SECTION 1 - OVERALL SYSTEM MAINTENANCE

INTRODUCTION

The information in Part II of this publication is intended for personnel with electronic service experience who prefer to service their own equipment instead of returning circuit modules to the factory. Keep in mind that modules can be damaged by improper maintenance procedures. Rowe will assume no responsibility for such damage. If you're not sure of what you are doing, don't even take the cover off; send the module back to the factory for repair.

SERVICING PROCEDURES

The module package consists of a printed circuit board sandwiched between a metal mounting plate and a protective plastic cover. A foam pad between the circuit board and mounting plate insulates and cushions the board. Always replace the pad after servicing the board to prevent the foil side of the board from shorting against the mounting plate.

Remove the plastic cover by squeezing the edges inward until they clear the metal tabs on the mounting plate.

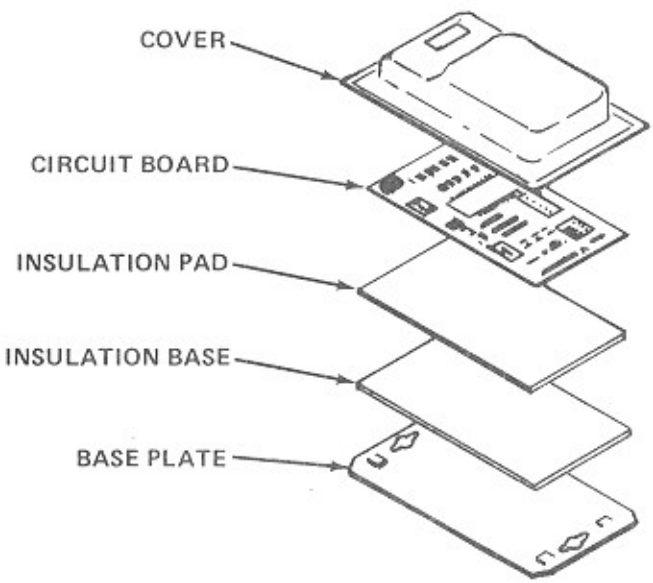


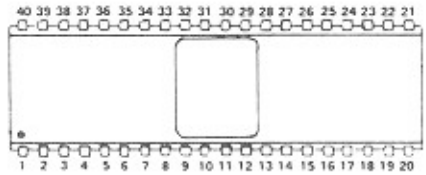
FIGURE 2-1. TYPICAL MODULE PACKAGE ASSEMBLY

PRECAUTIONS

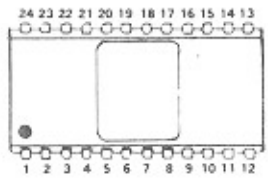
The MOS chips have an extremely high input resistance (typically on the order of 10^{10} [10,000,000,000] ohms.) Due to this high input impedance, they can be damaged by high static charges. Care should be taken when handling circuit boards removed from the protective module package to avoid conditions where the board may be exposed to static discharges.

IC PIN LOCATIONS

When looking at IC from top, with indexing mark to your left, pin no. 1 is at lower left. Indexing mark may be notch or dimple.

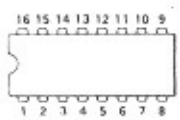


CREDIT CHIP AND SELECTOR DISPLAY CHIP



MEMORY CHIP

14 PIN PACKAGE



16 PIN PACKAGE

FIGURE 2-2. INTEGRATED CIRCUIT PIN LOCATION

TESTING DISCRETE TRANSISTORS

Test transistors using a volt-ohm-milliameter as follows:

1. Set the meter function switch to OHMS and the range switch to a medium scale (such as X10 on Simpson 260).

2. Connect ohmmeter to transistor leads to check NPN silicon transistors as follows:

NOTE

SOME METERS USE THE BLACK OR NEGATIVE LEAD AS THE POSITIVE LEAD FOR OHMS SCALE, TRIPLET BEING ONE OF THESE.

+ to emitter - to collector	- no reading
+ to collector - to emitter	- no reading

+ to base
- to collector - low reading (about 500 ohms)

+ to collector
- to base - no reading

+ to emitter
- to base - no reading

+ to base
- to emitter - low reading (about 500 ohms)

3. With positive meter lead on collector and negative lead on emitter, touch base to collector. Check that the meter shows a low reading to indicate that the transistor is conducting.

4. All previous tests indicate a good transistor. Any deviation from these conditions indicates a defective transistor.

5. For PNP transistors, reverse the polarities and proceed as in the previous steps.

TESTING DARLINGTON POWER TRANSISTORS

Test Darlington transistors using a volt-ohm-milliameter as follows:

1. Set the meter function switch to ohms, and the range switch to X1 (on Simpson 260) for scale.

2. Connect ohmmeter to transistor leads to check NPN silicon Darlington power transistors as follows:

NOTE

SOME METERS USE THE BLACK OR NEGATIVE LEAD AS THE POSITIVE LEAD FOR OHMS SCALE, TRIPLET BEING ONE OF THESE.

+ to emitter
- to collector - Low reading

+ to collector
- to emitter - No reading

+ to base
- to collector - Low reading

+ to collector
- to base - No reading

+ to emitter
- to base - No reading

+ to base
- to emitter - Low reading

3. With positive meter lead on the collector and negative lead on emitter, touch the base to the collector. Check that the meter shows a low reading to indicate that the transistor is conducting.

4. For PNP transistors, reverse the polarities and proceed as in the previous steps.

TESTING SILICON DIODES

Test silicon diodes as follows:

1. Set the meter function switch to OHMS and the range switch to a medium scale.

2. Connect the diode as shown.

NOTE

CONNECTIONS MAY VARY WITH VARIOUS TYPES OF METERS. THE IMPORTANT THING TO REMEMBER IS THAT THE DIODE SHOULD INDICATE NO READING WITH THE LEADS CONNECTED ONE WAY AND A LOW READING WHEN CONNECTED IN THE OPPOSITE POLARITY.

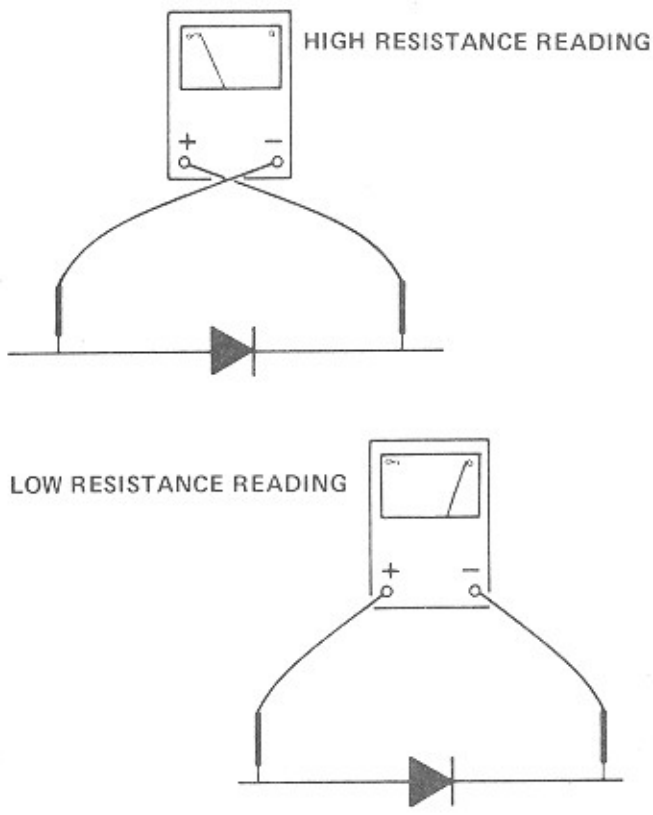


FIGURE 2-3. DIODE TEST HOOK-UP

REPLACING DARLINGTON POWER TRANSISTORS

Fuses mounted on driver boards on underside of amplifier serve a diagnostic function; an open fuse indicates a failed darlington power transistor, Q1 or Q2. Replace only the transistor adjacent to the open fuse. Use the following procedure:

64 Watt Amplifier

1. Replace open fuse and retest. If new fuse blows, continue as follows:
2. Remove phillips head screw and nut holding transistor to heat sink.
3. Pull transistor from socket, being sure to retain mica insulator under transistor.
4. Apply Thermal Joint Compound (Rowe Spec 53) to BOTH sides of mica insulator and place insulator against heat sink.
5. Plug new transistor into socket and replace screw and nut. One of the major causes of darlington failure is loose mounting screws. Be sure that screw is tight for proper heat transfer.

CAUTION

DIRECT CONTACT BETWEEN OUTPUT TRANSISTOR AND HEAT SINK WILL DESTROY TRANSISTOR. INSULATE AS DIRECTED.

6. Install new 3 amp fuse.

SOLDERING AND UNSOLDERING IC DEVICES

Integrated circuits, due to their fragile nature, require different soldering techniques than for discrete (individual) components. Improper soldering could also damage the circuit boards.

There are many devices on the market for soldering and unsoldering IC circuits. The following text describes some of the available devices. However, the technician will usually develop his own preferences.

Soldering irons for use with integrated circuits are available in many varieties. Simple versions are nothing more than a handle with a screw-in heating element and tip. Others include thermostatically controlled heating units. The selection of a soldering iron will be at the preference of the technician. However, the important thing to keep in mind is that the tip temperature should not exceed 750^{O} (35W max.). Also the tip should be shaped to permit unsoldering of a single IC lead, if necessary, without heating adjacent components or pins. To prevent the introduction of leakage voltage into the circuit from the soldering iron, the tip should be grounded. This is accomplished by connecting a ground wire to the soldering iron holder or touching the tip of the iron to a grounded surface before using.

The simplest unsoldering tool is the wick or braid-type solder remover. Wound on a spool, it's a metal mesh that acts as a solder blotter. In use, a half-inch of the braid is placed on the joint and heat is applied for a period of one second per IC pin. Once the braid sucks up the solder, the iron and braid are removed together revealing a free joint. The wick is available in various widths.

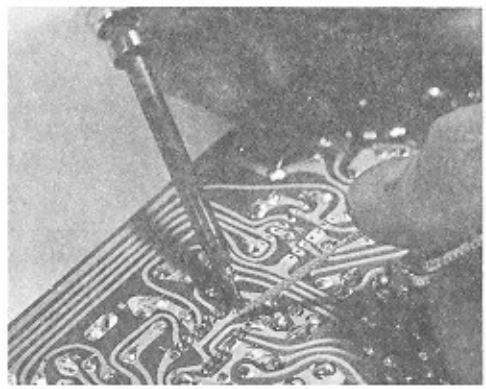


FIGURE 2-4. USING BRAID TYPE SOLDER REMOVER

While braids work by capillary action, sippers and suckers draw solder with a vacuum. The simplest device in this category is a rubber bulb which inhales molten solder. The tip is made of Teflon, a plastic that won't combine with solder or suffer heat damage.

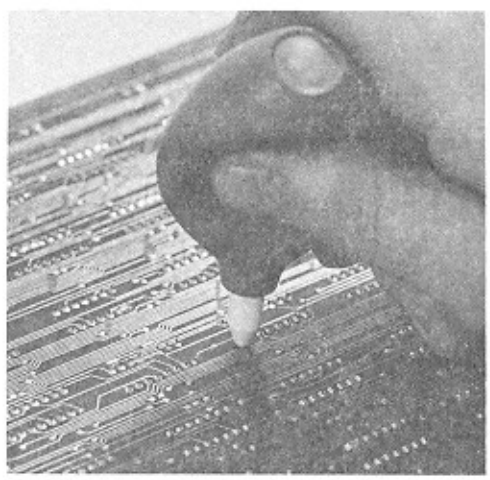


FIGURE 2-5. USING VACUUM BULB WITH TEFLON TIP

To use the bulb, squeeze it closed and then, when the solder melts, release it - vacuum does the rest. Since flowing solder cools and solidifies very quickly inside the bulb, it sometimes chokes the tip. Clear it with a wire. An advantage of the bulb is that it can be used in tight corners.

Soldering irons incorporating bulbs are also available. The major advantage of these devices is the convenience of one hand operation.

Be sure to discharge waste solder trapped inside the bulb after each joint is cleaned. Be careful on the discharge since it comes out of the tool as a fine spray of solder when the bulb is squeezed. Direct the spray into a metal container. Never press the bulb while applying the soldering iron to a solder joint or you'll spray the joint and nearby area with bits of solder that may cause short circuits. Finally, never reuse solder. Oxidation and loss of flux will almost certainly make a bad joint.

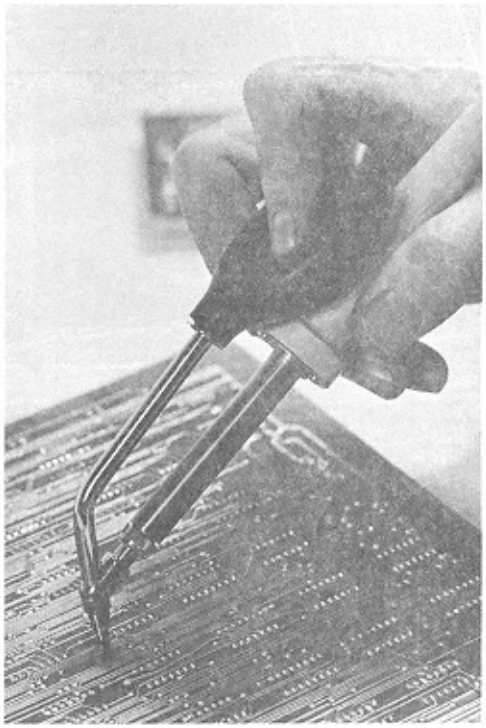


FIGURE 2-6. COMPONENT REMOVAL USING COMBINATION IRON AND SOLDER SUCKER

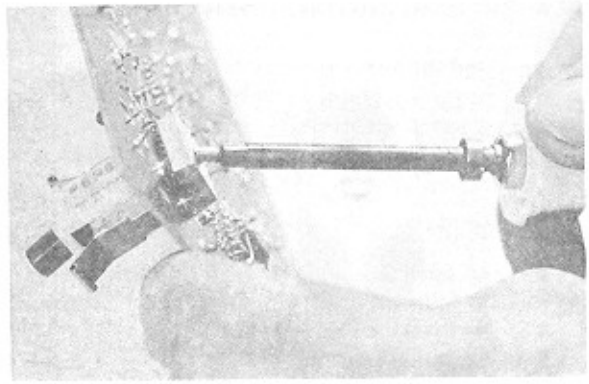


FIGURE 2-7. SPECIAL IRON TIP HEATS ALL IC PINS AT ONCE WHILE SPRING-LOADED REMOVAL TOOL LIFTS IC FROM BOARD

When isolating one part of an IC package, the recommended procedure is to cut the lead as close as possible to the board. Miniature cutters are recommended for this purpose. Bend the lead up, away from the board.

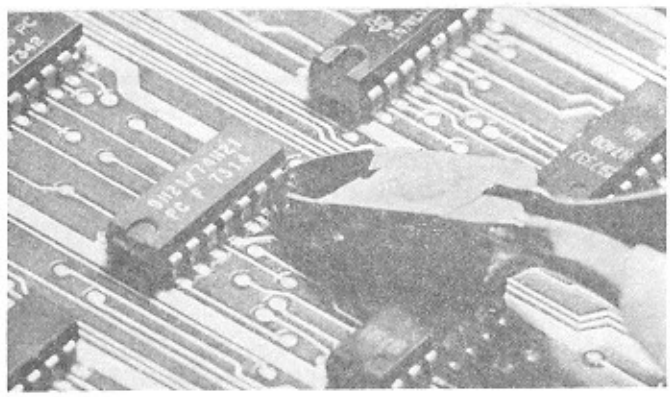


FIGURE 2-8. ISOLATING SINGLE PIN OF IC

To place the isolated section back in operation, bend the lead back down and solder in place. Use a thin 0.22-gauge 60/40 tin-lead solder. The thin gauge solder will melt and flow more freely thus requiring less application of heat.

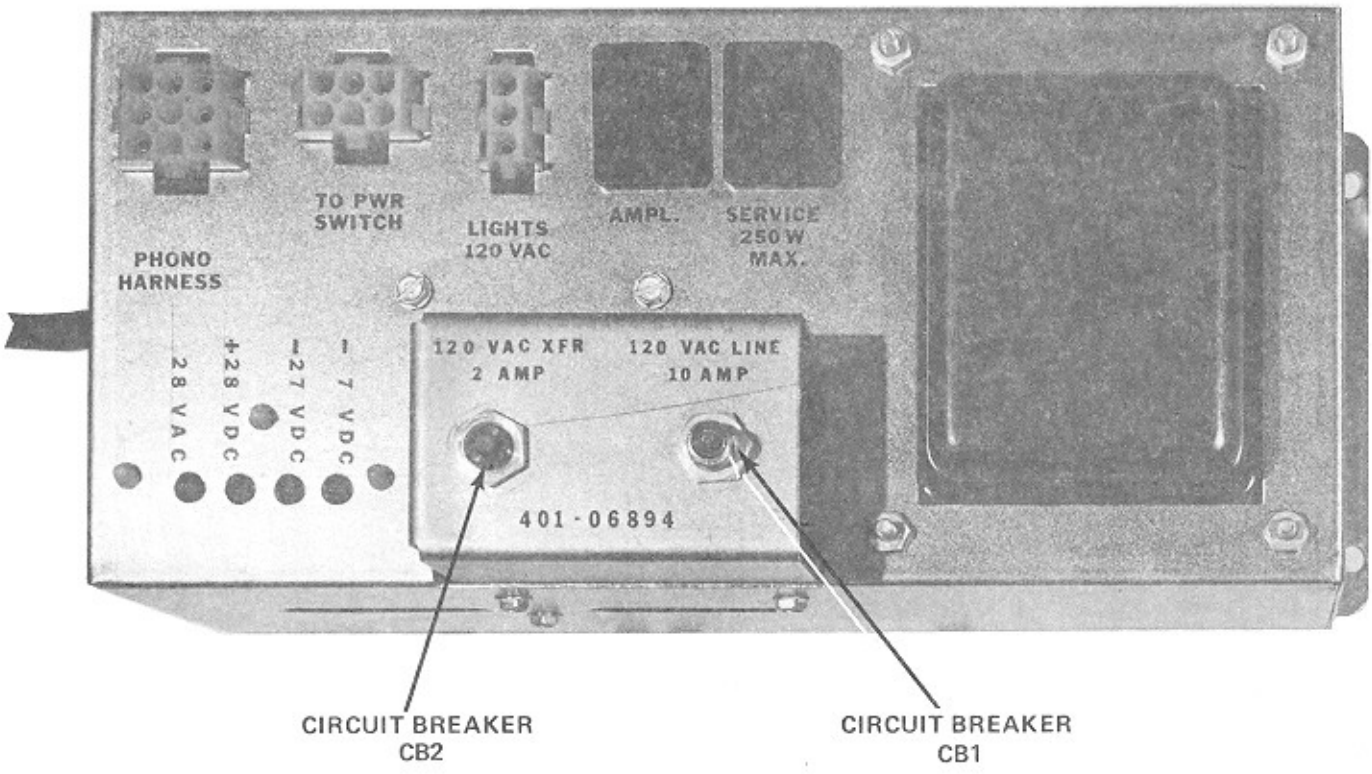


FIGURE 2-9. MAIN POWER SUPPLY

MAIN POWER SUPPLY (See figures 2-9, 2-11)

The main power supply distributes unregulated +28 VDC and 28 VAC, and regulated -27 VDC and -7 VDC power to phonograph components. Power is controlled by a toggle switch located on the access door at the rear of the cabinet. 120-volt AC receptacles are provided for the amplifier, lights, accessories and service equipment. The AC receptacles and transformer primary are protected by 10 amp circuit breaker CB1, while circuit breaker CB2 protects the transformer primary only. Both the circuit breakers can be reset from the front panel.

The step-down transformer incorporates four secondary windings, each corresponding to one of the four output voltages (+28 VDC, 28 VAC, -27 VDC and -7 VDC). Each secondary passes directly to the phonograph harness. Three identical full wave bridge rectifiers convert the AC secondary voltage to DC charging filter capacitors C1004, C1005 and C1006.

Integrated circuit Z1001 provides voltage regulation for the -27 VDC circuit (top of schematic). The regulator drives transistor Q1006 which, in turn, drives Q1002 to supply the necessary current. If output current draw should become excessive, Q1007 is turned on. This removes the drive to Q1006, cutting current flow to protect the circuit.

The -7 VDC and +28 VDC supplies are unregulated, other wise operation is similar to the -27 VDC circuit described previously. Transistors Q1005 and Q1009 provide overload protection. LED's indicate the presence of voltage.

SEQUENCE OF OPERATION

The sequence of operation diagrams which follow illustrate the circuits which are active during each point in the phonograph operational cycle.

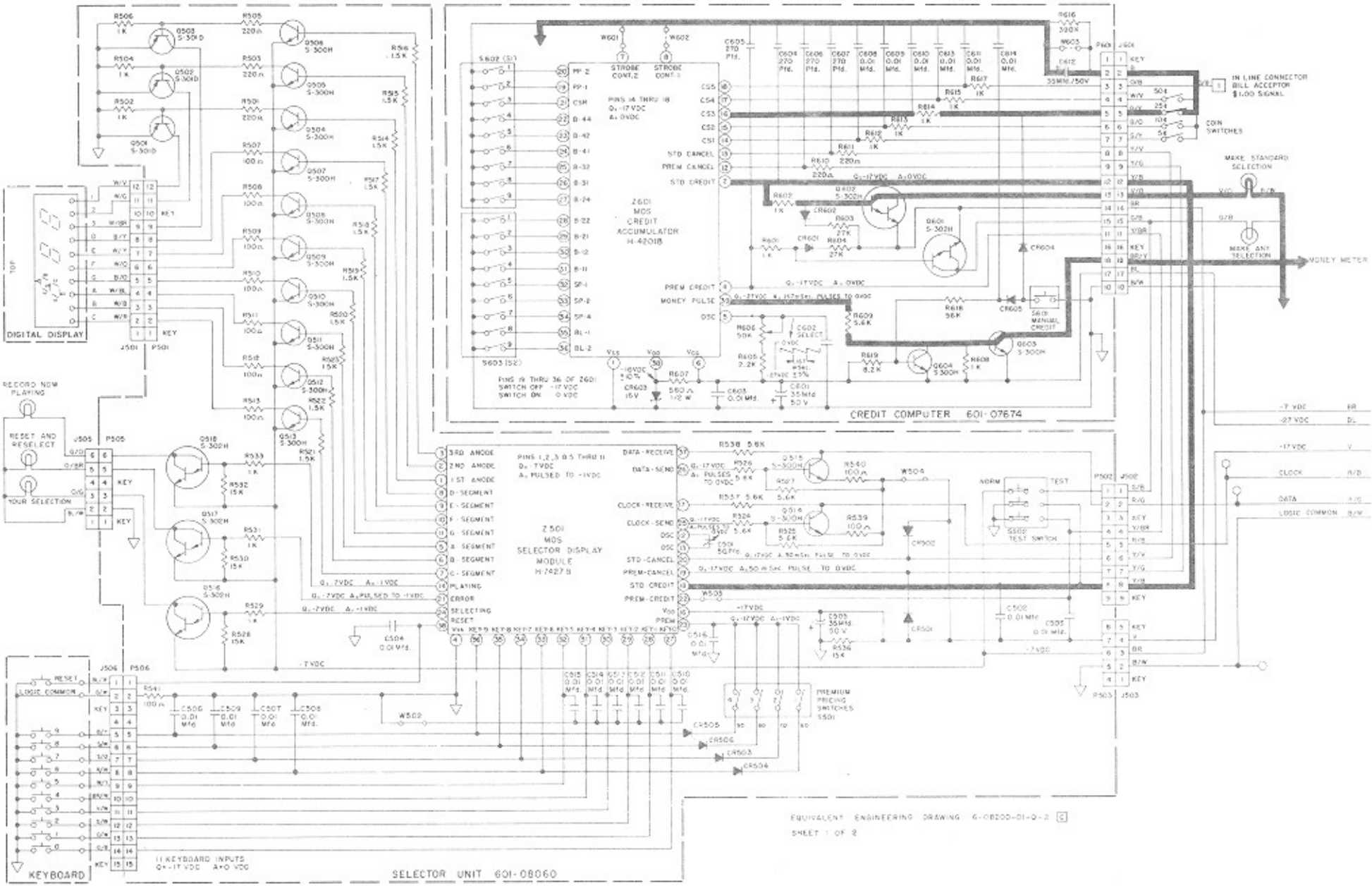
Since the circuit chips are digital devices, the pins are at one of two states in each sequence diagram:

Q = Quiescent
A = Active

The voltage for each chip pin in both the Q and A states is listed on the schematic diagram and referenced in the text.

Most of the voltages indicated can be measured with an inexpensive VOM.

1. QUARTER INSERTED. STANDARD CREDIT ESTABLISHED.



1. QUARTER INSERTED. STANDARD CREDIT ESTABLISHED.

Credit computer pricing is set to one play for a quarter coin, standard price.

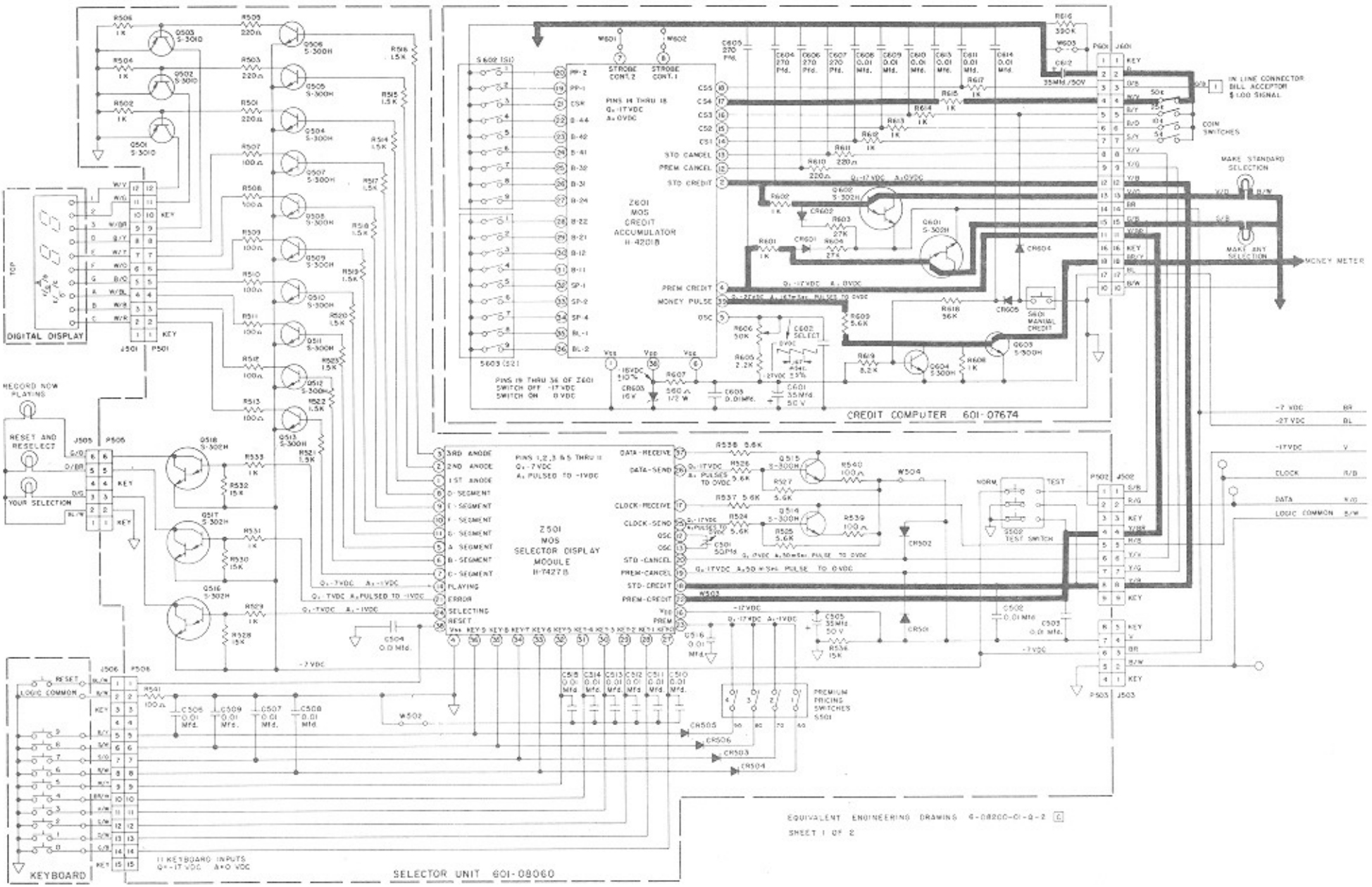
1. The quarter passes through the slug rejector operating the 25¢ coin switch lever to close the 25¢ coin switch.

2. The 25¢ coin switch connects pin 16 of the credit computer chip to COMMON through C612, R616 and R614.

3. Money pulses (-17vdc to 0vdc) are sent out on pin 39 of the credit computer chip to Q603 which drives the optional money meter assembly; five pulses=25¢.

4. A standard credit signal (-27vdc to 0vdc) at pin 2 of the credit computer chip drives Q602 which lights the MAKE STANDARD SELECTION lamp. This signal also appears at pin 18 of the selector chip.

2. HALF-DOLLAR INSERTED. PREMIUM CREDIT ESTABLISHED.



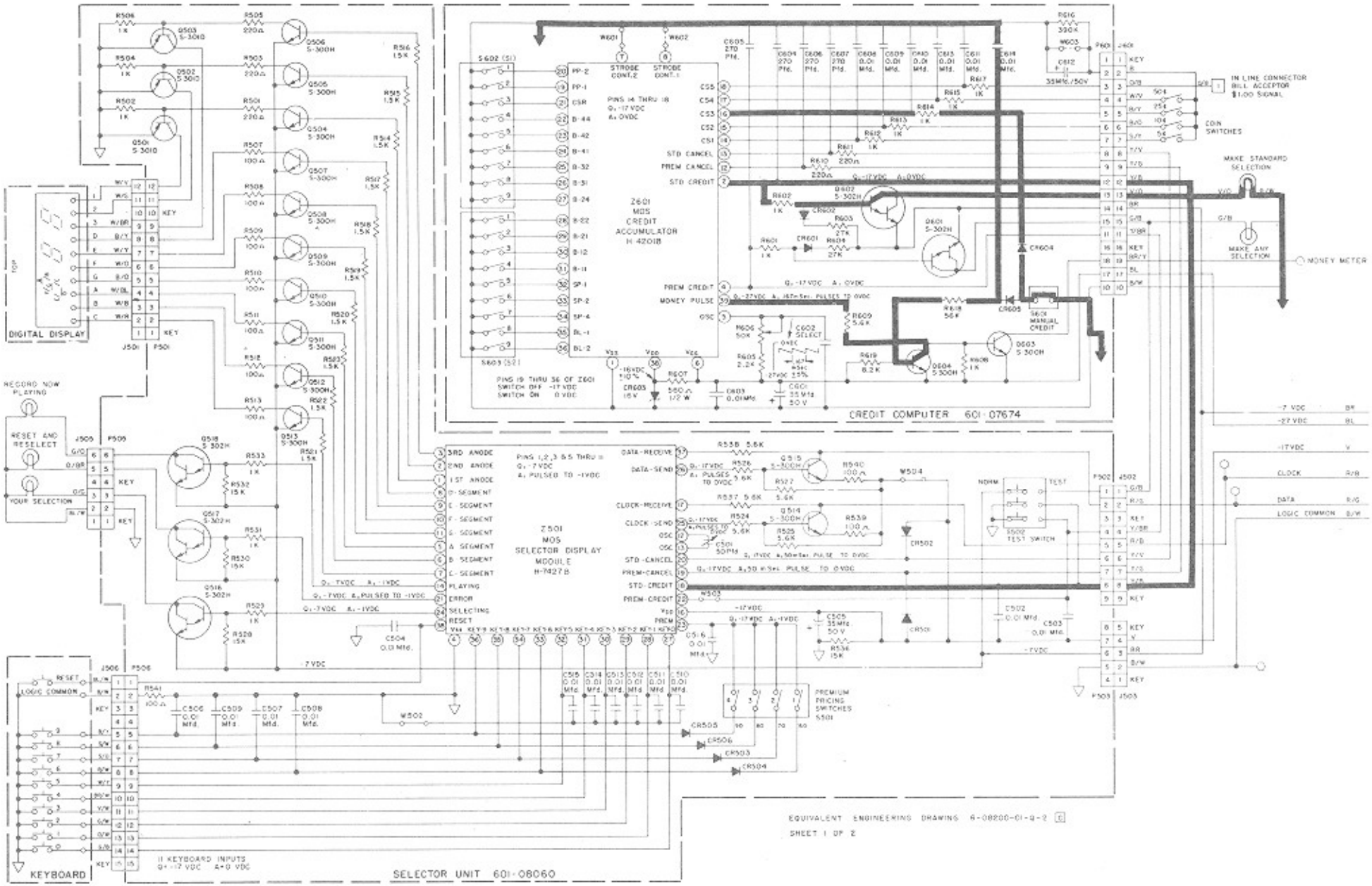
2. HALF-DOLLAR INSERTED. PREMIUM CREDIT ESTABLISHED.

1. If a half-dollar coin is deposited, the 50¢ coin switch connects pin 17 of the credit computer chip to COMMON through R615, R616, and C612.

2. The MAKE STANDARD SELECTION lamp is lit in the same manner as the previous sequence.

3. A premium credit signal (-17vdc to 0vdc) at pin 4 of the credit computer chip drives Q601 which lights the MAKE ANY SELECTION lamp. This pulse also appears at pin 22 of the selector chip.

3. CREDIT BUTTON PUSHED. CREDIT ESTABLISHED.



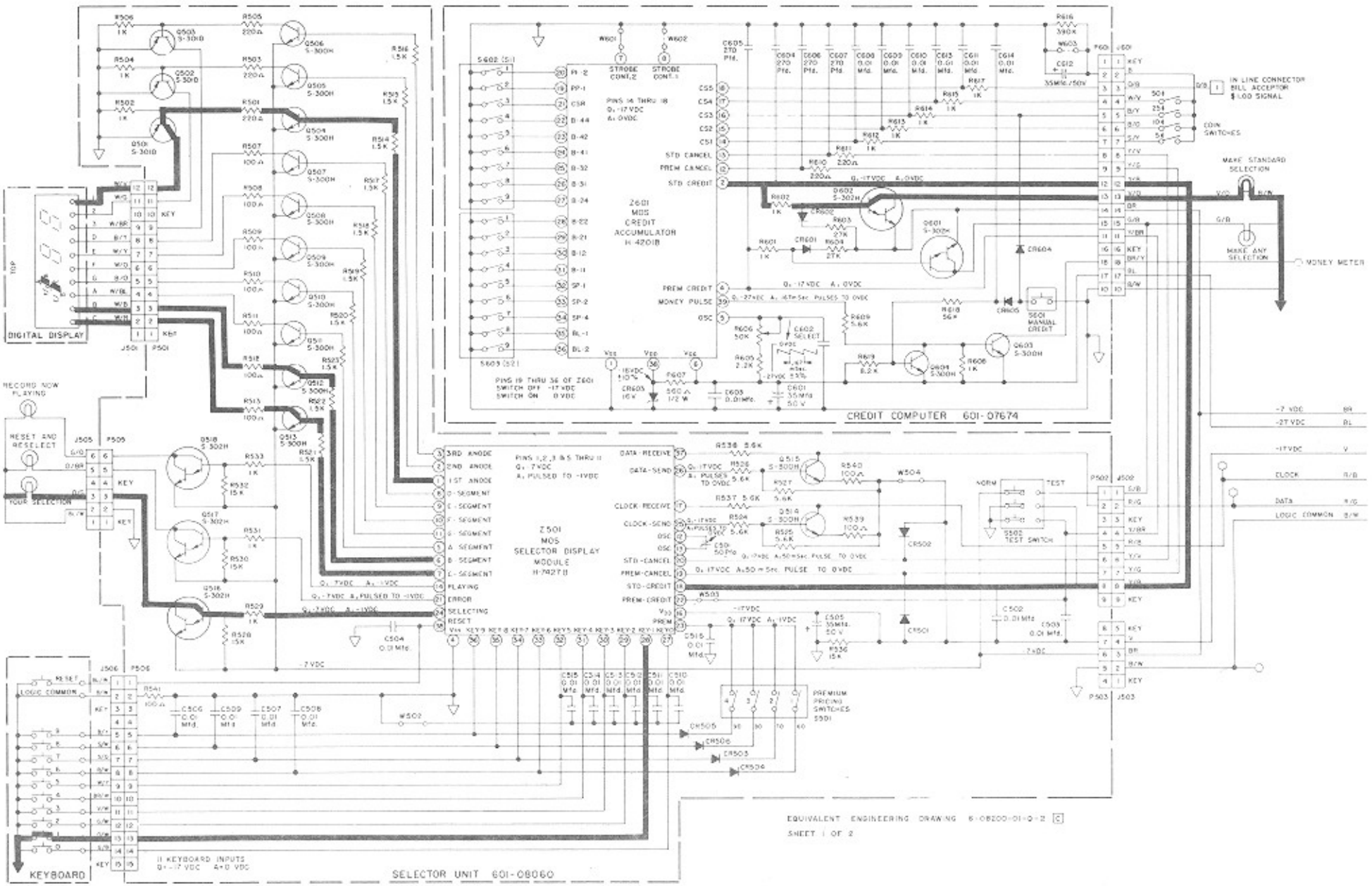
3. CREDIT BUTTON PUSHED. CREDIT ESTABLISHED.

1. Pressing manual credit pushbutton S601 on the credit computer simulates a 25¢ credit by connecting pin 16 of the credit computer chip to COMMON through diode CR604.

2. Money pulses (-17vdc to 0vdc) are tied to COMMON through R609, Q604 and R618 to prevent credit from registering on the optional money meter.

3. A standard credit signal (-17vdc to 0vdc) at pin 2 of the credit computer chip drives Q602 which lights the MAKE STANDARD SELECTION lamp. This signal also appears at pin 18 of the selector chip.

4. FIRST DIGIT SELECTED AND DISPLAYED.



4. FIRST DIGIT SELECTED AND DISPLAYED.

Only the numbers 1 and 2 corresponding to the selection group right and left side can be chosen for the first digit. If another digit such as 0 or 3 through 9 is chosen, the RESET AND RESELECT lamp will blink. In this instance, the RESET pushbutton must be pressed before making an alternate selection for the first digit.

Each of the three number display units consist of seven segments illuminated by light emitting diodes. The equivalent segments of the three display units are tied together electrically and are scanned left to right by pulses from the selector chip. Each pulse is synchronized to light the appropriate segment in the first, second or third display unit to produce the composite number image. The segments do not appear to be blinking due to the high scan speed and the persistence of vision by the observer.

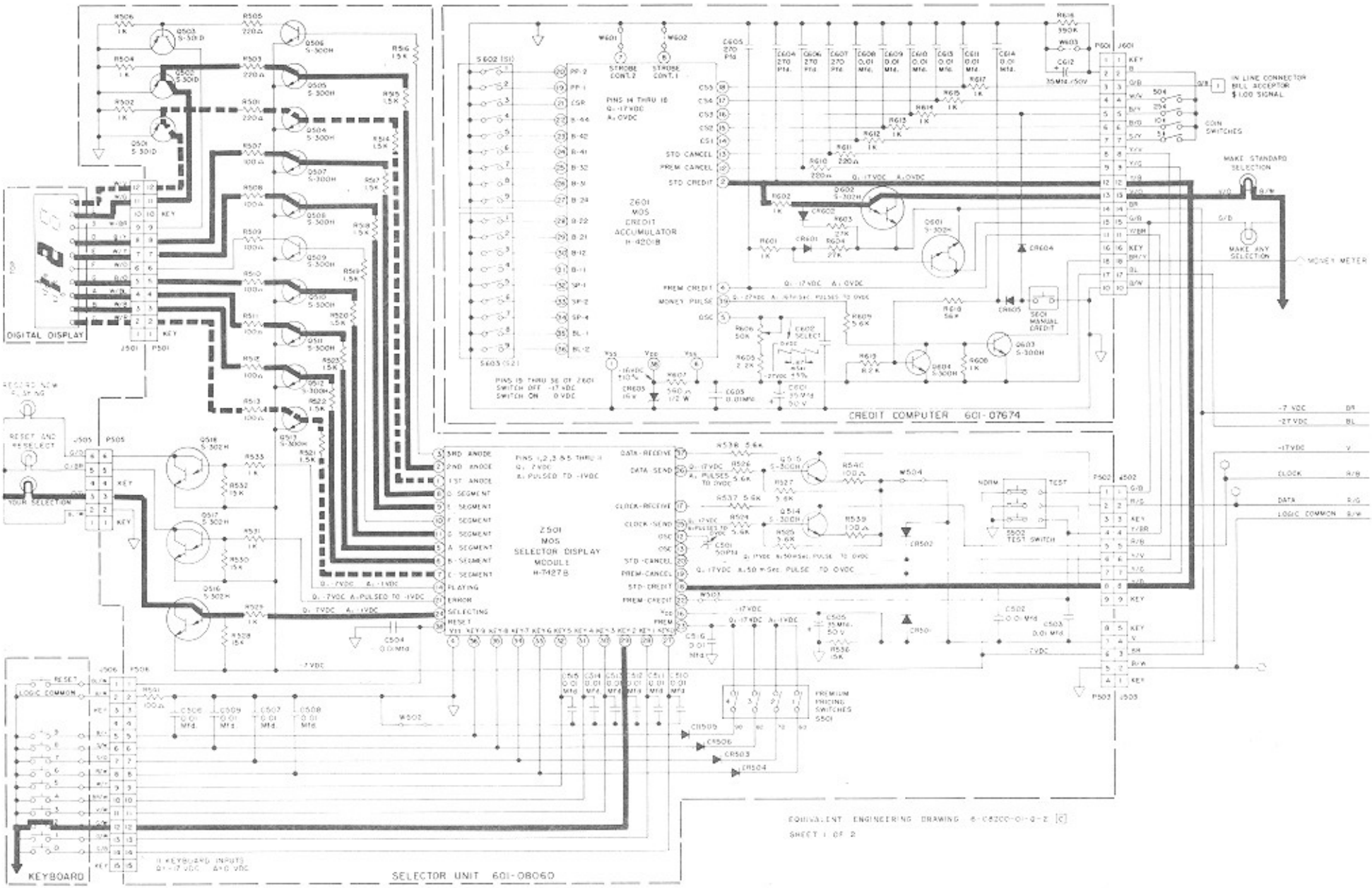
1. The number 1 is chosen for the first digit by pressing the 1 pushbutton on the selector keyboard. This closes a circuit to pin 28 of the selector chip.

2. A signal at pin 24 of the selector (-7vdc to -1vdc) chip drives Q516 which lights the YOUR SELECTION lamp.

3. The signal at selector chip pin 1 (-7vdc to -1vdc) drives Q504 and Q501 which codes the signal for the first display unit.

4. Signals (-7vdc to -1vdc) at pins 6 and 7 of the selector chip drive Q512 and Q513 respectively, lighting the B and C segments of the first display unit during the scan to produce the number 1.

5. SECOND DIGIT SELECTED AND DISPLAYED.



5. SECOND DIGIT SELECTED AND DISPLAYED.

The second digit chosen can be any number, 0 through 9 corresponding to the second number of the available record selections.

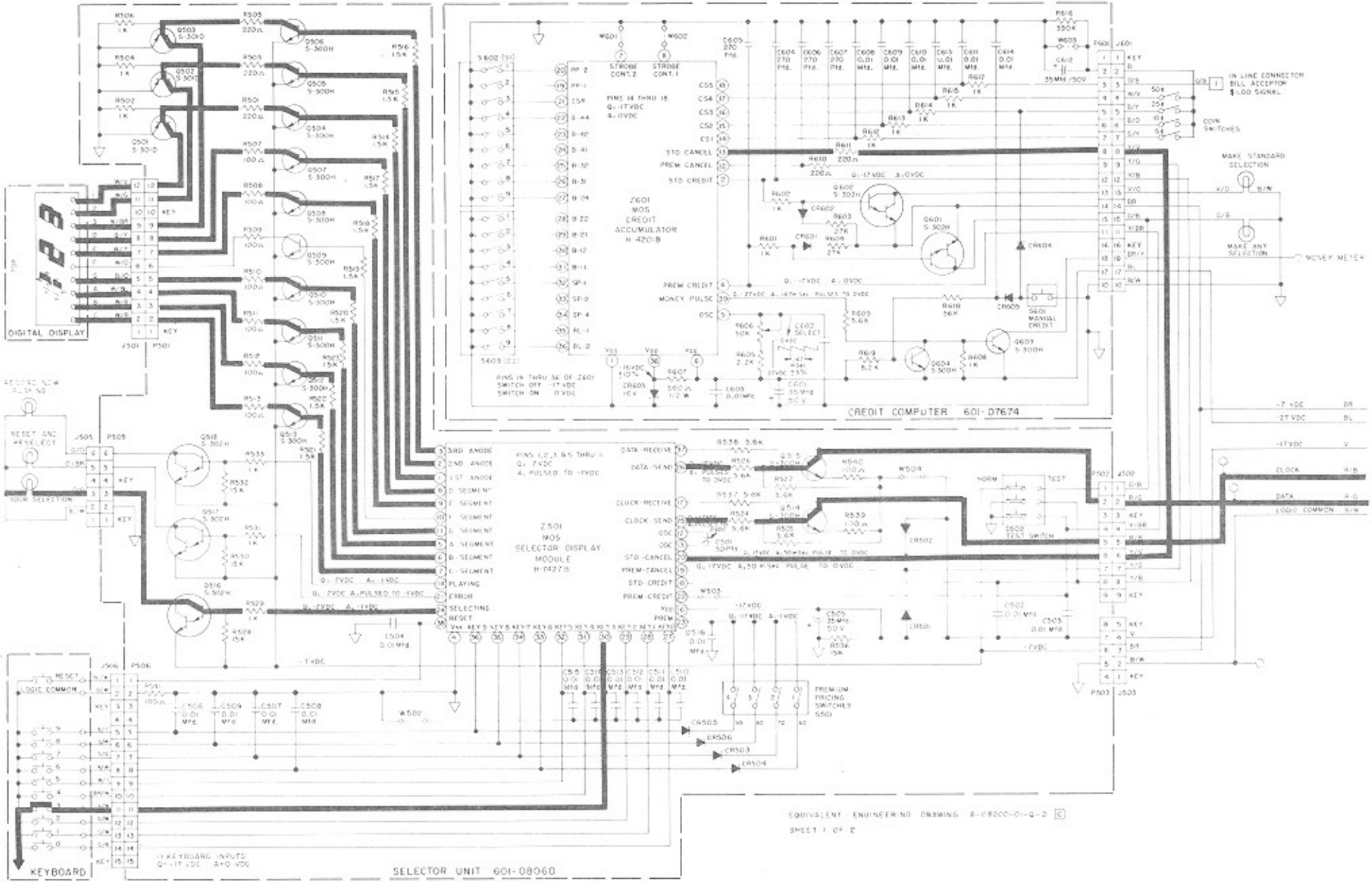
1. The number 2 is chosen for the second digit by pressing the corresponding pushbutton of the selector keyboard.

2. The signal (-7vdc to -1vdc) at selector chip pin 2 drives Q505 and Q502 which codes the signal for the second digit.

3. Signals (-7vdc to -1vdc) at pins 5, 6, 11, 9 and 8 of the selector chip drive Q511, Q512, Q510, Q508 and Q507 respectively, lighting the A, B, G, E and D segments of the second display unit during the scan to produce the number 2.

NOTE: If one or more of the premium price switches (S501-1 to S501-4) is closed the second digit represented by those switches will be premium priced. If a premium selection is attempted, premium credit must be available. If premium credit is not available, the RESET AND RESELECT lamps will flash and no further selection digits will be accepted. In this instance, RESET button must be pressed and the entire selection must be repeated.

6. THIRD DIGIT SELECTED AND DISPLAYED. CREDIT CANCELLED, SELECTION TRANSMITTED TO MEMORY UNIT.



6. THIRD DIGIT SELECTED AND DISPLAYED - CREDIT CANCELLED, SELECTION TRANSMITTED TO MEMORY UNIT.

As was the case with selecting the second digit in the previous sequence, the third digit chosen can also be 0 through 9.

1. The number 3 is chosen for the third digit by pressing the corresponding push-button on the selector keyboard.

2. The signal (-7vdc to 0vdc) at selector chip pin 3 drives Q506 and Q503 which codes the signal for the third digit.

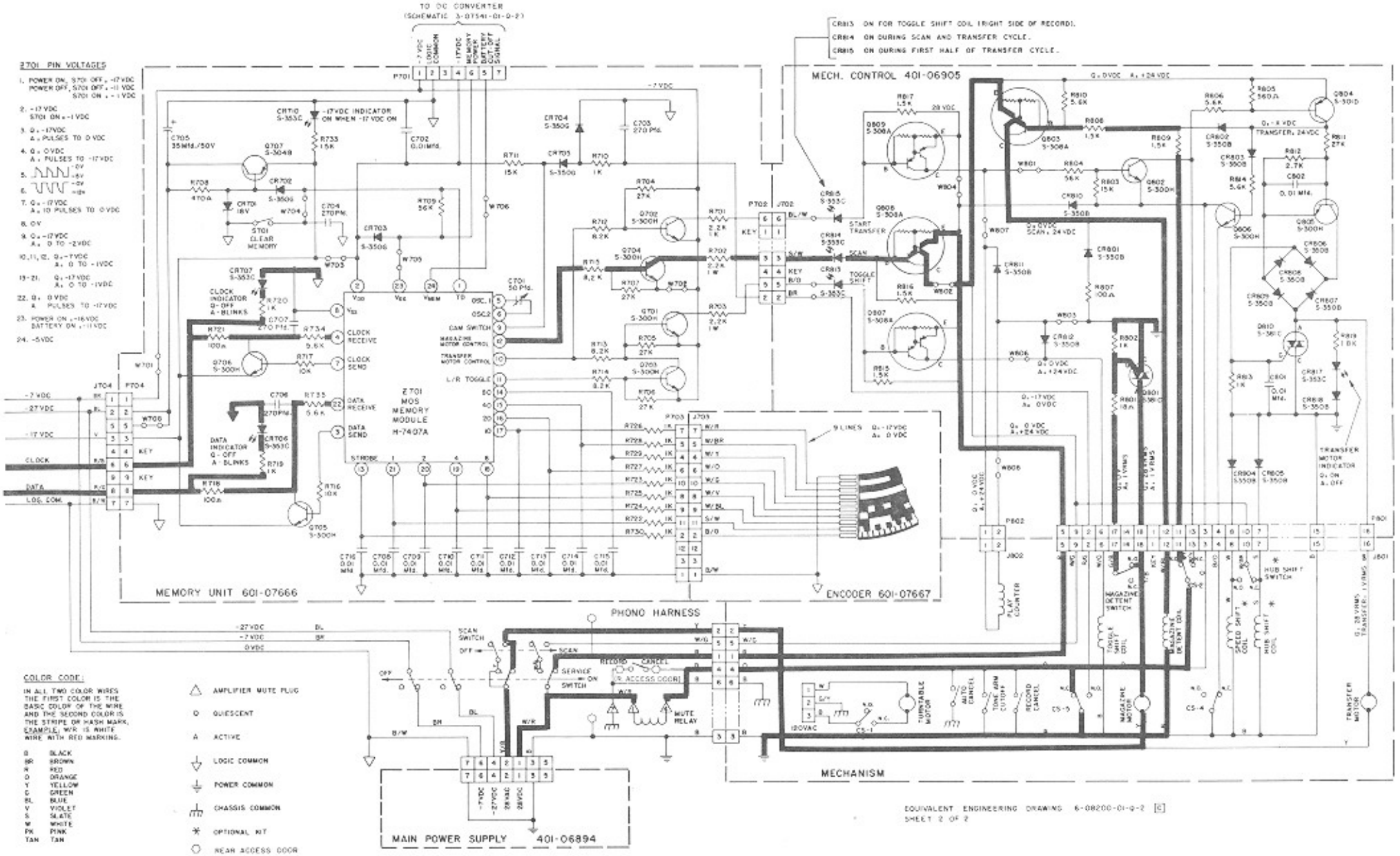
3. Signals (-7vdc to -1vdc) at pins 5, 6, 11, 7 and 8 of the selector chip drive Q511, Q512, Q510, Q513 and Q507 respectively, lighting the A, B, G, C and D segments of the third display unit during the scan to produce the number 3.

4. After the third digit has been selected, the coded selection information (data) is transmitted from pin 26 of the selector chip (-17vdc to 0vdc) to the memory unit where it is stored.

5. Clock pulses (-17vdc to 0vdc) transmitted from pin 25 of the selector chip synchronize the selection data on pin 26.

6. When the selection cycle is completed, a credit cancel signal (-17vdc to 0vdc) is sent to the credit computer from pin 20 of the selector chip and credit is erased.

7. SELECTION DATA STORED IN MEMORY UNIT, SCAN SIGNAL ENERGIZES DETENT COIL AND MAGAZINE MOTOR. AMPLIFIER MUTED.



7. SELECTION DATA STORED IN MEMORY UNIT, SCAN SIGNAL ENERGIZES DETENT COIL AND MAGAZINE MOTOR. AMPLIFIER MUTED.

1. The selection data and clock signals arrive at memory unit chip pins 4 and 22, lighting LED's CR707 (clock) and CR706) (data). These LED's will begin flashing when a selection is made and will continue to flash until the mechanism scans out.

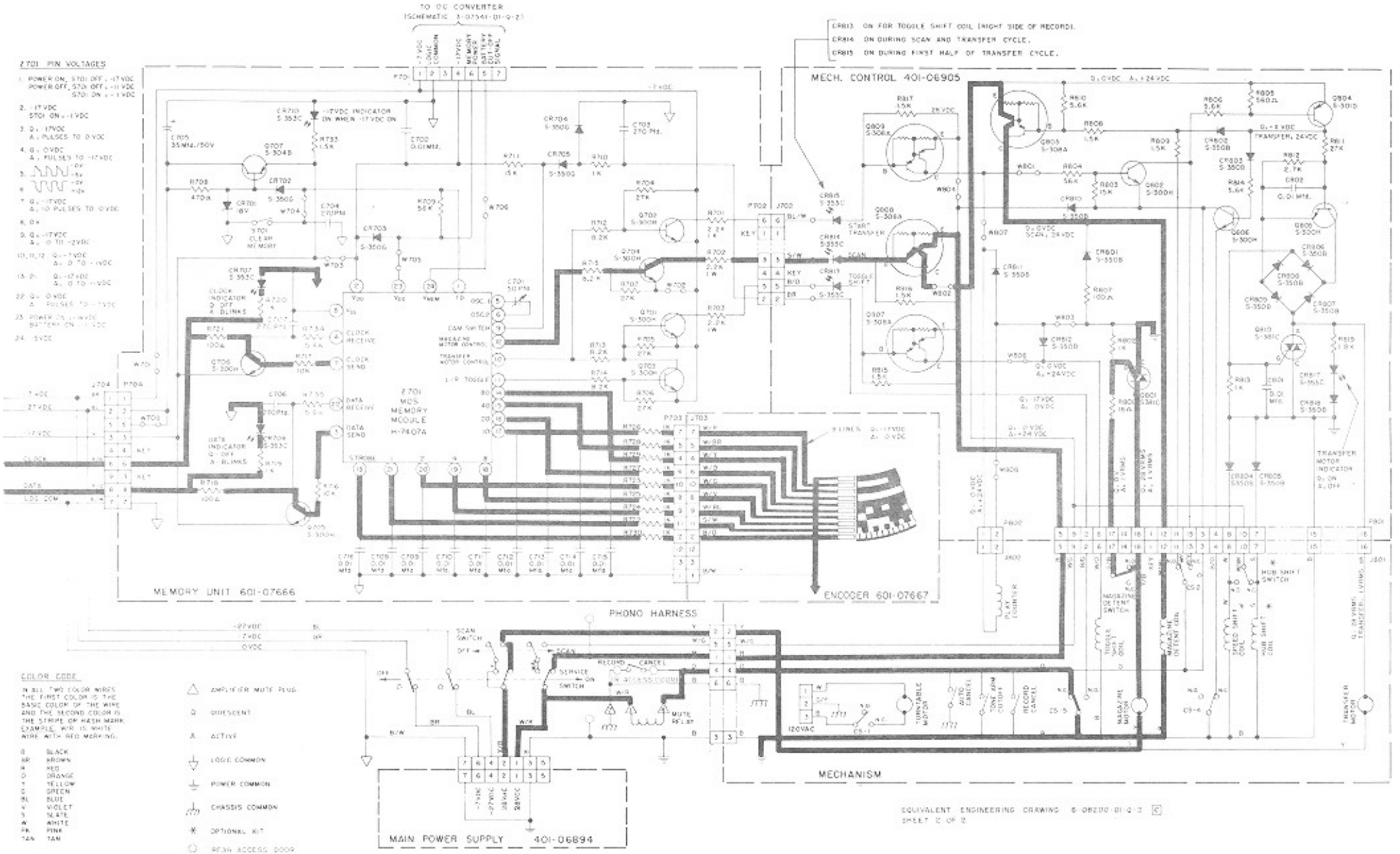
2. The scan signal (-7vdc to -1vdc) on pin 12 of the memory chip drives Q704, Q808 and Q803 lighting SCAN LED CR814 connecting +28vdc to COMMON through the magazine detent coil.

3. The energized magazine detent coil operates a mechanical linkage which transfers the contacts of the magazine detent switch turning on triac Q801.

4. Triac Q801 connects 28vac to COMMON through the service switch and magazine motor. The magazine motor is energized.

5. The amplifier mute relay is energized by 28vdc through cam switch CS5 to COMMON.

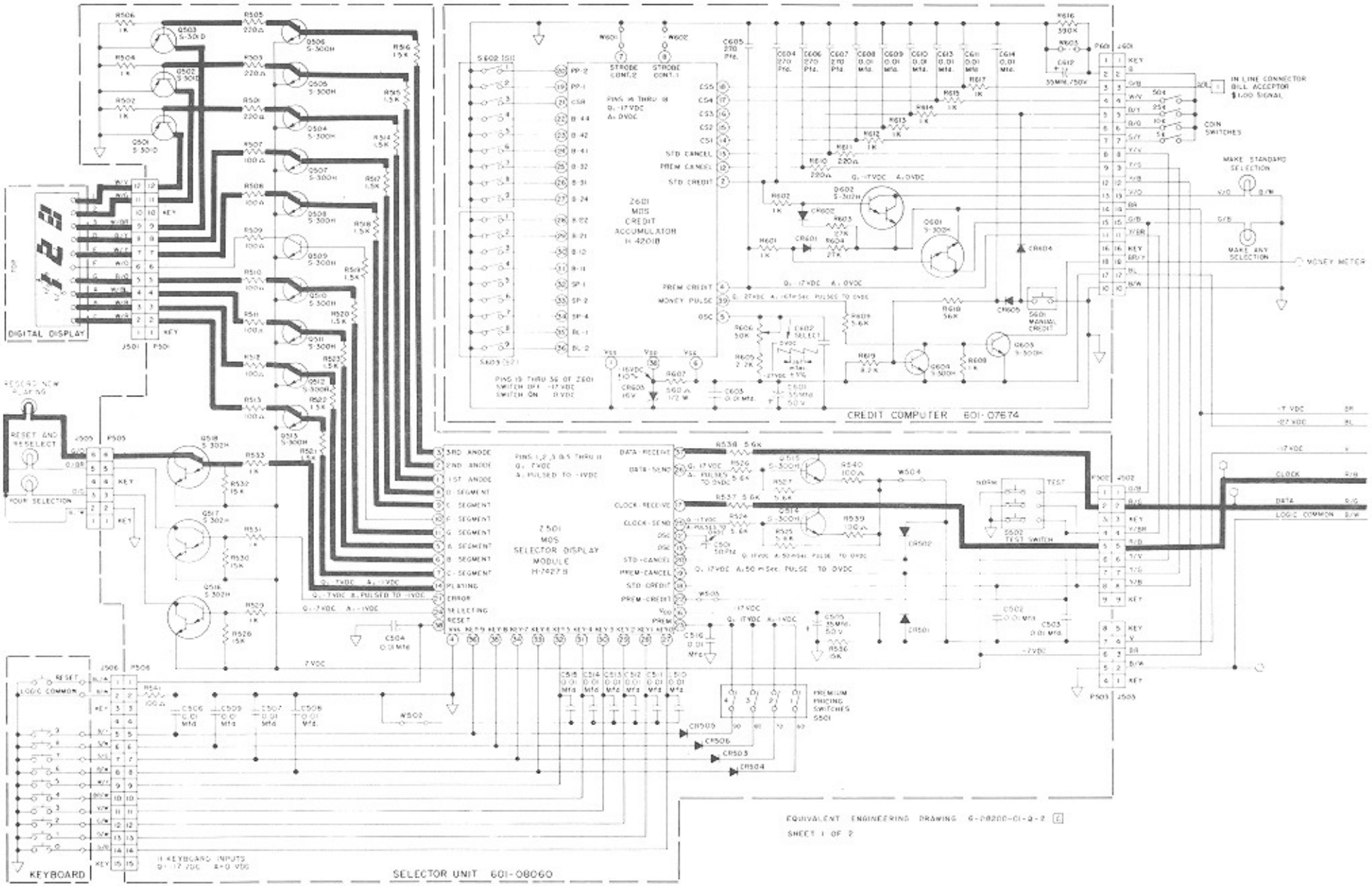
8. MAGAZINE ROTATES. ENCODER SIGNALS SCAN MEMORY, ENCODER SIGNALS SENT TO SELECTOR. AMPLIFIER MUTED.



8. MAGAZINE ROTATES. ENCODER SIGNALS SCAN MEMORY, ENCODER SIGNALS SENT TO SELECTOR. AMPLIFIER MUTED.

1. The magazine motor drives an encoder commutator disc on the right side of the record changer mechanism. The disc has a binary coded printed circuit pattern on one side. The circuit segments correspond directly to the 100 record positions. The disc is mechanically synchronized with the record magazine.
2. Stationary wipers in the encoder assembly contact the circuits on the encoder disc.
3. Encoder signals are transmitted from the memory chip to the selector logic module on the data and clock lines.

9. RECORD PLAYING (OR SCAN) DISPLAYED

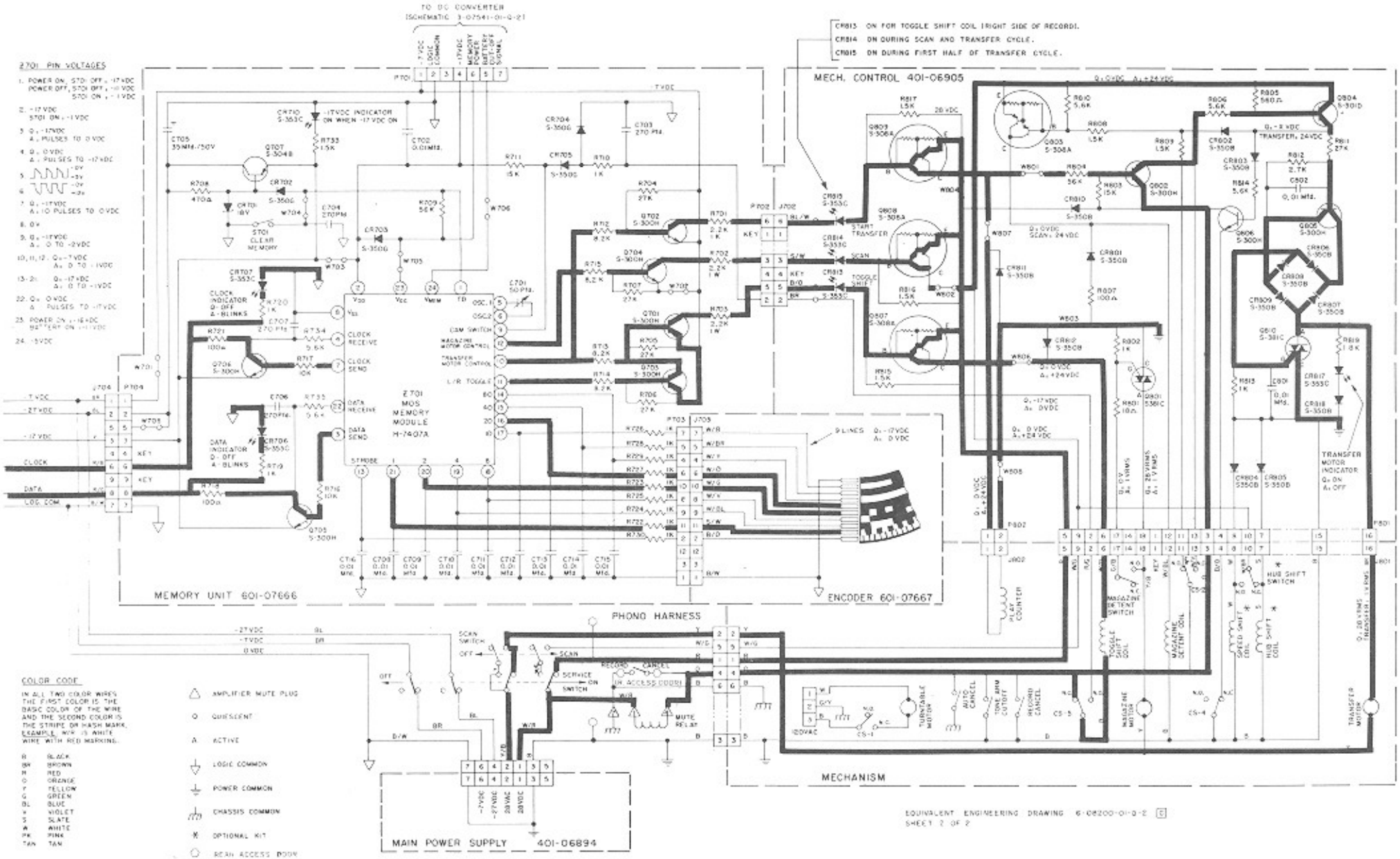


9. RECORD PLAYING (OR SCAN) DISPLAYED.

1. A signal (-7vdc to -1vdc) at pin 14 of the selector chip drives Q518 which lights the RECORD PLAYING lamp. The YOUR SELECTION lamp goes out.

2. If the phonograph is playing a selection, the selection number will be shown on the display. If the mechanism is scanning when the RECORD PLAYING lamp comes on, the scan will be displayed.

10. SELECTION LOCATED.



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SHEET 2 OF 2

10. SELECTION LOCATED.

1. When the selection is located in the memory chip, the voltage at pin 10 changes from -7vdc to 0vdc. This transfer signal turns on Q702 which drives Q809, Q802 and Q804, lighting START TRANSFER LED CR815.

2. Q804 turns on Q805 and drives an AC switch consisting of CR806 through CR809. The switch drives triac Q810 which completes a circuit to energize the transfer motor. TRANSFER MOTOR LED CR817 goes out.

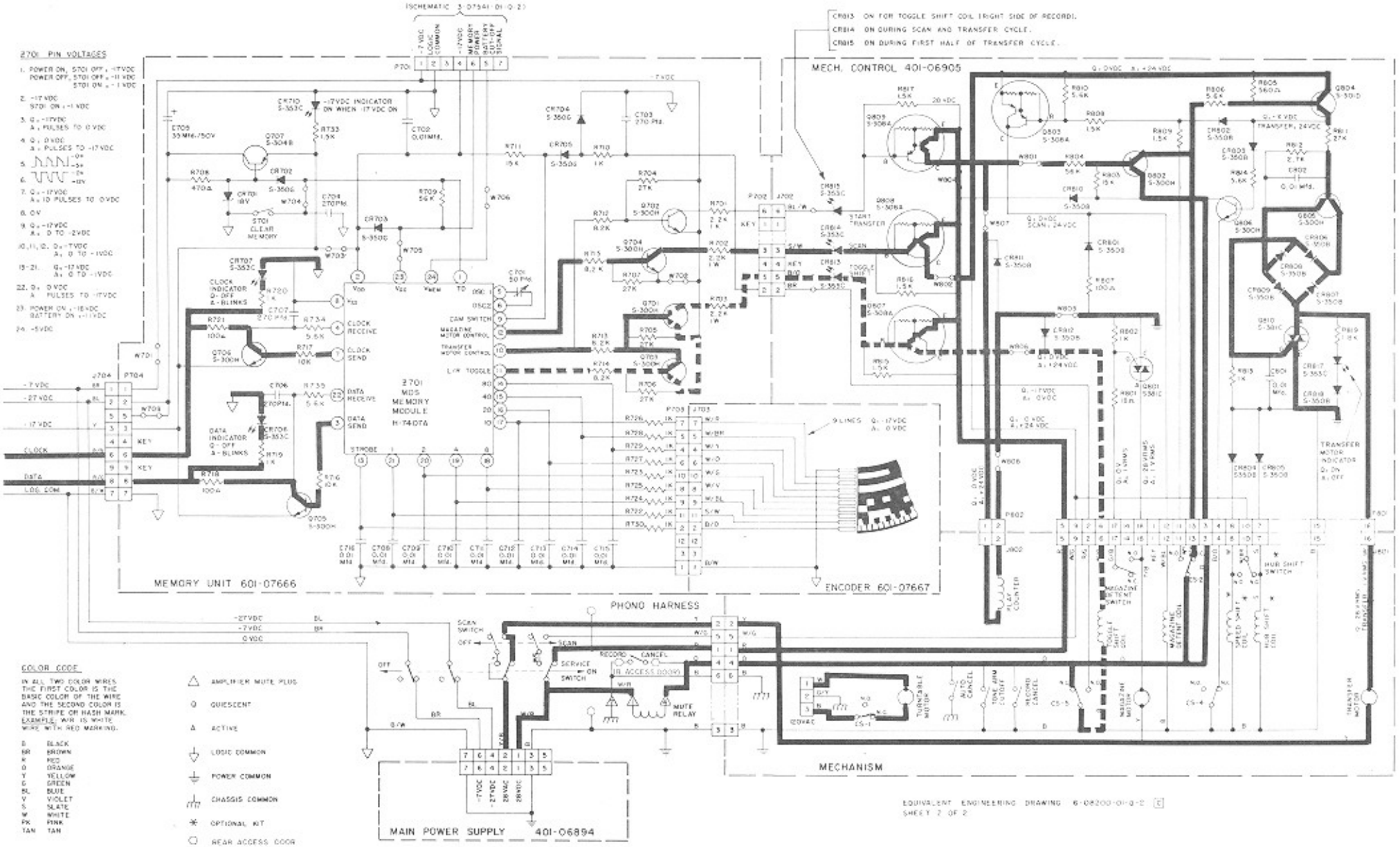
3. Q804 simultaneously turns off Q803. This opens the circuit to the magazine detent coil. The magazine detent coil transfers the magazine detent switch removing power from the magazine motor.

4. The transfer signal at pin 10 also drives Q701 and Q807. This lights toggle shift LED CR813 and energizes the toggle shift coil if the selection number begins with the number 2 (right side selection). If the selection number begins with the number 1 (left side), a signal on pin 11 of the memory chip will drive Q703 which will short the drive to Q701 to -7vdc to disable the toggle shift circuit.

5. The play counter is energized by Q809.

6. The selection is erased in the memory chip.

11. TRANSFER BEGINS.



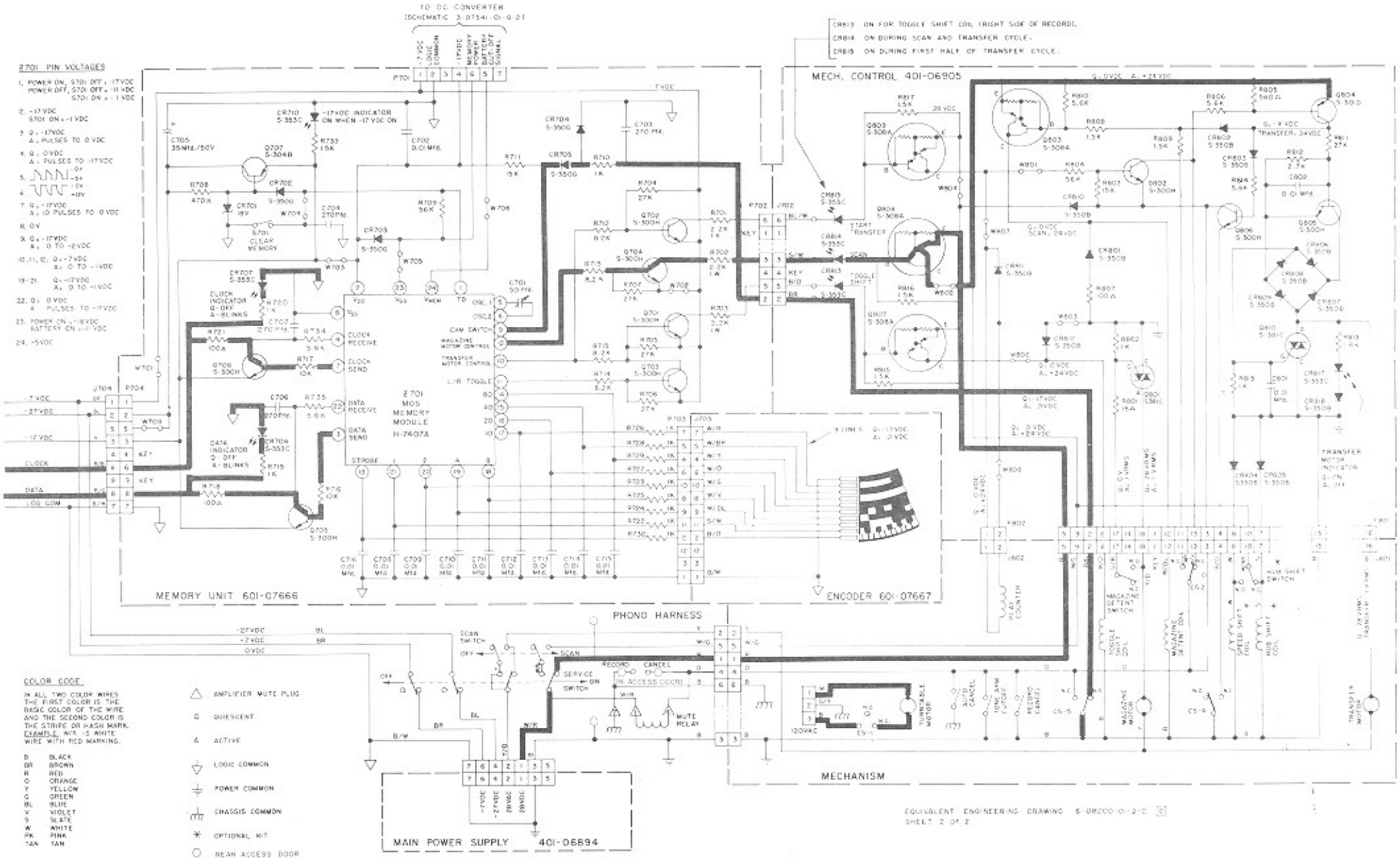
11 TRANSFER BEGINS

1. A cam operated by the transfer motor operates cam switches CS1, CS2, CS4 and CS5.

2. As the transfer motor and cam rotate, cam switch CS1 transfers, applying power to the turntable motor.

3. Cam switch CS2 transfers locking the transfer circuit on.

12. RECORD PLACED ON TURNTABLE. TONE ARM SET DOWN.



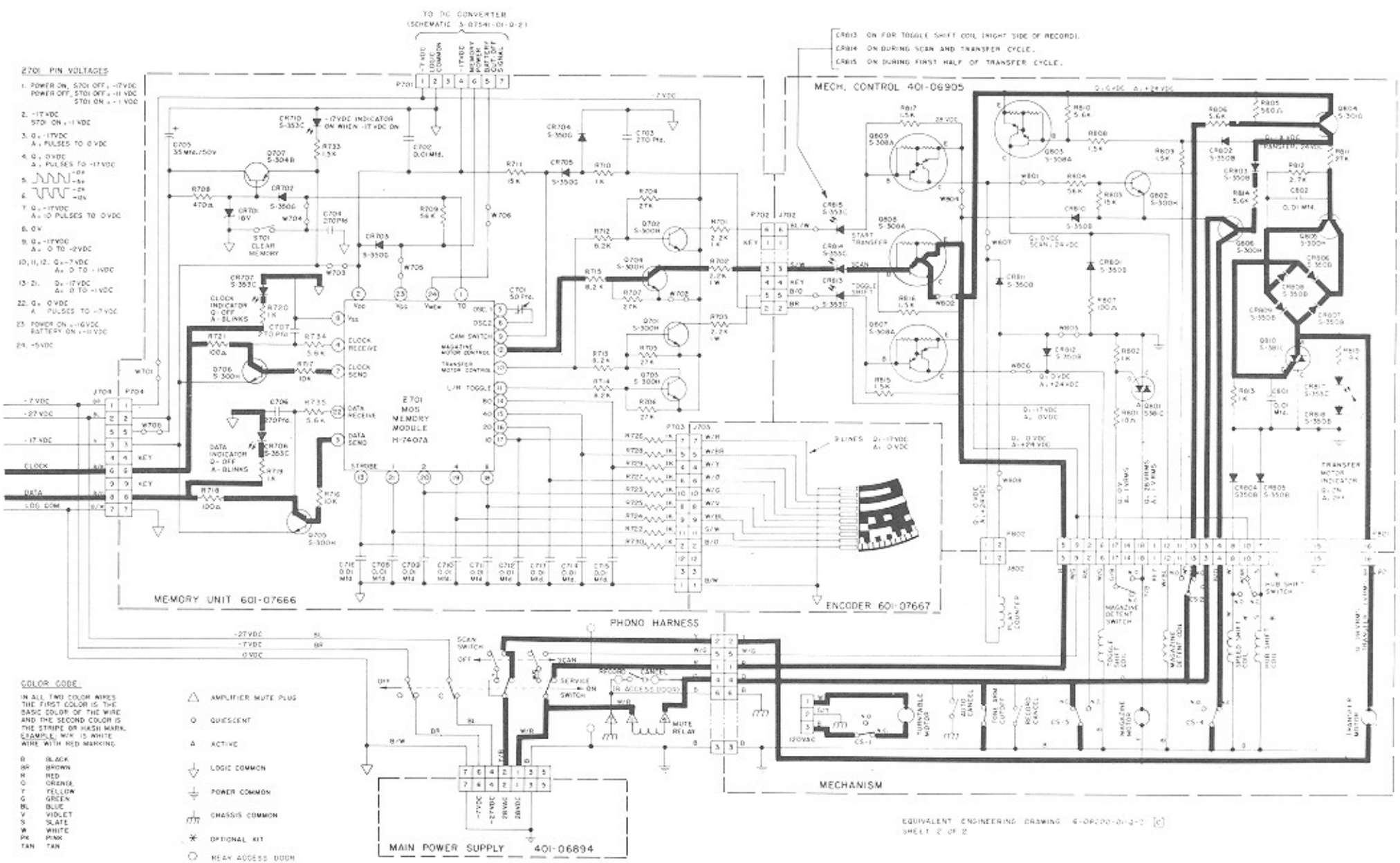
12. RECORD PLACED ON TURNTABLE. TONE ARM SET DOWN.

1. CS4 transfers, breaking the holding circuit to Q806.

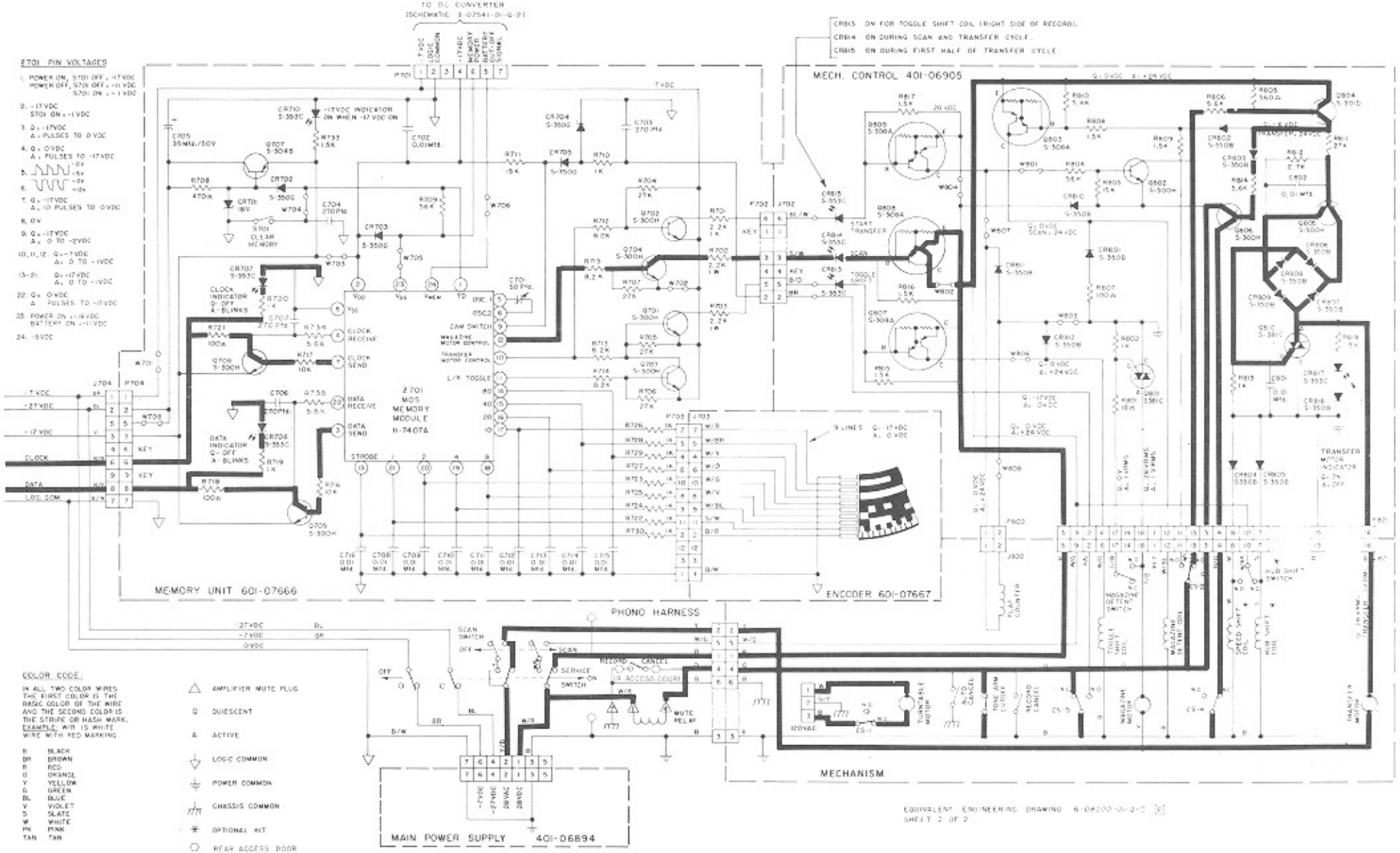
2. CS5 transfers, opening the circuit to the transfer motor and mute relay. In addition CS5 connects pin 9 of the memory chip to COMMON which cancels the transfer signal on pin 10.

3. TRANSFER MOTOR LED CR817 lights and START TRANSFER LED CR815 goes out.

4. The record plays.



EQUIVALENT ENGINEERING DRAWING 6-0P200-01-2-1 [c]
SHEET 2 OF 2


TO DC CONVERTER (SCHEMATIC 3-07541-01-Q-21)
CR813 ON FOR TOGGLE SHIFT COIL (RIGHT SIDE OF RECORD)
CR814 ON DURING SCAN AND TRANSFER CYCLE
CR815 ON DURING FIRST HALF OF TRANSFER CYCLE
Z701 PIN VOLTAGES
MECH. CONTROL 401-06905
Z701 MOS MEMORY MODULE II-7407A
MEMORY UNIT 601-07666
ENCODER 601-07667
PHONO HARNESS
MECHANISM
MAIN POWER SUPPLY 401-06894
COLOR CODE:
IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK. EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING
B BLACK
BR BROWN
R RED
O ORANGE
Y YELLOW
G GREEN
BL BLUE
V VIOLET
S SLATE
W WHITE
PK PINK
TAN TAN
AMPLIFIER MUTE PLUG
Q QUIESCENT
A ACTIVE
LOGIC COMMON
POWER COMMON
CHASSIS COMMON
OPTIONAL KIT
REAR ACCESS DOOR
VOLTAGES AND WAVE SHAPES ARE APPROXIMATE AND VARIATIONS ARE TO BE EXPECTED.
EQUIVALENT ENGINEERING DRAWING 6-08200-01-J-C [C] SHEET 2 OF 2

13. RECORD ENDS

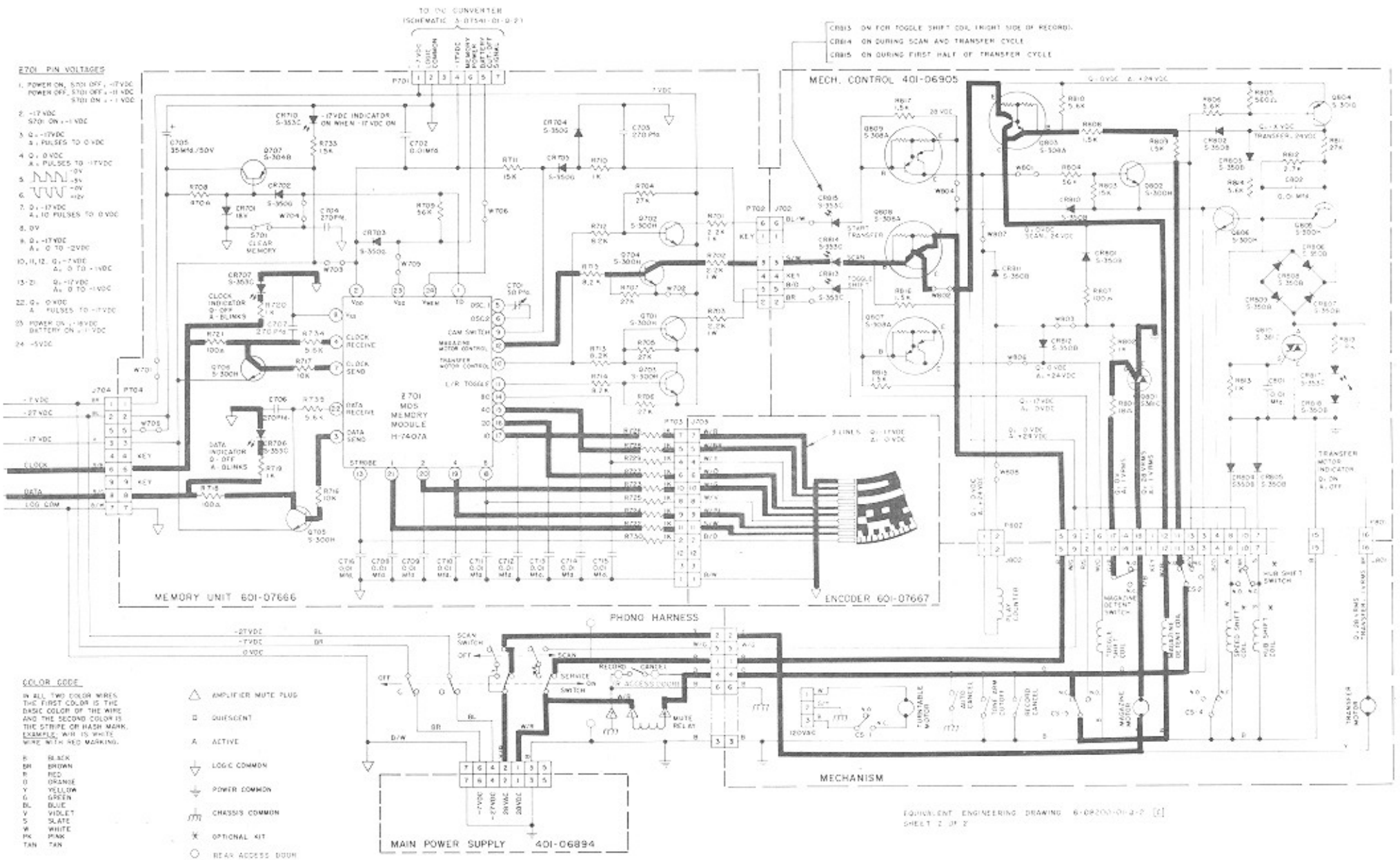
1. As the tone arm tracks into the cutoff groove of the record, a magnet on the underside of the tone arm operates the tone arm cutoff reed switch. The mute relay is energized.

2. The tone arm cutoff switch also provides a circuit to COMMON through cam switch CS2 to switch on Q804. Q804 drives the transfer motor circuit.

3. The record gripper arm picks up the record from the turntable. Cam switch CS4 transfers back and locks the transfer circuit on through Q806.

4. Cam Switch CS5 transfers back, insuring continuation of transfer function.

14. RECORD RETURNED TO MAGAZINE. MECHANISM SCANS OUT.



14. RECORD RETURNED TO MAGAZINE. MECHANISM SCANS OUT.

1. Cam switch CS2 transfers, opening the transfer circuit and energizing the scan circuit.

2. The magazine rotates one to one-and-a-half turns and the memory is searched for additional selections.

3. If there are no selections stored in the memory chip, the voltage on pin 12 of the memory chip drops to -7vdc from 0vdc and the scan, data and clock circuits are deenergized.

	Harness and Console (See Parts Catalog For Parts List	602-07677
	Main Power Supply (See Parts Catalog And Page 2-38 For Parts List)	401-06894
	Record Changer Mechanism (See Parts Catalog For Parts List)	601-03065
	Encoder Assembly (See Parts Catalog For Parts List)	601-07667

Memory Unit Assembly 601-07666

	Mounting Plate	401-06901
	Circuit Board Support	704-05000
	Memory Cover with Lettering	301-07638
	Memory Unit Circuit Board Assembly	601-07584
C701	Variable Capacitor, 5.1 to 50 pFD, 250V (JFD Electronics PVJ 305A;Johanson MFG.9305; Sprague-Goodman GKB50000)	701-00260
C702	2.2 MFD Tantalum Capacitor, 35V	712-00251
C703, C704	270 pFD Ceramic Disc Capacitor, 100V	708-00224
C705	35 MFD Electrolytic Capacitor, 50V (Motorola TT; Sprague 30D; G.E. 78F, 76F)	708-00235
C706, C707	270 pFD Ceramic Disc Capacitor, 100V (Same as C703)	708-00224
C708 to C716	0.01 MFD Ceramic Disc Capacitor, 100V (Same as C702)	721-00224
CR701	Zener Diode (1N4746A)	716-00355
CR702 to CR705	Silicon Diode (Selected 1N914B; 1N4448; 1N4148)	707-00350
CR706,CR707	Light Emitting Diode, Red Lens (Hewett-Packard 5082-488D; Texas Instr. TIL-220; Nat'l Semi-Cond. NSL5056)	
CR710		703-00353
Q701 to Q706	NPN Silicon Transistor (Motorola, Fairchild, Nat'l Semiconductor MPS-A06)	708-00300
Q707	PNP Silicon Transistor (Motorola MJE5195; RCA-RCA32B; Fairchild 2N6126; Texas Instr. TIP32B)	702-00304
R701 to R703	1W Carbon Resistor, 180 Ohms	721-00108
R704 to R707	1/4W Carbon Resistor, 27K	7-9900-273
R708	1/2W Carbon Resistor, 470 Ohms	702-00104
R709	1/4W Carbon Resistor, 56K	7-9900-563
R710	1/4W Carbon Resistor, 1K	7-9900-102
R711	1/4W Carbon Resistor, 15K	7-9900-153
R712 to R715	1/4W Carbon Resistor, 8.2K	7-9900-822
R716, R717	1/4W Carbon Resistor, 10K	7-9900-103
R718	1/4W Carbon Resistor, 100 Oh:.	7-9900-101
R719 to R720	1/2W Carbon Resistor, 1K	719-00106
R721	1/4W Carbon Resistor, 100 Ohms	7-9900-101
R722 to R730	1/4W Carbon Resistor, 1K	7-9900-102
R733	1/2W Carbon Resistor, 1.5K	705-00104
R734, R735	1/4W Carbon Resistor, 5.6K	7-9900-562
S701	SPST Keyboard Switch (Maxi-switch Co. 3200-001	301-07433
W701 to W706, W708	Wire Jumper	Spec. 5039
Z701	MOS Memory Module (LSI Computer Systems LSI2001A)	301-07407
P701-1, P702, P703-1, P707	2 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1021)(4 Required)	702-00750
P701-7	3 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1031)(2 Required)	703-00750
P704	4Circuit Polarizing Wafer Assembly (Molex Products 09-60-1041)	704-00750
P703-12	8 Circuit Polarizing Wafer Assembly (Molex Products 09-60-81)	708-00750
	Memory Unit Printed Circuit Board	601-07583

Mechanism Control Unit Assembly 401-06905

	Mechanism Control Cover with Lettering	301-07639
	Circuit Board Support (2 Required)	706-05000
	Bearing	703-01460
	P.C. Board Mounting Bracket	301-07723
	Mechanism Control Circuit Board Assembly Consisting Of:	401-06900
C801, C802	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
CR801 to CR812	Silicon Diode (1N4002)	702-00350
CR813 to CR815, CR817	Light Emitting Diode, (Hewlett-Packard 5082-488S. Nat'l Semi Cond. NSL-5056; Texas Instr. TIL-220)	703-00353
CR818	Silicon Diode (Same as CR801)	702-00350
Q801	Triac Thyristor (RCA T2801 B, T2500B, T2800 B; Texas Instr. TIC226B)	703-00381
Q802	NPN Silicon Transistor (Motorola, Fairchild, National Semiconductor MPS A06)	708-00300
Q803	PNP Darlington Power Silicon Transistor ITexas Instr. TIP136; Motorola 2N6041)	701-00308
Q804	PNP Silicon Transistor (Motorola, Fairchild, National Semiconduct MPS A56)	704-00301
Q805, Q806	NPN Silicon Transistor (Same as Q802)	708-00300
Q807 to Q809	PNP Darlington Power Silicon Transistor (Same as Q803)	701-00308
Q810	Triac Thyristor (Same as Q801)	703-00381
R801	1/4W Carbon Resistor, 18 Ohms	7-9900-180
R802	1/4W Carbon Resistor, 1K	7-9900-102
R803	1/4W Carbon Resistor, 15K	7-9900-153
R804	1/4W Carbon Resistor, 56K	7-9900-563
R805	1/4W Carbon Resistor, 560 Ohms	7-9900-561
R806	1/4 Carbon Resistor, 5.6K	7-9900-562
R807	1/4W Carbon Resistor, 100 Ohms	7-9900-101
R808,R809	1/2W Carbon Resistor, 1.5K	705-00104
R810	1/4W Carbon Resistor, 5.6K	7-9900-562
R811	1/4W Carbon Resistor, 27K	7-9900-273
R812	1/4W Carbon Resistor, 2.7K	7-9900-272
R813	1/4W Carbon Resistor, 1K	7-9900-102
R814	1/4W Carbon Resistor, 5.6K	7-9900-562
R815 to R817	1/4W Carbon Resistor, 1.5K	7-9900-152
R819	1/2W Carbon Resistor, 1.8K	706-00104
W801 to W808	Wire Jumper	Spec. 5039
	Memory Interconnect Harness Assembly	301-07550
P802	2 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1021)	702-00750
P801	4 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1041)	704-00750
P801-1	12 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1121)	712-00750
	Triac Heat Sink	201-17829
	Flat Washer (2 Required)	721-01207
	Mica Washer (2 Required)	201-15208
	Mechanism Control Printed Wiring Board	401-06899

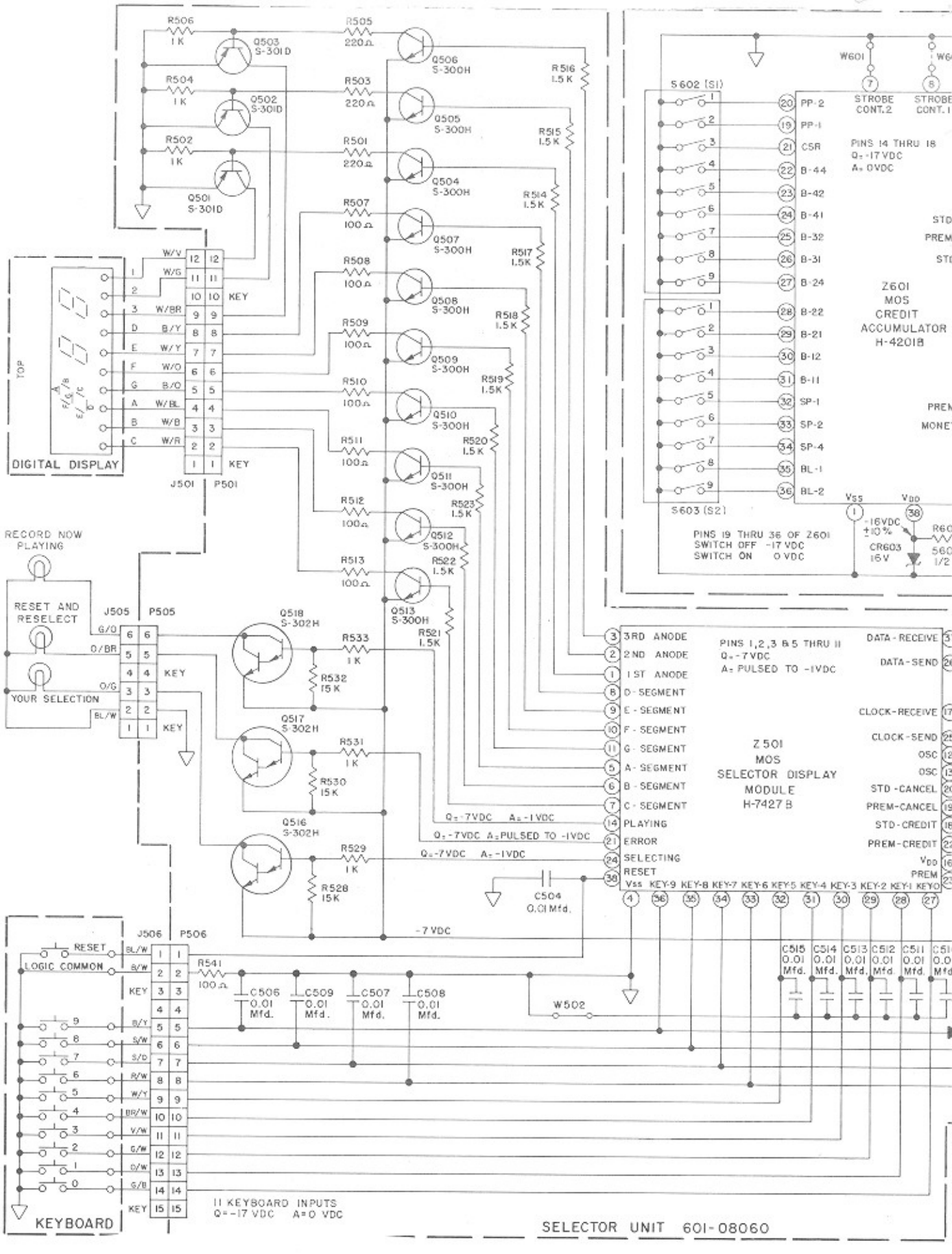
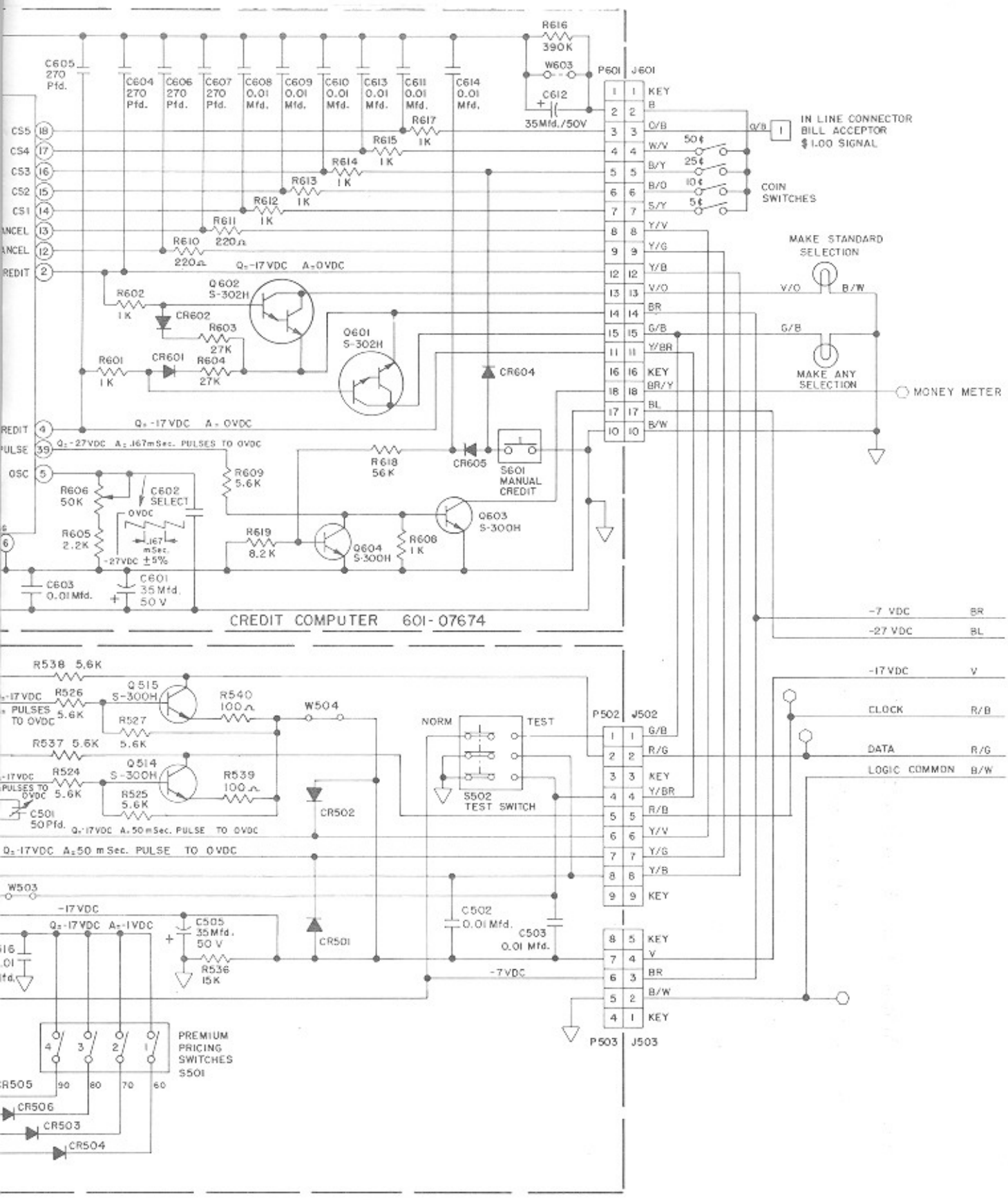
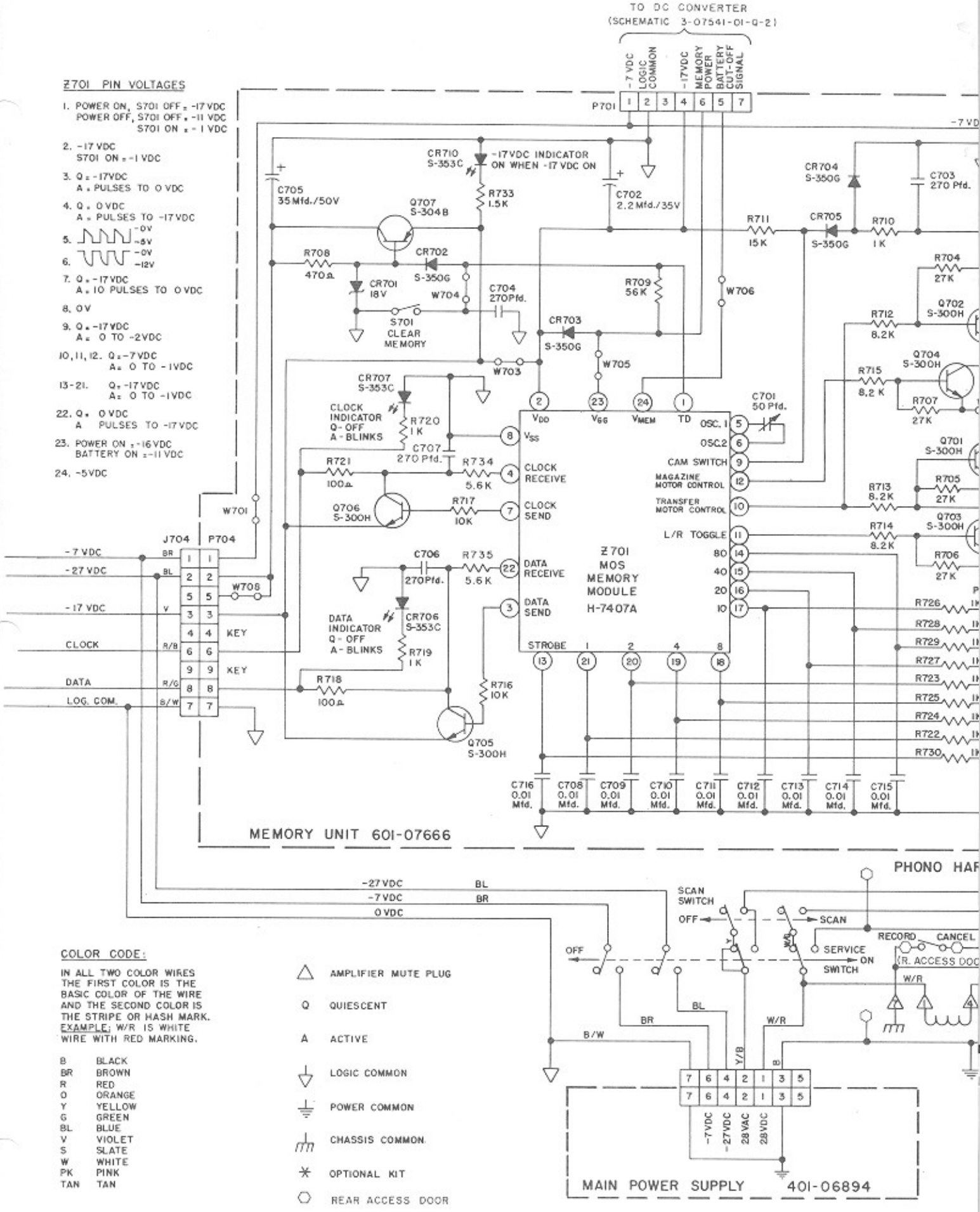


FIGURE 2-10. R-81 PHONOGRAPH SCHEMATIC DIAGRAM (Sheet 1 of 2)



EQUIVALENT ENGINEERING DRAWING 6-08200-01-Q-2 C

SHEET 1 OF 2



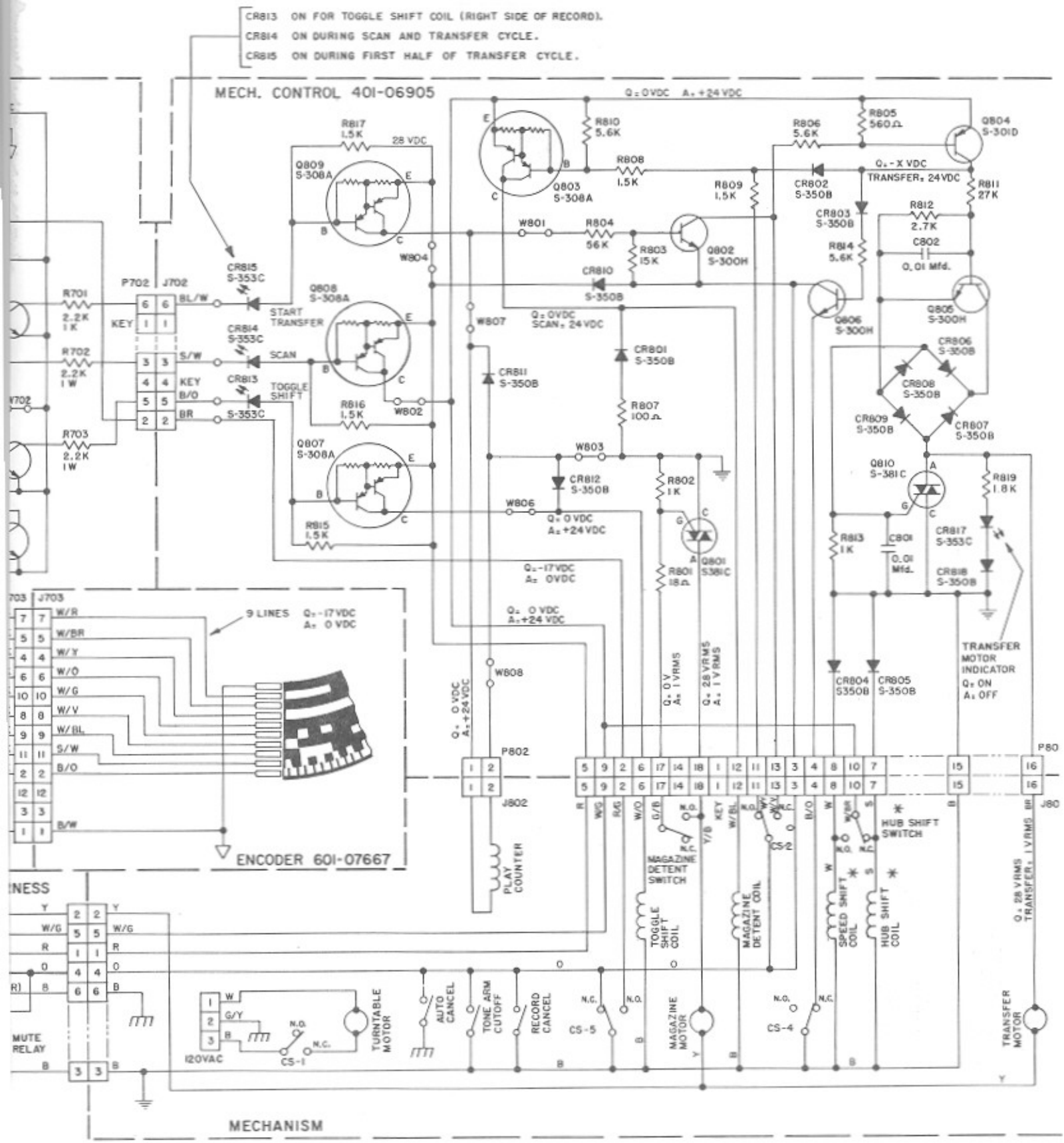
COLOR CODE:

IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK. EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING.

B	BLACK
BR	BROWN
R	RED
O	ORANGE
Y	YELLOW
G	GREEN
BL	BLUE
V	VIOLET
S	SLATE
W	WHITE
PK	PINK
TAN	TAN

△	AMPLIFIER MUTE PLUG
Q	QUIESCENT
A	ACTIVE
▽	LOGIC COMMON
⏚	POWER COMMON
⏚	CHASSIS COMMON
✳	OPTIONAL KIT
○	REAR ACCESS DOOR

VOLTAGES AND WAVE SHAPES ARE APPROXIMATE AND VARIATIONS ARE TO BE EXPECTED.



EQUIVALENT ENGINEERING DRAWING 6-08200-01-Q-2 [E]
SHEET 2 OF 2

FIGURE 2-10. R-81 PHONOGRAPH SCHEMATIC DIAGRAM (Sheet 2 of 2)

	Selector Keyboard, Digital Display, Selection Lamps (See Parts Catalog for Parts List)	
	Coin Switches (See Parts Catalog)	
Credit Computer Assembly	**601-07674**	
	Credit Computer Cover with Lettering	301-07637
	Credit Computer Base	301-07624
	Insulation Pad	201-17710
	Insulated Base	201-17711
	Credit Computer Circuit Board Assembly	601-07670
	Consisting of:	
C601	35 MFD Electrolytic Capacitor, 50V (Motorola TT; Sprague 30D; G.E. 78F, 76F)	708-00235
C602	0.047 MFDMylar Capacitor, 100V (Paktron FM720; Amperex C280; Electromotive P94731-1)	708-00240
or	0.1 MFD Mylar Capacitor, 100V (Paktron FM720; Sprague 225P; Electromotive P91041-1)	702-00240
or	0.068 MFD Mylar Capacitor, 100V (Paktron FM720; Sprague 225P; Electromotive P96831-1)	714-00240
or	0.022 MFD Mylar Capacitor, 100V	704-00240
or	0.033 MFD Mylar Capacitor, 100V	710-00240
or	0.01 MFD Mylar Capacitor	707-00240
	One of the above selected to meet oscillator frequency operation	
C603	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
C612	35 MFD Electrolytic Capacitor, 50V (Same as C601)	708-00235
C613, C614	001 MFD Ceramic Disc Capacitor, 100V	721-00224
CR601, CR602	Silicon Diode (Selected 1N914B, 1N4448, 1N4148)	707-00350
CR603	Zener Diode (1N4745)	703-00355
CR604, CR605	Silicon Diode (Same as CR601)	707-00350
Q601, Q602	Darlington Amp Transistor (Motorola 2N654B; Nat'l. Semi-Cond. NSD-U45)	708-00302
Q603, Q604	NPN Silicon Transistor (Motorola, Fairchild, National Semiconductors MPS-A06)	708-00300
R601, R602	1/4 W Carbon Resistor, 1K	7-9900-102
R603, R604	1/4 W Carbon Resistor, 27K	7-9900-273
R605	1/4 W Carbon Resistor, 2.2K	7-9900-222
R606	1/2 W Trimmer Potentiometer, 50K (Bourns 3389; CTS-362Y; Weston 840P)	202-15207
R607	1/2W Carbon Resistor, 560 OHMS	701-00107
R608	1/4 W Carbon Resistor , 1K	7-9900-102
R609	1/4 W Carbon Resistor, 5.6K	7-9900-562
R610, R611	1/4 W Carbon Resistor, 220 Ohms	7-9900-221
R612 to R615	1/4 W Carbon Resistor, 1K	7-9900-102
R616	1/4 W Carbon Resistor, 390K	7-9900-394
R617	1/4 W Carbon Resistor, 1K	7-9900-102
R618	1/4 W Carbon Resistor, 56K	7-9900-563
R619	1/4 W Carbon Resistor, 8.2K	7-9900-822
S601	SPST Pushbutton Switch (Oak Industries Series 415)	201-17733
S602, S603	9 Init DIP Switch (Amp 435166-6; Molex 01-07-0109; CTS 206-9)	701-00430
W601	Wire Jumper	Spec 5039
Z601	MOS Credit Accumulator	302-04201
P601-18	2 Circuit Polarizing Wafer Assembly	702-00750
P601-1	14 Circuit Polarizing Wafer Assembly	714-00750
	Credit Computer Printed Wiring Board	601-07671
Selector Logic Assembly	**601-08060**	
	Selector Cover with Lettering	301-07636
	Selector Logic Base	301-07625
	Insulation Pad	201-17710
	Insulated Base	201-17711
	Selector Logic Circuit Board Assembly	601-07655
	Consisting of:	
C501	Variable Capacitor, 5.1 to 50 pFD, 250V (JFD Electr. PV1305A; Sprague-Goodman GKB50000; Johanson Mfg. 93051	701-00260
C502 to C504	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
C505	35 MFD Electrolytic Capacitor, 50V (Motorola TT; Sprague 30D; G.E. 78F, 76F)	708-00235
C506 to C516	0.01 MFD Ceramic Capacitor, 100V	721-00224
CR501 to CR506	Silicon Diode (Selected 1N914; 1N4448; 1N4148)	707-00350
Q501 to Q503	PNP Silicon Transistor (Motorola, Fairchild, National Semiconductors MPS-A56)	704-00301
Q504 to Q515	NPN Silicon Transistor (Motorola, Fairchild, National Semiconductors MPS-A06)	708-00300
Q516 to Q518	Darlington Amplifier Transistor (National NSD-u45; G.E. D40K2)	708-00302
R501	1/4 W Carbon Resistor, 220 Ohms	7-9900-221
R502	1/4 W Carbon Resistor, 1K	7-9900-102
R503	1/4 W Carbon Resistor, 220 Ohms	7-9900-221
R504	1/4 W Carbon Resistor, 1K	7-9900-102
R505	1/4 W Carbon Resistor, 220 Ohms	7-9900-221
R506	1/4 W Carbon Resistor, 1K	7-9900-102
R507 to R513	1/4 W Carbon Resistor, 100 Ohms	7-9900-101
R514 to R523	1/4 W Carbon Resistor, 1.5K	7-9900-152
R524 to R527	1/4 W Carbon Resistor, 5.6K	7-9900-562
R528	1/4 W Carbon Resistor, 15K	7-9900-153
R529	1/4 W Carbon Resistor, 1K	7-9900-102
R530	1/4 W Carbon Resistor, 15K	7-9900-153
R531	1/4 W Carbon Resistor, 1K	7-9900-102
R532	1/4 W Carbon Resistor, 15K	7-9900-153
R533	1/4 W Carbon Resistor, 1K	7-9900-102
R536	1/4 W Carbon Resistor, 15K	7-9900-153
R537, 538	1/4W Carbon Resistor, 5.6K	7-9900-562
R539 to R541	1/4W Carbon Resistor, 100 OHMS	7-9900-101
S501	4Unit DIP Switch (Molex 01-07-0104; Amp 435166-2; CTS 206-4)	702-00430
S502	3PDT Slide Switch (U.L.D. Electronics SW-032PX)	304-07623
W502 to W507	Wire Jumper	Spec 5039
Z501	MOS Selector-Display Module (U.S.I. Computer System LSI2002A)	302-07421
P501-12, P502-1, P506-1	2 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1021)(5 required)	702-00750
P503	3 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1031)	703-00750
P502	5 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1051)	705-00750
P501	8 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1081)	708-00750
P506	10 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1101)	710-00750
	Selector Logic Printed Wiring Board	601-07653

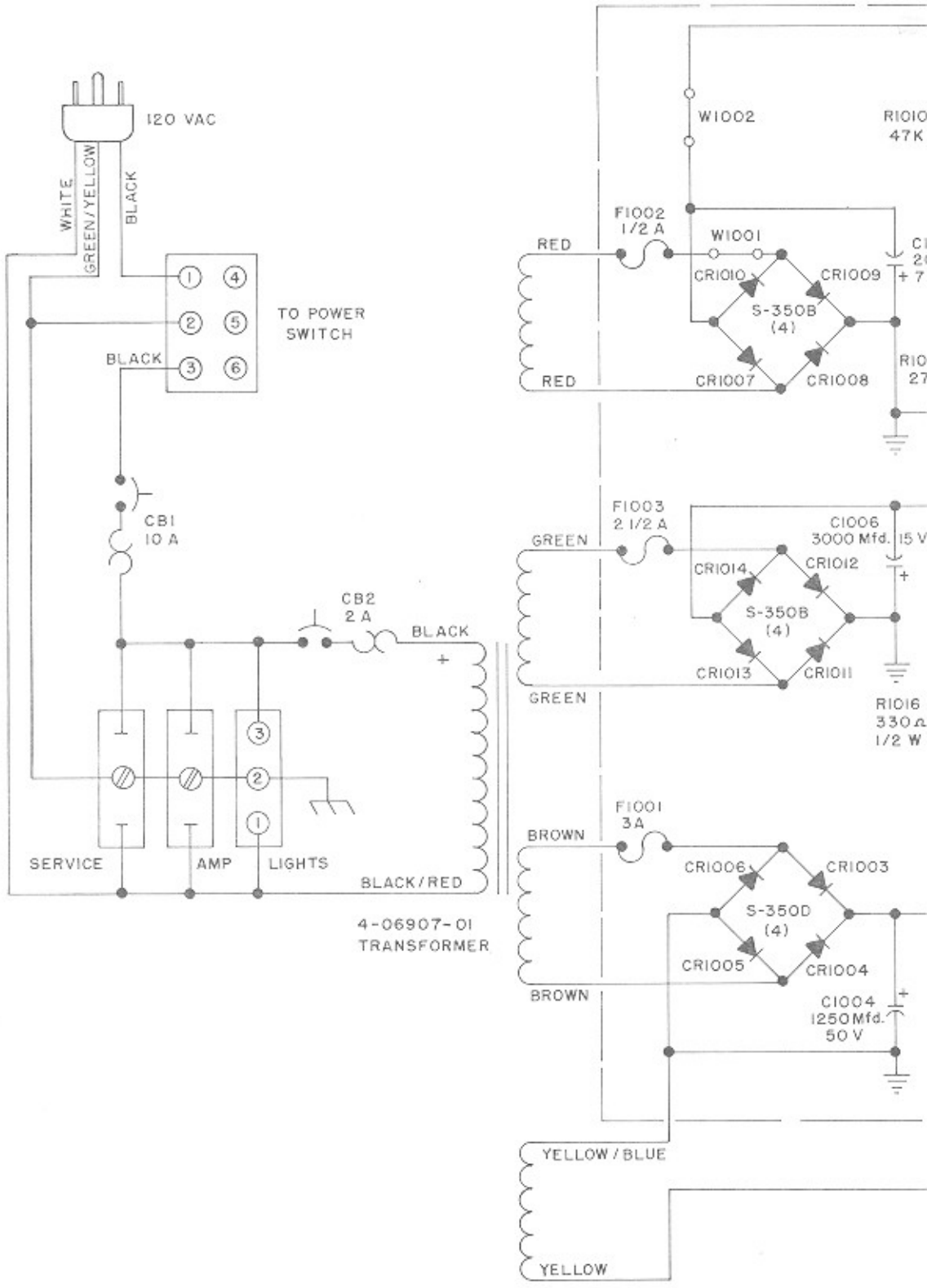
MAIN POWER SUPPLY 401-06894 (See also Part 3 - Parts Catalog)

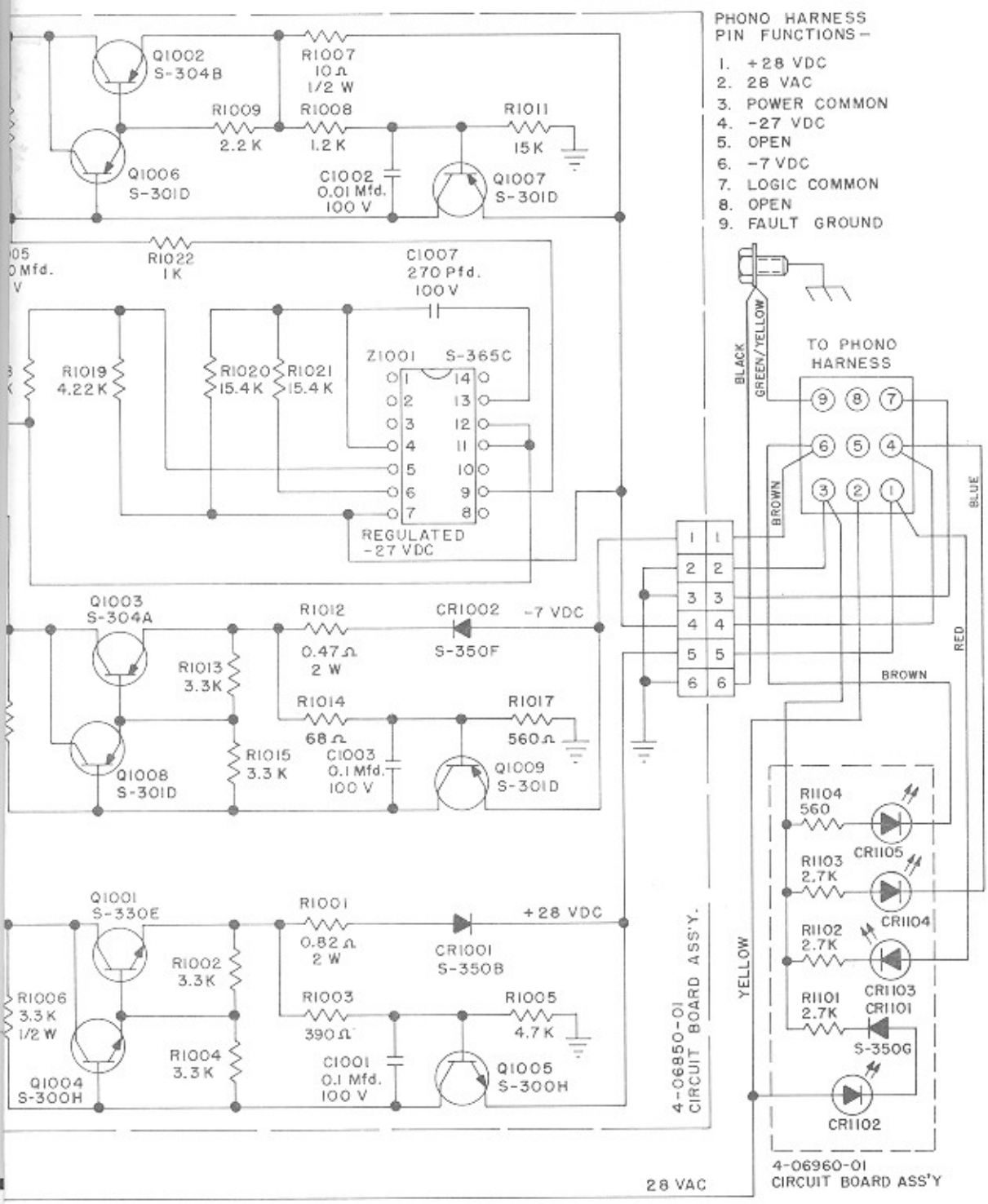
POWER SUPPLY CIRCUIT BOARD ASSEMBLY 401-06850

C1001	0.1 MFD Mylar Capacitor, 100V (Paktron FM1100; Amperex C280; Electromotive P91041-1)	702-00240
C1002	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
C1003	0.1 MFD Mylar Capacitor, 100V (Same as C1001)	702-00240
C1004	1250 MFD Electrolytic Capacitor, 50V (Sprague 43D; Mallory TCW)	710-00233
C1005	200 MFD Electrolytic Capacitor, 75V (Callins ARD; Motorola TCW; Cornell Dubilier WBR)	704-00235
C1006	3000 MFD Electrolytic Capacitor, 15V (Motorola TCW; Sprague 39D; Callins ARD)	711-00235
C1007	270 pFD Ceramic Disc Capacitor, 100V	708-00224
CR1001	Silicon Diode (1N4002)	702-00350
CR1002	Silicon Diode (Motorola MR504; Westinghouse 1N5404; I.T.T. 1N4142)	706-00350
CR1003 to CR1006	Silicon Diode (1N4004)	704-00350
CR1007 to CR1014	Silicon Diode (Same as CR1001)	702-00350
F1001	3 Amp Cartridge Fuse (Buss MDL)	722-00721
F1002	1/2 Amp Cartridge Fuse (Buss MDL)	701-00721
F1003	2.5 Amp Cartridge Fuse (Buss MDL)	725-00721
P1001	P.C. Board Header (6 circuit Universal Mate-N-Lok no. 350431-1)	304-07635
Q1001	Silicon Transistor, NPN (Motorola MJE5191; RCA No. RCA31A; Fairchild 2N6122)	705-00330
Q1002	Silicon Transistor, PNP (Motorola MJE5195; RCA No. RCA32B; Fairchild 2N6126)	702-00304
Q1003	Silicon Transistor, PNP (Motorola MJE5194; RCA No. RCA32A; Fairchild 2N6125)	701-00304
Q1004, Q1005	Silicon Transistor, NPN (Motorola, Fairchild, Nat'l. Semiconductor MPSA06)	708-00300
Q1006 to Q1009	Silicon Transistor, PNP (Motorola, Fairchild, Nat'l. Semiconductor MPSA56)	704-00301
R1001	2W Wirewound Resistor, 0.82 Ohm (I.R.C. Type BWH)	716-00113
R1002	1/4W Carbon Resistor, 3.3K	7-9900-332
R1003	1/4W Film Resistor, 390 Ohms ± 2%	7-9902-391
R1004	1/4W Carbon Resistor, 3.3K	7-9900-332
R1005	1/4W Film Resistor, 4.7K ± 2%	7-9902-472
R1006	1/2W Carbon Resistor, 3.3K	720-00107
R1007	1/2W Carbon Resistor, 10 Ohms	720-00109
R1008	1/4W Carbon Resistor, 1.2K	7-9900-122
R1009	1/4W Carbon Resistor, 2.2K	7-9900-222
R1010	1/4W Carbon Resistor, 47K	7-9900-473
R1011	1/4W Carbon Resistor, 15K	7-9900-153
R1012	2W Wirewound Resistor, 0.47 Ohm (I.R.C. Type BWH)	714-00113
R1013	1/4W Carbon Resistor, 3.3K	7-9900-332
R1014	1/4W Film Resistor, 68 Ohms ± 10%	7-9902-680
R1015	1/4W Carbon Resistor, 3.3K	7-9900-332
R1016	1/2W Carbon Resistor, 330 Ohms	719-00107
R1017	1/4W Film Resistor, 560 Ohms ± 2%	7-9902-561
R1018	1/4W Fixed Film Resistor, 27K ± 5%	7-9902-273
R1019	1/4W Fixed Film Resistor, 4.22K ± 2% (R-Ohm Corp.; TRW Electronics; Dale Electronics)	702-00122
R1020, R1021	1/4W Fixed Film Resistor, 15K ± 2%	7-9902-153
R1022	1/4W Fixed Film Resistor, 1K ± 2%	7-9902-102
W1001, W1002	Bare Wire	000-05039
Z1001	Linear I.C. Voltage Regulator (Teledyne 723CJ, 723CL; Fairchild u9A7723393; u6A7723393; National Semiconductor LM723CN, LM723CD; Signetics ua723CA,N5723A)	703-00365
	Heat Sink Bracket	301-07630
	Mica Washer (RCA DF103B; Thermalloy 43-77-8) (3 Required)	201-15208
	Triangular Washer (ESNA 22-NM-62) (3 Required)	201-17761
	Cable Tie (6 Required)	706-08000
	Fuse Clip (6 Required)	200-50755
	Power Supply Circuit Board	601-07686

VOLTAGE INDICATOR (L.E.D.) CIRCUIT BOARD ASSEMBLY 401-06960

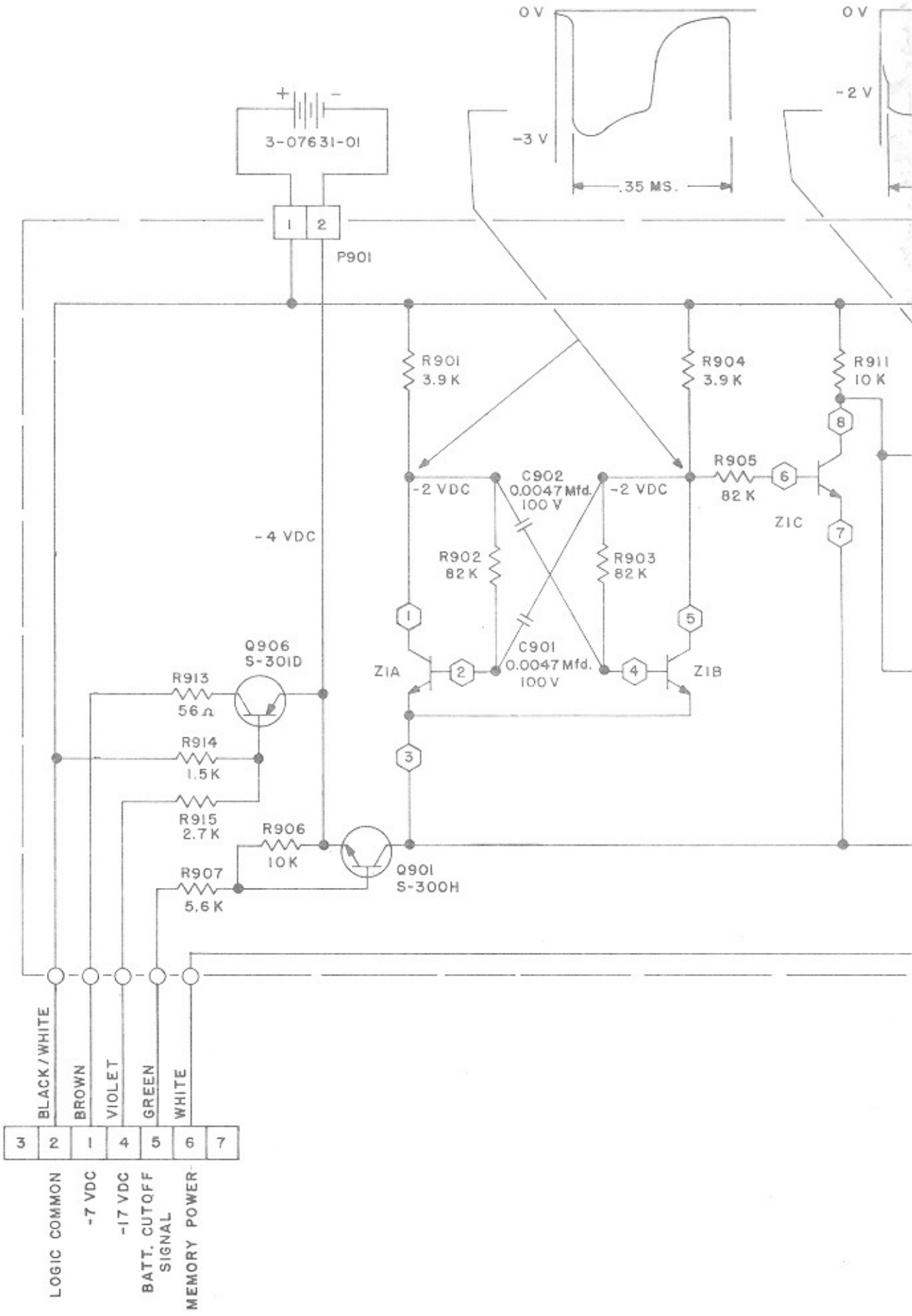
CR1101	Silicon Diode (Selected 1N914B; 1N4448; 1N4148)	707-00350
CR1102 to CR1105	Light Emitting Diode (Texas Instr.TIL-220; Nat'l. Semi-Cond. NSL-5056Hewlett Packard 5082-4881)	703-00353
R1101 to R1103	1/4W Carbon Resistor, 2.7K	7-9900-272
R1104	1/4W Carbon Resistor, 560 Ohms	7-9900-561
	L.E.D. Circuit Board	401-06959

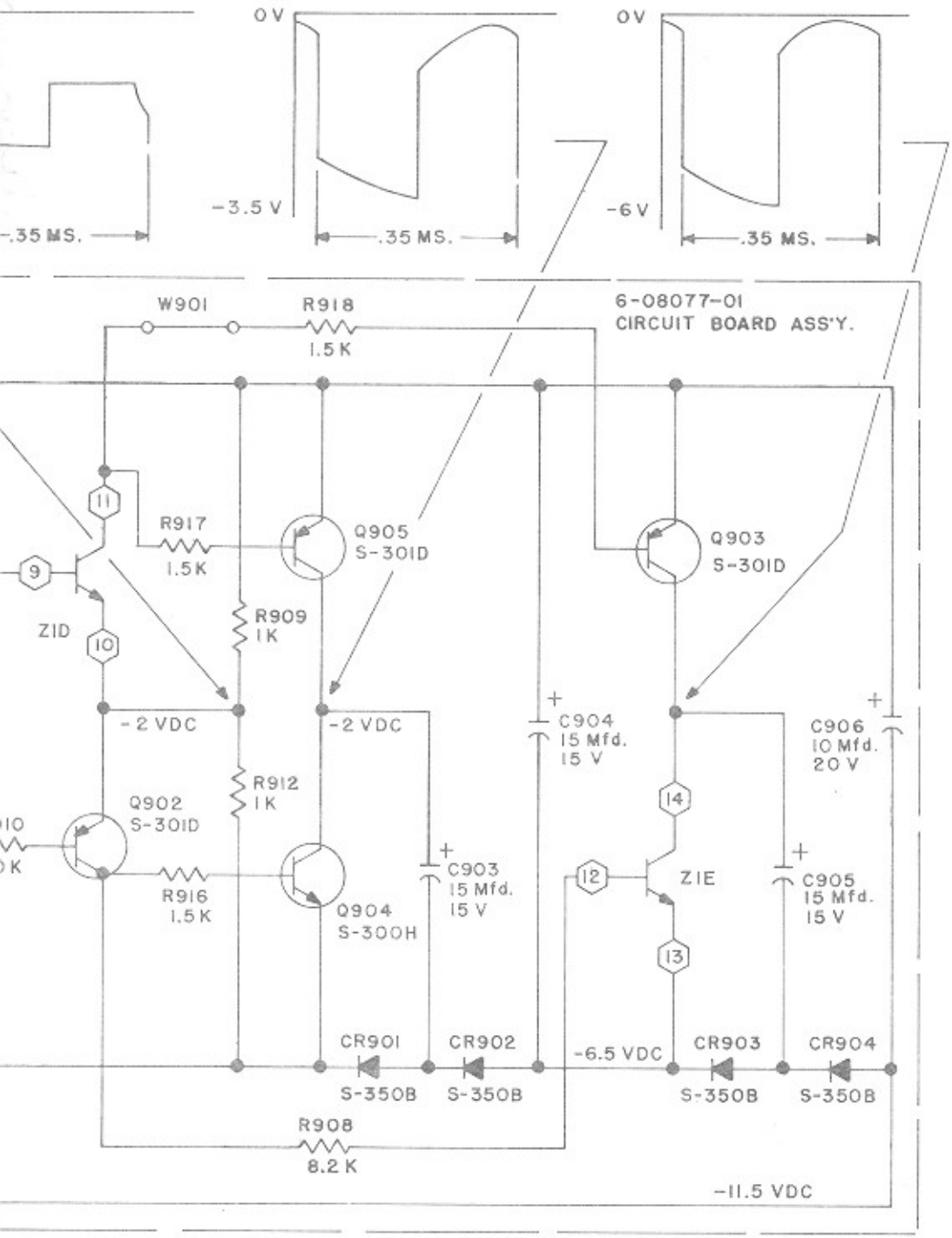

120 VAC
WHITE
GREEN/YELLOW
BLACK
TO POWER SWITCH
BLACK
CB1
10 A
CB2
2 A
BLACK
+
SERVICE
AMP
LIGHTS
BLACK/RED
4-06907-01
TRANSFORMER
W1002
R1010
47K
F1002
1/2 A
W1001
RED
CR1010
CR1009
S-350B
(4)
CR1007
CR1008
RED
F1003
2 1/2 A
C1006
3000 Mfd.
15 V
GREEN
CR1014
CR1012
S-350B
(4)
CR1013
CR1011
GREEN
R1016
330Ω
1/2 W
F1001
3A
BROWN
CR1006
CR1003
S-350D
(4)
CR1005
CR1004
BROWN
C1004
1250Mfd.
50 V
YELLOW/BLUE
YELLOW



EQUIVALENT ENGINEERING DRAWING: 4-06894-01-Q-2 F

FIGURE 2-11. MAIN POWER SUPPLY SCHEMATIC DIAGRAM


0V
-3V
.35 MS.
0V
-2V
3-07631-01
1
2
P901
R901
3.9K
R904
3.9K
R911
10K
8
R905
82K
6
Z1C
7
-2 VDC
C902
0.0047 Mfd.
100V
-2 VDC
-4 VDC
R902
82K
R903
82K
1
5
Q906
S-301D
C901
0.0047 Mfd.
100V
Z1A
2
4
Z1B
R913
56Ω
3
R914
1.5K
R915
2.7K
R906
10K
R907
5.6K
Q901
S-300H
3
2
1
4
5
6
7
BLACK/WHITE
BROWN
VIOLET
GREEN
WHITE
LOGIC COMMON
-7 VDC
-17 VDC
BATT. CUTOFF SIGNAL
MEMORY POWER



⬡ INDICATES PIN CONNECTIONS ON Z1 (H-8002A)

EQUIVALENT ENGINEERING DRAWING: 3-07541-01-Q-2

ALL RESISTORS ARE 1/4 WATT, 7-9900 SERIES.

WAVE SHAPES AND D.C. VOLTAGES ARE APPROXIMATE AND VARIATION FROM THEM ARE ALLOWED.

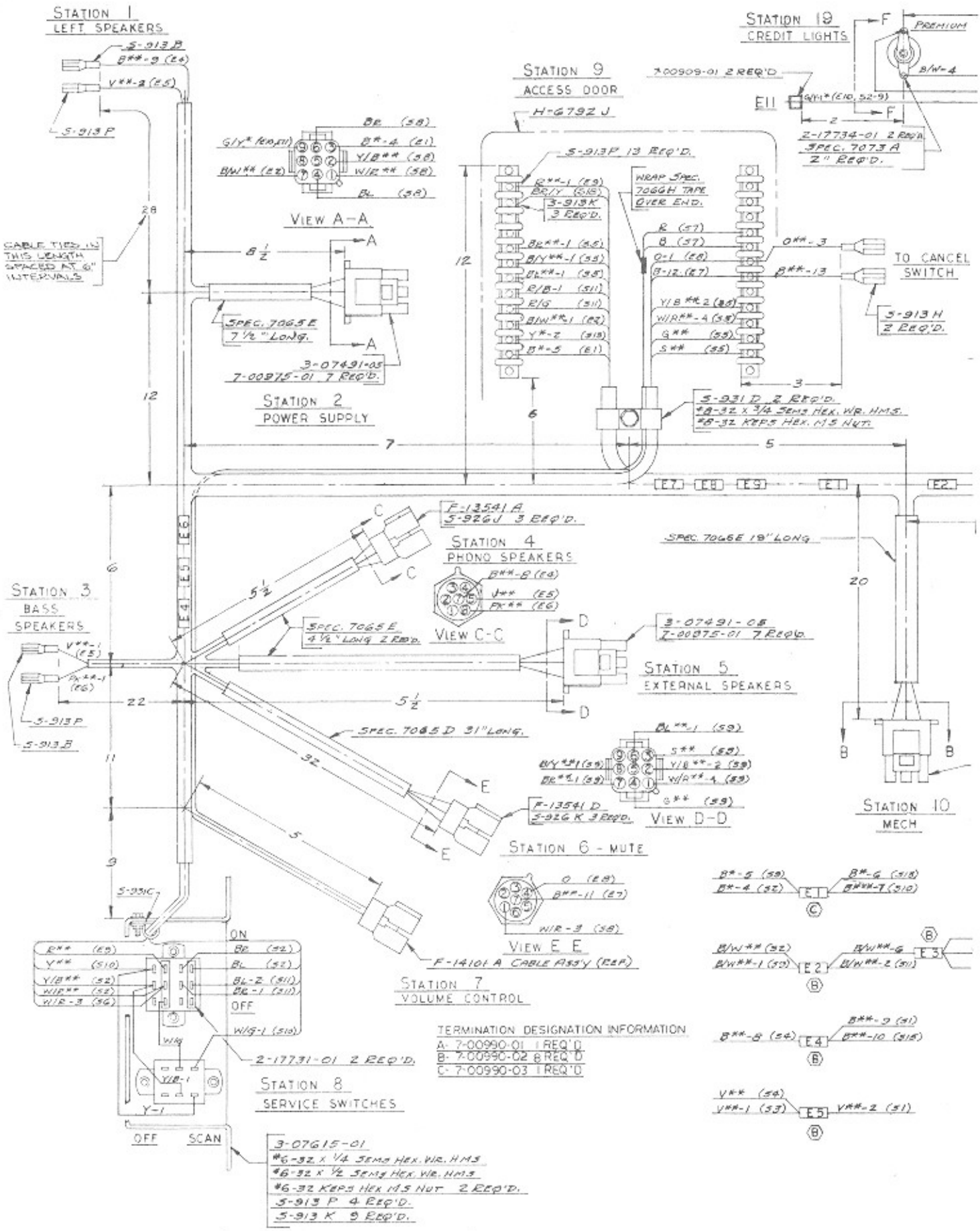
EQUIV. ENG'G DWG. NO. 3-07541-01-Q-2 [B]

FIGURE 2-12. DC TO DC CONVERTER SCHEMATIC DIAGRAM

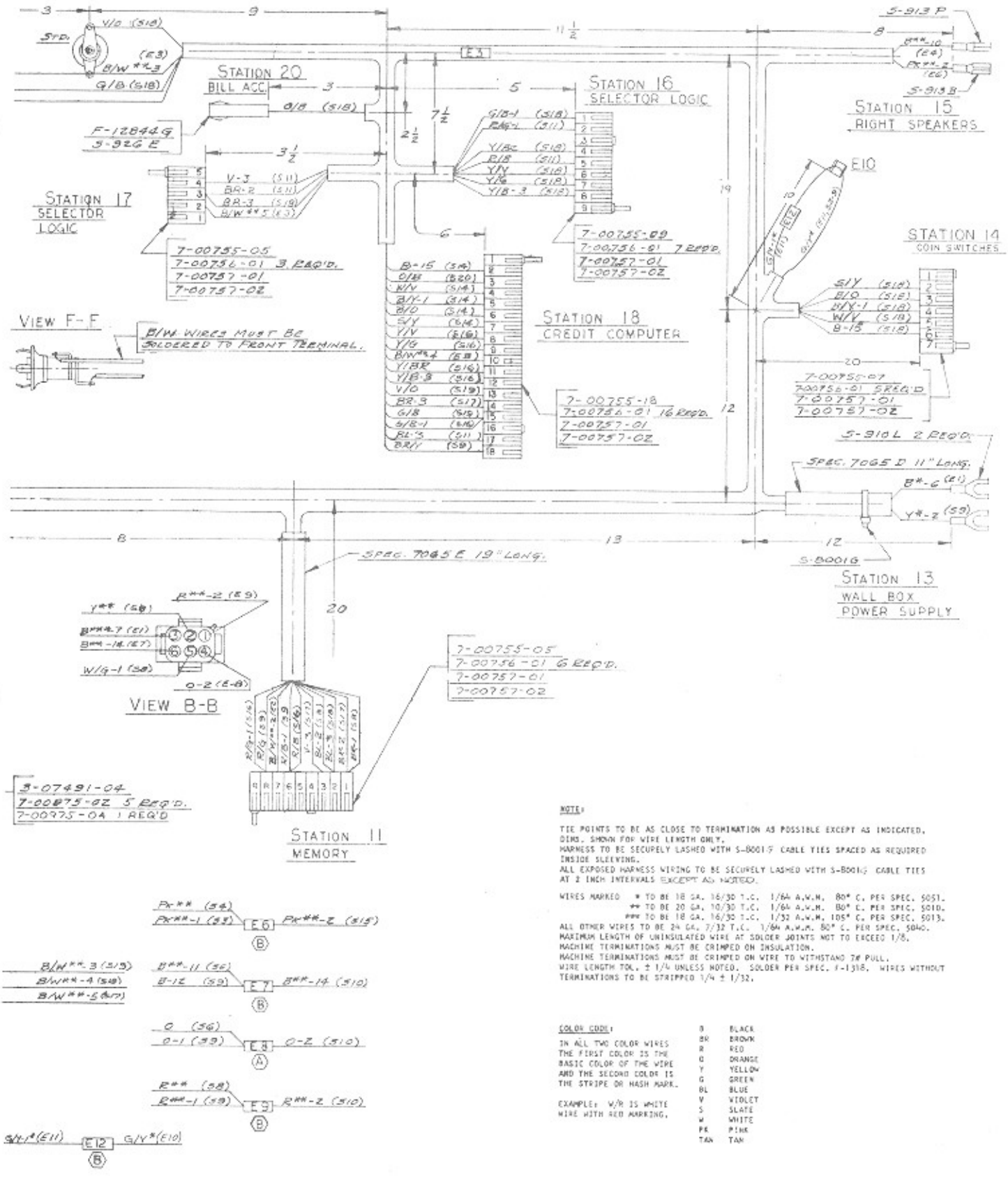
DC TO DC CONVERTER CIRCUIT BOARD ASSEMBLY 601-08077

C901,C902 0.0047 MFD Ceramic Disc Capacitor, 100V

C901,C902	0.0047 MFD Ceramic Disc Capacitor, 100V	704-00224
C903 to C905	15MFD Tantalum Capacitor, 15V (Sprague 196D,198D; Mallory TDC; I.T.T. TAG, TAP)	705-00251
C906	10 MFD Tantalum Capacitor, 20V (Same type as C903)	710-00251
CR901 to CR904	Silicon Diode (1N4002)	702-00350
P901	2 Circuit Polarizing Wafer Assembly (Molex Products 09-60-1021	702-00750
Q901	NPN Silicon Transistor (Motorola, Fairchild or National Semiconductors MPS-A06)	708-00300
Q902,Q903	PNP Silicon Transistor (Motorola, Fairchild or National Semiconductors MPS-A56)	704-00301
Q904	NPN Silicon Transistor (Same as Q901)	708-00300
Q905,Q906	PNP Silicon Transistor (Same as Q902)	704-00301
R901	1/4 W Carbon Resistor, 3.9K	7-9900-392
R902,R903	1/4 W Carbon Resistor, 82K	7-9900-823
R904	1/4 W Carbon Resistor, 3.9K	7-9900-392
R905	1/4 W Carbon Resistor, 82K	7-9900-823
R906	1/4 W Carbon Resistor, 10K	7-9900-103
R907	1/4 W Carbon Resistor, 5.6K	7-9900-562
R908	1/4 W Carbon Resistor, 8.2K	7-9900-822
R909	1/4 W Carbon Resistor, 1K	7-9900-102
R910,R911	1/4 W Carbon Resistor, 10K	7-9900-103
R912	1/4 W Carbon Resistor, 1K	7-9900-102
R913	1/4 W Carbon Resistor, 56 Ohms	7-9900-560
R914	1/4 W Carbon Resistor, 1.5K	7-9900-152
R915	1/4 W Carbon Resistor, 2.7K	7-9900-272
R916 to R918	1/4 W Carbon Resistor, 1.5K	7-9900-152
W901	Bare Wire	Spec 5039
Z901	Transistor Array Integrated Circuit (R.C.A. or Fairchild CA3086,CA3046; Sprague ULN2046A,ULN2086A	301-08002
	DC Converter to Memory Unit Harness Assembly	301-07633
	DC to DC Coverter Circuit Board	401-06957



PHONO HARNESS WIRING DIAGRAM



NOTE:

TIE POINTS TO BE AS CLOSE TO TERMINATION AS POSSIBLE EXCEPT AS INDICATED.
DIMS. SHOWN FOR WIRE LENGTH ONLY.
HARNESS TO BE SECURELY LASHED WITH S-8001 G CABLE TIES SPACED AS REQUIRED INSIDE SLEEVING.
ALL EXPOSED HARNESS WIRING TO BE SECURELY LASHED WITH S-8001 G CABLE TIES AT 2 INCH INTERVALS EXCEPT AS NOTED.

WIRES MARKED * TO BE 18 GA. 16/30 T.C. 1/64 A.W.M. 80° C. PER SPEC. 5051.
** TO BE 20 GA. 10/30 T.C. 1/64 A.W.M. 80° C. PER SPEC. 5010.
*** TO BE 18 GA. 16/30 T.C. 1/32 A.W.M. 105° C. PER SPEC. 5013.
ALL OTHER WIRES TO BE 24 GA. 7/32 T.C. 1/64 A.W.M. 80° C. PER SPEC. 5040.
MAXIMUM LENGTH OF UNINSULATED WIRE AT SOLDER JOINTS NOT TO EXCEED 1/8.
MACHINE TERMINATIONS MUST BE CRIMPED ON INSULATION.
MACHINE TERMINATIONS MUST BE CRIMPED ON WIRE TO WITHSTAND 7# PULL.
WIRE LENGTH TOL. ± 1/4 UNLESS NOTED. SOLDER PER SPEC. 7-1318. WIRES WITHOUT TERMINATIONS TO BE STRIPPED 1/4 ± 1/32.

COLOR CODE:

IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK.

EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING.

B	BLACK
BR	BROWN
R	RED
O	ORANGE
Y	YELLOW
G	GREEN
BL	BLUE
V	VIOLET
S	SLATE
W	WHITE
PK	PINK
TAN	TAN

PHONO HARNESS WIRING DIAGRAM

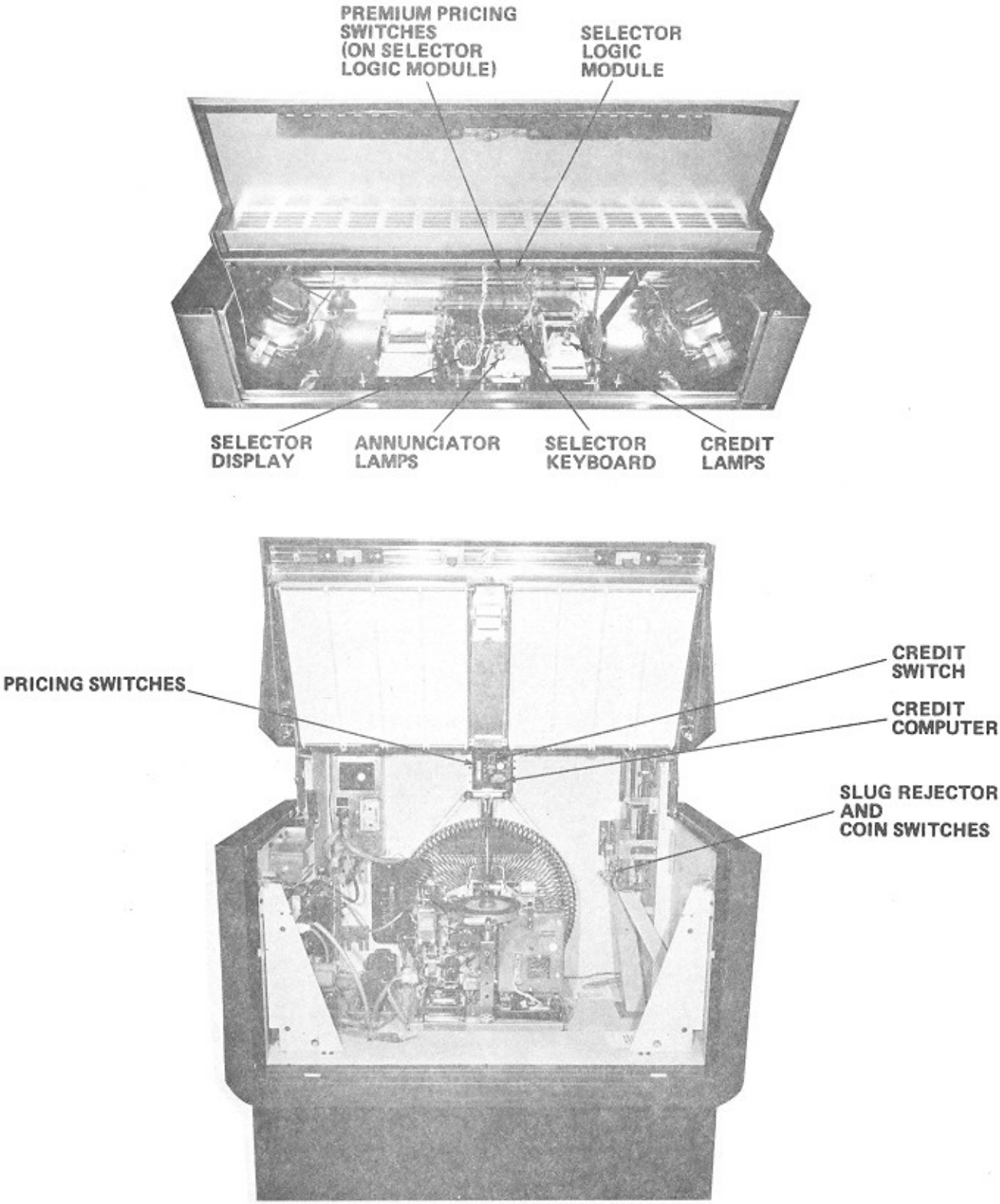


FIGURE 2-13. MAJOR COMPONENTS, CREDIT AND SELECTION SYSTEM