor (1/8W150kΩ)	4
R 512	116-2201-10	Chip resistor (1/8W22Ω)	1
R 108,110,306,520	116-2221-10	Chip resistor (1/8W2.2kΩ)	4
R 203,204,205,206 307,408,410,501 506,609	116-2231-10	Chip resistor (1/8W22kΩ)	10
R 105,516	116-2241-10	Chip resistor (1/8W220kΩ)	2
R 510	116-2711-10	Chip resistor (1/8W270Ω)	1
R 315,703,704	116-2731-10	Chip resistor (1/8W27kΩ)	3

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
R 515	116-3301-10	Chip resistor (1/8W33Ω)	1
R 304,305,508	116-3311-10	Chip resistor (1/8W330Ω)	3
R 402,607,608	116-3321-10	Chip resistor (1/8W3.3kΩ)	3
R 207,313,413,521 803,826	116-3331-10	Chip resistor (1/8W33kΩ)	6
R 104,414,415	116-3921-10	Chip resistor (1/8W3.9kΩ)	3
R 518	116-3931-10	Chip resistor (1/8W39kΩ)	1
R 102	116-4701-10	Chip resistor (1/8W47Ω)	1
R 804,807,814	116-4711-10	Chip resistor (1/8W470Ω)	3
R 106,517,605,606 618,623,630,631	116-4721-10	Chip resistor (1/8W4.7kΩ)	8
R 302,310,503,802	116-4731-10	Chip resistor (1/8W47kΩ)	4
R 312,405,406,409 509,514 624~627	116-5621-10	Chip resistor (1/8W5.6kΩ)	10
R 308,507	116-5631-10	Chip resistor (1/8W56kΩ)	2
R 416	116-6801-10	Chip resistor (1/8W68Ω)	1
R 805,808	116-6811-10	Chip resistor (1/8W680Ω)	2
R 401,701,702,705 706,852	116-6821-10	Chip resistor (1/8W6.8kΩ)	6

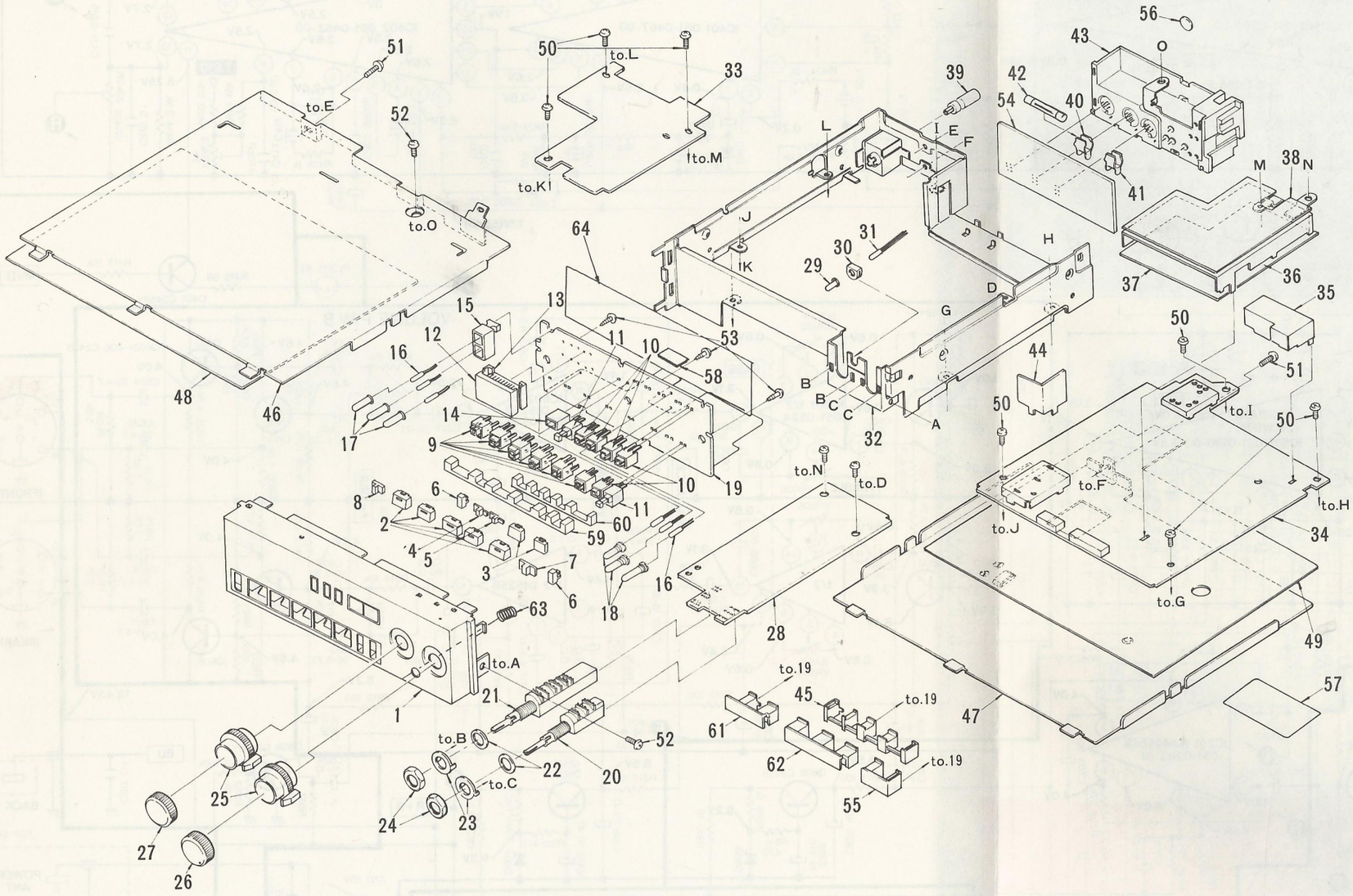
◎CHIP CAPACITOR

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
C 407	175-1007-00	Ceramic chip capacitor (10pF)	1
C 117,301,501	175-1801-00	Ceramic chip capacitor (18pF)	3
C 118	175-2201-00	Ceramic chip capacitor (22pF)	1
C 110	175-2212-00	Ceramic chip capacitor (220pF)	1
C 309,313	175-3311-00	Ceramic chip capacitor (330pF)	2
C 517	175-3901-00	Ceramic chip capacitor (39pF)	1
C 502	177-1025-06	Ceramic chip capacitor (1000pF)	1
C 104,105,108,111 112,114,302,303 306~308,309 310,312,314,503 508,509,513,524 1000	177-1035-06	Ceramic chip capacitor (0.01μF)	21
C 419,420,522	177-1045-06	Ceramic chip capacitor (0.1μF)	3

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
C 421	177-1532-05	Ceramic chip capacitor (0.015μF)	1
C 401	177-2225-06	Ceramic chip capacitor (2200pF)	1
C 810,823	177-2245-06	Ceramic chip capacitor (0.22μF)	2
C 519	177-3325-06	Ceramic chip capacitor (0.0033μF)	1
C 109	177-3335-06	Ceramic chip capacitor (0.033μF)	1
C 416	177-4722-05	Ceramic chip capacitor (0.0047μF)	1
C 318,510	177-4735-06	Ceramic chip capacitor (0.047μF)	2
C 409	177-6825-06	Ceramic chip capacitor (6800pF)	1
C 521	177-6835-06	Ceramic chip capacitor (0.068μF)	1
C 417	177-8212-05	Ceramic chip capacitor (820pF)	1

■EXPLODED VIEW • PARTS LIST:

◎Main section

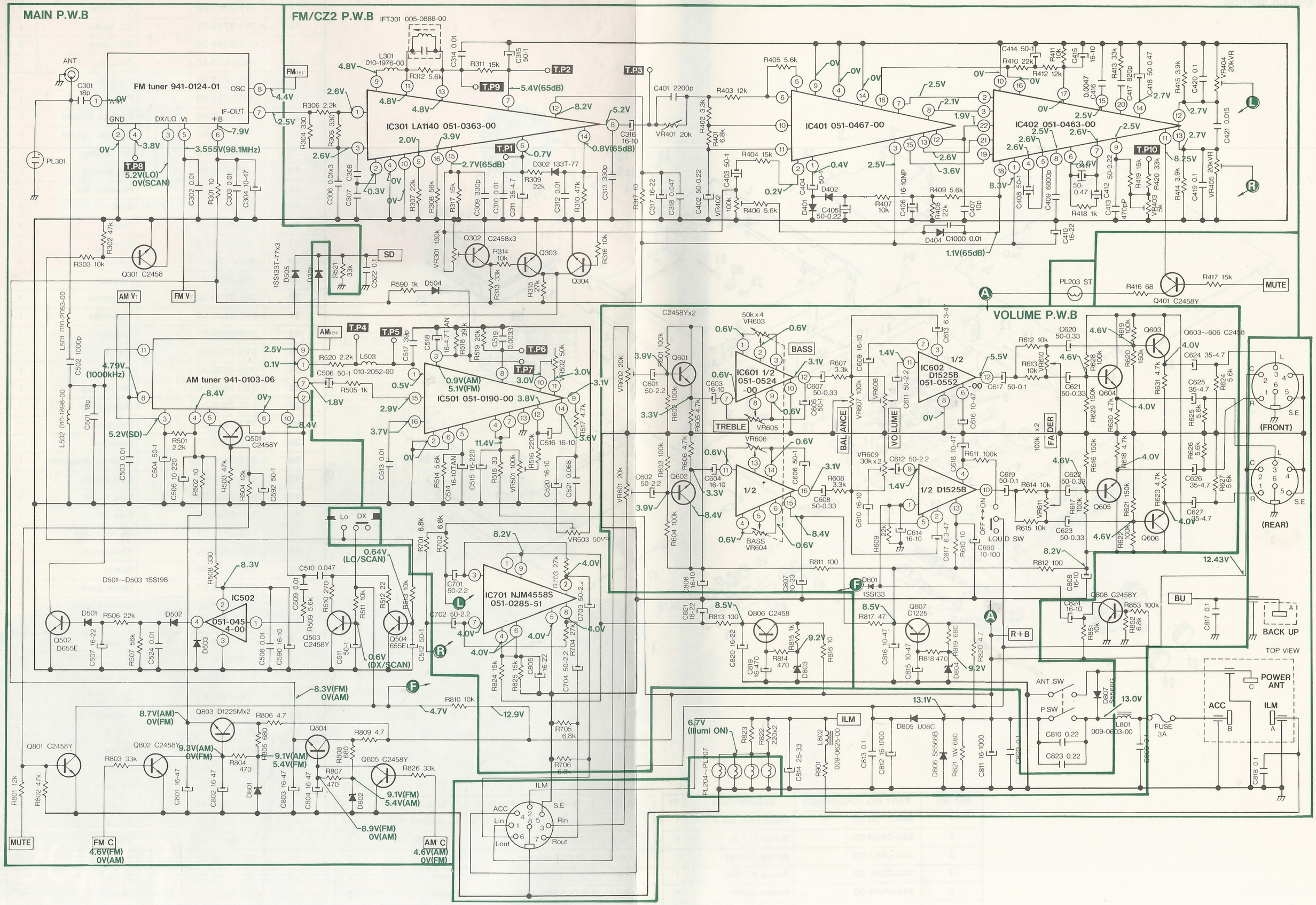


REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	940-2739-02	Escutcheon ass'y	1
2	382-0559-00	Button (1~5)	5
3	382-0563-00	Button (TUNE)	2
4	382-0585-00	Button (SCAN)	1
5	382-0586-00	Button (SEEK)	1
6	382-0561-00	Button (LOUD, SENS)	2

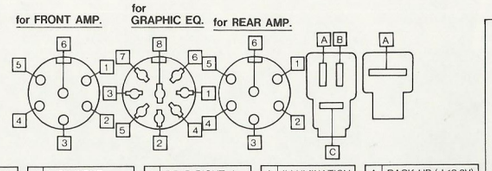
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
7	382-0562-00	Button (AM/FM)	1
8	382-0560-00	Button (MEMO)	1
9	013-3708-00	Switch	6
10	013-3708-01	Switch	5
11	013-3699-00	Switch	2
12	379-0039-04	LED	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
13	335-1724-00	LED holder	1
14	345-3769-00	P.L holder	1
15	345-3768-01	P.L holder	1
16	017-0349-04	Pilot lamp	6
17	345-2830-46	P.L cap	3
18	345-3436-09	P.L cap	3
19	099-7252-00	P.W.B	1
20	012-4129-00	Variable resistor	1
21	012-4130-00	Variable resistor	1
22	745-0514-00	Flat washer	2
23	745-0668-00	Flat washer	2
24	722-0231-00	Hexagon nut	2
25	380-4377-01	Knob	2
26	380-4375-02	Knob	1
27	380-4376-02	Knob	1
28	099-7020-02	P.W.B	1
29	345-2830-47	P.L cap	1
30	345-3770-00	P.L holder	1
31	017-0345-09	Pilot lamp	1
32	312-0235-01	Chassis	1
33	099-7020-02	P.W.B	1
34	099-7020-02	P.W.B	1
35	330-7880-00	Shield cover	1
36	330-7879-02	Shield cover	1
37	347-1347-01	Insulator	1
38	347-1348-01	Insulator	1
39	092-0516-00	Antenna receptacle	1
40	077-0081-05	Fuse holder	1
41	077-0081-04	Fuse holder	1
42	120-0030-02	Fuse (3A)	1
43	074-0719-09	Outlet socket	1
44	330-7881-00	Shield plate	1
45	335-1779-00	Spacer	1
46	303-0312-01	Upper case	1
47	304-0365-00	Lower case	1
48	347-1345-01	Insulator	1
49	347-1344-01	Insulator	1
50	714-3004-81	Machine screw (M3x4)	9
51	731-3006-80	Tap tight (M3x6)	2
52	714-3006-81	Machine screw (M3x6)	2
53	704-2605-11	Tap screw (2.6x5)	3
54	099-7020-02	P.W.B	1
55	335-1782-00	Spacer	1
56	290-3560-00	Label	1
57	286-5600-00	Set plate	1
58	347-1543-00	Insulator	1
59	345-3835-01	Spacer	1
60	345-3834-00	Spacer	1
61	335-1780-00	Spacer	1
62	335-1781-00	Spacer	1
63	750-2247-01	Spring	1
64	347-1346-01	Insulator	1

■CIRCUIT DIAGRAM:



■PRINTED WIRING BOARD:



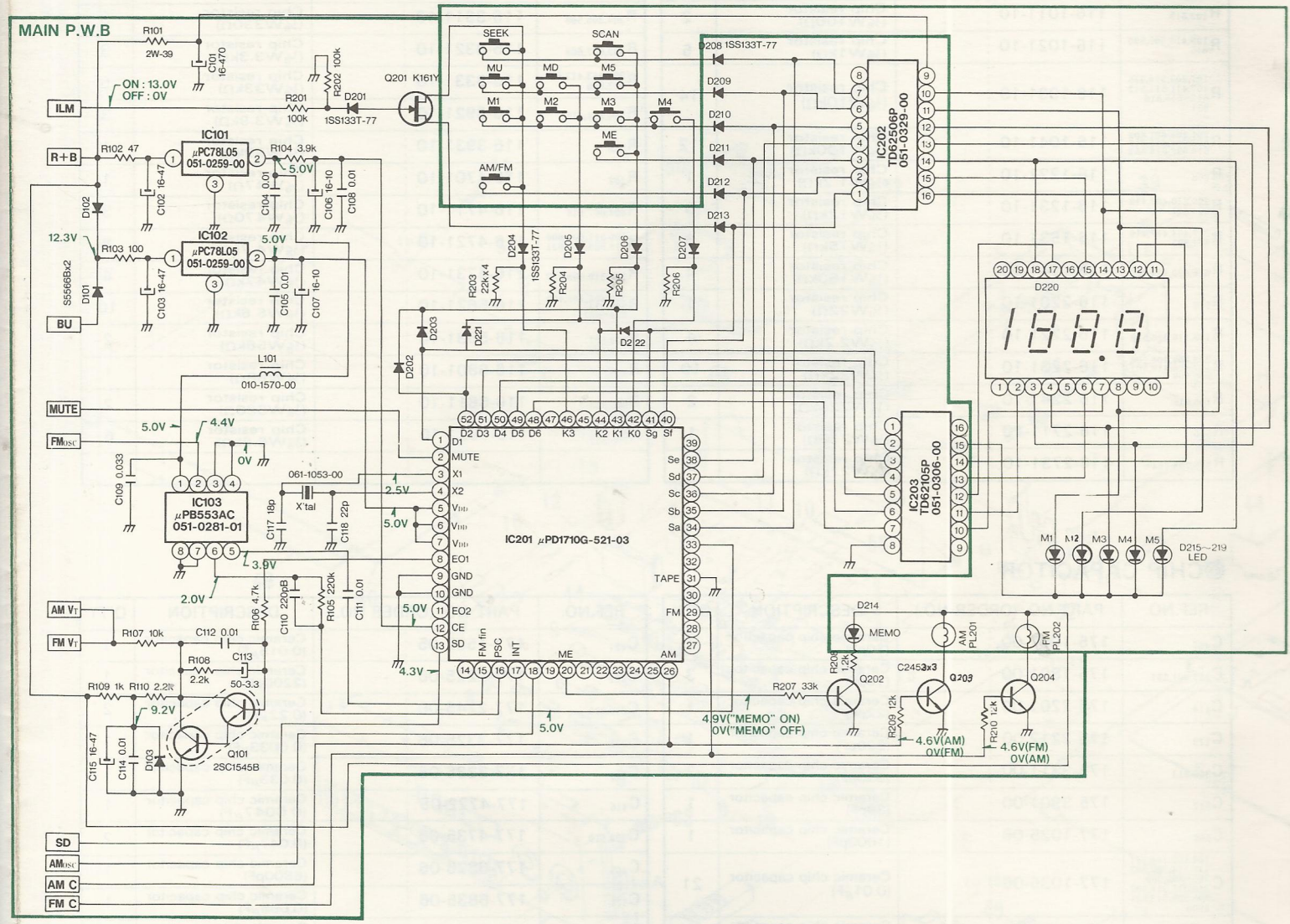
1	FRONT-RIGHT +
2	+13.2V (for AMP.)
3	FRONT-LEFT +
4	FRONT-RIGHT −
5	FRONT-LEFT −
6	GROUND

1	L-CH INPUT
2	ILLUMINATION
3	R-CH INPUT
4	+13.2V (for AMP.)
5	SIGNAL EARTH
6	L-CH OUTPUT
7	R-CH OUTPUT
8	EARTH

1	REAR-RIGHT +
2	+13.2V (for AMP.)
3	REAR-LEFT +
4	REAR-RIGHT −
5	REAR-LEFT −
6	GROUND

A	ILLUMINATION
B	+13.2V
C	POWER ANT.

A	BACK UP (+13.2V)


MAIN P.W.B
ILM
R+B
BU
MUTE
FM OSC
AM VT
FM VT
SD
AM OSC
AM C
FM C
ON : 13.0V
OFF : 0V
IC101
μPC78L05
051-0259-00
IC102
μPC78L05
051-0259-00
IC103
μPB553AC
051-0281-01
IC201 μPD1710G-521-03
IC202
TD62506P
051-0329-00
IC203
TD62105P
051-0306-00
Q101
2SC1545B
Q201 K161Y
Q202
Q203
Q204
L101
010-1570-00
X'tal
061-1053-00
SEEK
SCAN
MU
MD
M1
M2
M3
M4
M5
ME
AM/FM
D208 1SS133T-77
D209
D210
D211
D212
D213
D220
D214
MEMO
D215~219
LED
12.3V
5.0V
4.4V
4.3V
3.9V
2.5V
2.0V
9.2V
4.9V("MEMO" ON)
0V("MEMO" OFF)
4.6V(AM)
0V(FM)
4.6V(FM)
0V(AM)