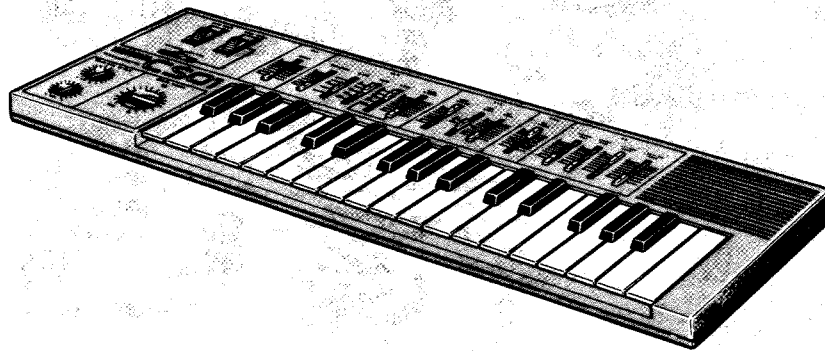


# YAMAHA

## COMBO SYNTHESIZER

### CS 01



# SERVICE MANUAL

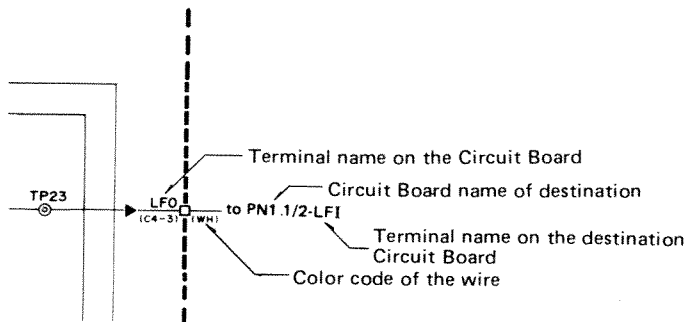


# INDEX

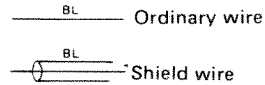
CORDING GUIDE .....	2
DISASSEMBLY PROCEDURE .....	3
SPECIFICATIONS .....	4
PANEL LAYOUT .....	5
PN CIRCUIT BOARD · BC CIRCUIT BOARD (BC1) .....	6
CHECKS & ADJUSTMENT .....	7
OFFSET VOLTAGE ADJUSTMENT OF BC1 .....	8
PART LIST (CS01/BC01) .....	9

# CORDING GUIDE

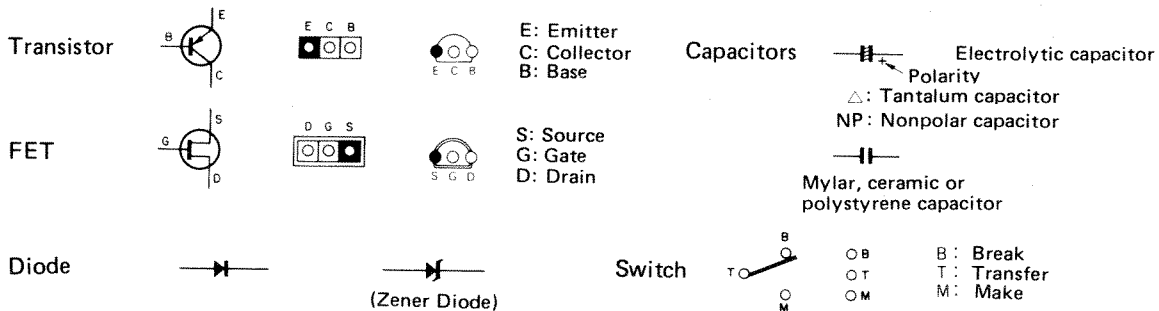
## 1 Wiring Notation



Note: Types of wire



## 2 Symbol Description



## 3 Abbreviations of Wire Color Codes

BLACK (クロ).....BL	BROWN (チャ).....BR	RED (アカ).....RE
ORANGE (ダイ).....OR	YELLOW (キイ).....YE	GREEN (ミド).....GR
BLUE (アオ).....BE	VIOLET (ムラ).....VI	GRAY (ハイ).....GY
WHITE (シロ).....WH	GRASS GREEN (クサ).....GG	SKY BLUE (ソラ).....SB
PINK (モモ).....PK	TRANSPARENT (トウメイ).....TR	

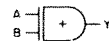
## 4 Relation of Color Coding and Notes

C	C≠	D	D≠	E	F	F≠	G	G≠	A	A≠	B
BR	RE	OR	YE	GR	BE	VI	GY	WH	GG	SB	PK
(チャ)	(アカ)	(ダイ)	(キイ)	(ミド)	(アオ)	(ムラ)	(ハイ)	(シロ)	(クサ)	(ソラ)	(モモ)

## 5 Logic Symbols

	MIL	YAMAHA
NOT		
NOR		
NAND		

Exclusive OR (排他的論理和)



Truth Table

A	B	Y
L	L	L
H	L	H
L	H	H
H	H	L

NOT (Inverter)



Truth Table

A	Y
L	H
H	L

OR



Truth Table

A	B	Y
L	L	L
H	L	H
L	H	H
H	H	H

NOR



Truth Table

A	B	Y
L	L	H
H	L	L
L	H	L
H	H	L

AND



Truth Table

A	B	Y
L	L	L
H	L	L
L	H	L
H	H	H

NAND



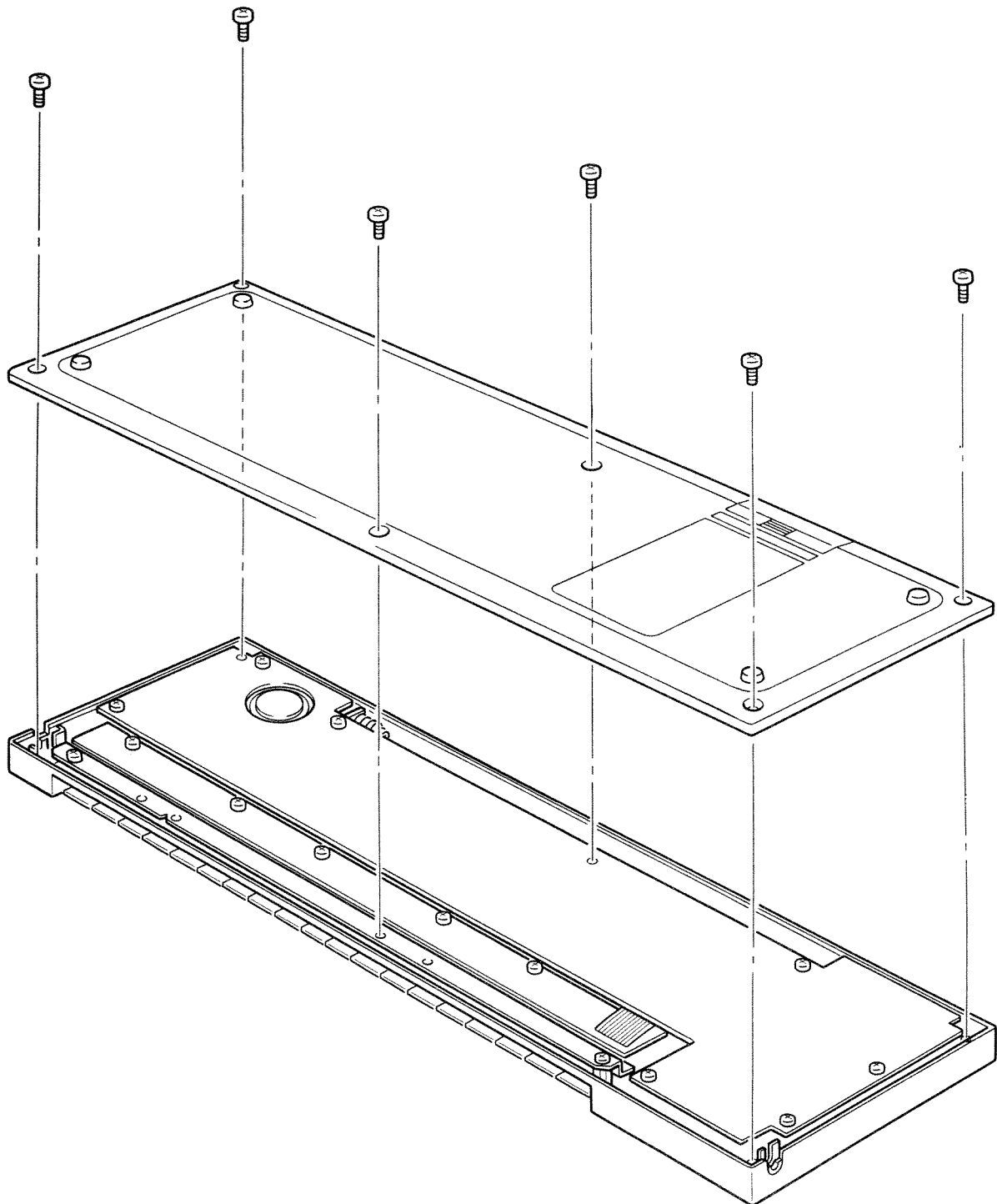
Truth Table

A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

## DISASSEMBLY PROCEDURE

- **Removal of Bottom Panel**

Remove all screws illustrated above and take away the bottom panel.



# SPECIFICATIONS

KEYBOARD	32 keys, F <sub>2</sub> ~ C <sub>5</sub>
LFO	Speed 0.8 ~ 21 Hz
GLISSANDO	Speed 0 ~ 6 ± 2 Sec.
VCO	PITCH - ~ 0 ~ + FEET 4', 8', 16', 32', NOISE WAVE $\wedge$ , $\searrow$ , $\square$ , $\sqcup$ , PWM PWM Speed 0.6 ~ 12 Hz
VCF	CUT OFF L ~ H RESONANCE H/L EG DEPTH 0 ~ 10
VCA	EG DEPTH 0 ~ 10
EG	ATTACH TIME S ~ L DECAY TIME S ~ L SUSTAIN LEVEL 0 ~ 10 RELEASE TIME S ~ L
WHEELS	PITCH BEND 1 oct MODULATION VCO/VCF
BREATH CONTROL	VCF 0 ~ 10 VCA 0 ~ 10
POWER SWITCH/VOLUME	0 ~ 10
SIDE PANEL	LINE OUT 10 k $\Omega$ PHONES 8 ~ 150 $\Omega$ DC IN (use PA-1 adaptor) BREATH CONT. IN BC1
POWER SOURCE	"R6" or "AA" battery x 6 (9 V) AC Adaptor PA-1 (DC 12 V, 300 mA)
POWER CONSUMPTION	No Output, 550 mW Maximum Output, 2700 mW
DIMENSIONS (WxHxD)	489 x 36 x 160 mm (19-1/4" x 1-1/2" x 6-3/8")
WEIGHT	1.5 kg (3 lbs, 5 oz)
ACCESSORIES	Breath Controller BC1 ACAdaptor PA-1 Soft Case SC-01 Stereo Headphone MH10

*Specifications are subject to change without notice.*

# CHECKS & ADJUSTMENT

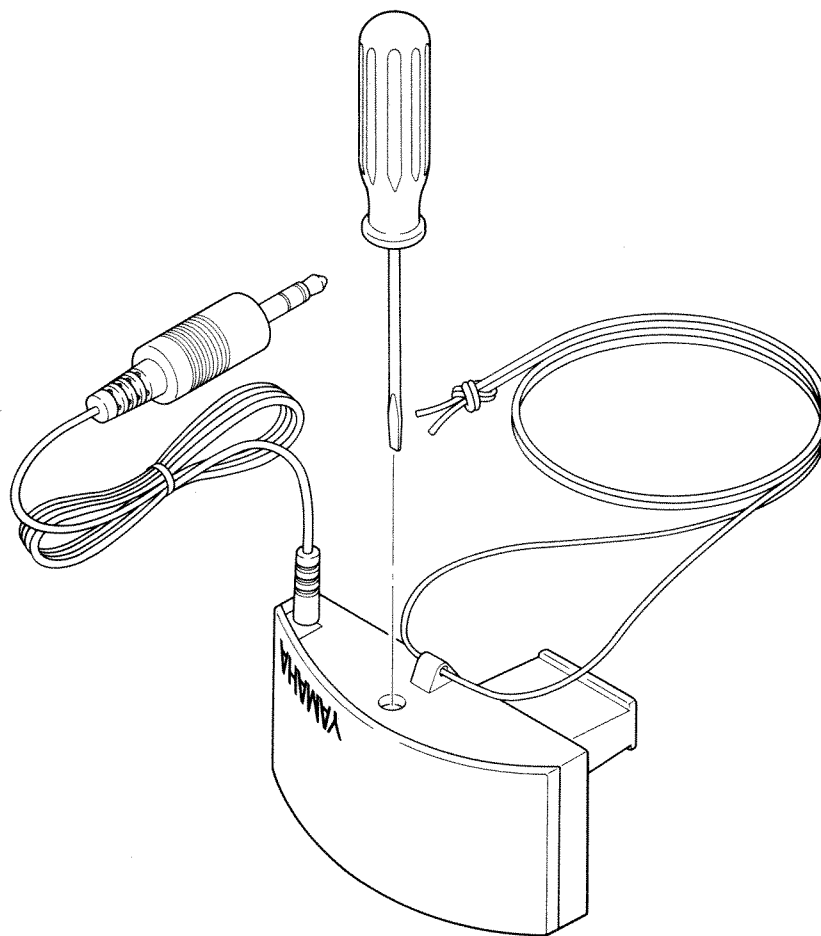
## 調整基準 ADJUSTMENT

Adjustment 調整項目	Measurment 測定点	Control Setting セッティング	Value 測定値	Adjustment Location 調整VR
Master OSC	TP7	<input type="text" value="PITCH"/> .....Center	565.3 ± 0.5KHz	VR3
White Noise	TP1	<input type="text" value="FEET"/> .....WN	-15 ± 1dBm	VR2
VCF	TP3	Set Pin 2 of <input type="text" value="FREQ CUT OFF"/> lever to 0.8V with it <input type="text" value="FREQ CUT OFF"/> レバー で、その2ピンを0.8Vにする <input type="text" value="RESONANCE"/> .....H <input type="text" value="FEET"/> .....4 <input type="text" value="WAVE"/> .....0 <input type="text" value="VCF EG DEPTH"/> .....0	Peak Point	VR4
			2Vp-p	VR1
Battery Indicator	LED is turned on and off when battery voltage is less than 6.5 ± 0.5V 電池の電圧が6.5 ± 0.5V以下でLEDが点滅します。			

## OFFSET VOLTAGE ADJUSTMENT OF BC1

The CS01 produces a sound even when the BC1 is not blown. Or no sound is produced unless BC1 is blown hard to a certain degree. In this case, adjust the trim potentiometer for the BC1 in the following manner:

1. Place the CS01 in the basic setting specified in the instruction manual, and set the breath control VCA knob to "10".
2. Connect the BC1 to the CS01.
3. Using a small screwdriver, turn the BC1 trim potentiometer all the way to the right, and sound will be produced through the CS01. Next, turn it slowly to the left and when the CS01 stops sounding, stop turning the trim potentiometer.





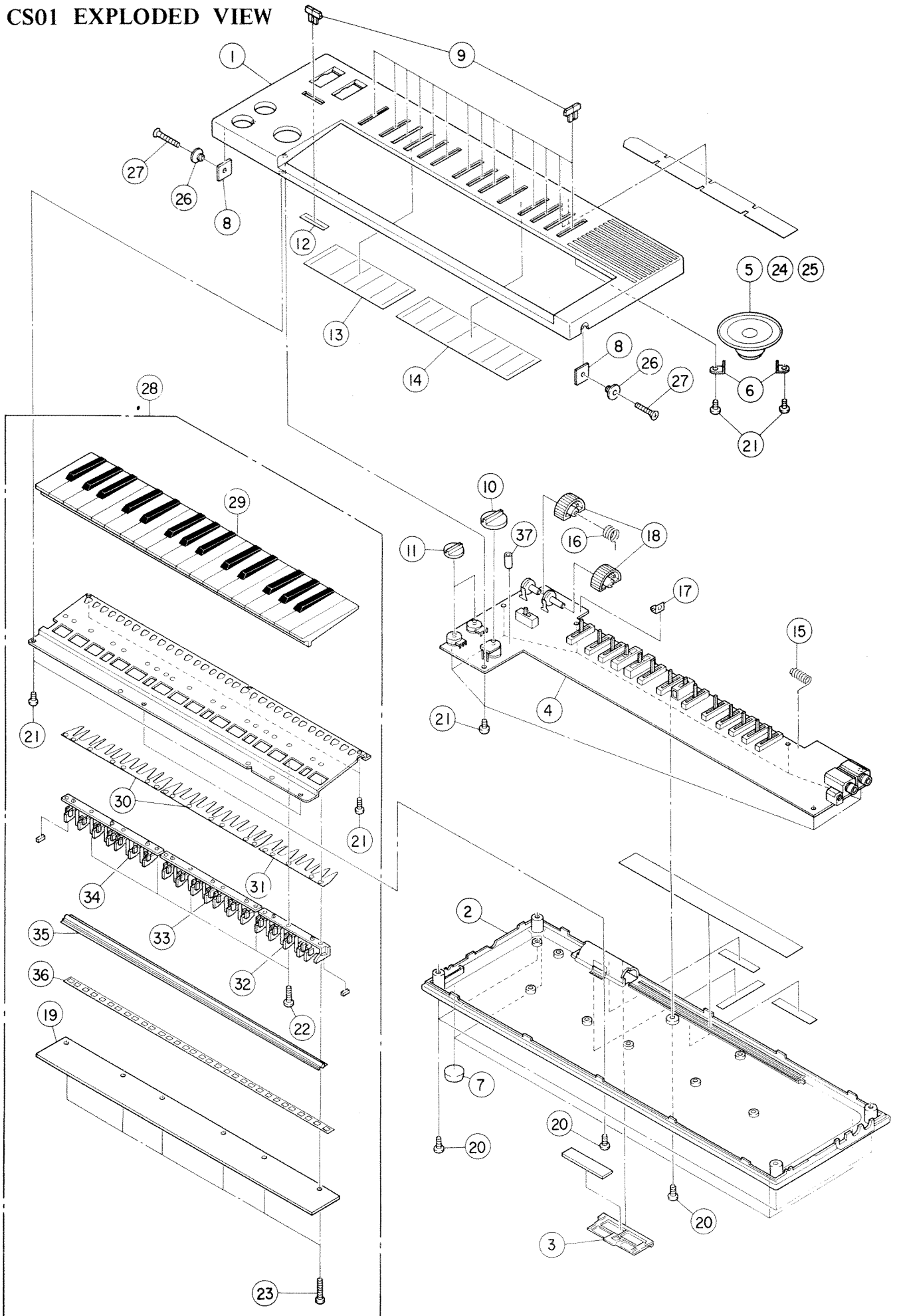
# YAMAHA

COMBO SYNTHESIZER  
CS01/BC1

## PARTS LIST

03 — 06 — 04 — 013

# CS01 EXPLODED VIEW



Mechanical Parts (内装部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※ 1	CB 82 51 90	Top Case	上ケース		
※ 2	CB 82 52 00	Bottom Case	下ケース		
※ 3	CB 82 52 10	Battery Cover	電池蓋		
※ 4	NA 80 90 60	Circuit Board, PN	PNシート		
※ 5	JA 06 52 10	Speaker	スピーカー		
※ 6	AA 82 42 50	Holder,Speaker	スピーカー固定金具		
7	CB 03 71 20	Leg	スベリ座		
※ 8	AA 82 42 20	Nut,Strap pin	特殊ナット		
※ 9	CB 82 52 20	Knob, Slide	ツマミ		
※ 10	CB 82 52 30	Knob, Rotary, Large	"	VOLUME	
※ 11	CB 82 52 40	Knob, Rotary, Small	"	BREATH CONTROL	
※ 12	CA 80 33 00	Dust-proof Cover	40×10×0.35	防塵クロス	
※ 13	CA 80 33 10	-do-	108×47×0.35	"	
※ 14	CA 80 33 20	-do-	153.5×47×0.35	"	
※ 15	AA 82 42 30	Spring, Battery	接点バネ		
※ 16	AA 82 42 40	Spring, wheel	ホイール戻りバネ		
※ 17	BB 80 18 70	Terminal, Battery	端子板		
※ 18	CB 82 52 50	Knob, Wheel	ホイール		
※ 19	NA 80 90 80	Circuit Board, MK	MKシート		
20	Ei 33 01 00	Binded Tapping Schew	3×10 BI	バインド・タッピング・ネジ	
21	Ei 33 00 80	-do-	3×8 BI	"	
22	Ei 03 01 40	-do-	3×14 Ye	"	
23	Ei 03 01 80	-do-	3×18 Ye	"	
24	LB 20 13 80	Housing 2P	H2P-SHF	2Pハウジング	JA06521
25	BB 00 44 30	Contact Pin		コンタクト・ピン	JA06521
26	BB 80 11 70	Strap Pin		肩掛けバンド・ピン	SG800
※ 27	EF 23 01 60	Oval Head Screw	3×16 Cr	丸皿小ネジ	
※ 28	NB 82 42 00	Keyboard Assembly		鍵盤Ass'y	
29	CB 04 03 70	White Key	F	白鍵	PC-100
	CB 04 03 80	-do-	G	"	PC-100
	CB 04 03 90	-do-	A	"	PC-100
	CB 04 04 00	-do-	B	"	PC-100
	CB 04 04 10	-do-	C	"	PC-100
	CB 04 04 20	-do-	D	"	PC-100
	CB 04 04 30	-do-	E	"	PC-100
	CB 04 04 40	-do-	F', C'	"	PC-100
	CB 04 04 50	Black Key		黒鍵	PC-100
※ 30	AA 05 30 70	Spring, Keyboard	F12	鍵バネ	
※ 31	AA 05 30 80	-do-	F8	"	
※ 32	CB 04 04 80	Holder	F8	ホルダー	
※ 33	CB 04 04 70	-do-	F12	"	
※ 34	CB 04 11 20	-do-	LF12	"	
※ 35	CB 04 22 70	Rubber Contact	F32-6	可動導伝コム	
※ 36	CB 04 16 00	Insulation Spacer		絶縁スペーサー	
※ 37	CB 82 52 60	LED Spacer		LEDスペーサー	

※ : New Parts (新部品)

Electrical Parts (電気部品) (1/2)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
	NA 80 90 60	Circuit Board, PN	#8937	PNシート	
	iG 02 60 00	IC	iG02600	IC	VCA
	iG 02 60 10	-do-	iG02601	"	VCF
	iG 04 58 00	-do-	LA4138	"	Power Amp.
	iG 05 38 00	-do-	M5232L	"	LED Driver
*	iG 06 12 00	-do- 500mA9v	NJM78M09H	"	Regulator
*	iG 06 82 00	-do-	TC7476BP	"	FF
*	iT 10 15 00	-do-	YM10150	"	DTG
	iA 10 15 70	Transistor	2SA1015(O,Y)	トランジスタ	
	iA 11 64 00	-do-	2SA1164(Y)	"	
	iC 07 52 20	-do-	2SC752(Y)	"	
	iC 18 15 70	-do-	2SC1815(O,Y)	"	
	iE 00 00 10	FET	2SK30A(Y)	FET	
	iF 00 00 40	Diode	1S1555	ダイオード	
	iF 00 03 00	Zener Diode	1S1715P	ツェナー・ダイオード	
	iF 00 08 60	-do-	WZ5.6	"	
	iF 00 11 90	LED	TLR-124	LED	
	iF 00 14 70	Zener Diode	RD6.2EB2	ツェナー・ダイオード	
	iH 00 05 90	Diode	10E-1	ダイオード	
*	HQ 46 00 10	Slide Pot, Resistor	A10KΩ	スライド・ボリューム	FREQ CUT OFF
*	HQ 46 00 20	-do-	B10KΩ	"	PITCH VCF
*	HQ 46 00 40	-do-	A1MΩ SW	"	EG, SASTAIN
*	HQ 46 00 50	-do-	SB10KΩ	"	GLISSANDO
*	HQ 46 00 60	-do-	C500KΩ	"	VCA EG-DEPTH
*	HQ 46 00 70	-do-	RD1MΩ	"	PWM SPEED
*	HQ 46 00 90	-do-	A2MΩ	"	LFO SPEED
					ATTACK, DECA-Y, RELEASE
*	HS 31 17 50	Rotary Pot. Resistor	B10K	ロータリー・ボリューム	BREATH CONTROL
*	HS 31 17 60	-do-	A10K, SW	"	POWER VOLUME
*	HS 31 18 00	-do-	A10K, 90°	"	PITCH BEND
*	HS 31 18 10	-do-	B10K, 90°	"	MODULATION
	HT 77 00 60	Trim Pot. Resistor	B10K	半固定抵抗	Noise
	HT 77 00 70	-do-	B20K	"	Master Clock, VCF Q
	HT 77 00 90	-do-	B100K	"	VCF fc
	HU 57 71 20	Metal Film Resistor	12KΩ	金属皮膜抵抗	
	HU 57 72 70	-do-	27KΩ	"	
	HU 57 73 30	-do-	33KΩ	"	
*	HU 57 82 20	-do-	220KΩ	"	
*	HZ 00 25 60	Metal Film Resistor	2.2KΩ	リニア抵抗	
	Hi 20 99 90	Solid Resistor	10MΩ	ソリッド抵抗	
	UA 55 51 00	Mylar Capacitor	0.1	小型マイラーコン	
	UA 55 51 50	-do-	0.15	"	

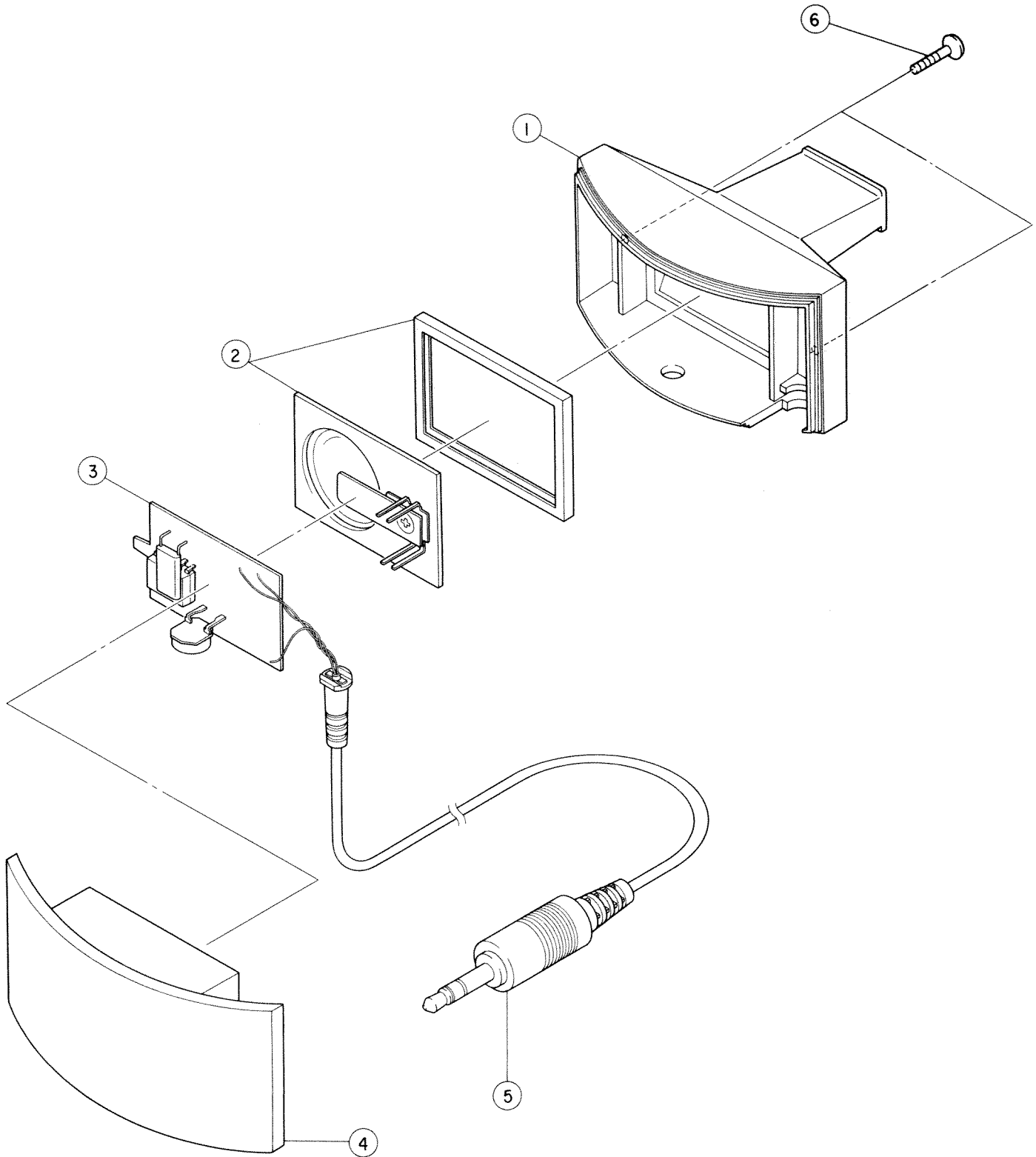
\* : New Parts (新部品)

Electrical Parts (電気部品) (2/2)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
	UJ 12 74 70	Electrolytic Capacitor	47 $\mu$ F / 10V	ケミコン	
	UJ 12 81 00	--do--	100 $\mu$ F / 10V	"	
	UJ 12 84 70	--do--	470 $\mu$ F / 10V	"	
	UJ 12 91 00	--do--	1000 $\mu$ F / 10V	"	
	UJ 13 71 00	--do--	10 $\mu$ F / 16V	"	
	UJ 13 72 20	--do--	22 $\mu$ F / 16V	"	
	UJ 14 64 70	--do--	4.7 $\mu$ F / 25V	"	
	UJ 16 54 70	--do--	0.47 $\mu$ F / 50V	"	
	UJ 16 61 00	--do--	1 $\mu$ F / 50V	"	
	UJ 16 62 20	--do--	2.2 $\mu$ F / 50V	"	
	UK 34 64 70	Bipolar Electrolytic Capacitor	4.7 $\mu$ F / 25V	BPケミコン	
*	KA 40 10 50	Slide Switch	2-2	スライド・スイッチ	RESONANCE, VCF/VCA
*	KA 40 10 60	--do--	2-5	"	FEET,WAVE
	LB 20 14 10	Base pin 2.5pitch	SE BS2P-SHF	NHコネクター	Speaker
*	LB 20 21 40	Jack, DC-IN	S-G9312	DC-INジャック	DC-IN
*	LB 30 16 40	Jack, Mini, Stereo	S-G8040	ステレオ・ミニ・ジャック	BREATH CONTROL
*	LB 30 16 50	Phone Jack, Stereo		フォン・ジャック	Head Phones
	LB 60 29 10	Base Pin 2.5pitch	SE BS12P-SHF	NHコネクター	Key Cord
*	AA 82 42 30	Spring, Battery		接点バネ	
*	AA 82 42 40	Spring, Wheel		ホイール戻りバネ	
*	BB 80 18 70	Terminal, Battery		端子板	
*	CB 82 52 50	Knob, Wheel		ホイール	
*	CB 82 52 60	LED Spacer		LEDスペーサー	
	EA 02 60 60	Pan Head Screw	2.6 $\times$ 6 Ye	ナベ小ネジ	NJM 78M09H
	EV 10 02 60	Hexagonal Nut	2.6	六角ナット	NJM 78M09H
*	NA 80 90 80	Circuit Board, MK	#8939	MKシート	
	IF 00 00 40	Diode	1S1555	ダイオード	
*	Mi 80 13 50	Flat Cable	12P	フラットケーブル	
	BB 00 44 90	Contact	SHF-001T08CS	コンタクト	
	LB 60 29 20	Housing 2.5pitch	H12P-SHF	2.5ピッチ・ハウジング	

\* : New Parts (新部品)

# BC1 EXPLODED VIEW



### Mechanical Parts (内装部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
* 1	CB 82 53 30	Mouthpiece	マウスピース		
* 2	iT 43 90 40	Senser Unit	センサーユニット		
* 3	NA 80 90 70	Circuit Board, BC	BCシート		
* 4	NB 82 42 60	Front Case Ass'y	フロントケース		
* 5	Mi 80 13 40	Plug, Minutia	ミニプラグ		
* 6	EM 32 61 00	Oval Head Tapping Screw	2.6×10 BL 丸皿タッピンネジ		
	CB 82 53 60	Soft Case	ソフトケース		

\* : New Parts (新部品)

### Electrical Parts (電気部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
* 1	NA 80 90 70	Circuit Board, BC	BCシート		
	iG 00 13 90	IC	NJM45558DV IC		
	iF 00 00 40	Diode	1S1555 ツェナーダイオード		
	iF 00 16 60	Zener Diode	RD3.6EBI ツェナーダイオード		
* 2	HY 00 15 20	Semi Variable Resister	B-50KΩ 半固定抵抗		

\* : New Parts (新部品)

## **CS01 SERVICE MANUAL**

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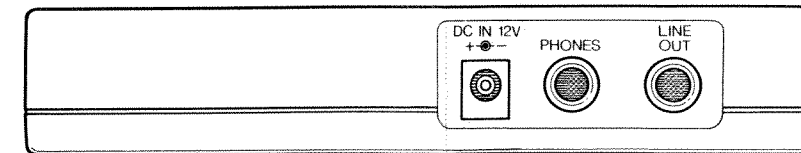
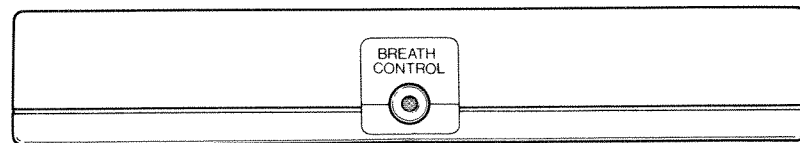
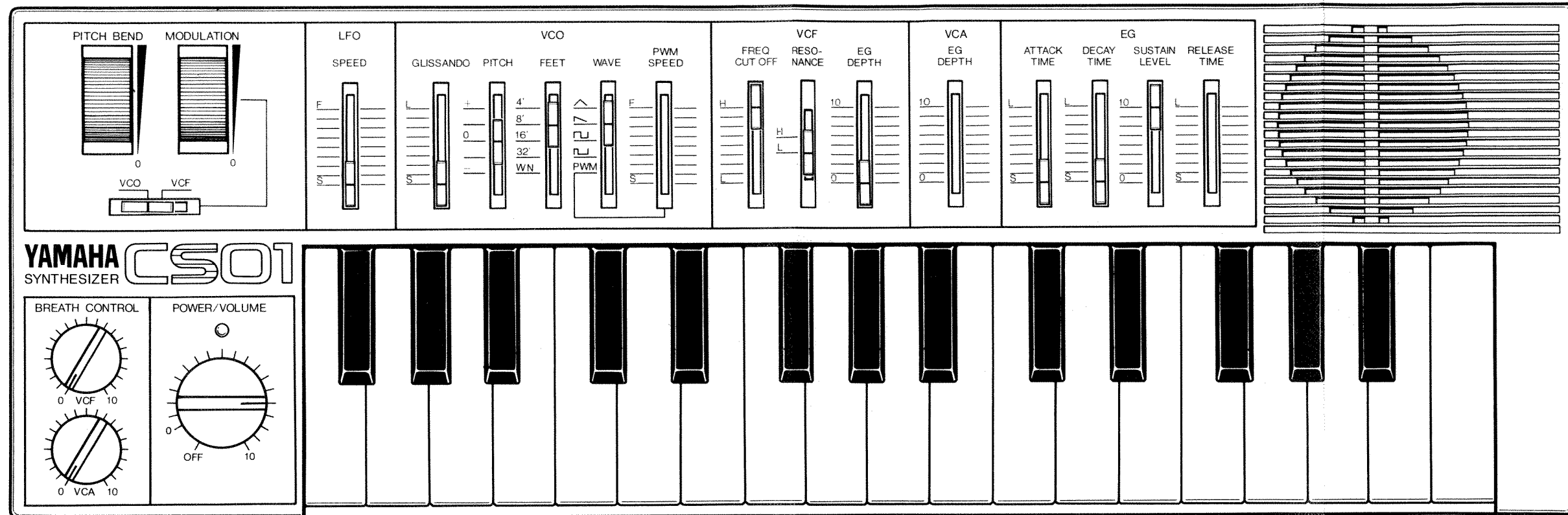
1982年 5月 初版発行

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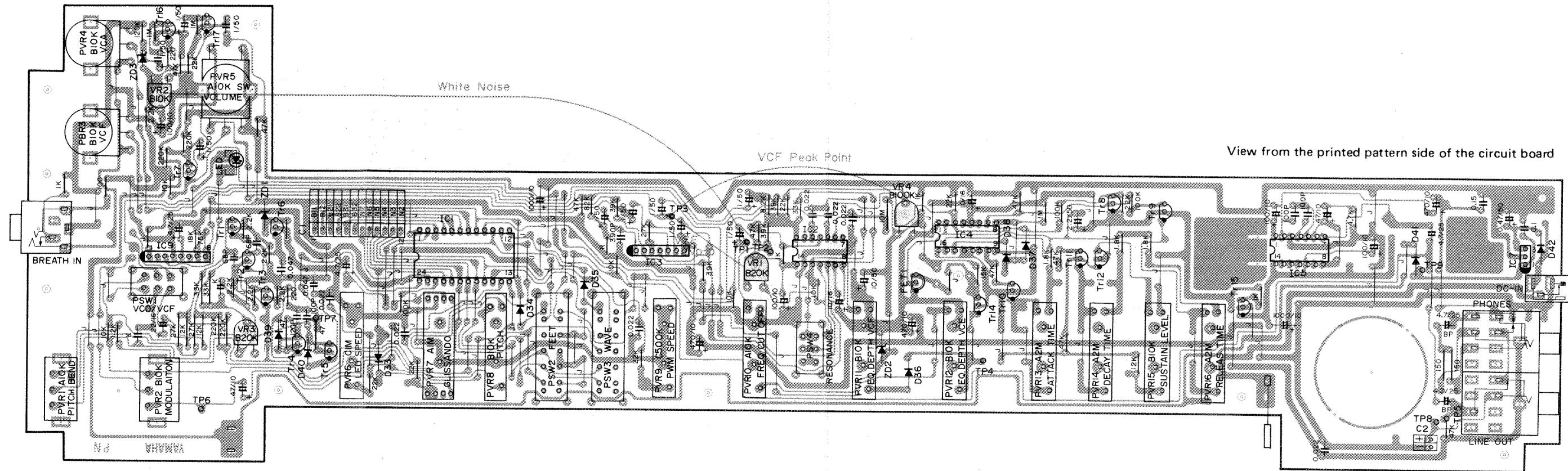
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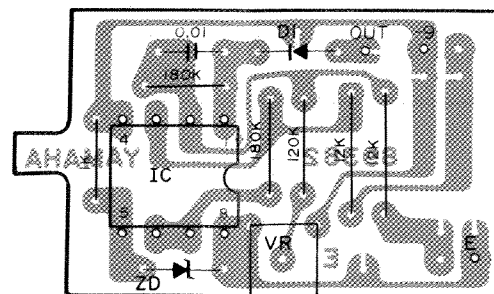
# PANEL LAYOUT



# PN CIRCUIT BOARD · BC CIRCUIT BOARD (BC1)



View from the component side of the circuit board



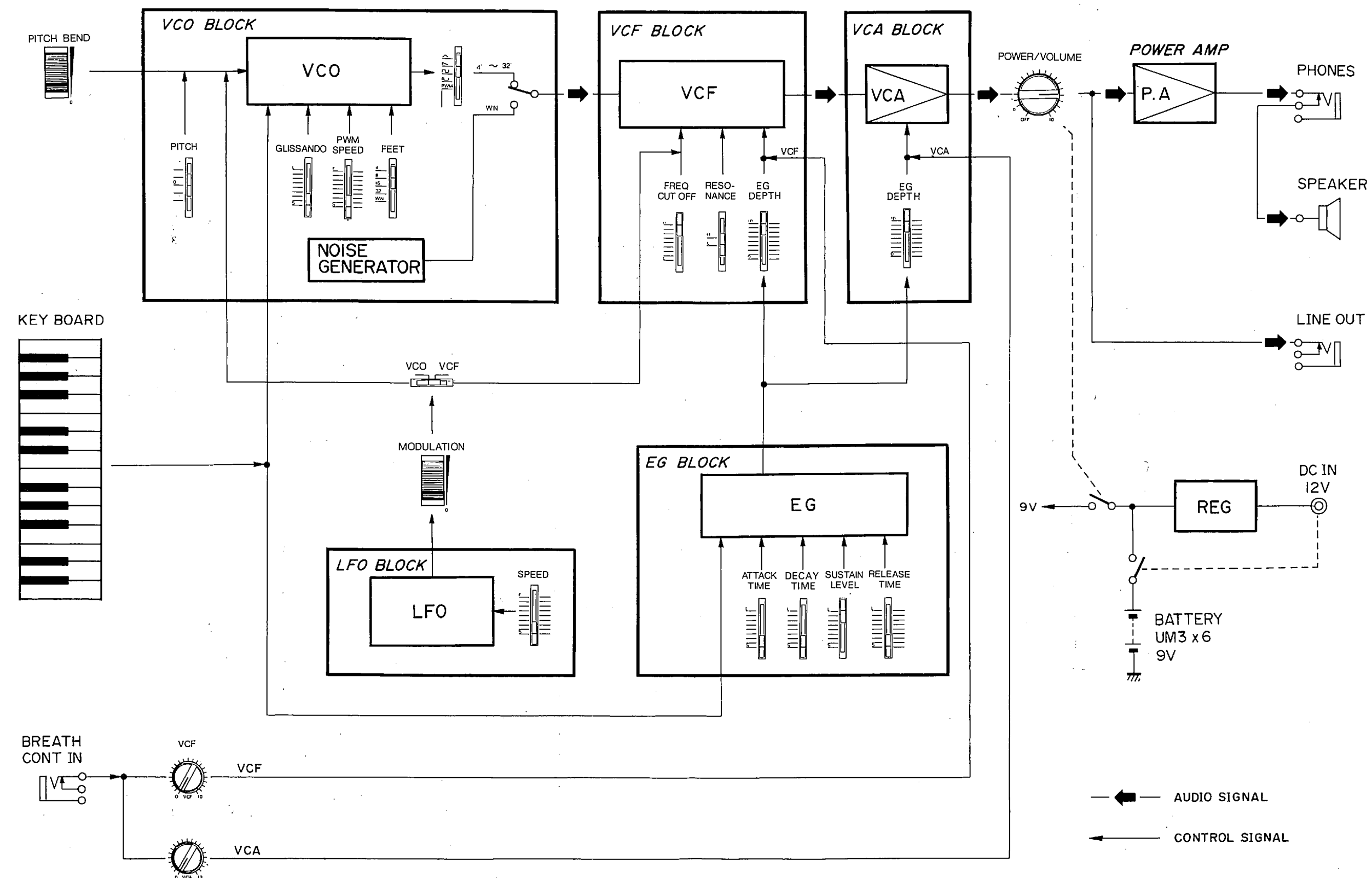
- NOTE)
1. IC : NJM4558DV
  2. Diode  
Di : 1S1555  
ZD : RD3.6EB1

KEC-90564-1Z    KEC-90563-1X

NOTE)

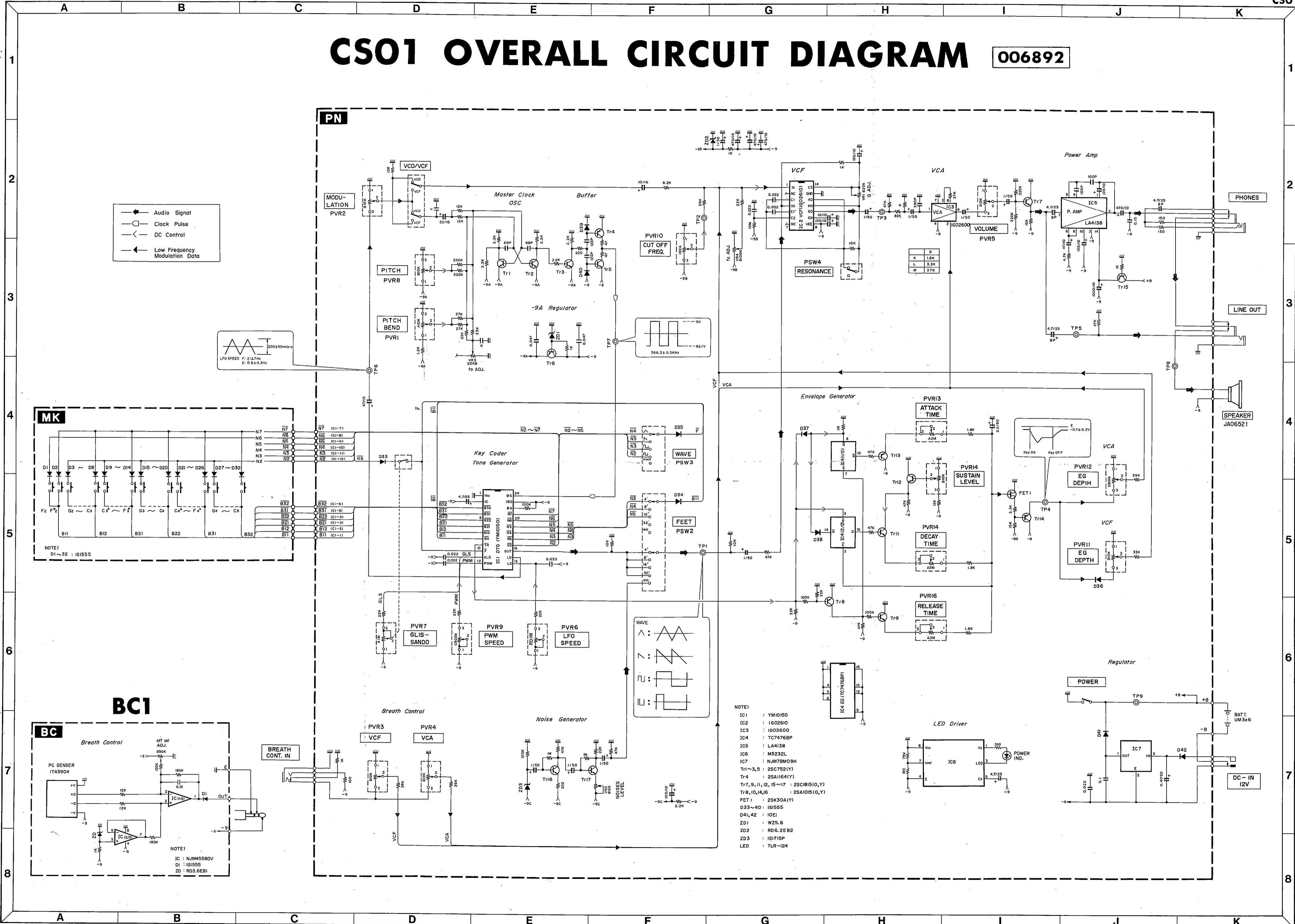
1. IC  
IC1 : YM10150  
IC2 : iG02610  
IC3 : iG02600  
IC4 : TC7476BP  
IC5 : LA4138  
IC6 : M5232L  
IC7 : NJM78M09H
2. Transistor  
Tr 1 ~ 3, 5 : 2SC752 (Y)  
Tr 4 : 2SA1164 (Y)  
Tr 8, 9, 11, 12, 15 ~ 17 : 2SC1815 (O, Y)  
Tr 8, 10, 14, 16 : 2SA1015 (O, Y)
3. FET  
FET1 : 2SA30A (Y)
4. Diode  
D1 ~ 40 : 1S1555  
D41, 42 : 10E-1  
ZD1 : WZ5.6  
ZD2 : RD6.2EB2  
ZD3 : IS1715P  
LED : TLR-124

# CS01 BLOCK DIAGRAM 006892



# CS01 OVERALL CIRCUIT DIAGRAM

006892



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