MusicParts.Com

Technical Document Distribution

Brand:	**Mu-Tron**
Model	**Bi-Phase (MU-03)**
Product:	**Pedal**
Description:	**Service Manual**

Musicparts Document Number: 52589 TechTips: No Pages: 15 Dated: 1979

Hello,
Welcome to MusicParts.Com, Inc. your online resource for technical documents and service information. This PDF package may contain information, schematics, parts lists, images, engineering changes, previous versions, circuit descriptions, and many other unique features about the product you have chosen. This document was assembled from a variety of sources and is the result of our many years in the music repair business.

NOTE: Large original over-sized drawings will need to be taped together. We feel this is better than reducing them and losing the fine details.

VIEWING: This document is utilizing PAGE-ON-DEMAND downloading. This will let you navigate to any page without waiting for the entire file to download. Just click ON the thumbnails.

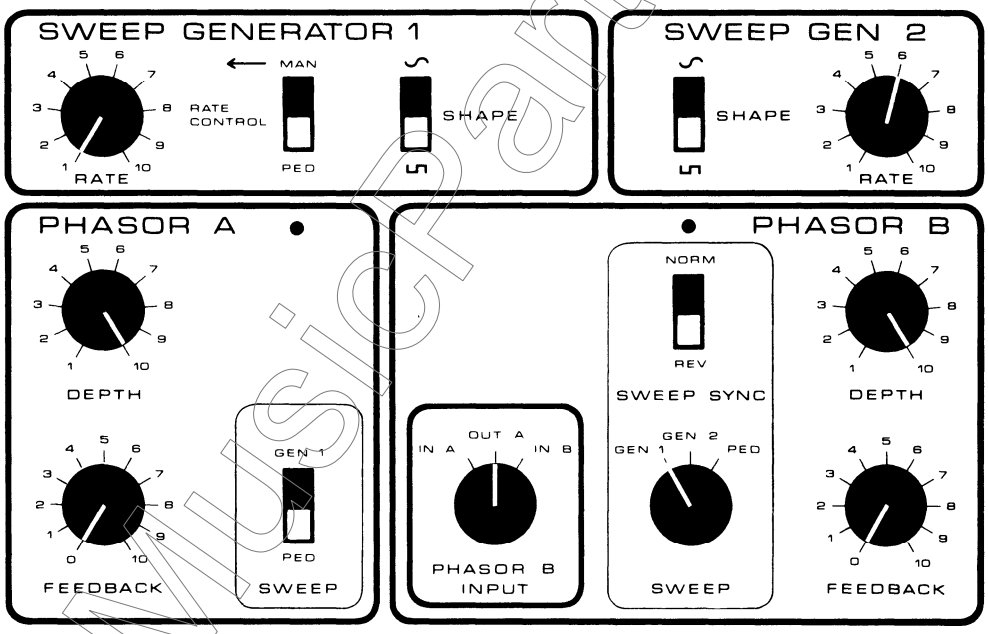
PRINTING: Very Important!

When the print dialog appears, please make sure **"REDUCE TO PAPER SIZE" OR "SHRINK OVERSIZED PAGES "** is checked, otherwise you may cut off the edge of the page. This will compensate for your printer's margins and produce a great looking printout. Also please stay online while printing this document to make sure you get all the pages.

Visit us on the web at: http://www.musicparts.com/
Email us at: customerservice@musicparts.com

MU-TRON

Bi-Phase Service Manual



MusicParts.Com

MU-TRON

SN 0038

SERVICE NOTES

MODEL: *Mu-tron BI PHASE* DATE: *November 30, 1979*

SUBJECT: *DISASSEMBLY*

Improper disassembly of Bi Phase can cause damage to the ribbon cable connected to the circuit boards.

Disassembly should be done as follows:

With the unit unplugged

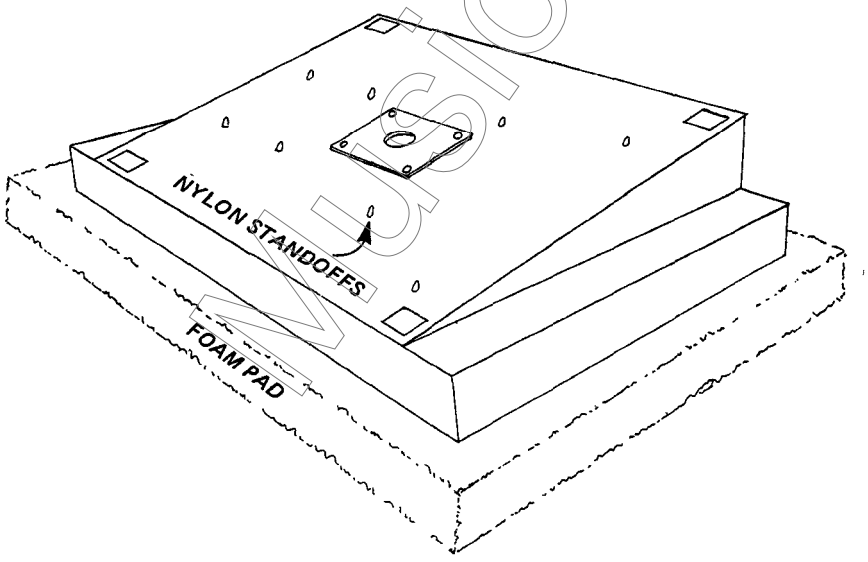
1) Invert the unit on a foam pad as shown

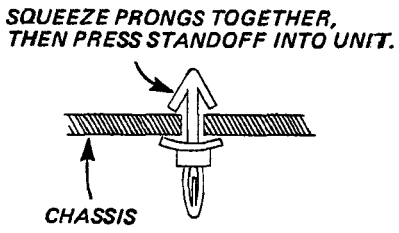
2) Locate the 8 board standoffs

3) Using needlenose pliers, squeeze the flanges on each standoff together so they can be pressed through the chassis.

4) Do this to all 8 standoffs allowing the circuit boards to fall loose into the unit.

5) It is now possible to remove the 11 screws holding the chassis together and separate the bottom chassis from the unit.

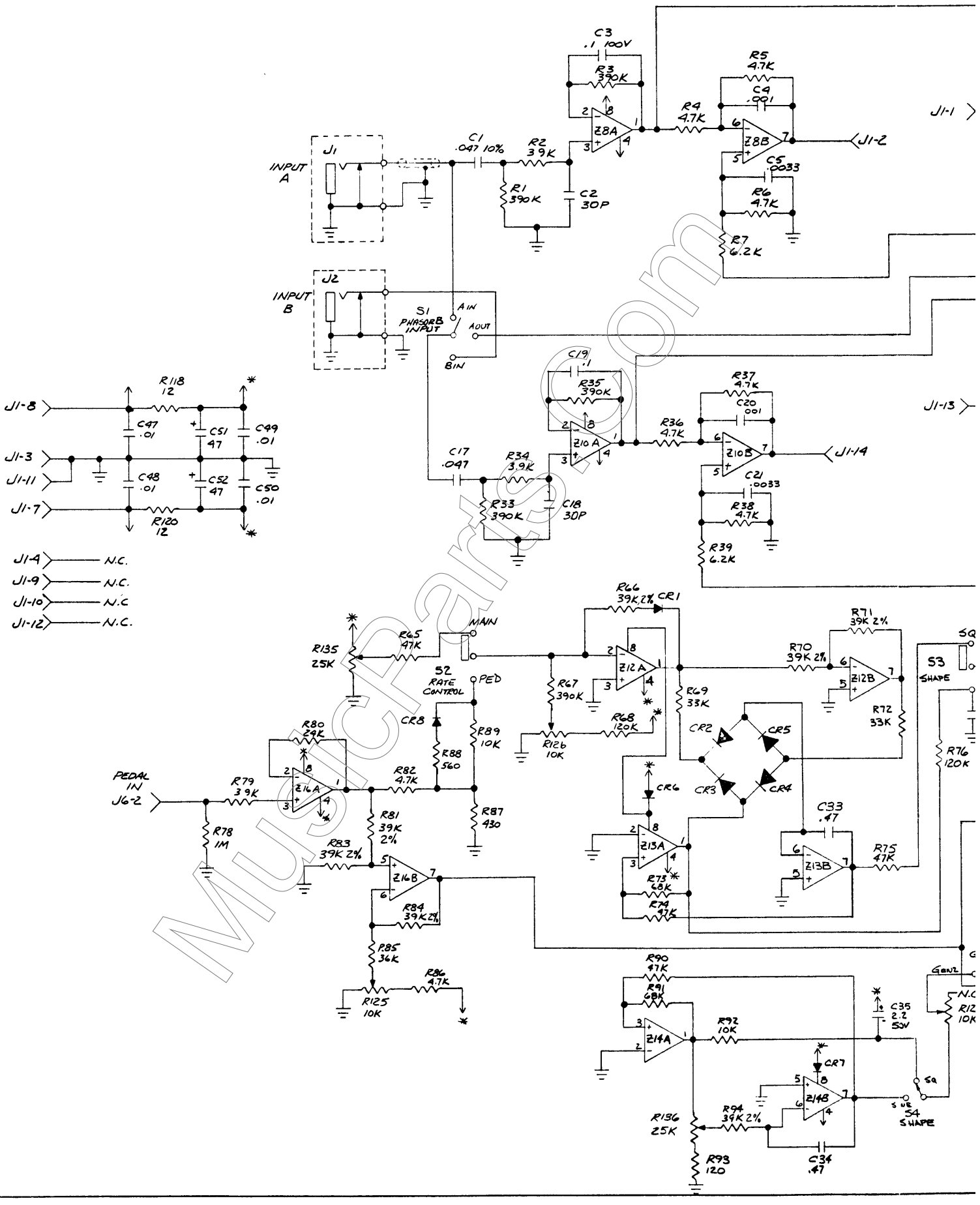




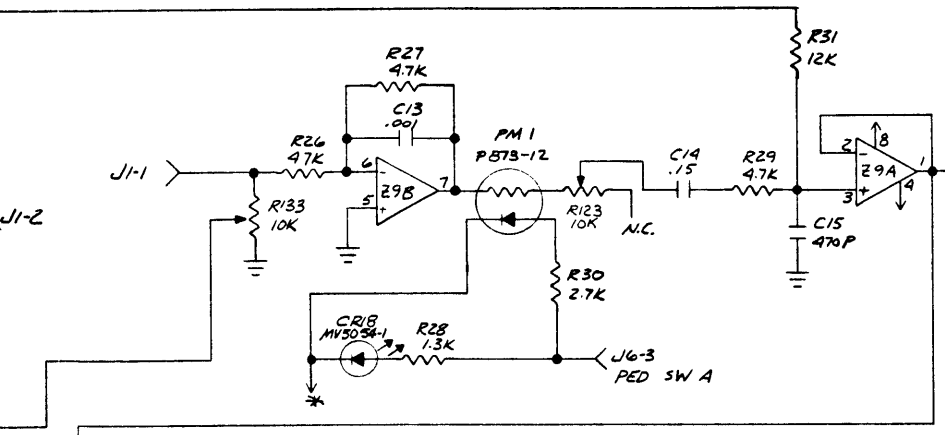
MU-TRON, Incorporated
45 Hartwell Avenue
Lexington, Massachusetts, 02173
Telephone: 617/861-6000

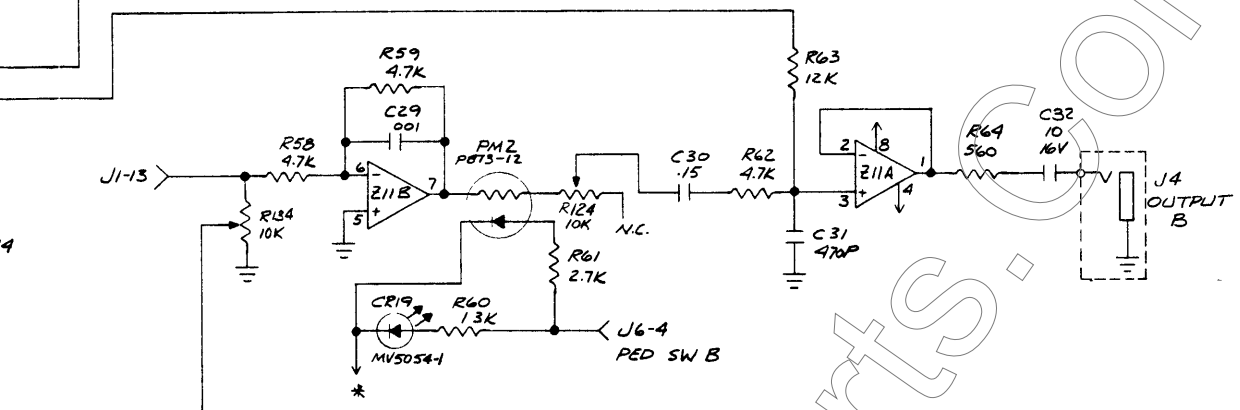
Musitronics Bi-PHASE (No references given)

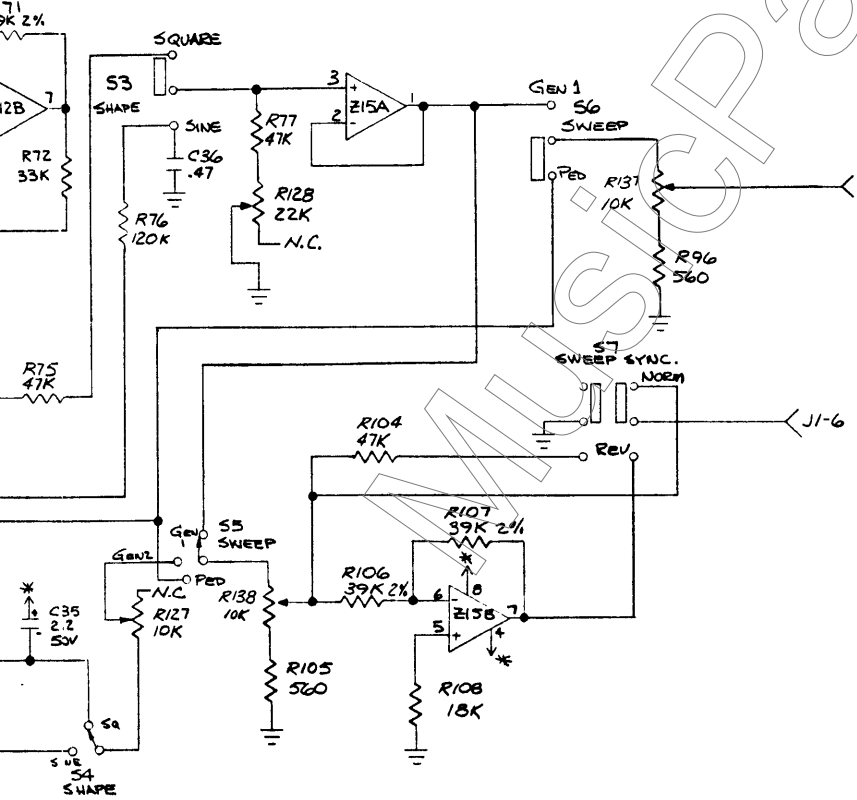
ARP PART NUMBER	ARP/MFG PART NUMBER	DESCRIPTION
5707101	CTS type VDT450	Pot, 10K, Linear
5707201	CTS type VDT450	Pot, 25K, Clockwise log taper
1001901	Brel (Mfg.)	Trim Pot, 10K, 3 terminal, horiz. mtg.
1001902	"	Trim Pot, 1K, " "
1001904	"	Trim Pot, 22K " "
1903801	RSW422-SD-P-R1-BK	Rocker Switch DPDT, Red
5708001	212-1	Rotary Switch, SP3T
1903901	RSW422-SD-P-A2-BK	Rocker Switch DPDT, Gray
1904001	RSW422-SD-P-U2-BK	Rocker Switch, DPDT, Blue
1904401	8174K11X121T50	Rocker Switch, power, illuminated
1903701	112-P	Footswitch SPDT
5708301		Power transformer, 117VAC
1305701	2N4401	Transistor NPN
1200301	1N4148	Diode, Signal
1202101	1N4002	Rectifier, 1A
2602401	P653-G50-6	Photo cell
2602901	P873-12	Photo cell
1202001	MV5054-1	LED
1410101	RC4195TK	IC, Voltage Regulator
5602701	RC4558NB	IC, Dual Op Amp, Selected
1700901	312.001	Fuse, 1Amp
5708601	AR-3-M-L	Knob
5708501	AR-1-B-SK-M	Knob



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1			





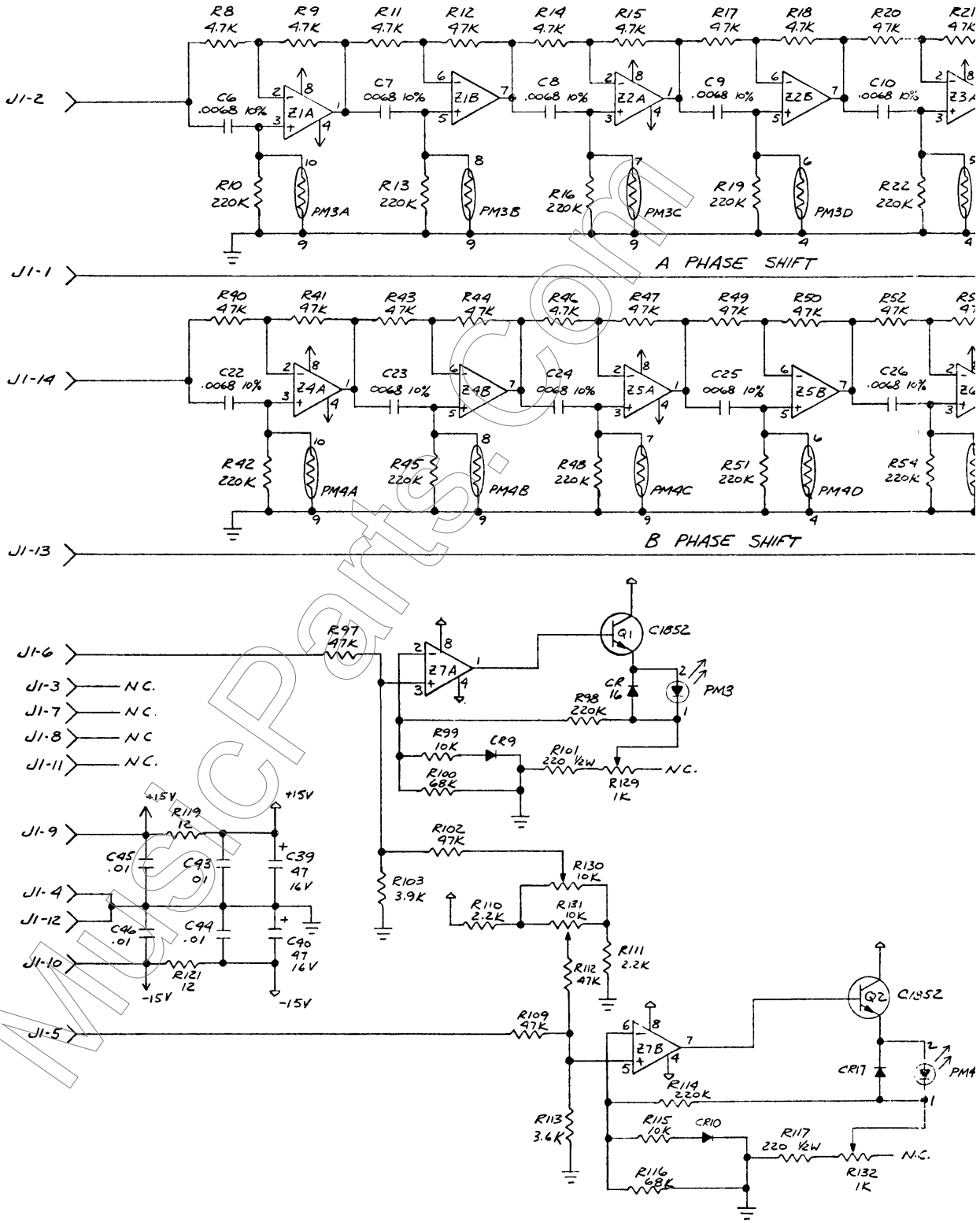


NOTES:

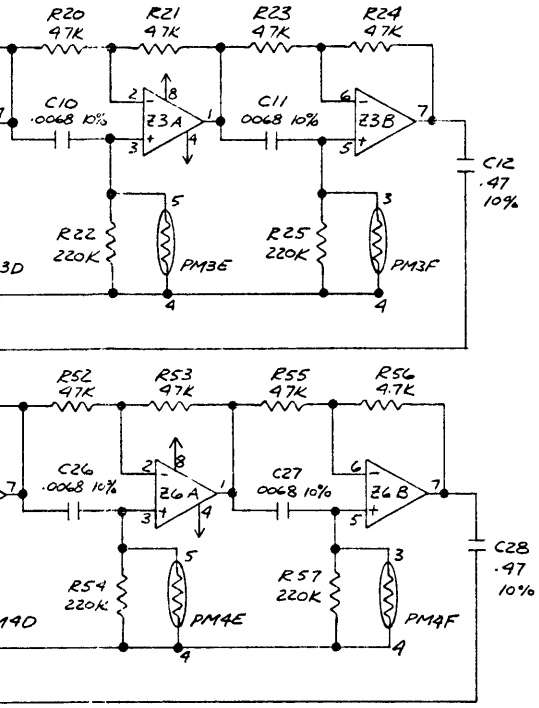
1. UNLESS OTHERWISE SPECIFIED:
   RESISTOR VALUES ARE IN OHMS, ¼W, 5%.
   CAPACITOR VALUES ARE IN μf (P= PICOFARADS).
   DIODES ARE IN4148.
2. HIGHEST REF. DESIGNATIONS:
   R138, C52, CR7, PM2, S7, J4, Z16
3. CONVENTION USED FOR SUPPLY VOLTAGE CONNECTIONS:

↑ IMPLIES	+15V ↑
↓ IMPLIES	-15V ↓

ARP PART NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES XX ± 02 TOLERANCES XXX ± 010 ANGLES ± 1° REMOVE BURRS & SHARP EDGES DO NOT SCALE DRAWING	ARP INSTRUMENTS INC	
USED ON		TITLE	SCHEMATIC, BD 1, BI-PHASOR
MATERIAL	DRAWN D.L.W. 11/1/79		
FINISH	CHECKED	SYM SWD	SIZE D
	APPROVED	DRAWING NO 77204	REV 1
	APPROVED	SCALE NONE	SHEET 1 OF 1

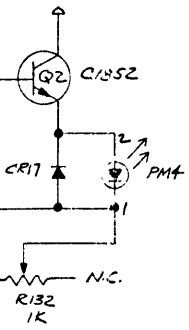


REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1			



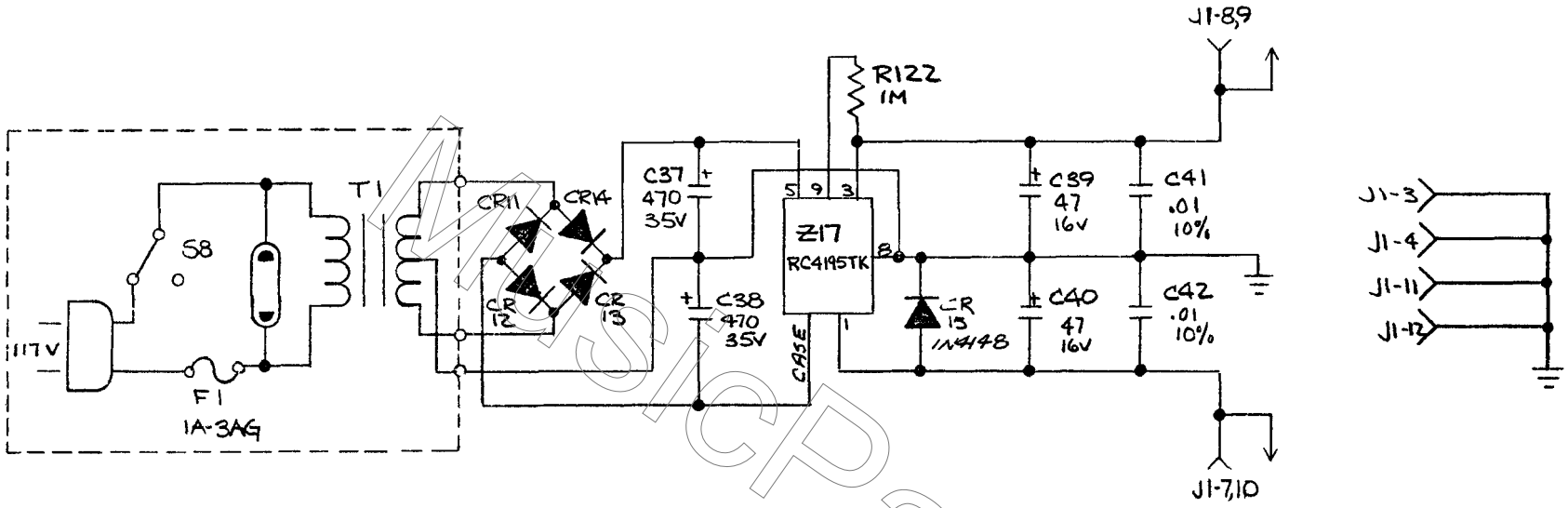
NOTES:
1. UNLESS OTHERWISE SPECIFIED:
   ALL RESISTOR VALUES ARE IN OHMS, ¼W, 5%
   ALL CAPACITOR VALUES ARE μF. P=PICAFARARDS
   DIODES ARE IN4148.
2. HIGHEST REF DES USED ARE R132, PM4, CR17, C54, Q2, Z7.
3. CONVENTION USED FOR SUPPLY VOLTAGE CONNECTIONS.

↑ IMPLIES +15V	↑
↓ IMPLIES -15V	↓
↑ IMPLIES DECOUPLED +15V	↑
↓ IMPLIES DECOUPLED -15V	↓



ARP PART NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	ARP INSTRUMENTS INC	
USED ON	TOLERANCES XX ± 02, XXX ± 010, ANGLES ± 1°	TITLE	SCHEMATIC BD 2 BI-PHASOR
MATERIAL	REMOVE BURRS & SHARP EDGES DO NOT SCALE DRAWING	SYM SWD	SIZE D
FINISH	DRAWN DLJ 1-8-79	DRAWING NO 77205	REV 1
	CHECKED	SCALE	SHEET 1 OF 1
	APPROVED		
	APPROVED		

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
1			

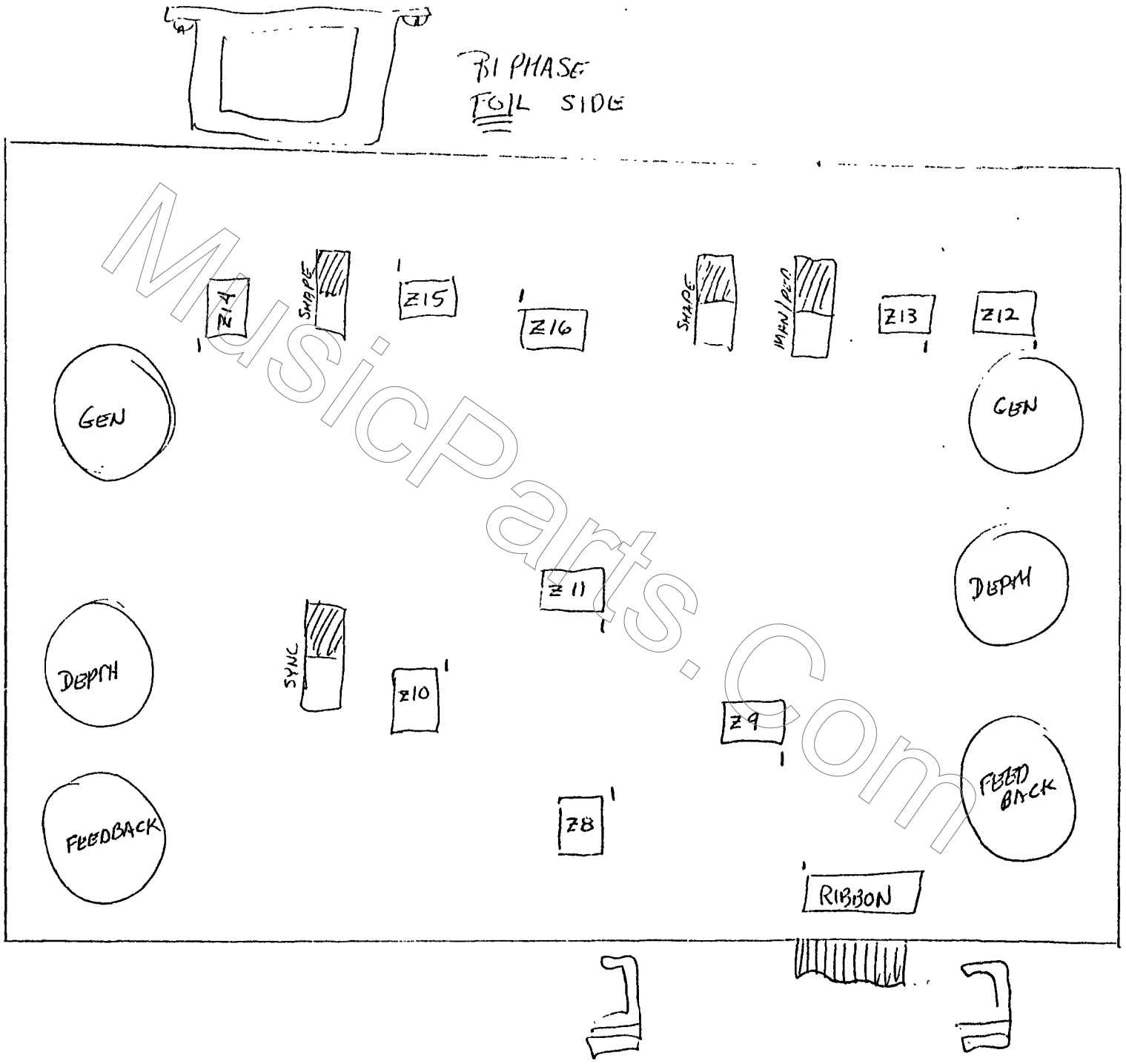


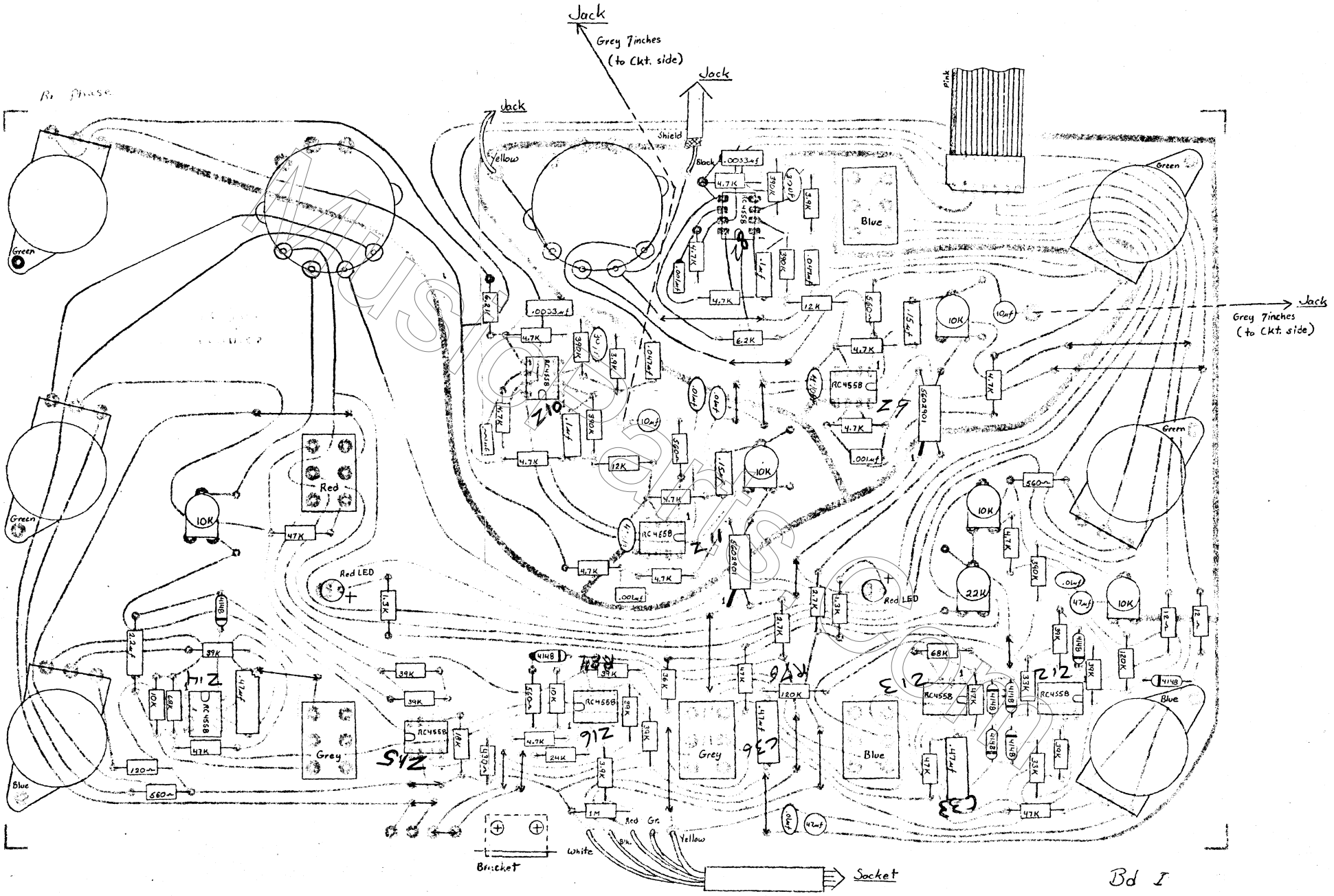
NOTES:

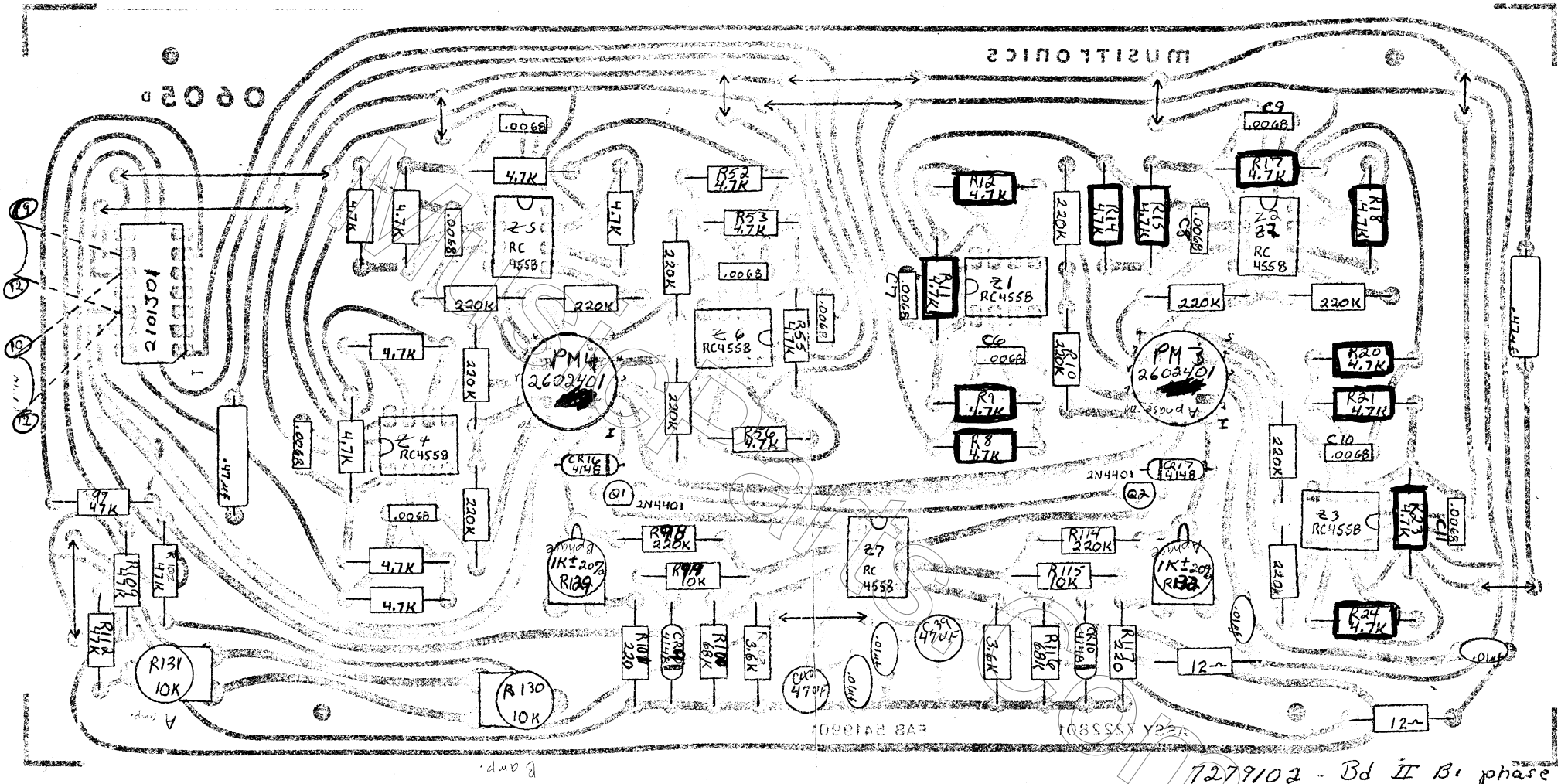
1. UNLESS OTHERWISE SPECIFIED:
   RESISTOR VALUES ARE IN OHMS, 1/4, 5%
   CAPACITOR VALUES ARE IN μf.
   DIODES ARE IN4002
2. HIGHEST REF DESIGNATIONS:
   R122, C42, Z17, CR15, S8, T1, F1, J1
3. CONVENTION USED FOR SUPPLY VOLTAGE CONNECTIONS

↑	IMPLIES +15 ↑
↓	IMPLIES −15 ↓

ARP PART NO	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES	ARP	ARP INSTRUMENTS INC
USED ON	TOLERANCES XX ± .02, XXX ± .010, ANGLES ± 1°		
MATERIAL	REMOVE BURRS & SHARP EDGES DO NOT SCALE DRAWING	TITLE	SCHEMATIC, BD3, BI-PHASOR
	DRAWN W.J. Ames 1/11/79		
FINISH	CHECKED	SYM SWD	SIZE B
	APPROVED	DRAWING NO 77206	REV 1
	APPROVED	SCALE NONE	SHEET 1 OF 1




Jack
Grey 7inches
(to Ckt. side)
Jack
Jack
Shield
Yellow
Black
Pink
Green
Blue
Red
Red LED
Grey
Green
Blue
Green
Blue
Jack
Grey 7inches
(to Ckt. side)
Bracket
White
Blk.
Red
Grn.
Yellow
Socket
Bd I



7279102 - Bd II Bi phase

BI PHASOR

SCOPE 2V/DIV 10 mS
TRIG LEFT AUTO TRIG OUT

OUTPOT "A" to CH 1
POINT "A" (PHASOR BD) to CH 2
PLUG IN FOOTSWITCH
SWEEP TO INPOT "A"
PEDAL (BLACK BALL CLIP) to GREEN WIRE ON FOOTSWITCH JACK
RED BALL CLIP TO ∿ of GEN 1 SHAPE SWITCH (actually the ⅂)
MAKE CONNECTIONS FOR COMMON GND
scope to ch 2

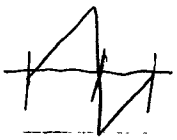
1) DRIVE ADJ:

RATE + DEPTH CLOCKWISE (PHASOR A+B)
FEEDBACK CCW (PHASOR A+B)
GEN 1 - SHAPE - ∿
RATE CONTROL - MAN
SWEEP - GEN 1

GEN 2 SHAPE - ∿
SYNC - NORM
SWEEP - GEN 1
B INPUT - "IN A"

FOOTSWITCH TO EFFECTS MODE (LED'S ON)
PEDAL - [redacted] MIN [redacted] ~~(w/ prongs on bottom)~~

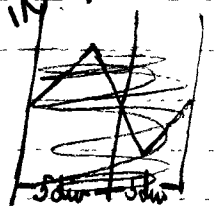
ADJ R128 FOR 10 V P-P
SWEEP CONTROL TO GEN 2 ROTARY SW
ADJ R127 FOR 10 V P-P
SWEEP CONTROL TO PEDAL ROTARY SW
CONNECT DVM TO POINT A
ADJ R125 FOR -5 V
SET PEDAL TO MAX DVM -4.5V - -5.5V
PEDAL TO MIN



(2)

SWEEP TO GEN 2
GEN 2 SHAPE SWITCH TO ⊓
WAVEFORM SIMILAR TO FIG 1
GEN 2 SHAPE SWITCH TO ∿
SWEEP TO GEN 1
GEN 1 SHAPE SWITCH TO ⊓
WAVEFORM SIMILAR TO FIG 1
GEN 1 SHAPE SWITCH TO ∿
GEN 1 RATE CONTROL TO PEDAL
CHECK PEDAL CHANGES FREQ OF LFO
PEDAL TO MIN
GEN 1 RATE CONTROL TO MANUAL

GEN 1 RATE CCW (min)
SCOPE TO 1 Sec — 1 full cycle in 10 sec
ADJ R126 FOR PERIOD OF [redacted] (5 DIV)



(2) SWEEP TO GEN 2
GEN 1 RATE FULLY CW (MAX)
SCOPE TO 10 mS
CH 2 to EMITTER Q2
~~A TO TRIG IN~~ (Grd ch. 2)
ADJ TRACE LEVEL 1 DIV FROM BOTTOM

ADJ R131 FOR AMPLITUDE OF 11V WITH NO CLIPPING AT TOP, NO SPIKES AT BOTTOM
SLOWLY DECREASE PHASOR A DEPTH CONTROL.
WAVEFORM SHOULD DECREASE TO .5 DIV AT MIN.
DEPTH CONTROL MAX
CH 2 TO EMMITTER OF Q1
ADJ R130 FOR AMPLITUDE OF 11V WITH NO CLIPPING AT TOP, NO SPIKES AT BOTTOM
SLOWLY DECREASE PHASOR B DEPTH CONTROL
WAVEFORM SHOULD DECREASE TO .5 DIV AT MIN
DEPTH CONTROL TO MAX

50μ ← → SET POT
10u
SCOPE

(3) SWEEP TEST: SCOPE TO CH 1 and Sweep B to Gen 1 (3)
V/DIV TO 10mV
[redacted] CENTER TRACE
AC COUPLE IN
TRIG EXT
SEC/DIV TO AMPLT adj. to center trace and
adj. Sweep Gen. 1 rate to 6
ADJ R132 SO LAST NOTCH IS 9.6 DIV
ADJ R123 FOR MIN AMPLITUDE AT NOTCH B

CH 1 FROM OUTPUT A TO OUTPUT B

ADJ R129 SO LAST NOTCH IS 9.6 DIV
ADJ R124 FOR MIN AMPLITUDE AT NOTCH B

PHASOR A+B switch SWEEP CON TO PED
PHASOR B INPUT TO "OUT A"
PHASOR B FOOTSWITCH TO NORMAL (LED OFF)
PEDAL TO MAX
NOTCH C SHOULD BE AT 9.8 DIV IF NOT ADJ R132
PHASOR B FOOTSWITCH TO EFFECTS (LED ON)
PHASOR A FOOTSWITCH TO NORMAL (LED OFF)
NOTCH C SHOULD BE AT 9.8 DIV IF NOT ADJ R129
PHASOR A F.S. TO EFFECTS (LED ON)
PHASOR B F.S. TO NORMAL (LED OFF)
SHOULD BE LITTLE OR NO AMPLITUDE CHANGE
FOOTSWITCH B TO EFFECT (LED ON)

PHASOR A SWEEP TO GEN 1
PHASOR B SWEEP TO GEN 1
WAVEFORM SIMILAR TO FIG 2
CH 1 TO OUTPUT A
PHASOR B INPUT TO "IN B"
PHASOR B SWEEP TO GEN 2
SCOPE TO 20mV

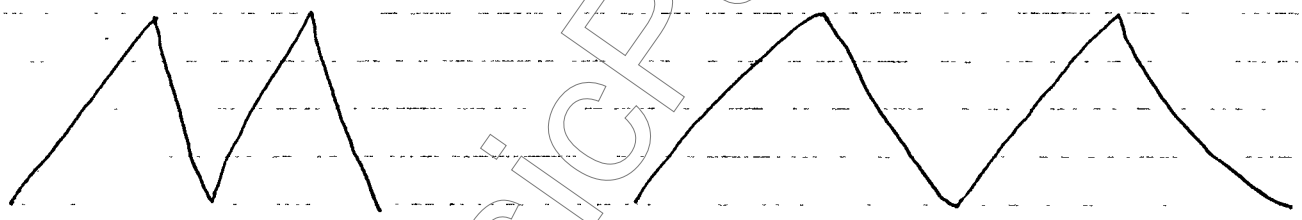
Ft. SW for A (4)

SLOWLY INCREASE PHASOR A FEEDBACK CONTROL Must beon! too.
WAVEFORM SHOULD BE 60-90 mV
SWEEP TO INPUT B
CH 1 TO OUTPUT B and Sweep ● to Gen 1
SLOWLY INCREASE PHASOR B FEEDBACK CONTROL
WAVEFORM SHOULD BE 60-90 m
FEED BACK CONTROL TO MIN

NORM/REV SWITCH TO REV
WAVEFORM SHOULD SHIFT

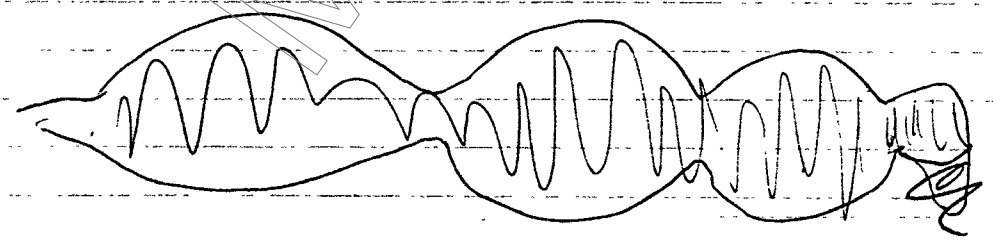
● POWER OFF

FIG 1



SINEWAVE SQUARE WAVE

FIG 2



Rear View (Foil Side)
Trim Pot Lay-out
Bi-Phase