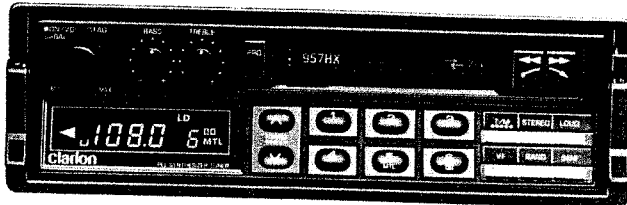
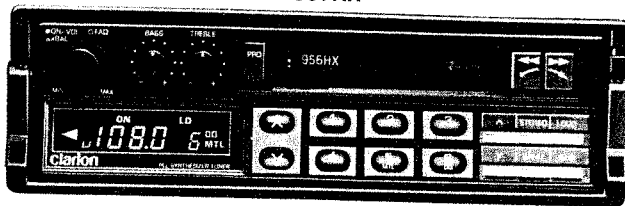


# clarion Service Manual

Published by Service Administration Section



957HX



956HX

## UKW·MPX/LW/MW RADIO CASSETTE COMBINATION

Model **957HX** (PE-9212A-A)  
**956HX** (PE-9213A-A)

### ■ SPECIFICATIONS:

#### Radio section

Circuit system: Superheterodyne  
 Tuning system: Electronic tuning  
 Receiving frequency: LW 153kHz to 281kHz  
 MW 531kHz to 1,602kHz  
 UKW(FM)  
 87.5MHz to 108MHz

#### Intermediate frequency:

LW, MW 459kHz  
 UKW(FM) 10.7MHz

#### Tape section

Reproduction system: Auto reversing  
 4 track, 2 channel stereo  
 cassette tape playback  
 (Monaural also capable)  
 Tape speed: 4.76cm/sec. (1 $\frac{7}{8}$  ips)

#### Composite

Load impedance: 4 $\Omega$ ×4 (4 $\Omega$ ×2)  
 Power output: 8W×4 (27W×2)  
 Power supply voltage: DC 14.4V(10.8V to 15.6V)  
 Negative ground  
 Power consumption: Less than 7A  
 (at max. output)  
 Line output: 300mV

Dimensions: Width 178mm  
 Height 50mm  
 Depth 160mm  
 Weight: 1.9kg

### ■ FEATURES:

- MW/LW/UKW-MPX electronic tuning radio with auto reverse stereo cassette player (FF, REW lock).
- Provided radio traffic information (VF) system (957HX)
- Dual direction azimuth.
- LD (Loudness).
- SAM-C4 mechanism.
- TAKE AWAY. (Unit with slide out bracket)
- 2-way High Power (27W×2ch or 8W×2ch)
- Dolby and the double-D symbol are trademarks of Dolby Licensing Corporation.
- Noise Reduction System manufactured under license Laboratories Licensing Corporation.

## COMPONENTS:

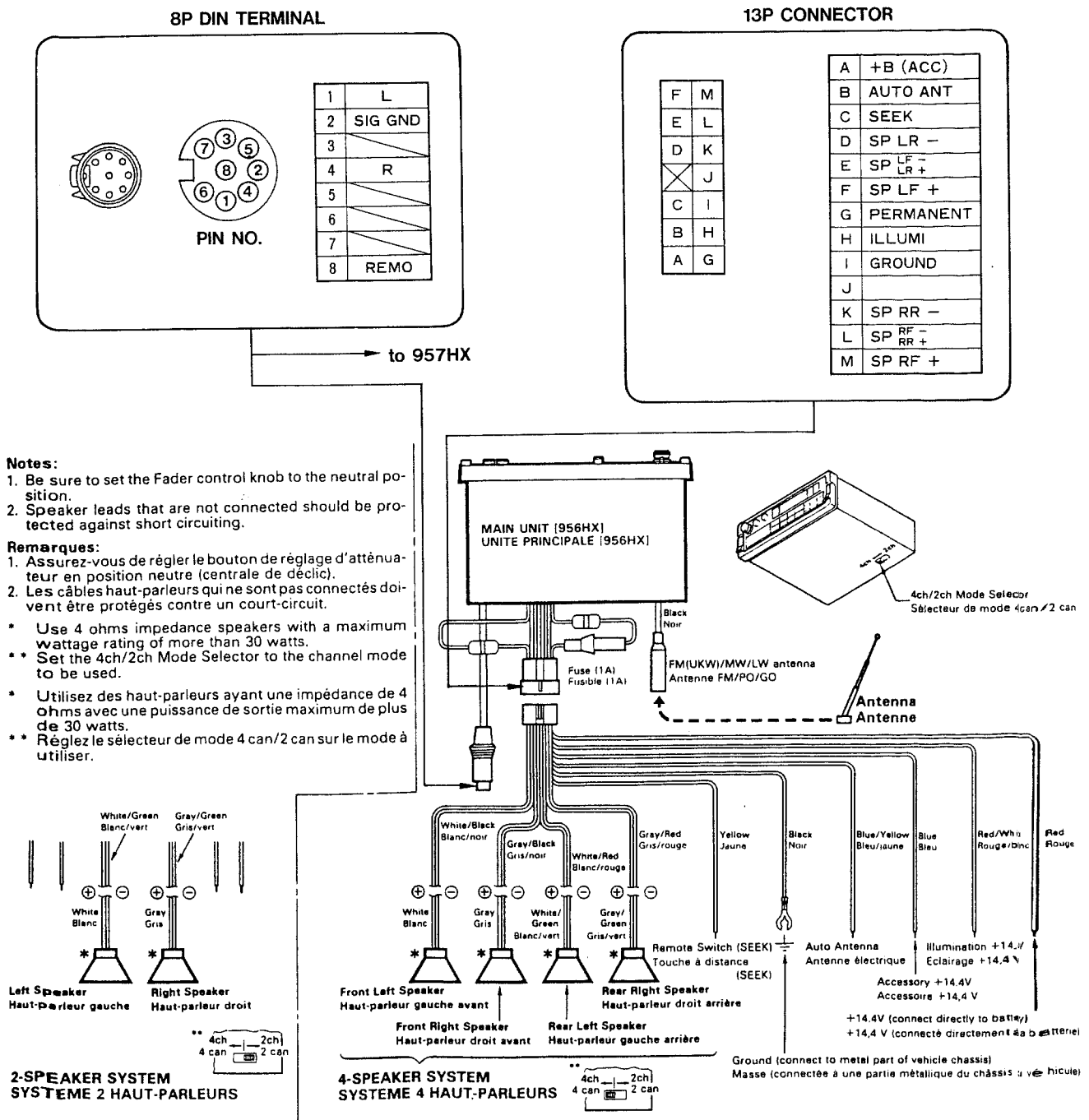
### ● 957HX (PE-9212A-A)

Main unit		1
Mounting bracket	300-6954-00	1
Extension lead (RIGHT SP.)	852-9715-00	1
Extension lead (LEFT SP.)	852-9716-00	1
Parts bag	921-8319-00	1
Key	330-8580-00	2
Rubber cap	345-3653-01	1
Tapping screw	700-5016-80	1
Hex-nut	723-5000-21	1
Plate nut	725-0216-00	1
Flat washer	740-5000-10	1

### ● 956HX (PE-9213A-A)

Main unit		1
Mounting bracket	300-6954-00	1
Extension lead	852-9213-02	1
Parts bag	921-8319-00	1
Key	330-8580-00	2
Rubber cap	345-3653-01	1
Tapping screw	700-5016-80	1
Hex-nut	723-5000-21	1
Plate nut	725-0216-00	1
Flat washer	740-5000-10	1

## WIRE CONNECTION/CABLAGE:



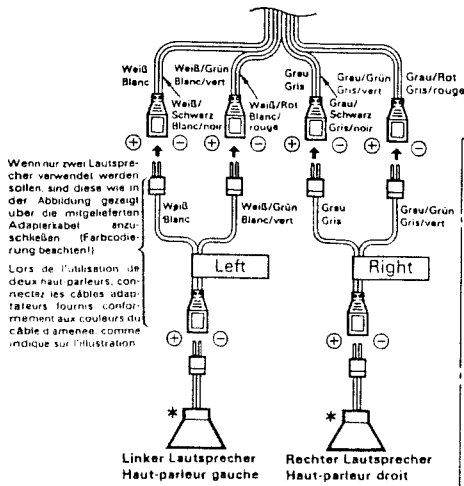
# ANSCHLÜSSE/CABLAGE:

## Hinweise:

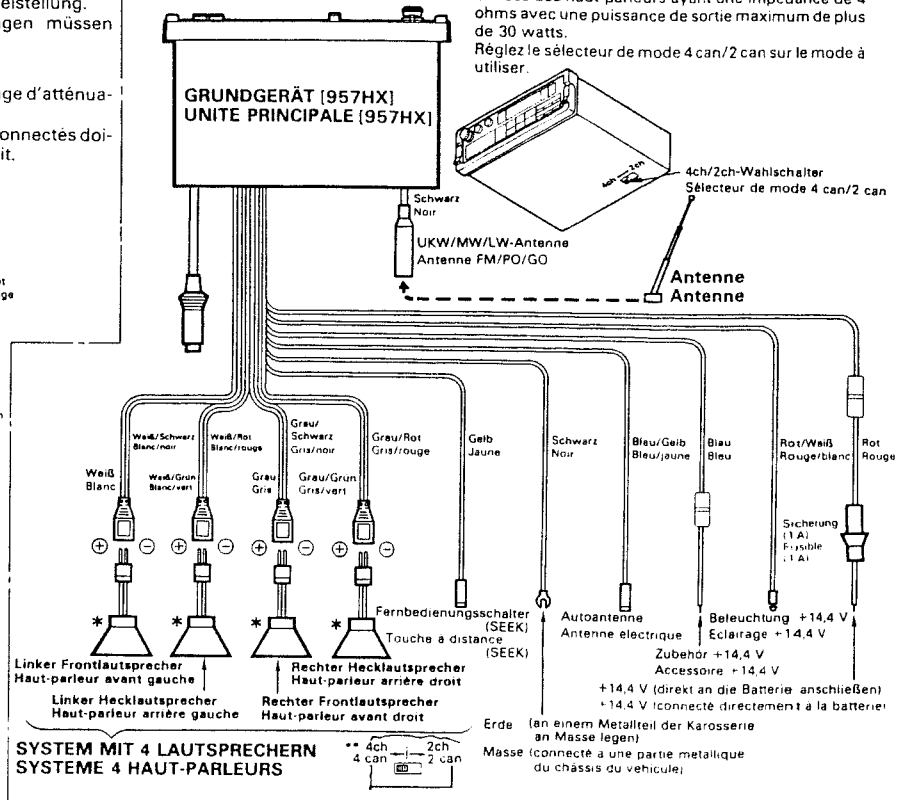
1. Bringen Sie den Überblendregler in Mittelstellung.
2. Nicht gebrauchte Lautsprecherzuleitungen müssen kurzschlußsicher abisoliert werden.

## Remarques:

1. Assurez-vous de régler le bouton de réglage d'atténuateur en position neutre.
2. Les câbles haut-parleurs qui ne sont pas connectés doivent être protégés contre un court-circuit.



SYSTEM MIT 2 LAUTSPRECHERN  
SYSTEME 2 HAUT-PARLEURS



SYSTEM MIT 4 LAUTSPRECHERN  
SYSTEME 4 HAUT-PARLEURS

# ADJUSTMENT:

Adjustment item	Adjustment point	Procedure	
OV fine adjustment	IFT102	<ol style="list-style-type: none"> <li>1. Tune 98.1MHz and input a 40dB 30%-modulated SSG signal.</li> <li>2. Connect a digital volt meter 0V TP.</li> <li>3. Adjust IFT102 so that the voltage is 0V ± 30mV.</li> <li>4. May adjust 0V by receiving weak broadcasting signal.</li> </ol>	
Stop seek sensitivity (SD)	VR101	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, input a 25dB non-modulated SSG signal.</li> <li>2. Adjust VR101 so that the voltage of SD TP is 4V.</li> </ol>	
Limiter (MUTE)	VR102	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, input 65dB SSG signal.</li> <li>2. Adjust VR to make the set output 0dB (0.775V).</li> <li>3. Reduce the output of SG 12dB.</li> <li>4. Adjust VR102 until output level decrease to 3dB.</li> </ol>	
SASC	VR103	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, input an 65dB, 7kHz modulation frequency, 30% modulation degree SSG signal, and then turn on ST. SW.</li> <li>2. Adjust the output level of the volume controller to 0dBm (0.775V).</li> <li>3. Set the SSG output to 38dB and adjust VR103 so that the output level is -2dB.</li> </ol>	
MPX	Separation	VR1 (880-0304A)	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, connect the output of a stereo modulator to the external modulation terminal, and input a 65dB SSG signal.</li> <li>2. Set the stereo modulator to the L or R ch and adjust VR1 so that the maximum separation is obtained.</li> </ol>
	Pilot canceller	VR2 (880-0304A)	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, input a 65dB, modulation (PL 10%).</li> <li>2. Adjust VR2 so that output of the set is minimum.</li> </ol>
DK VCO (955HP)	VR1 (880-0201B)	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz, input a 65dB 10% modulated SSG signal, and turn on VF. SW.</li> <li>2. Connect the frequency counter to DK TP and adjust VR1 so that the counter indicates 125Hz. In the case.</li> </ol>	
DK level (955HP)	VR201	<ol style="list-style-type: none"> <li>1. Tune at 98.1MHz 100% (Main + PL + DK + SK + BK) modulated SSG signal, and turn on VF. SW.</li> <li>2. At the time of minimum sound volume, adjust VR201 to make the speaker output 0.775V.</li> </ol>	

[NOTE] After the adjustment of frequency range, be sure that:  
(1) Band edge frequency of LW shall be 148.5kHz - 20kHz

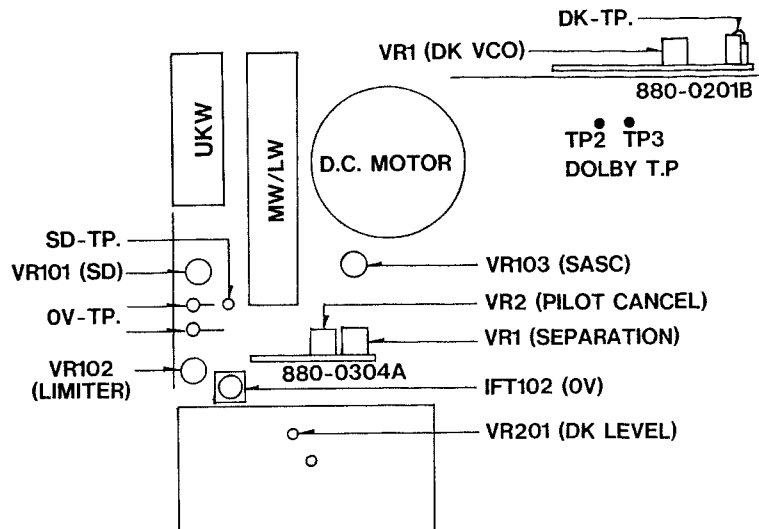
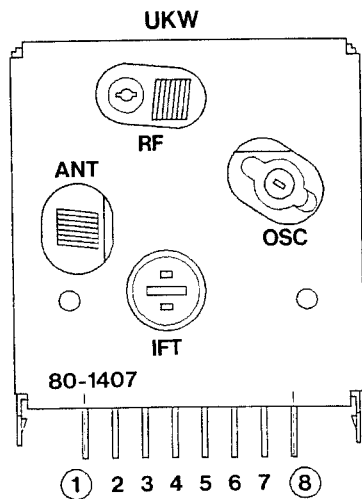
(2) Band edge frequency of UKW shall be 87.5MHz + 100kHz - 160kHz at low end. And shall be lower than 108.16MHz at upper end.

- SPECIFICATION -LIMIT- Quieting sensitivity: MW Less than 33dB (at 20dB S/N)  
LW Less than 40dB (at 20dB S/N)  
UKW Less than 12dB (at 30dB S/N)
- Stereo separation: UKW More than 20dB

## ● DOLBY Circuit

Item	Adjustment point	Adjustment
Dolby NR	VR104 and VR105	Insert a Dolby level test tape (400Hz-200nWb/m), connect the millivoltmeter to TP2 and TP3, and adjust VR104 and VR105 to obtain an output of 450mV. (DOLBY SW : OFF)

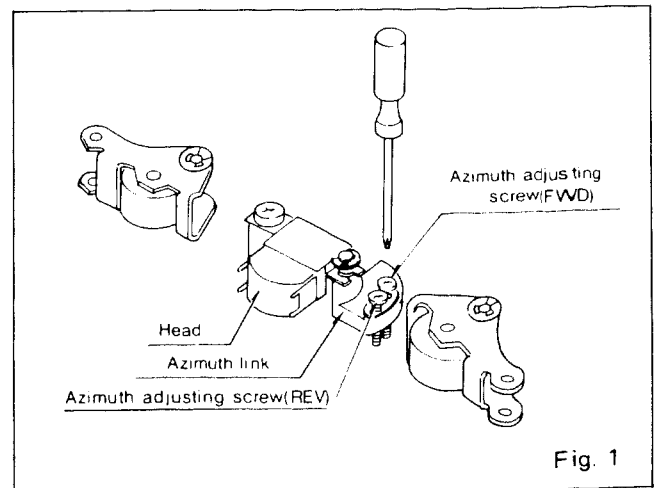
## ● ADJUSTMENT POINT



## ■ 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.



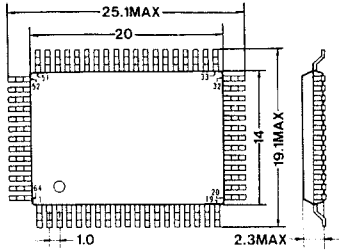
## ■ EXPLANATION OF IC's:

Refer to description in IC service manual vol 1.			
KC819	051-0606-01	Hybrid-IC for Tone Control	P23
LA3365	051-0501-00	UKW Stereo Demodulator (DK Type)	P15
TC4016BP	051-0158-00	Quad Bilateral Switch	P39
LA2110	051-0407-00	UKW Noise Canceller	P17

Refer to description in IC service manual vol 2.			
NJM4558M	051-0350-55	Dual OP Amp	P39
LA2220	051-0739-00	ARI System SK Type	P11
LA3430	051-0733-01	UKW MPX	P9
HA12046	051-0560-00	Dolby-B Type N-R System	P21
HA12438FP	051-0730-00	UKW Frontend	P7
TA78L006AP	051-0296-01	3 Terminal Regulator	P48
M51522AL	051-0301-02	Dual Pre Amp	P18
MB3756	051-0526-00	Constant-voltage Source	P51
TA7411AP	051-0798-00	UKW IF System	P8
TA7270P-CL	051-0655-01	AF Power Amp	P33
TA7271P-CL	051-0656-01	AF Power Amp	P33

(IC 051-0794-00 is unuseable instead of 051-0794-10)

I Outward Form



II Outline

- This IC, which can receive UKW, MW and LW, is a complete 1-chip controller incorporating a prescaler, PLL frequency synthesizer and LCD driver.
- (1) Single power source, 5V ± 10%.
  - (2) Prescaler incorporate (150MHz).
  - (3) PLL frequency synthesizer incorporated.
  - (4) LCD driver incorporated (1/2 duty, 1/2 bias, driven by 5V ± 10%, frame frequency: 100Hz).
  - (5) Preset memory 24 stations (UKW: 12, MW: 6, LW: 6).
  - (6) Preset memory channel display by 7-segment number.
  - (7) One station each of last channel memory UKW, UKW(SAM), MW and LW. 4 stations in total.
  - (8) With signal auto memory function. Independent call available using 6 stations (auto write enable memory) of the UKW preset memory.
  - (9) Music selection by manual tuning (M UP/DOWN key) and auto tuning (SEEK UP/DOWN key) (saw-tooth wave tuning, with IF counter).
  - (10) With AUTO VF RETUNE function.
  - (11) Auto tuning of the ARI (traffic information) station available.
  - (12) STEREO and SK display available.
  - (13) RADIO/TAPE dual function key (4CH/APC, 5CH/MTL, 6CH/□□).
  - (14) With LOUDNESS control terminal.

III Absolute Maximum Ratings

Item	Symbol	Rating	Unit
Supply voltage	V <sub>DD</sub>	-0.3 ~ +6.0	V
Input voltage	V <sub>I</sub>	-0.3 ~ +V <sub>DD</sub>	V
Output voltage	V <sub>O</sub>	-0.3 ~ +V <sub>DD</sub>	V
Output sink current	I <sub>O</sub>	10	mA

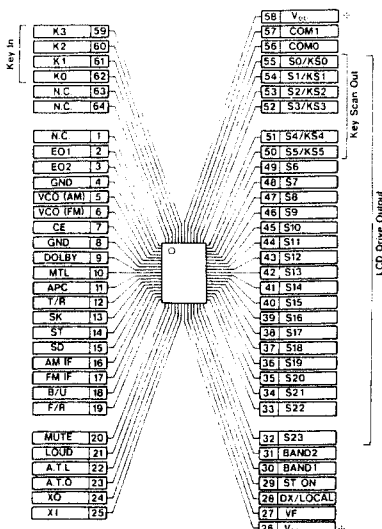
IV Receive Bands

Band	Frequency Range	Channel Space		Comparative Frequency	Intermediate Frequency
		Manual	Auto		
UKW	87.50 ~ 108.00MHz	25kHz	50kHz	12.5kHz	10.7MHz
MW	531 ~ 1602kHz	9kHz	9kHz	9kHz	459MHz
LW	153 ~ 281kHz	1kHz	1kHz	1kHz	459MHz

V Music Select Function

- (1) **Auto tuning**  
Auto tuning is done by the SEEK UP/DOWN key. If this key is pressed, a search will be performed first in the LOCAL mode. If the same key is pressed again when reaching a tuning start frequency or halfway, the search will be performed in the DX mode. Once received, that station will be held. When ARI and VF are both ON, if both SD and SK signals are input at the High level in the traffic information station search mode, that station will be received and held.
- (2) **Manual tuning**  
Manual tuning is done by the M UP/DOWN key. Every time this key is pressed, a frequency will be increased or decreased step by step. If it is kept pressed for 500ms or more, fast forwarding will be performed at a speed of 50 ~ 80ms per step until the key is released.

VI Terminal Connection

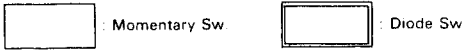


VII Terminal Description

Pin No.	Symbol	I/O	Function																
1	N.C.	-	Not in use																
2	E01	0	PLL error output terminals. When divided VCO output is higher than a reference frequency, "H" is output from these terminals, and when it is lower, "L" is output. When they coincide with each other, floating occurs. Use either E01 or E02 because same wave form is output from them.																
3	E02	0																	
4	GND	-	Ground																
5	VCO(UKW)	I	Inputs VCO output of 0.6 to 15MHz (0.3 Vp-p MIN.)																
6	VCO(FM)	I	Inputs VCO output of 15 to 150MHz (0.5 Vp-p MIN.)																
7	CE	I	Select signal input terminal of a device. Set to "H" when you make the device function normally, and set to "L" when you do not use it.																
8	GND	-	Ground																
9	DOLBY	0	DOLBY ON/OFF selector output terminal "H" when DOLBY is turned on, and "L" when turned off. Corresponding to the DOLBY ON/OFF key, DOLBY is turned off("L") when V <sub>DD</sub> is turned on. (See Momentary Sw No. 6)																
10	MTL	0	METAL ON/OFF selector output terminal "H" when METAL is turned on, and "L" when turned off. Corresponding to the METAL ON/OFF key, METAL is turned off("L") when V <sub>DD</sub> is turned on. (See Momentary Sw No. 5)																
11	APC	0	APC ON/OFF selector output terminal. "H" when APC is turned on, and "L" when turned off. Corresponding to the APC ON/OFF key, APC is turned off("L") when V <sub>DD</sub> is turned on. (See Momentary Sw No. 4)																
12	T/R	I	Cassette pack-in detect input terminal. Pulls up through a transistor switch. Judges "L" as cassette pack-in.																
13	SK	I	SK station detect input terminal. Judges "L" as the SK station. Displays by LCD when receiving UKW.																
14	ST	I	ST station detect input terminal. Pulls up by being connected to the ST IND terminal of MPX IC. Judges "L" as the ST station. Displays by LCD only when executing in the ST ON mode, with UKW selected. (See Momentary Sw No. 12)																
15	SD	I	Station select input terminal when auto tuning is performed. Stops when SD=IF count=1. In the VF mode, it stops when SD=IF count=SK=1.																
16	MW IF	I	MW IF signal input terminal																
17	UKW IF	I	UKW IF signal input terminal																
18	B/U																		
19	F/R	I	Tape run direction detect input terminal. Valid when the pin 12(T/R) is "L". "L" in the FOW mode, and "H" in the REV mode.																
20	MUTE	0	Output terminal to eliminate a shock noise when the PLL unit is unlocked. Active "L".																
21	LOUD	0	LOUDNESS ON/OFF selector output terminal "H" in the LOUDNESS ON mode, and "L" in the LOUDNESS OFF mode. Corresponding to the LOUDNESS ON/OFF key, LOUDNESS is turned off("L") when V <sub>DD</sub> is turned on. (See Momentary Sw No. 7)																
22	A.T.L																		
23	A.T.O																		
24	XO	I	This is a connection terminal for a crystal oscillator. Connect a 4.5 MHz crystal to it. Adjust the oscillation frequency while observing the XO terminal.																
25	XI																		
26	V <sub>DD</sub>	-	This is the power supply terminal of the device. When the device operates, a voltage of 5V ± 10% will be supplied.																
27	VF	0	VF ON/OFF selector output terminal "L" in the VF ON mode, and "H" in the VF OFF mode. Corresponding to the VF ON/OFF key, VF is turned off("H") when V <sub>DD</sub> is turned on. Valid only in case of UKW. (See Momentary Sw No. 8)																
28	DX/LOCAL	0	Auto DX/LOCAL terminal in auto tuning such as SEEK, AUTO STORE, and so on. Valid in all bands of UKW, MW and LW. "H" in the LOCAL mode, and "L" in the DX (normal reception) mode.																
29	ST ON	0	Stereo/monaural selector output terminal "H" in the STEREO ON mode, and "L" in the STEREO OFF mode (forced monaural). Corresponding to the STEREO ON/OFF key, the STEREO ON ("H") mode is set when V <sub>DD</sub> is turned on. Valid only when UKW is received.																
30	BAND1	0	Band select signal output terminal. Output is made as follows																
31	BAND2																		
<table border="1"> <thead> <tr> <th>Band</th> <th>Terminal</th> <th>BAND1</th> <th>BAND2</th> </tr> </thead> <tbody> <tr> <td>UKW</td> <td></td> <td>H</td> <td>H</td> </tr> <tr> <td>MW</td> <td></td> <td>L</td> <td>H</td> </tr> <tr> <td>LW</td> <td></td> <td>L</td> <td>L</td> </tr> </tbody> </table>				Band	Terminal	BAND1	BAND2	UKW		H	H	MW		L	H	LW		L	L
Band	Terminal	BAND1	BAND2																
UKW		H	H																
MW		L	H																
LW		L	L																
32	S23	0	Segment signal output terminal to the LCD panel.																
33	S6																		
34	S5	0	Terminal which outputs segment signal to the LCD panel and key matrix signal. (See Key Matrix)																
35	S0/KS0																		
36	S5/KS5	0	Common signal output terminal to the LCD panel.																
37	S0/KS0																		
38	COM0																		
39	COM1																		
40	V <sub>DD</sub>	-	See Pin No. 26																
41	K3	I	Key matrix signal input terminal (See Key Matrix)																
42	K0	I																	
43	N.C.	-	Not in use																
44	N.C.	-	Not in use																

### VIII Key Matrix

OUT	IN	K3 59Pin	K2 60Pin	K1 61Pin	K0 62Pin
KS0 55Pin			① M3	② M2	③ M1
KS1 54Pin	⑦ LD	⑥ M6/□□	⑤ M5/MTL	④ M4/APC	
KS2 53Pin	⑧ VF/M.DN *1	⑨ TM/M.UP *2	⑩ DOWN	⑪ UP	
KS3 52Pin	⑫ SAM	⑬ PSS	⑭ BND	⑮ ST	
KS5 50Pin	⑯ B.S	⑰ ARI			



\* 1 with ARI → VF  
without ARI → M.DN

\* 2 with ARI → TM  
without ARI → M.UP

#### (1) Diode Sw.

No	Sw name	Function
16	ARI	This switch sets whether the ARI mode is enabled/disabled. Open, ARI mode disabled Short-circuit by diode, ARI mode enabled
17	B.S	This switch selects a reception band (See Momentary Sw No. 13) Open, UKW → MW → LW → UKW ..... Short-circuit by diode, UKW → MW → UKW → MW .....

#### (2) Momentary Sw.

No	Sw name	Function
1	M1	Preset memory write/call key. UKW, MW and LW can be independently memorized for one key. There are 24 stations in total, 6 channels for UKW, 6 for UKW, SAM, 6 for MW and 6 for LW. Valid only in the RADIO mode. 1) When calling For example, if the M1 key is pressed and it is released within 2 seconds with the UKW band selected, a frequency memorized there will be called upon its release. When the key is pressed during auto tuning, the frequency is called upon pressing, because a write action is disabled. 2) When writing For example, if the M3 key is kept pressed for 2 seconds or more with the MW band selected, a frequency being displayed will be written to M3. The SEEK mode and TAPE mode disable a write action.
2	M2	
3	M3	
4	M4	
5	M5	
6	M6	
4	APC	APC ON/OFF selector switch (See Terminal Description Pin No. 11)
5	MTL	METAL ON/OFF selector switch (See Terminal Description Pin No. 10)
6	□□	DOLBY ON/OFF selector switch (See Terminal Description Pin No. 9)
7	LD	LOUDNESS ON/OFF selector key. If this key is pressed during auto tuning, LOUDNESS ON/OFF can be shifted from ON to OFF and vice versa without stopping tuning (See Terminal Description Pin No. 21)
8	VF	1) If ARI ON is specified in initial setting, this key will become valid only when receiving UKW. With the key turned on, a display is made by the LCD only in case of the UKW mode. VF is held ON also when the UKW mode is set again by changing reception bands after turning VF on in the UKW mode. With VF turned on, auto tuning stops when SD=IF count=SK=1. It does not stop by pressing this key during auto tuning (See Terminal Description Pin No. 27). 2) VF auto retuning is performed (SEEK UP) under the following condition: In the VF ON mode, SK·SD is sampled every 2 seconds (checks 200 times every 10ms, and judges as the Low level when SK·SD=0 in 101 check times or more). If the Low level continues 12 times (24 seconds), auto tuning will start. When SK·SD sampling is at the High level, a Low level count so far is cleared and a new Low level count starts from the next one. 3) a) In the UKW mode, if SK·SD=0 when shifting VF from OFF to ON, retuning will be done without counting. Counting will start without retuning, if SK·SD=1. b) In the UKW mode, if you return to UKW·VF ON mode by calling a preset channel or M UP/DOWN or by changing bands, PLL lock will be detected. After 500ms, if SK·SD=0, VF retuning will be performed without counting, and if SK·SD=1, counting will start without retuning.
9	TM	Tuning mode selector key. By changing over this key, the UP/DOWN key is changed over to the SEEK UP/DOWN key and M UP/M DOWN key.
10	M DN	Channel UP/DOWN key. Every time this key is pressed, a frequency is increased (M UP) or decreased (M DOWN) by 1 step. If this key is kept pressed for 0.5 second or more, fast forwarding will be performed at the following intervals until the key is released. UKW mode: About 52ms MW mode: About 82ms LW mode: About 82ms If the M UP key is pressed at an upper limit frequency, the frequency will jump to a lower limit one, and if the M DOWN key is pressed at the lower limit frequency, the frequency will jump to the upper limit one.
11	M UP	
12	DOWN	Every time 1-channel space is increased or decreased (UKW: 50kHz, MW 9kHz, LW 1kHz), SD and IF counts are detected. When returning to UKW by changing bands during SEEK UP/DOWN operation, if CE is set to the Low level one, and then, back to the High level, a search will not stop even if the TAPE mode is put into effect during SEEK UP/DOWN operation. When both ARI and VF are "ON", the traffic information station (VF) is searched. If either of them is "OFF", a normal broadcast station will be searched. If this key is pressed, a search will be performed in the upward (SEEK UP) and downward (SEEK DOWN) directions from the frequency being received in the LOCAL mode. As a result, if no station is found before reaching the frequency where you started a search initially, the station will be searched in the DX mode the next time on, skipping the initial frequency. Once again, when you come to the initial frequency, SD will be detected as to the initial frequency as well this time. If the same key is pressed again during a search in the LOCAL mode, a search will be performed in the DX mode from the frequency next to the initial one.
13	UP	

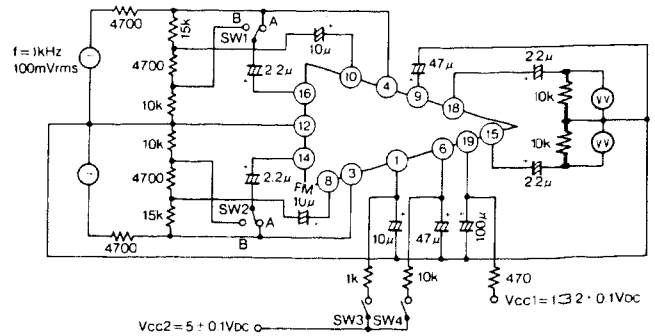
No	Sw name	Function
		Since the frequency may greatly change in this case, intervals of 250 to 375ms have been provided before detecting SD after outputting an N value (frequency division ratio), same as in changing over from the upper limit frequency to the lower limit frequency and vice versa. When a search is being performed in the DX mode, "DX" is displayed on the LCD panel. On the other hand, in the traffic information station search mode, if any high-level input is made, the SD and SK signals will stop at that frequency. In normal search mode, only the SD signal stops at the High level. When stopped during a search in the DX mode, the "DX" display disappears, and the receive mode is forcibly turned to the DX mode, including when a stoppage occurred during a search in the LOCAL mode.
12	ST	STEREO/MONOAURAL selector key for the FM UKW band. Even if this key is pressed during auto tuning, STEREO/MONOAURAL can be changed over without stopping tuning. (See Terminal Description Pin No. 14)
13	BND	Reception band selector key. Every time this key is pressed, the reception band changes as follows: (See Diode Sw No. 17) 1) When B.S of the Diode switch is open. UKW → MW → LW → UKW ..... 2) When B.S of the Diode switch is short-circuited. UKW → MW → UKW → MW .....
14	PSS	If this key is pressed, scanning of preset channels will start sequentially from the channel 1. If SD=1 (SD=SK=1 in the VF mode), subsequent channels will be sequentially received after stopping at that channel for about 5 seconds. If the key is pressed again, scanning will stop at that channel. In the SAM mode, a secondary memory is scanned. If this key is pressed during a preset call, scanning will start from the next channel.
15	SAM	Normally, the UKW station memory has 1 to 6 channels. However, if the SAM mode is set by pressing this key, those channels can be automatically written and called (only when receiving UKW). 1) Calling procedure If the SAM key is pressed and released within 2 seconds, the secondary memory (to be referred to as S.M hereinafter) can be called and the SAM display will light up. At this time, the channel 1 can be called by pressing M1, M2 by pressing M2, thus up to the channel 6 by pressing respective keys. If the SAM key is pressed again and released within 2 seconds, S.M call will be cancelled and you will return to a frequency selected immediately before pressing this key. The last channel in the S.M mode is also held. 2) Writing procedure Regardless of whether it is the SAM mode or not, if the SAM key is kept pressed for 2 seconds or more, the SAM display will flicker and seek-up operation will start (first time in the LOCAL mode, and the second time on in the DX mode). If there is any station existing, the channels will be automatically memorized sequentially from the channel 1 up to the channel 6. After memorizing up to the channel 6, operation stops with the channel 1 called. If the SAM key is pressed again during the seek-up operation, the channel 1 will be called stopping the operation. In DX seek operation, a frequency same as one memorized in the LOCAL mode is skipped.

### ■LB0354 051-0619-01 LOUDNESS with MUTING

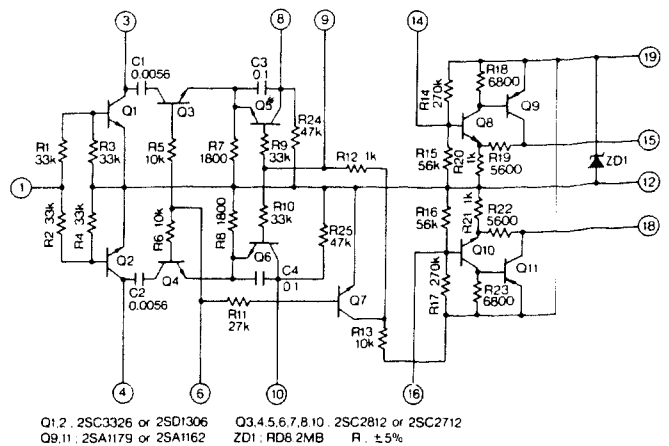
#### Absolute Maximum Ratings (Ta=25°C)

Supply Voltage Vcc1 +20V  
Vcc2 +16V

#### Test Circuit



#### Circuit Diagram



**PARTS LIST:**

⊙Electrical section

⊙MAIN P.W.B

□ is use only 956HX

□ is use only 957HX

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
102~104 207	001-0330-00	Diode 1SS119	24	Q201~204 312,315,317	102-2458-00	Transistor 2SC2458	7
301~312 D318~320 322,324,325 333			22	Q101,104,105 303,304	102-2458-28	Transistor 2SC2458GR	5
				Q208,306,307 310,311,313	102-3400-00	Transistor 2SC3400AC	6
				Q102,103	103-1450-00	Transistor 2SD1450	2
				Q314,316	108-0161-50	FET 2SK161-Y,GR-T4	2
D315,316,326	001-0360-00	Diode S5566B	3	117,126,201 C202,308,321 323	160-1022-05	Ceramic capacitor 0.001μF HD	7
D321	001-0361-00	Diode 1SS198	1	C114	160-1512-05	Ceramic capacitor 150pF HD	1
D203	001-0366-00	Diode LTZ-MR15	1	104~106 C110,111,301 309,310,324	171-1033-06	Ceramic capacitor 0.01μF SC	9
D101	001-0423-13	Diode MA4033	1	101~103 C118,119,211 212,282,288 317,319	171-2233-06	Ceramic capacitor 0.022μF SC	11
D204	001-0423-16	Diode MA4043	1	C124	171-3333-06	Ceramic capacitor 0.033μF SC	1
D314	001-0423-19	Diode MA4056	1	C291,292,306 307	172-1042-28	Polyester capacitor 0.1μF SS	4
D201,313,317	001-0423-24	Diode MA4091	3	C207,208	173-6821-10	Polyester capacitor 6800pF J S	2
IFT101	005-0836-00	IF-transformer MA	1	C107	174-1007-13	Ceramic capacitor 10pF TC	1
IFT102	005-0976-00	IF-transformer IFT	1	C316	174-1507-13	Ceramic capacitor 15pF TC	1
L102	010-2046-12	Coil 5.6μH	1	C315	174-2207-13	Ceramic capacitor 22pF TC	1
L101	010-2046-17	Coil 2.2μH	1	C314	179-1073-21	Electrolytic capacitor 10V100μF S	1
L103	010-2046-33	Coil LAL03NA121K 120μH	1	C320	179-2263-42	Electrolytic capacitor 25V22μF S	1
VR102	012-3808-05	Variable resistor 4.7kΩ	1	C220,303	179-2273-23	Electrolytic capacitor 10V220μF S	2
VR101	012-3808-06	Variable resistor 10kΩ	1	C313	179-4763-22	Electrolytic capacitor 10V47μF S	1
VR103	012-3808-11	Variable resistor 220kΩ	1	C286	179-4773-33	Electrolytic capacitor 16V470μF S	1
VR104,105	012-4318-09	Variable resistor 47kΩ	2	C109,112	182-1053-62	Electrolytic capacitor 50V1μF SS	2
PL3	017-0346-03	Pilot lamp	1	C290	182-1073-22	Electrolytic capacitor 10V100μF SS	1
PL2	017-0377-02	Pilot lamp	1	C289	182-4763-32	Electrolytic capacitor 16V47μF SS	1
PL1	017-0377-03	Pilot lamp	1	C116,127,203 204,222,223	183-1053-62	Electrolytic capacitor 50V1μF USS	6
R105	032-0059-11	Film resistor 6.8kΩ	1	115,120,122 C123,213,218 274	183-1063-32	Electrolytic capacitor 16V10μF USS	7
R106	032-0059-49	Film resistor 5.6kΩ	1	C205,206	183-1073-12	Electrolytic capacitor 6.3V100μF USS	2
C311,318	042-0358-00	Electrolytic capacitor 10V1000μF	2	C125	183-2243-62	Electrolytic capacitor 50V0.22μF USS	1
C108	043-0165-92	Ceramic capacitor 16V0.1μF	1	C113,209,210	183-2253-62	Electrolytic capacitor 50V2.2μF USS	3
CCT	050-0078-03	Component circuit 10kΩx5	1	C305	183-3343-62	Electrolytic capacitor 50V0.33μF USS	1
IC202	051-0158-00	IC TC4016BP	1	C302	183-3353-62	Electrolytic capacitor 50V3.3μF USS	1
IC303	051-0296-01	IC TA78L006AP	1	C224,322	183-4753-52	Electrolytic capacitor 35V4.7μF USS	2
IC201	051-0301-02	IC M51522AL	1	C221	183-4763-12	Electrolytic capacitor 6.3V47μF USS	1
IC302	051-0526-00	IC MB3756	1	C304	183-4763-32	Electrolytic capacitor 16V47μF USS	1
IC301	051-0794-10	IC μPD1714G-542-12	1				
IC101	051-0798-00	IC TA7411AP	1				
SUP101	060-0122-00	Surge protector	1				
X301	061-1053-61	Crystal	1				
Q209	100-1020-00	Transistor 2SA10200.Y	1				
Q302,308,309	100-1175-00	Transistor 2SA1175-TRJHFEK	3				
Q305	102-1846-00	Transistor 2SC1846QRS	1				

⊙AUDIO P.W.B

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
D202	001-0334-00	Diode DSA17	1	R267,270	116-5621-10	Chip resistor 1/8W5.6kΩ	2
IC204	051-0655-01	IC TA7270P-CL	1	C243~246	160-6812-05	Ceramic capacitor 680pF HD	4
IC205	051-0656-01	IC TA7271P-CL	1	254~256 C259~261 263,264	173-1542-10	Polyester capacitor 0.15μF S	8
R259~262	116-1031-10	Chip resistor 1/8W10kΩ	4	247,248,251 C252,253,257 258,262	179-1073-22	Electrolytic capacitor 10V100μF S	8
R243,273	116-1221-10	Chip resistor 1/8W1.2kΩ	2	C249,250	179-2263-32	Electrolytic capacitor 16V22μF S	2
R274,275	116-1501-10	Chip resistor 1/8W15Ω	2	C231 C265~268	179-2283-31	Electrolytic capacitor 16V220μF S	5
R255~258	116-1831-10	Chip resistor 1/8W18kΩ	4	C239~242	182-1053-62	Electrolytic capacitor 50V1μF SS	4
R263,264	116-2731-10	Chip resistor 1/8W27kΩ	2				
R265,266,268 R269	116-3301-10	Chip resistor 1/8W33Ω	4				

⊙VR P.W.B

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
VR 106	012-3808-06	Variable resistor 10kΩ	1	R245 R251~254	117-2221-15	Chip resistor 1/16W2.2kΩ S	5
IC207	051-0350-55	IC NJM4558M	1	R228,229	117-2731-15	Chip resistor 1/16W27kΩ S	2
IC206	051-0606-01	IC KC-819	1	R283	117-4721-15	Chip resistor 1/16W4.7kΩ S	1
IC203	051-0619-01	IC LB0354	1	R277,278	117-4731-15	Chip resistor 1/16W47kΩ S	2
Q211,212	102-2458-28	Transistor 2SC2458GR	2	R246,247	117-5631-15	Chip resistor 1/16W56kΩ S	2
Q205,206	103-1450-00	Transistor 2SD1450RST	2	R 227 231	117-6821-15	Chip resistor 1/16W6.8kΩ S	2
	116-0000-05	Chip jumper wire 0Ω	3	C272	179-2273-21	Electrolytic capacitor 10V220μF S	1
R279,281	116-1031-15	Chip resistor 1/8W10kΩ	2	C237	179-4773-33	Electrolytic capacitor 16V470μF S	1
R285	116-1041-15	Chip resistor 1/8W100kΩ	1	C299	182-1073-32	Electrolytic capacitor 16V100μF SS	1
R249,250	116-2211-15	Chip resistor 1/8W220Ω	2	236,238,270 C271 C280~282 284, 285	183-1053-62	Electrolytic capacitor 50V1μF USS	9
R244	116-2221-15	Chip resistor 1/8W2.2kΩ	1	225,226,228 C230,234,269 273 275~278	183-1063-32	Electrolytic capacitor 16V10μF USS	11
R 227 231	116-3921-15	Chip resistor 1/8W3.9kΩ	2	C227,229	183-2243-62	Electrolytic capacitor 50V0.22μF USS	2
R238,239	117-1021-15	Chip resistor 1/16W1kΩ S	2	C283	183-4763-19	Electrolytic capacitor 6.3V47μF USS	1
R241,276,284	117-1031-15	Chip resistor 1/16W10kΩ S	3				
R282	117-1041-15	Chip resistor 1/16W100kΩ S	1				
R242,280	117-1231-15	Chip resistor 1/16W12kΩ S	2				

⊙UKW BLOCK Ass'y 880-1407A

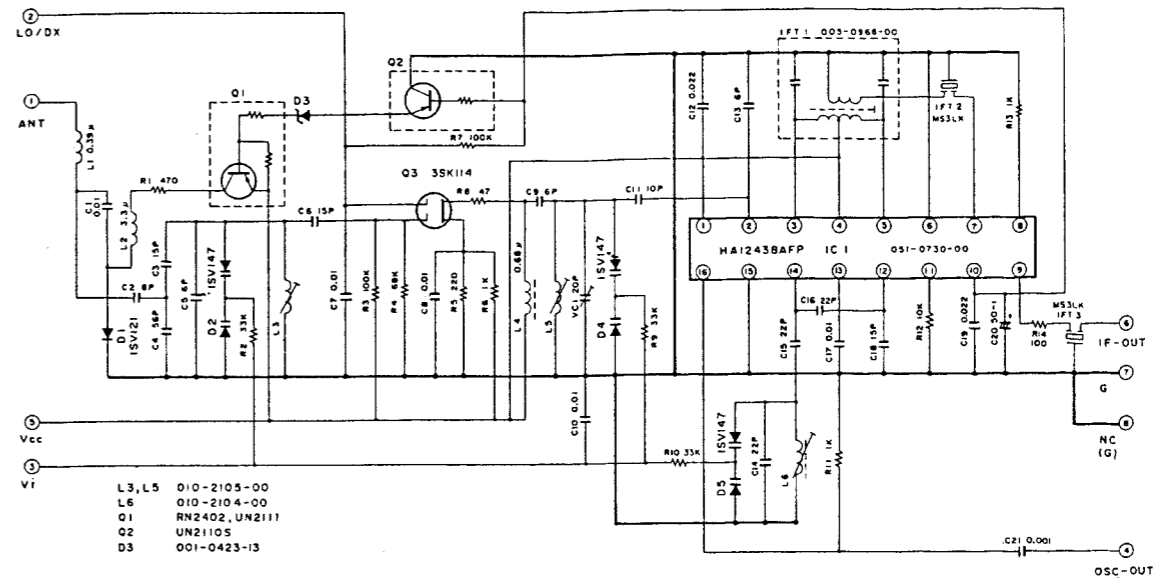
Ref. No.	Part No.	Description	Q'ty	Ref. No.	Part No.	Description	Q'ty
D1	001-0368-00	Diode (1SV121)	1	R2,9,10	117-3331-10	Chip resistor (33kΩ)	3
D3	001-0423-13	Diode (MA4033)	1	R8	117-4701-10	Chip resistor (47Ω)	1
D2,4,5	001-0442-00	Diode (1SV147)	3	R4	117-6831-10	Chip resistor (68Ω)	1
VC1	004-1567-00	Trimer (20P)	1	Q3	124-0114-15	Transistor (3SK114)	1
IFT1	005-0966-00	IF-Transformer	1	Q1	125-0001-01	Transistor (UN2111)	1
IFT2,3	005-0967-00	IF-Transformer (MS3LK)	2	Q2	125-0006-00	Transistor (UN2110)	1
L4	010-1570-01	Coil (RF)	1	C11	176-1007-00	Ceramic chip capacitor (10pF)	1
L1	010-2046-03	Coil (0.039μH)	1	C3,6,18	176-1501-00	Ceramic chip capacitor (15pF)	3
L2	010-2046-14	Coil (3.3μH)	1	C14,15,16	176-2201-00	Ceramic chip capacitor (22pF)	3
L6	010-2104-00	Coil (OSC)	1	C4	176-5601-00	Ceramic chip capacitor (56pF)	1
L3,5	010-2105-00	Coil (L4.5T)	2	C5,9,13	176-6097-00	Ceramic chip capacitor (6pF)	3
IC1	051-0730-00	IC (HA12438FP)	1	C2	176-8097-00	Ceramic chip capacitor (8pF)	1
R14	117-1011-10	Chip resistor (1/16W 100Ω)		C21	178-1022-05	eramic chip capacitor (0.001μF)	1
R6,11,13	117-1021-10	Chip resistor (1kΩ)	3	C1,7,8,10,17	178-1032-05	Ceramic chip capacitor (0.01μF)	5
R12	117-1031-10	Chip resistor (10kΩ)	1	C12,19	178-2232-05	Ceramic chip capacitor (0.022μF)	2
R3,7	117-1041-10	Chip resistor (100kΩ)	2	C20	183-1053-62	Electrolytic capacitor (50V 1μF)	1
R5	117-2211-10	Chip resistor (220Ω)	1				

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REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
VR1	012-3707-05	Variable resistor (VR10kΩ)	1	R5	117-6821-10	Chip resistor (1/16W6.8kΩ) S	1
VR2	012-3707-08	Variable resistor (VR100kΩ)	1	R3	117-8211-10	Chip resistor (1/16W820Ω) S	1
CCT1	050-0099-50	Component circuit	1	C6	171-2223-06	Ceramic capacitor (0.0022μF) SC	1
IC1	051-0407-00	IC (LA2110)	1	C16	171-3333-06	Ceramic capacitor (0.033μF) SC	1
IC2	051-0733-01	IC (LA3430)	1	C7	171-4733-06	Ceramic capacitor (0.047μF) SC	1
X1	060-0115-02	Ceramic resonator	1	C2,3	178-1032-05	Ceramic chip capacitor (0.01μF) HD,S	2
Q1	102-2458-49	Transistor (ZSC2458-YGR)	1	C10	178-2232-05	Ceramic chip capacitor (0.022μF) HD,S	1
R2,12	117-1041-10	Chip resistor (1/16W100kΩ) S	2	C9	178-4722-05	Ceramic chip capacitor (0.0047μF) HD,S	1
R8,9	117-2221-10	Chip resistor (1/16W2.2kΩ) S	2	C4,15	178-6822-05	Ceramic chip capacitor (0.0068μF) HD,S	2
R14	117-2231-10	Chip resistor (1/16W22kΩ) S	1	C11,12	182-1053-62	Electrolytic capacitor (50V1μF) SS	2
R6	117-3331-10	Chip resistor (1/16W33kΩ) S	1	C14	182-1063-32	Electrolytic capacitor (16V10μF) SS	1
R10	117-3921-10	Chip resistor (1/16W3.9kΩ) S	1	C13	182-2243-62	Electrolytic capacitor (50V0.22μF) SS	1
R1	117-4721-10	Chip resistor (1/16W4.7kΩ) S	1	C5	182-2263-32	Electrolytic capacitor (16V22μF) SS	1
R4,11,13	117-5621-10	Chip resistor (1/16W5.6kΩ) S	3	C1,8	182-4753-52	Electrolytic capacitor (35V4.7μF) SS	2

■BLOCK CIRCUIT DIAGRAM:

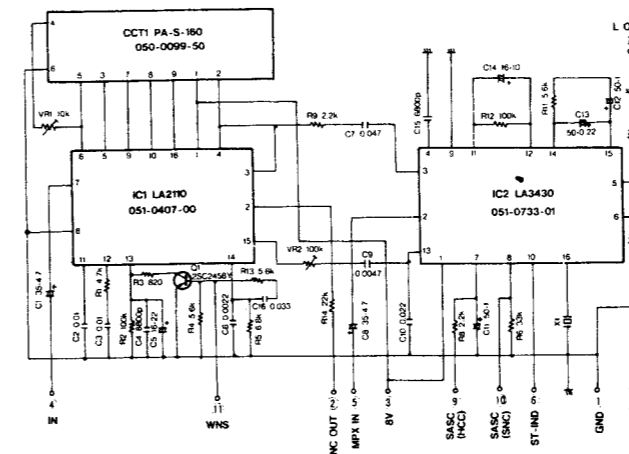
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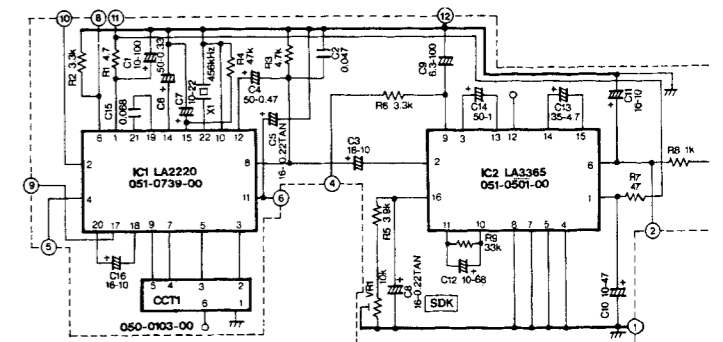
©SDK BLOCK Ass'y 880-0201B (957HX)

REF.NO.	PART NO.	DESCRIPTION	Q'TY	REF.NO.	PART NO.	DESCRIPTION	Q'TY
VR1	012-3707-05	Variable resistor (VR-10kΩ)	1	C3,11,16	182-1063-32	Electrolytic capacitor (16V10μF)	3
CCT1	050-0103-00	Component circuit (TCB06T0006)	1	C9	182-1073-12	Electrolytic capacitor (6.3V100μF)	1
IC2	051-0501-00	IC (LA3365)	1	C1	182-1073-22	Electrolytic capacitor (10V100μF)	1
IC1	051-0739-00	IC (LA2220)	1	C7	182-2263-22	Electrolytic capacitor (10V22μF)	1
X1	060-0115-01	Ceramic resonator (CBS456F11)	1	C6	182-3343-62	Electrolytic capacitor (50V0.33μF)	1
C2	171-4733-06	Ceramic capacitor (0.047μF)	1	C12	183-6863-22	Electrolytic capacitor (10V68μF)	1
C15	172-6831-20	Polyester capacitor (0.068μF)	1	C4	182-4743-62	Electrolytic capacitor (50V0.47μF)	1
C5,8	042-0249-00	Electrolytic capacitor (16V0.22μF TAN)	2	C13	182-4753-52	Electrolytic capacitor (35V4.7μF)	1
C14	182-1053-62	Electrolytic capacitor (50V1μF)	1	C10	182-4763-22	Electrolytic capacitor (10V4.7μF)	1

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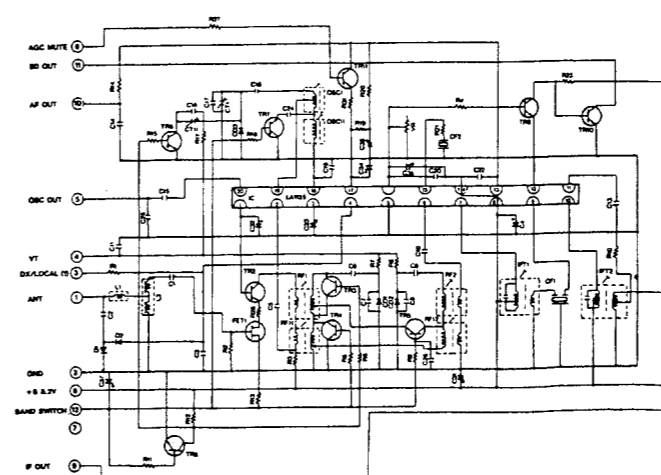
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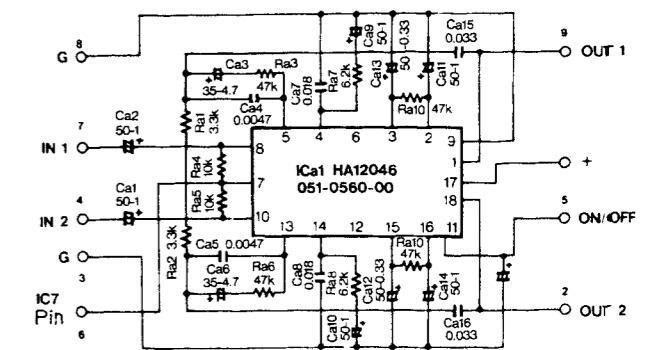
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REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY	REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
IC1	051-0560-00	IC (HA12046)	1	C601,605,607,701,705,707	182-1053-62	Electrolytic capacitor (50V1μF) SS	6
C604,704	173-1831-10	Polyester capacitor (0.018μF) S	2	C801	182-1063-32	Electrolytic capacitor (16V10μF) SS	1
C608,708	173-3331-10	Polyester capacitor (0.033μF) S	2	C606,706	182-3343-62	Electrolytic capacitor (50V0.33μF) SS	2
C602,702	173-4721-10	Polyester capacitor (0.0047μF) S	2	C603,703	182-4753-52	Electrolytic capacitor (35V4.7μF) SS	2

©MW/LW TUNER PACK 941-0159-02



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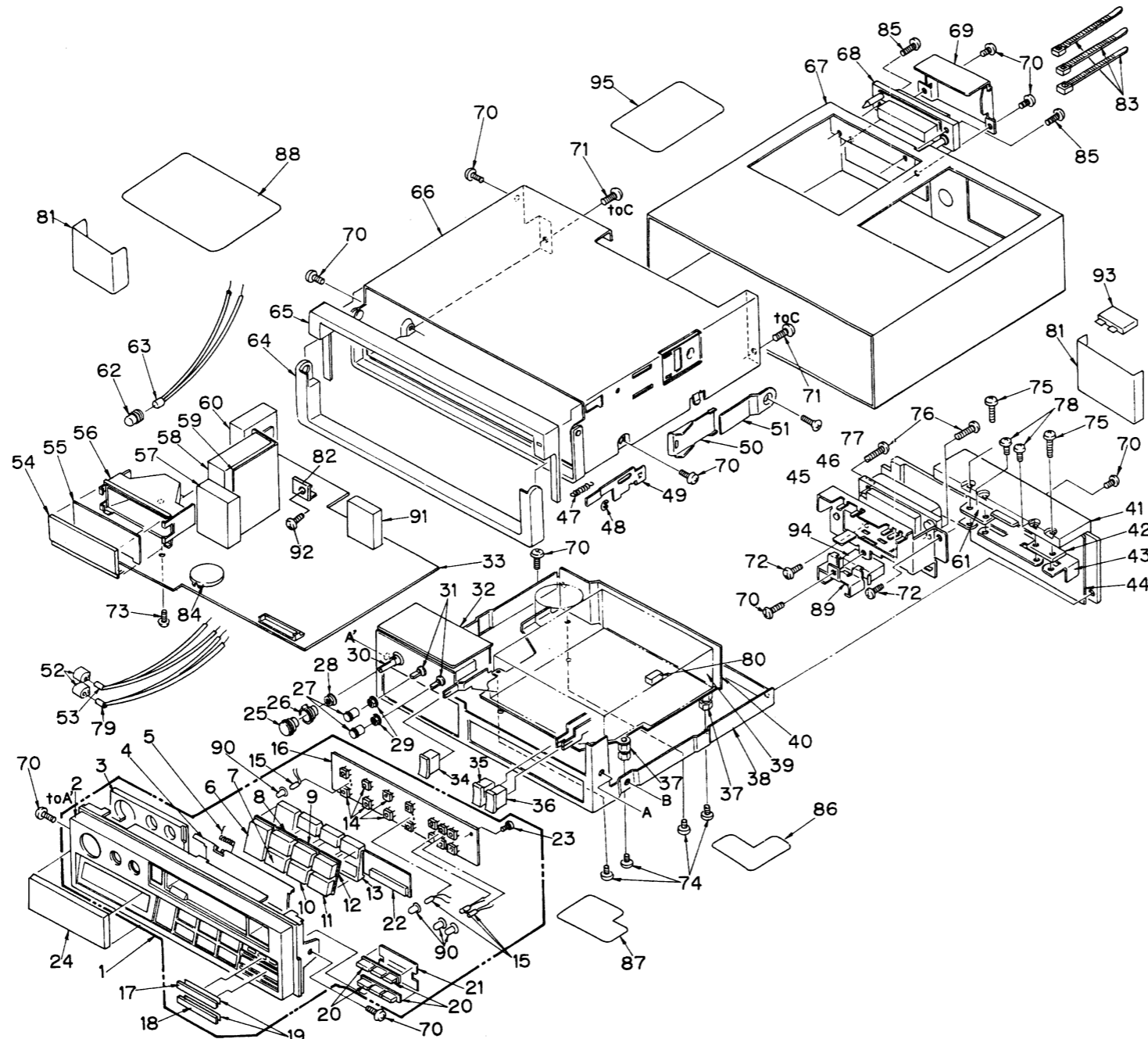


NOTE : OM (Oxidized Metal) SS (Super Small)  
 S (Small) TC (Temperature-Compensating)  
 HD (Higher Dielectric) LL (Low Leak)  
 SC (Semi-Conductor) USS (Ultra Super Small)



# EXPLODED VIEW • PARTS LIST:

©Main section



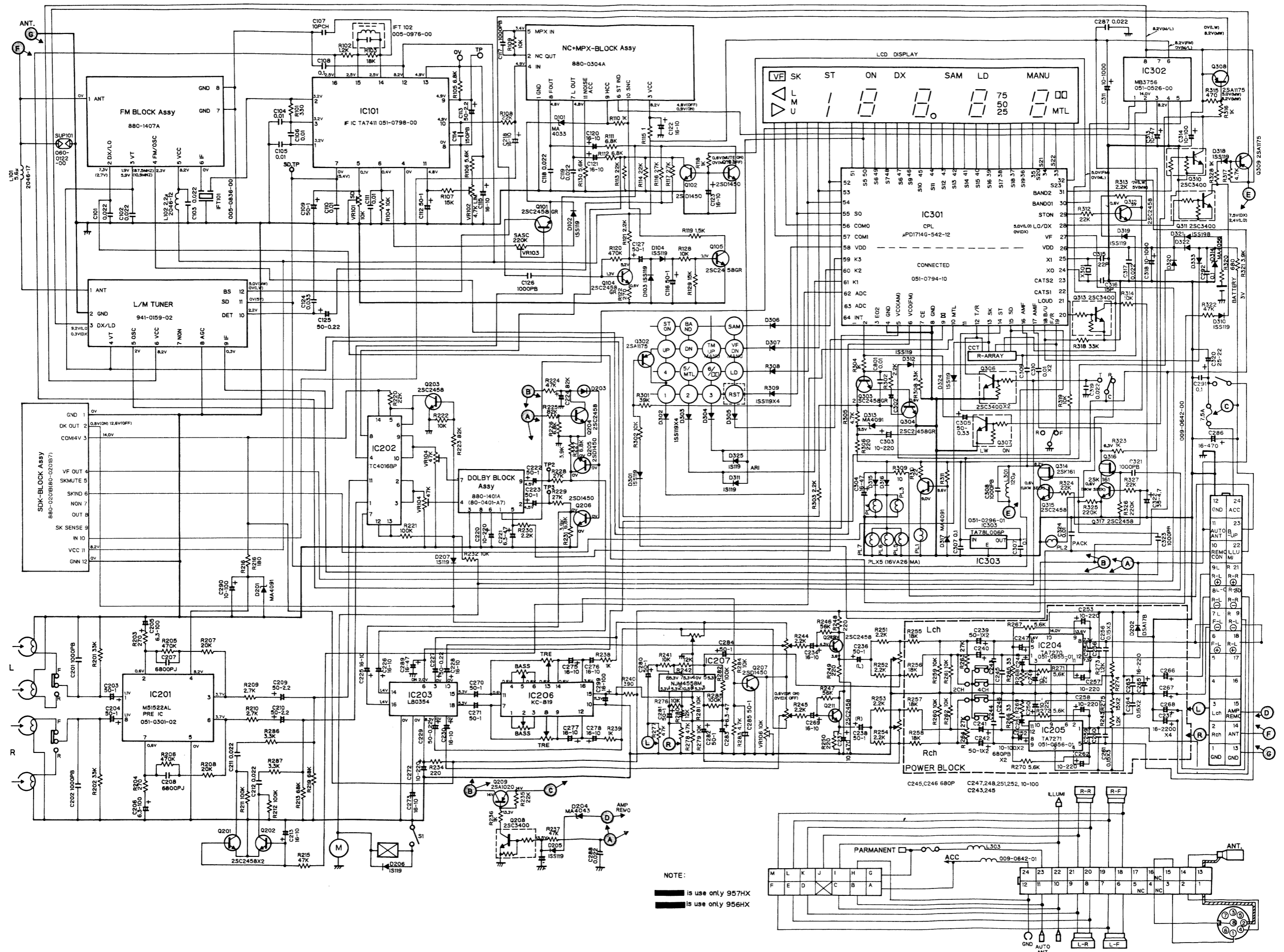
REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	940-0889A 940-0890A	Escutcheon (957HX) ass'y (956HX)	1
2	370-3996-00	Escutcheon	1
3	335-2426-00	Illumi. plate	1
4	320-0401-22 320-0401-27	Dust proof (957HX) cover (956HX)	1
5	750-2626-00	Spring	1
6	382-1256-00 382-1256-01	Button (957HX) (956HX)	1
7	382-1257-07	Button (4)	1
8	382-1257-00	Button (1)	1
9	382-1257-01	Button (2)	1
10	382-1257-18	Button (5)	1
11	382-1257-19	Button (6/NL)	1
12	382-1257-06	Button (3)	1
13	347-2338-01	Contact	1
14	013-3694-00	Switch	14

REF.NO.	PART NO.	DESCRIPTION	Q'TY
15	017-0377-00	Pilot lamp (16V38mA)	4
16	099-7957-00	SW.-P.W.B	1
17	378-0104-04 378-0104-07	Badge (957HX) (956HX)	1
18	378-0104-05 378-0104-08	Badge (957HX) (956HX)	1
19	347-2335-00	Double face	2
20	382-1261-00	Button	6
21	347-2336-00	Film	1
22	345-4410-00	Spacer	1
23	716-0648-00	Screw	1
24	373-0480-08	Dial cover	1
25	380-4832-00	Knob (VOL)	1
26	380-4831-00	Knob (FADER)	1
27	380-4830-00	Knob (BASS/TRE)	2
28	722-0370-00	Nut (VOL/FAD)	1

REF.NO.	PART NO.	DESCRIPTION	Q'TY
29	722-0433-00	Nut (B/T)	2
30	012-4577-00	Volume (VOL/FAD)	1
31	012-4578-00	Volume (B/T)	2
32	099-7943-00	VOL-P.W.B	1
33	099-7955-00	MAIN-P.W.B	1
34	382-1255-00	Button (PRO)	1
35	382-1254-00	Button (REW)	1
36	382-1253-00	Button (FF)	1
37	716-0375-00	Screw (MECHA)	4
38	311-1271-02	Lower case	1
39	930-0552-13	Mechanism	1
40	330-8574-01	Shield case	1
41	313-1295-00	Heat sink	1
42	051-0656-01	IC	1

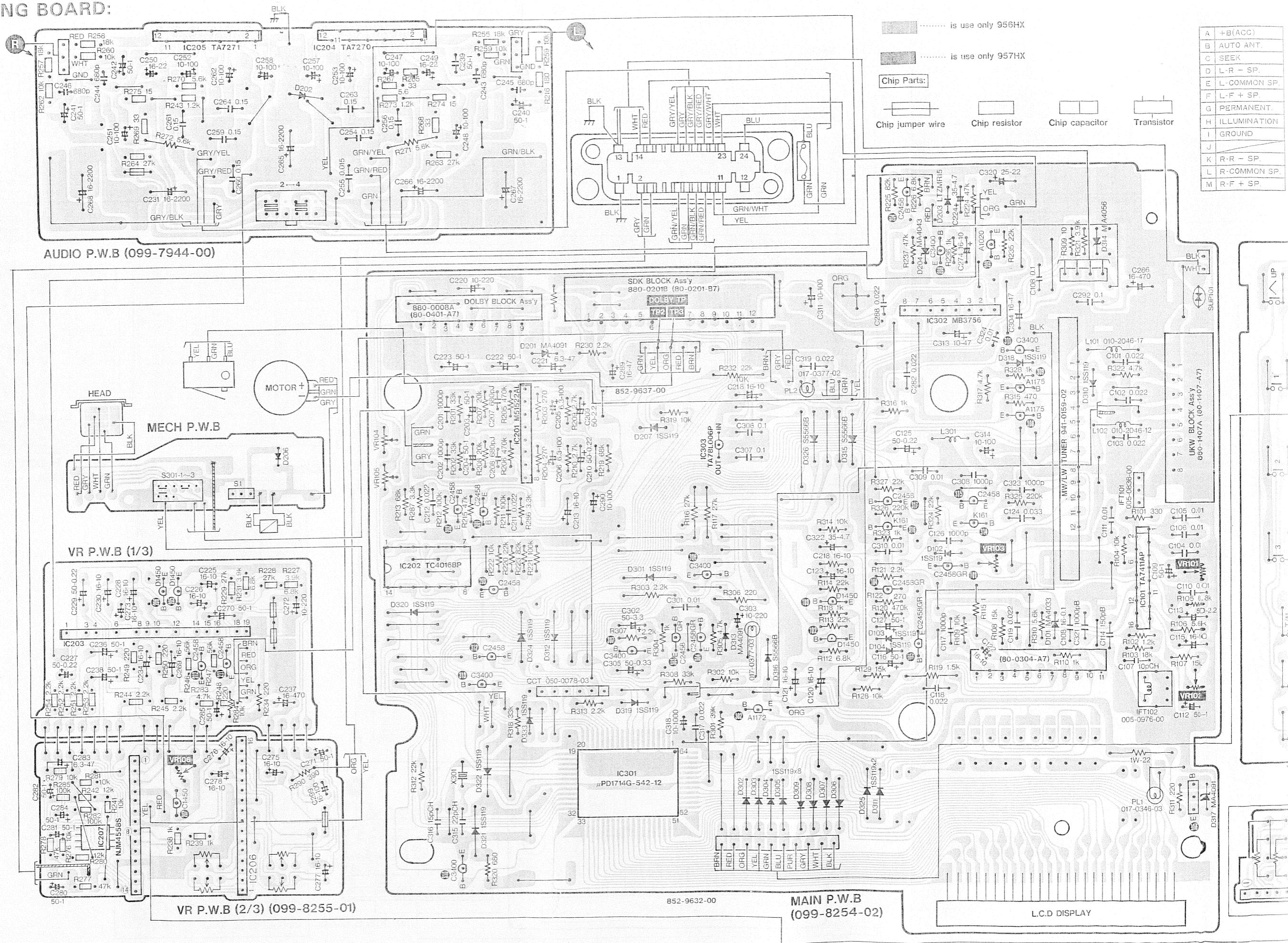
REF.NO.	PART NO.	DESCRIPTION	Q'TY
43	330-8575-00	IC holder	1
44	099-7944-00	AUDIO-P.W.B	1
45	330-8604-00	Lead holder	1
46	854-0254-00 854-0302-00	Extension (957HX) lead (956HX)	1
47	750-2624-00	Spring	1
48	743-2500-10	E-ring	1
49	330-8577-00	Lever	1
50	330-8578-00	Hook plate	1
51	750-2625-00	Spring	1
52	345-3922-05	P.L. cap	2
53	017-0377-02	Pilot lamp (16V38mA)	1
54	379-0152-00	Indicator	1
55	347-2337-00	Film	1
56	335-2460-00	LCD holder	1
57	880-0304A	NC-MPX brock ass'y	1
58	941-0159-02	MW/LW tuner	1
59	330-8603-00	Shield case	1
60	880-1407A	UKW tuner	1
61	051-0655-01	IC	1
62	345-3667-15	P.L. cap	1
63	017-0346-03	Pilot lamp (8V100mA)	1
64	335-2459-00	Handle cover	1
65	370-4006-01	Escutcheon	1
66	310-1309-01	Upper case	1
67	300-7347-03	Mounting bracket	1
68	854-0253-00 854-0255-00	Extension (957HX) lead (956HX)	1
69	330-8576-01	Shield case	1
70	731-3006-80	Tap tight (M3x6)	10
71	731-3008-81	Tap tight (M3x8)	2
72	702-3006-81	Tap screw (3x6)	2
73	702-2606-80	Tap screw (2.6x6)	1
74	714-3005-81	Machine screw (M3x5)	4
75	714-3006-81	Machine screw (M3x6)	2
76	714-4012-11	Machine screw (M4x12)	2
77	714-3006-40	Machine screw (M3x6)	1
78	714-3004-11	Machine screw (M3x4)	2
79	017-0377-03	Pilot lamp (16V38mA)	1
80	345-4438-00	Spacer	1
81	347-2339-00	Insulator	2
82	330-8218-00	IC bracket	1
83	335-0833-01	Lead holder	2
84	088-0017-00	Battery	1
85	731-3010-80	Tap tight (M3x10)	2
86	347-2342-00	Label	1
87	347-2343-00	Label	1
88	286-6936-00 286-6986-00	Set plate (957HX) (956HX)	1
89	330-8605-00	Fuse holder	1
90	345-4441-01	P.L. cap	4
91	880-0201B	SDK BLOCK (957HX)	1
92	714-3004-81	Machine screw (M3x4)	1
93	060-0057-05 060-0057-00	Auto fuse (957HX) (7.5A) (956HX)	1
94	077-0082-00	Fuse receptacle	1
95	285-0915-00	Guide label	1

# CIRCUIT DIAGRAM:



NOTE:  
 is use only 957HX  
 is use only 956HX

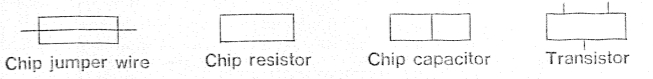
PRINTED WIRING BOARD:



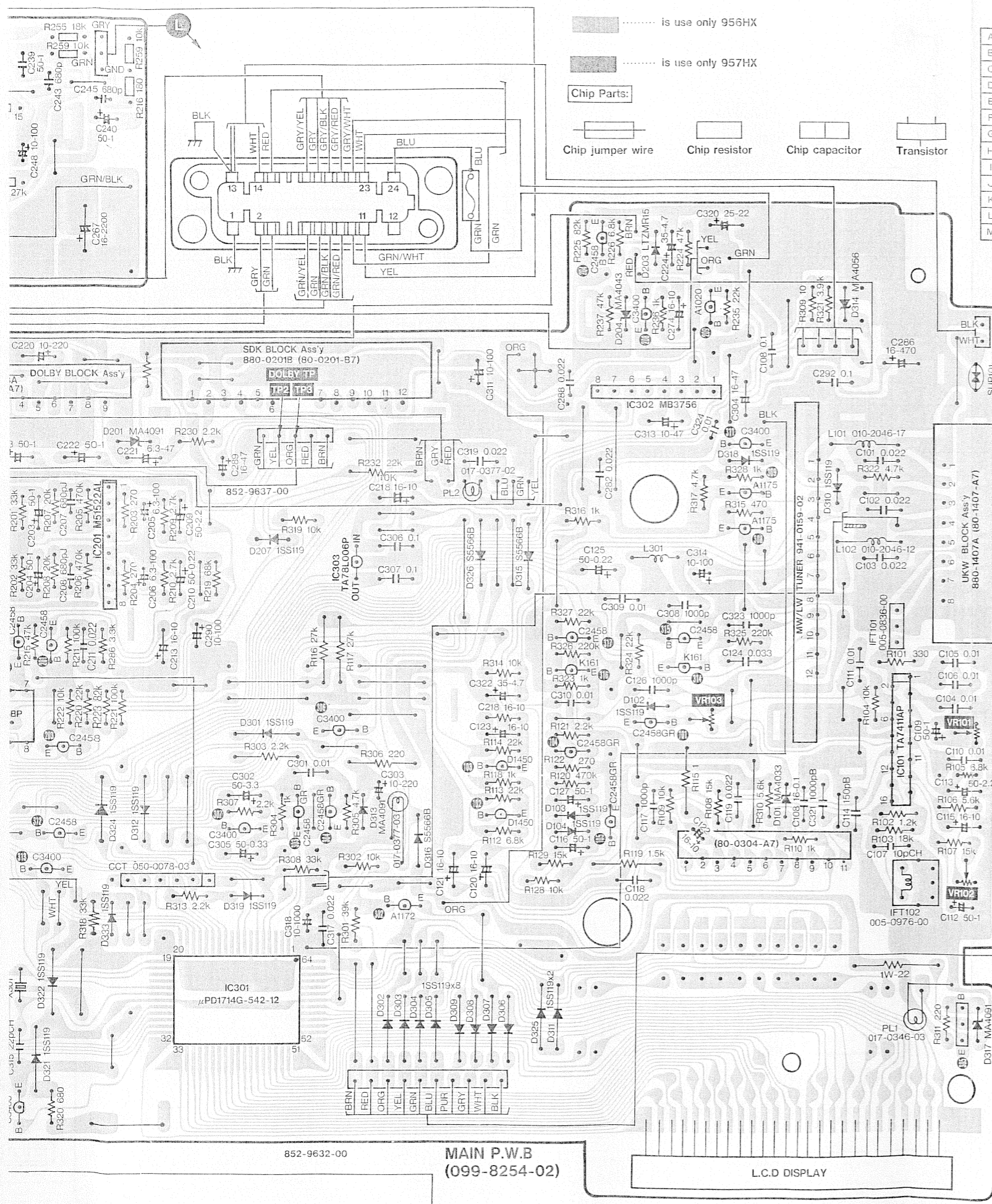
..... is use only 956HX

..... is use only 957HX

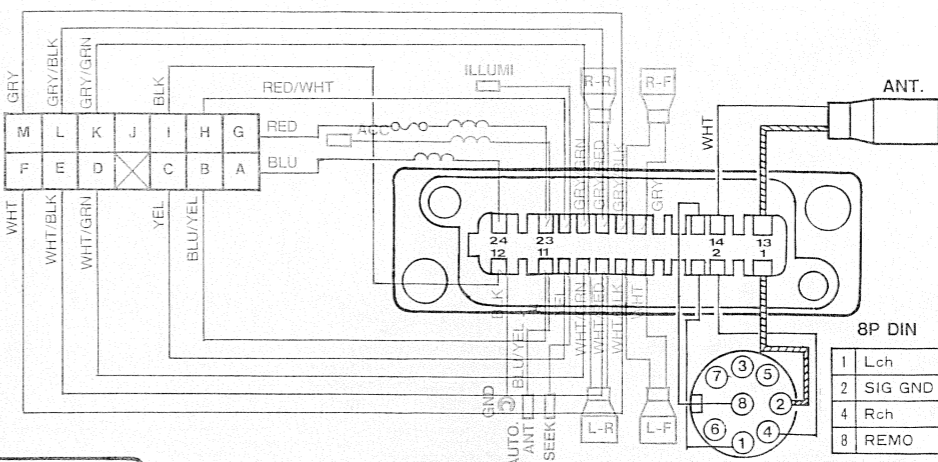
Chip Parts:



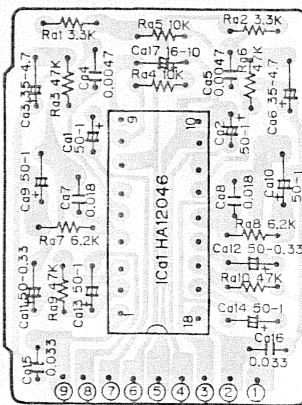
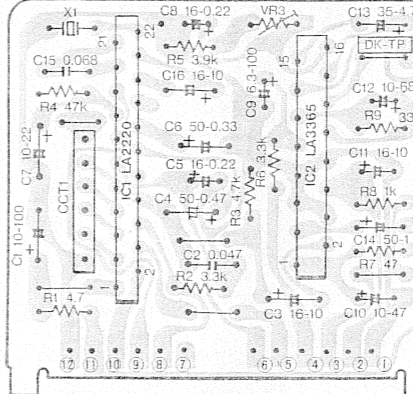
A	+B(ACC)
B	AUTO ANT.
C	SEEK
D	L-R - SP.
E	L-COMMON SP.
F	L-F + SP.
G	PERMANENT.
H	ILLUMINATION
I	GROUND
J	
K	R-R - SP.
L	R-COMMON SP.
M	R-F + SP.



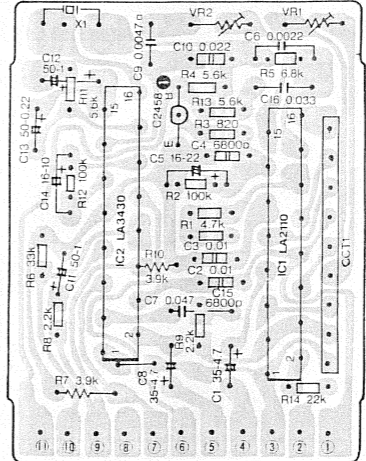
A	+B (ACC)
B	AUTO ANT.
C	SEEK
D	L-R - SP.
E	L-COMMON SP.
F	L-F + SP.
G	PERMANENT.
H	ILLUMINATION
I	GROUND
J	
K	R-R - SP.
L	R-COMMON SP.
M	R-F + SP.



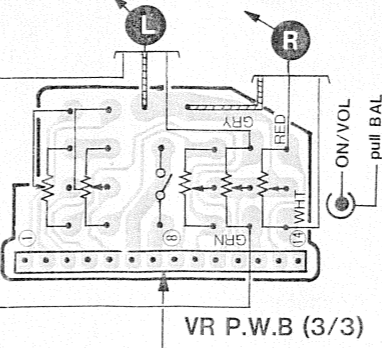
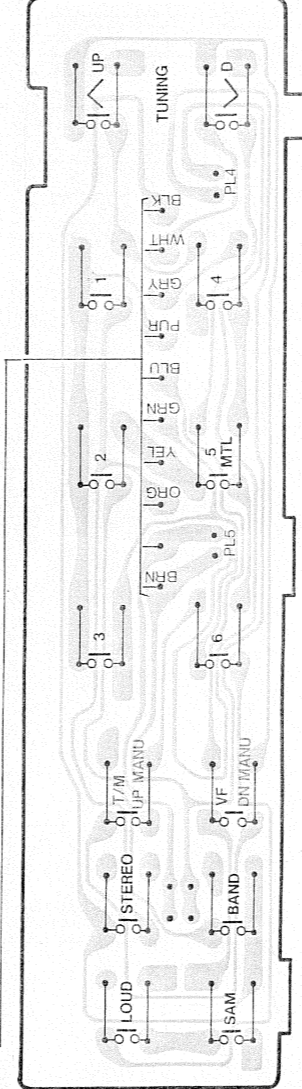
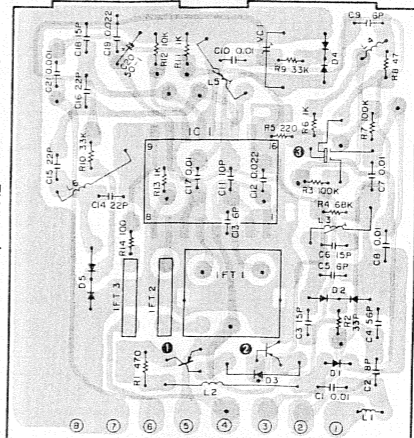
**SDK BLOCK Ass'y 880-0201B**



**NC/MPX BLOCK Ass'y 880-0304A**

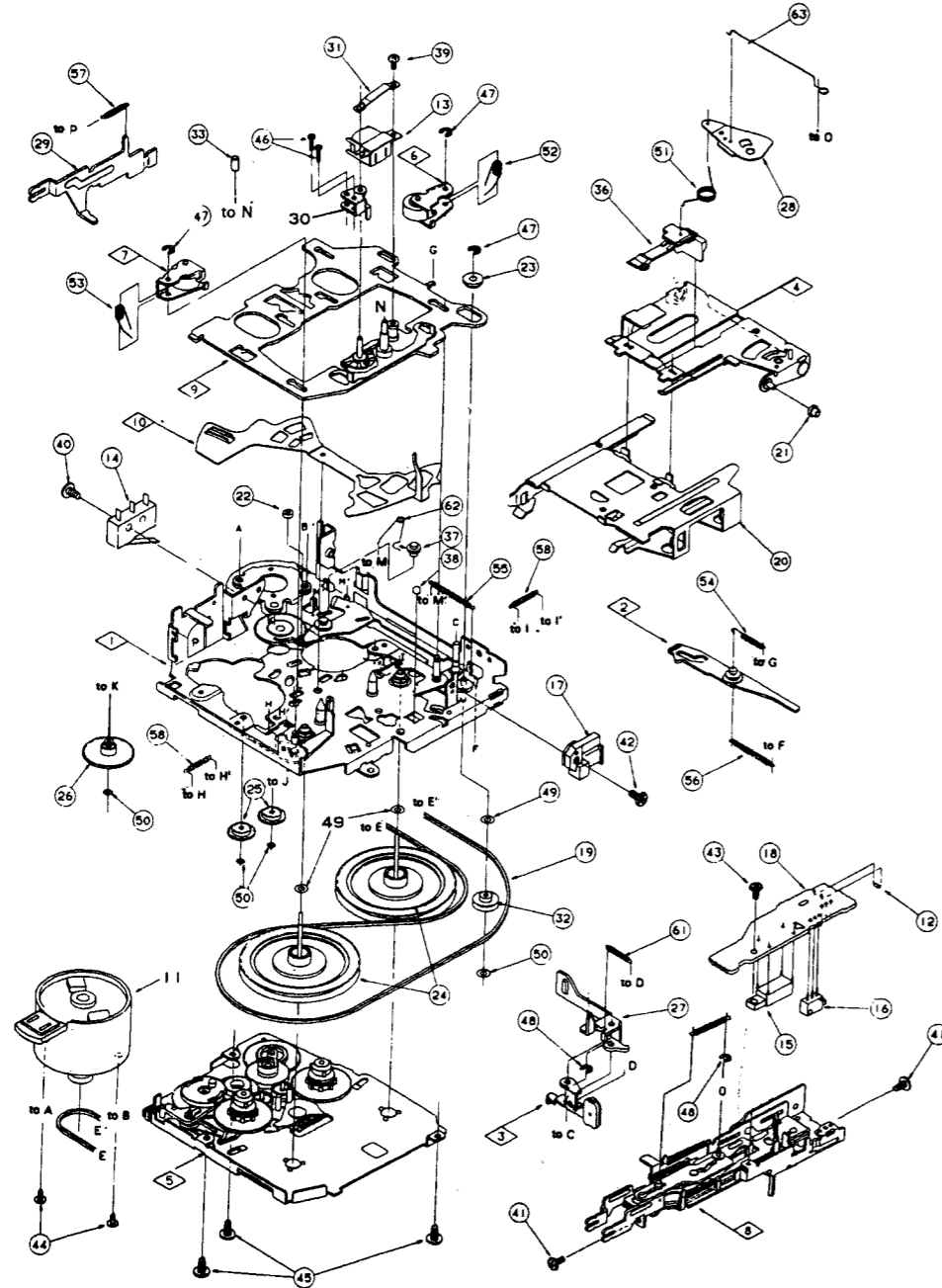


**UKW BLOCK Ass'y 880-1407A**

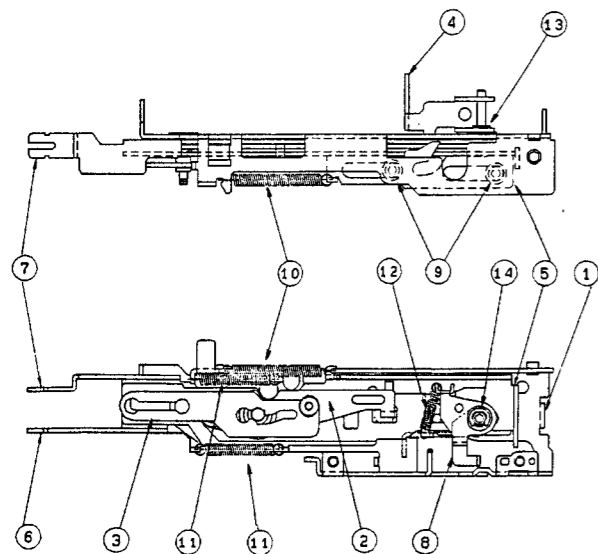


# EXPLODED VIEW • PARTS LIST:

©Tape mechanism section (930-0556-13)



<960-3924-05 Frame sub-A-RS>

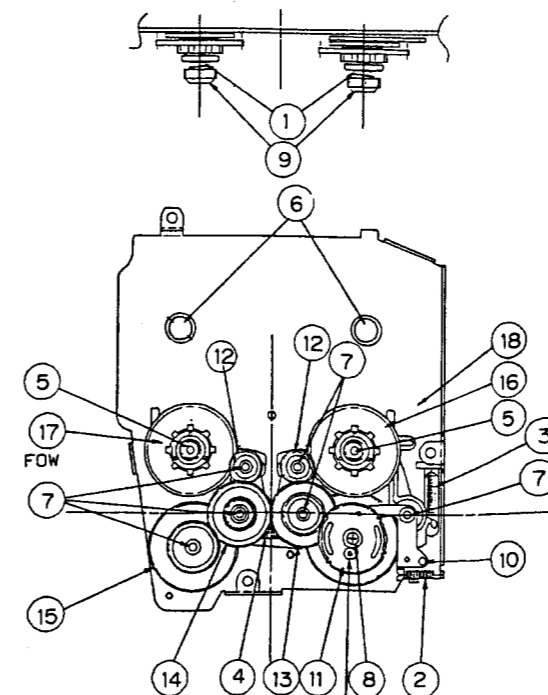


REF.NO.	PART NO. (ORDER NO.)	DESCRIPTION	Q'TY
1	960-3841-02	Frame ass'y RMS	1
2	960-3845-02	Click P-ass'y	1
3	960-3887-00	Select P-ass'y S	1
4	610-0296-01	Eject-P-roller	2
5	630-1931-01	Lock arm	1
6	630-1938-03	Eject plate RS	1
7	630-1943-05	FF lever	1
8	630-1948-05	REW lever	1
9	630-1951-02	SW plate	1
10	743-1500-20	E-ring	1
11	743-2000-20	E-ring	1
12	750-2549-01	Eject spring R	1
13	750-2550-02	FF spring	2
14	750-2556-01	SW plate spring	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
1	960-3834-02	Deck-P ass'y R	1
2	960-3837-04	Shift-P ass'y	1
3	960-3839-03	Plunger-L ass'y	1
4	960-3840-02	Guide arm ass'y	1
5	960-3850-09	Bottom sub-A-C	1
6	960-3852-02	Roller ass'y F	1
7	960-3853-02	Roller ass'y R	1
8	960-3924-05	Frame sub-A-RS	1
9	960-3947-02	Head-P-ass'y RD	1
10	960-3881-03	CH plate ass'y	1
11	SMA-112-101	Motor ass'y	1
12	001-0330-00	Diode	1
13	011-0296-10	Head	1
14	013-2690-02	Switch	1
15	013-3807-00	Switch	1
16	013-3808-00	Switch	1
17	015-0232-01	Plunger	1
18	099-7859-00	PWB	1
19	602-0103-10	Belt	1
20	606-0083-06	Pack guide	1
21	610-0226-00	Roller	1
22	610-0293-01	Power roller	1
23	610-0294-01	Head-P-G-roller	1
24	611-0077-01	Flywheel	2
25	613-0095-01	FF idler gear	2
26	613-0087-01	Gear A	1
27	630-1930-01	OFF arm	1
28	630-1932-02	Swing arm	1
29	630-1934-02	Program lever	1
30	630-1956-02	Adjust link	1
31	630-1962-02	Head spring	1

Ref. No.	Part No. (Order No.)	Description	Q'ty
32	604-0035-00	Tension pulley	1
33	631-0545-01	Eject roller	1
35	746-0617-00	Washer	2
36	631-0552-03	Pack stopper	1
37	632-1886-02	Lock pin	1
38	632-1888-00	Ball	1
39	714-2003-81	Machine screw (M2 x 3)	1
40	714-2308-81	Machine screw (M2.3 x 8)	1
41	714-2604-81	Machine screw (M2.6 x 4)	2
42	714-2606-11	Machine screw (M2.6 x 6)	1
43	716-0790-00	Machine screw	1
44	716-0715-15	Screw	2
45	716-0717-10	Screw	3
46	716-0718-20	Screw	2
47	743-1500-20	E-ring	3
48	743-2000-20	E-ring	2
49	746-0624-00	Washer	3
50	746-0761-00	Washer	4
51	750-2361-01	Spring	1
52	750-2535-03	Roller spring F	1
53	750-2536-03	Roller spring R	1
54	750-2537-02	Over-P-spring	1
55	750-2538-01	Power-P-spring	1
56	750-2539-01	Shift-P-spring	1
57	750-2541-01	Program spring	1
58	750-2545-00	FF gear spring	2
60	750-2554-03	Click-P-spring	1
61	750-2555-02	OFF arm spring	1
62	750-2568-00	Lock spring	1
63	750-2569-03	Eject rod RS	1

<960-3850-09 Bottom sub-A-C>



REF.NO.	PART NO.	DESCRIPTION	Q'TY
1	750-2564-01	Slide spring	2
2	750-2544-01	Lock-L-spring	1
3	750-2543-01	Sensing spring	1
4	750-2542-00	Idler-P-spring	1
5	746-0768-00	Washer	2
6	746-0767-00	Washer	2
7	746-0761-00	Washer	6
8	716-0716-10	Screw	1
9	631-0554-00	Slide bush	2
10	631-0546-01	Lock link	1
11	613-0093-01	CH gear	1
12	613-0091-01	Play idler gear	2
13	613-0090-99	Gear R	1
14	613-0089-01	Gear F	1
15	613-0088-01	Gear B	1
16	960-3855-04	Reel ass'y R	1
17	960-3854-02	Reel ass'y F	1
18	960-3846-04	Bottom ass'y C	1
19	745-0678-01	Washer	2

## ● How to read resistor

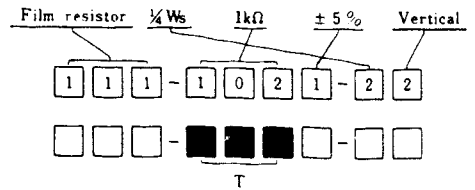
Resistors are deleted from the table of electric components, (except metal film resistors and special resistors). They can be converted to product Nos. as follows.

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	1/8 W	Approx. 3.7mm	1	Horizontal
	33Ω = 330	2		2	1/4 Ws	Approx. 6.5mm	2	Vertical
	33kΩ = 333	3		3			3	
		4		4	1/2 W	Approx. 9mm	4	
				7	1/2 W	Approx. 3.5mm		
				8	1/2 Ws	Approx. 6.6mm		
				9	1/4 Wss	Approx. 3.2mm		

(Example)



Note 1. The first two of three digits representing resistance are effective digits and the last one represents number of "0" following this.

Unit is given in ohm (Ω).

Example of conversion of resistance



Note: R : Resistance. T : Converted value

R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T	R	T
0 1	108	1 0	109	1 0	100	1 0	101	1 0	102	1 0	103	1 0	104	1 0	105	1 0	106	1 0	107
0 15	158	1 5	159	1 5	150	1 5	151	1 5	152	1 5	153	1 5	154	1 5	155	1 5	156	1 5	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 <sup>0</sup>	10 <sup>1</sup>	10 <sup>2</sup>	10 <sup>3</sup>	10 <sup>4</sup>	10 <sup>5</sup>	10 <sup>6</sup>				10 <sup>-1</sup>	10 <sup>-2</sup>	
4th color band											± 5% (J)	± 10% (K)	± 20% (M)

\*



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

Resistance