

SECTION 5 - TROUBLESHOOTING

INTRODUCTION

The phonograph incorporates several modules which plug in for rapid service. The block diagram (page 84) shows the modules and the wiring between them. It also shows wiring between modules and components (switches, motors, coils).

The most likely cause of phonograph problems are:

1. Continuous or intermittent opens in harness. The cause can be; the wiring, the terminal, or a bad wire to terminal crimp.
2. A defective module. A list is shown below.

It is important to troubleshoot logically so that effort is not wasted in removing and replacing the wrong parts. Most failures are caused by minor defects, such as loose connections or dirty contacts. Check the following before replacing any parts:

1. Check that all plugs are firmly seated.
2. Check that connector pins are not bent, broken or pushed through the back of the connector when mated.
3. Check that wires are not broken at connector pins.

CONTINUOUS PLAY

If continuous free play of the phonograph is desired the Central Control Computer may be programmed to play selections continuously. Enter the programming mode (Refer to the section on Programming and Credit Selection System for information on how to program the computer) and enter 255 in memory location 27 for continuous free play. When normal play is desired reset memory location 27 to 0.

PART NO.	DESCRIPTION	NOTES
4-07775-02	Central Control Computer (C.C.C.)	Module contains Circuit Bd. Ass'y - C.C.C. 6-09738-02
4-07221-02	Mechanism Control	Module contains Circuit Bd. Ass'y - Mech Control 6-08708-03
4-07706-01	Power Supply	

TROUBLESHOOTING CHARTS

One of the best ways to isolate a problem is to determine the exact state of the phonograph when the failure occurs. This means recording the condition of digital display, status LED's, gripper bow, detent pawl, magazine, cam switches, etc.

This information can help you identify the cause of intermittent or continuous failures.

The chart has three columns. The trouble column lists different types of failures. The symptom column shows the state of the phonograph when the failure occurs. The last column shows the probable cause.

TROUBLE	SYMPTOM	PROBABLE CAUSE
Phonograph fails to operate when power is turned on	LEDs on power supply and fluorescent lights fail to light	<ol style="list-style-type: none"> 1. Rear power switch off 2. Plug not in wall 3. Wall circuit is dead 4. 10 amp circuit breaker tripped 5. Wiring to rear power switch 6. Rear power switch
	LEDs on power supply fail to light but fluorescent lamps lit	<ol style="list-style-type: none"> 1. 2 amp circuit breaker tripped 2. Power Supply 3. 28 VAC overload from mag., transfer, or T.T. motor
	"+8VDC" LED on power supply fails to light but lights when phono harness at power supply is unplugged	<ol style="list-style-type: none"> 1. Central Control Computer 2. Mech Control 3. Wallbox interface 4. On/Service/Off switch 5. Wiring
		<p>NOTE:</p> <p>To locate problem reconnect phono harness and unplug connectors in order below. If +8VDC LED lights replace last unit unplugged.</p> <ol style="list-style-type: none"> 1. Wallbox Interface (J5) 2. Central Control Computer (J6) 3. Mech Control Harness (J205) 4. Mech Control (J206)
	"+28VDC" LED on Power Supply fails to light but lights when Phono Harness at Power Supply is unplugged	<ol style="list-style-type: none"> 1. Mech Control Board 2. Detent Coil 3. Wiring

TROUBLE	SYMPTOM	PROBABLE CAUSE
Magazine does not rotate when a Selection is made	"Mag. Motor" and "Detent" LED's on, detent is actuated	1. Wiring to Magazine Motor 2. Magazine Motor 3. Mech Control Board
	"Mag. Motor" and "Detent" LED's ON, Detent not actuated	1. Wiring to Detent Coin 2. Detent Coil 3. Mech Control Board 4. Inner Cam Switch N.C. Shorted to Common
	"Mag. Motor" LED OFF or "Detent" LED ON	1. Wiring from Central Control Computer to Mech Control Board 2. Central Control Computer 3. Mech Control Board
Magazine Roates Continuously	"Mag Motor" LED OFF	1. Wiring to Magazine Motor 2. Mech Control Board
	"Mag. Motor" LED ON, and "Opt. Sw. Index" LED not flashing, and/or "Opt. Sw. Home" LED does not flash at record number 99.	1. Optical Switch 2. Wiring to Optical Switch 3. Mech Control Board
	"Mag. Motor" LED on and both optical Optical Sw. LED's Normal	1. Wiring from Central Control Computer to Mech Control Bd. 2. Central Control Computer 3. Mech Control Board
Magazine Stop at Wrong Record	Stops at Random Record Anywhere in Magazine	1. Faulty Optical Switch 2. Wiring to Optical Switch 3. Heavy Dirt Buildup in Optical Switch
	Stops One or Two Records Before Record Selected	1. Optical Switch Adjustment 2. Magazine Not full of Records (out of balance) 3. Broken Sprag Lever Guide
	Stops One or Two Records After Record Selected	1. Faulty Optical Switch 2. Optical Switch Adjustment 3. Broken Sprag Gear 4. Sprag Linkage Binding
	Stops One Half to One Record Position Off Before or After Record Selected	1. Broken Sprag Gear 2. Broken Sprag Guide 3. Sprag Linkage Binding or Needs Adjustment
Record does not Transfer	"Tran. Motor" LED is ON	1. Wiring to Transfer Motor 2. Mech Control Board 3. Transfer Motor
	"Tran. Motor" LED is OFF	1. Wiring from Central Control Computer to Mech Control Bd. 2. Central Control Computer 3. Mech Control Board
	"Tran. Motor" LED comes on and transfer starts but LED and Motor turn off when cam leaves inner cam Switch	1. Outer Cam Switch N.O. Shorted to Common 2. Central Control Computer 3. Mech Control Board

TROUBLE	SYMPTOM	PROBABLE CAUSE
Transfer Starts when Power is applied and runs continuously	"Tran. Motor" LED is OFF	1. Mech Control Board 2. Wiring to Motor
	"Tran Motor" LED is ON	1. Central Control Computer 2. Mech Control Board 3. Wiring from Central Control Computer to Mech Control 4. Open Circuit-Inner Cam N.O. Contact 5. Open Circuit-Inner Cam Sw. Common
Transfer starts and runs continuously after selection is located	"Tran. Motor" LED comes on when Motor starts and stays ON	1. Wiring to Outer Cam Switch 2. Outer Cam Switch 3. Central Control Computer 4. Wiring from Central Control Computer to Mech Control 5. Mech Control Board 6. Inner Cam Switch N.O. Contact Shorted to Common 7. Open Circuit-Outer Cam Switch Common
No Sound	Always Muted	1. Central Control Computer
No Mute During Scan	Motor Noise in Speakers	1. Central Control Computer
Turntable motor does not run	"T.T. Motor" LED is ON	1. Wiring to T.T. Motor 2. T.T. Motor 3. Mech Control
	"T.T. Motor LED is OFF	1. Wiring from Central Control Computer to Mech Control Bd. 2. Central Control Computer 3. Mech Control Board
Record will not Cancel when Finished Playing	"Cancel" LED is ON	1. Wiring from Mech Control to Central Control Computer 2. Central Control Computer 3. Also see "Record Does not Transfer"
	"Cancel" LED is OFF	1. Wiring to Cancel Switch 2. Cancel Switch 3. Mech Control Board
Record Cancels without Playing	"Cancel" LED stays ON	1. Short in Cancel Sw. Wiring 2. Cancel Switch 3. Mech Control Board
	"Cancel" LED flashes ON as Record sets down	1. Auto Cancel Misadjusted
	"Cancel" LED does not flash	1. Wiring to outer cam Switch 2. Outer cam Switch 3. Wiring from Mech Control to Central Control Computer 4. Mech Control Board 5. Central Control Computer

TROUBLE	SYMPTOM	PROBABLE CAUSE
Left Side of Record Plays when Right Side Selected	"Toggle" LED is ON	1. Wiring to Toggle Coil(s) 2. Toggle Coil(s) 3. Mech. Control
	"Toggle" LED is OFF	1. Wiring from Central Control Computer to Mech Control Bd. 2. Central Control Computer 3. Mech Control Board
Money Counter or Play Counter Fails to Count	Fails To Count	1. Wiring To Counter 2. Counter 3. Mech. Control Board 4. Wiring from Central Control Computer to Mech Control 5. Central Control Computer
Phonograph is always in Service ("Memorec") Mode Of Operation	Record Number Times selected Display is always lit	1. On/Service/Off Switch 2. "+8 on Signal" Wiring 3. Central Control Computer
Phonograph will not go into Service Mode of Operation	Record Number Times selected Display will not light when On/Service/Off Switch is in Service Position	1. Central Control Computer 2. "+8 on Signal" Wiring 3. On/Service/Off Switch
No Credit	No Credit given by Coins and Dollar Bill	1. Central Control Computer
	No Credit given by Coins but Dollar Bill gives Credit	1. Coin Sw. common wiring 2. Central Control Computer
	One Value of Coin will not give Credit	1. Coin Rejected 2. Wiring To Coin Switch 3. Coin Switch 4. Central Control Computer
	Dollar Bill will not give Credit	1. Bill Acceptor 2. Wiring to Bill Acceptor 3. Central Control Computer
Wrong Credit	Credit for amount deposited does not agree with Price Card setting	1. One or more Coins did not register (See No Credit). 2. Central Control Computer programmed wrong. 3. Central Control Computer

TROUBLE	SYMPTOM	PROBABLE CAUSE
System does not respond to Keyboard	"Make Selection" LED not Lit	1. Insufficient Credit
	"Make Selection" LED Lit but entire Keyboard does not work	1. Shorted Keyboard Switch 2. Central Control Computer 3. Short in Keyboard Wiring
	"Make Selection" Led Lit but certain Keys to not work	1. Wiring from keyboard to Display Board 2. Keyboard 3. Digital Display Board 4. Central Control Computer
Digital Display does not work	Display Lights but Shows Wrong Information	1. Wiring from Central Control Computer to Display 2. Digital Display 3. Central Control Computer
	"+8 VDC" LED on Central Control Computer is Lit but Display Digits and LED Lamps will not Light	1. Wiring from Central Control Computer to Digital Display 2. Digital Display 3. Central Control Computer
	Certain LED Lamps and/or Digits will not Work	1. Wiring from Central Control Computer to Display 2. Digital Display 3. Central Control Computer
Miscellaneous Problems	Central Control Computer Display shows Err 1, Err 2, or Err 3.	1. Central Control Computer 2. Main Power Supply

SEQUENCE OF OPERATION

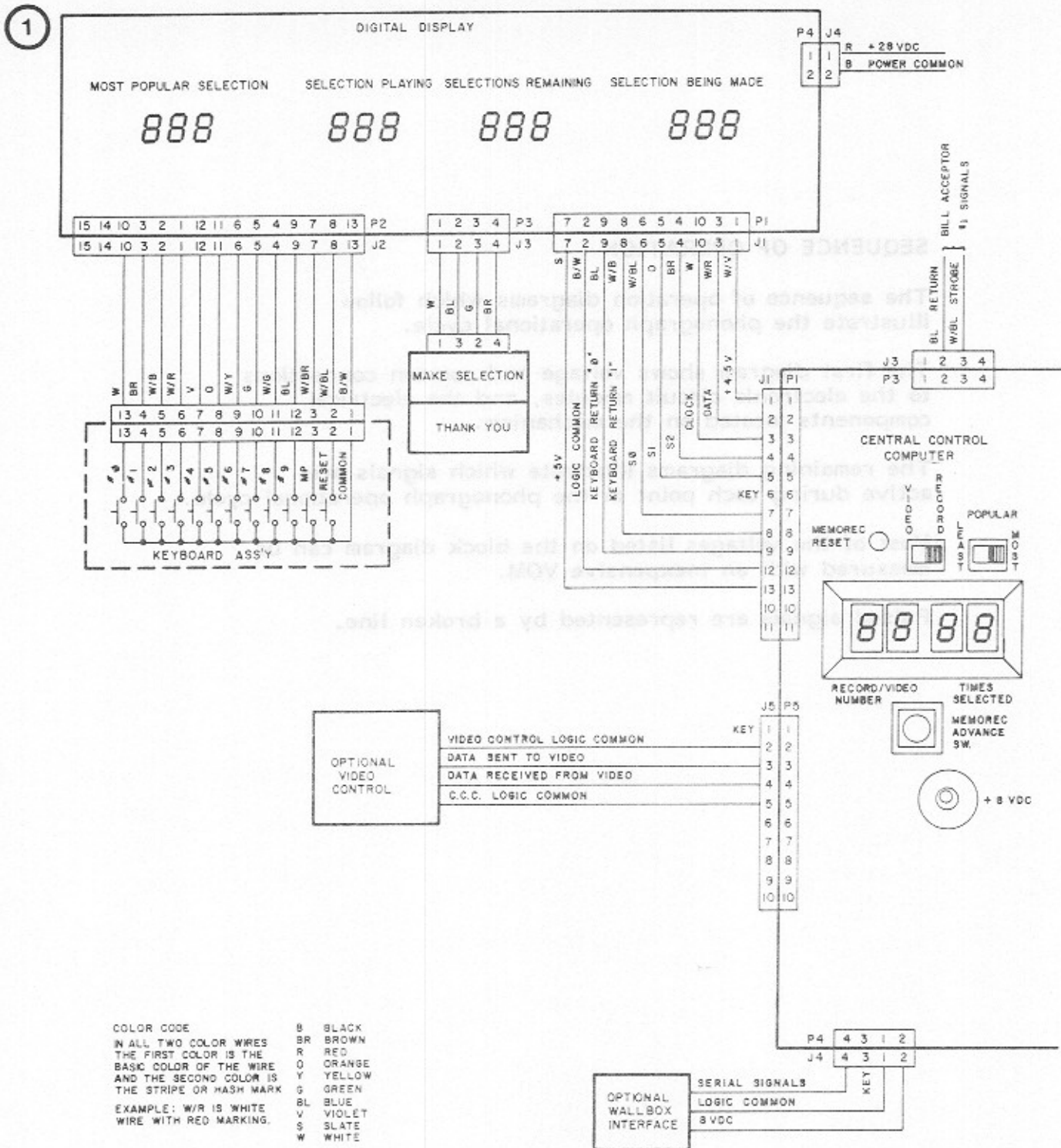
The sequence of operation diagrams which follow illustrate the phonograph operational cycle.

The first diagram shows voltage and common connections to the electronic circuit modules, and the electrical components located on the mechanism.

The remaining diagrams illustrate which signals are active during each point in the phonograph operational cycle.

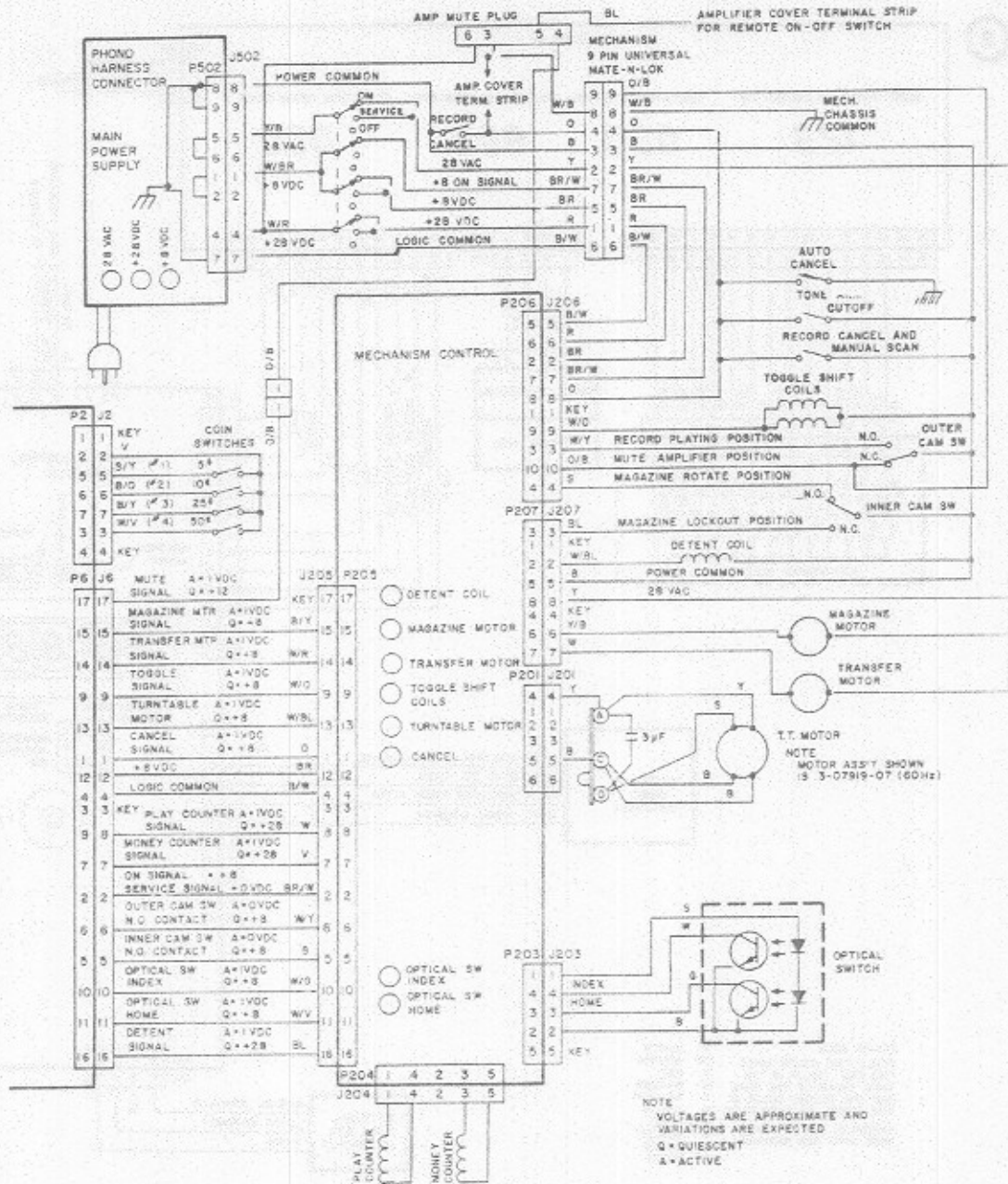
Most of the voltages listed on the block diagram can be measured with an inexpensive VOM.

Pulsed signals are represented by a broken line.



Power turned on, voltages and commons applied to circuits and components.

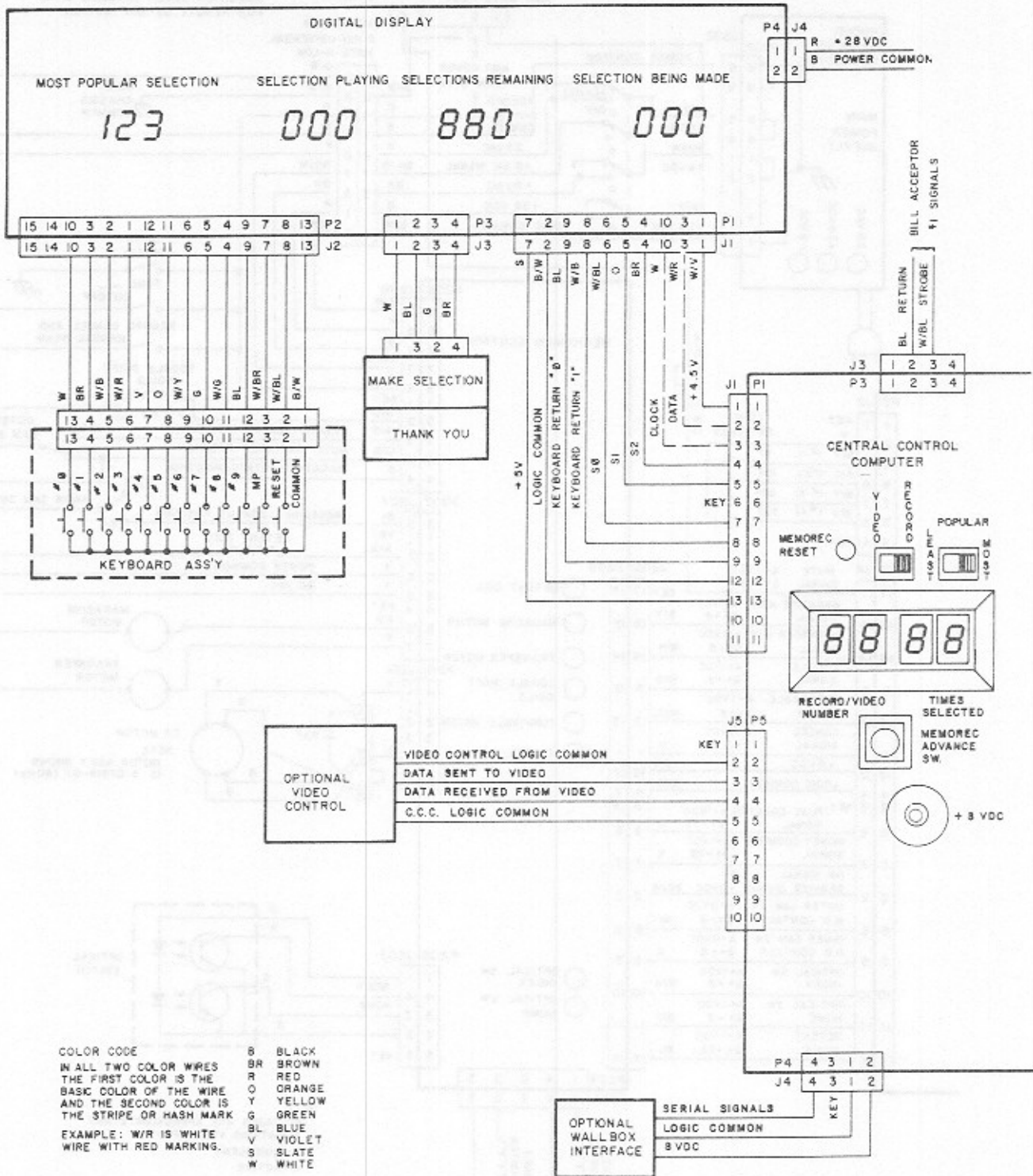
1. Power flows thru power cord and power switch to energize power supply. The three power supply LEDs light. The voltages go thru on-service-off switch and energize 28 VAC, +28 VDC, and +8 VDC busses. The "+8 VDC" LED on C.C.C. lights.
2. "28 VAC" goes to magazine motor, transfer motor, and mechanism control. The 28 VAC is routed thru mechanism control to the turntable motor.
3. "+28 VDC" goes to amplifier mute plug, and mechanism control.
4. "Power common" goes to outside record cancel, and manual scan switch, tonearm cutoff, toggle shift coils, inner and outer cam switches, detent coil, and mechanism control. It is routed thru mechanism control to play and money counters.



5. "+8 VDC and logic common" go to mechanism control. They are routed thru mechanism control to the C.C.C. and logic common to optical switch. The C.C.C routes them to the wallbox interface.
6. "+8 on Signal" is routed thru mechanism control to the C.C.C.*
7. "Mech. chassis common" goes to amplifier mute plug, amplifier cover terminal strip and auto cancel.

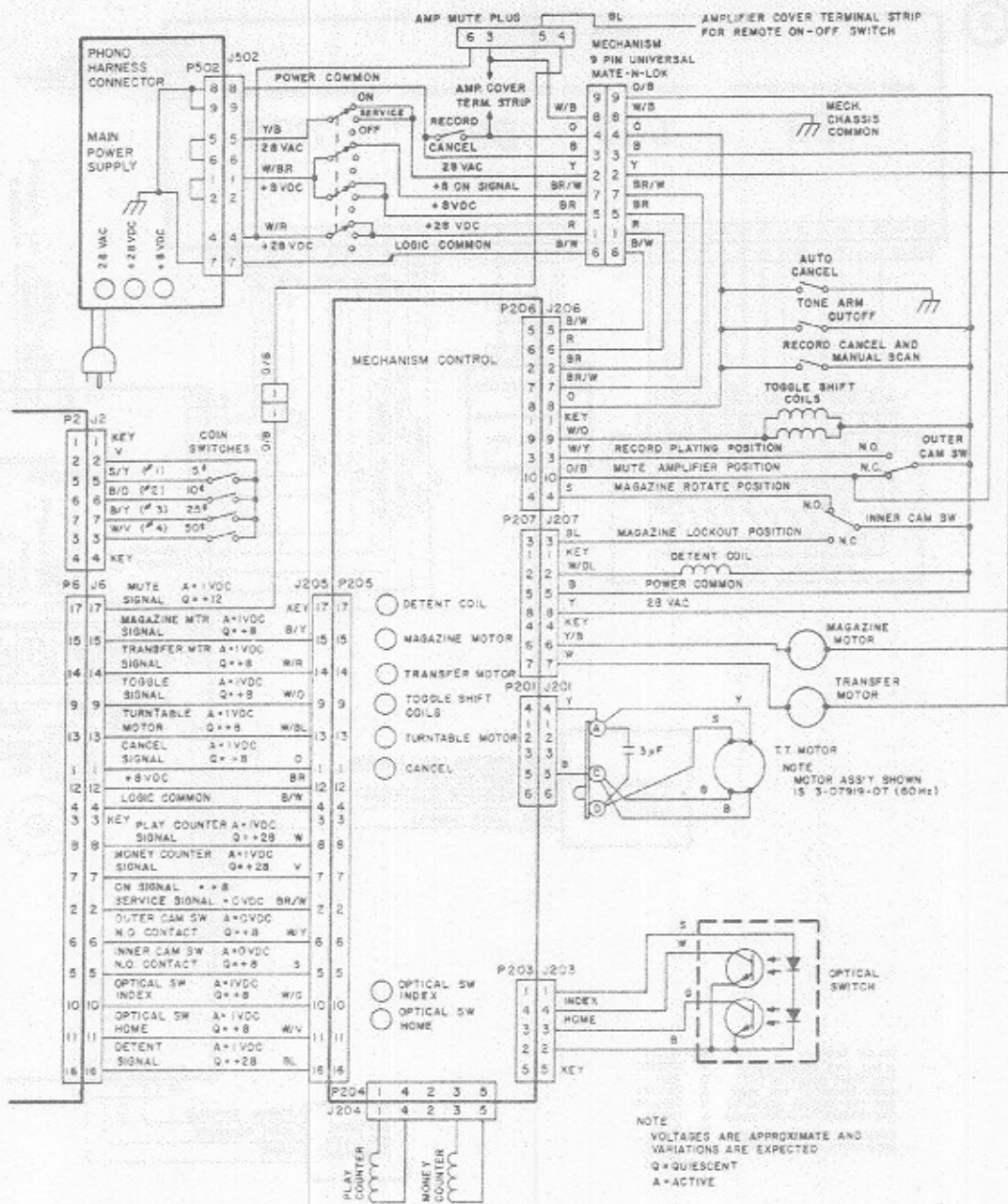
*C.C.C. = Central Control Computer

2



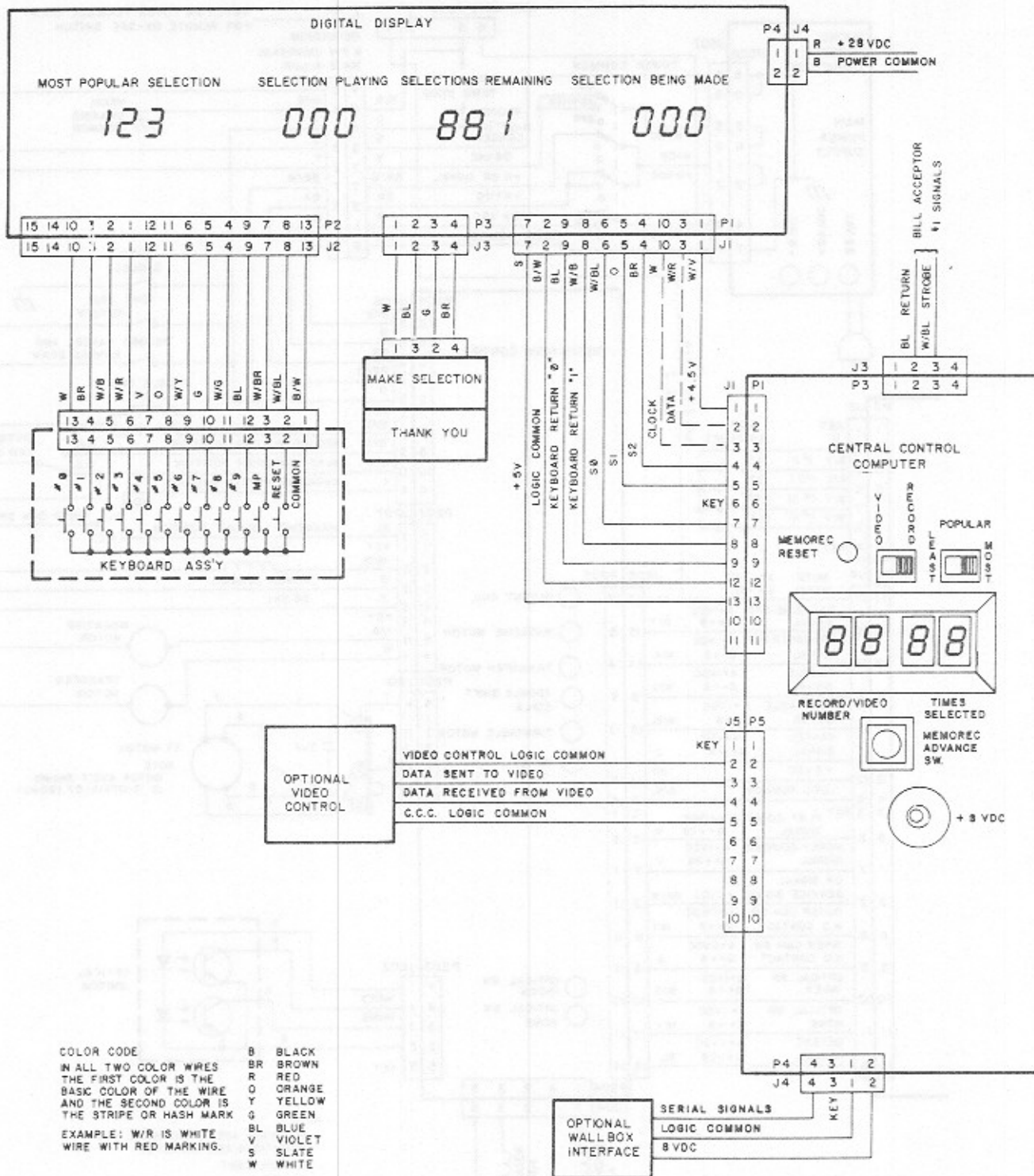
C.C.C. senses power turned on (no selections in memory, no credits)

1. The C.C.C. begins to constantly monitor the state of all switches and determines that the transfer arm (gripper bow) is in home position.
2. C.C.C. sends clock & data to digital display, causing the LED's to light.



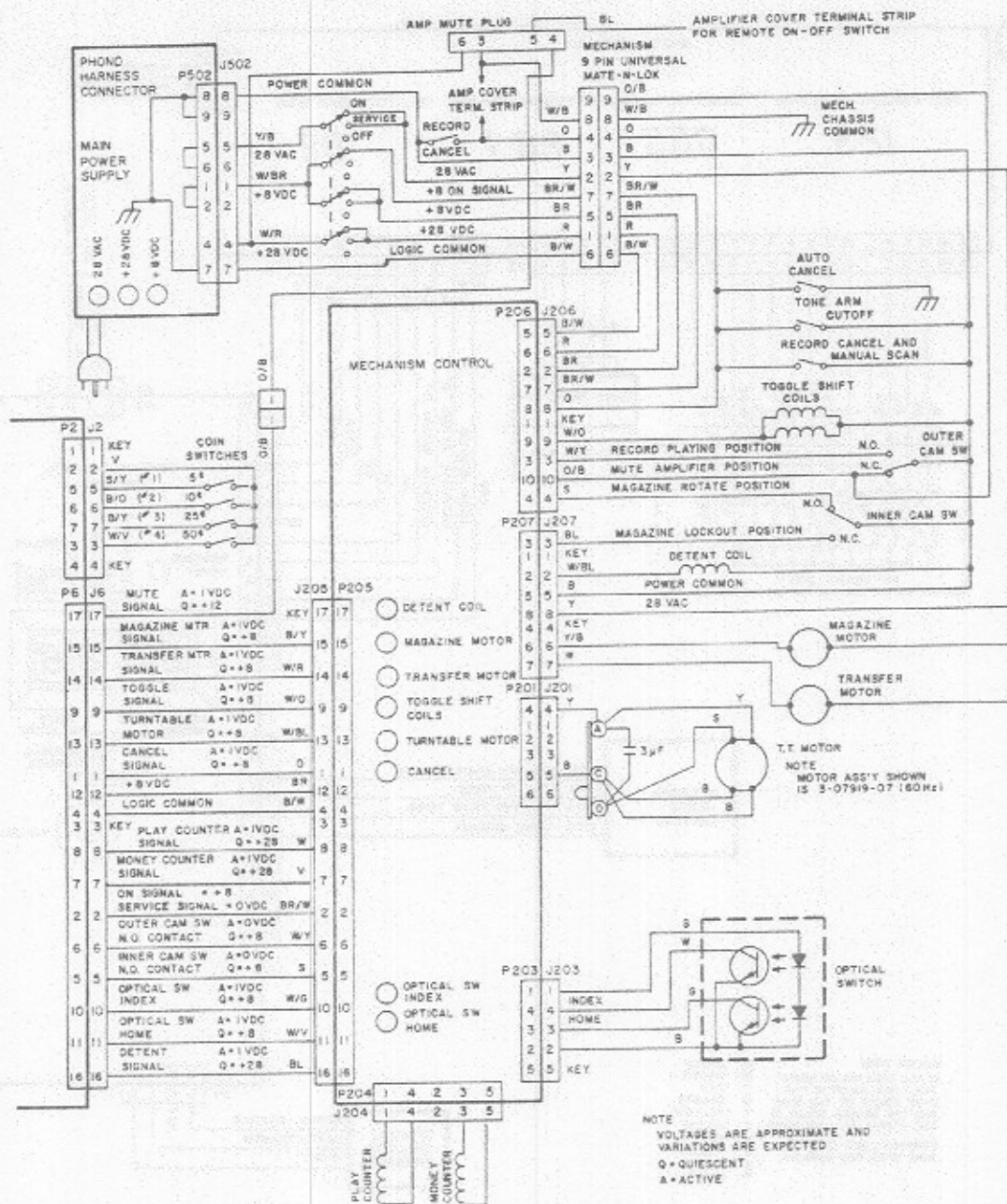
3. Most Popular Selection display shows most popular record on the phono. The diagram shows record "123" as the most popular.

3

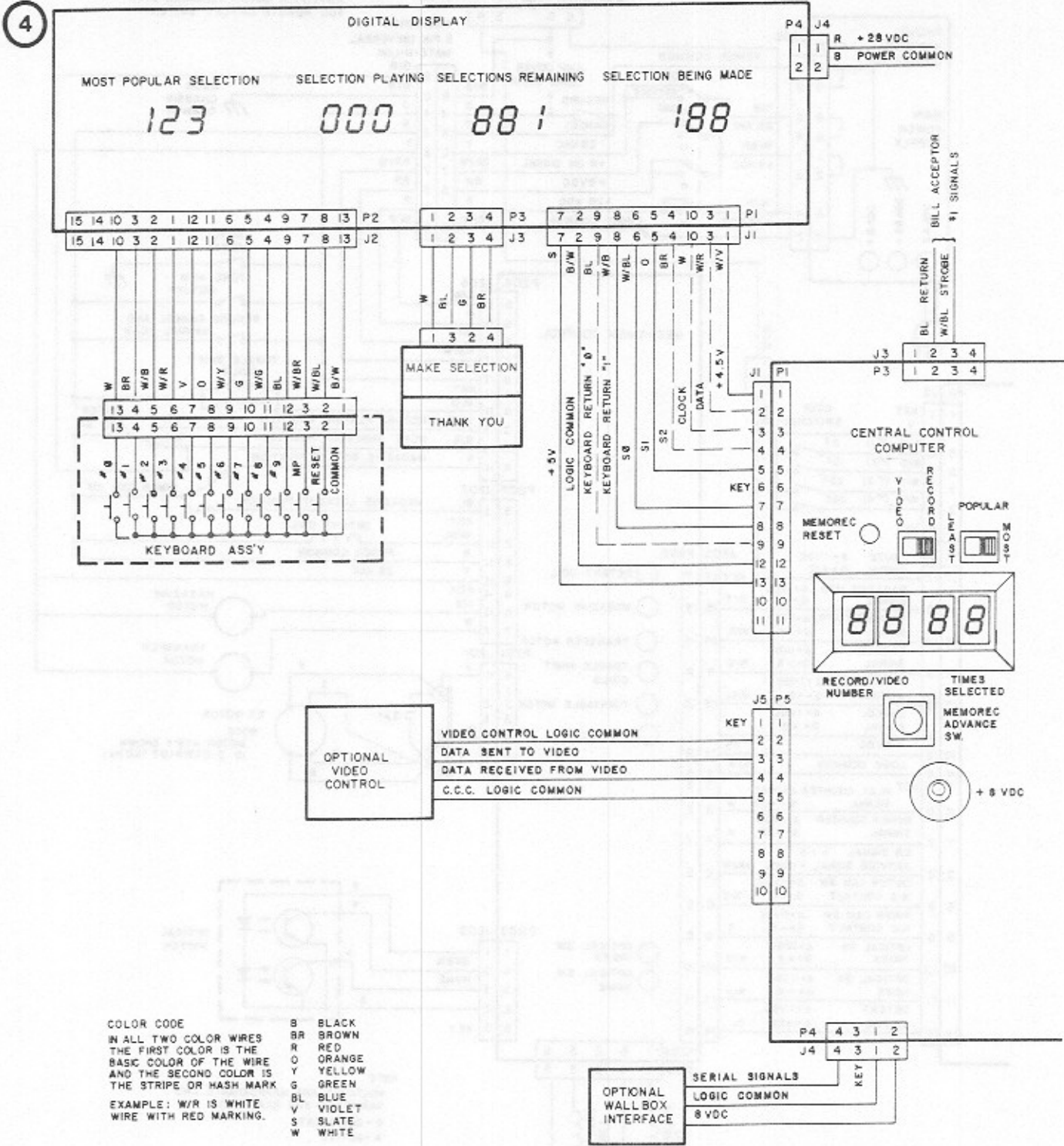


Patron inserts quarter. Standard credit established. (Credit is set at 1 play for 25¢, 2 for 50¢ and 5 for \$1.00).

1. Patron inserts quarter into coin slot. The coin passes through the validator and actuates the 25¢ coin switch.
2. The C.C.C. senses the switch closure and stores 5 money units (nickels) in its memory.
3. 5 pulses are sent to the money counter.

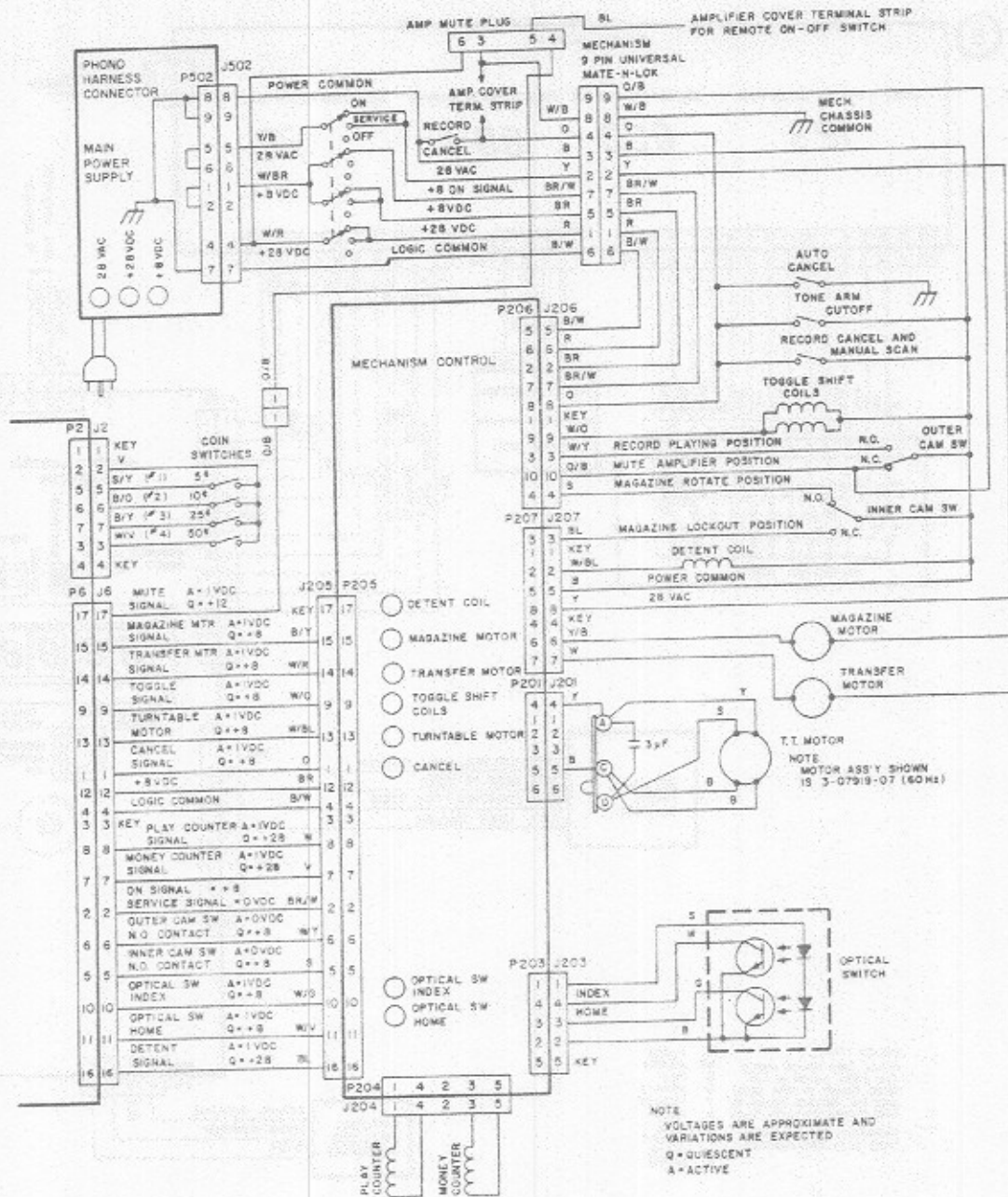


4. The C.C.C. uses the amount of money stored in its memory and the stored pricing information to calculate the remaining credit equal to 1.
5. The C.C.C. turns on the make selection display.
6. The "Selection Remaining Display" shows 1 credit.
7. Thank you message lights for 2 seconds.



First digit selected and displayed.

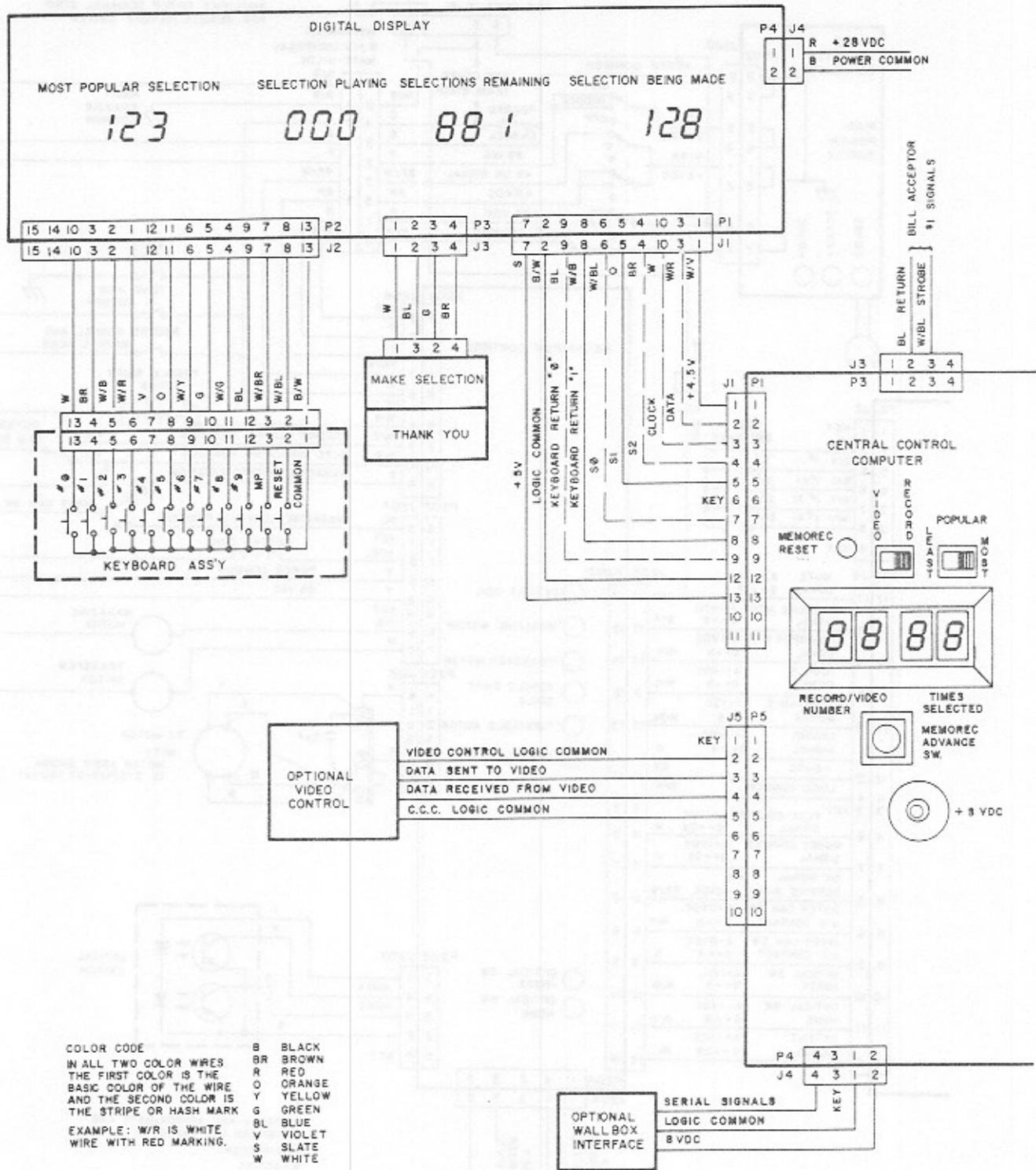
1. Patron presses first digit of his selection (in this illustration number 1).
2. The C.C.C. senses the key closure, checks that credit is available, stores the selected first digit and displays it on the digital display.



NOTE

The first digit of a selection must be a 1 or a 2. If any other key is pushed the computer ignores it. To make a correct selection merely push the correct key.

5



COLOR CODE

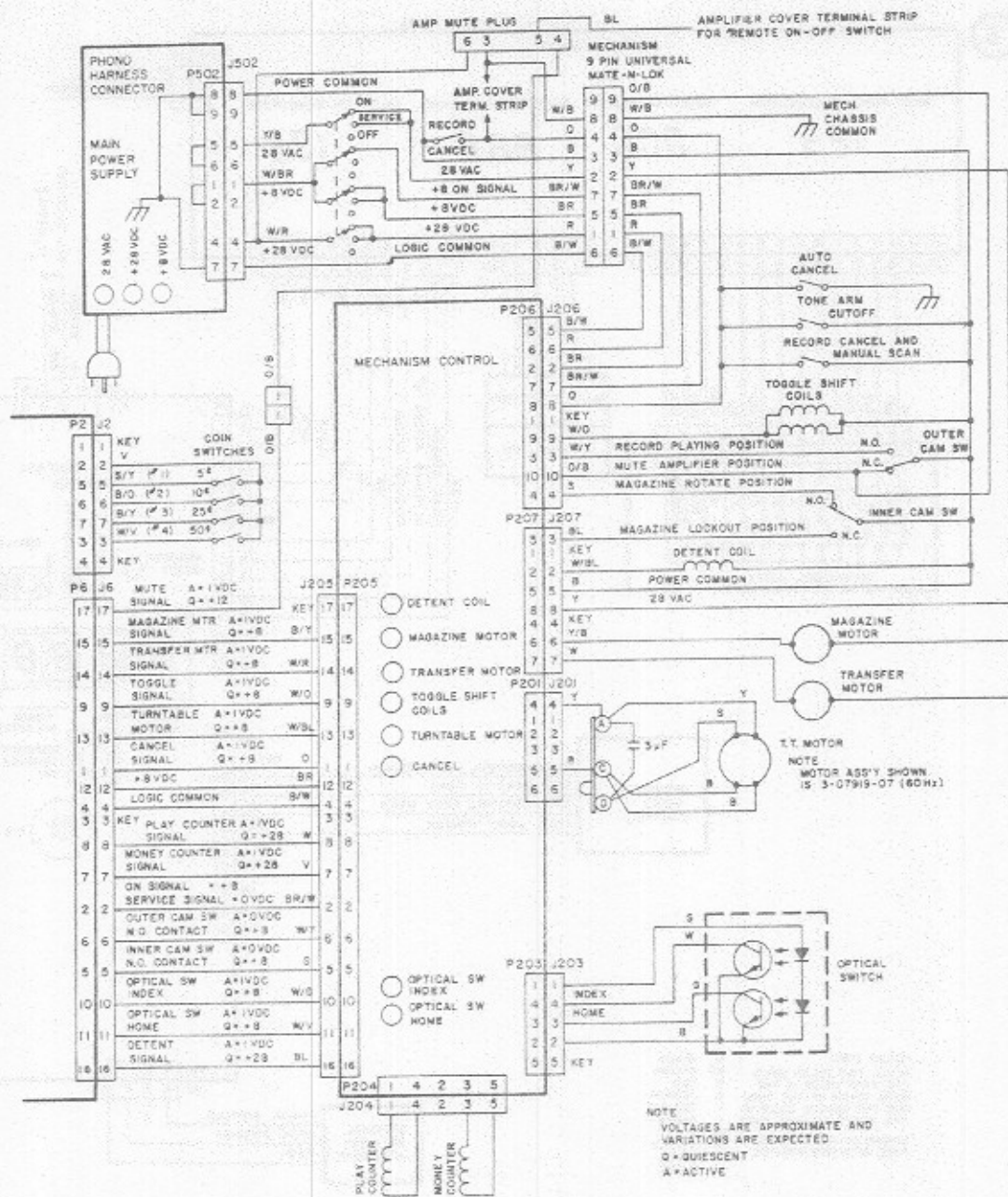
IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK

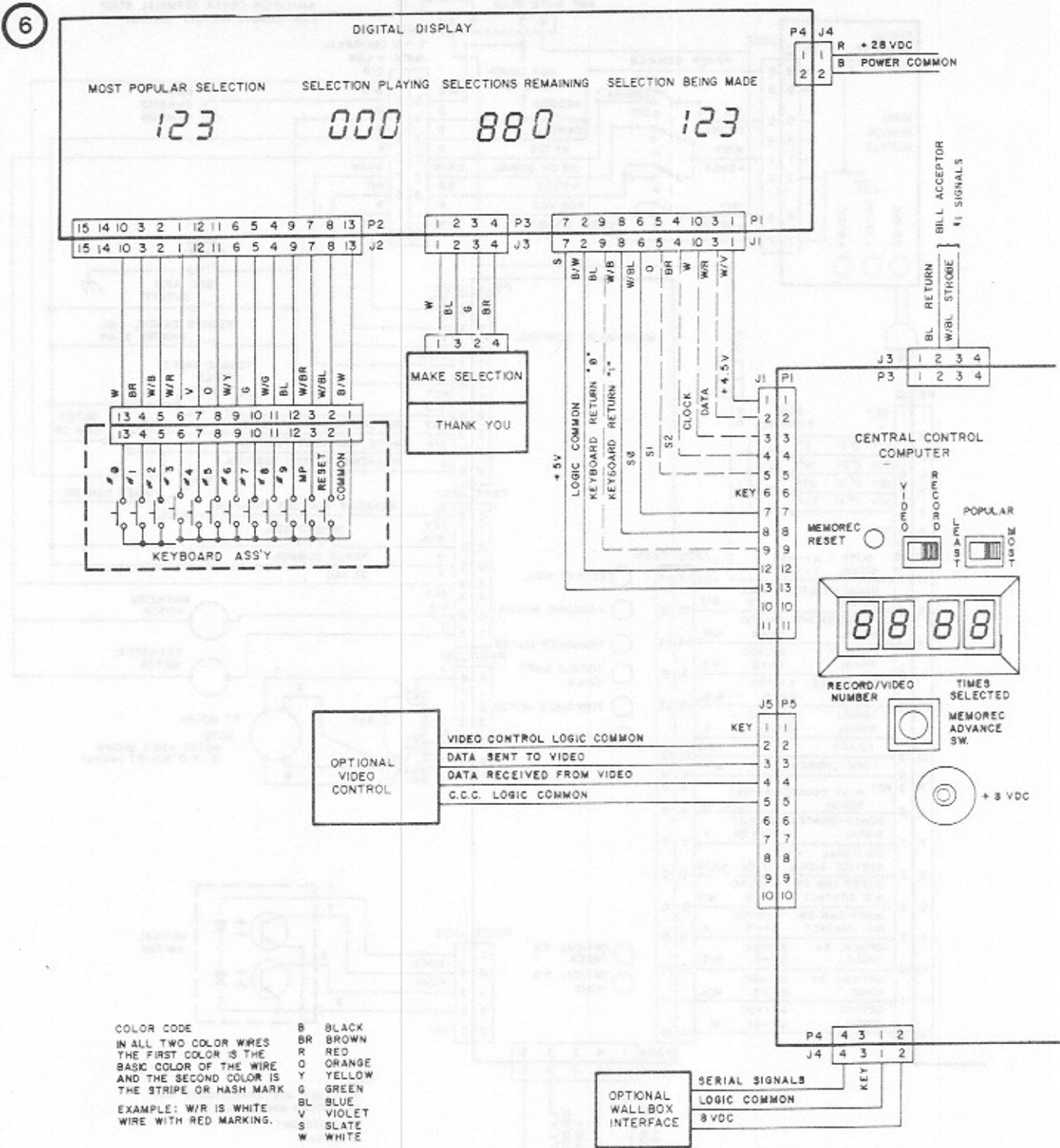
EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING.

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

Second digit selected and displayed.

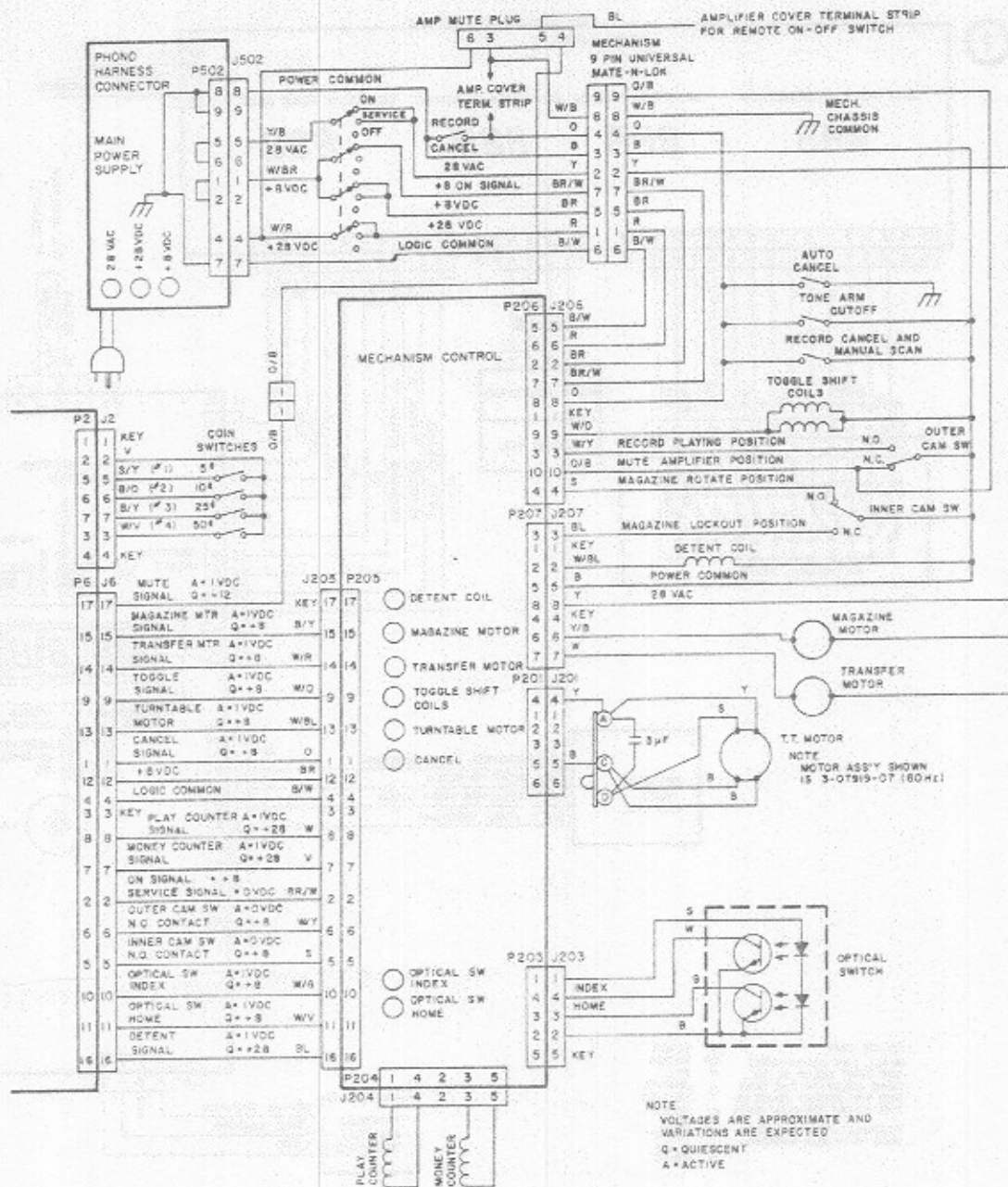
1. Patron presses second digit of his selection (In this illustration number 2).
2. The C.C.C. senses the key closure, stores the selected second digit and displays it.





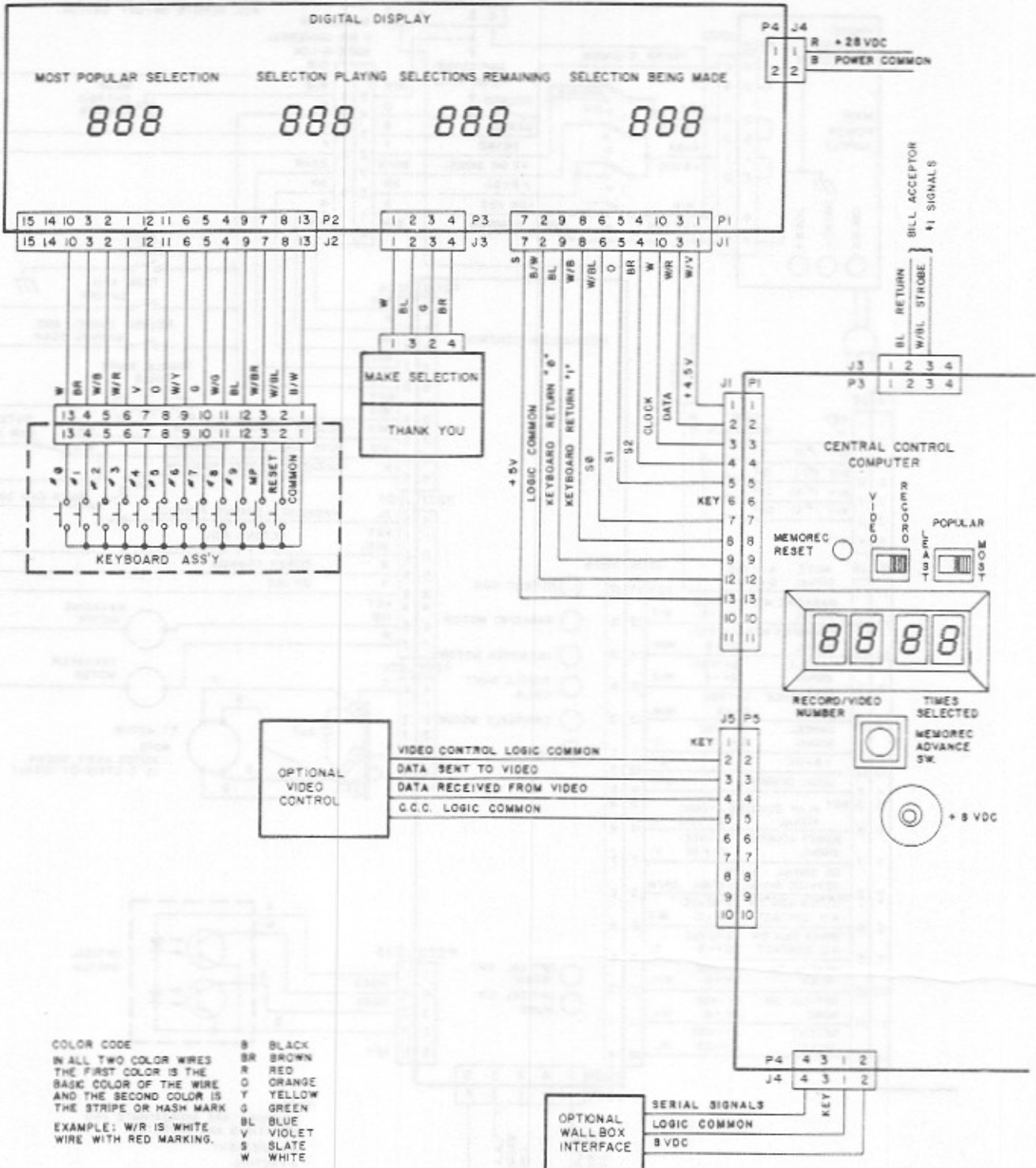
Third digit selected and displayed - selection stored, Memorec incremented. Credit cancelled.

1. Patron presses third digit of his selection (in this illustration number 3).
2. The C.C.C. senses the Key closure, stores the third digit and displays it.



3. Selection is stored in C.C.C.
4. Memorec data in C.C.C. is incremented.
5. Credit cancelled to 0.
6. Thank you light comes on for 10 seconds.

7



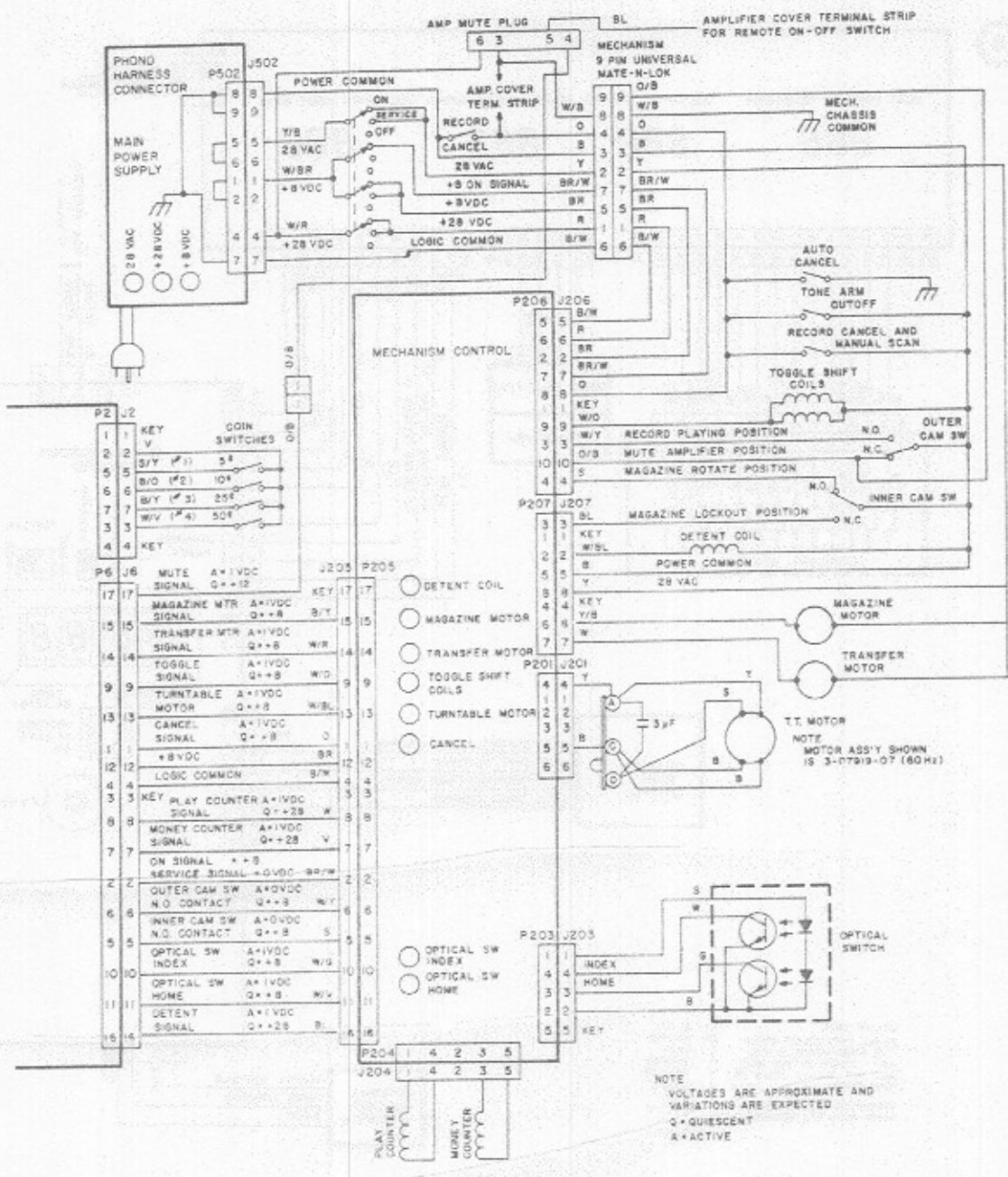
COLOR CODE

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

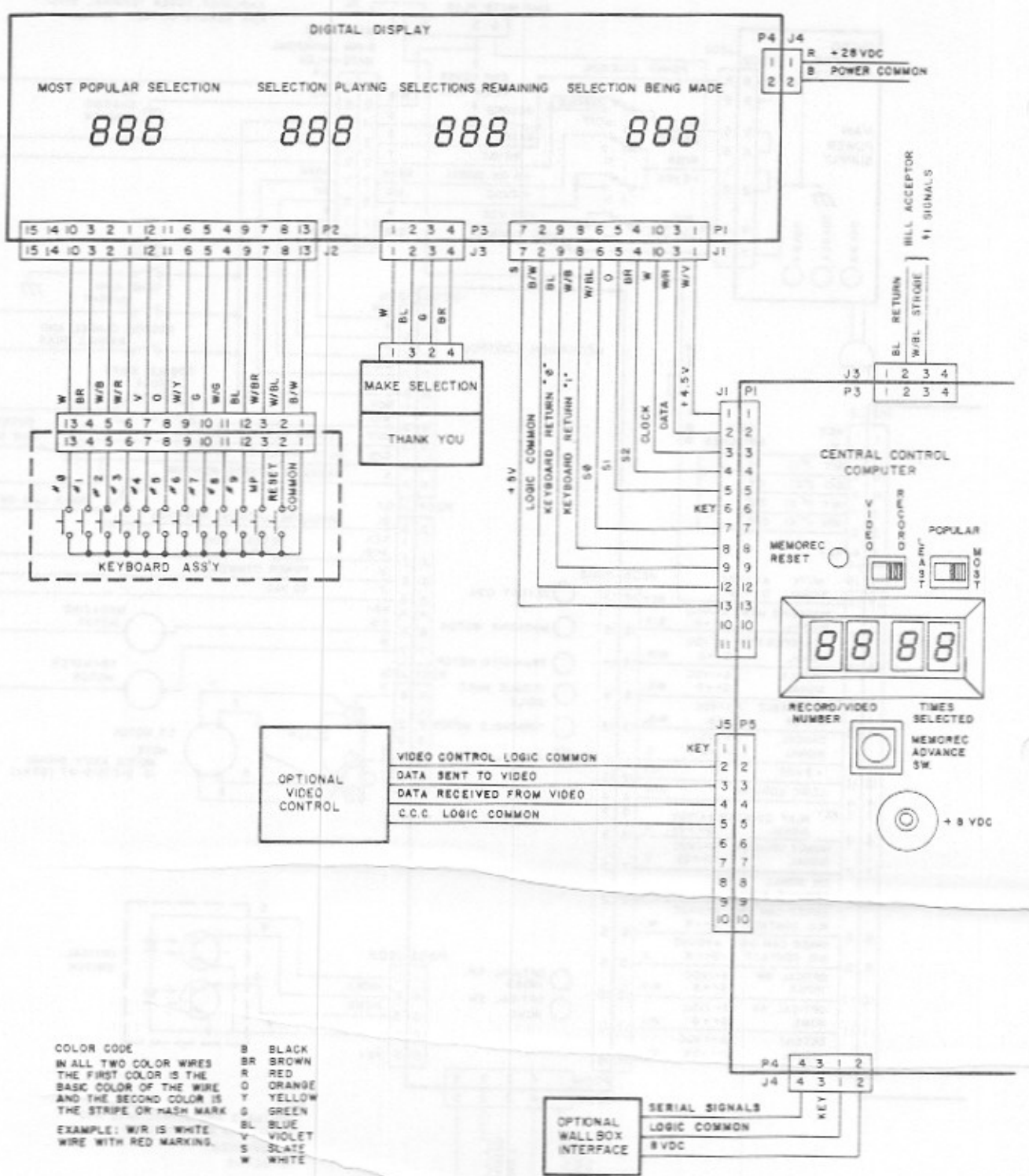
IN ALL TWO COLOR WIRES THE FIRST COLOR IS THE BASIC COLOR OF THE WIRE AND THE SECOND COLOR IS THE STRIPE OR HASH MARK
EXAMPLE: W/R IS WHITE WIRE WITH RED MARKING.

Detent coil and magazine motor energized - Magazine rotates.

1. C.C.C. signals the mechanism control to energize detent coil. "Detent coil" LED lights and the energized detent coil operates a mechanical linkage to unlock the magazine.
2. After 56 to 70 milliseconds C.C.C. signals the mechanism control to energize magazine motor. "Magazine Motor" LED lights and motor is energized causing the unlocked magazine to rotate.



8



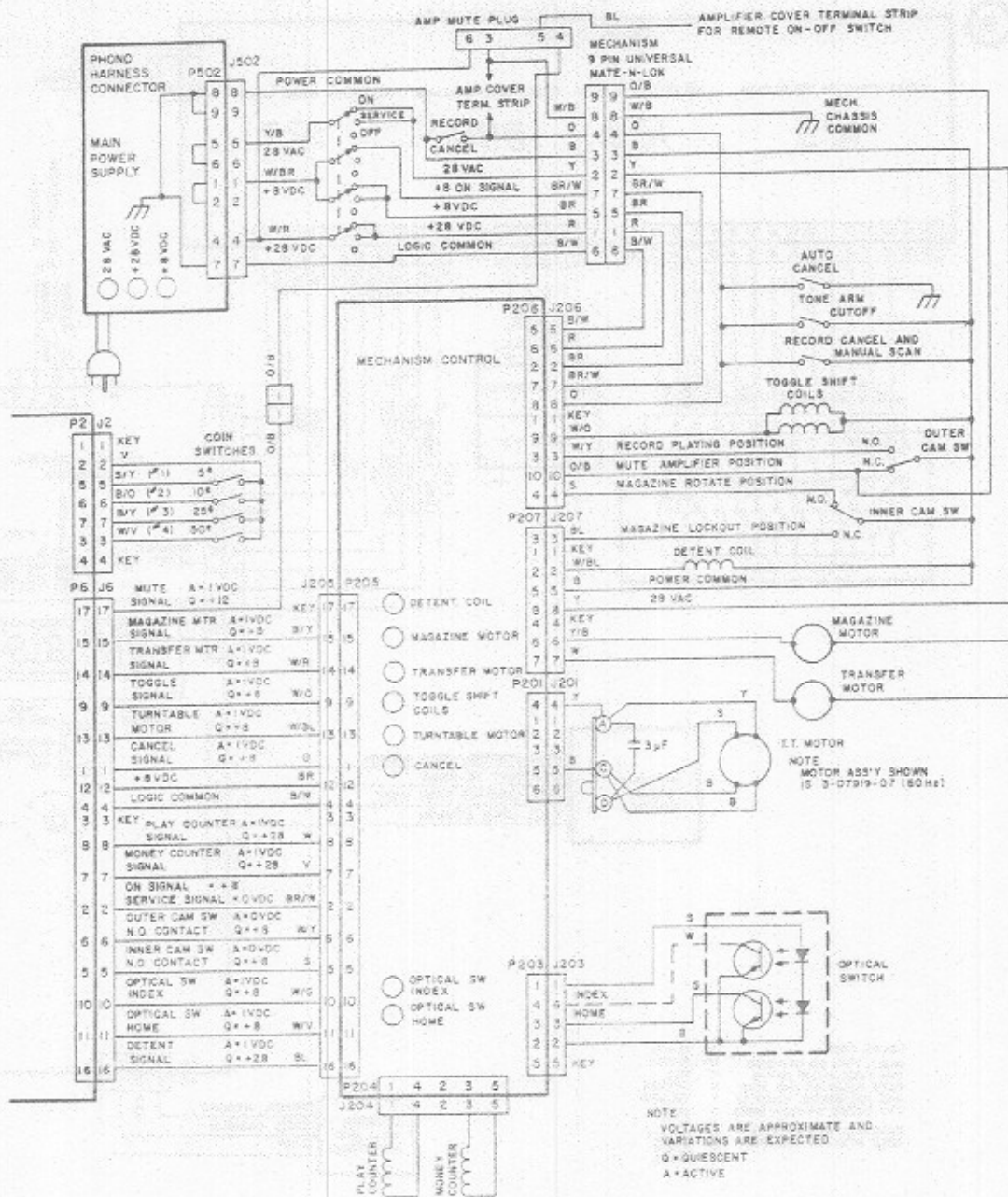
COLOR CODE

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

IN ALL TWO COLOR WRES 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.

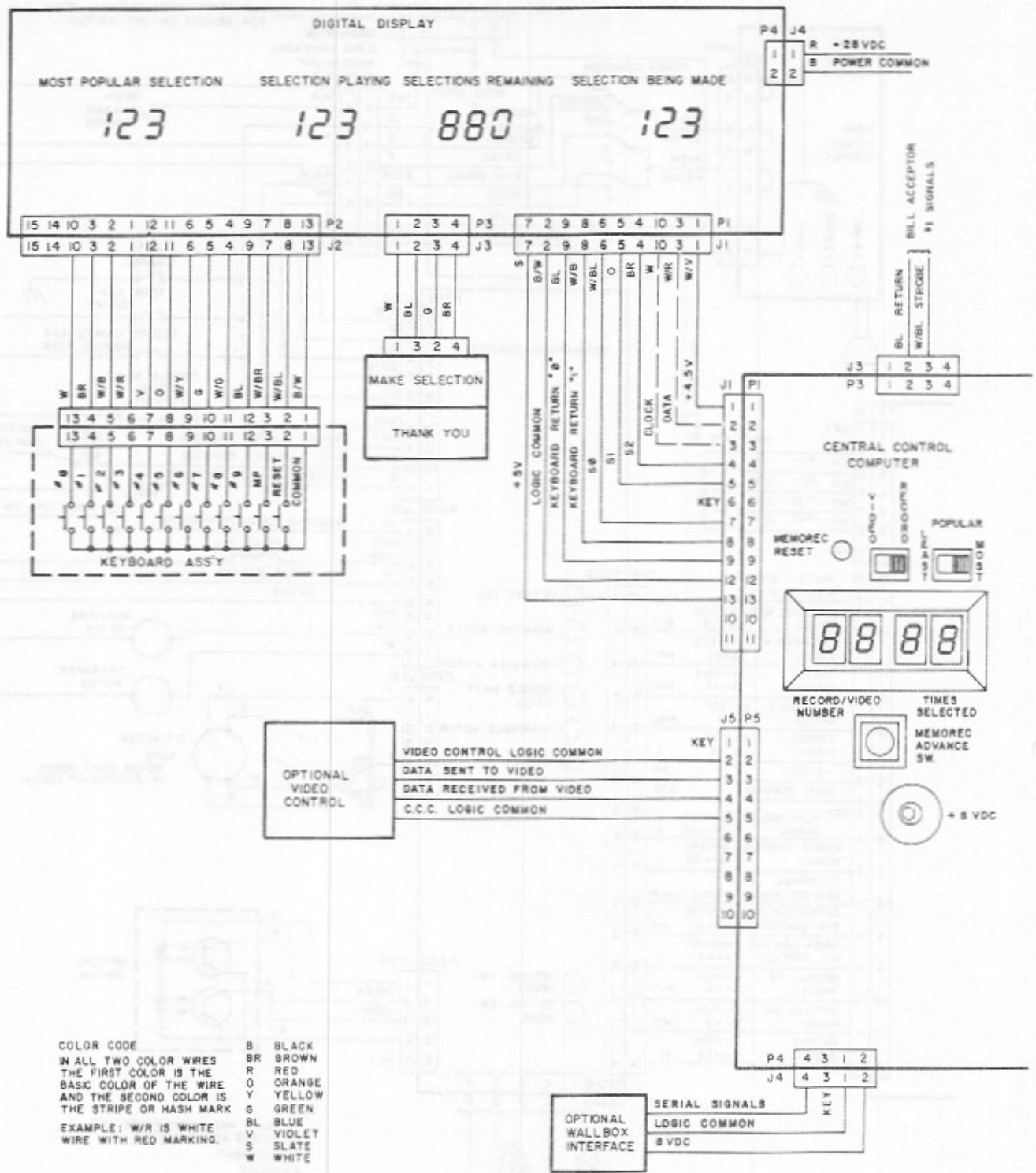
Magazine rotates until selection is located.

1. Magazine rotates and gear teeth interrupt optical switch light beam.
- NOTE: "Optical sw. index" LED going from dark to light (off to on) tells C.C.C. the magazine is moving to the next record position and two things happen:
- a. C.C.C. keeps track of magazine position by adding 1 to value stored in C.C.C.
 - b. C.C.C. checks the selection memory to see if left or right side of this next record has been selected.



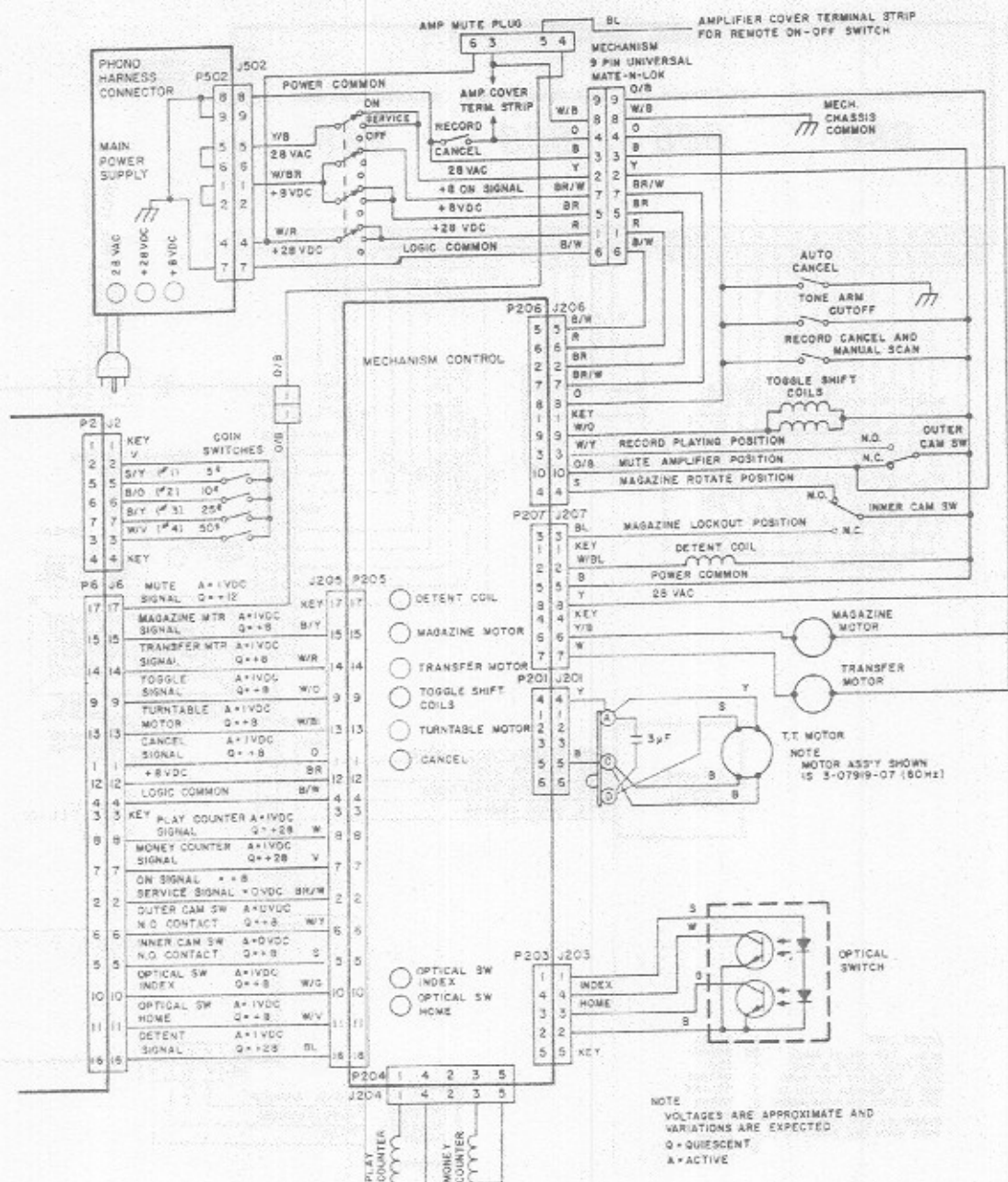
2. Selection playing display shows magazine record position.

9

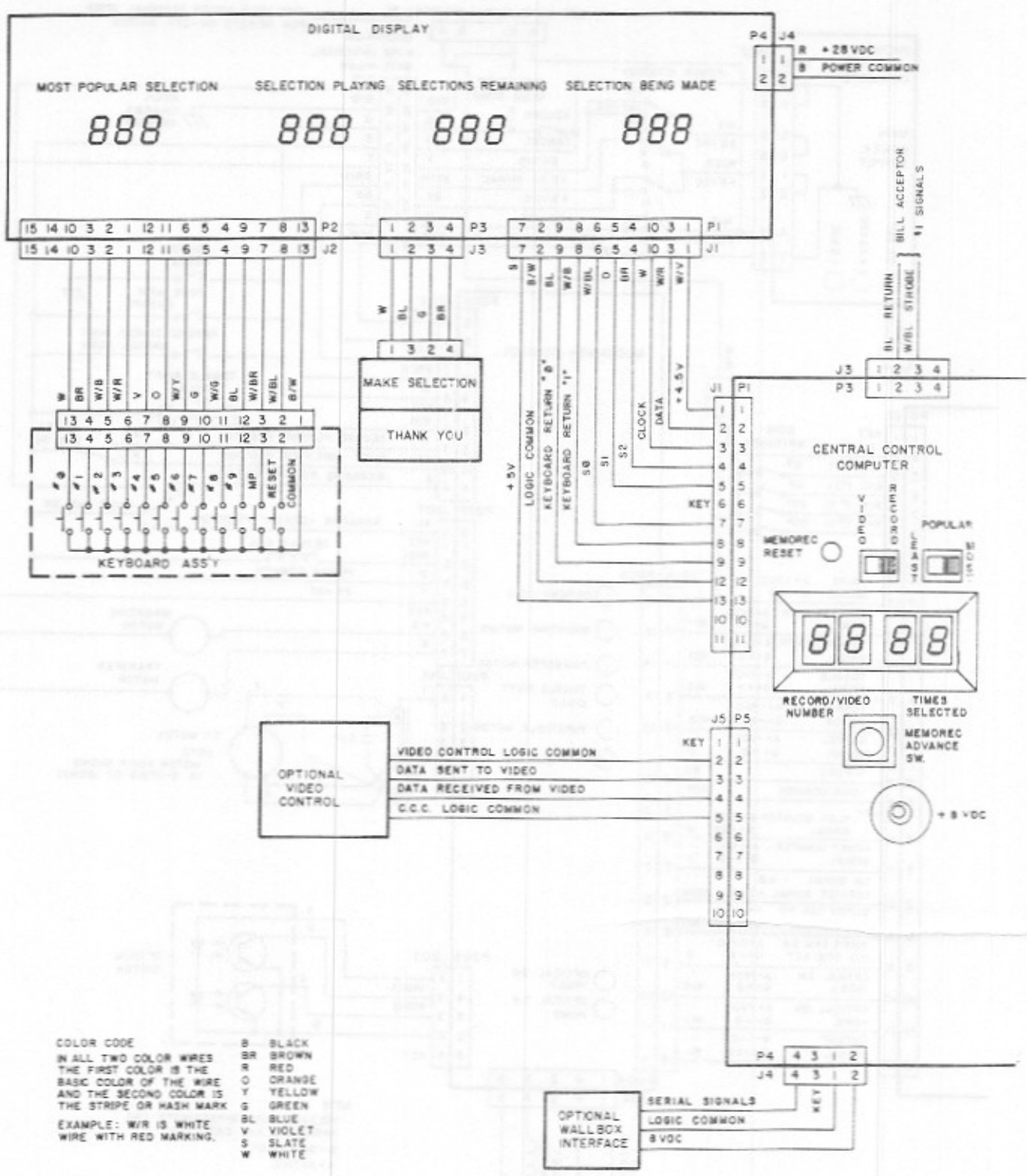


Selection located, record transferred to turntable, tone arm set down.

1. C.C.C. signals turn off "detent" and "mag. motor" LEDs causing mechanism control to de-energize detent coil and magazine motor.
2. Magazine is locked by detent pawl falling into slot in detent wheel.

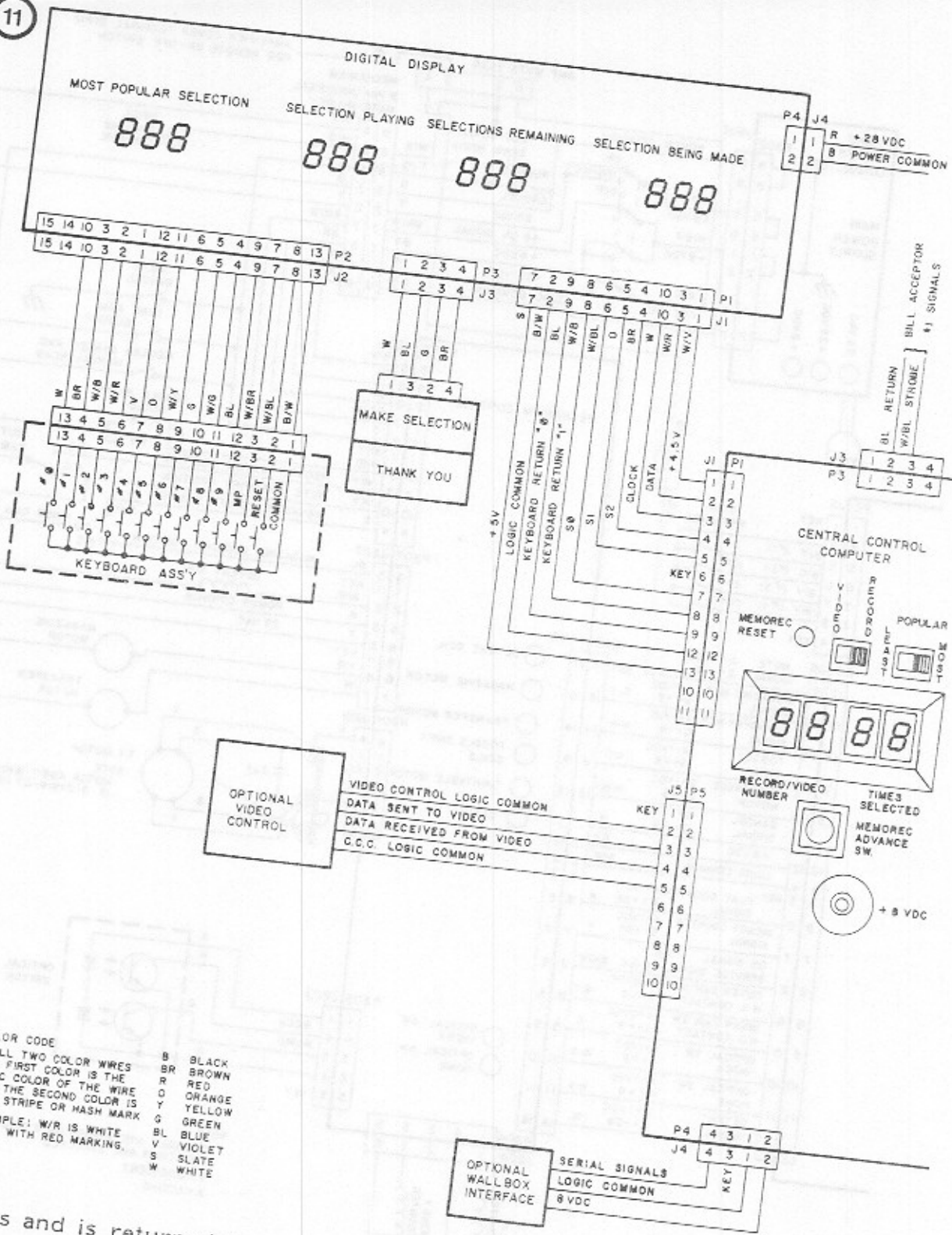


3. C.C.C. signals turn on "tran. motor" and "T.T. motor" LEDs, causing mechanism control to energize transfer and turntable motors. C.C.C. signals mechanism control to advance play counter.
4. Transfer motor rotates cam off inner cam switch. (NOTE: If the first digit of selection was a 2, the C.C.C. signal lights the "Toggle" LED causing the mechanism control to energize toggle shift coils).
5. Gripper bow picks up record, places it on turntable, and tone arm sets down. (NOTE: If a record is not placed on the turntable the Auto-Cancel operates when the tone arm sets down).
6. Selection playing display lights, showing number of record chosen.

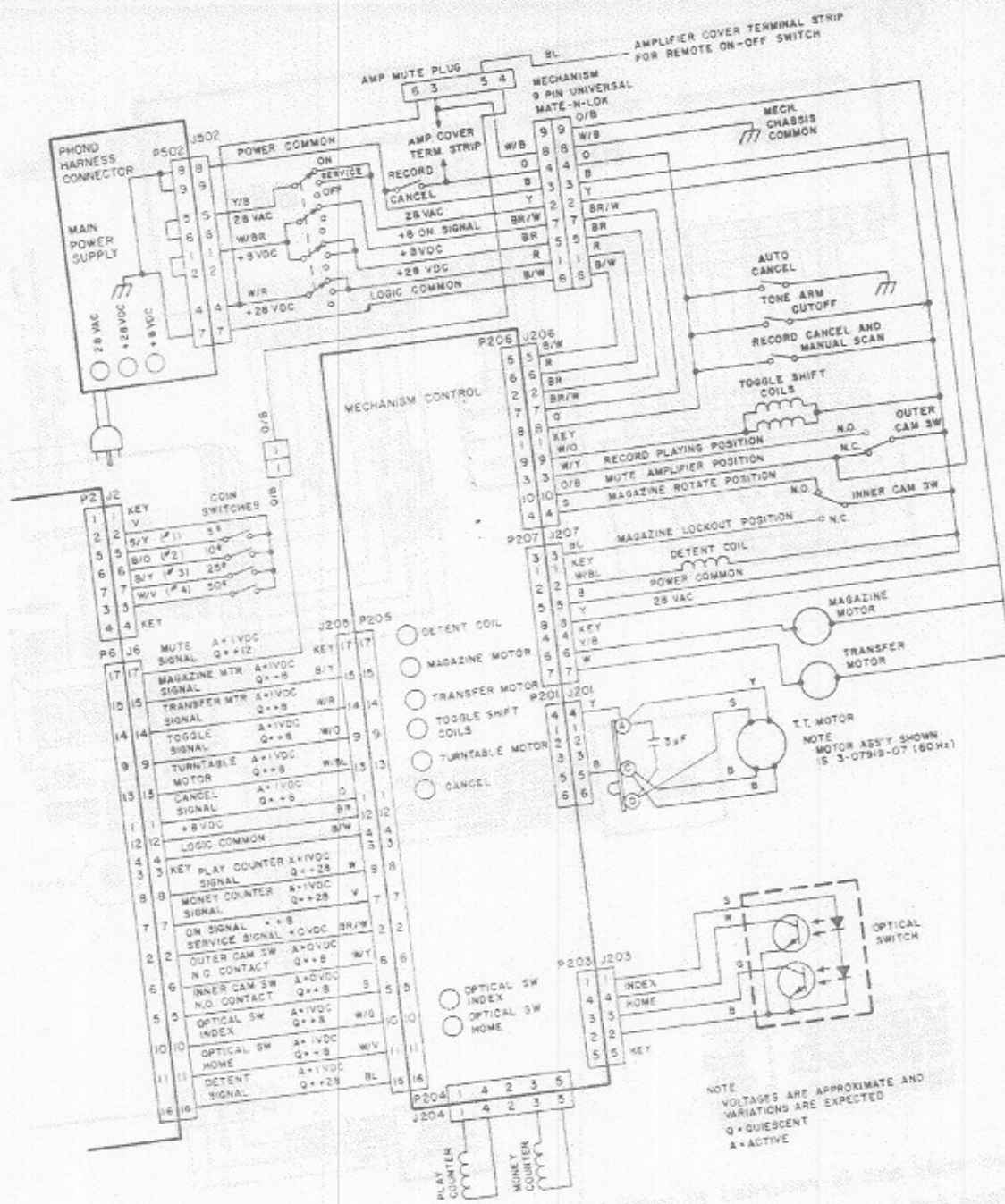


Amplifier unmuted and record plays.

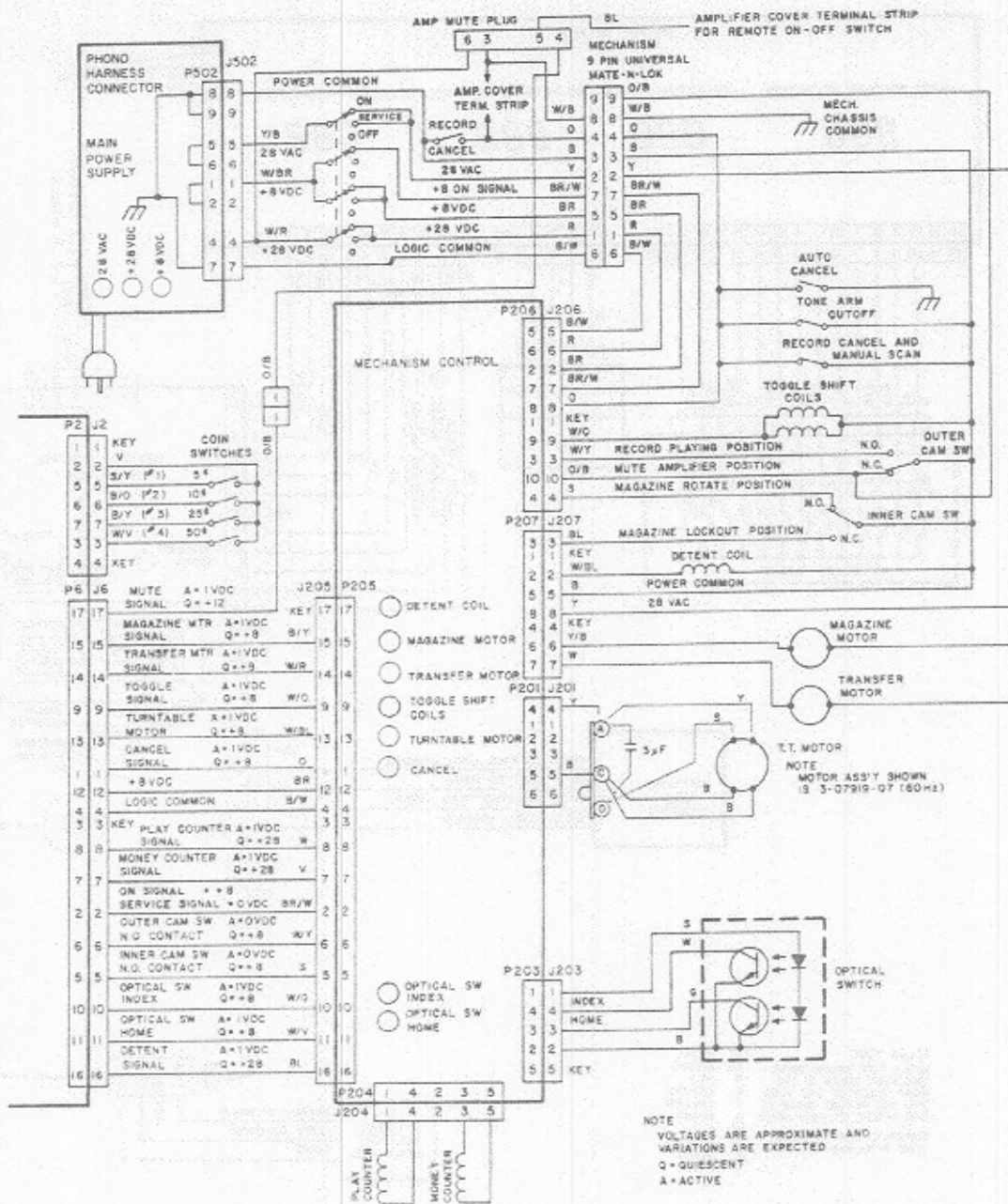
1. Transfer motor rotates and cam moves onto outer cam switch.
2. "Outer cam sw. N.O. contact" signals C.C.C. to turn off transfer motor. "Tran. motor" LED turns off and transfer motor stops.



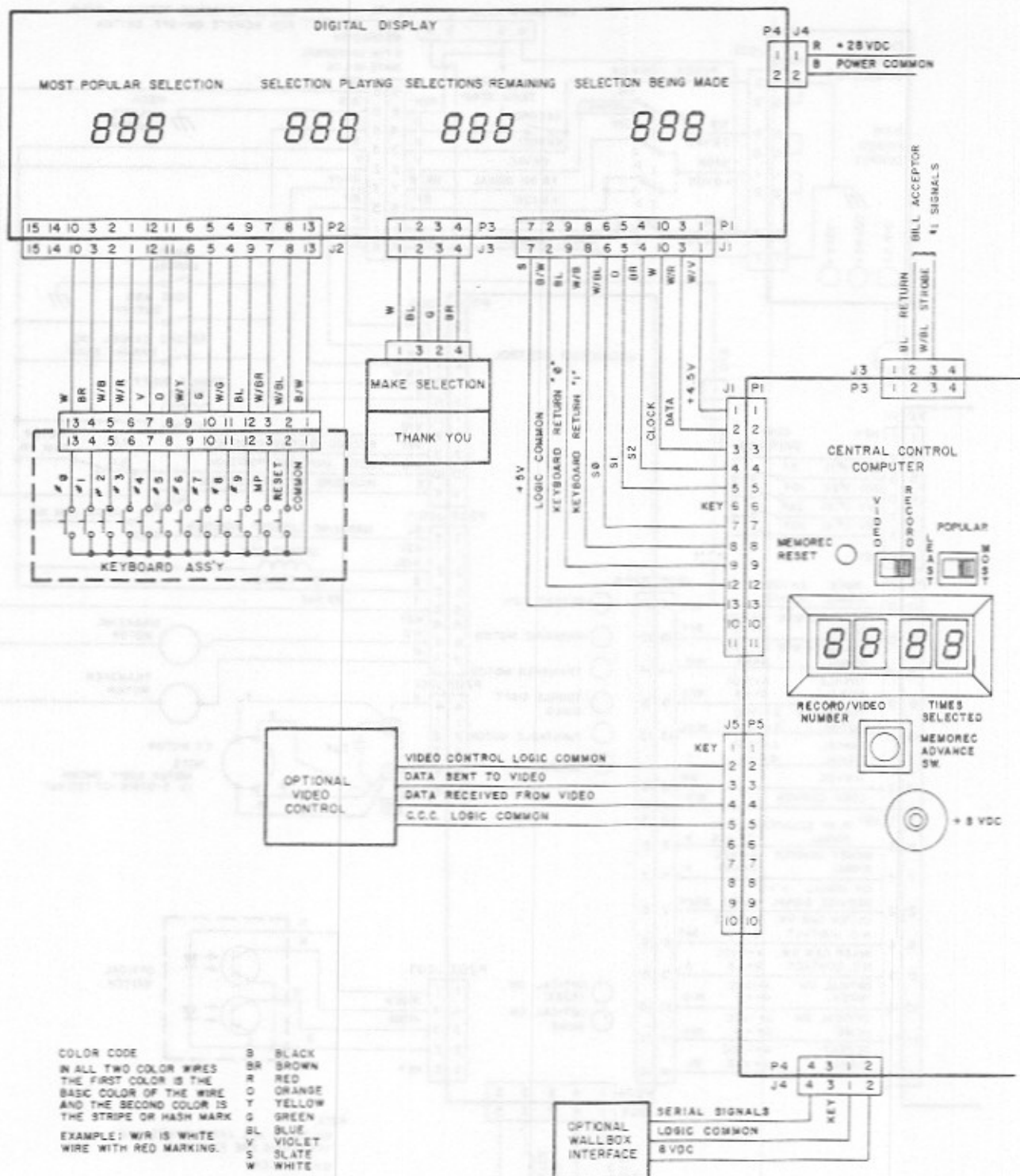
- Record ends and is returned to magazine.
1. Tone arm cutoff sends a cancel signal to C.C.C.
 2. C.C.C. turns on "Tran. Motor" LED, causing mechanism control to energize transfer motor.
 3. Gripper bow picks up record and returns it to magazine.



3. Mute signal becomes active causing amplifier to unmute.
4. Record plays.

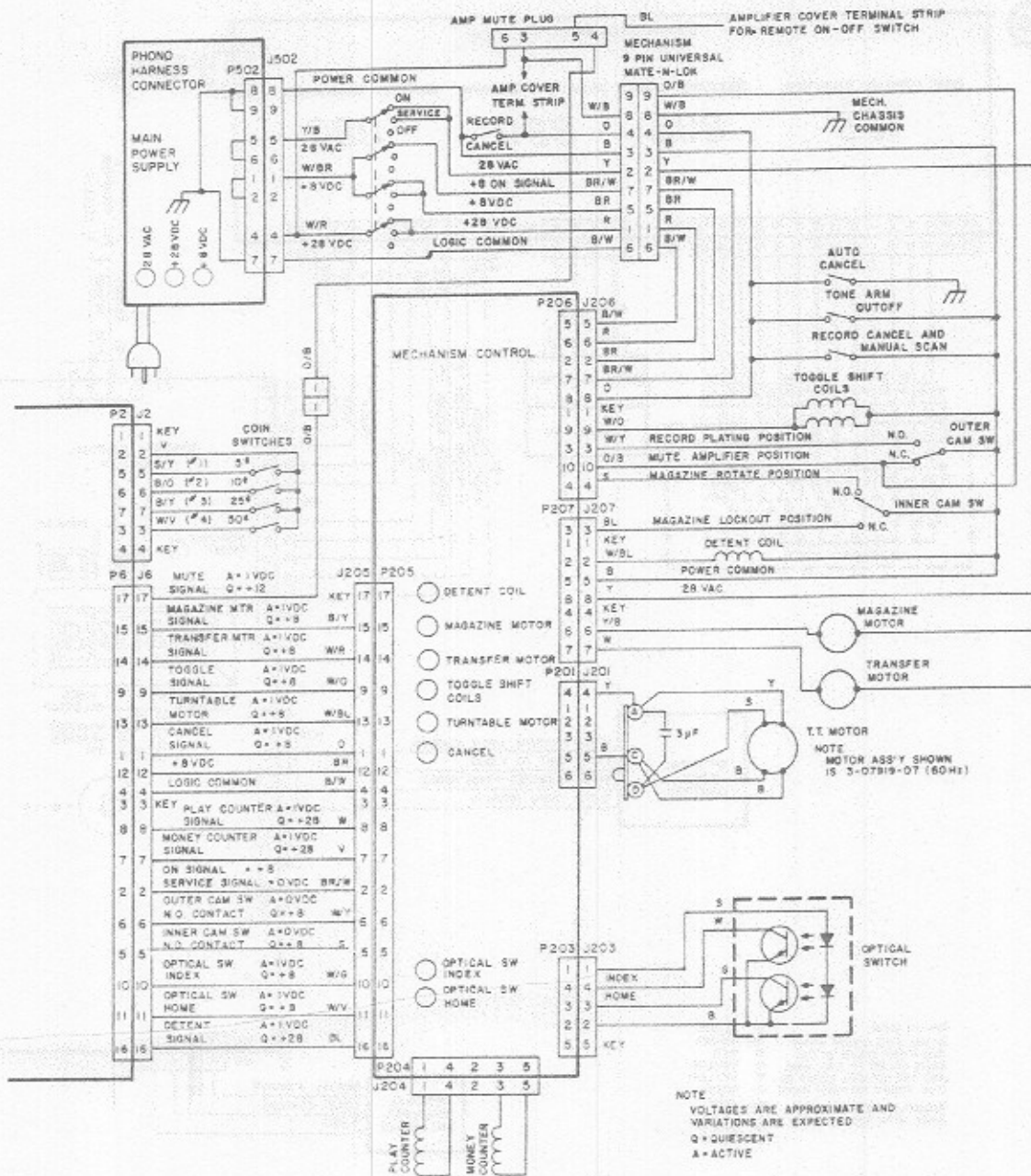


NOTE
 VOLTAGES ARE APPROXIMATE AND
 VARIATIONS ARE EXPECTED
 Q = QUIESCENT
 A = ACTIVE

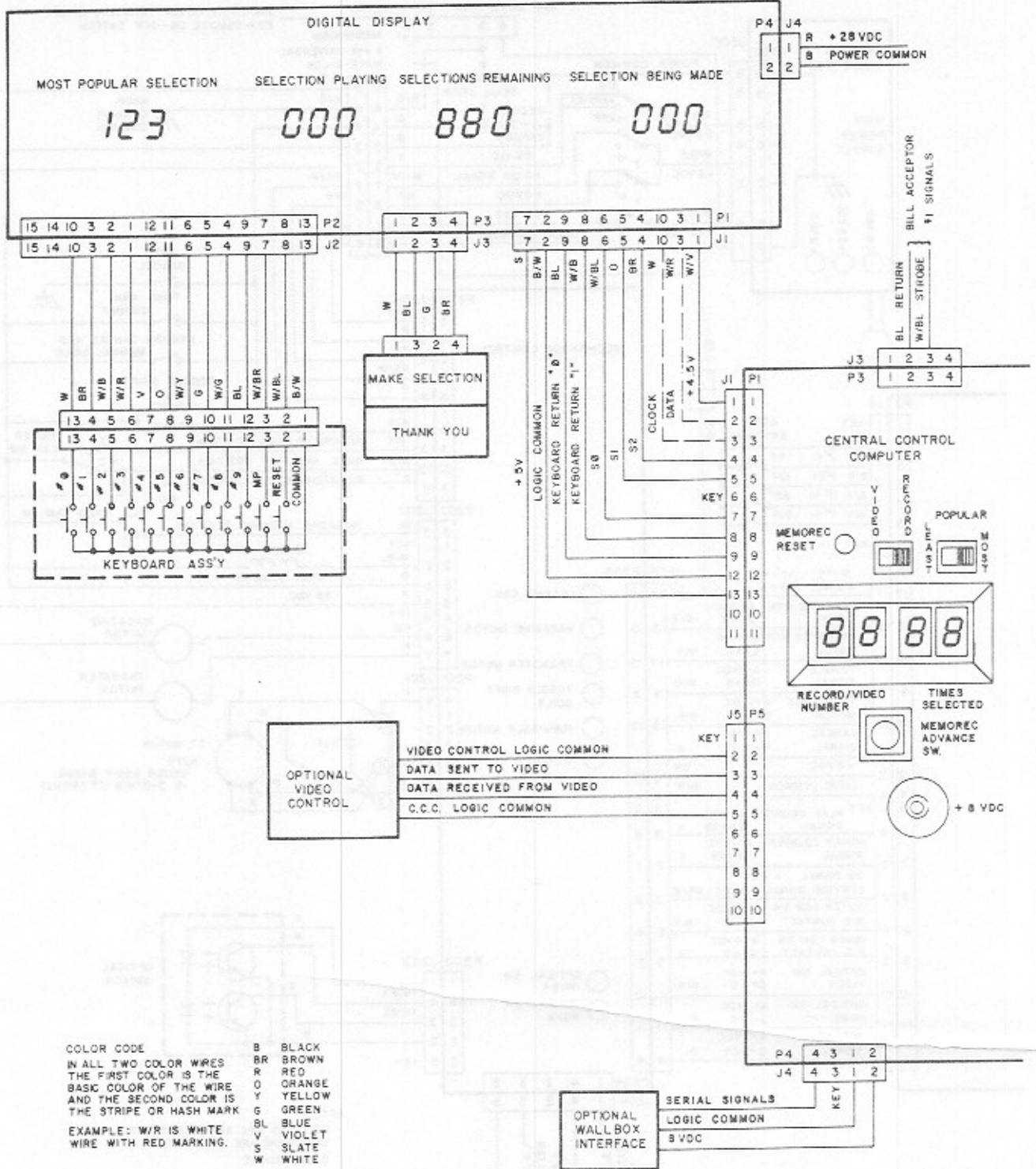


Transfer cycle ends, C.C.C. searches selection memory.

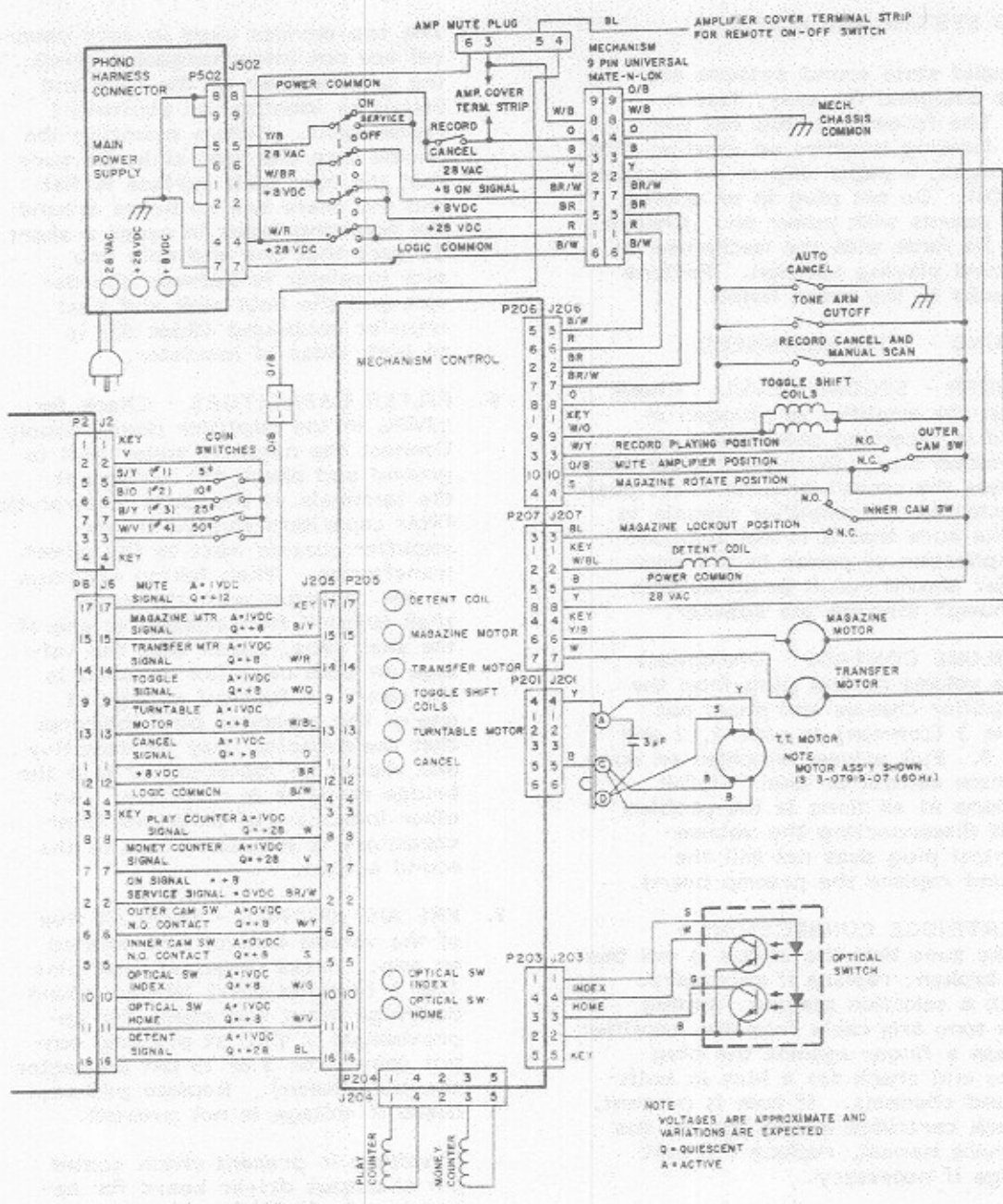
1. Cam rotates onto inner cam switch.
2. "Inner cam sw. N.O. contact" signals C.C.C. the transfer cycle is completed.
3. C.C.C. turns off "Tran. Motor" and "T.T. Motor" LEDs causing mechanism control to turn off these motors.



4. C.C.C. electronically searches its selection memory. If the memory contains one or more selections, sequences 8 thru 14 will be repeated.
5. If "order of play" switch is in as selected position, the selection will be located and played in the order they were selected.



- Phonograph returns to standby condition, most popular selection displayed.
1. All selections have been played.
 2. Read out shows most popular record on the phono. The diagram shows record "123" as the most popular.



SOUND SYSTEM QUICK CHECK

Rowe solid state sound systems are service designed for easy, fast repair. The following check list will enable locating troubles on location with your finger, a paper clip or an inexpensive VOM. Do not plug in or unplug circuit boards with power on. Checks should be made with the mechanism in the record playing position. Perform the checks in the order listed.

NO SOUND - BOTH CHANNELS

1. POWER - SECOND LEVEL - Check that the amplifier is plugged in and is receiving power from the junction box. Disconnect mute plug. Press the circuit breaker reset push-button on the amplifier chassis to make sure that it is not tripped. Application of power to the amplifier should result in an audible "thump" through the speaker.
2. VOLUME CONTROL - Disconnect the volume control plug from the amplifier chassis and short out pins 3 (common) to pins 1, 2 and 4, 5. Full volume indicates an open volume control or line. If full volume at all times is the problem and disconnecting the volume control plug does not kill the sound replace the preamp board.
3. CARTRIDGE CONNECTIONS - Make sure that the stylus is not bent or broken; replace if necessary. With a selection playing, unplug the tone arm cable from the amplifier. Press a finger against the plug pins and check for a hum in both sound channels. If hum is present, check cartridge wiring against the service manual, replace the cartridge if necessary.
4. EXTENSION SPEAKERS - To check if extension speakers are shorting out the amp, simply disconnect the extension speaker plug from the transformer package receptacle.
5. OUTPUT DEVICES - Visually inspect the driver board fuses for an open condition. If a fuse is open, replace the associated output device.
6. FILTER CAPACITORS - Check for $\pm 2\text{VDC}$ in the amplifier power supply. Connect the negative meter lead to ground and check the voltage at the terminals of the large electrolytic filter capacitors located on the amplifier chassis next to the power transformer. When taking readings on the capacitor with the outer shell isolated from chassis to one of the shell tabs, check that the voltage on each capacitor terminal is the same. A lowered voltage at one of the capacitor pins indicates that the capacitor may be defective and should be replaced, or that the bridge rectifier is defective. Another indication of defective filter capacitors is excessive hum in the sound output.
7. PRE AMP OUTPUT - Short all five of the volume control pins located on amp. Press finger against pins 1 or 3 (outside pins) labeled phono cartridge input and check for approximately 1 VAC at pre amp output (pins 3 or 5 of 13 pin connector-chassis common). Replace pre amp board if voltage is not present.

If voltage is present check center pin of output driver board for approximately 16 VAC. If voltage is not present make sure finger is pressed against the same outside pin with respect to channel that is being checked with volt meter.

**NO SOUND, LOW SOUND OR DISTORTED
SOUND RIGHT OR LEFT CHANNEL ONLY.**

1. **BALANCE CONTROL** - Adjust control for equal sound from each channel. Leave in mid position if adjustment is not possible.
2. **REVERSE CARTRIDGE LEADS** - With a selection playing reverse tone arm cable connections to the amplifier. If the sound switches channels, check cartridge connections against the service manual. Replace the cartridge if connections are O.K. Make sure that the stylus is not bent or broken; replace if necessary.
3. **EXTENSION SPEAKERS** - See Step 4.
4. **OUTPUT DEVICES** - See Step 5.
5. **PREAMP** - See Step 7.
6. **DRIVER BOARDS** - If one driver board is defective, switch input to "Mono" and use one good channel in emergency.

**CONSTANT HIGH VOLUME -
CANNOT BE ADJUSTED AT VOLUME
CONTROL**

1. **VOLUME CONTROL** - Disconnect volume control plug from amplifier chassis. No sound indicates that there is a short in the volume control line.

2. **PREAMP** - If there is full volume with control plug disconnected, replace the preamplifier board.

EXCESSIVE RECORD SCRATCH

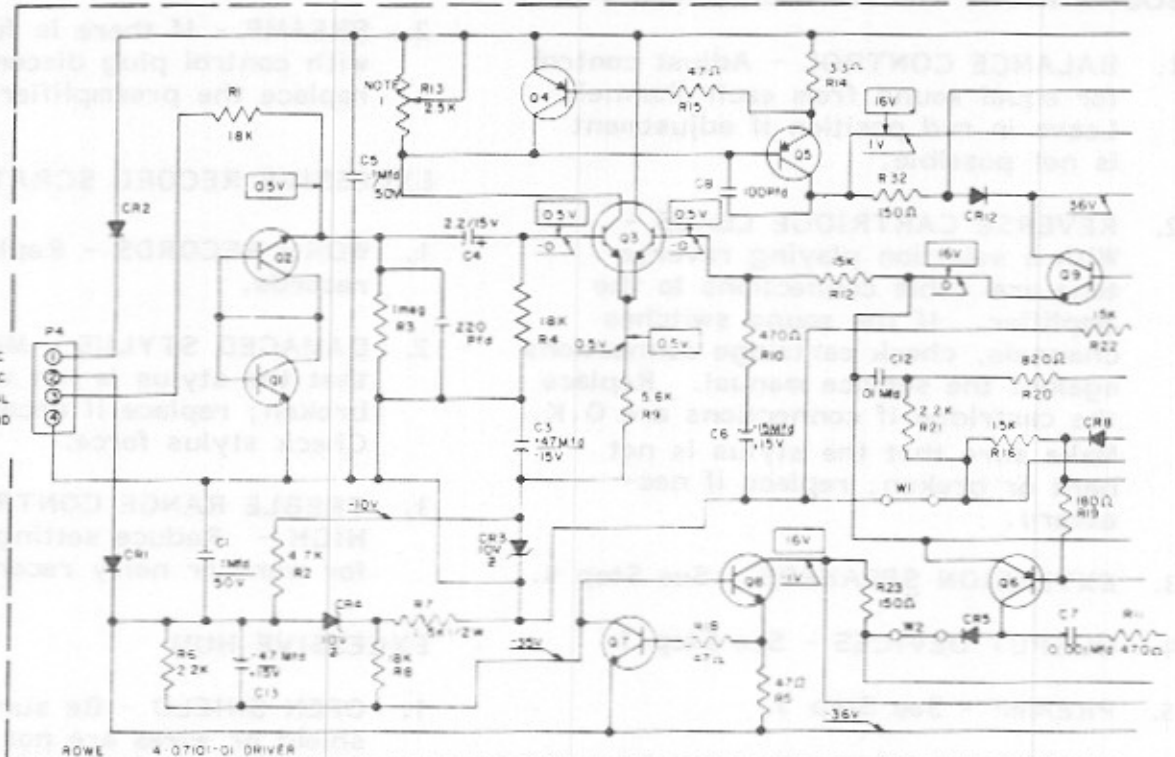
1. **WORN RECORDS** - Replace worn records.
2. **DAMAGED STYLUS** - Make sure that the stylus is not worn or broken; replace if necessary. Check stylus force.
3. **TREBLE RANGE CONTROL TOO HIGH** - Reduce setting of control for worn or noisy records.

EXCESSIVE HUM

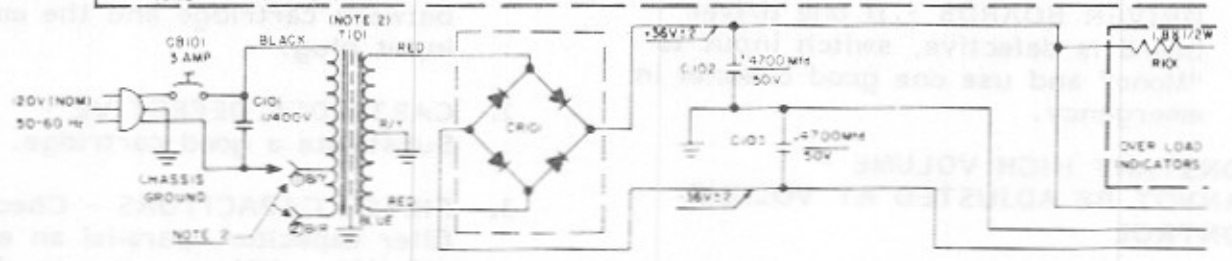
1. **OPEN SHIELD** - Be sure that shield or wires are not broken between cartridge and the amplifier input plug.
2. **CARTRIDGE DEFECTIVE** - Substitute a good cartridge.
3. **FILTER CAPACITORS** - Check filter capacitor, parallel an extra 500 Mfd. 50V capacitor in chassis. If hum drops, replace capacitor.
4. If External Inputs are used, the equipment driving those inputs must not be tied to Earth ground.

LEFT CHANNEL

* 36V ± 2 VDC
 -36V ± 2 VDC
 1000 Hz @ 1V INPUT SIGNAL
 SIGNAL GROUND



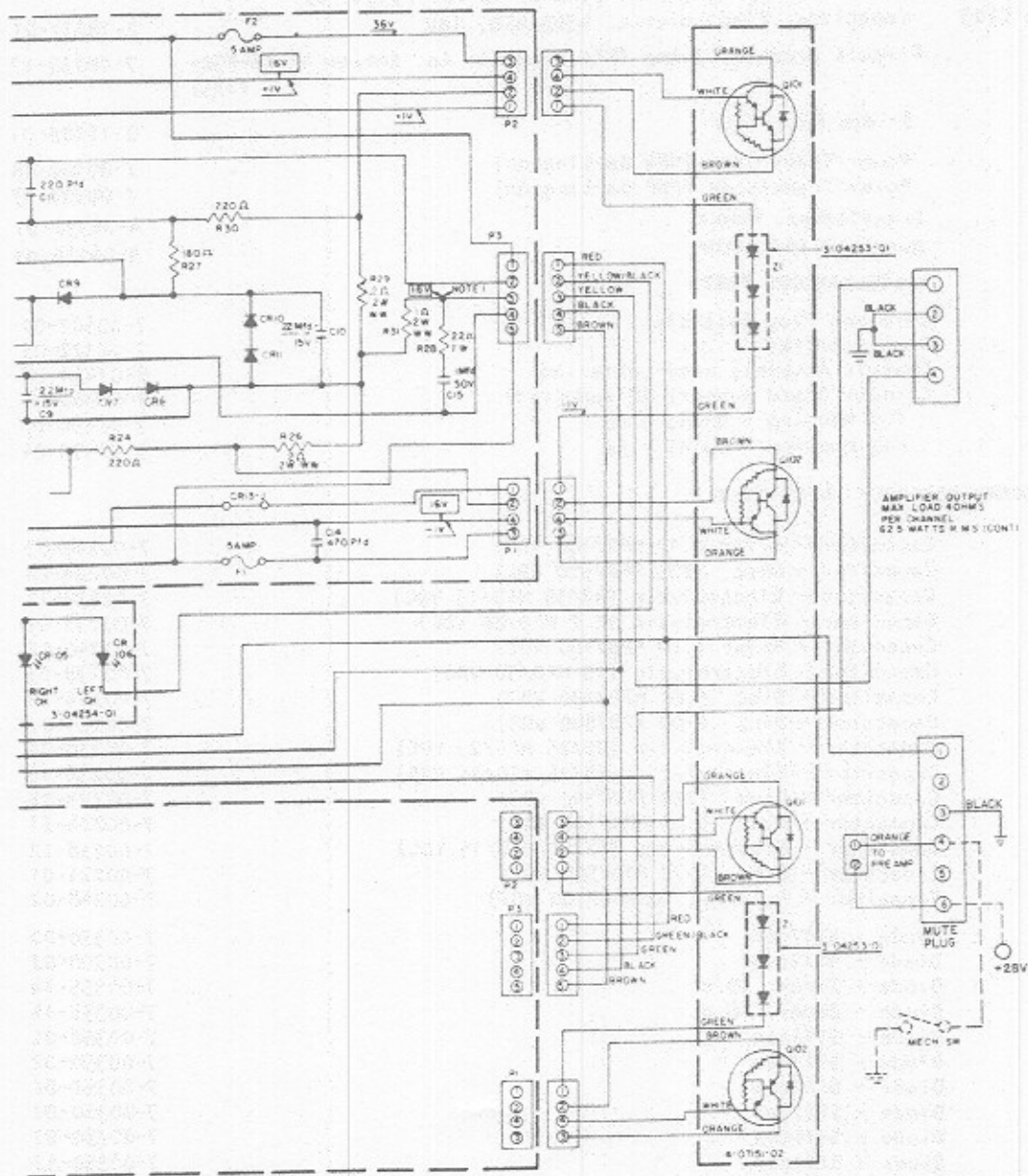
ROWE 4 07101-D1 DRIVER



RIGHT CHANNEL

DRIVER BOARD SAME AS ABOVE

- NOTES
1. POTENTIOMETER SET FOR 0V ± 0.05VDC @ 100Hz INPUT NO LOAD (NO POWER PACK CONNECTED)
 2. TAPS (PRIMARY):
 (1) 120V 100MVA TO 32 MAX AC
 (2) 132V TO 140V AC
 3. ALL RESISTORS 1/4 WATT UNLESS OTHERWISE SPECIFIED
 4. ALL VOLTAGE TAKEN WITH CHASSIS REFERENCE
 5. [Symbol: AC sine wave] INDICATES AC SIGNAL VOLTAGE NO LOAD
 6. [Symbol: DC arrow] INDICATES DC VOLTAGES NO LOAD
 7. I/OLE CURRENT I/O1 OR I/O2 EMITTER IS MAX 1.0MA S

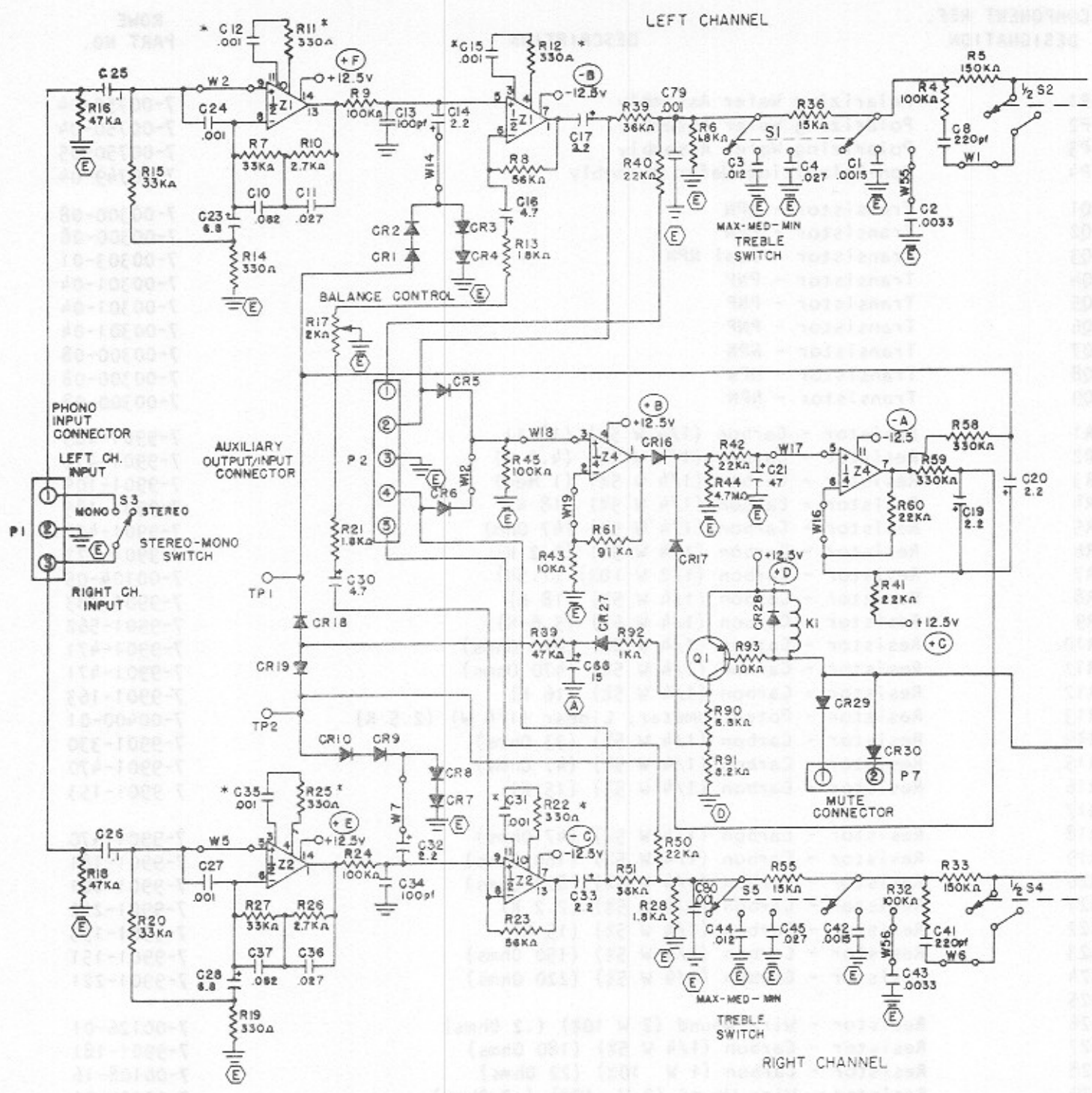


EQUIVALENT ENGG DRAWING 6-07438-104-07-0-0

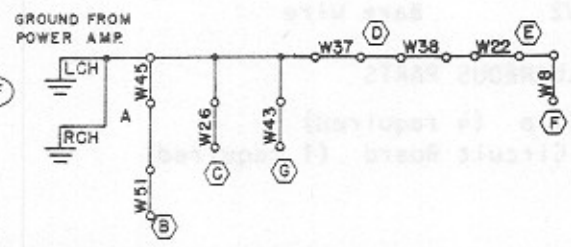
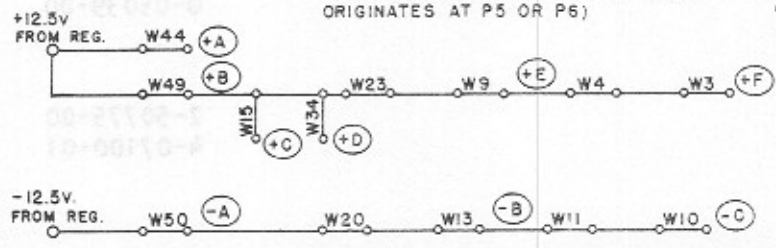
25W POWER AMPLIFIER SCHEMATIC DIAGRAM

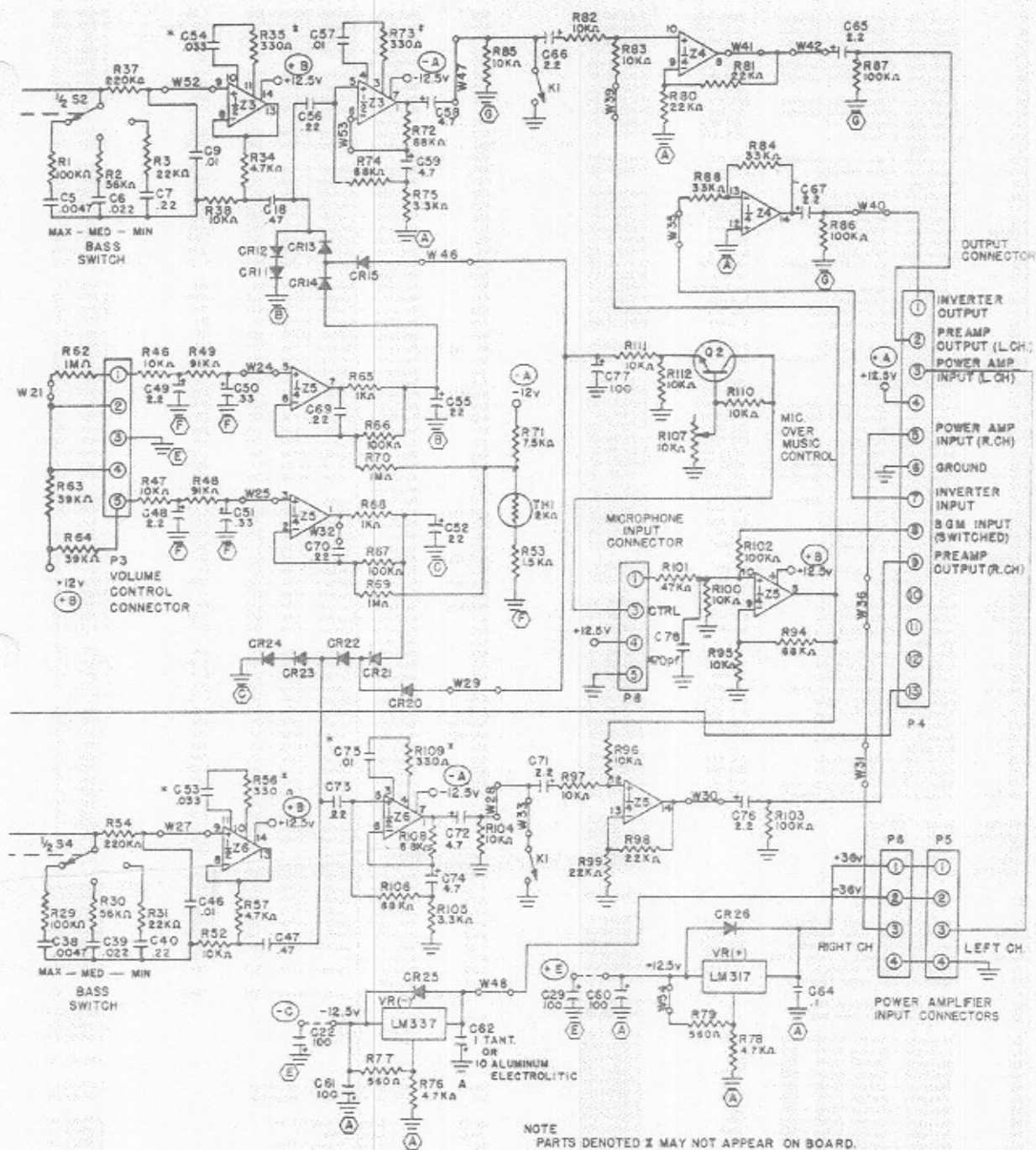
COMPONENT REF. DESIGNATION	DESCRIPTION	ROWE PART NO.
<u>125 W POWER AMPLIFIER 6-07438-06</u>		
C101	Capacitor, Mylar, 0.1 MFD, 400V (Paktron Type MB; Sprague Type 225P; Electromotive No. P91141-1)	7-00213-01
C102 to C103	Capacitor, Electrolytic, 4700 MFD, 50V	2-18231-01
CB101	Circuit Breaker, 3 Amp (ETA Products Co. Series 41-06-P30-1125)	7-00733-17
CR101	Bridge Rectifier	2-18225-01
Q101	Power Transistor (NPN Darlington)	7-00302-06
Q102	Power Transistor (PNP Darlington)	7-00302-07
T101	Transformer, Power Overload Indicator	4-06337-01 3-04254-01
MISCELLANEOUS PARTS		
	Cord and Plug Assembly	7-00502-02
	Strain Relief	7-02322-05
	Chassis Assembly with Lettering	6-07441-03
	Circuit Board Support (8 required)	7-05000-04
	Cap Housing - Combo Line	3-07490-03
	Cap Housing - Combo Line	3-07490-04
<u>DRIVER BOARD ASSEMBLY 4-07101-01</u>		
C1	Capacitor - Mylar (.10 MFD/100 VDC)	7-00240-02
C2	Capacitor - Disc (220 PFD/500 VDC)	7-00224-06
C3	Capacitor - Electrolytic (47/50 MFD/15 VDC)	7-00238-12
C4	Capacitor - Electrolytic (2.2 MFD/80 VDC)	7-00238-05
C5	Capacitor - Mylar (.10 MFD/100 VDC)	7-00240-02
C6	Capacitor - Electrolytic (15 MFD/50 VDC)	7-00238-09
C7	Capacitor - Disc (.01 MFD/100 VDC)	7-00224-21
C8	Capacitor - Disc (100 PFD/500 VDC)	7-00224-07
C9	Capacitor - Electrolytic (22/25 MFD/25 VDC)	7-00238-10
C10	Capacitor - Electrolytic (22/25 MFD/25 VDC)	7-00238-10
C11	Capacitor - Disc (220 PFD/500 VDC)	7-00224-06
C12	Capacitor - Disc (.01 MFD/100 VDC)	7-00224-21
C13	Capacitor - Electrolytic (47/50 MFD/15 VDC)	7-00238-12
C14	Capacitor - Disc (470 PFD/500 VDC)	7-00224-01
C15	Capacitor - Mylar (.10 MFD/100 VDC)	7-00240-02
CR1	Diode - Silicon	7-00350-02
CR2	Diode - Silicon	7-00350-02
CR3	Diode - Zener 10 V	7-00355-14
CR4	Diode - Zener 10 V	7-00355-14
CR5	Diode - Silicon	7-00350-02
CR6	Diode - Silicon	7-00350-02
CR7	Diode - Silicon	7-00350-02
CR8	Diode - Silicon	7-00350-02
CR9	Diode - Silicon	7-00350-02
CR10	Diode - Silicon	7-00350-02
CR11	Diode - Silicon	7-00350-02
CR12	Diode - Silicon	7-00350-02
CR13	Bare Wire	0-05039-00
F1	Fuse - 5 Amp	7-00720-10
F2	Fuse - 5 Amp	7-00720-10

COMPONENT REF. DESIGNATION	DESCRIPTION	ROWE PART NO.
P1	Polarizing Wafer Assembly	7-00750-04
P2	Polarizing Wafer Assembly	7-00750-04
P3	Polarizing Wafer Assembly	7-00750-05
P4	Non-Polarizing Wafer Assembly	7-00749-04
Q1	Transistor - NPN	7-00300-08
Q2	Transistor - NPN	7-00300-08
Q3	Transistor - Dual NPN	7-00303-01
Q4	Transistor - PNP	7-00301-04
Q5	Transistor - PNP	7-00301-04
Q6	Transistor - PNP	7-00301-04
Q7	Transistor - NPN	7-00300-08
Q8	Transistor - NPN	7-00300-08
Q9	Transistor - NPN	7-00300-08
R1	Resistor - Carbon (1/4 W 5%) (18 K)	7-9901-183
R2	Resistor - Carbon (1/4 W 5%) (4.7 K)	7-9901-472
R3	Resistor - Carbon (1/4 W 5%) (1 Meg)	7-9901-105
R4	Resistor - Carbon (1/4 W 5%) (18 K)	7-9901-183
R5	Resistor - Carbon (1/4 W 5%) (47 Ohm)	7-9901-470
R6	Resistor - Carbon (1/4 W 5%) (2.2 K)	7-9901-222
R7	Resistor - Carbon (1/2 W 10%) (1.5K)	7-00104-05
R8	Resistor - Carbon (1/4 W 5%) (18 K)	7-9901-183
R9	Resistor - Carbon (1/4 W 5%) (5.6 K)	7-9901-562
R10	Resistor - Carbon (1/4 W 5%) (470 Ohms)	7-9901-471
R11	Resistor - Carbon (1/4 W 5%) (470 Ohms)	7-9901-471
R12	Resistor - Carbon (1/4 W 5%) (16 K)	7-9901-163
R13	Resistor - Potentiometer, Linear (1/4 W) (2.5 K)	7-00400-01
R14	Resistor - Carbon (1/4 W 5%) (33 Ohms)	7-9901-330
R15	Resistor - Carbon (1/4 W 5%) (47 Ohms)	7-9901-470
R16	Resistor - Carbon (1/4 W 5%) (15 K)	7-9901-153
R17		
R18	Resistor - Carbon (1/4 W 5%) (47 Ohms)	7-9901-470
R19	Resistor - Carbon (1/4 W 5%) (180 Ohms)	7-9901-181
R20	Resistor - Carbon (1/4 W 5%) (820 Ohms)	7-9901-821
R21	Resistor - Carbon (1/4 W 5%) (2.2 K)	7-9901-222
R22	Resistor - Carbon (1/4 W 5%) (15 K)	7-9901-153
R23	Resistor - Carbon (1/4 W 5%) (150 Ohms)	7-9901-151
R24	Resistor - Carbon (1/4 W 5%) (220 Ohms)	7-9901-221
R25		
R26	Resistor - Wire Wound (2 W 10%) (.2 Ohms)	7-00126-01
R27	Resistor - Carbon (1/4 W 5%) (180 Ohms)	7-9901-181
R28	Resistor - Carbon (1 W 10%) (22 Ohms)	7-00108-16
R29	Resistor - Wire Wound (2 W 10%) (.2 Ohms)	7-00126-01
R30	Resistor - Carbon (1/4 W 5%) (220 Ohms)	7-9901-221
R31	Resistor - Wire Wound (2 W 10%) (.1 Ohms)	7-00126-02
R32	Resistor - Carbon (1/4 W 5%) (150 Ohms)	7-9901-151
W1 - W2	Bare Wire	0-05039-00
MISCELLANEOUS PARTS		
	Fuse Clip (4 required)	2-50775-00
	Drive Circuit Board (1 required)	4-07100-01



POWER SUPPLY JUMPER DIAGRAM
 +12.5v, -12.5v, AND GROUND CONNECTIONS
 (+12.5v, -12.5v LINE STARTING FROM EACH RESPECTIVE
 REGULATOR AND THE GROUND LINE STARTING
 FROM THE POWER AMP GROUND WHICH
 ORIGINATES AT P5 OR P6)





NOTE
 PARTS DENOTED X MAY NOT APPEAR ON BOARD.
 UNLESS OTHERWISE NOTED.
 ALL CAPACITORS ARE RATED IN μ F.
 ALL RESISTORS ARE 1/4 WATT.
 INVERTER INTENDED FOR LEFT CHANNEL
 USAGE ONLY

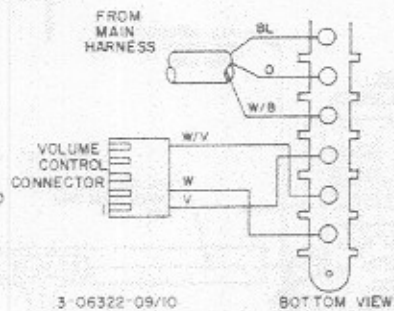
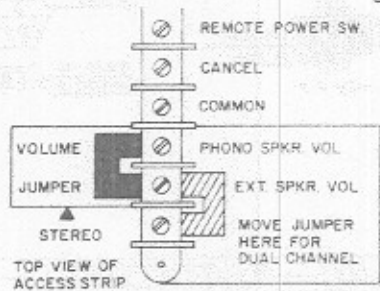
STEREO PREAMPLIFIER ASS'Y
 EQUIVANT ENG DWG 6-07925-01-Q-2 F

COMPONENT LIST

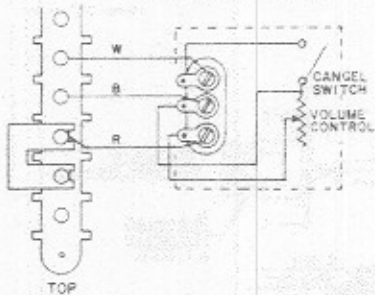
C1	Capacitor - Monolithic Ceramic	.0015 Mfd	7-00286-21	R13	Resistor - Carbon (1/4W - 5%)	1.8K	7-9901-182
C2	Capacitor - Monolithic Ceramic	.0033 Mfd	7-00286-27	R14	Resistor - Carbon (1/4W - 5%)	330 Ohms	7-9901-331
C3	Capacitor - Monolithic Ceramic	.012 Mfd	7-00286-38	R15	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333
C4	Capacitor - Mylar	.027 Mfd	7-00215-35	R16	Resistor - Carbon (1/4W - 5%)	47K	7-9901-473
C5	Capacitor - Monolithic Ceramic	.0047 Mfd	7-00286-30	R17	Potentiometer	2K	7-00400-14
C6	Capacitor - Monolithic Ceramic	.022 Mfd	7-00286-41	R18	Resistor - Carbon (1/4W - 5%)	47K	7-9901-473
C7	Capacitor - Mylar	.22 Mfd	7-00215-53	R19	Resistor - Carbon (1/4W - 5%)	330 Ohms	7-9901-331
C8	Capacitor - Monolithic Ceramic	.220 Pfd	7-00286-06	R20	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333
C9	Capacitor - Monolithic Ceramic	.01 Mfd	7-00286-17	R21	Resistor - Carbon (1/4W - 5%)	1.8K	7-9901-182
C10	Capacitor - Mylar	.082 Mfd	7-00215-47	R22	Not Used		
C11	Capacitor - Mylar	.022 Mfd	7-00215-35	R23	Resistor - Carbon (1/4W - 5%)	56K	7-9901-563
C12	Not Used			R24	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C13	Capacitor - Monolithic Ceramic	100 Pfd	7-00286-01	R25	Not Used		
C14	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R26	Resistor - Carbon (1/4W - 5%)	2.7K	7-9901-272
C15	Not Used			R27	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333
C16	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R28	Resistor - Carbon (1/4W - 5%)	1.8K	7-9901-182
C17	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R29	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C18	Capacitor - Mylar	.47 Mfd	7-00215-57	R30	Resistor - Carbon (1/4W - 5%)	56K	7-9901-563
C19-C20	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R31	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
C21-C22	Capacitor - Electrolytic	100 Mfd	7-00238-14	R32	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C23	Capacitor - Tantalum	6.8 Mfd	7-00251-20	R33	Resistor - Carbon (1/4W - 5%)	150K	7-9901-154
C24	Capacitor - Monolithic Ceramic	.001 Mfd	7-00286-18	R34	Resistor - Carbon (1/4W - 5%)	4.7K	7-9901-472
C25-C26	Capacitor - Mylar	.001 Mfd	7-00215-49	R35	Not Used		
C27	Capacitor - Monolithic Ceramic	6.8 Mfd	7-00251-20	R36	Resistor - Carbon (1/4W - 5%)	15K	7-9901-154
C28	Capacitor - Tantalum	100 Mfd	7-00238-14	R37	Resistor - Carbon (1/4W - 5%)	220K	7-9901-224
C29	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R38	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C30	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R39	Resistor - Carbon (1/4W - 5%)	36K	7-9901-363
C31	Not Used			R40	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
C32-C33	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R41-R42	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
C34	Capacitor - Monolithic Ceramic	100 Pfd	7-00286-01	R43	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C35	Not Used			R44	Resistor - Carbon (1/4W - 5%)	4.7K	7-9901-475
C36	Capacitor - Mylar	.022 Mfd	7-00215-35	R45	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C37	Capacitor - Mylar	.082 Mfd	7-00215-47	R46-R47	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C38	Capacitor - Monolithic Ceramic	.0047 Mfd	7-00286-30	R48-R49	Resistor - Carbon (1/4W - 5%)	91K	7-9901-913
C39	Capacitor - Monolithic Ceramic	.022 Mfd	7-00286-41	R50	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
C40	Capacitor - Mylar	.22 Mfd	7-00215-53	R51	Resistor - Carbon (1/4W - 5%)	36K	7-9901-363
C41	Capacitor - Monolithic Ceramic	.220 Pfd	7-00286-06	R52	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C42	Capacitor - Monolithic Ceramic	.0015 Mfd	7-00286-21	R53	Resistor - Carbon (1/4W - 5%)	1.5K	7-9901-152
C43	Capacitor - Monolithic Ceramic	.0033 Mfd	7-00286-27	R54	Resistor - Carbon (1/4W - 5%)	220K	7-9901-224
C44	Capacitor - Monolithic Ceramic	.012 Mfd	7-00286-38	R55	Resistor - Carbon (1/4W - 5%)	15K	7-9901-153
C45	Capacitor - Mylar	.027 Mfd	7-00215-35	R56	Not Used		
C46	Capacitor - Monolithic Ceramic	.01 Mfd	7-00286-17	R57	Resistor - Carbon (1/4W - 5%)	4.7K	7-9901-472
C47	Capacitor - Mylar	.47 Mfd	7-00215-57	R58-R59	Resistor - Carbon (1/4W - 5%)	330K	7-9901-334
C48-C49	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R60	Resistor - Carbon (1/4W - 5%)	91K	7-9901-913
C50-C51	Capacitor - Tantalum	3.3 Mfd	7-00251-19	R61	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C52	Capacitor - Electrolytic	.22 Mfd	7-00238-10	R62	Resistor - Carbon (1/4W - 5%)	1M	7-9901-105
C53-C54	Not Used			R63-R64	Resistor - Carbon (1/4W - 5%)	39K	7-9901-393
C55	Capacitor - Electrolytic	.22 Mfd	7-00238-10	R65	Resistor - Carbon (1/4W - 5%)	1K	7-9901-102
C56	Capacitor - Mylar	.22 Mfd	7-00215-53	R66-R67	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C57	Not Used			R68	Resistor - Carbon (1/4W - 5%)	1K	7-9901-102
C58-C59	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R69-R70	Resistor - Carbon (1/4W - 5%)	1M	7-9901-105
C60-C61	Capacitor - Electrolytic	100 Mfd	7-00238-14	R71	Resistor - Carbon (1/4W - 5%)	7.5K	7-9901-752
C62	Capacitor - Electrolytic	10 Mfd	7-00238-08	R72	Resistor - Carbon (1/4W - 5%)	68K	7-9901-683
C63	Not Used			R73	Not Used		
C64	Capacitor - Monolithic Ceramic	.1 Mfd	7-00285-14	R74	Resistor - Carbon (1/4W - 5%)	68K	7-9901-683
C65-C67	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R75	Resistor - Carbon (1/4W - 5%)	3.3K	7-9901-332
C68	Capacitor - Electrolytic	15 Mfd	7-00238-09	R76	Resistor - Carbon (1/4W - 5%)	4.7K	7-9902-472
C69-C70	Capacitor - Monolithic Ceramic	.22 Mfd	7-00285-10	R77	Resistor - Carbon (1/4W - 5%)	560 Ohm	7-9902-561
C71	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R78	Resistor - Carbon (1/4W - 5%)	4.7K	7-9902-472
C72	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R79	Resistor - Carbon (1/4W - 5%)	560 Ohm	7-9902-561
C73	Capacitor - Mylar	.22 Mfd	7-00215-53	R80-R81	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
C74	Capacitor - Electrolytic	4.7 Mfd	7-00238-06	R82-R83	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C75	Not Used			R84	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333
C76	Capacitor - Electrolytic	2.2 Mfd	7-00238-05	R85	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
C77	Capacitor - Electrolytic	100 Mfd	7-00238-14	R86-R87	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
C78	Capacitor - Monolithic Ceramic	4.0 uF	7-00286-12	R88	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333
C79-C80	Capacitor - Monolithic Ceramic	.001 MFD	7-00286-18	R89	Resistor - Carbon (1/4W - 5%)	47K	7-9901-473
CR1-CR24	Diode - Silicon		7-00350-05	R90	Resistor - Carbon (1/4W - 5%)	6.8K	7-9901-682
CR25-CR26	Diode - Silicon		7-00350-07	R91	Resistor - Carbon (1/4W - 5%)	8.2K	7-9901-822
CR27	Diode - Silicon		7-00350-07	R92	Resistor - Carbon (1/4W - 5%)	1K	7-9901-102
CR28	Diode - Silicon		7-00350-05	R93	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
CR29-CR30	Diode - Silicon		7-00350-07	R94	Resistor - Carbon (1/4W - 5%)	68K	7-9901-683
K1	Relay - Reed		7-00422-07	R95-R97	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
P1	Non-Polarized Wafer Assembly	(3 Ckt)	7-00749-21	R98-R99	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223
P2-P3	Non-Polarized Wafer Assembly	(5 Ckt)	7-00749-23	R100	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
P4	Non-Polarized Wafer Assembly	(13 Ckt)	7-00749-31	R101	Resistor - Carbon (1/4W - 5%)	47K	7-9901-473
P5-P6	P. C. Bd. Connector - Top Entry	(4 Ckt)	7-00748-02	R102-R103	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104
P7	Polarized Wafer Assembly	(2 Ckt)	7-00750-02	R104	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
P8	Non-Polarized Wafer Assembly	(5 Ckt)	7-00749-23	R105	Resistor - Carbon (1/4W - 5%)	3.3K	7-9901-332
Q1	Transistor - Silicon PNP		7-00301-04	R106	Resistor - Carbon (1/4W - 5%)	68K	7-9901-683
Q2	Transistor - Silicon NPN		7-00300-08	R107	Potentiometer	10K	7-00400-14
R1	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104	R108	Resistor - Carbon (1/4W - 5%)	68K	7-9901-683
R2	Resistor - Carbon (1/4W - 5%)	56K	7-9901-563	R109	Not Used		
R3	Resistor - Carbon (1/4W - 5%)	22K	7-9901-223	R110-R112	Resistor - Carbon (1/4W - 5%)	10K	7-9901-103
R4	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104	S1-S2	Switch - Slide		3-07862-03
R5	Resistor - Carbon (1/4W - 5%)	150K	7-9901-154	S3	Switch - Slide		3-07862-02
R6	Resistor - Carbon (1/4W - 5%)	1.8K	7-9901-182	S4-S5	Switch - Slide		3-07862-03
R7	Resistor - Carbon (1/4W - 5%)	33K	7-9901-333	TH1	Thermistor		7-00370-07
R8	Resistor - Carbon (1/4W - 5%)	56K	7-9901-563	VR+	Voltage Regulator - Positive		7-00365-07
R9	Resistor - Carbon (1/4W - 5%)	100K	7-9901-104	VR-	Voltage Regulator - Negative		7-00365-08
R10	Resistor - Carbon (1/4W - 5%)	2.7K	7-9901-272	Z1-Z3	IC - Stereo Preamplifier		3-08002-06
R11-R12	Not Used			Z4-Z5	IC - Quad Op Amp		3-08002-15
				Z6	IC - Stereo Preamplifier		3-08002-06
				W1-W56	Jumper - Bare Wire		0-05039-00
				DP1	Housing Terminal		7-00755-03
				DP2	Housing Terminal		7-00756-01
							7-00755-05
							7-00756-01

PARTS LIST STEREO PREAMPLIFIER 6-07925-01-Q-2

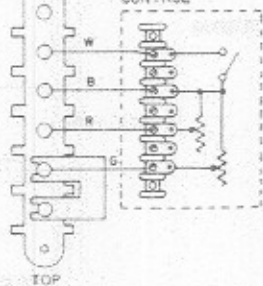
REMOTE VOLUME CONTROL
CONNECTIONS AND WIRING



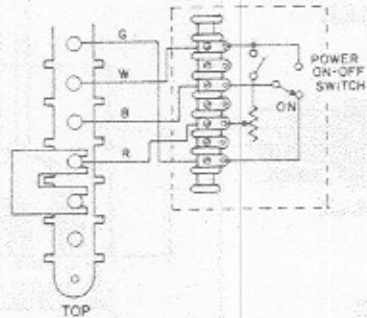
3-06322-01/02
STEREO VOLUME CONTROL



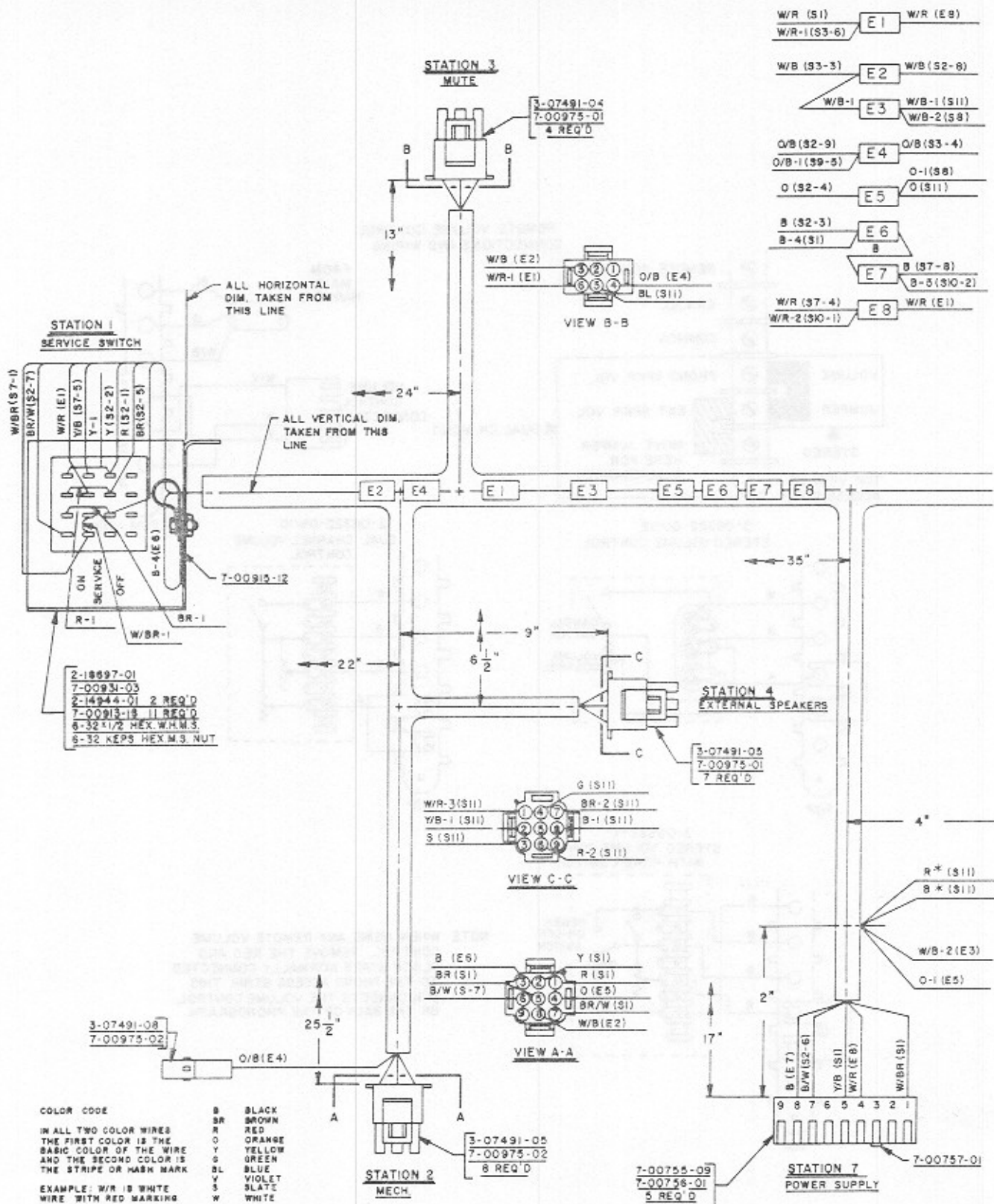
3-06322-09/10
DUAL CHANNEL VOLUME CONTROL

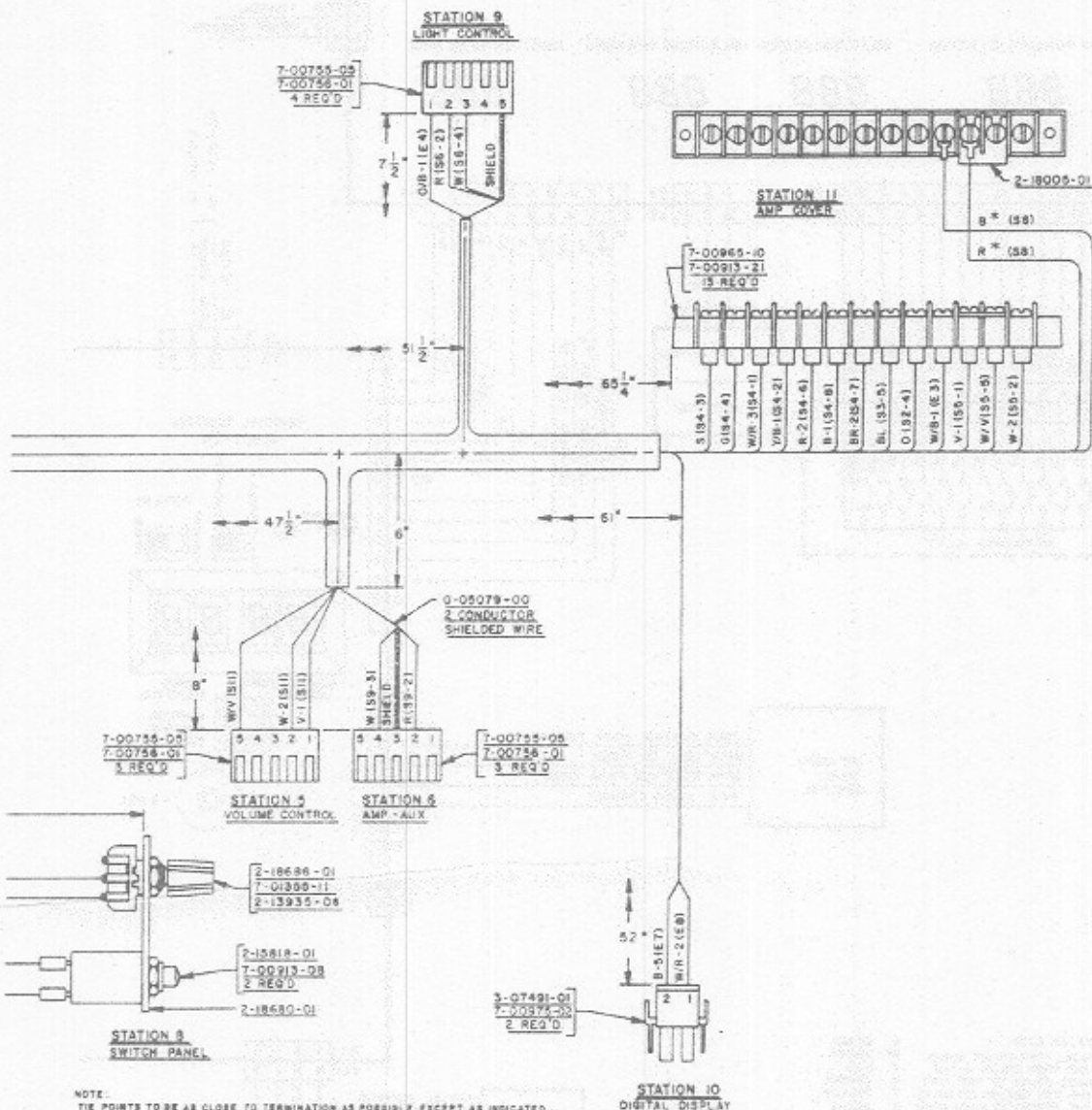


3-06322-11
STEREO VOLUME CONTROL
WITH POWER SWITCH



NOTE WHEN USING ANY REMOTE VOLUME CONTROL, REMOVE THE RED AND BLACK WIRES NORMALLY CONNECTED TO THE PHONO ACCESS STRIP. THIS DISCONNECTS THE VOLUME CONTROL ON THE BACK OF THE PHONOGRAPH.

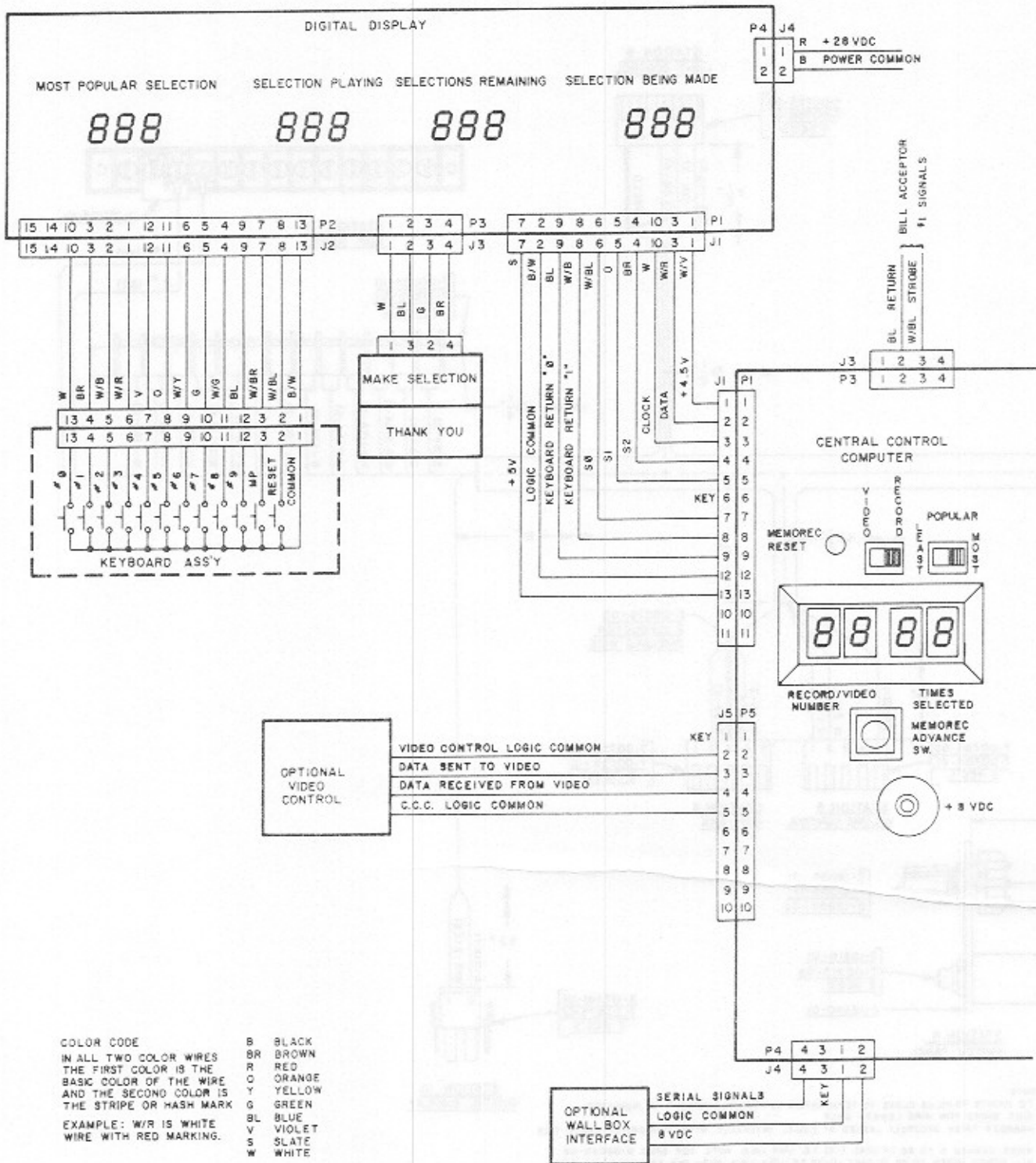




NOTE:
 TIE POINTS TO BE AS CLOSE TO TERMINATION AS POSSIBLE EXCEPT AS INDICATED
 DIMS SHOWN FOR WIRE LENGTH ONLY
 HARNESS TO BE SECURELY LASHED AT EQUAL INTERVALS WITH 7-08001-01 CABLE TIES
 WIRES MARKED * TO BE 24 GAGE 7/32 T.C. 1/64 A.W.M. 90°C PER SPEC 0-08040-00
 ALL OTHER WIRES TO BE 20 GAGE 10/30 T.C. 1/64 A.W.M. 90°C PER SPEC 0-05010-00
 MACHINE TERMINATIONS MUST BE CRIMPED ON INSULATION
 MACHINE TERMINATIONS MUST BE CRIMPED ON WIRE TO WITHSTAND 1# PULL
 WIRE LENGTH TOL. ± 1/4 UNLESS NOTED

Equiv. Eng'g. Drawing 6-09819-01

R-89 WIRING DIAGRAM

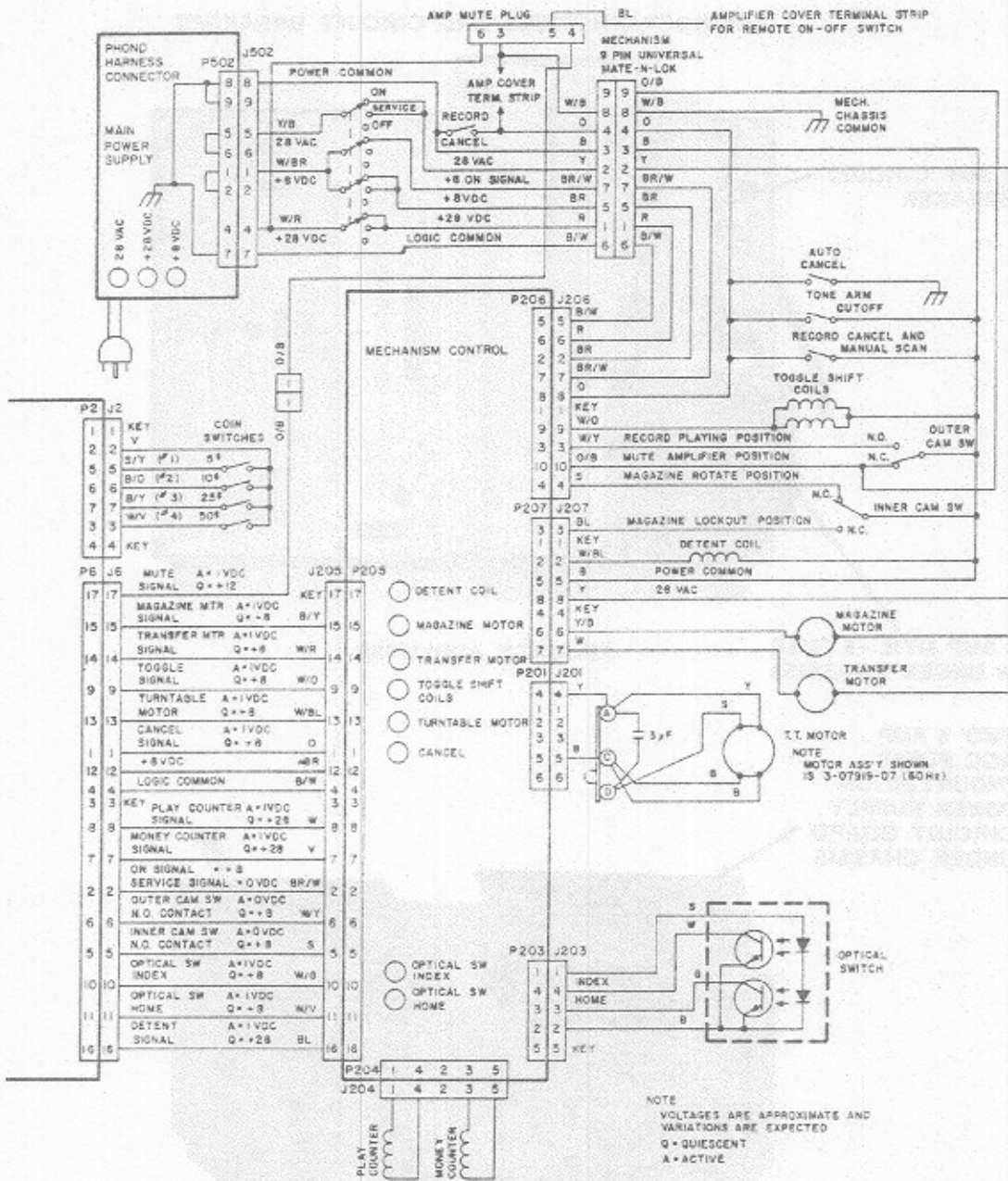


COLOR CODE

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



NOTE
 VOLTAGES ARE APPROXIMATE AND
 VARIATIONS ARE EXPECTED
 Q = QUIESCENT
 A = ACTIVE

6-09800-07-Q7

R-89 PHONOGRAPH
 BLOCK DIAGRAM