ARP PRO SOLOIST MODEL 2701

SERVICE MANUAL

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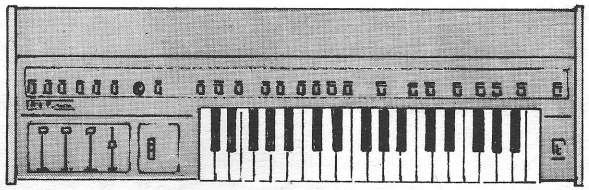
Pro Soloist Model 2701 Service Manual
Table of Contents

Servicing the Pro Soloist



WHAT YOU CAN AND CANNOT REPAIR

Because of the complexity of the Pro Soloist circuits, the factory uses automated test equipment which makes hundreds of tests on each board automatically in order to locate defective components. Because of this complexity, it is not practical for you to attempt to fix many of the boards in the Pro Soloist.

However, with just a VOM, you can repair mechanical problems, moving parts, and the "Voice Select" board (Board F).

In order to repair the power supply (Board G) you may need a digital voltmeter with at least 3½ digit accuracy.

If you have a DC coupled oscilloscope with at least a 5MHz bandwidth, you can also service Board E, the keyboard electronics.

PRO SOLOIST BOARD REPLACEMENT POLICY

Any circuit board can be returned to the factory for replacement under this policy, although we encourage service centers with appropriate equipment to maintain the field serviceable boards themselves.

If the unit is under warranty, any defective board will be replaced by the factory at no charge, assuming, of course, that the board is in satisfactory mechanical condition. If you return a defective board to the factory for replacement, include the following information:

Owner's name and address
Serial number of defective Pro Soloist
Description of the problem
Your name and address

Upon receipt of the defective board and the above information, a replacement board will be sent immediately. If your service center is on open account with Arp, you can call the service department to order replacement boards. You will be billed for these boards and then credited when the defective boards are received. Please be sure to include all the above information with the returned board.

If the unit is not under warranty, any defective board will be replaced by the factory for a fixed charge of $20. Return the defective board, along with $20 and full information as above, to the Arp service department, and a replacement will be sent to you immediately. If your service center is on open account with Arp, replacement boards can be ordered by phone as above.

Remember, only factory certified technicians can perform warranty repairs on our instruments. Any unauthorized repairs made by non-certified technicians may void the warranty. Factory certified technicians are asked to display their Arp Certificates in the shop.

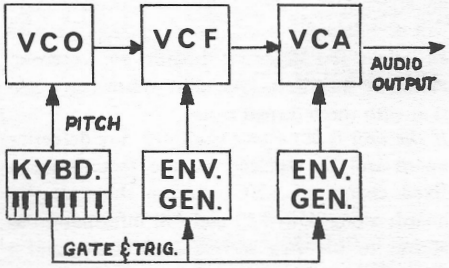
The exceptions to the board replacement policy are the keyboard electronics (Board E), voice selection board (Board F), and the power supply (Board G). Since all three boards are field serviceable, schematics and service information are included in this manual, along with a parts list with ARP part numbers for ordering spares. The standard Arp spare parts kit includes most of the critical parts used in these boards.

HOW THE PRO SOLOIST WORKS

Even though you can only make electrical repairs (except for slide pots and switches) on the Keyboard Electronics (Board E) and the Power Supply, it may be helpful to you to become familiar with the overall operation of the Pro Soloist.

The Pro Soloist is a hybrid of digital and analog circuits. The internal flow of the audio signal

is, in most respects, quite similar to any of our other synthesizers. That is, an oscillator produces a raw waveform (like pulse wave, sawtooth, etc.) at the correct pitch. This waveform is passed through a Voltage Controlled Filter and then through a Voltage Controlled Amplifier. Both the VCF and the VCA have their own envelope generators which provide the attack and decay signals.



In variable synthesizers, such as the Arp Odyssey or the Arp 2600, the oscillator waveform, filter characteristics, and envelope generator settings are adjusted manually. In the Pro Soloist, each of these circuits contains a digital memory in which is stored all the data necessary to set up the different preset sounds used on the Pro Soloist.

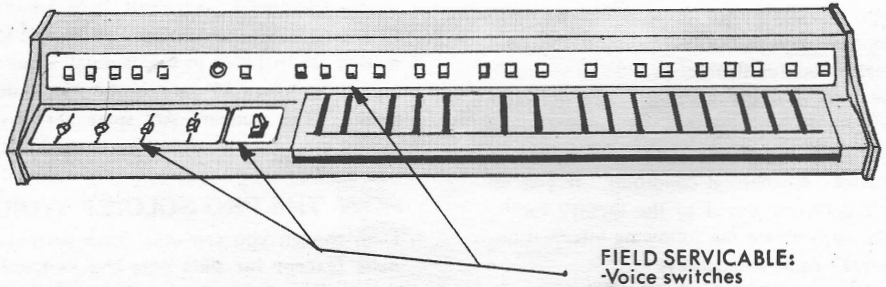
Referring to the board interconnection diagram, we can trace the signals through the instrument:

The keyboard electronics board (Board E) generates a six bit binary word corresponding to the note being played. It also generates a Gate and Trigger Signal. The six bit note information is transferred to Board A where the information determines the pitch of the oscillator. The Gate and Trigger signals are routed to Board B, the Envelope Generators.

Board F is the Voice Selection Board and includes all the voice select tab switches located just above the keyboard. When any of the voice tabs are depressed, this board generates a five-bit binary code which is routed to the Envelope Generators (Board B), the "Main Voice" filter board (Board C) and the Audio Waveform Generators (Board A). Memories are located on Boards A, B, C, and D so that the selection of a voice tab (trumpet, clarinet, etc.) will recall the appropriate oscillator waveform, filter settings, and attack and decay characteristics for each different instrumental sound.

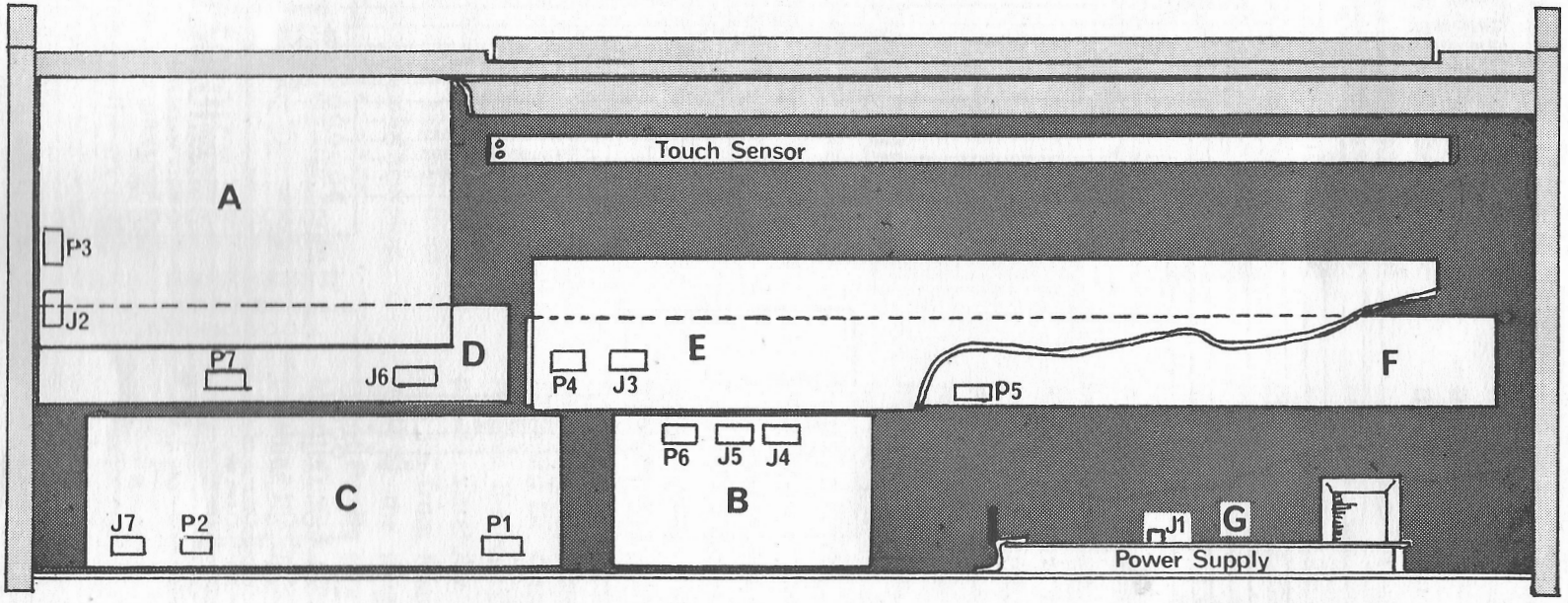
Board D, the Special Effects Board, also includes the touch sensor circuitry, vibrato and tremolo oscillator, and other control circuits.

The Power Supply, Board G, feeds directly into Board C, and from that board the power is distributed in series through the Flex-strip ribbon cables that interconnect all the boards in the Pro Soloist.



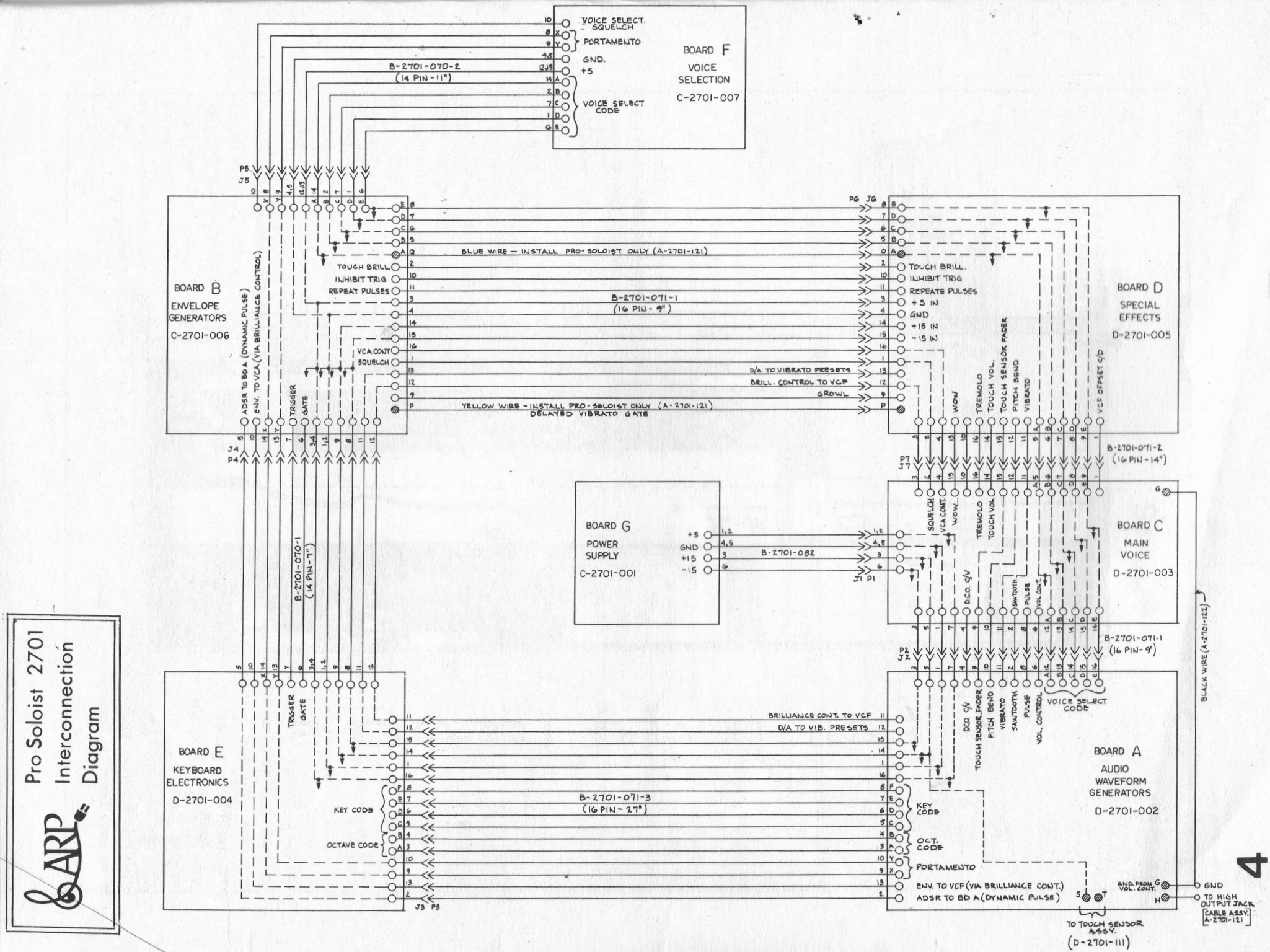
Mechanical Repairs

Mechanical repairs such as broken slide pots, transpose switches, voice switches etc. can be repaired in the field. A full list of the parts is included in the back of this manual.



2701 BOARD LOCATIONS

P-Male
J-Female


Pro Soloist 2701
Interconnection
Diagram
ARP
BOARD F
VOICE
SELECTION
C-2701-007
VOICE SELECT. - SQUELCH
PORTAMENTO
GND.
+5
VOICE SELECT CODE
B-2701-070-2
(14 PIN - 11")
BOARD B
ENVELOPE
GENERATORS
C-2701-006
ADSR TO BD A (DYNAMIC PULSE)
ENV. TO VCA (VIA BRILLIANCE CONTROL)
TRIGGER
GATE
VCA CONT
SQUELCH
TOUCH BRILL
INHIBIT TRIG
REPEAT PULSES
BLUE WIRE — INSTALL PRO-SOLOIST ONLY (A-2701-121)
YELLOW WIRE - INSTALL PRO-SOLOIST ONLY (A-2701-121)
DELAYED VIBRATO GATE
B-2701-071-1
(16 PIN - 9")
B-2701-070-1
(14 PIN - 7")
BOARD D
SPECIAL
EFFECTS
D-2701-005
TOUCH BRILL.
INHIBIT TRIG
REPEATE PULSES
+5 IN
GND
+15 IN
-15 IN
D/A TO VIBRATO PRESETS
BRILL. CONTROL TO VCF
GROWL
WOW
TREMOLO
TOUCH VOL.
TOUCH SENSOR FADER
PITCH BEND
VIBRATO
VCF OFFSET C/D
B-2701-071-2
(16 PIN - 14")
BOARD G
POWER
SUPPLY
C-2701-001
+5
GND
+15
-15
B-2701-082
BOARD C
MAIN
VOICE
D-2701-003
SQUELCH
VCA CONT.
WOW
TREMOLO
TOUCH VOL.
SAWTOOTH
PULSE
VOL. CONT.
D.C.O. C/V
B-2701-071-1
(16 PIN - 9")
BOARD E
KEYBOARD
ELECTRONICS
D-2701-004
KEY CODE
OCTAVE CODE
TRIGGER
GATE
B-2701-071-3
(16 PIN - 27")
BRILLIANCE CONT. TO VCF
D/A TO VIB. PRESETS
BOARD A
AUDIO
WAVEFORM
GENERATORS
D-2701-002
D.C.O. C/V
TOUCH SENSOR FADER
PITCH BEND
VIBRATO
SAWTOOTH
PULSE
VOL. CONTROL
VOICE SELECT CODE
KEY CODE
OCT. CODE
PORTAMENTO
ENV. TO VCF (VIA BRILLIANCE CONT.)
ADSR TO BD A (DYNAMIC PULSE)
BLACK WIRE (A-2701-122)
GND. FROM VOL. CONT.
GND
TO HIGH OUTPUT JACK
CABLE ASSY. A-2701-121
TO TOUCH SENSOR ASSY.
(D-2701-111)
4

BOARD REPLACEMENT SEQUENCE

In some cases, problems that may occur in the Pro Soloist may be difficult to isolate to a particular board. Often a problem that may point to a particular board may actually be on another board. To simplify matters we suggest that each board be replaced with a known working board one at a time until the faulty board is identified. The suggested sequence of board replacement is as follows:

1) Check/repair the power supply (see section on power supply repair)
2) Replace Board F
3) Replace Board E
4) Replace Board A
5) Replace Board B
6) Replace Board C
7) Replace Board D

BOARD REMOVAL PROCEDURE

1) Board F: Remove board B from its mountings so that you have room to grasp the plug firmly. Unplug P5 carefully, observing the orientation of the plug. Plug the replacement board into J5. BE SURE BOARD B AND THE REPLACEMENT BOARD F DO NOT TOUCH THE CHASSIS. A piece of packing foam or other suitable insulator can be used to keep board B from touching the chassis.

2) Board E: Remove the cable tie that holds the P3 cable to the keyboard bracket. Carefully unplug P4 from board B and P3 from board E. Observing the orientation of the plug, plug in the replacement board E.

3) Board A: Remove the four control knobs on the front panel. Unscrew the five screws holding board A in place. Carefully unplug P3 on board E and P2 on board A. Desolder the pair of wires from board A that are soldered to the points H and G. Resolder these wires to the replacement board. (The wires going to the points T and S do not have to be removed unless there is a problem in the touch sensor circuitry. See section above on the touch sensor before replacing board A.) Observing the orientation of the plugs, plug in the replacement board A. Remount board A with two screws to keep it from touching the chassis.

4) Board B: Remove the four screws that hold board D in place. Also remove the Repeat/Vib. knob. Remove board D and carefully disconnect P6. Carefully unplug P4 and P5 from board B. Observing the orientation of the plugs, plug the replacement board B into board D with two screws to keep it from touching the chassis.

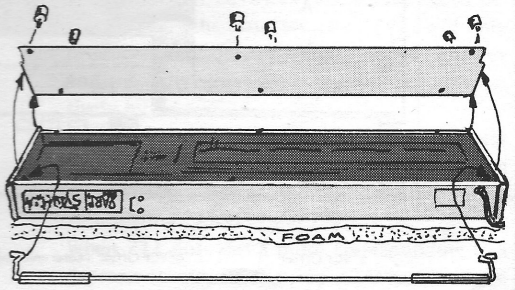
5) Board C: Remove board C from its mountings. Remove board A and carefully disconnect P2. Disconnect P6 from the power supply. Carefully disconnect P7 from board C. Observing the orientation of the plugs, plug in the replacement board C. Be sure to remount board A with two screws and insulate board C so that they do not touch the chassis.

6) Board D: Once board A has been removed, remove the repeat/vibrato rate knob from the panel. Carefully disconnect P7 from board C and P6 from board D. Observing the orientation of the plugs, plug in the replacement board D. Be sure to remount the replacement board D and board A to prevent them from touching the chassis.

OPENING THE PRO SOLOIST

Turn the unit upside down on a piece of foam or other soft surface. Remove the six rubber feet and remove the bottom. Unhook the tilt stand from its mounting holes.

If a board must be removed, handle the cables with great care. Lift the plug on both sides and move it gently from side to side until it can be lifted out. DO NOT FORCE THE PLUGS. THEY CAN BEND VERY EASILY.



SERVICING BOARD E Keyboard Electronics

I. Principle of Operation

The keyboard generates three signals which are routed to other parts of the instrument:

1) Pitch information (a 6 bit binary word)
2) Gate (on/off type signal that says that a note is pressed down)
3) Trigger (a fast pulse that occurs each time a new note is pressed down)

Refer to the block diagram. Note that the pitch information is stored in a 6 bit memory, 4 bits for the "key code" and 2 bits for an "octave code." The key codes start with 0000 for C, and proceed as follows:

C	0000	F#	0110
C#	0001	G	0111
D	0010	G#	1000
D#	0011	A	1001
E	0100	A#	1010
F	0101	B	1011

The octave codes are:

C_1 to B_1	00
C_2 to B_2	01
C_3 to B_3	10
C_4	11

In order to generate these coded outputs, the circuitry on Board E is designed to scan the keyboard about 100 times per second. When the scanning circuitry comes to a note which is pressed down by the performer, the number corresponding to that note is loaded into the 6 bit memory at the output and a gate and trigger pulse is generated.

II. The Circuit

Now let's see how the circuitry performs these functions. Refer both to the block diagram and to the Partitioned Schematic.

A. Generating the Pitch Information

An oscillator (Z2C, Z8D, Z8B, C3) produces a square wave at about 150KHz. The output of the oscillator is fed into a six stage frequency divider (Z4, Z5). The first four stages of the frequency divider (Z4) are wired to a "Data Selector" chip (Z11).

Z11 works as follows: Four "input" lines (pins 11-15) receive a four bit binary number. Here, the four bit number comes from Z4 which is counting away. Each time the "input" receives a four bit binary number, one of the twelve "sense inputs" (pins 1-8, 20-23) is activated. If a logic 1 happens to appear at that input, then the output of the chip (pin 10) produces a logic 0 (the output of Z11 is inverted), and if the activated sense input is a logic 0, then the output on pin 10 at that time will be a logic 1.

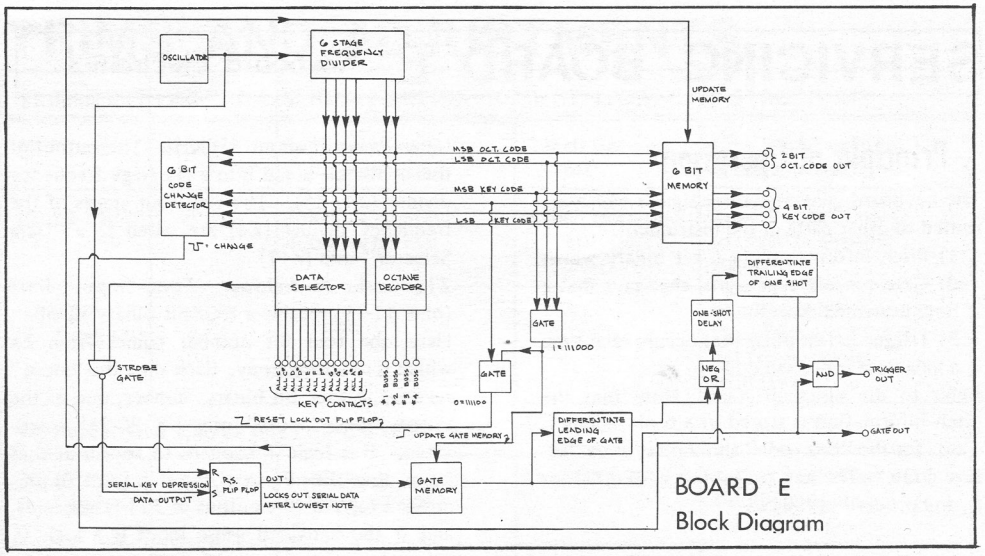
The sense inputs to Z11 are wired to the keyboard contacts such that all the C's are wired to pin 8, all the C#'s to pin 7, and so forth. If any key is pressed down and makes contact with a buss which is at logic 0, then the output (pin 10) will be a logic 1 when the counter (Z4) addresses that particular note.

The keyboard buss is split into four sections, one for each C - B octave and a separate buss for the top C. These busses are made to be logic 0 one at a time. Z5, the octave decoder, is the last two stages of the six stage counter composed of Z4 and Z5. The outputs of the two flip-flops in Z5 are decoded by Z6 which drives the keyboard busses directly.

So, each time the C - B keys are scanned, the octave decoder advances to the next higher octave. Thus, the data selector (Z11) will only produce a "1" output when both the right key and the right octave are being addressed respectively by Z4 and Z5.

The output of Z11 is "strobed" with the oscillator to get rid of "grass" and glitches which appear at the output of Z11. This is done by an inverting "AND" gate, Z7D.

When Z11 puts out a pulse corresponding to a depressed note, RS flip-flop Z9A "sets". Since the data selector (Z11) and octave decoder



BOARD E
Block Diagram

(Z6) are scanning the keyboard from the lowest note to the highest note, the first pulse to come out of Z11 (representing the lowest note being played) will set Z9A.

When Z9A is set, the output of Z9A sends an "update memory" command to the 6 bit output memory, Z3, whereupon Z3 loads in the number corresponding to the outputs of Z4 and Z5. Since the outputs of Z4 and Z5 are the "address" of the note being played, the binary number which identifies that note is now stored and ready for transfer to the rest of the Pro Soloist via the six-wire cable.

When the counter (Z4, Z5) reaches the number 111100, the R-S flip-flop is reset and ready for the keyboard scan to begin again. Note that the highest note on the keyboard is represented by the number 110000. So the numbers 110001 through 111111 are unused except for 111100 as mentioned above and 111000 which is used in the gate circuitry. Z7A and Z8A are used to detect 111000 and 111100 addresses.

B. Generating the Gate Signal

The Gate signal should provide a "1" output whenever *any* key is depressed. A Gate Memory (Z9B) flip-flop is "set" when the R-S flip-flop Z9A is set. Z9A (discussed above) only sets when a note is depressed. The Gate Memory flip-flop is reset when the counter hits the number 111000. However, the Gate Memory will not reset if Z9A is still set. So, in order for the Gate Memory to reset, Z9A has to be reset and the keyboard scanning has to show that there are no notes depressed for one complete cycle of the counter. Note that Z9A is reset by the number 111100 which occurs after 111000.

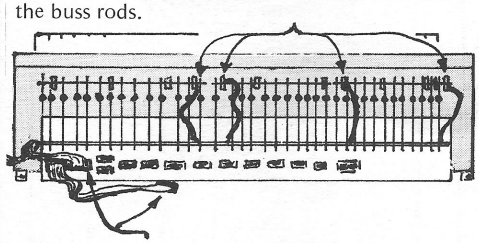
C. Generating the Trigger Signal

A trigger pulse is generated each time the pitch information changes. In the simplest case where a single note is pressed down, the leading edge of the Gate signal is differentiated (C11) and used to trigger a one-shot which produces a clean, uniform pulse. In the more complex condition where a note is pressed down while another note is already being held down, a pulse is generated whenever the pitch information changes.

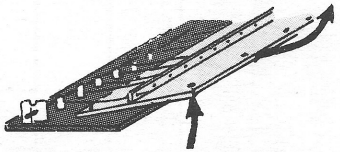
Z1a, Z1d, Z1c, Z2a, Z2b, Z2d are exclusive "OR" gates wired so that a change of state at the input (either from 0 to 1 or vice versa) will create a short pulse. These gates are open-collector types and wiring their outputs together "OR's" the outputs together. Therefore, a change in the output of any of the six output lines will produce a pulse which triggers Z10 and thereby creates a uniform trigger pulse.

REMOVING BOARD E

1) Desolder the four wires from PC board to the buss rods.



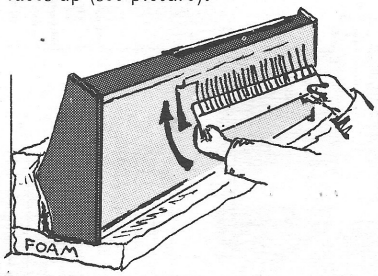
2) Unplug and
3) Carefully lift PC board (see picture) and remove.



4) Pack board so that the contacts are not damaged.

INSTALLING THE NEW BOARD E

1) Loosen the plastic contact pushers and remove them.
2) Install the contact pushers onto each contact of the new board.
3) Prop up the Pro Soloist so the keyboard faces up (see picture).

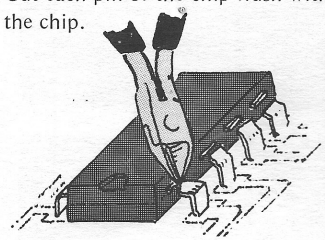


4) Install new board on its mounting. Be sure each contact is in its proper location.
5) Remount the contact pushers.
6) Check that each contact meets the buss rod when the key is depressed 1/8".

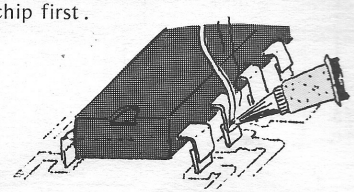
IC CHIP REMOVAL

To avoid damage to the PC board remove faulty IC chips as follows:

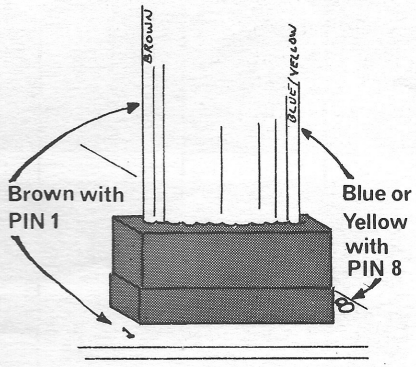
1) Cut each pin of the chip flush with the body of the chip.



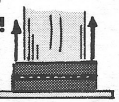
2) Solder new chip onto the leads of the old chips. Do not remove the old leads from the board. Snip the narrow tips off the leads of the new chip first.



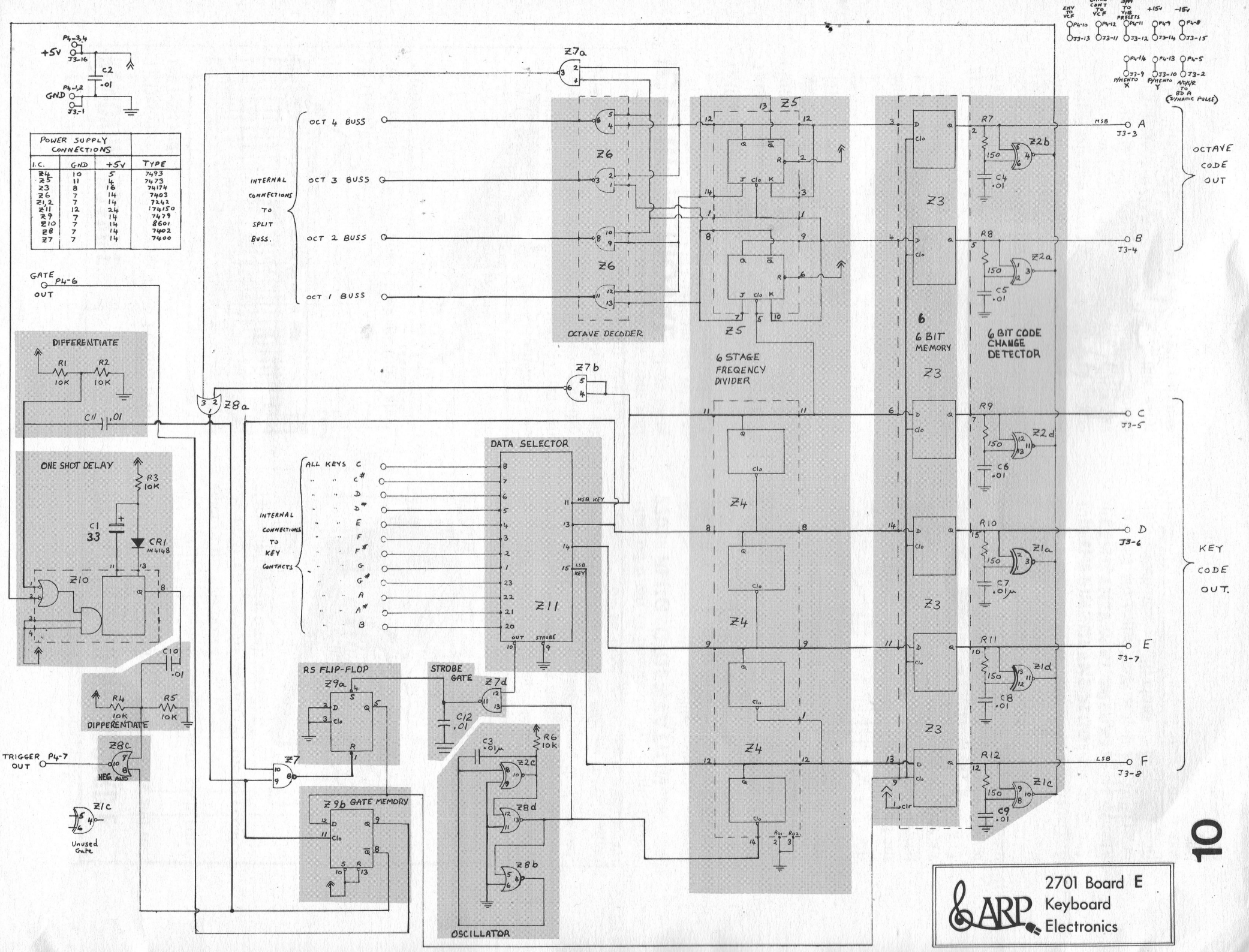
2701 PLUG ORIENTATION



IF THE PINS OF THE PLUG BEND, THEY MAY BREAK!



Pull up on both sides



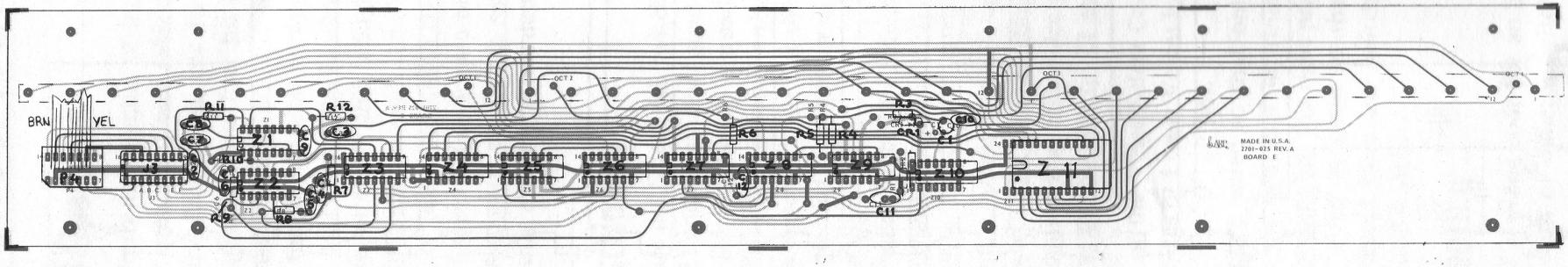
POWER SUPPLY CONNECTIONS			
I.C.	GND	+5V	TYPE
Z4	10	5	7493
Z5	11	4	7473
Z3	8	16	74174
Z6	7	14	7403
Z1,2	7	14	7242
Z11	12	24	74150
Z9	7	14	7479
Z10	7	14	8601
Z8	7	14	7402
Z7	7	14	7400

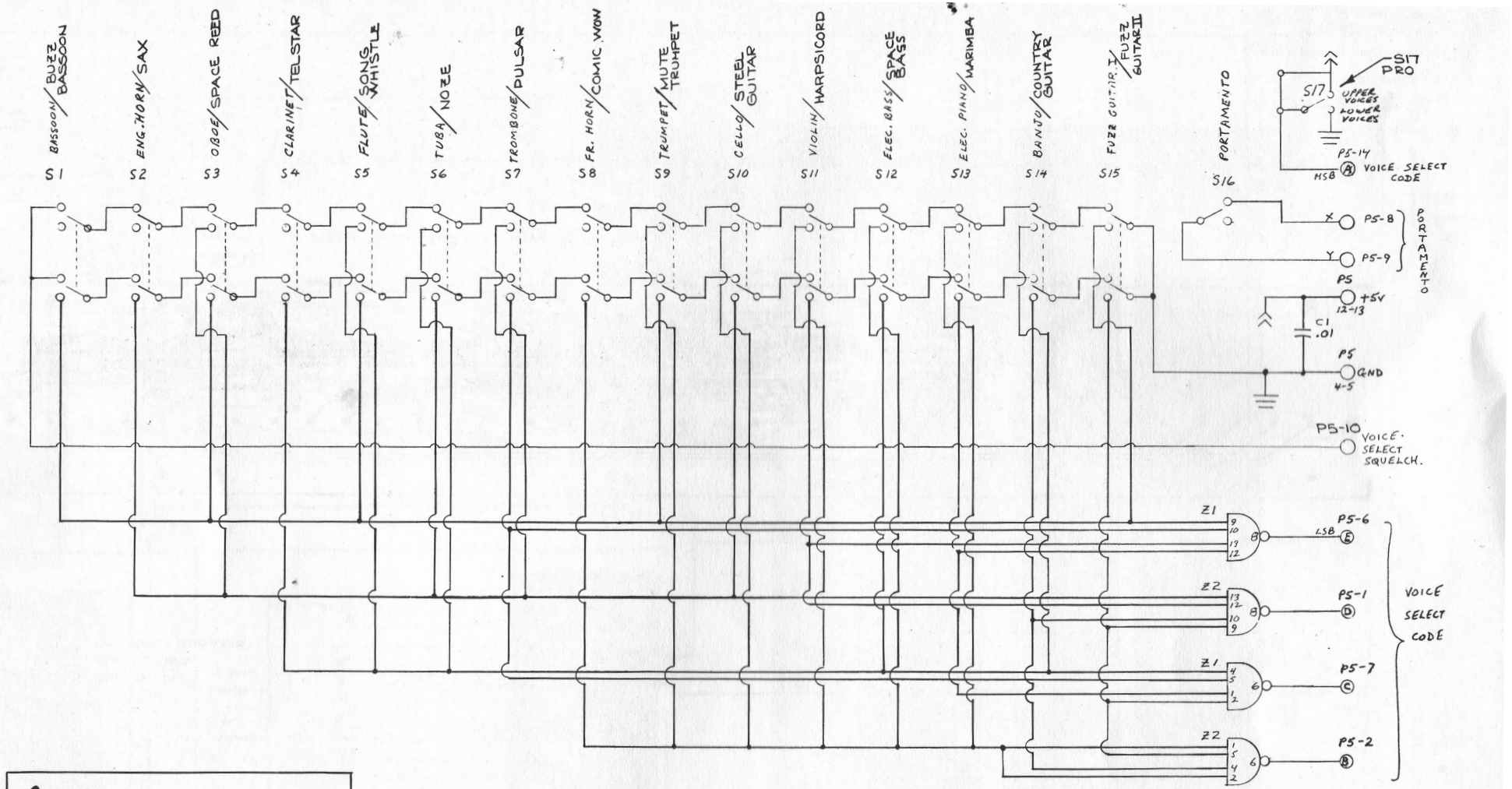
ARP 2701 Board E Keyboard Electronics

10

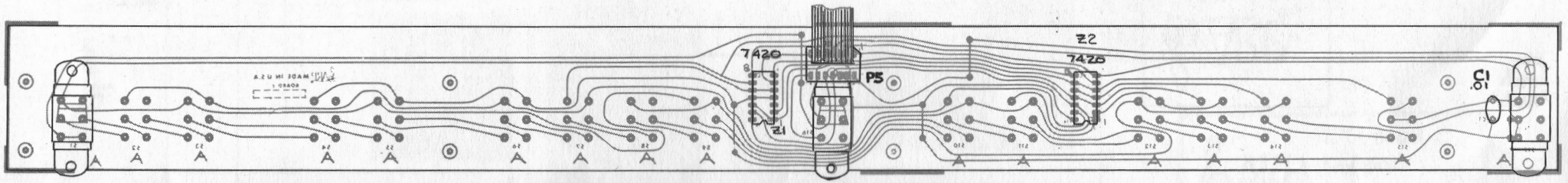
2701 Board E Keyboard

Red area = front
Pink area = back
Solid black = components





ARP 2701 Board F
Voice Selection



SERVICING BOARD F Voice Selection

I. Principle of Operation

In order to minimize the number of interconnecting wires between the Voice Select board and the rest of the Pro Soloist, the 15 Voice Select tabs are encoded into four bit binary words. In this manner, it is possible to send over 4 wires all the information necessary to say which of the 15 tab switches has been depressed. Separate wires are also brought out for the portamento switch and the "Upper Voice/Lower Voice" Select switch. In addition, a "Voice Select Squelch" line is also brought out which says that none of the tab switches are depressed or that a switch is not depressed all the way.

II. Circuit Description

S1 through S15 are the fifteen tab switches for voice selection. Z1 and Z2 are dual quad-input NAND Gates. The output of a quad-input NAND gate is a "0" (near ground) *only* when all four inputs are logic "1". In this circuit, it is important to note that a gate input which is open will act like a logic "1".

If any one of the voice select tabs is depressed, certain gate inputs will be grounded (logic 0) through the switches. Any gate which has a grounded input must produce a "1" output. If we close one switch at a time, starting with the bassoon, we can see that each voice generates a 4 bit code at the outputs of Z1 and Z2.

Output line "A" of the Voice Select Code selects the Upper Voices or Lower Voices by producing either a "1" or "0" output.

S-1 through S-15 are wired so that only the switch farthest to the right will determine the output code. To accomplish this right priority, the switches are wired in series so that the ground is disconnected from any switches to the left of a depressed switch.

III. Troubleshooting

The production of a wrong code for an instrument can be the fault of either a switch or a gate. A defective switch can be easily checked with an ohm meter.

Example: Depressing the Fuzz Guitar I produces the sound of a banjo. Look at both the Fuzz Guitar and Banjo in the table. Note that the the guitar is 1111 and the banjo is 1110. This code error indicates that output "E" is incorrect. Note that the gate for output E is connected to the upper half of S-15. If this half of S-15 were not closing properly, the code 1110 would be generated.

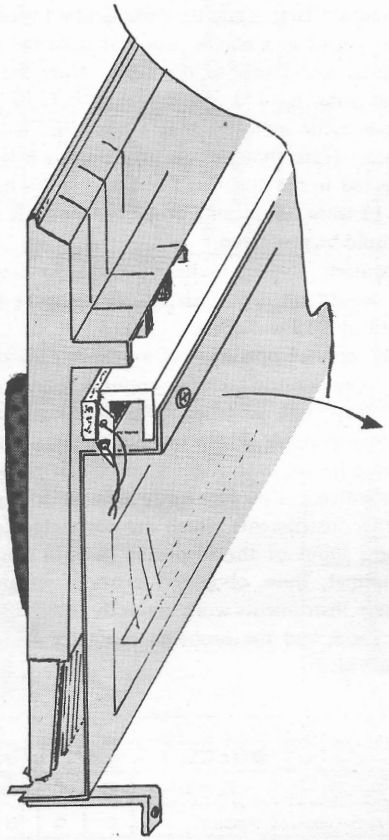
Similarly, if Fuzz Guitar I produced a bassoon, it would be logical to assume that the other half of S-15 was open.

The correct operation of a gate can always be verified because each gate input is connected to at least two switches. For instance, in the above example where the Fuzz Guitar I produces a banjo, you might suspect that Gate E is defective. You can verify this by trying the other instruments which are connected to the same input of the suspected gate, in this case trumpet, flute, oboe and bassoon. If any of these instruments work correctly, then the gate is good, and the probable cause for failure is the switch.

VOICE SELECT CODE LIST

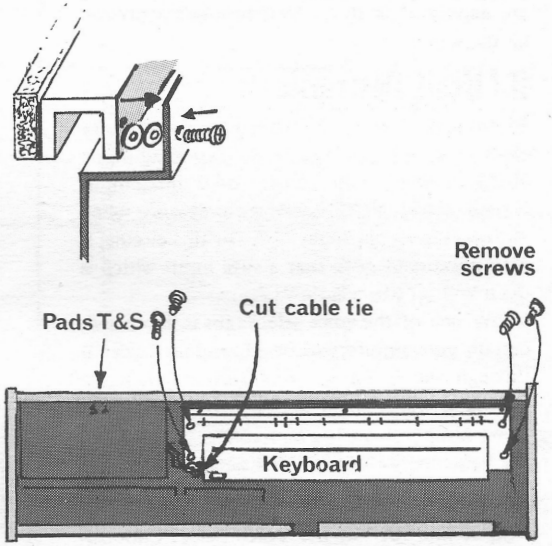
A = 0	A = 1	B	C	D	E
Buzz Basoon	Basoon	0	0	0	1
Saxophone	English Horn	0	0	1	0
Space Reed	Oboe	0	0	1	1
Telstar	Clarinet	0	1	0	0
Song Whistle	Flute	0	1	0	1
Noze	Tuba	0	1	1	0
Pulsar	Trombone	0	1	1	1
Comic Wow	French Horn	1	0	0	0
Mute	Trumpet	1	0	0	1
Steel Guitar	Cello	1	0	1	0
Harpsichord	Violin	1	0	1	1
Space Bass	Electric Bass	1	1	0	0
Steel Drum	Electric Piano	1	1	0	1
Country Guitar	Banjo	1	1	1	0
Fuzz Guitar II	Fuzz Guitar I	1	1	1	1

Touch Sensor Repairs



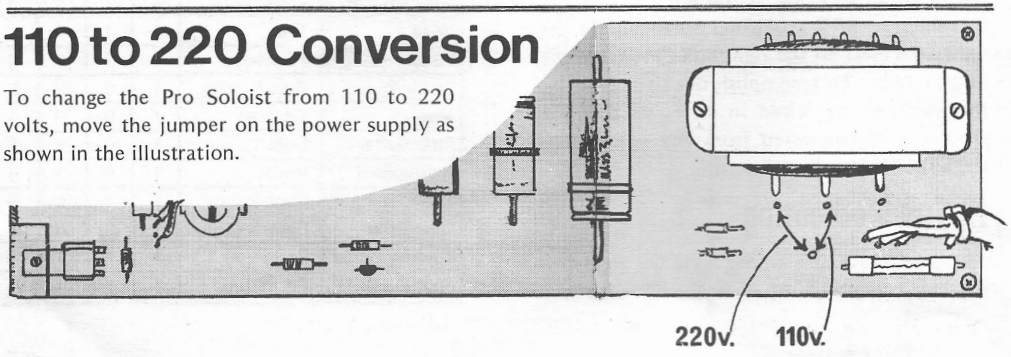
If the touch sensor effects work but there is a large inconsistency of sensitivity between keys, the touch sensor assembly is at fault. To replace the touch sensor assembly, desolder the two wires on pads "T" and "S" on Board A and remove the entire keyboard assembly. Remove the three screws on the key bed that hold the touch sensor assembly in place. Be sure to remount the new assembly with the two spacer screws as shown in the illustration.

When the new assembly is in place, some readjustment of the sensitivity may be required. (See step 8 of Trims & Adjustments on page 7.)



110 to 220 Conversion

To change the Pro Soloist from 110 to 220 volts, move the jumper on the power supply as shown in the illustration.



SERVICING BOARD G — Power Supply

I. An apparent malfunction of the power supply may be the result of shorts or other problems on other boards in the Pro Soloist. If there is any doubt about the power supply being defective, remove P1 from Board C and clip on a set of dummy loads as follows:

+15v to ground: 270 ohm, 1 Watt resistor
-15v to ground: 330 ohm, 1 Watt resistor
+5v to ground: 5 ohm, 10 Watt resistor

Observe the following color coding of power supply wires:

+15v = Red
-15v = Violet
+5v = Orange
Ground = Black

II. CALIBRATING THE POWER SUPPLY

Use *only* a digital voltmeter with at least 3½ digit accuracy.

Calibrate the Power Supply after a 10 minute warmup, clipping your DVM onto the appropriate power supply terminals. All Pro Soloist boards should be connected as usual to the Power Supply during calibration.

NOTE: The Power Supply is carefully calibrated at the factory and should only be recalibrated if parts involved with the regulator have been replaced or if the trim pots have been inadvertently turned.

A. +15v supply: Adjust R5 for +15.00v output
B. -15v supply: Adjust R13 for -15.00v output
C. +5v supply: No calibration necessary

III. CIRCUIT DESCRIPTION

+15.00 Volts

CR1-4: Bridge rectifier.

C4,5: Filter capacitors.

Q6: Emitter follower for amplifying current output of regulator chip Z1.

R2: Current overload protection. If the current through R2 gets too high, the voltage developed across pins 2 & 3 of Z1 will cause Q6 to shut off.

Z1: Contains zener diode reference, op amp comparator and overload protection.

R3,4,5,6: Provides feedback voltage to reference input, pin 4, on Z1. R5 is used to adjust +15v output.

-15.00 Volts (slaved to +15.00 Volts)

Q1 & 2: Current amplifier for -15v output.

R8: Constant current source for Q3 & Q4.

Q4: ½ of differential amplifier (with Q3), provides feedback to regulate current through Q3.

Q3: Current through Q3 controls current through Q2 & Q1.

R10-R13: Makes use of +15.00v supply as voltage reference for -15v supply. When +15.00 volts is applied to one end of R13 and -15.00v is applied to the other end of R13, the wiper of R13 will be set at the middle where the voltage is approximately zero volts. If the negative supply should drop toward zero voltage, the current through R12 will rise. Less current will travel through Q4, requiring Q3 to pass more current. This will turn on Q2 a little harder, allowing more current through Q1, and thus bringing the voltage level back to normal. (If the voltage should exceed -15v, the opposite occurs.)

Q5,R14: Current overload protection. When enough current is drawn on the power supply to cause a .7v drop across R14, Q5 turns on, which shuts off Q2 and Q3, thus lowering the amount of current from the power supply.

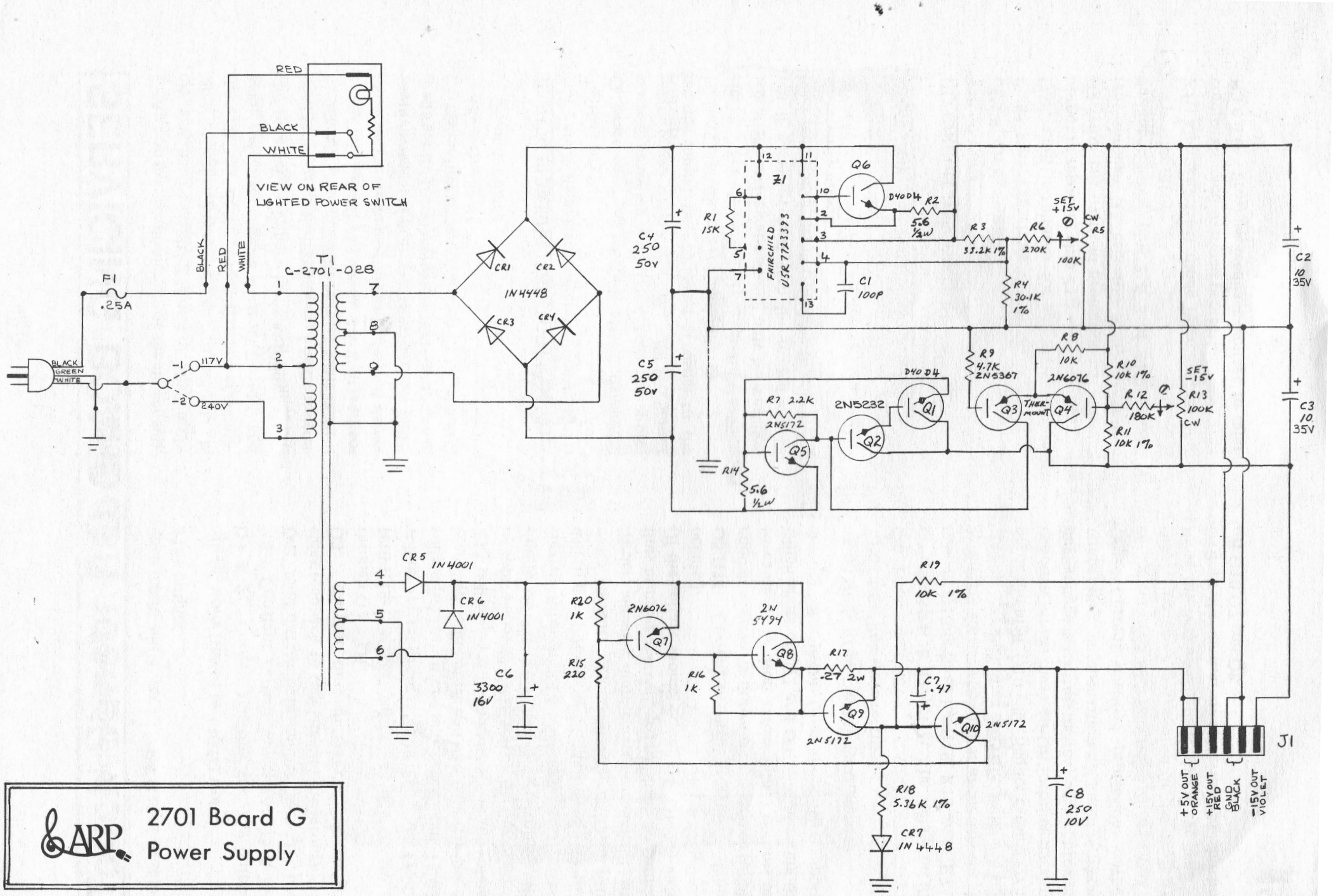
+5.00 Volts (slaved to +15.00 Volts)

CR5,CR6: Full wave rectifier.

C6: Filter capacitor.

Q7,Q8,Q10,R18,R19,CR7: The voltage on the base of Q10 is fixed by R18, R19 and CR7 at about 5.7 volts. The output of the +5v supply appears at the emitter of Q10. If the +5v supply is too high, Q10 will conduct causing Q7 to conduct, which turns on Q8 to bring the output voltage back up to +5v. CR7 provides temperature compensation.

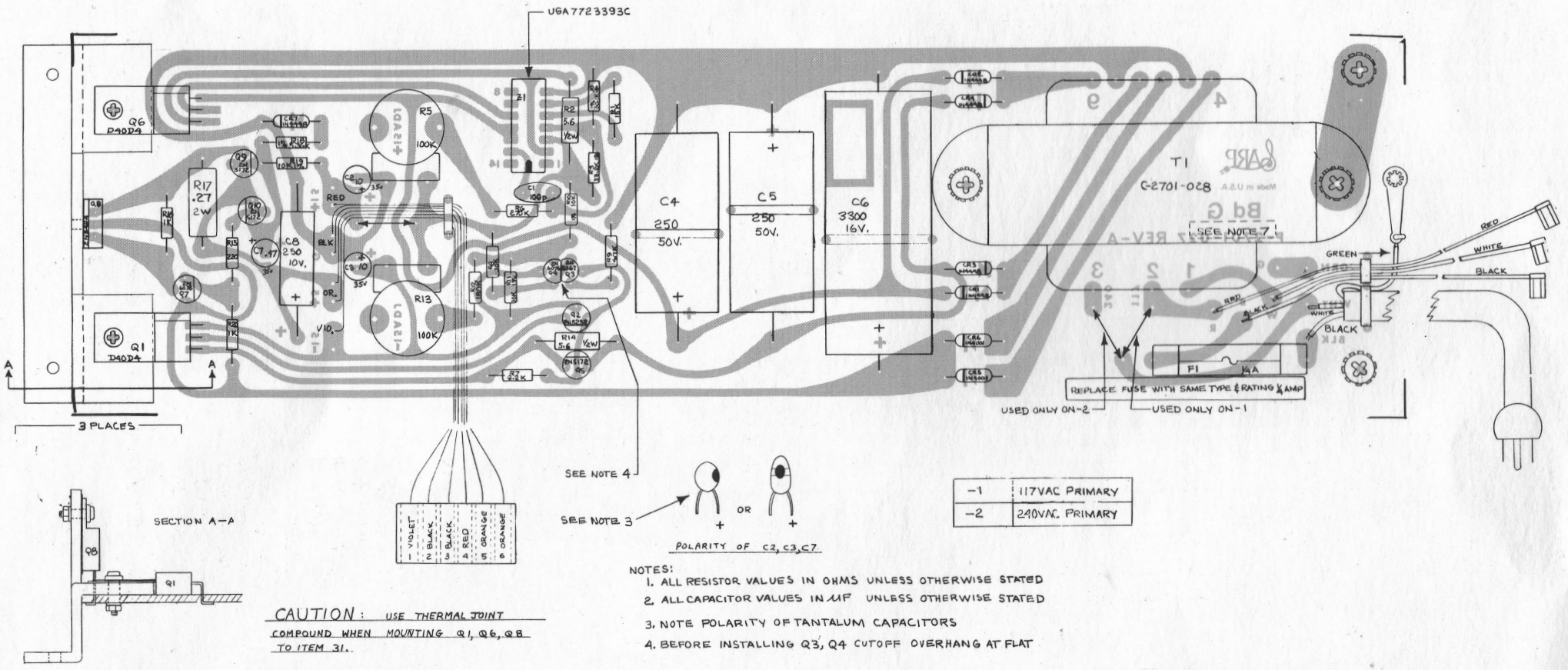
Q9: Current overload protection. When enough current is drawn from the +5v power supply to cause a .7v drop across .R17, Q9 turns on which essentially shorts the base of Q10 to the emitter of Q10, thereby shutting off Q10,Q7 and Q8.



ARP

2701 Board G
Power Supply

component side view



-1	117VAC PRIMARY
-2	240VAC PRIMARY

CAUTION: USE THERMAL JOINT COMPOUND WHEN MOUNTING Q1, Q6, Q8 TO ITEM 31.

NOTES:
1. ALL RESISTOR VALUES IN OHMS UNLESS OTHERWISE STATED
2. ALL CAPACITOR VALUES IN µF UNLESS OTHERWISE STATED
3. NOTE POLARITY OF TANTALUM CAPACITORS
4. BEFORE INSTALLING Q3, Q4 CUTOFF OVERHANG AT FLAT

ARP 2701 Board G Power Supply

Parts List

ORDER BY ARP PART NUMBER; INCLUDE PART DESCRIPTION & PRO SOLOIST SERIAL NUMBER

BOARD E	DESCRIPTION	ARP PART NUMBER
Z1,2	Digital Integrated Circuit	8000-005-7242
Z3	"	8000-005-74174
Z4	"	8000-005-7493
Z5	"	8000-005-7473
Z6	"	8000-005-7403
Z7	"	8000-005-7400
Z8	"	8000-005-7402
Z9	"	8000-005-7479 or 7474
Z10	"	8000-005-8601
Z11	"	8000-005-74150

BOARD F	DESCRIPTION	ARP PART NUMBER
Z1,2	Digital Integrated Circuit	8000-005-7420

BOARD G	DESCRIPTION	ARP PART NUMBER
Q1,6	Transistor (Power)	D40D2
Q2	"	2N5232
Q3	"	2N5367
Q4,7	"	2N6076
Q5,9,10	"	2N5172
Q8	"	2N5494
C4-5	Capacitor 250uf, 50v	B41010 $^{250}/_{50}$
C6	Capacitor 3300uf, 16v	16T3300
CR1-4	Diode	1N4448
CR5,6	Diode	1N4001
Z1	Regulator Chip	UGA7723393C
T1	Transformer	2701-028

MECHANICAL PARTS	ARP PART NUMBER
Trimmer Hole Plug	HP-250
Slide Pot Knobs (White)	3-4454-011
Transpose Switch	02-481-001
Voice Switches, Black	02-481-0009-REVA
Voice Switches, White	02-481-0010-REVA
Touch Sensor Assembly	2701-084
Rubber Feet	No. 2½
Fuse	MDV¼
Key Contacts	——
Slide Pot 1Meg Log	2801-006-1
Slide Pot 100K Log	2801-006-2
Slide Pot 100K Lin	2801-006-3
Slide Pot 1K Lin	2801-006-4

COMPLETE BOARD ASSEMBLIES	ARP PART NUMBER
BOARD A	2701-031-PL
BOARD B	2701-032-PL
BOARD C	2701-033-PL
BOARD D	2701-034-PL
BOARD E	2701-035-PL
BOARD F	2701-036-PL
BOARD G	2701-037-PL