Ibanez

SERVICE MANUAL

GUITAR MULTI EFFECTS

PUE5 MANUAL No.124

** INDEX **

SPECIFICATIONS ---------- 1
ADJUSTMENTS ---------- 2
TROUBLE SHOOTING ---------- 3
PARTS LIST ---------- 4
BLOCK DIAGRAM ---------- 5
SWITCHING CHART ---------- 6
SCHEMATIC DIAGRAMS ---- 7,8,9,10
P.C.B. ---------- 11

** SPECIFICATIONS ** (0dBv=775mVrms)

INPUT IMPEDANCE	500Kohms	
OUTPUT IMPEDANCE	10Kohms	
MAXIMUM INPUT LEVEL	+4dBv	
MAXIMUM OUTPUT LEVEL	+8dBv	TUNER OUT
	+8dBv	EFFECT SEND
	+4dBv	LINE OUT
	100mW 32ohms	HEADPHONES
	+4dBv	OUTPUT A,B
DELAY TIME 1:	16msec-64msec	DELAY
2:	64msec-256msec	
3:	256msec-1024msec	
BANDWIDTH (+1/-3dB)	20Hz-16KHz	
T.H.D.(1KHz,-20dBv)	< 0.5%	
SWEEP SPEED	0.6Hz-6Hz	CHORUS
SWEEP WIDTH	70KHz +/-10%	
COMPRESSION RANGE	34.5dB	COMPRESSOR
ATTACK TIME (1KHz, -20dBv)	5-20msec	
MAXIMUM AMPLITUDE	60dB	DISTORTION
EQUIVALENT INPUT NOISE (IHF-A,INPUT SHORTED)	-120dBv	
NOISE REDUCTION LEVEL (1KHz, -60dBv)	17dB	NOISE REDUCTION
POWER REQUIREMENT (DC10V)	260mA max.	use AC309
SIZE (WxHxD) (mm)	432x48x182	
WEIGHT	2.0Kgms	

MYSKHM 100-11-1989 PRINTED IN JAPAN

** ADJUSTMENT **

[A] VCO

1.	Setting	D-TIME, D-LEVEL REPEAT D-RANGE	CW max. CCW max. 1	
2.	Connection	FREQUENCY COUNTER	to CP4	
3.	Adjustment	SR4	for 256KHz	+/-1KHz
4.	Resetting	D-TIME	CCW max.	
5.	Check		for 1095KHz	+/-105KHz

[B] OFFSET

This adjustment is very delicate.
Please do not touch SR2 and SR3 without adjustment required.

1.	Setting	D-LEVEL D-TIME, REPEAT D-RANGE	CW max. CCW max. 1	
2.	Connection	TONE BURST GENERATOR LEVEL METER OSCILLOSCOPE	to RETURN to CP2/CP3 to CP1/CP3	for comparison
3.	Input	TONE BURST sinewave	1KHz -18.2dBv	open(ON)=15,close(OFF)=28
4.	Check	the level	300mVp-p	at CP1
5.	Adjustment	SR3 SR2	at CP3 at CP3	for DC-flatness at zero level for flatness at peak(p-p) level
6.	Resetting	D-TIME	CW max.	
7.	Adjustment	SR3 (adjust a little)	at CP3	for higher freq. at closed wave
8.	Resetting	D-TIME	CCW max.	
9.	Input	sinewave	40Hz -22dBv	
10.	Adjustment	SR2 (adjust a little)	at CP3	for same level at CP2

[C] REPEAT

1.	Setting	a guitar an amplifier D-RANGE another all knobs	to INPUT to OUTPUT 3 CW max.	
2.	Input	guitar signal	to INPUT	one shot guitar signal
3.	Adjustment	SR1	for -6dB	after the 20th repeat

[D] CHORUS

1.	Setting	SPEED, WIDTH	CCW max.	
2.	Connection	FREQUENCY COUNTER OSCILLOSCOPE	to CP6 to CP6	
3.	Adjustment	SR6	for 70KHz	+/-2KHz
4.	Resetting	WIDTH	CW max.	
5.	Check	SWEEP WIDTH	for 14usec	+/-1usec
6.	Input	sinewave	400Hz 0dBv	
7.	Resetting	WIDTH	CCW max.	
8.	Connection	OSCILLOSCOPE	to CP5	
9.	Adjustment	SR5		for the symmetrical sinewave

** CHECK LIST **

[A] COMPRESSOR

1.	Setting	COMPRESSOR THRESHOLD	ON CW max.	
2.	Connection	SIGNAL GENERATOR LEVEL METER	to INPUT to OUTPUT	
3.	Input	sinewave	1KHz -50dBv	
4.	Check	the level at SEND (input= 1KHz,-30dBv)	-15dBv +/-1dB -10dBv +/-1dB -32dBv +/-2dB	ATTACK=CCW, SUSTAIN & LEVEL=CW when input= 1KHz, -30dBv ATTACK & SUSTAIN=CCW, LEVEL=CW

[B] NOISE REDUCTION

1.	Setting	THRESHOLD	CCW max.	
2.	Input	sinewave	400Hz -60dBv	
3.	Connection	NOISE METER	to OUT A	
4.	Check	the level	-77dBv +/-3dB	

** TROUBLE SHOOTING **

(A) NO POWER		YES ;	NO ;	REMARKS
001	DC10V at D30 ?	GO TO 003	GO TO 002	use AC309
002	Check JK9, AC Adapter			
003	DC5V at C151 ?	GO TO 005	GO TO 004	
004	Check IC30, C151			
005	DC5V at C93 ?	GO TO 007	GO TO 006	
006	Check IC20, C93			
007	DC5V at C15 (schematic point-A) ?	GO TO 009	GO TO 008	
008	Check R24,R25, C15			
009	DC5V at C43 (schematic point-B) ?	GO TO 011	GO TO 010	
010	Check IC5,IC6B, C43			
011	DC5V at C85 (schematic point-C) ?	GO TO 013	GO TO 012	
012	Check IC18B, R125,R126, C84			
013	DC5V at C95 (schematic point-D) ?	GO TO 015	GO TO 014	
014	Check R151,R152, C95			
015	DC5V at C122 (schematic point-E) ?	GO TO 017	GO TO 016	
016	Check R199,R200, C122			
017	DC5V at C136 (schematic point-F) ?	END	GO TO 018	
018	Check R223,R224, C136			

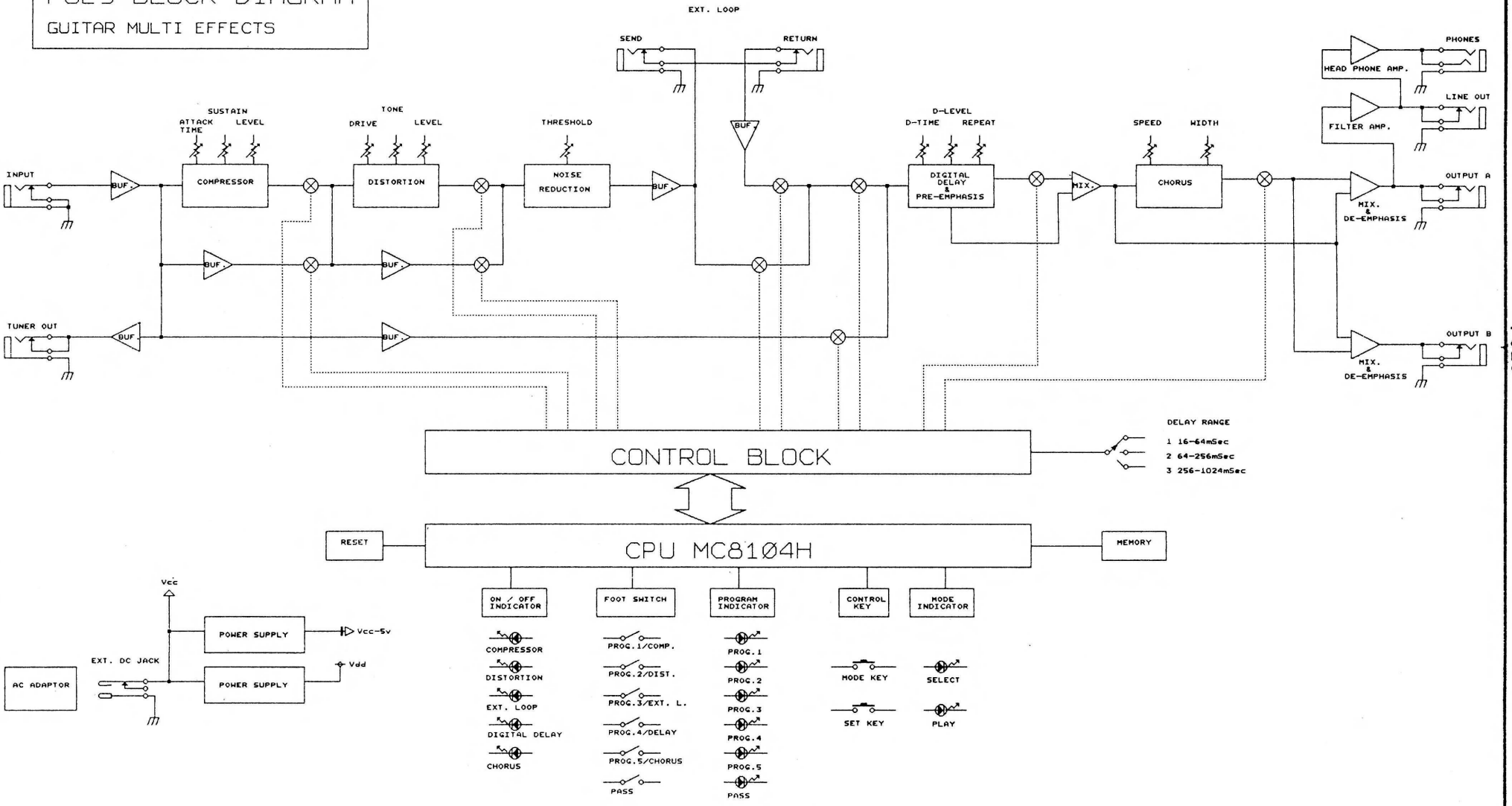
(B) NO OR BAD OUTPUT		YES ;	NO ;	REMARKS
101	Audio signal at JK2 ?	GO TO 103	GO TO 102	
102	Check IC1, JK1,JK2			
103	Audio signal at C13 ?	GO TO 105	GO TO 104	
104	Check IC2, TR1-TR4, VR1-VR3, D1,D2			
105	Audio signal at C32 ?	GO TO 107	GO TO 106	
106	Check IC3, TR5-8,22, VR4-7, D3,4			
107	Audio signal at JK3 ?	GO TO 109	GO TO 108	
108	Check IC4-IC9, D5-D11, JK3, Q6			
109	Audio signal at C48 ?	GO TO 111	GO TO 110	
110	Check IC9B, JK4			
111	REPEAT normal ?	GO TO 113	GO TO 112	
112	Check SR1, VR9			
113	Audio signal at C58 ?	GO TO 115	GO TO 114	
114	Check IC10,IC11, D13,D14, TR23			
115	Audio signal at C77 ?	GO TO 117	GO TO 116	
116	Check IC12-IC18, SR2,SR3, TR10-TR16			
117	Audio signal at PIN1 of IC19 ?	GO TO 119	GO TO 118	
118	Check IC19, VR8			
119	Audio signal at C99 ?	GO TO 121	GO TO 120	
120	Check TR17, D16,D17			
121	Audio signal at CP5 ?	GO TO 123	GO TO 122	
122	Check IC21,IC22, SR5, TR18			
123	DELAY normal ?	GO TO 125	GO TO 124	
124	Check VR10, TR10-12, SR4, SW9, IC28,29, D29			
125	SWEEP/WIDTH normal ?	GO TO 127	GO TO 126	
126	Check IC23,25, TR19,20, D19,20, VR11,12, SR6			
127	Audio signal at JK7 and JK8 ?	GO TO 129	GO TO 128	
128	Check IC23,IC24, JK7,JK8			
129	Audio signal at JK6 ?	GO TO 131	GO TO 130	
130	Check IC26, TR21, JK6			
131	Audio signal at JK5 ?	GO TO 133	GO TO 132	
132	Check IC27, JK5			
133	LED/Switching control normal ?	END	GO TO 134	
134	Refer to SWITCHING CHART Check TR9,24-34, D12,15,18,21-28			

** PARTS LIST **

PARTS NAME	Mkr.	pcs	PARTS No.	REF.No.	REMARKS
TOP COVER		1	CHA-PUE-0101A	PUE5	
BOTTOM COVER		1	CHA-PUE-0102A		
P.C.B.HOLDER		3	ANG-SDZ-0101A		
POT. KNOB		11	KNB-PUE-0101VTA		
SWITCH KNOB		2	KNB-RM-0103A-PK2		
PEDAL TOP		6	CAS-PUE-0101A		
PEDAL BOTTOM		6	CAS-PUE-0102A		
CUSHION A		6	CSN-PUE-0101A	for FOOT PEDAL	
CUSHION B		1	CSN-PUE-0103A	for P.C.B.	
SPRING		6	SPR-PUE-0101A		
RUBBER FOOT		5	LEG-PUE-0101A		
P.C.B.SPACER		3	KGLS-14RT		
NAME PLATE		1	NPT-PUE-0102A		
CAUTION LABEL		1	CSL-0101A		
SERIAL LABEL		1	SSL-PUE-0102A		
AC ADAPTER		1	AC309		
PCB		1	PCB-PUE-0101A		
IC Op.Amp.	MB	15	M5218AP	IC1,3,4,6-11,17-19,23,24,26	
IC VCA	ROM	1	BA6110	IC2	
IC VCA	MB	1	M5207L01	IC5	
IC Comparator	JRC	1	NJM311D	IC12	
IC Op.Amp.	MB	2	M5238P	IC13,14	
IC DRAM	TO	1	TMM41256AZ-12	IC15	
IC DELAY	ACT	1	MC4102F	IC16	
IC Regulator	JRC	1	NJM7905FA	IC20	
IC BBD Driver	MA	1	MN3102	IC21	
IC BBD	MA	1	MN3207	IC22	
IC Op.Amp.	TI	1	TL022CP	IC25	
IC Phone.Amp.	JRC	1	NJM386D	IC27	
IC CPU	MB	1	MC8104H(M50727)	IC28	
IC ROM	MB	1	M6M80011DIP	IC29	
IC Regulator	JRC	1	NJM7805FA	IC30	
LED	TO	13	GL9PR4	LED1-13	
TRANSISTOR	TO	25	2SC1815BLTPE2	TR1-3,5-9,11-13,15,17-23,25,27,29,31-33	
TRANSISTOR	TO	1	2SC1815YTPE2	TR4	
TRANSISTOR	TO	8	2SA1015YTPE2	TR10,14,16,24,26,28,30,34	
FET	TO	12	2SK246GRTPE2	Q1-12	
DIODE	MA	28	MA165TA5	D1-10,12-29	
DIODE	MA	1	MA700TA2	D11	
DIODE	HI	1	W03C	D30	
PHONES JACK	HO	7	HLJ0520-01-110	JK1-4,6-8	
PHONES JACK	HO	1	HLJ0520-01-010	JK5	
DC JACK	HO	1	HEC-0470-01-230	JK9	
VARIABLE R.	MA	1	EVU-F2A-F20-C55	VR1	
VARIABLE R.	MA	4	EVU-F2A-F20-B15	VR2,3,11,12	
VARIABLE R.	MA	1	EVU-F2A-F20-A24	VR4	
VARIABLE R.	MA	1	EVU-F2A-F20-B24	VR5	
VARIABLE R.	MA	1	EVU-F2A-F20-A15	VR6	
VARIABLE R.	MA	1	EVU-F2A-F20-B55	VR7	
VARIABLE R.	MA	2	EVU-F2A-F20-B14	VR8,9	
VARIABLE R.	MA	1	EVU-F2A-F20-B54	VR10	
SEMI FIXED R.	MA	2	EVN-61A-A00-B14	SR1,5	
SEMI FIXED R.	MA	2	EVN-61A-A00-B23	SR2,3	
SEMI FIXED R.	MA	1	EVN-61A-A00-B55	SR4	
SEMI FIXED R.	MA	1	EVN-61A-A00-B25	SR6	
SWITCH	ALP	6	SKCLAD	SW1-6	
SWITCH	ALP	2	SPEA-12	SW7,8	
SWITCH	ALP	1	SSSU01	SW9	
LED SPACER		1	SPC-PUE-0101A		10mm

PUE5 BLOCK DIAGRAM

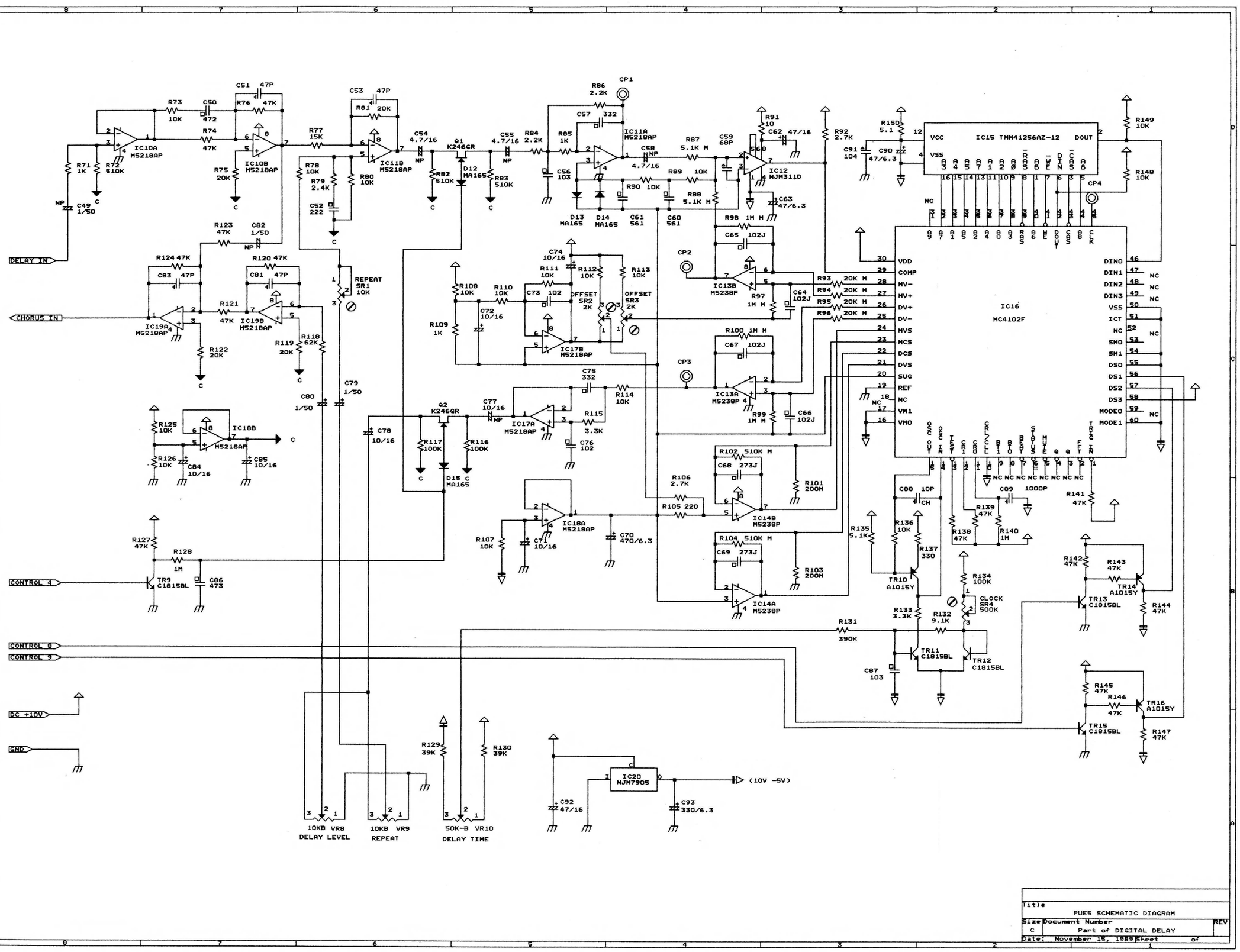
GUITAR MULTI EFFECTS

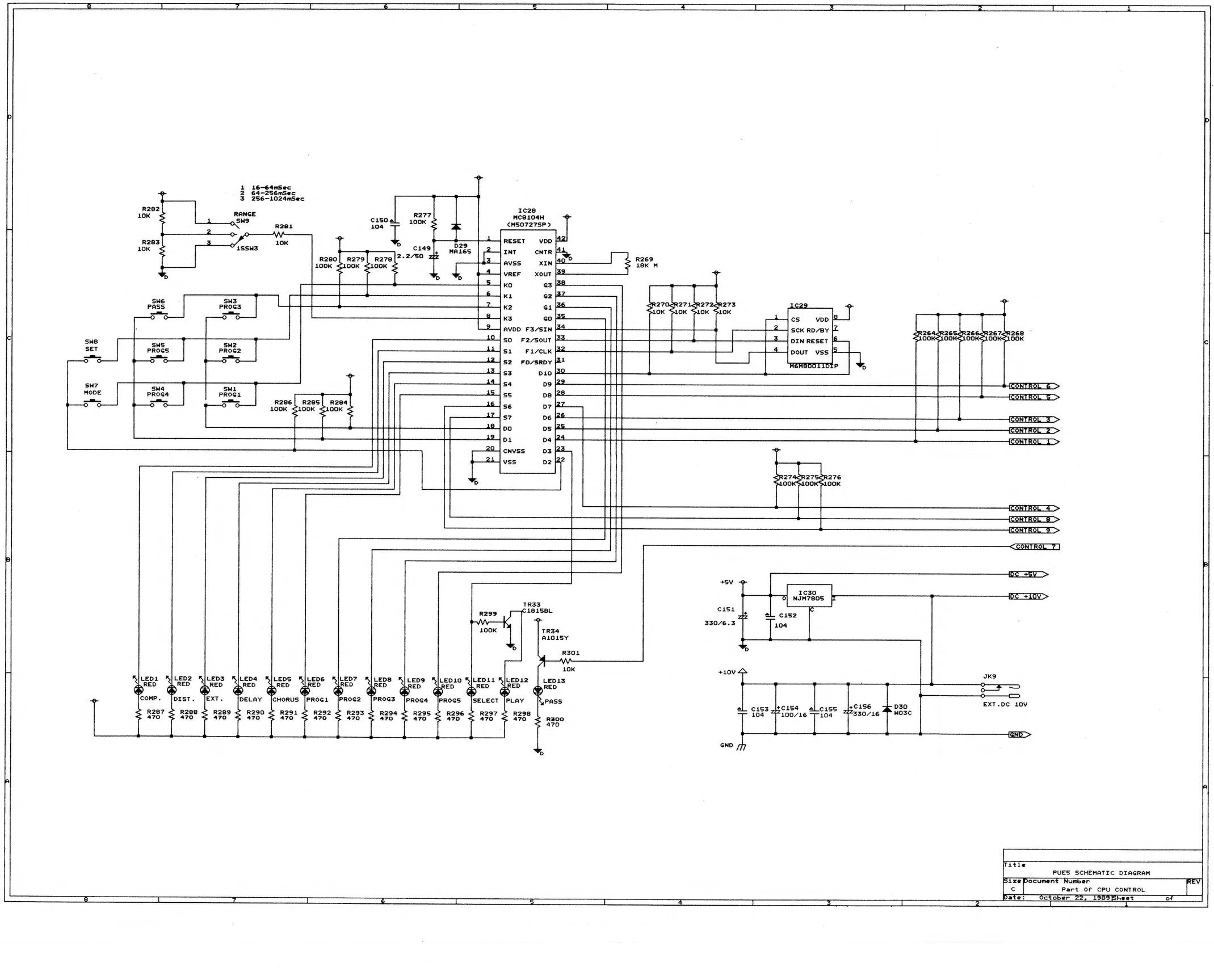


PUE5 Switching Chart

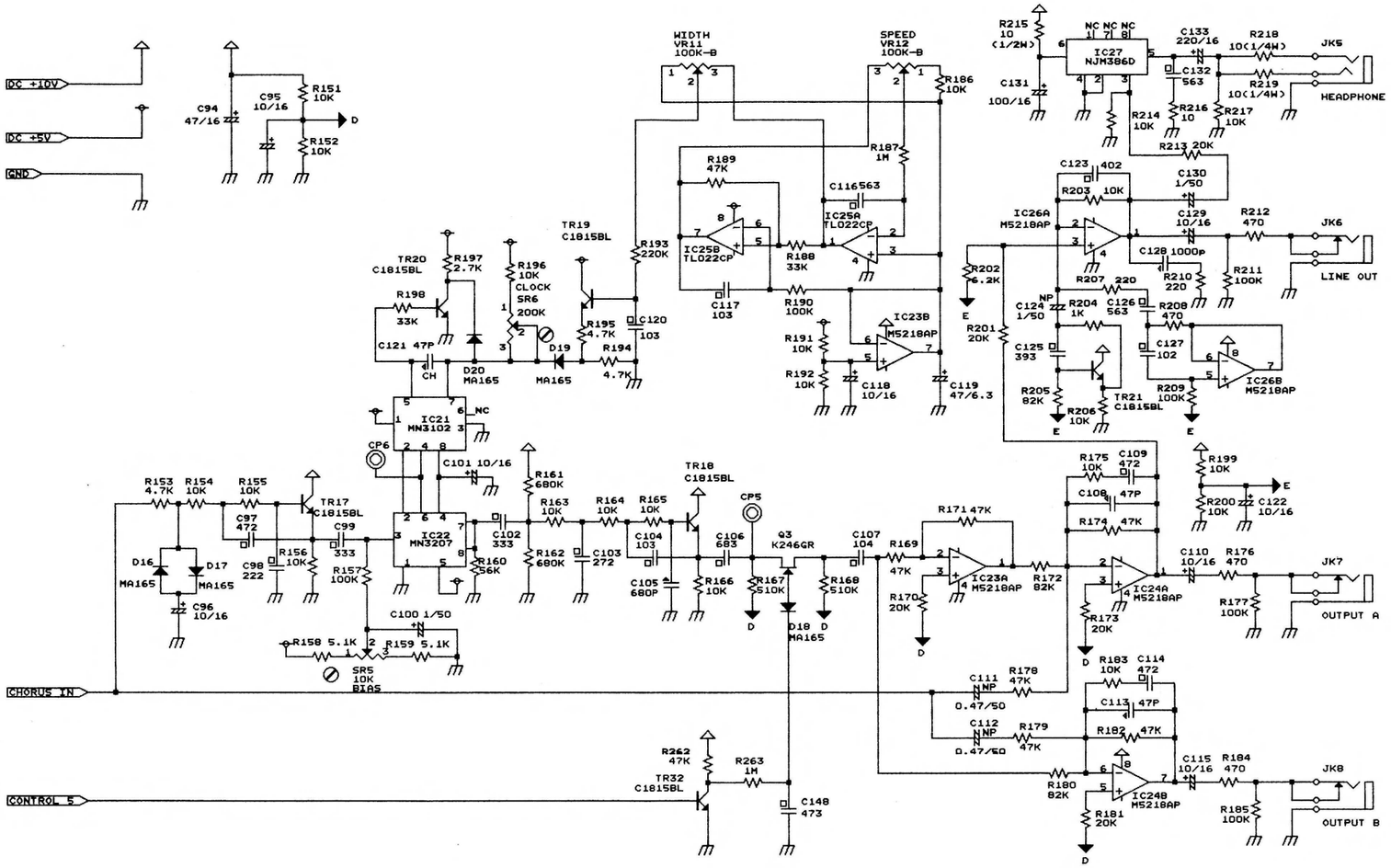
Note : EFF. = EFFECT
H I = High level (about 600mV)
LOW = Lou level (about 3mV)
RANGE 1 = 16-64 mSec
RANGE 2 = 64-256 mSec
RANGE 3 = 256-1024 mSec

Check Item \ Status		COMPRESSOR				DISTORTION				EXT. LOOP				DELAY				CHORUS				DELAY RANGE			RANGE SWITCHING			MODE		SET
		ON		OFF		ON		OFF		ON		OFF		ON		OFF		ON		OFF										
		PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	PASS	EFF.	1	2	3	after RANGE change	after 120 mSec	after 1 Sec	PLAY	SELECT	
COMPRESSOR	CONTROL 1	LOW	LOW	H I	H I	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DISTORTION	CONTROL 2	/	/	/	/	LOW	LOW	H I	H I	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
EXT. LOOP	CONTROL 3	/	/	/	/	/	/	/	/	LOW	LOW	H I	H I	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DELAY	CONTROL 4	/	/	/	/	/	/	/	/	/	/	/	/	H I	LOW	H I	H I	/	/	/	/	/	/	/	H I	H I	LOW	/	/	/
CHORUS	CONTROL 5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	H I	LOW	H I	H I	/	/	/	/	/	/	/	/	/
PASS	CONTROL 6	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	/	/	/	/	/	/	/	/	/
PASS LED	CONTROL 7	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	LOW	H I	/	/	/	/	/	/	/	/	/
DELAY RANGE	CONTROL 8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	LOW	H I	H I	/	RANGE data output	/	/	/	/
DELAY RANGE	CONTROL 9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	H I	LOW	H I	/	RANGE data output	/	/	/	/
COMPRESSOR FET	Q 4	OFF	OFF	O N	O N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
COMPRESSOR FET	Q 5	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DISTORTION FET	Q 7	/	/	/	/	OFF	OFF	O N	O N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DISTORTION FET	Q 8	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
EXT. LOOP FET	Q11	/	/	/	/	/	/	/	/	OFF	OFF	O N	O N	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
EXT. LOOP FET	Q12	/	/	/	/	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DELAY FET	Q 1	/	/	/	/	/	/	/	/	/	/	/	/	OFF	O N	OFF	OFF	/	/	/	/	/	/	/	OFF	OFF	ON	/	/	/
DELAY FET	Q 2	/	/	/	/	/	/	/	/	/	/	/	/	OFF	O N	OFF	OFF	/	/	/	/	/	/	/	OFF	OFF	ON	/	/	/
CHORUS FET	Q 3	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	OFF	O N	OFF	OFF	/	/	/	/	/	/	/	/	/
PASS FET	Q 9	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	/	/	/	/	/	/	/	/	/
PASS FET	Q10	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	OFF	O N	/	/	/	/	/	/	/	/	/
COMPRESSOR LED	LED 1	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DISTORTION LED	LED 2	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
EXT. LOOP LED	LED 3	/	/	/	/	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
DELAY LED	LED 4	/	/	/	/	/	/	/	/	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/	/	/	/	/
CHORUS LED	LED 5	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N	O N	OFF	OFF	/	/	/	/	/	/	/	/	/
PROGRAM 1 LED	LED 6	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N when chose	OFF	blink
PROGRAM 2 LED	LED 7	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N when chose	OFF	blink
PROGRAM 3 LED	LED 8	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N when chose	OFF	blink
PROGRAM 4 LED	LED 9	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N when chose	OFF	blink
PROGRAM 5 LED	LED10	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N when chose	OFF	blink
SELECT MODE LED	LED11	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	OFF	O N	O N
PLAY MODE LED	LED12	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	O N	OFF	OFF
PASS LED	LED13	O N	/	O N	/	O N	/	O N	/	O N	/	O N	/	O N	/	O N	/	O N	/	O N	/	/	/	/	/	/	/	/	/	/


DELAY IN
CHORUS IN
CONTROL 4
CONTROL 8
CONTROL 9
DC +10V
GND
REPEAT SR1 10K
IC10A M5218AP
IC10B M5218AP
IC11A M5218AP
IC11B M5218AP
IC12 NJM311D
IC13A M5238P
IC13B M5238P
IC14A M5238P
IC14B M5238P
IC15 TMM41256AZ-12
IC16 MC4102F
IC17A M5218AP
IC17B M5218AP
IC18A M5218AP
IC18B M5218AP
IC19A M5218AP
IC19B M5218AP
IC20 NJM7905
Q1 K246GR
Q2 K246GR
D12 MA165
D13 MA165
D14 MA165
D15 MA165
TR9 C1815BL
TR10 A1015Y
TR11 C1815BL
TR12 C1815BL
TR13 C1815BL
TR14 A1015Y
TR15 C1815BL
TR16 A1015Y
CLOCK SR4 500K
OFFSET SR2 2K
OFFSET SR3 2K
10KB VR8 DELAY LEVEL
10KB VR9 REPEAT
50K-B VR10 DELAY TIME
(10V -5V)
Title
PUES SCHEMATIC DIAGRAM
Size C
Document Number
Part of DIGITAL DELAY
REV
Date: November 15, 1989
Sheet of

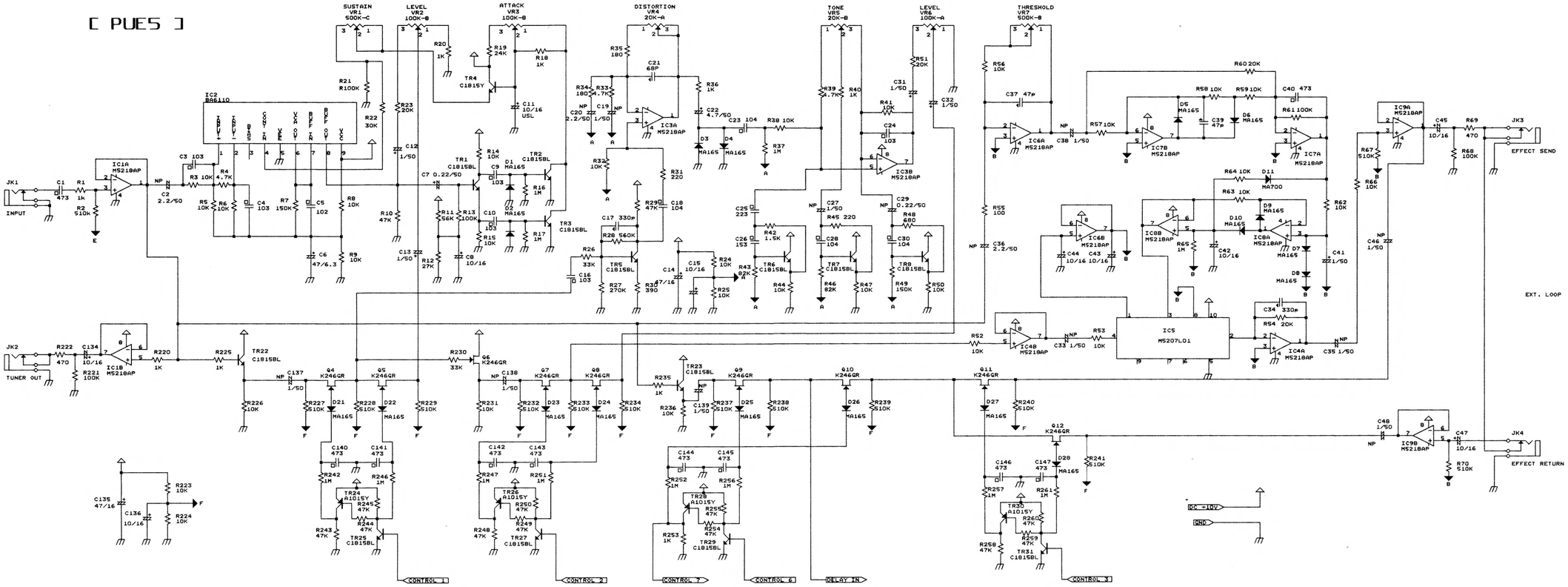


Title	PUE5 SCHEMATIC DIAGRAM	
Size C	Document Number: Part of CPU CONTROL	REV
Date: October 22, 1989	Sheet 1 of	



Title	PUE5 SCHEMATIC DIAGRAM	
Size: C	Document Number: Part of CHORUS/LINE OUT/HEADPHONE	REV
Date: October 22, 1989	Sheet of	

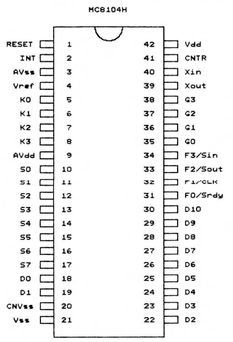
[PUE5]

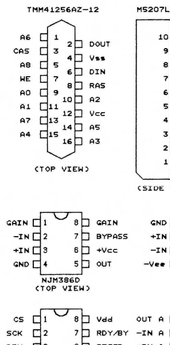


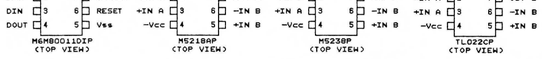
PARTS LIST

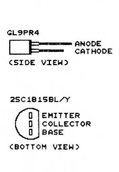
PCB-PUE-0101A

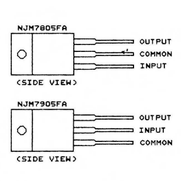
Ref.	IC	TR	FET	D	LED
01	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
02	BA6110	2SC1815BL	2SK246GR	MA165	GL9PR4
03	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
04	MS218AP	2SC1815Y	2SK246GR	MA165	GL9PR4
05	MS207L01	2SC1815BL	2SK246GR	MA165	GL9PR4
06	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
07	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
08	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
09	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
10	MS218AP	2SA1015Y	2SK246GR	MA165	GL9PR4
11	MS218AP	2SC1815BL	2SK246GR	MA165	GL9PR4
12	NJM311D	2SC1815BL	2SK246GR	MA165	GL9PR4
13	MS238P	2SA1015Y		MA165	GL9PR4
14	MS238P	2SA1015Y		MA165	
15	TMM41256AZ12	2SC1815BL		MA165	
16	MC4102F	2SA1015Y		MA165	
17	MS218AP	2SC1815BL		MA165	
18	MS218AP	2SC1815BL		MA165	
19	MS218AP	2SC1815BL		MA165	
20	NJM79D5FA	2SC1815BL		MA165	
21	MN3102	2SC1815BL		MA165	
22	MN3207	2SC1815BL		MA165	
23	MS218AP	2SC1815BL		MA165	
24	MS218AP	2SA1015Y		MA165	
25	TL022CP	2SC1815BL		MA165	
26	MS218AP	2SA1015Y		MA165	
27	NJM386D	2SC1815BL		MA165	
28	MC8104H	2SA1015Y		MA165	
29	M6M80011DIP	2SC1815BL		MA165	
30	NJM78D5FA	2SA1015Y		WO3C	
31		2SC1815BL			
32		2SC1815BL			
33		2SC1815BL			
34		2SA1015Y			

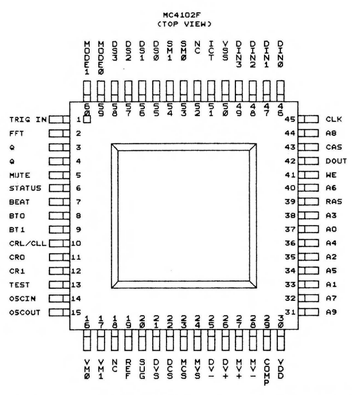












== color ==

BR	: Brown
RD	: Red
OR	: Orange
YL	: Yellow
GR	: Green
BL	: Blue
VT	: Violet
GY	: Gray
WH	: White
BK	: Black
SK	: Sky Blue
LG	: Light Green
PK	: Pink

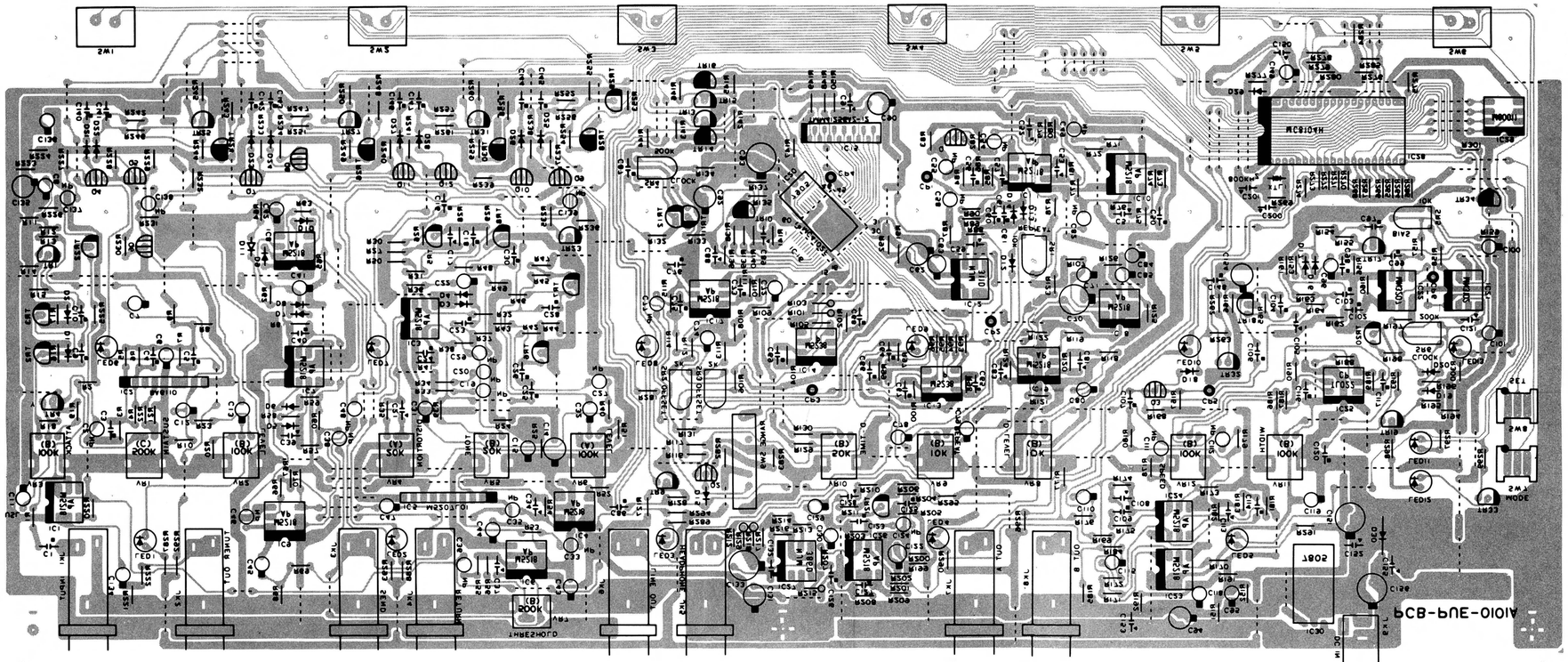
== CAUTION ==

This schematic diagram is a normal standard one. The parts rating and/or schematic diagram will be subject to change without notice.

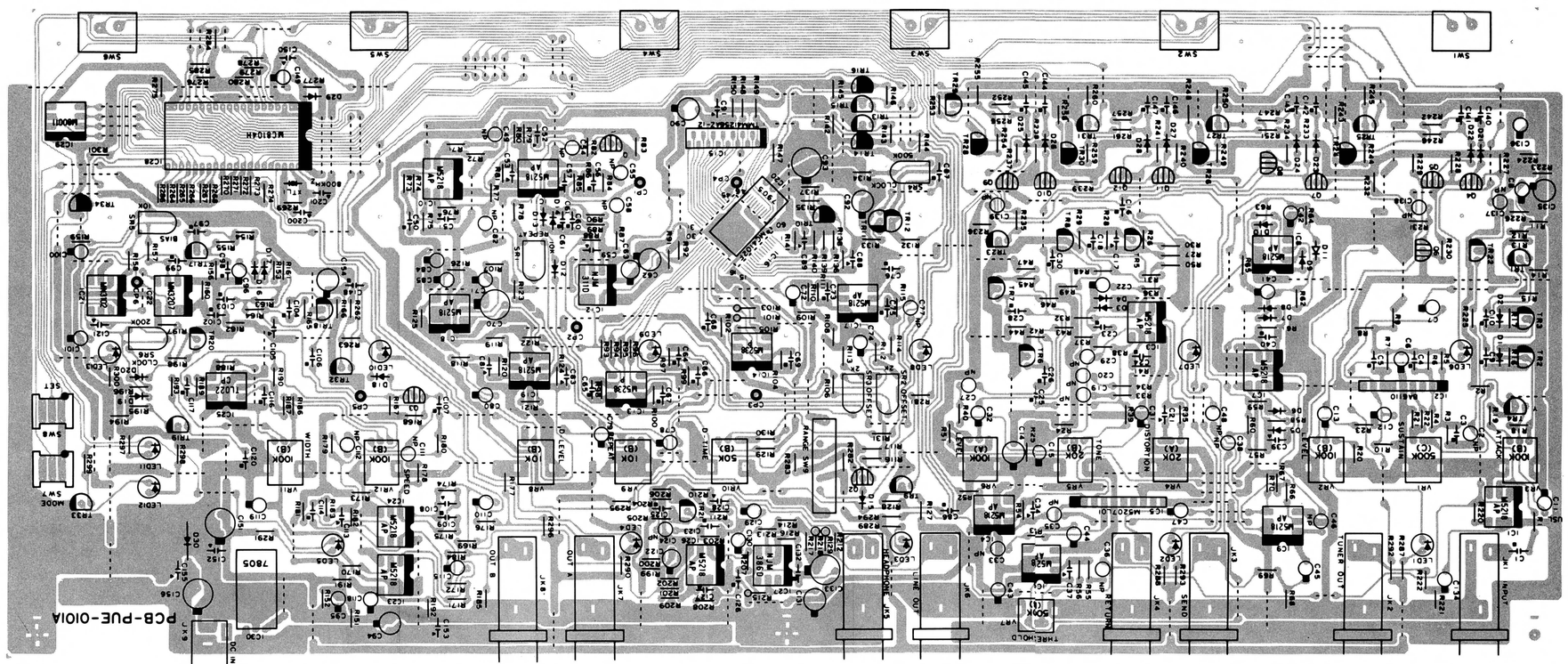
== NOTES ==

△ : CERAMIC capacitor.
All ceramic capacitors are above 25v rating.
□ : FILM capacitor.
All film capacitors are above 50v rating.
BP : BI POLAR capacitor.
NP : NON POLAR capacitor.
T : TANTALUM capacitor.
And all capacitors are ELECTROLYTIC capacitors unless otherwise marked.
Unless otherwise indicated :
Resistance in Ω,KΩ,MΩ
Resistors, 1/4W or 1/8W +/-5% rating.
Capacitance in pμF, nμF

Title: PUE5 SCHEMATIC DIAGRAM
Size: D | Document Number | REV
Part of COMP/DIST/NOISE/EXT.LOOP
Date: November 16, 1989 | Sheet | of



PCB-PUE-01010A



PCB-PUE-01010A