

ARIES System 300 Music Synthesizer

MODULE AR-329

PHASE- FLANGER

The previous pages were written as a general guide, to familiarize the builder with the components. Now are the specific assembly instructions for building your AR-329 PHASE FLANGER module It is recommended that you do the following before you proceed:

Find a place 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

() Preparation

lay the circuit board out on a clean sheet of white paper PLACE METAL (FOIL SIDE) DOWN Turn board so that the connector strip is to 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 core solder!

Small diagonal wire cutters

Small long nose pliers

Regular pliers

Flat blade screw driver

() Jumpers

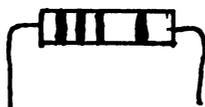
Find J-1 on the drawing. Measure J-1 on the P.C. board. Cut a piece of insulated wire one inch longer than J-1 measures on the P.C. board . Strip $\frac{1}{2}$ " of the insulation from each end of the wire. Bend the bare end of the wire and insert them into the board, according to the drawing. While holding the jumper against the board , bend the bare ends at a 45 degree angle on the foil side of the board to hold the jumper in place. Solder and cut off the excess. Install J2 through J5 in the same manner , but do not install J6 or J7 at this time as they are long and will get in your way install J6 and J7 after you have installed the resistors that are in there area.

() RESISTORS

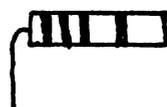
Install all 48 resistor on the P.C. board to avoid braking the resistor leads bend the leads at least 1/16 of an inch away from the resistor body.

For example:

Correct



Incorrect



() CAPACITORS:

Install all 14 capacitors on the P.C. Board—most capacitors on the AR-329 Phase Flanger are ceramic or monolithic disc type and therefore are not polarity sensitive; C-1 & C-2 are tantalum and must be oriented properly.

() TRANSISTORS AND F.E.T.S

Install Q1 (2N3393) on to the P.C. Board. Be careful to maintain the proper orientation of the leads. Next install Q2 (E-411) this is a dual n channel fet—as before be careful to maintain the proper lead orientation.

() INTEGRATED CIRCUITS AND TRANSISTOR ARRAYS

Install all three CA1458 on to the P.C. Board. Be careful to maintain the proper orientation of the device's.
Next install the CA-3086 transistor array and as before be careful to maintain the proper orientation of the device.

() PD-10 POTTED AND TESTED MODULE

Install the PD-10 potted module on to the P.C. board. Be careful to orientate it correctly. Notice that one end of the module has the leads more closely together. This end goes towards the connector strip.

() TRIMPOTS

Install all three of the 50K linear trimpots on to the P.C. board and finally J-6 & J-7.

ALL THE BOARD COMPONENTS ARE NOW MOUNTED

MODULE ASSEMBLY: Please refer to the module assembly drawing.

- () Unpack the frame, and the bag of mounting hardware and front panel. Also a bag of mini phone jacks, knobs.
- () Snap the two black plastic card guides into the frame holes; the tabs must point to the rear (the bottom one is shown installed on the drawing).
- () Slide the P.C. Board into the frame. Hold the top and the bottom of the frame down upon the board, so that the board fits snugly in the card guide tabs.
- () Mount the board to the two brackets, as shown, using four round head screws and nuts. It may be necessary to hold the frame top and bottom together to prevent the P.C. board from slipping out of the guides.
- () Next comes the front panel. Notice that the front panel has two small holes near the bottom of the panel; these mount to the two holes on the bottom of the frame with two 4-40 pan head screws and nuts.
- () Now take two 100K linear pots and bend the tabs, if any, out flat. Insert the shaft through the module frame and the front panel. Align as shown on the panel wiring diagram and secure with two nuts. **BE CAREFUL NOT TO SCRATCH THE FRONT PANEL.**
- () Install the other two pots as indicated on the panel wiring diagram.
- () Install all 12 mini-phone jacks as shown on the panel wiring diagram.
- () Turn all of the potentiometer shafts fully counter-clockwise and mount the knobs pointing to the left most number or mark. Now tighten the knobs set screws.

THIS COMPLETES THE MODULE ASSEMBLY

PANEL WIRING---Refer to the panel wiring diagram, and the board assembly drawing.

- () Run a wire connecting the grounds of all 12 jacks, as shown. also run a wire from the connector strip point N to one of the grounds on the jacks as shown. and to the three pots P-1,3,4 pins 3 as shown
- () Wire all four pots to the appropriate points on the board as indicated on the assembly drawings. USE INSULATED WIRE.
- () Wire all 12 jacks to the appropriate points on the board near the connector strip . Be careful to wire to the right lettered points. these can be found on the drawing and on the p.c. edge connector.

THIS COMPLETES THE WIRING OF YOUR AR-329 PHASE FLANGER MODULE

AR-329 TRIM PROCEDURE.

NOTE: you will need the following to trim your phase flanger module

- () Source of + and- 15 volts like the AR- 322 power supply
- () A D.C. Voltmeter
- () A 1Khz. sinewave AR-317 VCO
- () A small screw driver to adjust the trimpots

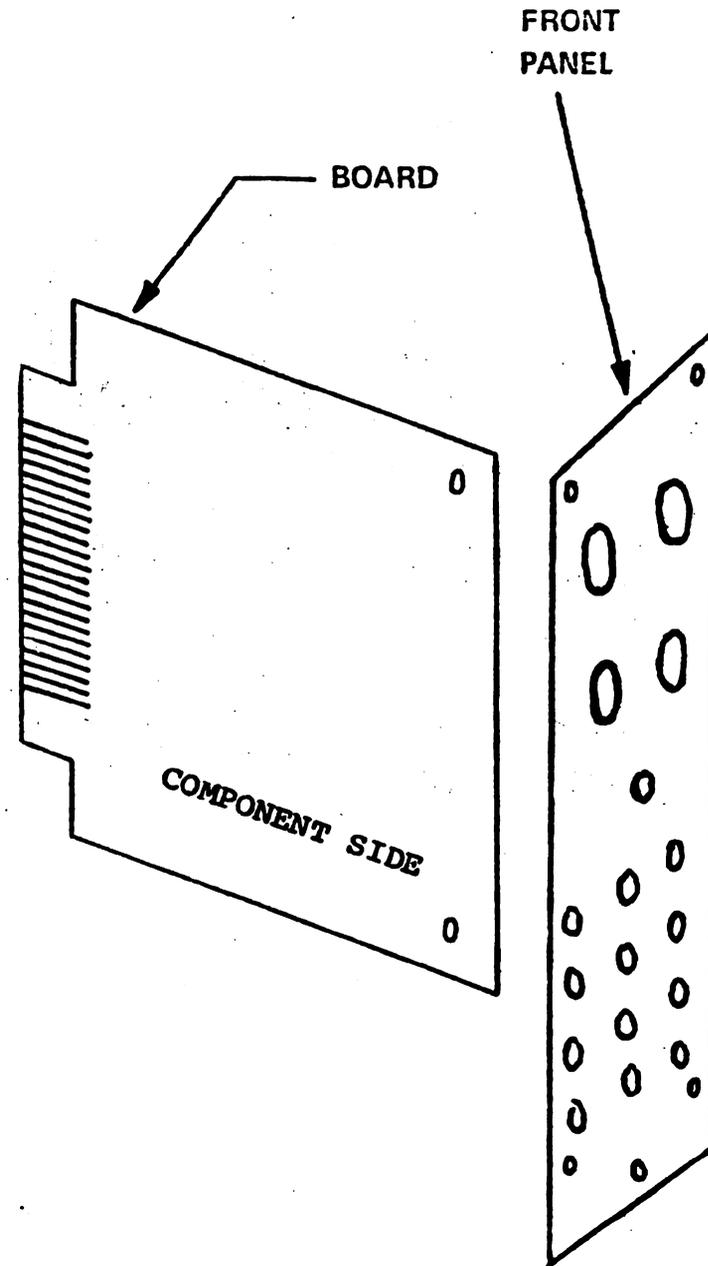
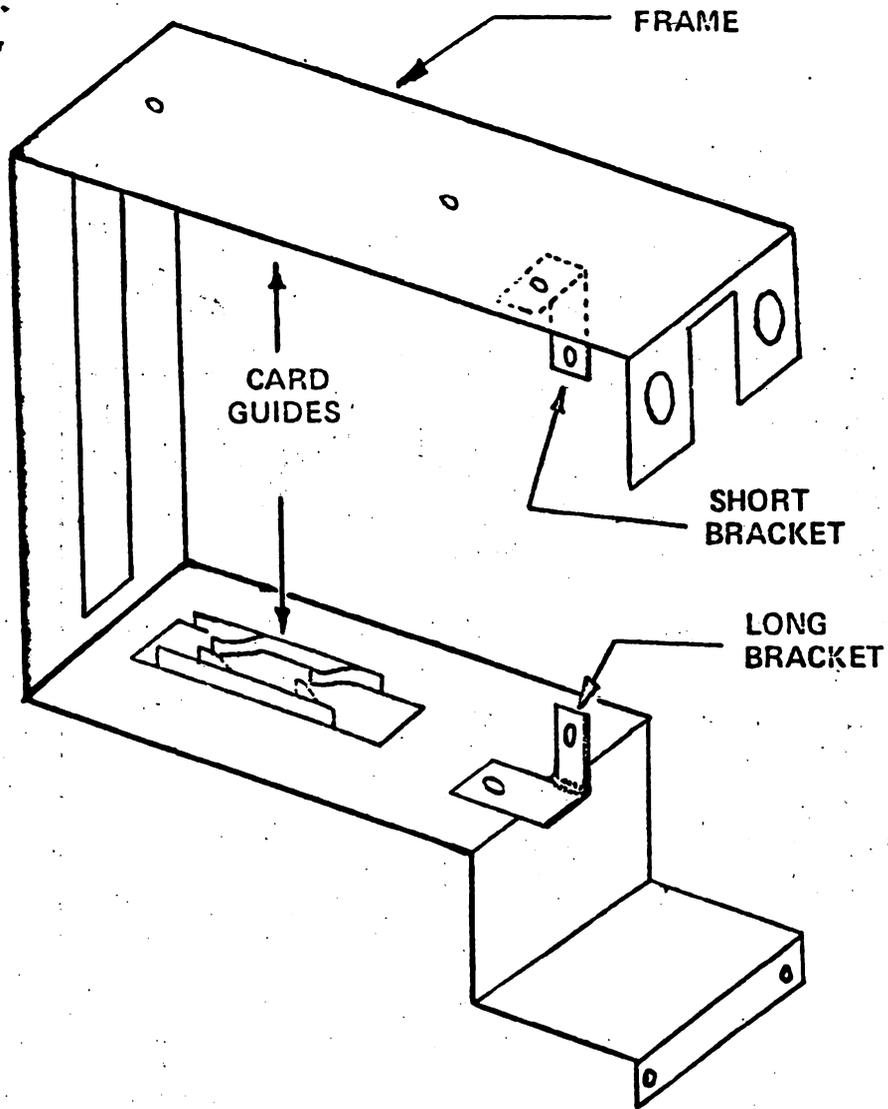
- () **FREQ. TRIM (T-2)**
Set the freq. knob to its max's, and the resonance knob to its min. Set the audio input knob to its min., and the control knob to its min. set the odd even switch to the odd position. Next connect a DC Voltmeter +lead to R-39 the end nearest to the CA-3086, and the - lead to ground. Now turn on power to the AR-329 and set T-2 for 1.0 volt \pm 0.1 volts

- () **GAIN TRIM (T-3)**
SET freq. knob to its mid. position 12:00
Feed a 1Khz. sine wave (aprox.) into audio input 1
Connect an AC. voltmeter or scope to the main output. switch the Bypass/mix switch to Bypass. Adjust the audio input pot for a 2 Volt RMS signal on the meter. Now switch the meter to R-30 the connector end and adjust T-3 for a 1 Volt RMS signal .

- () **RESONANCE TRIM (T-1)**
Switch from Bypass to Mix. Monitor the main output with a scope, meter, or an audio amp. Turn up the resonance pot to its max. Now turn T-1 up to max (fully clockwise) and monitor the output if the output shows any oscillation turn T-1 down just until the signal or oscillation disappears. Now rotate the Freq. knob over its entire range and turn down T-1 further if needed to allow no oscillation at any frequency setting on the freq. knob

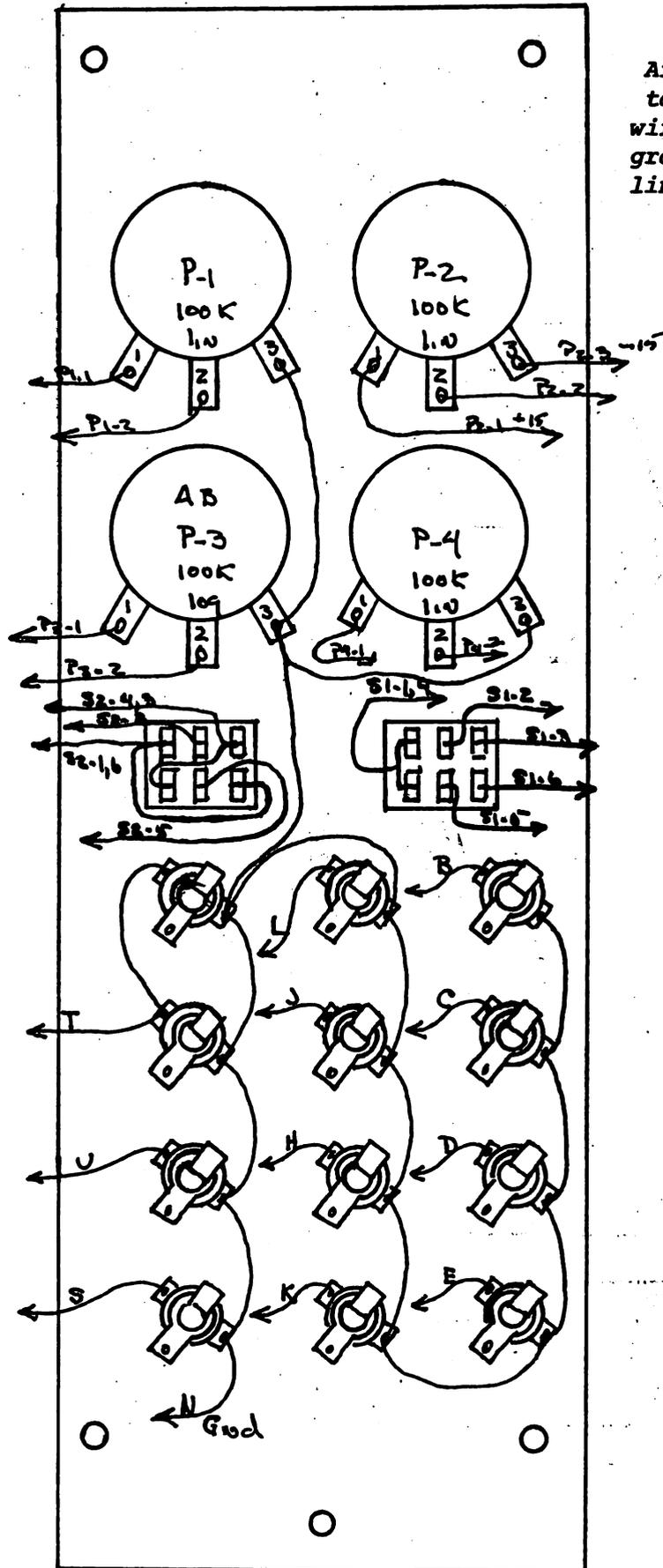
THIS COMPLETES THE TRIMMING OF YOUR AR-329 PHASE FLANGER MODULE

AR-329 PHASE FLANGER



AR-329 PHASE-FLANGER PANEL WIRING DIAGRAM

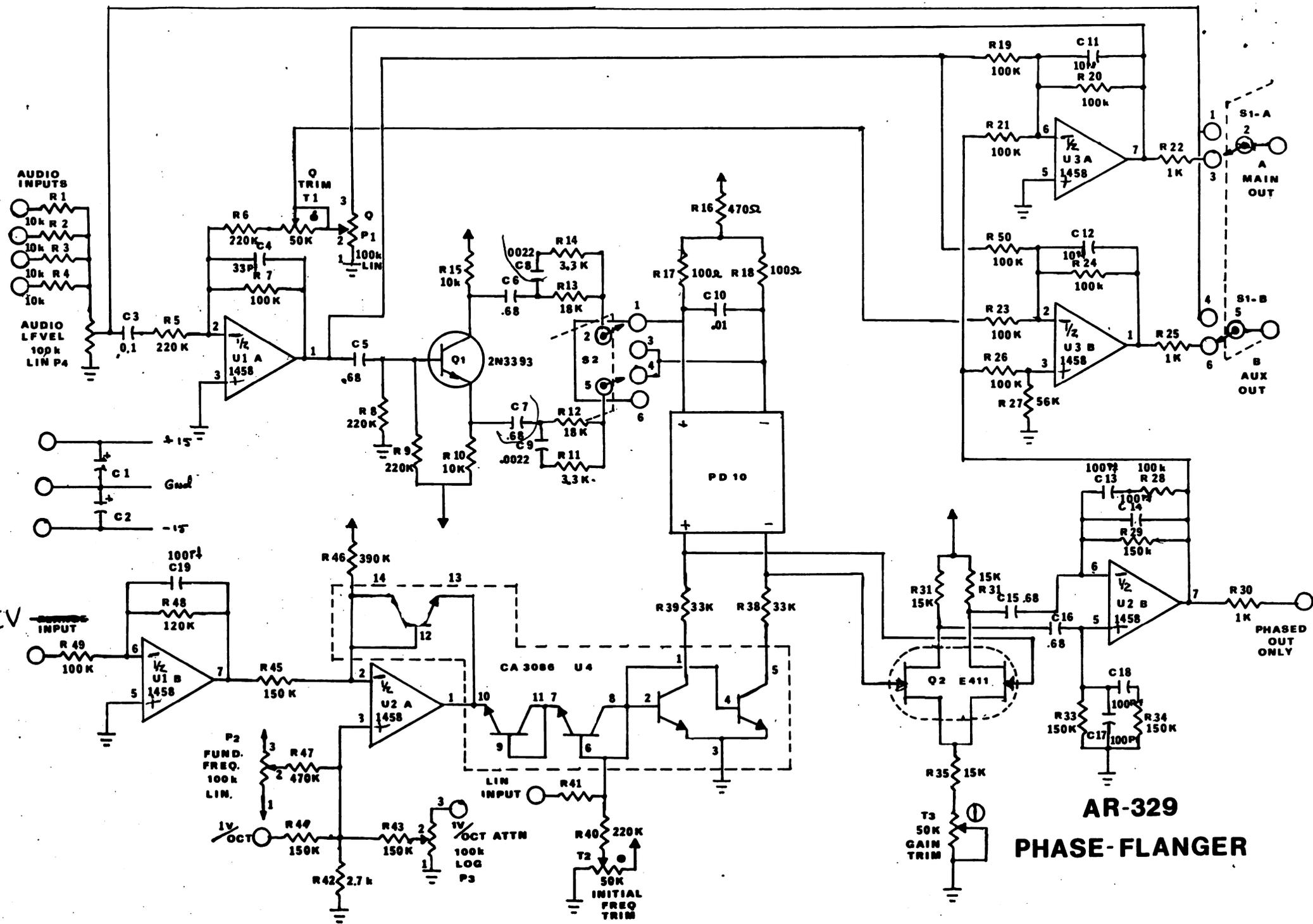
Rear view



Arrows indicate a wire to the P.C. board. All wires with arrows and ground bus with thick lines must be insulated

PARTS LIST * AR-329* PHASE FLANGER

| NUMBER | QUANTITY | DESCRIPTION | VALUE | RATING |
|--------------------------------------|----------|--------------------------|---------|----------|
| C-5,6,7,15,16 | 5 | Capacitor, Disc | .68 | uf |
| C-11, 12 | 2 | Capacitor, Disc | 10 | pf |
| C-4 | 1 | " | 33 | pf |
| C-13,14,17,18,19 | 5 | " | 100 | pf |
| C-8,9 | 2 | " | .0022 | uf |
| C-10 | 1 | " | .01 | uf |
| C-3 | 1 | " | .1 | uf |
| C-1,2 | 2 | Capacitor, Tantalum | 1 | uf |
| U-1,2,3 | 3 | Dual Operational Amp. | Mc/CA | 1458 |
| U-4 | 1 | Transistor array | CA-3086 | |
| U-5 | 1 | Potted Module | PD-10 | |
| Q-1 | 1 | Transistor NPN | 2N3393 | |
| Q-2 | 1 | F.E.T. dual N channel | E-411 | |
| R-17,18 | 2 | Resistor Carbon | 100 | ohm, 10% |
| R-16 | 1 | " " | 470 | ohm, 10% |
| R-22, 25, 30 | 3 | " " | 1K | 10% |
| R-42 | 1 | " " | 2.7K | 10% |
| R-11,14 | 2 | " " | 3.3K | 10% |
| R-1,2,3,4,10,15 | 6 | " " | 10K | 10% |
| R-31,32,35 | 3 | " " | 15K | 10% |
| R-12,13 | 2 | " " | 18K | 10% |
| R-38,39 | 2 | " " | 33K | 10% |
| R-27 | 1 | " " | 56K | 10% |
| R-7,19,20,21,23 24,26,28,49,41,50 | 11 | " " | 100K | 10% |
| R-48 | 1 | " " | 120K | 10% |
| R-29,33,34,43,44,45 | 6 | " " | 150K | 10% |
| R-5,6,8,9,40 | 5 | " " | 220K | 10% |
| R-46 | 1 | " " | 390K | 10% |
| R-47 | 1 | " " | 470K | 10% |
| T-1,2,3 | 3 | Trimpot | 50K | Linear |
| P-1,2,4 | 3 | Potentiometer 1/4" shaft | 100K | Linear |
| P-3 | 1 | " " | 100K | Log |
| S-1,2 | 2 | Switch, Toggle | DPDT | |
| | 12 | Jack, Mini-phone | | |
| | 1 | Printed Circuit Board | | |
| | 1 | Front Panel | | |
| | 4 | Knobs, 1/4" shaft | | |
| | 1 | Frame | | |
| | 2 | Brackets | | |
| | 6 | Screws, 4-40 x 3/16" | | |
| | 6 | Nuts, 4-40 | | |
| | 2 | P.C. Card Guides | | |



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