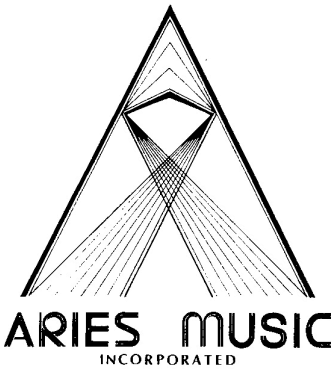


MODULE ASSEMBLY INSTRUCTION ERRATA

AR-338 Correction to Instructions:

Assembly Wiring: step i) should read: Connect CCW of P-7 to CCW of P-8
Using Violet Wire: Step b) should read: Connect the CCW of P-2 to the CW of P-8. Step c) should read: Connect the CW of P-8 to the CCW of P-10
Add to parts list:
(1) 16 pin dip socket
Add to Page 2:
#6 c) install the 16 pin socket for the SSM 2030
#6 d) install the SSM 2030

AR-339 Parts List Corrections:

(8) 10K carbon film resistors; instead of (7)
(3) 22K " " " " " (2)
(0) 27K " " " " " (1)
(2) 33K " " " " " (3)
(2) 330K " " " " " (1)
Assembly Instructions:
Step 2
F) (2) 33K R-11, 23
G) (3) 22K R-3, 36, 41
N) (2) 330K R-7, 42
Q) No 27K, delete step
Schematic & Component layout are correct.

AR-344 & AR-345
Correct resistor designations on schematic & assembly instructions:

R-1 should be R-8		*R-9 should be R-1*	
R-2 " " R-9		*R-16 " " R-20*	
R-3 " " R-6		*R-17 " " R-19*	
R-4 " " R-7		*R-18 " " R-17*	
R-5 " " R-4		*R-19 " " R-18*	
R-6 " " R-5		*R-20 " " R-16*	
R-7 " " R-3			
R-8 " " R-2			

Parts List & P.C. Layout Drawing are correct.

AR-324:
(2) 2N3638 replacing (1) 3347-1

P.O. Box 3065 Salem, Massachusetts 01970 (617) 744-2400

ARIES MUSIC SYSTEM 300 SYNTHESIZER

AR-338 PMS VOLTAGE CONTROLLED OSCILLATOR

PARTS LIST

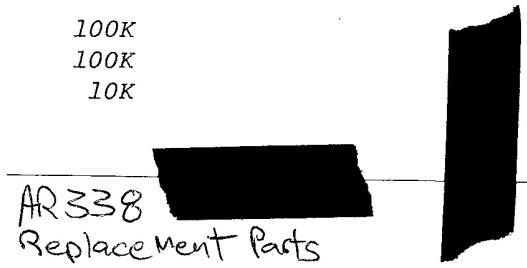
QUANTITY	DESCRIPTION	VOLTAGE & RATINGS
RESISTORS:		
2	¼w. carbon film; 5%	330 ohm
2	" " " "	390 ohm
8	" " " "	1 K
1	Tel Labs Q81; Tempco	1 K
2	¼w. carbon film; 5%	1.5 K
1	" " " "	2.2 K
1	" " " "	5.6 K
1	" " " "	7.5 K
2	" " " "	10 K
1	" " " "	12 K
2	" " " "	15 K
3	" " " "	18 K
2	" " " "	20 K
2	" " " "	22 K
7	" " " "	27 K
2	" " " "	33 K
3	" " " "	39 K
8	" " " "	47 K
1	1% metal film; green, yellow, white, red, brown	54.9 K
2	¼w. carbon film; 5%	68 K
1	1% metal film; white, black, white, red, brown	90.9 K
2	1% metal film; brown, black, black, orange, brown	100 K
12	¼w. carbon film; 5%	100 K
2	" " " "	150 K
1	1% metal film; red, violet, orange, orange, brown	274 K
3	¼w. carbon film; 5%	470 K
1	" " " "	560 K
1	" " " "	1 M
1	" " " "	2.2 M
1	" " " "	3.3 M
1	" " " "	22 M
TRIM POTS:		
4	Linear	50K
1	multi-turn cermet (Spectrol 64W103)	10K
1	multi-turn cermet (Spectrol 64W203)	20K
CAPACITORS:		
1	Disc	10pf
1	"	20pf
2	"	50pf
1	"	100pf
1	"	330pf
2	"	1000pf
1	"	0.1uf

[redacted]

AR-338 PMS VOLTAGE CONTROLLED OSCILLATOR

PARTS LIST CONT.

QUANTITY	DESCRIPTION	VOLTAGE & RATINGS
1	Mallory SXM 210; Polystyrene cap.	1000pf
1	Mallory SXM 110; " "	10.000pf
2	Tantalum Capacitor	luf
DIODES:		
5		1N4148
TRANSISTORS:		
2	NPN	2N3393
1	NPN Darlington	MPSA-14
1	PNP	2N3638
Sockets		
1	16 pin dip	
I.C.:		
3	Op. Amp.	TL082 LF 353N
2	" "	1458
1	VCO	SSM2030
4	Dual pots; linear	100K
1	" " log	100K
1	Single pots; linear	10K
5 sets	Dual concentric knobs	
1	Single knob	
1	Switch; SPST; on-none-on	
1	Switch; DPDT; on-none-on	
14	Mini jacks	
2	Wire saddle	
4	Nuts; 1/16" thick; 3/8" internal	
1	AR-338 Front panel	
1	AR-338 P.C. Board	
1	Module Frame	
1	Bracket; large	
1	Bracket; small	
3	Screws; Phillips head for module	
4	" #4-40 x 3/8"	
2	" Phillips head, black	
6	Nuts; #4-40	
2	P.C. Card guides	
COLOR CODED WIRE		
4	Black	
6	Brown	
2	Red	
7	Orange	
5	Yellow	
6	Green	
6	Blue	
3	Violet	
4	Grey	
6	White	
20"	24 AWG gauge tinned copper buss	



AR338 [redacted]
Replacement Parts
82pf and 910 pf Polystyrene caps in parrallel replaces 1000 pf (.001 uf) Polysty. Cap.
2000pf and 8200 pf Polysty In Parrallel replaces .01uf Polysty.
LF 353N Replaces TL082.
Lin, 100K, Duals designated by the code EF 1869

ARIES MUSIC SYSTEM 300 SYNTHESIZER

AR-338 PMS VOLTAGE CONTROLLED OSCILLATOR

ASSEMBLY INSTRUCTIONS

It is recommended that you do the following before you proceed:
Find a place where you can work through completion, without disturbing your set-up
Use adequate lighting
Wash your hands before starting. This removes contaminating oils and perspiration and makes assembly more comfortable
As you proceed, check off each step with a pencil

( ) 1. PREPARATION:
Lay the circuit board down on a sheet of white paper. PLACE METAL FOIL SIDE DOWN! Turn board so that connector strip is on the left.
Lay the assembly drawing down near the board
Unpack the parts carefully and place in a large box or tray SO THEY WON'T GET LOST.
HAVE THE FOLLOWING TOOLS NEARBY:
Pencil tip soldering iron, hot and tinned (solder coated)
Solder; USE ONLY THIN ROSIN-COATED SOLDER!
Small, diagonal, wire cutters
Small wire strippers
Small long-nose pliers
Flat blade screw driver
½" or #16 nut driver
5/16" or #10 nut driver
¼" or #8 nut driver
A pair of regular pliers can substitute for the nut drivers but will not be as easy to use.

( ) 2. RESISTORS:
Carefully install all resistors on the circuit board. Double check your installation against the P.C. board component layout drawing to be sure that the correct value is in the correct location. To prepare the resistor for insertion hold the body of the resistor between the thumb and index finger of your left hand. With the thumb and index finger of your right hand bend both the leads of the resistor at once to form right angles with the body. The resistor will now insert easily into the P.C. board. Once the resistor is inserted, bend the leads on the foil side to hold the resistor in place. Solder the resistors to the board and cut the leads about 1/16 of an inch from the board.

1) Install all twelve 100K 5% resistors; R14,15,41,49,50,61,64, 66,67,68,69,& 71; solder & cut leads
2) Install all eight 47K resistors; R1,3,6,19,26,44,48,57; solder & cut leads
3) Install all four 1K resistors: R11,30,31 & 72; solder & cut leads
4) Install all three 18K resistors; R7, 10, & 73; solder & cut leads
5) Install all three 39K resistors; R51, 59, & 60; solder & cut leads
6) Install all three 470K resistors; R21, 39 & 42; solder & cut leads
7) Install both 330ohm resistors; R2 & 5; solder & cut leads
8) Install both 390ohm resistors; R45 & 63; solder & cut leads
9) Install both 10K resistors; R33 & 70; solder & cut leads
10) Install both 15K resistors; R25 & 37; solder & cut leads
11) Install both 20K resistors; R32 & 34; solder & cut leads
12) Install both 22K resistors; R29 & 35; solder & cut leads
13) Install both 33K resistors; R8 & 12; solder & cut leads

AR-338 PMS V.C.O.

ASSEMBLY INSTRUCTIONS CONTINUED

14) Install both 68K resistors; R9 & 13; solder & cut leads
15) Install both 100K, 1% resistors; R20 & 22; solder & cut leads
16) Install both 150K resistors; R16, & 17; solder & cut leads
17) Install both 1.5K resistors; R62 & 65; solder & cut leads
18) Install the 1K tempco resistor; R-43; solder & cut leads
19) Install the 2.2K resistor; R-36; solder & cut leads
20) Install the 5.6K resistor; R-56; solder & cut leads
21) Install the 7.5K resistor; R-27; solder & cut leads
22) Install the 12K resistor; R-28; solder & cut leads
23) Install the 27K resistor; R4; solder & cut leads
24) Install the 54.9K 1% resistor; R-40; solder & cut leads
25) Install the 90.9K 1% resistor; R-38; solder & cut leads
26) Install the 274K 1% resistor; R-24; solder & cut leads
27) Install the 560K resistor; solder & cut leads (R-47)
28) Install the 1M resistor; R-18; solder & cut leads
29) Install the 2.2M resistor; R-46; solder & cut leads
30) Install the 3.3M resistor; R-23; solder & cut leads
31) Install the 22M resistor; R-58; solder & cut leads

( ) 3. DIODES:
Install diodes CR1 - 5. Double check the polarity of the diodes. Solder and cut leads.

( ) 4. Install capacitors. Observe polarity on the tantalum and polystyrene capacitors. Solder and cut leads.

a) 10,000pf polystyrene capacitor	C-5
b) 1000pf " "	C-6
c) luf tantalum capacitor	C-12 & 13
d) 10pf disc capacitor	C-9
e) 20pf " "	C-10
f) 50pf " "	C-1 & 2
g) 100pf " "	C-7
h) 330pf " "	C-3
i) 1000pf " "	C-4 & 11
j) .luf " "	C-8

Capacitor C-8 is optional. If it is inserted it will capacitively couple the linear FM input. If the modulating waveform has a DC component and if it is in the low audio frequency range, this capacitor will block the DC component. The result is that the pitch of the modulated VCO will not be shifted by the DC component. If this capacitor is not installed, a jumper must be installed in its place. We suggest that you lst complete the module by leaving out this capacitor and later experimenting with capacitively coupling this input by inserting it. In this way you can make your own choice on which you prefer.

( ) 5. Install all four transistors. Check from correct orientation of the leads
a) Install NPN 2N3393 Q1 & 2
b) Install NPN MPSA-14 Darlington; Q-3
c) Install PNP 2N3638 Q-4

( ) 6. Install all six IC's
a) Install the three TL)82 op. amps. U-1, 2, & 3
b) Install the two 1458 op. amps. U-5, & 6
c) Install the SSM 2030's

AR-338 PMS V.C.O.

ASSEMBLY INSTRUCTIONS, CONT.

( ) 7. Install the six trim pots
a) Install the 20K multi-turn trim T-5
b) Install the 10K multi-turn trim T-6
c) Install the 50K single turn trim T-1, 2, 3 & 4

SNAP BOTH WIRE SADDLES INTO PLACE

THIS COMPLETES THE ASSEMBLY OF THE P.C. BOARD. FOR THE TIME BEING, LAY IT ASIDE AND GO TO THE NEXT SECTION

FRONT PANEL ASSEMBLY PROCEDURE (see drawing)

Aries Music front panels are made of anodized aluminum. They will not be scratched in normal operation, but they can be scratched with pliers or a nut driver. When using tools on the front panel, be very careful not to scratch it.

( ) 1. Mount the top 2 dual pots. Do not fully tighten the nuts because they will be later removed for final assembly. If the pots have a small flange which prohibits them from being mounted flush against the face panel, bend the flange outward so the pots can be mounted flush.

( ) 2. Mount the additional 3 dual pots and the single pot. Pot 3/4 is LOG. On each of these pots there are 2 nuts. Screw the 1st one, the larger of the two, on to the threads and tighten it firmly against the body of the pot. Place the lock washers between this nut and the back side of the front panel. Mount the pots on the panel and attach them with the 2nd nut. Tighten this nut firmly.

( ) 3. Mount all 14 jacks as shown in the diagram. The washer goes on the front of the face panel.

( ) 4. Mount the 6 terminal switch (S-2) so that the terminals are oriented as in the drawing. It makes no difference which row of terminals is on top. There are 2 nuts with each switch also. Screw the 1st nut onto the bushing about 1/8" from the body of the switch. Next place the lock washer on the bushing and insert switch into the face panel securing it with the 2nd nut. The purpose of the 1st nut is to space the switch so its bushing protrudes from the face panel as far as the jacks' bushings.

( ) 5. Mount the 3 terminal switch (S-1) so that the terminals are oriented as in the drawing. It makes no difference which terminal is on the right. Follow the above mounting procedure.

PANEL WIRING

USING BUSS WIRE:
1) Connect the shunts to the grounds of the following 4 jacks: Jack 3FM, LIN, FM, SYNC & SOFT.
2) Connect Grounds of all 14 jacks together as shown in the wiring diagram.

USING BLACK WIRE, MAKE AND SOLDER THE FOLLOWING CONNECTIONS. THESE WIRES SHOULD BE AS SHORT AS CONVENIENTLY POSSIBLE EXCEPT WHERE OTHERWISE INDICATED.

a) Connect the CCW of P6 to the CCW of P5

Sprague color code & front panel wiring diagram

AR-338 PMS V.C.O.

ASSEMBLY INSTRUCTIONS, CONT.

b) Connect the CCW of P4 to the CCW of P3
c) Connect the CCW of P6 to the CCW of P4
d) Connect the CCW of P6 to GND jack sync
e) Connect GND jack sync to TERM 6 of S-2
f) Connect TERM 6 of S-2 to CT of P11
g) Connect CT of P11 to CCW of P9
h) Connect CCW of P9 to CCW of P7 (This wire should be 3" long)
i) Connect CCW of P7 to CCW of P8

USING RED WIRE

a) Connect the CW of P1 to CW of P2
b) Connect the CW of P2 to CW of P10

USING VIOLET WIRE

a) Connect the CCW of P1 to the CCW of P2
b) Connect the CCW of P2 to the CCW of P8 (This wire should be 3" long)
c) Connect the CCW of P8 to the CCW of P10 (This wire should be 3" long)
d) Connect the CCW of P10 to TERM 4 of S-2

CONNECT THESE WIRES FROM POTS TO JACKS.

They should run along the face panel in the most direct and logical route. They should be as short as conveniently possible and should not excessively "loop".

1) ORANGE from CW P9 to TIP jack TRI PWM
2) BROWN from CW P7 to TIP jack PWM SAW
3) BROWN from CW P3 to TIP jack 1 FM
4) ORANGE from CW P4 to TIP jack 2 FM
5) WHITE from CW P5 to TIP jack MOD

USING 14" LENGTHS OF COLOR CODED WIRE, CONNECT ONE END TO THE FOLLOWING TERMINALS:

1) Connect WHITE wire to CCW of P11
2) Connect GREY wire to CW of P11
3) Connect ORANGE wire to CT of P9
4) Connect GREEN wire to CT of P10
5) Connect BROWN wire to CT of P7
6) Connect YELLOW wire to CT of P8
7) Connect VIOLET wire to CCW of P1
8) Connect GREY wire to CT of P1
9) Connect RED wire to CW of P1
10) Connect WHITE wire to CT of P2
11) Connect BROWN wire to CT of P3
12) Connect ORANGE wire to CT of P4
13) Connect WHITE wire to CT of P5
14) Connect YELLOW wire to CT of P6
15) Connect VIOLET wire to CW of P6
16) Connect GREEN wire to terminal 1 of switch S-1
17) Connect ORANGE wire to terminal 2 of switch S-1
18) Connect BROWN wire to terminal 3 of switch S-1
19) Connect BLACK wire to GND of JACK 1FM
20) Connect BLUE wire to TIP of JACK SYNC

AR-338 PMS V.C.O.

ASSEMBLY INSTRUCTIONS CONT.

21) Connect YELLOW wire to TIP of JACK 3FM
22) Connect GREY wire to TIP of JACK SOFT
23) Connect GREEN wire to TIP of JACK LIN FM
24) Connect WHITE wire to TIP of JACK SINE
25) Connect YELLOW wire to TIP of JACK TR1
26) Connect ORANGE wire to TIP of JACK PAN OUT
27) Connect BLUE wire to TIP of JACK PUL OUT
28) Connect GREEN wire to TIP of JACK OUT SAW
29) Connect BLUE wire to TERMINAL 5 of S-2
30) Connect BLUE wire to TERMINAL 2 of S-2
31) Connect BLUE wire to TERMINAL 1 of S-2

MODULE ASSEMBLY INSTRUCTIONS. PLEASE REFER TO MODULE ASSEMBLY DRAWING.

( ) 1. Unpack the frame, bag of hardware and front panel
( ) 2. Snap the 2 plastic card guides into the holes in the frame. Be sure that the pairs of tabs point to the rear, as shown.
( ) 3. Slide the P.C. Board into the frame holding the top and bottom of the frame together against the board so that the board fits snugly in the guides between the tabs.
( ) 4. Using the 4-40 x 3/8" screws and nuts, mount the 2 angle brackets to the frame, as shown. The brackets should be on the component side of the board.
( ) 5. Screw the board to the brackets. Insert the 4-40 x 3/8" screw from the foil side of PC board.
( ) 6. Refer again to MODULE ASSEMBLY drawing. Mount top of panel to frame using the 2 upper pots. Put on lock washers and insert pot shafts thru rear of upper holes in front of frame. Bring panel against frame, so these pots also go thru matching holes in panel. Tighten nuts on front of panel, with pots oriented as shown in diagram.
( ) 7. Attach bottom of panel to frame, using remaining 4-40 x 3/8" screws and nuts.

FINAL WIRING PROCEDURE

Connect the wires from the front panel to the PC board in this order. Run the wires through the specified wire saddle and around the periphery of the baord to their designations. Cut each wire about 1" longer than absolutely necessary to provide for some slack. Cut, strip, trim, insert and solder each wire.

THROUGH THE BOTTOM WIRE SADDLE

1. Connect BLACK wire from jack ground to M on board
2. Connect GREY wire from P11 to PAN 2 on board
3. Connect VIOLET wire from P2 to -15VZ on board
4. Connect WHITE wire from P11 to PAN 1 on board
5. Connect GREEN wire from P10 to PWM P~INIT on board
6. Connect ORANGE wire from P9 to PWM P~MOD on board
7. Connect BLUE wire from S 2.1 to S 2.1 on board
8. Connect BLUE wire from S 2.2 to S 2.2 on board
9. Connect BLUE wire from jack PUL OUT to PULSE on board
10. Connect ORANGE wire from SWITCH S1.2 to S 1.2 on board
11. Connect GREEN wire from jack OUT SAW to SAW on board

AR-338 PMS V.C.O.

ASSEMBLY INSTRUCTIONS, CONT.

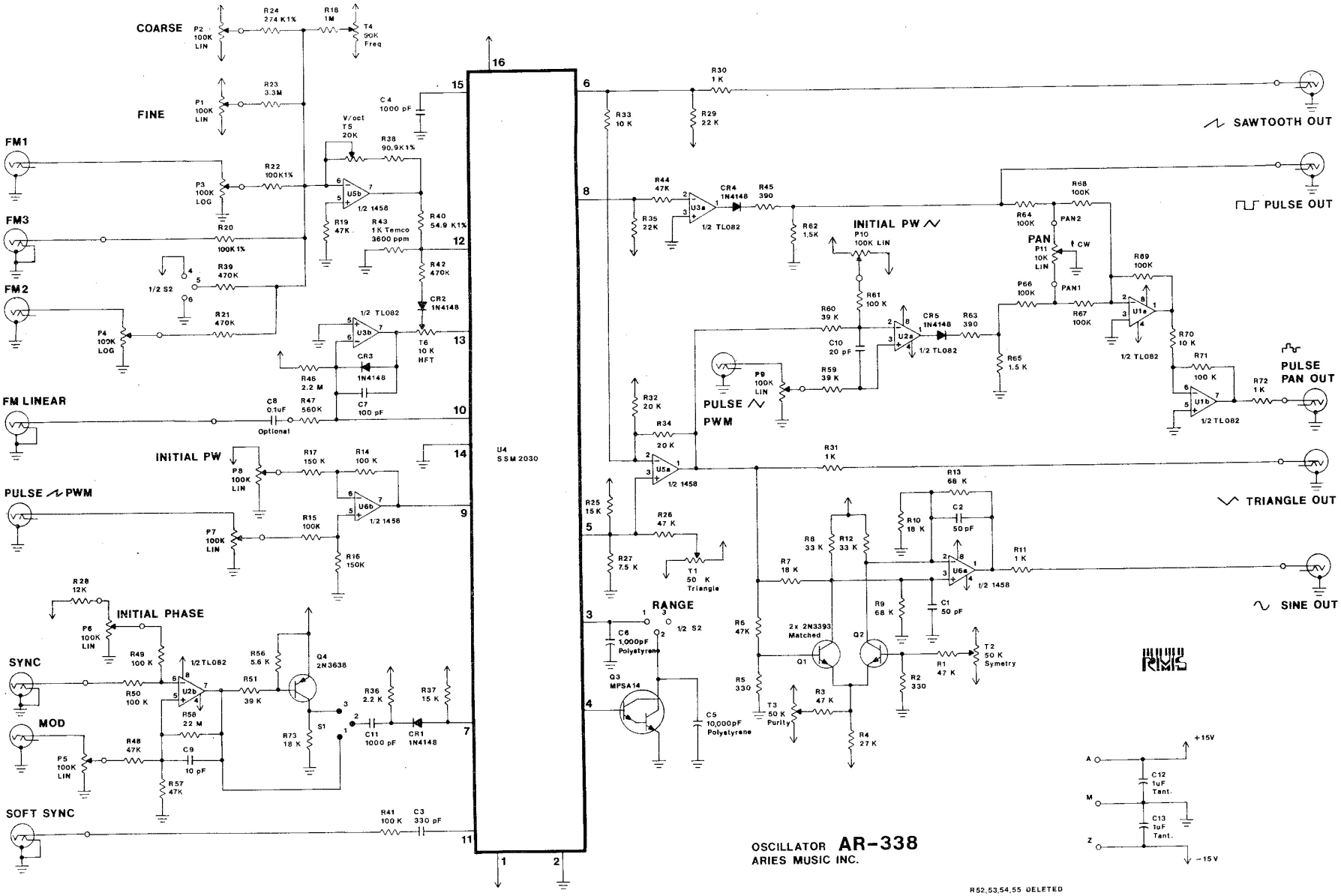
12. Connect YELLOW wire from jack TRI to TRI on board
13. Connect VIOLET wire from P6 CW to P6 CW on board
14. Connect WHITE wire from jack SINE to SINE on board

THROUGH THE TOP WIRE SADDLE

1. Connect RED wire from P1 to A + 15v on board
2. Connect ORANGE wire from jack PAN OUT to PAN OUT on board
3. Connect GREEN wire from switch S1.1 to S1.1 on board
4. Connect BROWN wire from switch S1.3 to S1.3 on board
5. Connect BLUE wire from jack SYNC to SYNC on board
6. Connect YELLOW wire from P6 to INIT PHASE on board
7. Connect WHITE wire from P5 to PHASE MOD on board
8. Connect GREEN wire from jack LIN FM IN to FM LINEAR on board
9. Connect GREY wire from jack SOFT SYNC to SOFT SYNC on board
10. Connect BLUE wire from SWITCH 2.5 to S 2.5 on board
11. Connect WHITE wire from P2 to COARSE on board
12. Connect GREY wire from P1 to FINE on board
13. Connect BROWN wire from P3 to FM1 on board
14. Connect ORANGE wire from P4 to FM2 on board
15. Connect YELLOW wire from jack 3FM to FM3 on board
16. Connect YELLOW wire from P8 to PWM P∿ INIT on board
17. Connect BROWN wire from P7 to PWM P∿ MOD on board

TURN ALL POT SHAFTS FULLY TO THE LEFT & AFIX THE KNOBS IN THIS ORDER

1) P-11
2) P-9
3) P-10
4) P-7
5) P-8
6) P-5
7) P-6
8) P-3
9) P-4
10) P-1
11) P-2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FM3
FM2
FM LINEAR
INITIAL PW
PULSE PWM
SYNC
MOD
INITIAL PHASE
SOFT SYNC
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SAWTOOTH OUT
PULSE OUT
PULSE PWM
INITIAL PW
PAN
PULSE PAN OUT
TRIANGLE OUT
SINE OUT
RANGE
OSCILLATOR AR-338
ARIES MUSIC INC.
R52,53,54,55 DELETED
+15V
-15V

AR-338 OSCILLATOR
FRONT PANEL WIRING DIAGRAM