PIONEER

Service Manual

ORDER NO.
CRT-446-0

COMPONENT CAR STEREO AUTOMATIC SOUND LEVELIZER

ASL-E03 EW

SPECIFICATION

Power source	DC 14.4V (10.8~15.6V allowable)
Grounding system	Negative type
Dimensions	150(W)×25(H)×133(D)mm
Weight	0.6kg
Volume range	16 dB (ASL in operation)
Distortion	0.06% (1kHz, 70mV)
Frequency response	20~30,000Hz (±3 dB)
Signal-to-noise ratio	85 dB (IEC-A network)
Input impedance	25kΩ
Output impedance	1.5kΩ

Note
Specifications and the design are subject to possible modification without notice due to improvements.

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1. PARTS LOCATION

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.*
  ★ ★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

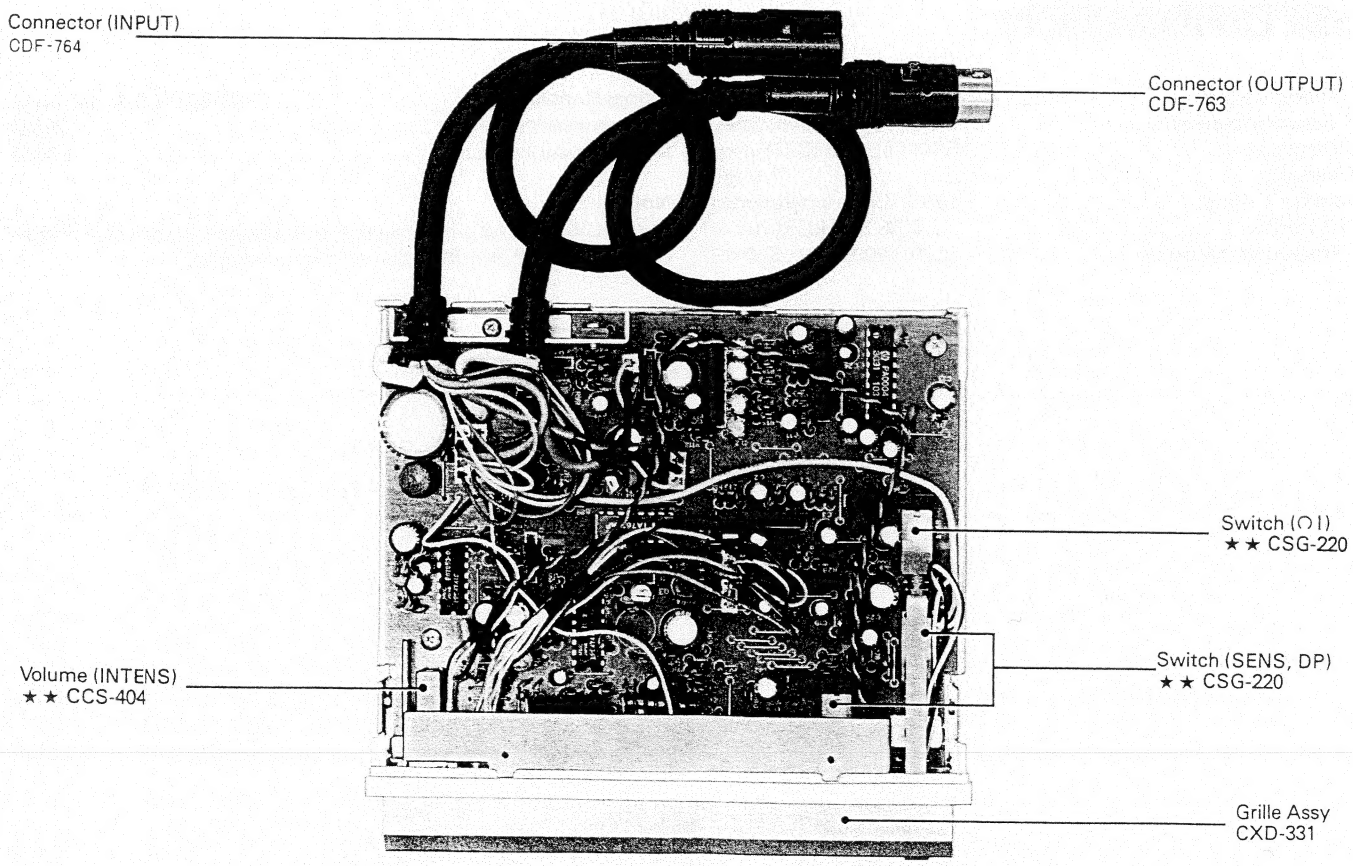


Fig. 1

2. NAME OF PARTS AND THEIR FUNCTIONS

❶ ASL Intensity Control
Set this button while driving.
Press this button and it will come up (▬) for adjustment. Turn the button to the left or right to set the desired gain for the driving noise level. (For safe driving, have a passanger make this adjustment.)

❷ Power Level Indicator
This power level indicator displays the deck output level, and when the "0" is lit on the indicator the deck output is 4mV. Furthermore, when used with the GM-E04 main amp, "0" is equivalent to 40mW (when ASL if OFF).

❸ Power Switch for Automatic Sound Levelizer (ASL)

❹ Display Power Switch

❺ Interior Mike

❻ ASL Sensitivity Switch
This switch is generally used in the HIGH (▬) position. For vehicles that seem to idle noisily, use in the LOW (▬) position.

❼ ASL Gain Indicator
Gain change is indicated when the power switch for Automatic Sound Levelizer is ON.

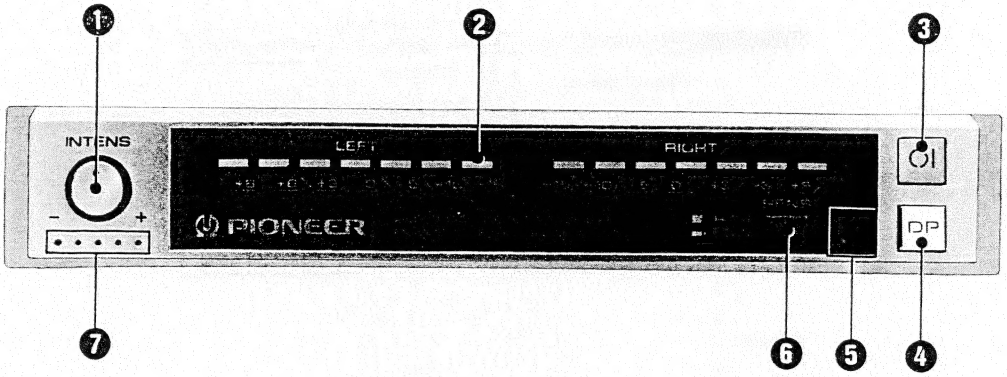


Fig. 2

3. CONNECTION

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the main amp instruction manual for details on correct connection of speakers and power supply.
- Don't run the leads of the input cord of this unit and the main amp speaker leads close together. If you do, the deck or tuner will generate unwanted noise.
- When connecting this unit to the optional GTS-X80 (MFB Subwoofer System), make the connections as shown in the following figure and the low frequency range ASL will operate to mask running noise.

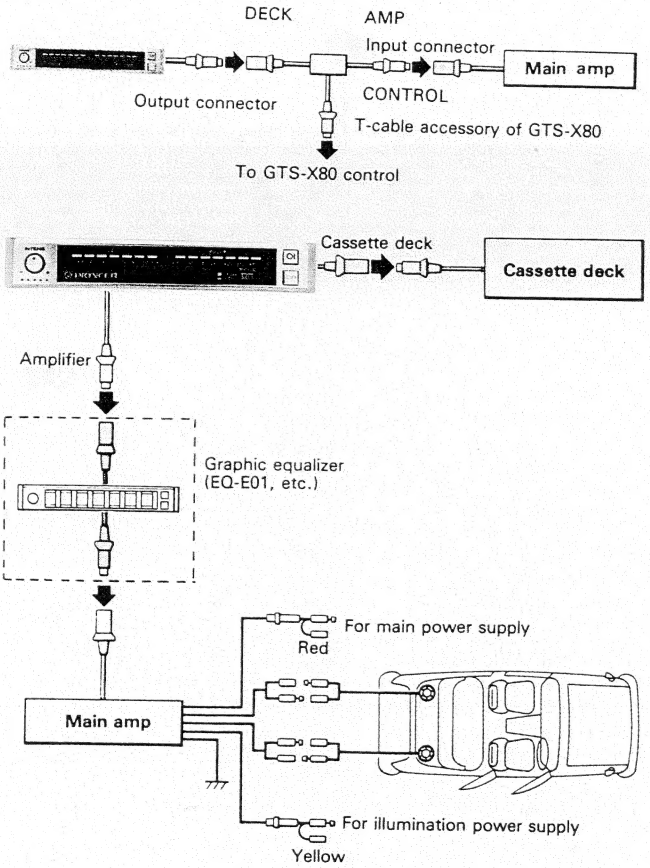


Fig. 3

4. DISASSEMBLY

• Removing the Case

1. Remove the three screws shown, then remove the case in the direction indicated by the arrow (Fig. 4)

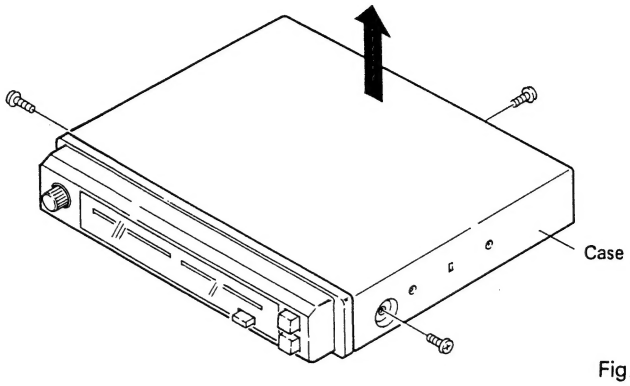


Fig. 4

• Removing the Grille Assembly

1. Removing the two screws shown, then pull the grille assembly out in the direction indicated by the arrow. (Fig. 5)

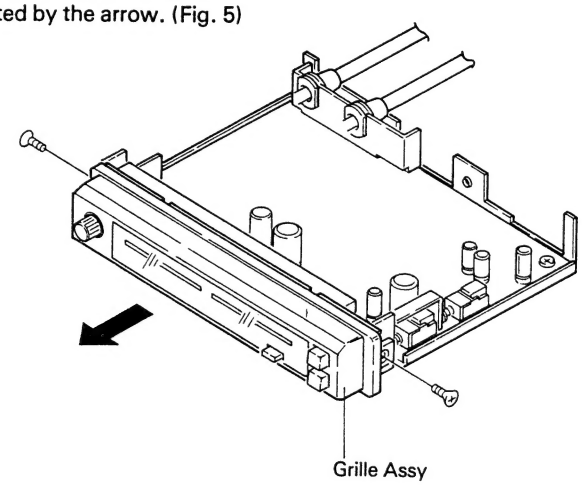


Fig. 5

• Removing the P.C. Board Assembly

1. Remove the four screws shown, then remove the P.C. Board assembly in the direction indicated by the arrow. (Fig. 6)

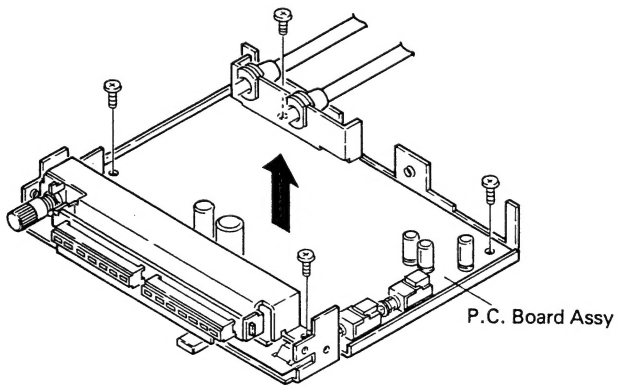
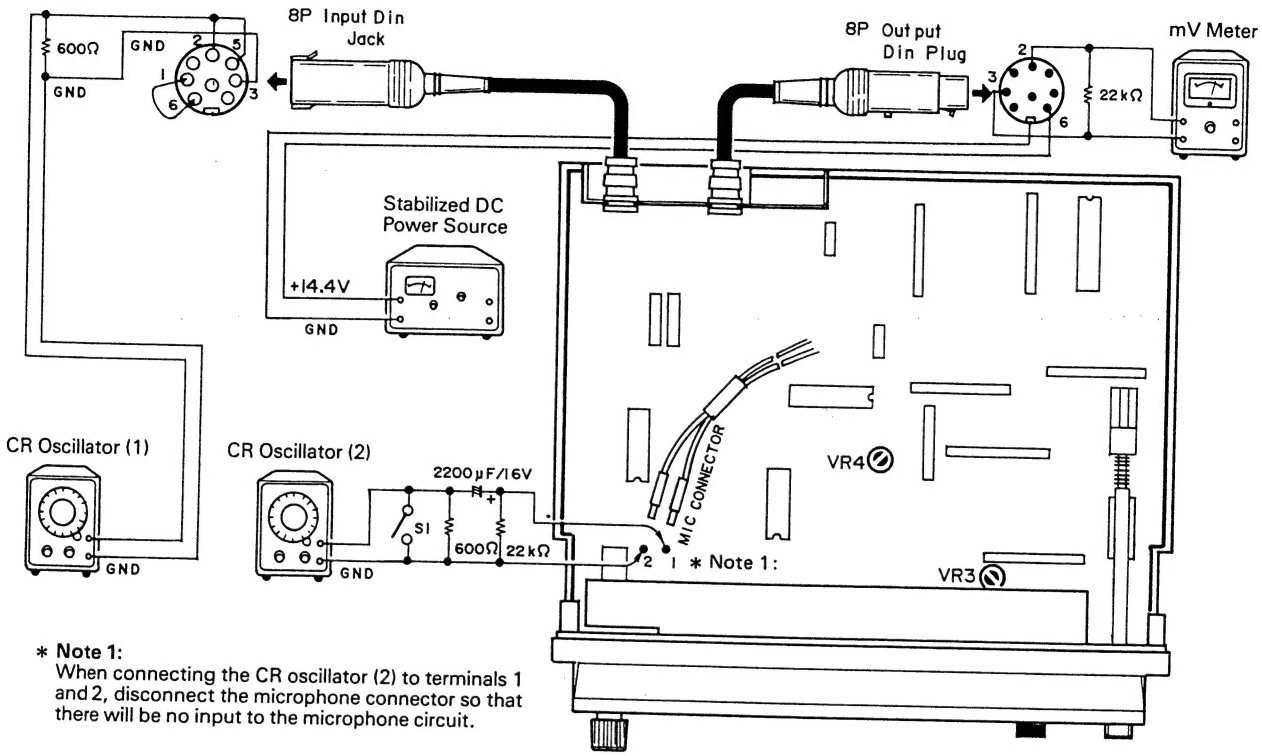


Fig. 6

5. ADJUSTMENT

- **Connection Diagram**



* **Note 1:**
When connecting the CR oscillator (2) to terminals 1 and 2, disconnect the microphone connector so that there will be no input to the microphone circuit.

Fig. 7

5.1 GAIN ADJUSTMENT

• To Adjustment

Volume, Switch position

INTENS Volume ..... Minimum setting
SENS Switch ..... Low
ASL Switch ..... OFF

1. Turn on switch S1 which is connected to CR oscillator (2) shorting the circuit. (CR oscillator (2) will not be used.)
2. With a 1kHz, −20dBs (77.5mV) signal from CR oscillator (1), adjust VR3 so that the mV-meter will register −20dBs (77.5mV).

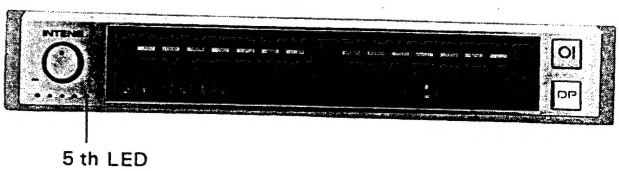
5.2 LED GAIN DISPLAY ADJUSTMENT

• To Adjustment

Volume, Switch position

INTENS VOLUME ..... Maximum setting
SENS VOLUME ..... HIGH
ASL VOLUME ..... ON

1. Use a 1kHz, −30dBs (24.5mV) signal from CR oscillator (1).
2. Turn OFF switch S1 which is connected to CR oscillator (2). Using a 15Hz signal, adjust the output of CR oscillator (2) so that the mV-meter registers −14dB.
3. Next, adjust VR11 so that the 5th LED of the gain display LEDs will light up.



5 th LED

6. CIRCUIT DESCRIPTION

- **Block Diagram**

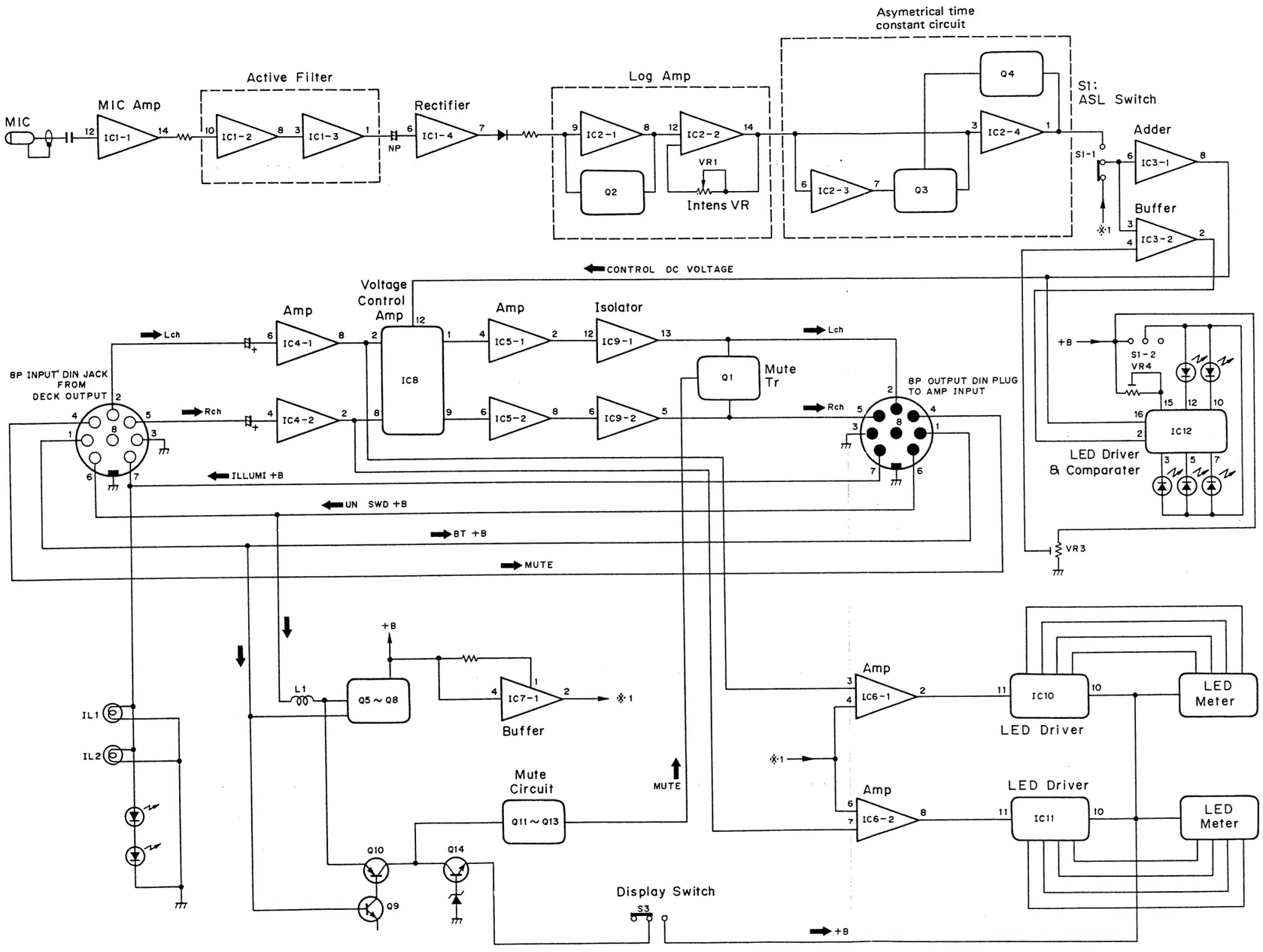


Fig. 8

- **Gain adjustment with a combination of the noise level inside the vehicle and the ASL (Auto Sound Levelizer) operation.**

The following is a brief explanation about the ASL (Automatic Sound Levelizer) system.
The ASL detects the noise inside the vehicle through a built-in microphone. After amplifying the reproduced sound to the approximate level, the noise level in the car is compensated for. Then, the system automatically amplifies the sound with the electronic volume control in proportion to the noise level. Thus, since automatic control is always carried out while the ASL is on, you do not have to make frequent volume adjustments while driving but can fully concentrate on your driving.

Gain change by vehicle interior noise and ASL (Automatic Sound Levelizer) operation.

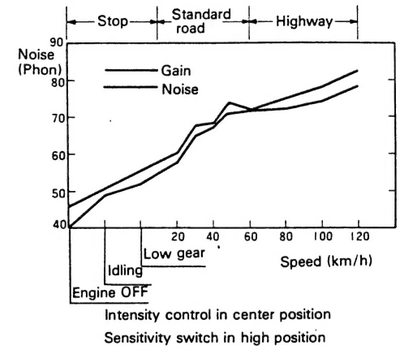


Fig. 9

- **Sense and Intense controls**

While the ASL circuit is in operation, the relationship between the gain and the noise is as shown in figure 10. The intense control controls the rate of gain increase (i.e., the slope of the gain curve), and the microphone sense control determines the noise level at which the ASL circuit starts operation.
The sense control is usually set to the HIGH position. When the unit is used in an automobile with a high noise level, the control is set to the LOW position.
The intense control can be adjusted to the user's preference.

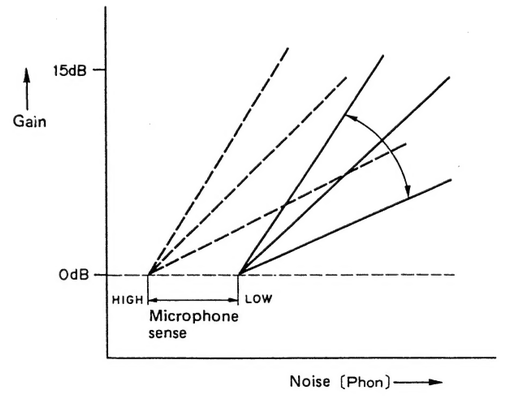
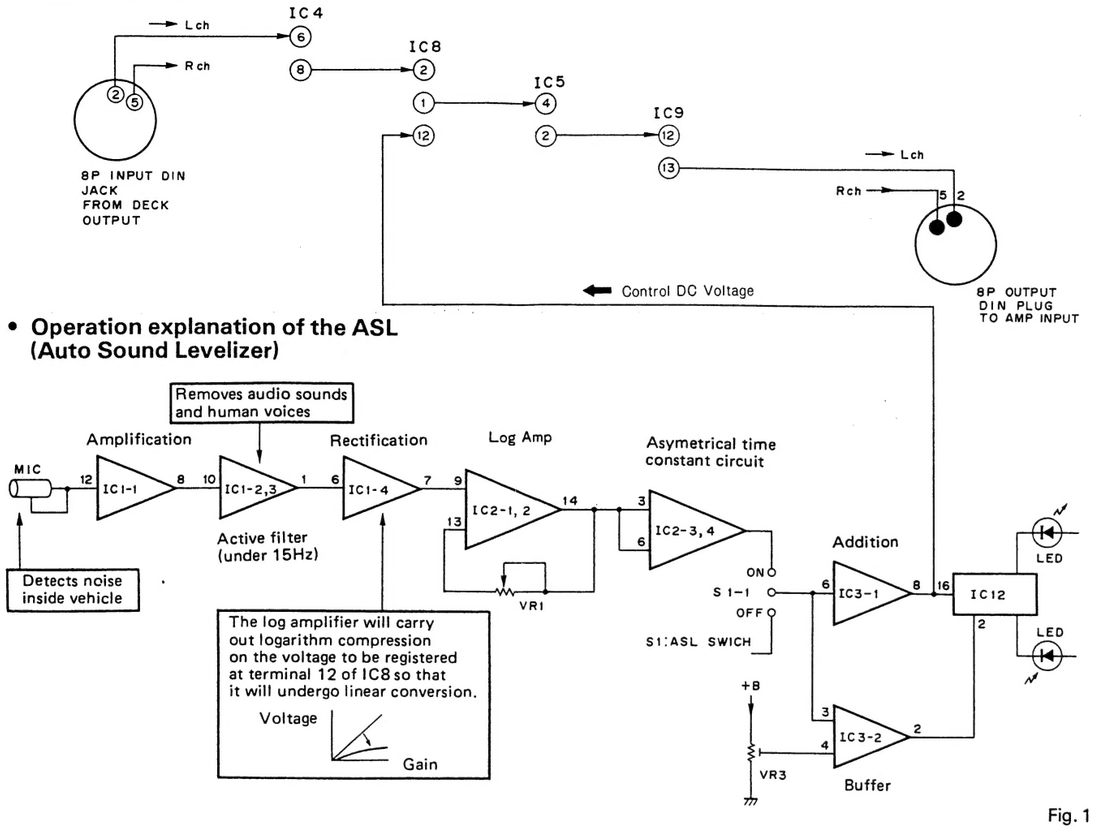


Fig. 10

• Audio signal path (Lch)



• Operation explanation of the ASL (Auto Sound Levelizer)

Fig. 11

• Level diagram

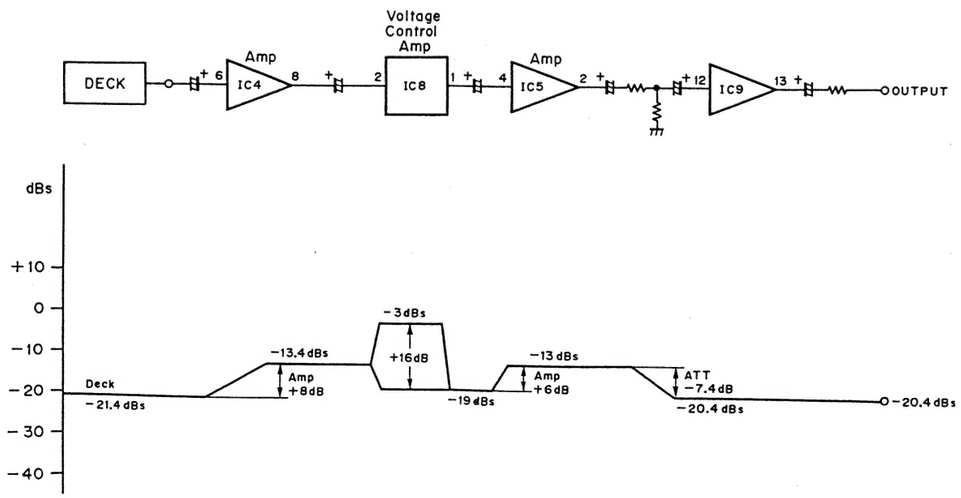
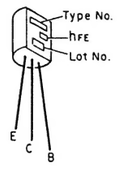


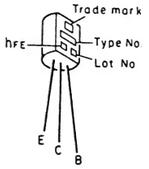
Fig. 12

• IC's and Transistors

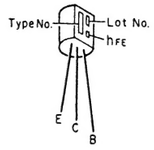
2SC1583
2SA798



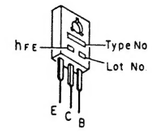
2SC2634NC



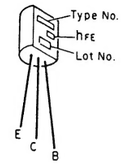
2SC1627
2SC1815
2SA608NP



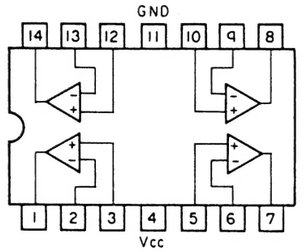
2SB632



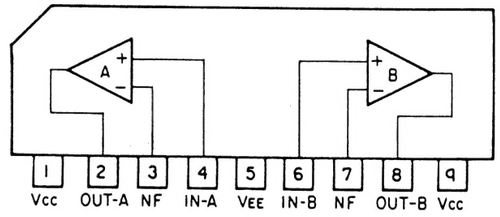
2SB647
2SD667A



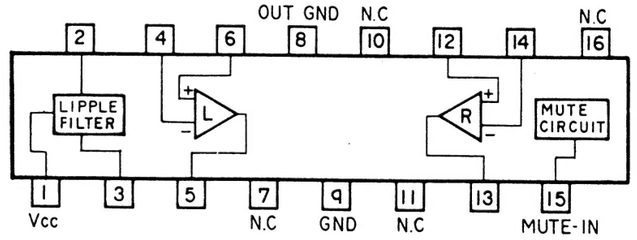
IC1,IC2:μPC4741C
(TA75902P)



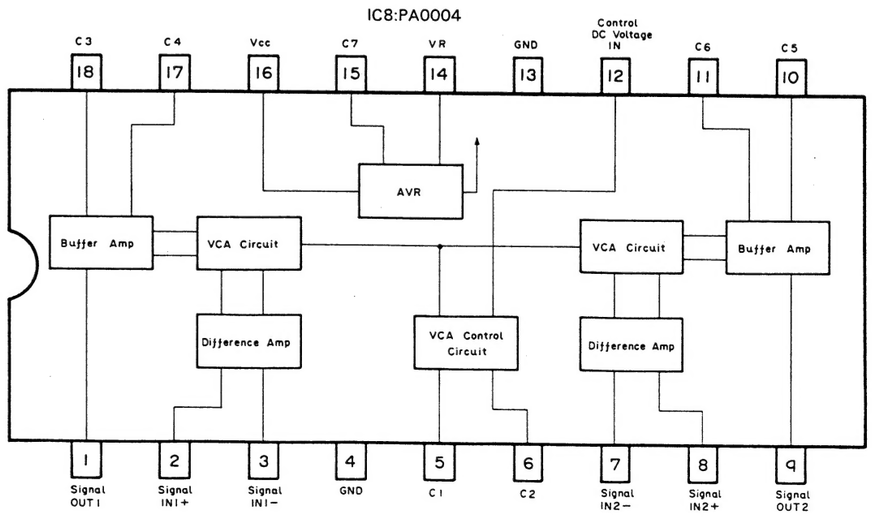
IC3~IC7:TA75558S



IC9:PA2014



IC8:PA0004

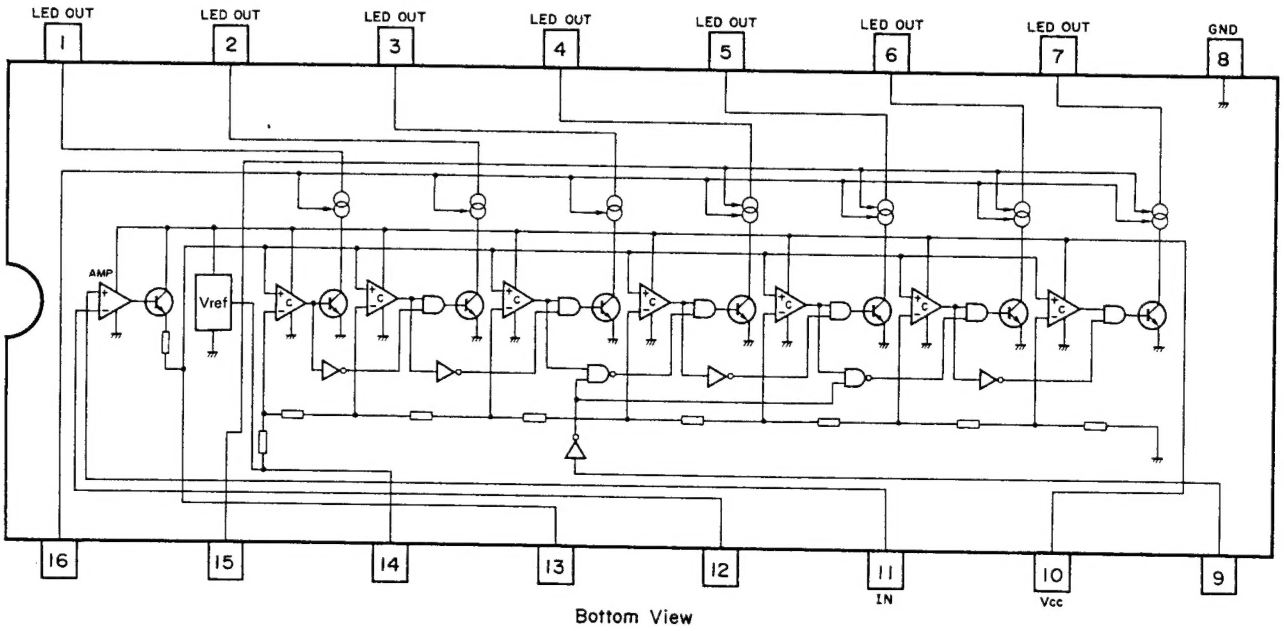


• **Terminals and functions of PA0004**

Terminals	Terminal Name	I/O	Function
1	Signal OUT 1	Output	Channel 1 output terminal
2	Signal IN 1 +	Input	Channel 1 + input terminal
3	Signal IN 1 −	Input	Channel 1 − input terminal
4	GND		Ground terminal
5	C1		Noise prevention capacitor terminal
6	C2		
7	Signal IN 2 −	Input	Channel 2 − input terminal
8	Signal IN 2 +	Input	Channel 2 + input terminal
9	Signal OUT 2	Output	Channel 2 output terminal
10	C5		Channel 2 phase compensation capacitor terminal
11	C6		

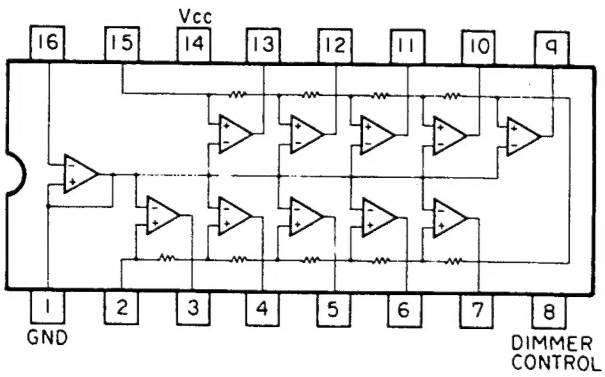
Terminals	Terminal Name	I/O	Function
12	Control DC Voltage IN	Input	Control voltage input
13	GND		Ground terminal
14	VR		Reference voltage terminal
15	C7		Bias terminal
16	Vcc		+ B power supply
17	C4		Channel 1 phase compensation capacitor terminal
18	C3		

IC10,IC11:AN6882



Bottom View

IC12:TA7612AP



7. CONNECTION DIAGRAM

P.C. BOARD UNIT

IC,Q	IC7	IC8	IC3 IC5 IC6 IC4	IC9	IC10	Q14 Q1 IC12 Q3 Q4 Q13 IC2	Q8 Q7 Q12 Q11 IC11	Q6 Q10 Q2	Q9 Q5	IC1
ADJ.					VR4					

	1	2	3
IC8	5.7		
IC9		6.8	

8P INPUT DIN JACK
FROM DECK OUTPUT

L-CH
R-CH
GND
MUTE
BT +B
UN SWD +B
ILLUMI +B

DI5, I6 : LED ASS'Y

AUTO SOUND LEVELIZER SWITCH
S1

S3 DISPLAY SWITCH

S2 SENS SWITCH

VR3 10k(B)
VR4 47k(B)
INTENS VOLUME VR1 50k(B)

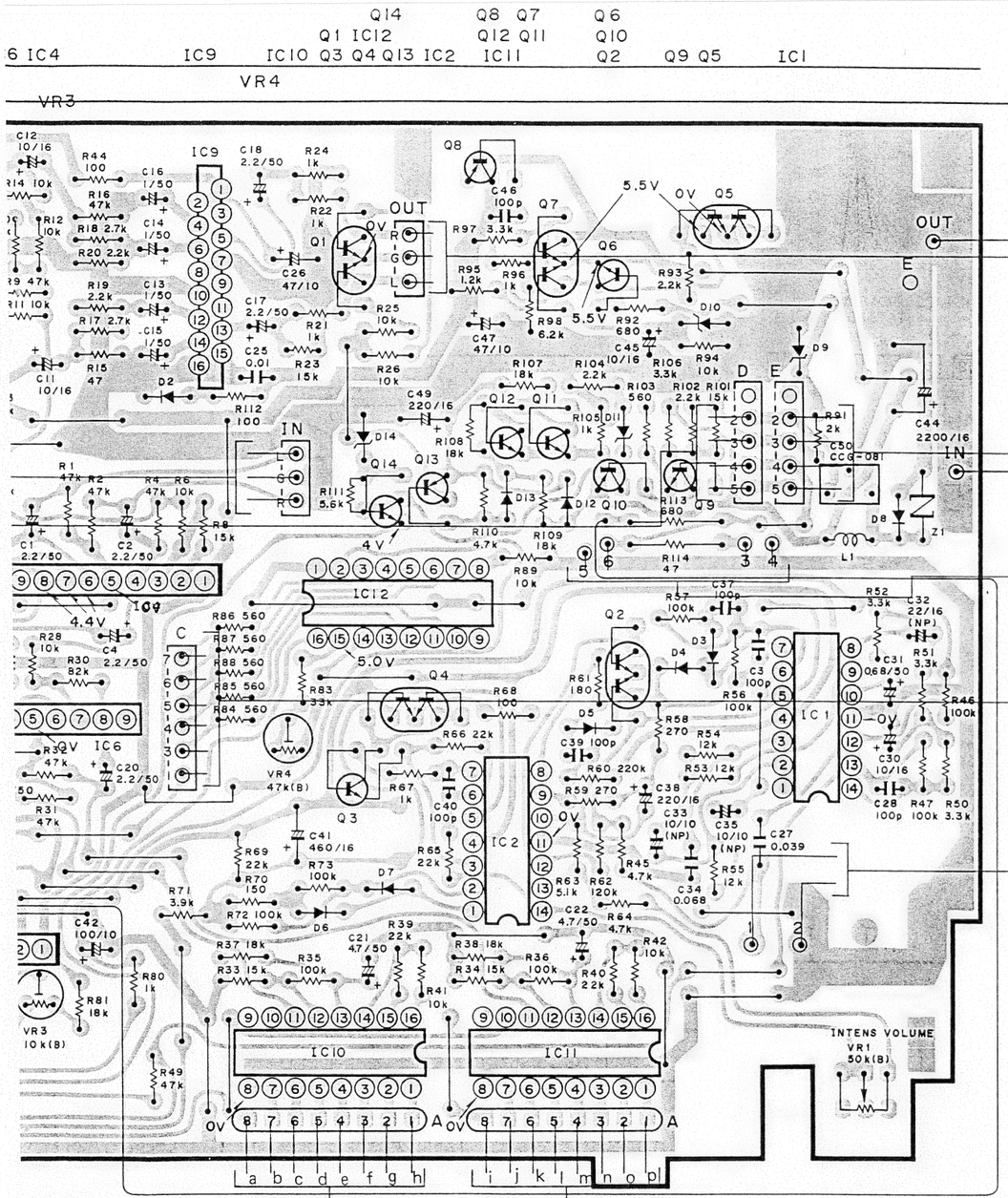
OUT
IN

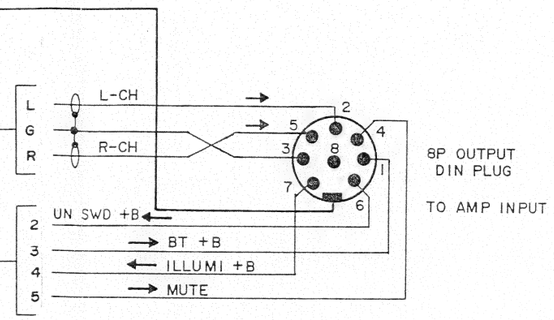
L-CH
R-CH
UN SWD +B
BT +B
ILLUMI
MUTE

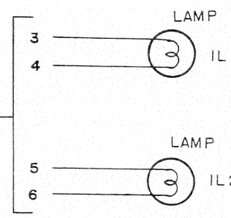
LED P.C.

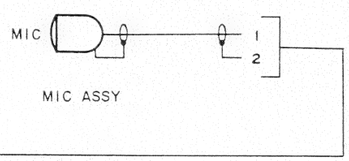
IC1,2 : μPC4741C or TA75902P IC3~7 : TA75558S IC8 : PA0004 IC9 : PA2014 IC10, 11 : AN6882 IC12 : TA7612AP
Q1,2,5,7 : 2SC1583 Q3 : 2SC1627-Y Q4 : 2SA798 Q6,9 : 2SC2634NC Q8 : 2SB632 Q10 : 2SB647 Q11, 12 : 2SC1815
Q13 : 2SA608NP Q14 : 2SD1267-P
DI : RD7R5EBI or HZ7B2 D2~7, I2, I3 : ISI555, DS442 or IS2473VH D8 : SM-1A-02 D9 : RD5R1EBI or HZ5B3
DI0 : RD5R6EBI or HZ6A3 DII : RD7R5EB3 or HZ7C1 DI4 : RD18EBI ZI : ERZ-M10DK220

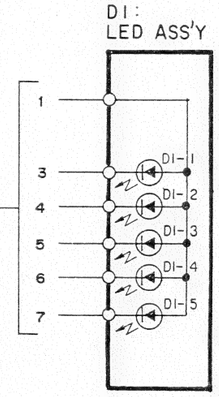
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
IC8	5.7			0	3.8	3.7							0		6.4		6.4	7.9
IC9		6.8					0	0	0	0			1.6	3.3	0	0		(V)

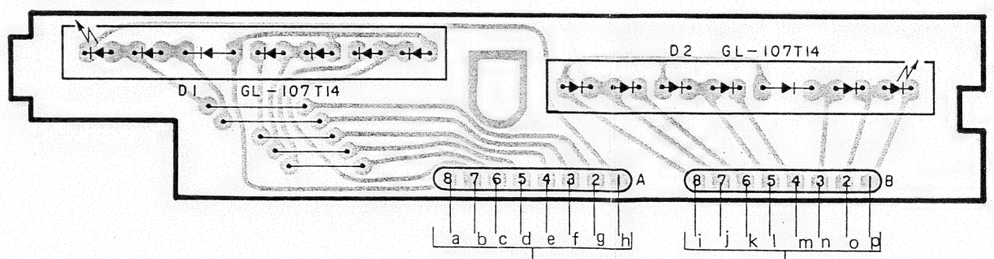












TA75558S IC8: PA0004 IC9: PA2014 IC10, 11: AN6882 IC12: TA7612AP
Q4: 2SA798 Q6, 9: 2SC2634NC Q8: 2SB632 Q10: 2SB647 Q11, 12: 2SC1815

13: IS1555, DS442 or IS2473VH D8: SM-1A-02 D9: RD5RIEB1 or HZ5B3
B3 or HZ7C1 D14: RD18EB1 Z1: ERZ-M10DK220

Fig. 13

8. SCHEMATIC CIRCUIT DIAGRAM

P.C. BOARD UNIT

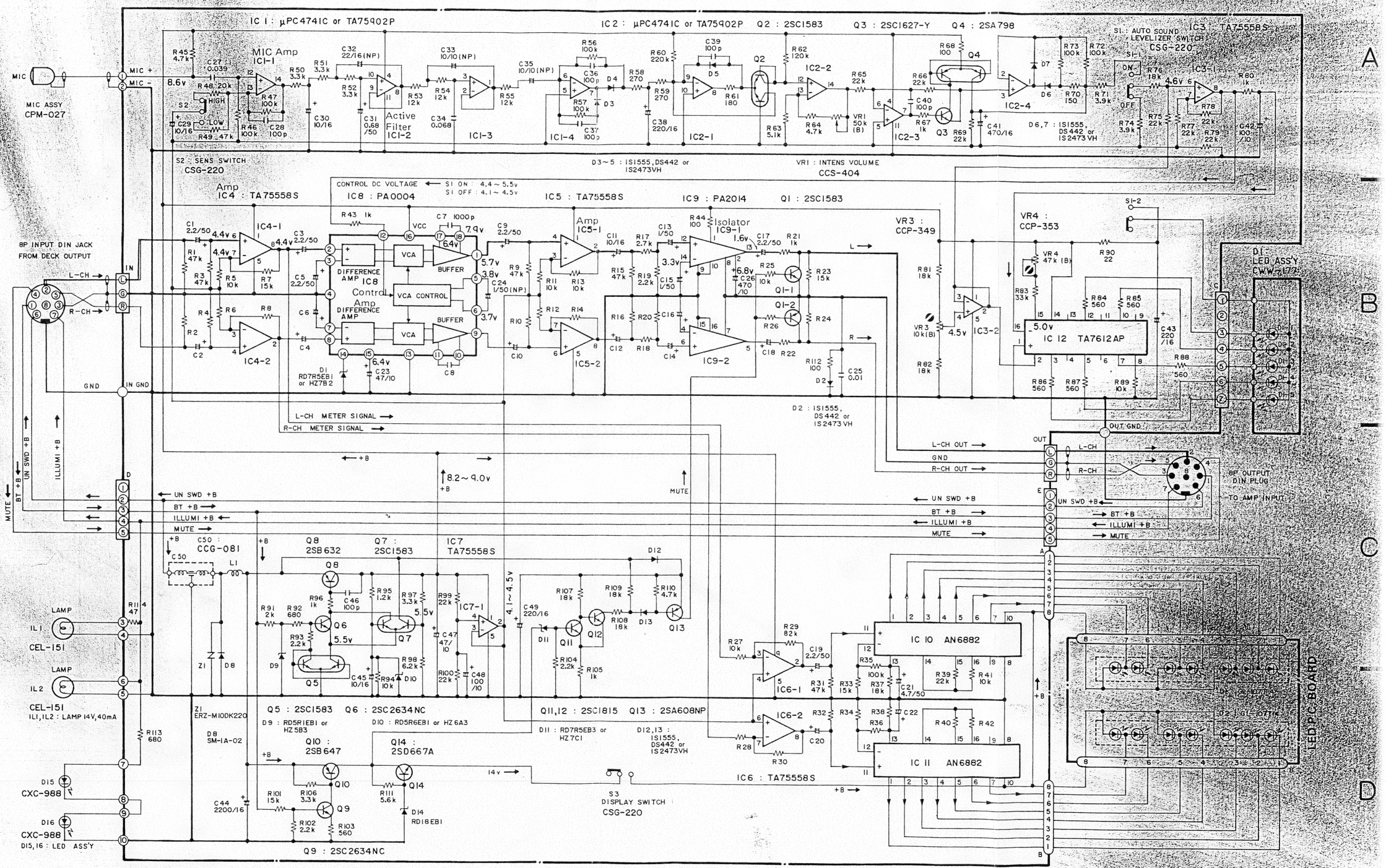


Fig. 14

9. EXPLODED VIEW

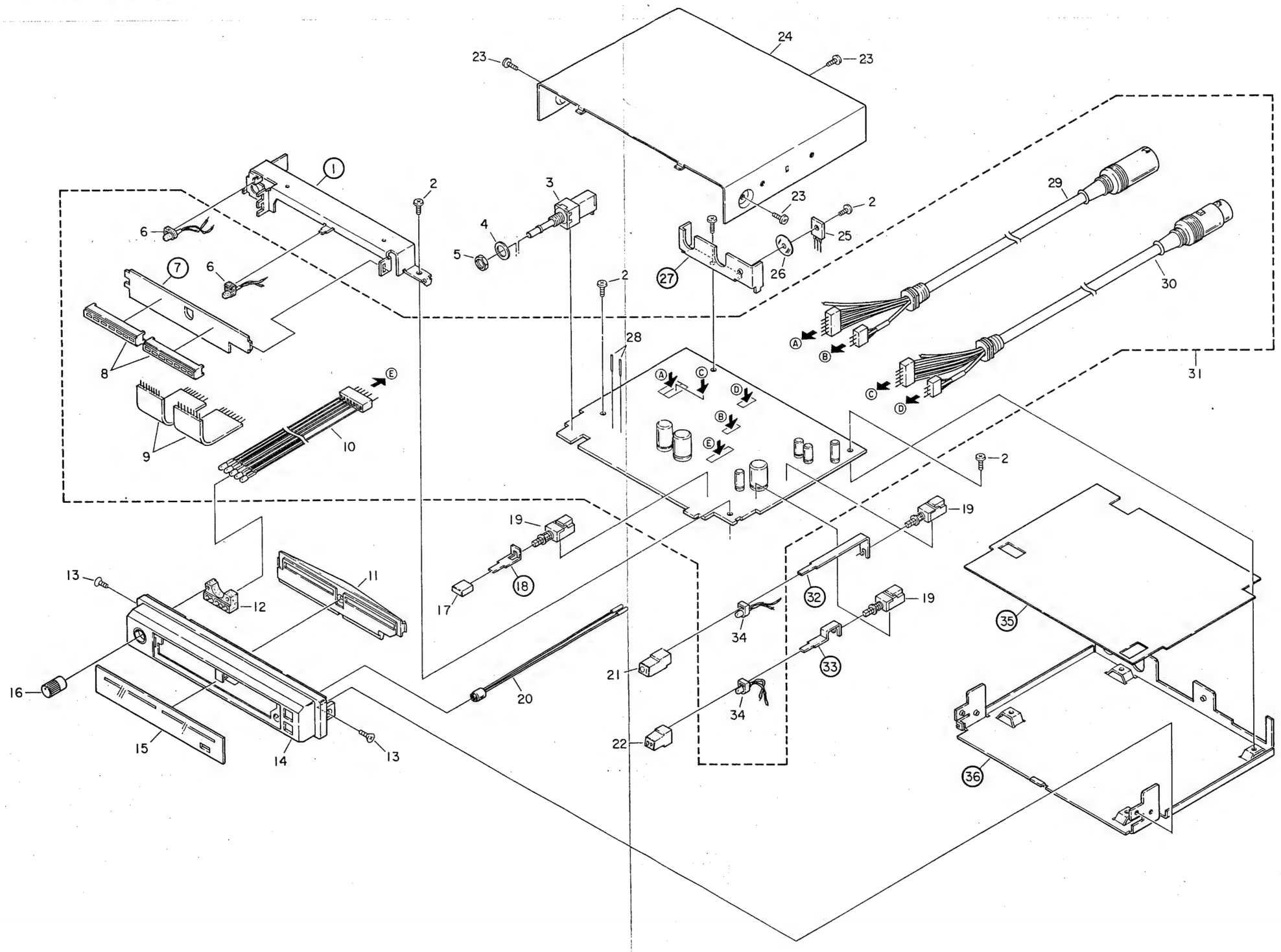


Fig. 15

• Parts List

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.		Bracket
	2.	BMZ26P050FMC	Screw
★★	3.	CCS-404	Volume, 50kΩ(B) (INTENS)
	4.	CBF-091	Washer (M6)
	5.	CBA-066	Nut (M6)
★★	6.	CEL-151	Lamp 14V, 40mA
	7.		P.C. Board
	8.	GL-107T14	LED Array
	9.	CDF-871	Connector (8P)
	10.	CWW-242	LED Assy
	11.	CNK-240	Lens
	12.	CNW-896	Holder
	13.	CMZ26P040FMC	Screw
	14.	CXD-331	Grille Assy
	15.	CNK-239	Scale
★	16.	CAA-451	Knob (INTENS)
★	17.	CAC-898	Button (SENS)
	18.		Lever
★★	19.	CSG-220	Switch (SENS, ⏻, DP)
	20.	CPM-027	Mic Assy
★	21.	CAC-896	Button (⏻)
★	22.	CAC-897	Button (DP)
	23.	CBA-122	Screw
	24.	CNB-856	Case
★★	25.	2SB632	Transistor
	26.	CNM-736	Insulator
	27.		Bracket
	28.	CKF-018	Terminal
	29.	CDF-764	Connector (INPUT)
	30.	CDF-763	Connector (OUTPUT)
	31.	CWK-215	P.C. Board Assy
	32.		Lever
	33.		Lever
	34.	CXC-988	LED Assy
	35.		Insulator
	36.		Chassis

. ELECTRICAL PARTS LIST

TE:

ən ordering resistors, first convert resistance values into code form as shown in the wing examples.

1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*		*RN1/4SR 5 6 2 1 F*

or your Parts Stock Control, the fast moving items are indicated with the marks ★ ★ and ★.

★ ★: GENERALLY MOVES FASTER THAN ★.

This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts whose parts numbers are omitted are subject to being not supplied.

. Board Unit

CELLANEOUS

rk	Symbol & Description	Part No.
★	IC1, IC2	μPC4741C or TA7502P
★	IC3 — IC7	TA75558S
★	IC8	PA0004
★	IC9	PA2014
★	IC10, IC11	AN6882
★	IC12	TA7612AP
★	Q1, Q2, Q5, Q7	2SC1583
★	Q3	2SC1627-Y
★	Q4	2SA798
★	Q6, Q9	2SC2634NC
★	Q8	2SB632
★	Q10	2SB647
★	Q11, Q12	2SC1815
★	Q13	2SA608NP
★	Q14	2SA667A
★	D1	RD7R5EB1 or HZ7B2
★	D2-D7, D12, D13	1S1555 or DS442 or 1S2473VH

Mark	Symbol & Description		Part No.
★	D8		SM-1A-02
★	D9		RD5R1EB1 or HZ5B3
★	D10		RD5R6EB1 or HZ6A3
★	D11		RD7R5EB3 or HZ7C1
★	D14		RD18EB1
★★	L1	Coil	HTF-117
★★	VR1	Volume, 50kΩ(B)	CCS-404
	VR2		VACANT
★★	VR3	Semi-fixed, 10kΩ(B)	CCP-349
★★	VR4	Semi-fixed, 47kΩ(B)	CCP-353
★	Z1		ERZ-M10DK220
★★	S1 — S3	Switch (SENS, OI, DP)	CSG-220

RESISTORS

Mark	Symbol & Description		Part No.
	R1 — R55, R58 — R62, R64 — R111		RA1/4VM□□□J
	R63	5.1kΩ	CCN-130

CAPACITORS

Mark	Symbol & Description		Part No.
	C1 — C6, C9, C10, C17 — C20		CEA2R2M50L2
	C7, C8		CCDSL102J50L
	C11, C12, C29, C30, C45		CEA100M16L2
	C13 — C16		CEA010M50L2
	C21, C22		CEA4R7M50L2
	C23, C47		CEA470M10L2
	C24		CEA010M50NPLL
	C25		CQMA103J50L
	C26		CEA471M10L2
	C27		CQMA393J50L
	C28, C36, C37, C39, C40, C46		CCDSL101J50L
	C31		CEAR68M50LL
	C32		CEA220M16NPLL
	C33, C35		CEA100M10NPLL
	C34		CQMA683J50L
	C38, C43, C49		CEA221M16L2
	C41		CEA471M16L2
	C42, C48		CEA101M10L2
	C44	2200μF/16V	CCH-058
	C50		CCG-081

LED P.C. BOARD

Mark	Symbol & Description		Part No.
	D1, D2	LED Array	GL-107T14

Miscellaneous Parts List

Mark	Symbol & Description		Part No.
★★	IL1, IL2	Lamp 14V, 40mA	CEL-151
	D1	LED Assy	CWW-242
	D15, D16	LED Assy	CXC-988
	MIC	MIC Assy	CPM-027

11. PAKING METHOD

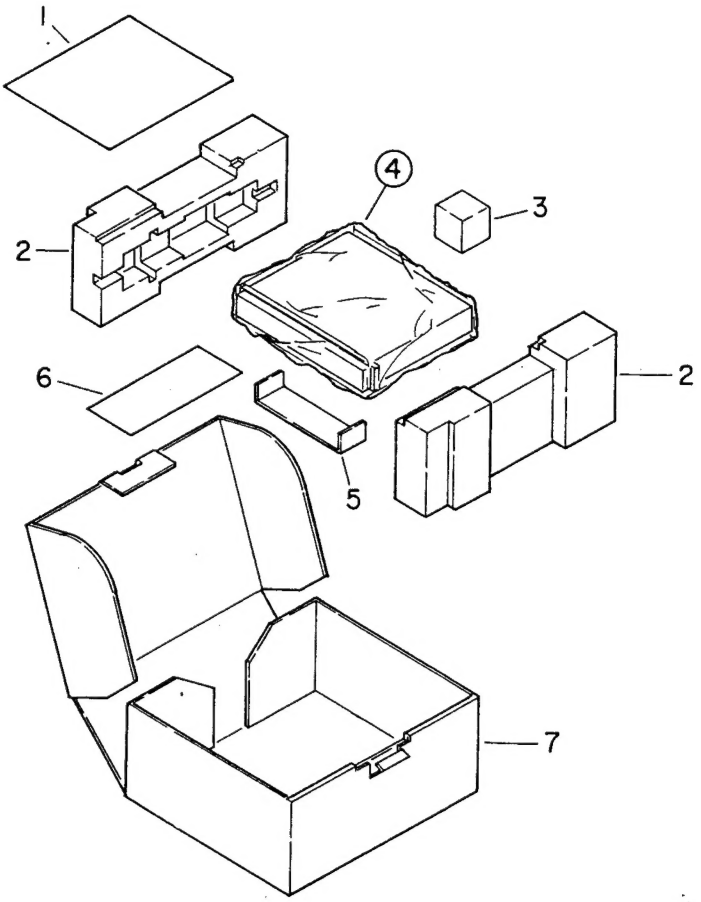


Fig. 16

• Parts List

Mark	No.	Part No.	Description
	1	CRA-503	Owner's Manual (English, French, German, Spanish, Italiam)
	2	CHD-420	Styroform (1 set pair)
	3	CHD-732	Styroform
	4		Cover
	5	CNB-783	Mounting Bracket
	6	CEB-051	Accessory Kit
	6-1	VACANT	
	6-2	CDE-437	Cord
	6-3	CEA-901	Screw kit
	6-3-1	B70-056-A	Nut (M5)
	6-3-2	CBA-101	Screw (M4×6)
	6-3-3	CBA-102	Screw (M5×16)
	7	CHD-742	Carton