Ibanez

SERVICE MANUAL

NO. 021

DIGITAL DELAY
DM1000

★ SPECIFICATIONS

1) CONTROLS
INPUT LEVEL, TONE mSec (DELAY RANGE), DELAY TIME, WIDTH, SPEED, FEEDBACK (PULL INVERT), DRY LEVEL, DELAY LEVEL, EFFECT/BYPASS SWITCH, HOLD SWITCH

2) JACKS
* FRONT : INPUT, MIX OUTPUT, INVERT-MIX OUTPUT
* REAR : INPUT, DRY OUTPUT, MIX OUTPUT, INVERT-MIX OUTPUT, BYPASS/EFFECT FOOTSWITCH, HOLD FOOTSWITCH

3) DELAY TIME ..... 1.75msec to 900msec

4) FREQUENCY RESPONSE
DELAY ..... 30Hz to 8KHz (+0.5, −3dB)
DRY ..... 30Hz to 20KHz (+0, −0.5dB)

5) INPUT CHARACTERISTICS (FRONT & REAR)
INSTRUMENT ..... IMPEDANCE : 500KΩ, GAIN : 0dB
MICROPHONE ..... IMPEDANCE : 5KΩ, GAIN : 30dB

6) OUTPUT IMPEDANCE (FRONT & REAR)
DRY, MIX, INVERT-MIX ..... LESS THAN 10KΩ

7) TONE CONTROL ..... 6KHz ± 12dB

8) MAXIMUM INPUT LEVEL
DELAY ..... +17dBm (ABOVE +3dBm LIMITER ON)
DRY ..... +17dBm

9) EQUIVALENT INPUT NOISE ..... −95dBm (IHF-A, INPUT SHORTED)

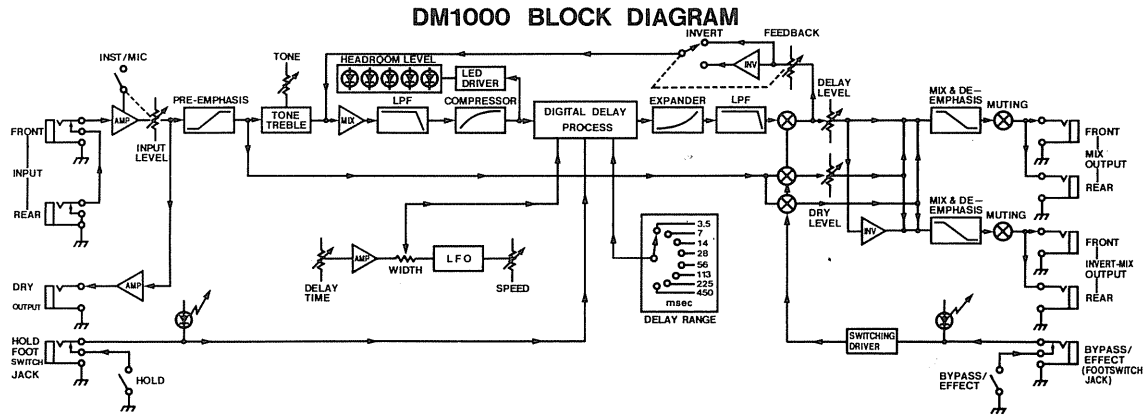
10) TOTAL HARMONIC DISTORTION
DELAY ..... LESS THAN 1%
DRY ..... LESS THAN 0.2%

11) WEIGHT 3Kg. (6.6lbs)

12) DIMENSIONS (W×H×D) ..... 482mm×44mm×233mm (19.0×1.8×9.2in)

13) POWER REQUIREMENT ..... 117V AC 60Hz 11W
220V-240V AC 50Hz 14W

★ BLOCK DIAGRAMS



★ HOW TO REMOVE THE CASE → SEE PAGE 8.

★ PARTS LIST − 1 (PLEASE CHECK YOUR NATION AND THE LINE VOLTAGE)

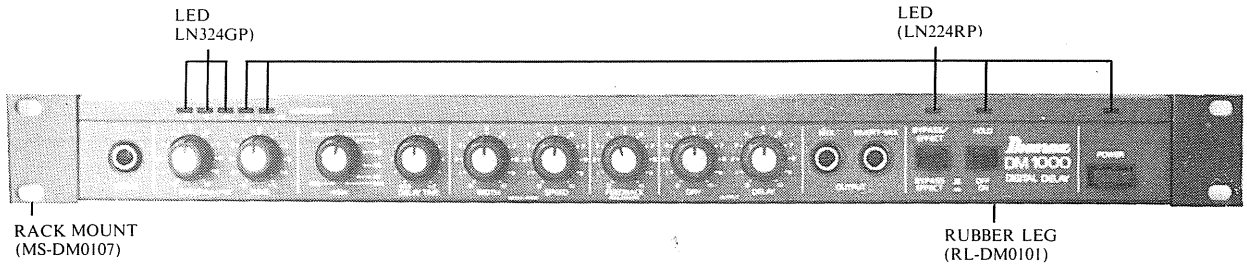
TYPE	A.C. LINE (v)	NATION	A.C. CORD	FUSE	FUSE HOLDER	POWER TRANS.	
M	100	JAPAN	0.75V FF2M	0.5A 30mm 61ML	S-N2059	MT-DM0101	
N	120	U.S.A.	SVT182C6FT	0.5A 30mm 61ML	S-N2059	MT-DM0102	
T	120	CANADA					
Q	220	SWITZERLAND	KP419E	0.5A 20mm ES2-0500	S-N2250	MT-DM0103	
U	220	EUROPE	BB6721	0.5A 20mm ES2-0500	S-N2250	MT-DM0103	
R	240	U.K.	BS	0.5A 20mm ES2-0500	S-N2250	MT-DM0103	
S	240	AUSTRALIA	KP550LTSA36FT	0.5A 20mm ES2-0500	S-N2250	MT-DM0103	

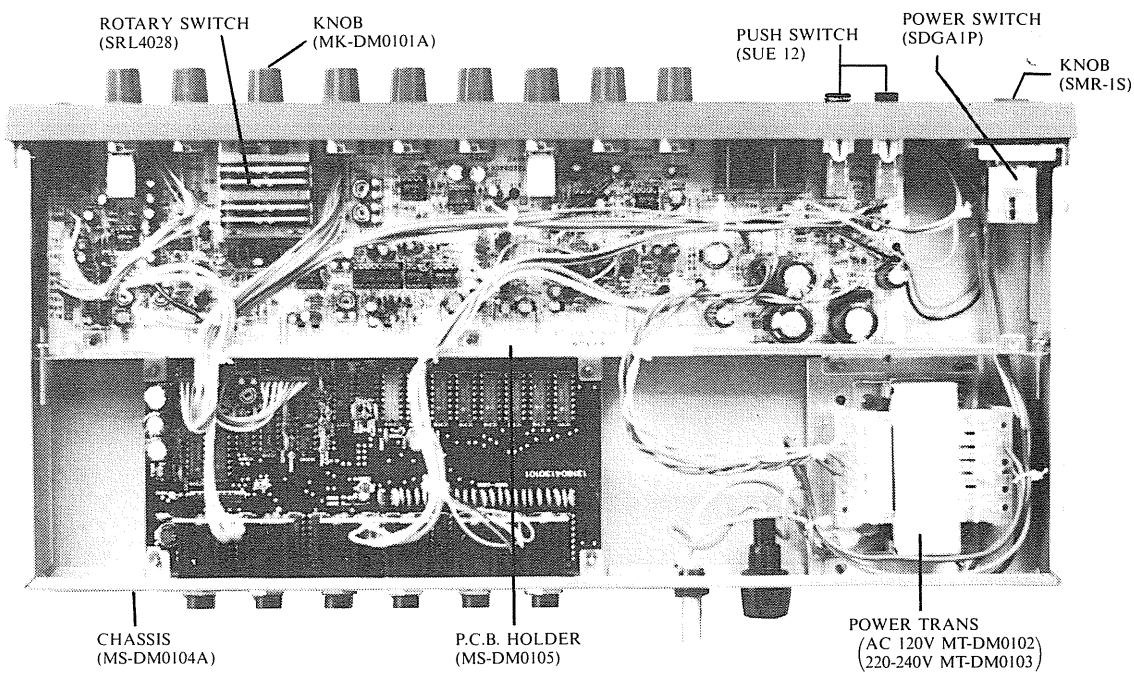
★ PARTS LIST – 2

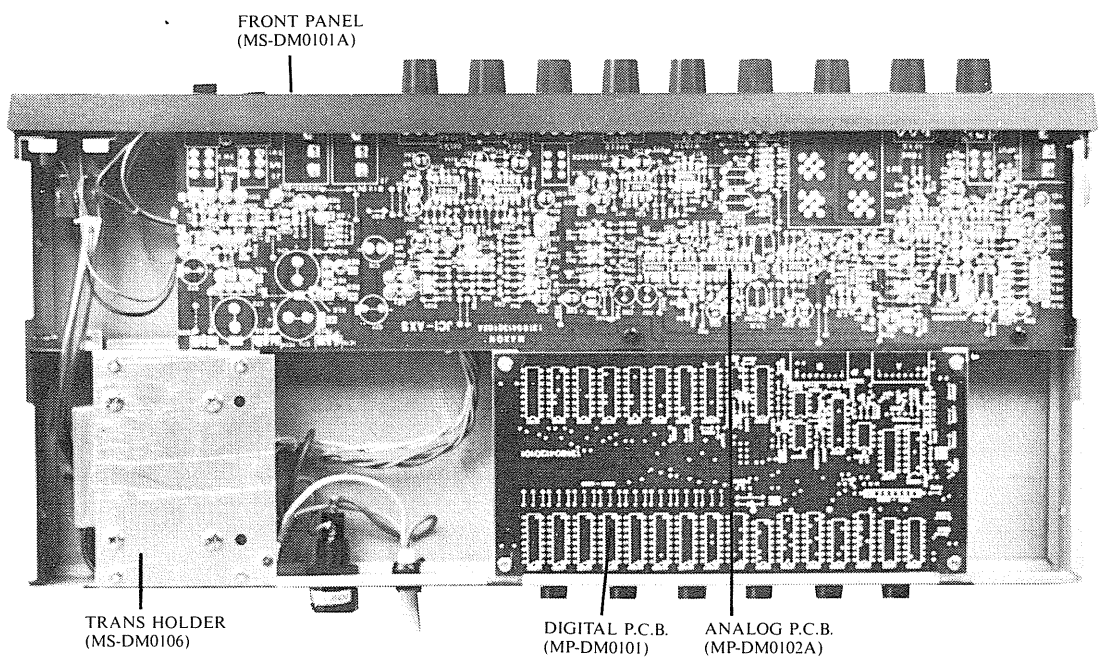
PARTS NAME	TYPE	PARTS NO.	REF. NO.	
POWER TRANS.	(CHECK YOUR NATION)	MT-DM0101/2/3		
POWER SWITCH		SDGA1P		
AC CORD	(CHECK YOUR NATION)			
AC CORD BUSHING	STRAIN RELIEF	SR-5N-4		
FUSE	(CHECK YOUR NATION)	0.5A 20mm/30mm		
FUSE HOLDER	(CHECK YOUR NATION)	SN2059/2250		
FRONT PANEL		MS-DM0101A		
TOP CASE		MS-DM0102A		
BOTTOM CASE		MS-DM0103A		
CHASSIS		MS-DM0104A		
P.C.B. HOLDER		MS-DM0105		
TRANS. HOLDER		MS-DM0106		
RACK MOUNT	(2-USED)	MS-DM0107		
KNOB	(9-USED)	MK-DM0101A		
KNOB	POWER SWITCH	SMR-1(S)		
RUBBER LEG	(4-USED)	RL-DM0101		
PARTS ON P.C.B.	(MP-DM0102A)	(ANALOG P.C.B.)		
ROTARY SWITCH	(1-USED)	SRL4028		
PUSH SWITCH	(2-USED)	SUE12		
VARIABLE R.	(2-USED) 10KA	EVHCCAP20A14	VR3, 8	
VARIABLE R.	(2-USED) 50KB	EVHCCAP20B54	VR6, 7	
VARIABLE R.	(1-USED) 10KA, SW	EVHY13K20A14	VR1	
VARIABLE R.	(1-USED) 50KC, SW	EVHY13K20C54	VR4	
VARIABLE R.	(1-USED) 50KG, CC	EVH4KAP20G54	VR2	
VARIABLE R.	(1-USED) 500KC	EVHCCAP20C55	VR5	
JACK	(9-USED)	HLJ4317-01-100	J1~9	
P.C.B.		MP-DM0102A		
LED	(5-USED) RED	LN224RP		
LED	(3-USED) GREEN	LN324GP		
SEMI FIXED R.	(4-USED) 10K	RVF8P-14	SR3, 4, 5, 6	
SEMI FIXED R.	(1-USED) 50K	RVF8P-54	SR2	
SEMI FIXED R.	(1-USED) 100K	RVF8P-15	SR1	
CONNECTOR	(2-USED) 8PIN	HONDA-P8		
IC	(9-USED)	TA75558P ※	IC1~8, 10	
IC	(1-USED)	TL062 ※	IC9	
IC	(1-USED)	NE570N ※	IC11	
IC	(1-USED)	AN6884	IC12	
IC	(1-USED)	μA7805 ※	IC13	
IC	(1-USED)	μA7812 ※	IC14	
IC	(1-USED)	μA7912 ※	IC15	
TRANSISTOR	(10-USED)	2SC1815BL ※	Q1~4, 6~8, 15, 16, 18	
TRANSISTOR	(2-USED)	2SA1015Y ※	Q5, 17	
FET	(6-USED)	2SK30AY/GR ※	Q9~14	
DIODE	(24-USED)	1S1588/M8555 ※	D1~24	
DIODE BRIDGE	(2-USED)	1B4B41	DB1, 2	
P.C.B.		MP-DM0101		
PARTS ON P.C.B.	(MP-DM0101)	(DIGITAL P.C.B.)		
IC	(2-USED)	SN74LS08 ※	IC201, 202	
IC	(2-USED)	SN74LS283 ※	IC203, 204	
IC	(3-USED)	SN74LS393 ※	IC205~207	
IC	(1-USED)	TBP18S030-1000	IC208	
IC	(4-USED)	SN74LS375	IC209~212	
IC	(4-USED)	SN74LS157 ※	IC213~216	
IC	(1-USED)	HD/MC14559B ※	IC217	
IC	(1-USED)	MC3408/HA17408P ※	IC218	
IC	(1-USED)	TC4053BP ※	IC219	
IC	(8-USED)	TMM416P-3/4 ※	IC220~227	
IC	(1-USED)	SN74LS00 ※	IC228	
IC	(1-USED)	TA75558P ※	IC229	
IC	(1-USED)	TL082 ※	IC230	
IC	(1-USED)	LM311J-8/NJM311D ※	IC231	
IC	(1-USED)	LM318J-8 ※	IC232	
TRANSISTER	(1-USED)	2SC1583(F) ※	Q201	
TRANSISTER	(1-USED)	2SA1015(Y) ※	Q202	
DIODE	(1-USED)	RD5.1EB ※	D201	
DIODE	(2-USED)	1S1588/M8555 ※	D202, 203	
SEMI FIXED R.	(1-USED) 10K	RVF8P-14	SR201	
NETWORK R.	(1-USED) 1K	EXB-P88 102J		
DIGITAL P.C.B. Assy.	MP-DM0101-ASSY			

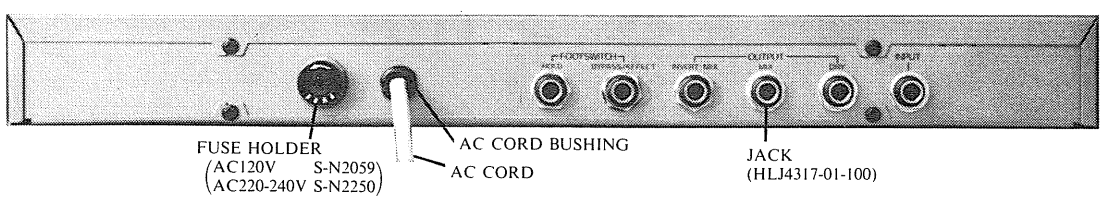
※ ; OR EQUIVALENT PARTS

★ DISPOSITION OF PARTS









★ ADJUSTMENTS

[I] VOLTAGE CHECK

1) [G] to [17] : +5V
2) [G] to C76 (R151) : +12V
3) [G] to C77 (R152) : −12V

[II] CLOCK FREQUENCY

1) Connect the SYNCHROSCOPE and the FREQUENCY COUNTER to pin6 of IC207 on DIGITAL P.C.B.
2) Set knobs as follows. WIDTH : "O", DELAY TIME : "MAX." (×2)
   Adjust SR3 for a frequency of 73KHz.
3) Set knobs as follows. WIDTH : "O", DELAY TIME : "MIN." (×0.5)
   Adjust SR2 for a frequency of 292KHz.
4) Set knobs as follows. WIDTH : "MAX." SPEED "5"
   Check the clock periodic time 3μsec to 13μsec.

[III] BIAS OF NE570 & A-D CONVERTER

1) Put 400Hz 0dBm (775mV) sinewave into INPUT.
2) Set knobs as follows. INPUT, DELAY : "MAX."
   FEEDBACK, DRY : "MIN."
   TONE : "FLAT", BYPASS/EFFECT : "EFFECT"
3) Connect the DISTORTION METER, LEVEL METER and SYNCHROSCOPE to MIX OUTPUT JACK.
4) Adjust SR201 → SR4 → SR5 (in order) to be minimum distortion (less than 0.2%).
5) Check the level more than 0dBm (775mV) at the point of [3].

[IV] HEADROOM INDICATOR

1) Settings are as same as [III]. (INPUT : PUSH)
2) Adjust SR1 to light the LEDs of −10~+3dB, also not to light the LED of +6dB.

[V] FREQUENCY RESPONSE

1) Settings are as same as [IV].
2) Put −30dBm (25mV) sinewave into INPUT.
3) Check the response +0.5dB~−3dB at 30Hz~8KHz.
4) Check TONE CONTROL response ±12dB (±2dB) at 6KHz.
5) Check DRY OUTPUT frequency response +0~−5dB at 20Hz~20KHz.
6) Set FEEDBACK knob "5~7" and push/pull the knob.
   Check the sound changing normal to inversion.

[VI] HEARING TEST

A. FEEDBACK

1) Set knobs as follows. RANGE : "225msec"
   DELAY TIME : "×2" (=450msec)
   FEEDBACK : "MAX."
2) Put the signal suitably.
3) Adjust SR6 to repeat the signal more than 10 seconds, also not to oscillate.

B. HOLD

1) Set knobs as follows. RANGE : "450msec"
   DELAY TIME : "×0.5~×2" (=225~900msec)
2) Check the HOLD function working well.

C. OUTPUT

1) Connect two amplifiers MIX OUT and INV. MIX OUT.
2) Set knobs as follows. DELAY TIME : "MAX." RANGE : "7msec"
   WIDTH : "5", SPEED : "5~8"
3) Check the output sound to be STEREO CHORUS effect.

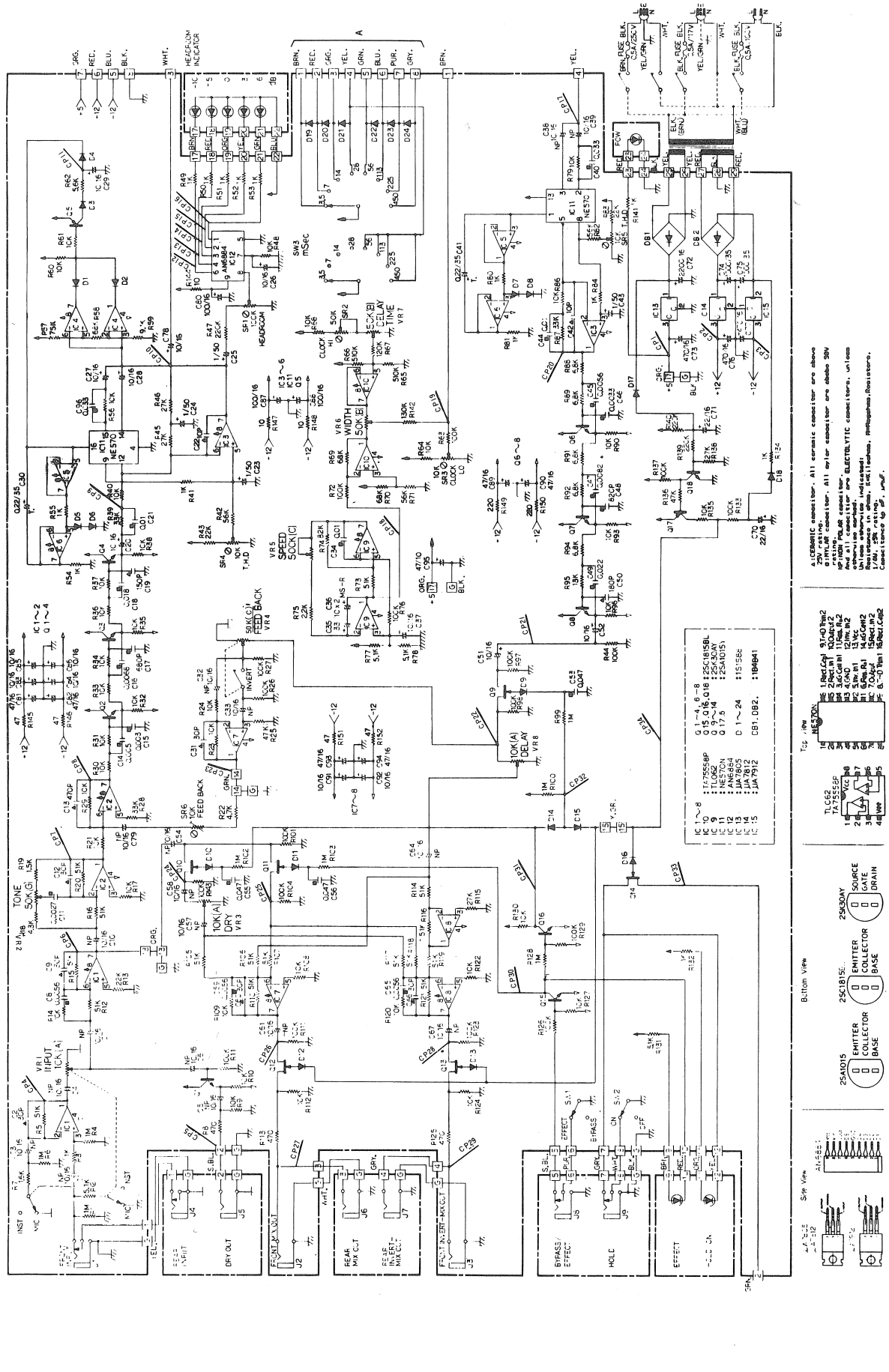
D. FEEDBACK, INVERT SW.

1) Set knobs as follows. RANGE : "3.5~7msec", WIDTH : "MAX."
2) Check the output sound to be FLANGER effect.
   (FEEDBACK INV. SW. PUSH — INV. MIX OUTPUT to AMP.
   FEEDBACK INV. SW. PULL — MIX OUTPUT to AMP.)

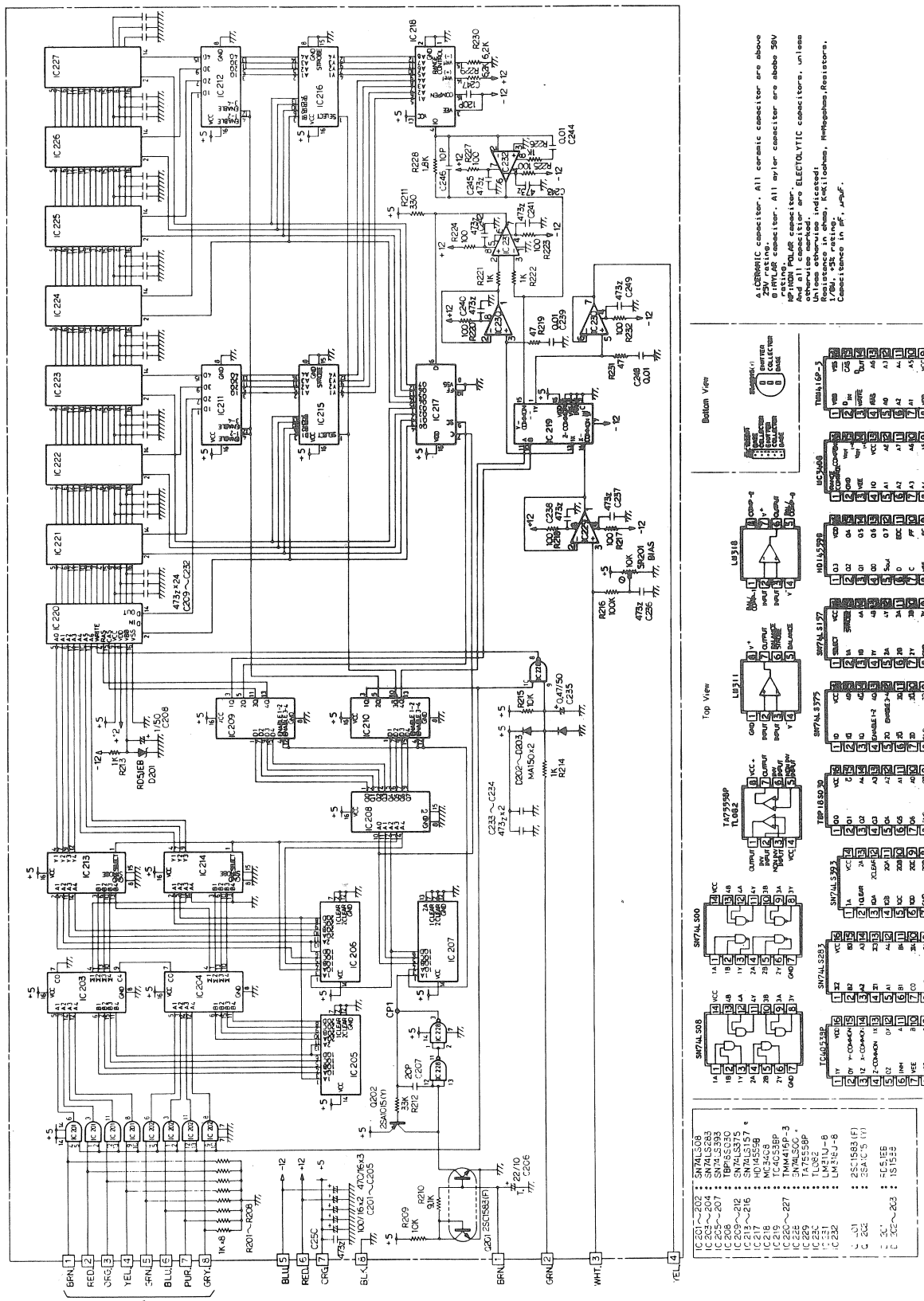
E. REAR PANEL

1) INPUT : a) Check working when rear input only.
   b) Check FRONT PRIORITY when both input.
2) OUTPUT : Check DRY OUTPUT, MIX OUTPUT, INV. MIX OUTPUT to be working well.
3) FOOTSWITCH (BYPASS/EFFECT, HOLD) :
   a) Check ON/OFF FRONT SWITCH and FOOTSWITCH working well.
   b) Check FRONT SWITCH to be canceled when FOOTSWITCH working.
4) MUTING : a) Check MUTING time about 10seconds after the POWER SWITCH ON.
   b) Set HOLD SWITCH ON and check the MUTING working well.

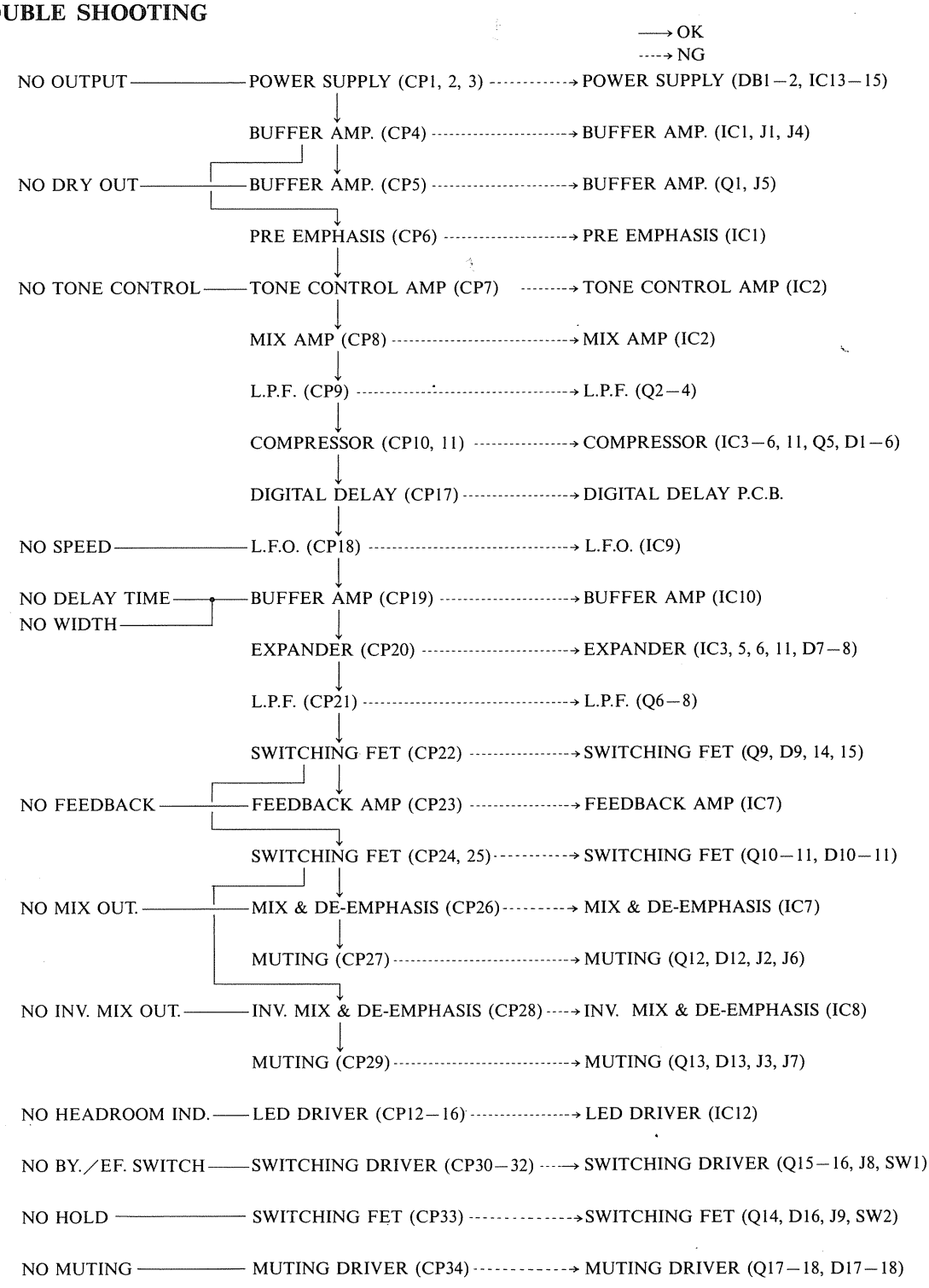
★ SCHEMATIC DIAGRAMS—1



★ SCHEMATIC DIAGRAMS—2



★ TROUBLE SHOOTING

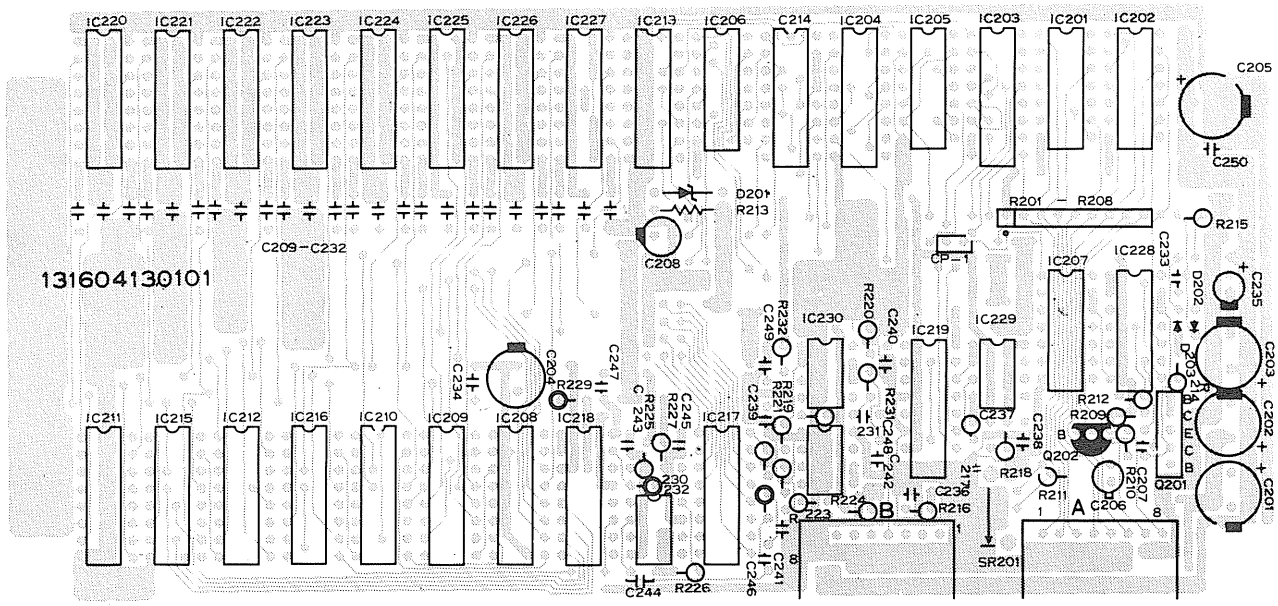


CP1	+5V	CP18	
2	+12V	19	+0.5V
3	−12V	30	EFFECT : −11V BYPASS : +11V
4—10 21—29	■	31, 32	EFFECT : +12V BYPASS : −11V
11	+11V ■	33	HOLD ON : 0V OFF : +5V
12—16	LED ON : +1V OFF : +12V	34	AC SW. ON—10sec : 0V
17, 20	■		AC SW. ON—NORMAL OPERATION : +11V

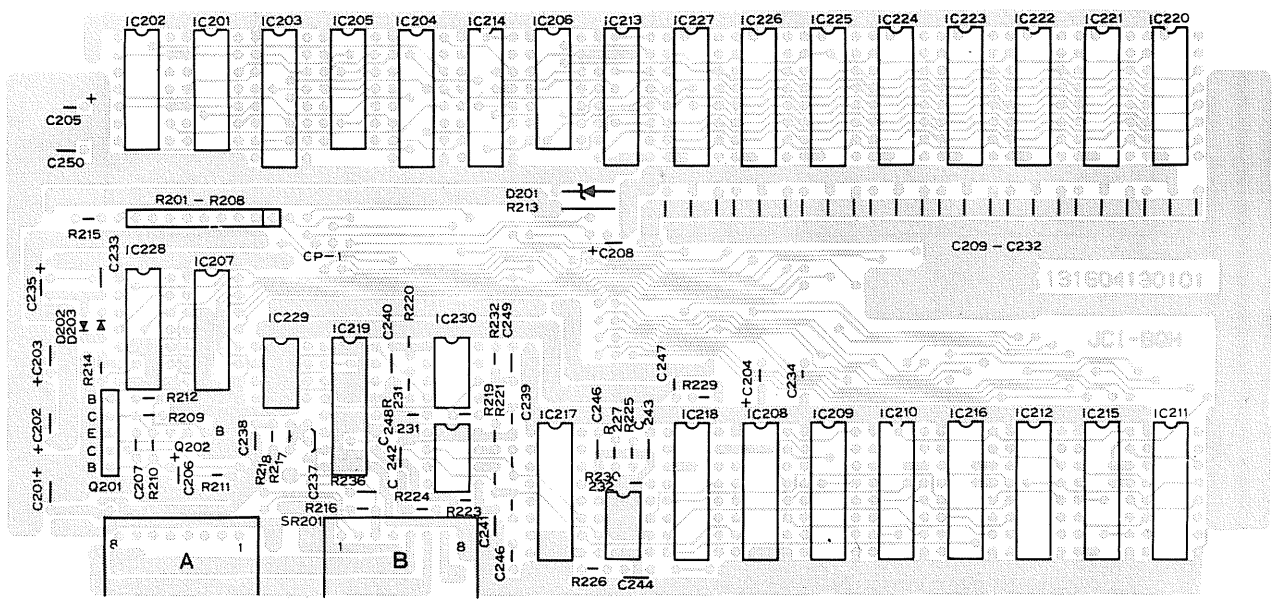
■ : INPUT 400Hz 400mV SINEWAVE

★ P.C.B. (MP-DM0101)

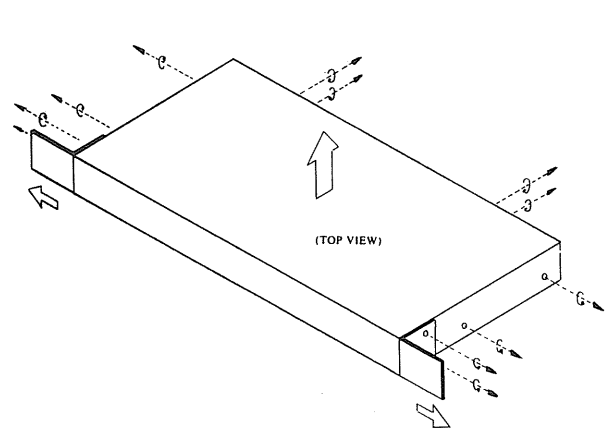
(TOP VIEW—PARTS SIDE)

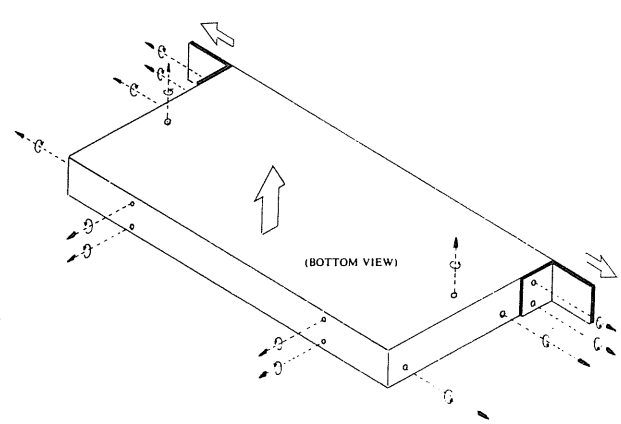


(BOTTOM VIEW—SOLDER SIDE)



★ HOW TO REMOVE THE CASE





★ INFORMATION – I

PUBLICATION OF IBANEZ SERVICE MANUAL

MANUAL NO.	EQUIPMENT		SIDE LINE NO.	MONTH OF ISSUE
001	PT9	PHASER	1	SEP. 1982
002	FL9	FLANGER	3	SEP. 1982
003	CS9	STEREO CHORUS	5	SEP. 1982
004	TS9	TUBE SCREAMER	7	SEP. 1982
005	SD9	SONIC DISTORTION	9	SEP. 1982
006	CP9	COMPRESSOR／LIMITER	11	SEP. 1982
007	AD9	ANALOG DELAY	13	SEP. 1982
008	GE9	GRAPHIC EQ	15	SEP. 1982
009	PQ9	PARAMETRIC EQ	17	SEP. 1982
010	AF9	AUTO FILTER	19	SEP. 1982
011	OD9	OVERDRIVE	21	SEP. 1982
012	UE300	MULTI EFFECTS	23	OCT. 1982
013	GX20	GUITAR AMPLIFIER	25	JUL. 1982
014	GX30	GUITAR AMPLIFIER	27	JUL. 1982
015	GX60	GUITAR AMPLIFIER	29	JUL. 1982
016	GX100	GUITAR AMPLIFIER	31	JUL. 1982
017	GX40B	BASS AMPLIFIER	33	AUG. 1982
018	GX60B	BASS AMPLIFIER	35	AUG. 1982
019	UE400	MULTI EFFECTS	37	NOV. 1982
020	UE405	MULTI EFFECTS	2	NOV. 1982
021	DM1000	DIGITAL DELAY	4	DEC. 1982
022			6	
023			8	
024			10	
025			12	
026			14	
027			16	
028			18	
029			20	
030			22	

★ INFORMATION – II

RESISTOR CHANGING INFORMATION OF "9" SERIES

1) These changing are your discretion, never compulsion.
2) IF you want to switch the "EFFECT／NORMAL" state to be "NORMAL" one all the time when the effector is switched on, please change the following resistor.
3) Manufacture changing will be practiced on DEC. 1982.

MANUAL NO.	EQUIPMENT	P.C.B.	R.NO.	CHANGING
001	PT9	MP-PT1201B	R164	10KΩ → 22KΩ
002	FL9	MP-FL0601	R134	10KΩ → 22KΩ
003	CS9	MP-CS0301B	R151	10KΩ → 22KΩ
004	TS9	MP-DO1201A	R126	56KΩ → 39KΩ
005	SD9	MP-SD1301A	R123	10KΩ → 22KΩ
006	CP9	MP-CO0501A	R134	10KΩ → 22KΩ
007	AD9	MP-AD1401A	R154	10KΩ → 22KΩ
008	GE9	MP-PQ0101	R114	10KΩ → 22KΩ
009	PQ9	MP-PQ0101	R116	10KΩ → 22KΩ
010	AF9	MP-AF0301	R130	10KΩ → 22KΩ
011	OD9	MP-DO1001A	R144	10KΩ → 22KΩ