



Clarion Co., Ltd.

Export Division—3, Kojimachi 5-chome, Chiyoda-ku, Tokyo, 102 Japan Tel: 03-265-2931

Telex: J22908, J22152, J25550 CLARISHO

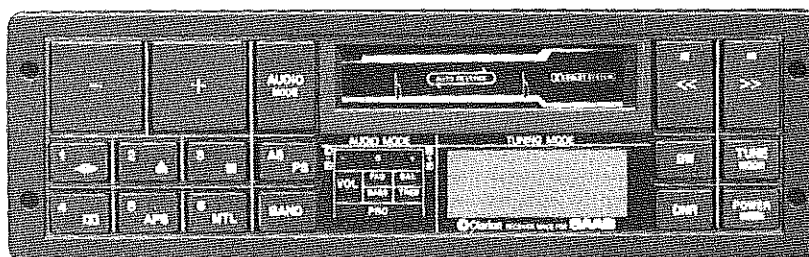
Service Dept.—50 Kamitoda, Toda-shi, Saitama, 335 Japan Tel: 0484-43-1111 Telex: J2962628 CLAFAC-J

Service Manual

Overseas Sales Branch Offices

Clarion Corporation of America 5500 Rosecrans Ave., Lawndale, Calif., 90260 U.S.A. Tel: 213-973-1100 Telex: CLARIONLSA 66-4447
Clarion Corporation of America (Eastern Division) 100 Thirteenth Avenue, Ronkonkoma, New York 11779 U.S.A. Tel: 516-467-1120 Telex: 64-0787
Clarion Shoji (EUROPA) G.m.b.H. Rudolf-Diesel-Strasse 2, 6236 Eschborn 2, West Germany Tel: 06173-61036 Telex: 415414
Clarion (HONG KONG) Co., Ltd. 526, Ocean Centre, Canton Road, Tsimshatsui, Kowloon, Hong Kong Tel: 3-690528 Telex: HX64293 CLAHK
Clarion Canada Inc. 1401 Meyerside Dr. Mississauga, Ontario L5T 1G8, Canada Tel: 416-678-1367 Telex: 216968573 CLARION MSGA
Clarion Shoji (U.K.) Ltd. 4-6, Faraday Road, Dorcan Industrial Estate, Dorcan, Swindon, Wiltshire, SN3.5HQ United Kingdom Tel: (0793) 24081 Telex: 44689

Model PU-9079A (SAAB 9000T, 900T, 9000S, 900S)



SAAB

SPECIFICATIONS:

(The specifications for this product were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.)

General

Power supply voltage:

DC 14.4V
(10.8 to 15.6V allowable)

Current consumption:

Less than 10A

Weight:

1.7kg (3.75 lbs)

Dimensions:

Width 177.5mm (7")
Height 50mm (2")
Depth 165mm (6-1/2")

FM Section

Frequency range: 88.1MHz to 107.9MHz

Usable sensitivity: 13dBf

50dB Quieting sensitivity:

18dBf

Capture ratio: 1.5dB

Alternate channel selectivity:

70dB

Stereo separation: 35dB at 1kHz

Frequency response:

30Hz to 15,000Hz, ± 3 dB

AM Section

Frequency range: 540kHz to 1,610kHz

Usable sensitivity. (20dB S/N): $28\mu V$

Selectivity. (at ± 10 kHz): 50dB

Tape Section

Tape speed: 4.76cm/s. (1-7/8 ips)

Wow & Flutter: 0.13% W.R.M.S.

Stereo separation: 45dB at 1kHz

Signal/Noise ratio: Norm (120 μ s)

53dB/62dB (Dolby NR on)

Metal (70 μ s)

56dB/65dB (Dolby NR on)

Frequency response:

50Hz to 14,000Hz, ± 3 dB

Fast forward time. (C-60): 120sec.

Rewind time. (C-60): 120sec.

Audio Section

Tone action:

Bass ± 10 dB at 100Hz

Treble ± 10 dB at 10kHz

© Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
 © Noise Reduction System manufactured under license from Dolby Laboratories Licensing Corporation.

COMPONENTS:

■UU-581A-01

●PU-9079A-A	Head set	1
●EU-605A-51	Power amp.	1
●EU-606A-51	Equalizer	1
●300-7110-01	Mounting bracket	1
●335-0833-02	Lead holder (short)	2
●335-2202-00	Lead holder	1
●704-3005-81	Tap-screw	4
●716-0523-00	Screw	1
●852-8965-00	Extension lead	1
●341-1346-00	Take-out tool	1
●371-3322-00	Trim plate	1
●345-4264-00	Spacer	1
●345-4265-00	Spacer	1

■UU-582A-01

●PU-9079A-A	Head set	1
●EU-605A-52	Power amp.	1
●300-7110-01	Mounting bracket	1
●335-0833-02	Lead holder	2
●716-0523-00	Screw	1
●852-8762-00	Extension lead (DIN)	1
●852-8806-01	Extension lead (□—□)	1
●852-8965-00	Extension lead (□—□)	1
●345-3791-00	Spacer (20×120)	1
●345-3792-00	Spacer (20×80)	1
●345-4223-00	Spacer	1

ADJUSTMENTS:

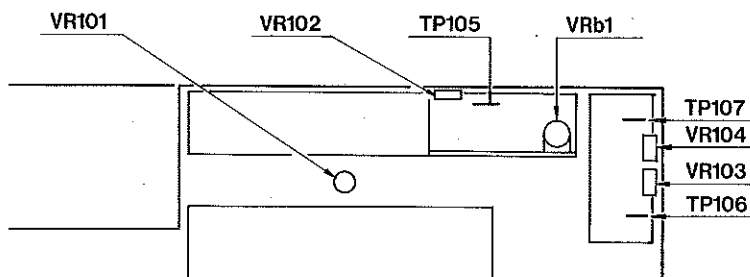
FM

Item	Adjustment	Measuring Instrument
SASC	1) Set SG to 98.1MHz and input the 30%-modulated frequency 7kHz, 65dB. 2) Adjust the SASC outputs evenly to -3dB by VR102 when the SG output is set to 38dB.	SG Milli-volt meter
Stop Sensitivity	1) Tune at 98.1MHz, input a 35dB non-modulated SSG signal. 2) Adjust VR101 so that the voltage of TP105 is in the range 0 to 5V.	SG Milli-volt meter
Separation	1) Set SG to 98.1MHz, 65dB and modulation of 100% (signal 90%, PL 10%) and connect the output of stereo modulator to the external modulation terminal. 2) Adjust the R-side signal by VRb1 to the minimum level when the stereo modulator output is set to L-side.	SG Stereo modulator Milli-volt meter

DOLBY

Item	Adjustment point	Adjustment
Dolby NR	VR103 and VR104	Insert a Dolby level test tape (400Hz-200nWb/m), connect the millivoltmeter to TP106 and TP107, and adjust VR103 and VR104 to obtain an output of 450mV. (Dolby switch : OFF)

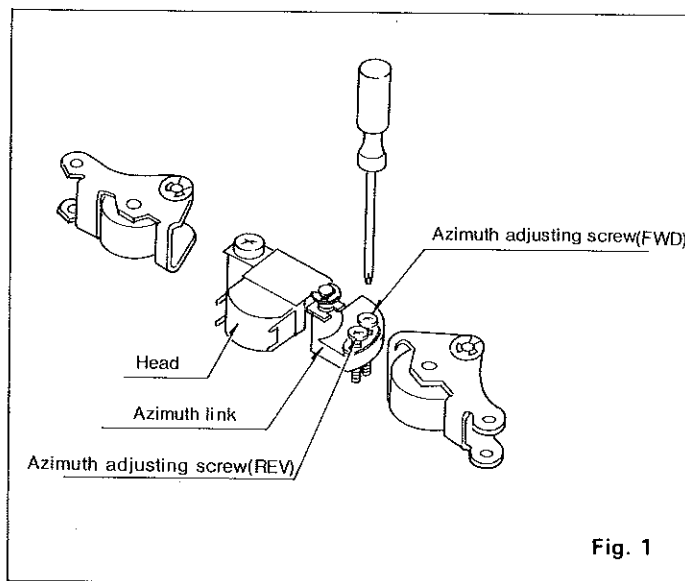
●ADJUSTMENT POINT:



■ADJUSTMENT: <TAPE MECHANISM>

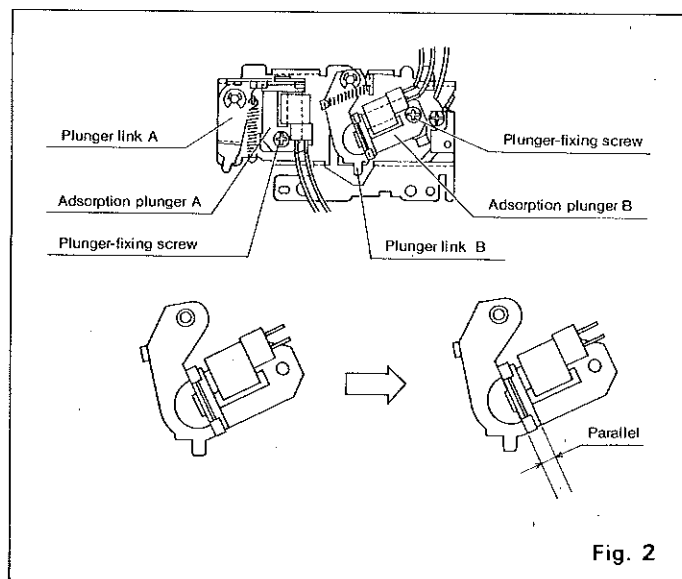
1. Head-azimuth Adjustment

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.



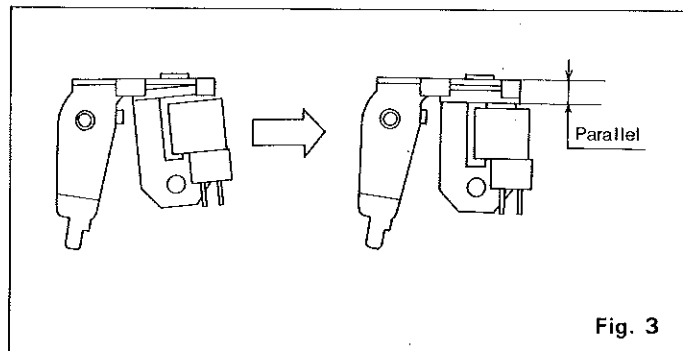
2. Adjustment of Adsorption Plunger B

Under FF-operation, when adsorption plunger is released, mount the plunger to make the adsorption-surface of adsorption plunger B in parallel to the bent surface of plunger link B, and make adhesion of the rear side of the screw with bond.



3. Adjustment of Adsorption Plunger A

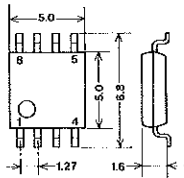
Under REW-operation, when adsorption plunger is released, mount the plunger to make the adsorption-surface of adsorption plunger A in parallel to the bent surface of plunger link A, and make adhesion of the rear side of the screw with bond.



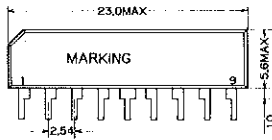
EXPLANATION OF IC's:

■ NJM4558M 051-0350-55 Dual OP. Amp.
■ NJM4558S 051-0285-51

Outward Form

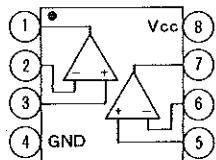


M type

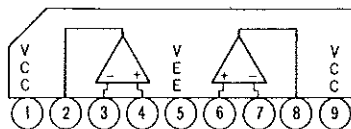


S type

Block Diagram



M type



S type

Maximum Ratings (Ta=25°C)

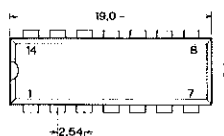
Supply voltage	V^+/V^-	$\pm 18V$
Power dissipation	P_D	(M type) 300mW (S type) 500mW

Electrical Characteristics (Ta=25°C, V+=15V, V-=-15V)

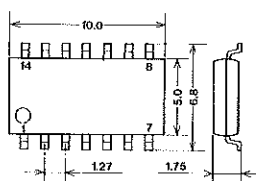
		min	typ.	max
Input Offset Voltage	V_{IO} ($R_S \leq 10k\Omega$)		0.5	6mV
Input Offset Current	I_{IO}		5	200nA
Input Bias Current	I_B		50	500nA
Voltage Gain	A_v ($R_L \geq 2k\Omega$, $V_O = \pm 10V$)	20	100	($\times 10^3$)
Common Mode Rejection Ratio	CMRR ($R_S \leq 10k\Omega$)	70	90	dB
Slew Rate	SR ($R_L \geq 2k\Omega$)		1	V/ μ s

■ NJM2058D 051-0287-51 Quad OP. Amp.
■ NJM2058M 051-0556-01

Outward Form



D type

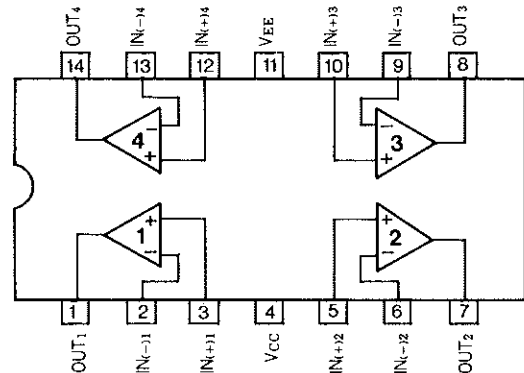


M type

Absolute Maximum Ratings (Ta=25°C)

Supply Voltage	V^+/V^-	$\pm 18V$
Power Dissipation	P_D	700mW
Input Voltage	V_I	$\pm 15V$
Differential Input Voltage	V_{ID}	$\pm 30V$

Block Diagram

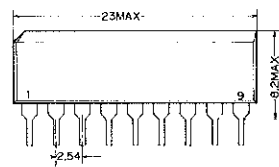


Electrical Characteristics (Ta=25°C, V+=15V, V-=-15V)

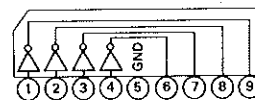
Item	Symbol	Min.	Typ.	Max.	Unit
Input Offset Voltage	V_{IO} ($R_S \leq 10k\Omega$)		0.5	6	mV
Input Offset Current	I_{IO}		5	200	nA
Input Bias Current	I_B		50	500	nA
Voltage Gain	G_v ($R_L \geq 2k\Omega$, $V_O = \pm 10V$)	20	100		$\times 10^3$
Common Mode Rejection Ratio	CMRR ($R_S \leq 10k\Omega$)	70	90		dB
Common Mode Input Range	V_{ICM}	± 12	± 14		V
Supply Voltage Rejection Ratio	SVRR ($R_S \leq 10k\Omega$)		30	150	μ V/V
Slew Rate	SR ($R_L \geq 2k\Omega$)		1		V/ μ s
Input Impedance	R_i	0.3	1		M Ω

■ TD62551S 051-0568-01 Common Emitter Transistor Array
■ TD62555S 051-0568-05

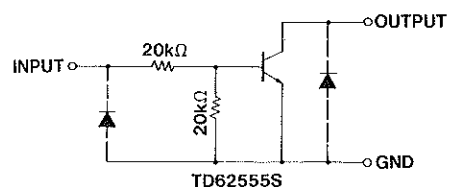
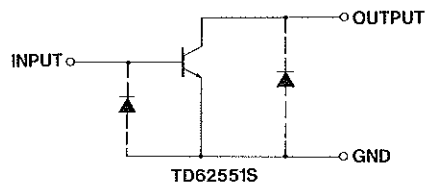
Outward Form



Block Diagram



Equivalent Circuit (Unit)



Maximum Ratings (Ta=25°C)

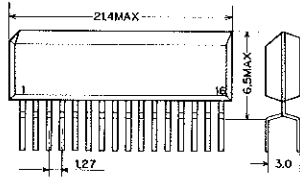
Item	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CE0}	25	V
Collector-Base Voltage	V_{CB0}	35	V
Collector Current	I_C	150	mA
Input Voltage (TD6255S)	V_{IN}	20	V
Input Current (TD6255S)	I_{IN}	10	mA
GND Terminal Current	I_{GND}	400	mA
Power Dissipation	P_D	0.75	W

Electrical Characteristics (Ta=25°C)

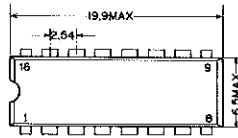
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Output Leak Current	I_{LCK}	$V_{CE}=25V, V_{IN}=0V$			10	μA
Output Saturation Voltage	$V_{CE(sat)}$	$I_{IN}=0.5mA, I_C=10mA$		0.15	0.2	V
		$I_{IN}=2.5mA, I_C=50mA$		0.36	0.5	
DC Current Gain	h_{FE}	$V_{CE}=5V, I_C=10mA$	60		400	
		TD6255S	50		400	
Input Voltage	$V_{IN(ON)}$	$I_{IN}=0.5mA, I_C=10mA$	7.7	10.7	13.8	V
Turn On Time	t_{ON}	$V_{OUT}=25V, C_L=15pF$		100		nS
Turn Off Time	t_{OFF}	$R_L=800\Omega$		500		nS

TA7405P 051-0539-00 Dual Preamp. for Auto Reverse TA7705P 051-0714-00 Car Stereo

Outward Form

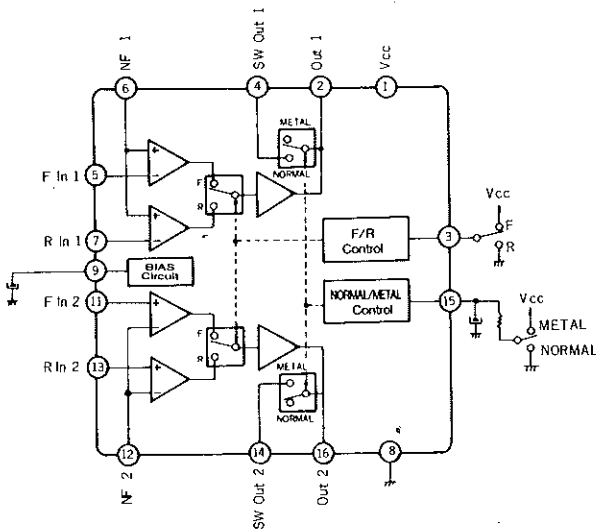


TA7405P



TA7705P

Block Diagram



Maximum Ratings (Ta=25°C)

Supply voltage	V_{CC}	16V
Power dissipation	P_D	750mW

Electrical Characteristics ($V_{CC}=9V, f=1kHz, R_L=10k\Omega, R_g=600\Omega$ Ta=25°C, Normal EQ)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Zero signal supply current	I_{CQ}	$V_{IN}=0, \text{Normal EQ}$		5.0		mA
		$V_{IN}=0, \text{Metal EQ}$		6.0	9.0	
Open loop voltage gain	G_{OL}	$CF=100\mu F, R_L=0$		98		dB
Maximum output voltage	V_{OX}	$THD=0.5\%$	1.5	2.0		Vrms
Total harmonic distortion	THD	$V_{OUT}=0.5V_{rms}$		0.035	0.12	%
Noise voltage referred to input	V_{IN}	$R_g=620\Omega, f=1kHz, BW=20Hz-20kHz$		0.9	1.7	μV_{rms}
Input resistance	R_{IN}			500		k Ω
Ripple rejection ratio	RR	$f_{ripple}=100Hz, V_{IN}=1V_{rms}$		55		dB
Crosstalk	C.T	$V_{OUT}=0dBm$	50	60		dB
Forward/Reverse crosstalk	C.T(F/R)	$V_{OUT}=0dBm$	60	70		dB

TC9188N 051-0782-00 Electronic Volume

Description

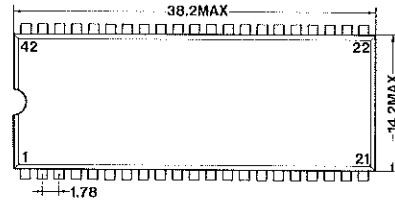
TC9188N is an electronic volume system to make one touch operation for switch and volume necessary for digital control of volume, balance, fader, bass, treble, and loudness.

Features

The selection and control of each volume can be optionally performed by the input of the specified serial data from the outside.

- Volume 0 ~ 79dB (1dB/Step)
- Fader FRONT, REAR
- Tone each Bass, Treble $\pm 12dB$ (2dB/Step)
- Loudness There is a built-in control function for ON/OFF at less than -20dB.

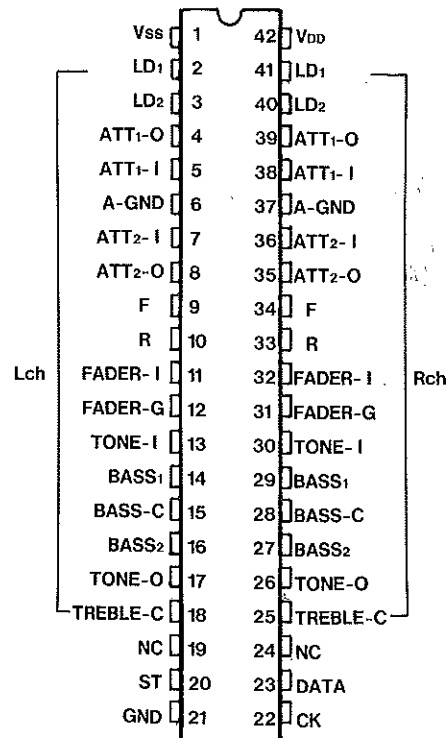
Outward Form



Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage	V_{DD}	14	V
Input voltage	V_{IN}	$V_{SS}-0.3 \sim V_{DD}+0.3$	V
Power dissipation	P_D	800	mW

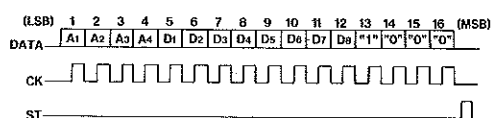
Terminal Connection



Terminal Function Table

No.	Symbol	Function
2,41 3,40	LD ₁ LD ₂	To connect Loudness network.
4 39	(L) ATT ₁ -OUT (R)	10dB step attenuator output terminal. The signal added to ATT ₁ -IN can be attenuated up to 0--70dB at 8 stages with 10dB-step.
5 38	(L) ATT ₁ -IN (R)	10dB step attenuator input terminal.
6,37	A-GND	Analog system ground.
7 36	(L) ATT ₂ -IN (R)	1dB step attenuator input terminal.
8 35	(L) ATT ₂ -OUT (R)	1dB step attenuator output terminal. The signal added to ATT ₂ -IN can be attenuated up to 0--9dB at 10 stages with 1dB-step.
9 34	(L) F (R)	Front of Fader Control output terminal.
10 33	(L) R (R)	Rear of Fader Control output terminal.
11 32	(L) FADER-IN (R)	Fader Control input terminal.
12 31	(L) FADER-GND (R)	Attenuator ground terminal for Fader Control.
13 30	(L) TONE-IN (R)	Tone Control input terminal.
14 29	(L) BASS ₁ (R)	Tap terminal for Tone Control Bass.
15 28	(L) BASS-COM (R)	Common terminal of volume for Tone Control Bass.
16 27	(L) BASS ₂ (R)	Tap terminal for Tone Control Bass.
17 26	(L) TONE-OUT (R)	Tone Control output terminal.
18 25	(L) TREBLE-COM (R)	Common terminal of volume for Tone Control Treble.
19,24	NC	Not in use. Open or ground.
20	ST	This is strobo input terminal for shifting to the taken-in control data. It is low-threshold value inverter input with CK, and DATA input.
22	CK	Clock input terminal for read the control data.
23	DATA	Control data input terminal.
1 21 42	V _{SS} GND V _{DD}	Power supply terminal.

Data Format

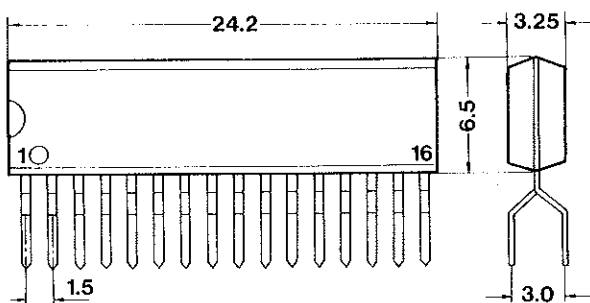


■LA3430 051-0733-00 FM MPX (Tentative Standard)

Feature

FM stereo multiplexer built in functions as pilot canceller, stereo noise controller, high frequency cut controller and automatic changer between stereo and monaural.

Figure



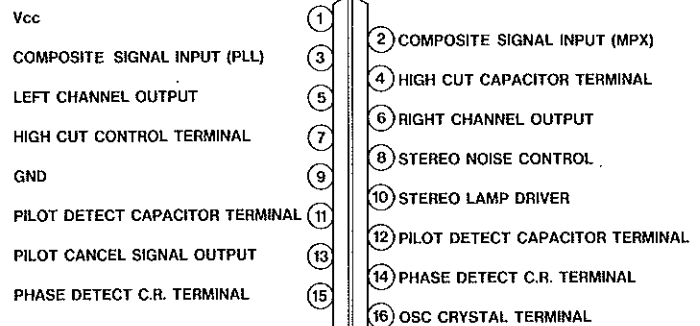
Absolute Maximum Ratings (Ta=25°C)

Supply Voltage	V _{CC}	16V
Lamp Drive Current	I _b	30mA
Power Dissipation	P _D	520mW

Electrical Characteristics (Ta=25°C, V_{CC}=10V, V_i=300mV, f=1kHz, L+R=90%, PILOT=10%)

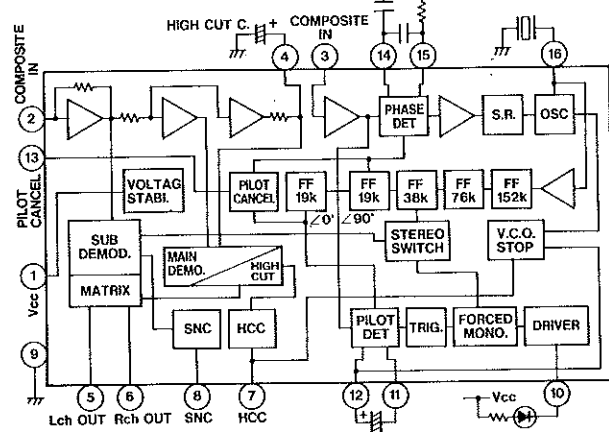
Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Non-signal current	I _{CCO}	No input		28	38	mA
Channel separation	Sep		40	50		dB
Total harmonic distortion	THD	Monaural		0.07	0.2	%
		Main		0.07	0.2	%
Lamp turn-ON level	V _i	L+R=90%, PILOT=10%	60	85	120	mV
Lamp hysteresis	hy			3	6	dB
Capture range	CR			±1		%
Output signal level	V _o	sub	150	215	300	mV
Signal/noise ratio	S/N	R _g =20kΩ	68	74		dB
		R _g =10kΩ	70	78		dB
Input resistance (Pin 2)	r _i			20		kΩ
SCA reject ratio	SCA _{rej}			80		dB
Allowable input voltage	V _i	THD=1% R _g =20kΩ	700	900		mV
		THD=1% R _g =10kΩ		450		mV
SNC output attenuation degree	Att SNC	V _B =0.6V, L+R=90%, PILOT=10%	-8.5	-3.0	-0.3	dB
SNC output voltage	V _o sub	V _B =0.1V, L+R=90%, PILOT=10%			5	mV
HCC output attenuation degree	Att HCC(1)	V ₇ =0.6V, L+R=90%, PILOT=10%	-15.0	-6.0	-0.5	dB
	Att HCC(2)	V ₇ =1V, L+R=90%, PILOT=10%	-2.0		0	dB
Supply voltage ripple rejection	R _r			35		dB
VCC STOP voltage				7.3		V
Channel balance				0.5	1.5	dB
Pilot cancelling degree			20	27		dB
Stereo amplifier current		Minimum stereo operating current	1.0			mA
Saturation voltage (Pin 10)		I _L =10mA		1.0		V

Terminal Connection



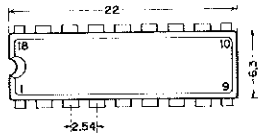
No.	Name of terminal	Function
1	Vcc	Connected to power supply.
2	Composite signal input (MPX)	Composite signal input terminal to MPX unit.
3	Composite signal input (PLL)	Composite signal input terminal to PLL unit.
4	High-cut condensor terminal	Connects a condensor to improve S/N ratio on audio sensitivity by attenuating high-pass of voice signal in the weak electric field.
5	Left channel output	Generates voice signal in the left channel.
6	Right channel output	Generates voice signal in the right channel.
7	High-cut control (HCC)	When voltage applied to this terminal is dropped down to about 1.0V or less (when V _{CC} =10V), 7kHz or more of the main signal (Monaural signal) is dropped, so that S/N-ratio for the audio sensitivity may be improved. When voltage of 7V or more is applied to this terminal, V.C.O. oscillation is stopped, putting the system in the forcible monaural mode. In this case, HCC and SNC become not operatable.
8	Stereo noise control (SNC)	As voltage applied to this terminal is decreased gradually, output of SUB DETECTOR (differential signal) drops gradually, so that the voice signal output is put nearly in the monaural mode, providing the favourable S/N ratio in the weak electric field.
9	GND	For grounding
10	Stereo lamp driver	Absorbs the stereo lamp drive current of up to 30mA.
11	Pilot detect condensor terminal	Connects a condensor for detection of the pilot signal.
12	Pilot cancel signal output	Generates a faulse triangular wave of 19kHz to cancel the pilot signal.
13	Phase detect C.R. terminal	Connects C.R. for phase detection.
14	OSC CRYSTAL terminal	Connects a oscillating crystal or ceramic resonator.

Block Diagram



HA12046 051-0560-00 Dolby-B Type Noise Reduction System
HA12047 051-0507-00

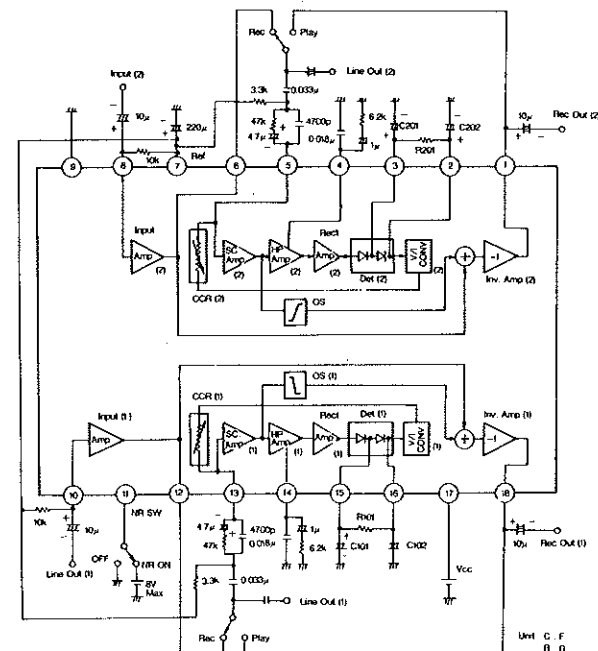
Outward Form



Electric Characteristics

Item	HA12046	HA12047	Unit
Dolby level	450	300	mV
Operating power voltage	5~15	5~15	V
Input amp. gain	26	22	dB

Block Diagram



	HA12046	HA12047
Dolby level	450mV	300mV
C ₁₀₁₍₂₀₁₎	0.33μ	0.22μ
C ₁₀₂₍₂₀₂₎	1μ	0.68μ
R ₁₀₁₍₂₀₁₎	47k	100k

Note) Dolby and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.
 Noise Reduction System manufacture under license from Dolby Laboratories Licensing Corporation.

μPD1708G600-03 051-0756-00 Micro Computer

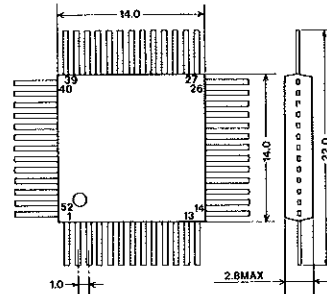
I Description

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



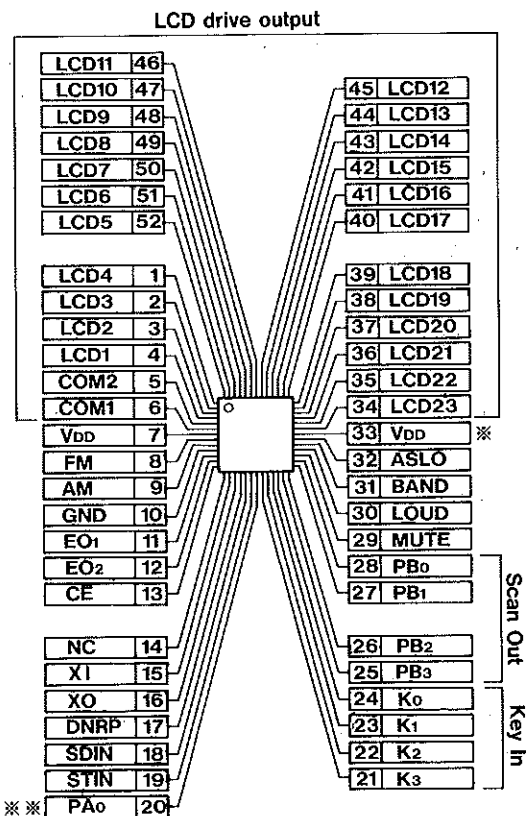
IV Absolute Maximum Ratings (Ta = 25 ± 2°C)

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

Aria	BAND	Frequency Range	Channel Space	Comparative Frequency	Intermediate Frequency
U.S.A	MW	530 ~ 1,620kHz	10kHz	10kHz	450kHz
	F M	87.9 ~ 107.9MHz	200kHz	25kHz	10.7MHz
Australia	MW	531 ~ 1,602kHz	9kHz	9kHz	450kHz
	F M	87.9 ~ 107.9MHz	100kHz	25kHz	10.7MHz

VI Terminal Connection



※ Pins 7 and 33 is internally connected.

※ This is an I/O terminal to be used for both Key In and Scan Out.

Terminal Connection Table

Pin No.	Symbol	Terminal Name	Function	I/O
34-52	LCD23-LCD5	LCD Segment Output	This is a segment signal output terminal for the LCD panel. Display up to 46 dots is possible by using a matrix together with COM1 or COM2. (Note 1)	CMOS Push-Pull
1-4	LCD4-LCD1	LCD Segment Output		
5	COM2	LCD Common Output	It allows 3 types of values, i.e., GND, 1/2 VDD and VDD, to be output at 5ms intervals and at a frequency of 50Hz. A segment with a potential difference of $\pm VDD$ which was produced between these terminals and LCD1-LCD23 will be lighted. (Note 1)	CMOS Push-Pull
6	COM1	LCD Common Output		
7, 33	VDD	Power Supply	This is the power supply terminal of the device. When the device operates, a voltage of $5V \pm 10\%$ 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.	—
8	FM	FM Local Oscillation Signal Input	This allows local oscillating outputs up to 10~150MHz (0.5Vp-p MIN) to be input. (Note 2)	Input
9	AM	AM Local Oscillation Signal Input	This allows local oscillating outputs up to 0.6~50MHz (0.3Vp-p MIN) to be input. This terminal will be selected at time of the direct dividing and become active. (Note 2)	Input
10	GND	Ground		
11	EO1	Error Outputs	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 EO1 and EO2 will output the same waveform and therefore using EO1 or EO2 terminal is optional.	CMOS 3-state
12	EO2	Error Outputs		
13	CE	Chip Enable	This is a selection signal input terminal for the device. Set "high level" when letting the device operate normally. Set "low level" when the device is not to be used. This terminal, during low level, causes the PLL to become a prohibited status. However, it will not accept inputs less than 134 μ s.	Input
14	NC	NO Connection	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	X'tal	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	X'tal		
17	DNRP	DNR/AM-BW (DNR/ DOLC)	(R) Either the DNR or the AM-BW can be selected by diode switch (see Diode Sw. Matrix Operation Table) as follows. (1) When DNR was selected (See Momentary Sw. No. ②): "H" ← DNR output, ON "L" ← DNR output, OFF (2) When AM-BW was selected (See Momentary Sw. No. ③): "H" ← AM-BW output, ON "L" ← AM-BW output, OFF (T) Either the DNR or DOL-C can be selected by 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 tape mode b) on Momentary Sw. No. ④ or ⑤.	CMOS Push-Pull
18	SDIN	SD (DOL-B)	(R) An input port for SD signal. (See Momentary Sw. No. ⑤ PS) "H" ← SD input "L" ← No SD input (T) See (T), (2) and Momentary Sw. No. ⑥ on above DNRP.	Input
19	STIN	ST (C >)	(R) An input port for the STEREO signal. "H" ← ST input "L" ← No ST input (T) An input port for the tape tuning indicator display. "H" ← > "L" ← <	Input
20	PA0	Key In, Scan Out	This is an I/O terminal to be used for both Key In and Scan Out.	CMOS Push-Pull
21-24	K3-K0	Key Return Signal Inputs	These are the Key return signal input terminals on the external Key matrixes.	Input
25-28	PB3-PB0	Scan Out	This is a 4-bit output port. It is used as the Key return signal source of the Key matrix.	CMOS Push-Pull
29	MUTE	MUTING	(R) (T) This is a muting signal output port. "H" ← Mute, ON "L" ← Mute, OFF	CMOS Push-Pull
30	LOUD	LOUD	(R) (T) This is a Loudness function control output port (See Momentary Sw. No. ⑧) "H" ← Controlled output, OFF "L" ← Controlled output, ON	CMOS Push-Pull
31	BAND	BAND (APC)	(R) This is a controlled output port for FM/MW band switching. "H" ← FM "L" ← MW (T) This is an APC controlled signal output port (See Momentary Sw. No. ⑨) "H" ← Controlled output, ON "L" ← Controlled output, OFF	CMOS Push-Pull

Pin No.	Symbol	Terminal Name	Function	I/O
32	ASLO	ASLO (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. ⑩) "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

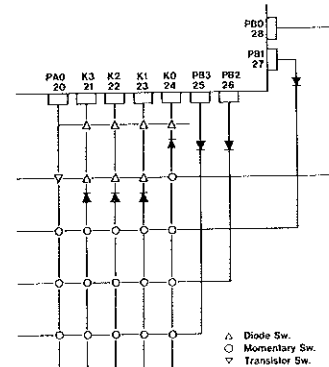
	PA0 20Pin	K3 21Pin	K2 22Pin	K1 23Pin	K0 24Pin
PA0 20Pin	—	T-MODE ¹	C ²	B ³	A ⁴
PB0 28Pin	—	R/T ^⑤	CLKSEL ^⑥	USA ^⑦	BAND ^⑧
PB1 27Pin	PS/AS ⁹	(M-UP) UP ¹⁰	(M-DOWN) DOWN ¹¹	RCAL ¹²	(SEEK) TUNE ¹³
PB2 26Pin	M1 ¹⁴	M2 (dbx) ¹⁵	M3 (DOL-C) ¹⁶	M4 (DOL-B) ¹⁷	M5 (APC) ¹⁸
PB3 25Pin	MTL ²⁰	(AM-BW) APC ²¹	(DNR) DOL-B ²²	LOUD ²³	M6 (MTL) ¹⁹

□ • Momentary Sw.

□ • Diode Sw.

□ • Transistor Sw.

2. Key Matrix Connection and Switch Form



3. Diode Sw.

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

In the Table below, "0" 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 M-an. 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. It provides a function mode to be executed by the combination of ON/OFF of diode switches A, B and C. (See Diode Sw. Matrix Operation Table)
③	B	
④	A	
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	C	B	A	Function
T1	0	0	0	TUNE
T1	0	0	1	Dual
T1	0	1	0	DOL-B
T1	0	1	1	DOL-C
T1	1	0	0	dbx
T1	1	0	1	AMBW
T1	1	1	0	DNR
T1	1	1	1	APC
T1	0	0	0	MTL
T1	0	0	1	LOUD

0 • OFF (Open)
1 • ON (Short)

See Function of TUNE ⑬ 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 "preset scan". Push and touch off the key less than 2 seconds for "auto memory". (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 FM, channels of FM1 will be called from 1 to 6, then channels of FM2 will be called from 1 to 6, and these will be repeated as follows. (MW) 1→2→3→4→5→6 └──────────┘ (FM) FM1 FM2 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 is "High", the channel will be held. During the holding, the channel display 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. <table border="1"> <thead> <tr> <th>Key Name</th> <th>Handling</th> </tr> </thead> <tbody> <tr> <td>BAND, RCAL M1-M6, UP DOWN</td> <td>Cancel the PS and handle the key.</td> </tr> <tr> <td>AM-BW, DNR LOUD</td> <td>Retain the PS and handle the invalid key. When no selection has been made, handle the invalid key.</td> </tr> <tr> <td>TUNE, MTL</td> <td>No acceptance allowed.</td> </tr> <tr> <td>PS/AS</td> <td>Cancel the PS and retain the frequency of that time.</td> </tr> </tbody> </table> 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 starting 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 week, 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: <table border="1"> <thead> <tr> <th>Key Name</th> <th>Handling</th> </tr> </thead> <tbody> <tr> <td>BAND, RCAL M1-M6, UP DOWN</td> <td>Cancel the AS, then handle the key.</td> </tr> <tr> <td>AM-BW, DNR LOUD</td> <td>Retain the AS, then handle the key. If no selection has been made, handle the invalid key.</td> </tr> <tr> <td>MTL, TUNE</td> <td>No acceptance allowed.</td> </tr> <tr> <td>PS/AS</td> <td>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.</td> </tr> </tbody> </table> Note that the reception frequency, after the RCAL ⑫ 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 cancelled. The reception frequency after the tape is switched to radio and the CE is changed from L to H thereafter, will be the same as of when the AS was started. (Note) Although we described that the TUNE cannot accept the handling of the key during PS/AS or Auto Tuning, this applies to when the T-MODE is "0". When T-MODE is in "1", cancel the AS to handle the key.	Key Name	Handling	BAND, RCAL M1-M6, UP DOWN	Cancel the PS and handle the key.	AM-BW, DNR LOUD	Retain the PS and handle the invalid key. 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.	Key Name	Handling	BAND, RCAL M1-M6, UP DOWN	Cancel the AS, then handle the key.	AM-BW, 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.
Key Name	Handling																					
BAND, RCAL M1-M6, UP DOWN	Cancel the PS and handle the key.																					
AM-BW, DNR LOUD	Retain the PS and handle the invalid key. 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.																					
Key Name	Handling																					
BAND, RCAL M1-M6, UP DOWN	Cancel the AS, then handle the key.																					
AM-BW, 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.																					

No.	Switch name	Function
⑩ ⑪	UP DOWN	The UP/DOWN key is used when a channel is selected. However, depending on the T-MODE switch ①, handling manner will become different. Also, clock adjustments can be made by pushing this UP/DOWN key and "RCAL" key ⑫ at the same time. (1) T-MODE ← 0 Make UP/DOWN on the selected channel selection mode by "TUNE" key ⑬. a) Manual Tuning Push UP/DOWN key to operate 1ch, UP or DOWN. If it is continued to be pushed more than 0.5 second, a feed will be made at 40ms intervals and by 1ch until the pushing is stopped. If the UP key is pushed and the upper limit is exceeded, a transfer will be made to the lower limit. If the DOWN key is pushed and the lower limit is exceeded, a transfer will be made to the upper limit. During manual tuning, there will be a mute output. The UP/DOWN key works in the order it is pushed. The UP/DOWN key, as it allows acceptance at time of clock display, will make a frequency display to permit the key to be handled. When the clock display is priority, the clock display will be made after the key is touched off and the frequency display for about 5 seconds. If, while the UP/DOWN key is continued to be pushed, the power is turned OFF, the tape mode is changed to ON, or the CE is changed from H to L, no rewriting of the memory will be made. Therefore, if, after then, the power is turned ON, the tape mode is changed to OFF (radio, ON) and the CE is changed from L to H, a return to the frequency by which the UP/DOWN was started will result. b) Auto Tuning (SEEK) If the UP/DOWN is pushed, an auto tuning will be made by going UP or DOWN by 1ch. If, during the auto tuning, the SD signal "High" is input to pin 18, a frequency of that time will be retained. The SD signals, after PLL locking and a delay time of about 40ms, will be tested. If a "High" is input at that time, the auto tuning will be cancelled. When the frequency at the band edge changes from the upper to the lower limit or from the lower to the upper limit, a frequency after the change will be retained for about 500ms. Also when the frequency by which the auto tuning is started is of the band edge, starting will be made after a delay time of about 500ms. The sweep time is 40ms. (Note) The above also applies to the auto tuning by the TUNE key when T-MODE=1. If, during the auto tuning, the power is turned OFF, the tape mode is changed to ON or the CE is changed from H to L for signals other than those of the SD, there will be no rewriting of the last channel memory and the last channel memory will retain the frequency by which the auto tuning was started. Therefore, if, after then, the power is turned ON, the tape mode changed to OFF and the CE changed from L to H, a return to the frequency by which the former auto tuning was started will result. When, during auto tuning, the key is input, the following handling will be required depending on the key input. When a key other than the above was input, the auto tuning must be cancelled and the key handled.

Key Name	Handling
BAND, PS/AS M1-M6, RCAL	Cancel the auto tuning, then handle the invalid key.
LOUD, AM-BW DNR	Retain the auto tuning, then handle the key. When no selection has been made yet, push the invalid key (by Diode Sw.)
TUNE, MTL	No acceptance allowed.
UP, DOWN	For UP to DOWN and DOWN to UP, the tuning direction will change with the auto tuning retained as is. For UP to UP and DOWN to DOWN, cancel and stop the auto tuning.

If the UP and DOWN key is continued to be pushed, a different handling will be required and the momentary key will be accepted by any key. However, when the UP/DOWN key is continued to be pushed or the DOWN key is pushed while the UP key is being pushed for instance, there will be no change because there is a link also to the auto tuning. If the finger is let gone from the UP, auto tuning of DOWN will be caused.

c) Auto tuning (SCAN)
The SCAN allows an auto tuning to be made, and if, during sweep, the "High" input is made to the SD signal input to pin 18 a broadcast station, the channel will be held at the frequency for 5 seconds to cause a reception condition. After 5 seconds, an auto tuning will be started again. After then SCAN operations will be repeated.
When the UP/DOWN key is pushed (the key being handled) during sweep or a stop for 5 seconds, the SCAN operation will be cancelled to cause a reception status.

(2) T-MODE ← 1
When T-MODE switch ① is "1", Man. UP and DOWN will result irrespective of the "TUNE" key ⑬. Please see Manual Tuning in section (1), a). The difference between Man. UP/DOWN when T-MODE is "0" is the display of the channel selection mode. For Man. UP/DOWN, no "Man" display will be made.

(3) Clock adjustments
If UP/DOWN key is pushed together with RCAL key ⑫, it will be possible to adjust the clock.
a) Adjusting minutes
Continue to push RCAL key ⑫ and push UP key ⑬ to adjust the digit of minute. Push one time to allow the clock to gain one minute by changing only in UP direction. If the key is continued to be pushed more than 0.5 second, a fast feed at a speed of 8 minutes per second will be possible until the finger is let gone from the key.
In the adjustment of minute, the minute digit will not be carried up to time digit. The second with each time it is adjusted will be reset and becomes 0.
b) Adjusting hours
Continue to push RCAL key ⑫ and push DOWN key ⑪ to adjust the hour digit. Each it is pushed, it allows gaining one hour changing only in the UP direction.
If the key is continued to be pushed over 0.5 second, a fast feed at a speed of 4 hours per hour will be possible until the finger is let gone from the key. The hour adjustment will not affect the minute and second at all.

No.	Switch name	Function										
		c) Relations between minute and hour adjustments The first pushed the first served. Even if DOWN key ⑪ is pushed while adjusting the minute with UP key ⑩ by keeping pushing RCAL key ⑫, the time cannot be adjusted. If DOWN key ⑪ will have been pushed when the finger is let gone from UP key ⑩, a time adjustment fast feet will result. If the finger is not let gone from RCAL key ⑫, it will be possible to adjust the time even if the UP/DOWN key is turned ON/OFF any times. However, if the finger is let gone from RCAL key ⑫ during handling, the handling will be stopped and handling of other keys cannot be made until the finger is let gone from UP/DOWN key.										
⑫	RCAL	This RCAL key can be accepted when the clock display present has been selected by diode switch ⑥. (1) Changing the display Push and let the finger go from this key to allow a change of display. When the display priority is the frequency, the display of frequency will made 5 seconds after a shift to the clock. When the clock display is the priority, the display will change to the clock about 5 seconds after a shift to the frequency. (2) Adjusting the clock See item (3) in UP, DOWN keys ⑩ and ⑪. (3) Changing the display priority In about 750ms after RCAL key has been pushed, the display priority will change if TUNE key ⑬ is pushed. If TUNE key ⑬ is pushed after about 750ms, no display priority will change. When, during clock display, the display priority is changed to the frequency or when, during the frequency display, the display priority is changed to the clock, the display will change respectively about 5 seconds after the priority change.										
⑬	TUNE	The diode switch (T-MODE) ① allows the TUNE to become a channel selection mode selection key or a SEEK UP key. (1) T-MODE ← 0 Diode switch ① allows T1 or T2 mode to be selected. (T1 mode) Man.→SEEK (T2 mode) Man.→SEEK→SCAN As shown above, the channel selection mode will change each time it is pushed. And, the UP/DOWN key will become the UP/DOWN key for each mode. The channel selection mode will be LCD displayed (in " " in figures shown below). As the "Man" in T1 mode and the "SCAN" in T2 mode have been used as the segment, Man. will not be displayed in T2 mode. (T1 mode) Man. → SEEK "Man" "SEEK" (T2 mode) Man. → SEEK → SCAN " " "SEEK" "SCAN" The key cannot be accepted during auto tuning or PS/AS. (2) T-MODE ← 1 When T-MODE switch ① is "1", the channel selection mode will be gone, and the UP/DOWN key will become Man, UP/DOWN while the TUNE key will become a SEEK UP key. If the key is pushed, upping will be made by one step for auto tuning, and an SD signal "High" is input during the auto tuning, the auto tuning will be cancelled and the frequency of that time retained. The "SEEK" indicator will light during the auto tuning but no other displays will be made. Acceptation of the keys during the auto tuning are as follows. <table><tr><th>Key Name</th><th>Handling</th></tr><tr><td>BAND, PS/AS UP, DOWN RCAL, M1-M6</td><td>Cancel the auto tuning, then handle the key.</td></tr><tr><td>AM-BW, DNR LOUD</td><td>Retain the auto tuning, then handle the invalid key. When no selection has been made with a diode switch, handle the invalid key.</td></tr><tr><td>MTL</td><td>Invalid key</td></tr><tr><td>TUNE</td><td>Cancel the auto tuning</td></tr></table> For others including the timing, see item (2) "Auto Tuning (SEEK)" in section, UP and DOWN ⑩ and ⑪.	Key Name	Handling	BAND, PS/AS UP, DOWN RCAL, M1-M6	Cancel the auto tuning, then handle the key.	AM-BW, DNR LOUD	Retain the auto tuning, then handle the invalid key. When no selection has been made with a diode switch, handle the invalid key.	MTL	Invalid key	TUNE	Cancel the auto tuning
Key Name	Handling											
BAND, PS/AS UP, DOWN RCAL, M1-M6	Cancel the auto tuning, then handle the key.											
AM-BW, DNR LOUD	Retain the auto tuning, then handle the invalid key. When no selection has been made with a diode switch, handle the invalid key.											
MTL	Invalid key											
TUNE	Cancel the auto tuning											
⑭	M1	This key can be used as a preset key in the radio mode and also as a function key in the tape mode.										
⑮	M2 (dbx)	(1) Radio mode										
⑯	M3 (DOL-C)	This is a key for writing and calling a preset memory.										
⑰	M4 (DOL-B)	To one key, the MW, FM1 and FM2 correspond separately so that it is possible to memorize different frequencies from a total of 18 channels. The selection of writing and calling will be decided by the way the key is pushed as follows.										
⑱	M5 (APC)	Let the finger go from the key in 2 seconds to call.										
⑲	M6 (MTL)	Keep pushing the key for more than 2 seconds to write.										
		a) Calling										
		If the preset key is pushed and then touched off in 2 seconds, the channel memorized in the pushed key will be for reception.										
		While a judging is being made whether it is a calling or writing, there will be a mute output. However, when it is now receiving the preset and the pushed key is the same as the present preset channel, no mute output will be made.										
		This key can be accepted even if it is pushed during the clock display. At time when this key is accepted, the display of the frequency being received will be provided and, if the finger is let gone from this key in 2 seconds, a frequency display for the called preset memory will be provided.										

No.	Switch name	Function																																																																																		
		b) Writing If the preset key is pushed and the pushing is continued more than 2 seconds, the frequency being received at present will be written in the memory corresponding to the pushed key. 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. 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. 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. c) During deciding 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. 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. (2) Tape mode 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) <table><tr><td>⑩</td><td>M1</td><td>→</td><td>(OFF)</td></tr><tr><td>⑬</td><td>M2</td><td>→</td><td>dbx</td></tr><tr><td>⑯</td><td>M3</td><td>→</td><td>DOL-C</td></tr><tr><td>⑰</td><td>M4</td><td>→</td><td>DOL-B</td></tr><tr><td>⑱</td><td>M5</td><td>→</td><td>APC</td></tr><tr><td>⑲</td><td>M6</td><td>→</td><td>MTL</td></tr></table> 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. a) APC, MTL 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. b) DOL-B, DOL-C, dbx 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. <table><tr><td>DOL-B 17</td><td>DOL-C 16</td><td>dbx 15</td><td></td><td>SDIN (18Pin)</td><td>DNRP (17Pin)</td></tr><tr><td>ON</td><td></td><td></td><td></td><td>H</td><td>L</td></tr><tr><td></td><td>ON</td><td></td><td></td><td>L</td><td>H</td></tr><tr><td></td><td>ON</td><td></td><td></td><td>L</td><td>L</td></tr><tr><td></td><td></td><td>ON</td><td></td><td>H</td><td>H</td></tr></table> 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. <table><tr><td>DOL-B 17</td><td>DOL-C 16</td><td>dbx 15</td><td></td><td>Display</td><td>SDIN (18Pin)</td><td>DNRP (17Pin)</td></tr><tr><td>ON</td><td></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></td><td>DOL-C</td><td>L</td><td>H</td></tr><tr><td></td><td></td><td>ON</td><td></td><td>BLANK</td><td>H</td><td>H</td></tr></table> If the Dual has not been selected by the diode switch, an invalid key will be caused in the tape mode.	⑩	M1	→	(OFF)	⑬	M2	→	dbx	⑯	M3	→	DOL-C	⑰	M4	→	DOL-B	⑱	M5	→	APC	⑲	M6	→	MTL	DOL-B 17	DOL-C 16	dbx 15		SDIN (18Pin)	DNRP (17Pin)	ON				H	L		ON			L	H		ON			L	L			ON		H	H	DOL-B 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
⑩	M1	→	(OFF)																																																																																	
⑬	M2	→	dbx																																																																																	
⑯	M3	→	DOL-C																																																																																	
⑰	M4	→	DOL-B																																																																																	
⑱	M5	→	APC																																																																																	
⑲	M6	→	MTL																																																																																	
DOL-B 17	DOL-C 16	dbx 15		SDIN (18Pin)	DNRP (17Pin)																																																																															
ON				H	L																																																																															
	ON			L	H																																																																															
	ON			L	L																																																																															
		ON		H	H																																																																															
DOL-B 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). 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.																																																																																		
㉑	(AM-BW) APC	This key serves in two ways according to the Diode Sw. Matrix. (1) APC If, in the tape mode, the Dual selected 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. Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from pin 31 to be made. (2) AM-BW (See Pin 17 [DNRP] in Terminal Connection Table). If, in the radio mode, the AM-BW has been selected by the Diode switch and the MW is being received, an AM-BW execution mode will be caused. Each this key is pushed, ON/OFF will be repeated, allowing the port output and display from Pin 17 to be made. Since APC and AM-BW have a different execution mode, both respond independently even if both APC and AM-BW have been selected.																																																																																		
㉒	(DNR) DOL-B	This key serves in two ways according to the Diode Sw. Matrix. (1) DOL-B 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. Each time this key is pushed, ON/OFF will be repeated, allowing the port output and display from Pin 18 to be made. (2) DNR (See Pin 17 [DNRP] in Terminal Connection Table) If the DNR has been selected by the Diode switch, a DNR execution mode will be caused. 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. (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.																																																																																		
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.																																																																																		

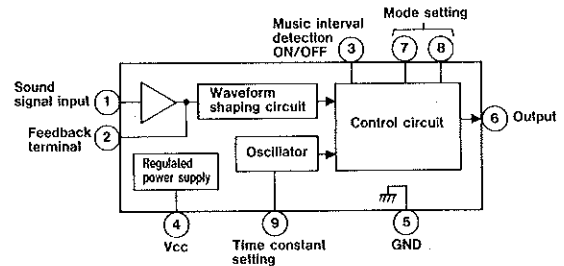
VIII LCD Matrix

pin	COMMON 1		COMMON 2	
LCD 1	a A	>	b A	<
2	e A	MANU or SCAN	g A	SEEK
3	f A	FM1	a 0	FM2
4	b 0	AM	c 0	1
5	f 2	Sf 2	b 2	Sb 2
6	e 2	Se 2	g 2	Sg 2
7	d 2	Sd 2	c 2	Sc 2
8	a 2	Sa 2	d 1	: (COLON)
9	f 4	Sf 4	b 4	Sb 4
10	e 4	Se 4	g 4	Sg 4
11	d 4	Sd 4	c 4	Sc 4
12	a 4	Sa 4	a 1	. (D.P)
13	f 6	Sf 6	d 6	Sd 6
14	e 6	Se 6	g 6	Sg 6
15	d 6	Sd 6	c 6	Sc 6
16	a 6	Sa 6	e 8	LOUD
17	f 8	MTL	g 8	APC
18	b 8	DOL-B	c A	DOL-C or DNR
19	d A	AM-BW	c 3	ST
20	d 3	ch	a C	Sa C
21	d C	Sd C	c C	Sc C
22	e C	Se C	g C	Sg C
23	f C	Sf C	b C	Sb C

Description of Terminal

1	Sound signal input	Sound signal is input.
2	Feedback terminal	Sound signal amplifier feedback terminal.
3	Music interval detection ON/OFF	When "H" is input, Music interval detecting function is actuated.
4	Power terminal	
5	GND	
6	Output	When the Music interval is detected, "H" pulse is output.
7	Mode setting B	Modes of OFF, PLAY and FF/RWD are set. Refer to Table of Modes.
8	Mode setting A	
9	Time constant setting	Sets the oscillation cycle of oscillator which specifies the timing of IC function. Refer to Summary of Functions.

Block Diagram



When the Music interval detection ON/OFF terminal (3 pins) is set to "H", the IC is reset at the "rise" and the output (6 pins) becomes "L". Then, the sound signal is changed into the pulse by the waveform shaping circuit, but when this pulse is input into the control circuit of 3968 * 1 pcs, the IC recognizes the existence of a curve. Then, while 3712 * 2 pcs of output pulses from the oscillator are being output, the IC assumes that there is a music interval, if there is no pulse by the sound signal while 3712 * 2 pcs of output pulse of oscillation are being output, and "H" is output (pin 6) only while 265 pcs of output pulse from the oscillator are being output.

* 1 : 384 pcs in FF/RWD

* 2 : 128 pcs in FF/RWD

The period T_{osc} of oscillator is decided as follows by the capacity C of the condenser connected to the time constant setting terminal (pin 9).

$$T_{osc} = (8.64 \pm 1.9) C \text{ (msec)}$$

Absolute Maximum Ratings (Ta=25°C)

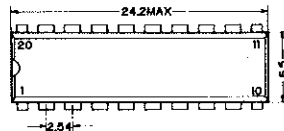
Item	Symbol	Rating		Unit
		AN6262 AN6263	AN6262N AN6263N	
Power voltage	V _{cc}	16	16	V
Power current	I _t	21.0	28.0	mA
Allowable loss	P _D	420	450	mW
Output current	I _s	150	150	mA

Electrical Characteristics (Unless specified otherwise, V_{cc}=4.5~16V, Ta=-30~80°C)

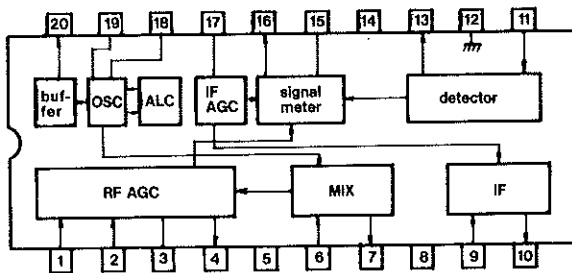
No.	Item	Symbol	Test circuit	Condition	Allowable value			Unit	Note
					min.	typ.	max.		
1	Power current	I _{cc}			12.5		21.0	mA	DC inspection item
2	Oscillation frequency	f _{osc}	1	V _{in} =0mV V ₃ =V ₄ =0V	0.9	1.2	1.47	kHz	
3	Signal detection level	V _{in}	1	V _{in} =10kHz V ₃ =V ₄ =2V, V ₄ =0V	1.7		2.7	mVrms	
4	Music interval ON/OFF level	V ₃₋₅			1.1		1.6	V	DC inspection item
5	Music interval detection OFF outflow current	I ₁			-1.2		-0.6	mA	-
6	Mode switching level 7 terminal	V ₇₋₅			1.0		1.5	V	-
7	Mode switching level 8 terminal	V ₈₋₅			1.0		1.5	V	-
8	Mode switching circuit outflow current 7 terminal	I ₁			-1.2		-0.6	mA	-
9	Mode switching circuit outflow current 8 terminal	I ₁			-1.2		-0.6	mA	-

■LA1135 051-0634-00 AM ET

Outward Form

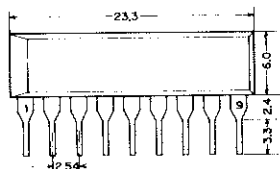


Block Diagram



AN6262 051-0566-00
 ■AN6262N 051-0566-01
 AN6263 051-0561-00 MUSIC INTERVAL DETECTION IC
 AN6263N 051-0561-01

Drawing of General View



Terminal Connection Diagram

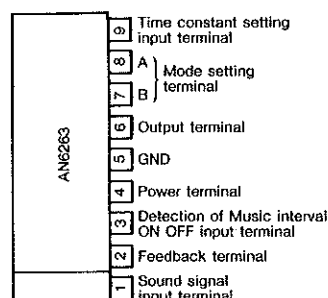


Table of Modes

A	B	Mode	
		AN6262,N	AN6263,N
L	L	OFF	OFF
L	H	PLAY	FF/RWD
H	L	FF/RWD	PLAY
H	H	OFF	OFF

PARTS LIST:

©Electrical section

©MAIN P.W.B

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
D _{101,102,201,202,302,303,401,501,502,506-508,510-526,529,530,531,532,535,536,537,538,701,702}	001-0330-00	Diode (1SS119)	39	Q ₇₀₄	103-1225-00	Transistor (2SD1225)	1
D _{533,534}	001-0360-00	Diode (S5566B)	2	Q ₅₂₃	108-0369-00	FET (2SK369)	1
D _{509,527}	001-0361-00	Diode (1SS198)	2	R ₇₀₇	111-1001-81	Film resistor (½W510Ω)	1
D ₅₂₈	001-0391-00	Diode (DCE015)	1	R ₃₁₄	111-2711-81	Film resistor (½W5270Ω)	1
D _{301,702,703}	001-0423-24	Diode (MA4091)	3	R ₇₀₈	111-4711-81	Film resistor (½W5470Ω)	1
D ₅₃₉	001-0423-25	Diode (MA4100)	1	R ₇₀₆	111-5611-81	Film resistor (½W5560Ω)	1
D ₅₀₃₋₅₀₅	001-0451-00	Diode (DCD015)	3	C _{105,118,301-304}	160-1022-05	Ceramic capacitor (50V1000pF B) HD	6
L ₂₀₁	010-2003-03	Coil	1	C _{101,106,208,209,514}	171-1033-06	Ceramic capacitor (25V0.01μF) SC	5
VR ₁₀₁	012-3808-09	Variable resistor (47kΩ)	1	C _{107,108}	171-2233-06	Ceramic capacitor (25V0.022μF) SC	2
VR _{103,104}	012-4318-06	Variable resistor (10kΩ)	2	C _{109,110,120,121,201,413,423}	171-4723-06	Ceramic capacitor (25V0.0047μF) SC	7
VR ₁₀₂	012-4318-09	Variable resistor (47kΩ)	1	C _{202,507,508}	174-2200-13	Ceramic capacitor (50V22pF CH) TC	3
C ₅₁₁	042-0347-00	Electrolytic capacitor (5.5V0.1μF)	1	C _{411,424}	174-3300-13	Ceramic capacitor (50V33pF CH) TC	2
CCT ₅₀₂	050-0077-63	Component circuit (33kx4)	1	C _{502,503}	174-4700-13	Ceramic capacitor (50V47pF CH) TC	2
CCT ₅₀₃	050-0078-60	Component circuit (47kx5)	1	C ₁₁₄	172-4732-20	Polyester capacitor (63V0.047μF) SS	1
CCT ₅₀₄	050-0090-62	Component circuit (10kx10)	1	C ₃₁₃	172-6832-20	Polyester capacitor (63V0.068μF) SS	1
CCT ₅₀₁	050-0093-63	Component circuit (33kx6)	1	C _{306,309}	173-1032-10	Polyester capacitor (63V0.01μF) S	2
CCT ₂₀₁	050-0105-00	Component circuit	1	C ₃₁₂	173-2232-10	Polyester capacitor (0.022μF) S	1
IC ₄₀₃₋₄₀₆	051-0350-55	IC (NJM4558M)	4	C _{206,207}	173-5631-10	Polyester capacitor (0.056μF) S	2
IC ₁₀₁	051-0485-00	IC (LM1894N)	1	C _{412,422}	173-4732-10	Polyester capacitor (0.047μF) S	2
IC ₄₀₂	051-0556-01	IC (NJM2058M)	1	C ₁₀₃	179-1053-62	Electrolytic capacitor (50V1μF) S	1
IC ₃₀₂	051-0561-01	IC (AN6263N)	1	C _{112,501}	179-1063-32	Electrolytic capacitor (16V10μF) S	2
IC ₅₀₂	051-0568-01	IC (TD62551S)	1	C _{104,111,203,205}	179-2273-23	Electrolytic capacitor (10V220μF) S	4
IC ₃₀₁	051-0714-00	IC (TA7705P)	1	C ₅₁₀	179-4763-22	Electrolytic capacitor (10V47μF) S	1
IC ₅₀₁	051-0746-01	IC (TMP47C40N-6221)	1	C ₅₀₉	179-4773-32	Electrolytic capacitor (16V470μF) S	1
IC ₅₀₃	051-0756-00	IC (μPD1708G-600-03)	1	C _{504,505}	181-4763-22	Electrolytic capacitor (10V47μF) LL	2
IC ₄₀₁	051-0782-00	IC (TC9188N)	1	C _{403,404,405,406,409,410,414,415,416,417,420,421,506}	182-1053-62	Electrolytic capacitor (50V1μF) SS	13
X ₅₀₁	060-0109-53	Ceramic resonator (4.1MHz)	1	C _{401,402,407,408,418,419,425,426,427,428,701}	182-1063-32	Electrolytic capacitor (16V10μF) SS	11
X ₅₀₂	061-1053-00	Crystal	1	C _{115,517,702,703,705}	182-1073-22	Electrolytic capacitor (10V100μF) SS	5
Q _{502-506,705,706}	100-1048-00	Transistor (2SA1048)	7	C ₄₂₉	182-4763-22	Electrolytic capacitor (10V47μF) SS	1
Q _{508-515,518}	100-1346-00	Transistor (2SC1346)	9	C ₁₁₉	183-1043-62	Electrolytic capacitor (50V0.1μF) USS	1
Q _{520,703}	101-0909-50	Transistor (2SB909)	2	C _{117,513}	183-1053-62	Electrolytic capacitor (50V1μF) USS	2
Q ₇₀₂	102-1545-00	Transistor (2SC1545B)	1	C _{113,307,310,314,512}	183-1063-32	Electrolytic capacitor (16V10μF) USS	5
Q _{101-106,201,202,501,507,517,519,521,522,525,701,707,708,709,710,711}	102-2458-00	Transistor (2SC2458)	21	C _{102,305,308,516}	183-2263-32	Electrolytic capacitor (16V22μF) USS	4
Q _{301,302,524}	102-3327-00	Transistor (2SC3327AB)	3	C ₅₁₅	183-3363-22	Electrolytic capacitor (10V33μF) USS	1
Q ₅₁₆	102-3400-00	Transistor (2SC3400)	1	C ₂₀₄	183-4763-12	Electrolytic capacitor (6.3V47μF) USS	1
				C _{116,704}	183-4763-32	Electrolytic capacitor (16V47μF) USS	2
				C ₃₁₁	183-6863-22	Electrolytic capacitor (10V68μF) USS	1

©BUZZER P.W.B

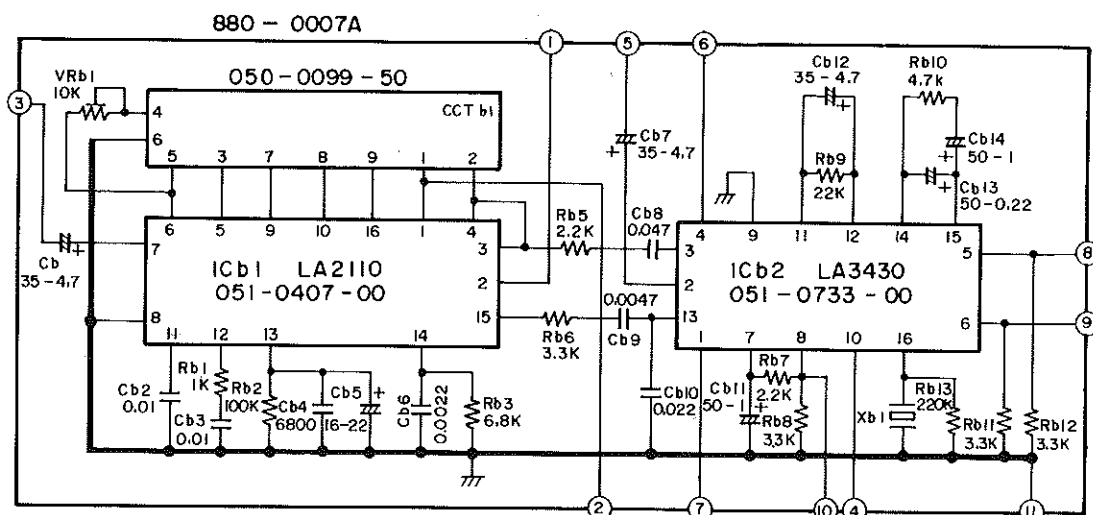
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
D _{610,611}	001-0330-00	Diode (1SS119)	2	BUZ ₆₀₁	060-0071-00	Buzzer	1
D _{607,608,609}	001-0360-00	Diode (S5566B)	3	Q ₆₀₈	101-0553-25	Transistor (2SB553Y)	1
D ₆₀₆	001-0423-19	Diode (MA4056)	1	Q _{602,603}	102-1846-00	Transistor (2SC1846QRS)	2
D ₆₀₁	001-0423-20	Diode (MA4062)	1	Q _{601,605,606,607}	102-2458-00	Transistor (2SC2458)	4
D ₆₀₅	001-0423-23	Diode (MA4082)	1	Q ₆₀₉	103-0655-00	Transistor (2SD655)	1
D _{602,603}	001-0425-12	Diode (HZS3.0E)	2	R ₆₁₃	111-6811-81	Film resistor (680Ω)	1
IC ₆₀₁	051-0172-00	IC (TC4011BP)	1	C ₆₀₄	160-1222-05	Ceramic capacitor (1200pF B) HD	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
C ₆₁₁	179-2273-31	Electrolytic capacitor (16V220 μ F) S	1
C ₆₀₇	179-4773-33	Electrolytic capacitor (16V470 μ F) S	1
C _{608,609}	182-1053-32	Electrolytic capacitor (50V1 μ F) SS	2

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
C _{601,602,606,610}	182-1063-32	Electrolytic capacitor (16V10 μ F) SS	4
C ₆₀₅	182-1073-22	Electrolytic capacitor (10V100 μ F) SS	1
C ₆₀₃	182-4763-22	Electrolytic capacitor (10V47 μ F) SS	1

Note : OM (Oxidized Metal)
S (Small)
HD (Higher Dielectric)
SC (Semi-Conductor)
SS (Super Small)
TC (Temperature-Compensating)
LL (Low Leak)
USS (Ultra Super Small)

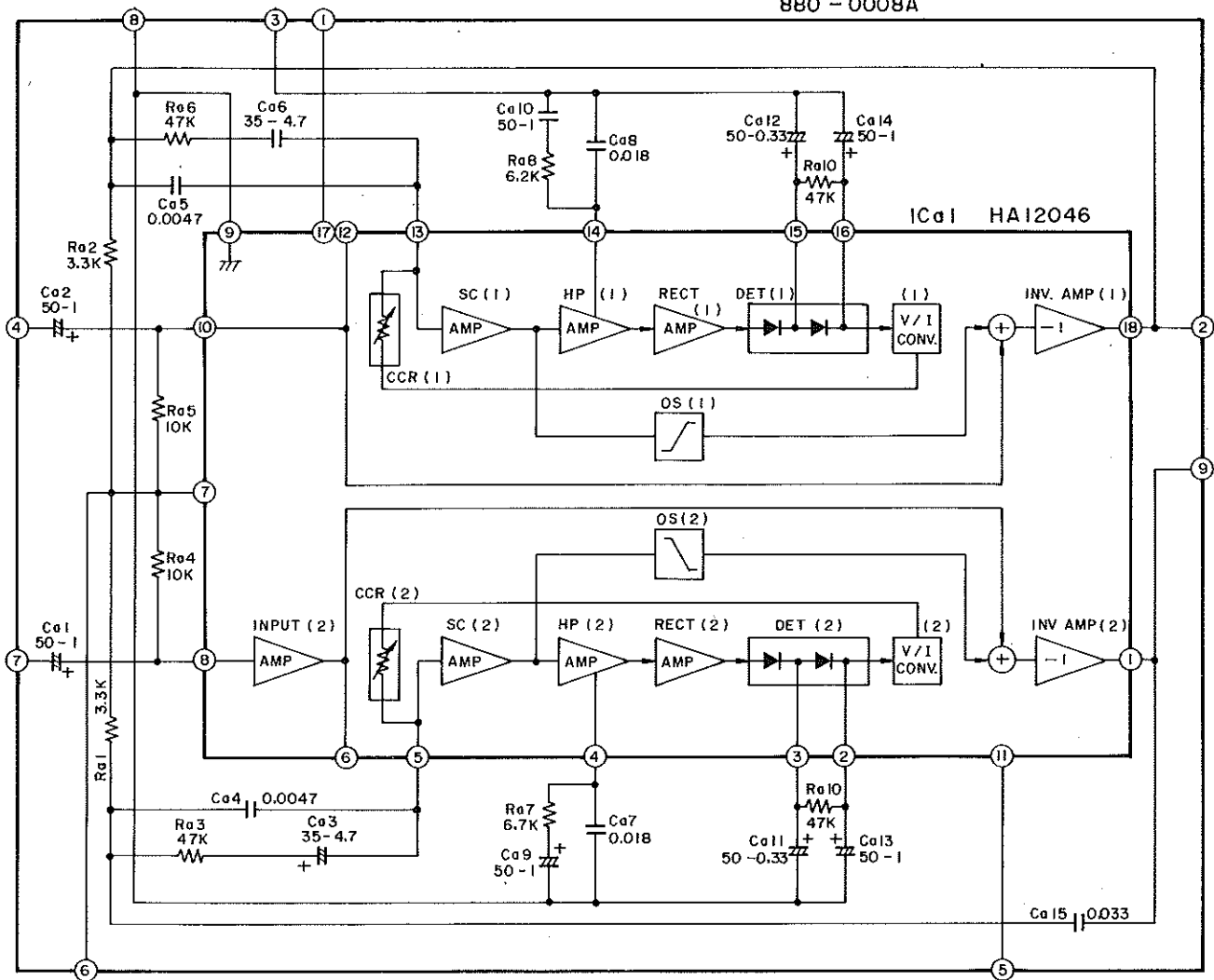
©NC MPX BLOCK Ass'y (880-0007A)



REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
VRb ₁	012-4318-06	Variable resistor (10k Ω)	1
CCTb ₁	050-0099-50	Component circuit (PA-S-160)	1
ICb ₁	051-0407-00	IC (LA2110)	1
ICb ₂	051-0733-00	IC (LA3430)	1
Xb ₁	060-0115-01	Ceramic resonator (CSB456F11)	1
Rb ₁	116-1021-10	Chip resistor ($\frac{1}{4}$ W1k Ω)	1
Rb ₂	116-1041-10	Chip resistor ($\frac{1}{4}$ W100k Ω)	1
Rb ₄	116-1831-10	Chip resistor ($\frac{1}{4}$ W18k Ω)	1
Rb _{5,7}	116-2221-10	Chip resistor ($\frac{1}{4}$ W2.2k Ω)	2
Rb ₉	116-2231-10	Chip resistor ($\frac{1}{4}$ W22k Ω)	1
Rb ₁₁	116-3321-10	Chip resistor ($\frac{1}{4}$ W3.3k Ω)	1
Rb ₈	116-3331-10	Chip resistor ($\frac{1}{4}$ W33k Ω)	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
Rb ₁₀	116-4721-10	Chip resistor ($\frac{1}{4}$ W4.7k Ω)	1
Rb ₃	116-6821-10	Chip resistor ($\frac{1}{4}$ W6.8k Ω)	1
Cb ₆	171-2223-06	Ceramic capacitor (0.0022 μ F SR) SC	1
Cb ₉	171-4723-06	Ceramic capacitor (0.0047 μ F SR) SC	1
Cb _{2,3}	177-1032-05	Ceramic chip capacitor (0.01 μ F) HD	2
Cb ₁₀	177-2232-05	Ceramic chip capacitor (0.022 μ F) HD	1
Cb ₈	177-4732-05	Ceramic chip capacitor (0.047 μ F) HD	1
Cb ₄	177-6822-05	Ceramic chip capacitor (6800pF) HD	1
Cb _{11,14}	182-1053-62	Electrolytic capacitor (50V1 μ F) SS	2
Cb ₁₃	182-2243-62	Electrolytic capacitor (50V0.22 μ F) SS	1
Cb ₅	182-2263-32	Electrolytic capacitor (16V22 μ F) SS	1
Cb _{1,7,12}	182-4753-52	Electrolytic capacitor (35V4.7 μ F) SS	3

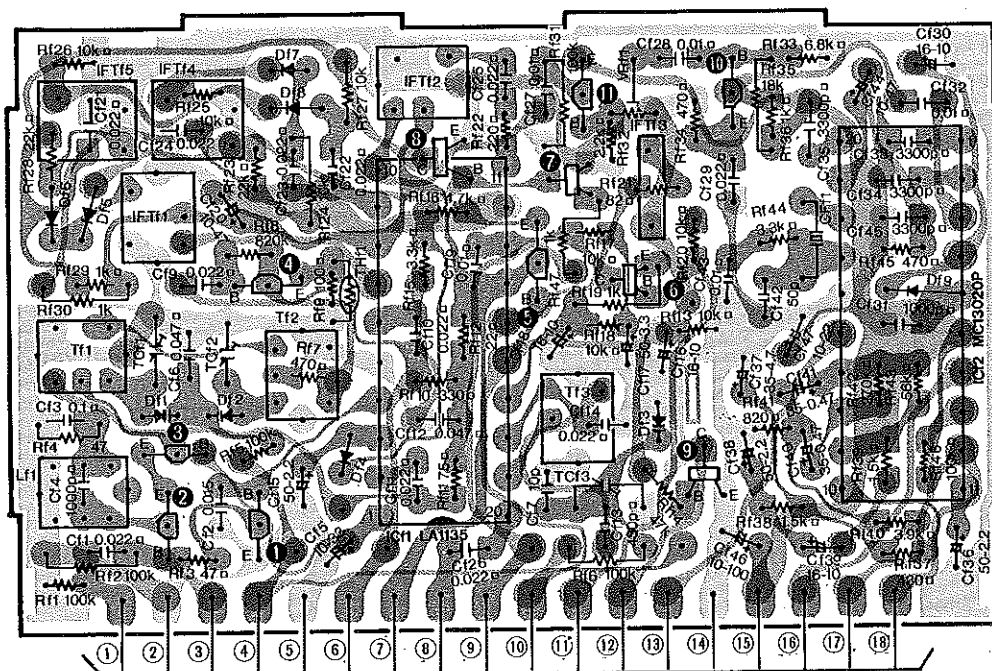
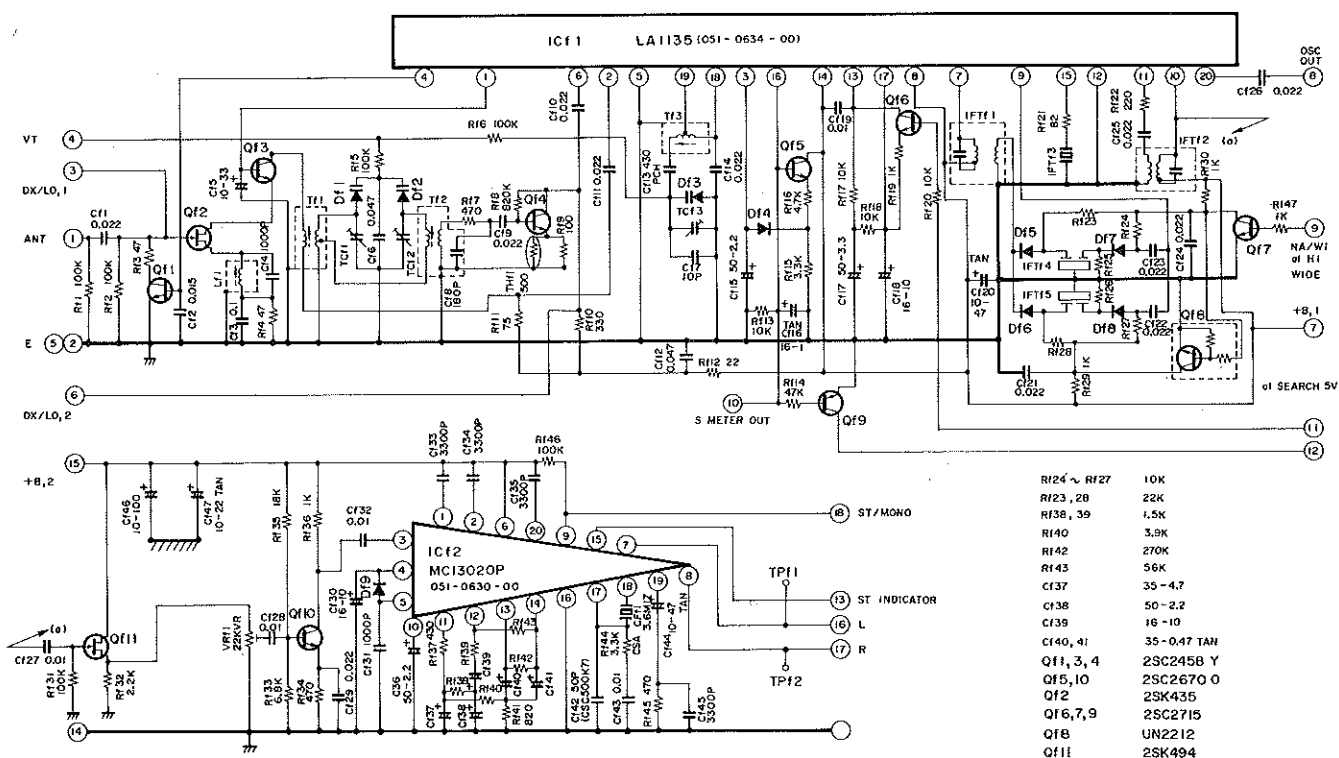
Note : OM (Oxidized Metal)
S (Small)
HD (Higher Dielectric)
SC (Semi-Conductor)
SS (Super Small)
TC (Temperature-Compensating)
LL (Low Leak)
USS (Ultra Super Small)



REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
ICa1	051-0560-00	IC (HA12046)	1
Ca7,8	173-1831-10	Polyester capacitor (0.018μF) S	2
Ca15,16	173-3331-10	Polyester capacitor (0.033μF) S	2
Ca4,5	173-4721-10	Polyester capacitor (0.0047μF) S	2

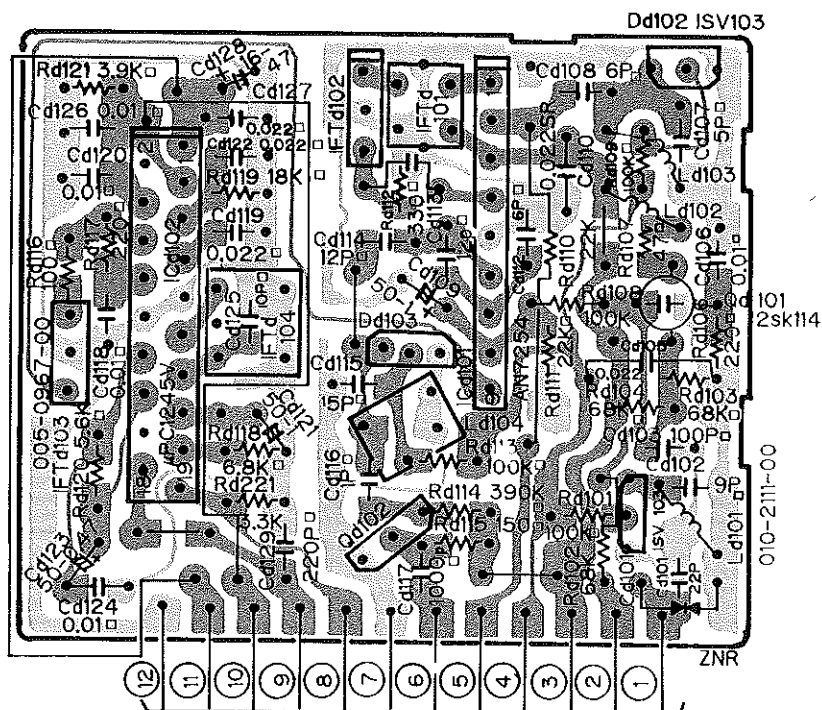
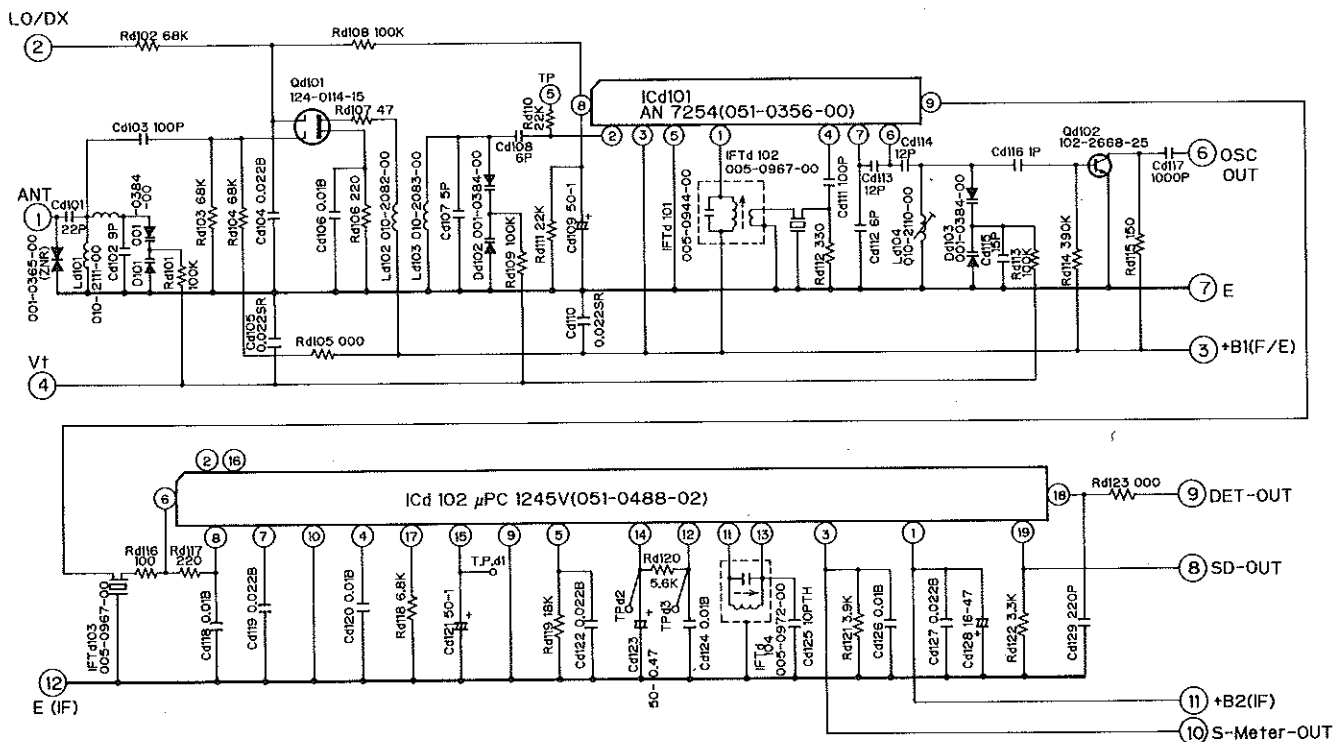
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
Ca1,2,9,10,13,14	182-1053-62	Electrolytic capacitor (50V1μF) SS	6
Ca17	182-1063-32	Electrolytic capacitor (16V10μF) SS	1
Ca11,12	182-3343-62	Electrolytic capacitor (50V0.33μF) SS	2
Ca3,6	182-4753-52	Electrolytic capacitor (35V4.7μF) SS	2

Note: OM (Oxidized Metal)
 S (Small)
 HD (Higher Dielectric)
 SC (Semi-Conductor)
 SS (Super Small)
 TC (Temperature-Compensating)
 LL (Low Leak)
 USS (Ultra Super Small)



REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
Df _{5,6,7,8,9}	001-0330-00	Diode (1SS119)	5	Rf ₁₀	117-3311-10	Chip resistor (1/8W330Ω) S	1
Df _{1,2,3}	001-0402-00	Diode (1SV149-AB)	3	Rf _{15,44}	117-3321-10	Chip resistor (1/8W3.3kΩ) S	2
Df ₄	001-0453-00	Diode (1SS237)	1	Rf ₄₀	117-3921-10	Chip resistor (1/8W3.9kΩ) S	1
THf ₁	002-0186-00	Thermistor (500Ω)	1	Rf ₃₇	117-4311-10	Chip resistor (1/8W430Ω) S	1
TCf _{1,2,3}	004-1567-00	Trimmer capacitor (20pF)	3	Rf ₃	117-4701-10	Chip resistor (1/8W47Ω) S	1
IFTf ₄	005-0854-00	IF-transformer	1	Rf _{7,34,45}	117-4711-10	Chip resistor (1/8W470Ω) S	3
IFTf ₁	005-0951-01	IF-transformer	1	Rf ₁₆	117-4721-10	Chip resistor (1/8W4.7kΩ) S	1
IFTf ₃	005-0963-00	IF-transformer	1	Rf ₄₃	117-5631-10	Chip resistor (1/8W56kΩ) S	1
IFTf ₅	005-0969-00	IF-transformer	1	Rf ₃₃	117-6821-10	Chip resistor (1/8W6.8kΩ) S	1
Tf ₂	005-0973-00	IF-transformer (180pF)	1	Rf ₁₁	117-7501-10	Chip resistor (1/8W75Ω) S	1
IFTf ₂	005-0974-00	IF-transformer	1	Rf ₂₁	117-8201-10	Chip resistor (1/8W82Ω) S	1
Tf ₁	010-2112-00	Coil	1	Rf ₄₁	117-8211-10	Chip resistor (1/8W820Ω) S	1
Lf ₁	010-2113-00	Coil (4.5μH)	1	Cf ₄₂	043-0204-00	Ceramic capacitor (50pF)	1
Tf ₃	010-2114-00	Coil	1	Cf ₂	171-1533-06	Ceramic capacitor (0.015μF) SC	1
VRf ₁	012-3808-07	Variable resistor (22kΩ VR)	1	Cf ₃₅	173-3322-10	Polyester capacitor (3300pF) S	1
ICf ₂	051-0630-00	IC (MC13020P)	1	Cf ₇	174-1000-13	Ceramic capacitor (10pF CH) TC	1
ICf ₁	051-0634-00	IC (LA1135)	1	Cf ₁₃	176-4311-00	Ceramic chip capacitor (430pF CH) TC,S	1
CFf ₁	060-0112-00	Ceramic resonator (CSA3.6M17)	1	Cf ₆	177-4732-05	Ceramic chip capacitor (0.047μF) HD	1
Qf _{1,3,4}	102-2458-25	Transistor (2SC2458Y)	3	Cf _{4,31}	178-1022-05	Ceramic chip capacitor (1000pF) HD,S	2
Qf _{5,10}	102-2670-15	Transistor (2SC2670)	2	Cf _{19,27,28,32,43}	178-1032-05	Ceramic chip capacitor (0.01μF) HD,S	5
Qf _{6,9}	102-2715-15	Transistor (2SC2715)	1	Cf ₃	178-1045-06	Ceramic chip capacitor (0.1μF) HD,S	1
Qf ₂	108-0435-51	Transistor (2SK435CD)	1	Cf _{1,9,10,11,14,21,22,23,24,25,26,29}	178-2232-05	Ceramic chip capacitor (0.022μF) HD,S	12
Qf ₁₁	108-0494-03	Transistor (2SK494C)	1	Cf _{33,34,45}	178-3322-05	Ceramic chip capacitor (3300pF) HD,S	3
Qf ₈	125-2005-02	Transistor (UN2212)	2	Cf ₁₂	178-4735-06	Ceramic chip capacitor (0.047μF) HD,S	1
Qf ₇	132-2715-15	Transistor (2SC2715)	1	Cf ₄₇	042-0199-00	Electrolytic capacitor (10V22μF TAN)	1
Rf ₉	117-1011-10	Chip resistor (1/8W100Ω) S	1	Cf _{20,44}	042-0200-00	Electrolytic capacitor (10V47μF TAN)	2
Rf _{29,36}	117-1021-10	Chip resistor (1/8W1kΩ) S	2	Cf _{40,41}	042-0230-00	Electrolytic capacitor (35V0.47μF TAN)	2
Rf _{13,17,18,20,25}	117-1031-10	Chip resistor (1/8W10kΩ) S	6	Cf ₁₆	042-0239-00	Electrolytic capacitor (16V1μF TAN)	1
Rf ₄₆	117-1041-10	Chip resistor (1/8W100kΩ) S	1	Cf ₄₆	182-1073-22	Electrolytic capacitor (10V100μF) SS	1
Rf _{38,39}	117-1521-10	Chip resistor (1/8W1.5kΩ) S	2	Cf _{18,30,39}	183-1063-32	Electrolytic capacitor (16V10μF) USS	3
Rf ₁₂	117-2201-10	Chip resistor (1/8W22Ω) S	1	Cf _{15,36,38}	183-2253-62	Electrolytic capacitor (50V2.2μF) USS	3
Rf ₂₂	117-2211-10	Chip resistor (1/8W220Ω) S	1	Cf ₁₇	183-3353-62	Electrolytic capacitor (50V3.3μF) USS	1
Rf ₃₂	117-2221-10	Chip resistor (1/8W2.2kΩ) S	1	Cf ₅	183-3363-22	Electrolytic capacitor (10V33μF) USS	1
Rf _{23,28}	117-2231-10	Chip resistor (1/8W22kΩ) S	2	Cf ₃₇	183-4753-52	Electrolytic capacitor (35V4.7μF) USS	1
Rf ₄₂	117-2741-10	Chip resistor (1/8W270kΩ) S	1				

Note : OM (Oxidized Metal)
S (Small)
HD (Higher Dielectric)
SC (Semi-Conductor)
SS (Super Small)
TC (Temperature-Compensating)
LL (Low Leak)
USS (Ultra Super Small)



REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
Dd ₁₀₀	001-0365-00	Diode (ZNR)	1
Dd _{101,102,103}	001-0384-00	Diode (1SV103)	3
IFTd ₁₀₁	005-0944-00	IF-transformer	1
IFTd _{102,103}	005-0967-00	IF-transformer	2
IFTd ₁₀₄	005-0972-00	IF-transformer	1
Ld ₁₀₂	010-2082-00	Coil	1
Ld ₁₀₃	010-2083-00	Coil	1
Ld ₁₀₄	010-2110-00	Coil	1
Ld ₁₀₁	010-2111-00	Coil	1
ICd ₁₀₁	051-0356-00	IC (AN7254)	1
ICd ₁₀₂	051-0488-02	IC (μ PC1245V)	1
Qd ₁₀₂	102-2668-25	Transistor (2SC2668Y)	1
Qd ₁₀₁	124-0114-15	Transistor (2SK114)	1
Rd _{101,113}	116-1041-10	Chip resistor ($\frac{1}{8}$ W100k Ω)	2
Rd ₁₁₁	116-2231-10	Chip resistor ($\frac{1}{8}$ W22k Ω)	1
Rd ₁₀₄	116-6831-10	Chip resistor ($\frac{1}{8}$ W68k Ω)	1
Rd ₁₁₆	117-1011-10	Chip resistor ($\frac{1}{8}$ W100 Ω) S	1
Rd ₁₀₉	117-1041-10	Chip resistor ($\frac{1}{8}$ W100k Ω) S	1
Rd ₁₁₅	117-1511-10	Chip resistor ($\frac{1}{8}$ W150 Ω) S	1
Rd ₁₁₉	117-1831-10	Chip resistor ($\frac{1}{8}$ W18k Ω) S	1
Rd _{106,117}	117-2211-10	Chip resistor ($\frac{1}{8}$ W220 Ω) S	2
Rd ₁₁₂	117-3311-10	Chip resistor ($\frac{1}{8}$ W330 Ω) S	1
Rd ₁₂₂	117-3321-10	Chip resistor ($\frac{1}{8}$ W3.3k Ω) S	1
Rd ₁₂₁	117-3921-10	Chip resistor ($\frac{1}{8}$ W3.9k Ω) S	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
Rd ₁₁₄	117-3941-10	Chip resistor ($\frac{1}{8}$ W390k Ω) S	1
Rd ₁₀₇	117-4701-10	Chip resistor ($\frac{1}{8}$ W47 Ω) S	1
Rd ₁₂₀	117-5621-10	Chip resistor ($\frac{1}{8}$ W5.6k Ω) S	1
Rd ₁₁₈	117-6821-10	Chip resistor ($\frac{1}{8}$ W6.8k Ω) S	1
Rd ₁₀₃	117-6831-10	Chip resistor ($\frac{1}{8}$ W68k Ω) S	1
Cd _{105,110}	171-2233-06	Ceramic capacitor (0.022 μ F SR) SC	2
Cd ₁₁₁	174-1010-13	Ceramic capacitor (100pF CH) TC	1
Cd ₁₁₆	175-1096-00	Ceramic chip capacitor (1pF CH) TC	1
Cd ₁₁₅	175-1501-00	Ceramic chip capacitor (15pF CH) TC	1
Cd ₁₀₁	175-2201-00	Ceramic chip capacitor (22pF CH) TC	1
Cd ₁₂₉	175-2211-00	Ceramic chip capacitor (220pF CH) TC	1
Cd ₁₀₇	175-5096-00	Ceramic chip capacitor (5pF CH) TC	1
Cd ₁₀₂	175-9097-00	Ceramic chip capacitor (9pF CH) TC	1
Cd ₁₂₅	176-1007-04	Ceramic chip capacitor (10pF CH) TC,S	1
Cd ₁₀₃	176-1011-00	Ceramic chip capacitor (100pF CH) TC,S	1
Cd _{113,114}	176-1201-00	Ceramic chip capacitor (12pF CH) TC,S	2
Cd _{108,112}	176-6097-00	Ceramic chip capacitor (6pF CH) TC,S	2
Cd ₁₁₇	178-1022-05	Ceramic chip capacitor (1000pF) HD,S	1
Cd _{106,118,120,124,126}	178-1032-05	Ceramic chip capacitor (0.01 μ F B) HD,S	5
Cd _{104,119,122,127}	178-2232-05	Ceramic chip capacitor (0.022 μ F B) HD,S	4
Cd _{109,121}	182-1053-62	Electrolytic capacitor (50V1 μ F) SS	2
Cd ₁₂₃	182-4743-62	Electrolytic capacitor (50V0.47 μ F) SS	1
Cd ₁₂₈	183-4763-32	Electrolytic capacitor (16V47 μ F) USS	1

Note : OM (Oxidized Metal) HD (Higher Dielectric) SS (Super Small) LL (Low Leak)
S (Small) SC (Semi-Conductor) TC (Temperature-Compensating) USS (Ultra Super Small)

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)



Classification	Resistance *	Tolerance of the value of resistance		Rated power			Shape	
1 1 1		0		0			0	
	Example	1	± 5 %	1	$\frac{1}{8}$ W		Approx. 3.7mm	1 Horizontal 
	33Ω = 330	2		2	$\frac{1}{4}$ Ws		Approx. 6.5mm	2 Vertical 
	33kΩ = 333	3		3				3
		4		4	$\frac{1}{2}$ W		Approx. 9mm	4
				7	$\frac{1}{6}$ W		Approx. 3.5mm	
				8	$\frac{1}{2}$ Ws		Approx. 6.6mm	
				9	$\frac{1}{4}$ Wss		Approx. 3.2mm	

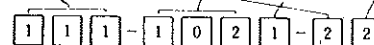
Example of conversion of resistance $\blacksquare\blacksquare\blacksquare\blacksquare$ Note) R : Resistance, T : Converted value

R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T
0 1	108	1 0	109	0 10	100	0 101	1 0	102	1 10	103	1 104	10 10	105	10 106	100 100	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

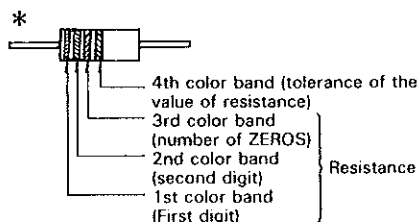
COLOR	BLK	BRN	RED	ORG	YEL	GRN	BLU	PUR	GRY	WHT	GOLD	SILVER	NO COLOR
1st color band	0	1	2	3	4	5	6	7	8	9			
2nd color band	0	1	2	3	4	5	6	7	8	9			
3rd color band	10 ⁰	10 ¹	10 ²	10 ³	10 ⁴	10 ⁵	10 ⁶				10 ⁻¹	10 ⁻²	
4th color band											$\pm 5\%$ (J)	$\pm 10\%$ (K)	$\pm 20\%$ (M)

(Example)

Film resistor $\frac{1}{8}$ Ws 1k Ω $\pm 5\%$ 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).

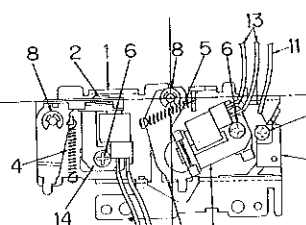


EXPLODED VIEW • PARTS LIST:

©Tape mechanism section

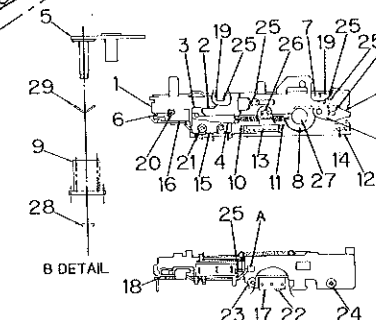
①960-3640-08 Side-P-sub ass'y

NO.	PART NO.	DESCRIPTION	QTY
1	960-3610-05	SIDE PANEL-ASSY	1
2	960-3623-01	PL-LINK-A-ASSY	1
3	960-3624-05	PL-LINK-B-ASSY	1
4	750-2408-00	PL-SPRING-A	1
5	750-2409-02	PL-SPRING-B	1
6	714-2505-11	MACHINE SCREW(M2.6x6)	2
7	716-0670-00	SCREW	1
8	743-1500-10	E-RING	2
9	013-3757-00	SWITCH	1
10	015-0232-02	PLUNGER	1
11	803-0608-60	VINYL-COAT-WIRE	1
12	804-0605-60	VINYL-COAT-WIRE	2
13	805-0609-60	VINYL-COAT-WIRE	2
14	015-0238-00	PLUNGER	1



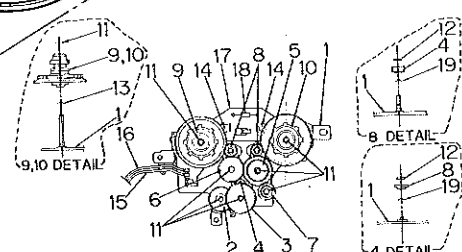
②960-3639-04 Frame-sub ass'y

NO.	PART NO.	DESCRIPTION	QTY
1	960-3611-01	FRAME-ASSY	1
2	960-3619-03	EJ-ARM-P-ASSY	1
3	630-1758-03	EJ-RACK PLATE	1
4	960-3621-03	SW-LINK-ASSY	1
5	960-3620-04	SWING-P-ASSY	1
6	820-3003-02	VINYL-TUBE	1
7	960-3618-03	EJECT-P-ASSY	1
8	613-0076-01	EJECT GEAR	1
9	613-0075-01	SWING GEAR	1
10	750-2404-00	EJ-RACK SPRING	1
11	750-2419-01	EJ-GEAR SPRING	1
12	099-7435-02	P.W.B	1
13	076-0271-06	PLUG	1
14	076-0272-02	PLUG	1
15	013-2690-05	SWITCH	1
16	013-3757-00	SWITCH	1
17	013-3789-00	SWITCH	1
18	806-0307-60	VINYL-COAT-WIRE	1
19	610-0268-00	EJECT ROLLER	2
20	716-0670-00	SCREW	1
21	714-2308-11	MACHINE SCREW(M2.6x6)	1
22	716-0356-00	SCREW	1
23	716-0485-00	SCREW	1
24	714-2604-81	MACHINE SCREW(M2.6x4)	1
25	743-1500-10	E-RING	5
26	743-2000-10	E-RING	2
27	746-0761-00	WASHER	2
28	746-0762-00	WASHER	1
29	745-0296-00	WASHER	1



③960-3641-07 Reel-B-sub ass'y

NO.	PART NO.	DESCRIPTION	QTY
1	960-3613-05	REEL-BASE-P-ASSY	1
2	613-0061-01	POWER GEAR A	1
3	613-0062-00	POWER GEAR B	1
4	613-0066-01	P-IDLER GEAR	1
5	613-0063-00	POWER GEAR C	1
6	613-0064-01	POWER GEAR D	1
7	613-0065-00	POWER GEAR E	1
8	613-0068-00	IDLER GEAR	2
9	960-3634-02	REEL-BASE-F-ASSY	1
10	960-3635-02	REEL-BASE-R-ASSY	1
11	746-0751-00	WASHER	2
12	746-0762-00	WASHER	3
13	746-0712-01	WASHER	2
14	013-3702-00	SWITCH	2
15	802-0615-60	VINYL-COAT-WIRE	1
16	801-0616-60	VINYL-COAT-WIRE	1
17	099-7216-02	P.W.B	1
18	111-1021-91	FILM RESISTOR(1/4Watt100)	1
19	745-0678-01	WASHER	3



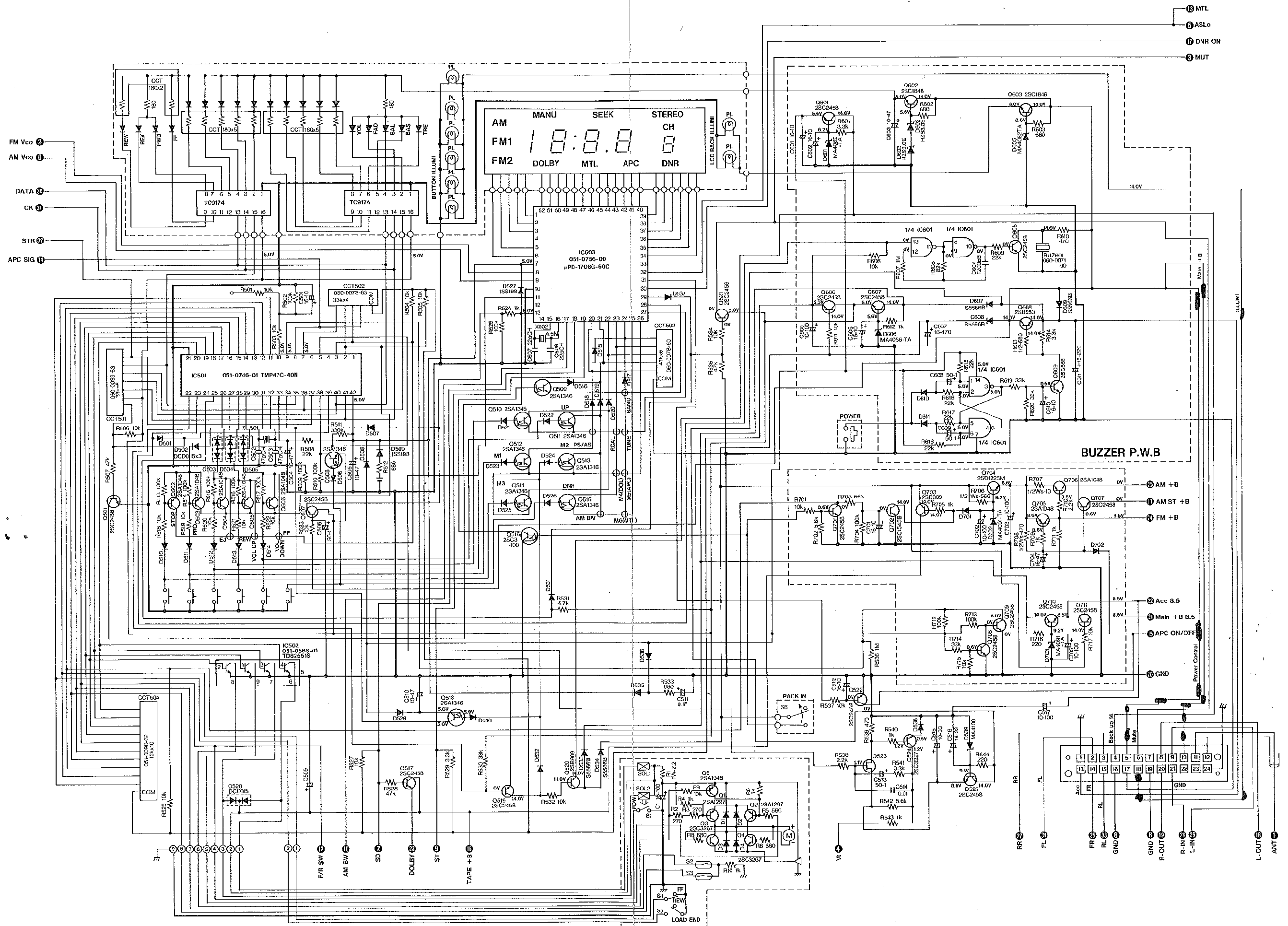
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	960-3609-02	Guide arm ass'y	1
2	960-3612-04	Head plate ass'y	1
3	960-3617-00	Flywheel-P ass'y	1
4	960-3626-01	Timing-P ass'y	1
5	960-3627-03	Power-P ass'y	1
6	960-3628-01	P-lock-P ass'y	1
7	960-3631-02	Power link ass'y	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
8	960-3632-02	REW-link ass'y	1
9	960-3738-00	Roller-F ass'y	1
10	960-3739-00	Roller-R ass'y	1
11	960-3638-04	Deck plate ass'y	1
12	960-3639-04	Frame-sub ass'y ②	1
13	960-3640-08	Side-P-sub ass'y ①	1
14	960-3641-07	Reel-B-sub ass'y ③	1

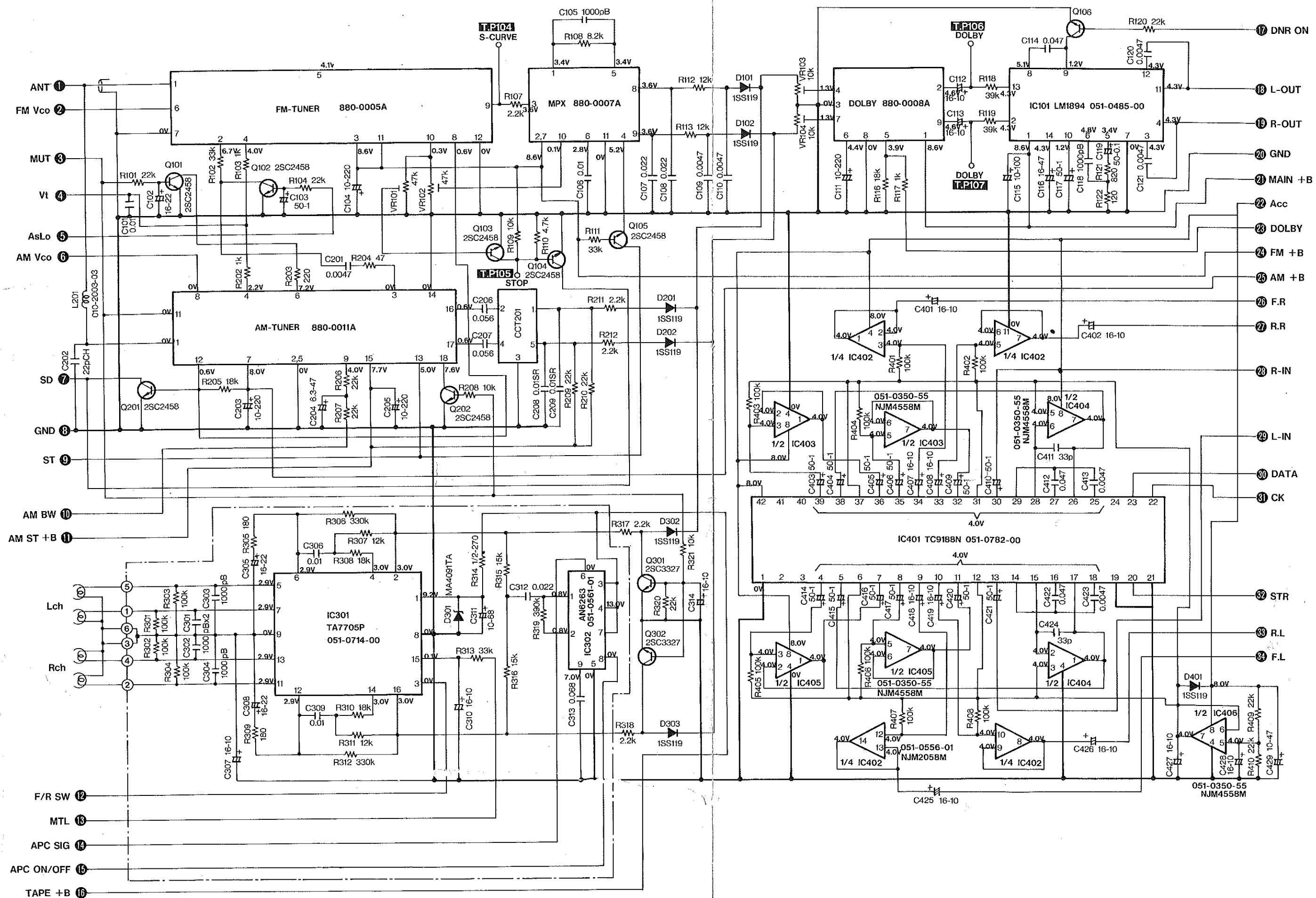
REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
15	960-3642-03	CH-gear ass'y	1
16	960-3643-02	Pack-ST ass'y	1
17	990-0614-00	P.W.B ass'y	1
18	011-0291-04	Head	1
19	SMA-105-100	DC motor ass'y	1
20	335-0833-01	Lead holder	1
21	602-0091-01	Belt-A	1

REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
22	602-0092-02	Belt-B	1
23	750-2421-00	Change-A spring	1
24	604-0029-01	Tension pulley	1
25	606-0079-04	Pack guide	1
26	610-0266-00	Cam roller	1
27	610-0267-00	Guide roller	1
28	610-0281-00	Head-P-roller	1
29	610-0282-00	H-P-roller B	1
30	611-0072-02	Flywheel	2
31	613-0060-00	Pulley gear	1
32	613-0067-04	Cam gear	1
33	613-0070-00	FF-gear	2
34	613-0071-00	Loading gear-A	1
35	613-0072-00	Loading gear-B	1
36	613-0073-00	Loading gear-C	1
37	613-0074-00	Loading gear-D	1
38	630-1759-03	Eject arm	1
39	630-1760-02	Change plate	1
40	630-1761-00	Change arm	1
41	630-1762-02	Head lock plate	1
42	630-1763-01	FF-link	1
43	631-0461-01	Azimuth link	1
44	714-2003-81	Machine screw (M2x3)	6
45	714-2603-81	Machine screw (M2.6x3)	2
46	714-2604-81	Machine screw (M2.6x4)	2
47	716-0347-00	Screw (MOTOR)	2
48	716-0485-00	Screw (P.W.B)	1
49	716-0654-01	Screw (AZIMUTH)	2
50	743-1500-10	E-ring	7
51	743-2000-10	E-ring	4
52	743-2500-10	E-ring	4
53	744-0031-10	E-ring	4
54	744-0028-00	Snap retainer	1
55	745-0646-00	Washer (FLYWHEEL)	2
56	746-0624-00	Washer	2
57	746-0761-00	Washer	9
58	750-2422-03	Roller spring	1
59	746-0747-00	Washer (BEARING)	2
60	750-2405-02	Loading spring	1
61	750-2406-03	Head-P-spring	1
62	750-2407-02	P-link spring	1
63	750-2410-00	G-lock spring	1
64	750-2411-00	Timing spring	1
65	750-2412-00	Power-P-spring	1
66	750-2413-00	P-lock spring	1
67	750-2414-02	FF-spring	1
68	750-2415-01	REW-spring	1
69	750-2416-01	Brake spring	1
70	750-2418-02	EJ-arm spring-B	1
71	750-2420-00	Azimuth spring	1

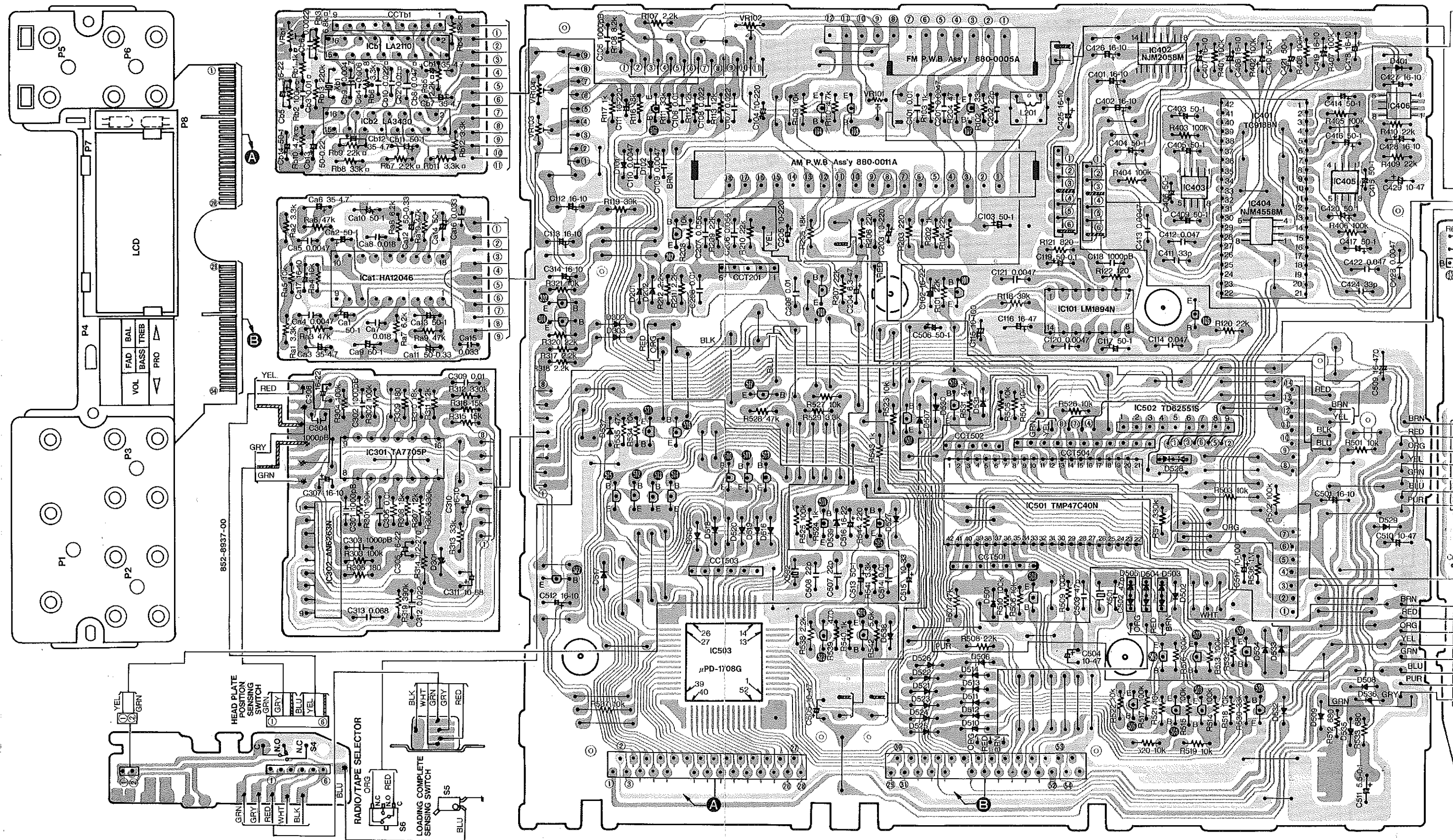
CIRCUIT DIAGRAM:

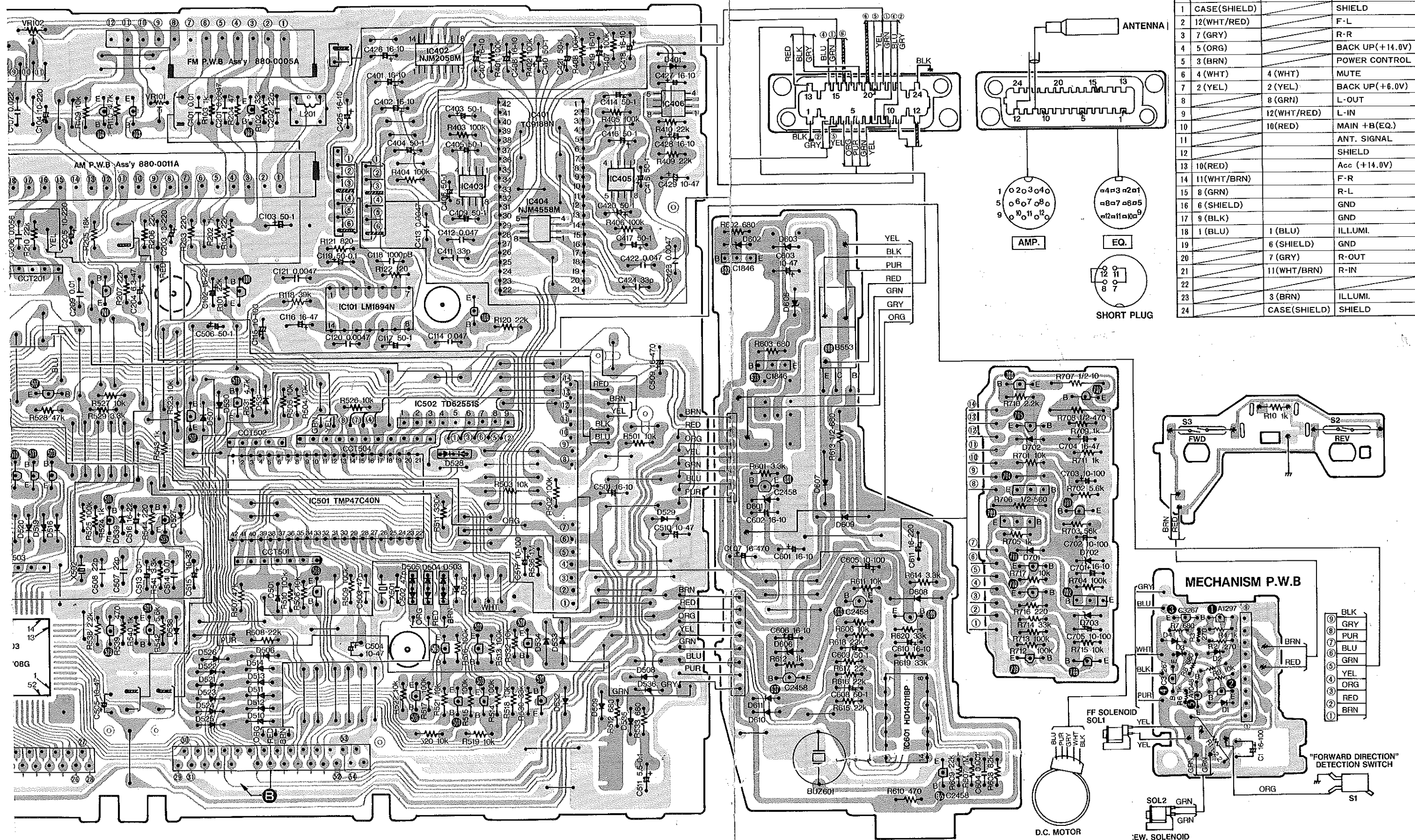


■ **CIRCUIT DIAGRAM:**



■PRINTED WIRING BOARD:





AMP.	EQ.	DESCRIPTION
1 CASE(SHIELD)		SHIELD
2 12(WHT/RED)		F-L
3 7 (GRY)		R-R
4 5 (ORG)		BACK UP(+14.0V)
5 3 (BRN)		POWER CONTROL
6 4 (WHT)	4 (WHT)	MUTE
7 2 (YEL)	2 (YEL)	BACK UP(+6.0V)
8	8 (GRN)	L-OUT
9	12(WHT/RED)	L-IN
10	10(RED)	MAIN +B(EQ.)
11		ANT. SIGNAL
12		SHIELD
13 10(RED)		Acc (+14.0V)
14 11(WHT/BRN)		F-R
15 8 (GRN)		R-L
16 6 (SHIELD)		GND
17 9 (BLK)		GND
18 1 (BLU)	1 (BLU)	ILLUM.
19	6 (SHIELD)	GND
20	7 (GRY)	R-OUT
21	11(WHT/BRN)	R-IN
22		
23	3 (BRN)	ILLUM.
24	CASE(SHIELD)	SHIELD