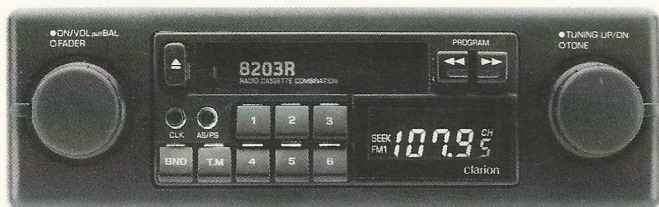


clarion Service Manual



AM/FM STEREO CASSETTE RECEIVER Model **8203R** (PE-9510A)

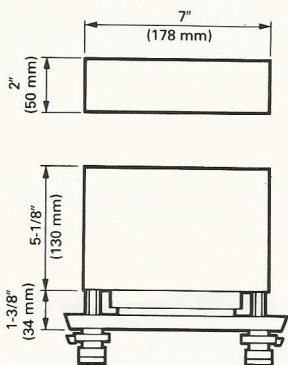
■ SPECIFICATIONS :

(The specifications for this product were determined and are presented in accordance with specification standards established by EIA)

General

Power supply voltage : DC 14.4V
(10.8 to 15.6V allowable)
Current consumption : Less than 3A
Load impedance : 4 ohms.
(4 to 8 ohms. allowable)

Dimensions :



AM Section

Frequency range : 530kHz to 1710kHz
Usable sensitivity.(20dB S/N) : 20μV

Tape Section

Tape speed : 4.76cm/s.(1-7/8ips)
Wow & Flutter : 0.1% W.R.M.S.
Stereo separation : 45dB at 1kHz
Signal/Noise ratio : 53dB Norm(120μs)
Frequency Response(± 3dB)
120μs(normal) : 30Hz to 14kHz

POWER AMPLIFIER

Maximum Power Output : 12W Total(6W/ch.)
Continuous Average : 3.2 W/ch.
Power Output : 4ohms, 50Hz to 20kHz at 1% THD

PRE-AMPLIFIER

Tone(@ 10kHz) Action : -10dB

FM Section

Frequency range : 87.9MHz to 107.9MHz
Usable sensitivity : 12dBf
50dB Quieting sensitivity : 17dBf
Alternate channel selectivity : 70dB
Stereo separation : 35dB at 1kHz, 60dBf input
Frequency response : 30Hz to 15,000Hz, ±3dB

COMPONENTS :

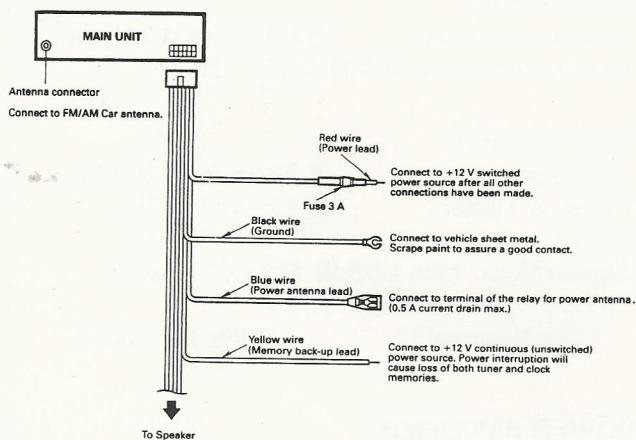
8203R(PE09510A-A)

Main unit	1	Parts bag	B2009601100B	1
Bracket, rear MTG	1	Screw, Tapping	M12115015012	(1)
Gasket, nose piece	1	Clip Install	B2007401000A	(1)
Extention lead	1	Stud Install	B2006302700A	(1)
	1	Washer, Plain	M51100050012	(1)
Escutcheon	1	Nut, Hex	M31200050012	(1)
Parts bag	1	Nut, Hex	B2009200300A	(4)
Knob Inner(Built-in Spring)	(2)	Washer Flat	B2009100701A	(4)
Knob outer	(2)			

FEATURES :

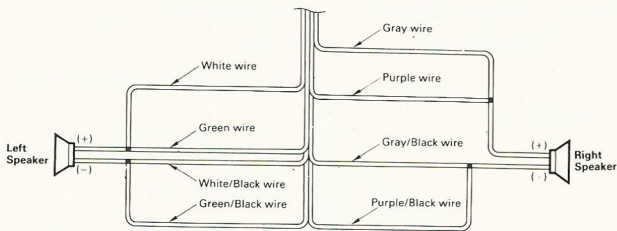
Electronic Quartz-Locked PLL Tuning ■ 12 FM/6 AM Touchbutton Memory ■ Seek Up/Down Tuning ■ Preset Station Scan (PS) ■ Automatic Station Store (AS) ■ 1710 kHz Expanded AM Band ■ Switchable Frequency Spacing Tuner ■ Auto DX/LO ■ Dual Gate FET/Balanced Mixer FM Front End ■ Signal Actuated Stereo Control (SASC) ■ Optimum IF Filter ■ Soft Muting ■ Auto Reverse with Dual Azimuth Adjustment ■ Locking FF/REW ■ Electronic Bridge Servo Motor ■ Hard Permalloy Tape Head ■ Illuminated Tape Door ■ Max. Power Output 12 Watts (6W/Ch) ■ Tone Control ■ 4-Way Balance Controls ■ LCD "Full Information Display" ■ Digital Quartz Clock ■ Night Illumination ■ Power Antenna Activator ■ Compact Chassis (7"×2"×5-1/8")

WIRE CONNECTION :



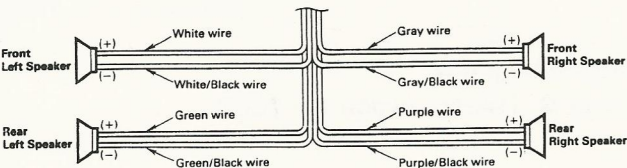
2-SPEAKER INSTALLATION

* This connection disables Front/Rear Fader control.



IMPORTANT
Improper installation may cause damage to your unit or car. If you do not have appropriate experience, use a qualified installer. Cutting chassis leads voids warranty.

4-SPEAKER INSTALLATION



1. Connect wires together securely for good contact. Insulate any exposed wires with tape.
2. Use 4 to 8 ohms impedance speakers.

POWER SWITCH/VOLUME CONTROL KNOB
Turn clockwise to switch unit on and increase volume.
Pull the knob toward you and lock into position.
Adjust sound balance of left and right speakers for best stereo image.
Depress the knob slightly to return to the volume mode.

BALANCE CONTROL
This will instruct the tuner to briefly tune into each of the stations stored in the touch-button memory.
Press this button to activate Preset Station Scan.
If you are driving in an area where you are unfamiliar with available stations, your radio will AUTOMATICALLY program the preset memory for you.
Press the PS button for MORE THAN TWO SECONDS and Auto Store will be activated. The Tuner will start to scan the band from the lowest frequency and will store SIX Strong stations available in the area. On the FM band, FM1 and FM2 may be Auto Stored separately.
IF SIX STATIONS ARE NOT AVAILABLE YOU MUST PRESS THE PS BUTTON AGAIN TO STOP SCANNING.
IF A PARTICULAR PRESET BUTTON IS PROGRAMMED FOR A STATION WHICH IS NOT RECEIVABLE IN YOUR AREA, THE TUNER WILL BYPASS THAT PRESET POSITION.

EJECT BUTTON
Depress the button to stop play and eject the cassette.

FADER CONTROL KNOB (4-speaker system)
Adjusts the volume between front and rear speakers.

CASSETTE TAPE DOOR

SYSTEM UPGRADE FLEXIBILITY
Your unit will work with improved speakers, equalizers and power amplifiers offered by Clarion. Ask your dealer for technical information on these items to expand your listening enjoyment.

PRESET STATION SCAN (PS)
Press this button to activate Preset Station Scan.
This will instruct the tuner to briefly tune into each of the stations stored in the touch-button memory.
Each station will be heard for approximately FIVE SECONDS and so on. When you activate PS using the FM band, the tuner will scan the FM1 position, and so on. When you activate PS when using the FM band, the tuner will scan the FM1 band (6 STATIONS) and then the FM2 (6 STATIONS). To STOP scanning, press EITHER the PS button again or press the appropriate preset button that you decide upon.
IF A PARTICULAR PRESET BUTTON IS PROGRAMMED FOR A STATION WHICH IS NOT RECEIVABLE IN YOUR AREA, THE TUNER WILL BYPASS THAT PRESET POSITION.

FM/FM1/FM2 BAND SELECTOR
Press this button to select between AM, FM1 and FM2. When selecting an FM band either FM1 or FM2 will appear in the readout.

TUNING MODE SELECTOR
Press this button to select the Manual or Seek Tuning mode. SEEK will appear in the display when the tuner is in SEEK mode. In the MANUAL Tuning mode, the UP/DOWN Tuning Control will instruct the tuner to go to the next frequency in the band. In the SEEK Tuning mode, the UP/DOWN Tuning Control will instruct the tuner to go to the next receivable station on the band.

CLOCK SELECTOR
Press this button for momentary TIME or FREQUENCY display. To change Display Priority, see instructions under "DIGITAL DISPLAY" section.
During the time display, press and hold the "CLK" button. Then turn the Tuning knob clockwise to set the minutes or counterclockwise to set the hours.

FM/FM1/FM2 BAND SELECTOR
Press this button to select between AM, FM1 and FM2. When selecting an FM band either FM1 or FM2 will appear in the readout.

12 FM and 6 AM TOUCHBUTTON MEMORY
Up to 12 FM and 6 AM Stations may be stored in memory for future recall.
1) Select the desired station to be stored by either Seek or Manual Tuning.
2) Press the desired touchbutton for MORE THAN TWO SECONDS. Sound is muted temporarily. When you hear the station again, it has been stored into Memory. In the display, an indication corresponding to the touchbutton you have pressed will be displayed.
YOU MAY STORE 6 STATIONS ON FM1 AND 6 STATIONS ON FM2. PRESS THE BAND SELECTOR TO SELECT BETWEEN FM1 AND FM2. A BAND INDICATOR WILL SHOW WHICH BAND HAS BEEN SELECTED.

FF/REW/TAPE PROGRAM BUTTONS
To advance the tape at high speed, depress the button whose arrow is in the SAME direction as the tape play arrow in the display.
To rewind the tape at high speed, depress the button whose arrow is in the OPPOSITE direction to the tape play arrow in the display.
Depress both FF and REWIND buttons simultaneously to play the reverse side of the tape. The other arrow in the display will light to show the new tape direction.

TO STOP FF OR REWIND ACTION
Lightly press the opposite button to release FF or REW.

TAPE PROGRAM BUTTONS
Depress both FF and REWIND buttons simultaneously to play the reverse side of the tape. The other arrow in the display will light to show the new tape direction.

UP/DOWN TUNING CONTROL
Turn the control to the left to tune down the band. Turn the control to the right to tune up the band.

FREQUENCY/CLOCK DIGITAL DISPLAY

FM STEREO INDICATOR

FM1 INDICATOR

FM2 INDICATOR

SEEK INDICATOR

PRESET CHANNEL INDICATOR

Clarion

1. Automatic Distance/Local Circuit
Automatically adjusts the FM receiver sensitivity for ideal reception based on the signal strength of both the desired and nearby stations. This is a new FM circuit using a Dual Gate FET/Balanced Mixer which effectively reduces interference distortion from nearby strong radio signals. This circuit conveniently monitors weak stereo FM signals for optimum reception. When the stereo signal falls below the level of noise-free reception, the SASC adjusts the tuner to reduce objectionable noise by changing frequency from stereo to mono mode and reducing high frequency response.

2. Signal Activated Stereo Control (SASC)
This unit comes integrated with a new tuner that can receive stations up to 1710 KHz.

3. 1710 KHz Expanded AM Band
This unit comes integrated with a new tuner that can receive stations up to 1710 KHz.

4. Switchable Frequency Spacing
The initial setting from the factory is 10 kHz step for AM and 200 kHz step for FM. For outside Continental U.S. use, you can switch the frequency step and frequency range by the following procedure:
1. While the tuner is ON, press the BAND selector and hold it.
2. Then turn the tuning knob counterclockwise.
3. Repeat above 1 and 2 to return to original setting.

Note: YOU WILL LOSE STATIONS IN THE PRESET MEMORY WHEN YOU SWITCH FREQUENCY SPACING.

5. System Upgrade Flexibility
Your unit will work with improved speakers, equalizers and power amplifiers offered by Clarion. Ask your dealer for technical information on these items to expand your listening enjoyment.

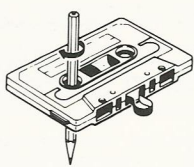
	NEW SETTING	INITIAL SETTING
AM	9 KHz	10 KHz
FREQUENCY SPACING	531 to 1629 KHz	530 to 1710 KHz
FREQUENCY RANGE	200 KHz	200 KHz
FREQUENCY SPACING	87.5 to 107.9 MHz	87.5 to 107.9 MHz
FREQUENCY RANGE	87.5 to 107.9 MHz	87.5 to 107.9 MHz

RADIO MODE: Tuner Frequency Display. For momentary Clock display, press the "CLK" button.
TAPE MODE: Tuner Frequency Display. For momentary Clock display, press the "CLK" button.
TAPE MODE: Clock Time Display. (Time Display Priority).
To change the display priority press and hold the "CLK" button and then press the "Tuning Mode" button subsequently.
To change back to Frequency Display Priority, repeat this procedure.

PRIORITY SELECTOR
Your new Clarion unit has been engineered to allow you to change the display priority from Radio Frequency to Clock time while in the radio mode. This unit is set for Frequency Display Priority at time of shipment.
To change the display priority press and hold the "CLK" button and then press the "Tuning Mode" button subsequently.
To change back to Frequency Display Priority, repeat this procedure.

CASSETTE PRECUTION NO CARE :

- 1. Slack tape can cause operating difficulties. Remove tape slack before inserting cassette, particularly when using C-90 or pre-recorded cassettes.
- 2. Use C-30 to C-90 cassettes. Avoid use of C-120 or longer cassettes. (The very thin tape may stretch or break)
- 3. Clean head periodically with good commercial head cleaner. Avoid touching head with magnetic or hard objects.
- 4. Don't oil the cassette mechanism.
- 5. Always remove cassette from mechanism when not in use. Exposure to direct sunlight, extreme temperatures or high humidity may damage cassettes.



ADJUSTMENTS :

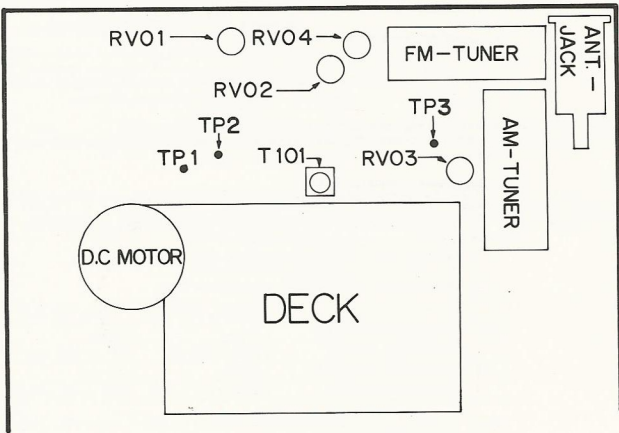
AM Circuit

Item	Input	Frequency	Output	Method of adjustment	Instruments required	Remark
• IF • Tracking	PRE-ADJUSTED TUNER					

FM Circuit

Item	Input	Frequency	Output	Method of adjustment	Instruments required	Remark
OV	Antenna receptacle	98.1MHz, 55EMF dBμ	TP1 TP2	Connect a digital voltmeter to TP1 and TP2 adjust IFT T101 to OV	• Digital voltmeter • SSG	
Separation		98.1MHz, 55EMF dBμ Modulation 100% (Signal 90%, PL10%)	Meter across the speaker Voice Coil	Adjust RV03 so that left and right Separation becomes maximum and the L, R outputs become equal.	• MPX ST • S.S.G • V.T.V.M	
19KHz			TP3	Connect a frequency counter to TP3 and adjust RV04 to 19kHz	• MPX Stereo SG • VTVM	
S.A.S.C		Set to the specified modulation(30%). assuming an FM SSG output 65dB(98.1MHz) modulation frequency 6.3kHz	Meter across the speaker2 Voice Coil	• Set the output level OdBm (=0.775V) using the volume control. • Set the FM SSG output to 38dB and adjust RV02 so that the output level is 2dB down	• Stereo SG • Oscilloscope • V.T.V.M • Frequency SG	
Seek stop sensitivity (SD)		Tune at 98.1MHz and input a 19dB(non-modulated) SSG signal	U101 ⑦ pin	Adjust RV01 so that voltag of IC8129Z 7 PIN is ov→5V, when SSG signal is 25dB	• SSG • Digital voltmeter	

ADJUSTMENT POINT



TROUBLE SHOOTING GUIDE :

Good ground connections eliminate most electrical noise problems and require tight contact with the metal vehicle chassis. Remove plastic, paint or rust for good electrical contact.

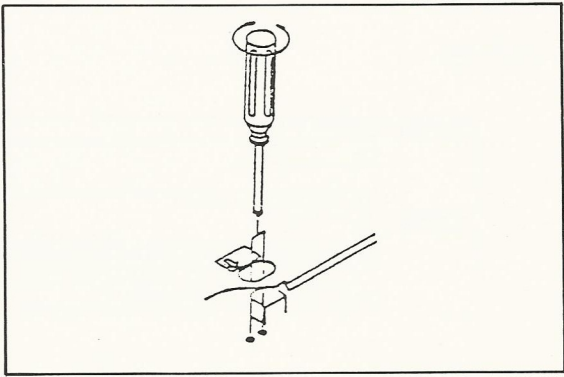
Symptom	Possible cause	Solution
No power	Blown fuse	Replace if blown with same rating (3amps)
	Bad power connection	Securely connect leads
No sound one channel	Misadjusted balance	Check balance control
	Damaged lead or speaker	Interchange left and right channel speaker leads if no sound from other side, check or replace speaker wire. If no sound from same side, replace speaker
Noise, Alternator whine (Radio and Tape)	Weak Battery or low fluid	Replace battery if weak or add fluid
	Corroded battery posts	Clean posts for good contact
	Poor filtering	Add filter in power lead to unit
Noise, Pulse (Radio only)	Antenna location wrong	Move antenna away from noise source
	No factory noise suppression	See car dealer or note below
Poor reception	Insensitive windshield ant.	Replace with good sensitivity whip antenna
No memory or wrong time	Memory back up lead (Yellow wire) not energized	Connect to battery or continuous power source

All Clarion units are tested for electrical noise rejection during manufacture. Electrical noise can be a vehicle systems problem. See a professional installer or your Clarion dealer for assistance in noise suppression techniques and-filter accessories.

TAPE MECHANISM :

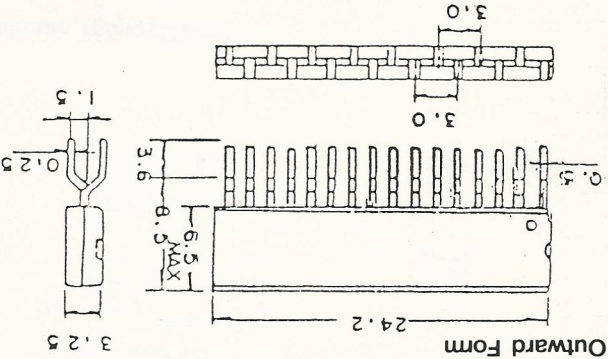
Head-azimuth Adjustment

Make playback for the azimuth-tape (8kHz, -10VU), and turn each azimuth-adjusting screw to make each FWD & REV maximum. After adjustment, make adhesion with bond.



KIA 8129Z FM IF

LA1135 AM TUNER



Absolute maximum ratings(Ta=25°C)

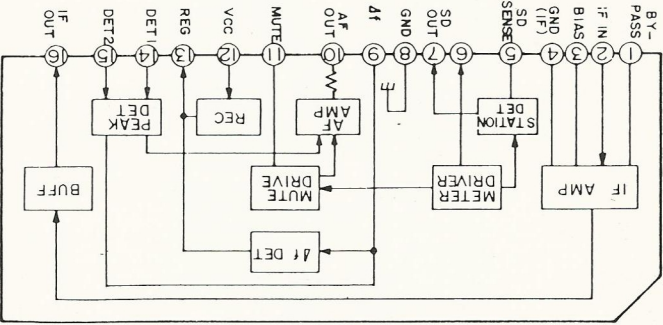
Item	Symbol	Rating	Unit
Supply Voltage	V _{cc}	16	V
Power Dissipation	P ₀	750	mW
Tuning Indication Current	I _T max	20	mA

Electrical Characteristics

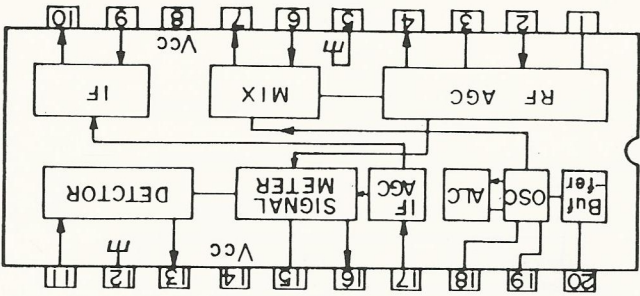
(V_{cc}=8.5V, f_i=10.7MHz, D_{ev}=+75kHz, f_m=400Hz
V_i=80dBμ, Sw1=D(Mute off), Sw2=off)

Item	Symbol	Test Conditions	Min	Typ	Max	Unit
Limiting Sensitivity	V _i (lim)			33	35	dBμ
Detection Output	V _{0D}		350	430	550	dBμ
Total Harmonic Distortion Ratio	THD	DeV=+22.5kHz RD=1.3KΩ	0.04	0.5		%
Signal to Noises Ratio	S/N		71	78		dB
AM Rejection Ratio	AMR	AM=30%		55		dB
Signal Meter Output	VSM1	V _i =0dBμ	0	0.3		V
	VSM2	V _i =50dBμ	0.5	1.5	2.5	
	VSM3	V _i =70dBμ	2.6	3.8	5.1	
	VSM4	V _i =100dBμ	5.4	6.5	6.8	

Block Diagram



Block Diagram



Electrical Characteristics

(Ta=25°C, V_{cc}=8V, f_i=1MHz, f_m=400Hz)

Item	Symbol	Conditions	Min	Typ	Max	Unit
Detection Output	V ₀ (1)	16dBμ input 30%mod	-29.0	-25.0	-21.0	dBm
	V ₀ (2)	74dBμ input 30%mod	-15.0	-12.0	-9.0	dBm
Signal to Noise Ratio	S/N	74dBμ input 30%mod	51.0	56.0		dB
Total Harmonic Distortion	THD	74dBμ input 30%mod	0.3	1.0		%
	VSM(1)	Quiescent	0	0.3		V
Output	VSM(2)	130dBμ input	3.5	5.0	7.5	V
	IF R	f _i =600KHz		77.5		dB
Image Frequency Interference	IMR	f _i =1400KHz		52.0		dB

Performance

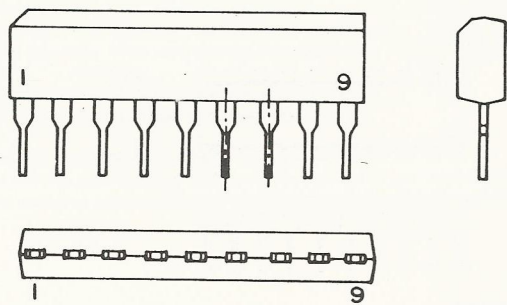
- RF wide-band AGC
- Detector
- AGC(Normal)
- Local oscillation buffer output
- Local oscillation buffer output

Maximum Ratings(Ta=25°C)

Item	Symbol	Condition	Rating	Unit
Supply Voltage	V _{cc} max	Pin No. 8,14	16	V
Output Voltage	V ₀	Pin No. 7,19	24	V
Input Voltage	V _i	Pin 6	5.6	V
Power Dissipation	P ₀ max		730	mW

KIA8125S
DUAL PRE-AMPLIFIER

Outward Form



Maximum ratings(Ta=25℃)

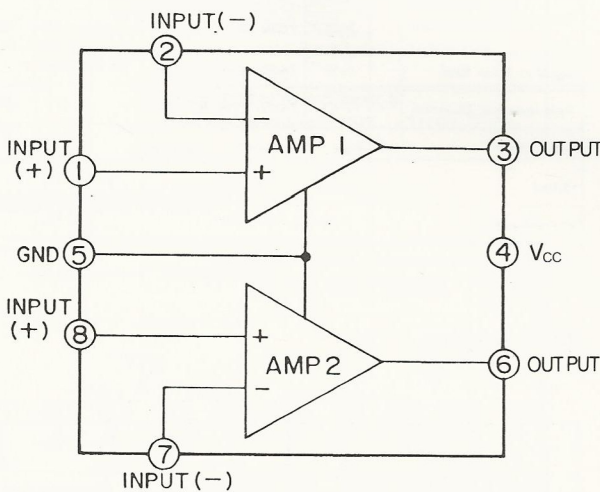
Item	Symbol	Rating	Unit
Supply Voltage	V _{cc}	18	V
Power Dissipation	P _D	700	mW

Electrical Characteristics

(V_{cc}=6V, f=1MHz, R_g=600Ω, R_L=KΩ, Ta=25℃)

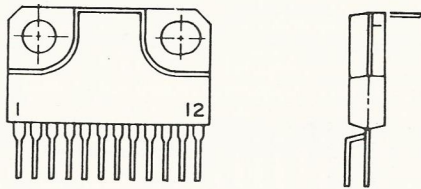
Item	Symbol	Condition	Min	Typ	Max	Unit
Voltage Gain	GV _o	V _{out} T= -100dBm	75	100		
	GT _v	V _{out} T= -0dBm	38	41	44	dB
Channel Separation	CH spe	f=10KHz, V _{out} =0dBm		65		dB
Total Harmonic Distortion	THD	V _{out} =0dBm		0.04	0.25	%

Block Diagram



KIA7299P 5.8W×2CH POWER AMP

Outward Form



Maximum ratings(Ta=25℃)

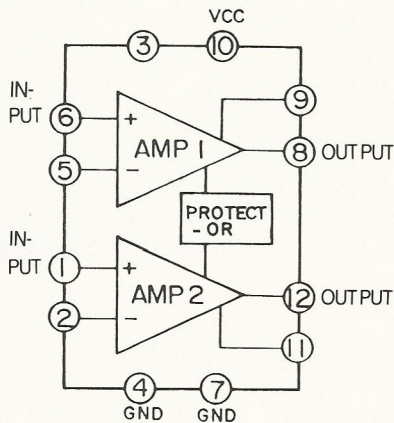
Item	Symbol	Rating	Unit
Supply Voltage	V _{cc opr}	18	V
Power Dissipation	P _D	25	W

Electrical Characteristics

(V_{cc}=13.2V, R_L=4Ω, R_g=600Ω, f=KHz, Ta=25℃)

Item	Symbol	Condition	Min	Typ	Max	Unit
Output Power	P _{OUT}	THD=10%	5	5.8		W
Total Harmonic Distortion	THD	R _{OUT} =01W		0.06	0.3	%
Voltage Gain	G _v	V _{OUT} =0dBm	50	52	54	dB

Block Diagram



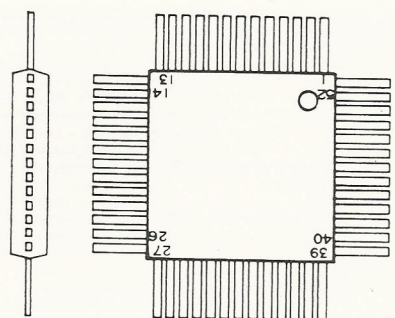
μPD 1708AG-886 MICRO COMPUTER

I. Description
 This IC, which contains a prescaler that operates up to 150MHz, PLL and LCD driver(1/2 duty, 1/2 bias), in a chip is a CMOS microprocessor for digital tuning and has been developed for use to the FM/MW radio in the U.S. and Australia.

II. Features

- (1) 5V±10% single power supply.
- (2) Low current-consuming CMOS.
- (3) 3 bands with FM1/FM2/MW.
- (4) UP/DOWN channel selectable by AUTO/MANUAL.
- (5) Preset and memory available for FM1/FM2/MW.

III. Outward Form



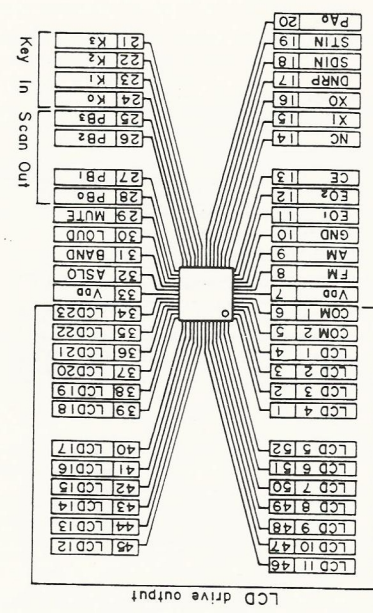
IV. Absolute Maximum Ratings (Ta=25±2°C)

Item	Symbol	Rating	Unit
Supply voltage	V _{DD}	-0.3~+6.0	V
Input voltage	V _I	-0.3~+V _{DD} +0.3	V
Output voltage	V _O	-0.3~+V _{DD} +0.3	V
Output sink current	I _O	10	mA

V. Receive Bands

Area	BAND	Frequency Range	Space	Channel	Comparative intermediate
U.S.A	MW	530~1,710kHz	10kHz	200kHz	10.7kHz
	FM	87.9~107.9MHz	200kHz	25kHz	10.7kHz
Australia	MW	531~1,629kHz	9kHz	9kHz	450kHz
	FM	87.9~107.9MHz	100kHz	25kHz	10.7kHz

VI. Terminal Connection



Terminal Connection Table

Pin No.	Symbol	Terminal Name	Function	I/O
34-52	LCD23-LCD5	Segment	This is a segment signal output terminal for the LCD panel. Display up to 46 dots is possible by using a max. 10mA current.	Push-Pull
1-4	LCD4-LCD1	Output	It allows 3 types of values, i.e., GND, 1/2 V _{DD} and V _{DD} . A segment with a potential difference of -V _{DD} which is output at 5ms intervals and at a frequency of 50Hz.	Push-Pull
5	COM2	LCD Common	LCD23 will be lighted. (Note 1)	Push-Pull
6	COM1	Output	was produced between these terminals and LCD.	Push-Pull
7, 33	VDD	Power Supply	This is the power supply terminal of the device. When the device operates, a voltage of 5V ± 10% will be supplied. When the internal data memory (RAM) is retained (or when the CKSTP instruction is executed), the voltage can be reduced down to 2.5V. As pin 7 and pin 33 are connected inside the chip, this power supply will operate with only the voltage supplied either by the former or the latter.	Push-Pull
8	FM	FM Local Oscillation	This allows local oscillating outputs up to 10-150MHz. When the internal data memory (RAM) is retained (Note 2).	Input
9	AM	AM Local Oscillation	This allows local oscillating outputs up to 0.6-50MHz. This terminal will be selected at time of the direct dividing and become active. (Note 2)	Input
10	GND	Ground	These are the error output terminals for the PLL. If the frequency produced by dividing the local sending frequency (VCO output) is higher than the standard frequency, these terminals will allow high levels to be output, while if it is lower than the standard frequency, the same terminals will allow low levels to be output. If it is the same as the standard frequency, a floating will result. In addition, the E01 and E02 will output the same waveform and therefore using E01 or E02 terminal is optional.	CMOS 3-state
11	E01	Error		
12	E02	Output		
13	CE	Chip Enable	This is a selection signal input terminal for the device. Set "high level" when letting the device operate normally. This terminal, during low level, causes the PLL to become a prohibited status. However, it will not accept inputs less than 1.34V.	Input
14	NC	NO	As this terminal has not been connected to the internal chip, it cannot be used. However, it can be connected freely to OPEN, GND or VDD.	-
15	XI	XTal	This is a connection terminal for a crystal oscillator. Connect a 4.5MHz crystal to it. Adjust the oscillation frequency while observing the XO terminal.	Input
16	XO			
17	DNRP	DNR / -MO / ST	(R) Either the DNR or the ST-MO can be selected by a diode switch (see Diode Sw. Matrix operation Table) as follows. (1) When DNR was selected : Same as above. (2) When DOL-C was selected : See table 1	CMOS Push-Pull
18	SDIN	SD (DOL-B)	(R) A input port for SD signal. (See Momentary Sw. No. 9 PS) (T) "H" : SD input (T) "L" : No SD input (T) See (T), (2) and Momentary Sw. No. 10 on above DNRP	Input
19	STIN	ST	(R) A input port for the STEREO signal (T) "H" : ST input (T) "L" : No ST input (T) An input port for the tape tuning indicator display.	Input
20-24	K4	Key Return Signal	These are the key return signal input terminals on the external key matrices. (K4=PAO)	Input
25-28	PB3	Scan Out	This is a 4-bit output, it is used as the key return signal source of the key matrix.	CMOS Push-Pull
29	MUTE	PB0	(R) (T) This is a muting signal output port. "H" : Mute, ON (T) "L" : Mute, OFF	CMOS Push-Pull
31	BAND	BAND (APC)	(R) This is a controlled output for FM/MW band switching. (T) This is an APC controlled signal output port (See Momentary Sw. No. 4) (T) "H" : FM (T) "L" : MW (T) "H" : Controlled output, ON (T) "L" : Controlled output, OFF	CMOS Push-Pull

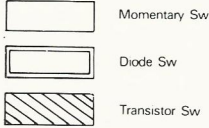
Pin No.	Symbol	Terminal Name	Function	I/o
32		LO/DX (MTL)	(R) This is a Local/DX signal output port. "H" : Local "L" : DX (T) This is an MTL controlled output port. (See Momentary Sw. No. 20) "H" : Controlled output. ON "L" : Controlled output. OFF	CMOS Push-Pull

* In the above Table, () in the terminal name indicates the name in tape mode. (R) indicates the function in radio mode. (T) indicates the function in tape mode.
(Note 1) When the power is applied (VDD=Low → High) and when the CKSTP instruction is executed a low level (display OFF mode) will be output automatically.
(Note 2) Because it incorporates an AC amplifier, it is necessary to input by cutting with a capacitor.

VII. Key Matrix

1. Key Matrix Connection Table

	PA0 20Pin	K3 21Pin	K2 22Pin	K1 23Pin	K0 24Pin
PA0 20Pin	2	T-MODE 1	C 2	B 3	A 4
PB0 28Pin		R/T 5	CLKSEL 6	USA 7	VAND 8
PA1 27Pin	9	(M-UP) 10	(M-DOWN) 11	RCAL 12	(SEEK) 13
PA2		UP	DOWN		TUNE
PA2 26Pin	14	M2 (dbx) 15	M3 (DOL-C) 16	M4 (DOL-B) 17	M5 (APC) 18
PB3 25Pin	20	(ST-MO) 21	(DNR) 22		
		APC	DOL-B	LOUD	M6 (MTL) 19

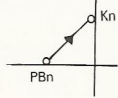


2. Key Matrix Connection and Switch Form

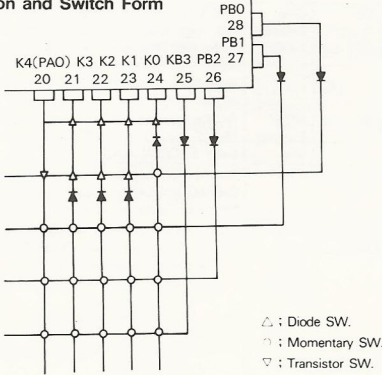
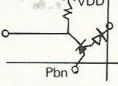
Momentary Switch



Diode Switch



Transistor Switch



△ : Diode SW.
◑ : Momentary SW.
▽ : Transistor SW.

3. Diode Sw

The initial setting diode matrix will be read when the power is applied at the beginning (VDD : LOW → High) and when the EC terminal changes from the low to the high level.

In the Table below, "O" means the diode switch is OFF (Open) and "1" does the diode switch is ON (Short).

No.	Switch name	Function
①	T-MODE	This is a switch to be used when the function of "TUNE" key 13 is set. 1 : "TUNE" key will become a SEEK up key and UP/DOWN keys 10, 11, irrespective of the selected channel mode. will become Manual, and UP/DOWN key. 0 : "TUNE" key can become a channel selection mode key and, by auto switches (A, B, C) and in T1 or T2 mode, the UP/DOWN key can become a Man, Auto, Scan UP/DOWN key (See Function of TUNE 13 on Momentary Sw.)
②	C	This is a switch to be used when a function mode is set.
③	B	It provides a function mode to be executed by the combination of ON/OFF of diode switches A, B and C.
④	A	(See Diode Sw. Matrix Operation Table)
⑥	CLKSEL	Use this switch when setting for the display or no display of the clock. 1 : Clock is to be displayed. 0 : Clock is not to be displayed.
⑦	USA	Use this switch when setting the destination. 1 : Australia 0 : U.S.A.

Diode Sw. Matrix Operation Table

Diode SW				Function									
C 2	B 3	A 4		TUNE	Dual	DOL B	DOL C	dbx	AMBW	DNR	APC	MTL	LOUD
0	0	0		T1									
0	0	1		T1									
0	1	0		T1									
0	1	1		T1									
1	0	0		T2									
1	0	1		T1									
1	1	0		T1									
1	1	1		T1									

* 0 : OFF (Open)
1 : ON (short)
See function of TUNE or on Momentary Sw

4. Transistor Sw.

No.	Switch name	Function
⑤	R/T	Use this switch when seeing if it is the tape mode or radio mode. 1 : Radio mode 0 : Tape mode If it is tape mode, the switches and outputs on the radio will become OFF condition while if it is radio mode, the switches and outputs on the tape will become OFF condition.

5. Momentary Sw.

No.	Switch name	Function
⑧	BAND	Use this switch when switching the band. Each time the key is pushed, switching will be made as FM1, FM2, MW and so on, and will receive the last channel memory of a newly switched band. Also, "Low" at time of AM or "High" at time of FM will be output from the controlled signal output terminal for switching FM and MW. If this key is pushed during display of the clock, the key will be accepted to cause display of the frequency. According to the priority or if the priority is clock display, a clock display will be made in about 5 seconds

⑨ PS/AS Use PS/AS when making a preset scan or an auto store. Either of the two can be selected by the way it is pushed as follows.
Continue to push the key more than 2 seconds for "Auto memory" push and touch off the key less than 2 seconds for "Preset SCAN"

(1) Preset scan (PS)

For the Preset Scan (PS), the channels which have been preset will be called in sequence, i.e., for the MW, channels will be called from 1 to 6 and, for the FM1 will be called from 1 to 6, then channels of FM2 will be called from 1 to 6, these will be repeated as follows (MW)

1 → 2 → 3 → 4 → 5 → 6

(FM)

FM1 1 → 2 → 3 → 4 → 5 → 6 → 1 → 2 → 3 → 4 → 5 → 6

The called channel requires a different handling depending on whether the input of the SD signals on the channel is "High" or "Low"

a) When SD input (pin 18) is "High"

When the SD input "High", the channel will be held. During the holding, the channel will be flashed (1Hz, duty 50%). Then, after reception which continues 5 seconds, proceed to the next preset.

b) When SD input (pin 18) is "Low"

When the SD input is "Low", the muting is not cancelled and therefore there will be no voice output. After waiting about 500ms, proceed to the next preset.

If the key is input during the PS the following handling will be required depending on the key which was input.

Key Name	Handling
BAND, RCAL M1, M6, UP DOWN	Cancel the PS and handle the key
DNR	Retain the PS and handle the invalid key
LOUD	When no selection has been made handle the invalid key
TUNE MTL	No acceptance allowed
PS/AS	Cancel the PS and retain the frequency of that time

If, during PS, the radio is switched to tape and the CE is changed from H to L, the PS will be cancelled. The reception frequency after a return is made to a radio condition by changing the setting from tape to radio and changing the CE from L to H, will become one channel having the SD which was received at the last.

And if it is impossible to receive the channel having the SD even once, the frequency which caused the PS to start will result.

(2) Auto store (AS)

The Auto Store (AS) will make an auto tuning in up direction from 87.9MHz, and will continue to store the channels whose SD (pin 18) have inputs of "High", from M1 to M6 in sequence. After this memorizing up to M6 is completed, M1 will be called to cancel the AS function.

In the first sweep, the auto tuning in the AS will continue to store M1 to M6 in sequence in Local mode (ASLO output (pin 32) "High"). However, when the memorizing up to M6 is not made, Make auto tuning in DX mode (ASLO output "Low") until storing is made up to M6 thereafter, then retain the AS function.

The AS will continue to store the memory by making an auto tuning but the same frequency will not be stored in a different preset channel.

If the Key is input during the AS, the following handling will be required depending on the Key which was input.

Key Name	Handling
BAND, RCAL M1, M6, UP DOWN	Cancel the AS then handle the key
ST-MO DNR LOUD	Retain the AS then handle the key If no selection has been made handle the invalid key
MTL, TUNE	No acceptance allowed
PS/AS	Cancel the AS if even a key has been memorized, call 1ch if no key has been memorized, return the AS to the started frequency to complete handling

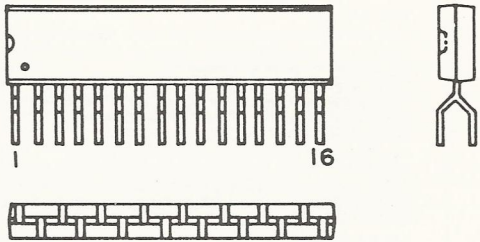
Note that the reception frequency, after the RCAL ⑩ and band 8 are pushed each, then are handled and returned to their original condition (RCAL with display of frequency and BAND by which the AS was done), will become that of when the AS was started.

If, during AS, radio is switched to tape and CE is changed from H to L, the AS will be changed from L to H thereafter, will the same as of when the AS was started.

No.	Switch mane	Function																								
		<p>b) Writing</p> <p>If the preset key is pushed and the pushing is continued more than 7 seconds, the frequency being received at present will be written in the memory corresponding to the pushed key.</p> <p>After a 2-second time to decide whether it is a calling or writing passes the mute will be cancelled, indicating the writing has been completed</p> <p>Same as calling, when a preset is being received at present and if the channel which is being received now is going to be written In the present preset channel, there will be no mute output.</p> <p>It is possible to write even during the clock display. At time when the key is pushed, a display of the frequency being received now will be provided and after deciding time of 2 seconds, this frequency will be written</p> <p>c) During deciding</p> <p>Even if other keys are pushed during deciding on whether it is calling or writing, there will be no effect. During the deciding, the decision will be made only on whether the pushed key has been touched off or not and therefore no their keys will be checked. Also, even if the CE is changed from H to L and the radio is changed to the tape during deciding, there will be no rewriting.</p> <p>If, after then, a return to the radio condition is made after changing the CE setting from L to H and changing the setting from tape to radio, a frequency at time of when the preset was pushed will be provided.</p> <p>(2) Tape mode</p> <p>In the tape mode, each Dual which was set by the initial setting diode will become a function key(See Diode Sw, Matrix Operation Table)</p> <p>14 M1 → (OFF) 15 M2 → dbx 16 M3 → DOL-C 17 M4 → DOL-B 18 M5 → APC 19 M1 → MTL</p> <p>These keys are not always executed in the tape mode but combinations of the initial setting diodes A, B and C (4, 3, 2,)will decide whether the keys are executed or not</p> <p>a) APC, MTL</p> <p>Each time the key is pushed, the controlled output corresponding to the key will reverse, making a display corresponding to the key at the same time.</p> <p>b) DOL-B, DOL-C, dbx</p> <p>Each time the key is pushed, ON/OFF will be repeated. Combinations of two ports will cause controlled outputs to be made. Also, a display corresponding to the output will be made. However, there will be no display of dbx.</p> <p>DOL-B DOL-C and dbx do not mean that the two turn ON at the same time. They mean that, if dbx is turned ON while DOL-B is ON, DOL-B turns OFF and dbx turns ON.</p> <table><tr><td>DOL 17</td><td>DOL C 16</td><td>dbx 15</td><td>Display</td><td>SDIN (18pin)</td><td>DNRP (17pin)</td></tr><tr><td>ON</td><td></td><td></td><td>DOL-B</td><td>H</td><td>L</td></tr><tr><td></td><td>ON</td><td></td><td>DOL-C</td><td>L</td><td>H</td></tr><tr><td></td><td></td><td>ON</td><td>BLANK</td><td>H</td><td>H</td></tr></table> <p>If the Dual has not been selected by the diode switch, and invalid key will be cancelled in the tape mode.</p>	DOL 17	DOL C 16	dbx 15	Display	SDIN (18pin)	DNRP (17pin)	ON			DOL-B	H	L		ON		DOL-C	L	H			ON	BLANK	H	H
DOL 17	DOL C 16	dbx 15	Display	SDIN (18pin)	DNRP (17pin)																					
ON			DOL-B	H	L																					
	ON		DOL-C	L	H																					
		ON	BLANK	H	H																					
20	MTL	This key will work as an execution mode if the Dual has not been selected by the diode switch in the tape mode(See Diode Sw, Matrix).																								
21	(ST/MO) APC	<p>Each time the key is pushed, ON/OFF will be repeated. At time of ON, "High" will be output from output port(pin 32) together with the display.</p> <p>This key serves in two ways according to the Diode Sw Matrix.</p> <p>(1) APC</p> <p>If, in the tape mode, the Dual selection by the Diode switch has not been made but the DOL-B has been selected by the Diode switch, an APC execution mode will be caused.</p> <p>Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from pin 31 to be made.</p> <p>(2) ST-MO</p> <p>If, in the radio mode, the ST-MO has been selected by the Diode switch and the MW is being received, an ST-MO execution mode will be caused</p> <p>Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from Pin 17 to be made.</p> <p>Since APC and ST-MO have a different execution mode, both respond independently even if both APC and ST-MO have been selected.</p>																								
	(DNR) DOL-B	<p>This key serves in two ways according to the Diode Sw Matrix.</p> <p>(1) DOL-B</p> <p>If, in the tape mode, the Dual has not been selected by the Diode switch and the DOL-B has been selected, a DOL-B execution mode will be caused</p> <p>Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from Pin 18 to be made.</p> <p>(2) DNR</p> <p>If, the DNR has been selected by the Diode switch, a DNR execution mode will be caused.</p> <p>Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from Pin 17 to be made. Also, this key can be accepted in both the radio and tape modes.</p> <p>(Note) DOL-B and DNR have a common execution mode so that it does not happen that the two are selected at the same time.</p>																								
23	LOUD	This key is used when the Loudness function is controlled. Each time this key is pushed, ON/OFF will be repeated. When it is ON, "Low" will be output from the output port(pin 30), with the display made at the same time.																								
		This key can be accepted in both the radio and tape modes																								

LA3370 PLL FM MULTIPLEX STEREO DEMODULATOR

Outward Form



Maximum ratings(Ta=25℃)

Item	Symbol	Rating	Unit
Supply Voltage	V _{cc} max	16	V
Power Dissipation	P _o max	520, (Ta≤45℃)	mW

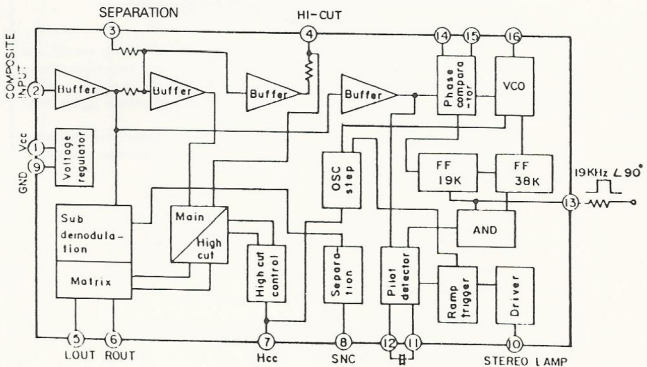
Electrical Characteristics

(Ta=25℃, V_{cc}=10V, V_i=300mV, f=1KHz

L+R=90%, pilot=10%)

Item	Symbol	Condition	Min	Typ	Max	Unit
Channel Separation	Sep		40	50		dB
Monaural Distortion	mono THD	mono=300mV		0.05	0.2	%
Stereo Distortion	ST THD	MAIN		0.05	0.2	%
Output Signal Level	V _O	sub	140	200	280	mV
S/N	S/N		70	78		dB
V _{cc} Stopping Voltage	V _{cc} STOP			6.8		V
Channel Balance	CH Ba			0.5	1.5	dB

Block Diagram



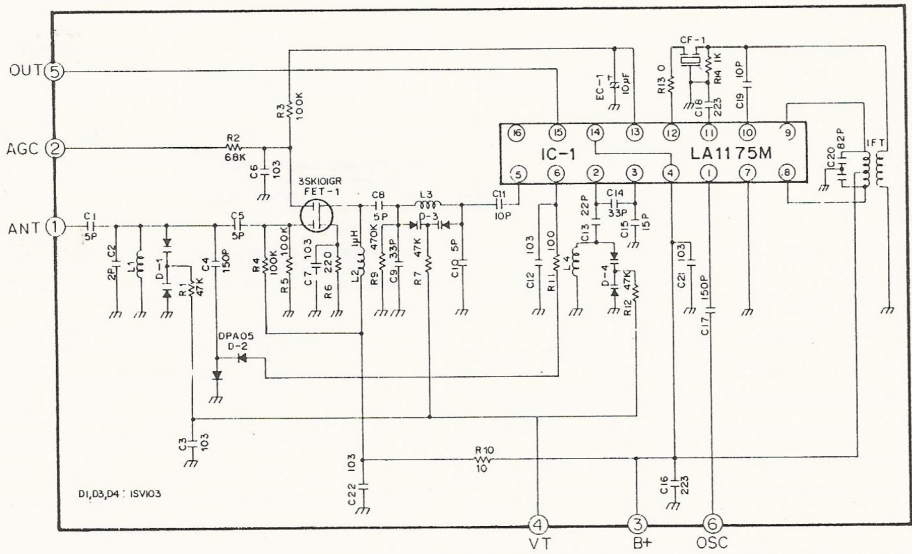
■ PARTS LIST :
⊙ Electrical section

NOTE : Substitute applies figure in bracket under Part No. column
SMS SME(Miniature-sized standard)
SRA(Super Miniature standard)
SRE(Further Miniature more than SRA SERIES)

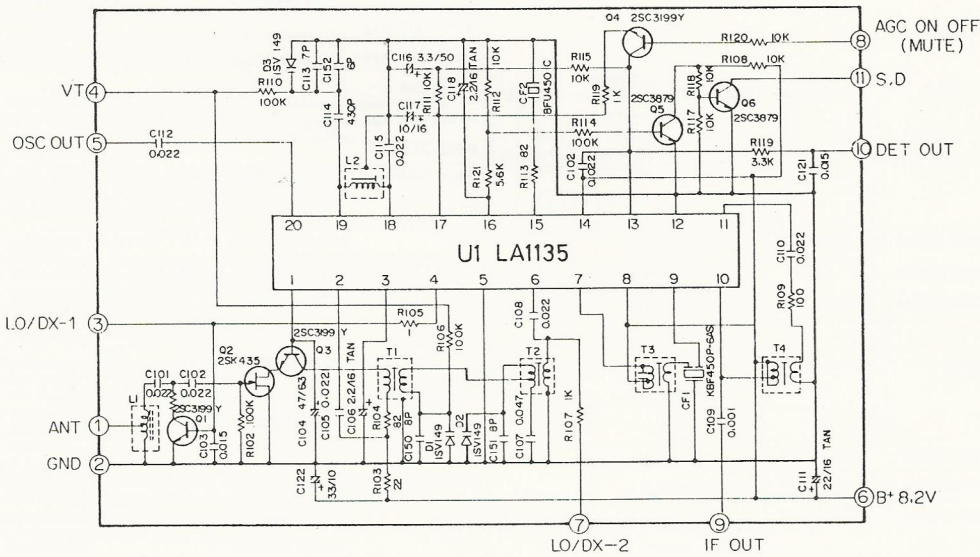
REF. NO	PART NUMBER		DESCRIPTION	QT'Y	REF. NO	PART NUMBER		DESCRIPTION	QT'Y
	HEI	CLARION				HEI	CLARION		
TU02	E2001404400A	—	TUNER-AM, CET-510 AH	1	C103, 111, 202				
TU01	E2001404500A	—	TUNER-FM, CET-515F	1	C501, 506	CE04BT1H100M	179-1063-62	ELEC. 50V, 10UF	5
U601	UPD1708AG886	—	IC-PLL, FIP, 52P, CUSTIOM	1	C314, 313	CE04DT1V4R7M	182-4753-52	ELEC. 35V, 4.7UF	2
U301	UKIA8125S	—	IC-EQ/AMP, SIP, KIA8125S	1	C112	CE04BT1H2R2M	179-2253-62	ELEC. 50V, 2.2UF	1
U101	UKIA8129Z	051-1154-00	IC-FM/IF, ZIP, KIA8129Z	1	C301, 304	CE04BT1H4R7M	179-4753-62	ELEC. 50V, 4.7UF	2
U102	ULA3370	051-0308-00	IC-MPX, ZIP, LA3370	1	C407, 413	CE04DT1HOR1M	182-1043-62	ELEC. 50V, 0.1UF	2
U501	KIA7299P	—	IC-POWER KIA7299P	1	C120	CE04VT1C100M	183-1063-32	ELEC. 16V, 10UF	1
X601	E2007500200A	—	X-TAL 4.5MHZ, 16PF	1	C117	CE04VT1C4R7M	183-4753-32	ELEC. 16V, 4.7UF	1
L201	E2003106900A	—	IFT-AM/TRAP 5.6 MICRO	1	C108, 606	CE04VT1C470M	183-4763-32	ELEC. 16V, 47UF	2
T101	E2003205000A	—	IFT-DET, 10.7MHZ, PL-7	1	C127, 604	CE04VT1E3R3M	183-3353-42	ELEC. 25V, 3.3UF	2
L701	E2003207300A	—	COIL-CHOKE, 0.8MH, 1A	1	C119, 126	CE04VT1H010M	183-1053-62	ELEC. 50V, 1UF	2
CF01	E2003301801A	—	FILTER-CER, SFE10.7MHZ	1	C612	CE04VT1H2R2M	183-2253-62	ELEC. 50V, 2.2UF	1
DP01	E2007600200A	060-0122-00	SURGE PROTECTOR DIODE	1	C610, 611	CC45CT1H200J	174-2000-13	CER. 50V, 20PF	2
Q605, 606	TTDTA114TS	—	TRANSISTOR, DTA114TS	2	C113	CC45RT1H100J	174-1000-37	CER. 50V, 10PF	1
Q701	TTDTA114YS	—	TRANSISTOR, DTA114YS	1	C121	CGP1XT1C682M	—	CER. 16V, 6800PF	1
Q702	TTDTA123JS	—	TRANSISTOR, DTA123JS	1	C114, 115	CG45XN1E103M	171-1033-06	CER. 25V, 0.01UF	2
Q604	TTDTA144ES	125-0004-03	TRANSISTOR, DTA144ES	1	C104, 105, 106	CG45XN1E473M	171-4733-06	CER. 25V, 0.047UF	3
Q602	TTDTC114TS	—	TRANSISTOR, DTC114TS	1	C118	CKP1BT1H681K	—	CER. 50V, 680PF	1
Q703	TTDTC124XS	—	TRANSISTOR, DTC124XS	1	C101, 102, 109	CKP1FT1E223Z	—	CER. 25V, 0.022UF	10
Q603	TTDTC143ES	125-2007-01	TRANSISTOR, DTC143ES	1	C123, 201, 204				
Q704	TKTCC2236AO	—	TRANSISTOR, KTC2236A-O	1	C605, 609, 613				
Q601, 607, 608	TT2SC3337A	102-3327-01	TRANSISTOR, 2SC3327-A	3	C614				
FE01	TT2SK369V	108-0369-00	TRANSISTOR, 2SK369-V	1	C116	CK45BT1H151K	160-1512-05	CER. 50V, 150PF	1
D705	DN1N4004B	001-0153-00	DIODE, 1N4004B	1	C414, 509, 510	CQ92BN1H154K	173-1542-10	MYLAR. 50V, 0.15UF	5
D701	DTBZX83C10B	001-0376-50	DIODE ZENER, 10V 500MW	1	C511, 705				
D624	DTBZX83C5V1B	001-0376-29	DIODE ZENER, 5.1V 500MW	2	C130, 131, 502	CQ92BT1H102K	173-1022-10	MYLAR. 50V, 1000PF	4
D610	DTBZX83C5V6B	001-0376-32	DIODE ZENER, 5.6V 500MW	1	C505				
D609	DTBZX83C6V2B	001-0376-35	DIODE ZENER, 6.2V 500MW	1	C129, 128	CQ92BT1H223K	173-2232-10	MYLAR. 50V, 0.022UF	2
D605	DTBZX83C6V8B	001-0376-38	DIODE ZENER, 6.8V 500MW	1	C415, 416	CQ92BT1H273K	173-2732-10	MYLAR. 50V, 0.027UF	2
D602	DTBZX83C8V2B	001-0376-44	DIODE ZENER, 8.2V 1/2W	1	C307, 311	CQ92BT1H333K	173-3332-10	MYLAR. 50V, 0.033UF	2
D607, 706	DTBZX83C9V1C	001-0376-48	DIODE ZENER, 9.1V 1/2W	2	C302, 303	CQ92BT1H152J	—	MYLAR. 50V, 1500PF	1
D704	DT1N4001A	—	DIODE 1N4001A	1	R122, 123, 206	RD2CPOT0100J	111-1001-91	R-CARBON, 1/6W, 10 OHM	3
D101, 102, 103	DT1SS133	001-0294-00	DIODE, 1SS133	25	R701				
D104, 105, 201					R103	RD2CPOT0101J	111-1011-91	R-CARBON, 1/6W, 100 OHM	1
D202, 203, 301					R117, 409, 612				
D302, 601, 603					R409, 613, 627	RD2CPOT0102J	111-1021-91	R-CARBON, 1/6W, 1K OHM	8
D606, 608, 613					R628, 634				
D615, 616, 617					R105, 112, 125	RD2CPOT0103J	111-1031-91	R-CARBON, 1/6W, 10K OHM	6
D618, 619, 620					R202, 211, 601				
D621, 622, 623					R207, 303, 311	RD2CPOT0104J	111-1041-91	R-CARBON, 1/6W, 100K OHM	3
D627					R116	RD2CPOT0123J	111-1231-91	R-CARBON, 1/6W, 12K OHM	1
C608, 617	CE04BN1A221M	042-0378-00	ELEC. 10V, 220UF	2	R111	RD2CPOT0152J	111-1521-91	R-CARBON, 1/6W, 1.5K OHM	1
C513, 515	CE04BN1A222M	—	ELEC. 10V, 2200UF	2	R109	RD2CPOT0153J	111-1531-91	R-CARBON, 1/6W, 15K OHM	1
C508	CE02BN1C222M	042-0348-00	ELEC. 16V, 2200UF	1	R110, 120, 121	RD2CPOT0183J	111-1831-91	R-CARBON, 1/6W, 18K OHM	3
C122, 203, 306	CE04BT1A101M	179-1073-22	ELEC. 10V, 100UF	11	R505, 506	RD2CPOT0220J	111-2201-91	R-CARBON, 1/6W, 22 OHM	2
C312, 503, 504					R115, 304, 310	RD2CPOT0222J	111-2221-91	R-CARBON, 1/6W, 2.2K OHM	3
C507, 512, 514					R205, 606, 607				
C601, 701					R620, 621, 632	RD2CPOT0223J	111-2231-91	R-CARBON, 1/6W, 22K OHM	8
C305					R633, 631				
C702	CE04BT1C470M	179-4763-32	ELEC. 16V, 47UF	1	RV01, RV04	E20017G00103	—	R-TRIMMER 10K OHM	2
C615	CE04BT1E330M	179-3363-42	ELEC. 25V, 33UF	1	RV02	E20017G00203	—	R-TRIMMER 20K OHM	1
C124	CQ92PT1H102J	—	P.P 50V, 1000P	1	RV03	E20017G00503	—	R-TRIMMER 50K OHM	1

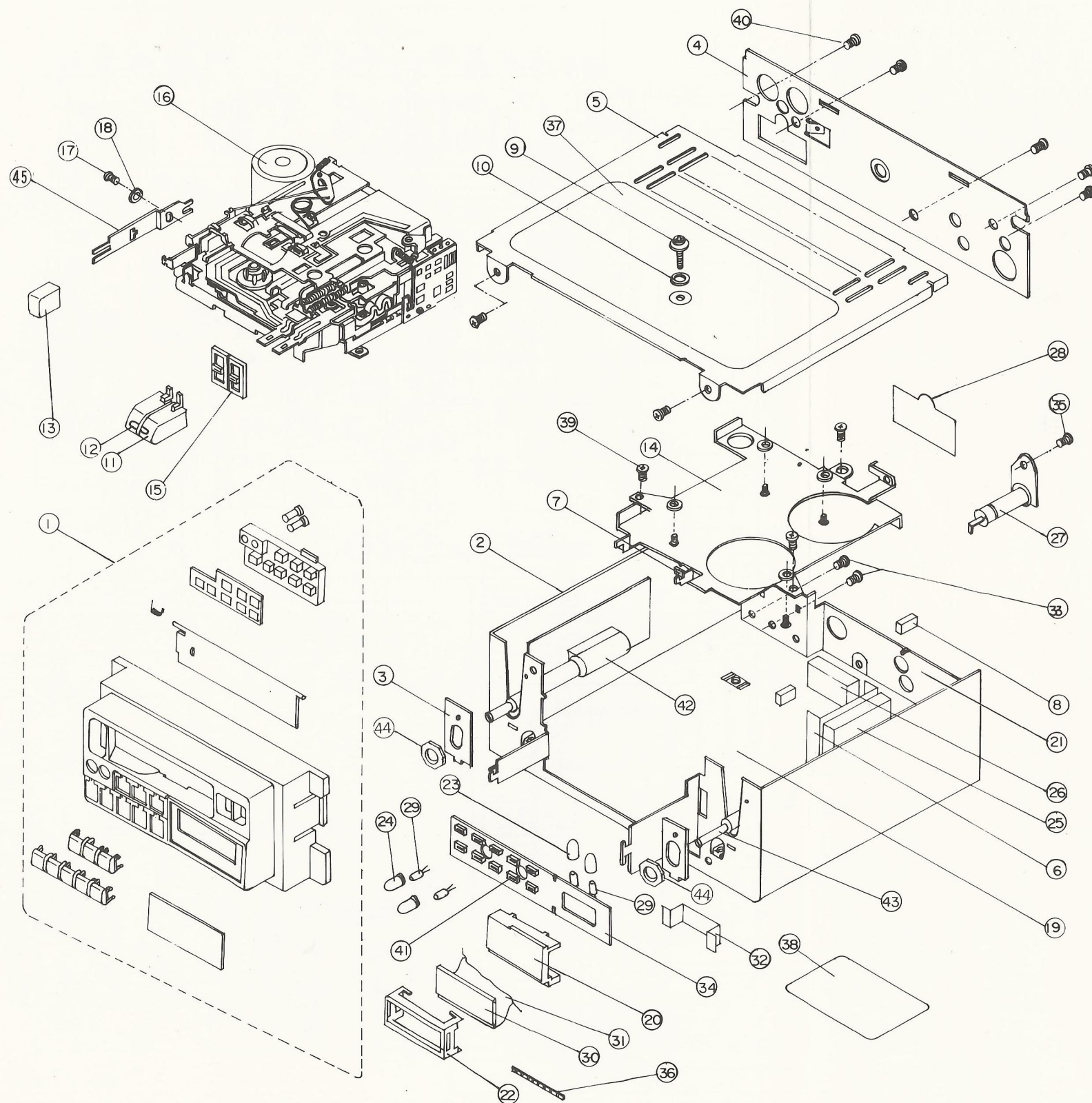
REF. NO	PART NUMBER		DESCRIPTION	QT*Y	REF. NO	PART NUMBER		DESCRIPTION	QT*Y
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R208	RD2CPOTO273J	111-2731-91	R-CARBON, 1/6W, 27K OHM	1	R615	RD2EPOTO564J	111-5641-91	R-CARBON, 1/4W, 560K OHM	1
R104	RD2CPOTO331J	111-3311-91	R-CARBON, 1/6W, 330 OHM	1	R603, 609, 314	RD2CPOTO682J	111-6821-91	R-CARBON, 1/6W, 6.8K OHM	4
R107, 118, 119 R630	RD2CPOTO332J	111-3321-91	R-CARBON, 1/6W, 3.3K OHM	4	R315	RD2EPOTO221J	111-2211-91	R-CARBON, 1/4W, 220 OHM	1
R114, 203, 204 R622, 623, 624 R625, 626	RD2CPOTO333J	111-3331-91	R-CARBON, 1/6W, 33K OHM	8	R705	RD2EPOTO222J	111-2221-91	R-CARBON, 1/4W, 2.2K OHM	1
R106, 302, 312	RD2CPOTO392J	111-3921-91	R-CARBON, 1/6W, 3.9K OHM	3	R616	RD2EPOTO332J	111-3321-91	R-CARBON, 1/4W, 3.3K OHM	1
R610, 614, 704	RD2CPOTO471J	111-4711-91	R-CARBON, 1/6W, 470 OHM	3	R617	RD2EPOTO391J	111-3911-91	R-CARBON, 1/4W, 390 OHM	2
R113	RD2CPOTO472J	111-4721-91	R-CARBON, 1/6W, 4.7K OHM	1	R706	RD2EPOTO477J	111-4791-91	R-CARBON, 1/4W, 4.7 OHM	1
R618	RD2CPOTO473J	111-4731-91	R-CARBON, 1/6W, 47K OHM	1	R209	RD2EPOTO472J	111-4721-91	R-CARBON, 1/4W, 4.7K OHM	1
R301, 313	RD2CPOTO560J	111-5601-91	R-CARBON, 1/6W, 56K OHM	2	R703	RD2HPOTO477J	111-4791-81	R-CARBON, 1/2W, 4.7 OHM	1
R101, 108, 124 R201, 611	RD2CPOTO562J	111-5621-91	R-CARBON, 1/6W, 5.6K OHM	6					

● FM TUNER PACK (E2001404500A)

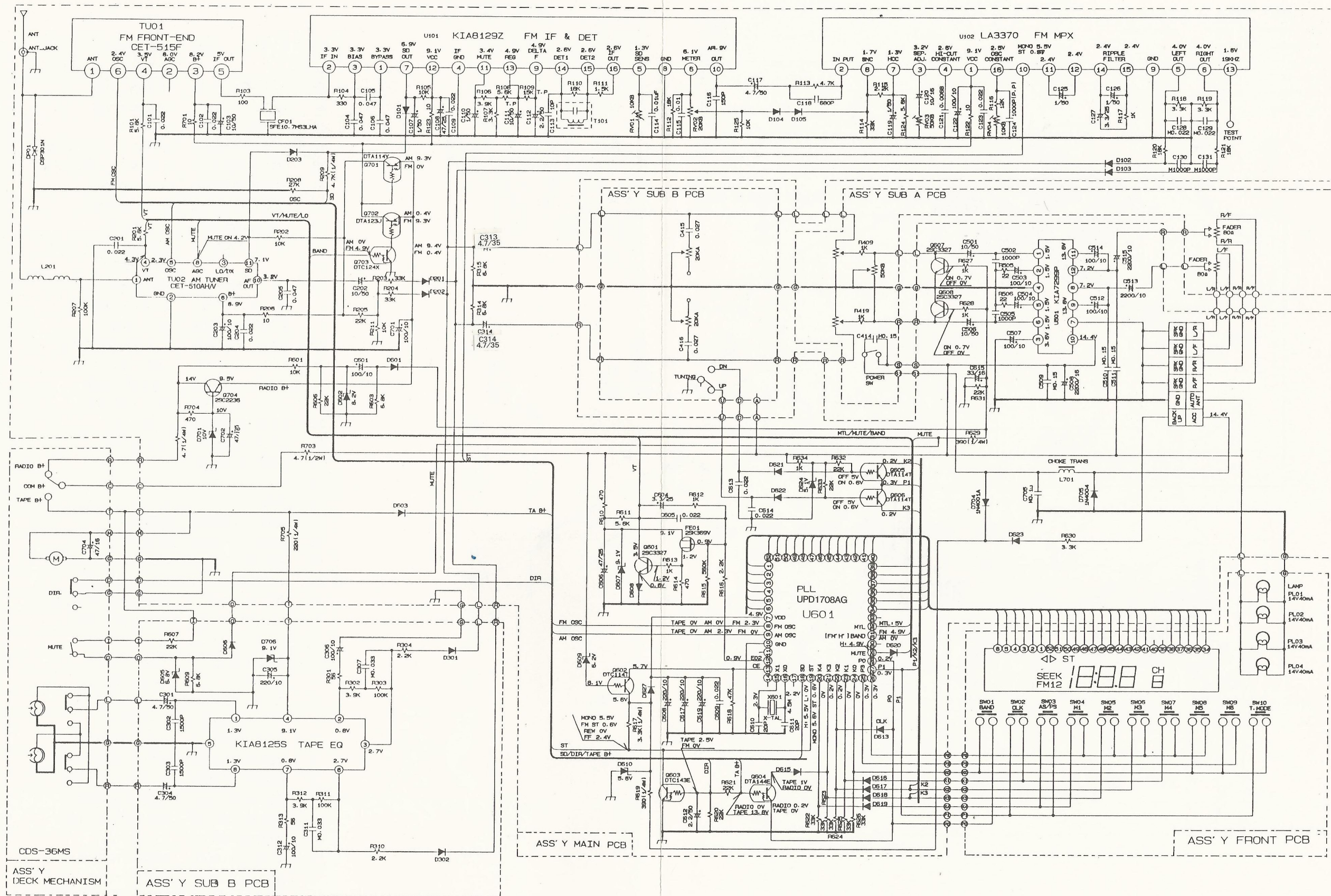


● AM TUNER PACK (E2001404400A)

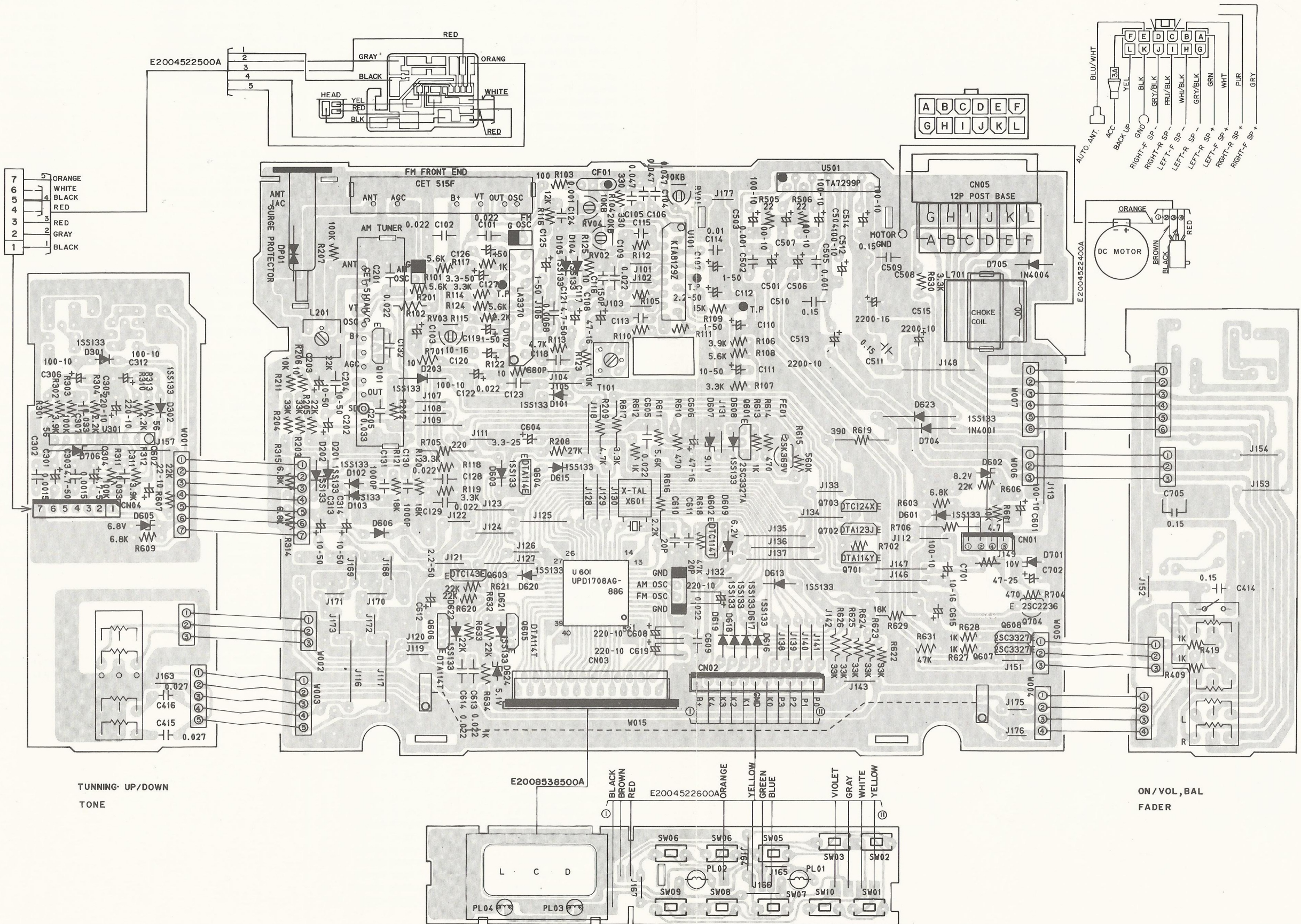




45	B2002231100A	BRKT EJECT	1
44		NUT M9	2
43	E2001814800A	VR-SUB, TONE	1
42	E2001814600A	VR-MAIN, VOL	1
41	E2002701400A	SW-TACT	10
40	M14713006011	SCREW-TT PAN 3×6	7
39	M11113004011	SCREW-MC PAN 3×4	3
38	E2009133100A	LABEL-MODEL	1
37	E2009120305B	LABEL-WIRING	1
36	321-0961-00	CLAMP-LCD	1
35	M14713006011	SCREW-TT PAN 3×6	1
34		PCB, FRONT	1
33	M11113004011	SCREW-MC PAN 3×4	2
32	E2009133900A	STICKER-FIBER ILL	1
31	E2009638500A	HEAT SEAL	1
30	E2006305100A	LCD-26P NEGATIVE	1
29	E2006200900A	LAMP-16V 30MA	4
28	E2009134200A	STICKER-REAR	1
27	E2004103700A	JACK ANTENNA	1
26	E2001404500A	TUNER-FM	1
25	E2001404400A	TUNER-AM	1
24	B2002614606A	COVER-LAMP	2
23	B2002601002A	COVER-LAMP	2
22	B2002231200A	BRACKET-LCD	1
21	B2002230800A	BRACKET-IC	1
20	B2001711300A	REFLECTOR-LCD	1
19	E2008037800A	ASS'Y-MAIN PCB	1
18	M62100026012	WASHER-SPRING	1
17	M11112604011	SCREW-MC, PAN2.6×4	5
16	E2005105700A	DECK-CDS 36MS	1
15	B2003601700A	GUIDE FF/REW	2
14	B2002230900A	BRACKET-DECK	1
13	B2001251700A	KNOB-EJECT(R)	1
12	B2001251600A	KNOB-REW(R)	1
11	B2001251500A	KNOB-FF(R)	1
10	B2009133000A	WASHER-PLANE	1
9	B2009102100A	SCREW-DECK GUIDE	1
8	B2006606300A	CUSHION RUBBER	2
7	B2004313200A	INSULATOR-FRONT	1
6	B2004309300B	INSULATOR-TUNER	1
5	B2002619800A	COVER-TOP	1
4	B2002231000A	BRACKET-REAR	1
3	B2002230700A	BRACKET-VR	2
2	B2002020200A	ASS'Y COVER BOTTON	1
1	B2001012802A	ASS'Y NOSE PIECE	1



PRINTED WIRING BOARD



This diagram is an exploded view of a complex mechanical assembly, likely a piece of industrial machinery. It features numerous components, each identified by a circled number. The parts are arranged in a way that shows their relative positions and how they fit together. Key components include a central motor or actuator (93), various structural frames (e.g., 2, 19, 22, 46, 108), and a large, curved component (87) at the bottom right. The diagram is a technical drawing with clear lines and numbers, typical of a service manual or parts catalog.

■PARTS LIST :

NO.	OESCRITION	REFERENCE NO.	Q'TY	NO.	OESCRITION	REFERENCE NO.	Q'TY
1	MAIN CHASSIS ASS'Y	3-0036-101	(1)	73	ADJUSTER ARM SPRING (B)	1-0036-411-02	1
2	HEAD PLATE ASS'Y	3-0036-102	(1)	74	PINCH ARM (F) SPRING	1-0036-412-01	1
3	REEL BASE ASS'Y	3-0036-109	(1)	75	PINCH ARM (R) SPRING	1-0036-413-01	1
4	FR CHANGE ARM ASS'Y	3-0036-110	(1)	76	RATCHET SPRING	1-0036-414-01	1
5	CHANGE LEVER(A) ASS'Y	3-0036-114	(1)	77	SELECTOR GEAR SPRING	1-0036-415-02	1
6	EJECT CAM LOCK ASS'Y	3-0036-119	(1)	78	CENTER PLATE SPRING	1-0036-416	1
7	BRACKET (R) ASS'Y	3-0036-120	(1)	79	SW CHANGE ARM SPRING	1-0036-417-01	1
8	BRACKET (F) ASS'Y	3-0036-121	(1)	80	EARTH SPRING	1-0036-418-01	2
9	PROGRAM ARM ASS'Y	3-0036-124	(1)	81			
10	FR ARM(A) ASS'Y	3-0036-125	(1)	82	TENSION SPRING	1-0036-416-00	2
11	CM BRACKET ASS'Y	3-0036-216	(1)	83			
12	FLYWHEEL ASS'Y	3-0036-601-01	2	84			
13	PINCH ARM (R) ASS'Y	3-0036-611	(1)	85	SUB BELT	1-0036-501-00	1
14	PINCH ARM (R) ASS'Y	3-0036-612	(1)	86	SELECTOR LINK	1-0036-503-01	1
15	REEL SPINDLE ASS'Y	3-0036-660	(2)	87	MAIN BELT	1-0036-504-00	1
16				88	C.H.CUSHION RUBBER	1-0010-509-02	1
17				89	RETURN LINK	1-0058-504-02	1
18				90			
19	CASSETTE HOLDER	1-0036-103-01	1	91			
20	EJECT CAM ASS'Y	3-0036-106	(1)	92			
21	EJECT LEVER	1-0036-107-00	1	93	MOTOR ASS'Y	3-0058-710-10	(1)
21	CASSETTE HANGER	1-0036-108-00	1	94	SW PWB	1-0036-711-00	1
23	SPRING PUSH PLATE	1-0036-115-00	1	95	WIRE (A) BRACK	1-0036-702-01	1
24	REVERSE LEVER	1-0036-116-01	1	96	WIRE (B) RED	1-0036-703-01	1
25	ADJUSTER CAM	1-0036-117-00	1	97	WIRE (C) YELLOW	1-0036-704-01	1
26	CENTER PLATE	1-0036-118-00	1	98	HEAD (TC860BH)	1-0036-705-00	1
27				99	POWER SW	1-0036-711-01	1
28	CHANGE LEVER (B)	1-0036-123-03	1	100			
29	FR ARM (B)	1-0036-126-00	1	101	MUTE SW	1-0058-702	1
30	E LEVER	1-0036-127-00	1	102	HEAD CHANGE SW (SL132B)	1-0036-707-02	1
31	REW LEVER	1-0036-128-00	1	103			
32	LOCK ARM	1-0036-129-00	1	104			
33	SW ARM	1-0036-130-00	1	105	E-RING E-1.5	2-171D-040-06	4
34				106	E-RING E-1.6×3.2×0.3	2-171E-032-96	2
35	IDLE GEAR	1-0036-201-00	1	107	E-RING E-2.0	2-1712-050-06	4
36	TU GEAR	1-0036-202-01	2	108	E-RING E-2.5	2-171K-060-06	3
37	REDUCTION GEAR (A)	1-0036-204-00	1	109			
38	REDUCTION GEAR (B)	1-0036-203-00	1	110			
39	PULLEY GEAR	1-0036-205-00	1	111	POLY WASHER W/N 1.2×3×0.25	2-1812-030-D2	3
40	TAPE GUIDE	1-0036-206-01	1	112	POLY WASHER W/N 1.6×3.2×0.25	2-1816-032-D2	4
41	RATCHET	1-0036-207-01	1	113	POLY WASHER 2.1×3.2×0.25	2-1821-032-D1	2
42	FF ARM	1-0036-208-00	1	114	M/WASHER	1-0012-517-00	1
43	SENSOR ARM	1-0036-209-00	1	115			
44	SELECTOR GEAR	1-0036-210-01	1	116	MACHINE+SCREW B-TITE	2-138F-060-H2	1
45	ADJUSTER ARM	1-0036-211-01	1	117	MACHINE+SCREW B-TITE	2-1382-030-H2	5
46	ADJUSTER LINK	1-0036-212-01	1	118	MACHINE+SCREW B-TITE	2-1382-040-H2	2
47	GEAR LOCK ARM	1-0036-213-00	1	119			
48	DETECTOR GEAR	1-0036-214-00	1	120			
49	TU GEAR ARM	1-0036-215-01	1	121	MACHINE+SCREW	2-1032-025-H2	2
50	DETECTOR ARM	1-0036-217-00	2	122	MACHINE+SCREW	2-1012-040-H2	1
51	PROGRAM ARM COLLAR	1-0036-218-00	1	123	MACHINE+SCREW	2-1012-030-S2	1
52	TAPE HOOKER	1-0058-204-02	1	124	MACHINE+SCREW	2-1022-050-H2	2
53	IDLE PULLEY (A)	1-0058-221-01	1	125	EJECT HOOK SEREW M2×5	1-0061-522-00	2
54				126	MACHINE+SCREW S-TITE	2-1332-040-H2	2
55							
56							
57	HP ROLLER (B)	1-0036-324-00	1				
58	FF ROLLER	1-0036-304-01	1				
59	COLLAR	1-0036-318-02	1				
60	HP ROLLER (A)	1-0036-302-00	1				
61	SW ARM COLLAR	1-0036-329-00	1				
62	TU GEAR SHAFT	1-0036-330-00	2				
63							
64	FF/REW LEVER SPRING	1-0036-401-01	2				
65	LOCK LEVER SPRING	1-0036-402-01	1				
66	GEAR LOCK ARM SPRING	1-0036-403-02	1				
67	EJECT LEVER SPRING	1-0036-404-01	1				
68	EJECT CAM SPRING	1-0036-405-02	1				
69	HEAK PLATE SPRING	1-0036-406-01	1				
70	EJECT CAM LOCK SPRING	1-0036-407-02	1				
71	PROGRAM ARM SPRING	1-0036-408-00	2				
72	ADJUSTER ARM SPRING (A)	1-0036-410-01	1				

8203RA Service Manual Correction Table

Page	OLD					NEW																																											
1	FM SECTION Frequency range : 87.9MHz to 107.9MHz					FM SECTION Frequency range : 87.5MHz to 107.9MHz																																											
	AM SECTION Frequency range : 530KHz to 1710KHz					AM SECTION Frequency range : 531KHz to 1629KHz																																											
2	■ 1710KHz Expanded AM Band					Delete																																											
11	<table><tr><td>Q605, 606</td><td>TTDTA114TS</td><td>-</td><td>TRANSISTOR, DTA114TS</td><td>2</td></tr><tr><td>Q701</td><td>TTDTA114YS</td><td>-</td><td>TRANSISTOR, DTA114YS</td><td>1</td></tr></table>					Q605, 606	TTDTA114TS	-	TRANSISTOR, DTA114TS	2	Q701	TTDTA114YS	-	TRANSISTOR, DTA114YS	1	<table><tr><td>Q605, 606</td><td>TTDTA114TS</td><td>-</td><td>TRANSISTOR, DTA114TS</td><td>2</td></tr><tr><td>Q101</td><td>TTDTA124ES</td><td>-</td><td>TRANSISTOR, DTA124ES</td><td>1</td></tr><tr><td>Q701</td><td>TTDTA114YS</td><td>-</td><td>TRANSISTOR, DTA114YS</td><td>1</td></tr></table>					Q605, 606	TTDTA114TS	-	TRANSISTOR, DTA114TS	2	Q101	TTDTA124ES	-	TRANSISTOR, DTA124ES	1	Q701	TTDTA114YS	-	TRANSISTOR, DTA114YS	1														
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<table><tr><td>D704</td><td>DT1N4001A</td><td>-</td><td>DIODE IN4001A</td><td>1</td></tr><tr><td>D101, 102, 103</td><td rowspan="9">DT1SS133</td><td rowspan="9">001-0294-00</td><td rowspan="9">DIODE 1SS133</td><td rowspan="9">25</td></tr><tr><td>D104, 105, 201</td></tr><tr><td>D202, 203, 301</td></tr><tr><td>D302, 601, 603</td></tr><tr><td>D606, 608, 613</td></tr><tr><td>D615, 616, 617</td></tr><tr><td>D618, 619, 620</td></tr><tr><td>D621, 622, 623</td></tr><tr><td>D627</td></tr></table>					D704	DT1N4001A	-	DIODE IN4001A	1	D101, 102, 103	DT1SS133	001-0294-00	DIODE 1SS133	25	D104, 105, 201	D202, 203, 301	D302, 601, 603	D606, 608, 613	D615, 616, 617	D618, 619, 620	D621, 622, 623	D627	<table><tr><td>D704</td><td>DT1N4001A</td><td>-</td><td>DIODE IN4001A</td><td>1</td></tr><tr><td>D104</td><td>DNL7ZMRJ5</td><td>-</td><td>DIODE LTZMRJ5</td><td>1</td></tr><tr><td>D101, 102, 103</td><td rowspan="8">DT1SS133</td><td rowspan="9">001-0294-00</td><td rowspan="9">DIODE 1SS133</td><td rowspan="9">24</td></tr><tr><td>D202, 203, 301</td></tr><tr><td>D302, 601, 603</td></tr><tr><td>D606, 608, 613</td></tr><tr><td>D615, 616, 617</td></tr><tr><td>D618, 619, 620</td></tr><tr><td>D621, 622, 623</td></tr><tr><td>D627, 201, 999</td></tr></table>					D704	DT1N4001A	-	DIODE IN4001A	1	D104	DNL7ZMRJ5	-	DIODE LTZMRJ5	1	D101, 102, 103	DT1SS133	001-0294-00	DIODE 1SS133	24	D202, 203, 301	D302, 601, 603	D606, 608, 613	D615, 616, 617	D618, 619, 620	D621, 622, 623	D627, 201, 999
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