PIONEER®
The future of sound and vision.

Service Manual

Original


The photo shows the model BP-880.

ORDER NO.
CRT1111

GRAPHIC EQUALIZER/AMPLIFIER

BP-880

UC, EW, ES

BP-650

UC, EW, ES

BP-450

UC, ES

CONTENTS

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: (03) 580-9911

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1. SPECIFICATIONS

• BP-880

Power source . . . . . 14 V DC (10.8 – 15.6 V allowable)
Grounding system . . . . . Negative type
Max. current consumption . . . . . 7 A
Dimensions (chassis size) . . . . 178(W) × 25(H) × 150(D) mm
[7(W) × 1(H) × 5-7/8(D) in.]
(overall dimensions) . . . . 178(W) × 25(H) × 163(D) mm
[7(W) × 1(H) × 6-3/8(D) in.]
Weight . . . . . 1.0 kg (2.2 lbs.)

Continuous power output is 8 W per channel min. into 4 Ω, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output (BP-880/UC) . . . . 20 W × 4 (EIAJ)
Continuous power output (BP-880/EW,ES) . . . . . 10 W × 4
(1% dist, at 1 kHz)
Load impedance . . . . . 4 Ω (4 – 8 Ω allowable)
Frequency response . . . . . 25 – 30,000 Hz (± 3 dB)
Signal-to-noise ratio (BP-880/UC) . . . . . 85 dB
(IHF-A network, at 1 W)
(BP-880/EW,ES) . . . . . 85 dB
(IEC-A network, at 1 W)
Distortion . . . . . 0.5% (at 1.5 W, 1 kHz)
Input level (BP-880/UC) . . . . . RCA: 0.2 – 1 V/10 kΩ
BOOSTER: 1.2 – 6 V/24 Ω
Input level (BP-880/EW) . . . . . DIN: 70 mV/20 kΩ
BOOSTER: 3 V/24 Ω
Input level (BP-880/ES) . . . . . DIN: 40 – 200 mV/20 kΩ
RCA: 0.2 – 1 V/10 kΩ
BOOSTER: 1.2 – 6 V/24 Ω
Equalization frequency . . . 60 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 3.5 kHz, 10 kHz
Equalization range . . . . . ± 12 dB

• BP-650, 450

Power source . . . . . 14 V DC (10.8 – 15.6 V allowable)
Grounding system . . . . . Negative type
Max. current consumption . . . . . 4 A
Dimensions (chassis size) . . . . 178(W) × 25(H) × 135(D) mm
[7(W) × 1(H) × 5-3/8(D) in.]
(overall dimensions) . . . . 178(W) × 25(H) × 148(D) mm
[7(W) × 1(H) × 5-7/8(D) in.]
Weight (BP-650) . . . . . 0.9 kg (2.0 lbs.)
(BP-450) . . . . . 0.8 kg (1.8 lbs.)

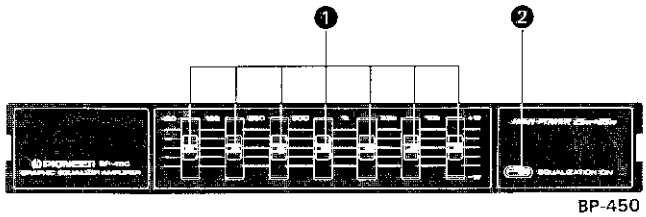
Continuous power output is 12 W per channel min. into 4 Ω, both channels driven 50 to 15,000 Hz with no more than 5% THD.
Maximum power output . . . . . 25 W × 2 (EIAJ)
Continuous power output (BP-650/EW,ES, 450/ES)
. . . . . 16 W × 2 (1% dist, at 1 kHz)
Load impedance . . . . . 4 Ω (4 – 8 Ω allowable)
Frequency response . . . . . 20 – 30,000 Hz (± 3 dB)
Signal-to-noise ratio (BP 650/UC, 450/UC)
. . . . . 85 dB (IHF-A network, at 1 W)
(BP-650/EW,ES, 450/ES)
. . . . . 85 dB (IEC-A network, at 1 W)
Distortion . . . . . 0.3% (at 1.5 W, 1 kHz)
Input level (BP-650/UC) . . . . . RCA: 0.2 – 1 V/10 kΩ
BOOSTER: 1.2 – 6 V/24 Ω
Input level (BP-650/EW) . . . . . DIN: 70 mV/20 kΩ
BOOSTER: 3 V/24 Ω
Input level (BP-650/ES) . . . . . DIN: 40 – 200 mV/20 kΩ
RCA: 0.2 – 1 V/10 kΩ
BOOSTER: 1.2 – 6 V/24 Ω
Input level (BP-450) . . . . . 3 V/24 Ω
Equalization frequency . . . 60 Hz, 125 Hz, 250 Hz, 500 Hz, 1 kHz, 3.5 kHz, 10 kHz
Equalization range . . . . . ± 12 dB

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

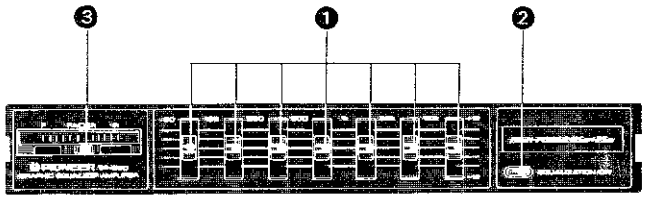
Note:
Specifications and the design are subject to possible modification without notice due to improvements.

2. OPERATION

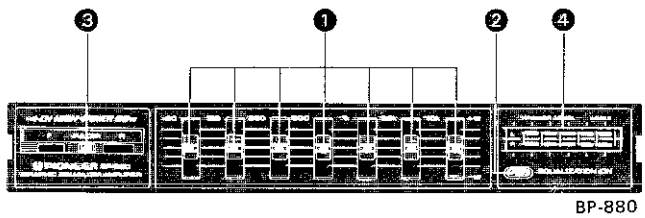
• Controls and Their use (ES Model)



BP-450



BP-650



BP-880

❶ Equalizer Control

Slides up and down to allow adjustment to suit both the music and individual tastes. Pressing the equalization switch causes each indicator to illuminate.

❷ Equalization Switch

Press to activate the equalizer control function and illuminate the indicator on the equalizer control lever.

❸ Fader Control (BP-880, BP-650)

Adjusts the sound balance between the front and rear speakers when the unit is being used in a 4-speaker system. As the control is moved to the left, the rear speakers are faded out until the front speakers are operating alone; as the control is moved to the right, the front speakers are faded out until the rear speakers are operating alone.

Important Note (BP-880)

- When listening to a 2-speaker system, position this lever at dead center.

❹ Level Indicator (BP-880)

Green and red indicators illuminate corresponding to the left/right output levels.

- If your car stereo has a fader control, set it to the center position.
- Changes in low-pitched sounds may not be discernible even when the 60Hz frequency level is adjusted if the program source does not include components in the 60Hz vicinity or if the small diameter speakers are used.

• Connecting the units (ES Model)

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Be sure to connect only a single component as shown in the connection diagram. If two or more components are connected, internal circuitry may be damaged or an accident may occur. (BP-880, BP-650)
- When using this unit in combination with a car stereo equipped with RCA pin jacks, see the section entitled "When combined with a car stereo with RCA pin jacks." (BP-880, BP-650)
- **Be aware that connection is different between 2-speaker system and 4-speaker system. Failure to follow the wiring diagram may cause considerable loss of power even when fader control is at the center position. (BP-650)**
- A special BPTL circuit is used to be sure that you do not connect the speakers directly to ground nor join the left and right speaker (–) leads.
- For detailed information concerning connections between different components and this unit consult their respective owner's manuals and follow those recommendations precisely.
- Wire all connecting cords so that they stay well clear of high-temperature areas such as the heater exhaust port.
- Be sure to properly connect the color-coded leads. Failure to do so can cause malfunctions.

Input Selector (BP-880, BP-650)

Be sure to set the input selector before wiring. (Fig. 1)

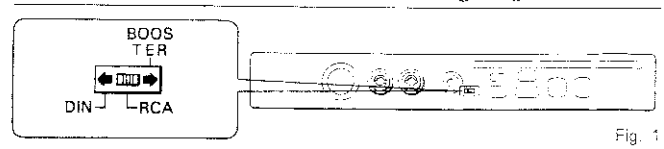


Fig. 1

DIN: When connecting the unit to a car stereo with DIN cord.

RCA: When connecting the unit to a car stereo with RCA pin jacks.

BOOSTER: When connecting the unit to a regular car stereo (unequipped with RCA pin jacks).

Gain Control

When gain adjustment is required, make adjustments with a screwdriver. (Fig. 2)

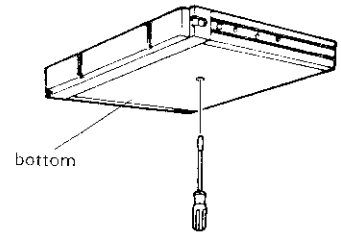


Fig. 2

• BP-650/ES (2-Speaker System)

When Combined with a Car Stereo with DIN cord

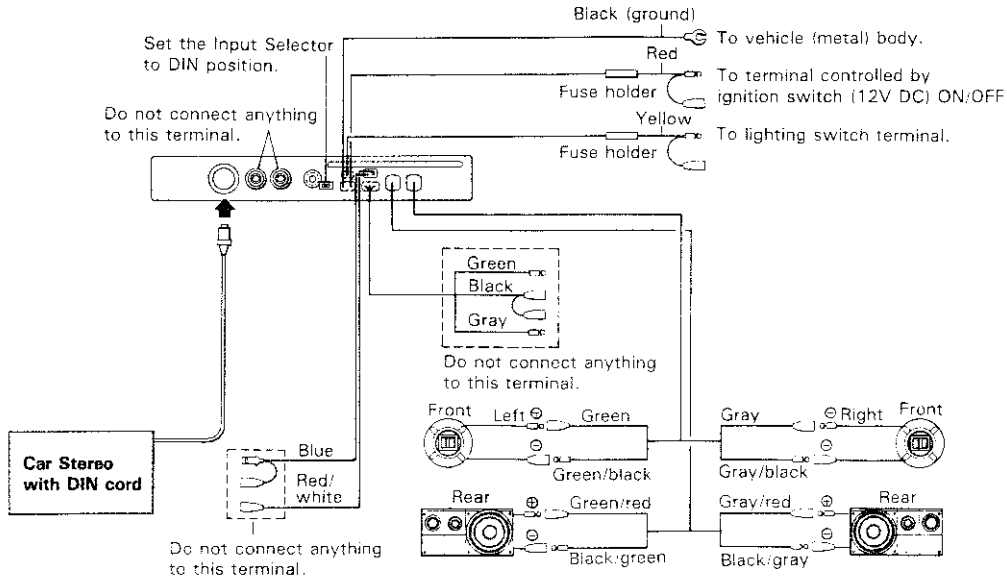


Fig. 8

• BP-880/ES, 650/ES (4-Speaker System)

When Combined with a Car Stereo with RCA Pin Jacks

- When using the BP-880 in a 2-speaker system, use either the front speaker cords or the rear speaker cords for connection as appropriate.

Note 1

- If the car stereo has a blue lead (system control terminal), connect it to the blue lead (male) of this unit, without connecting anything to the red/white lead of this unit. If the car stereo does not have a blue lead (system control terminal), connect the red/white lead or red lead of the car stereo to the red/white lead of the unit.
- The blue lead of a PIONEER car stereo to be connected to the unit may have an auto-antenna terminal. If it does, it cannot be connected to the blue lead (system control terminal) of the unit, so read the section on connections in the car stereo's owner's manual. If no sound comes from the speakers during the playing of a tape after they have been connected to the unit, connect the red/white or red lead of the car stereo to the red/white lead of the unit.

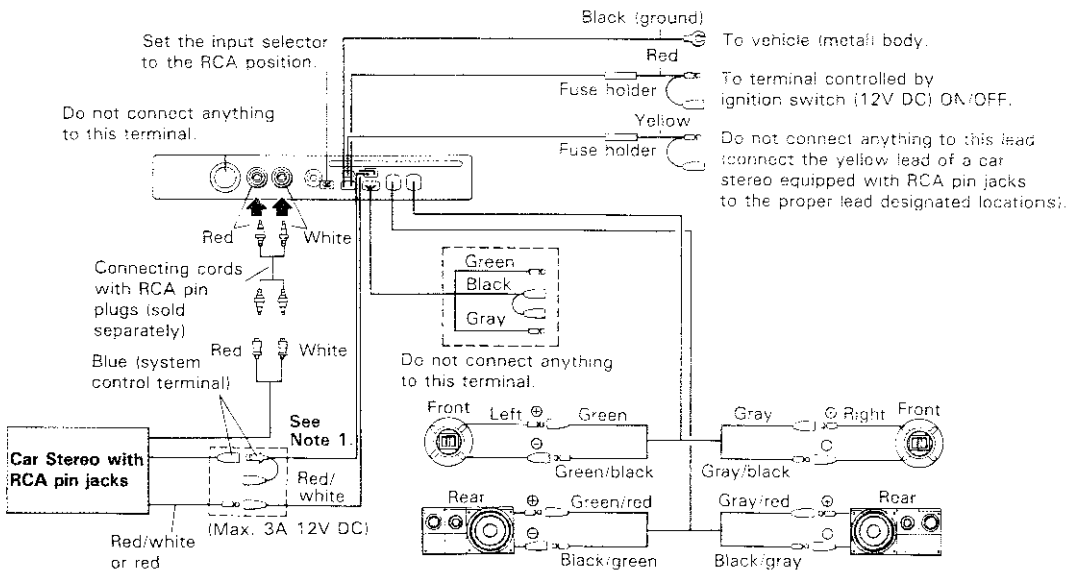


Fig. 9

- BP-650/ES (2-Speaker System)

When Combined with a Car Stereo with RCA Pin Jacks

Note 1

- If the car stereo has a blue lead (system control terminal), connect it to the blue lead (male) of this unit, without connecting anything to the red/white lead of this unit. If the car stereo does not have a blue lead (system control terminal), connect the red/white lead or red lead of the car stereo to the red/white lead of the unit.
- The blue lead of a PIONEER car stereo to be connected to the unit may have an auto-antenna terminal. If it does, it cannot be connected to the blue lead (system control terminal) of the unit, so read the section on connections in the car stereo's owner's manual. If no sound comes from the speakers during the playing of a tape after they have been connected to the unit, connect the red/white or red lead of the car stereo to the red/white lead of the unit.

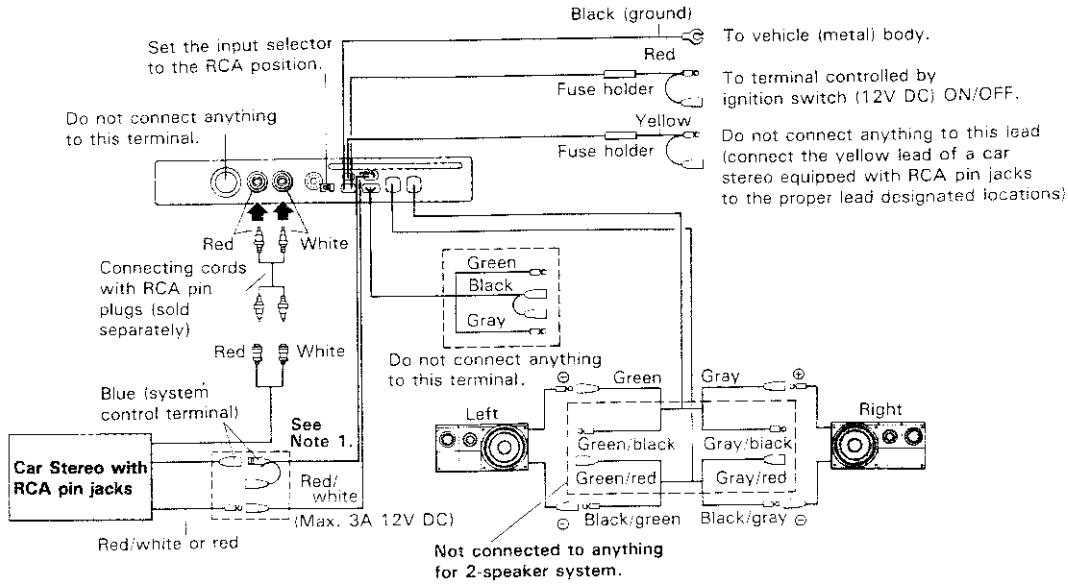


Fig. 10

- BP-880/ES, 650/ES (4-Speaker System)

When Combined with a Regular Car Stereo (Unequipped with RCA pin jacks)

- When using the BP-880 in a 2-speaker system, use either the front speaker cords or the rear speaker cords for connection as appropriate.

Note 1

- If the car stereo has a blue lead (system control terminal), connect it to the blue lead (male) of this unit, without connecting anything to the red/white lead of this unit. If the car stereo does not have a blue lead (system control terminal), connect the red/white lead or red lead of the car stereo to the red/white lead of the unit.
- The blue lead of a PIONEER car stereo to be connected to the unit may have an auto-antenna terminal. If it does, it cannot be connected to the blue lead (system control terminal) of the unit, so read the section on connections in the car stereo's owner's manual. If no sound comes from the speakers during the playing of a tape after they have been connected to the unit, connect the red/white or red lead of the car stereo to the red/white lead of the unit.

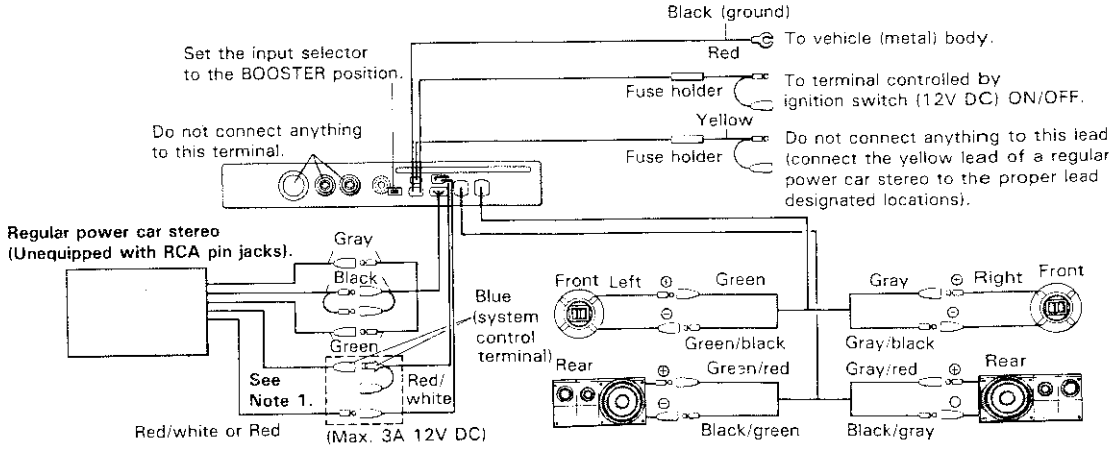


Fig. 11

- BP-650/ES (2-Speaker System)

When Combined with a Regular Car Stereo (Unequipped with RCA pin jacks)

Note 1

- If the car stereo has a blue lead (system control terminal), connect it to the blue lead (male) of this unit, without connecting anything to the red/white lead of this unit. If the car stereo does not have a blue lead (system control terminal), connect the red/white lead or red lead of the car stereo to the red/white lead of the unit.
- The blue lead of a PIONEER car stereo to be connected to the unit may have an auto-antenna terminal. If it does, it cannot be connected to the blue lead (system control terminal) of the unit, so read the section on connections in the car stereo's owner's manual. If no sound comes from the speakers during the playing of a tape after they have been connected to the unit, connect the red/white or red lead of the car stereo to the red/white lead of the unit.

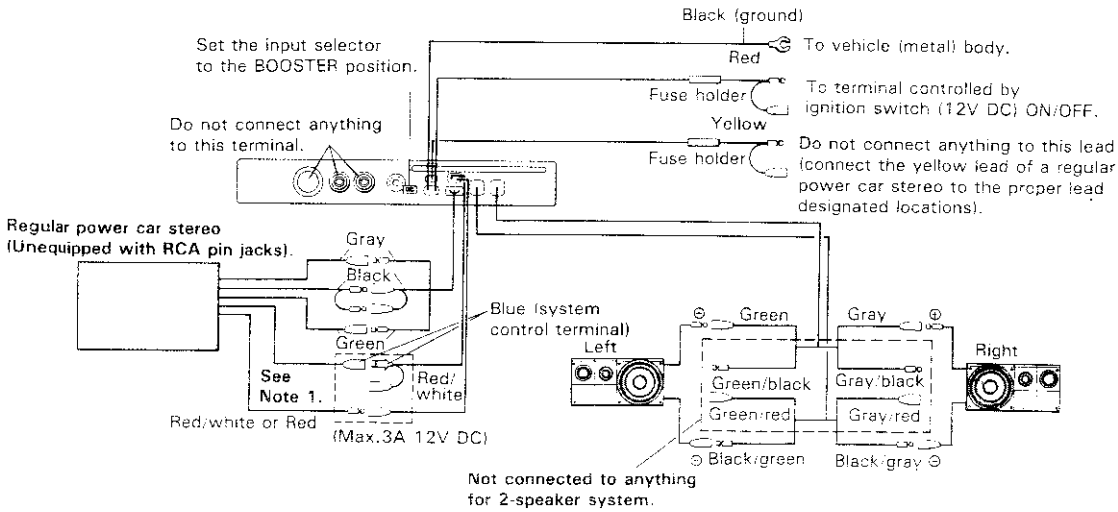
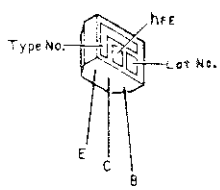


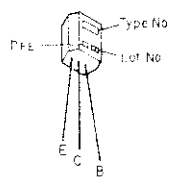
Fig. 12

- ICs and Transistors

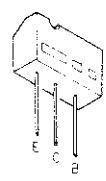
2SA933SLN
2SA933



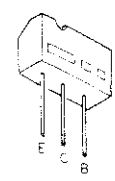
2SC1740SLN



2SB909M
2SD1858
2SB1237
2SC4038
2SA1561



DTC114TF



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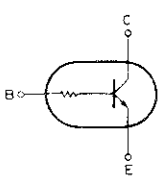
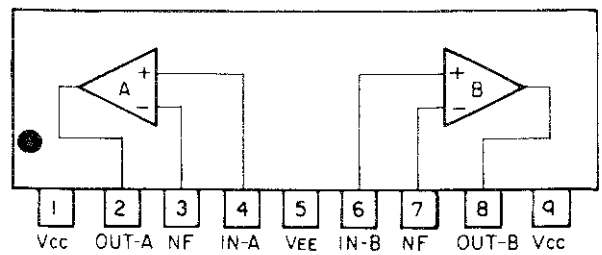
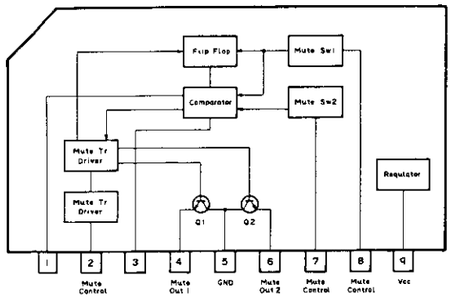


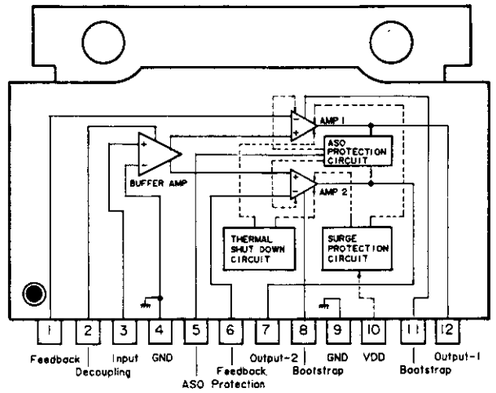
μPC4570HA



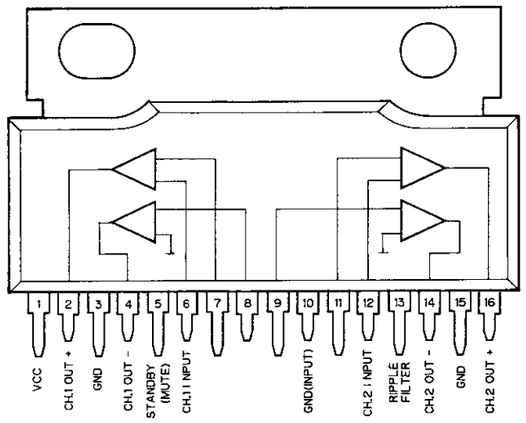
TA7362P



HA1384P



AN7173K



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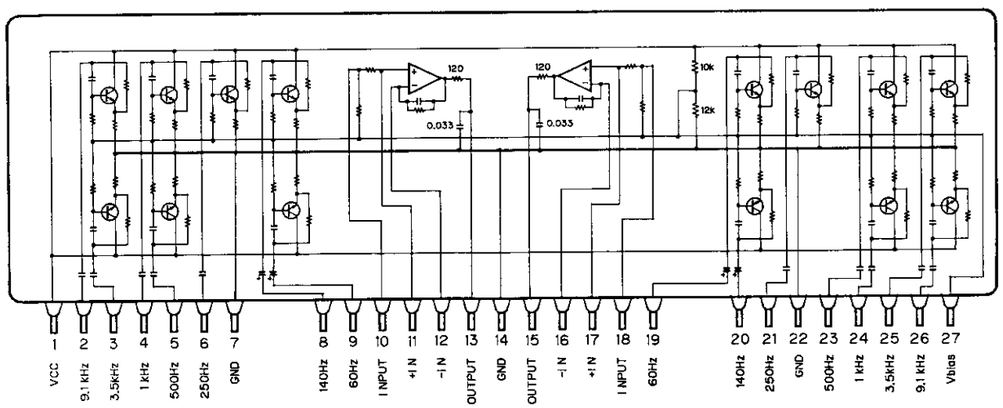


4. LEVEL DIAGRAM

• **BP-880**

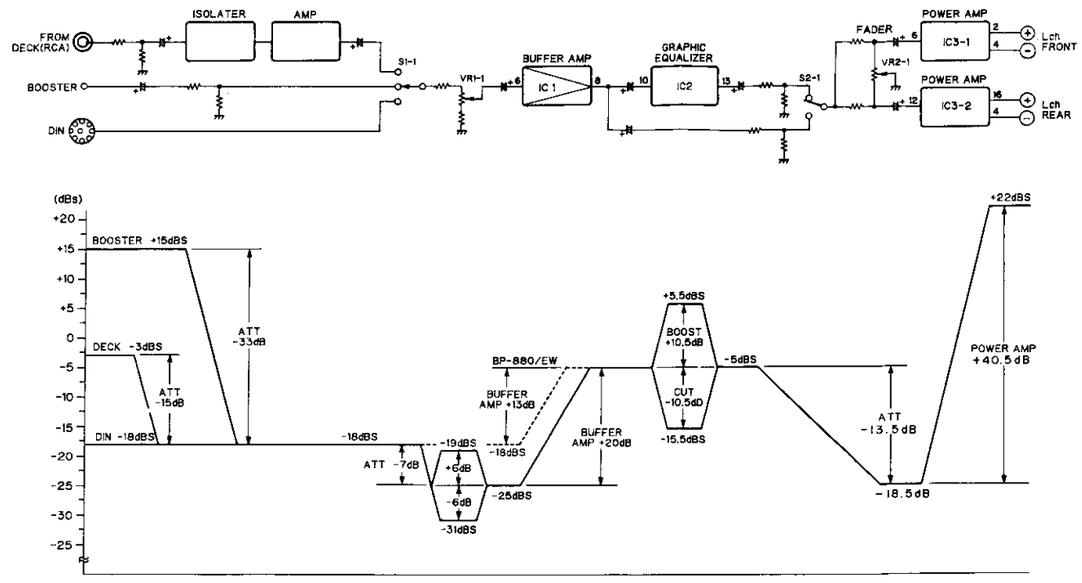


Fig. 13

• **BP-650, 450**

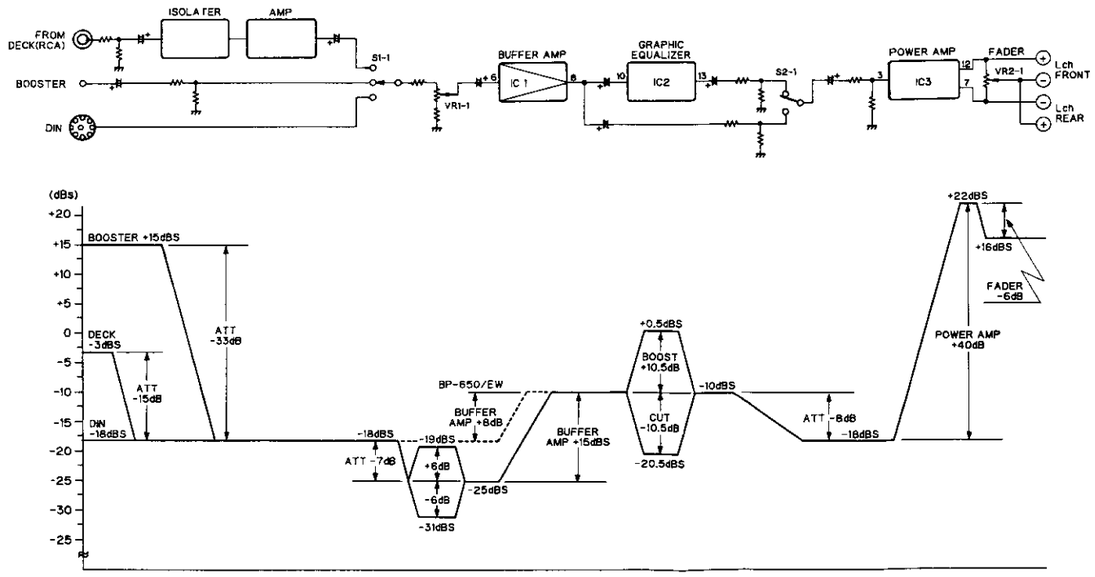
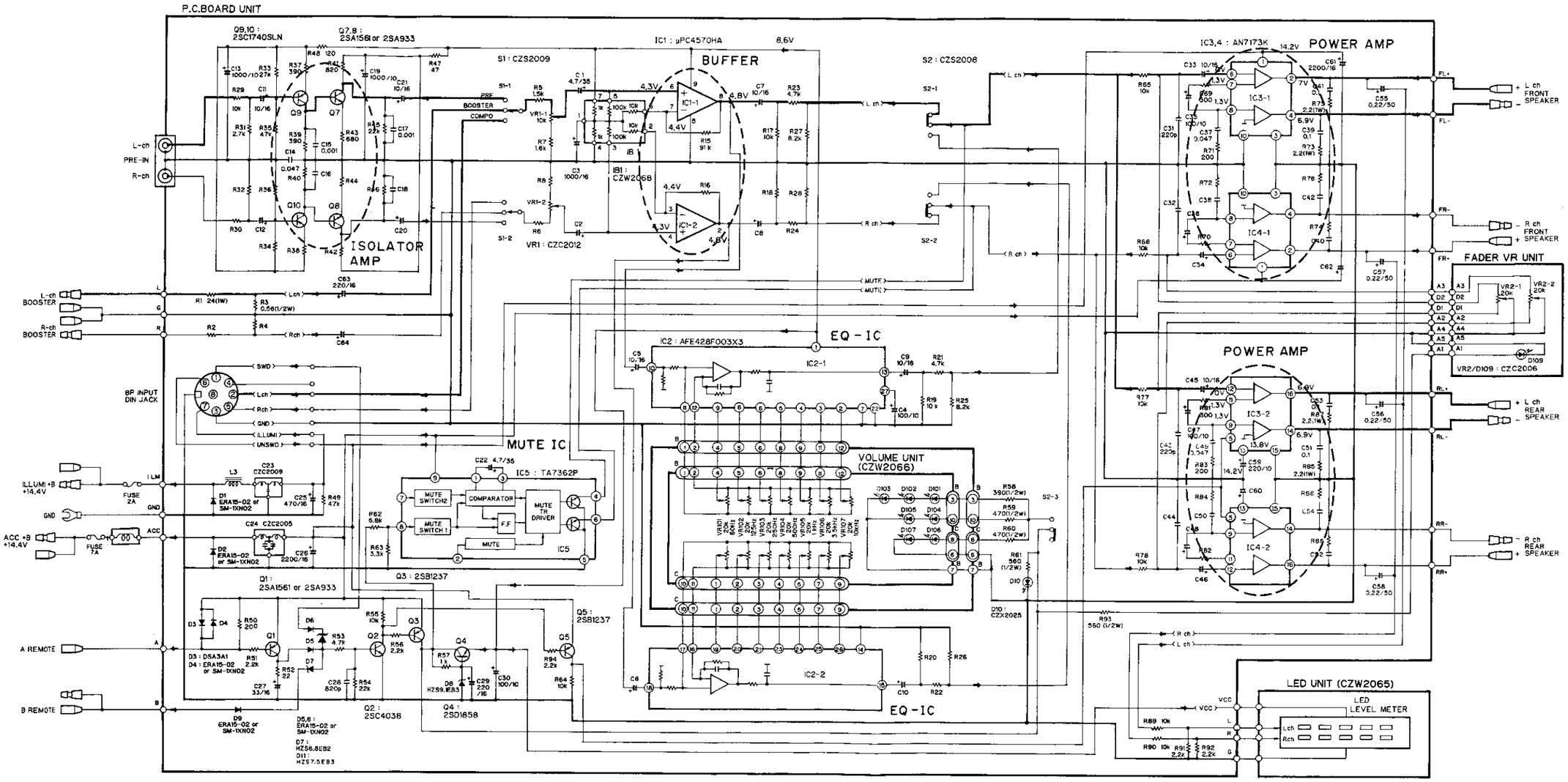


Fig. 14

5. SCHEMATIC CIRCUIT DIAGRAM (BP-880/ES)



SWITCHES

◉P.C.BOARD UNIT

S1 : INPUT SELECTOR SWITCH---BOOSTER–COMPO–PRE

S2 : EQUALIZATION SWITCH-------ON–OFF

The underlined indicates the switch position.

Fig. 15

6. CONNECTION DIAGRAM (BP-880/ES)

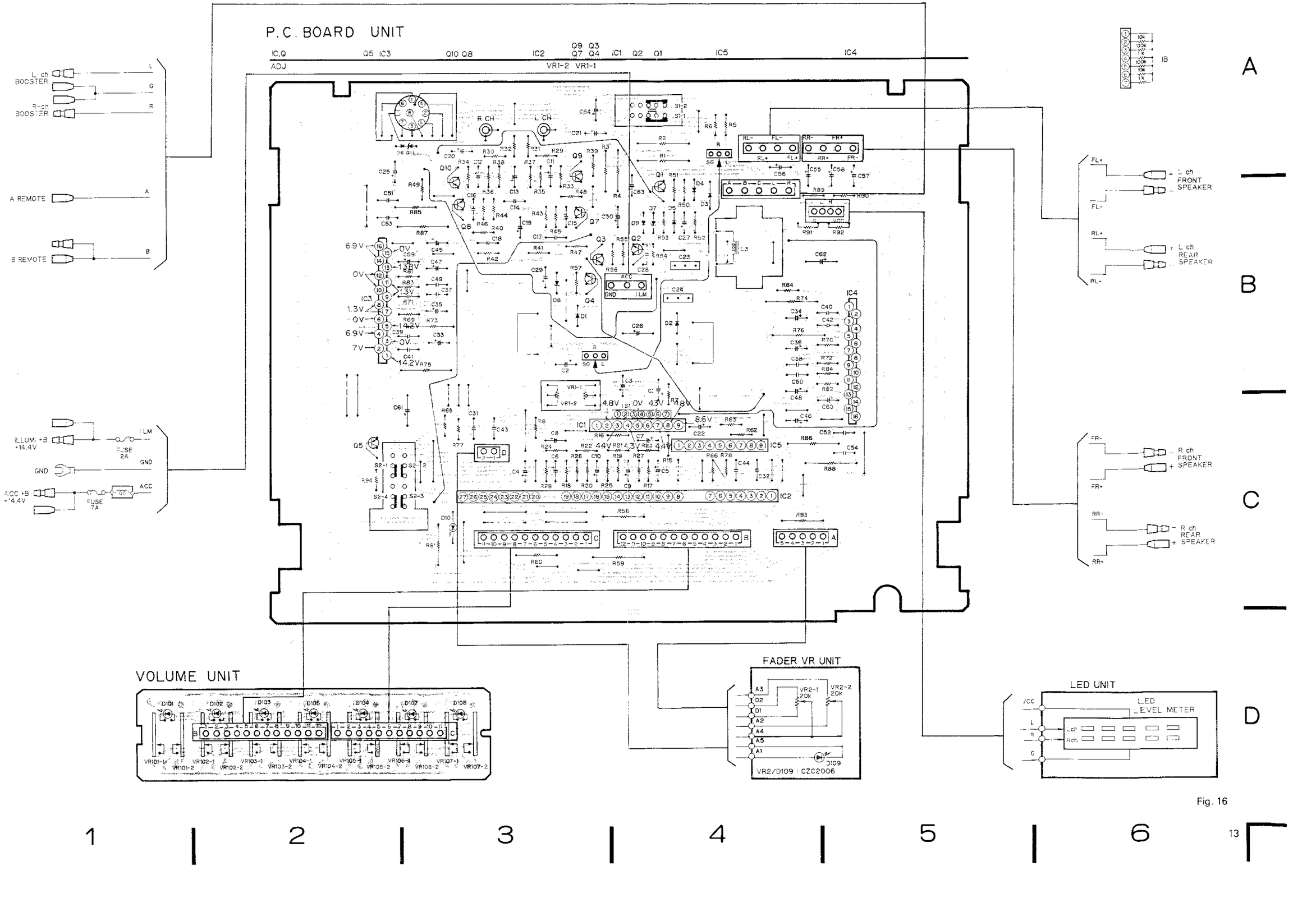
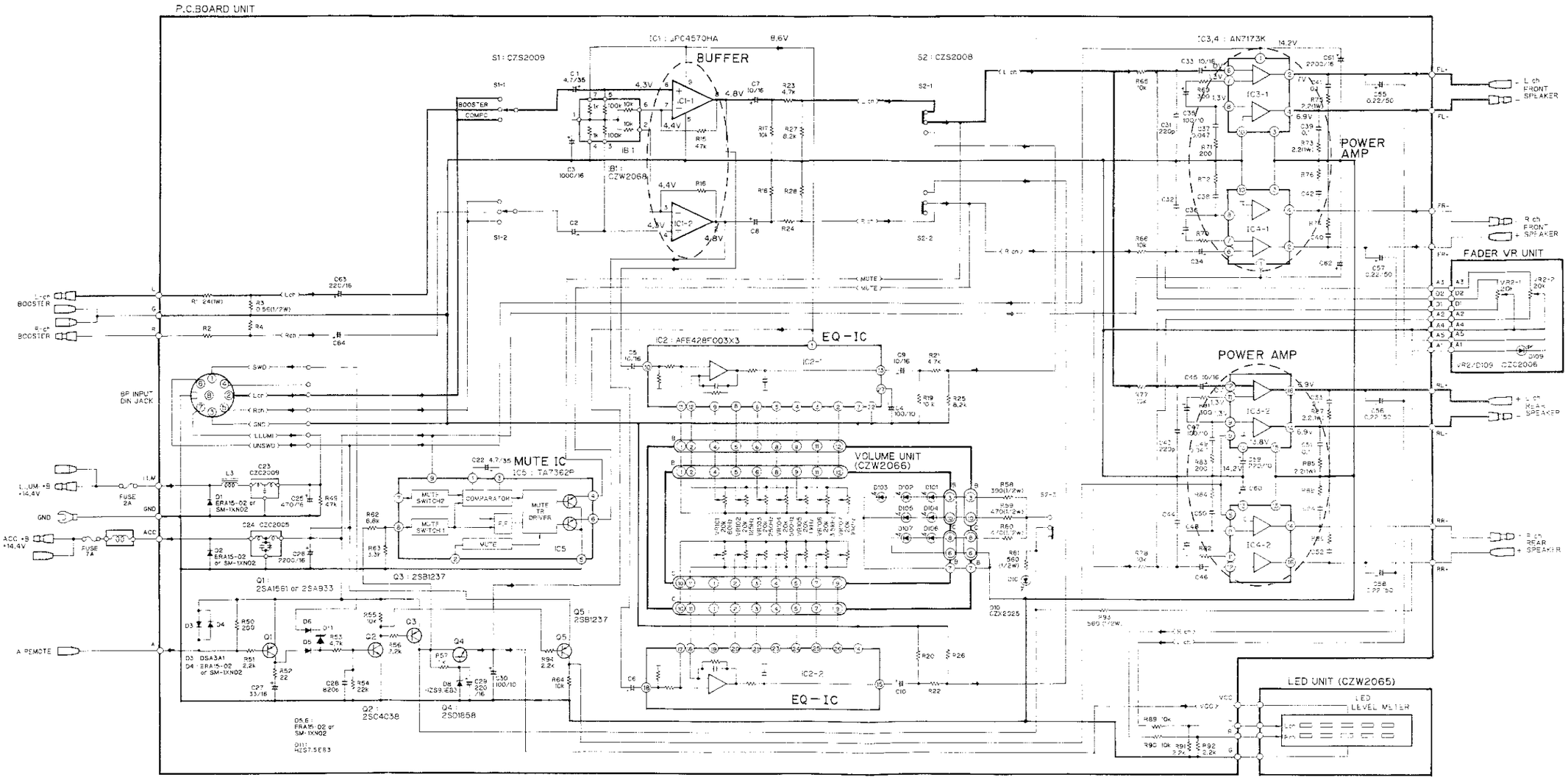


Fig. 16

7. SCHEMATIC CIRCUIT DIAGRAM (BP-880/EW)



SWITCHES

⊕P.C.BOARD UNIT

S1 : INPUT SELECTOR SWITCH---- BOOSTER-COMPO

S2 : EQUALIZATION SWITCH------- ON-OFF

The underlined indicates the switch position.

Fig. 17

8. CONNECTION DIAGRAM (BP-880/EW)

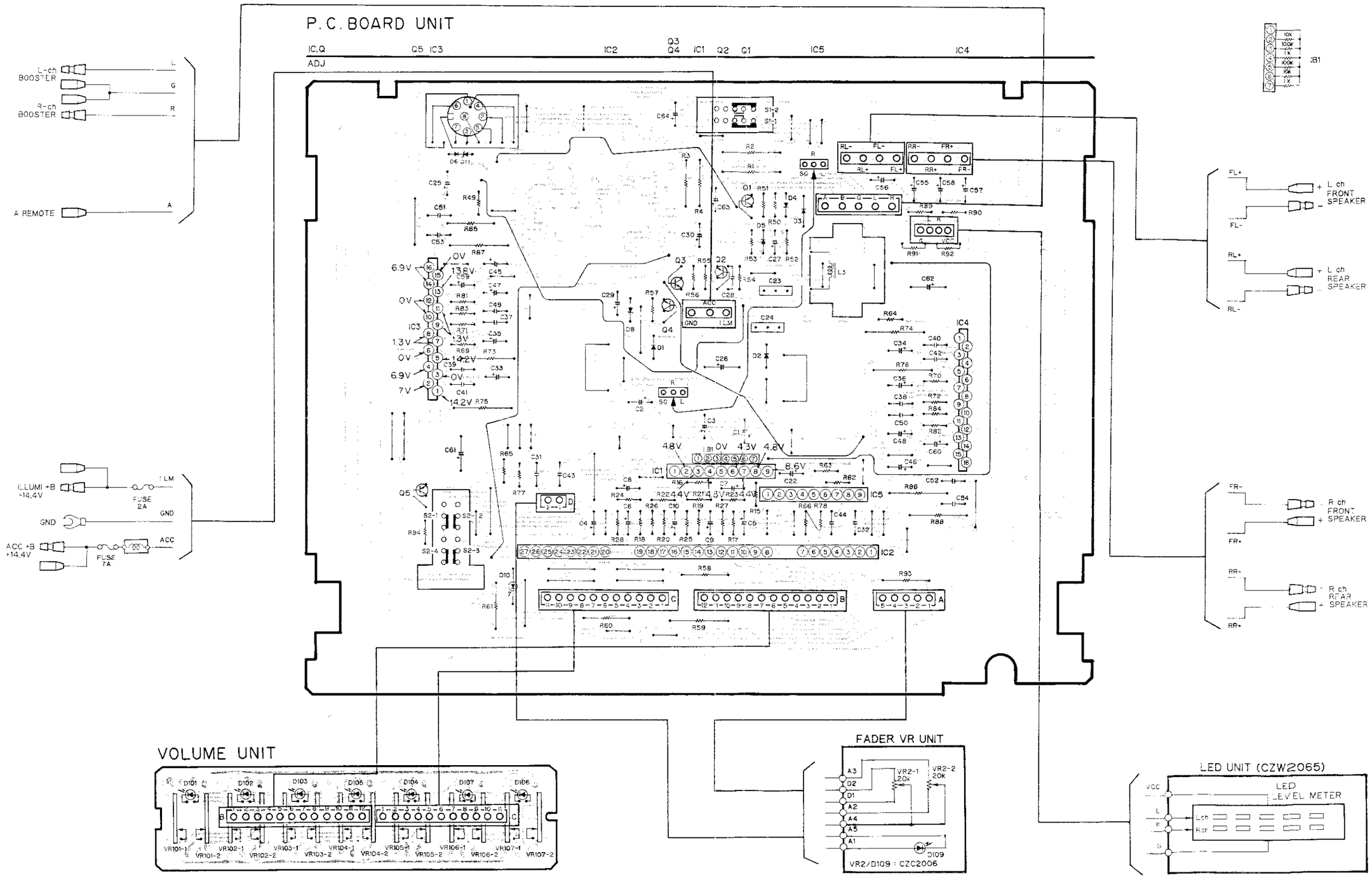


Fig. 18

9. SCHEMATIC CIRCUIT DIAGRAM (BP-880/UC)

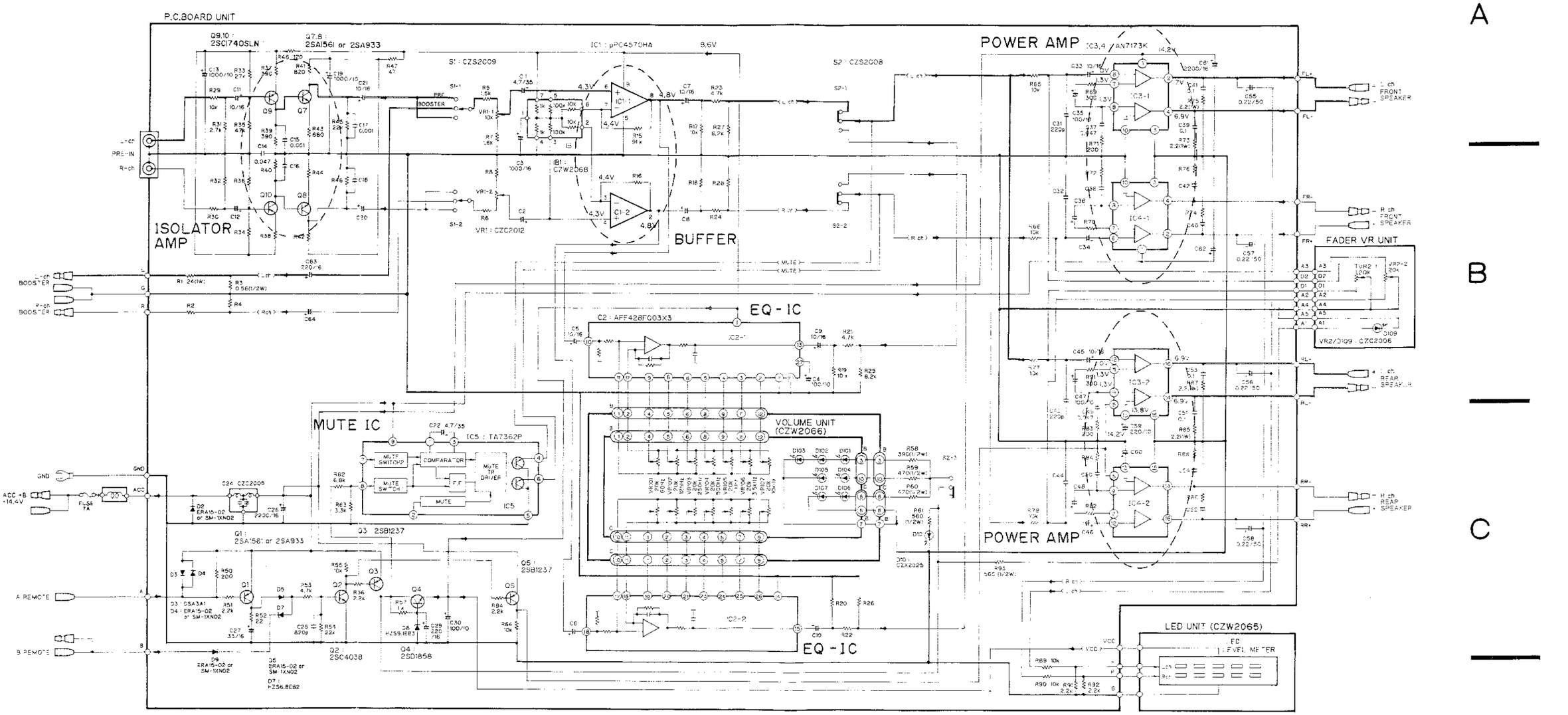


Fig. 19

10. CONNECTION DIAGRAM (BP-880/UC)

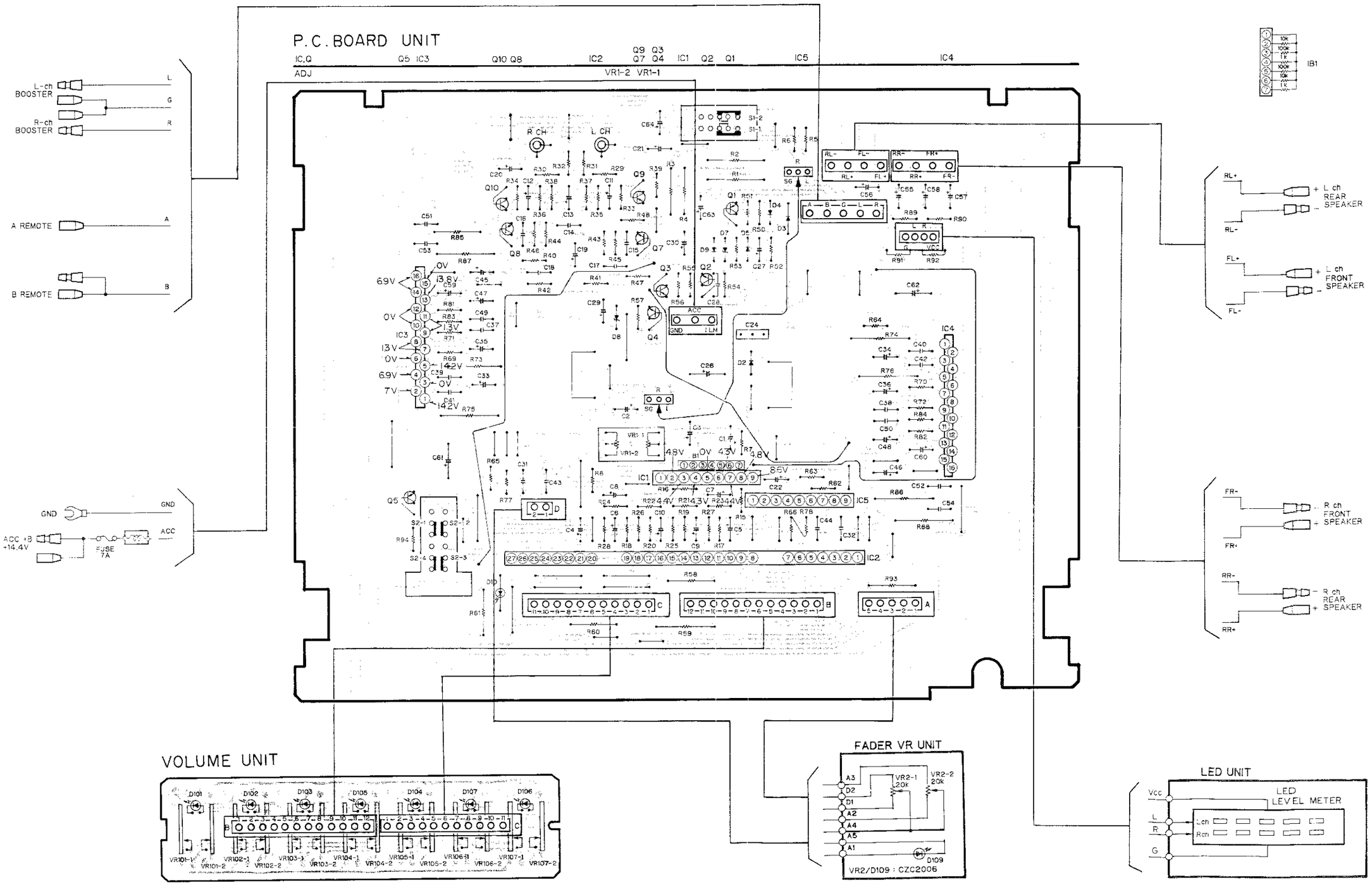
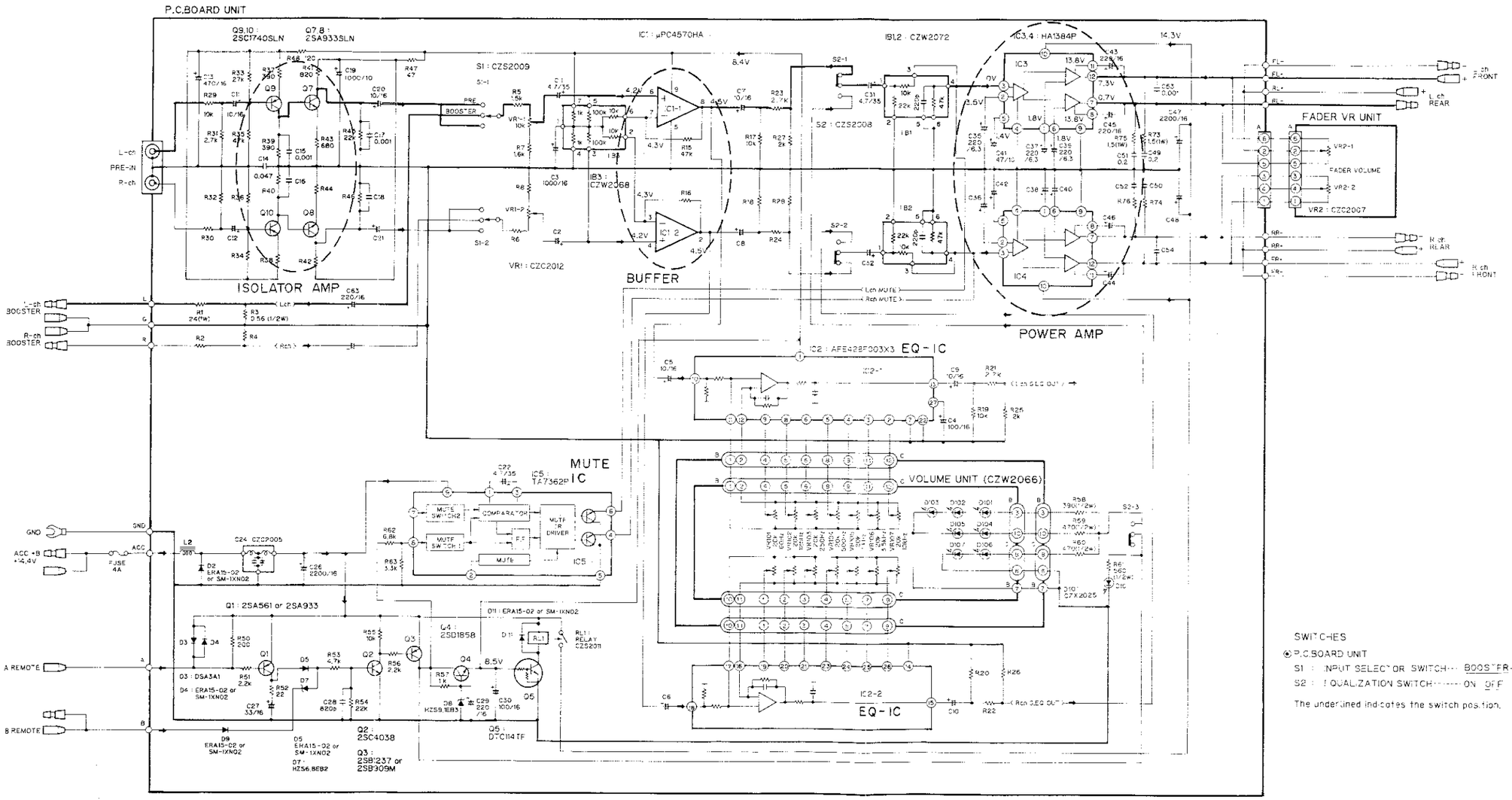


Fig. 20

11. SCHEMATIC CIRCUIT DIAGRAM (BP-650/UC)



SWITCHES

⊕ P.C.BOARD UNIT

S1 : INPUT SELECTOR SWITCH ··· BOOSTER -- PRE

S2 : EQUALIZATION SWITCH ····· ON OFF

The underlined indicates the switch position.

Fig. 21

12. CONNECTION DIAGRAM (BP-650/UC)

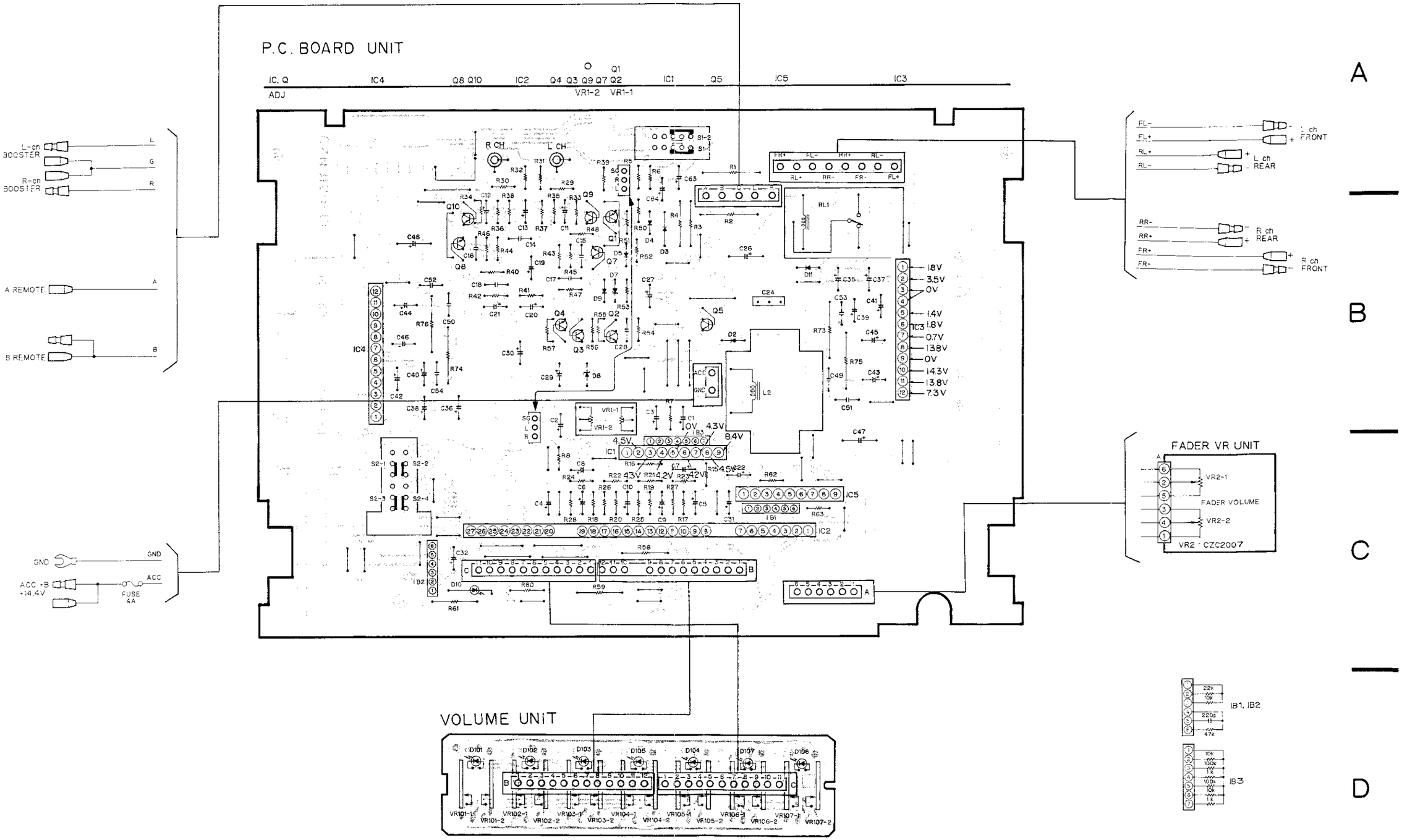
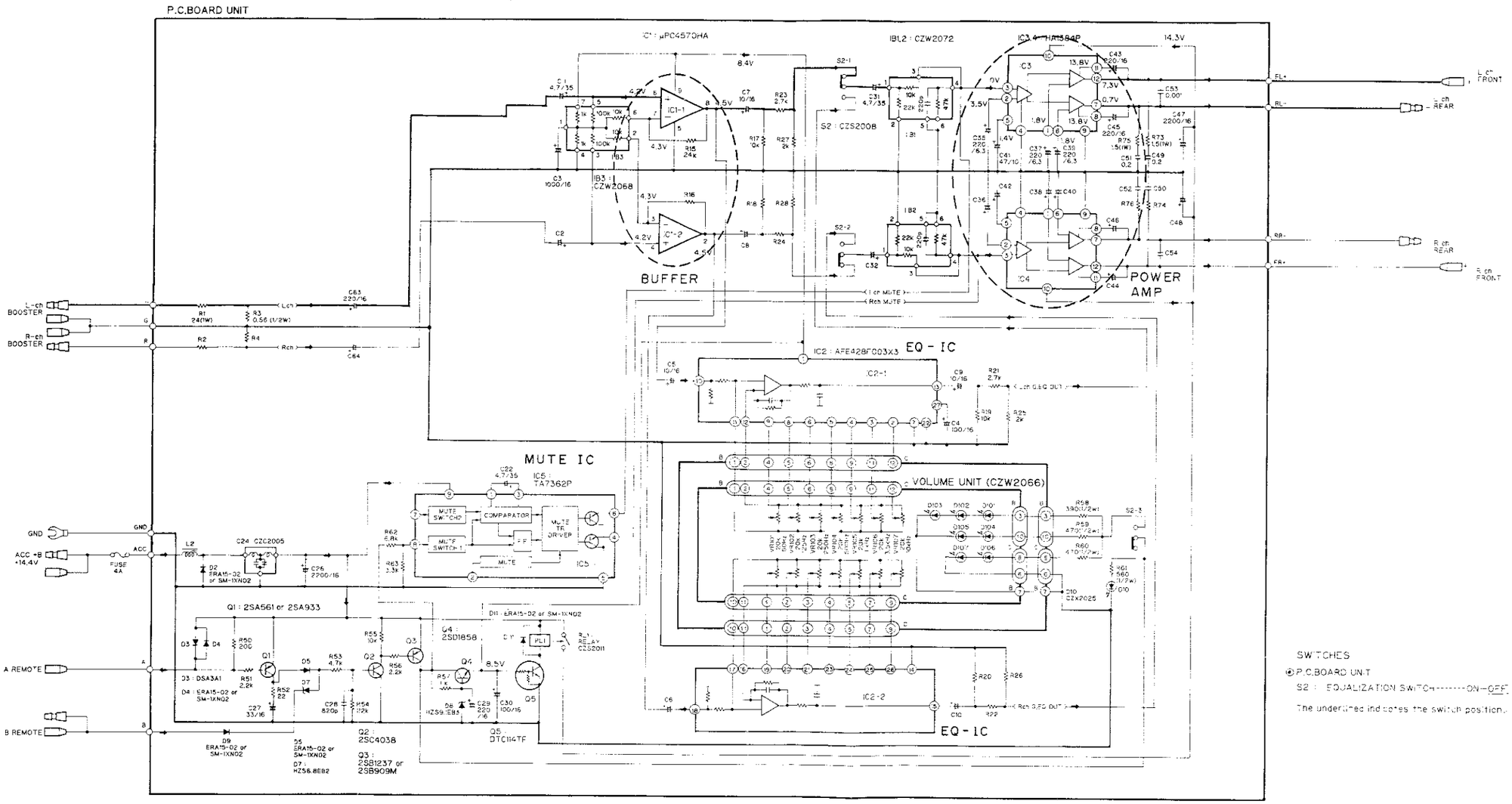


Fig. 22

13. SCHEMATIC CIRCUIT DIAGRAM (BP-450/UC,ES)



SWITCHES

● P.C.BOARD UNIT

S2 : EQUALIZATION SWITCH ·····ON—OFF

The underlined indicates the switch position.

Fig. 23

14. CONNECTION DIAGRAM (BP-450/UC,ES)

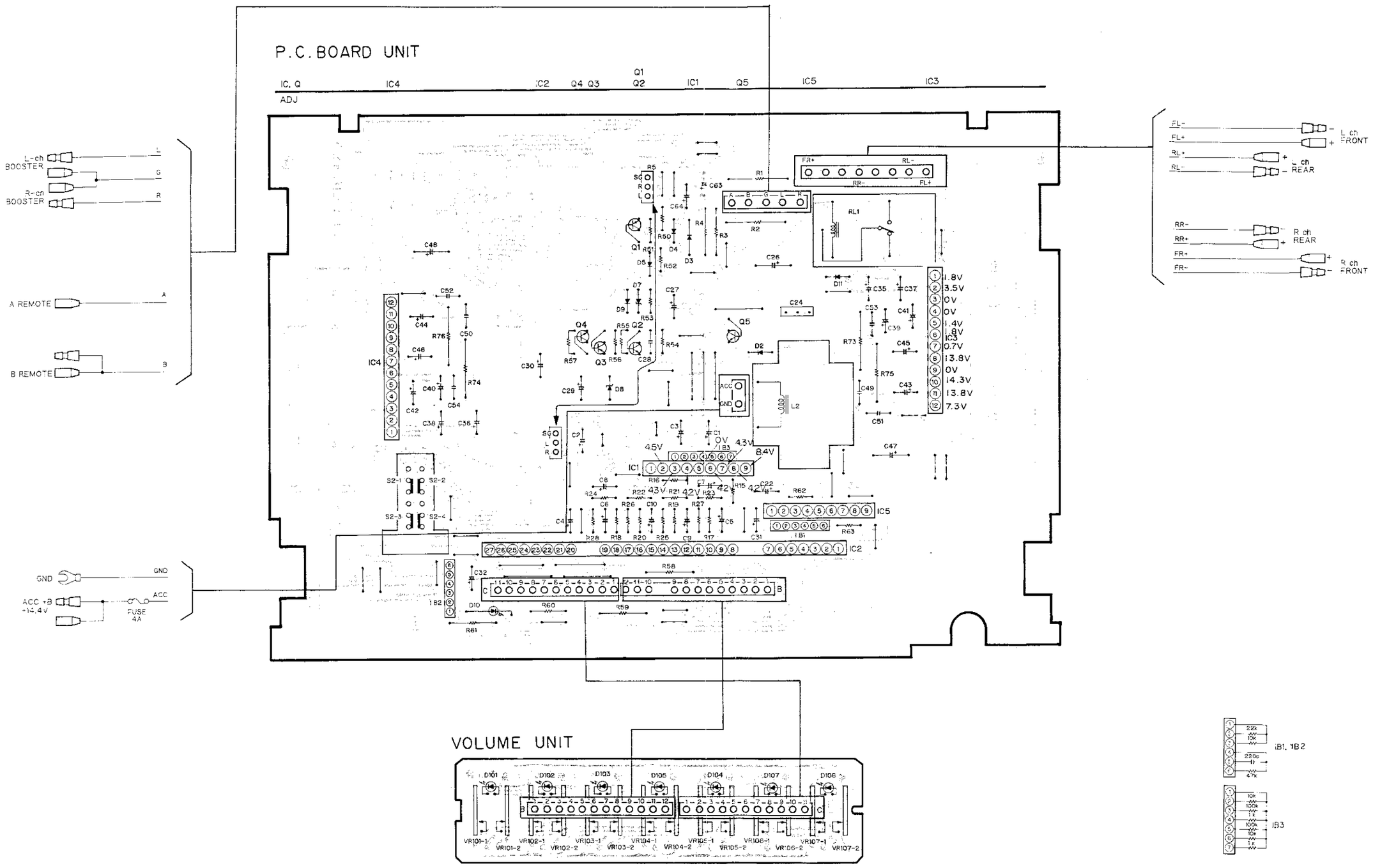
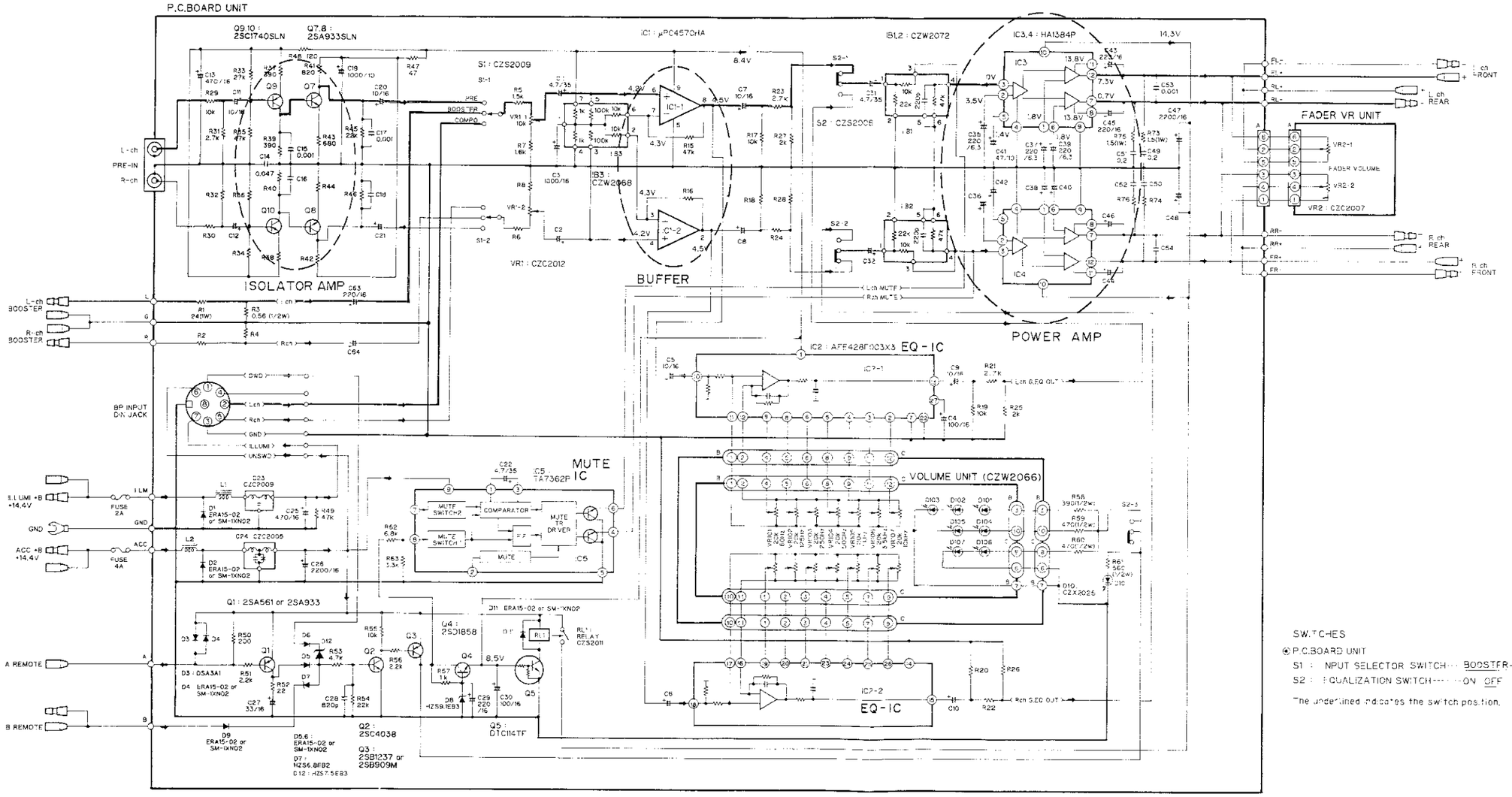


Fig. 24

15. SCHEMATIC CIRCUIT DIAGRAM (BP-650/ES)



SWITCHES

⊛ P.C.BOARD UNIT

S1 : INPUT SELECTOR SWITCH ··· BOOSTER-COMPO-PRE

S2 : EQUALIZATION SWITCH ····· ON OFF

The underlined indicates the switch position.

Fig. 25

16. CONNECTION DIAGRAM (BP-650/ES)

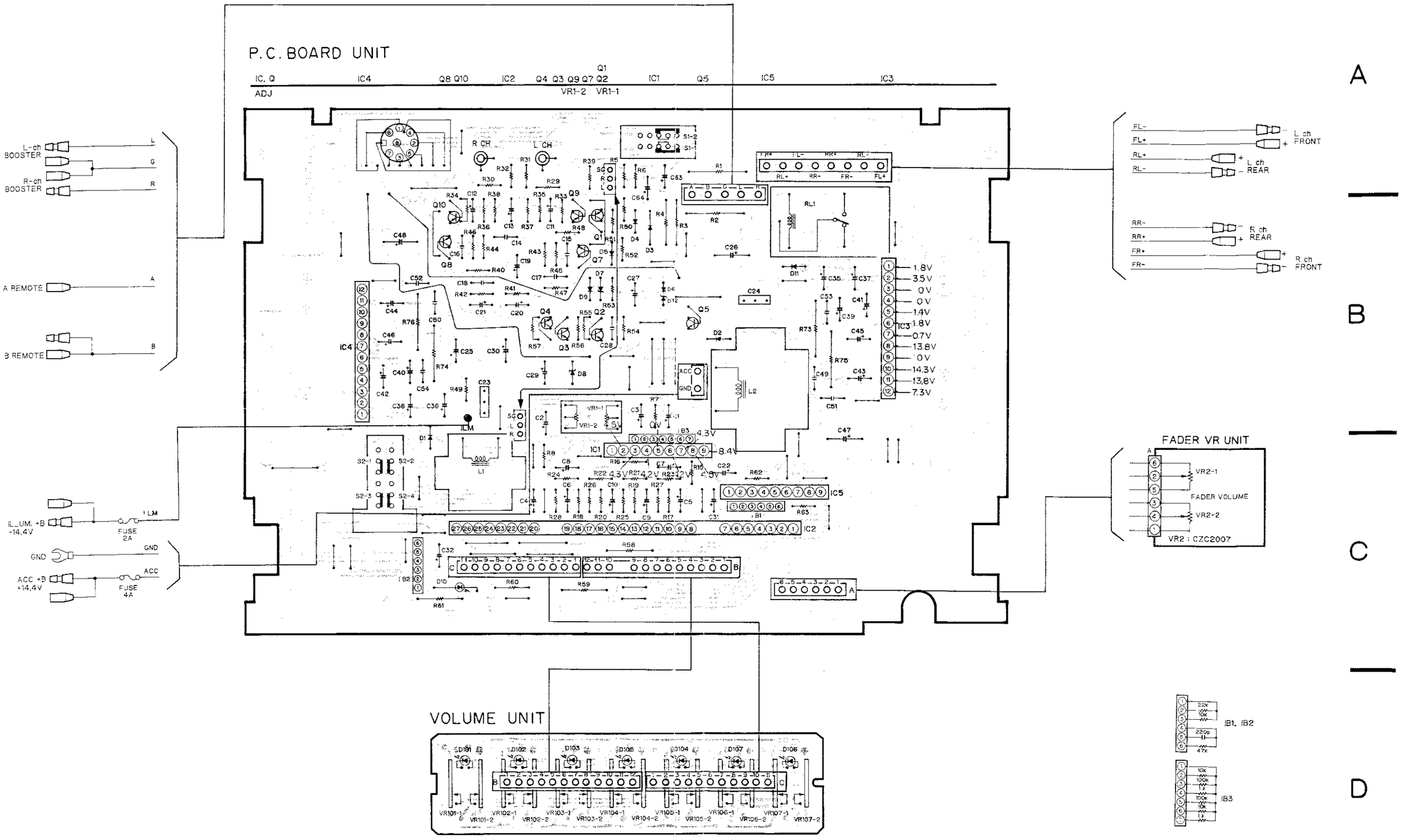
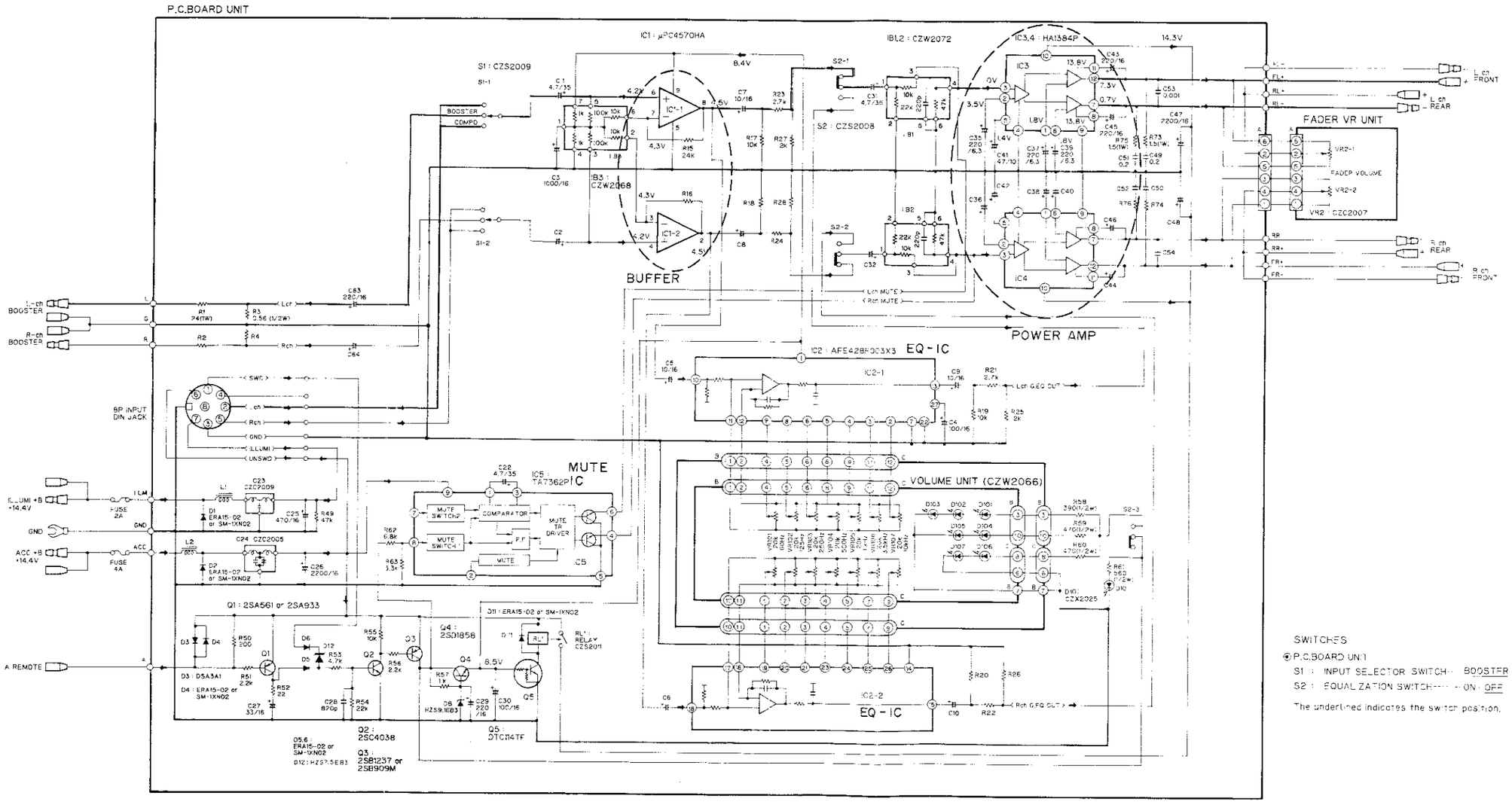


Fig. 26

17. SCHEMATIC CIRCUIT DIAGRAM (BP-650/EW)



SWITCHES

◉ P.C.BOARD UNIT

S1 : INPUT SELECTOR SWITCH ··· BOOSTER COMPO

S2 : EQUALIZATION SWITCH ····· ON OFF

The underlined indicates the switch position.

Fig. 27

18. CONNECTION DIAGRAM (BP-650/EW)

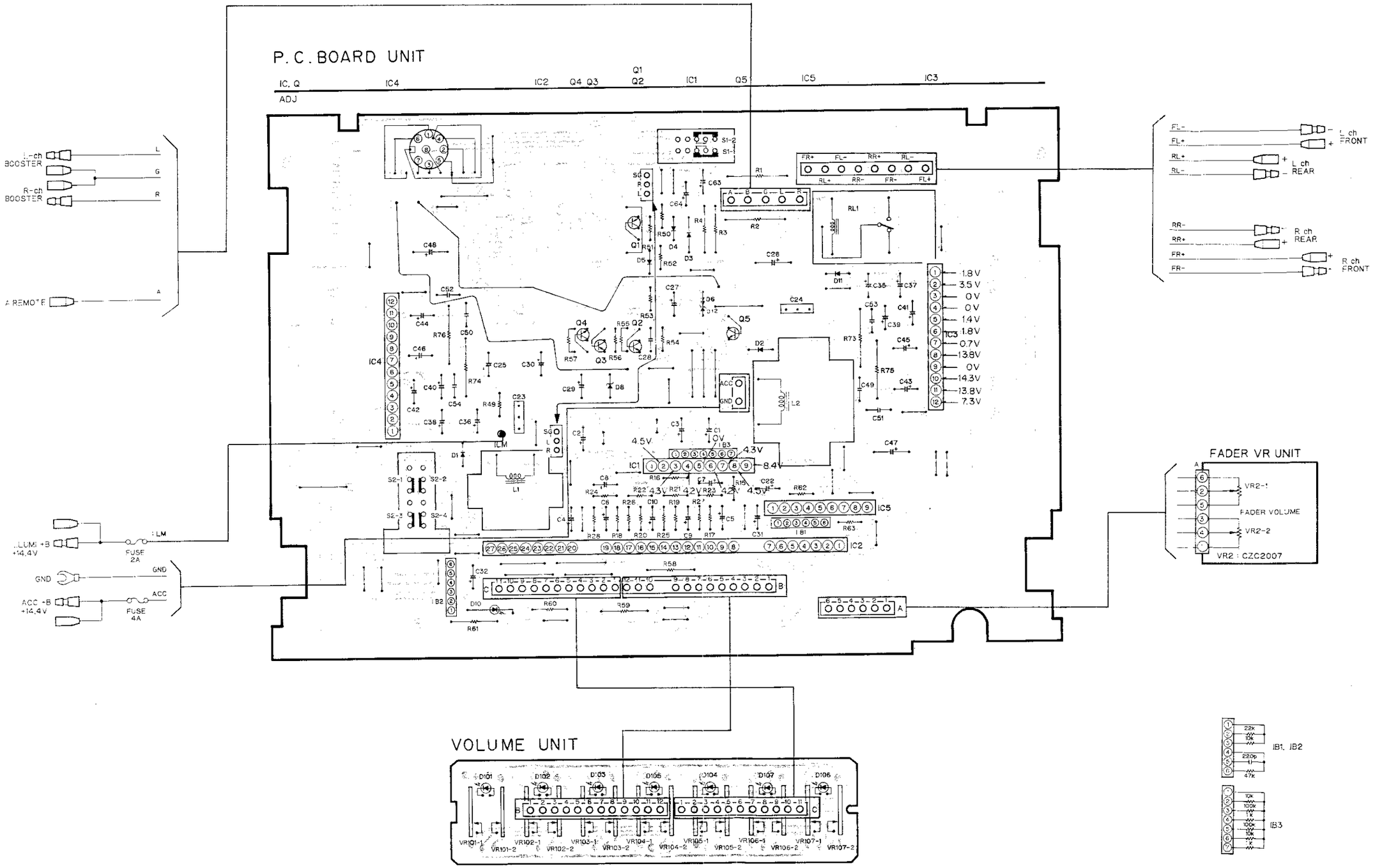


Fig. 28

19. EXPLODED VIEW

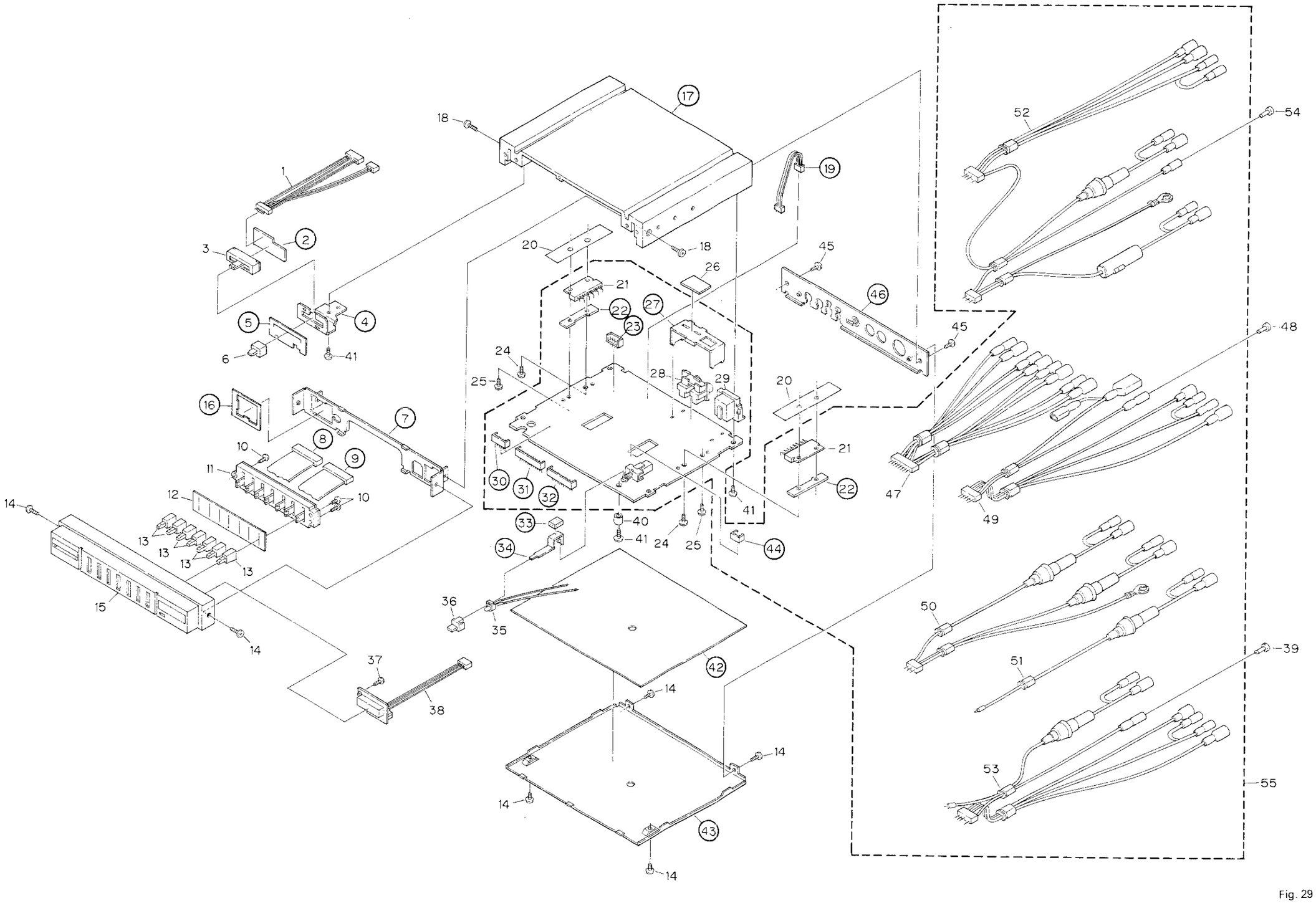


Fig. 29

• 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.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Mark	No.	Part No.	Description
	1		Connector (7P) (BP-880)
			Connector (6P) (BP-650)
	2		P.C. Board
★★	3	CZC2006	Volume (BP-880)
		CZC2007	Volume (BP-650)
	4		Holder (BP-880, 650)
	5		Cover (BP-880, 650)
★	6	CZA2051	Knob (BP-880)
		CZA2052	Knob (BP-650)
	7		Bracket
	8		Connector (12P)
	9		Connector (11P)
	10	PVZ17P080FZK	Screw
	11	CZW2066	Volume Unit
	12		Cover
★	13	CZA2045	Knob
	14	BMZ26P040FZK	Screw
	15	CZX2029	Grille Unit (BP-880/UC,ES)
		CZX2030	Grille Unit (BP-650/UC,ES)
		CZX2033	Grille Unit (BP-880/EW)
		CZX2034	Grille Unit (BP-650/EW)
		CZN3121	Grille (BP-450/UC,ES)
	16		Insulator
	17		Heat Sink
	18	BMZ26P100FZK	Screw
	19		Connector (3P)
	20	CZN3135	Rubber
★★	21	AN7173K	IC (BP-880)
		HA1384	IC (BP-650, 450)
	22		Spacer
	23		Plug (4P) (BP-880)
	24	BMZ30P100FZK	Screw
	25	BMZ30P080FMC	Screw
	26	CZN3131	Spacer
	27		Bracket (BP-880, 650)
	28	CZK2006	Jack (BP-880, 650)
	29	CZK2007	DIN Connector (BP-880, 650)
	30		Plug (5P) (BP-880)
			Plug (6P) (BP-650)
	31		Connector (12P)

Mark	No.	Part No.	Description
	32		Connector (11P)
	33		Cushion
	34		Lever
	35	CZX2025	LED Assy
★	36	CZA2053	Button
	37	PVZ14P045FZK	Screw
	38	CZW2065	LED Unit (BP-880)
	39	CKX-003	Cover (BP-650/EW)
	40	CZB2003	Spacer
	41	BMZ26P050FMC	Screw
	42		Insulator
	43		Chassis
	44		Plug (2P) (BP-880)
	45	BRZ30P080FZK	Screw
	46		Panel
	47	CZD2083	Connector Assy (BP-880)
		CZD2090	Connector Assy (BP-650)
		CZD2091	Connector Assy (BP-450)
	48	CKX-003	Cover (BP-880/UC,ES, 650/UC,ES, 450/UC,ES)
	49	CZD2081	Connector Assy (BP-880/UC,ES, 650/UC,ES, 450/UC,ES)
	50	CZD2082	Connector Assy (BP-880/ES)
		CZD2085	Connector Assy (BP-880/UC)
		CZD2089	Connector Assy (BP-650/UC,ES, 450/UC,ES)
	51	CZD2084	Connector Assy (BP-650/ES)
	52	CZD2093	Connector Assy (BP-880/EW)
	53	CZD2092	Connector Assy (BP-650/EW)
	54	CKX-003	Cover (BP-650/EW)
◉	55	CZW2073	P.C. Board Unit (BP-880/UC)
		CZW2074	P.C. Board Unit (BP-880/ES)
		CZW2075	P.C. Board Unit (BP-880/EW)
		CZW2076	P.C. Board Unit (BP-650/UC)
		CZW2077	P.C. Board Unit (BP-650/ES)
		CZW2078	P.C. Board Unit (BP-650/EW)
		CZW2079	P.C. Board Unit (BP-450/UC,ES)

20. ELECTRICAL PARTS LIST

NOTE:

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

Ex. 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*

Ex. 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*

- *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.*

P.C. Board Unit (BP-880)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		μPC4570HA
★★	IC2		AFE428F003X3
★★	IC3, 4		AN7173K
★★	IC5		TA7362P
★★	Q1		2SA1561
			(2SA933)
★★	Q2		2SC4038
★★	Q3, 5		2SB1237
★★	Q4		2SD1858
★★	Q7, 8	(BP-880/UC,ES)	2SA1561
			(2SA933)
★★	Q9, 10	(BP-880/UC,ES)	2SC1740SLN
★	D1	(BP-880/EW,ES)	SM-1XN02
			(ERA15-02)
★	D2, 4, 5		SM-1XN02
			(ERA15-02)
★	D3		DSA3A1
★	D6	(BP-880/EW,ES)	SM-1XN02
			(ERA15-02)
★	D7	(BP-880/UC,ES)	HZS6R8EB2
★	D8		HZS9R1EB3
★	D9	(BP-880/UC,ES)	SM-1XN02
			(ERA15-02)
★	D10	LED Assy	CZX2025
★	D11	(BP-880/EW,ES)	HZS7R5EB3
	L3	Coil (BP-880/EW,ES)	CTF-002
	IB1		CZW2068
★★	S1	Switch (INPUT SELECTOR)	CZS2009
★★	S2	Switch (EQUALIZATION)	CZS2008
★★	VR1	Volume, 10 kΩ (BP-880/UC,ES)	CZC2012

RESISTORS (BP-880)

Mark	Symbol & Description		Part No.
	R1, 2, 73 – 76, 85 – 88		RS1P□□□JL
	R3, 4		RS1/2P□□□JL
	R5 – 8, 29 – 48	(BP-880/UC,ES)	RD1/6PM□□□J
	R15 – 28, 50 – 57, 62 – 66, 69 – 72, 77, 78, 81 – 84, 89 – 92, 94		RD1/6PM□□□J
	R49	(BP-880/EW,ES)	RD1/6PM□□□J
	R58 – 61, 93		RD1/2PM□□□JL

CAPACITORS (BP-880)

Mark	Symbol & Description		Part No.
	C1, 2, 22		CEA4R7M35L2
	C3	1,000 μF/16 V	CZC2014
	C4, 30, 35, 36, 47, 48		CEA101M10L2
	C5 – 10		CEA100M16L2
	C11, 12, 20, 21	(BP-880/UC,ES)	CEA100M16L2
	C13, 19	(BP-880/UC,ES)	CZC2015
	C14	(BP-880/UC,ES)	CQMA473J50
	C15 – 18	(BP-880/UC,ES)	CKPYB102K50L
	C23	(BP-880/EW,ES)	CZC2009
	C24		CZC2005
	C25	(BP-880/EW,ES)	CEA471M16L2
	C26, 61, 62	2,200 μF/16 V	CZC2013
	C27		CEA330M16L2
	C28		CKPYB821K50L
	C29		CEA221M16L2
	C31, 32, 43, 44		CKPYB221K50L
	C33, 34, 45, 46		CEA100M16L2
	C37, 38, 49, 50		CGDYX473K25
	C39 – 42, 51 – 54		CGDYX104K25

Mark	Symbol & Description		Part No.
	C55 – 58		CEAR22M50L2
	C59, 60		CEA221M10L2
	C63, 64		CEA221M16L2

P.C. Board Unit (BP-650)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		μPC4570HA
★★	IC2		AFE428F003X3
★★	IC3, 4		HA1384P
★★	IC5		TA7362P
★★	Q1		2SA1561
			(2SA933)
★★	Q2		2SC4038
★★	Q3		2SB1237
			(2SB909M)
★★	Q4		2SD1858
★★	Q5		DTC114TF
★★	Q7, 8	(BP-650/UC,ES)	2SA933SLN
★★	Q9, 10	(BP-650/UC,ES)	2SC1740SLN
★	D1	(BP-650/EW,ES)	SM-1XN02
			(ERA15-02)
★	D2, 4, 5		SM-1XN02
			(ERA15-02)
★	D3		DSA3A1
★	D6	(BP-650/EW,ES)	SM-1XN02
			(ERA15-02)
★	D7	(BP-650/UC,ES)	HZS6R8EB2
★	D8		HZS9R1EB3
★	D9	(BP-650/UC,ES)	SM-1XN02
			(ERA15-02)
★	D10	LED Assy	CXZ2025
★	D11		SM-1XN02
			(ERA15-02)
★	D12	(BP-650/ES,EW)	HZS7R5EB3
	L1	Coil (BP-650/EW,ES)	CTF-001
	L2	Transformer	CTH1001
	IB1, 2		CZW2072
	IB3		CZW2068
	RL1	Relay	CZS2011
★★	S1	Switch (INPUT SELECTOR)	CZS2009
★★	S2	Switch (EQUALIZATION)	CZS2008
★★	VR1	Volume, 10 kΩ (BP-650/UC,ES)	CZC2012

RESISTORS (BP-650)

Mark	Symbol & Description		Part No.
	R1, 2, 73 – 76		RS1P□□□JL
	R3, 4		RS1/2P□□□JL
	R5 – 8, 29 – 48	(BP-650/UC,ES)	RD1/6PM□□□J
	R15 – 28, 50 – 57, 62, 63		RD1/6PM□□□J
	R49	(BP-650/EW)	RD1/6PM□□□J
	R58 – 61		RD1/2PM□□□JL

CAPACITORS (BP-650)

Mark	Symbol & Description		Part No.
	C1, 2, 22, 31, 32		CEA4R7M35L2
	C3	1,000 μF/16 V	CZC2014
	C4		CEA101M16L2
	C5 – 10		CEA100M16L2
	C11, 12, 20, 21	(BP-650/UC,ES)	CEA100M16L2
	C13	(BP-650/UC,ES)	CEA471M16L2
	C14	(BP-650/UC,ES)	CQMA473J50
	C15 – 18	(BP-650/UC,ES)	CKPYB102K50L
	C19	(BP-650/UC,ES)	CZC2015
	C23	(BP-650/EW,ES)	CZC2009
	C24		CZC2005
	C25	(BP-650/EW,ES)	CEA471M16L2
	C26, 47, 48	2,200 μF/16 V	CZC2013
	C27		CEA330M16L2
	C28		CKPYB821K50L
	C29, 43 – 46		CEA221M16L2
	C30		CEA101M16L2
	C35 – 40		CEA221M6R3L2
	C41, 42		CEA470M10L2
	C49 – 52		CGDYX204K25L
	C53, 54		CKPYB102K50L
	C63, 64		CEA221M16L2

P.C. Board Unit (BP-450)

MISCELLANEOUS

Mark	Symbol & Description		Part No.
★★	IC1		μPC4570HA
★★	IC2		AFE428F003X3
★★	IC3, 4		HA1384P
★★	IC5		TA7362P
★★	Q1		2SA1561
			(2SA933)
★★	Q2		2SC4038
★★	Q3		2SB1237
			(2SB909M)
★★	Q4		2SD1858
★★	Q5		DTC114TF
★	D2, 4, 5, 9, 11		SM-1XN02
			(ERA15-02)
★	D3		DSA3A1
★	D7		HZS6R8EB2
★	D8		HZS9R1EB3
★	D10	LED Assy	CZX2025
	L2	Transformer	CTH1001
	IB1, 2		CZW2072
	IB3		CZW2068
	RL1	Relay	CZS2011
★★	S2	Switch (EQUALIZATION)	CZS2008

RESISTORS (BP-450)

Mark	Symbol & Description	Part No.
	R1, 2, 73 – 76	RS1P□□□JL
	R3, 4	RS1/2P□□□J
	R15 – 28, 50 – 57, 62, 63	RD1/6PM□□□J
	R58 – 61	RD1/2PM□□□JL

CAPACITORS (BP-450)

Mark	Symbol & Description	Part No.
	C1, 2, 22, 31, 32	CEA4R7M35L2
	C3	CZC2014
	C4	CEA101M16L2
	C5 – 10	CEA100M16L2
	C24	CZC2005
	C26, 47, 48	CZC2013
	C27	CEA330M16L2
	C28	CKPYB821K50L
	C29, 43 – 46	CEA221M16L2
	C30	CEA101M16L2
	C35 – 40	CEA221M6R3L2
	C41, 42	CEA470M10L2
	C49 – 52	CGDYX204K25L
	C53, 54	CKPYB102K50L
	C63, 64	CEA221M16L2

Fader VR Unit

Mark	Symbol & Description		Part No.
★★	VR2/D109	Volume (BP-880)	CZC2006
★★	VR2	Volume (BP-650)	CZC2007

21. PACKING METHOD

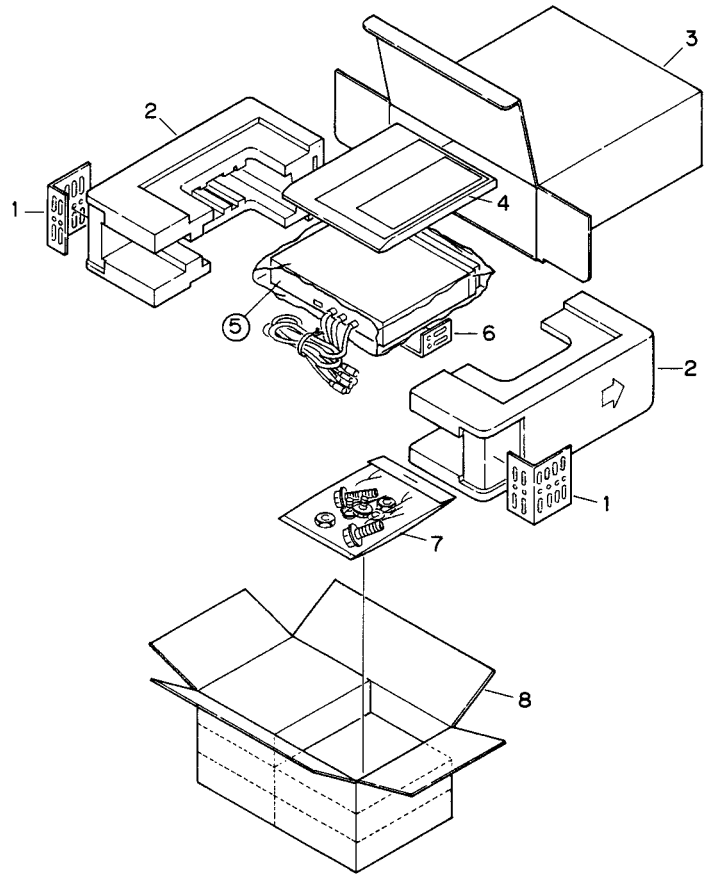


Fig. 30

• Parts List

Mark	No.	Part No.	Description
	1	CNB1159	Mounting Bracket (BP-880/UC, 650/UC, 450/UC)
	2	CZH3110	Styrofoam (BP-880)
		CZH3111	Styrofoam (BP-650, 450)
	3	CZH3112	Carton (BP-880/UC)
		CZH3114	Carton (BP-880/ES)
		CZH3116	Carton (BP-880/EW)
		CZH3118	Carton (BP-650/UC)
		CZH3120	Carton (BP-650/ES)
		CZH3122	Carton (BP-650/EW)
		CZH3124	Carton (BP-450/UC)
		CZH3126	Carton (BP-450/ES)
	4	CRD1147	Installation Manual (BP-880/UC, 650/UC, 450/UC)
		CZR2045	Owner's Manual (BP-880/UC, 650/UC, 450/UC)
		CZR2047	Owner's Manual (BP-880/ES, 650/ES, 450/ES)
		CZR2048	Owner's Manual (BP-880/EW, 650/EW)

Mark	No.	Part No.	Description
	5		Cover
	6	CNB-720	Mounting Bracket (BP-880/EW,ES, 650/EW,ES, 450/ES)
	7	CZE2017	Screw Assy (BP-880/EW,ES, 650/EW,ES, 450/ES)
		CZE2021	Screw Assy (BP-880/UC, 650/UC, 450/UC)
	7-1	CBA-102	Screw
	7-2	HMF40P080FZK	Screw
	7-3	NF50FMC	Nut
	8	CZH3113	Contain Box (BP-880/UC)
		CZH3119	Contain Box (BP-650/UC)
		CZH3125	Contain Box (BP-450/UC)