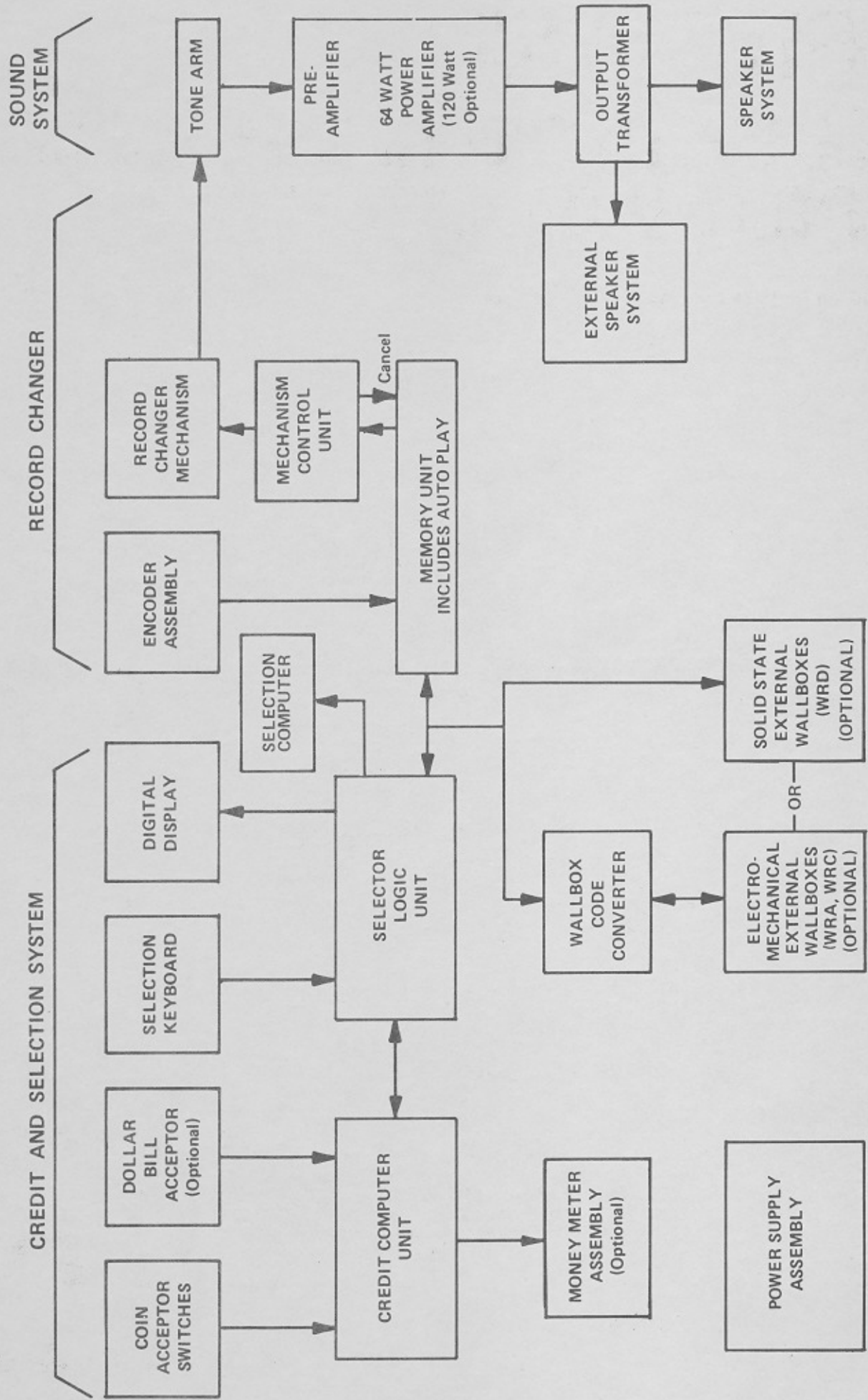


# PART TWO

# SYSTEM AND COMPONENT MAINTENANCE

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SYSTEM BLOCK DIAGRAM

# 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.

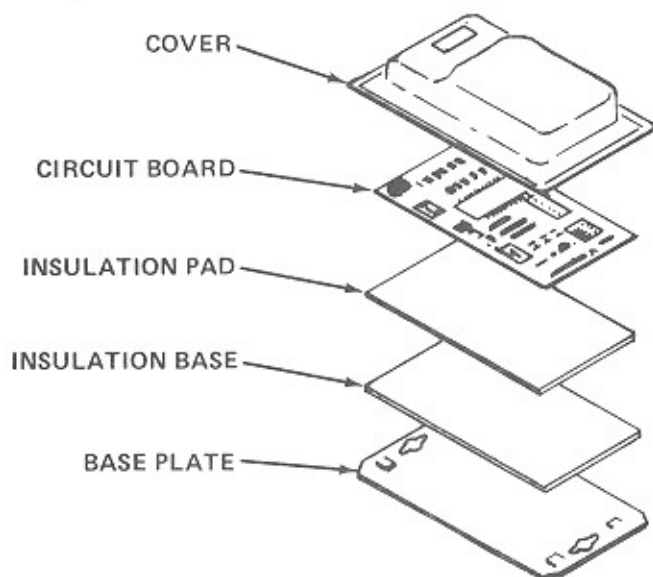


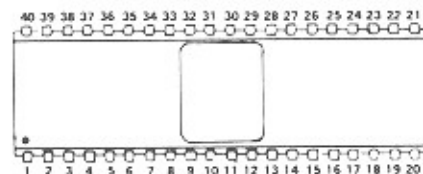
FIGURE 2-1. TYPICAL MODULE PACKAGE ASSEMBLY

## PRECAUTIONS

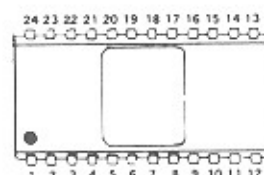
The MOS chips have an extremely high input resistance (typically on the order of  $10^{10}$  [10,000,000,000] ohms.) Due to this high input impedance, they can be damaged by high static charges. Care should be taken when handling circuit boards removed from the protective module package to avoid conditions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

## IC PIN LOCATIONS

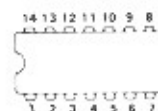
When looking at IC from top, with indexing mark to your left, pin no. 1 is at lower left. Indexing mark may be notch or dimple.



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-milliammeter 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-milliammeter 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.

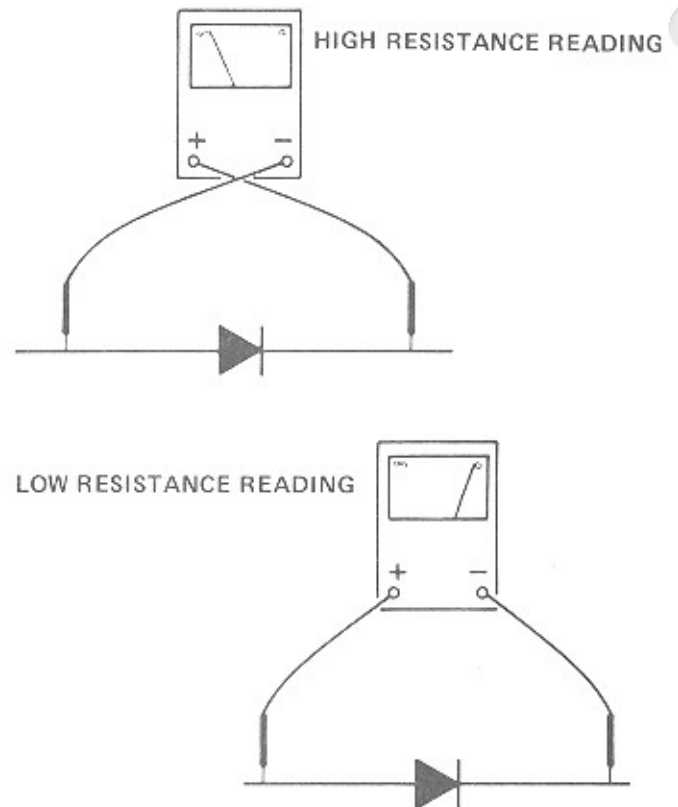


FIGURE 2-3. DIODE TEST HOOK-UP



## 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:

### 125 Watt Amplifier

1. Replace open fuse and retest. If new fuse blows, continue as follows:
2. Remove guard covers from heat sink.
3. Remove transistor from socket on heat sink, 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 tighten mounting screws. One of the major causes of darlington failure is loose mounting screws. Be sure that screws are tight for proper heat transfer.

### CAUTION

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

6. Install new 5 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  $750^{\circ}$  ( $35W$  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.

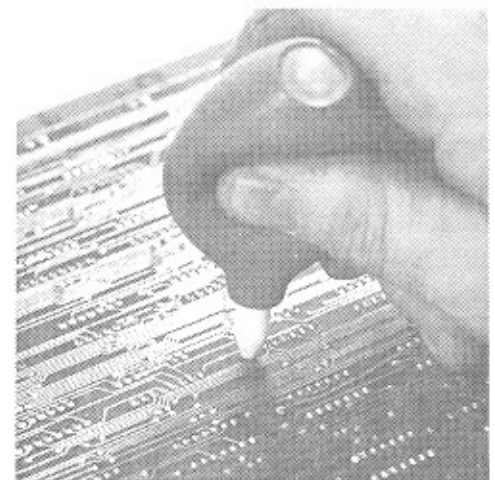
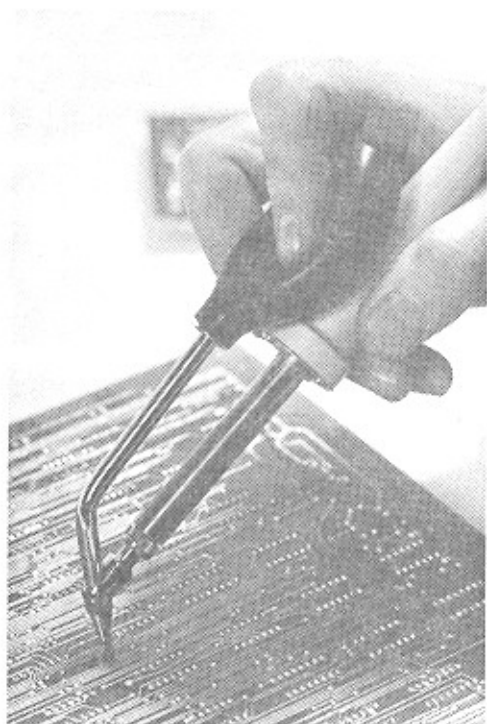


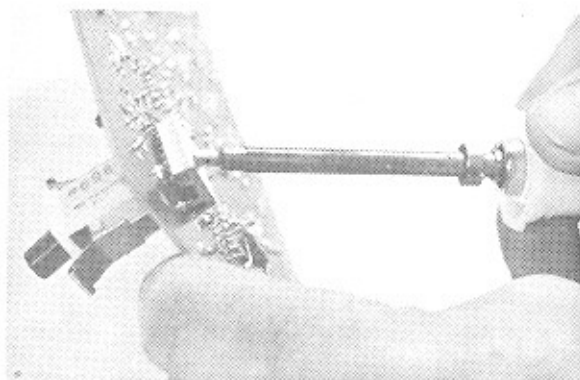
FIGURE 2-5. USING VACUUM BULB WITH TEFLON TIP

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.

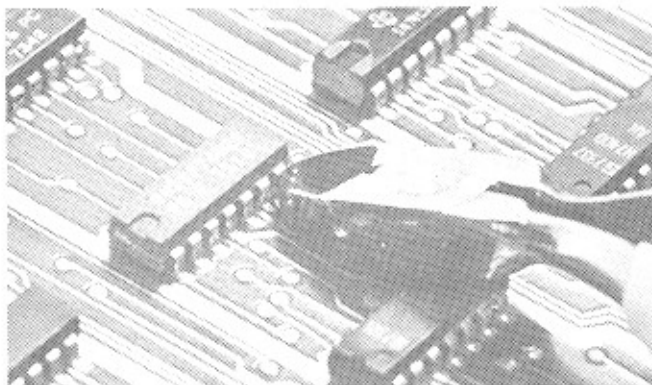


**FIGURE 2-6. COMPONENT REMOVAL USING COMBINATION IRON AND SOLDER SUCKER**



**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.

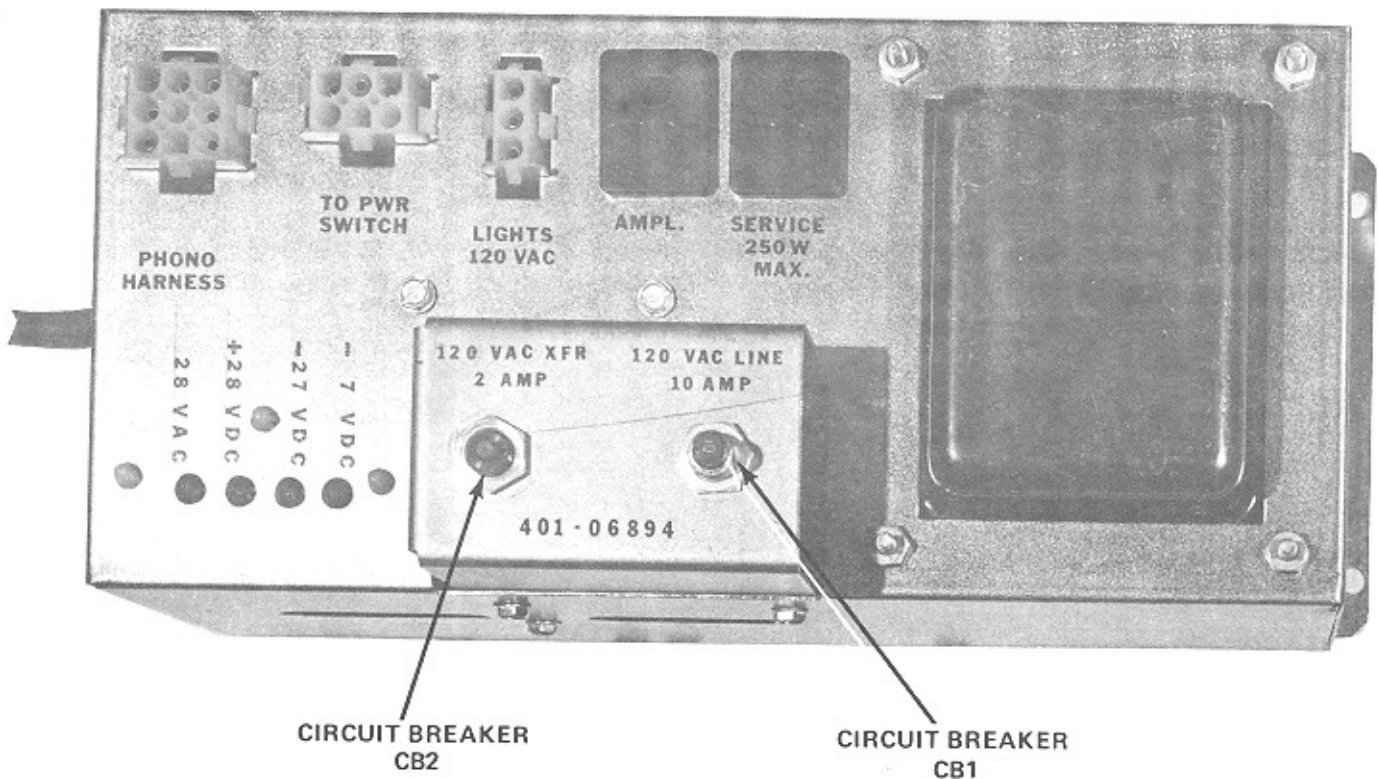


FIGURE 2-9. MAIN POWER SUPPLY

### 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, otherwise 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.

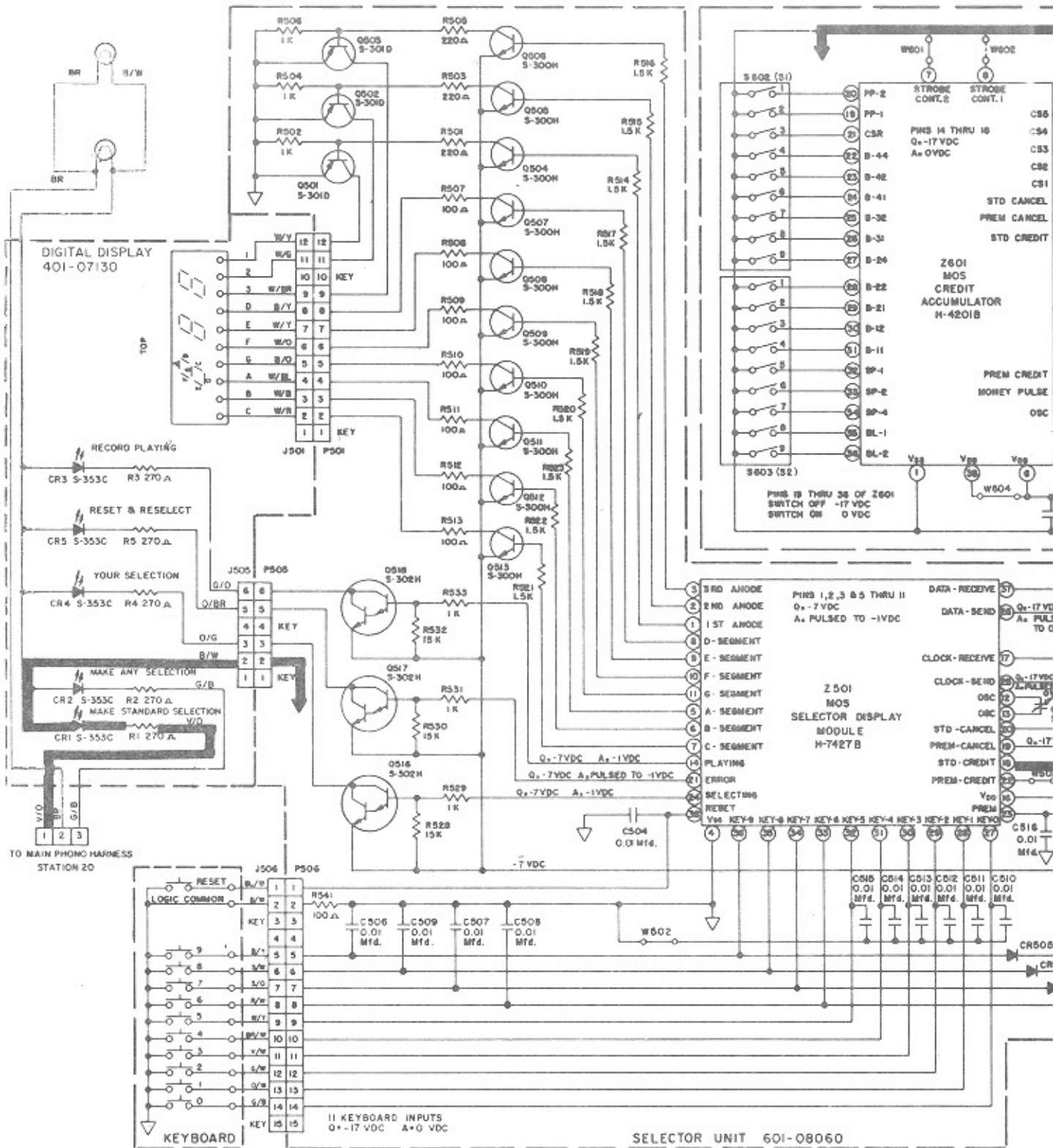


**FOR THIS SECTION, SELECT VIEW(TOP TOOL BAR),THEN CLICK ON PAGE LAYOUT,THEN FACING**



# ① QUARTER INSERTED. STANDARD CREDIT ESTABLISHED.

THESE TWO LAMPS ARE ON ALL THE TIME TO LIGHT KEYBOARD.



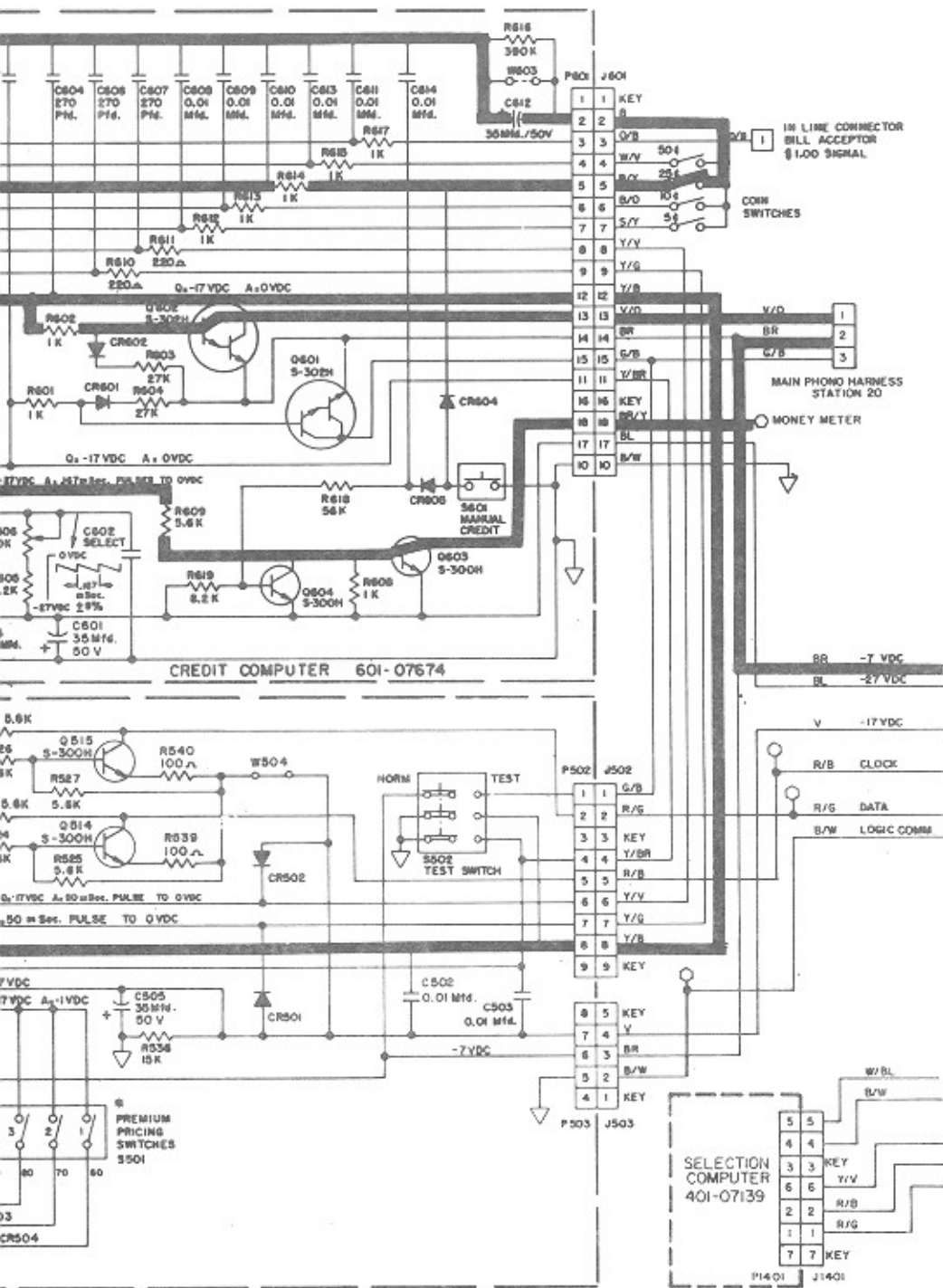
## 1. QUARTER INSERTED. STANDARD CREDIT ESTABLISHED.

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.

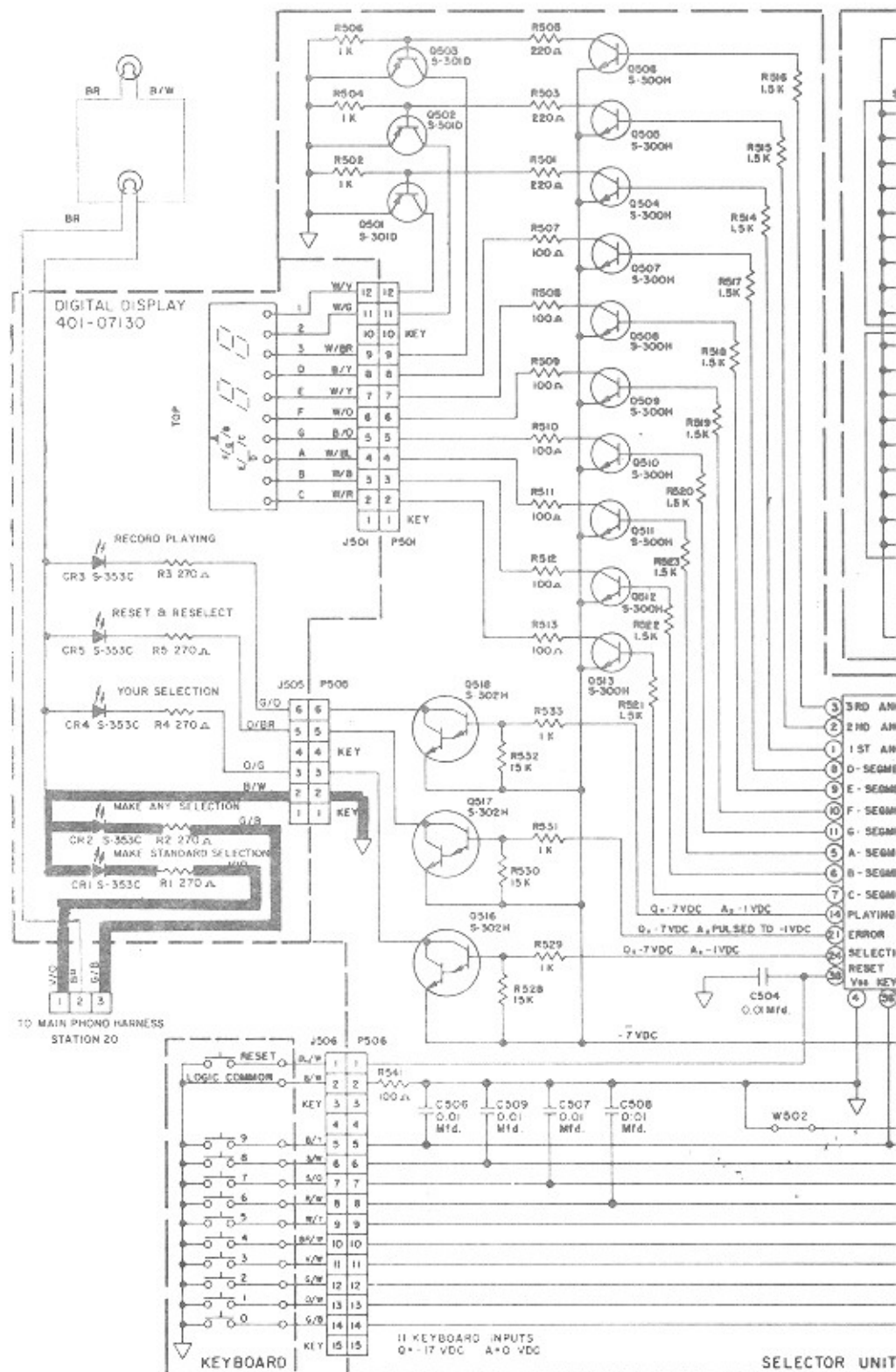
3. Money pulses (-17vdc to 0vdc) are sent out chip to Q603 which drives the optional mor

4. A standard credit signal (-27 vdc to 0 vdc) chip drives Q602 which lights the MAKE S This signal also appears at pin 18 of the sel



pin 39 of the credit computer  
meter assembly; five pulses=25¢.

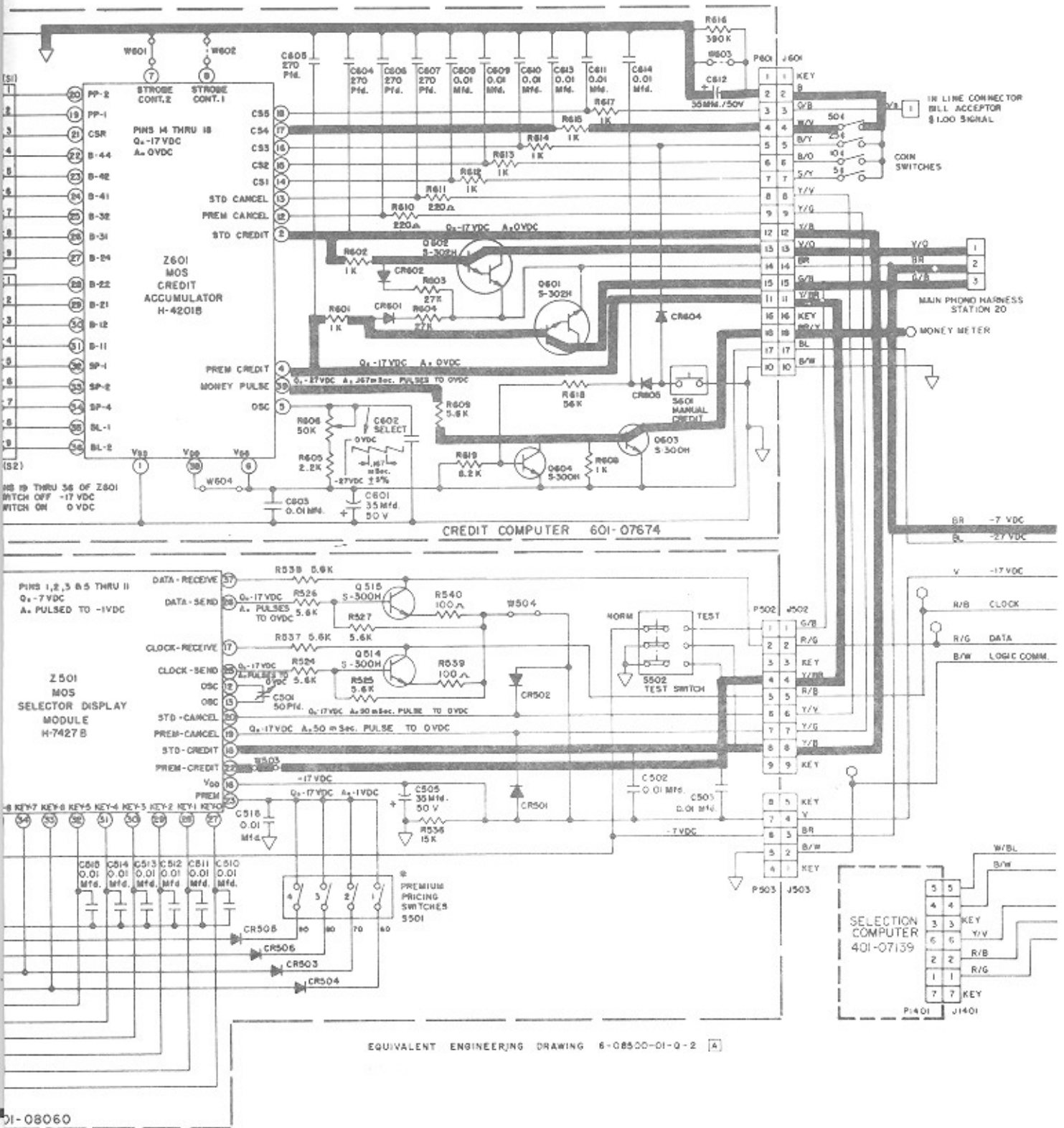
pin 2 of the credit computer  
STANDARD SELECTION LED.  
for ship.



## 2. HALF-DOLLAR IN

1. If a half-dollar coin is de credit computer chip to C
2. The MAKE STANDARD previous sequence.

② HALF-DOLLAR INSERTED. PREMIUM CREDIT ESTABLISHED.



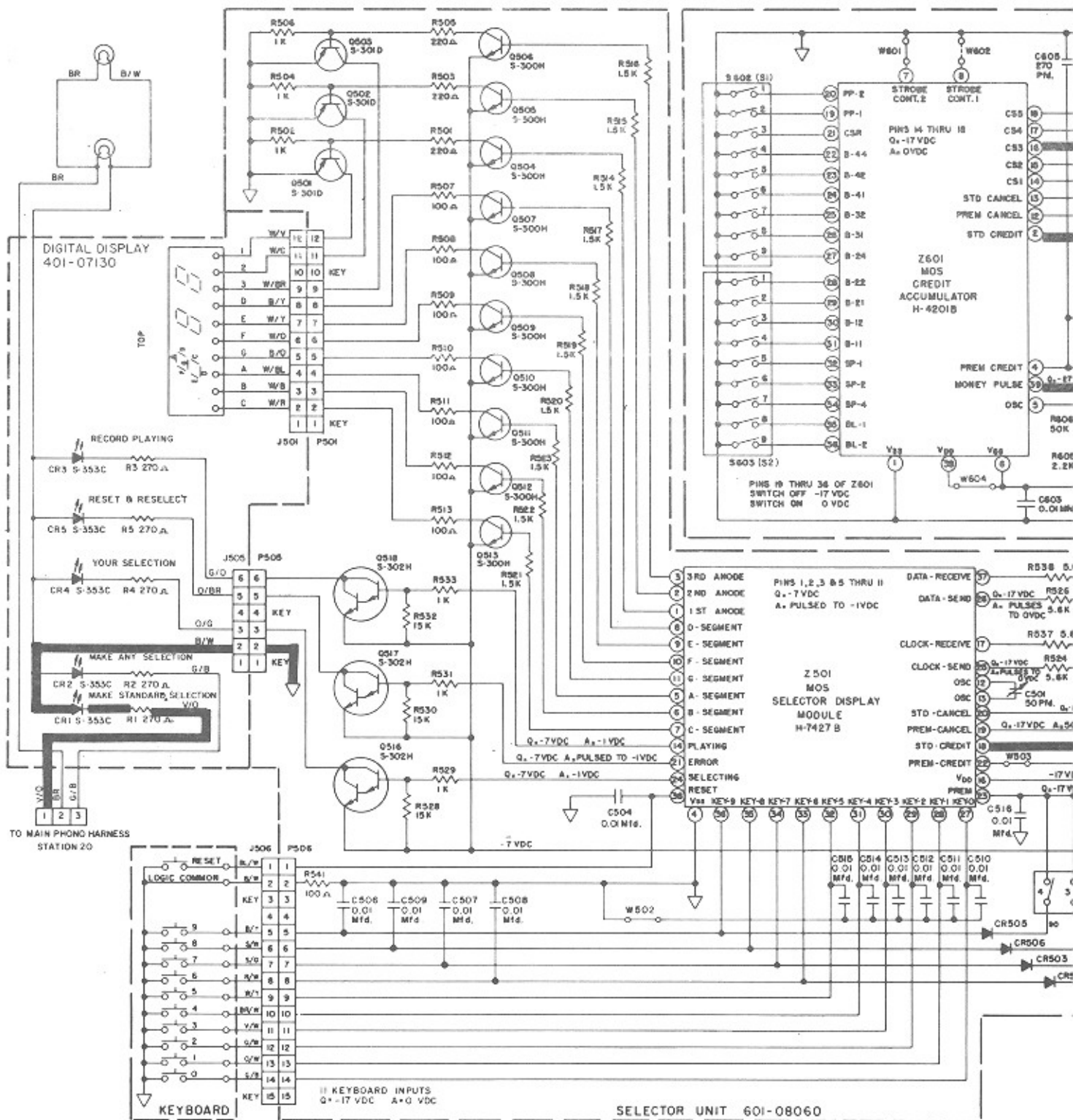
RTED. PREMIUM CREDIT ESTABLISHED.

ited, the 50¢ coin switch connects pin 17 of the  
MON through R615, R616, and C612.

LECTION LED is lit in the same manner as the

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

3. CREDIT BUTTON PUSHED. CREDIT ESTABLISHED.

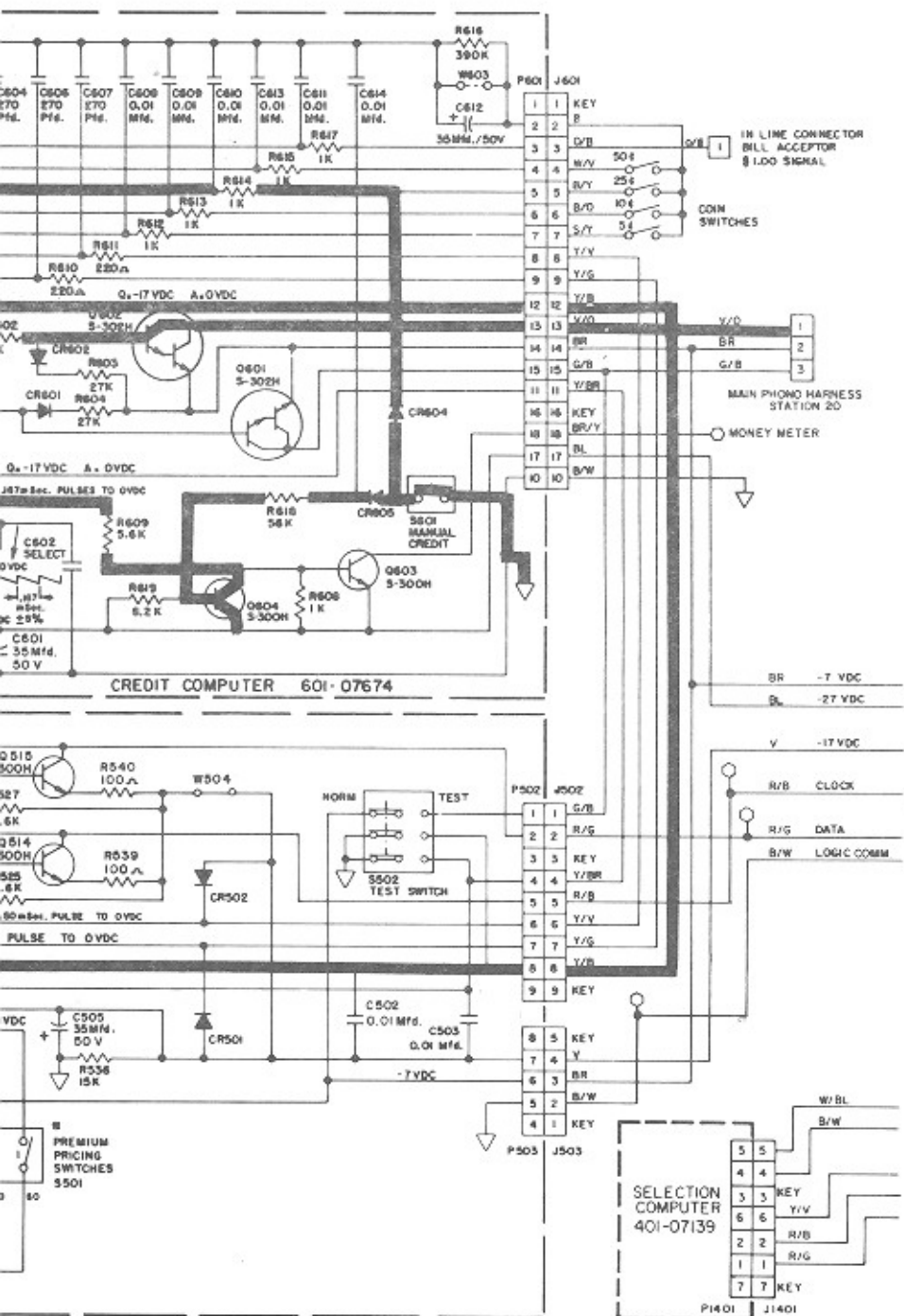


3. CREDIT BUTTON PUSHED. CREDIT ESTABLISHED.

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.

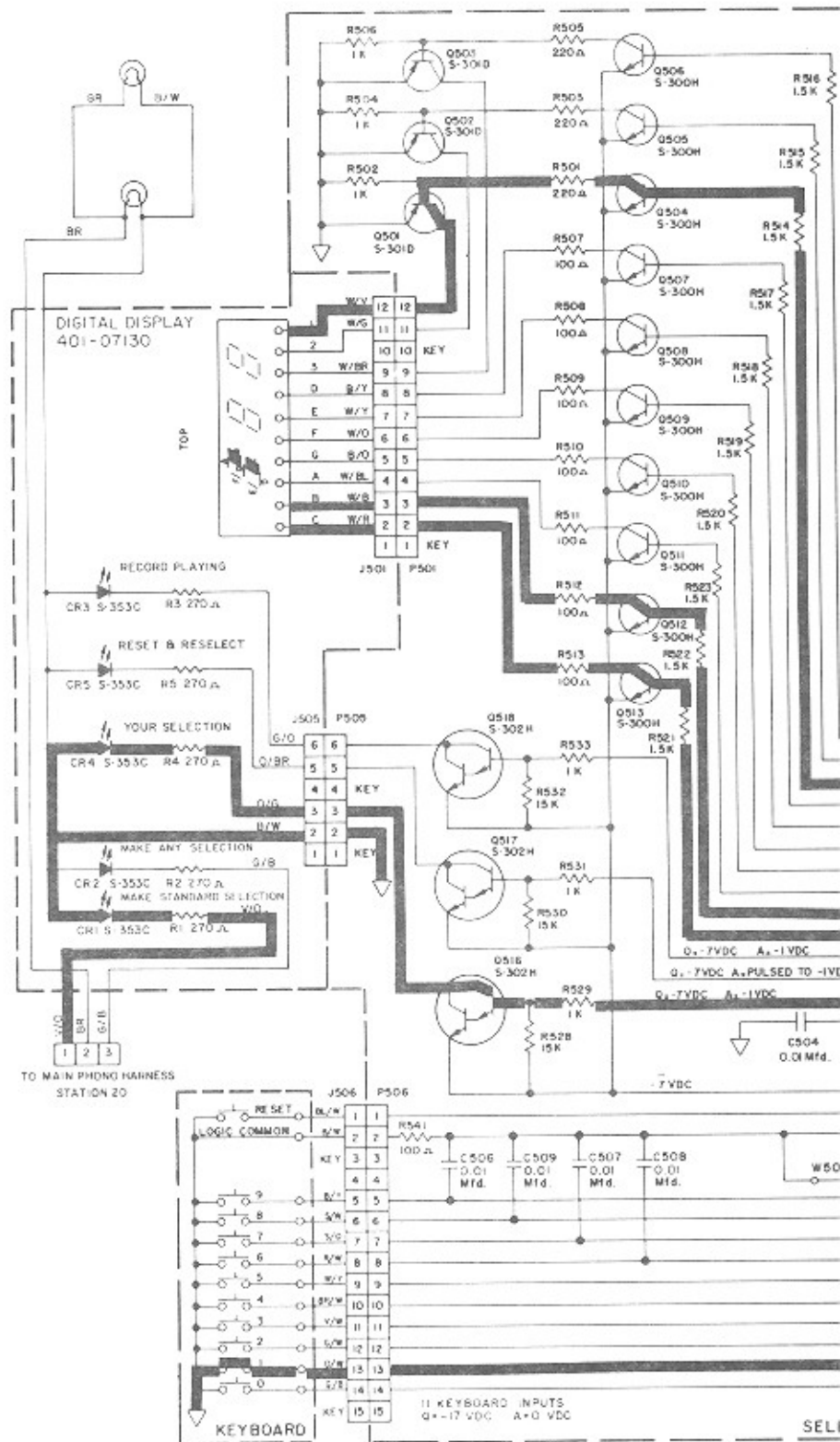
3. A standard credit signal (-17 vdc to 0 vdc) at pin 16 of the credit computer chip drives Q602 which lights the MAKE STAND... This signal also appears at pin 18 of the selector c...





EQUIVALENT ENGINEERING DRAWING 6-08500-01-Q-2 [A]

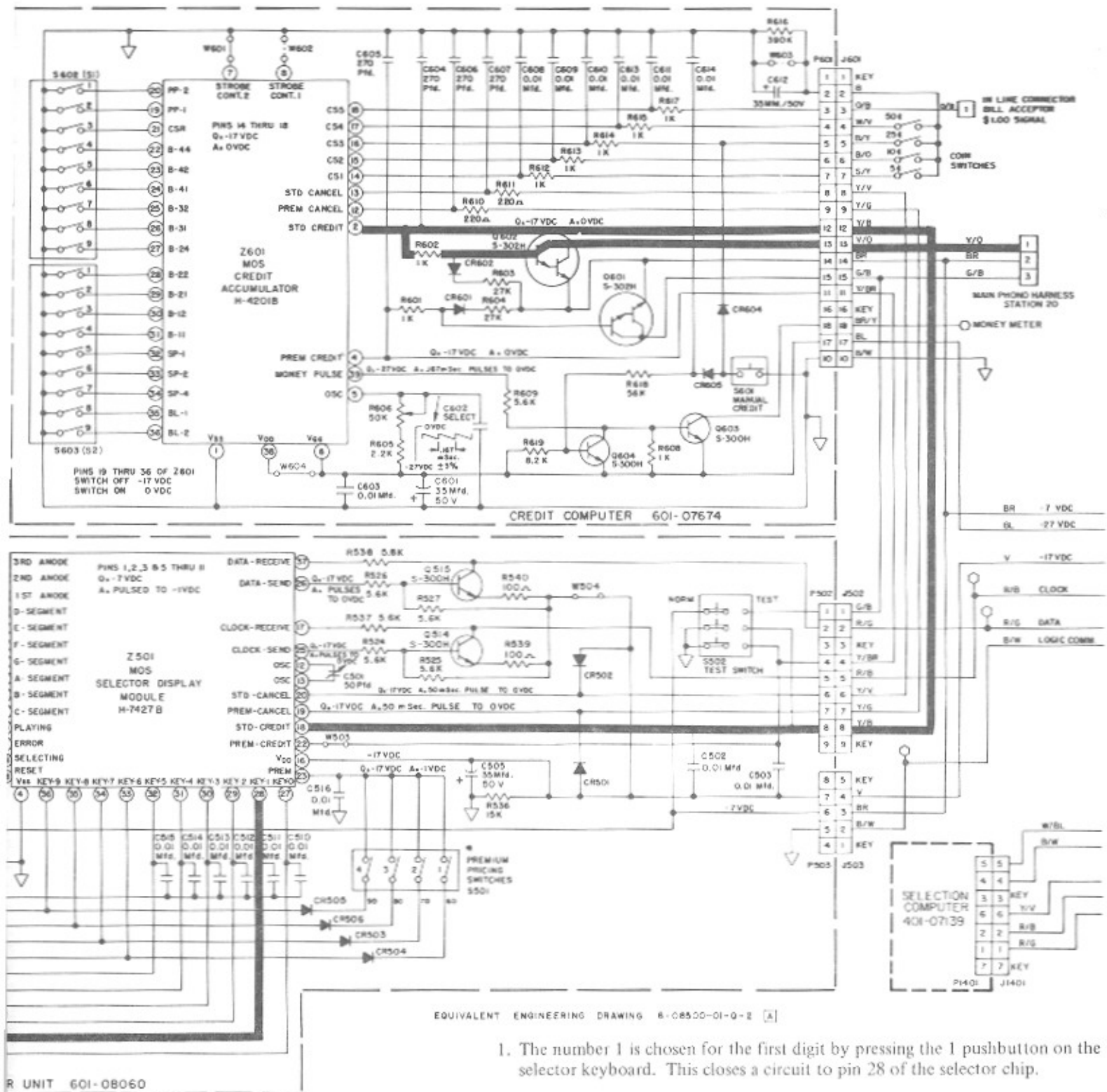
the credit computer  
 D SELECTION LED.



#### 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 LED will blink. In this instance, the RESET pushbutton must be pressed before making an alternate selection for the first digit.

Each of the three light emitting diodes together electrical... Each pulse is syn... or third display u... not appear to be b... by the observer.

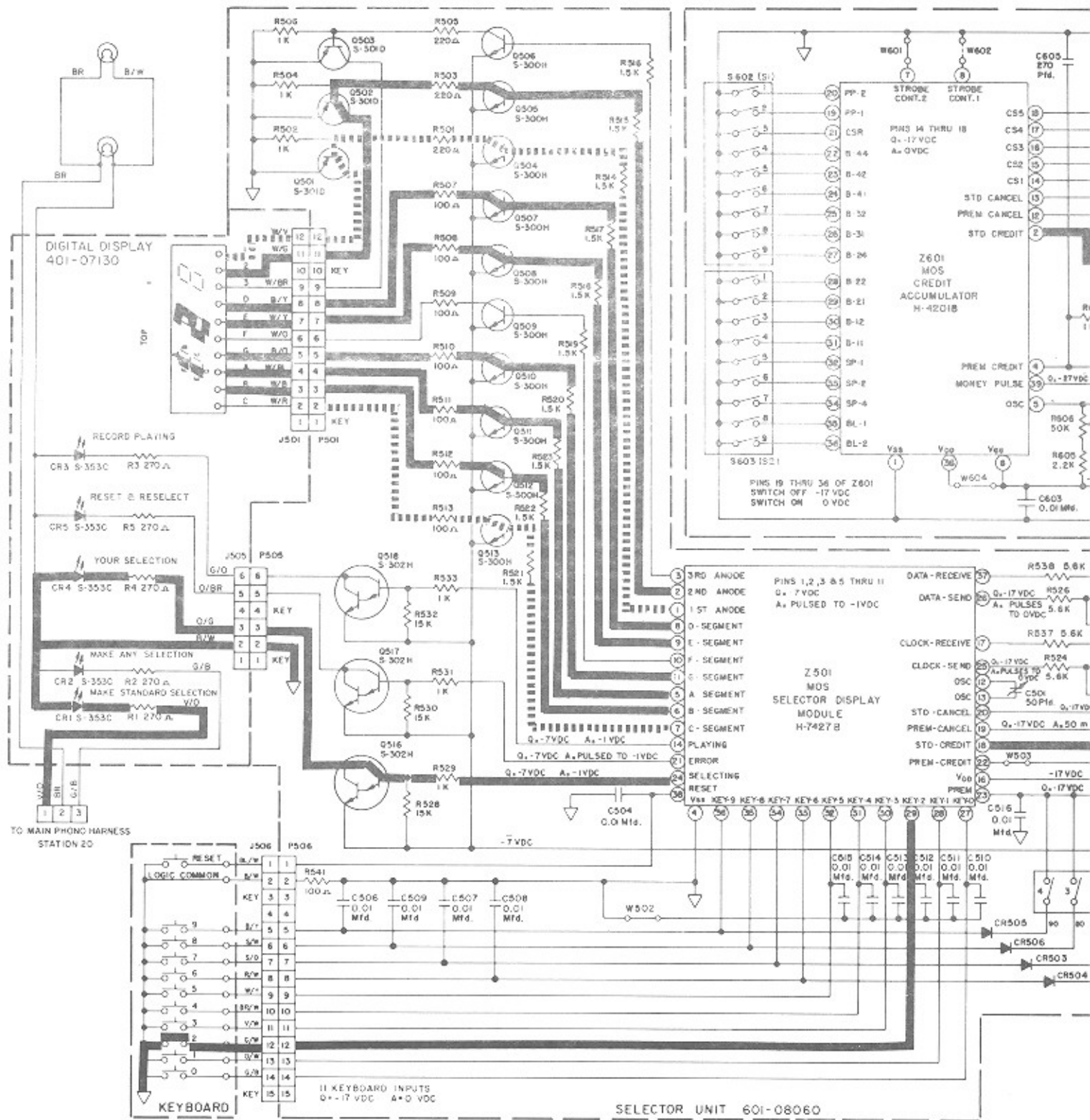


EQUIVALENT ENGINEERING DRAWING 8-08500-01-0-2 [A]

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 (-7 vdc to -1 vdc) chip drives Q516 which lights the YOUR SELECTION LED.
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.

Number display units consist of seven segments illuminated by... The equivalent segments of the three display units are tied and are scanned left to right by pulses from the selector chip... to produce the composite number image. The segments do... due to the high scan speed and the persistence of vision

5 SECOND DIGIT SELECTED AND DISPLAYED.



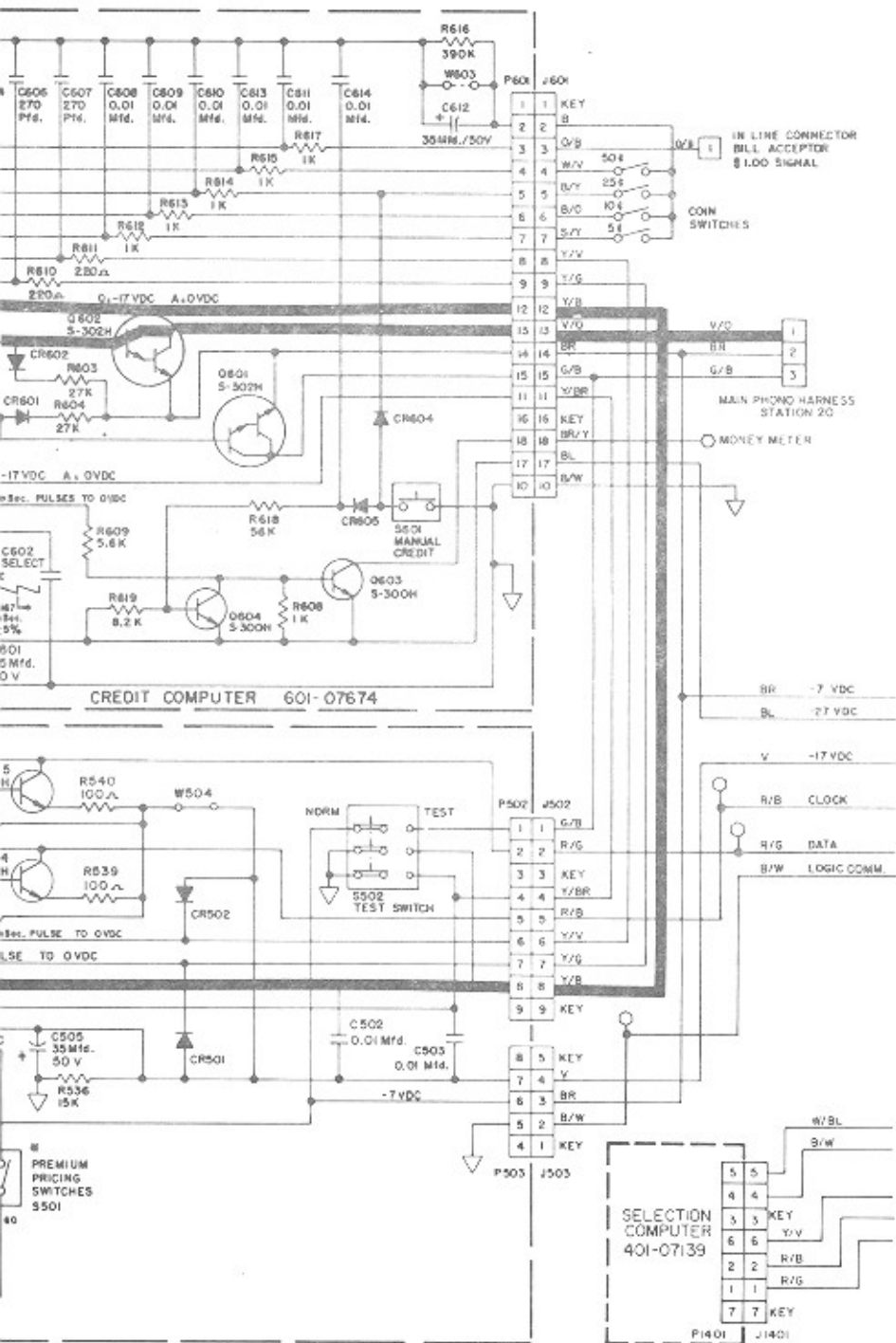
5. SECOND DIGIT SELECTED AND DISPLAYED.

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 Q511, Q512, Q510, Q508 and Q507 respectively drive the D segments of the second display unit during the

NOTE: If one or more of the premium price switches are pressed during the second digit represented by those switches will be accepted, premium credit will not be available, the RESET AND RESELECT switches must be pressed and the entire selection must be repeated.

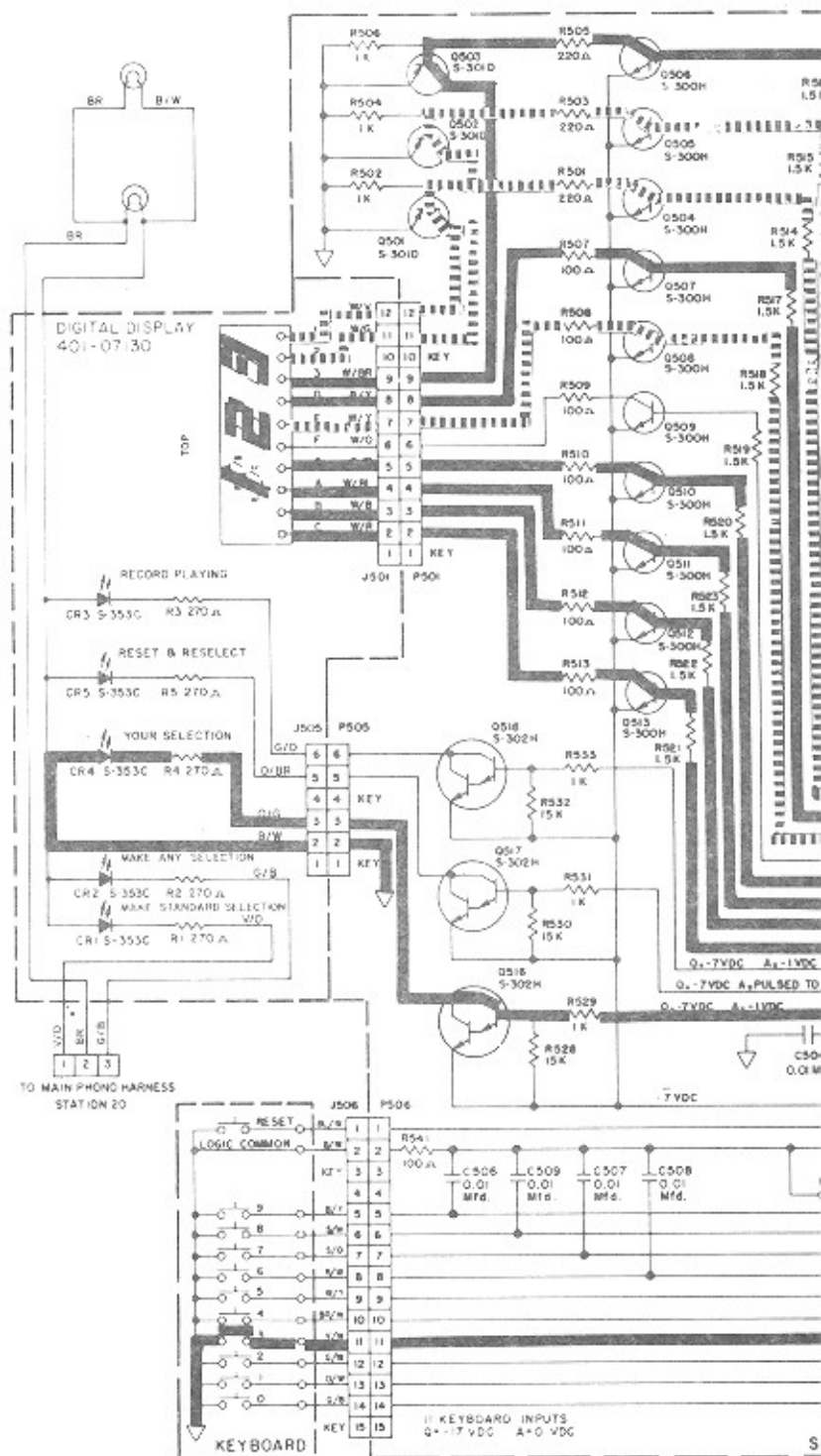


EQUIVALENT ENGINEERING DRAWING 6-08500-01-9-2 [A]

of the selector chip drive lighting the A, B, G, E and to produce the number 2.

501-1 to S501-4) is closed premium priced. If a pre- available. If premium lamps will flash and no nce, RESET button must



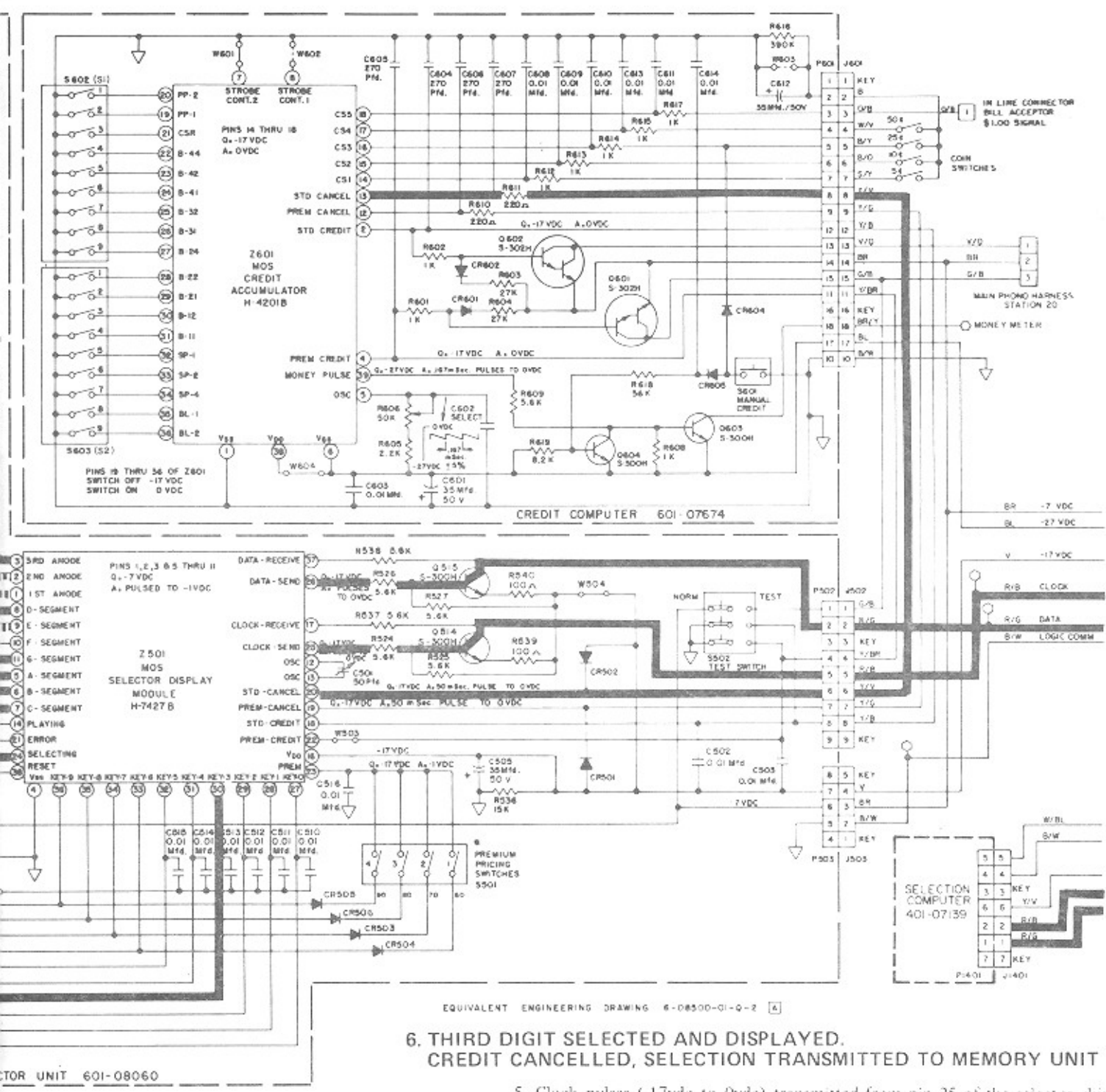


As was the case with selecting the second digit in the previous sequence, the third digit chosen can also be 0 through 9.

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 0vdc) at selector chip pins 10, 11, and 12 drive the inputs of Q512, Q511, and Q510 respectively.
4. After the third digit is transmitted, the selector keyboard is transmitted to the next display unit.

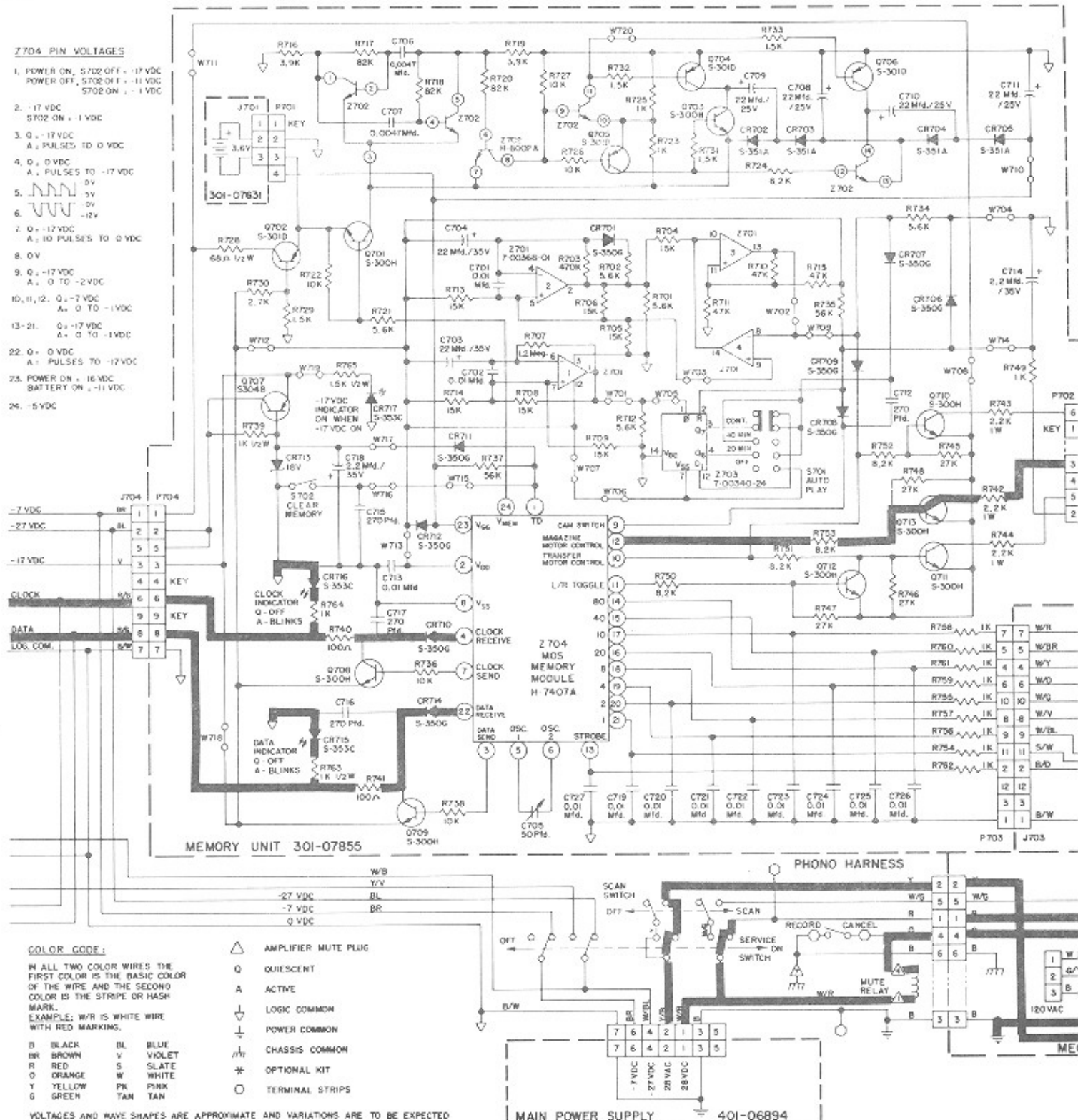
6 THIRD DIGIT SELECTED AND DISPLAYED. CREDIT CANCELLED, SELECTION TRANSMITTED TO MEMORY



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

5. Clock pulses (-17vdc to 0vdc) transmitted from pin 25 of the selector chip synchronize the selection data on pin 26.
6. The selection computer, connected across the clock and data lines, detects the data pulse train. It recognizes a selection sequence and enters the selection in its memory.
7. 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 MAGAZ





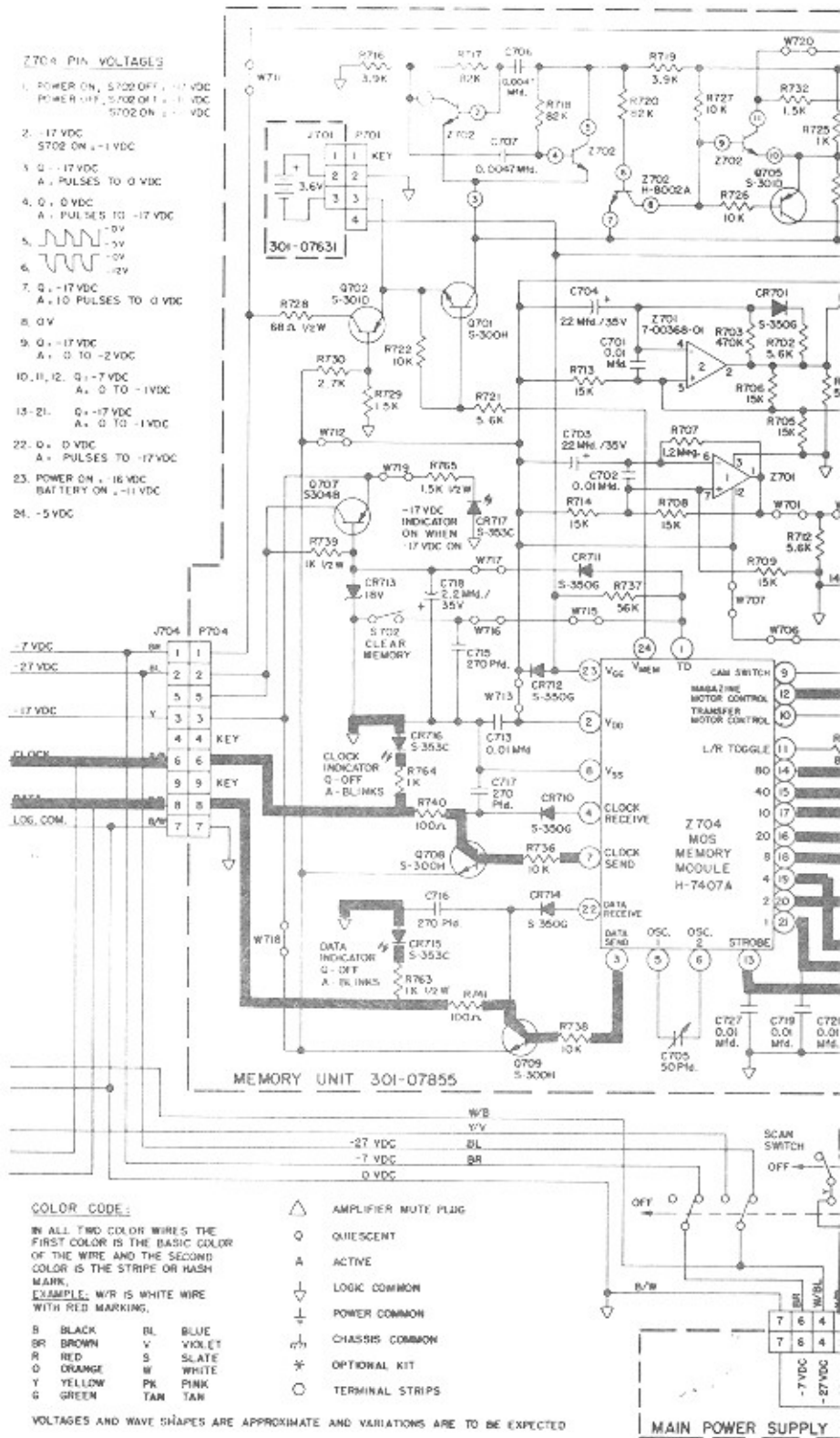
7. SELECTION DATA STORED IN MEMORY UNIT, SCAN SIGNAL ENERGIZES DETENT COIL AND AMPLIFIER MUTED.

- The selection data and clock signals arrive at memory unit chip pins 4 and 22, lighting LED's CR716 (clock) and CR715 (data). These LED's will begin flashing when a selection is made and will continue to flash until the mechanism scans out.
- The scan signal (-7 vdc to -1 vdc) on pin 12 of the memory chip drives Q713, Q808 and Q803 lighting SCAN LED CR814 and connecting 28 vdc to COMMON through the magazine detent coil.
- The energized magazine detent coil operates the magazine detent switch which energizes the contacts of the magazine detent switch.
- Triac Q801 connects 28vac to COMMON through the magazine detent switch. The magazine motor is energized.
- The amplifier mute relay is energized by the scan signal through the magazine detent switch.



Z704 PIN VOLTAGES

1. POWER ON, S702 OFF, -17 VDC  
POWER OFF, S702 ON, -1 VDC  
S702 ON, -1 VDC
2. -17 VDC  
S702 ON, -1 VDC
3. 0, -17 VDC  
A, PULSES TO 0 VDC
4. 0, 0 VDC  
A, PULSES TO -17 VDC
5.  -5V
6.  -2V
7. 0, -17 VDC  
A, 10 PULSES TO 0 VDC
8. 0V
9. 0, -17 VDC  
A, 0 TO -2 VDC
- 10, 11, 12. 0, -7 VDC  
A, 0 TO -1 VDC
- 13-21. 0, -17 VDC  
A, 0 TO -1 VDC
22. 0, 0 VDC  
A, PULSES TO -17 VDC
23. POWER ON, -16 VDC  
BATTERY ON, -11 VDC
24. -5 VDC



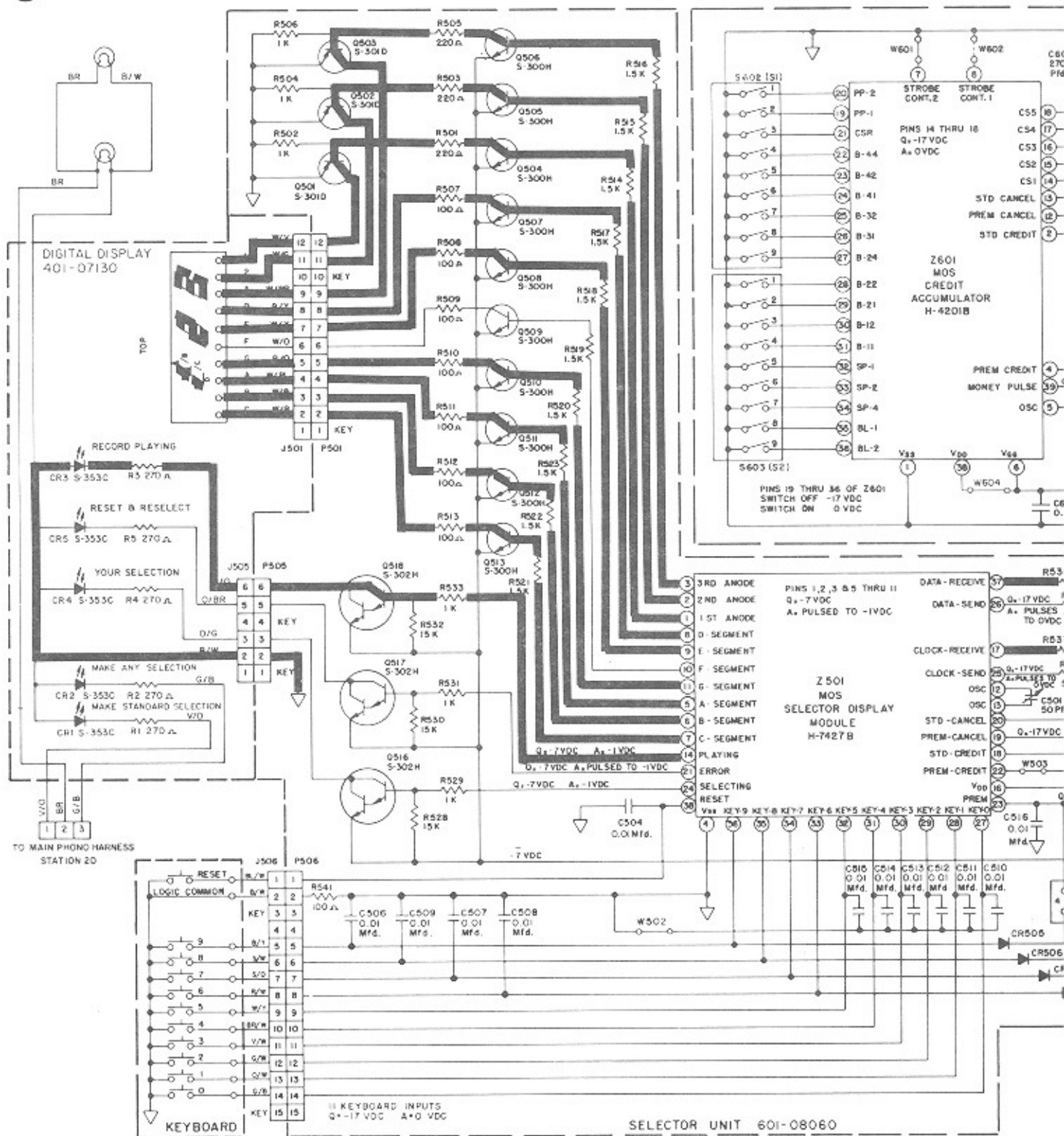
8. MAGAZINE R

1. The magazine motor... the record change... pattern on one side... record positions. T... zine.



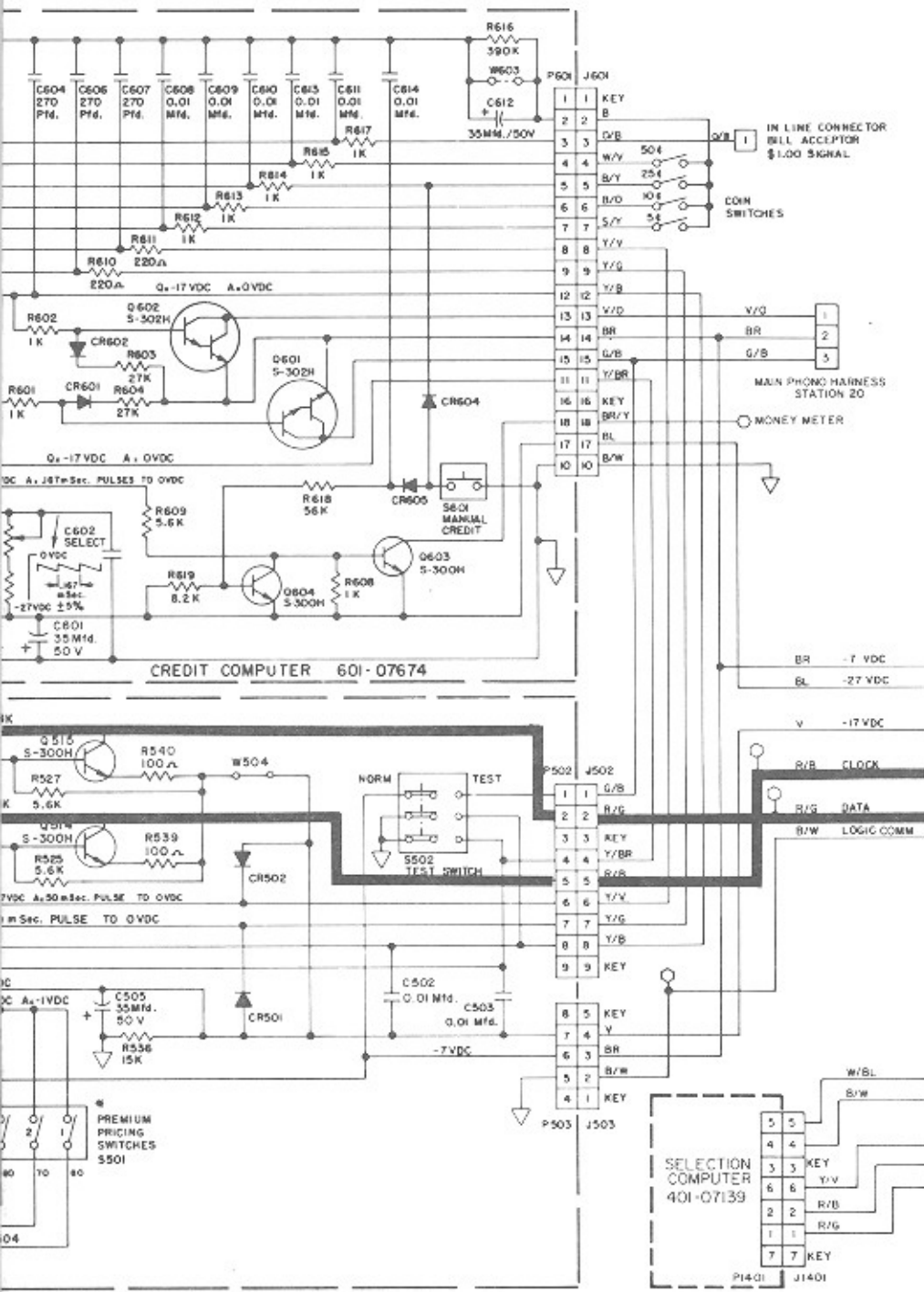


## 9) RECORD PLAYING (OR SCAN) DISPLAYED.



### 9. RECORD PLAYING (OR SCAN) DISPLAYED.

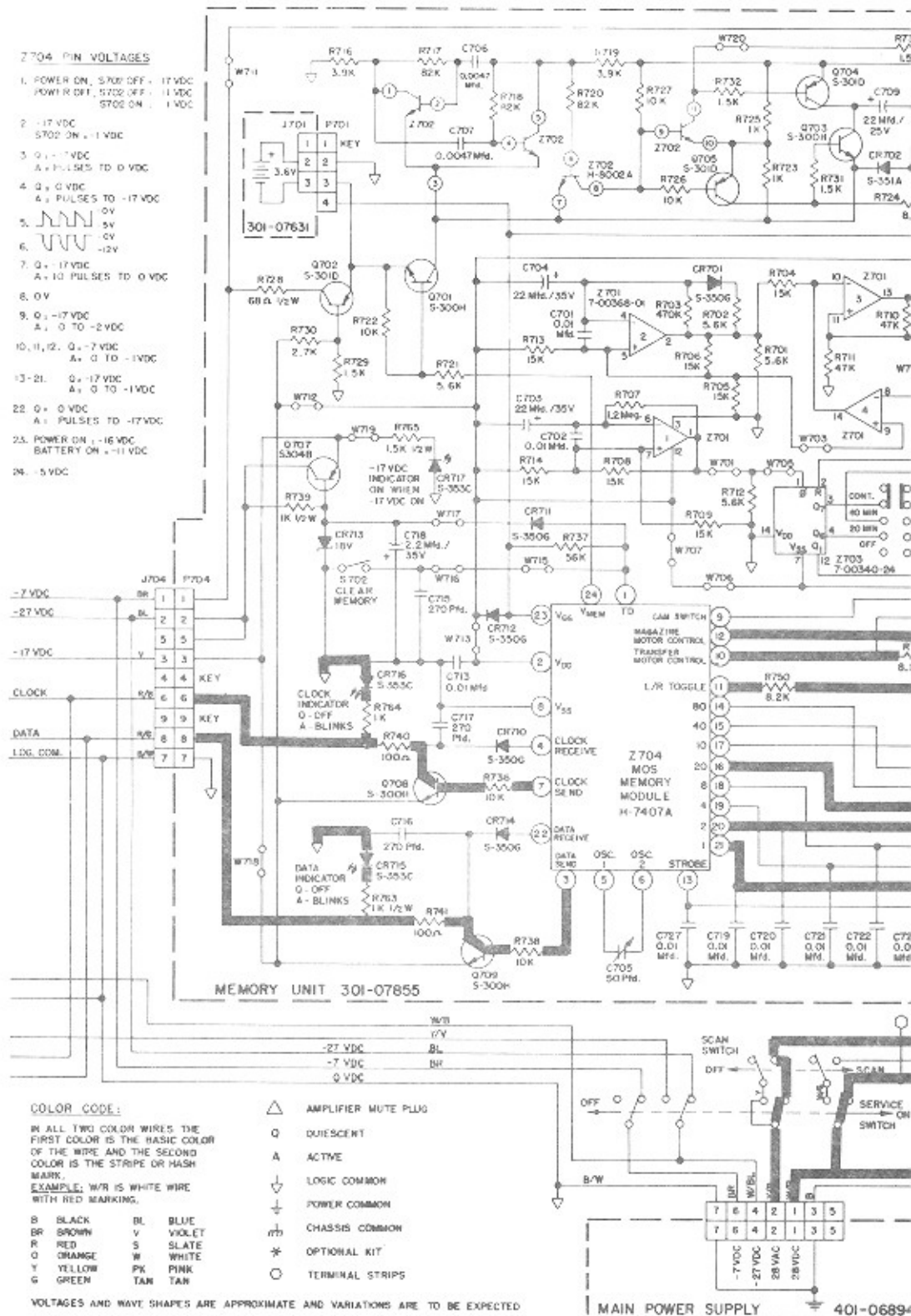
1. A signal (-7 vdc to -1 vdc) at pin 14 of the selector chip drives Q518 which lights the RECORD PLAYING LED. The YOUR SELECTION LED goes out.
2. If the phonograph is playing a selection, the selection number will be shown on the display. If the mechanism is scanning when the RECORD PLAYING lamp comes on, the scan will be displayed.



EQUIVALENT ENGINEERING DRAWING 6-08500-01-0-2 [A]

### Z704 PIN VOLTAGES

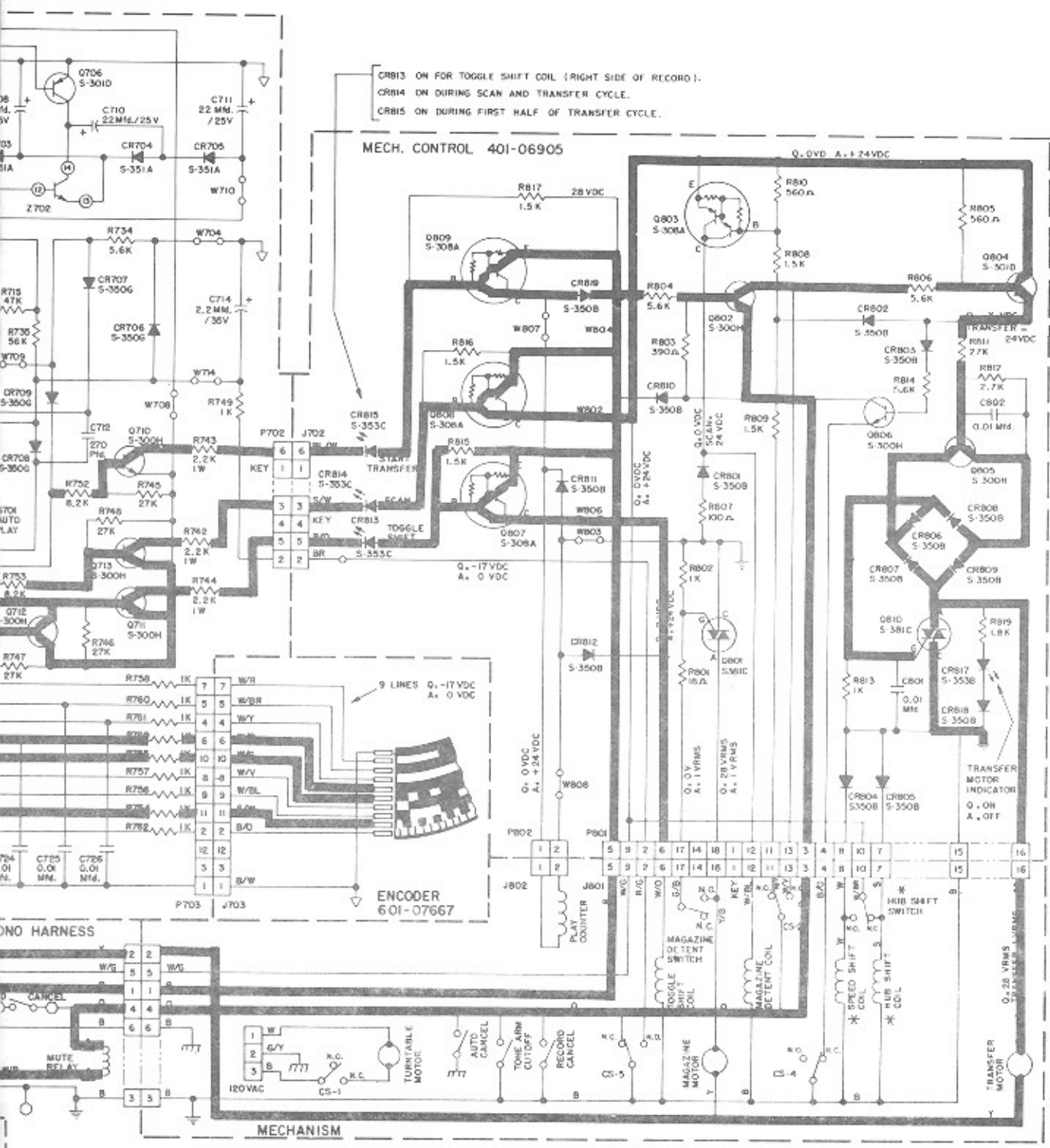
1. POWER ON, S702 OFF -17 VDC  
POWER OFF, S702 OFF -11 VDC  
S702 ON -1 VDC
2. -17 VDC  
S702 ON -1 VDC  
A: PULSES TO 0 VDC
3. 0 -17 VDC  
A: PULSES TO -17 VDC
4. 0 -0 VDC  
A: PULSES TO -17 VDC
5.  0V  
5V
6.  0V  
-12V
7. 0 -17 VDC  
A: 10 PULSES TO 0 VDC
8. 0V
9. 0 -17 VDC  
A: 0 TO -2 VDC
- 10, 11, 12. 0 -7 VDC  
A: 0 TO -1 VDC
- 13-21. 0 -17 VDC  
A: 0 TO -1 VDC
22. 0 -0 VDC  
A: PULSES TO -17 VDC
23. POWER ON -16 VDC  
BATTERY ON -11 VDC
24. -5 VDC



## 10. SELECTION LOCATED.

1. When the selection is located in the memory chip, the voltage at pin 10 changes from -7 vdc to 0 vdc. This transfer signal turns on Q710 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. Q805
- det
- ren
4. Th
- shi
- beg
- gin
- dri
- shi



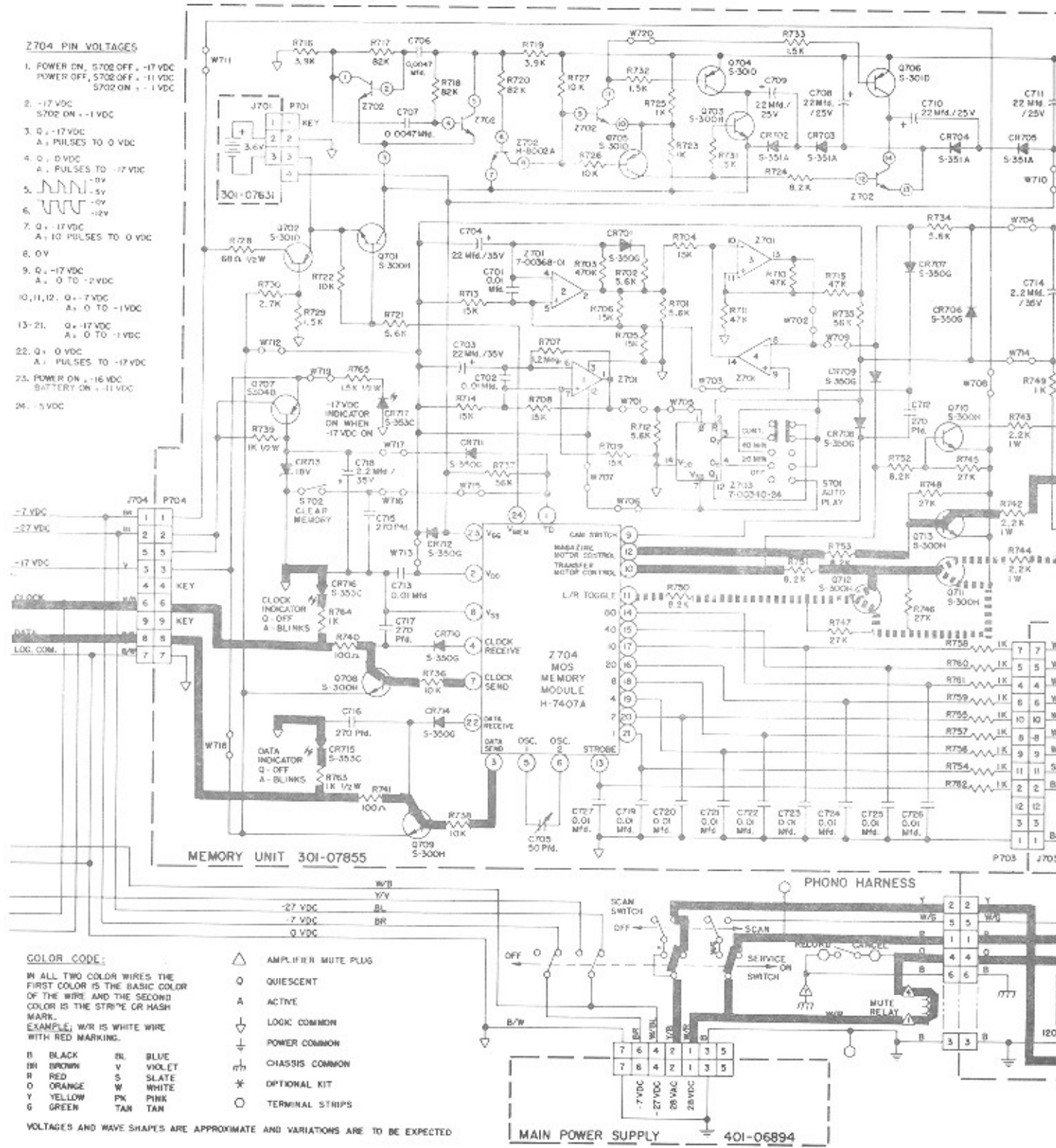
simultaneously turns off Q803. This opens the circuit to the magazine coil. The magazine detent coil transfers the magazine detent switch power from the magazine motor.

transfer signal at pin 10 also drives Q711 and Q807. This lights toggle LED CR813 and energizes the toggle shift coil if the selection number with the number 2 (right side selection). If the selection number both the number 1 (left side), a signal on pin 11 of the memory chip will drive Q712 which will short the drive to Q711 to -7 vdc to disable the toggle circuit.

5. The play counter is energized by Q809.
6. The selection is erased in the memory chip.



# 11 TRANSFER BEGINS.



## 11 TRANSFER BEGINS

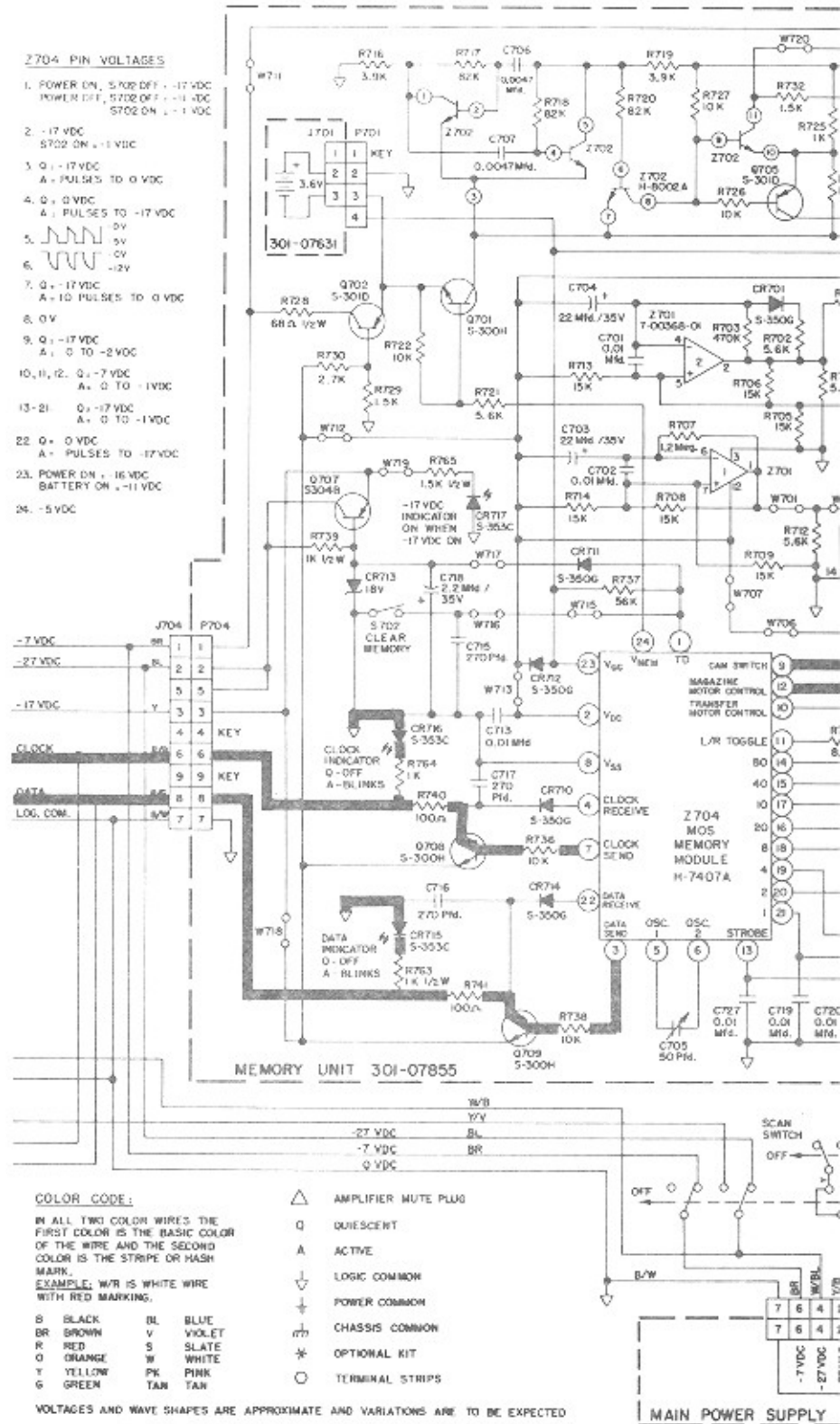
1. A cam operated by the transfer motor operates cam switches CS1, CS2, CS4 and CS5.
2. As the transfer motor and cam rotate, cam switch CS1 transfers, applying power to the turntable motor.
3. Cam switch CS2 transfers locking the transfer motor.





### 2704 PIN VOLTAGES

1. POWER DN, S702 OFF, -17 VDC  
POWER UP, S702 OFF, -11 VDC  
S702 ON, -1 VDC
2. -17 VDC  
S702 ON, -1 VDC
3. 0, -17 VDC  
A, PULSES TO 0 VDC
4. 0, 0 VDC  
A, PULSES TO -17 VDC
5.  0V  
5V
6.  0V  
-2V
7. 0, -17 VDC  
A, 10 PULSES TO 0 VDC
8. 0V
9. 0, -17 VDC  
A, 0 TO -2 VDC
- 10, 11, 12. 0, -7 VDC  
A, 0 TO -1 VDC
- 13-21. 0, -17 VDC  
A, 0 TO -1 VDC
22. 0, 0 VDC  
A, PULSES TO -17 VDC
23. POWER DN, -16 VDC  
BATTERY ON, -11 VDC
24. -5 VDC

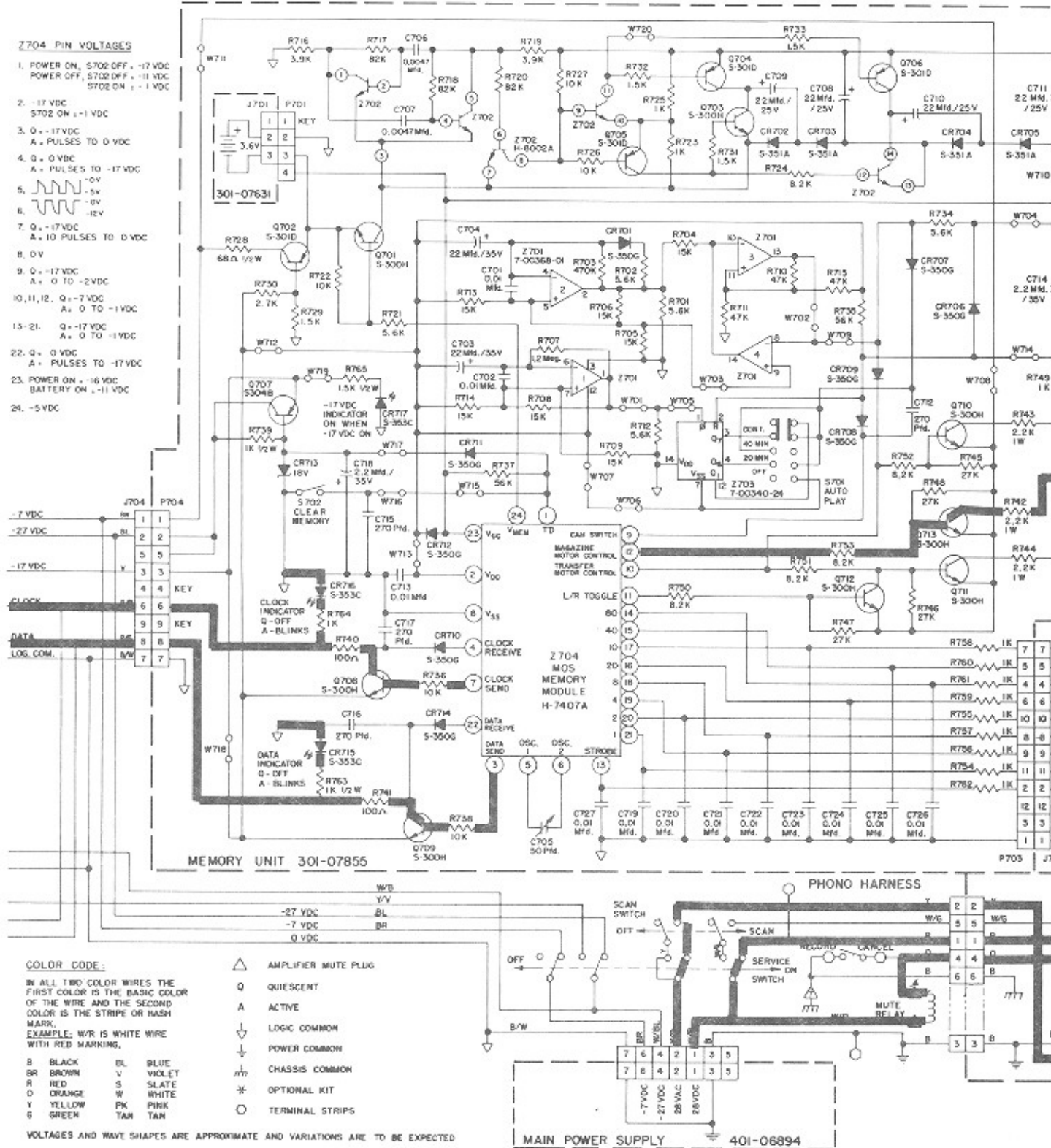


### 12. RECORD PL

1. CS4 transfers, bre
2. CS5 transfers, ope  
 condition CS5 connec  
 transfer signal on



# 13 RECORD ENDS.



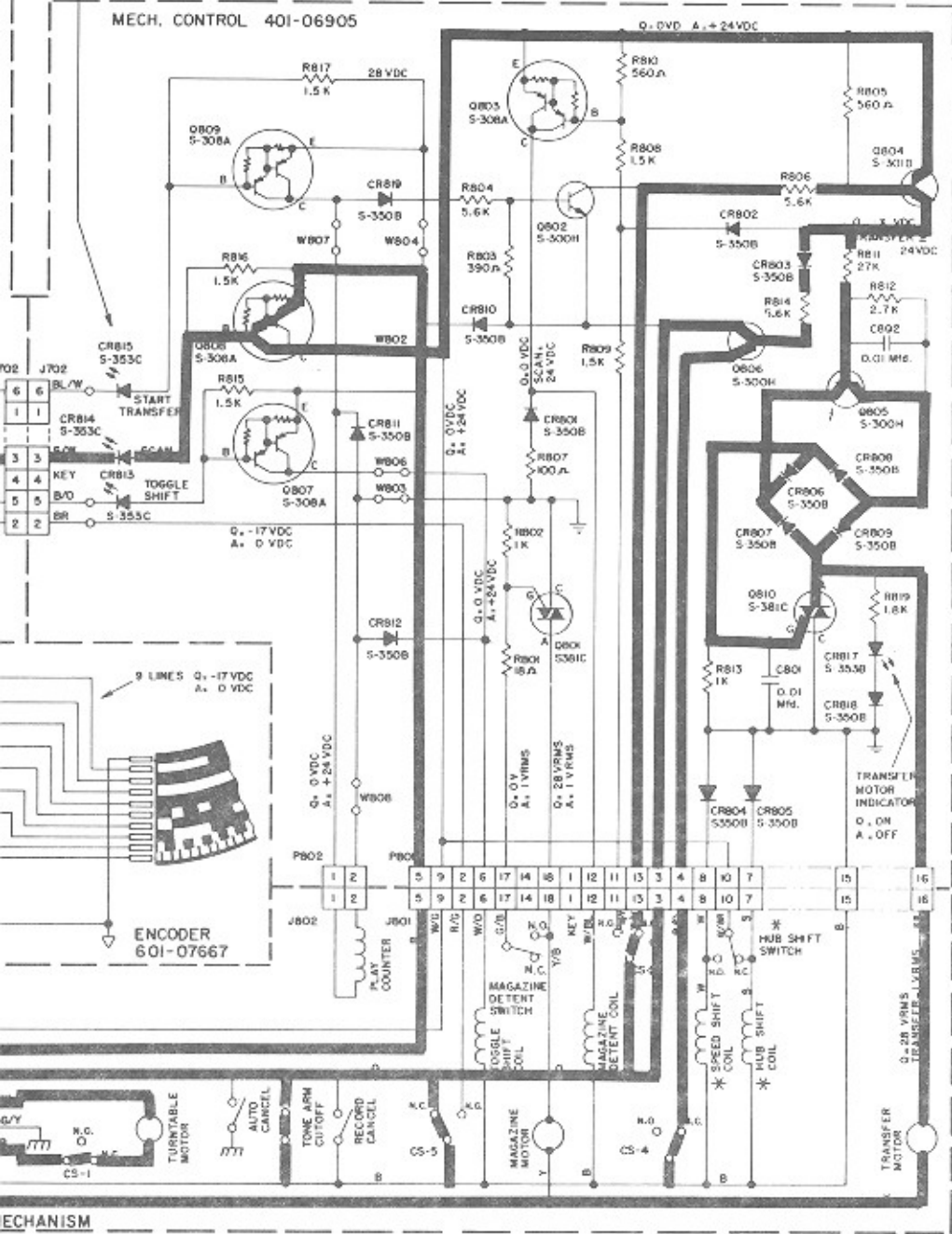
## 13. RECORD ENDS

- 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.
- 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.

- The record gripper arm picks up the record. CS4 transfers back and locks the transfer cam.
- Cam Switch CS5 transfers back, insuring correct operation.

CR813 ON FOR TOGGLE SHIFT COIL (RIGHT SIDE OF RECORD I).  
 CR814 ON DURING SCAN AND TRANSFER CYCLE.  
 CR815 ON DURING FIRST HALF OF TRANSFER CYCLE.

MECH. CONTROL 401-06905





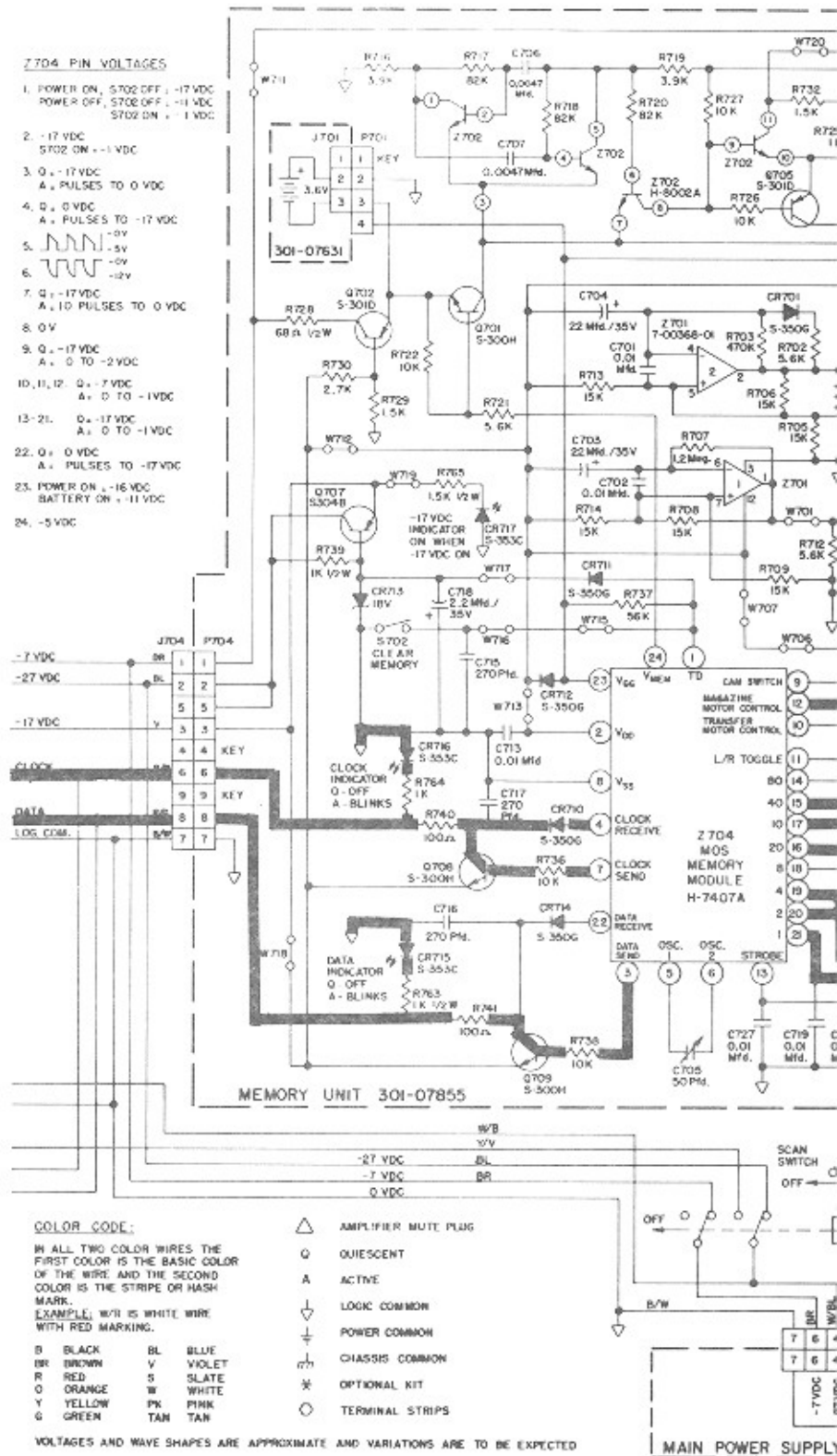
EQUIVALENT ENGINEERING DRAWING 6-08500-01-0-2 [A]

from the turntable. Cam switch  
 t on through Q806.

uation of transfer function.

### Z704 PIN VOLTAGES

1. POWER ON, S702 OFF: -17 VDC  
POWER OFF, S702 OFF: -11 VDC  
S702 ON: -1 VDC
2. -17 VDC  
S702 ON: -1 VDC
3. Q: -17 VDC  
A: PULSES TO 0 VDC
4. Q: 0 VDC  
A: PULSES TO -17 VDC
5.  -5V
6.  -12V
7. Q: -17 VDC  
A: PULSES TO 0 VDC
8. 0V  
A: 0 TO -2 VDC
9. Q: -17 VDC  
A: 0 TO -2 VDC
- 10, 11, 12. Q: -7 VDC  
A: 0 TO -1 VDC
- 13-21. Q: -17 VDC  
A: 0 TO -1 VDC
22. Q: 0 VDC  
A: PULSES TO -17 VDC
23. POWER ON: -16 VDC  
BATTERY ON: -11 VDC
24. -5 VDC



#### 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.

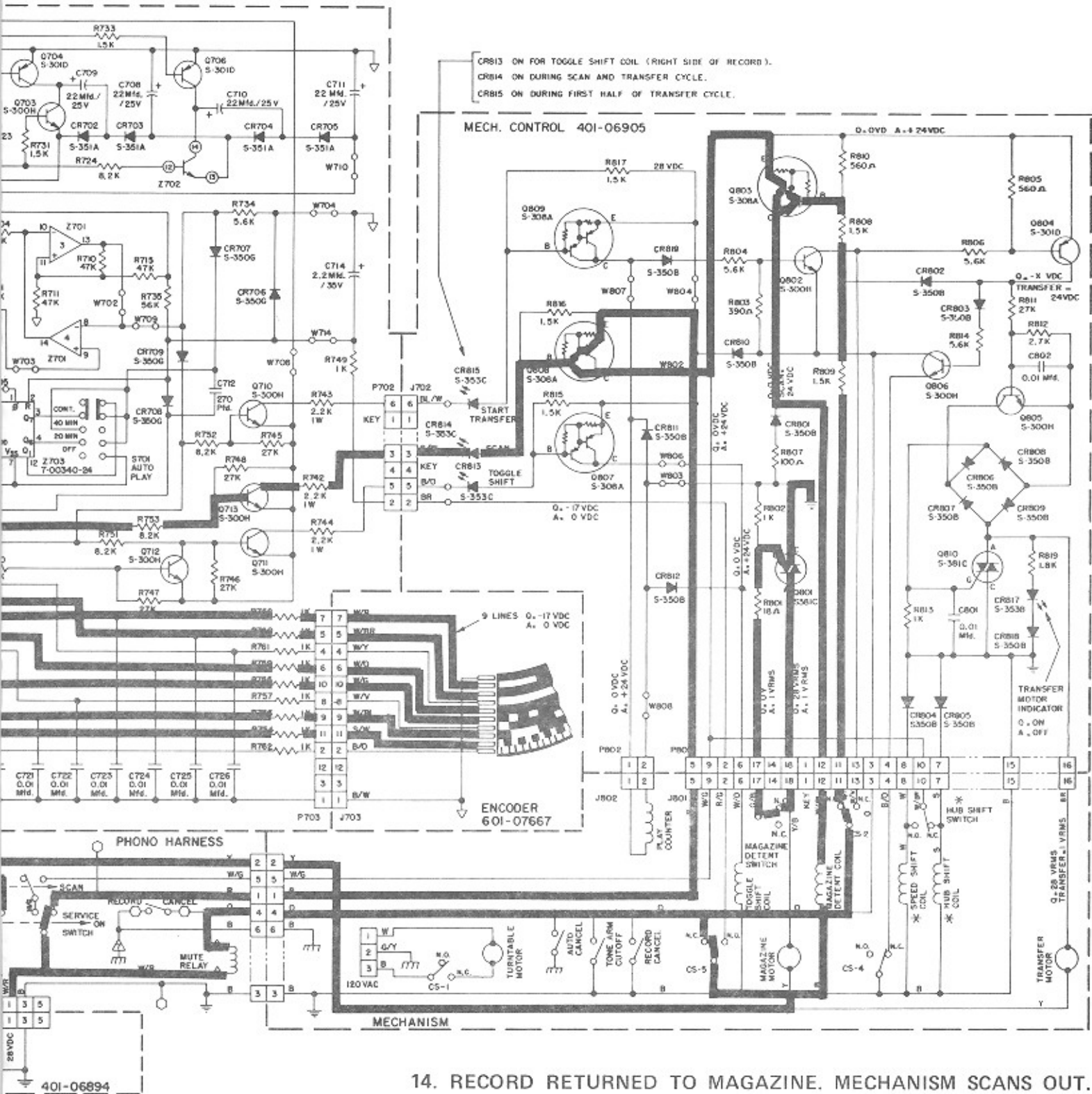
B BLACK	BL BLUE
BR BROWN	V VIOLET
R RED	S SLATE
O ORANGE	W WHITE
Y YELLOW	PK PINK
G GREEN	TAN TAN

- △ AMPLIFIER MUTE PLUG
- QUIESCENT
- A ACTIVE
- ∇ LOGIC COMMON
- ⊥ POWER COMMON
- ⊕ CHASSIS COMMON
- \* OPTIONAL KIT
- TERMINAL STRIPS

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



14 RECORD RETURNED TO MAGAZINE. MECHANISM SCANS OUT.




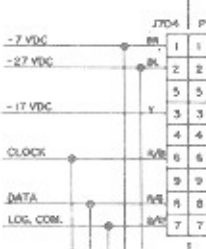
14. RECORD RETURNED TO MAGAZINE. MECHANISM SCANS OUT.

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.

# 15 AUTO PLAY.

## Z704 PIN VOLTAGES

1. POWER ON, S702 OFF, -17 VDC  
POWER OFF, S702 OFF, -11 VDC  
S702 ON, -1 VDC
2. -17 VDC  
S702 ON, -1 VDC
3. 0, -17 VDC  
A, PULSES TO 0 VDC
4. 0, 0 VDC  
A, PULSES TO -17 VDC
5.  0, -17 VDC  
A, 10 PULSES TO 0 VDC
6.  0, -17 VDC  
A, 10 PULSES TO 0 VDC
7. 0, -17 VDC  
A, 10 PULSES TO 0 VDC
8. 0 V
9. 0, -17 VDC  
A, 0 TO -2 VDC
- 10, 11, 12. 0, -7 VDC  
A, 0 TO -1 VDC
- 13-21. 0, -17 VDC  
A, 0 TO -1 VDC
22. 0, 0 VDC  
A, PULSES TO -17 VDC
23. POWER ON, -16 VDC  
BATTERY ON, -11 VDC
24. -5 VDC



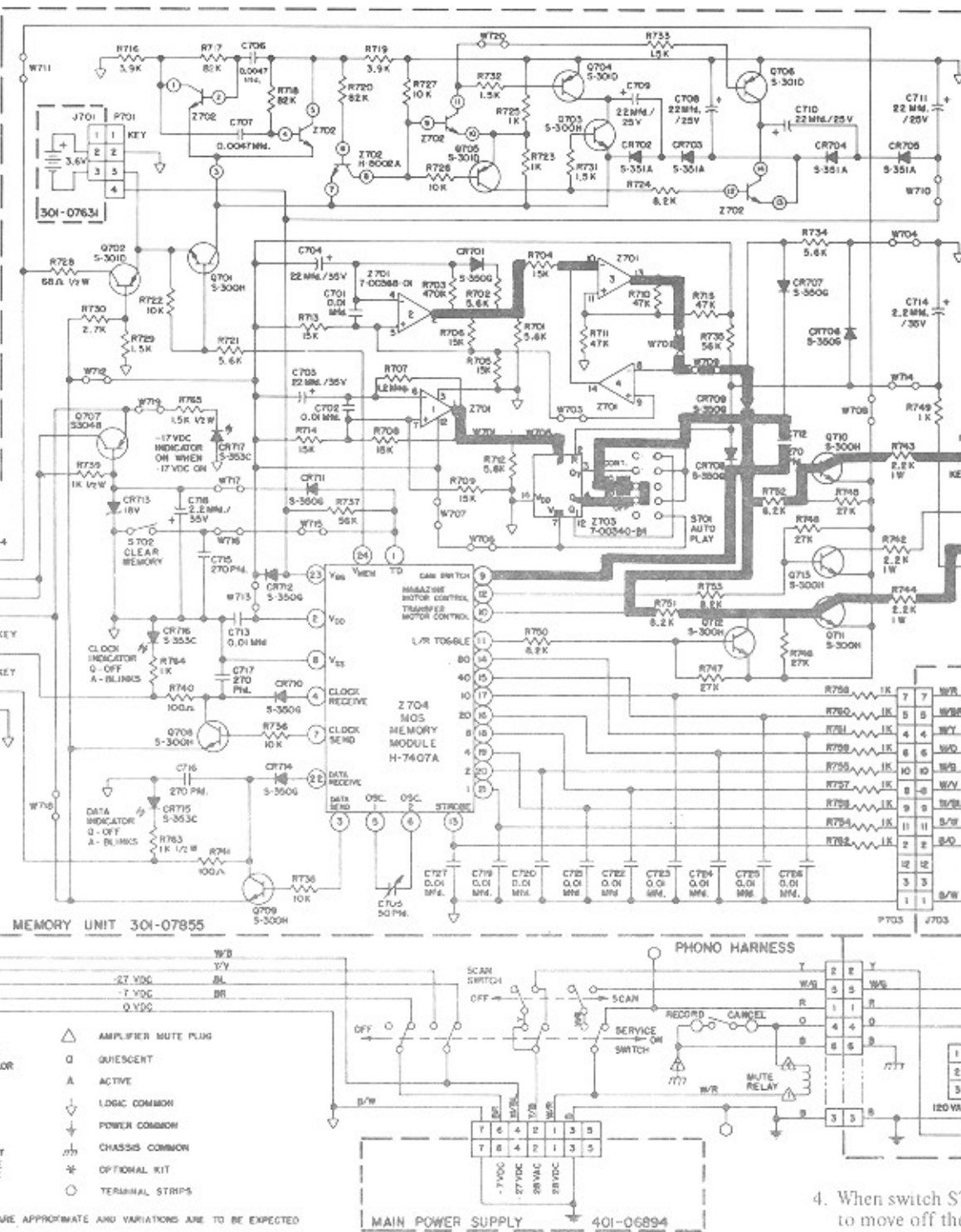
- COLOR CODE:**  
IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK. EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING.
- |          |           |
|----------|-----------|
| B BLACK  | BL BLUE   |
| BR BROWN | BV VIOLET |
| R RED    | S SLATE   |
| O ORANGE | W WHITE   |
| Y YELLOW | PK PINK   |
| G GREEN  | TAN TAN   |
- ▲ AMPLIFIER MUTE PLUG  
 ○ QUIESCENT  
 A ACTIVE  
 ↓ LOGIC COMMON  
 ↓ POWER COMMON  
 ⊕ CHASSIS COMMON  
 \* OPTIONAL KIT  
 ○ TERMINAL STRIPS

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

## 15. AUTOPLAY

1. Z701-1 and its associated resistors and capacitors form an oscillator which has a period of about 40 seconds (oscillator 1). Z701-2 similarly is an oscillator with a period of about 8 seconds (oscillator 2). The two oscillators are not related to each other in either phase or frequency.
2. Oscillator 1 drives the clock input of seven stage counter Z703. The reset, R, holds the counter at zero. When the reset is released, each oscillator cycle increases the count by 1. Oscillator 2 drives the set input of a flip-flop formed by Z701-3, -4. The reset or the output of Z703 selected by switch S701 holds the flip flop off.
  3. When switch S701 is in the OFF position, both oscillators will run, but the switch has the output line of the autoplay circuit tied to -17 volts. This prevents the autoplay circuit from affecting phono operation.

2-20



4. When switch S701 is moved to the OFF position, the output of the counter Z703 is transferred to the set input of flip-flop Z701-3, -4. This re-initiates the autoplay circuit.
5. After the Z703 counter reaches its maximum count, the output of the counter Z703 is transferred to the set input of flip-flop Z701-3, -4 (about 8 seconds).
6. With switch S701 in the OFF position, the output of the counter Z703 causes CS5 to transfer the next selection.
7. Selections made during the autoplay are in C...



REF. DESIGNATION	DESCRIPTION	601-08600	ROWE PART NO.
	MODEL R-83 PHONOGRAPH		(Page 1 of 2)
	Selector Keyboard, Digital Display, Selection Lamps (See Parts Catalog for Parts List) Coin Switches (See Parts Catalog)		
	<b>Credit Computer Assembly 601-07674</b>		
	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 MFD Mylar 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		707-00350
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		7-9901-10
R603, R604	1/4 W Carbon Resistor, 27K		7-9901-27
R605	1/4 W Carbon Resistor, 2.2K		7-9901-22
R606	1/2 W Trimmer Potentiometer, 50K (Bourns 3389; CTS-362Y; Weston 840P)		202-15207
R608	1/4 W Carbon Resistor, 1K		7-9901-10
R609	1/4 W Carbon Resistor, 5.6K		7-9901-56
R610, R611	1/4 W Carbon Resistor, 220 Ohms		7-9901-22
R612 to R615	1/4 W Carbon Resistor, 1K		7-9901-10
R616	1/4 W Carbon Resistor, 390K		7-9901-39
R617	1/4 W Carbon Resistor, 1K		7-9901-10
R618	1/4 W Carbon Resistor, 56K		7-9901-56
R619	1/4 W Carbon Resistor, 8.2K		7-9901-82
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, W604	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		601-07674
	<b>DIGITAL DISPLAY AND HARNESS ASSEMBLY 401-07130</b>		
CR1 to CR5	Light Emitting Diode (Nat'l. Semicond. NSL5056; Texas Instr. TIL220; Fairchild FLV117, FLV110)		703-00240
R1 to R5	1/4 W Carbon Resistor, 270 Ohms		7-9901-27
W1 to W7	Wire Jumper		Spec 5039
Z1 TO Z3	L.E.D. Display (Texas Instr. TIL312; Nat'l. Semicond. NSN711L; Monsanto MAN72)		201-17666
J501	12 Circuit Connector Housing (To Selector Logic)		712-00750
J505	6 Circuit Connector Housing (TO Selector Logic)		706-00750
	3 Circuit Universal Connector Plug Housing (To Selector Lights)		301-0749
	Incandescent Lamp Socket (2) (Display Lamps)		200-1278
	Wire Tie		701-0880
	Digital Display Printed Circuit Board		401-07130

REF. DESIGNATION	DESCRIPTION	ROWE PART NO.		
	<b>Selector Logic Assembly 601-08060</b>			
	Selector Cover with Lettering	301-07636		
	Selector Logic Base	301-07625		
	Insulation Pad	202-17710		
	Insulated Base	202-17711		
	Selector Logic Circuit Board Assembly	601-07655		
	Consisting of:			
C501	Variable Capacitor, 5.1 to 50 pFD, 250V (JFD Electr. PVJ305A; Sprague-Goodman GKB50000; Johanson Mfg. 9305)	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 NSDu45; G.E. D40K2)	708-00302		
R501	1/4 W Carbon Resistor, 220 Ohms	7-9901-221		
R502	1/4 W Carbon Resistor, 1K	7-9901-102		
R503	1/4 W Carbon Resistor, 220 Ohms	7-9901-221		
R504	1/4 W Carbon Resistor, 1K	7-9901-102		
R505	1/4 W Carbon Resistor, 220 Ohms	7-9901-221		
R506	1/4 W Carbon Resistor, 1K	7-9901-102		
R507 to R513	1/4 W Carbon Resistor, 100 Ohms	7-9901-101		
R514 to R523	1/4 W Carbon Resistor, 1.5K	7-9901-152		
R524 to R527	1/4 W Carbon Resistor, 5.6K	7-9901-562		
R528	1/4 W Carbon Resistor, 1.5K	7-9901-153		
R529	1/4 W Carbon Resistor, 1K	7-9901-102		
R530	1/4 W Carbon Resistor, 15K	7-9901-153		
R531	1/4 W Carbon Resistor, 1K	7-9901-102		
R532	1/4 W Carbon Resistor, 15K	7-9901-153		
R533	1/4 W Carbon Resistor, 1K	7-9901-102		
R536	1/4 W Carbon Resistor, 15K	7-9901-153		
R537, 538	1/4 W Carbon Resistor, 5.6K	7-9901-562		
R539 to R541	1/4 W Carbon Resistor, 100 OHMS	7-9901-101		
S501	4 Unit DIP Switch (Molex 01-07-0104; Amp 435166-2; CTS 206-4) (Optional)	702-00430		
S502	3PDT Slide Switch (U.I.D. Electronics SW-032PX)	304-07623		
W502 to W504	Wire Jumper	Spec5039		
Z501	MOS Selector-Display Module (L.S.I. Computer System LSI2002A)	302-07427		
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		



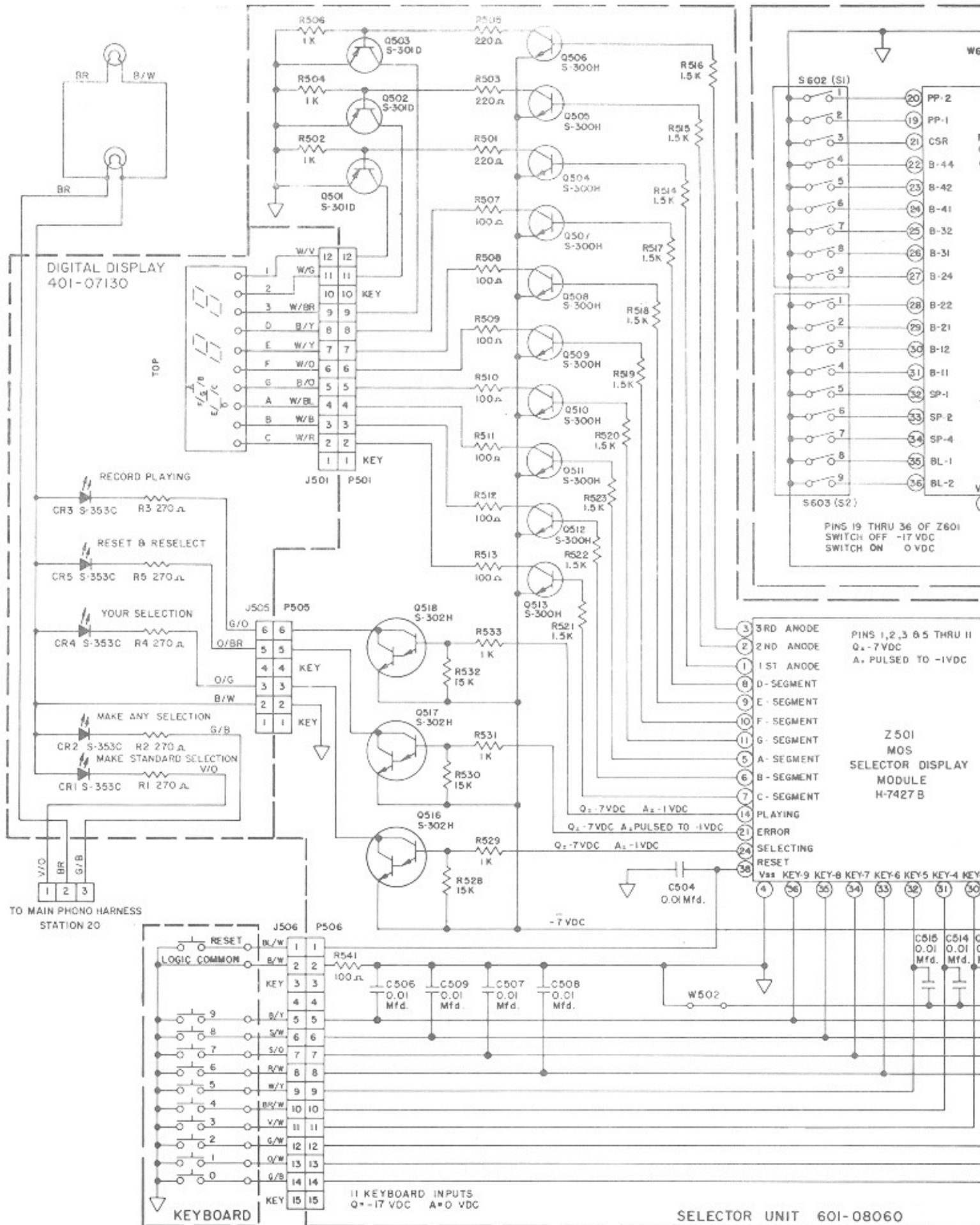
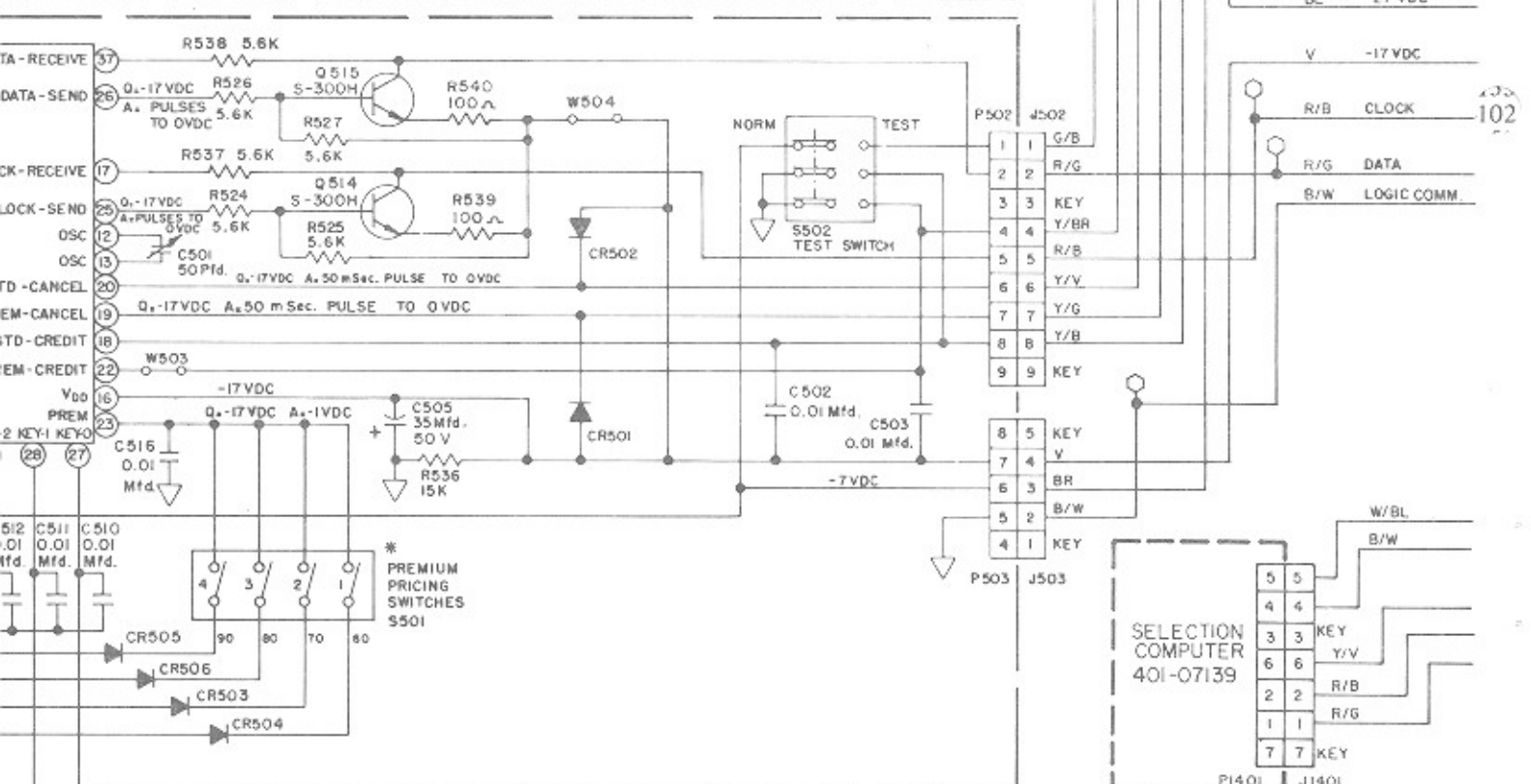
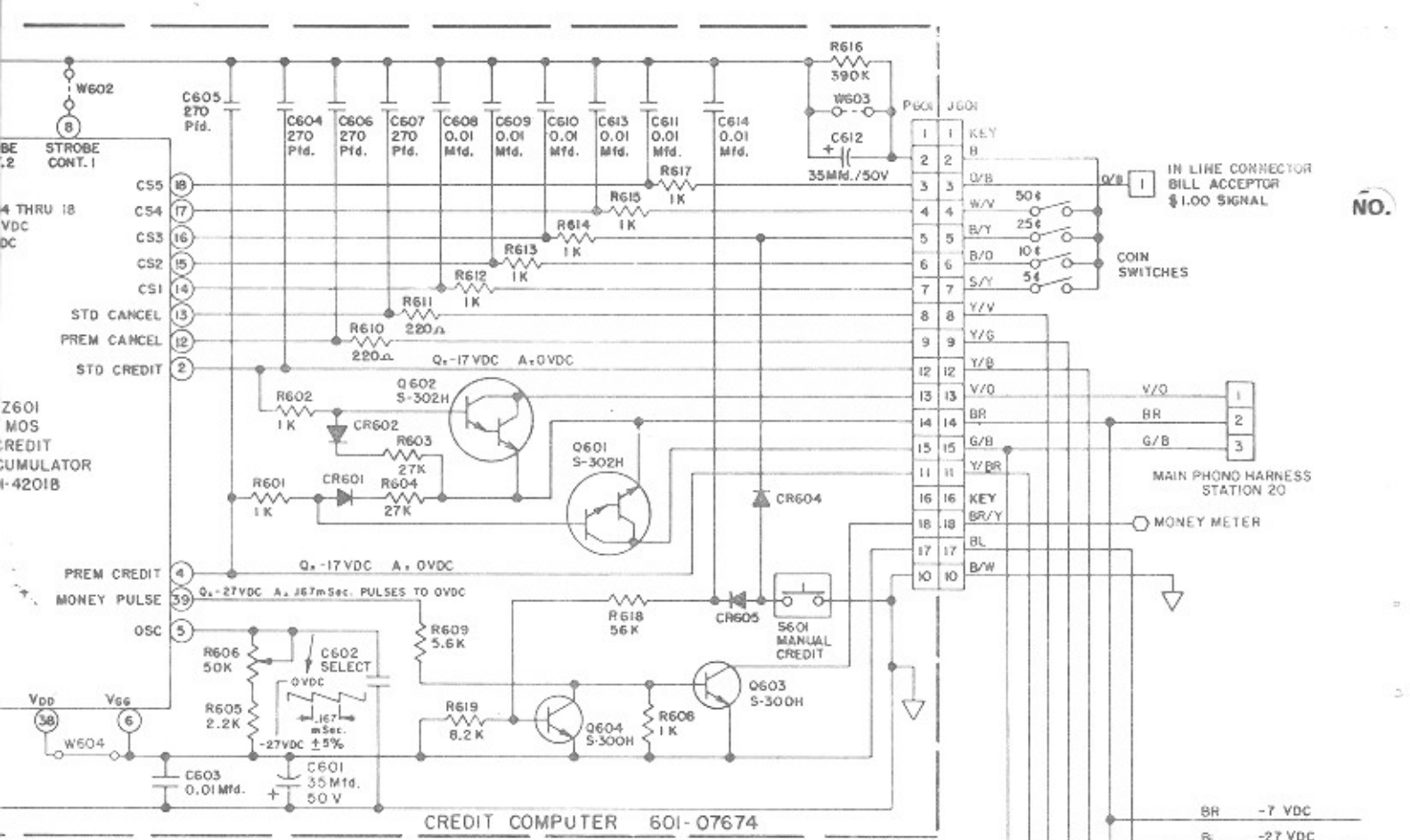




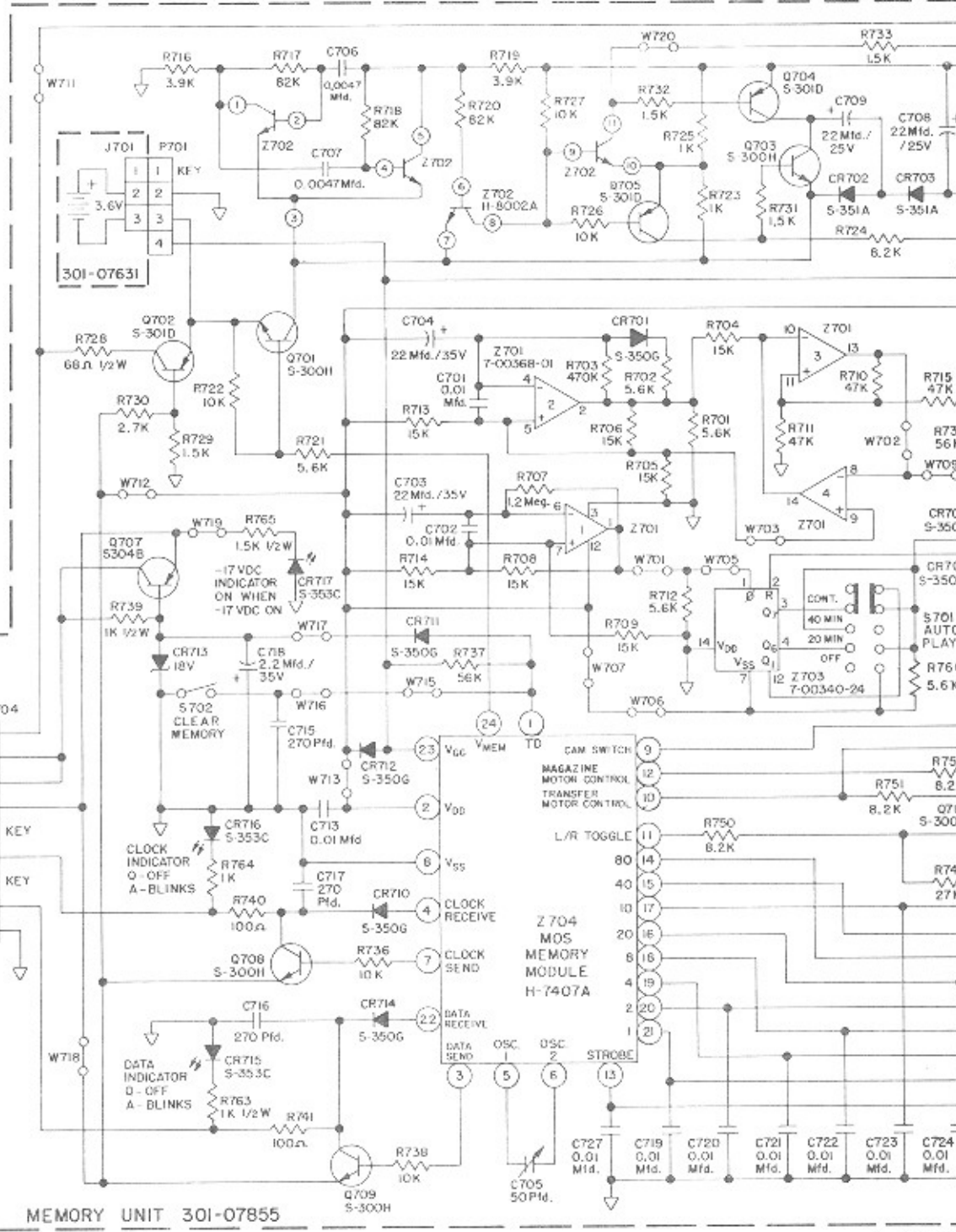
FIGURE 2-10. R-83 PHONOGRAPH SCHEMATIC DIAGRAM (Page 1 of 2)





### Z704 PIN VOLTAGES

1. POWER ON, S702 OFF -17 VDC  
POWER OFF, S702 OFF -11 VDC  
S702 ON -1 VDC
2. -17 VDC  
S702 ON -1 VDC
3. 0 -17 VDC  
A: PULSES TO 0 VDC
4. 0 -0 VDC  
A: PULSES TO -17 VDC
5.  -5V
6.  -12V
7. 0 -17 VDC  
A: 10 PULSES TO 0 VDC
8. 0V
9. 0 -17 VDC  
A: 0 TO -2VDC
- 10, 11, 12. 0 -7 VDC  
A: 0 TO -1VDC
- 13-21. 0 -17 VDC  
A: 0 TO -1VDC
22. 0 -0 VDC  
A: PULSES TO -17 VDC
23. POWER ON -16 VDC  
BATTERY ON -11 VDC
24. -5 VDC



MEMORY UNIT 301-07855

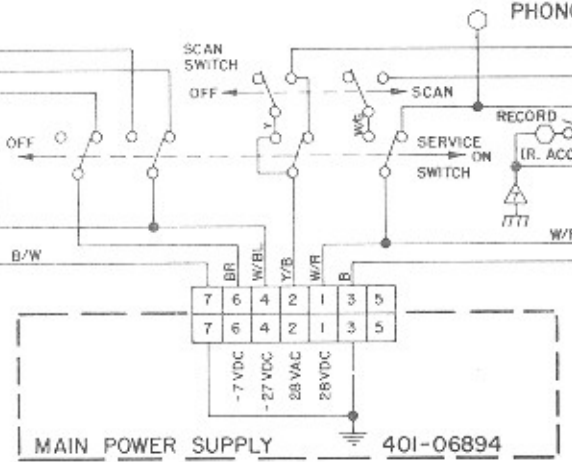
### COLOR CODE:

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

- △ AMPLIFIER MUTE PLUG
- QUIESCENT
- A ACTIVE
- ∇ LOGIC COMMON
- ⊥ POWER COMMON
- ⏏ CHASSIS COMMON
- \* OPTIONAL KIT
- TERMINAL STRIPS

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



MAIN POWER SUPPLY

401-06894



REF. DESIGNATION	DESCRIPTION	ROWE PART NO.
	<b>MODEL R-83 PHONOGRAPH</b>	
	Harness and Console Assembly (See Figure 1 of Parts Catalog for Parts)	601-08571
	Main Power Supply, 120V (See Parts Catalog and Schematic for Parts List)	401-06894
OR	Main Power Supply, 220V (See Schematic for Parts List)	402-65079
	Record Changer Mechanism Assembly (See Parts Catalog for Parts List)	604-03065
	Encoder Assembly (See Parts Catalog for Parts List)	601-07667
	<b>Memory Unit Assembly 601-07666</b>	
	Cover with Lettering	301-07858
	Mounting Plate	401-07143
	Insulation Pad	203-17711
	Insulation Base	206-17710
	Battery Retaining Plate	201-17960
	Battery Assembly consisting of:	201-17740
	Rechargeable NICAD Battery Pack (Burgess 475SC; G.E. 41B905CD19-G1)	301-07631
	Harness with Connector	201-17675
	Connector	703-00755
	Memory Unit Circuit Board Assembly consisting of:	601-08584
C701, C702	0.1 MFD Ceramic Disc Capacitor, 100V	721-00224
C703, C704	22 MFD Low Leakage Electrolytic Capacitor, 35V	710-00238
C705	5.1 to 50 pFD Trimmer Capacitor (JFD PVJ305A; Sprague GK850000)	701-00260
C706, C707	0.0047 MFD Mylar Capacitor, 100V	716-00240
C708 to C711	22 MFD Electrolytic Capacitor, 25V	703-00280
C712	270 pFD Ceramic Disc Capacitor, 100V	708-00224
C713	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
C714	2.2 MFD Tantalum Capacitor, 35V	712-00251
C715 to C717	270 pFD Ceramic Disc Capacitor, 100V	708-00224
C718	2.2 MFD Tantalum Capacitor, 35V	712-00251
C719 to C727	0.01 MFD Ceramic Disc Capacitor, 100V	721-00224
CR701	Silicon Diode	707-00350
CR702 to CR705	Germanium Diode	701-00351
CR706 to CR712	Silicon Diode	707-00350
CR713	Zener Diode (1N4746A)	716-00355
CR714	Silicon Diode	707-00350
CR715 to CR717	Light Emitting Diode (TI TIL220; National NSL5056; Fairchild FLV110, FLV117)	703-00353
Q701	NPN Silicon Transistor (Motorola, Fairchild, National MPSA06; TI SKA-3368)	708-00300
Q702	PNP Silicon Transistor (Motorola, Fairchild, National MPS-A56)	704-00301
Q703	NPN Silicon Transistor (Same as Q701)	708-00300
Q704 to Q706	PNP Silicon Transistor (Same as Q702)	704-00301
Q707	PNP Silicon Transistor (Motorola, T.I. TIP32B; R.C.A. RCA32B; Fairchild 2N6126)	702-00304
Q708 to Q713	NPN Silicon Transistor (Same as Q701)	708-00300
R701, R702	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R703	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R704 to R706	1/4W Carbon Resistor, 15K, 5%	7-9901-153
R707	1/4W Carbon Resistor, 1.2 Meg, 5%	7-9901-125
R708, R709	1/4W Carbon Resistor, 15K, 5%	7-9901-153
R710, R711	1/4W Carbon Resistor, 47K, 5%	7-9901-473
R712	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R713, R714	1/4W Carbon Resistor, 15K, 5%	7-9901-153
R715	1/4W Carbon Resistor, 47K, 5%	7-9901-473
R716	1/4W Carbon Resistor, 3.9K, 5%	7-9901-392
R717, R718	1/4W Carbon Resistor, 82K, 5%	7-9901-823
R719	1/4W Carbon Resistor, 3.9K, 5%	7-9901-392
R720	1/4W Carbon Resistor, 82K, 5%	7-9901-823
R721	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R722	1/4W Carbon Resistor, 10K, 5%	7-9901-103
R723	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R724	1/4W Carbon Resistor, 8.2K, 5%	7-9901-822
R725	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R726, R727	1/4W Carbon Resistor, 10K, 5%	7-9901-103
R728	1/2W Carbon Resistor, 68 Ohms	719-00102
R729	1/4W Carbon Resistor, 1.5K, 5%	7-9901-152
R730	1/4W Carbon Resistor, 2.7K, 5%	7-9901-272
R731 to R733	1/4W Carbon Resistor, 1.5K, 5%	7-9901-152
R734	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R735	1/4W Carbon Resistor, 56K, 5%	7-9901-563
R736	1/4W Carbon Resistor, 10K, 5%	7-9901-103

(Continued in next column)

R-83 PHONOGRAPH ELECTRONIC PARTS LIST (Page 2 of 2)  
(See Schematic, page 2-23)

REF. DESIGNATION	DESCRIPTION	ROWE PART NO.
<b>Memory Unit Assembly (Continued)</b>		
R737	1/4W Carbon Resistor, 56K, 5%	7-9901-563
R738	1/4W Carbon Resistor, 10K, 5%	7-9901-103
R739	1/2W Carbon Resistor, 1K	719-00106
R740, R741	1/4W Carbon Resistor, 100 Ohms, 5%	7-9901-101
R742 to R744	1W Carbon Resistor, 2.2K	721-00108
R745 to R748	1/4W Carbon Resistor, 27K, 5%	7-9901-273
R749	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R750 to R753	1/4W Carbon Resistor, 8.2K, 5%	7-9901-822
R754 to R762	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R763, R764	1/2W Carbon Resistor, 1K	719-00106
R765	1/2W Carbon Resistor, 1.5K	705-00104
S701	"Auto Play" 4 Position Double Pole Slide Switch (CW Ind. G141-L-3)	301-07862
S702	"Clear Memory" Pushbutton Switch (Oak Series 415)	201-17733
Z701	Quad Comparator I.C. (Nat'l LM3302N, LM339N; Fairchild MA3302P; Motorola MC3302P)	701-00368
Z702	I.C. Transistor Array (Fairchild CA3046; Sprague ULN2046A, ULN2086A; RCA CA3146AE, CA3146E, CA3046, CA3086)	301-08002
Z703	CMOS 7 Stage Binary Counter I.C. (RCA CD4024BP)	724-00340
Z704	MOS Memory Module I.C. (L.S.I. LSI2001A)	301-07407
	Two Pin Receptacle (Molex 09-60-1021)	702-00750
	Three Pin Receptacle (Molex 09-60-1031)	703-00750
	Four Pin Receptacle (Molex 09-60-1041)	704-00750
	Eight Pin Receptacle (Molex 09-60-1081)	708-00750
	Printed Circuit Board	601-08583
<b>Mechanism Control Unit Assembly 401-06905</b>		
	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 Semiconductors NSL-5056)	703-00353
CR818, CR819	Silicon Diode (Same as CR801)	702-00350
Q801	Triac Thyristor (RCA T2801B, T2800B, T2500B; Texas Instr. TIC226B)	703-00381
Q802	NPN Silicon Transistor (Motorola, Fairchild, National Semiconductor MPS-A06)	708-00300
Q803	PNP Darlington Power Silicon Transistor (Texas Instr. TIP136; Motorola 2N6041)	701-00308
Q804	PNP Silicon Transistor (Motorola, Fairchild, National Semiconductor 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, 5%	7-9901-180
R802	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R803	1/4W Carbon Resistor, 390 Ohms, 5%	7-9901-391
R804	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R805	1/4W Carbon Resistor, 560 Ohms, 5%	7-9901-561
R806	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R807	1/4W Carbon Resistor, 100 Ohms, 5%	7-9901-101
R808, R809	1/2W Carbon Resistor, 1.5K	705-00104
R810	1/4W Carbon Resistor, 560 Ohms, 5%	7-9901-561
R811	1/4W Carbon Resistor, 27K, 5%	7-9901-273
R812	1/4W Carbon Resistor, 2.7K, 5%	7-9901-272
R813	1/4W Carbon Resistor, 1K, 5%	7-9901-102
R814	1/4W Carbon Resistor, 5.6K, 5%	7-9901-562
R815 to R817	1/4W Carbon Resistor, 1.5K, 5%	7-9901-152
R819	1/2W Carbon Resistor, 1.8K,	706-00104
W802 to W804,		
W806 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
	Rectangular Washer (2 Required)	201-17761
	Mica Washer (2 Required)	201-15208
	Mechanism Control Printed Circuit Wiring Board	401-06899



MAIN POWER SUPPLY (120V) 401-06894 (See also Figure 6 — Parts Catalog)  
 MAIN POWER SUPPLY (220V) 402-65079 (See also Figure 6 — Parts Catalog)

POWER SUPPLY CIRCUIT BOARD ASSEMBLY 401-06850

C1001	0.1 MFD Mylar Capacitor, 100V (Paktron FM100; 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	1.250 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 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 Amp Cartridge Fuse (Buss MDL)	705-00721
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	7-9901-332
R1003	1/4W Film Resistor, 390 Ohms $\pm 2\%$	7-9902-391
R1004	1/4W Carbon Resistor, 3.3K	7-9901-332
R1005	1/4W Film Resistor, 4.7K $\pm 2\%$	7-9902-472
R1006	1/2W Carbon Resistor, 3.3K	720-00107
R1007	2W Wirewound Resistor, 10 Ohms	704-00113
R1008	1/4W Carbon Resistor, 1.2K	7-9901-122
R1009	1/4W Carbon Resistor, 2.2K	7-9901-222
R1010	1/4W Carbon Resistor, 47K	7-9901-473
R1011	1/4W Carbon Resistor, 15K	7-9901-153
R1012	2W Wirewound Resistor, 0.47 Ohm (I.R.C. Type BWH)	714-00113
R1013	1/4W Carbon Resistor, 3.3K	7-9901-332
R1014	1/4W Film Resistor, 68 Ohms $\pm 2\%$	7-9902-680
R1015	1/4W Carbon Resistor, 3.3K	7-9901-332
R1016	1/2W Carbon Resistor, 330 Ohms	719-00107
R1017	1/4W Film Resistor, 560 Ohms $\pm 2\%$	7-9902-561
R1018	1/4W Fixed Film Resistor, 27K $\pm 2\%$	7-9902-273
R1019	1/4W Fixed Film Resistor, 4.22K $\pm 2\%$ (R-Ohm Corp.; TRW Electronics; Dale Electronics)	702-00122
R1020, R1021	1/4W Fixed Film Resistor, 15K $\pm 2\%$	7-9902-153
R1022	1/4W Carbon Resistor, 1K	7-9901-102
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)	706-08001
Fuse Clip (6 Required)	200-50755
Power Supply Circuit Board	601-07686

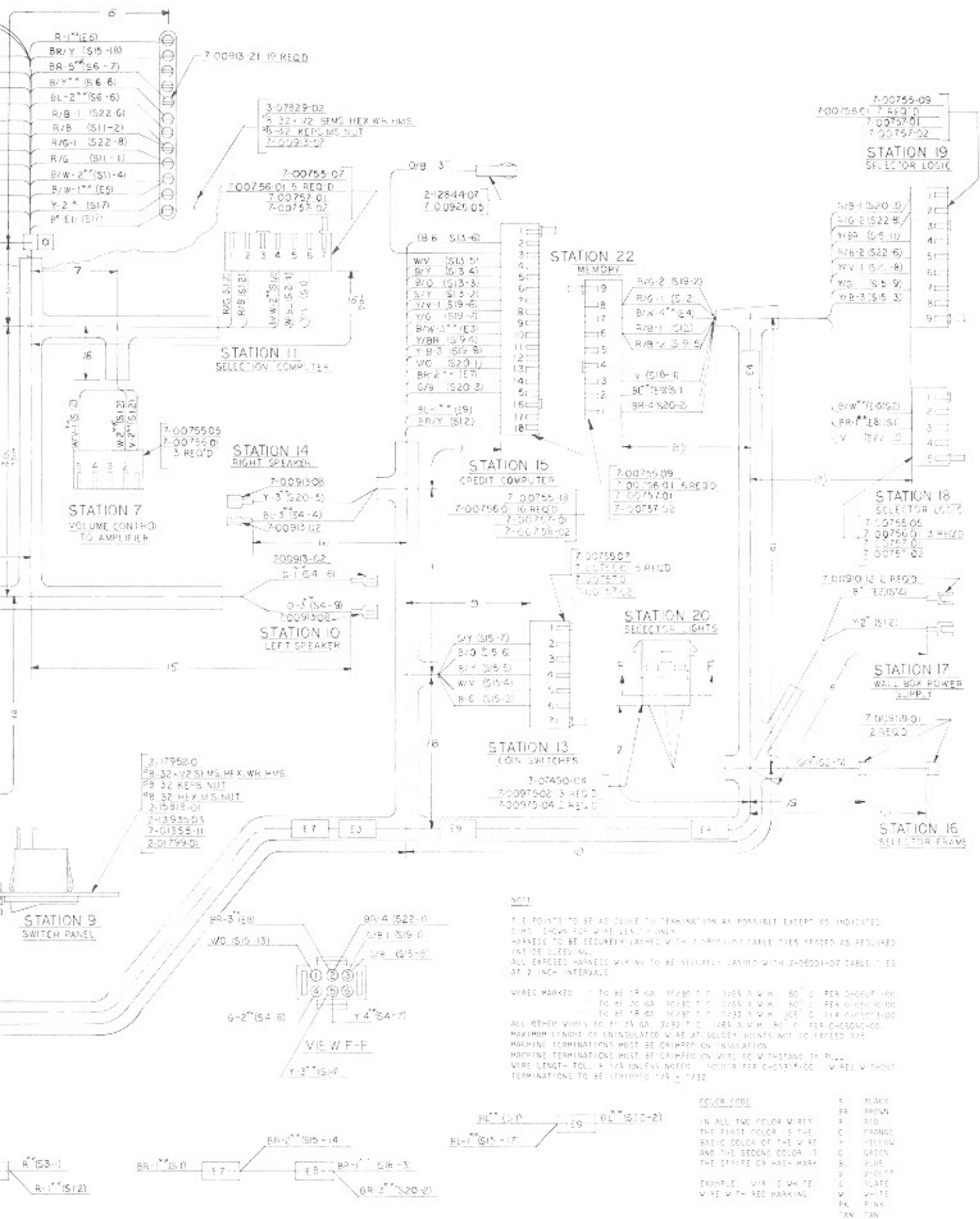
VOLTAGE INDICATOR (L.E.D.) CIRCUIT BOARD ASSEMBLY 401-06960

CR1101	Silicon Diode (Selected 1N914B; 1N4448; 1N4148)	707-00350
CR1102 to CR1105	Light Emitting Diode (Texas Instr. TL-220; Nat'l. Semi-Cond. NSL-5056; Hewlett Packard 5082-488D)	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











**Selection Computer Assembly**

**401-07139**

	Cover with Lettering	301-07860
	Display Window Light Filter	204-17819
	Mounting Plate	301-07861
	Insulation Pad	207-17710
	Insulation Base	204-17711
	Selection Computer Circuit Board consisting of:	601-07434
BT1401	Battery Assembly	201-17965
	Rechargeable NICAD Battery Pack (Soft Storage Battery Div. 2VRO.5AA)	302-07631
	3 Pin MATE-N-LOK Receptacle (Amphenol 1-480304-1)	201-12444
C1401	2.2 MFD Tantalum Capacitor, 20V	707-00251
C1402,C1403	470 pFD Ceramic Disc Capacitor, 100V	701-00224
C1404	2.2 MFD Tantalum Capacitor, 20V	707-00251
CR1401,CR1402	Silicon Diode	707-00350
CR1403	Zener Diode, 15V -1% (1N965B)	722-00355
CR1404	Zener Diode, 5.1V -5% (1N4733A)	701-00355
CR1405	Silicon Diode	707-00350
Q1401	NPN Silicon Transistor (National, Fairchild, Motorola MPS-A06;T.I. SKA-3368)	708-00300
R1401	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1402	1W Carbon Resistor, 100 Ohms	704-00103
R1403	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1404	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1405	Trimmer Potentiometer, 50K (Bourns 3389; Weston 840P; CTS 362Y)	202-15207
R1406	1/4W Carbon Resistor, 27K, 5%	7-9901-273
R1407	1/4W Carbon Resistor, 8.2K, 5%	7-9901-822
R1408	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1409	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1410	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1411	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1412	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1413	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1414	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1415	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1416	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1417	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1418	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1419	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1420	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1421	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1422	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1423	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1424	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1425	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1426	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1427	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1428	1/4W Carbon Resistor, 470K, 5%	7-9901-474
R1429	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1430	2 W Carbon Resistor, 200 Ohms	723-00105
R1431,R1432	1/4W Carbon Resistor, 8.2K, 5%	7-9901-822
R1433	2W Carbon Resistor, 390 Ohms	703-00126
R1434	1/4W Carbon Resistor, 8.2K, 5%	7-9901-822
R1435	1/4W Carbon Resistor, 680 Ohms, 5%	7-9901-681
R1436	1/4W Carbon Resistor, 220 Ohms, 5%	7-9901-221
R1437,R1438	1/4W Carbon Resistor, 100K, 5%	7-9901-104
R1440	1/4W Carbon Resistor, 220 Ohms, 5%	7-9901-221
S1401	"RESET" Pushbutton Switch (Oak Series 415)	201-17733
S1402	"MOST POPULAR/LEAST POPULAR" DPDT Slide Switch (U.I.D. Elect. SW622-P-8K-T6)	305-07623
S1403	"ADVANCE" Pushbutton Switch (Oak Series 415)	201-17733
Z1401	Vacuum Fluorescent Display (Futaba 4-BT-03; Nippon Electric LD8165)	201-15395
Z1402	Micro Computer (Rockwell MM75)	701-00364
Z1403	CMOS Memory, 256K X 4 RAM	701-00366
P1401	Two Pin Receptacle (Molex 09-60-1021)	702-00750
	Three Pin Receptacle (Molex 09-60-1031)	703-00750
	Battery Harness consisting of:	201-17964
	Pin Housing (Amphenol 1-480319-0)	206-12445
	Display Retainer	201-17954
	Printed Circuit Board	601-07433

**SELECTION COMPUTER ELECTRONIC PARTS LIST**