ROWE/AMI

# CD-100F LaserStar V

## Compact Disc Phonograph

Field Service Manual
& Parts Catalog

## Volume 2 of 2

**CBA-2 Maintenance, Troubleshooting, Adjustments, Parts Catalog**

PART NO. 21822637
FIRST EDITION

# CD-100F

# LaserStar® IV

## Compact Disc Phonograph

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## Field Service Manual
## And Parts Catalog

## Volume 2

ROWE®

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## SECTION 4 — CBA-2 MAINTENANCE



## SECTION 5 — TROUBLESHOOTING

## SECTION 5 — TROUBLESHOOTING *(Continued)*

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## SECTION 7 — MISCELLANEOUS

## SECTION 8 — PARTS CATALOG



## FREQUENTLY USED FIGURES AND TABLES FOR VOLUME 2

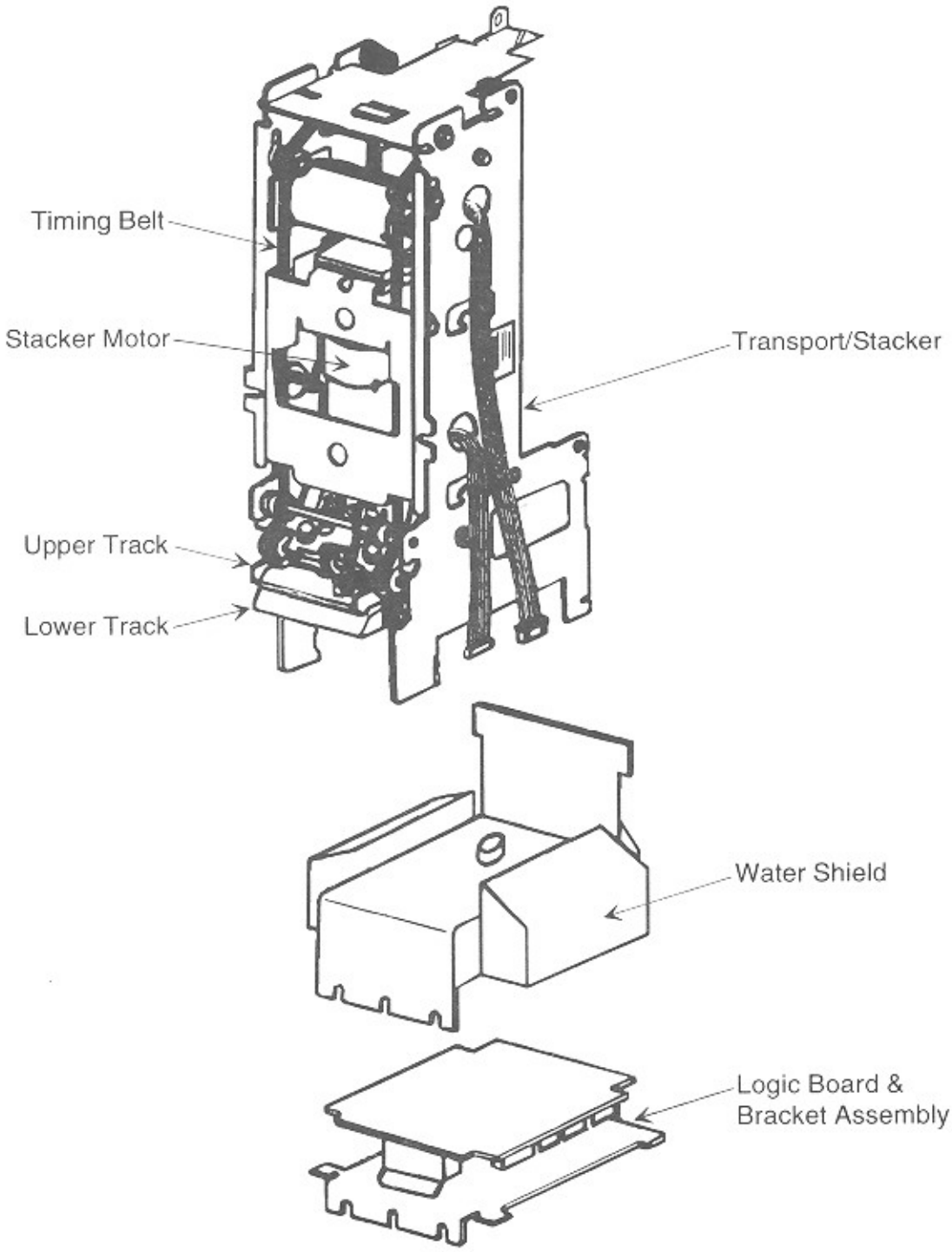



**Figure 4-1. CBA-2 Components**

# Section 4: CBA-2 Maintenance

## SYSTEM DESCRIPTION

The Rowe Compact Bill Acceptor-2 (CBA-2) extends the capability of your equipment to include the acceptance of one and five dollar bills. Valid bills of genuine United States currency are accepted by the CBA-2, which then outputs credit pulses. Rejected bills are returned to the customer.

### Equipment Description

The CBA-2 consists of a bill acceptor transport/stacker mechanism, an electronic logic board, and a power supply integrated into a single unit.

#### TRANSPORT

The bill acceptor transport mechanism contains optical and magnetic sensors for bill validation. These sensors transmit their signals to the control circuitry.

The transport/stacker unit uses long life optical cells and a timing belt drive for trouble-free performance.

#### LOGIC BOARD

The logic board contains electronics for operation of the CBA-2. Microcomputer based electronic circuitry provides protection against bogus bills and bills of different denominations. The control of the transport motor, the stacker motor, and the credit function are also contained in the logic board.

#### BILL ACCEPTOR TRANSPORT/STACKER

The CBA-2 Transport is a mechanical device that carries the bill through five test stations. The transport contains a $V_1$, $V_2$, $V_3$, and $V_4$ sensor and a magnetic head.

The $V_1$ sensor consists of an infrared emitter and receiver which senses that a bill has been inserted into the transport.

The $V_2$ backside sensor consists of a green emitter and receiver to make checks on the backside of the bill.

The $V_3$ sensor consists of a detector, which senses that the bill has reached the magnetic head.

$V_4$ verifies that the bill has left the transport.

#### MAGNETIC HEAD AND BILL PRESSURE ROLLER

The magnetic head checks the magnetic properties of the bill. A spring-loaded pressure roller, located under the lower track, presses the bill firmly against the magnetic head.

#### ANTI-CHEAT LEVER AND $V_4$ SENSOR

The anti-cheat lever prevents the bill from being pulled back through the transport once it has exited and credit has been given. The anti-cheat lever also works in conjunction with the $V_4$ sensor, sensing bill position and providing a signal to give credit when the bill has exited the transport. The $V_4$ sensor is an infrared emitter/receiver.

#### TRANSPORT/STACKER DRIVE

The transport uses a direct gear drive from the motor to the drive shaft. The drive shaft drives the front belts, which are also timing belts. Adjustable idler pulleys are used to maintain the correct timing belt tension. The rear belts are the semi-stretch type and do not require length adjustment. The bill is trapped between the front and rear belts for positive, non-slip movement through the transport.

The stacker uses a gear-head motor. A cam on the motor shaft causes the bill pusher plate to move forward and backward inside the transport. This action removes the bill from between the belts and places it into the bill box. A micro-switch riding on the motor cam allows the logic board to monitor the pusher plate position.

## Bill Acceptor Logic Board

The logic board directs all of the operations of the bill acceptor. It contains a microcomputer which is the "brain" of the system, as well as self-diagnostic circuitry and the interface and drive circuitry necessary to monitor and control the transport/stacker.

Power is provided by the power supply. The CBA-2 requires a voltage of +12 VDC. A regulator on the logic board reduces the +12 VDC to +5 VDC.

The logic board contains all the electrical controls and visual indicators for the CBA-2. These are:

#### POWER AND STATUS LED'S

The logic board contains a self diagnostic feature, which is capable of detecting various malfunctions as well as certain normal conditions within the bill acceptor. The POWER LED indicates that the CBA-2 is receiving power. The STATUS LED indicates the status of the CBA-2.

#### RESET PUSHBUTTON

When the CBA-2 is in a FAULT condition, this pushbutton will cause the CBA-2 to reset.

#### DIP SWITCH SETTING

Switches 1,3, and 4 are set to ON, the rest are set to OFF.

# FUNCTIONAL DESCRIPTION

The following functional description will give you a basic understanding of how the bill acceptor normally operates. This information and the schematic in *Figures 4-2 and 4-3* can also be used as an aid in troubleshooting.

## Power-Up Sequence

The CBA-2 goes through a well defined power-up sequence as follows:

1. The transport motor runs forward for about 75 milliseconds.

2. The stacker is cycled to purge any bills from the drive belts.

3. The transport motor runs in reverse and the computer adjusts the motor to the correct speed. If any of the sensors detect a bill during power-up, the reject sequence described later in this section is initiated. If this sequence successfully removes the bill (or object), the power-up sequence just described is followed.

If the stacker does not cycle properly during the power-up sequence, the bill acceptor enters the shutdown sequence (which is described later).

If the transport motor speed cannot be correctly adjusted within 5 seconds, a modified shutdown sequence is followed:

1. The bill acceptor ignores any inserted bills and the STATUS LED flashes in a 7-flash sequence.

2. During each 2-minute interval (up to 8½ hours maximum) the computer will attempt to adjust the motor speed correctly. If the correct speed is attained, the unit will enter the standby mode. If, after 8½ hours, the speed still cannot be set correctly, the bill acceptor will remain in shutdown mode with the STATUS LED in a 7-flash sequence.

## Acceptor in Standby Mode (Ready to Accept Bills)

Although the CBA-2 appears to be idle, it is continually checking the sensors in the bill transport and bill stacker mechanisms. If the CBA-2 senses an incorrect signal, it takes the appropriate action.

### Problems That May Arise in the Standby Mode:

#### THE $V_3$ OR $V_4$ SENSOR IS ACTIVE

The bill acceptor assumes that something is trapped in the bill transport path if either of these sensors are active while in the STANDBY mode. The bill acceptor then begins the REJECT sequence to remove the trapped object from the path. For further information, see the following paragraphs on the REJECT sequence.

#### STACKER HOME SWITCH NOT ACTIVATED

The bill acceptor turns on the stacker motor and attempts to return the stacker platen to its HOME position. If it is successful, the bill acceptor returns to the STANDBY mode. If the bill acceptor is unsuccessful, it shuts itself down. For further information, see the following section on the SHUTDOWN sequence:

### Actions Taken by the Bill Acceptor to Correct Problems

#### REJECT SEQUENCE

In order to clear the bill transport mechanism and purge any objects from the transport path, the bill acceptor turns on its motor in the reverse direction. If the bill acceptor is following a normal bill rejection sequence, it will reject the bill and the transport mechanism will return the bill to the bill acceptor opening. The bill acceptor will place the bill so that the bill can be easily grasped by the customer. If the customer retrieves the bill within five seconds, and all other sensors indicate that the transport path is clear, the bill acceptor returns to the STANDBY mode. If the track is not clear, the bill acceptor begins the SELF-CLEARING sequence described in the following paragraph:

#### SELF-CLEARING SEQUENCE

If the transport cannot clear the transport path as previously described, the bill acceptor begins a SELF-CLEARING sequence. This process consists of a series of reverse cycles to dislodge any object trapped in the transport. If this procedure is successful, the bill acceptor returns to the STANDBY mode. If the track is not clear after 10 cycles, the unit shuts down. The SHUTDOWN sequence is as follows:

#### SHUTDOWN SEQUENCE

Several things may cause a bill acceptor shutdown. During the SELF-CLEARING sequence, if the bill acceptor is unable to clear an object lodged in the transport path, it will initiate a SHUTDOWN sequence. In the event of a shutdown, the bill acceptor turns everything OFF except the STATUS LED, which it flashes ON and OFF to indicate a FAULT condition. After a fault has occurred, the system must be reset by pushing the RESET button on the logic board.

## Bill Acceptance Mode

### 1. The customer inserts a bill and bill validation begins

a. The $V_1$ sensor is covered by the leading edge of the bill.

b. The computer starts the Motor Forward and Motor On circuits, which start the transport motor in the forward direction.

c. As the bill is moved through the transport mechanism, the computer closely monitors all sensors for the proper signals and timings representative of a valid bill.

d. If the bill meets all of the necessary requirements, the transport motor continues to run until the bill exits the rear of the transport and allows the anti-cheat lever to move back to its rest position, which uncovers the $V_4$ sensor.

### 2. Bill validation sequence complete-The credit and stacking cycles are activated

a. The Transport motor continues to run until the bill is in position to be stacked.

b. The computer sends a credit signal to the output circuitry.

c. The computer also turns on the bill stacker motor for one cycle of the bill pusher plate, which will move the bill from the transport belts to the bill box.

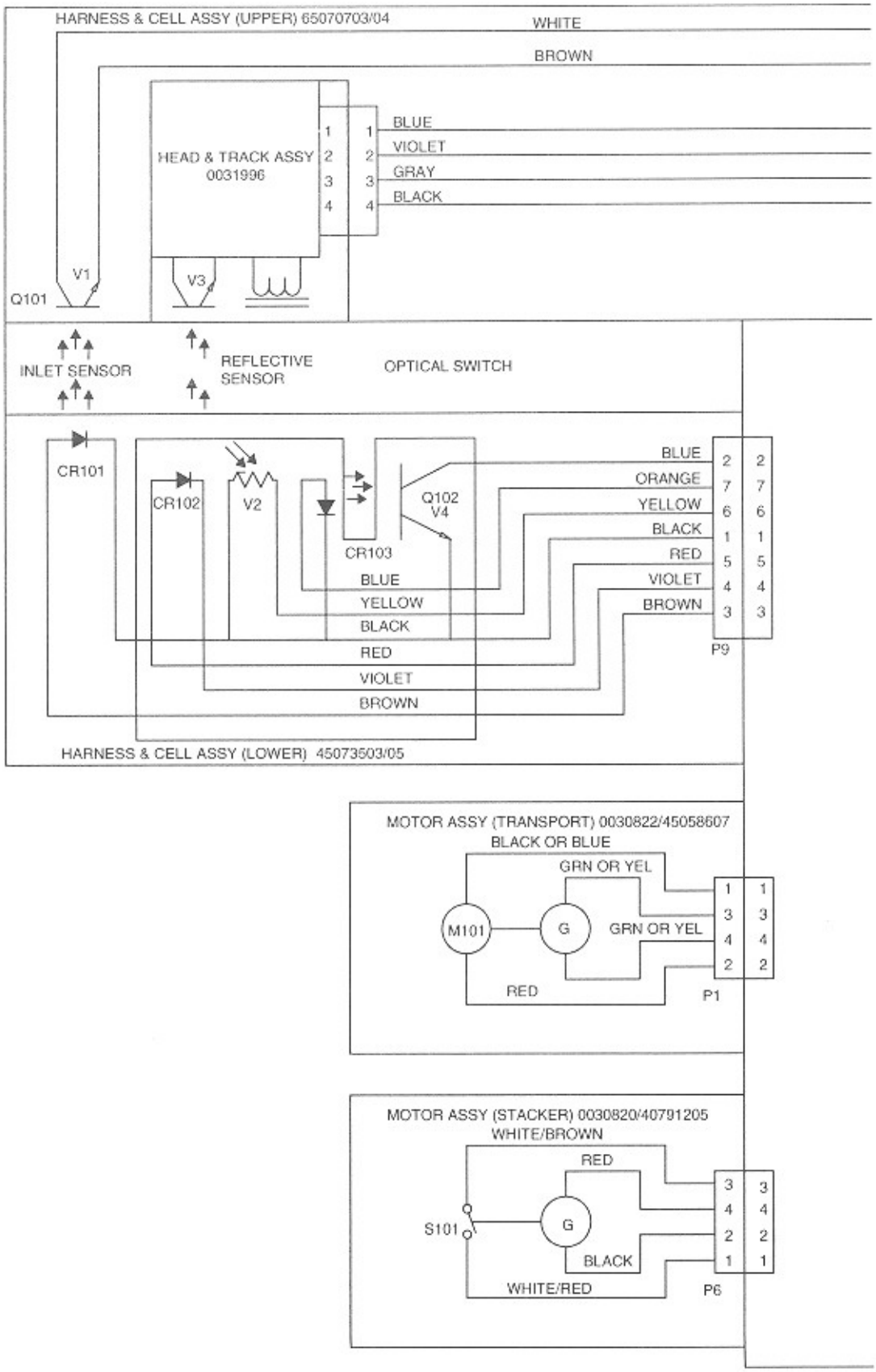
**3. If any of the validation conditions are not met, the bill is returned to the customer as follows:**

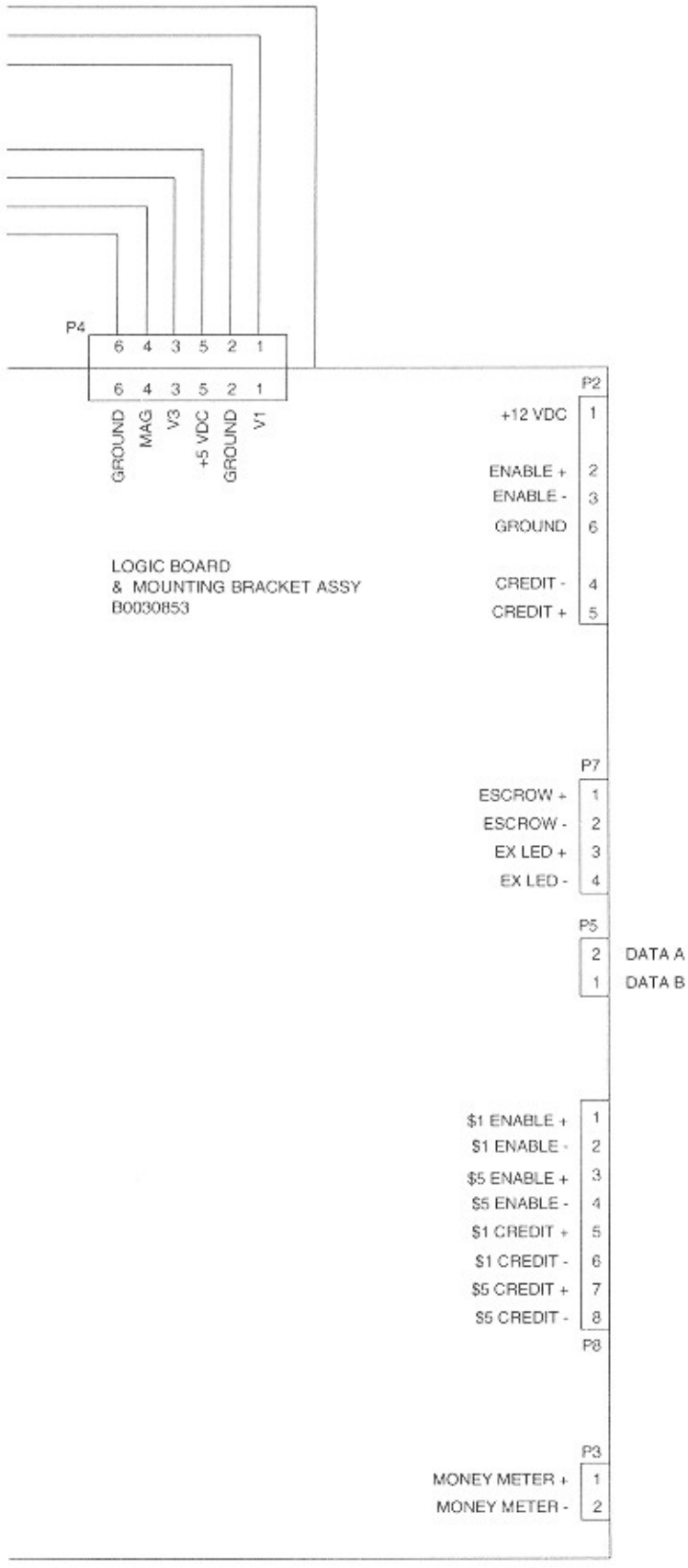
a. The transport motor changes direction from forward to reverse and returns the bill to the transport opening.

b. The computer checks for the $V_4$ and $V_3$ sensors to be uncovered by the returning bill.

c. The computer stops the transport motor with the leading edge of the bill still in the transport inlet covering the $V_1$ cell.

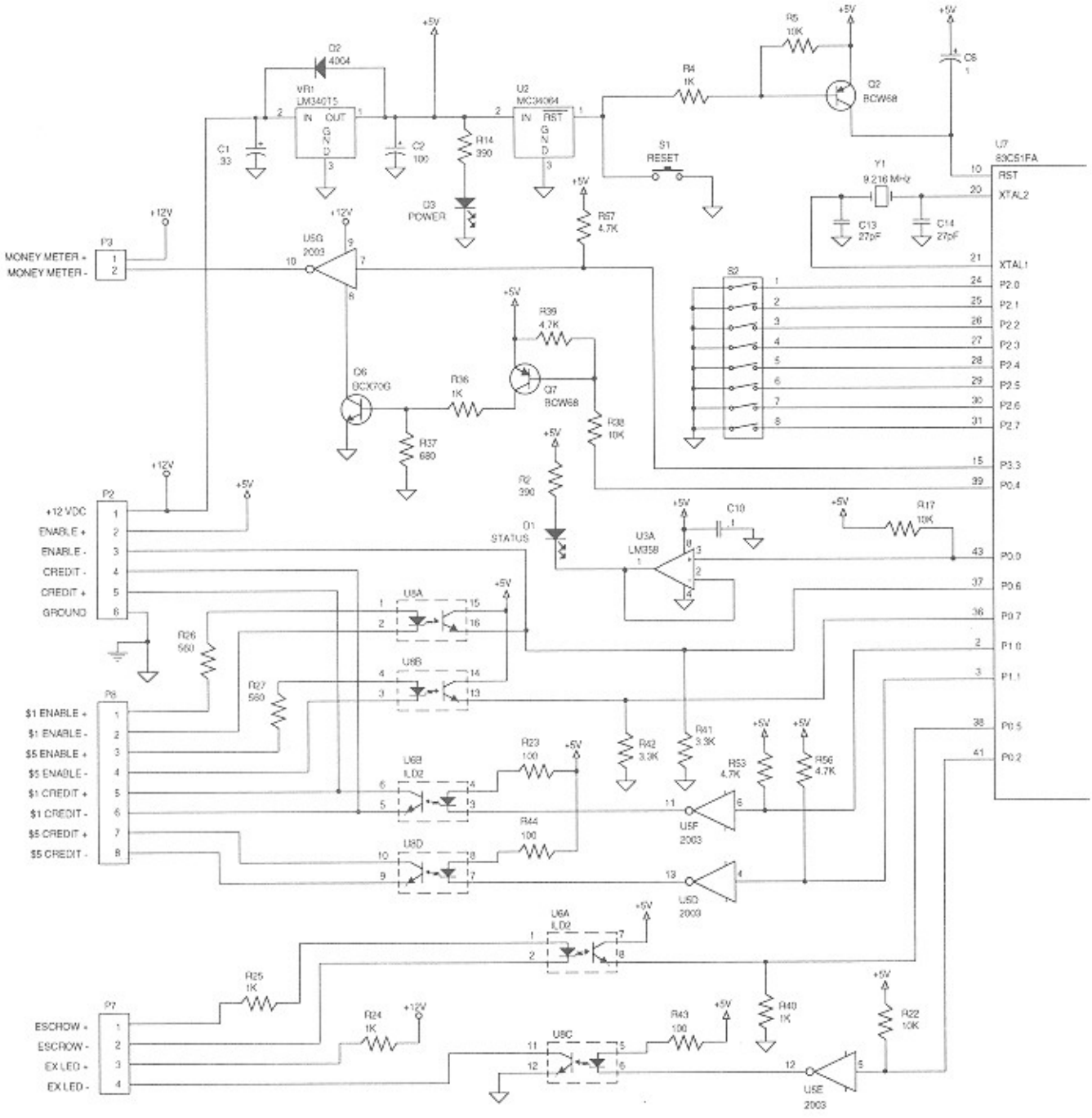
d. If the $V_1$ cell is still covered after 5 seconds, the computer enters the self-clearing sequence as described in *Self-Clearing Sequence* in this section.

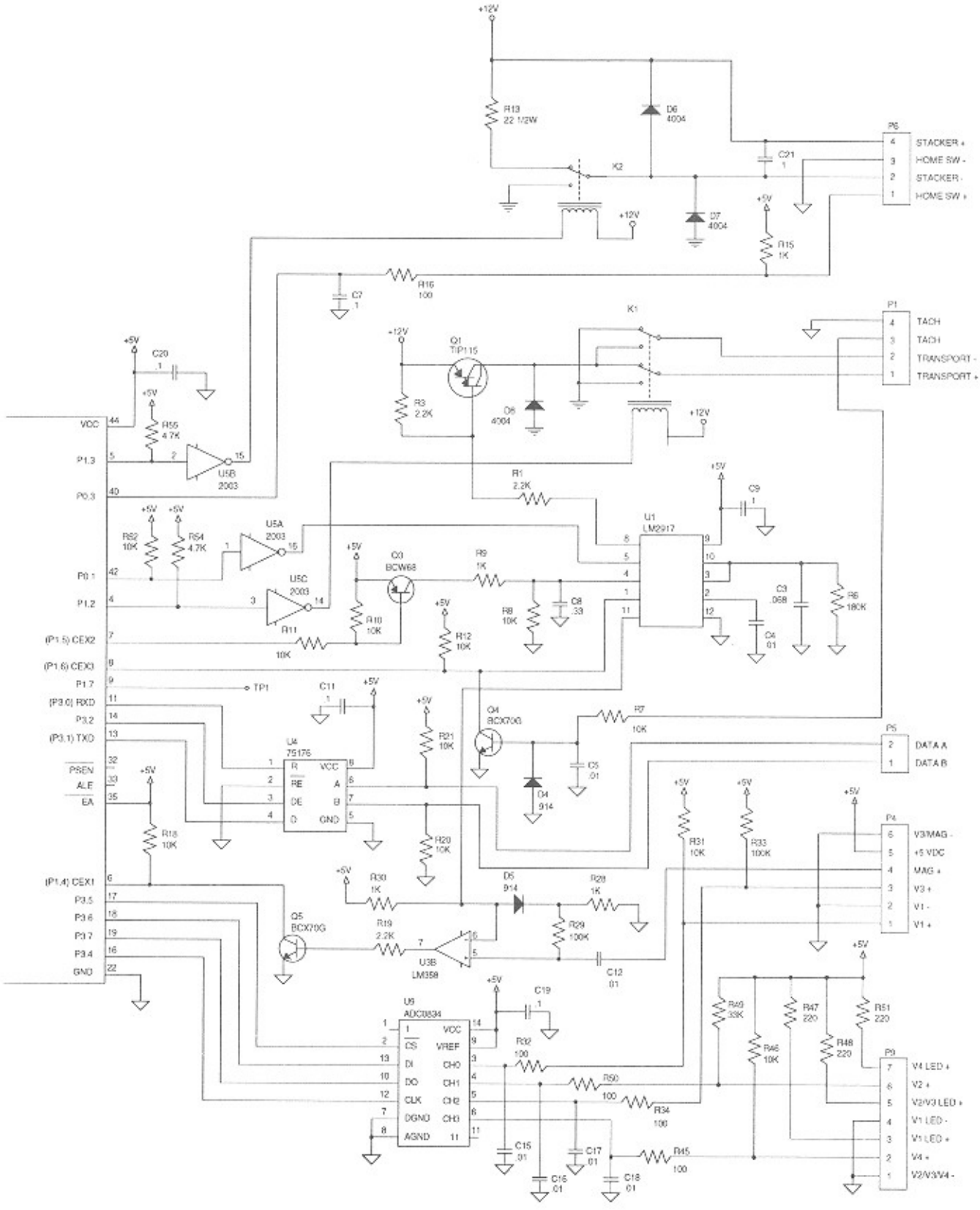

HARNESS & CELL ASSY (UPPER) 65070703/04
WHITE
BROWN
HEAD & TRACK ASSY
0031996
1
2
3
4
BLUE
VIOLET
GRAY
BLACK
V1
Q101
V3
INLET SENSOR
REFLECTIVE
SENSOR
OPTICAL SWITCH
CR101
CR102
V2
CR103
Q102
V4
BLUE
YELLOW
BLACK
RED
VIOLET
BROWN
ORANGE
P9
HARNESS & CELL ASSY (LOWER) 45073503/05
MOTOR ASSY (TRANSPORT) 0030822/45058607
BLACK OR BLUE
GRN OR YEL
M101
G
RED
P1
MOTOR ASSY (STACKER) 0030820/40791205
WHITE/BROWN
S101
WHITE/RED
P6




For Equivalent Engineering Drawing See 65093004-Q7 - B

**Figure 4-2. System Block Diagram**


D2
4004
VR1
LM340T5
IN
OUT
GND
C1
.33
C2
100
R14
390
D3
POWER
U2
MC34064
RST
S1
RESET
R4
1K
R5
10K
Q2
BCW68
C8
U7
83C51FA
RST
XTAL2
XTAL1
Y1
9.216 MHz
C13
27pF
C14
27pF
R67
4.7K
P3
MONEY METER +
MONEY METER -
U5G
2003
S2
P2.0
P2.1
P2.2
P2.3
P2.4
P2.5
P2.6
P2.7
R39
4.7K
Q6
BCX70G
R36
1K
Q7
BCW68
R38
10K
R37
680
P3.3
P0.4
P2
+12 VDC
ENABLE +
ENABLE -
CREDIT -
CREDIT +
GROUND
R2
390
D1
STATUS
U5A
LM358
C10
R17
10K
P0.0
P0.6
P0.7
P1.0
P1.1
U6A
U6B
U6C
U6D
ILD2
R26
560
R27
560
P8
$1 ENABLE +
$1 ENABLE -
$5 ENABLE +
$5 ENABLE -
$1 CREDIT +
$1 CREDIT -
$5 CREDIT +
$5 CREDIT -
R23
100
R44
100
R42
3.3K
R41
3.3K
R53
4.7K
R56
4.7K
U5F
2003
U5G
2003
P0.5
P0.2
R25
1K
R24
1K
R43
100
R40
1K
R22
10K
P7
ESCROW +
ESCROW -
EX LED +
EX LED -
U5E
2003




For Equivalent Engineering Drawing See 0030832/53 - B

**Figure 4-3. CBA-2 Schematic Diagram**

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# ROUTINE MAINTENANCE

Jammed bills are the cause of most maintenance calls. If you have recurring bill jams or other CBA-2 problems, follow the troubleshooting procedures (see *Troubleshooting* at the end of this section).

## Tools Required

The CBA-2 does not require special tools. The following tools are recommended, however:

- 1/8" Nut Driver
- 1/4" Nut Driver
- 5/16" Nut Driver
- Small Phillips Screwdriver
- 3/32" Flat Blade Insulated Screwdriver
- Long-Nose Pliers
- 3/8" Open End Wrench
- 5/16" Open End Wrench
- 0.030" Feeler Gauge
- External Retaining Ring Tool
- Precision Oiler with Lightweight Machine Oil (Such as 3-in-1 Electric Motor Oil)

**CAUTION:**

**Always disconnect the power to the CBA-2 before turning the gear by hand. Be careful not to pinch your fingers between the gears.**

Open the bill box and determine if the bill can be reached. If necessary, the transport can be turned by hand, either forward or reverse to remove the bill. To turn the transport by hand, turn the gear on the side of the transport. If the bill is jammed near the inlet, try to remove it by turning the transport by hand. If this does not free the bill; remove the transport from the unit and remove the inlet (see *Removing the Inlet* later in this section).

## Bill Jamming Checklist and Corrective Procedures

If frequent bill jamming occurs, perform the following checks and corrective procedures:

1. Check that the timing belts are not too loose or too tight (see *Timing Belt Tension Adjustment* in this section). Make sure the belts are positioned on the pulleys correctly.

2. Make sure the upper belts run freely and stay centered on the crowned rollers while the transport is running.

3. The inlet and bill track surfaces must be free of dirt, moisture, burrs, projections, and rough spots, which might catch edge of a bill or slow the bill down.

4. Check that the anti-cheat lever moves freely.

5. Check that the belts are clean and not glazed or slippery. If the belts are dirty or oily, clean them by wiping them with denatured alcohol.

6. Check that the drive pulleys are not loose on the shaft.

7. Check that the upper input roller is not loose on the shaft.

8. Check that the lower input roller has the correct amount of spring pressure and moves up and down without binding. The force to move the roller should be 150 to 200 grams.

## CLEANING

The bill acceptor does not require routine cleaning, however, the inlet and track surface should be wiped with a clean soft lint free cloth each time the mechanism is removed for service. Due to the abrasive nature of currency, the magnetic head does not normally require cleaning. If the head does become dirty, use a clean cotton swab saturated with denatured alcohol or other suitable cleaning solution. Never soak the belts in cleaning solvents.

## LUBRICATION

The bill acceptor does not require lubrication under normal use. If the transport turns hard or squeaks, apply one drop of light machine oil (such as 3-in-1 Electric Motor Oil or equivalent) to the following 19 areas:

- Gear shaft
- The nyliner bearings
- Each roller for the upper and lower belts
- Two blue bearings on the upper inlet shaft (These bearings can be reached by removing the inlet; see *Removing the Bill Inlet* in this section)

See *Figure 4-4* for oiling locations.

**Do not over lubricate.**

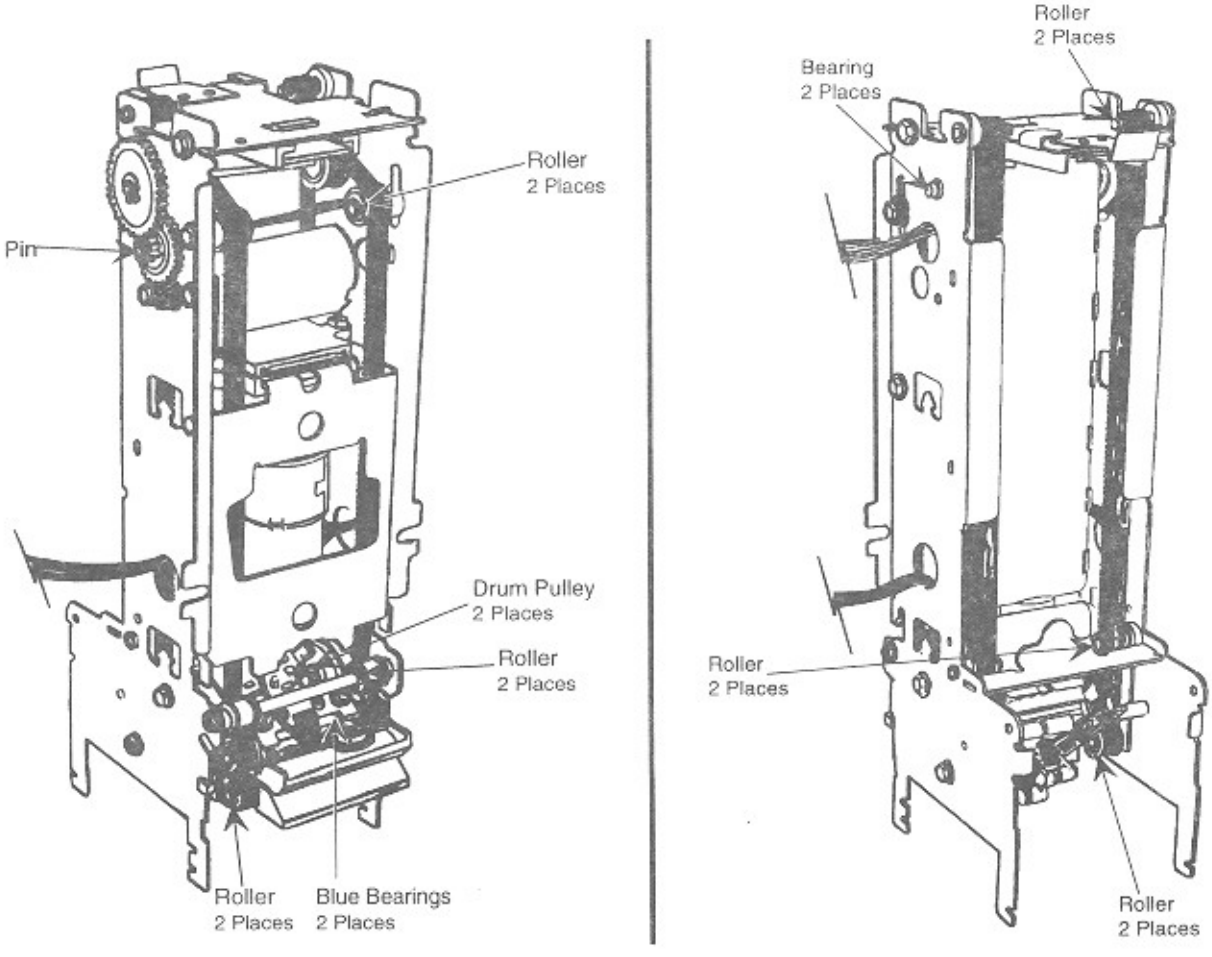



**Figure 4-4. Oiling Locations**

# MECHANICAL ADJUSTMENTS

The bill acceptor transport mechanism does not require setup or routine adjustment; however, if the mechanism binds or slips, the following adjustments can be made. These adjustments should also be made if the transport is disassembled.

## Belt Adjustment

Refer to *Figure 4-5* for adjustment locations and the precision adjustment illustration.

### COARSE ADJUSTMENT CHECK

Timing belts should be adjusted tight enough that they do not come off the pulleys, but not so tight that they put a load on the transport. This tension is achieved by adjusting the belt to the point that the slack in the belt is taken up.

### PRECISION ADJUSTMENT CHECK

If this general adjustment procedure is not satisfactory, you may use the following precision adjustment procedure *(Refer to Figure 4-5)*:

1. Apply a force of 118 grams to each belt. Each belt must deflect a distance of 3/16 inch.

2. Apply the force mentioned in step 1 with the end of a 1/4 inch diameter pin. The centerline of the pin must be centered on a line that is 1/4 inch from the stacker motor bracket and the pin must be centered on the belt. Apply the force in a direction perpendicular to the belt.

3. If the tension is not correctly set, loosen the screw(s) (**A**) in *Figure 4-5* so that the pulleys move freely in their slots. Adjust the pulley(s), tighten the screw(s), and recheck the belt deflection.

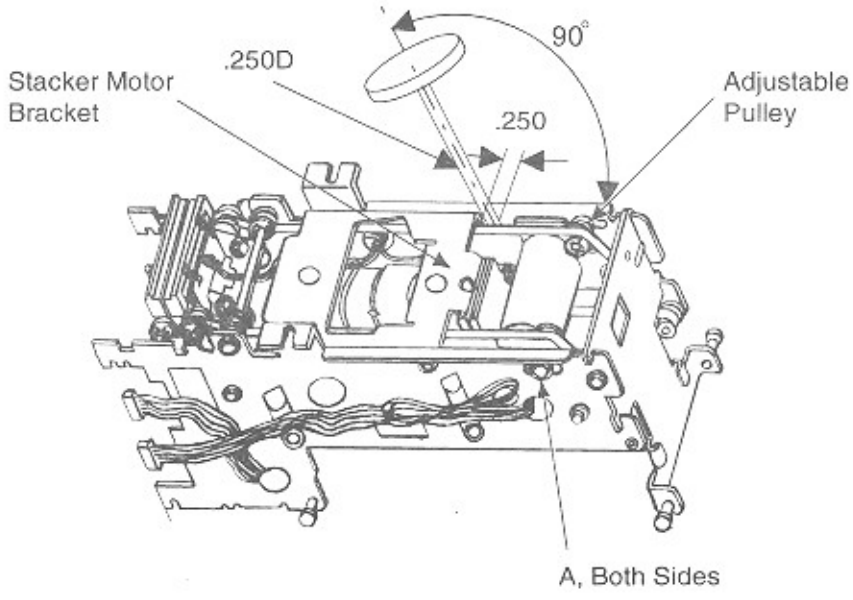



**Figure 4-5. Timing Belt Tension Adjustment**

## Gear Backlash Adjustment

Check that the gears in *Figure 4-6* have a slight backlash of .008 to .012 inch. To adjust the gear backlash:

1. Loosen the two Hex-head adjusting screws (A) holding the motor.
2. Move the motor to obtain the correct backlash.
3. Tighten the two screws and recheck the gear backlash.

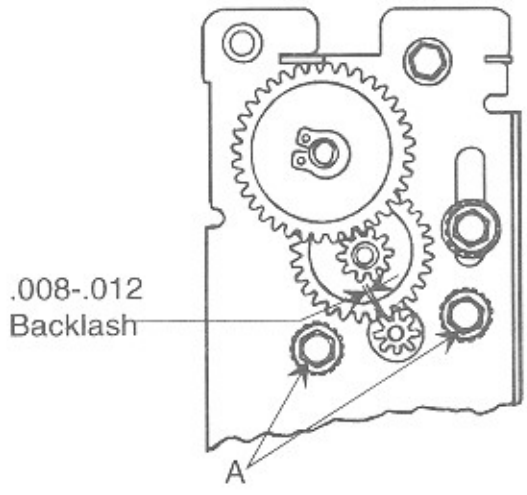



**Figure 4-6. Gear Backlash Adjustment**

## Stacker Home Switch Adjustment

Check for a gap of 1/32 (.030 inch feeler gauge) between the stacker switch arm and the stacker switch body as shown in *Figure 4-7*.

If this clearance is not correct, adjust the stacker switch as follows:

1. Loosen the two adjusting screws as shown in *Figure 4-7*.
2. Position the cam so that the switch arm rests on the raised lobe of the cam.
3. Insert a 1/32 inch gauge (0.030 inch feeler gauge) between the switch arm and the switch body.
4. Hold the switch against the arm and tighten the two adjusting screws.

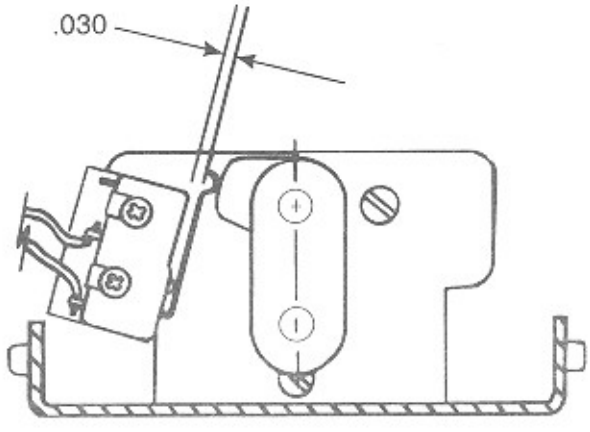



**Figure 4-7. Stacker Home Switch Adjustment**

## Magnetic Head Alignment

The magnetic head is aligned to the upper track at the factory. If the head must be aligned or replaced, order the *Upper Track Harness and Cell Assembly* listed in *Figure 8-8.*

# ELECTRICAL ADJUSTMENTS

The CBA-2 has no electrical adjustments.

# REMOVAL AND REPLACEMENT PROCEDURES

### Removing the Bill Inlet

1. Remove the countersunk screw that holds the inlet on the front of the transport *(See Figure 4-8).*

2. Lift off the inlet.

### Removing the Water Shield

The water shield must be removed to gain access to the outer belts, rollers, and the lower harness and cell assembly. Remove the water shield as follows:

Remove the inlet (see *Removing the Inlet* above), disconnect the logic board wiring harnesses, and slide the logic board back; then, remove all three pieces (watershield, logic board, mounting bracket) at the same time.

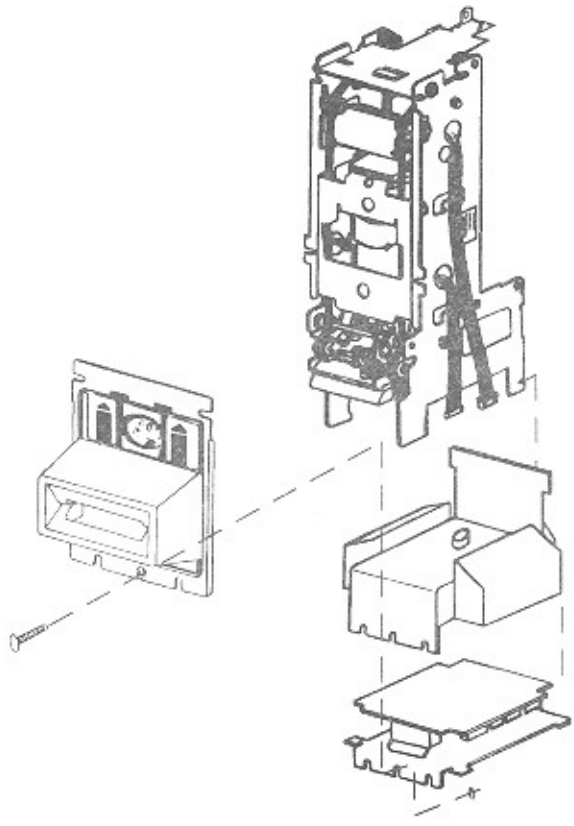


**Figure 4-8. Removing the Bill Inlet**

### Re-Installing the Water Shield

1. Slide the water shield into its former position.

2. Re-install the logic board, reconnect the wiring harnesses, and re-install the inlet *(See Figure 4-8)*.

## Removing the Lower Harness and Cell Assembly

1. Remove the water shield (see *Removing the Water Shield* in the preceding paragraph for this procedure).

2. Unhook the circuit board by pushing back on the catch (see *Figure 4-9*), then remove the board.

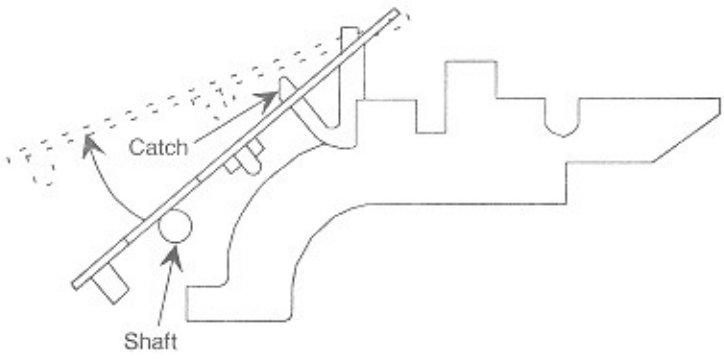



**Figure 4-9. Removing the Cell Assembly**

## Re-Installing the Lower Harness and Cell Assembly

**CAUTION:**

**The plastic circuit board catch, shown in *Figure 4-9*, can be damaged very easily if it is allowed to push its way through the circuit board. Always pull the catch tip to the right so that the catch will pass through the circuit board without damaging the catch tip.**

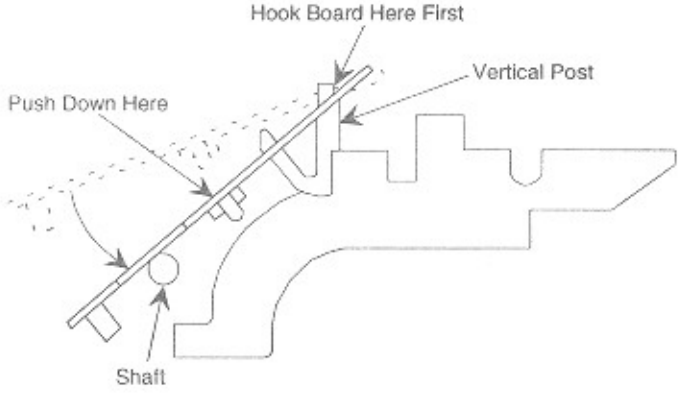



**Figure 4-10A. Mounting the Cell Assembly**

1. To replace the assembly on the lower track, set the transport upside down. Hook the board over the vertical post, pull the catch back, then push down on the board to snap it under the catch *(See Figure 4-10A).*

2. Re-Install the water shield *(See Re-installing the Water Shield* in this section).

3. Check to see that the catch is hooked over the board (**A**) and the board is setting in the recessed area on the shaft (**B**). See *Figure 4-10B.*

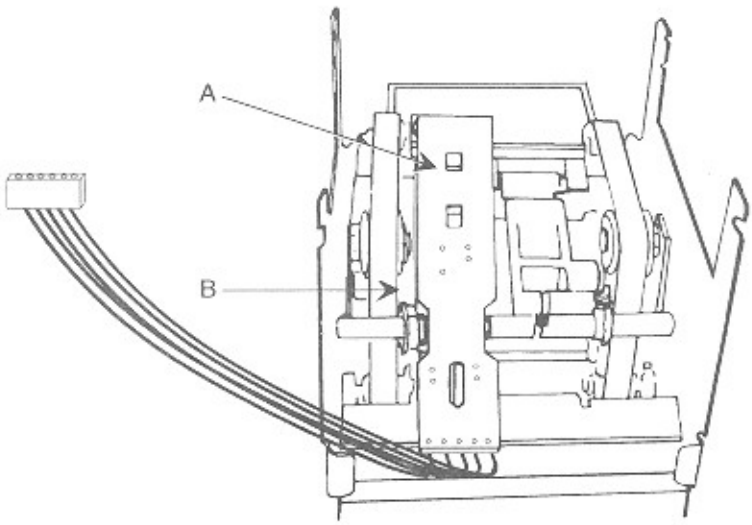



**Figure 4-10B. Mounting the Cell Assembly**

## TROUBLESHOOTING

Logical troubleshooting minimizes effort caused by removing and replacing the wrong part. Many 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 the coin acceptor operates properly. If the machine has disabled the coin acceptor, the CBA-2 will also be disabled.

## TROUBLESHOOTING GUIDE

This guide will help you isolate problems and return the bill acceptor to service as quickly as possible. *Table 4-2* lists common "Trouble" situations, their symptoms, and the most likely defective modules.

Rowe recommends that you replace defective modules with new modules, rather than try to replace individual components within the modules.

## Table 4-2. Troubleshooting Chart

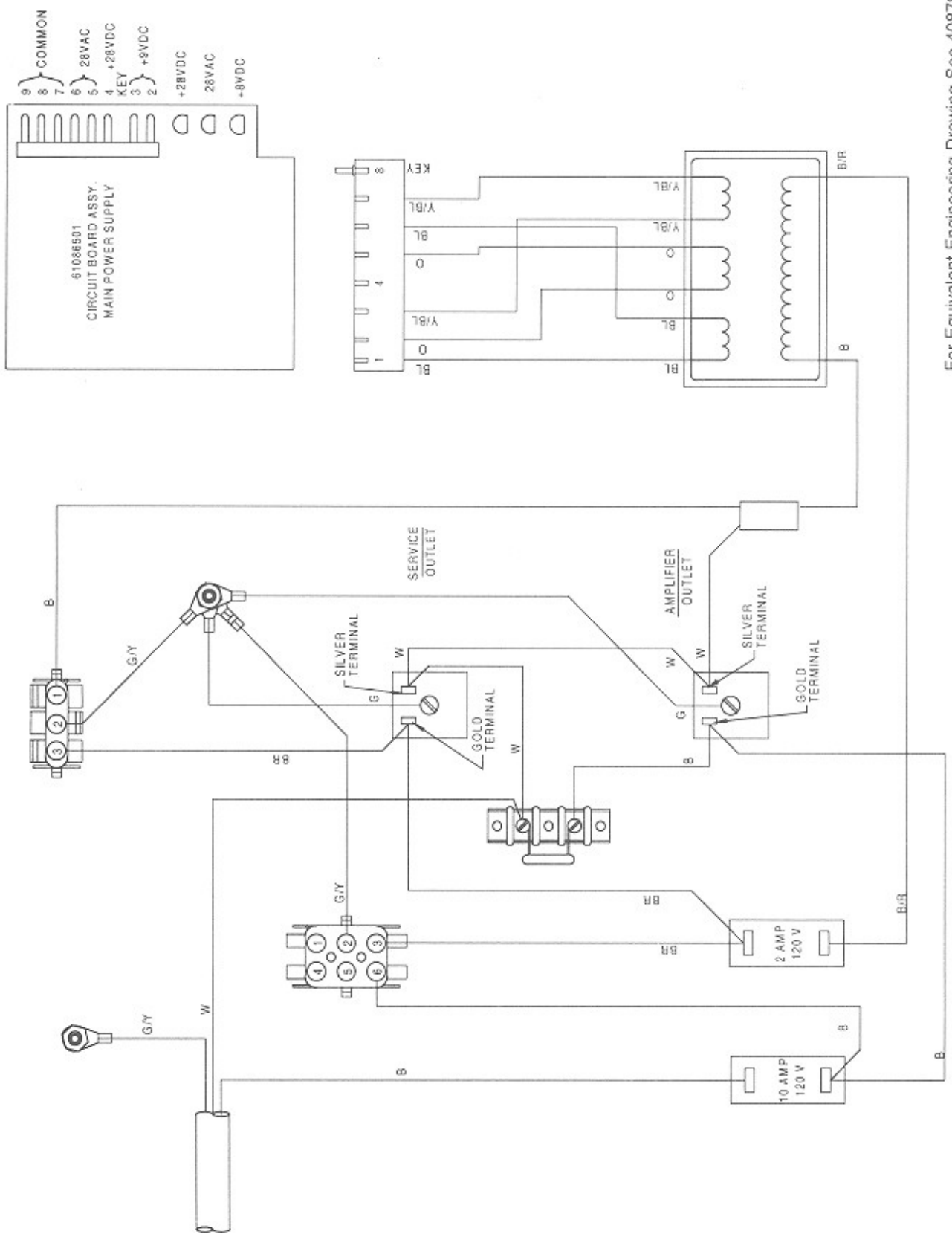
| Trouble | Symptom | Probable Cause |
|---|---|---|
| Transport motor does not start when a bill is inserted. | POWER LED on the logic board is not lit. | 1. The problem is in the power supply or the harness to the CBA-2.<br>2. Defective logic board. |
| | The STATUS LED is ON or is blinking. | The CBA-2 is not operational due to a fault condition (see the next section of this chart). |
| | The transport does not start, but a clicking sound is heard in the logic board. | 1. An object is jammed in the transport mechanism.<br>2. Defective transport.<br>3. Defective logic board. |
| | No sound or other indication that the transport is trying to run. | 1. Defective V1 cell.<br>2. Defective logic board. |
| CBA-2 in SHUTDOWN | CBA-2 STATUS LED is ON steady. | The CBA-2 has not been enabled by the controlling machine. |
| In this state, the CBA-2 STATUS LED will be flashing ON and OFF. The number of flashes indicates the cause of the SHUTDOWN. | The CBA-2 STATUS LED flashes once. | 1. An object is covering the V1 cell in the transport.<br>2. Defective transport.<br>3. Defective logic board. |
| | The CBA-2 STATUS LED flashes three times. | 1. An object is covering the V3 cell.<br>2. Defective lower harness and cell assembly.<br>3. Defective transport.<br>4. Defective logic board. |

## Table 4-2. Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| In this state, the CBA-2 STATUS LED will be flashing ON and OFF. The number of flashes indicates the cause of the SHUTDOWN. | The CBA-2 STATUS LED flashes four times. | 1. An object is activating the anti-pull-back lever in the transport.<br>2. Defective lower harness and cell assembly.<br>3. Defective logic board. |
| | The CBA-2 STATUS LED flashes five times. | 1. The bill stacker is full.<br>2. The bill stacker is jammed in the OFF-HOME position.<br>3. The bill stacker HOME switch is out of adjustment.<br>4. Defective bill stacker home switch.<br>5. Defective logic board. |
| | The CBA-2 STATUS LED flashes seven times. | 1. Motor speed could not be adjusted.<br>2. Incorrect belt tension.<br>3. Defective motor.<br>4. Defective logic board. |
| The bill acceptor rejects a large number of valid bills. The CBA-2 STATUS LED will flash one or more times to indicate the cause of the rejection. | The CBA-2 STATUS LED flashes once after rejecting the bill. | 1. Defective V1 cell in the transport.<br>2. Defective logic board. |
| | The CBA-2 STATUS LED flashes twice after rejecting the bill. | 1. Defective lower harness and cell assembly.<br>2. Defective logic board. |

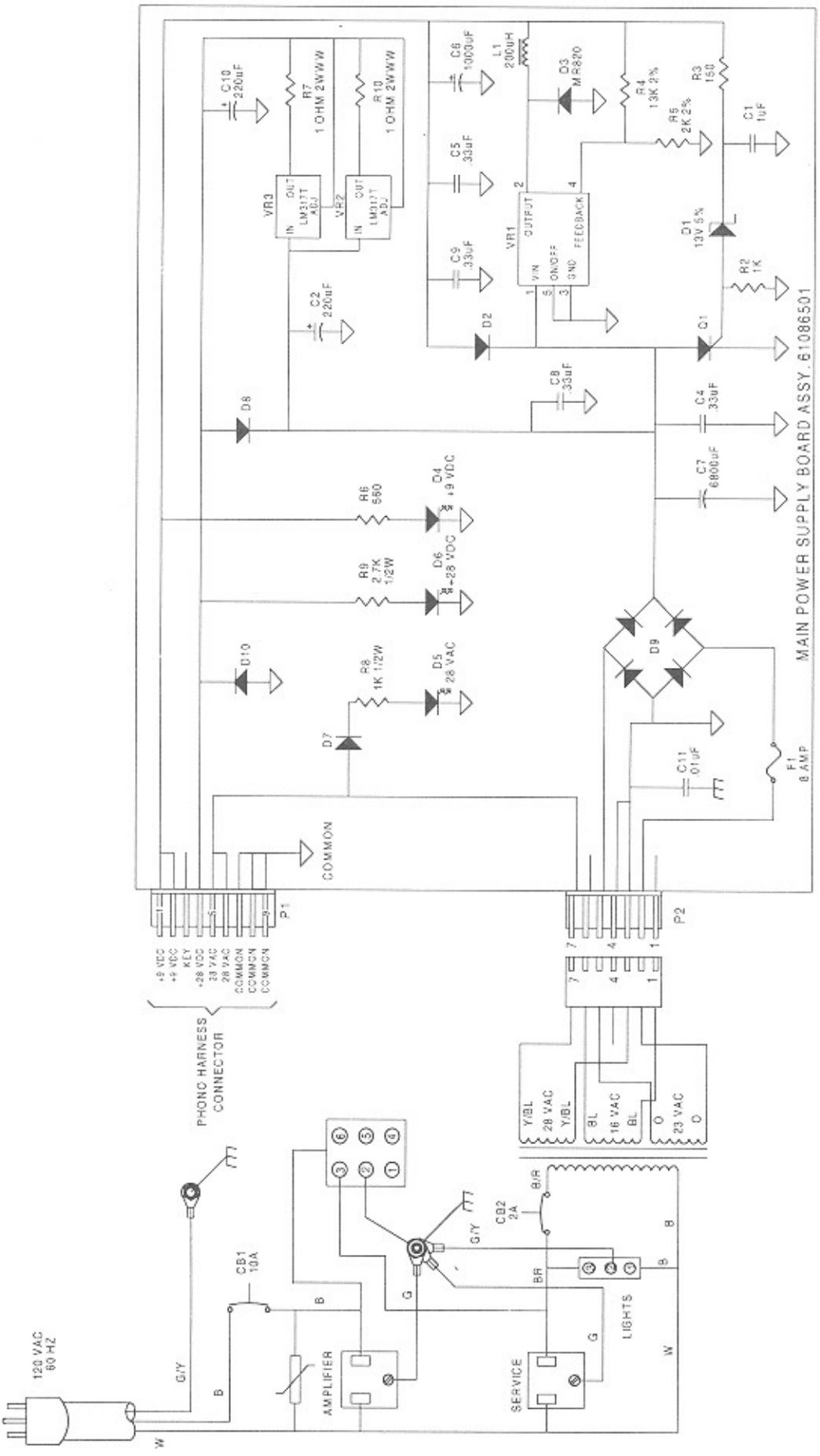
## Table 4-2. Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| The bill acceptor rejects a large number of valid bills. The CBA-2 STATUS LED will flash one or more times to indicate the cause of the rejection. | The CBA-2 STATUS LED flashes three times after rejecting the bill. | 1. Defective V3 cell in the transport.<br>2. Defective logic board. |
| | The CBA-2 STATUS LED flashes four times after rejecting the bill. | 1. An object is lodged in the transport.<br>2. Binding anti-pull-back lever.<br>3. Defective lower harness and cell assembly.<br>4. Defective logic board. |
| | The CBA-2 STATUS LED flashes five times after rejecting the bill. | 1. Defective magnetic head or transport.<br>2. Defective logic board. |
| | The CBA-2 STATUS LED flashes six times after rejecting the bill. | The bill denomination inserted has not been enabled. |
| Bills jam frequently. | | 1. The anti-pull-back lever is not moving freely.<br>2. The bill pressure roller is binding.<br>3. The transport inlet or track surfaces have projections, or rough spots, on them.<br>4. The transport belts are out or adjustment or dirty.<br>5. The transport belts are not centered on their rollers.<br>6. The transport upper input roller does not move up and down freely.<br>7. Defective power supply. |




For Equivalent Engineering Drawing See 40879001-Q1

**Figure 5-7A. Main Power Supply Wiring Diagram - Domestic**




For Equivalent Engineering Drawing See 40879001-Q2

**Figure 5-7B. Main Power Supply Schematic - Domestic**

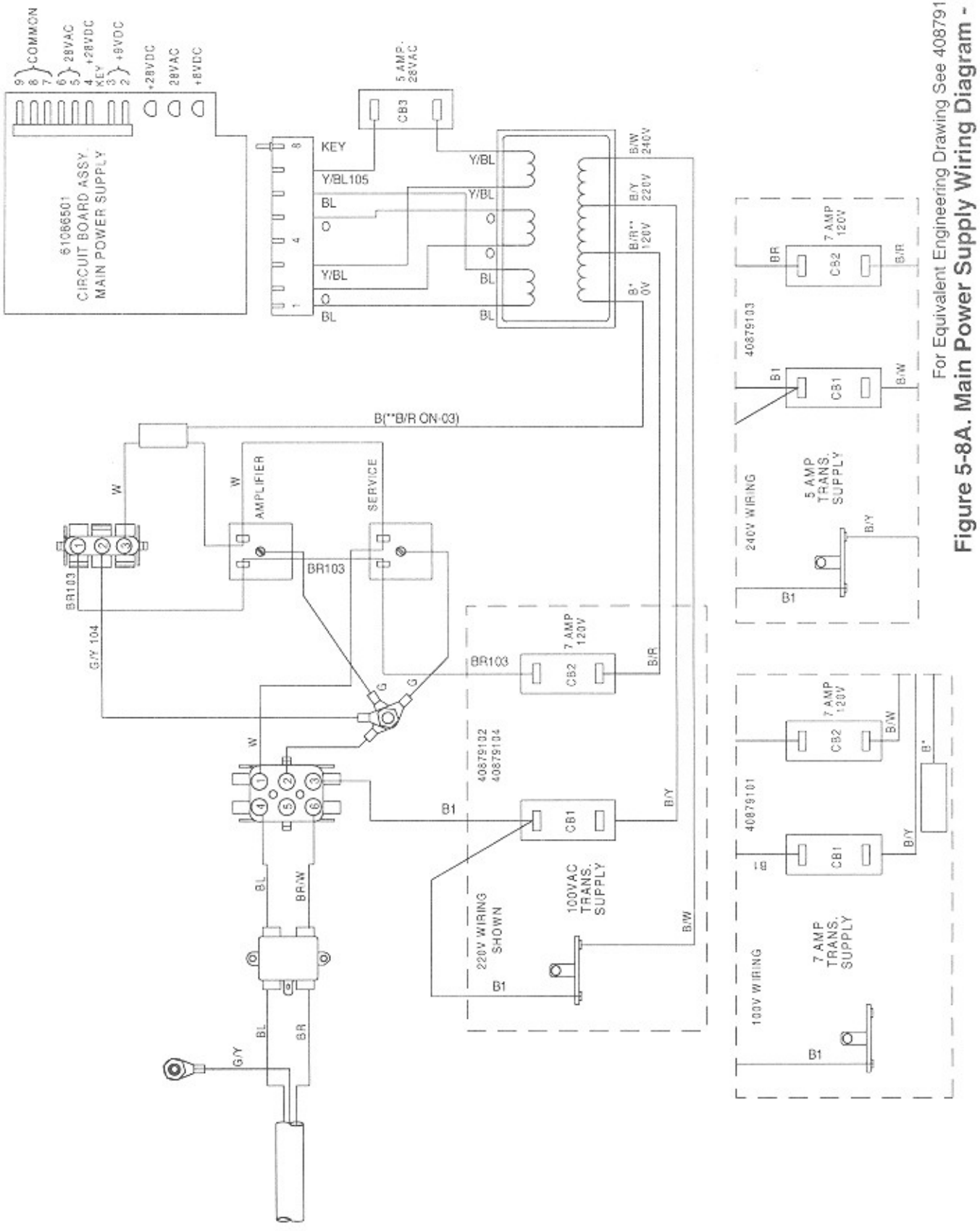
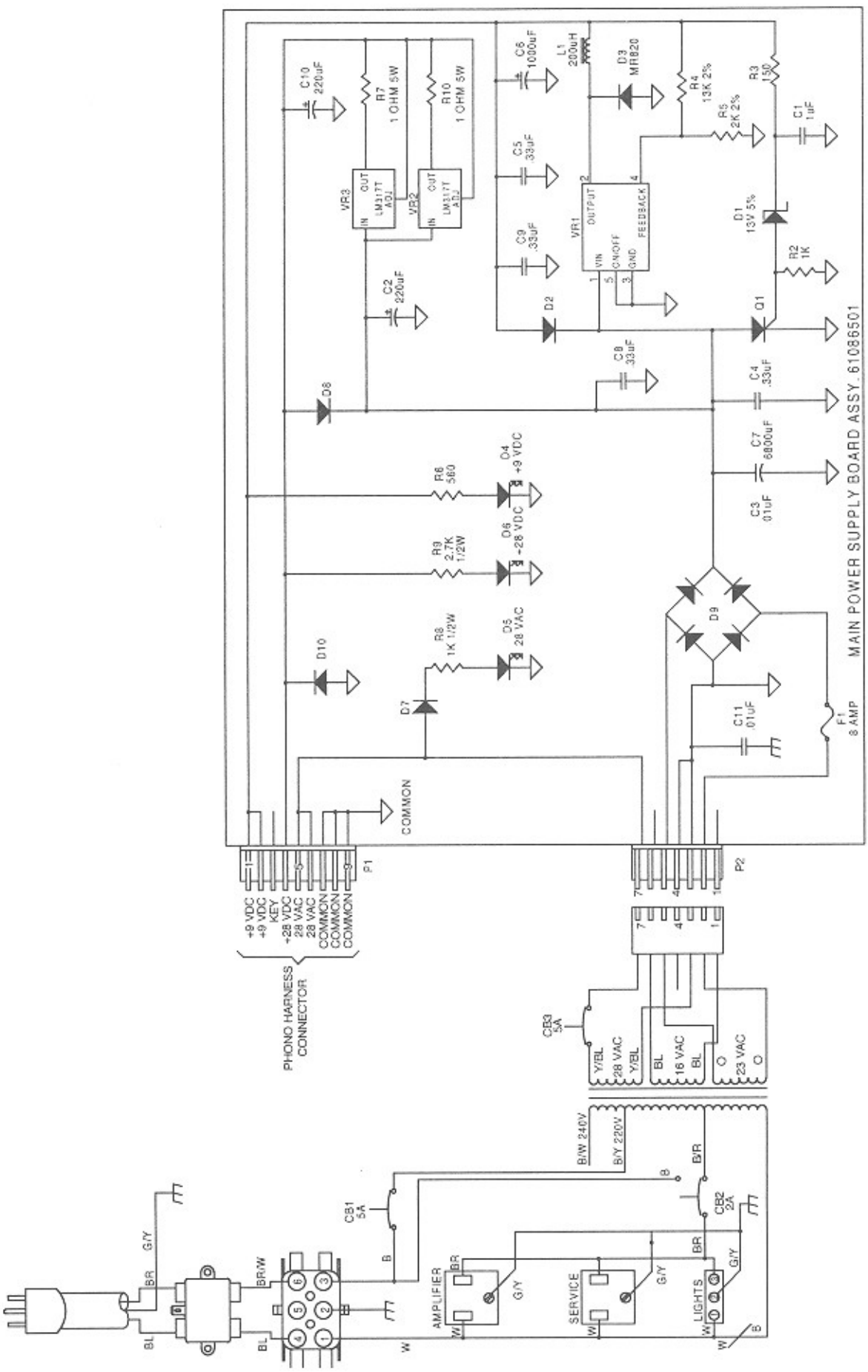



**Figure 5-8A. Main Power Supply Wiring Diagram - Export**

For Equivalent Engineering Drawing See 40879101/04-Q1




For Equivalent Engineering Drawing See 40879101/04 Q2

**Figure 5-8B. Main Power Supply Schematic - Export**

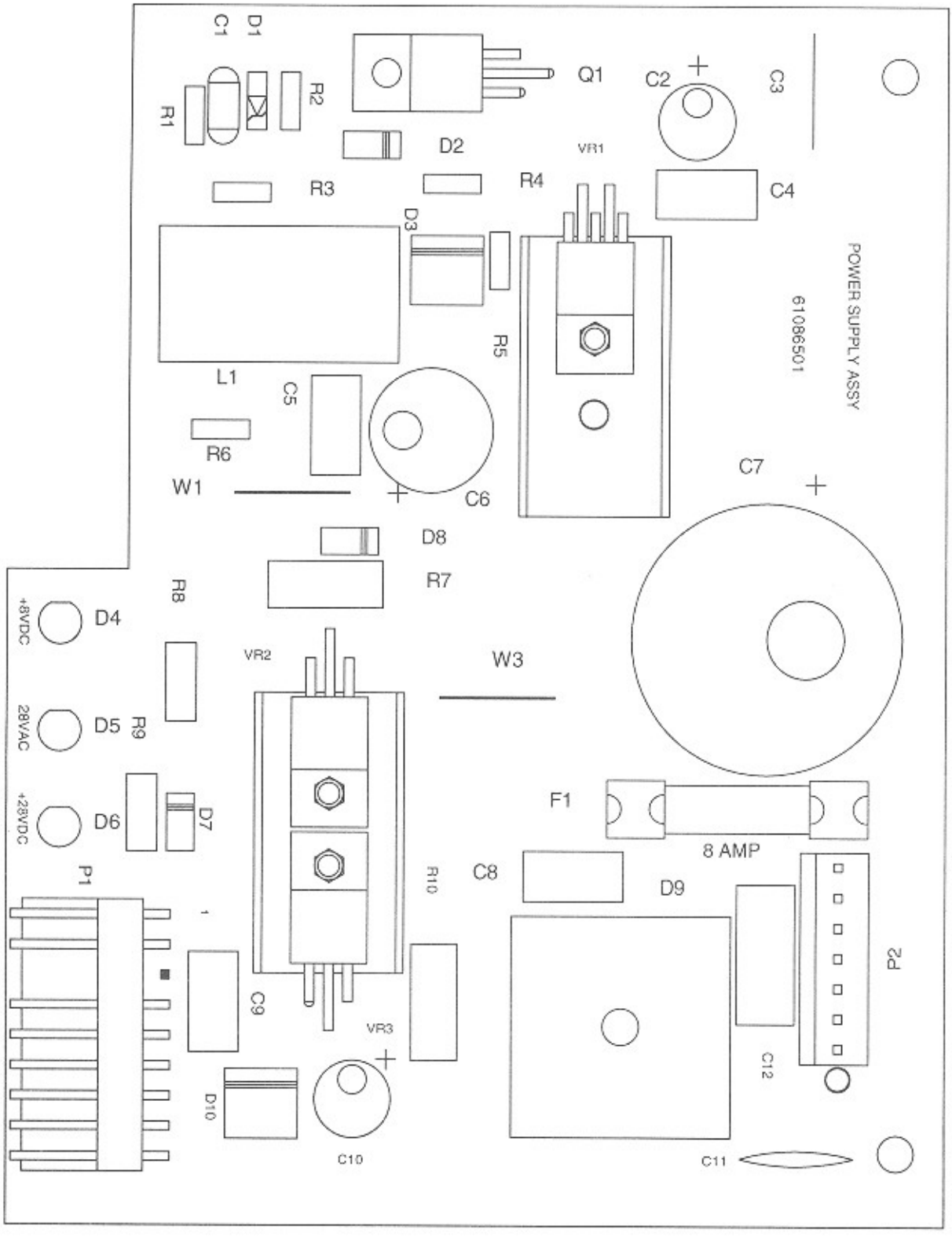



**Figure 5-8C. Main Power Supply Circuit Board Assembly Layout**

## COMPONENTS LIST FOR MAIN POWER SUPPLY CIRCUIT BOARD ASSEMBLY 61086501

| | | | |
|---|---|---|---|
| C1 | Capacitor - Monolythic Ceramic 20% | 1 µF | 70028521 |
| C2 | Capacitor - Low E.S.R. 50 VDC 20% | 220 µF | 70028305 |
| C3 | Not Used | | |
| C4 | Capacitor - Mylar 100 VDC 10% | .33 µF | 70021555 |
| C5 | Capacitor - Mylar 100 VDC 10% | .33 µF | 70021555 |
| C6 | Capacitor - Low E.S.R. 16 VDC | 1000 µF | 70028310 |
| C7 | Capacitor - Electrolytic 35 VDC 20% | 6800 µF | 70023601 |
| C8 | Capacitor - Mylar 100 VDC 10% | .33 µF | 70021555 |
| C9 | Capacitor - Mylar 100 VDC 10% | .33 µF | 70021555 |
| C10 | Capacitor - Low E.S.R. 50 VDC 20% | 220 µF | 70028305 |
| C11 | Capacitor - Ceramic Disc 1 KV 20% | .01 µF | 70022508 |
| C12 | Not Used | | |
| D1 | Diode - Zener (13V .5W 5%) | 1N4743A | 70035506 |
| D2 | Diode - Silicon | 1N4004 | 70035005 |
| D3 | Diode - Silicon | MR820 | 70035017 |
| D4 | Diode - Light Emitting Red Diffused | | 70035305 |
| D5 | Diode - Light Emitting Red Diffused | | 70035305 |
| D6 | Diode - Light Emitting Red Diffused | | 70035305 |
| D7 | Diode - Silicon | 1N4004 | 70035005 |
| D8 | Diode - Silicon | 1N4004 | 70035005 |
| D9 | Bridge - Rectifier 25 Amp | KBP-C25-02W | 21822507 |
| D10 | Diode - Silicon | MR 752 | 70035010 |
| F1 | Fuse | 8 Amp | 70072002 |
| L1 | Inductor | | 21513502 |
| P1 | Header - Polarized .156 Right Angle 9-Position | | 70076009 |
| P2 | Header - Polarized .156 7-Position | | 70075007 |
| Q1 | Thyristor Scr. 20 Amp | S4020L-ND | 70038004 |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Not Used | | |
| R2 | Resistor - Carbon Film | 1 Ω | 79901102 |
| R3 | Resistor - Carbon Film | 150 Ω | 79901151 |
| R4 | Resistor - Carbon Film | 13 KΩ | 79902133 |
| R5 | Resistor - Carbon Film | 2 KΩ | 79902202 |
| R6 | Resistor - Carbon Film | 560 Ω | 79901561 |
| R7 | Resistor - Wirewound (2 W) | 1 Ω | 79900109 |
| R8 | Resistor - Metal Film (1/2 W 5%) | 1 KΩ | 79904102 |
| R9 | Resistor - Metal Film (1/2 W 5%) | 2.7 KΩ | 79904272 |
| R10 | Resistor - Wirewound (2 W 5%) | 1 Ω | 79920109 |
| VR1 | I.C. - Voltage Regulator | LM2576T-ADJ | 70036520 |
| VR2 | I.C. - Voltage Regulator | LM317T | 70036507 |
| VR3 | I.C. - Voltage Regulator | LM317T | 70036507 |
| W1 | Wire - Bare 22 GA | | 00503200 |
| W2 | Not Used | | |
| W3 | Wire - Bare 22 GA | | 00503200 |

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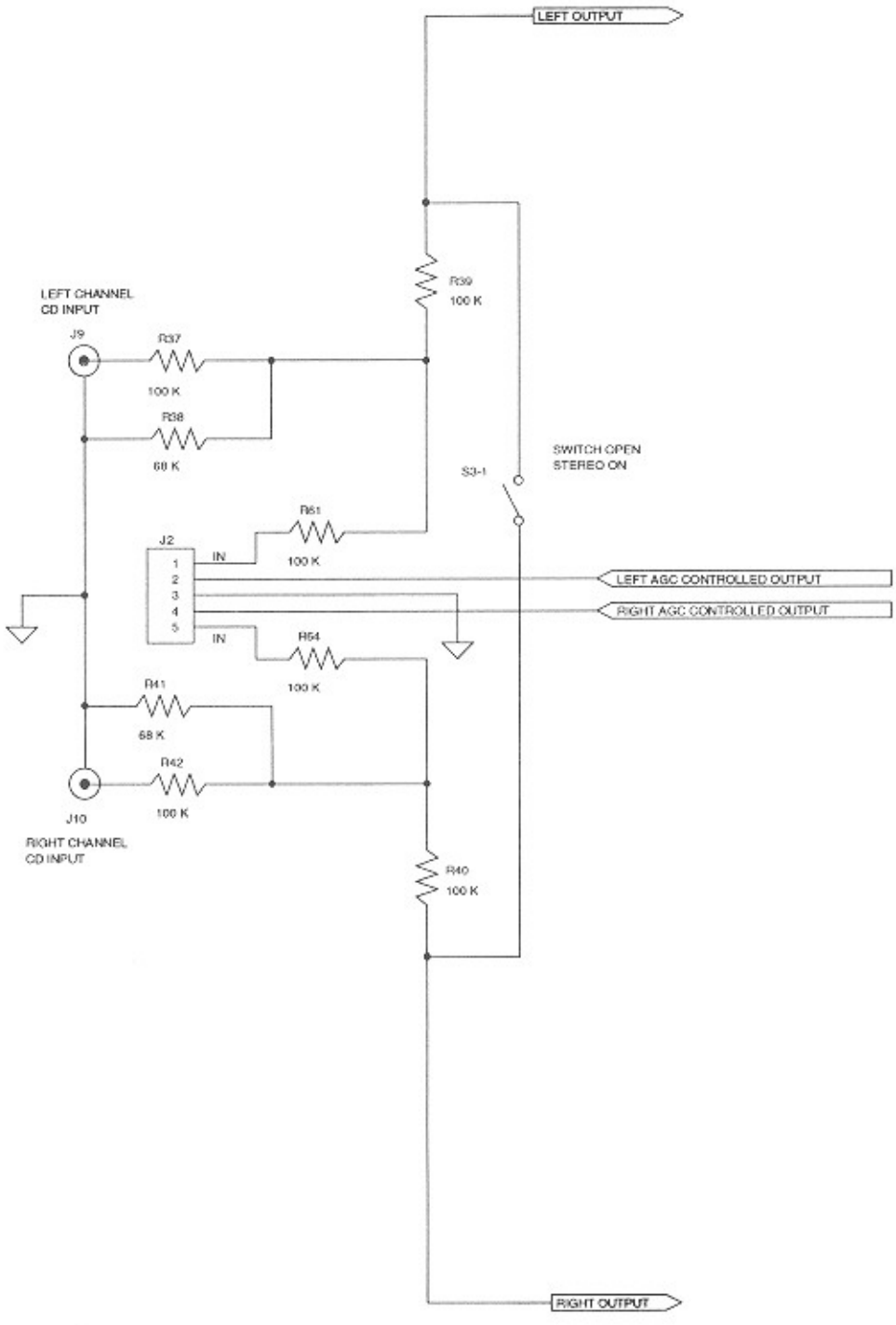
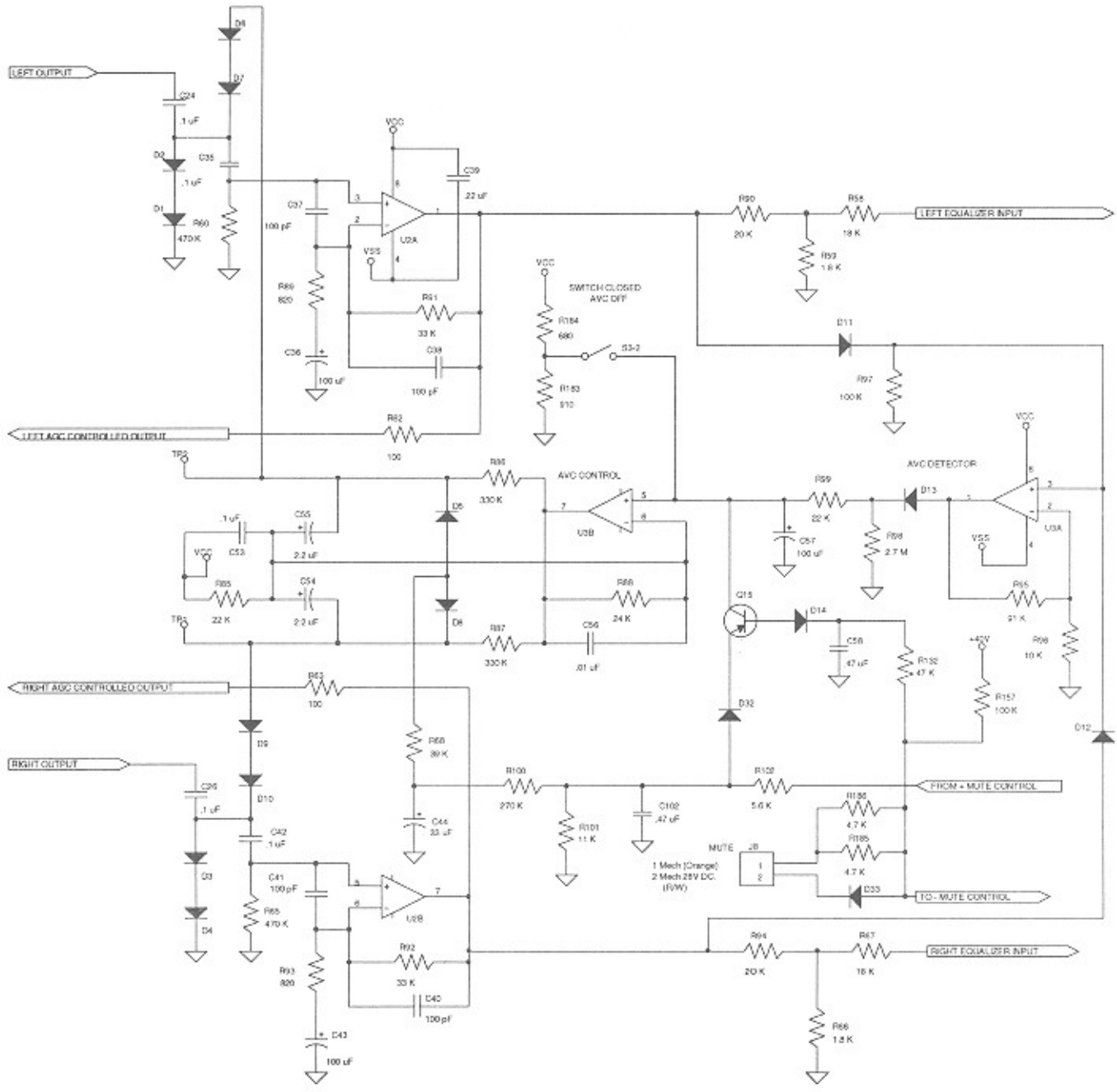
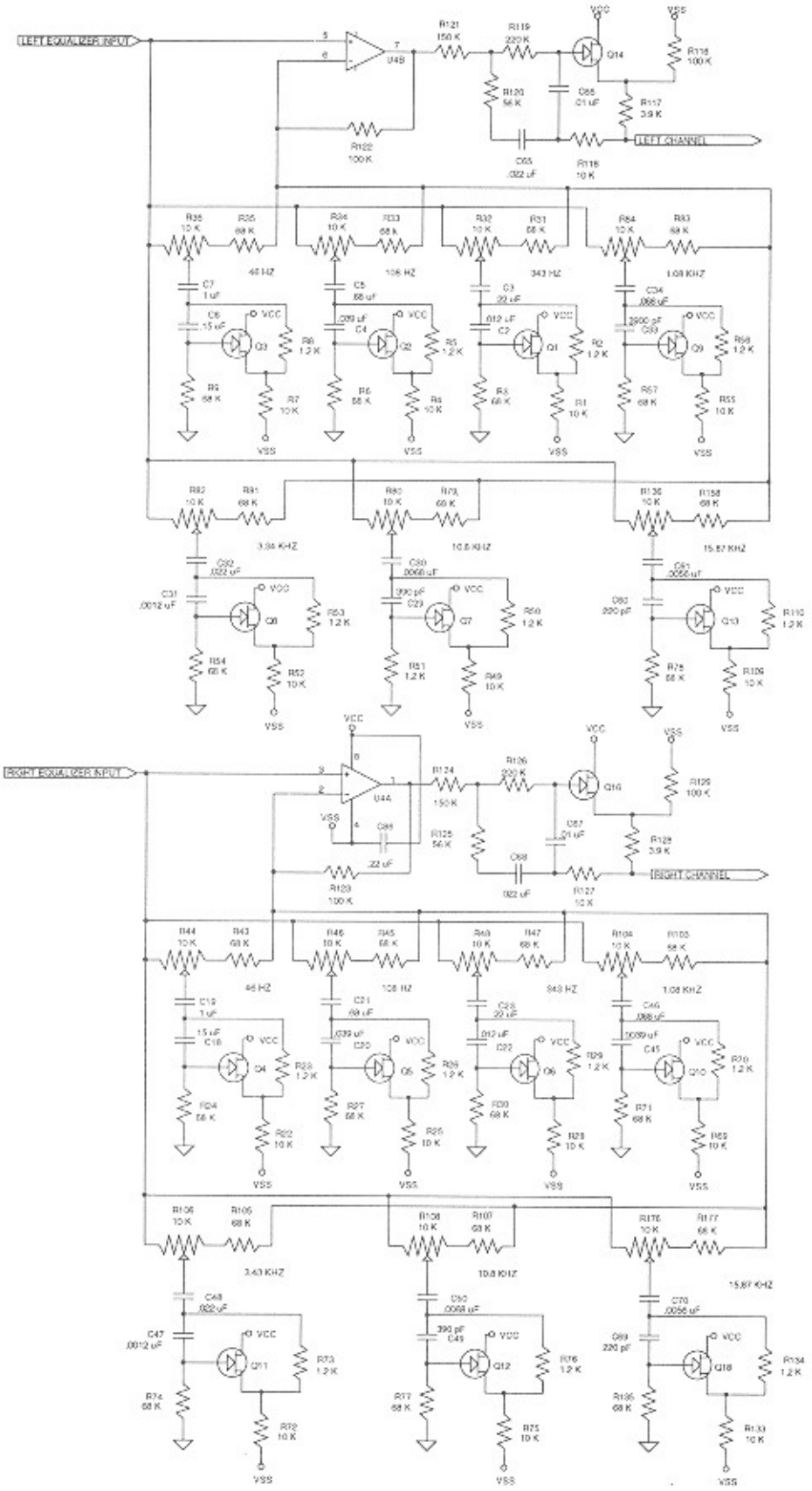
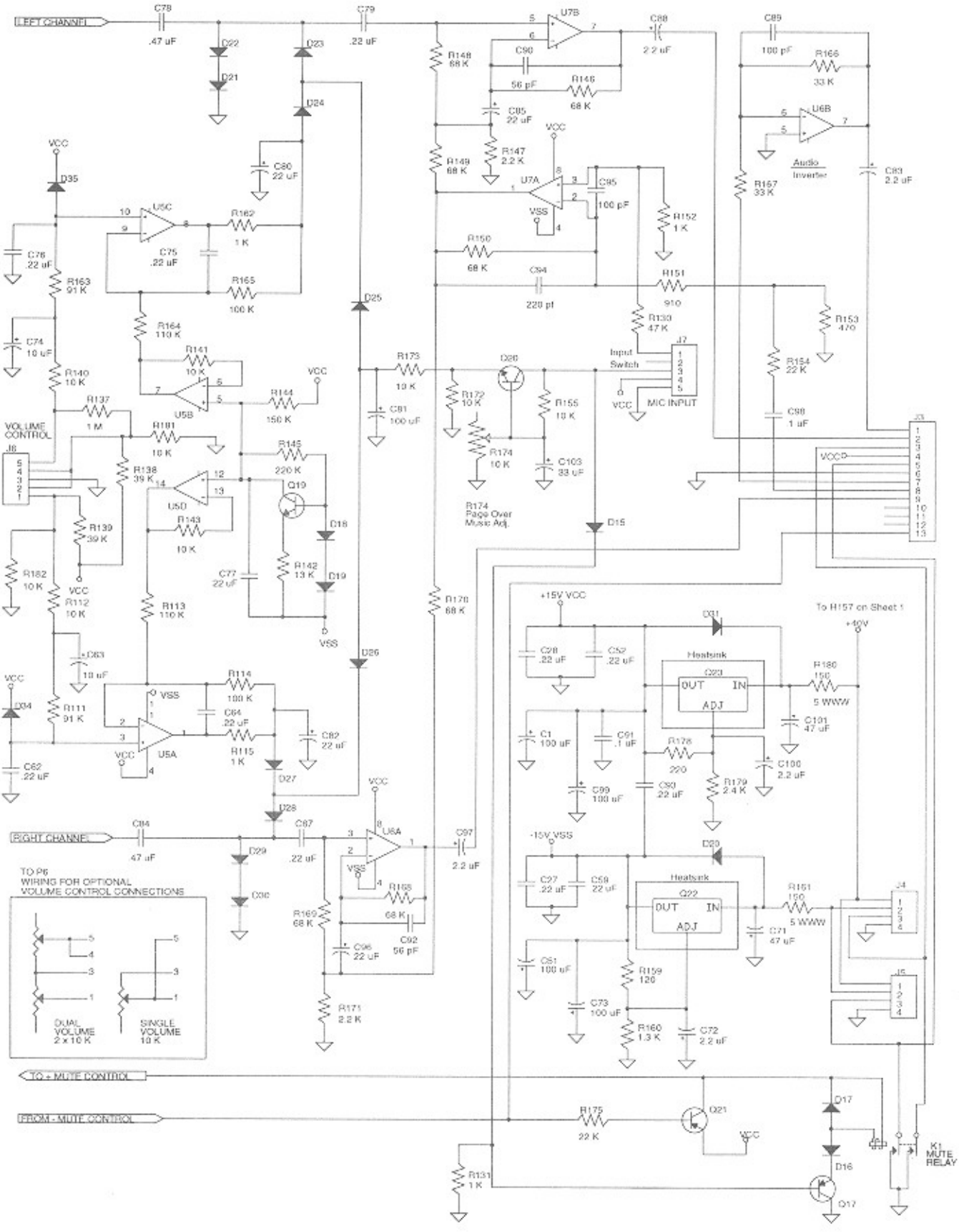

LEFT OUTPUT
R39
100 K
LEFT CHANNEL
CD INPUT
J9
R37
100 K
R38
68 K
SWITCH OPEN
STEREO ON
S3-1
R61
100 K
J2
1
2
3
4
5
IN
IN
LEFT AGC CONTROLLED OUTPUT
RIGHT AGC CONTROLLED OUTPUT
R64
100 K
R41
68 K
R42
100 K
J10
RIGHT CHANNEL
CD INPUT
R40
100 K
RIGHT OUTPUT




For Equivalent Engineering Drawing See 61023703-Q2 A

**Figure 5-9A. Schematic Diagram - Stereo Preamp Assembly, Sheet 1**


LEFT EQUALIZER INPUT
U4B
R121 150 K
R119 220 K
Q14
R116 100 K
R120 56 K
C65 .01 uF
R117 3.9 K
LEFT CHANNEL
C55 .022 uF
R118 10 K
R122 100 K
VCC
VSS
R35 10 K
R36 68 K
R34 10 K
R33 68 K
R32 10 K
R31 68 K
R84 10 K
R83 68 K
46 HZ
108 HZ
343 HZ
1.08 KHZ
C7 1 uF
C6 .15 uF
C5 .068 uF
C4 .039 uF
C3 .22 uF
C2 .012 uF
C34 .068 uF
C33 2900 pF
Q3
Q4
Q2
Q1
Q9
R6 1.2 K
R5 1.2 K
R2 1.2 K
R58 1.2 K
R9 68 K
R8 68 K
R7 10 K
R6 68 K
R5 10 K
R3 68 K
R1 10 K
R57 68 K
R55 10 K
R82 10 K
R81 68 K
R80 10 K
R79 68 K
R136 10 K
R158 68 K
3.84 KHZ
10.8 KHZ
15.87 KHZ
C32 .022 uF
C31 .0012 uF
C30 .0068 uF
390 pF
C29
C82 .0056 uF
C80 220 pF
Q8
Q7
Q13
R53 1.2 K
R50 1.2 K
R110 1.2 K
R54 68 K
R52 10 K
R51 1.2 K
R49 10 K
R78 68 K
R109 10 K
RIGHT EQUALIZER INPUT
U4A
R124 150 K
R126 220 K
Q16
R125 100 K
R125 56 K
C88
.22 uF
C87 .01 uF
R129 3.9 K
C88 .022 uF
RIGHT CHANNEL
R123 100 K
R127 10 K
R144 10 K
R143 68 K
R146 10 K
R145 68 K
R148 10 K
R147 68 K
R104 10 K
R103 68 K
46 HZ
108 HZ
343 HZ
1.08 KHZ
C19 1 uF
C18 .15 uF
C21 .68 uF
C20 .039 uF
C23 .22 uF
C22 .012 uF
C46 .068 uF
C45 .0039 uF
Q4
Q5
Q6
Q10
R28 1.2 K
R26 1.2 K
R29 1.2 K
R30 1.2 K
R24 68 K
R27 68 K
R25 68 K
R23 10 K
R26 10 K
R28 10 K
R71 68 K
R65 10 K
R106 10 K
R105 68 K
R108 10 K
R107 68 K
R176 10 K
R177 68 K
3.43 KHZ
10.8 KHZ
15.87 KHZ
C48 .022 uF
C47 .0012 uF
C50 .0068 uF
390 pF
C49
C70 .0056 uF
C69 220 pF
Q11
Q12
Q18
R73 1.2 K
R76 1.2 K
R134 1.2 K
R74 68 K
R72 10 K
R77 68 K
R75 10 K
R135 68 K
R133 10 K




For Equivalent Engineering Drawing See 61023703-Q2 A

**Figure 5-9A. Schematic Diagram - Stereo Preamp Assembly, Sheet 2**

## COMPONENT LIST FOR PREAMPLIFIER BOARD (61023703-A)

| | | | |
|---|---|---|---|
| C1 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C2 | Capacitor - Monolythic Ceramic | .012 µF | 70028638 |
| C3 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C4 | Capacitor - Monolythic Ceramic | .039 µF | 70028644 |
| C5 | Capacitor - Monolythic Ceramic | .68 µF | 70028522 |
| C6 | Capacitor - Monolythic Ceramic | .15 µF | 70028512 |
| C7 | Capacitor - Monolythic Ceramic | 1 µF | 70028521 |
| C8 | Not Used | | |
| C9 | Not Used | | |
| C10 | Not Used | | |
| C11 | Not Used | | |
| C12 | Not Used | | |
| C13 | Not Used | | |
| C14 | Not Used | | |
| C15 | Not Used | | |
| C16 | Not Used | | |
| C17 | Not Used | | |
| C18 | Capacitor - Monolythic Ceramic | .15 µF | 70028512 |
| C19 | Capacitor - Monolythic Ceramic | 1 µF | 70028521 |
| C20 | Capacitor - Monolythic Ceramic | .039 µF | 70028644 |
| C21 | Capacitor - Monolythic Ceramic | .68 µF | 70028522 |
| C22 | Capacitor - Monolythic Ceramic | .012 µF | 70028638 |
| C23 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C24 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C25 | Not Used | | |
| C26 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C27 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C28 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C29 | Capacitor - Monolythic Ceramic | 390 PF | 70028611 |
| C30 | Capacitor - Monolythic Ceramic | .0068 µF | 70028633 |
| C31 | Capacitor - Monolythic Ceramic | .0012 µF | 70028620 |
| C32 | Capacitor - Monolythic Ceramic | .022 µF | 70028641 |
| C33 | Capacitor - Monolythic Ceramic | .0039 µF | 70028629 |
| C34 | Capacitor - Monolythic Ceramic | .068 µF | 70028647 |
| C35 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C36 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C37 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C38 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C39 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C40 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C41 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C42 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C43 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C44 | Capacitor - Electrolytic | 33 µF | 70023811 |
| C45 | Capacitor - Monolythic Ceramic | .0039 µF | 70028629 |
| C46 | Capacitor - Monolythic Ceramic | .068 µF | 70028647 |
| C47 | Capacitor - Monolythic Ceramic | .0012 µF | 70028620 |
| C48 | Capacitor - Monolythic Ceramic | .022 µF | 70028641 |
| C49 | Capacitor - Monolythic Ceramic | 390 PF | 70028611 |
| C50 | Capacitor - Monolythic Ceramic | .0068 µF | 70028633 |
| C51 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C52 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C53 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C54 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C55 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C56 | Capacitor - Monolythic Ceramic | .01 µF | 70028636 |
| C57 | Capacitor - Electrolytic | 100 µF | 70023814 |

| | | | |
|---|---|---|---|
| C58 | Capacitor - Monolythic Ceramic | .47 µF | 70028516 |
| C59 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C60 | Capacitor - Monolythic Ceramic | 220 PF | 70028606 |
| C61 | Capacitor - Monolythic Ceramic | .0056 µF | 70028632 |
| C62 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C63 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C64 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C65 | Capacitor - Monolythic Ceramic | .022 µF | 70028641 |
| C66 | Capacitor - Monolythic Ceramic | .01 µF | 70028636 |
| C67 | Capacitor - Monolythic Ceramic | .01 µF | 70028636 |
| C68 | Capacitor - Monolythic Ceramic | .022 µF | 70028641 |
| C69 | Capacitor - Monolythic Ceramic | 220 PF | 70028606 |
| C70 | Capacitor - Monolythic Ceramic | .0056 µF | 70028632 |
| C71 | Capacitor - Electrolytic | 47 µF | 70023812 |
| C72 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C73 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C74 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C75 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C76 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C77 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C78 | Capacitor - Monolythic Ceramic | .47 µF | 70028516 |
| C79 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C80 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C81 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C82 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C83 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C84 | Capacitor - Monolythic Ceramic | .47 µF | 70028516 |
| C85 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C86 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C87 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C88 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C89 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C90 | Capacitor - Monolythic Ceramic | 56 PF | 70028710 |
| C91 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C92 | Capacitor - Monolythic Ceramic | 56 PF | 70028710 |
| C93 | Capacitor - Monolythic Ceramic | .22 µF | 70028523 |
| C94 | Capacitor - Monolythic Ceramic | 220 PF | 70028606 |
| C95 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C96 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C97 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C98 | Capacitor - Monolythic Ceramic | .1 µF | 70028649 |
| C99 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C100 | Capacitor - Electrolytic | 2.2 µF | 70023805 |
| C101 | Capacitor - Electrolytic | 47 µF | 70023812 |
| C102 | Capacitor - Monolythic Ceramic | .47 µF | 70028516 |
| C103 | Capacitor - Electrolytic | 33 µF | 70023811 |
| | | | |
| D1 | Diode - Silicon | 1N4148 | 70035012 |
| D2 | Diode - Silicon | 1N4148 | 70035012 |
| D3 | Diode - Silicon | 1N4148 | 70035012 |
| D4 | Diode - Silicon | 1N4148 | 70035012 |
| D5 | Diode - Silicon | 1N4148 | 70035012 |
| D6 | Diode - Silicon | 1N4148 | 70035012 |
| D7 | Diode - Silicon | 1N4148 | 70035012 |
| D8 | Diode - Silicon | 1N4148 | 70035012 |
| D9 | Diode - Silicon | 1N4148 | 70035012 |
| D10 | Diode - Silicon | 1N4148 | 70035012 |

## COMPONENT LIST FOR PREAMPLIFIER BOARD (61023703-A)

*(CONTINUED)*

| | | | |
|---|---|---|---|
| D11 | Diode - Silicon | 1N4148 | 70035012 |
| D12 | Diode - Silicon | 1N4148 | 70035012 |
| D13 | Diode - Silicon | 1N4148 | 70035012 |
| D14 | Diode - Silicon | 1N4148 | 70035012 |
| D15 | Diode - Silicon | 1N4148 | 70035012 |
| D16 | Diode - Silicon | 1N4148 | 70035012 |
| D17 | Diode - Silicon | 1N4148 | 70035012 |
| D18 | Diode - Silicon | 1N4148 | 70035012 |
| D19 | Diode - Silicon | 1N4148 | 70035012 |
| D20 | Diode - Silicon | 1N4148 | 70035012 |
| D21 | Diode - Silicon | 1N4148 | 70035012 |
| D22 | Diode - Silicon | 1N4148 | 70035012 |
| D23 | Diode - Silicon | 1N4148 | 70035012 |
| D24 | Diode - Silicon | 1N4148 | 70035012 |
| D25 | Diode - Silicon | 1N4148 | 70035012 |
| D26 | Diode - Silicon | 1N4148 | 70035012 |
| D27 | Diode - Silicon | 1N4148 | 70035012 |
| D28 | Diode - Silicon | 1N4148 | 70035012 |
| D29 | Diode - Silicon | 1N4148 | 70035012 |
| D30 | Diode - Silicon | 1N4148 | 70035012 |
| D31 | Diode - Silicon | 1N4148 | 70035012 |
| D32 | Diode - Silicon | 1N4148 | 70035012 |
| D33 | Diode - Silicon | 1N4148 | 70035012 |
| D34 | Diode - Silicon | 1N4148 | 70035012 |
| D35 | Diode - Silicon | 1N4148 | 70035012 |
| | | | |
| K1 | Relay - Reed | | 70042208 |
| | | | |
| P1 | Not Used | | |
| P2 | Header - Non Polarizing | (5 CKT) | 70074923 |
| P3 | Header - Non Polarizing | (13 CKT) | 70074931 |
| P4 | Connector - Top Entry | (4 CKT) | 70074802 |
| P5 | Connector - Top Entry | (4 CKT) | 70074802 |
| P6 | Header - Non Polarizing | (5 CKT) | 70074923 |
| P7 | Header - Non Polarizing | (5 CKT) | 70074923 |
| P8 | Header - Polarizing | (2 CKT) | 70075002 |
| P9 | Receptacle - Phono Jack | | 21540902 |
| P10 | Receptacle - Phono Jack | | 21540902 |
| | | | |
| Q1 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q2 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q3 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q4 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q5 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q6 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q7 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q8 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q9 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q10 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q11 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q12 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q13 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q14 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q15 | Transistor - Silicon (PNP) | MPSA56 | 70030104 |
| Q16 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q17 | Transistor - Silicon (PNP) | MPSA56 | 70030104 |

| | | | |
|---|---|---|---|
| Q18 | Transistor - J Fet (N-Channel) | 2N5484 | 70030901 |
| Q19 | Transistor - Silicon (NPN) | MPSA06 | 70030008 |
| Q20 | Transistor - Silicon (NPN) | MPSA06 | 70030008 |
| Q21 | Transistor - Silicon (PNP) | MPSA56 | 70030104 |
| Q22 | Regulator - Voltage (Adj Neg) | LM337T | 70036508 |
| Q23 | Regulator - Voltage (Adj Pos) | LM317T | 70036507 |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Resistor - Carbon | 10 KΩ | 79901103 |
| R2 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R3 | Resistor - Carbon | 68 KΩ | 79901683 |
| R4 | Resistor - Carbon | 10 KΩ | 79901103 |
| R5 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R6 | Resistor - Carbon | 68 KΩ | 79901683 |
| R7 | Resistor - Carbon | 10 KΩ | 79901103 |
| R8 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R9 | Resistor - Carbon | 68 KΩ | 79901683 |
| R10 | Not Used | | |
| R11 | Not Used | | |
| R12 | Not Used | | |
| R13 | Not Used | | |
| R14 | Not Used | | |
| R15 | Not Used | | |
| R16 | Not Used | | |
| R17 | Not Used | | |
| R18 | Not Used | | |
| R19 | Not Used | | |
| R20 | Not Used | | |
| R21 | Not Used | | |
| R22 | Resistor - Carbon | 10 KΩ | 79901103 |
| R23 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R24 | Resistor - Carbon | 68 KΩ | 79901683 |
| R25 | Resistor - Carbon | 10 KΩ | 79901103 |
| R26 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R27 | Resistor - Carbon | 68 KΩ | 79901683 |
| R28 | Resistor - Carbon | 10 KΩ | 79901103 |
| R29 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R30 | Resistor - Carbon | 68 KΩ | 79901683 |
| R31 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R32 | Potentiometer - Special | 10 KΩ | 70040018 |
| R33 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R34 | Potentiometer - Special | 10 KΩ | 70040018 |
| R35 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R36 | Potentiometer - Special | 10 KΩ | 70040018 |
| R37 | Resistor - Carbon | 100 KΩ | 79901104 |
| R38 | Resistor - Carbon | 68 KΩ | 79901683 |
| R39 | Resistor - Carbon | 100 KΩ | 79901104 |
| R40 | Resistor - Carbon | 100 KΩ | 79901104 |
| R41 | Resistor - Carbon | 68 KΩ | 79901683 |
| R42 | Resistor - Carbon | 100 KΩ | 79901104 |
| R43 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R44 | Potentiometer - Special | 10 KΩ | 70040018 |
| R45 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R46 | Potentiometer - Special | 10 KΩ | 70040018 |
| R47 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R48 | Potentiometer - Special | 10 KΩ | 70040018 |
| R49 | Resistor - Carbon | 10 KΩ | 79901103 |
| R50 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R51 | Resistor - Carbon | 68 KW | 79901683 |

## COMPONENT LIST FOR PREAMPLIFIER BOARD (61023703-A)

*(CONTINUED)*

| | | | |
|---|---|---|---|
| R52 | Resistor - Carbon | 10 KΩ | 79901103 |
| R53 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R54 | Resistor - Carbon | 68 KΩ | 79901683 |
| R55 | Resistor - Carbon | 10 KΩ | 79901103 |
| R56 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R57 | Resistor - Carbon | 68 KΩ | 79901683 |
| R58 | Resistor - Carbon | 18 KΩ | 79901183 |
| R59 | Resistor - Carbon | 1.8 KΩ | 79901182 |
| R60 | Resistor - Carbon | 470 KΩ | 79901474 |
| R61 | Resistor - Carbon | 100 KΩ | 79901104 |
| R62 | Resistor - Carbon | 100 Ω | 79901101 |
| R63 | Resistor - Carbon | 100 Ω | 79901101 |
| R64 | Resistor - Carbon | 100 KΩ | 79901104 |
| R65 | Resistor - Carbon | 470 KΩ | 79901474 |
| R66 | Resistor - Carbon | 1.8 KΩ | 79901182 |
| R67 | Resistor - Carbon | 18 KΩ | 79901183 |
| R68 | Resistor - Carbon | 39 KΩ | 79901393 |
| R69 | Resistor - Carbon | 10 KΩ | 79901103 |
| R70 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R71 | Resistor - Carbon | 68 KΩ | 79901683 |
| R72 | Resistor - Carbon | 10 KΩ | 79901103 |
| R73 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R74 | Resistor - Carbon | 68 KΩ | 79901683 |
| R75 | Resistor - Carbon | 10 KΩ | 79901103 |
| R76 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R77 | Resistor - Carbon | 68 KΩ | 79901683 |
| R78 | Resistor - Carbon | 68 KΩ | 79901683 |
| R79 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R80 | Potentiometer - Special | 10 KΩ | 70040018 |
| R81 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R82 | Potentiometer - Special | 10 KΩ | 70040018 |
| R83 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R84 | Potentiometer - Special | 10 KΩ | 70040018 |
| R85 | Resistor - Carbon | 22 KΩ | 79901223 |
| R86 | Resistor - Carbon | 330 KΩ | 79901334 |
| R87 | Resistor - Carbon | 330 KΩ | 79901334 |
| R88 | Resistor - Carbon | 24 KΩ | 79901243 |
| R89 | Resistor - Carbon | 820 Ω | 79901821 |
| R90 | Resistor - Carbon | 20 KΩ | 79901203 |
| R91 | Resistor - Carbon | 33 KΩ | 79901333 |
| R92 | Resistor - Carbon | 33 KΩ | 79901333 |
| R93 | Resistor - Carbon | 820 Ω | 79901821 |
| R94 | Resistor - Carbon | 20 KΩ | 79901203 |
| R95 | Resistor - Carbon | 91 KΩ | 79901913 |
| R96 | Resistor - Carbon | 10 KΩ | 79901103 |
| R97 | Resistor - Carbon | 100 KΩ | 79901104 |
| R98 | Resistor - Carbon | 2.7 MΩ | 79901275 |
| R99 | Resistor - Carbon | 22 KΩ | 79901223 |
| R100 | Resistor - Carbon | 270 KΩ | 79901274 |
| R101 | Resistor - Carbon | 11 KΩ | 79901113 |
| R102 | Resistor - Carbon | 5.6 KΩ | 79901562 |
| R103 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R104 | Potentiometer - Special | 10 KΩ | 70040018 |
| R105 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R106 | Potentiometer - Special | 10 KΩ | 70040018 |
| R107 | Resistor - Carbon | 68 KΩ | 79901683 |

| | | | |
|---|---|---|---|
| * R108 | Potentiometer - Special | 10 KΩ | 70040018 |
| R109 | Resistor - Carbon | 10 KΩ | 79901103 |
| R110 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R111 | Resistor - Carbon | 91 KΩ | 79901913 |
| R112 | Resistor - Carbon | 10 KΩ | 79901103 |
| R113 | Resistor - Carbon | 110 KΩ | 79901114 |
| R114 | Resistor - Carbon | 100 KΩ | 79901104 |
| R115 | Resistor - Carbon | 1 KΩ | 79901102 |
| R116 | Resistor - Carbon | 100 KΩ | 79901104 |
| R117 | Resistor - Carbon | 3.9 KΩ | 79901392 |
| R118 | Resistor - Carbon | 10 KΩ | 79901103 |
| R119 | Resistor - Carbon | 220 KΩ | 79901224 |
| R120 | Resistor - Carbon | 56 KΩ | 79901563 |
| R121 | Resistor - Carbon | 150 KΩ | 79901154 |
| R122 | Resistor - Carbon | 100 KΩ | 79901104 |
| R123 | Resistor - Carbon | 100 KΩ | 79901104 |
| R124 | Resistor - Carbon | 150 KΩ | 79901154 |
| R125 | Resistor - Carbon | 56 KΩ | 79901563 |
| R126 | Resistor - Carbon | 220 KΩ | 79901224 |
| R127 | Resistor - Carbon | 10 KΩ | 79901103 |
| R128 | Resistor - Carbon | 3.9 KΩ | 79901392 |
| R129 | Resistor - Carbon | 100 KΩ | 79901104 |
| R130 | Resistor - Carbon | 47 KΩ | 79901473 |
| R131 | Resistor - Carbon | 1 KΩ | 79901102 |
| R132 | Resistor - Carbon | 47 KΩ | 79901473 |
| R133 | Resistor - Carbon | 10 KΩ | 79901103 |
| R134 | Resistor - Carbon | 1.2 KΩ | 79901122 |
| R135 | Resistor - Carbon | 68 KΩ | 79901683 |
| * R136 | Potentiometer - Special | 10 KΩ | 70040018 |
| R137 | Resistor - Carbon | 1 MΩ | 79901105 |
| R138 | Resistor - Carbon | 39 KΩ | 79901393 |
| R139 | Resistor - Carbon | 39 KΩ | 79901393 |
| R140 | Resistor - Carbon | 10 KΩ | 79901103 |
| R141 | Resistor - Carbon | 10 KΩ | 79901103 |
| R142 | Resistor - Carbon | 13 KΩ | 79901133 |
| R143 | Resistor - Carbon | 10 KΩ | 79901103 |
| R144 | Resistor - Carbon | 150 KΩ | 79901154 |
| R145 | Resistor - Carbon | 220 KΩ | 79901224 |
| R146 | Resistor - Carbon | 68 KΩ | 79901683 |
| R147 | Resistor - Carbon | 2.2 KΩ | 79901222 |
| R148 | Resistor - Carbon | 68 KΩ | 79901683 |
| R149 | Resistor - Carbon | 68 KΩ | 79901683 |
| R150 | Resistor - Carbon | 68 KΩ | 79901683 |
| R151 | Resistor - Carbon | 910 Ω | 79901911 |
| R152 | Resistor - Carbon | 1 KΩ | 79901102 |
| R153 | Resistor - Carbon | 470 Ω | 79901471 |
| R154 | Resistor - Carbon | 22 KΩ | 79901223 |
| R155 | Resistor - Carbon | 10 KΩ | 79901103 |
| R156 | Not Used | | |
| R157 | Resistor - Carbon | 100 KΩ | 79901104 |
| R158 | Resistor - Carbon | 68 KΩ | 79901683 |
| R159 | Resistor - Carbon (1/4W 2%) | 120 Ω | 79902121 |
| R160 | Resistor - Carbon (1/4W 2%) | 1.3 KΩ | 79902132 |
| R161 | Resistor - Wirewound | 150 Ω | 70012510 |
| R162 | Resistor - Carbon | 1 KΩ | 79901102 |
| R163 | Resistor - Carbon | 91 KΩ | 79901913 |
| R164 | Resistor - Carbon | 110 KΩ | 79901114 |
| R165 | Resistor - Carbon | 100 KΩ | 79901104 |
| R166 | Resistor - Carbon | 33 KΩ | 79901333 |

## COMPONENT LIST FOR PREAMPLIFIER BOARD (61023703-A)

*(CONTINUED)*

| | | | |
|---|---|---|---|
| R167 | Resistor - Carbon | 33 KΩ | 79901333 |
| R168 | Resistor - Carbon | 68 KΩ | 79901683 |
| R169 | Resistor - Carbon | 68 KΩ | 79901683 |
| R170 | Resistor - Carbon | 68 KΩ | 79901683 |
| R171 | Resistor - Carbon | 2.2 KΩ | 79901222 |
| R172 | Resistor - Carbon | 10 KΩ | 79901103 |
| R173 | Resistor - Carbon | 10 KΩ | 79901103 |
| * R174 | Potentiometer | 10 KΩ | 70040014 |
| R175 | Resistor - Carbon | 22 KΩ | 79901223 |
| * R176 | Potentiometer - Special | 10 KΩ | 70040018 |
| R177 | Resistor - Carbon | 68 KΩ | 79901683 |
| R178 | Resistor - Carbon (1/4W 2%) | 220 Ω | 79902221 |
| R179 | Resistor - Carbon (1/4W 2%) | 2.4 KΩ | 79902242 |
| R180 | Resistor - Wirewound | 150 Ω | 70012510 |
| R181 | Resistor - Carbon | 10 KΩ | 79901103 |
| R182 | Resistor - Carbon | 10 KΩ | 79901103 |
| R183 | Resistor - Carbon | 910 Ω | 79901911 |
| R184 | Resistor - Carbon | 680 Ω | 79901681 |
| R185 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R186 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| S1 | Switch - DP | | 70042902 |
| U1 | Not Used | | |
| U2 | I.C. - Dual Op Amp | LM833 | 30800238 |
| U3 | I.C. - Dual Op Amp | LM833 | 30800238 |
| U4 | I.C. - Dual Op Amp | LM833 | 30800238 |
| U5 | I.C. - Dual Op Amp | LM833 | 30800238 |
| U6 | I.C. - Dual Op Amp | LM833 | 30800238 |
| U7 | I.C. - Dual Op Amp | LM833 | 30800238 |

* Requires Potentiometer Adjustment Shaft, Part Number 21621101.

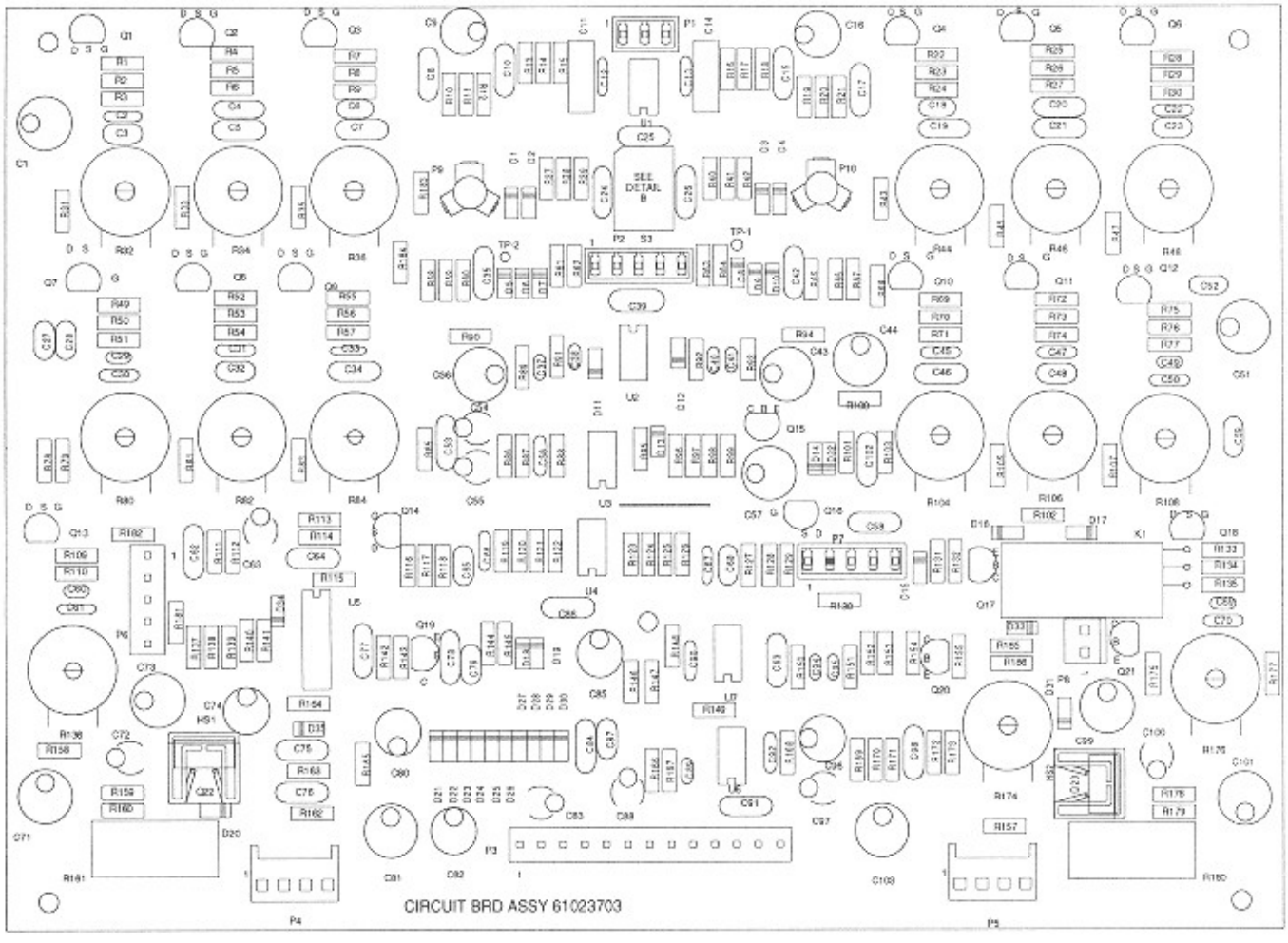
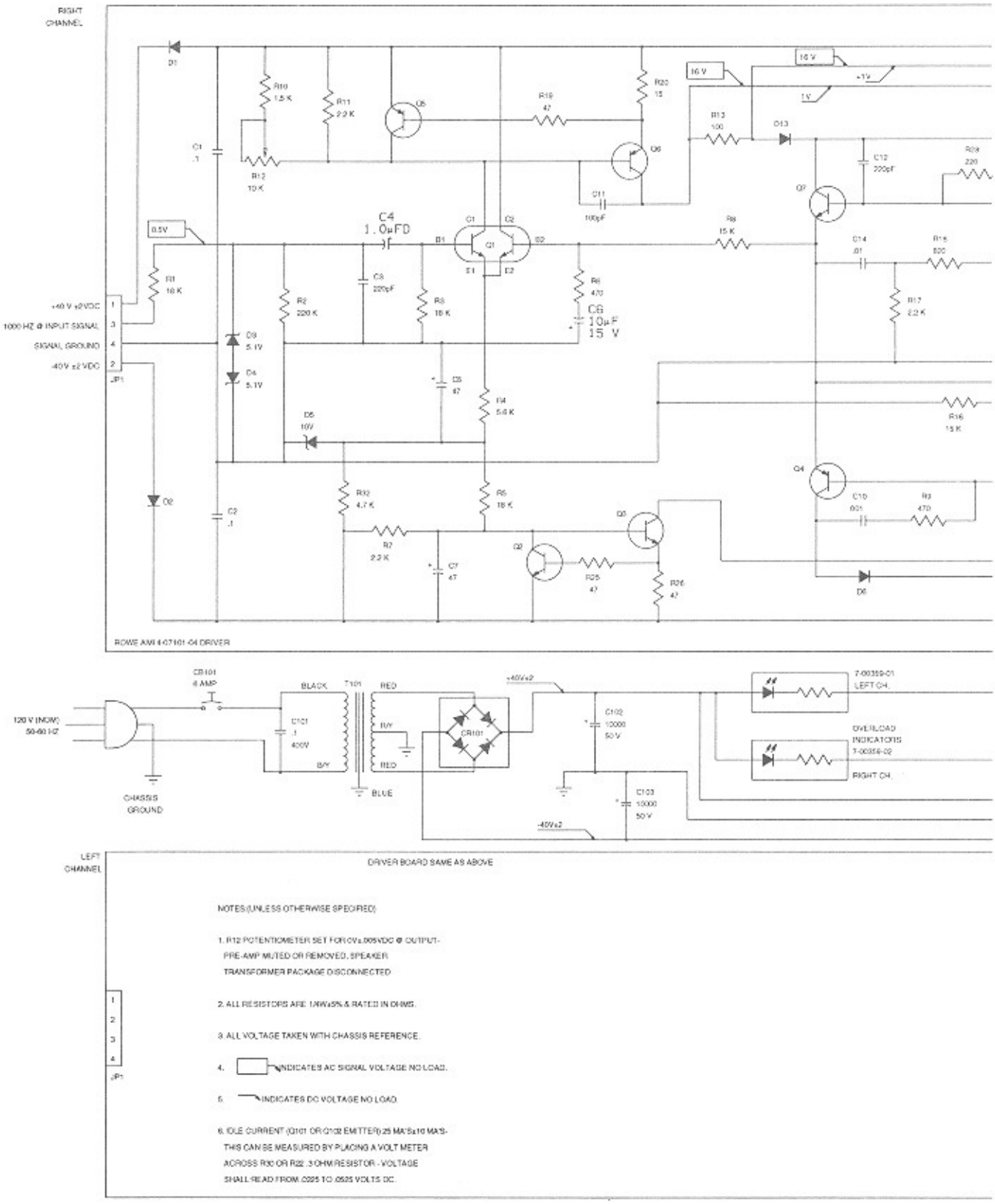
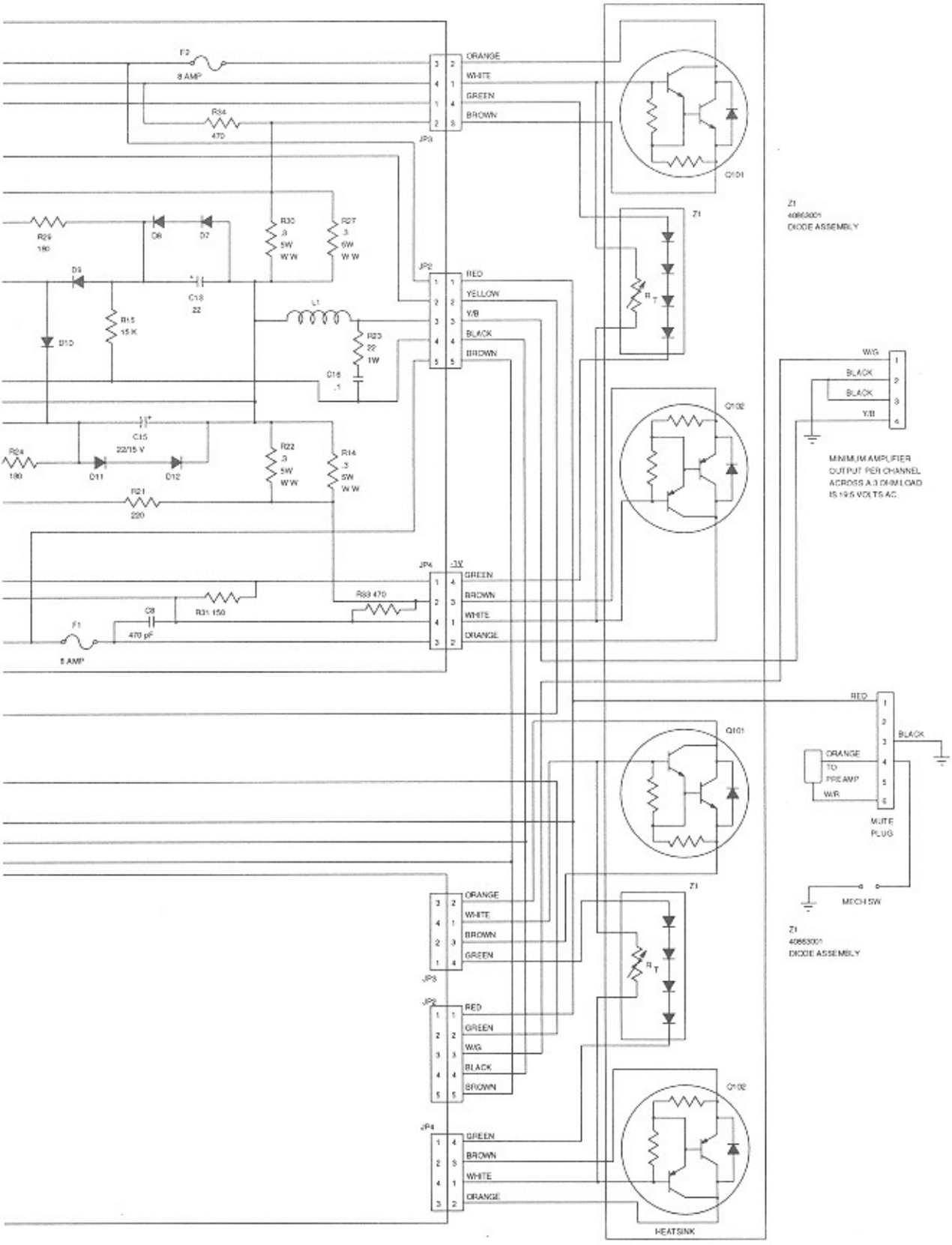



**Figure 5-9B. Preamplifier Circuit Board Layout**


RIGHT CHANNEL
+40 V ±2VDC
1000 HZ @ INPUT SIGNAL
SIGNAL GROUND
-40V ±2 VDC
JP1
ROWE AMI 4-07101-04 DRIVER
CB101 4 AMP
120 V (NOM) 50-60 HZ
CHASSIS GROUND
BLACK
T101
RED
BLUE
C101 .1 400V
CR101
+40Vx2
-40Vx2
C102 10000 50 V
C103 10000 50 V
7-00359-01 LEFT CH.
OVERLOAD INDICATORS 7-00359-02
RIGHT CH.
LEFT CHANNEL
DRIVER BOARD SAME AS ABOVE
NOTES (UNLESS OTHERWISE SPECIFIED)
1. R12 POTENTIOMETER SET FOR CV ± .005VDC @ OUTPUT- PRE-AMP MUTED OR REMOVED, SPEAKER TRANSFORMER PACKAGE DISCONNECTED
2. ALL RESISTORS ARE 1/4W ±5% & RATED IN OHMS.
3. ALL VOLTAGE TAKEN WITH CHASSIS REFERENCE.
4. INDICATES AC SIGNAL VOLTAGE NO LOAD.
5. INDICATES DC VOLTAGE NO LOAD
6. IDLE CURRENT (Q101 OR Q102 EMITTER) 25 MA ± 10 MA'S- THIS CAN BE MEASURED BY PLACING A VOLT METER ACROSS R30 OR R22 .3 OHM RESISTOR - VOLTAGE SHALL READ FROM .0225 TO .0525 VOLTS DC.




For Equivalent Engineering Drawing See 61024903

**Figure 5-10A. Schematic Diagram - 250 Watt Power Amp**

## COMPONENT LIST FOR AMPLIFIER DRIVER BOARD 40710104-J

| | | | |
|---|---|---|---|
| C1 | Capacitor - Mylar | .1 µF | 70021549 |
| C2 | Capacitor - Mylar | .1 µF | 70021549 |
| C3 | Capacitor - Monolythic Ceramic | 220 PF | 70028606 |
| C4 | Capacitor - Electrolytic | 1 µF | 70023804 |
| C5 | Capacitor - Electrolytic | 47 µF | 70023812 |
| C6 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C7 | Capacitor - Electrolytic | 47 µF | 70023812 |
| C8 | Capacitor - Monolythic Ceramic | 470 PF | 70028612 |
| C9 | Not Used | | |
| C10 | Capacitor - Monolythic Ceramic | .001 µF | 70028618 |
| C11 | Capacitor - Monolythic Ceramic | 100 PF | 70028601 |
| C12 | Capacitor - Monolythic Ceramic | 220 PF | 70028606 |
| C13 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C14 | Capacitor - Monolythic Ceramic | .01 µF | 70028636 |
| C15 | Capacitor - Electrolytic | 22 µF | 70023810 |
| C16 | Capacitor - Mylar | .1 µF | 70021549 |
| | | | |
| CR1 | Diode - Silicon | | 70035005 |
| CR2 | Diode - Silicon | | 70035005 |
| CR3 | Diode - Zener | (5.1 V) | 70035527 |
| CR4 | Diode - Zener | (5.1 V) | 70035527 |
| CR5 | Diode - Zener | (10 V) | 70035514 |
| CR6 | Diode - Silicon | | 70035005 |
| CR7 | Diode - Silicon | | 70035005 |
| CR8 | Diode - Silicon | | 70035005 |
| CR9 | Diode - Silicon | | 70035005 |
| CR10 | Diode - Silicon | | 70035005 |
| CR11 | Diode - Silicon | | 70035005 |
| CR12 | Diode - Silicon | | 70035005 |
| CR13 | Diode - Silicon | | 70035005 |
| | | | |
| F1 | Fuse (8 Amp) | | 70072002 |
| F2 | Fuse (8 Amp) | | 70072002 |
| | | | |
| L1 | Inductor - Coil | | 21940701 |
| | | | |
| P1 | Wafer - Non-Polarizing | (4 CKT) | 70074904 |
| P2 | Wafer - Polarizing | (5 CKT) | 70075005 |
| P3 | Wafer - Polarizing | (4 CKT) | 70075004 |
| P4 | Wafer - Polarizing | (4 CKT) | 70075004 |
| | | | |
| Q1 | Transistor - Silicon (Dual) | (NPN) | 70030301 |
| Q2 | Transistor - Silicon | (NPN) | 70030008 |
| Q3 | Transistor - Silicon | (NPN) | 70033006 |
| Q4 | Transistor - Silicon | (PNP) | 70030104 |
| Q5 | Transistor - Silicon | (PNP) | 70030104 |
| Q6 | Transistor - Silicon | | 70030403 |
| Q7 | Transistor - Silicon | (NPN) | 70030008 |
| | | | |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Resistor - Carbon | 18 KΩ | 79901183 |
| R2 | Resistor - Carbon | 220 KΩ | 79901224 |
| R3 | Resistor - Carbon | 18 KΩ | 79901183 |
| R4 | Resistor - Carbon | 5.6 KΩ | 79901562 |
| R5 | Resistor - Carbon | 18 KΩ | 79901183 |
| R6 | Resistor - Carbon | 470 Ω | 79901471 |

| | | | |
|---|---|---|---|
| R7 | Resistor - Carbon | 2.2 Ω | 79901222 |
| R8 | Resistor - Carbon | 15 KΩ | 79901153 |
| R9 | Resistor - Carbon | 470 Ω | 79901471 |
| R10 | Resistor - Carbon | 1.5 KΩ | 79901152 |
| R11 | Resistor - Carbon | 2.2 KΩ | 79901222 |
| R12 | Resistor - Potentiometer | 10 KΩ | 70040014 |
| R13 | Resistor - Carbon | 100 Ω | 79901101 |
| R14 | Resistor - Wire Wound | .3 Ω | 70011805 |
| R15 | Resistor - Carbon | 15 KΩ | 79901153 |
| R16 | Resistor - Carbon | 15 KΩ | 79901153 |
| R17 | Resistor - Carbon | 2.2 KΩ | 79901222 |
| R18 | Resistor - Carbon | 820 Ω | 79901821 |
| R19 | Resistor - Carbon | 47 Ω | 79901470 |
| R20 | Resistor - Carbon | 15 Ω | 79901150 |
| R21 | Resistor - Carbon | 180 Ω | 79901181 |
| R22 | Resistor - Wire Wound | .3 Ω | 70011805 |
| R23 | Resistor - Wire Wound | 22 Ω | 79920220 |
| R24 | Resistor - Carbon | 180 Ω | 79901181 |
| R25 | Resistor - Carbon | 47 Ω | 79901470 |
| R26 | Resistor - Carbon | 47 Ω | 79901470 |
| R27 | Resistor - Wire Wound (5 W, 10%) | .3 Ω | 70011805 |
| R28 | Resistor - Carbon | 180 Ω | 79901181 |
| R29 | Resistor - Carbon | 180 Ω | 79901181 |
| R30 | Resistor - Wire Wound (5 W 10%) | .3 Ω | 70011805 |
| R31 | Resistor - Carbon | 220 Ω | 79901221 |
| R32 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R33 | Resistor - Carbon | 470 Ω | 79901471 |
| R34 | Resistor - Carbon | 470 Ω | 79901471 |

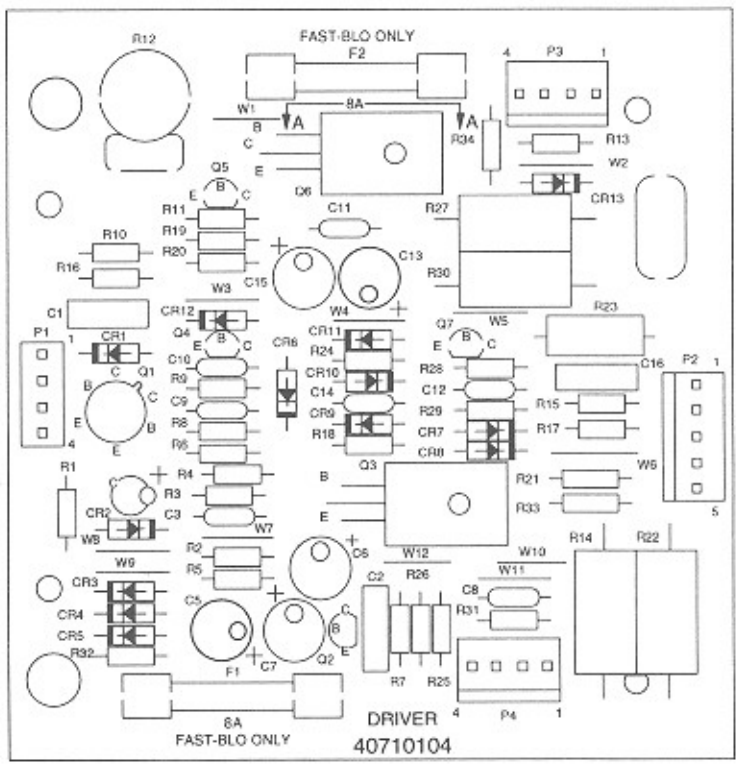
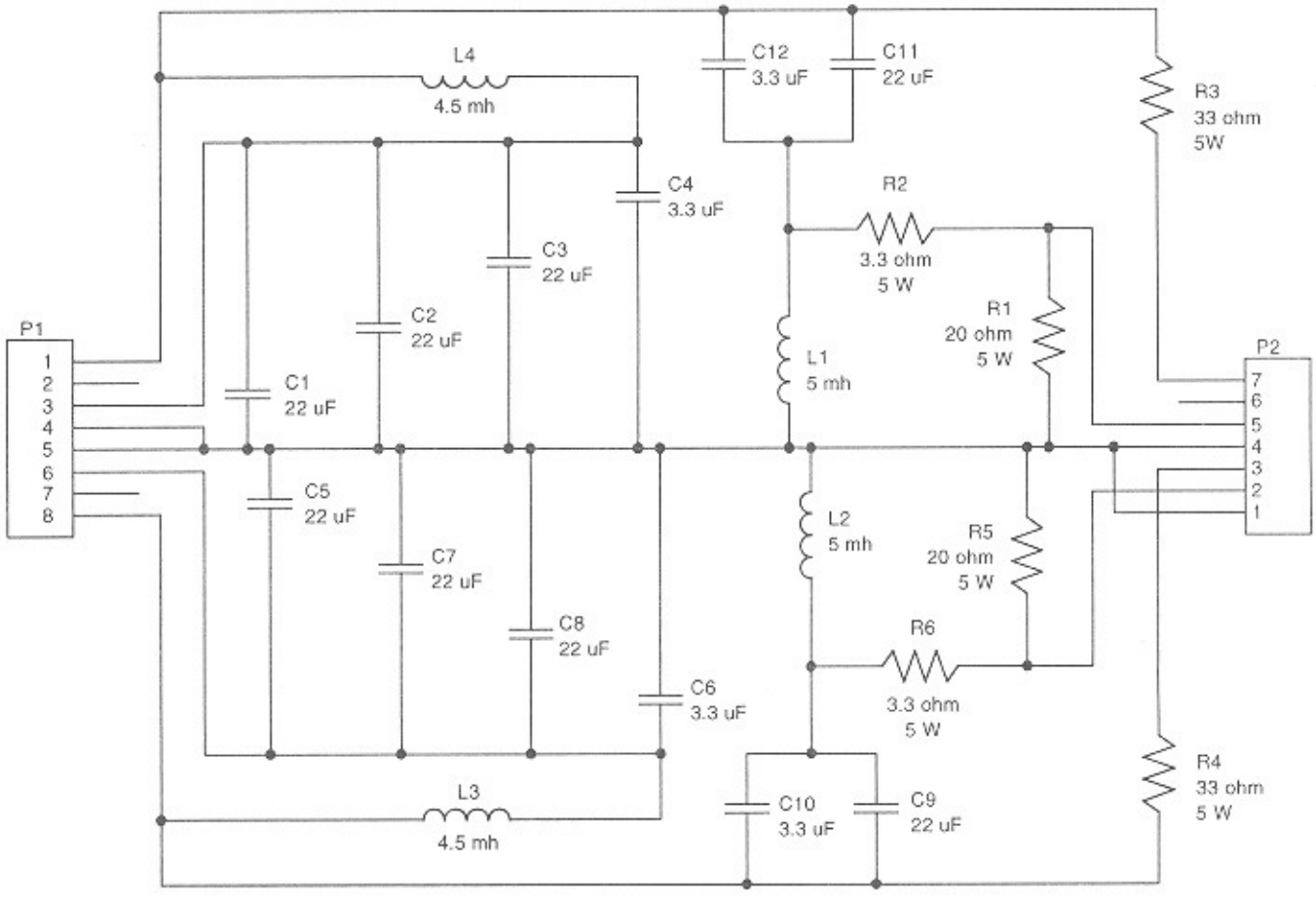



**Figure 5-10B. Amplifier Driver Board Layout**




For Equivalent Engineering Drawing See 61052701

**Figure 5-10C. Circuit Board Assembly - Crossover**

## COMPONENT LIST FOR CROSSOVER NETWORK 61052701

| | | | |
|---|---|---|---|
| * C1 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| * C2 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| * C3 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| C4 | Capacitor - Bi-Polar Electrolytic | 3.3 µF | 70022801 |
| * C5 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| C6 | Capacitor - Bi-Polar Electrolytic | 3.3 µF | 70022801 |
| * C7 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| * C8 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| C9 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| C10 | Capacitor - Bi-Polar Electrolytic | 3.3 µF | 70022801 |
| C11 | Capacitor - Bi-Polar Electrolytic | 22 µF | 70022809 |
| C12 | Capacitor - Bi-Polar Electrolytic | 3.3 µF | 70022801 |
| L1 | Inductor | 5 mH | 70041401 or 70041302 |
| L2 | Inductor | 5 mH | 70041401 or 70041302 |
| L3 | Inductor | 4.5 mH | 70041401 or 70041406 or 70041301 |
| L4 | Inductor | 4.5 mH | 70041401 or 70041406 or 70041301 |
| P1 | Header - Vertical Polarized | (8 CKT) | 70075008 |
| P2 | Header - Vertical Polarized | (7 CKT) | 70075007 |
| R1 | Resistor - Wirewound 5W | 20 Ω | 70012514 |
| R2 | Resistor - Wirewound 5W | 3.3 Ω | 70012513 |
| R3 | Resistor - Wirewound 5W | 33 Ω | 70012512 |
| R4 | Resistor - Wirewound 5W | 33 Ω | 70012512 |
| R5 | Resistor - Wirewound 5W | 20 Ω | 70012514 |
| R6 | Resistor - Wirewound 5W | 3.3 Ω | 70012513 |

**NOTES:**

The following substitutions may be made:

* C1 (22 µF) + C2 (22 µF) + C3 (22 µF) + C4 (3.3 µF) = 69.3 µF
* C5 (22 µF) + C7 (22 µF) + C8 (22 µF) + C6 (3.3 µF) = 69.3 µF

OR

* C2 (33 µF) + C3 (33 µF) + C4 (3.3 µF) = 69.3 µF
* C7 (33 µF) + C8 (33 µF) + C6 (3.3 µF) = 69.3 µF

C1 and C5 Not Used.

Either of the above combinations may be used to obtain the nominal 19.5 mF.

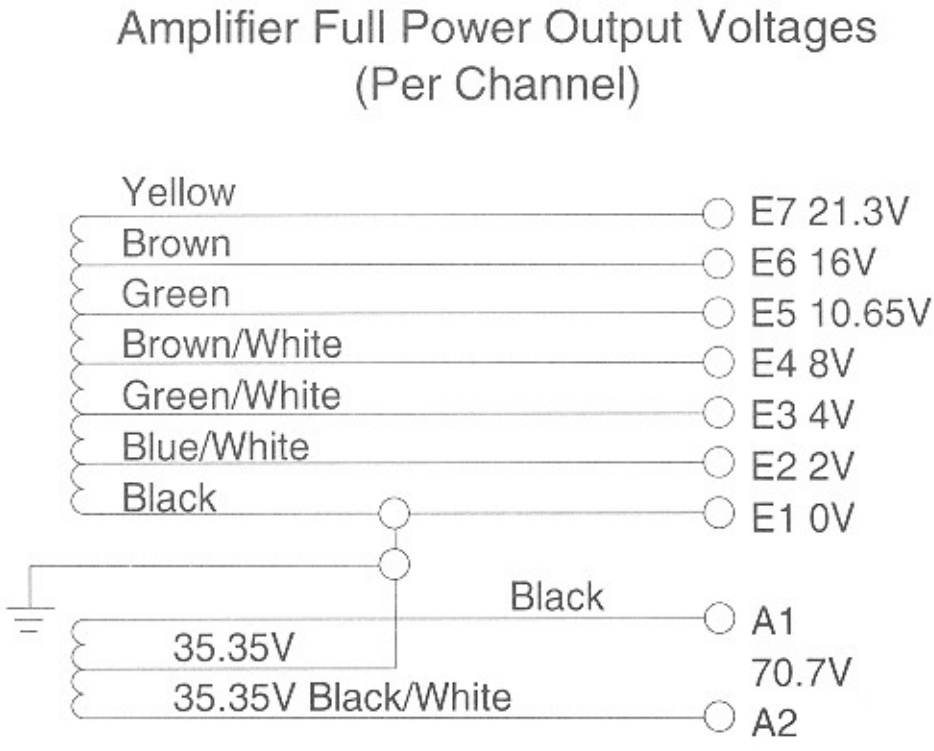
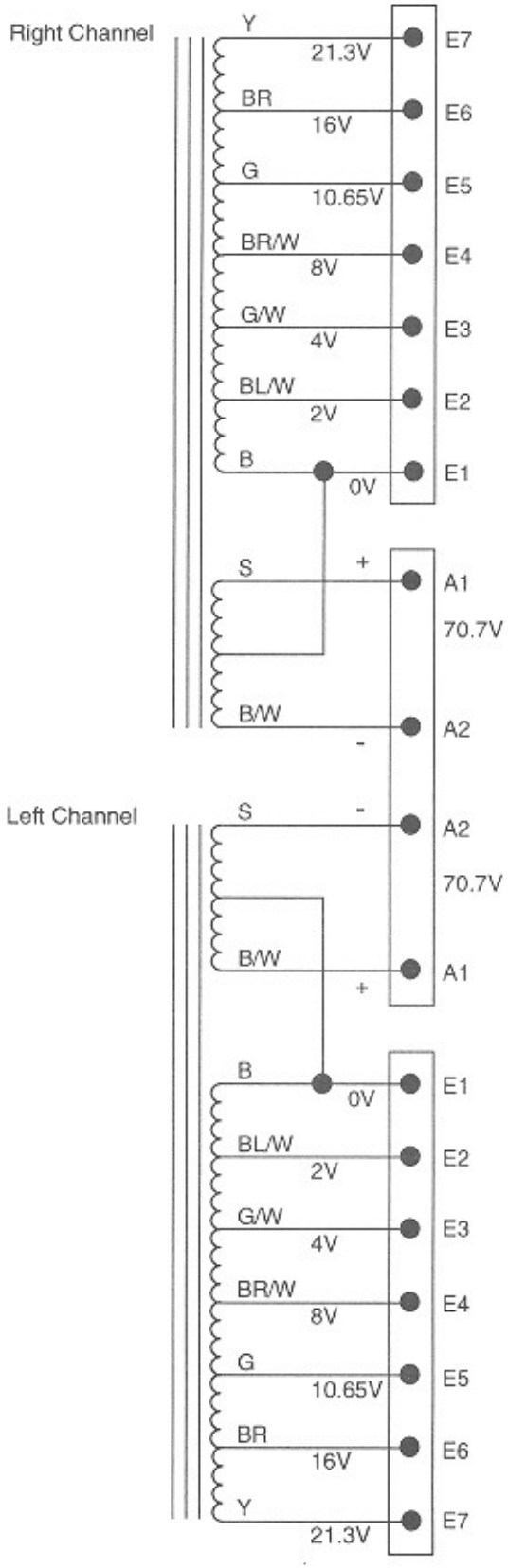
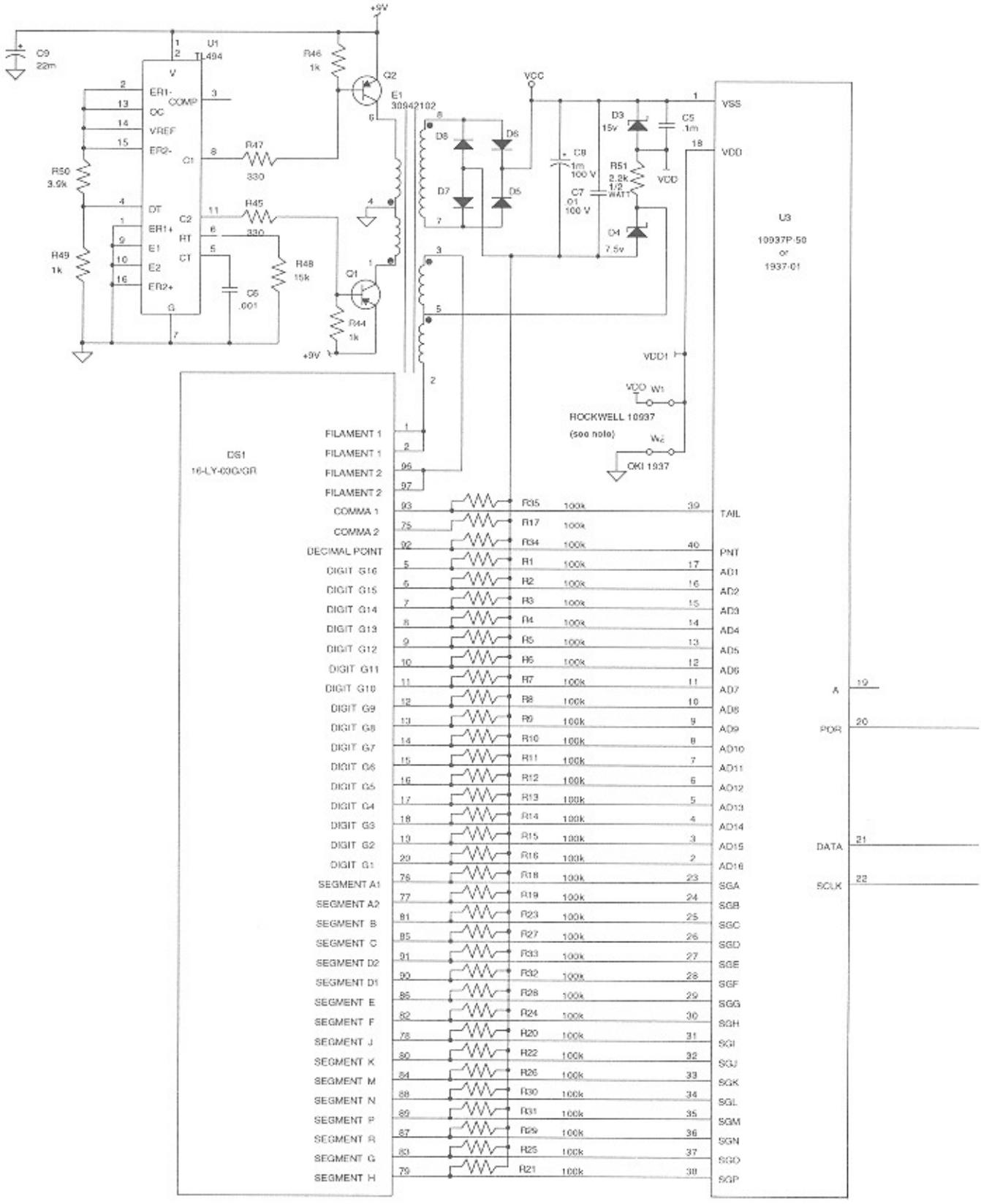



**Figure 5-11. Transformer Output Voltages**



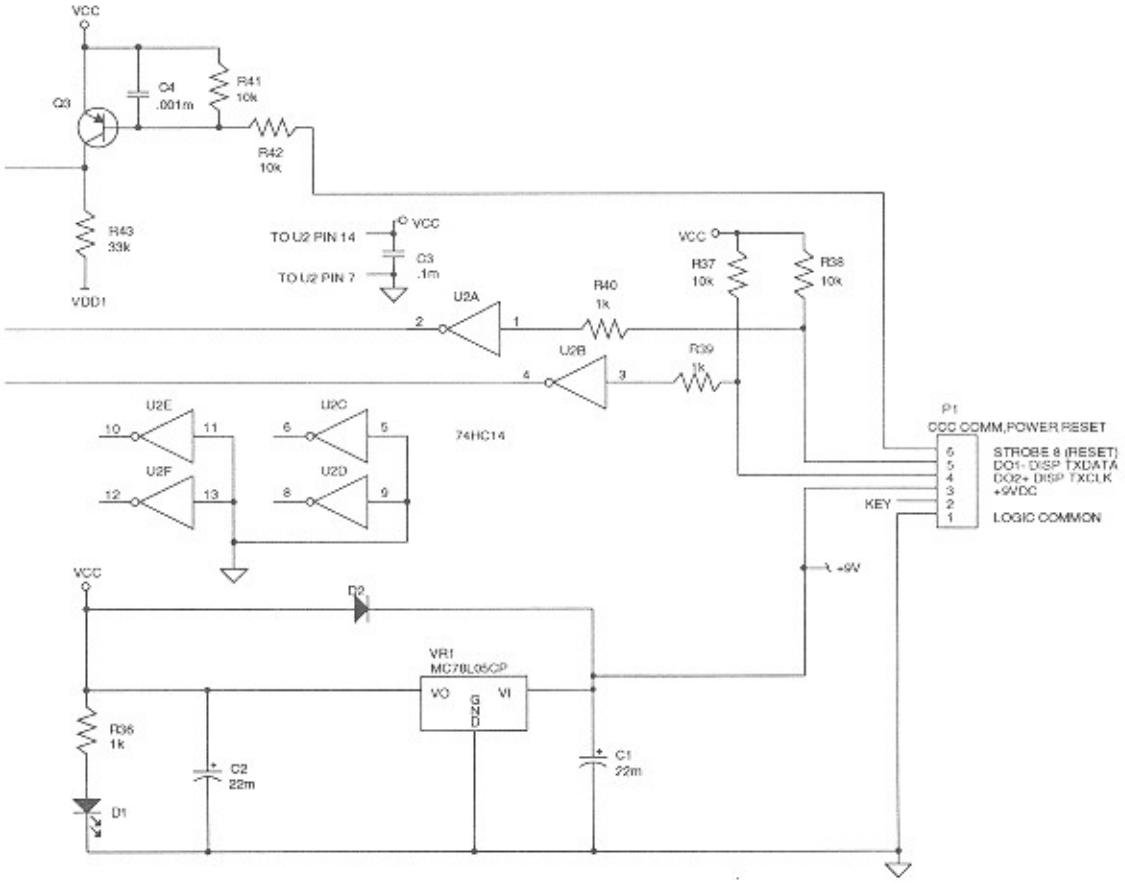

For Equivalent Engineering Drawing See 40875301-Q2 A

**Figure 5-12. Transformer Wiring Diagram**




**NOTE:**

| AT U3 | W1 | W2 |
|---|---|---|
| 30800237 | USED | NOT USED |
| 30800258 | NOT USED | USED |




For Equivalent Engineering Drawing See 40855001-Q2 B

**Figure 5-13A. Display Assembly**

## COMPONENT LIST FOR THE DISPLAY ASSEMBLY (40855001)

| | | | |
|---|---|---|---|
| C1 | Capacitor - Tantalum 15 VDC 10% | 22 µF | 70025104 |
| C2 | Capacitor - Tantalum 15 VDC 10% | 22 µF | 70025104 |
| C3 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C4 | Capacitor - Monolythic Ceramic 10% | .001 µF | 70028618 |
| C5 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C6 | Capacitor - Monolythic Ceramic 10% | .001 µF | 70028618 |
| C7 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C8 | Capacitor - Electrolytic 100 VDC 20% | 1 µF | 70028101 |
| C9 | Capacitor - Tantalum 15 VDC 10% | 22 µF | 70025104 |
| | | | |
| D1 | Diode - Light Emitting Red Diffused | | 70035305 |
| D2 | Diode - Silicon | 1N4004 | 70035005 |
| D3 | Diode - Zener 15V 1/2W 5% | 1N965B | 70035522 |
| D4 | Diode - Zener 7.5V 1/2W 5% | 1N958B | 70035520 |
| D5 | Diode - Silicon | 1N4148 | 70035012 |
| D6 | Diode - Silicon | 1N4148 | 70035012 |
| D7 | Diode - Silicon | 1N4148 | 70035012 |
| D8 | Diode - Silicon | 1N4148 | 70035012 |
| | | | |
| DS1 | Display - Vac Flu (16 Char) | 16-LY-03G | 30933204 |
| | | | |
| E1 | Transformer DC-DC/AC | 30942102 | |
| | | | |
| P1 | Header - Polarized .156 6 Position | 70075006 | |
| | | | |
| Q1 | Transistor - Silicon PNP | MPSA56 | 70030104 |
| Q2 | Transistor - Silicon PNP | MPSA56 | 70030104 |
| Q3 | Transistor - Silicon PNP | MPSA56 | 70030104 |
| | | | |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1-R35 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R36 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R37 | Resistor - Carbon Film | 10 KΩ | 79901103 |
| R38 | Resistor - Carbon Film | 10 KΩ | 79901103 |
| R39 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R40 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R41 | Resistor - Carbon Film | 10 KΩ | 79901103 |
| R42 | Resistor - Carbon Film | 10 KΩ | 79901103 |
| R43 | Resistor - Carbon Film | 33 KΩ | 79901333 |
| R44 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R45 | Resistor - Carbon Film | 330 Ω | 79901331 |
| R46 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R47 | Resistor - Carbon Film | 330 Ω | 79901331 |
| R48 | Resistor - Carbon Film | 15 KΩ | 79901153 |
| R49 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R50 | Resistor - Carbon Film | 3.9 KΩ | 79901392 |
| R51 | Resistor - Carbon Film | 1.8 KΩ | 79901182 |

| | | | |
|---|---|---|---|
| U1 | I.C.-PWM Control Circuit | TL494 | 30800257 |
| U2 | Schmitt Trigger Inverter | 74HC14I.C.-HEX | 79940014 |
| U3 | Driver-Display (Vac Flu) | 10937P-50 | 30800237 |
| SEE NOTE | | | |
| | ***OR*** | | |
| | Driver-Display (Vac Flu) | MSC1937-01 | 30800258 |
| SEE NOTE | | | |
| VR1 | Regulator - Voltage (Linear IC) | MC78L05ACP | 70036515 |
| W1 | Wire - Bare | | 00503200 |
| SEE NOTE | | | |
| W2 | Wire - Bare | | 00503200 |
| SEE NOTE | | | |

NOTE: Insert W1 (W2 Open) If Rockwell 10937 (30800237) at U3.
Insert W2 (W1 Open) If OKI 1937 (30800258) at U3.

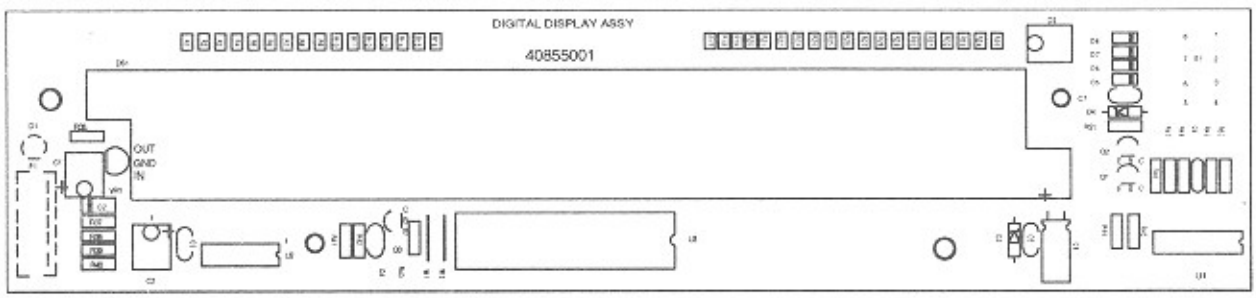
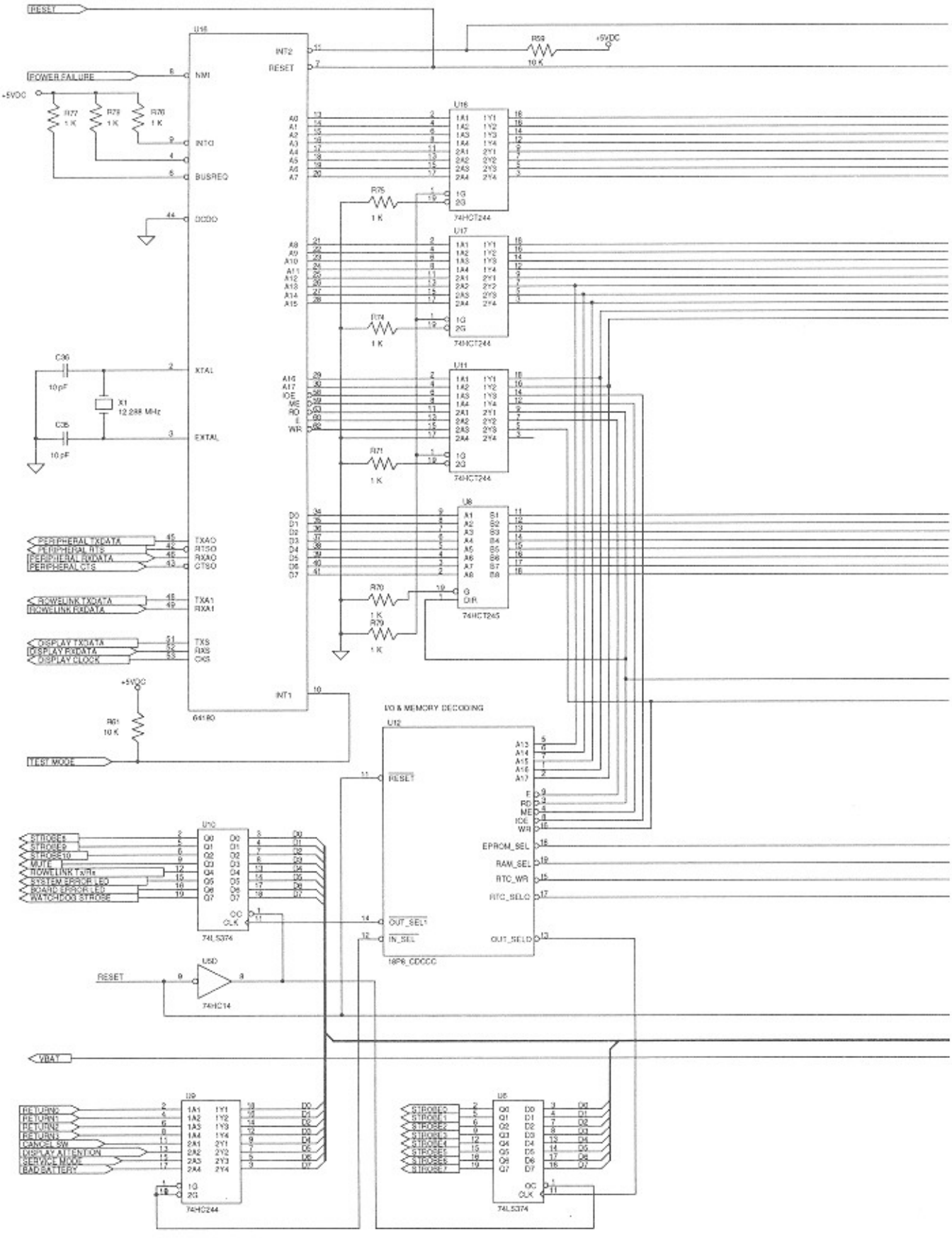
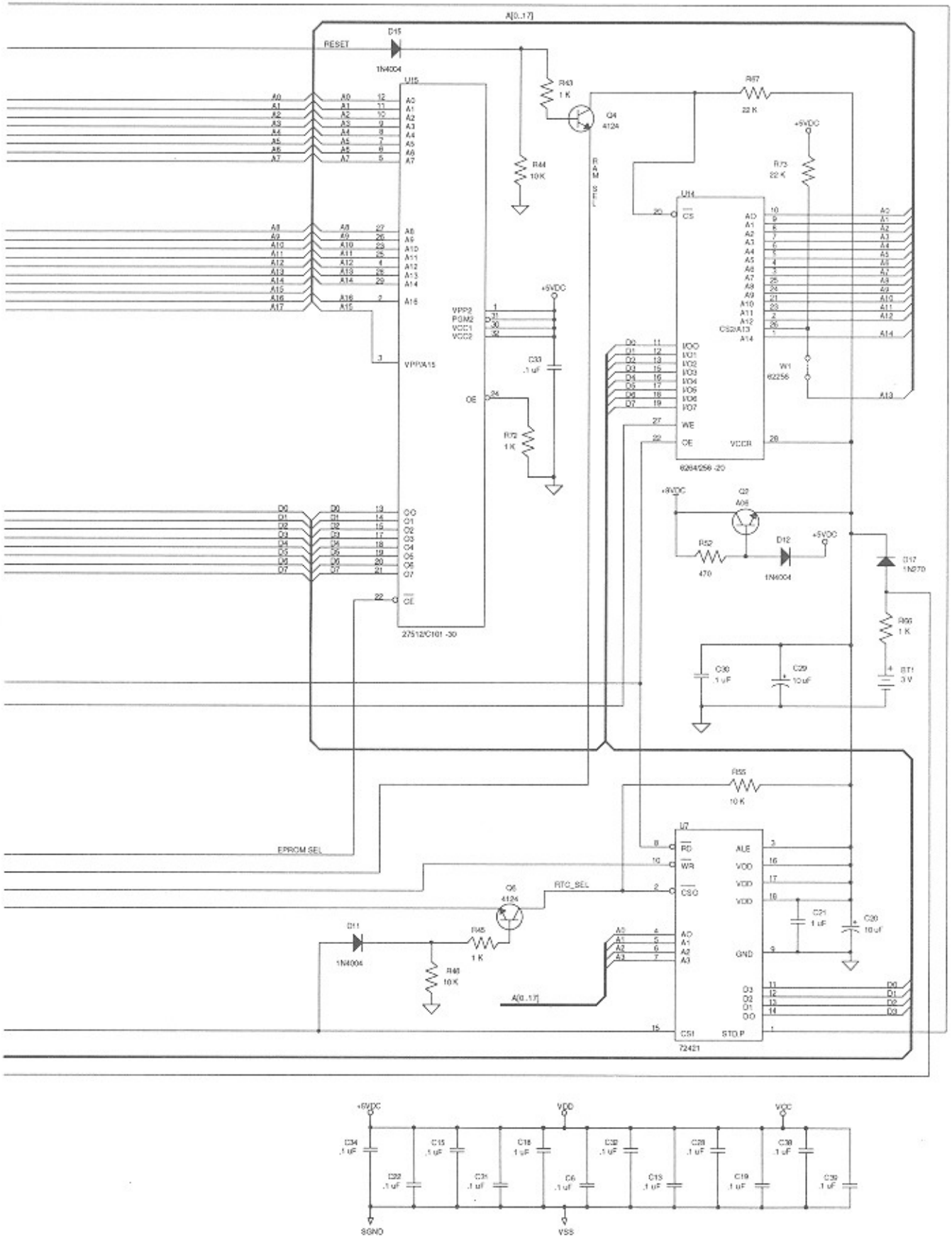



**Figure 5-13B. Display Assembly Circuit Board Layout 40855001**

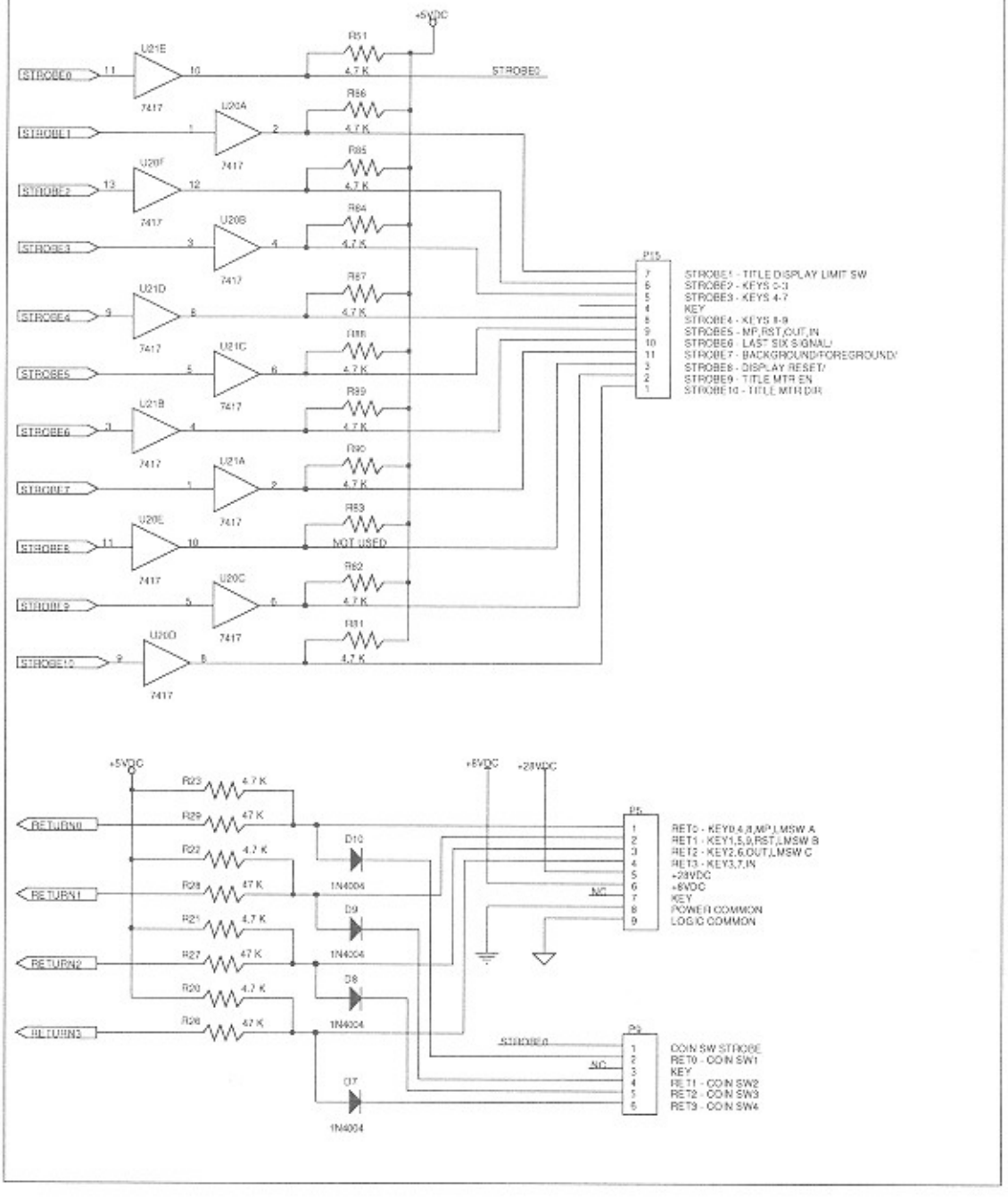

RESET
POWER FAILURE
+5VDC
R77 1 K
R78 1 K
R76 1 K
INT2
RESET
NMI
INTO
BUSREQ
DCDO
XTAL
EXTAL
C36 10 pF
C35 10 pF
X1 12.288 MHz
64180
INT1
R59 10 K
R75 1 K
R74 1 K
R71 1 K
R70 1 K
R79 1 K
74HCT244
74HCT245
PERIPHERAL TXDATA
PERIPHERAL RTS
PERIPHERAL RXDATA
PERIPHERAL CTS
TXA0
RTS0
RXA0
CTS0
POWERLINK TXDATA
POWERLINK RXDATA
TXA1
RXA1
DISPLAY TXDATA
DISPLAY RXDATA
DISPLAY CLOCK
TXS
RXS
CKS
R61 10 K
TEST MODE
I/O & MEMORY DECODING
18P8_CDCCC
RESET
OUT_SEL1
IN_SEL
EPROM_SEL
RAM_SEL
RTC_WR
RTC_SELO
OUT_SELO
74LS374
74HC14
VBAT
RETURN2
RETURN1
RETURN3
CANCEL SW
DISPLAY ATTENTION
SERVICE MODE
BAD BATTERY
74HC244
STROBE0
STROBE1
STROBE2
STROBE3
STROBE4
STROBE5
STROBE6
STROBE7



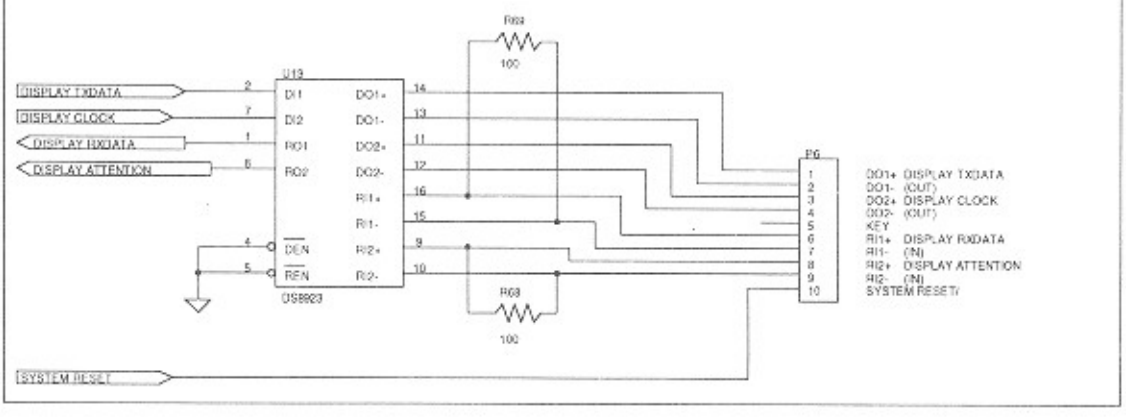

For Equivalent Engineering Drawing See 61031120-Q2 F

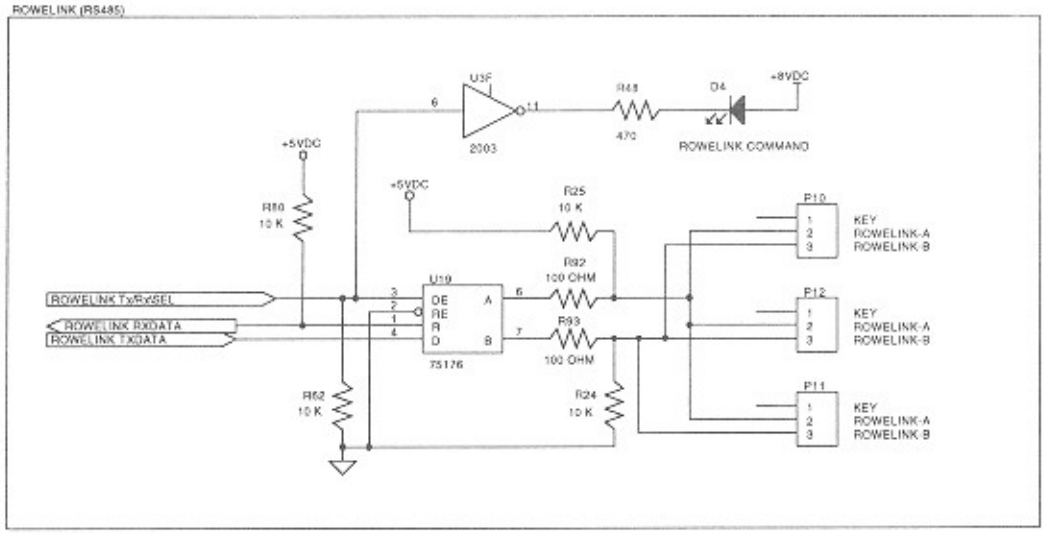
**Figure 5-14A. Central Control Computer Schematic, Sheet 1**

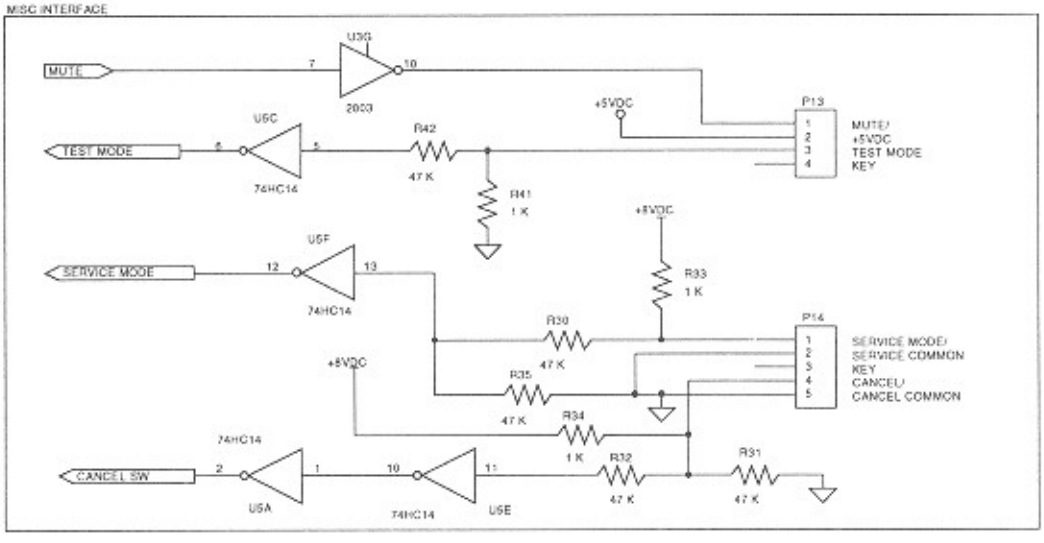
DISPLAY/KEYBOARD INTERFACE

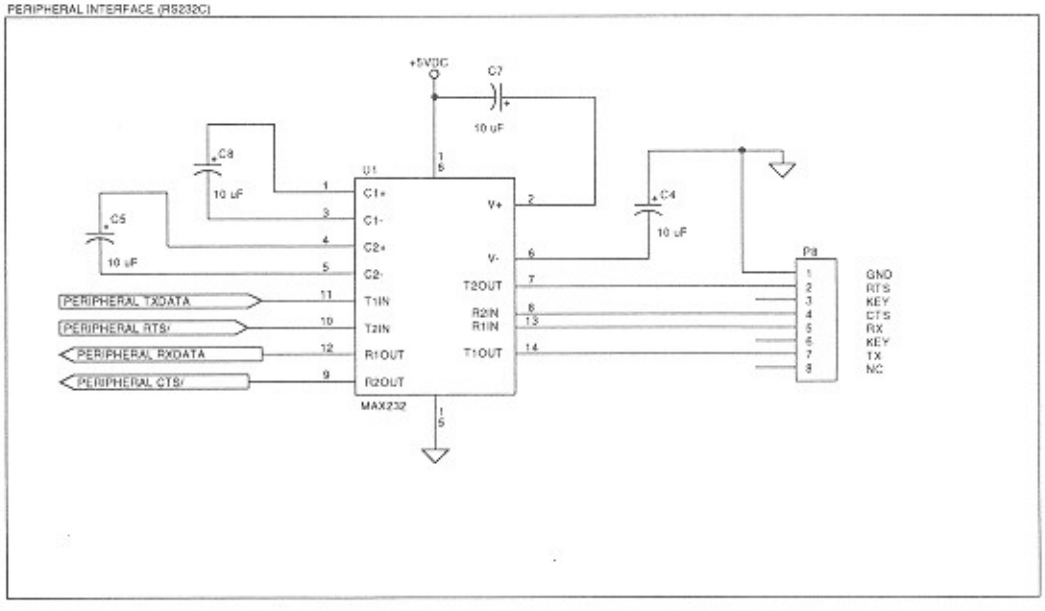


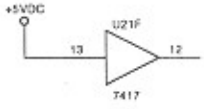

DISPLAY INTERFACE (RS422)





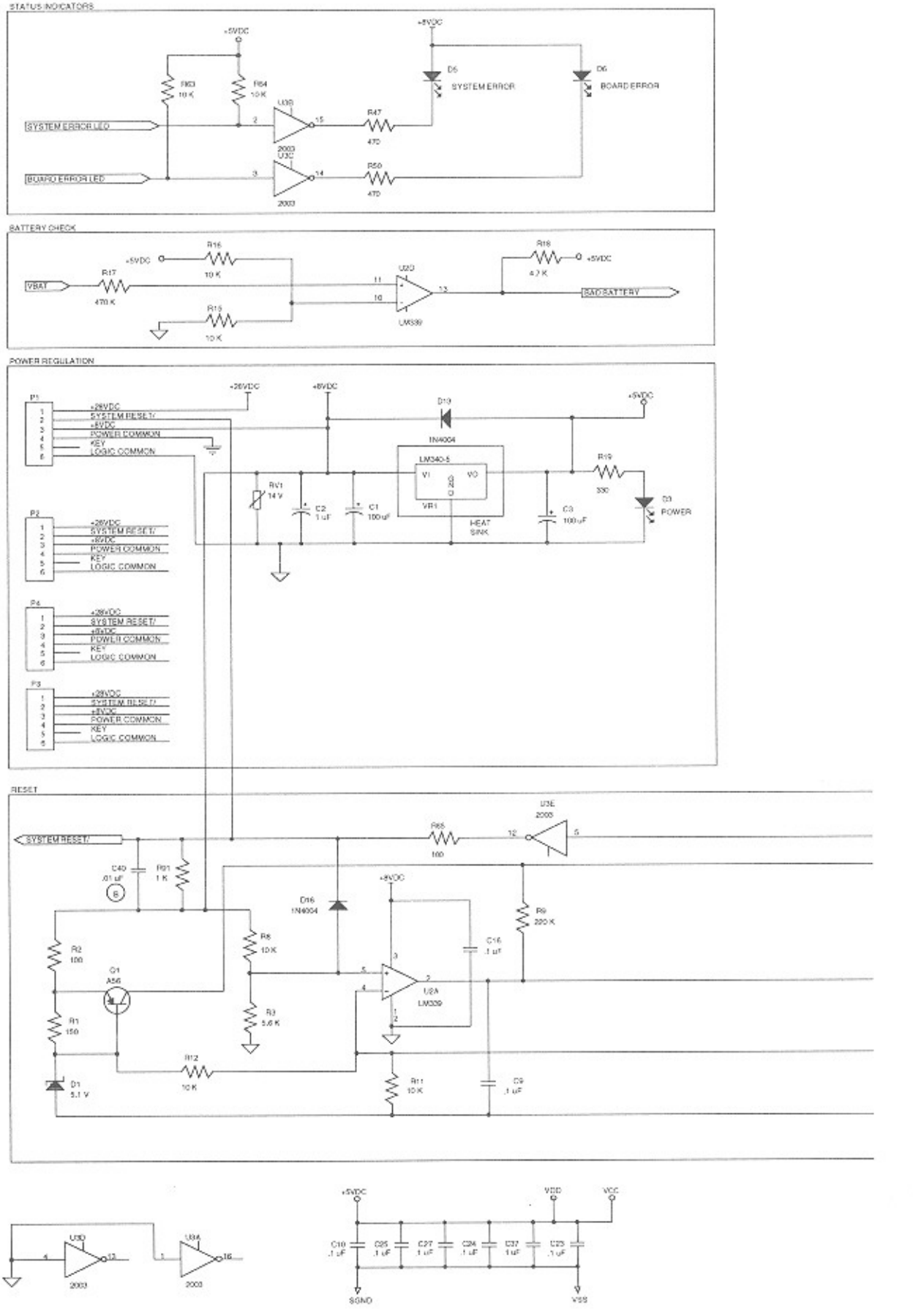



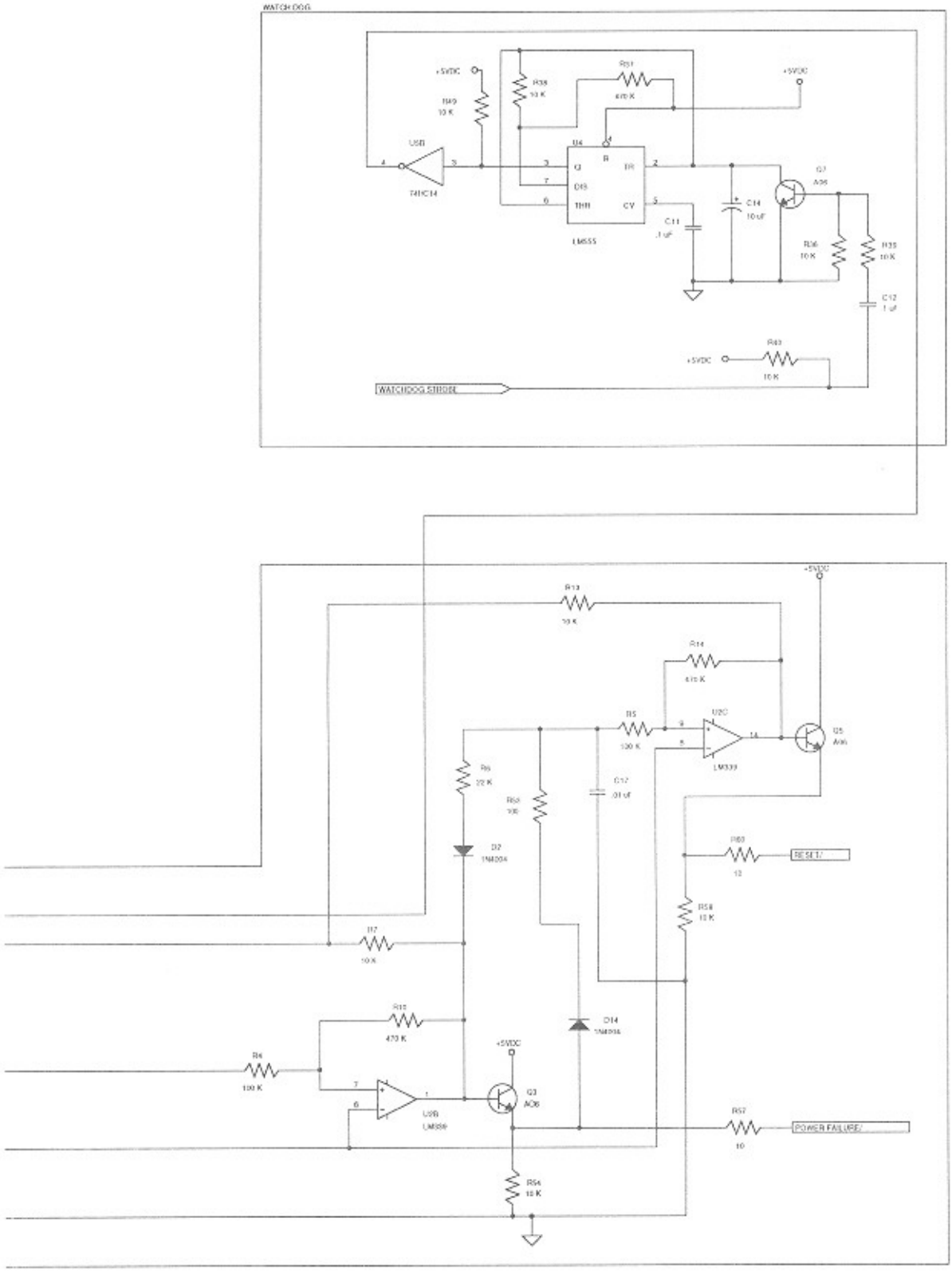




For Equivalent Engineering Drawing See 61031120-Q2 F

**Figure 5-14A. Central Control Computer Schematic, Sheet 2**


STATUS INDICATORS
+5VDC
+5VDC
R63
10 K
R64
10 K
D5
SYSTEM ERROR
D6
BOARD ERROR
SYSTEM ERROR LED
BOARD ERROR LED
U3B
U3C
2003
R47
470
R50
470
BATTERY CHECK
+5VDC
R16
10 K
R17
470 K
VBAT
R18
4.7 K
+5VDC
U2D
LM339
R15
10 K
BAD BATTERY
POWER REGULATION
P1
P2
P4
P3
+28VDC
SYSTEM RESET/
+8VDC
POWER COMMON
KEY
LOGIC COMMON
D13
1N4004
LM340-5
VI
VO
GND
VR1
HEAT SINK
RV1
14 V
C2
1 uF
C1
100 uF
C3
100 uF
R19
330
D3
POWER
RESET
SYSTEM RESET/
R65
100
U3E
2003
C40
.01 uF
R91
1 K
D16
1N4004
R9
220 K
C16
.1 uF
R8
10 K
R2
100
Q1
A56
R1
150
R3
5.6 K
U2A
LM339
D1
5.1 V
R12
10 K
R11
10 K
C9
.1 uF
U3D
U3A
2003
+5VDC
VDD
VCC
C10
.1 uF
C25
.1 uF
C27
.1 uF
C24
.1 uF
C37
1 uF
C23
.1 uF
SGND
VSS




For Equivalent Engineering Drawing See 61031120-Q2 F

**Figure 5-14A. Central Control Computer Schematic, Sheet 3**

## Table 5-3. CD-100F C.C.C. IC Power and Common Pin Chart

| Ref. | Generic Part # | Power | | Common | |
|---|---|---|---|---|---|
| | | +5 VDC | +8 VDC | Logic | Power |
| U1 | MAX232 | 16 | — | 15 | — |
| U2 | LM339 | — | 3 | 12 | — |
| U3 | 2003 | — | — | 8 | — |
| U4 | LM555 | 8 | — | 1 | — |
| U5 | 74HC14 | 14 | — | 7 | — |
| U6 | 74LS374 | 20 | — | 10 | — |
| U7 | 72421 | 16, 17, 18 | — | 9 | — |
| U8 | 74HCT245 | 20 | — | 10 | — |
| U9 | 74HC244 | 20 | — | 10 | — |
| U10 | 74LS374 | 20 | — | 10 | — |
| U11 | 74HCT244 | 20 | — | 10 | — |
| U12 | 18P8_CDCCC | 20 | — | 10 | — |
| U13 | DS8923 | 3 | — | 6 | — |
| U14 | 6264/6256 | 28 | — | 14 | — |
| U15 | 27512/27C101 | 32, 30 | — | 16 | — |
| U16 | 64180 | 32 | — | 1, 33 | — |
| U17 | 74HCT244 | 20 | — | 10 | — |
| U18 | 74HCT244 | 20 | — | 10 | — |
| U19 | 75176 | 8 | — | 5 | — |
| U20 | 7417 | 14 | — | 7 | — |
| U21 | 7417 | 14 | — | 7 | — |

For Equivalent Engineering Drawing See 61031120-Q2

**Figure 5-14A. Central Control Computer Schematic, Sheet 4**

# COMPONENT LIST FOR CENTRAL CONTROL COMPUTER (61031120)

| | | | |
|---|---|---|---|
| BT1 | Battery - Lithium | 160 mah 3V (with holder) | 30873101 |
| | | OR | |
| | | 750 mah 3V | 40788901 |
| C1 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C2 | Capacitor - Tantalum | 1 µF | 70025121 |
| C3 | Capacitor - Electrolytic | 100 µF | 70023814 |
| C4 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C5 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C6 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C7 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C8 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C9 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C10 | Not Used | | |
| C11 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C12 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C13 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C14 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C15 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C16 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C17 | Capacitor - Monolythic Ceramic | .01 µF | 70028502 |
| C18 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C19 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C20 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C21 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C22 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C23 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C24 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C25 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C27 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C28 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C29 | Capacitor - Electrolytic | 10 µF | 70023808 |
| C30 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C31 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C32 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C33 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C34 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C35 | Capacitor - Monolythic Ceramic | 10 PF | 70028701 |
| C36 | Capacitor - Monolythic Ceramic | 10 PF | 70028701 |
| C37 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C38 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C39 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C40 | Capacitor - Monolythic Ceramic | .01 µF | 70028502 |
| D1 | Diode - Zener (5.1 V) | | 70035526 |
| D2 | Diode - Silicon | IN4004 | 70035005 |
| D3 | Diode - Light Emitting | | 70035305 |
| D4 | Diode - Light Emitting | | 70035305 |
| D5 | Diode - Light Emitting | | 70035305 |
| D6 | Diode - Light Emitting | | 70035305 |
| D7 | Diode - Silicon | IN4004 | 70035005 |
| D8 | Diode - Silicon | IN4004 | 70035005 |
| D9 | Diode - Silicon | IN4004 | 70035005 |
| D10 | Diode - Silicon | IN4004 | 70035005 |

## COMPONENT LIST FOR CENTRAL CONTROL COMPUTER (61031120)

*(Continued)*

| | | | |
|---|---|---|---|
| D11 | Diode - Silicon | IN4004 | 70035005 |
| D12 | Diode - Silicon | IN4004 | 70035005 |
| D13 | Diode - Silicon | IN4004 | 70035005 |
| D14 | Diode - Silicon | IN4004 | 70035005 |
| D15 | Diode - Silicon | IN4004 | 70035005 |
| D16 | Diode - Silicon | IN4004 | 70035005 |
| D17 | Diode - Germanium | IN270 | 70035101 |
| | | | |
| P1 | Wafer - Polarizing | 6 CKT | 70075006 |
| P2 | Wafer - Polarizing | 6 CKT | 70075006 |
| P3 | Wafer - Polarizing | 6 CKT | 70075006 |
| P4 | Wafer - Polarizing | 6 CKT | 70075006 |
| P5 | Wafer - Polarizing | 9 CKT | 70075009 |
| P6 | Wafer - Polarizing | 10 CKT | 70075010 |
| P7 | Not Used | | |
| P8 | Wafer - Polarizing | 8 CKT | 70075008 |
| P9 | Wafer - Polarizing | 6 CKT | 70075006 |
| P10 | Wafer - Polarizing | 3 CKT | 70075003 |
| P11 | Wafer - Polarizing | 3 CKT | 70075003 |
| P12 | Wafer - Polarizing | 3 CKT | 70075003 |
| P13 | Wafer - Polarizing | 4 CKT | 70075004 |
| P14 | Wafer - Polarizing | 5 CKT | 70075005 |
| P15 | Wafer - Polarizing | 11 CKT | 70075011 |
| | | | |
| Q1 | Transistor - Silicon (PNP) | | 70030104 |
| Q2 | Transistor - Silicon (NPN) | | 70030008 |
| Q3 | Transistor - Silicon (NPN) | | 70030008 |
| Q4 | Transistor - Silicon (NPN) | | 70031301 |
| Q5 | Transistor - Silicon (NPN) | | 70030008 |
| Q6 | Transistor - Silicon (NPN) | | 70031301 |
| Q7 | Transistor - Silicon (NPN) | | 70030008 |
| | | | |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Resistor - Carbon | 150 Ω | 79901151 |
| R2 | Resistor - Carbon | 100 Ω | 79901101 |
| R3 | Resistor - Carbon (¼ W, 2%) | 5.6 KΩ | 79902562 |
| R4 | Resistor - Carbon | 100 KΩ | 79901104 |
| R5 | Resistor - Carbon | 100 KΩ | 79901104 |
| R6 | Resistor - Carbon | 22 KΩ | 79901223 |
| R7 | Resistor - Carbon | 10 KΩ | 79901103 |
| R8 | Resistor - Carbon Film (¼ W, 2%) | 10 KΩ | 79902103 |
| R9 | Resistor - Carbon | 220 KΩ | 79901224 |
| R10 | Resistor - Carbon | 470 KΩ | 79901474 |
| R11 | Resistor - Carbon Film (¼ W, 2%) | 10 KΩ | 79902103 |
| R12 | Resistor - Carbon Film (¼ W, 2%) | 10 KΩ | 79902103 |
| R13 | Resistor - Carbon | 10 KΩ | 79901103 |
| R14 | Resistor - Carbon | 470 KΩ | 79901474 |
| R15 | Resistor - Carbon | 10 KΩ | 79901103 |
| R16 | Resistor - Carbon | 10 KΩ | 79901103 |
| R17 | Resistor - Carbon | 470 KΩ | 79901474 |
| R18 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R19 | Resistor - Carbon | 330 Ω | 79901331 |
| R20 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R21 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R22 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R23 | Resistor - Carbon | 4.7 KΩ | 79901472 |

| | | | |
|---|---|---|---|
| R24 | Resistor - Carbon | 10 KΩ | 79901472 |
| R25 | Resistor - Carbon | 10 KΩ | 79901103 |
| R26 | Resistor - Carbon | 47 KΩ | 79901473 |
| R27 | Resistor - Carbon | 47 KΩ | 79901473 |
| R28 | Resistor - Carbon | 47 KΩ | 79901473 |
| R29 | Resistor - Carbon | 47 KΩ | 79901473 |
| R30 | Resistor - Carbon | 47 KΩ | 79901473 |
| R31 | Resistor - Carbon | 47 KΩ | 79901473 |
| R32 | Resistor - Carbon | 47 KΩ | 79901473 |
| R33 | Resistor - Carbon | 1 KΩ | 79901102 |
| R34 | Resistor - Carbon | 1 KΩ | 79901102 |
| R35 | Resistor - Carbon | 47 KΩ | 79901473 |
| R36 | Resistor - Carbon | 10 KΩ | 79901103 |
| R37 | Resistor - Carbon | 470 KΩ | 79901474 |
| R38 | Resistor - Carbon | 10 KΩ | 79901103 |
| R39 | Resistor - Carbon | 10 KΩ | 79901103 |
| R40 | Resistor - Carbon | 10 KΩ | 79901103 |
| R41 | Resistor - Carbon | 1 KΩ | 79901102 |
| R42 | Resistor - Carbon | 47 KΩ | 79901473 |
| R43 | Resistor - Carbon | 1 KΩ | 79901102 |
| R44 | Resistor - Carbon | 10 KΩ | 79901103 |
| R45 | Resistor - Carbon | 1 KΩ | 79901102 |
| R46 | Resistor - Carbon | 10 KΩ | 79901103 |
| R47 | Resistor - Carbon | 470 Ω | 79901471 |
| R48 | Resistor - Carbon | 470 Ω | 79901471 |
| R49 | Resistor - Carbon | 10 KΩ | 79901103 |
| R50 | Resistor - Carbon | 470 Ω | 79901471 |
| R51 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R52 | Resistor - Carbon | 470 Ω | 79901471 |
| R53 | Resistor - Carbon | 100 Ω | 79901101 |
| R54 | Resistor - Carbon | 10 KΩ | 79901103 |
| R55 | Resistor - Carbon | 10 KΩ | 79901103 |
| R57 | Resistor - Carbon | 10 Ω | 79901100 |
| R58 | Resistor - Carbon | 10 KΩ | 79901103 |
| R59 | Resistor - Carbon | 10 KΩ | 79901103 |
| R60 | Resistor - Carbon | 10 Ω | 79901100 |
| R61 | Resistor - Carbon | 10 KΩ | 79901103 |
| R62 | Resistor - Carbon | 10 KΩ | 79901103 |
| R63 | Resistor - Carbon | 10 KΩ | 79901103 |
| R64 | Resistor - Carbon | 10 KΩ | 79901103 |
| R65 | Resistor - Carbon | 100 Ω | 79901101 |
| R66 | Resistor - Carbon | 1 KΩ | 79901102 |
| R67 | Resistor - Carbon | 22 KΩ | 79901223 |
| R68 | Resistor - Carbon | 100 Ω | 79901101 |
| R69 | Resistor - Carbon | 100 Ω | 79901101 |
| R70 | Resistor - Carbon | 1 KΩ | 79901102 |
| R71 | Resistor - Carbon | 1 KΩ | 79901102 |
| R72 | Resistor - Carbon | 1 KΩ | 79901102 |
| R73 | Resistor - Carbon | 22 KΩ | 79901223 |
| R74 | Resistor - Carbon | 1 KΩ | 79901102 |
| R75 | Resistor - Carbon | 1 KΩ | 79901102 |
| R76 | Resistor - Carbon | 1 KΩ | 79901102 |
| R77 | Resistor - Carbon | 1 KΩ | 79901102 |
| R78 | Resistor - Carbon | 1 KΩ | 79901102 |
| R79 | Resistor - Carbon | 1 KΩ | 79901102 |
| R80 | Resistor - Carbon | 10 KΩ | 79901103 |
| R81 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R82 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R83 | Not Used | | |

## COMPONENT LIST FOR CENTRAL CONTROL COMPUTER (61031120)

*(Continued)*

| | | | |
|---|---|---|---|
| R84 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R85 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R86 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R87 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R88 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R89 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R90 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R91 | Resistor - Carbon | 1 KΩ | 79901102 |
| R92 | Resistor - Carbon | 100 Ω | 79901101 |
| R93 | Resistor - Carbon | 100 Ω | 79901101 |
| RV1 | Metal Oxide Varistor | 14 VDC | 70037505<br>70037507 |
| U1 | Not Used | | |
| U2 | I.C. - Quad Comparator (LM339) | (3302) | 70036801 |
| U3 | I.C. - Darlington Array | (2003) | 70036901 |
| U4 | I.C. - Timer | (LM555) | 70033801 |
| U5 | I.C. - HCT (Hex Schmitt Trigger) | 74HC14 | 79940014 |
| U6 | I.C. - Octal Edge Triggered F/F | 74LS374 | 70037111 |
| U7 | I.C. - Calendar Clock | 72421 | 30800236 |
| U8 | I.C. - HCT (Octal Bus Transceiver) | 74HCT245 | 79930245 |
| U9 | I.C. - HC-Tristate Octal Buffer | 74HC244 | 79940244 |
| U10 | I.C. - Octal Edge triggered F/F | 74LS374 | 70037111 |
| U11 | I.C. - HCT (Octal Buffer/Line Driver) | 74HCT244 | 79930244 |
| U12 | I.C. - PAL 18P8-CDCCC | | 30800232 |
| U13 | I.C. - RS-422 Dual Driver/Rcvr | DS8923 | 30800230 |
| U14 | I.C. - CMOS RAM 8K X 8 | 6264 | 70036604 |
| U15 | I.C. - EPROM (128 K X 8) 2700 | V3.6 | 70042704 |
| U16 | I.C. - Microprocessor | 64180 | 70039126 |
| U17 | I.C. - HCT (Octal Buffer/Line Driver) | 74HCT244 | 79930244 |
| U18 | I.C. - HCT (octal Buffer/Line Driver) | 74HCT244 | 79930244 |
| U19 | I.C. - Transceiver (RS-485) | 75176 | 70037801 |
| U20 | I.C. - TTL Buffer (Open Collector) | 7417 | 70036305 |
| U21 | I.C. - TTL Buffer (Open Collector) | 7417 | 70036305 |
| VR1 | Regulator - Voltage (Linear I.C.) | LM340-5 | 70036505 |
| W1 | Not Used | | |
| X1 | Crystal - Quartz (12.288 MHz) | | 25167314 |

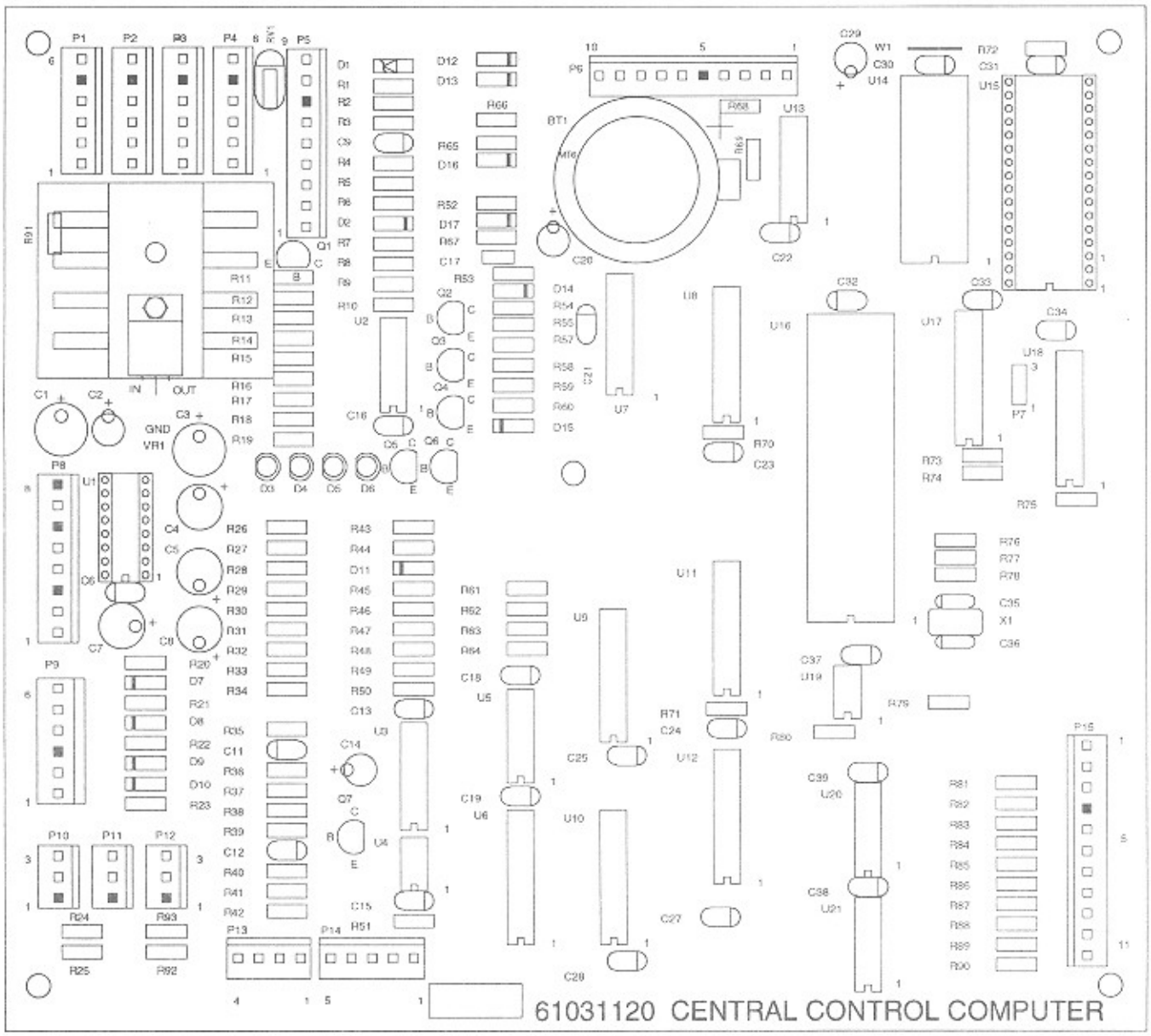



**Figure 5-14B. Central Control Computer Circuit Board Layout**

The chart below shows the various combinations of strobes (outputs from the CCC) and returns (inputs to the CCC) and their corresponding functions.

Strobes 0 through 5 appear on Returns 0 through 3 when the indicated switches are activated.

**For Example:** If you need to be sure that Key 5 is working, find Key 5 in table 5-3. This matrix entry indicates that, when Strobe 3 is active and Key 5 is pressed, Return 1 becomes active.

Not all of the strobes and returns operate in this matrix mode; Returns 4 through 7 and Strobes 7 through 15 have unique functions, which are listed in the table.

**Table 5-4. CD-100F CCC I/O Matrix**

| Outputs | | Inputs | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Strobes | Dedicated | Returns | | | | Dedicated | | | |
| | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 0 | | 5¢ Coin Switch | 10¢ Coin Switch | 25¢ Coin Switch | 50¢ Coin Switch | Cancel Switch | Display Attention | Service Switch | Low Battery Det. |
| 1 | | Title Disp. Limit | Title Disp. Index | Reserved | UK Defaults | | | | |
| 2 | | Key 0 | Key 1 | Key 2 | Key 3 | | | | |
| 3 | | Key 4 | Key 5 | Key 6 | Key 7 | | | | |
| 4 | | Key 8 | Key 9 | Remote Credit Button | Audit Report Start Button | | | | |
| 5 | | POPULAR | RESET | OUT | IN | | | | |
| | 6 | Singalong/Karaoke | | | | | | | |
| | 7 | Background music active | | | | | | | |
| | 8 | Display Reset - Controls hardware reset on the display driver chip | | | | | | | |
| | 9 | Sends speed info to motor chip | | | | | | | |
| | 10 | Sends motor info to motor chip | | | | | | | |
| | 11 | Mute | | | | | | | |
| | 12 | ROWELINK Tx/Rx Select | | | | | | | |
| | 13 | SYSTEM ERROR LED | | | | | | | |
| | 14 | BOARD ERROR LED | | | | | | | |
| | 15 | Watchdog Strobe | | | | | | | |

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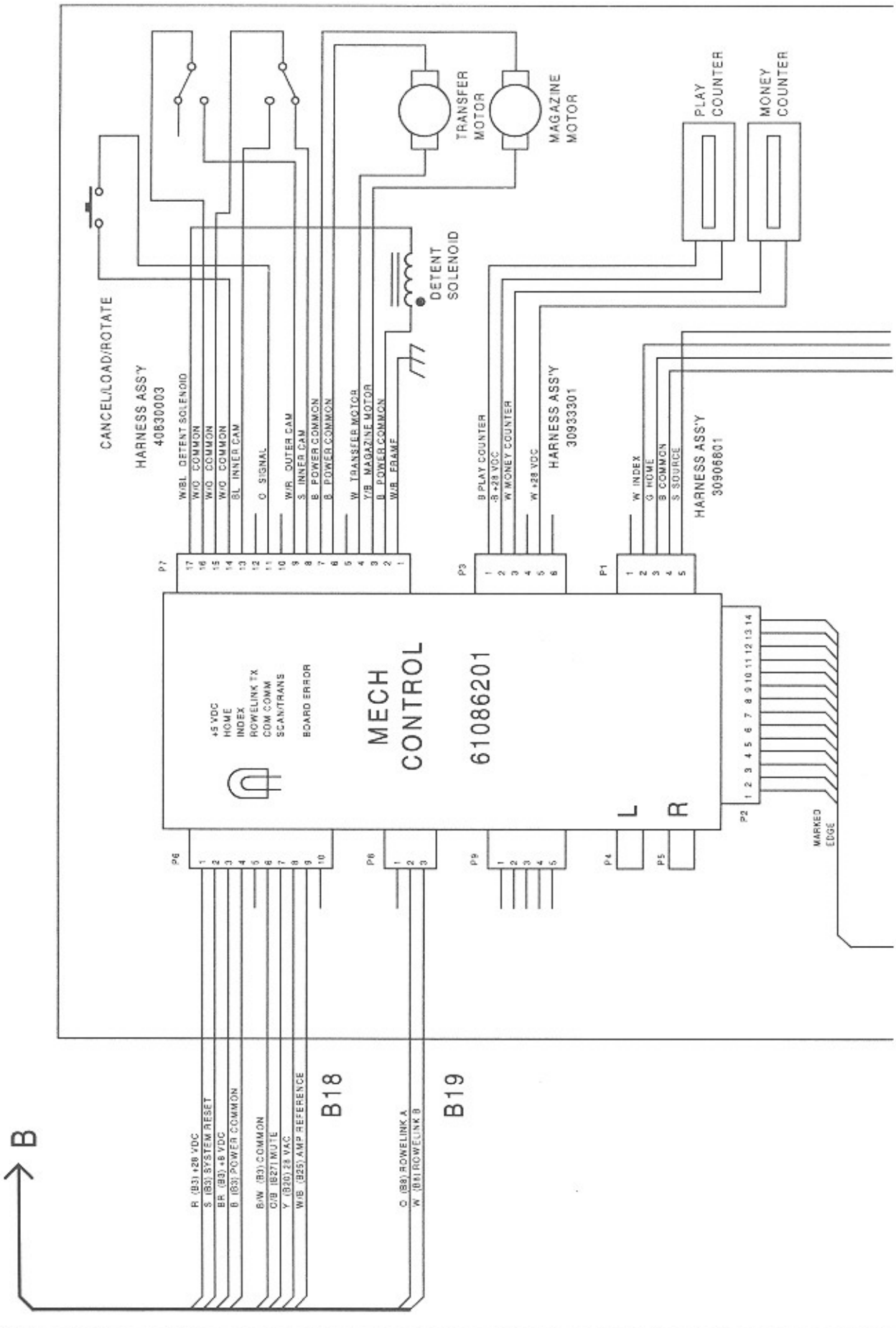

CANCEL/LOAD/ROTATE
HARNESS ASSY
40830003
W/BL DETENT SOLENOID
W/O COMMON
W/O COMMON
W/O COMMON
BL INNER CAM
O SIGNAL
W/R OUTER CAM
S INNER CAM
B POWER COMMON
B POWER COMMON
W TRANSFER MOTOR
Y/B MAGAZINE MOTOR
B POWER COMMON
W/R FRAME
DETENT SOLENOID
TRANSFER MOTOR
MAGAZINE MOTOR
PLAY COUNTER
MONEY COUNTER
B PLAY COUNTER
B +28 VDC
W MONEY COUNTER
W +28 VDC
HARNESS ASSY
30933301
W INDEX
G HOME
B COMMON
S SOURCE
HARNESS ASSY
30906801
+5 VDC
HOME
INDEX
ROWELINK TX
COM COMM
SCAN/TRANS
BOARD ERROR
MECH
CONTROL
61086201
L
R
MARKED EDGE
R (B3) +28 VDC
S (B3) SYSTEM RESET
BR (B3) +5 VDC
B (B3) POWER COMMON
B/W (B3) COMMON
O/B (B27) MUTE
Y (B26) 28 VAC
W/B (B25) AMP REFERENCE
O (B8) ROWELINK A
W (B8) ROWELINK B
B18
B19
B

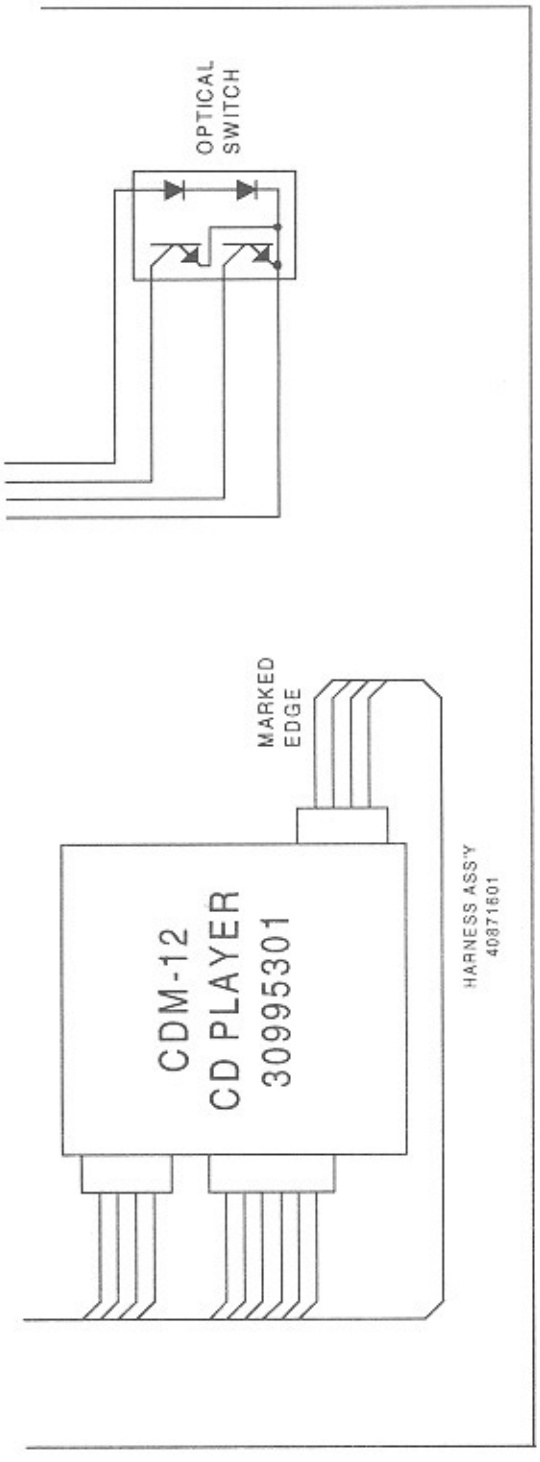
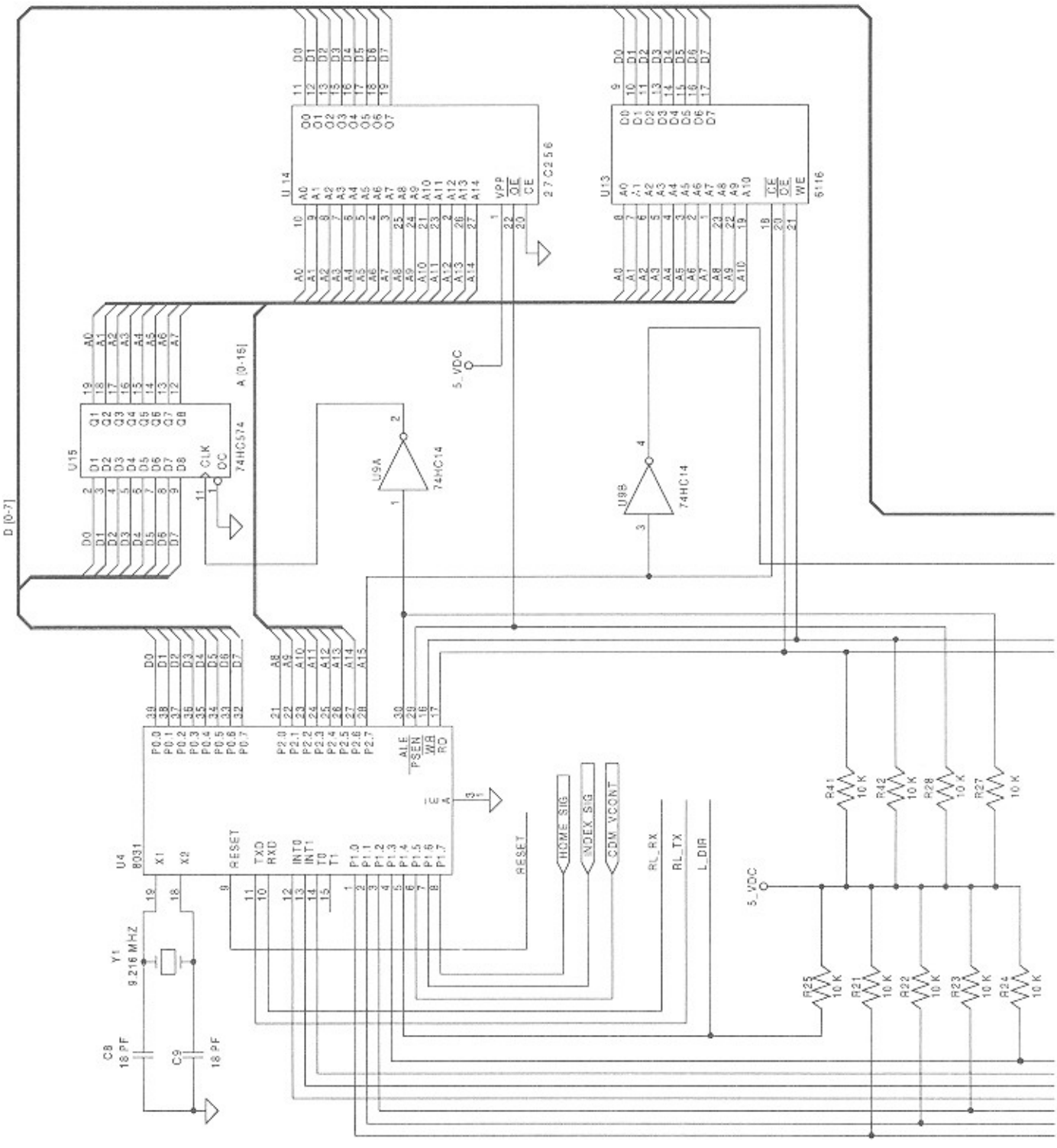
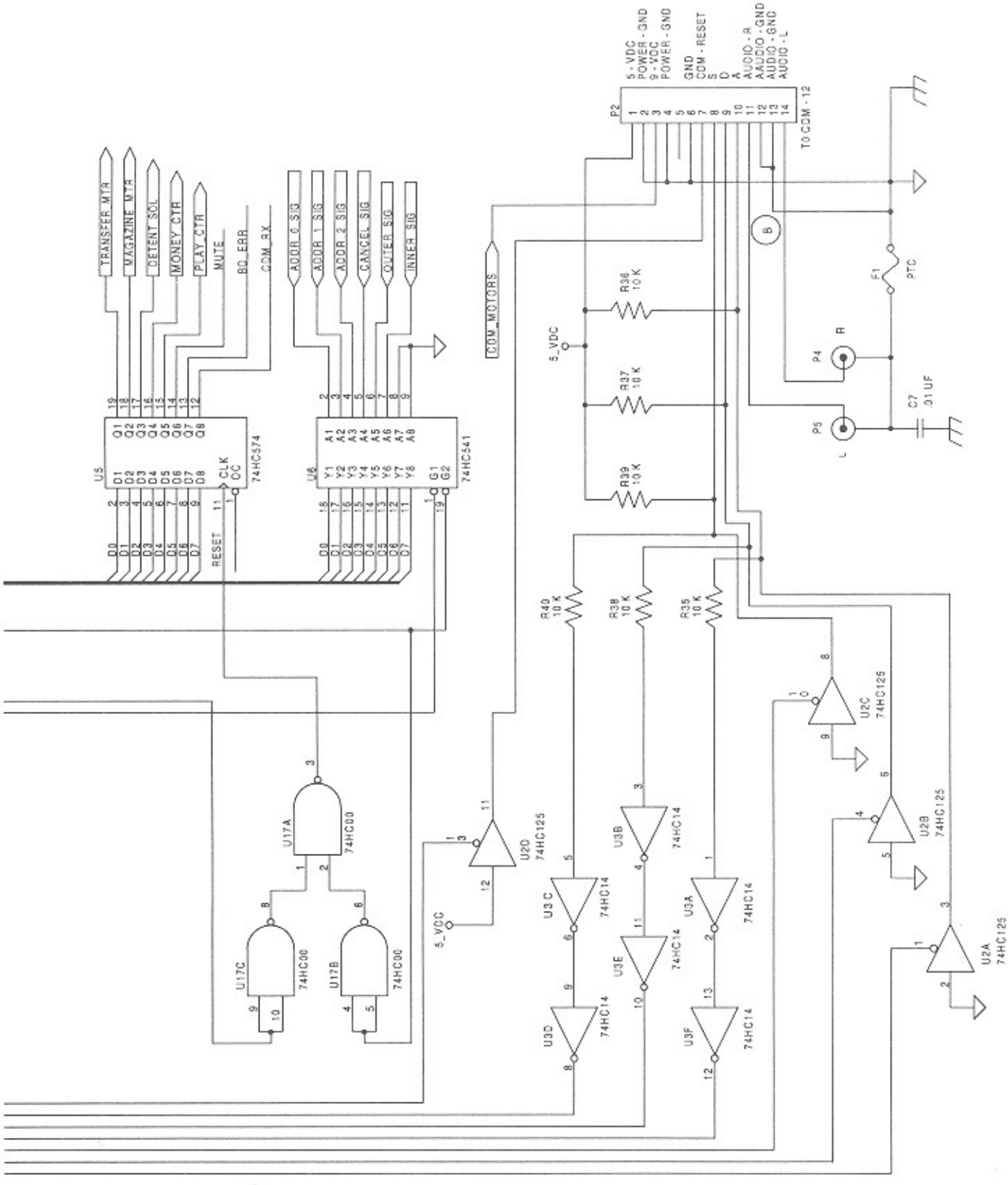


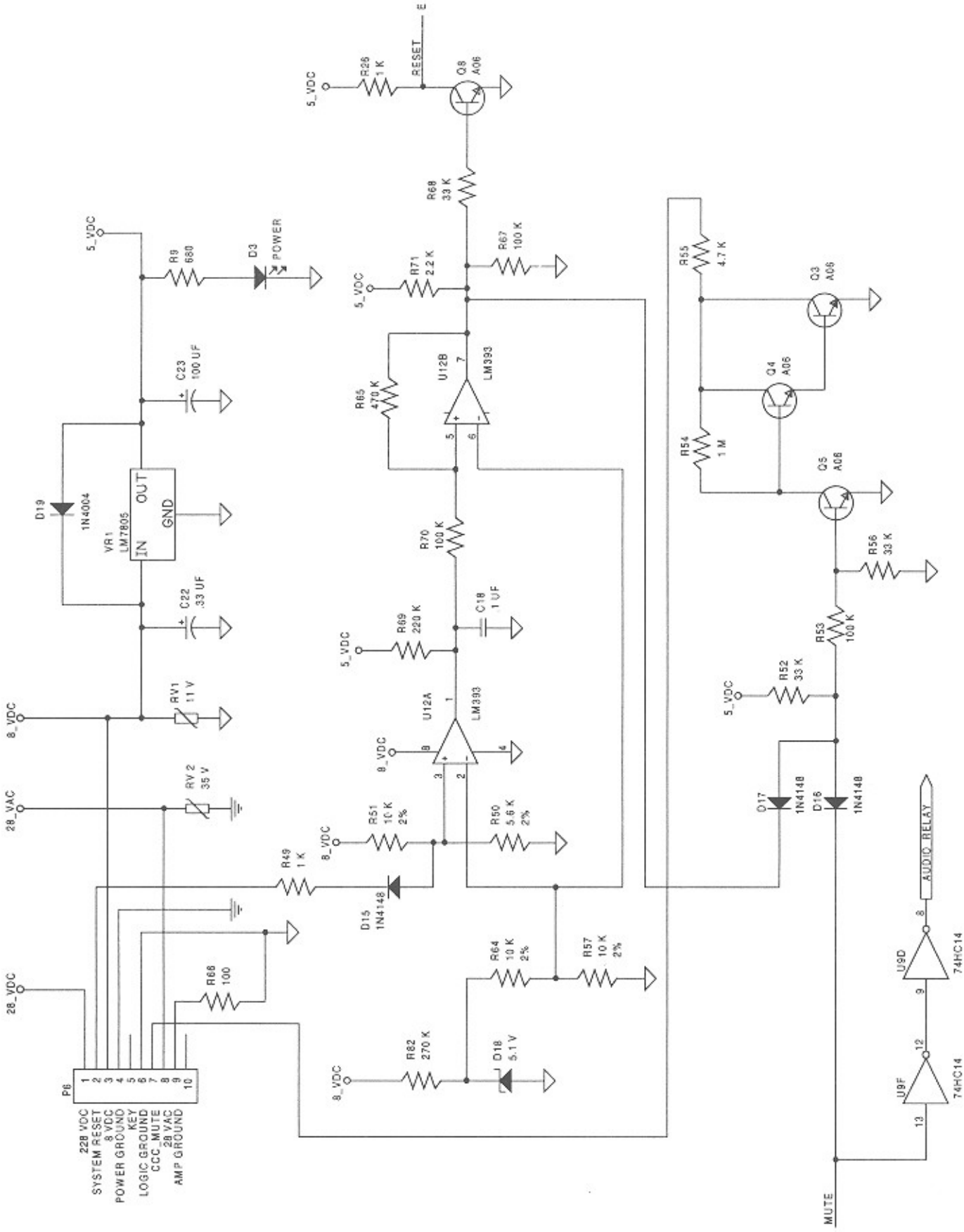

**Figure 5-15A. Mechanism Control Assembly Block Diagram**

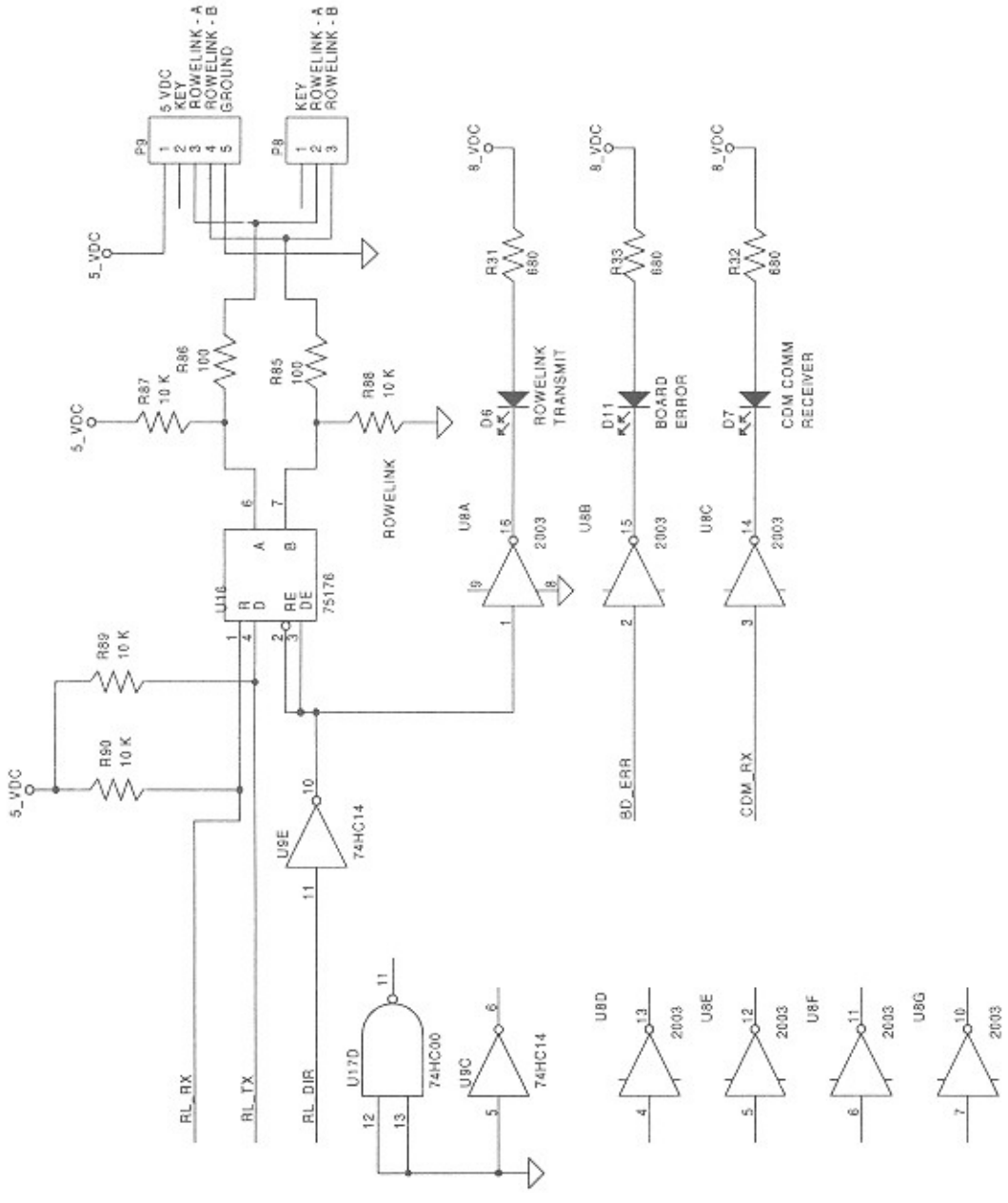

U14
27C256
U13
6116
U15
74HC574
U9A
74HC14
U9B
74HC14
U4
8031
D [0-7]
A [0-15]
5_VDC
Y1
9.216 MHZ
C8
18 PF
C9
18 PF
RESET
HOME_SIG
INDEX_SIG
CDM_VCONT
RL_RX
RL_TX
L_DIR
R41
10 K
R42
10 K
R28
10 K
R27
10 K
R25
10 K
R21
10 K
R22
10 K
R23
10 K
R24
10 K




For Equivalent Engineering Drawing See 61085801-Q2

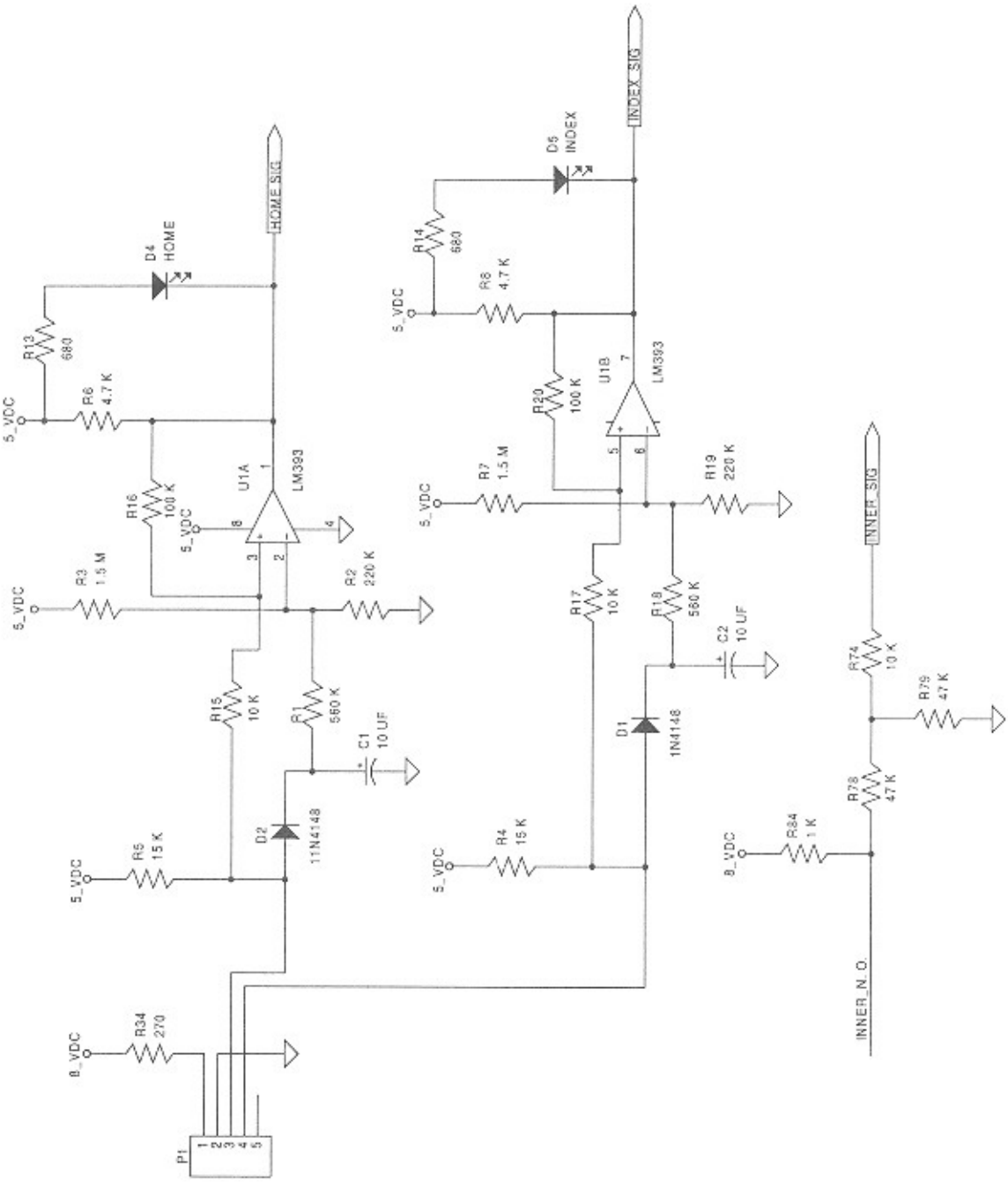
**Figure 5-15B. Mechanism Control Assembly Schematic, Sheet 1**

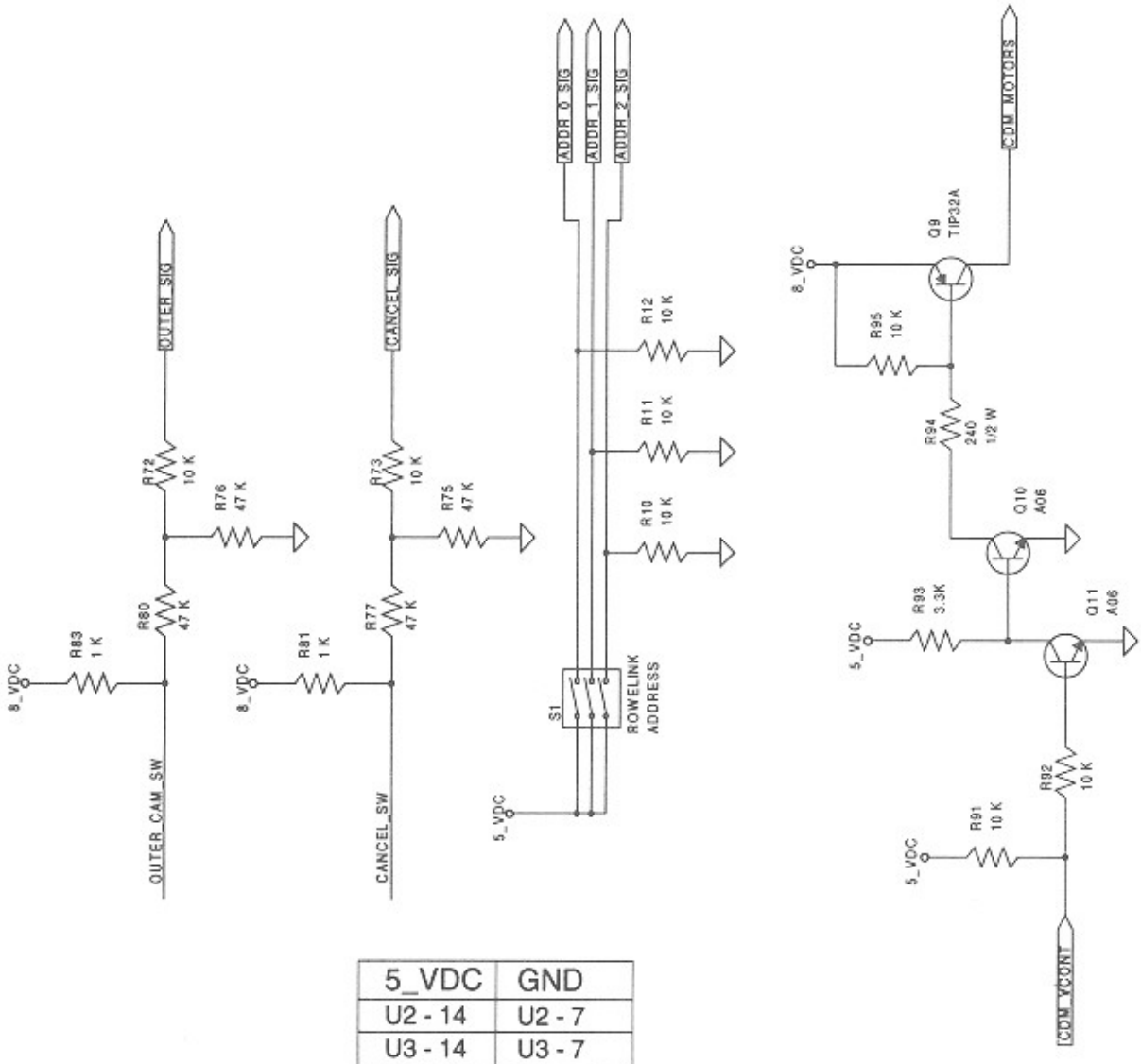

5_VDC
R26 1 K
RESET
E
Q8 A06
R68 33 K
R67 100 K
R71 2.2 K
R9 680
D3 POWER
C23 100 UF
U12B LM393
R65 470 K
R55 4.7 K
Q3 A06
Q4 A06
R54 1 M
Q5 A06
D19 1N4004
VR1 LM7805 IN OUT GND
C22 .33 UF
R70 100 K
R56 33 K
R53 100 K
R69 220 K
C18 1 UF
R52 33 K
8_VDC
RV1 11 V
U12A LM393
RV 2 35 V
28_VAC
R51 10 K 2%
R50 5.6 K 2%
D17 1N4148
D16 1N4148
R49 1 K
D15 1N4148
R64 10 K 2%
R57 10 K 2%
28_VDC
R68 100
R82 270 K
D18 5.1 V
P6
22B VDC
SYSTEM RESET
8 VDC
POWER GROUND
KEY
LOGIC GROUND
CCC_MUTE
28 VAC
AMP GROUND
AUDIO RELAY
U9D 74HC14
U9F 74HC14
MUTE




For Equivalent Engineering Drawing See 61085801-Q2

**Figure 5-15B. Mechanism Control Assembly Schematic, Sheet 2**

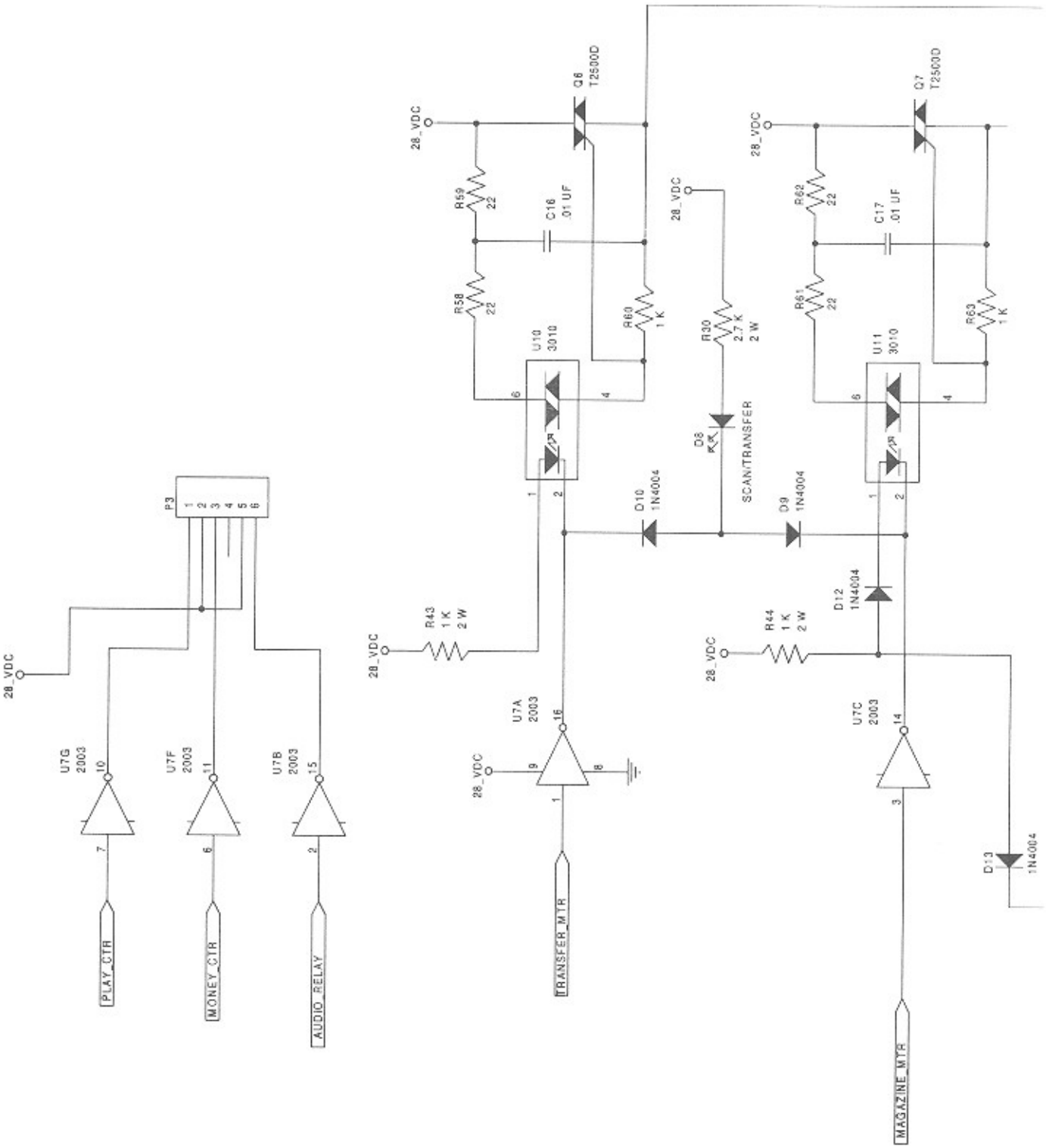

HOME SIG
INDEX SIG
INNER SIG
INNER_N.O.
D4 HOME
D5 INDEX
D1 1N4148
D2 11N4148
R13 680
R14 680
R6 4.7 K
R8 4.7 K
R16 100 K
R20 100 K
R3 1.5 M
R7 1.5 M
R2 220 K
R19 220 K
R15 10 K
R17 10 K
R1 560 K
R18 560 K
C1 10 UF
C2 10 UF
R5 15 K
R4 15 K
R34 270
R74 10 K
R79 47 K
R78 47 K
R84 1 K
U1A LM393
U1B LM393
5_VDC
8_VDC
P1

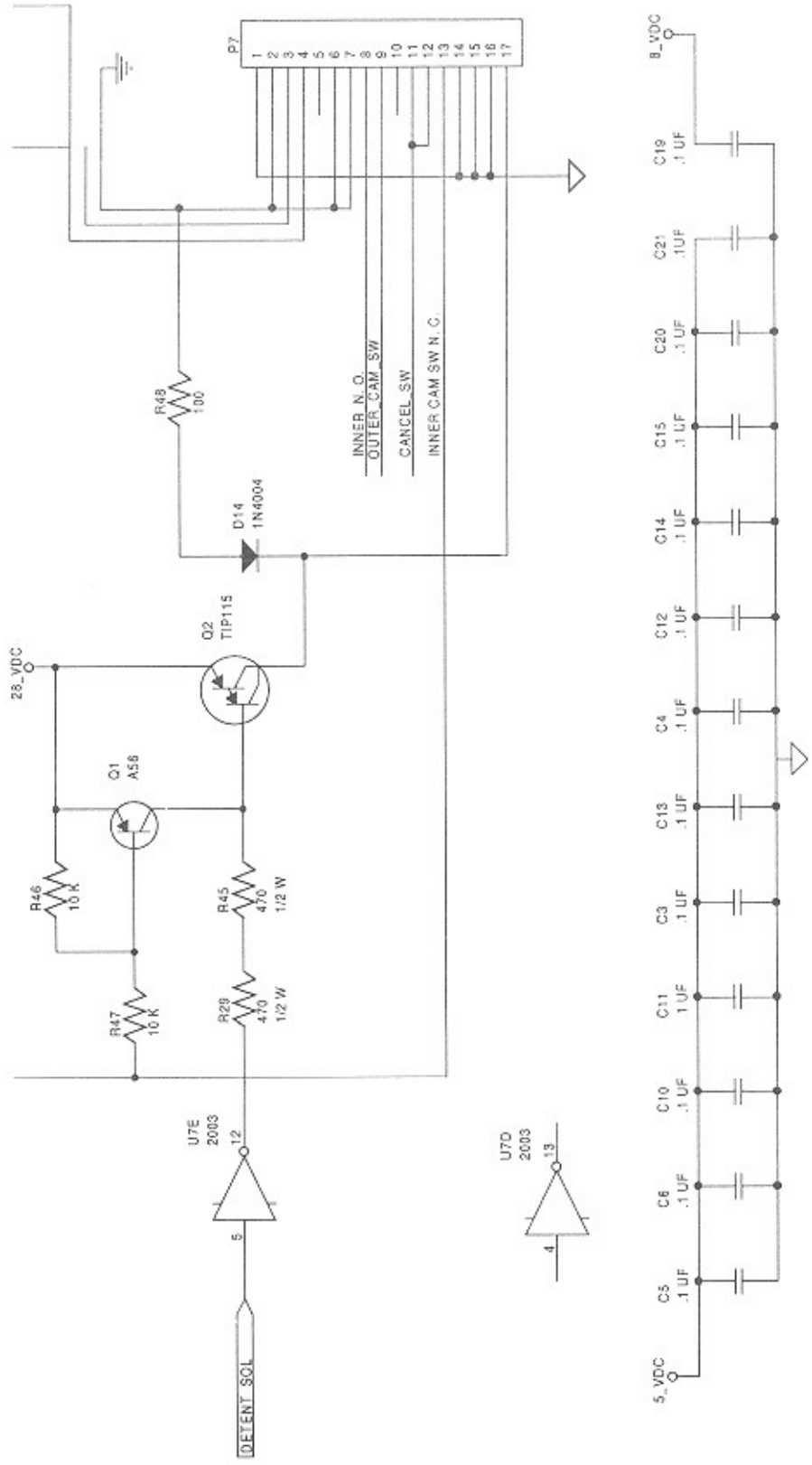



| 5_VDC | GND |
|---|---|
| U2 - 14 | U2 - 7 |
| U3 - 14 | U3 - 7 |
| U4 - 40 | U4 - 20 |
| U5 - 20 | U5 - 10 |
| U6 - 20 | U6 - 10 |
| U9 - 14 | U9 - 7 |
| U13 - 24 | U13 - 12 |
| U14 - 28 | U14 - 14 |
| U15 - 20 | U15 - 10 |
| U16 - 8 | U16 - 5 |
| U17 - 14 | U17 - 7 |

For Equivalent Engineering Drawing See 61085801-Q2

**Figure 5-15B. Mechanism Control Assembly Schematic, Sheet 3**


28_VDC
Q8
T2500D
Q7
T2500D
R59
22
C16
.01 UF
R58
22
R60
1 K
U10
3010
R30
2.7 K
2 W
D8
SCAN/TRANSFER
R62
22
C17
.01 UF
R61
22
R63
1 K
U11
3010
D10
1N4004
D9
1N4004
D12
1N4004
D13
1N4004
R43
1 K
2 W
R44
1 K
2 W
P3
U7A
2003
U7B
2003
U7C
2003
U7F
2003
U7G
2003
TRANSFER_MTR
MAGAZINE_MTR
PLAY_CTR
MONEY_CTR
AUDIO_RELAY




For Equivalent Engineering Drawing See 61085801-Q2

**Figure 5-15B. Mechanism Control Assembly Schematic, Sheet 4**

## Table 5-5. CD-100F Mech. Controller C.C.C. IC Power and Common Pin Chart

| Ref. | Generic Part # | Power | | Common | |
|---|---|---|---|---|---|
| | | +5 VDC | +28 VDC | Logic | Power |
| U1 | ULN2003 | — | 9 | 8 | — |
| U2 | LM3302 | — | — | — | — |
| U3 | 74HCT151 | 16 | — | 8 | — |
| U4 | 74HCT151 | 16 | — | 8 | — |
| U5 | 74HCT373 | 14 | — | 7 | — |
| U6 | 63A03R | 7 | — | 1 | — |
| U7 | 27256 | 28 | — | 14 | — |
| U8 | 74HCT04 | 20 | — | 10 | — |
| U9 | 74HCT00 | 14 | — | 7 | — |
| U10 | 74HCT04 | 14 | — | 7 | — |
| U11 | 62564 | 28 | — | 14 | — |
| U12 | 74HCT138 | 16 | — | 8 | — |
| U13 | 74HCT00 | 14 | — | 7 | — |
| U14 | 74HCT04 | 14 | — | 7 | — |
| U15 | 88C168 | 28 | — | 14 | — |
| U16 | 74LS374 | 20 | — | 10 | — |
| U17 | ULN2003 | — | — | 8 | — |

For Equivalent Engineering Drawing See 61085801-Q2

## COMPONENT LIST FOR MECHANISM CONTROL BOARD (61085801)

| | | | |
|---|---|---|---|
| C1 | Capacitor - Electrolytic 50 VDC 20% | 10 µF | 70028105 |
| C2 | Capacitor - Electrolytic 50 VDC 20% | 10 µF | 70028105 |
| C3 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C4 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C5 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C6 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C7 | Capacitor - Ceramic Disc 1 KV 20% | .01 µF | 70022508 |
| C8 | Capacitor - Monolythic Ceramic 20% | 18 pF | 70028704 |
| C9 | Capacitor - Monolythic Ceramic 10% | 18 pF | 70028704 |
| C10 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C11 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C12 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C13 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C14 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C15 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C16 | Capacitor - Ceramic Disc 1 KV 20% | .01 µF | 70022508 |
| C17 | Capacitor - Ceramic Disc 1 KV 20% | .01 µF | 70022508 |
| C18 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C19 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C20 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C21 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C22 | Capacitor - Tantalum 35 VDC 20% | .33 µF | 70025119 |
| C23 | Capacitor - Electrolytic 16 VDC 20% | 100 µF | 70028111 |
| | | | |
| D1 | Diode - Silicon | 1N4148 | 70035021 |
| D2 | Diode - Silicon | 1N4148 | 70035021 |
| D3 | Diode - Light Emitting 90 Degree | | 70035201 |
| D4 | Diode - Light Emitting 90 Degree | | 70035201 |
| D5 | Diode - Light Emitting 90 Degree | | 70035201 |
| D6 | Diode - Light Emitting 90 Degree | | 70035201 |
| D7 | Diode - Light Emitting 90 Degree | | 70035201 |
| D8 | Diode - Light Emitting 90 Degree | | 70035201 |
| D9 | Diode - Silicon | 1N4004 | 70035005 |
| D10 | Diode - Silicon | 1N4004 | 70035005 |
| D11 | Diode - Light Emitting 90 Degree | | 70035201 |
| D12 | Diode - Silicon | 1N4004 | 70035005 |
| D13 | Diode - Silicon | 1N4004 | 70035005 |
| D14 | Diode - Silicon | 1N4004 | 70035005 |
| D15 | Diode - Silicon | 1N4148 | 70035012 |
| D16 | Diode - Silicon | 1N4148 | 70035012 |
| D17 | Diode - Silicon | 1N4148 | 70035012 |
| D18 | Diode - Zener 5.1 V 1/2W 5% | 1N5231B | 70035526 |
| D19 | Diode - Silicon | 1N4004 | 70035005 |
| | | | |
| F1 | Fuse - P.T.C. | | 70072504 |
| | | | |
| P1 | Header - Polarized .156 5 Position | | 70075005 |
| P2 | Header - Right Angle 2mm 14 Position | | 70088914 |
| P3 | Header - Polarized .156 6 Position | | 70075006 |
| P4 | Phono Jack | | 21540902 |
| P5 | Phono Jack | | 21540902 |
| P6 | Header - Polarized .156 10 Position | | 70075010 |
| P7 | Header - Polarized .156 17 Position | | 70075017 |
| P8 | Header - Polarized .156 3 Position | | 70075003 |
| P9 | Header - Polarized .156 5 Position | | 70075005 |

## COMPONENT LIST FOR MECHANISM CONTROL BOARD (61085801)

*(Continued)*

| | | | |
|---|---|---|---|
| Q1 | Transistor - Silicon PNP | MPSA56 | 70030104 |
| Q2 | Transistor - Silicon Darlington | TIP115 | 70030805 |
| Q3 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| Q4 | Transistor - Silicon NPN | MPSA06 | 70038008 |
| Q5 | Transistor - Silicon NPN | MPSA06 | 70038008 |
| Q6 | Thyristor Triac | T2500D | 70038102 |
| Q7 | Thyristor Triac | T2500D | 70038102 |
| Q8 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| Q9 | Transistor - Silicon PNP | TIP32A | 70030401 |
| Q10 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| Q11 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Resistor - Carbon Film (1/8W 5%) | 560 KΩ | 79905564 |
| R2 | Resistor - Carbon Film (1/8W 5%) | 220 KΩ | 79905224 |
| R3 | Resistor - Carbon Film (1/8W 5%) | 1.5 MΩ | 79901155 |
| R4 | Resistor - Carbon Film (1/8W 5%) | 15 KΩ | 79905153 |
| R5 | Resistor - Carbon Film (1/8W 5%) | 15 KΩ | 79905153 |
| R6 | Resistor - Carbon Film (1/8W 5%) | 4.7 KΩ | 79905472 |
| R7 | Resistor - Carbon Film (1/8W 5%) | 1.5 MΩ | 79901155 |
| R8 | Resistor - Carbon Film (1/8W 5%) | 4 7 KΩ | 79905472 |
| R9 | Resistor - Carbon Film (1/8W 5%) | 680 Ω | 79905681 |
| R10 | Resistor - Carbon Film (1/8W 5%) | 680 Ω | 79905103 |
| R11 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R12 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R13 | Resistor - Carbon Film (1/8W 5%) | 680 Ω | 79905681 |
| R14 | Resistor - Carbon Film (1/8W 5%) | 680 Ω | 79905681 |
| R15 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R16 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R17 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R18 | Resistor - Carbon Film (1/8W 5%) | 560 KΩ | 79905564 |
| R19 | Resistor - Carbon Film (1/8W 5%) | 220 KΩ | 79905224 |
| R20 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R21 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R22 | Resistor - Carbon Film (1/8W 5%) | 10 Ω | 79905103 |
| R23 | Resistor - Carbon Film (1/8W 5%) | 10 Ω | 79905103 |
| R24 | Resistor - Carbon Film (1/8W 5%) | 10 Ω | 79905103 |
| R25 | Resistor - Carbon Film | 10 Ω | 79905103 |
| R26 | Resistor - Carbon Film | 1 Ω | 79905102 |
| R27 | Resistor - Carbon Film | 10 Ω | 79905103 |
| R28 | Resistor - Carbon Film | 10 Ω | 79905103 |
| R29 | Resistor - Metal Film (1/2W 5%) | 470 Ω | 79904471 |
| R30 | Resistor - Wirewound (2W 10%) | 2.7 KΩ | 79920272 |
| R31 | Resistor - Carbon Film | 680 Ω | 79901681 |
| R32 | Resistor - Carbon Film | 680 Ω | 79901681 |
| R33 | Resistor - Carbon Film | 680 Ω | 79901681 |
| R34 | Resistor - Carbon Film | 270 Ω | 79901271 |
| R35 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R36 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R37 | Resistor - Carbon Film (1/8W 5%) | 10 MΩ | 79905103 |
| R38 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R39 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R40 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R41 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R42 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R43 | Resistor - Wirewound (2W 10%) | 1 KΩ | 79920102 |

| | | | |
|---|---|---|---|
| R44 | Resistor - Wirewound (2W 10%) | 1 KΩ | 79920102 |
| R45 | Resistor - Metal Film (1/2W 5%) | 470 Ω | 79904471 |
| R46 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R47 | Resistor - Carbon Film | 10 KΩ | 79901103 |
| R48 | Resistor - Carbon Film | 100 Ω | 79901101 |
| R49 | Resistor - Carbon Film (1/8W 5%) | 1 Ω | 79905102 |
| R50 | Resistor - Carbon Film (1/4W 2%) | 5.6 KΩ | 79902562 |
| R51 | Resistor - Carbon Film (1/4W 2%) | 10 KΩ | 79902103 |
| R52 | Resistor - Carbon Film (1/8W 5%) | 33 KΩ | 79905333 |
| R53 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R54 | Resistor - Carbon Film (1/8W 5%) | 1 MΩ | 79905105 |
| R55 | Resistor - Carbon Film (1/8W 5%) | 4.7 KΩ | 79905472 |
| R56 | Resistor - Carbon Film (1/8W 5%) | 33 KΩ | 79905333 |
| R57 | Resistor - Carbon Film (1/4W 2%) | 10 KΩ | 79902103 |
| R58 | Resistor - Carbon Film | 22 Ω | 79901220 |
| R59 | Resistor - Carbon Film | 22 Ω | 79901220 |
| R60 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R61 | Resistor - Carbon Film | 22 Ω | 79901220 |
| R62 | Resistor - Carbon Film | 22 Ω | 79901220 |
| R63 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R64 | Resistor - Carbon Film | 10 KΩ | 79902103 |
| R65 | Resistor - Carbon Film (1/8W 5%) | 470 KΩ | 79905474 |
| R66 | Resistor - Carbon Film | 100 Ω | 79901101 |
| R67 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R68 | Resistor - Carbon Film (1/8W 5%) | 33 KΩ | 79905333 |
| R69 | Resistor - Carbon Film (1/8W 5%) | 220 KΩ | 79905224 |
| R70 | Resistor - Carbon Film (1/8W 5%) | 100 KΩ | 79905104 |
| R71 | Resistor - Carbon Film (1/8W 5%) | 2.2 KΩ | 79905222 |
| R72 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R73 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R74 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R75 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R76 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R77 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R78 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R79 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R80 | Resistor - Carbon Film (1/8W 5%) | 47 KΩ | 79905473 |
| R81 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R82 | Resistor - Carbon Film | 270 Ω | 79901271 |
| R83 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R84 | Resistor - Carbon Film | 1 KΩ | 79901102 |
| R85 | Resistor - Carbon Film | 100 Ω | 79901101 |
| R86 | Resistor - Carbon Film | 100 Ω | 79901101 |
| R87 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R88 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R89 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R90 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R91 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R92 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| R93 | Resistor - Carbon Film (1/8W 5%) | 3.3 KΩ | 79905332 |
| R94 | Resistor - Metal Film (1/2W 5%) | 240 Ω | 79904241 |
| R95 | Resistor - Carbon Film (1/8W 5%) | 10 KΩ | 79905103 |
| | | | |
| RV1 | Metal Oxide Varistor 14 VDC | | 70037505 |
| RV2 | Metal Oxide Varistor 45 VDC | | 70037506 |
| | | | |
| S1 | Not Used | | |

## COMPONENT LIST FOR MECHANISM CONTROL BOARD (61085801)

*(Continued)*

| | | | |
|---|---|---|---|
| U1 | I.C. - Dual Comparitor | (LM393) | 70036802 |
| U2 | I.C. - Quad Buffer - Tristate | (74HC125) | 79940125 |
| U3 | I.C. - Hex Schmitt Trigger Inverter | (74HC14) | 79940014 |
| U4 | I.C. - Microprocessor | (80C31) | 70039402 |
| U5 | I.C. - Octal D Latch | (74HC574) | 79940574 |
| U6 | I.C. - Octal Buffer | (74HC541) | 79940541 |
| U7 | I.C. - Darlington Array | (ULN2003) | 70036901 |
| U8 | I.C. - Darlington Array | (ULN2003) | 70036901 |
| U9 | I.C. - Hex Schmitt Trigger Inverter | (74HC14) | 79940014 |
| U10 | Photocoupler Opto-Triac | (3010) | 70033703 |
| U11 | Photocoupler Opto-Triac | (3010) | 70033703 |
| U12 | I.C. - Dual Comparator | (LM393) | 70036802 |
| U13 | I.C. - 2K x 8 CMOS RAM | (6116) | 79800359 |
| U14 | I.C. - 8K x 8 CMOS EPROM Programmed CD Mech Ver 5.3 | (27C256) | |
| U15 | I.C. - Octal D Latch | (74HC574) | 79940574 |
| U16 | I.C. - Transceiver RS-485 | (75176) | 70037801 |
| U17 | I.C. - Quad 2 Input Nand | (74HCOO) | 79940000 |
| VR1 | I.C. - Voltage Regulator 5V | (LM340T5) | 70036506 |
| Y1 | Crystal - Quartz 9.216 MHz | | 25167323 |

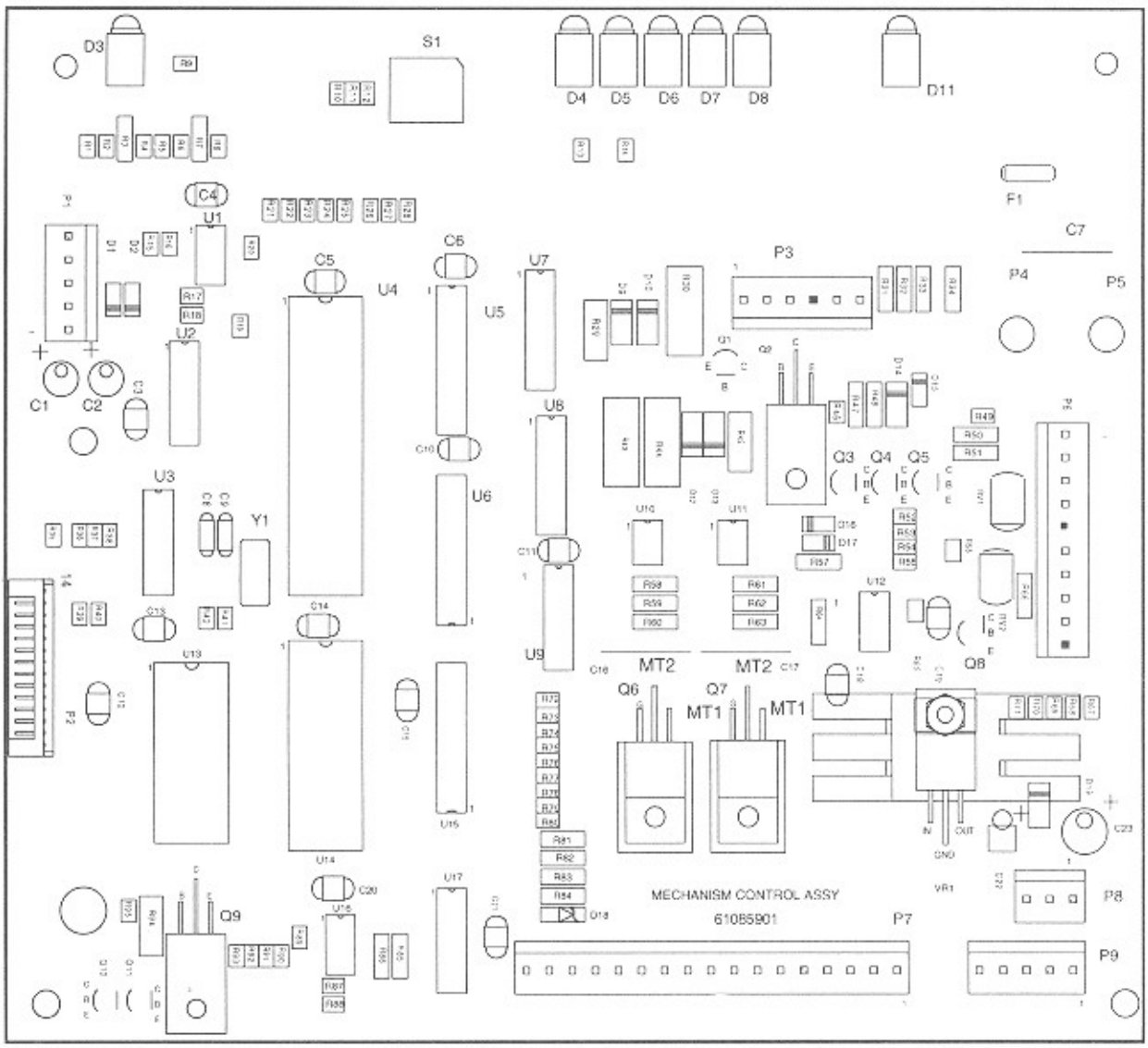
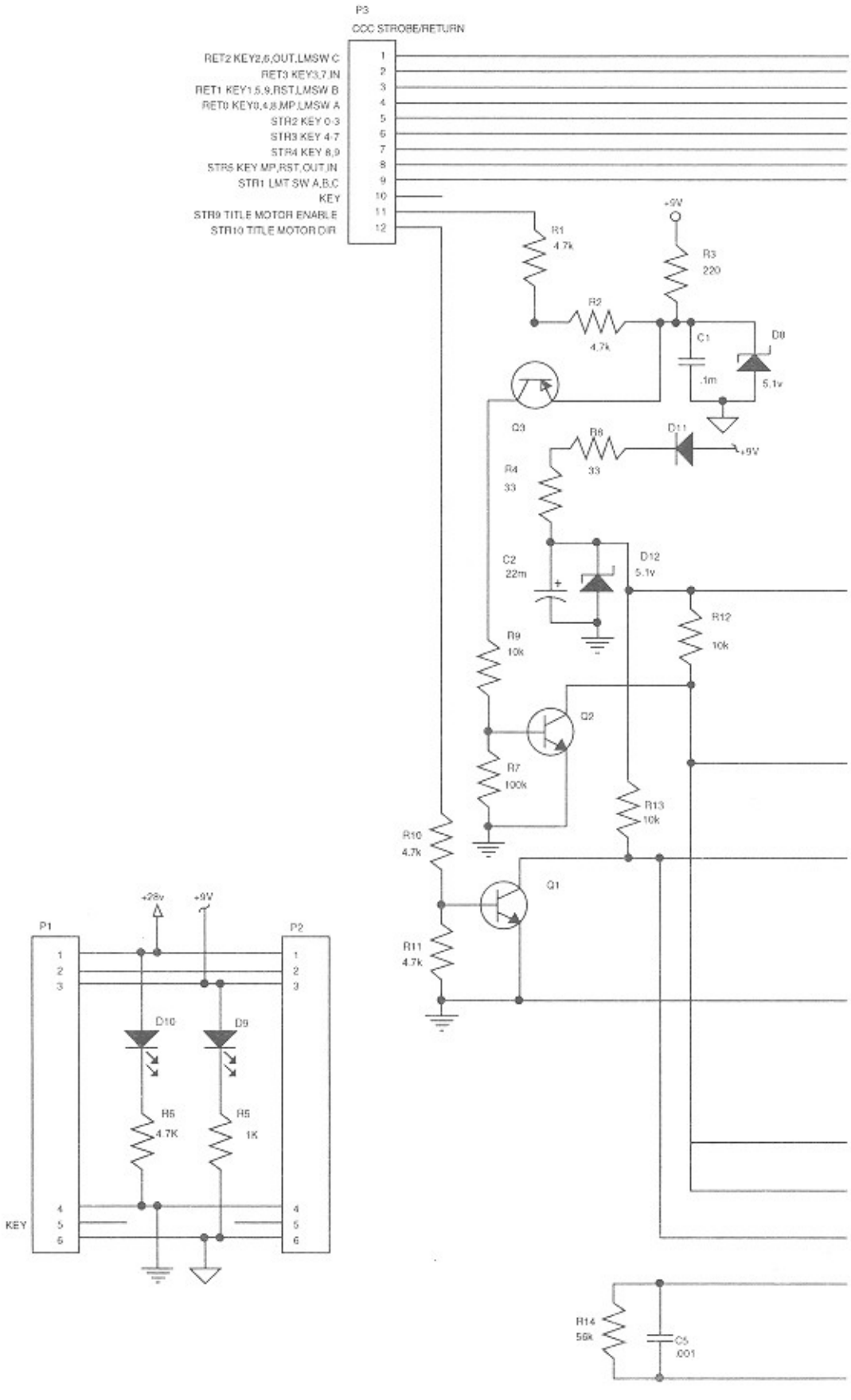
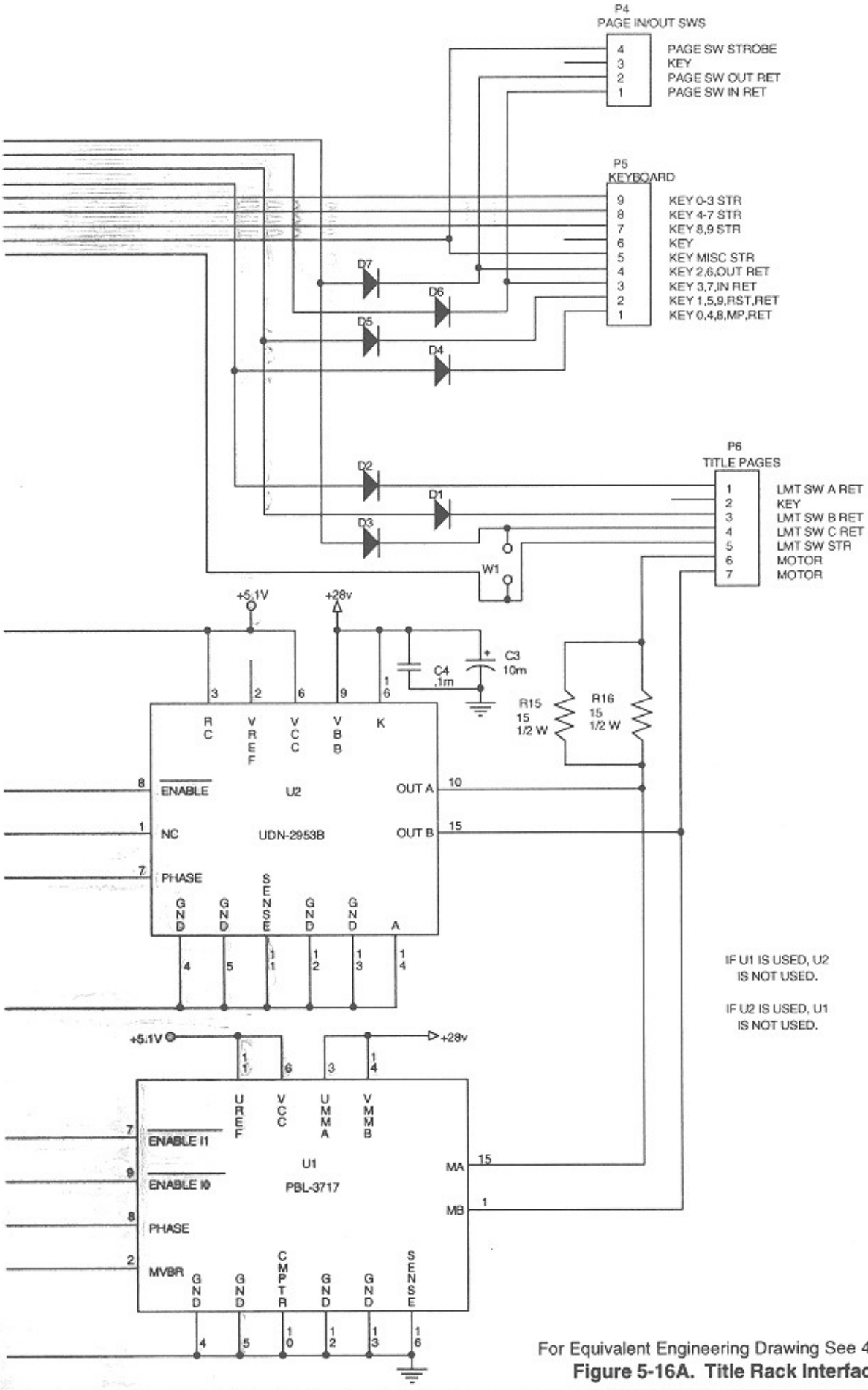



**Figure 5-15B. Mechanism Control Assembly Circuit Board Layout 61085801**


P3
CCC STROBE/RETURN
RET2 KEY2,6,OUT,LMSW C
RET3 KEY3,7,IN
RET1 KEY1,5,9,RST,LMSW B
RET0 KEY0,4,8,MP,LMSW A
STR2 KEY 0-3
STR3 KEY 4-7
STR4 KEY 8,9
STR5 KEY MP,RST,OUT,IN
STR1 LMT SW A,B,C
KEY
STR9 TITLE MOTOR ENABLE
STR10 TITLE MOTOR DIR
1
2
3
4
5
6
7
8
9
10
11
12
+9V
R1
4.7k
R3
220
R2
4.7k
C1
.1m
D8
5.1v
Q3
R8
33
D11
+9V
R4
33
C2
22m
D12
5.1v
R12
10k
R9
10k
Q2
R7
100k
R13
10k
R10
4.7k
Q1
R11
4.7k
+28v
+9V
P1
P2
D10
D9
R6
4.7K
R5
1K
KEY
R14
56k
C5
.001

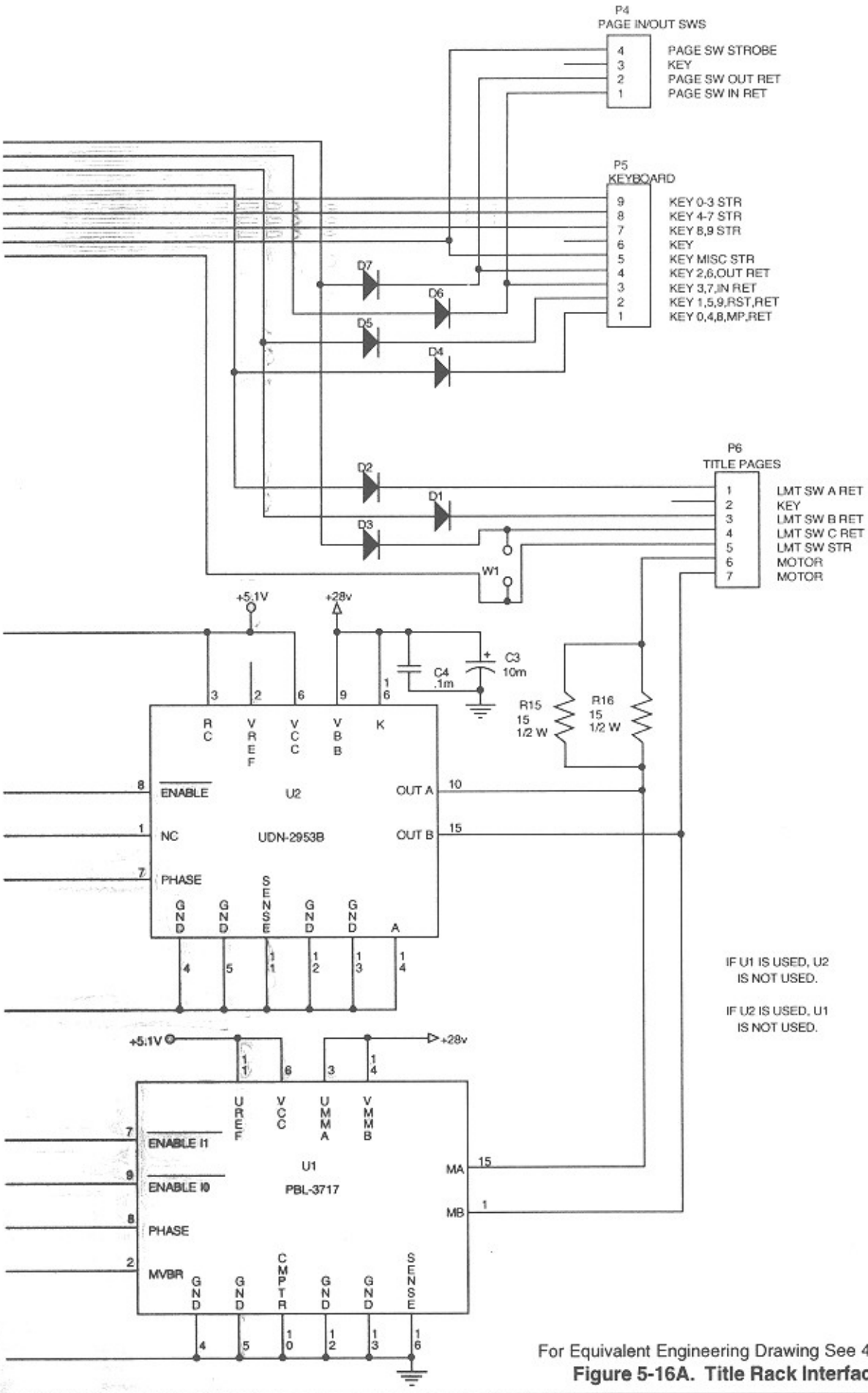



For Equivalent Engineering Drawing See 40853001-Q2 B

**Figure 5-16A. Title Rack Interface Schematic**

# COMPONENT LIST FOR TITLE RACK INTERFACE BOARD (40853001)

| | | | |
|---|---|---|---|
| C1 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C2 | Capacitor - Tantalum 15 VDC 10% | 22 µF | 70025104 |
| C3 | Capacitor - Electrolytic 50 VDC 20% | 10 µF | 70023808 |
| C4 | Capacitor - Monolythic Ceramic | .1 µF | 70028511 |
| C5 | Capacitor - Monolythic Ceramic | .001 µF | 70028518 |
| | | | |
| D1 | Diode - Silicon | 1N4004 | 70035005 |
| D2 | Diode - Silicon | 1N4004 | 70035005 |
| D3 | Diode - Silicon | 1N4004 | 70035005 |
| D4 | Diode - Silicon | 1N4004 | 70035005 |
| D5 | Diode - Silicon | 1N4004 | 70035005 |
| D6 | Diode - Silicon | 1N4004 | 70035005 |
| D7 | Diode - Silicon | 1N4004 | 70035005 |
| D8 | Diode - Zener 5.1V 1/2W 5% | 1N5231B | 70035526 |
| D9 | Diode - Light Emitting Red Diffused | | 70035305 |
| D10 | Diode - Light Emitting Red Diffused | | 70035305 |
| D11 | Diode - Silicon | 1N4148 | 70035012 |
| D12 | Diode - Zener 5.1V 1/2W 5% | 1N5231B | 70035526 |
| | | | |
| P1 | Header - Polarized .156 6 Position | | 70075006 |
| P2 | Header - Polarized .156 6 Position | | 70075006 |
| P3 | Header - Polarized .156 12 Position | | 70075012 |
| P4 | Header - Polarized .156 4 Position | | 70075004 |
| P5 | Header - Polarized .156 9 Position | | 70075009 |
| P6 | Header - Polarized .156 7 Position | | 70075007 |
| | | | |
| Q1 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| Q2 | Transistor - Silicon NPN | MPSA06 | 70030008 |
| Q3 | Transistor - Silicon PNP | MPSA56 | 70030104 |
| | **NOTE: All resistors are 1/4 watt 5% unless otherwise indicated.** | | |
| R1 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R2 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R3 | Resistor - Carbon | 220 Ω | 79901221 |
| R4 | Resistor - Carbon | 33 Ω | 79901330 |
| R5 | Resistor - Carbon | 1 KΩ | 79901102 |
| R6 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R7 | Resistor - Carbon | 100 KΩ | 79901104 |
| R8 | Resistor - Carbon | 33 Ω | 79901330 |
| R9 | Resistor - Carbon | 10 KΩ | 79901103 |
| R10 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R11 | Resistor - Carbon | 4.7 KΩ | 79901472 |
| R12 | Resistor - Carbon | 10 KΩ | 79901103 |
| R13 | Resistor - Carbon | 10 KΩ | 79901103 |
| R14 | Resistor - Carbon | 56 KΩ | 79901563 |
| R15 | Resistor - Metal Film (1/2W 5%) | 15 Ω | 79904150 |
| R16 | Resistor - Metal Film (1/2W 5%) | 15 Ω | 79904150 |
| | | | |
| U1 | I.C. - Motor Driver | CS3717A | 30800241 |
| | | | |
| U2 | I.C. - Motor Driver | UDN-2953B | 30800229 |
| | | | |
| W1 | NOT USED | | |




For Equivalent Engineering Drawing See 40853001-Q2 B

**Figure 5-16A. Title Rack Interface Schematic**

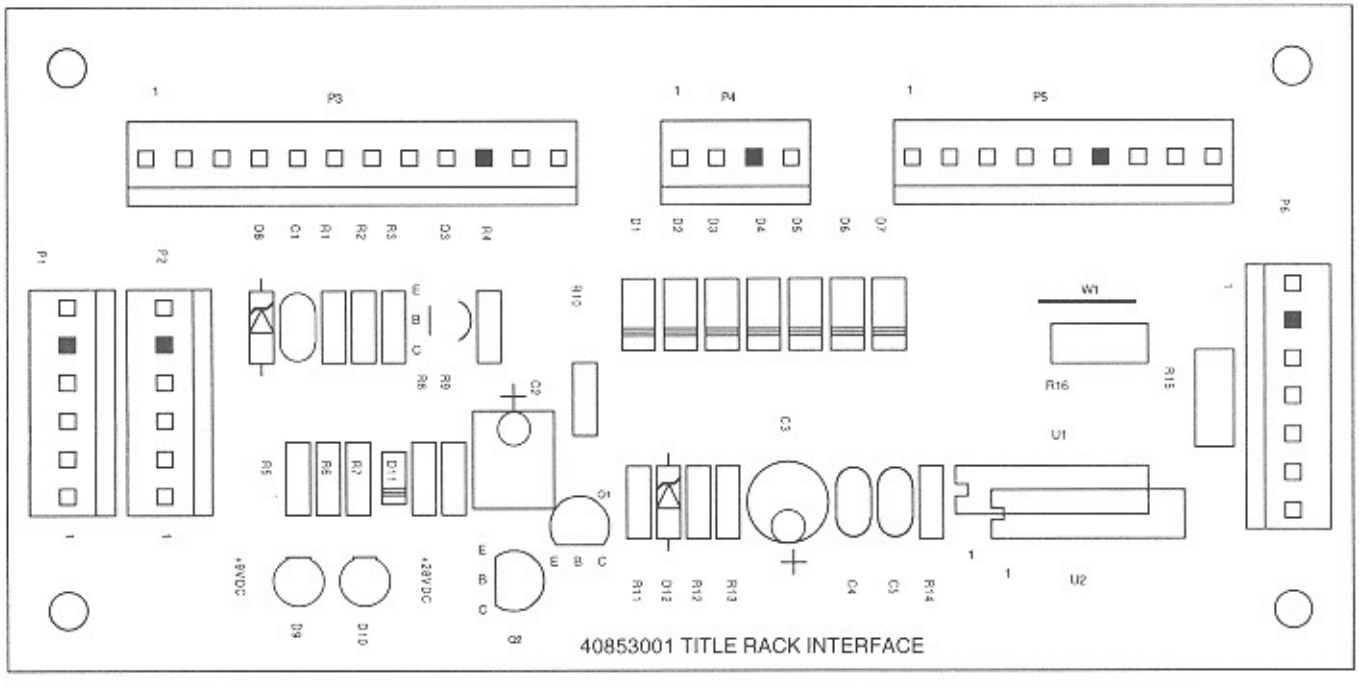



**Figure 5-16B. Title Rack Interface Circuit Board Layout 40853001**

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# Section 5: Troubleshooting

## INTRODUCTION

The CD-100F Phonograph incorporates several modules which plug in for rapid service. The most likely causes of phonograph problems are:

1. Continuous or intermittent opens in a harness. The cause can be wiring, a terminal, or a bad terminal crimp.

   - Check that all plugs are firmly seated.
   - Check that connector pins are not bent, broken or pushed through the back of connectors when mated.
   - Check for bad solder joints, especially at connector pins.

2. A defective module *(See Table 5-1)*. Troubleshooting procedures are directed at module replacement, not repair.

**Table 5-1. Replaceable Modules**

| Part No. | Description |
|---|---|
| 40832220 | Central Control Computer (CCC) |
| 61086201 | Mechanism Control |
| 30995302 | CDM-12 CD Player with Centering Hub |
| 61086501 | Power Supply Circuit Board Assembly |
| 40855001 | Digital Display |
| 40856101 | Title Rack-Keyboard Interface Assembly |

## TROUBLESHOOTING TOPICS

The troubleshooting topics presented in this section are:

- A summary of the functions for each of the phonograph's replaceable modules
- A sequence of operation explanation and a Block Diagram *(Figure 5-1)* to help you isolate the problem to a harness or a module.
- The RED LED STATUS lamps *(Figures 5-2 through 5-6)*.
- Instructions on how to use the ERROR and WARNING messages
- Modular Troubleshooting Charts that list the *Trouble, Symptom*, and *Probable Cause*
- A Sound System Quick Check

**NOTE:**

**The CBA-2 service procedures are described in *Section 4* of this manual.**

## REPLACING THE CCC EPROM / FACTORY DEFAULT

If you have changed the CCC EPROM, use the following procedure to reset the CCC:

1. Put the NORM/SERVICE switch to SERVICE and the ON/OFF Power switch to OFF.

2. Press and hold keyboard 0 and 1 switches down and place the ON/OFF POWER switch power to ON; hold the 0 and 1 buttons down until the display shows LOADING DEFAULTS. Do not be concerned when the 14-04 WARNING appears, because it is just a status message indicating that the defaults were loaded. For a fresh start, clear out this warning (CODE 81).

## FREE PLAY

1. Enter the SERVICE mode by setting the SERVICE switch to the SERVICE position.

2. Enter 55. This will place you in the PRICING menu, OPTION 5. Press and hold RESET and press 9. The display will change from FPLAY STATUS OFF to FPLAY STATUS ON. Press POPULAR to complete the change.

## CD MODULE FUNCTIONS

### Digital Display Module

- A "dumb" controller (i.e. cannot make any decisions)
- Displays information sent by CCC

### Title Page Assembly-Keyboard Interface Module

- Contains the TITLE DISPLAY motor driver IC. The IC is controlled by the CCC.

### CCC

- The master controller
- Has battery backed up RAM
- Controls all credit functions
- Stores all selections
- Controls all programming functions
- Makes all system decisions

### Mechanism Control

- A slave controller
- Plays selections sent by the CCC
- Controls all mechanism functions
- Controls the CD player
- Mutes and unmutes the audio amplifier

### CBA-2 Logic Board

- A slave controller
- Tells CCC when a valid bill is accepted.

Rowelink and the Power Bus (voltages, Commons & System Reset) are the only connections between CCC, mechanism control and CBA-2. Rowelink is a 2-wire communication channel that ties the system components together. The ROWELINK COMMAND (CCC), and ROWELINK TX (mechanism control), LED's should always be flickering.

## SEQUENCE OF OPERATION

This sequence of operation describes the phonograph cycle and jobs performed by each module shown in the Block Diagram *(Figure 5-1)*.

In the Block Diagram, the TITLE DISPLAY switches are shown in the PAGE 1 position. The mechanism OUTER CAM and INNER CAM switches are shown in the MAGAZINE ROTATE position.

**Step 1.** Power is turned on, voltages and commons are applied to modules and components.

| At Line Voltage | Voltages Labeled | Should Measure |
|---|---|---|
| 115 VAC | 28 VAC | 26 to 30 VAC |
| 115 VAC | +28 VDC | +23 to +30 VDC |
| 95 to 135 VAC | +8 VDC | +8.5 to +9.9 VDC |

**Step 2.** The modules sense power turn on, no selections or credit in memory, and the SERVICE switch is in the NORMAL position.

### CCC

- +5 VDC LED lights
- BOARD ERROR LED flashes 3 times to indicate that ROM, RAM and real time calendar clock have tested OK.
- ROWELINK COMMAND LED flickers, indicating that serial communication commands are being sent from the master (CCC) to the slaves (mechanism control and CBA-2).

### Mechanism Control

- +5V LED lights.
- BOARD ERROR LED flashes 3 times to indicate that ROM, RAM and CD Player Communication (CDM COMM) have tested OK.
- CDM COMM flashes once.
- ROWELINK TX (Rowelink response) LED flickers, indicating that communication is occurring between the mech control (a slave) and CCC (the master). Each time it flickers, communication has successfully occurred.

### CBA-2

- PWR LED lights
- STATUS LED flashes 1 time

### Digital Display

- +5 VDC LED lights
- CCC serially sends information (via TX data, clock) and display shows:
- Checksum = XXXX
- RAM test passed
- 0 (selections remaining)
- After 10 seconds, the moving messages **ROWE**, **CD PHONOGRAPH** and **PLAY THE MUSIC** appear.

**Step 3.** Customer deposits money. Play credit is established.

- Money is deposited
- CBA-2 tells CCC if a bill was validated and stacked.
- • CCC senses coins from the closed coin switches.
- • CCC uses pricing information (COIN SWITCH VALUES, PRICE LEVELS, PLAYS @ LEVEL and MULTIPLIER) stored in it, to convert money deposited into play credits.
- CCC sends (via TX data, clock) credits to digital display and they appear above the SELECTIONS REMAINING legend.
- • CCC tells the mechanism control the money's value and the mechanism control increments the money counter.

**Step 4.** Customer makes a selection.

- CCC determines that a switch is closed or open by sending out strobes and sensing returns.
- Customer finds the selection that he wants to make by using the keyboard IN (^) and OUT (v) title page switches.
- CCC sends out Strobes 1, 9 and 10 to the TITLE RACK-KEYBOARD INTERFACE.
- • The motor driver in the TITLE RACK-KEYBOARD INTERFACE uses Strobe 9 to control speed and Strobe 10 to control direction.
- • CCC determines when to stop the motor (i.e., a page has flipped) by sensing the state of the INDEX switch on return RET 1.
- • CCC determines when to change directions by sensing the state of the LIMIT switch on return RET 0, or by using PAGE IN, OUT data in the ATTRACT menu.
- • Customer enters 4 digits (a 2-digit disc number and a 2-digit track number).
- • CCC senses the pushed keys by sending out Strobes 2, 3, 4, 5 and sensing returns RET 0, 1, 2 and 3.
- • Digital display shows digits as they are entered above the SELECTION BEING MADE.
- • Selection stored in the CCC's memory.
- • Credit is cancelled.
- • Selection is displayed for approximately 4 seconds after it is made.

**Step 5.** Selection is located and played.

- CCC sends the selection to the mechanism control.
- Mechanism Control searches for the disc.
- • Detent coil is energized and the magazine unlocks.
- • Magazine motor rotates the magazine.
- • Mechanism control SCAN/TRANSFER LED lights.
- • Digital display shows the selection playing as - - - -.
- • Mechanism control locates the disc by counting gear teeth interruptions of the INDEX optical switch light beam.
- Disc located and transferred to the play position.
- • Magazine motor stops and the magazine locks (detented).
- • Transfer motor runs and the disc is placed in the play position.
- • Outer cam Common connected to the N.O. contact.
- Mechanism control SCAN/TRANSFER LED goes OFF.
- Mechanism control tells the CDM-12 what track (i.e., selection) to play.
- CDM-12 tells the mechanism control that the track has been located. Play counter advaces.
- Selection plays
- • Mechanism control tells the CCC that the selection is playing.
- • Mechanism control unmutes the audio amplifier.
- • Selection is erased from CCC's memory.
- • Digital display shows that the selection is playing.
- • Mechanism control monitors the disc condition and tells the CCC if disc problems occur.

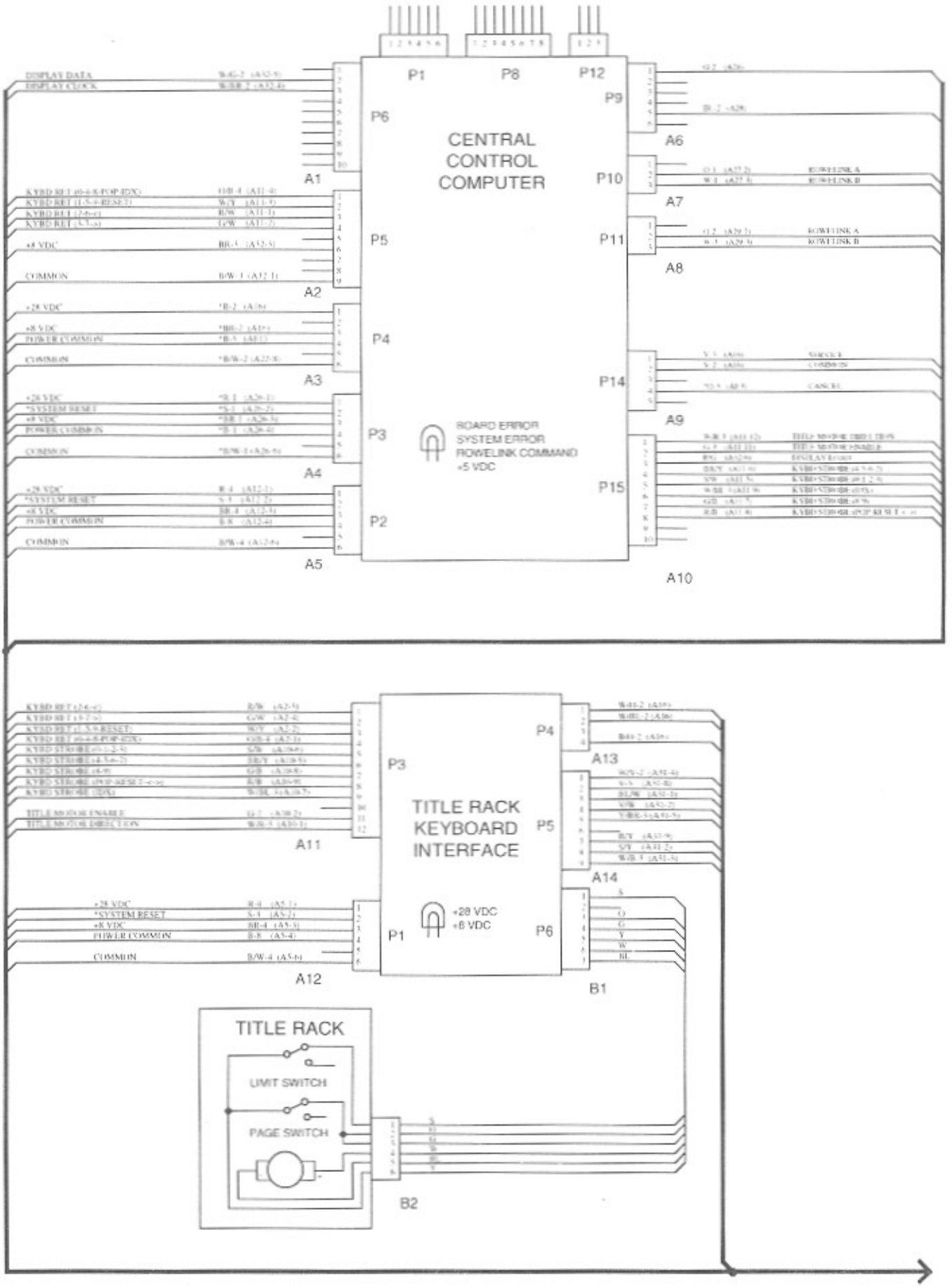
**Step 6.** Selection ends, the disc returns to the magazine, the CCC searches selection memory.

- Mechanism control tells the CCC that the selection is over.
- Mechanism control mutes the audio amplifier.

- Transfer motor runs and the disc is returned to the magazine.
- Inner cam Common connects to the N.O. contact when the disc is in the magazine.
- CCC searches its selection memory. If it contains one or more selections, steps 5 and 6 are repeated.

**Step 7.** Phono returns to STANDBY and AUTOPLAY timing begins.

- All selections have played.
- Digital display shows moving messages: ROWE, CD PHONOGRAPH, and PLAY THE MUSIC.


CENTRAL
CONTROL
COMPUTER
P1
P8
P12
P9
P6
P10
P5
P11
P4
P14
P3
P15
P2
BOARD ERROR
SYSTEM ERROR
ROWELINK COMMAND
+5 VDC
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10
TITLE RACK
KEYBOARD
INTERFACE
+28 VDC
+8 VDC
A11
A12
A13
A14
B1
TITLE RACK
LIMIT SWITCH
PAGE SWITCH
B2

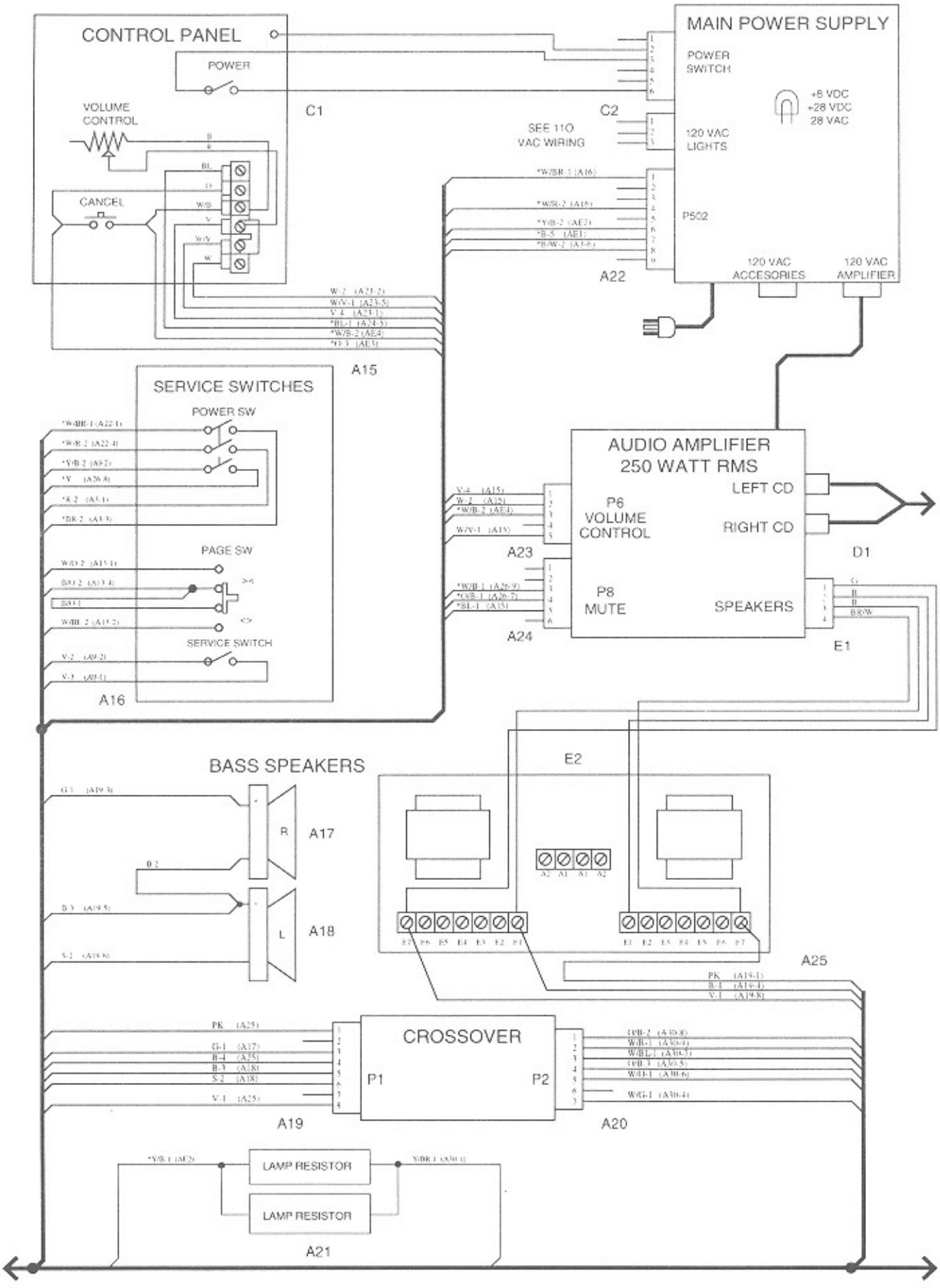
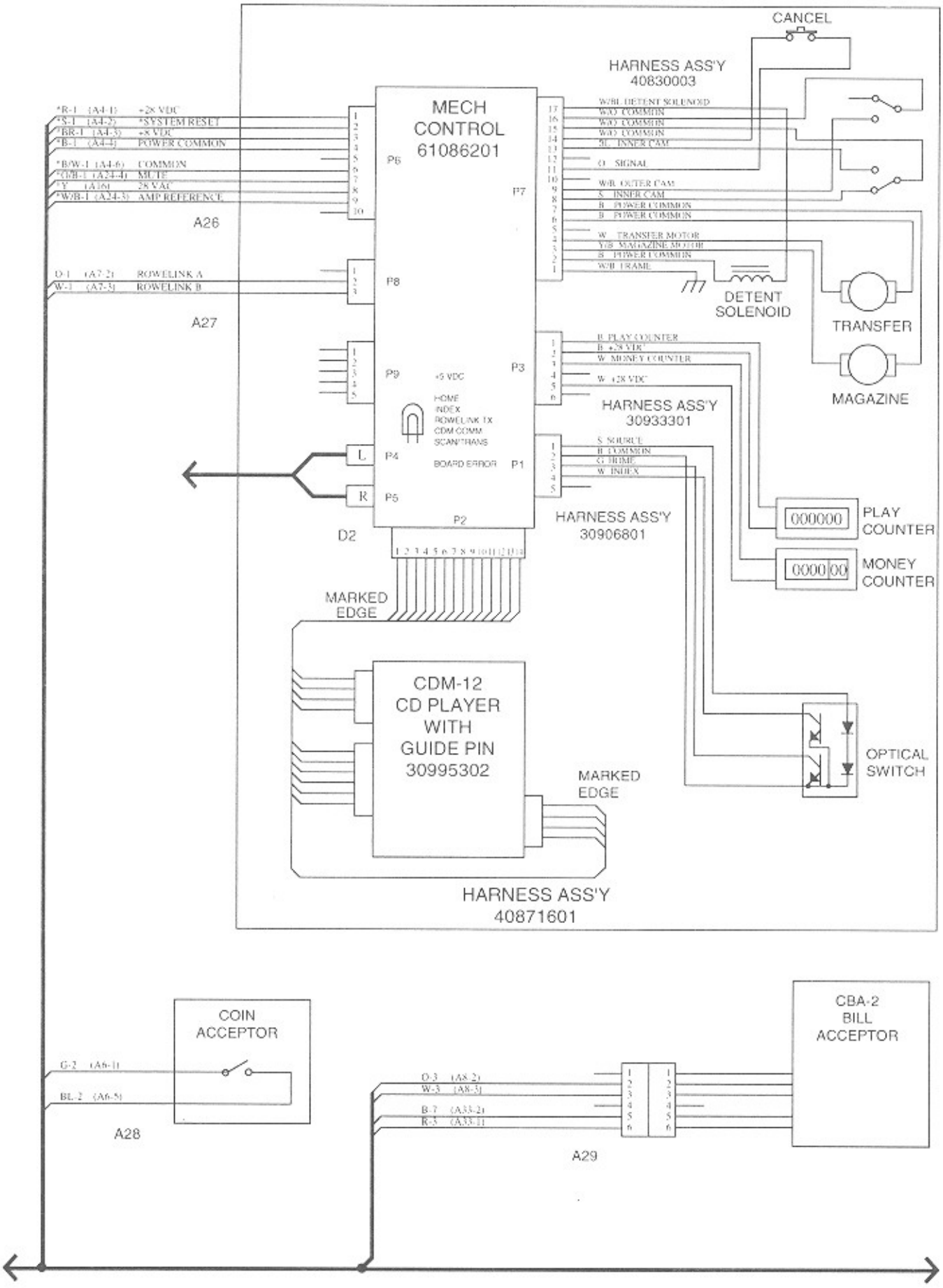



**Figure 5-1. CD-100F Block Diagram Sheet 1**


CANCEL
HARNESS ASS'Y
40830003
MECH
CONTROL
61086201
P5
P7
P8
P9
P3
P4
P1
P2
P6
A26
A27
D2
*R-1 (A4-1) +28 VDC
*S-1 (A4-2) *SYSTEM RESET
*BR-1 (A4-3) +8 VDC
*B-1 (A4-4) POWER COMMON
*B/W-1 (A4-6) COMMON
*O/B-1 (A24-4) MUTE
*Y (A16) 28 VAC
*W/B-1 (A24-3) AMP REFERENCE
O-1 (A7-2) ROWELINK A
W-1 (A7-3) ROWELINK B
+5 VDC
HOME
INDEX
ROWELINK TX
CDM COMM
SCAN/TRANS
BOARD ERROR
L
R
MARKED
EDGE
W/BL DETENT SOLENOID
W/O COMMON
W/O COMMON
W/O COMMON
2C INNER CAM
O SIGNAL
W/B OUTER CAM
S INNER CAM
B POWER COMMON
B POWER COMMON
W TRANSFER MOTOR
Y/B MAGAZINE MOTOR
S POWER COMMON
W/B FRAME
DETENT
SOLENOID
TRANSFER
MAGAZINE
B PLAY COUNTER
B +28 VDC
W MONEY COUNTER
W +28 VDC
HARNESS ASS'Y
30933301
S SOURCE
B COMMON
G HOME
W INDEX
HARNESS ASS'Y
30906801
000000
PLAY
COUNTER
0000 00
MONEY
COUNTER
OPTICAL
SWITCH
CDM-12
CD PLAYER
WITH
GUIDE PIN
30995302
MARKED
EDGE
HARNESS ASS'Y
40871601
COIN
ACCEPTOR
G-2 (A6-1)
BL-2 (A6-5)
A28
O-3 (A8-2)
W-3 (A8-3)
B-7 (A33-2)
R-5 (A33-1)
A29
CBA-2
BILL
ACCEPTOR

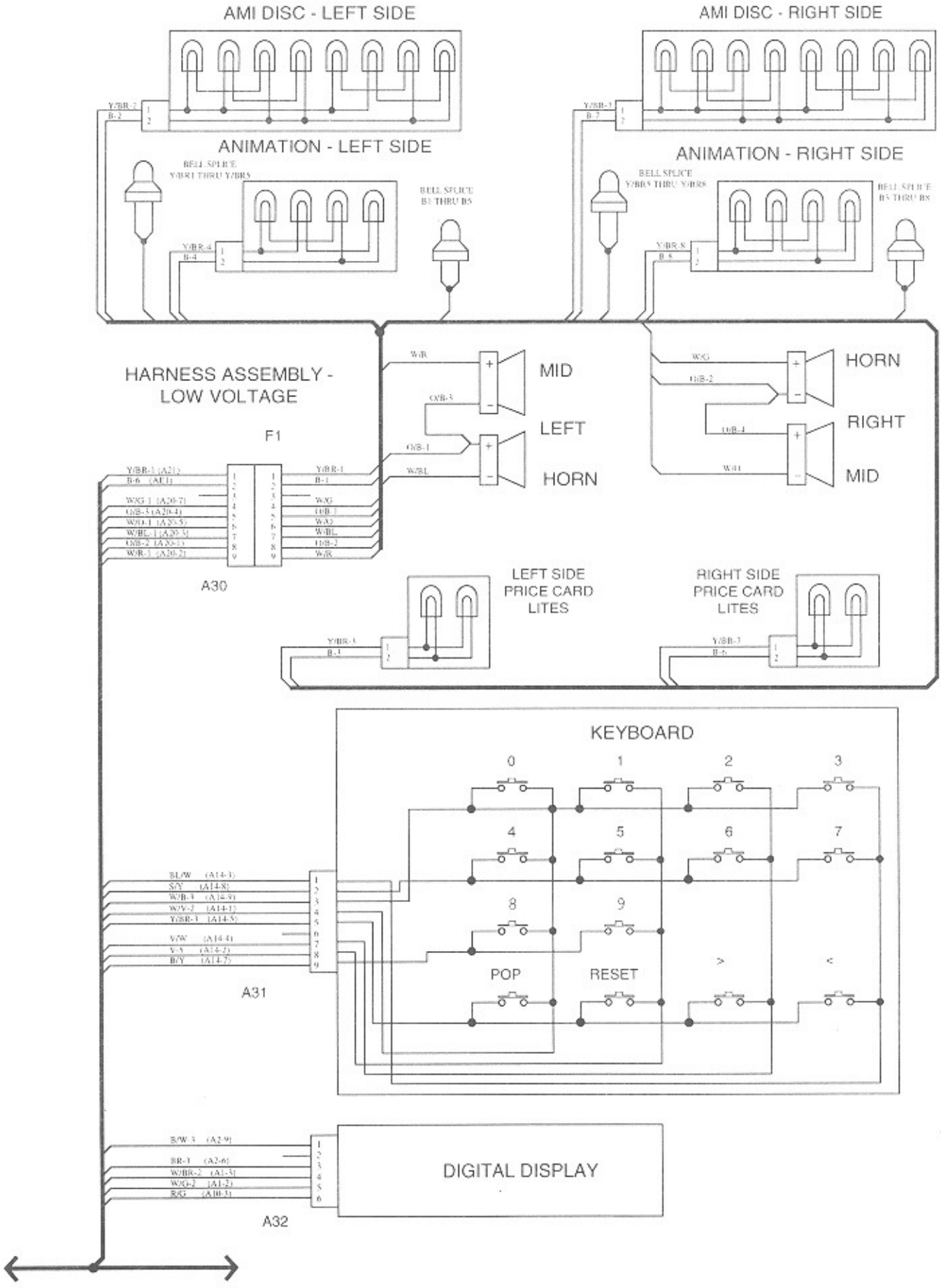
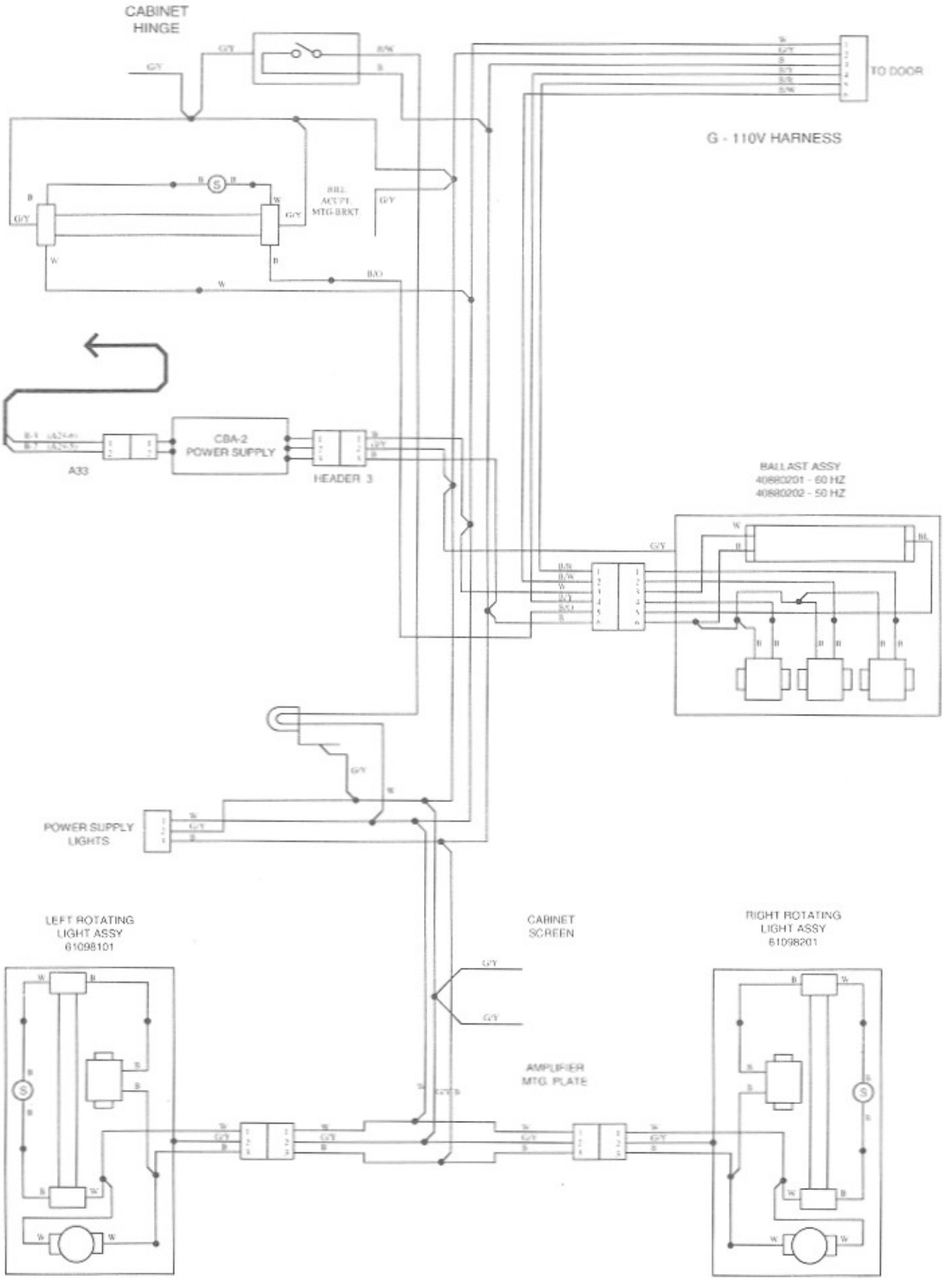



**Figure 5-1. CD-100F Block Diagram Sheet 2**


CABINET HINGE
TO DOOR
G - 110V HARNESS
BILL ACCPT. MTG BRKT.
CBA-2 POWER SUPPLY
A33
HEADER 3
BALLAST ASSY
40880201 - 60 HZ
40880202 - 50 HZ
POWER SUPPLY LIGHTS
LEFT ROTATING LIGHT ASSY 61098101
CABINET SCREEN
AMPLIFIER MTG. PLATE
RIGHT ROTATING LIGHT ASSY 61098201

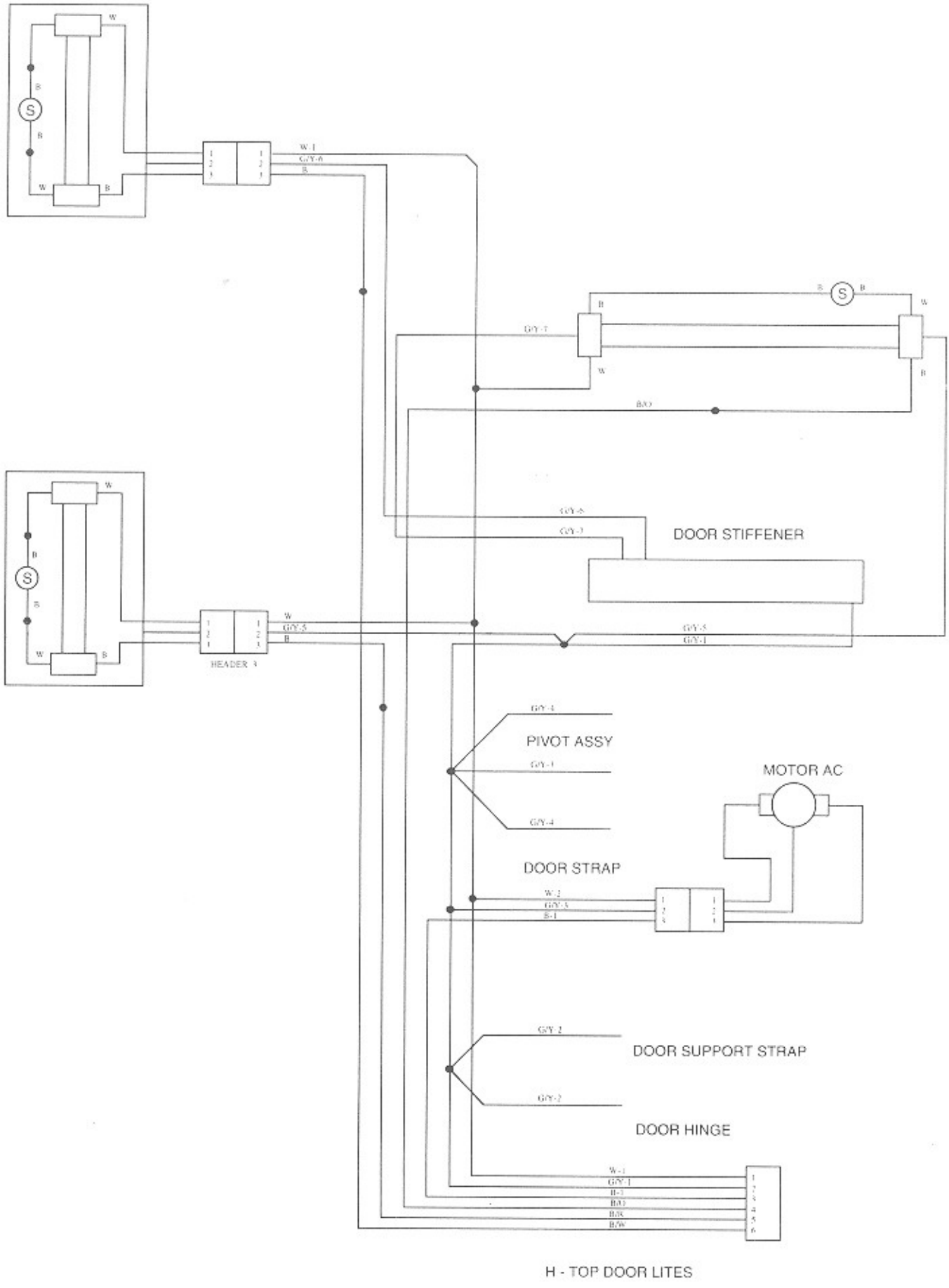



**Figure 5-1. CD-100F Block Diagram Sheet 3**

# CD-100F HARNESS ASSEMBLIES

| PART NO. | HARNESS NAME |
|---|---|
| A. 61099101 | Harness & Switch Assembly |
| B. 40883801 | Harness Assembly - Title Rack |
| C. 40883701 | Harness Assembly - Power Switch |
| *C1. 40883702 | Harness Assembly - Power Switch (Export) |
| D. 30934204 | Harness Assembly - Audio |
| E. 30985302 | Harness Assembly - Output Transformer |
| F. 61101401 | Harness Assembly - Low Voltage |
| G. 40880101 | 110V Harness Assembly |
| H. 40881601 | Harness Assembly - Top Door Lights |

* Denotes Harness Not Shown in Block Diagram

**Figure 5-1. CD-100F Block Diagram Sheet 4**

# STATUS LAMPS

The red LED indicators are connected to various strategic points in the phonograph's circuits to indicate the status of power and signal circuits.

**Main Power Supply LED's**

+8 Volts DC
+28 Volts DC
28 Volts AC

These indicators light when their corresponding voltages are present and no wiring shorts are present.

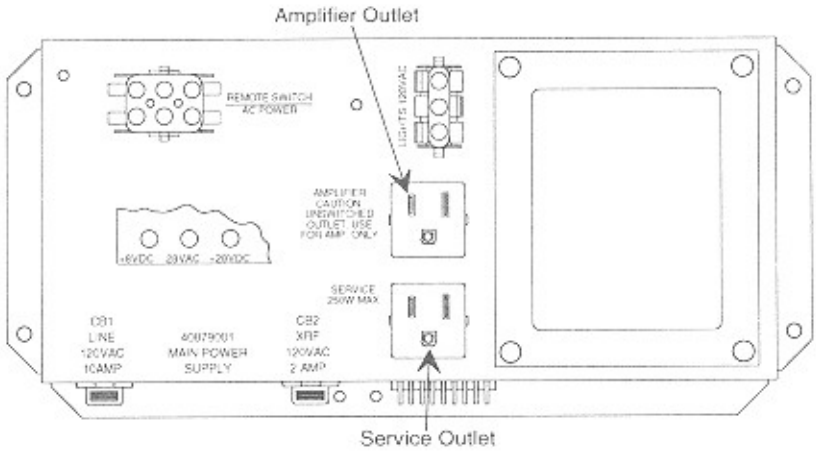



**Figure 5-2. Main Power Supply LED's**

## Mechanism Control

**5VDC** — Lights as long as 5 VDC is present from the main power supply.

**OPT. SW. HOME** — Lights when the HOME section of the optical switch sees the hole in the magazine drive gear. Flickers when the magazine CD Position 99 passes the transfer position.

**OPT. SW. INDEX** — Lights when the index section of the optical switch sees a tooth space of the magazine drive gear. Flickers when the magazine rotates.

**ROWELINK TX** — Flashes when the CD mechanism is transmitting to the CCC.

**CDM COMM** — Flashes when the CDM-12 is transmitting to the mech control.

**SCAN/TRANSFER** — Lights when either the scan or the transfer motor is activated.

**BOARD ERROR** — Blinks on and off three times on power up. Any other time, this LED indicates that a fatal mechanism error (phonograph out of service) has occurred.

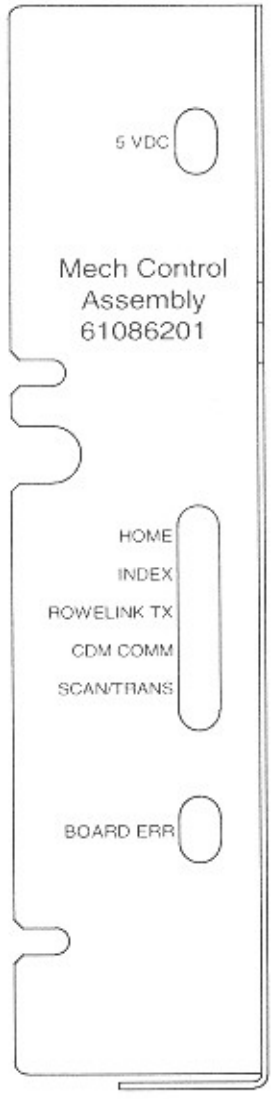



**Figure 5-3. Mechanism Control LED's**

## Central Control Computer

**BOARD ERROR** — Blinks 3 times on power up. If it stays on, an error has been detected.

**SYSTEM ERROR** — Lit only when the phonograph is out of order. The type of error that caused the shutdown can be examined from the SERVICE mode.

**ROWELINK COMMAND** — Flashes when the CCC is transmitting messages to slave devices (i.e. mechanism, CBA-2)

**+5 VDC** — +5 VDC is present.

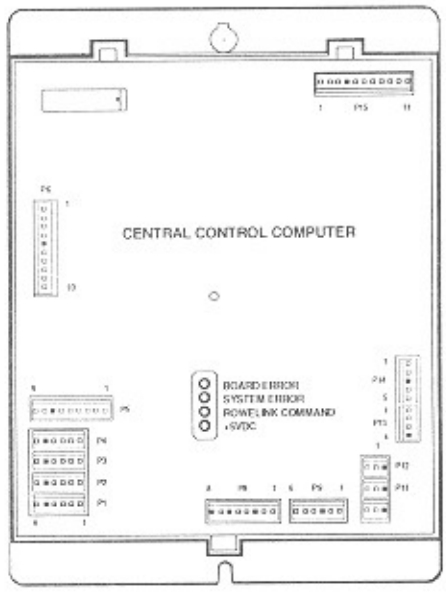



**Figure 5-4. Central Control Computer LED's**

## Digital Display

**+5 VDC** — +5 VDC is present.

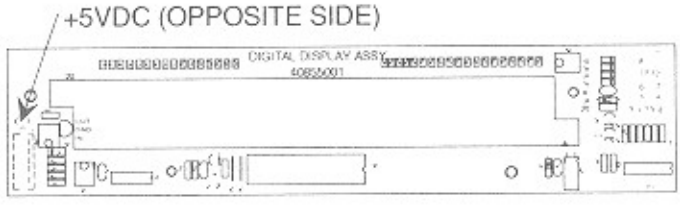



**Figure 5-5. Digital Display LED's**

## CBA-2

**BA STATUS** — Blinks one time at power up then stays off. See Section 4 Troubleshooting if always lit or flashing.

**PWR** — Voltage is present.

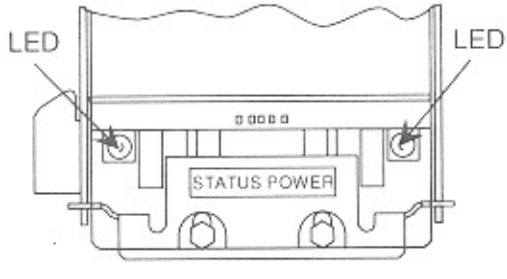



**Figure 5-6. CBA-2 LED's**

# ERRORS AND WARNINGS

## Basic Concepts

When you switch to SERVICE mode, you will see one of two displays:

- If the phonograph has not encountered any errors or warnings, * SERVICE MODE * will be displayed.
- If the phonograph has encountered errors or warnings, --ERRORS EXIST-- will be displayed. This message will only appear as you enter SERVICE mode, and it will not change menu or command operation.

### ERRORS (ERR)

- Cause phonograph shutdown and show the OUT OF ORDER message.
- Usually require a service call, component replacement, adjustment, or harness repair.
- Are always shown as active (A), even if they cleared up.

If you turn power OFF and ON, the phonograph will operate if error cleared up. If error is still present, the phonograph will shut down. Errors that clear up do not require service unless the phonograph is malfunctioning.

### WARNINGS (WARN)

- Do not cause phonograph shutdown.
- Phonograph may or may not operate.
- Service personnel are made aware by the --ERRORS EXIST-- message appearing upon entering the service mode.
- Shown as active (A) until the problem clears up.
- Not active (N) warnings do not require service unless the phonograph is malfunctioning.

### VIEWING THE ERRORS AND WARNINGS

**NOTE:**

1. **If the CCC thinks that a key other than RESET is closed, it will not accept other keys. This problem will not allow you to view the error/warnings. The probable cause is a short in the keyboard, a short in RET 0, 1, 2 or 3 wiring, defective CCC, or a short in (^) or (v) page switch or wiring.**
2. **The viewing procedure can be started over by holding RESET and repeatedly pushing POPULAR until the display shows * SERVICE MODE *. Then start at step 2.**

| Steps | Display Shows |
|---|---|
| 1. Enter SERVICE mode | --Errors Exist-- |
| 2. Type 8 | * STATUS * |
| 3. Type 0 *(See Note 1)* | Error History |
| 4. Push POPULAR | X WARN XX-XX XX<br><br>A = Active<br>N = Not Active<br>Source of warning<br>Type of warning<br>Number of occurrences<br><br>**OR**<br><br>X ERR XX-XX XX<br><br>A = Active<br>Source of error<br>Type of error<br>Number of occurrences |
| 5. Hold RESET, push 9 | START XX:XX XX/XX<br><br>Time of first occurrence<br>Month/day of first occurrence |
| 6. Hold RESET, push 9 | END XX:XX XX/XX<br><br>Time it last cleared up (not active)<br>Month/day it last cleared up (not active)<br>00:00 00/00 if first occurrence and still active, or ERR message |
| 7. Hold RESET, push 3 | Next ERR or WARN if a different one exists.<br>Otherwise stays the same. |

8. Repeat steps 5, 6, and 7 as often as necessary (*See the Notes that follow*).

**NOTE:**

3. **You can review the WARN or ERR, START or END by holding RESET and pushing 9 as often as desired.**
4. **Steps 4 and 5 can be skipped.**
5. **Hold RESET, push 2 to search backwards through errors.**

**EXAMPLE 1:**

N WARN 06-02 15
START 14:30 06/01
END 15:00 06/01

**Message means**

- CBA-2 thinks bill transport V1 cell was blocked 15 times.
- First occurrence was 2:30 p.m. on June 1.
- Last occurrence cleared up 3:00 p.m. on June 1.

**Probable cause**

- Someone tried to obtain free credit by inserting a foreign object.

**EXAMPLE 2:**

A ERR 05-63 03
START 09:10 07/13
END 00:00 00/00

**Message means**

- The CCC has sent messages (via the ROWELINK) to the mechanism control, but the CCC has not received any response for 1 minute.
- First occurrence was 9:10 a.m. on July 13.

**NOTE:**

6. **A (Active symbol) always proceeds ERR, even if the problem is not active now.**
7. **An ERR message always shows 00:00 and 00/00 for the END time and date.**

# ERROR AND WARNING SUMMARY

The following list summarizes all possible errors and warnings that can be displayed. For details of causes and corrective action, see *Description Of Errors/Warnings And Probable Causes* that follows this summary.

## Coin Switches (01)

01-17 #1 coin switch
01-18 #2 coin switch
01-19 #3 coin switch
01-20 #4 coin switch
01-31 Multiple coin switches

## Keyboard Switches (02)

02-16 Key 0
02-17 Key 1
02-18 Key 2
02-19 Key 3
02-20 Key 4
02-21 Key 5
02-22 Key 6
02-23 Key 7
02-24 Key 8
02-25 Key 9
02-26 Most Popular key
02-27 Reset key
02-28 ^ key
02-29 v key
02-31 Multiple keys
02-32 Cancel button

## Mechanism Controller (05)

05-05 Mech. cannot determine magazine position
05-08 EPROM checksum error
05-09 RAM test failed.
05-10 CDM communication invalid
05-25 Cause undetermined

## Mechanism Fatal Errors

The error codes below will cause a system reset and after five errors, the phonograph will go out of order.

05-50 Inner cam switch
05-51 Inner cam switch
05-52 Outer cam switch
05-53 Outer cam switch
05-56 Index LED
05-57 Index LED
05-58 Home LED
05-59 Home LED
05-62 CDM-to-CCC communication lost
05-63 Mech-to-CCC communication lost
05-64 Gripper bow position undetermined

## CBA-2 (06)

06-01 Communication to the CBA-2 has been lost
06-02 V1 cell or inlet cell
06-03 Jammed bill (V3 Cell)
06-04 Bill stacker is full
06-05 Cause undetermined
06-06 Jammed bill (V4 Cell)
06-07 Motor speed error

## Wallbox Controller (07-10)

07-01 Communication to wallbox #1 has been lost
08-01 Communication to wallbox #2 has been lost
09-01 Communication to wallbox #3 has been lost
10-01 Communication to wallbox #4 has been lost

## IR Remote (11)

11-01 Communication to the IR remote has been lost.

## Central Control Computer (14)

14-01 EPROM checksum error
14-02 RAM failed
14-03 Real time clock error
14-04 Factory defaults have been loaded
14-05 RAM checksum error
14-06 Low battery

## Description Of Errors/Warnings And Probable Causes

### SOURCE 01 COIN SWITCH WARNINGS

| | | |
|---|---|---|
| WARN | 01-17 | #1 coin switch |
| | 01-18 | #2 coin switch |
| | 01-19 | #3 coin switch |
| | 01-20 | #4 coin switch |
| | 01-31 | Multiple coin switches |

**Message Means:**

CCC thinks one or more coin switches are closed for more than 5 seconds.

**Probable cause:**

1. A manual operation of coin switches.
2. A jammed coin or switch.
3. A short in wiring.
4. A defective CCC.

### SOURCE 02 KEYBOARD WARNINGS

| | | |
|---|---|---|
| WARN | 02-16 | Key 0 |
| | 02-17 | Key 1 |
| | 02-18 | Key 2 |
| | 02-19 | Key 3 |
| | 02-20 | Key 4 |
| | 02-21 | Key 5 |
| | 02-22 | Key 6 |
| | 02-23 | Key 7 |
| | 02-24 | Key 8 |
| | 02-25 | Key 9 |
| | 02-26 | MOST POPULAR key |
| | 02-27 | RESET key |
| | 02-28 | < > key |
| | 02-29 | > < key |
| | 02-30 | ------- |
| | 02-31 | Multiple keys |
| | 02-32 | External CANCEL button |

**Message Means:**

CCC thinks one or more switches were closed for more than 10 minutes.

**Probable cause:**

1. Someone held it closed. Nothing needs repairing or replacing.
2. A short in associated wiring *(See the Block Diagram in this section).*
3. A defective CCC.

**SOURCE 03-04 NOT DESIGNATED**

**SOURCE 05 MECHANISM ERRORS/WARNINGS**

WARN 05-05

**Message Means:**

Both the Index and Home signals are changing, but the mechanism is unable to determine the magazine position.

**Probable cause:**

1. A defective optical switch.
2. A loose connection wire/terminal at OPTICAL switch connector on the mechanism controller.
3. A defective mechanism control.

---

WARN 05-08 EPROM checksum warning

**Message Means:**

Checksum test failed

**Probable cause:**

1. A failed EPROM.
2. A defective mechanism control.

---

WARN 05-09 RAM test failed

**Message Means:**

RAM test failure

**Probable cause:**

A defective RAM or mechanism control.

---

WARN 05-10 CDM communication invalid

**Message Means:**

The mechanism control is receiving invalid communications from the servo-processor on the decoder board.

**Probable cause:**

1. Neon signs
2. RF signals from radio station(s), CB radio(s), arcing wires, etc.

WARN 05-25 Unspecified Warning

ERR 05-50 Inner Cam switch always closed
05-51 Inner Cam switch always open
05-52 Outer Cam switch always closed
05-53 Outer Cam switch always open

**Message Means:**

Mechanism control thinks a switch is not working.

**Probable cause:**

1. A switch.
2. A wiring short or open.
3. The mechanism control.

ERR 05-56 Index LED always OFF
05-57 Index LED always ON
05-58 Home LED always OFF
05-59 Home LED always ON

**Message Means:**

Mechanism control thinks that the optical switch is defective.

**Probable cause:**

1. The optical switch.
2. A wiring short or open.
3. The mechanism control.

ERR 05-62 CDM communication failure

**Message Means:**

The servo processor, on the decoder board, has stopped all communications with the mechanism control for 20 seconds.

**Probable cause:**

1. The decoder board is not getting power.
2. A failure in the mech controller.
3. A failure in the decoder board.

ERR 05-63 Mech communication failure

**Message Means:**

The CCC has sent messages (via the Rowelink) to the mechanism controller, but the CCC has not received any response for one minute.

**Probable cause:**

1. Rowelink harness failure in the CCC harness.
2. The mech control has failed.
3. CCC (or a module that uses ROWELINK) has failed.

---

ERR 05-64

**Message Means:**

Both the inner and outer cam switches are operating, but the gripper bow position is uncertain.

**Probable cause:**

1. A defective cam switch.
2. A loose connection in wire/terminal at cam switch.
3. A defective mechanism control.

---

**SOURCE 06 CBA-2 WARNINGS**

WARN 06-01

**Message Means:**

CBA-2 Communication failure.

**Probable Cause:**

1. A loose connection in wire/terminal at the Rowelink communication line.
2. A defective CBA-2.

---

WARN 06-02

**Message Means:**

CBA-2 control unit thinks that the transport V1 cell is blocked.

**Probable cause:**

1. An object in transport covering V1 cell.
2. A defective harness.
3. A defective CBA-2 logic board.

---

WARN 06-03

**Message Means:**

CBA-2 control unit thinks that the V3 cell is blocked.

**Probable cause:**

1. An object is or was in transport covering the V3 cell.
2. A defective harness.
3. A defective CBA-2 logic board.

---

WARN 06-04

**Message Means:**

The CBA-2 thinks that the bill stacker is full.

**Probable cause:**

1. The bill stacker is full.
2. The bill stacker is jammed in the OFF HOME position.
3. The bill stacker HOME switch is out of adjustment.
4. A defective bill stacker.
5. A defective CBA-2 logic board.

---

WARN 06-05 Unspecified Warning

---

WARN 06-06

**Message Means:**

The CBA-2 thinks that the V4 cell (pullback flipper) is blocked.

**Probable cause:**

1. An object is or was in the transport, activating the pullback flipper.
2. A defective harness.
3. A defective CBA-2 logic board.

---

WARN 06-07

**Message Means:**

The CBA-2 control unit could not set the proper motor speed.

**Probable cause:**

1. Incorrect belt tension.
2. A defective motor.
3. A defective harness.
4. A defective CBA-2 logic board.

**SOURCE 07 WALLBOX ADDRESS 70**

WARN 07-01 CCC lost communication with wallbox or concentrator for more than 1 minute.

**SOURCE 08 WALLBOX ADDRESS 71**

WARN 08-01 CCC lost communication with wallbox for more than 1 minute.

**SOURCE 09 WALLBOX ADDRESS 72**

WARN 09-01 CCC lost communication with wallbox for more than 1 minute.

**SOURCE 10 WALLBOX ADDRESS 73**

WARN 10-01 CCC lost communication with wallbox for more than 1 minute.

**Message Means:**

Rowelink communications was established with this wallbox or concentrator then it was lost for more than 1 minute.

**Probable Cause:**

1. The Rowelink wiring to the concentrator (or wallbox).
2. A wallbox power supply.
3. A wallbox or concentrator.

---

**SOURCE 11 IR REMOTE WARNING**

WARN 11-01 IR Remote communication failure

**Message Means:**

Rowelink communication was established with the IR remote, then was lost for more than 1 minute.

**Probable Cause:**

1. Defective Rowelink harness between the P1O of the CCC and P6 of the IR Remote.
2. Defective power harness between P1 of the CCC and P4 of the IR Remote.
3. Defective IR Remote assembly.

---

**SOURCE 12-13 NOT DESIGNATED**

---

**SOURCE 14 INTERNAL CCC WARNINGS**

14-01 CCC EPROM checksum test failed.
14-02 CCC RAM test failed.
14-03 CCC real-time clock failure.
14-04 CCC factory defaults requested and loaded.
14-05 CCC programmed RAM checksum test failed.
14-06 CCC battery voltage is low.

**Message Means:**

All except 04 indicate a CCC internal fault. The 04 indicates that factory defaults were loaded into programmed RAM because someone used the factory load procedure (see replacing the EPROM).

**Probable cause:**

1. A defective CCC for all except 04
2. A defective CCC if 04 occurs frequently
3. Someone loaded factory defaults, causing 04 warning.

## Clearing Error/Warnings from Memory

Error/warnings stored in the phonograph's memory can be cleared by:

| STEPS | DISPLAY SHOWS |
|---|---|
| 1. Enter SERVICE mode | -- ERRORS EXIST -- |
| 2. Press 8. | * STATUS * |
| 3. Press 1. | * CLEAR ERRORS * |
| 4. Press POPULAR. | CLEAR ERRORS |
| | (Will blink and then reappear) |

**NOTE:**

**If already in SERVICE mode, or you want to start over, hold RESET and repeatedly press POPULAR until display shows * SERVICE MODE *. Then start at step 2.**

# DISC CONDITIONS

## Basic Concepts

Compact Discs are very rugged, but sometimes they develop problems similar to vinyl records. Skips and dropouts are not uncommon CD faults and may be caused by: a dirty disc, dirty CD player lens, or CD manufacturing defects. On rare occasions, the CD player may be unable to play any tracks on a disc. This failure to play any tracks may have the same cause as skips and dropouts.

## Programmable Disc Condition Logging

The CD-100F has a built-in disc condition logging feature that records disc play problems found on a disc or track. Three programmable options determine when these conditions are placed into the Disc Condition Log:

### CONDITION LOG (SERVICE CODE 35)

The number of skips over one second or the time difference in seconds between disc time and running time, to occur before recording the error in the condition log. The recommended setting is 3.

### SKIP CANCEL (SERVICE CODE 36)

The number of skips, greater than one second, to occur before recording the error in the condition log and canceling the selection. The recommended setting is 5.

### TIME CANCEL (SERVICE CODE 37)

The absolute time difference, in seconds, between the current playing position, coming off the CD, and the running time. The recommended setting is 10.

## Factory Settings

The factory setting for the CONDITION LOG is 5, and 99 for SKIP CANCEL and TIME CANCEL. The reason for the difference between defaults and recommended settings is that we want the CD-100F, when shipped, to play discs of practically any condition without early canceling.

## Non-Programmable Disc Condition Logging

Four non-programmable disc condition events are also recorded in the condition log. These events are:

### LOGGED TRACK NUMBER EQUALS 00

This entry in the log means that the CD player was unable to read the CD Table Of Contents (TOC).

**NOTE:**

**The TOC is read every time the disc is placed on the turntable. The TOC contains the location of each track on the disc, so without it the player is unable to play any track.**

**LOGGED CANCL AND SKIP EQUALS 99**

This entry means that the CD player was able to read the TOC, but was unable to locate the track.

**LOGGED CANCL EQUALS 99 AND SKIP EQUALS 88**

This means the disc stopped spinning while playing.

**LOGGED CANCL EQUALS 99 AND SKIP EQUALS 77**

This means tracking was lost when the disc was playing.

The CD-100F has an automatic method to lock out selections that have logged too many errors. You can set this number of condition occurrences from 1 to 99. Once the LOCKOUT COUNT, Code 693, has exceeded the number of occurrences on a selection, that selection is automatically placed into LOCKOUTS list, Code 60. To remove a condition- generated lockout, refer to *Section 2* on editing the Lockout List or re-initializing the disc when using menu command 31.

## Viewing Disc Conditions

| STEPS | DISPLAY SHOWS |
|---|---|
| 1. Enter SERVICE mode. | * SERVICE MODE * |
| 2. Type 8. | * STATUS * |
| 3. Type 6. | DISC CONDITIONS |
| 4. Press POPULAR | - NO CONDITIONS<br>**-OR-**<br>SEL ditr OCC oo<br>The small letters mean:<br>di - Disc number<br>tr - Track number<br>oo - Number of occurrences |
| 5. Hold RESET, press 9 | CANCL tt SKIP ss<br>tt- Absolute time difference, in seconds, when the condition was logged.<br>ss-Number of skips, greater than one second in duration, when the condition was logged. |
| 6. Hold RESET, press 9 | TIME hh:mi mo/dd<br>hh- Hour when last condition occurred.<br>mi- Minute when last condition occurred.<br>mo- Month when last condition occurred.<br>dd- Day when last condition occurred. |

7. Hold RESET, Press 3 to view next disc condition.

8. Hold RESET, Press 2 to view previous disc condition.

9. Repeat steps 5, 6, 7, and 8 as often as necessary.

**Example 1:**

SEL 1500 OCC 05
CANCL 00 SKIP 00
TIME 12:15 7/19

**Condition Means**

The CD player could not read the TOC (track number equals 00) of disc 15 on 5 selected occasions. The most recent condition was logged on July 19th at 12:15 (24 hour time).

**Probable Cause**

1. Disc installed backward.

2. Absent disc. This disc location may not have been initialized, allowing it to be accidentally selected.

3. Dirty disc. For this type of a condition the dirt would be located around the inner most diameter of the disc. This is where the TOC information is located.

4. Dirty CD player LASER lens. Expect to see various conditions logged on many of the discs selected *(see CD Player Lens in Section 3 for details).*

**Remedy**

1. Check to see if the disc was inserted backward. If inserted backward, re-install it correctly and initialize that disc.

2. Check to see if the disc is present. If not present, initialize that disc location.

3. Remove the disc from the magazine, then inspect the inner diameter, TOC area, for dirt or damage. If you find dirt or damage clean it up. See disc cleaning section. Clear out the conditions and select a track on this disc to see if the CD player is able to read the TOC. If the CD player is still unable to read the TOC, try further cleaning or replace the disc.

4. Clean the CD player LASER lens *(see CD Player Lens in Section 3 for details).*

---

**Example 2:**

SEL 1505 OCC 01
CANCL 99 SKIP 99
TIME 12:30 7/12

**Condition Means**

The CD player read the TOC successfully, but was unable to start playing the track (no music would have been heard) on 1 occasion. The most recent condition was logged on July 12th at 12:30 (24 hour time).

**Probable Cause**

1. The disc is dirty. For this type of a condition the dirt would be located some where between the innermost diameter of the disc and the track selected. See disc cleaning section.

2. Dirty CD player LASER lens. Expect to see various conditions logged on many of the discs selected *(see CD Player Lens in Section 3 for details).*

**Remedy**

1. Remove the disc from the magazine, then inspect it for dirt or damage. If you find dirt or damage clean it up. See disc cleaning section. Clear out the conditions and select 1505 again to see if the CD player is able to play it. If the CD player is still unable to play it, try further cleaning, lock out tracks 5 and greater on disc 15, or replace the disc.

2. Clean the CD player LASER lens *(see CD Player Lens in Section 3 for details).*

---

**Example 3:**

SEL 2302 OCC 01
CANCL 10 SKIP 3
TIME 23:30 5/20

**Condition Means**

1. The CD player was playing selection 2302, but while it was playing 3 skips occurred, skips over 1 second, with an overall time loss of 10 seconds on 1 occasion. The most recent condition was logged on May 20th at 23:30 (24 hour time).

**Probable Cause**

1. Dirty disc. For this type of a condition the dirt would be located somewhere within track 2.

2. Dirty CD player LASER lens. Expect to see various conditions logged on many of the discs selected *(see CD Player Lens in Section 3 for details).*

3. An outside jarring of the jukebox.

**Remedy**

1. Remove the disc from the magazine, then inspect it for dirt or damage. If you find dirt or damage clean it up. See disc cleaning section. Clear out the conditions and select 2302 again to see if the CD player is able to play it. If the CD player is still unable to play it, try further cleaning, lock out track 2 on disc 23, or replace the disc.

2. Clean the CD player LASER lens *(see CD Player Lens in Section 3 for details).*

## Clearing Disc Conditions From Memory

Disc condition messages stay in memory until you perform the following steps:

**NOTE:**

**If already in SERVICE mode, or you want to start over, hold RESET and repeatedly press POPULAR until display shows * SERVICE MODE *. Then start at step 2.**

| STEPS | DISPLAY SHOWS |
|---|---|
| 1. Enter SERVICE mode | * SERVICE MODE * or -- ERRORS EXIST -- |
| 2. Press 8. | * STATUS * |
| 3. Push 7. | * CLEAR CONDITIONS * |
| 4. Press POPULAR. | CLEAR CONDITIONS (will blink and then reappear) |

## 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.

See *Figures 5-2* through *5-6* for descriptions and locations of the LED's referred to in *the Modular Troubleshooting Chart* that follows in *Table 5-2.*

The chart has the following 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.

*Refer to Figure 5-1, the Block Diagram,* for harnessing information.

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Phonograph fails to operate when power is turned ON. | LED's on the power supply and the fluorescent lights fail to light. | 1. Rear power switch OFF.<br>2. Plug not in wall.<br>3. Wall circuit is dead.<br>4. 10-amp circuit breaker tripped.<br>5. Wiring to rear power switch.<br>6. Rear power switch. |
| | LED's on the power supply fail to light but fluorescent lamps are ON. | 1. 2-amp circuit breaker tripped.<br>2. Power supply.<br>3. 28 VAC overload from magazine, transfer motor. |
| | The +8 VDC or +28 VDC LED on the power supply fails to light but lights when the phono harness is unplugged at the power supply. | 1. Central control computer.<br>2. Mechanism control.<br>3. Digital display.<br>4. Title Rack/Keyboard Interface.<br>5. Power supply.<br>6. Service switch.<br>7. Short circuit in wiring.<br>8. Detent coil.<br>9. Money or play counter. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Phonograph fails to operate when power is turned ON | The +8 VDC or +28 VDC LED on the power supply fails to light but lights when the phono harness is unplugged at the power supply. | 1. Digital display module (P1).<br>2. Harness at the CCC (P5).<br>3. Title Rack/Keyboard Interface Module (P1).<br>4. Harness at CCC (P1).<br>5. Harness at mechanism control (P6). Check harnesses, detent coil, and counters.<br>6. Mechanism control module (P7).<br>7. Harness at CCC (P2).<br>8. CCC module (P3).<br>9. Check the power switch and the wiring between it, the power supply, and the CCC (P3).<br>10. Replace the power supply or the circuit board inside it. |
| | CCC ROWELINK COMMAND LED is always OFF or always ON (not flickering). | Central control computer. |
| | CCC ROWELINK COMMAND LED is flickering 4 times a second and the display shows OUT OF ORDER, and Error A ERR 05-63 is logged in. | 1. If the mechanism ROWELINK TX LED is flickering, the cause is:<br><br>a. Mechanism control<br>b. Open wiring in mechanism<br><br>2. If the mechanism ROWELINK TX LED is not flickering, the cause is:<br><br>a. Mechanism control<br>b. CBA-2<br>c. A short in the ROWELINK wiring |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| **NOTE:**<br><br>**The CCC sends** OUT OF ORDER **to the display and logs the** A ERR 05-63 Error **one minute after power up if it cannot establish Rowelink communication with the mechanism control and the phonograph is in the** NORMAL **mode (i.e., not** SERVICE**).**<br><br>**To isolate the problem to a module or its associated Rowelink wiring, put the** SERVICE **switch in the** SERVICE **position and unplug the connectors in the following order. If the mechanism ROWELINK TX** (TRANSMIT) LED **starts flickering, replace the last module unplugged or repair the short in the harness. If the LED never starts flickering, the cause is a defective mechanism control, CCC, or a short in the Rowelink harness between them.**<br><br>**1. Unplug the CBA-2.** | | |
| Magazine does not rotate when a selection is made. | SCAN/TRANSFER LED ON, detent is actuated. | 1. Power supply.<br>2. Wiring to magazine motor.<br>3. Magazine motor.<br>4. Mech control board. |
| | SCAN/TRANSFER LED OFF. | 1. Mech control board.<br>2. Central control computer.<br>3. Wiring from central control computer to mech control board. |
| Magazine rotates continuously. | SCAN/TRANSFER LED OFF. | 1. Wiring to magazine motor.<br>2. Mech control board. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Magazine rotates continuously. | SCAN/TRANSFER LED is ON, OPT. SW. INDEX LED is not flashing, and/or OPT. SW. HOME LED does not flash at Disc Number 99. | 1. Optical switch.<br>2. Wiring to optical switch.<br>3. Mech control board. |
| | SCAN/TRANSFER LED ON and both optical switch LED's normal. | Mech control board. |
| Magazine stops at wrong disc. | Stops at random CD anywhere in magazine. | 1. Faulty optical switch.<br>2. Wiring to optical switch.<br>3. Heavy dirt buildup in optical switch. |
| | Stops one or two discs before disc selected. | 1. Optical switch adjustment.<br>2. Magazine not full of CD's (out of balance).<br>3. Broken sprag lever guide. |
| | Stops one or two discs after disc selected. | 1. Faulty optical switch.<br>2. Optical switch adjustment.<br>3. Magazine not full of CD's (out of balance).<br>4. Broken sprag gear.<br>5. Sprag linkage binding. |
| | Stops one-half to one disc position before or after disc selected. | 1. Broken sprag gear.<br>2. Broken sprag guide.<br>3. Sprag linkage binding or needs adjustment. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| All discs cancel without playing. | Disc spins but will not play. | 1. Short in cancel switch wiring.<br>2. Cancel switch.<br>3. Mech control board.<br>4. CD player.<br>5. Bad/upside down disc. |
| | Disc will not spin. | 1. Mech control board.<br>2. CD player.<br>3. Wiring between the CD player and the mech control. |
| Some discs cancel without playing. | | 1. Defective discs (check disc conditions).<br>2. Mechanism control.<br>3. CD player. |
| Money counter or play counter fails to count. | Fails to count. | 1. Wiring to counter.<br>2. Counter.<br>3. Mech control board. |
| Phonograph is always in SERVICE mode of operation. | *SEVICE MODE* is always displayed after power up. | 1. SERVICE switch.<br>2. SERVICE switch wiring.<br>3. Central control computer.<br>4. Central control computer set for programming with the front door closed (the VOID SERVICE SWITCH option is ON). |
| Phonograph will not go into SERVICE mode. | Display will not show *SEVICE MODE* or ERRORS EXIST when SERVICE switch is in SERVICE. | 1. Central control computer.<br>2. SERVICE switch wiring.<br>3. SERVICE switch. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Disc does not transfer. | SCAN/TRANSFER LED is ON. | 1. Wiring to transfer motor.<br>2. Mech control board.<br>3. Transfer motor. |
| | SCAN/TRANSFER LED is OFF. | 1. Mech control board.<br>2. Central control computer.<br>3. Wiring from central control computer to mech control board. |
| Transfer starts when power is applied and runs continuously. | SCAN/TRANSFER LED is OFF. | 1. Mech control board.<br>2. Wiring to motor. |
| | SCAN/TRANSFER LED is ON. | 1. Mech control board.<br>2. Open circuit at inner cam switch N.O. contact.<br>3. Open circuit at inner cam switch Common.<br>4. Outer cam switch N.O. shorted to Common. |
| Transfer starts and runs continuously after selection is located. | SCAN/TRANSFER LED comes ON when motor starts and stays ON. | 1. Wiring to outer cam switch.<br>2. Outer cam switch.<br>3. Mech control board.<br>4. Inner cam switch N.O. contact shorted to Common.<br>5. Open circuit in outer cam switch Common. |
| No sound. | Always muted. | 1. Central control computer.<br>2. Amplifier. |
| Motor noise in speakers. | Never muted. | 1. Central control computer.<br>2. Wiring between CCC and amplifier.<br>3. Amplifier. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Some CD's skip. | | 1. Dirty discs or dirty lens on CD player (See Section 3 for lens cleaning procedure).<br>2. Defective discs (check disc conditions).<br>3. Mechanism control.<br>4. CD player. |
| All CD's skip. | | 1. Dirty lens on CD player (See Section 3 for lens cleaning procedure).<br>2. CD player.<br>3. Mechanism control. |
| No credit. | No credit given by coins and dollar bills. | Central control computer. |
| | No credit given by coins but dollar bill gives credit. | 1. Coin switch Common wiring.<br>2. Central control computer. |
| | One value of coin will not give credit. | 1. Coin rejected.<br>2. Wiring to coin switch.<br>3. Coin switch.<br>4. Central control computer. |
| | Dollar bill will not give credit. | 1. Bill acceptor.<br>2. Wiring to bill acceptor.<br>3. Central control computer. |
| Wrong credit. | Credit for amount deposited does not agree with price card setting. | 1. One or more coins or bills did not register (See No Credit).<br>2. Central control computer programmed incorrectly.<br>3. Central control computer. |
| System does not respond to keyboard. | 0 Credits on SELECTION REMAINING display. | Insufficient credit. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| System does not respond to keyboard. | Credits remain, but entire keyboard does not work. | 1. Shorted keyboard switch.<br>2. Central control computer.<br>3. Short in keyboard wiring. |
| | Credits remain, but certain keys do not work. | 1. Wiring from keyboard to title rack/keyboard interface.<br>2. Keyboard.<br>3. Title rack/keyboard interface.<br>4. Central control computer. |
| Digital display does not work. | Display lights, but shows wrong information. | 1. Digital display.<br>2. Central control computer. |
| Title pages do not operate normally. | Title pages do not move at all or movement is very slight. | 1. Mechanical jam in the mechanism - Try to rotate the motor by hand - Disassemble to locate the jam.<br>2. The motor will not run - faulty motor - test for voltage at the motor - Try rotating the motor by hand. Remove the motor and test it.<br>3. The title rack harness is not plugged in. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Title pages do not operate normally. | Pages continue to flip past the next page. | 1. Index switch on the title display is defective or out of adjustment.<br>2. Harness between title display and P6 of the title rack/keyboard interface.<br>3. Harness between P3 of the title page/keyboard interface and P5 or P15 of the central control computer.<br>4. Defective title rack/keyboard interface module.<br>5. Defective central control computer. |
| | Cannot get the desired page. | 1. PAGE IN/OUT limits are not set correctly - See Section 2.<br>2. Limit switch on the title display is defective or out adjustment.<br>3. Harness between the title display and J5 of the digital display.<br>4. Defective title rack/keyboard interface module.<br>5. Defective central control computer. |

## Table 5-2. Modular Troubleshooting Chart

| Trouble | Symptom | Probable Cause |
|---|---|---|
| Title pages do not operate normally. | Pages do not operate from keyboard OUT/IN switches or from the titles OUT/IN switch. | 1. Defective title motor.<br>2. Defective digital display module.<br>3. Defective central control computer.<br>4. Harness between title display and P6 of the title rack/keyboard interface.<br>5. Harness between P3 of the title rack/keyboard interface and P5 or P15 of the central control computer.<br>6. Defective keyboard.<br>7. Harness between J1 of the keyboard and J4 of the digital display. |
| | Pages do not operate from the keyboard OUT/IN switches, but do operate from the titles OUT/IN switch. | Defective keyboard. |
| Miscellaneous problems. | Any malfunction not described above. | 1. Main power supply.<br>2. Central control computer. |

# SOUND SYSTEM QUICK CHECK

Rowe solid state sound systems are service designed for fast, easy repair. The following check list will enable you to locate troubles with basic tools. *Refer to Figures 5-1, 5-5, and 5-6* as needed.

**WARNING:**

**Do not plug in or unplug circuit boards with power ON. Checks should be made with the changer in the disc playing position. Perform all service checks in the order listed.**

## No Sound — Both Channels

### POWER - SECOND LEVEL

1. Check that the amplifier is plugged-in and is receiving power from the power supply.

2. Disconnect the mute plug.

3. Press the circuit breaker reset pushbutton on the amplifier chassis to make sure that it is not tripped. The amplifier should cause an audible "thump" in the speakers when its power is turned ON.

### VOLUME CONTROL

Disconnect the volume control plug from the amplifier chassis and short out Pin 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.

## No Sound, Low Sound, Or Distorted Sound–Right Or Left Channel Only

### EXTENSION SPEAKERS

Check the OVERLOAD indicators (*See Figure 1-6*), then disconnect the extension speakers from the transformer package receptacle (*See Figure 1-7*) and look at the OVERLOAD indicators again. If either or both OVERLOAD indicators were ON, but are now OFF, the overload is in the extension speakers.

Check that the phonograph is not overloaded by performing the following five steps:

1. Make sure the phonograph and extension speakers are connected to the proper speaker taps.

2. On the amplifier, set all seven RIGHT CHANNEL and all seven LEFT CHANNEL graphic equalizer controls fully counterclockwise.

3. Set the volume control fully clockwise (maximum volume) and make a selection.

4. While the music is playing, an acceptable load will allow the OVERLOAD INDICATOR(S) to be off or occasionally flicker in a random manner. If the OVERLOAD INDICATOR(S) are always lit or flicker continuously, the amplifier is overloaded and you must perform *Step 5*.

5. Do this step only if the OVERLOAD INDICATOR(S) came on as described in the previous step. Find the source of the overload (shorted speaker wires, too many speakers connected, or speaker power taps too high). After you fix the short, disconnect a few speakers, or lower the speaker power tap selection; repeat *Step 4*.

**NOTE:**

**The left channel output phase is reversed with respect to the right channel. This reversal is necessary to extend monaural sound in a stereo phonograph system. Because of this reversal, speaker connections to the left channel must be reversed when compared to the right channel, except for 70-volt speaker connections. The 70-volt phasing is reversed inside the output transformers. See *Figure 2-7* for correct polarity hookup of extension speakers. If the (+) and (-) terminals are not wired properly, the speakers will be out of phase, causing a reduction in low frequencies (bass).**

#### OUTPUT DEVICES

Visually inspect the driver board for blown fuses. If a fuse is blown, replace the associated output device. The two devices used in each channel are not interchangeable. Check the part number on the case and install an identical or equivalent replacement. Before mounting the device onto the heat sink, be sure that the heat sink surface is flat and no burrs are around the mounting holes to cause a short. Be sure that one, and only one, mica insulator is between the device and the heat sink and heat transfer compound (*Rowe Specification 0-00053-00*) is on both sides of insulator.

#### FILTER CAPACITORS

Check for plus and minus 40 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.

#### DRIVER BOARDS

If one driver board is defective, switch the input to "Mono" and use the good channel temporarily.

### Constant High Volume — Cannot Adjust

#### VOLUME CONTROL

Disconnect the volume control plug from amplifier chassis. No sound indicates a short in the volume control line or the volume control connector is plugged in backwards. The white/violet wire should be closest to the heatsink.

#### PREAMP

If full volume is heard with control plug disconnected, replace the preamplifier board.

## Excessive Hum

### OPEN SHIELD

Be sure that shield or wires are not broken between CD player and the amplifier input plug.

### FILTER CAPACITORS

Check the filter capacitor and parallel an extra 500 Mfd. 50V capacitor in the chassis. If the hum drops, replace the capacitor. If external inputs are used, the equipment driving those inputs must not be tied to earth ground.

# Section 6: Mechanical Adjustments

## LUBRICATION

Your phonograph mechanism requires no lubrication.

## UNSCHEDULED MAINTENANCE

This section contains adjustment, removal, and replacement procedures that should be followed whenever a malfunction has occurred.

## MECHANISM MAINTENANCE AND ADJUSTMENTS

**CAUTION:**

**The CD mechanism is extremely sensitive to static discharges. The photo diodes and the laser are more sensitive to discharges than MOS IC's. Careless handling may immediately destroy components within the player or cause undetectable damage that will lead to failure after several weeks or even months of use. Before you touch the player, discharge your hands and tools by touching a grounded metal part of the phonograph, such as the amplifier or power supply chassis. If you need to remove the CD player for servicing, place the CD player into the anti-static bag (shipped with the phonograph for this purpose) immediately after you remove it from the phonograph.**

### CD Player Mechanism

The only maintenance required on the CD player is an occasional cleaning of the lens. If you need to clean the CD player lens, follow the lens cleaning procedure on *Page 3-12* in Volume 1 of the Service Manual.

### CD Player Maintenance

The CD player does not require any adjustments or field replaceable parts. Individual parts and components are not available for distributor or field repairs. All CD players that require repair must be sent to Rowe for service.

## Removing the Mechanism Control Unit

If you have followed the troubleshooting procedure in *Section 5*, and you have found the mechanism control unit needs to be removed for factory service, follow this procedure:

1. Turn the POWER switch (on the bottom of the phonograph) to the OFF position.

2. Remove all connectors from the mechanism control unit, loosen the two mechanism control unit mounting screws *(Figure 6-1)*, and remove the mechanism control unit. Then remove the 14-pin ribbon connector.

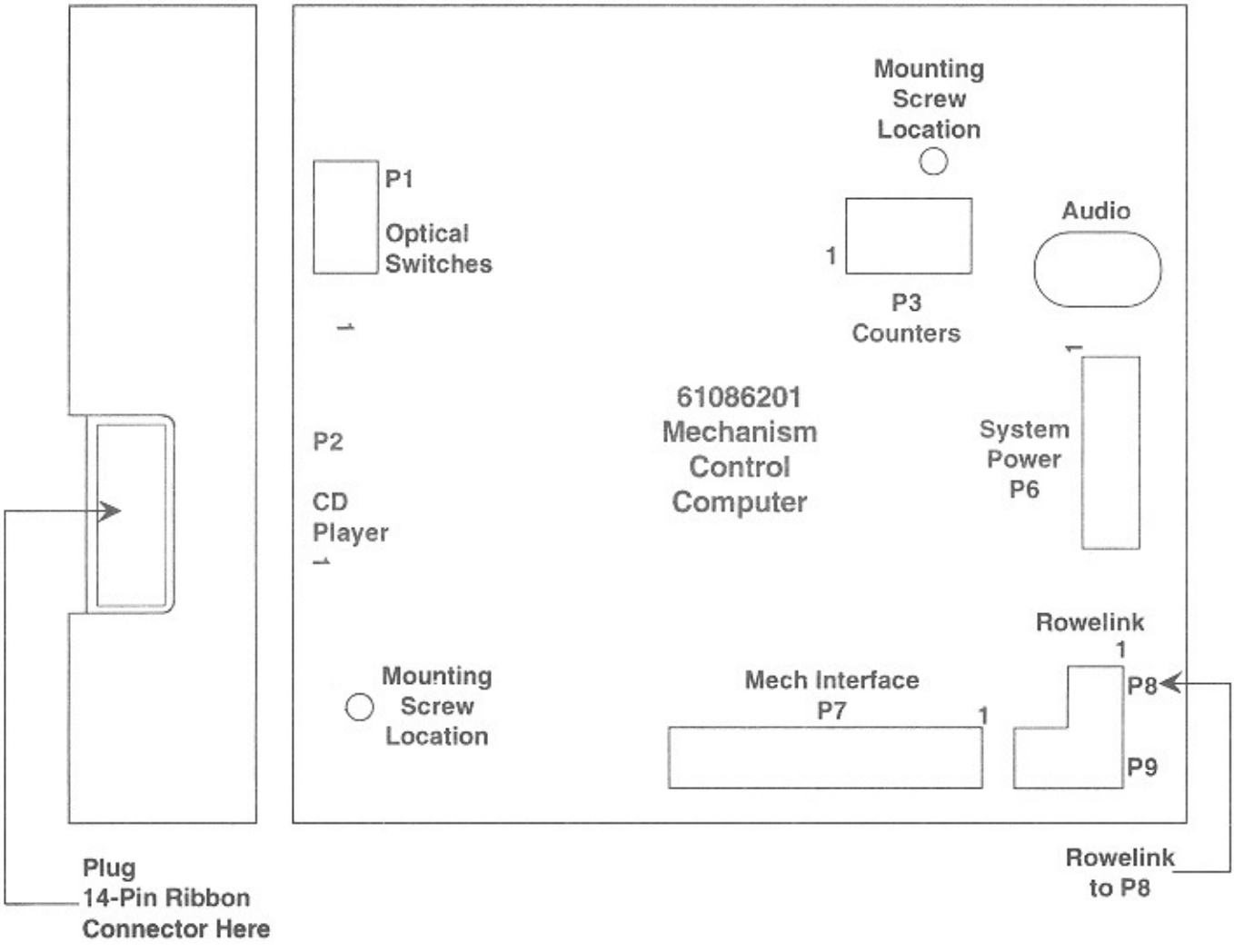



**Figure 6-1. Mechanism Control Connecting Diagram**

## Removing The CD Player

1. Read the following Caution before you remove the CD player:

**CAUTION:**

**The CD mechanism is sensitive to static discharges. The photo diodes and the laser are more sensitive to discharges than MOS IC's. Careless handling may immediately destroy components within the player or cause undetectable damage that will lead to failure after several weeks or even months of use. Before you touch the player, discharge your hands and tools by touching a grounded metal part of the phonograph, such as the amplifier or power supply chassis. If you need to remove the CD player for servicing, place the CD player into the anti-static bag (shipped with the phonograph for this purpose) immediately after you remove it from the phonograph.**

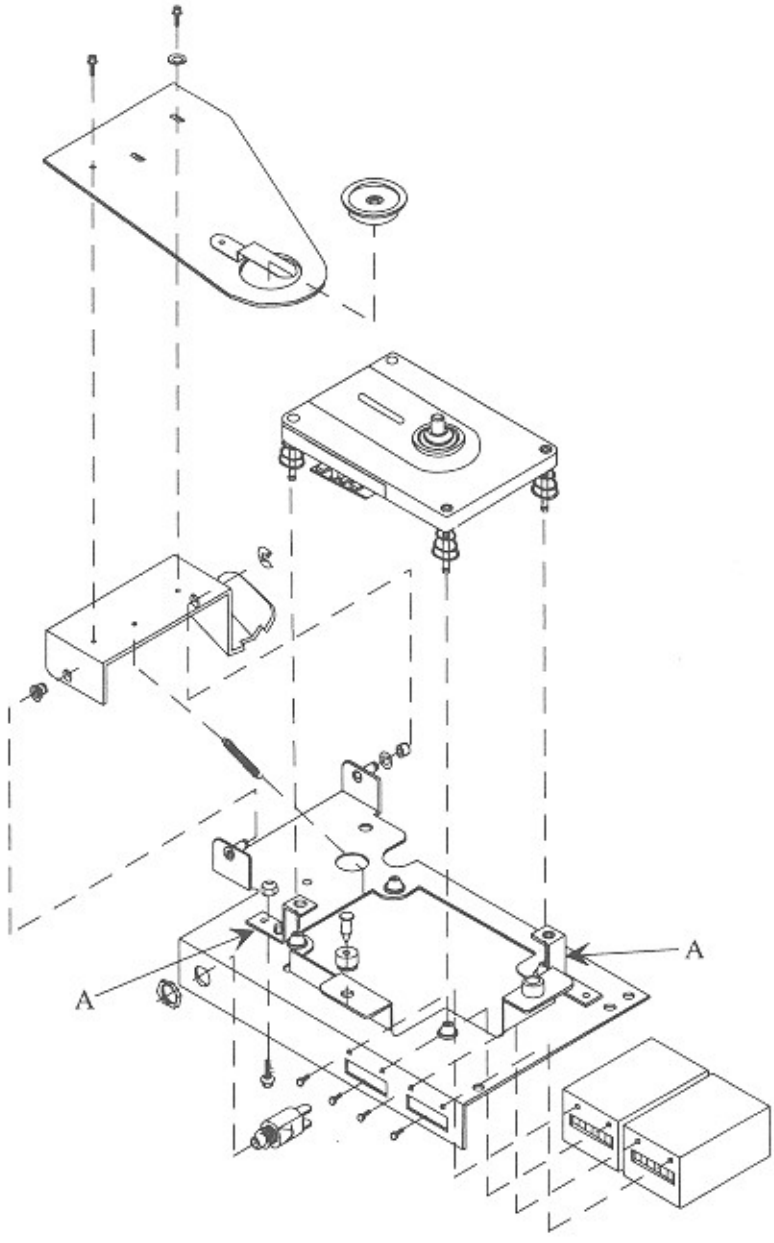



**Figure 6-2. Removing The CD Player**

2. To remove the player, loosen the screws holding the two retaining brackets *(A)* in place, swing the brackets out of the way, and lift the player straight up until the ribbon cable connections are easily accessible. Disconnect the ribbon cable at the three locations on the player. Note that the 4-pin connector with the black stripe on the cable connects at the front of the player.

3. Immediately place the CD player into the anti-static bag (supplied with the phonograph) and return the CD player to your distributor.

4. To replace the CD player, reverse the previous steps. Make sure that the four grommets are in place in the holes in the mounting plate before setting the player springs onto the grommets. When you have properly positioned the CD player, make sure that all grommets are seated and that the CD player sets level in the mechanism frame.

## Hold Down Assembly And Hold Down Plate Height

### SERVICE CHECK

With the gripper bow in the play position and the disc on the turntable (the outer cam switch is actuated), the aluminum hold down plate *(Figure 6-3)* should be 3/32 to 5/32 inch (1/8 ± 1/32) under the flange of the magnetic hold down hub.

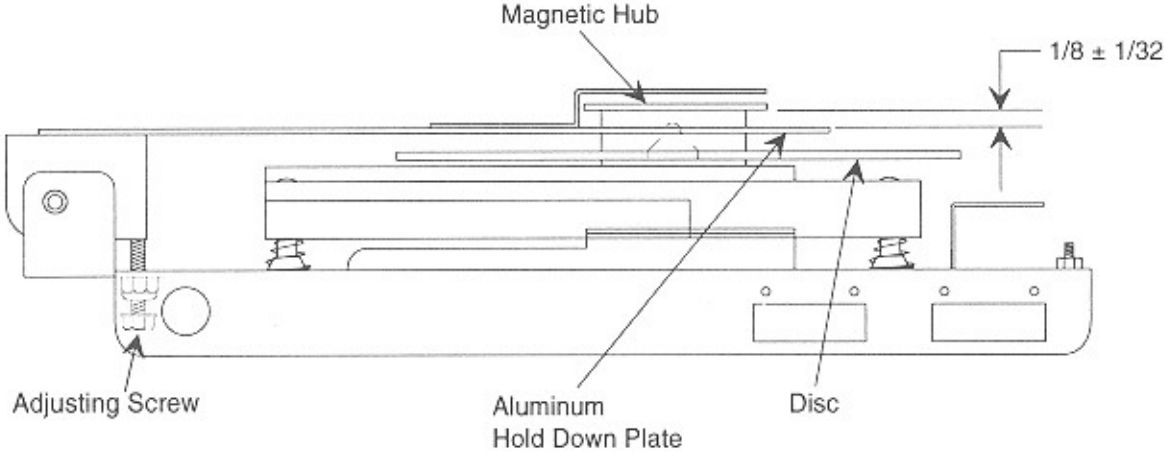



**Figure 6-3. Hold Down Plate**

### ADJUSTMENT

If the hold down plate height is not correct, turn the adjustment screw *(Figure 6-3)* until the 3/32 to 5/32 inch (1/8 ± 1/32) height is attained.

## HOLD DOWN PLATE CENTERING

Refer to *Figure 6-4* for this adjustment.

1. With the gripper bow in the PLAY position and the disc on the turntable, loosen the two centering adjustment screws slightly.
2. Look straight down on the turntable hub and rotate the hold down plate until it is centered around the magnetic hold down hub.
3. Tighten the two centering adjustment screws and recheck the previous adjustments.

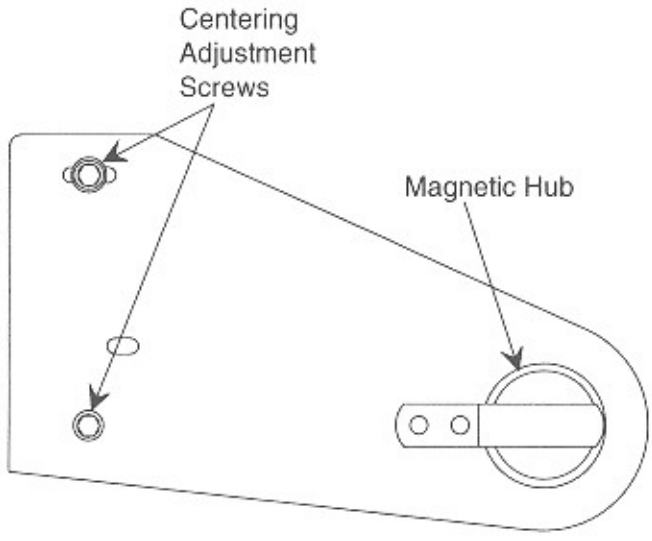



**Figure 6-4. Hold Down Plate Centering**

## Optical Switch Adjustment

1. Push in the detent plunger so the magazine can be rotated to Position 99. Engage the detent plunger.
2. Loosen the optical switch bracket mounting screw, turn the adjustment knob counterclockwise to the top of its travel, and move the bracket down to the bottom of its travel *(Refer to Figure 6-5)*. Snug the optical switch mounting screw so the bracket can move with resistance.
3. With the detent plunger engaged, rotate the magazine counter-clockwise to remove gear backlash and maintain pressure for Steps 4 and 5.
4. Turn the adjustment knob clockwise until both the INDEX and HOME LED's are ON.

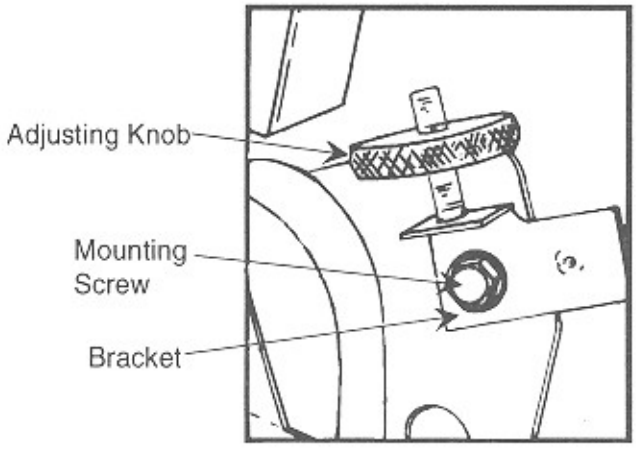



**Figure 6-5. Optical Switch Adjustment**

5. Continue turning the adjustment knob clockwise until the INDEX LED goes OFF. The HOME LED must remain ON. Then turn the knob one full turn clockwise and tighten the mounting screw. The INDEX LED must be OFF and the HOME LED can be ON or OFF.

6. Push in the detent plunger and rotate the magazine to Position 06.

7. With the detent plunger engaged, rotate the magazine in both directions as far as you can by hand (taking up the gear backlash in both directions). The INDEX and HOME LED's will remain OFF when properly adjusted.

8. Push in the detent plunger and rotate the magazine to Positions 56, 07, and 57. Repeat *Step 7* at each position.

## Sprag Assembly

### ADJUSTMENTS

The following steps must be used to make sprag assembly adjustments.

**WARNING:**

**Turn the power OFF before servicing the sprag assembly.**

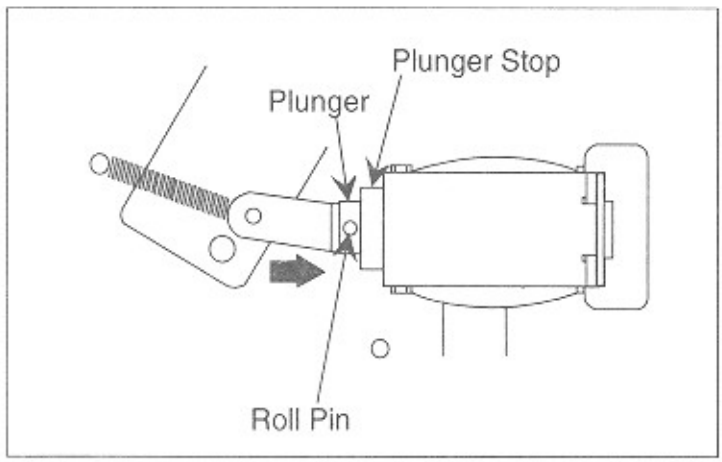



**Figure 6-6. Sprag Assembly (Plunger)**

1. Refer to *Figure 6-6*. Depress the solenoid plunger until the roll pin bottoms on the plunger stop (actuate by pressing on the plunger).

2. Rotate the disc magazine and note the clearance between the sprag lever and the sprag wheel located on the backside of the sprag plate assembly.

   The sprag lever must not touch the sprag wheel and the clearance must be .015 to .025 inches *(See Figure 6-7)*. It will be necessary to remove the sprag assembly if corrections are required.

## SPRAG ASSEMBLY REMOVAL

1. To remove the sprag assembly, disconnect the wires to the solenoid and motor, remove the three mounting screws, and slide the assembly out of the right side of the mechanism *(See Figure 6-8)*.

2. Loosen the solenoid mounting screws*(See Figure 6-9)*. With the roll pin against the plunger stop, position the solenoid so there is a .015 to .025-inch gap between the sprag lever and the highest point on the sprag wheel *(See Figure 6-7)*.

3. Tighten the solenoid mounting screws.

4. Replace the sprag assembly into the mechanism. Reconnect the Black and White/Blue wires to the solenoid and the Yellow and Yellow/Black wires to the magazine motor.

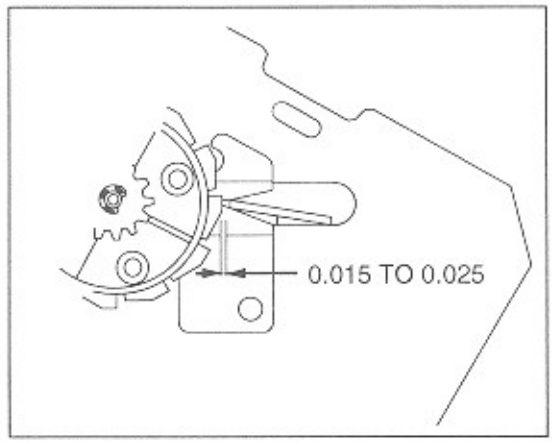



**Figure 6-7. Sprag Wheel**

5. After you have replaced the sprag assembly, perform the *Aligning Magazine Stopping Position with the Gripper Bow* procedure in this section.

6. To adjust the optical switch, refer to *Optical Switch* in this section.

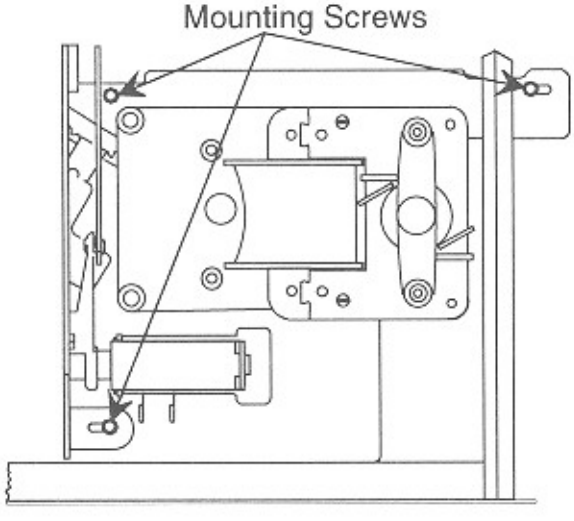



**Figure 6-8. Sprag Assembly Removal**

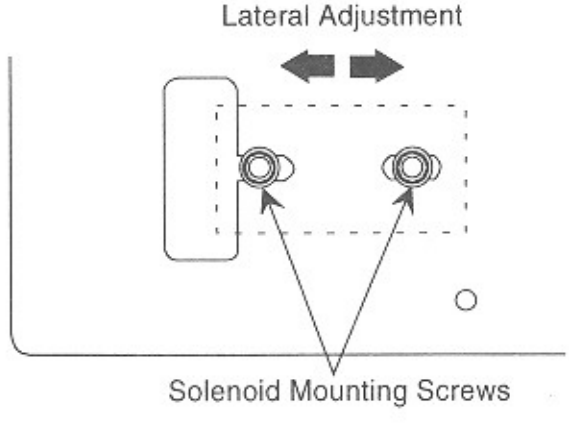



**Figure 6-9. Lateral Adjustment**

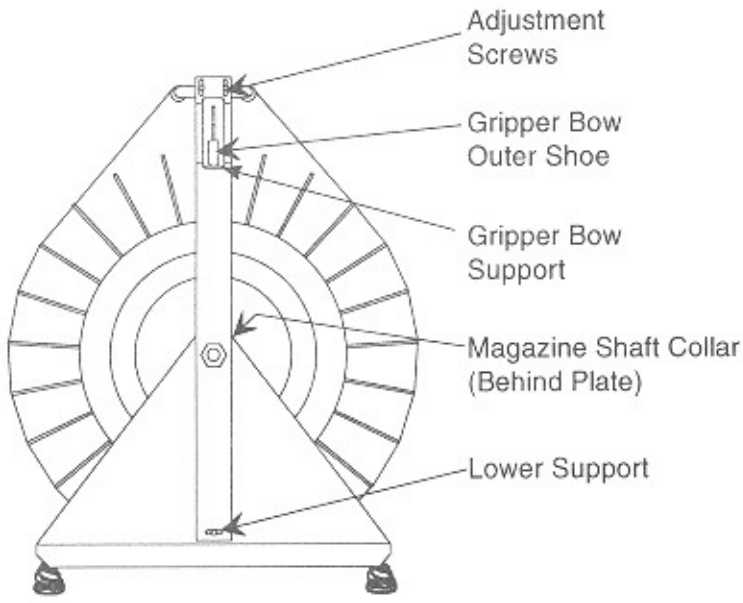



**Figure 6-10. Magazine Belt Adjustment**

## Disc Magazine And Gripper Bow Support

See *Figure 6-10* for this adjustment.

### ADJUSTMENT

To eliminate magazine end play and to adjust the gripper bow support:

1. Loosen the set screws in rear magazine shaft collar. Push the collar onto the magazine shaft to eliminate end play. Tighten the set screws.
2. Loosen the lower screw that holds the gripper bow support to the mechanism frame.
3. Adjust the gripper bow support so the gripper bow outer shoe is centered in the opening.
4. Tighten the support to the frame with the lower screw.

## Magazine Belt Adjustment

1. Loosen the two adjustment screws shown in *Figure 6-10*.
2. Raise the bracket to tighten the belt around the magazine.
3. Check that the belt rides evenly in the center of the belt guides, all the way around the magazine.
4. Tighten the two adjustment screws.

## Cam Switch

### ADJUSTMENTS

If it is necessary to remove the switch cam from the transfer motor, the following procedure must be followed to ensure that the cam is properly located and not 180 degrees out of position.

Position the inner lobe so it is pointing in the same direction as the crank. Turn the cam so that neither cam lobe is on a switch before removing or installing the cam *(See Figure 6-11)*.

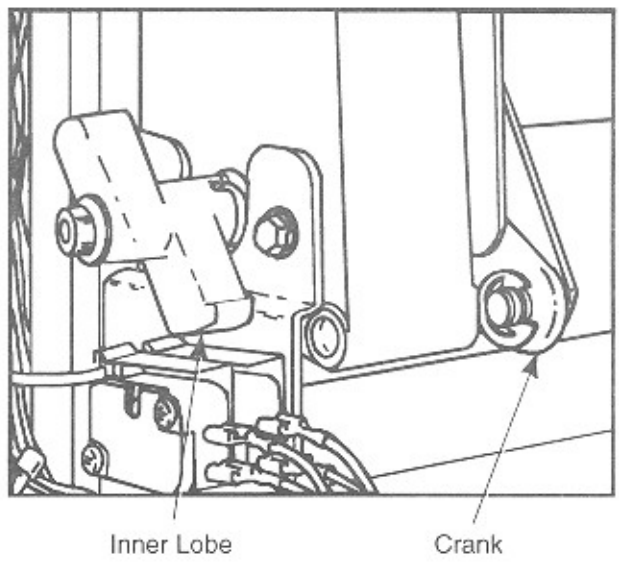



**Figure 6-11. Cam Switch**

### CAM SWITCH CHECK AND ADJUSTMENT

1. Check that the leaf spring is resting in the cam lobes and that the switch plunger just touches the bottom of the leaf spring as shown in *Figure 6-12*.

2. To adjust the switches, loosen the mounting screw under the plunger end and move the switch housing as described in the previous step *(See Figure 6-12)*.

3. Tighten the mounting screw and recheck operation.

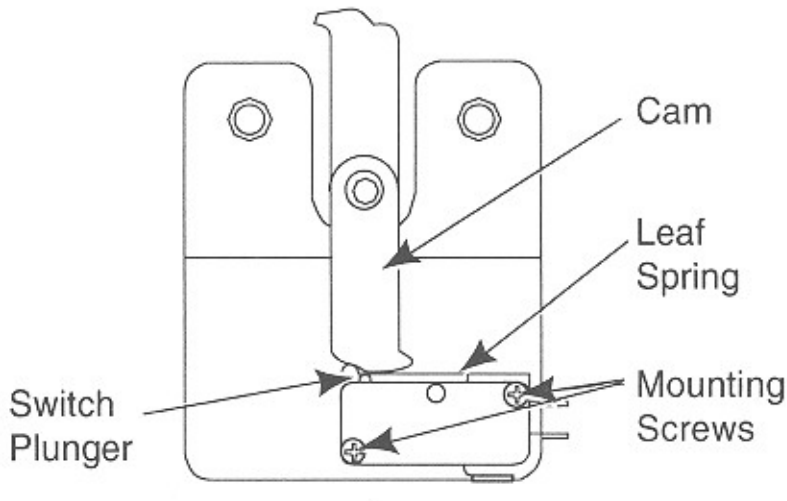



**Figure 6-12. Cam Switch Adjustment**

## Aligning Magazine Stopping Position with the Gripper Bow

1. Place a disc in any position in the disc magazine and rotate the magazine until this disc is in the top position. Allow the magazine sprag lever to engage and lock the magazine in this position.

2. Using a 5/32-inch Allen wrench in the end of transfer motor shaft, turn the motor shaft clockwise until the gripper bow starts to lift the disc out of the magazine *(See Figure 6-13).*

3. With the disc and gripper bow in this position, rock the magazine to the left and right to make sure the magazine vertical slot is centered relative to the edge of the disc.

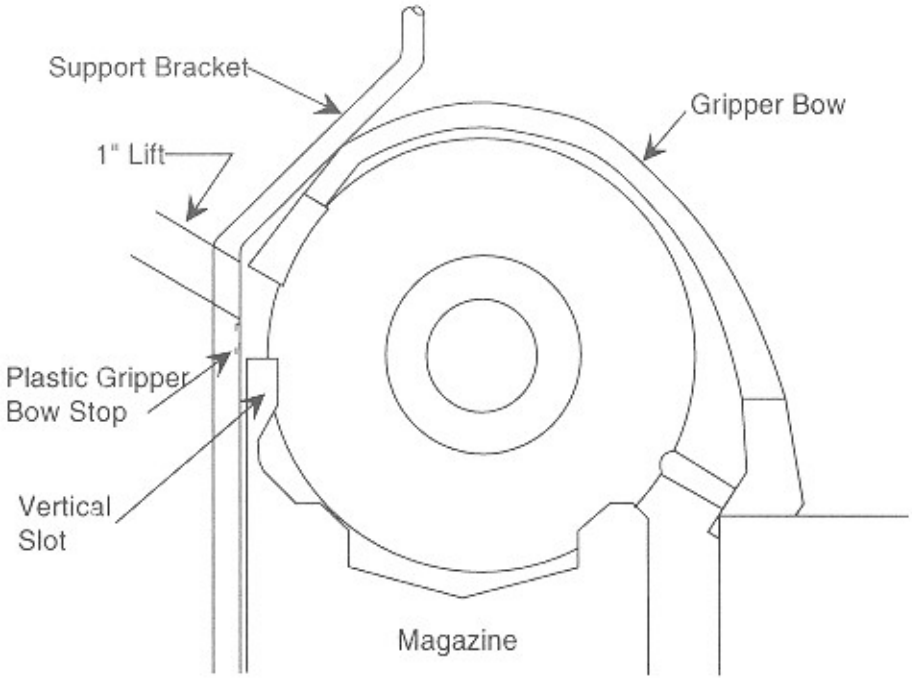



**Figure 6-13. Magazine and Gripper Bow Stopping Position**

## IF ADJUSTMENT IS NECESSARY:

4. Loosen the three adjustment screws in the magazine motor mounting plate.

5. With the sprag wheel locked, move the magazine until the disc is centered in the magazine vertical slot. The adjustment screws will be approximately centered in the slots. *See Figure 6-14.*

6. Tighten the three screws in the magazine motor mounting plate securely.

7. Perform the *Optical Switch Adjustment* described earlier in this section.

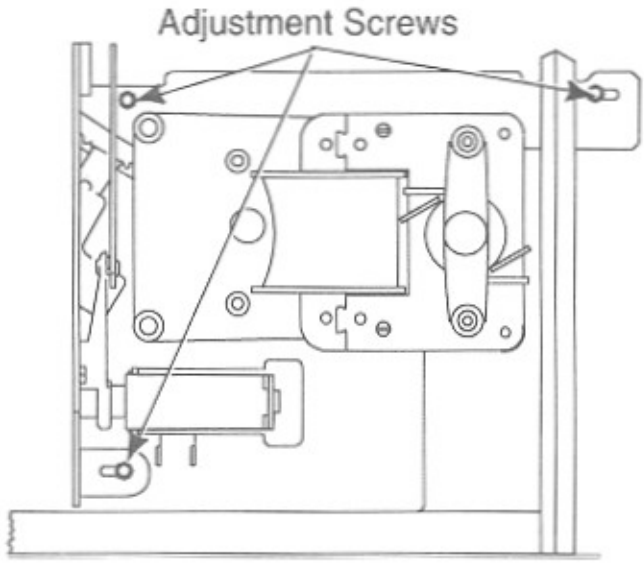



**Figure 6-14. Magazine Adjustment**

## Title Page Assembly Adjustments

**WARNING:**

**Do not attempt to turn the CD title pages by hand. If the title page assembly is unplugged or not operating electronically, use the title page knob on the drive shaft of the assembly to turn the pages. (*See Figure 6-15*).**

### REMOVING THE TITLE PAGE ASSEMBLY FROM THE PHONOGRAPH

Open the top door. If not done previously, remove the two shipping screws (#8 x 5/8" wood screws, threaded into the back wall of the phonograph) located at the bottom of the title page assembly mounting brackets. See *Figure 6-15*. Unplug the title page assembly, release the latch at the upper left side, then lift and pull the assembly out of the phonograph.

### SWITCHES

There are no switch in the title page assembly. Switch operation can be checked by manually turning the pages with the title page knob. When the last moving page has turned on each end of the rack the home switch should be actuated. (NOTE: The front page - titles 06 through 11 - never moves.) The index switch should actuate in the time between page turnings. In case of damage, check as above and make any corrections by bending the switch bracket. See *Figure 6-16*.

### PAGE REMOVAL

Unlike previous CD-100 jukeboxes, the individual title pages can be removed from the title page assembly without disassembly of the entire assembly. This greatly simplifies any major work on the title page assembly, as the pages can first be removed, then replaced as the last step. To remove any number of pages, the page being removed must be in a flat position (up or down). Grasp the center and flex out until the end pins disengage the pivot holes. Replace a page by positioning the pins on one end of the page in the rack and flexing the page until the pins on the other end can be seated in the pivot holes.

**WARNING:**

**After installing a page as described above, the pages in the center of the rack must be snapped into the center pivot guide. Failure to do so will result in jammed pages. See *Figure 6-15.***

### ASSEMBLY AND TIMING CHECK

To check for proper alignment of the drive system, place the title page assembly on end with the motor end up, and perform the following steps.

1. Turn the title page knob to flip all the pages to the forward position. This will drive the carriage in the opposite direction. See *Figure 6-16*.

2. Remove the light block and the slide cover.

3. Under the slide cover, remove the plastic slide trap and forked-end page drive link, noting their relative positions for reassembly. With these part removed the assembly should be as shown in *Figure 6-17*.

4. If alignment is correct, reassemble drive link, slide trap, slide cover, and light block, ***without changing motor shaft position.***

5. Turn the title page assembly over and perform the same check on the opposite end, making sure the crank pin is in the down position and the crank is close to touching the cutout. If either or both ends do not appear as shown in *Figure 6-17*, proceed to the next step.

## ALIGNMENT

If the timing check indicates misalignment, perform the following steps. After removing the slide cover, light block, slide trap, and drive link.

1. Using a $^{11}/_{32}$" nut driver, remove the #8-32 nut that holds the crank in place and pop the crank off by using a screwdriver or the open jaws of a pair of needle nose pliers. Position all parts as shown in *Figure 6-18*. The holes in the white reduction gear and the motor bracket and the slot in the endplate should be in line. To verify this, use a 1/8" diameter pin and slide it through the opening. Reinstall the crank with the arm facing the reduction gear pin. **NOTE: The roll-pin should be vertical.** All the pins (drive shaft, crank pin, and reduction gear pin) should be in a straight line.

2. Check for broken teeth on gear rack, white gear and crank gear.

3. After making any necessary alignments, reinstall the crank with the pin down as shown in *Figure 6-17*.

4. Replace the $^{11}/_{32}$" nut. The crank should drop over the roll-pin. Then replace the drive link, slide trap, slide cover, and light block.

5. ***Without changing motor position,*** make the same adjustments on the opposite end of the title page assembly (the carriage will be in the opposite end).

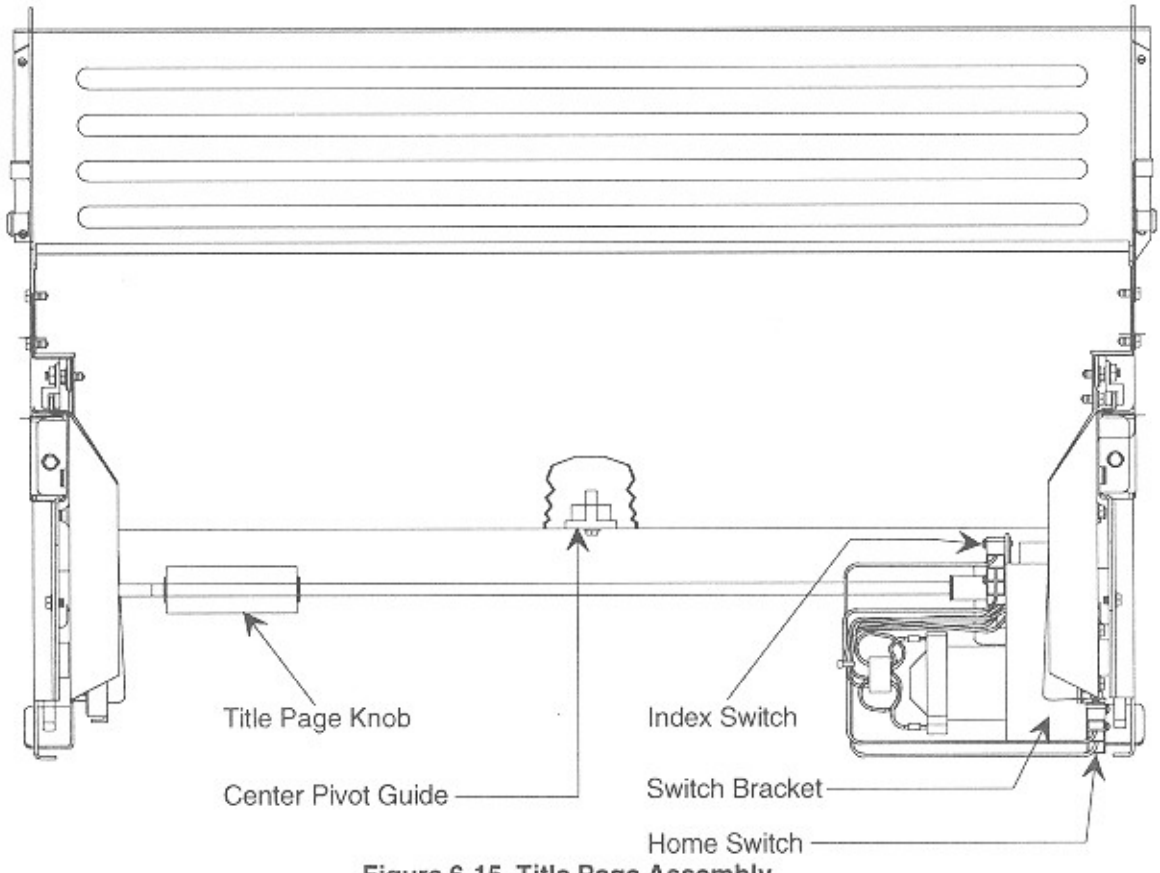



**Figure 6-15. Title Page Assembly**

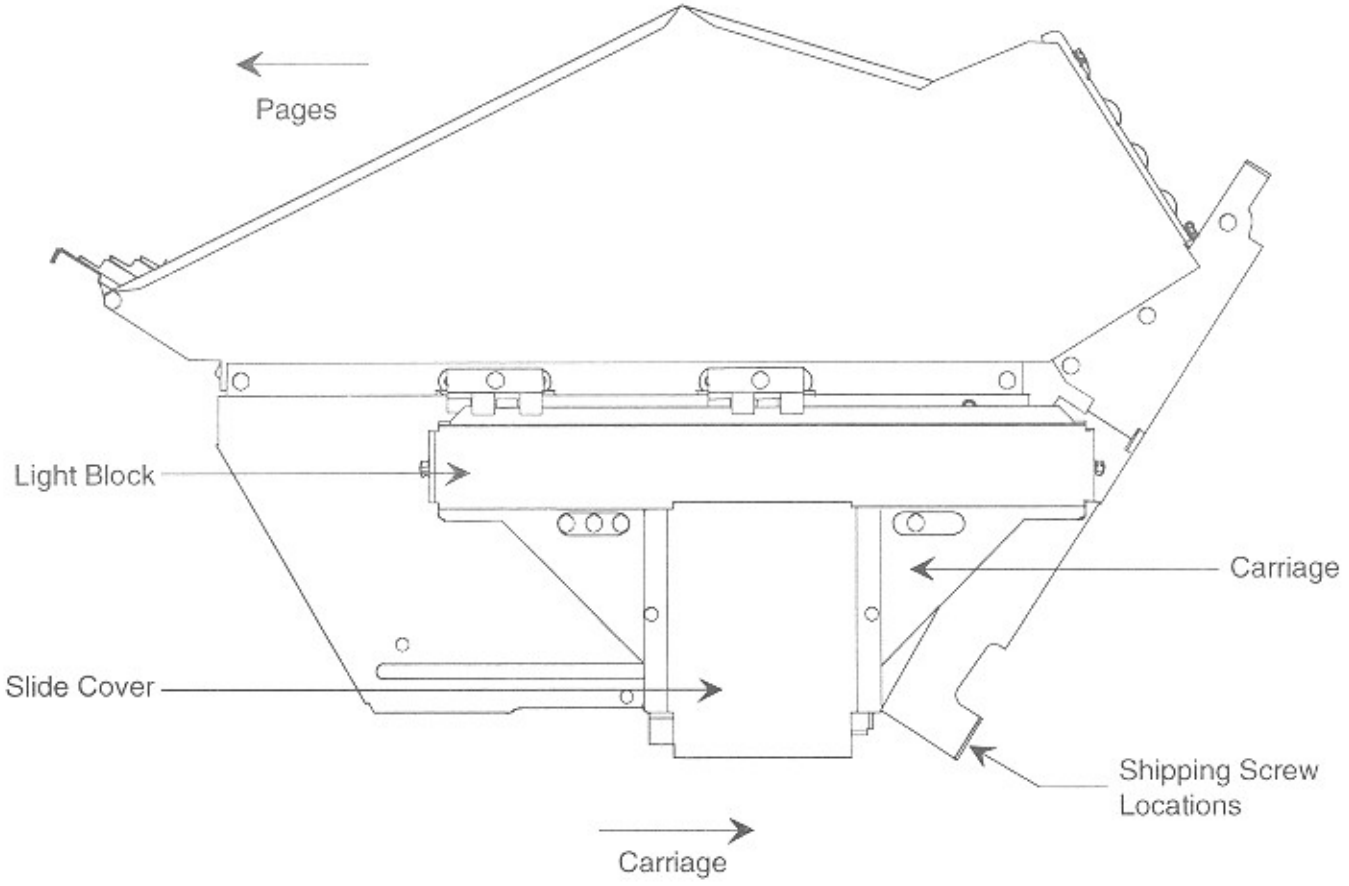



**Figure 6-16. Title Page Assembly - Motor End**

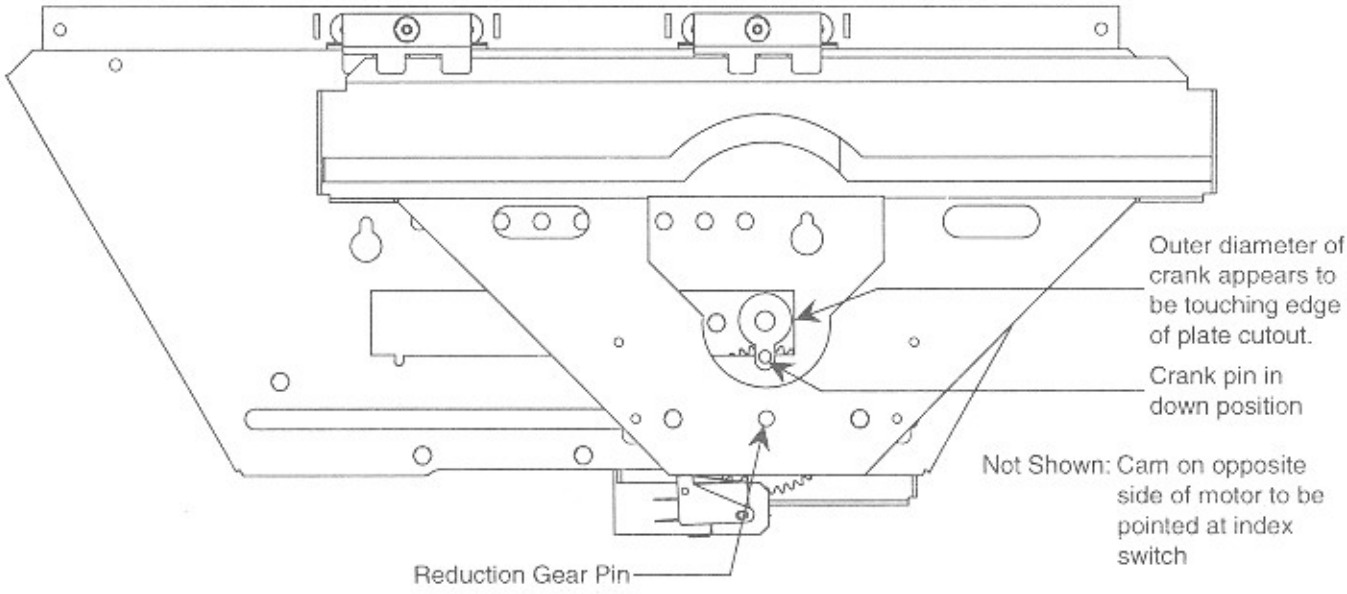



**Figure 6-17. Title Page Assembly - Motor End**

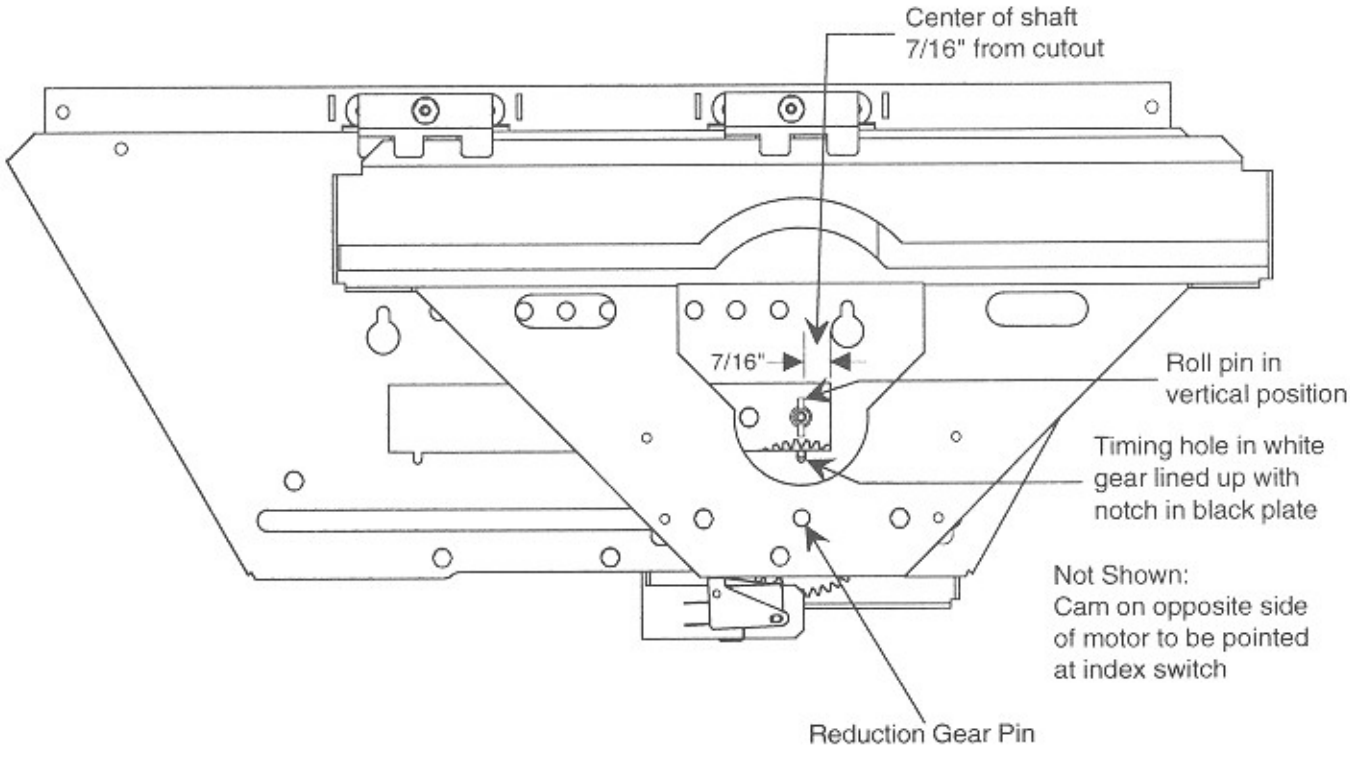



**Figure 6-18. Title Page Assembly - Motor End**

## DOOR SPRING REPLACEMENT

1. Open the top door.

2. While another person keeps the door open, find the appropriate style spring end fitting (See *Figure 6-17*) and follow the instructions below.

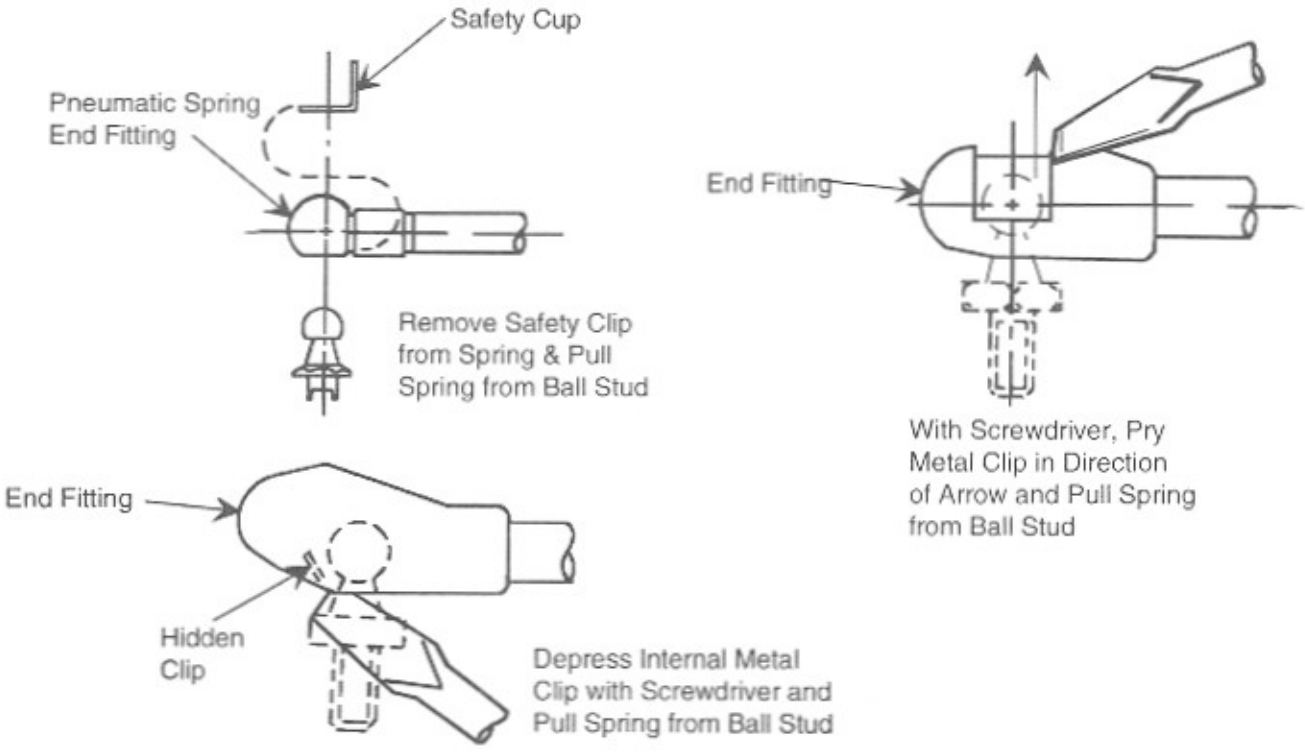



**Figure 6-19. Door Spring Fittings**

# GLASS REPLACEMENT

**WARNING:**

**The top door glass can break or fall on you if you do not follow the recommended removal procedure. For your safety, Rowe does not recommend that you replace the top door glass while the door is on the phonograph. The proper procedure requires two people to remove the top door safely.**

Refer to *Figure 6-20* on the next page as you follow the steps below.

1. Unplug the power to the phonograph.
2. Open the cabinet door and remove the title rack.
3. Unplug the low voltage harness at the connector on the upper left side of the phonograph and the 110V harness on the upper right side. Unplug the harness from the keyboard display (two connectors). Disconnect the harness from the cable clamps on the top door. Remove any ground wires that extend from the cabinet to the door.
4. Remove all of the top door hinge screws **except** for one screw and one nut at each end of the hinge.
5. With your helper holding the top door open, disconnect the door springs (*See Figure 6-19 on the previous page*).
6. Remove the two remaining top door hinge screws and nuts while your helper continues to hold the door open.
7. Carefully lift the top door off the phonograph and set it on a clean smooth working surface, with the outside of the door facing down.
8. Remove all of the screws from the trim on the right and left side of the glass. The two trim pieces clamp the glass to the door.
9. Remove the keyboard/display latch mechanism.
10. Lift the door far enough to slide the trim out.
11. Protect your hands by wearing gloves and remove any remaining broken glass from the door. Use a brush or vacuum if necessary to remove smaller pieces of glass.
12. Note that on the top and bottom the door glass was setting on a "lip."
13. Lift the door far enough to slide the new glass underneath, into and through the opening far enough to clear the lower lip. Continue holding the door up and slide the glass back until it is setting on the lower lip.
14. Re-install the trim and all other hardware removed in steps 8 and 9.
15. Lift the door back onto the phonograph and attach all screws and nuts removed in steps 4 and 6. Be sure the door is centered before tightening the screws.
16. While your helper holds the door, reconnect the door springs and make sure the springs are properly supporting the door.
17. Reconnect the harnesses and the ground wires removed in Step 3.
18. Reinstall the title rack and reconnect the harness.
19. Plug in the phonograph and play a selection. Make sure the title rack pages turn and all lights are on.
20. Check the clearance between the top door and the CBA and slide the CBA out if necessary.

# Section 7: Miscellaneous

## CD-100F SPECIFICATIONS

### General

Depth ..... 26 1/2 in.
Width ..... 35 in.
Height ..... 57 5/32 in.

**Power Requirements** ..... 120 VAC 60 Hz.,
670 watts 6.4 amps.

220 VAC 50 Hz.,
700 watts 3.9 amps.

240 VAC 50 Hz.,
70 watts 3.6 amps.

### CD Player And Changer

Title Rack Capacity ..... 104 CD jackets and title strips
Capacity ..... 100 Digital discs
Disc Size ..... 5-inch or 3-inch

### Credit And Pricing System

Accumulator Type Credit System ..... $1 & $5 bills
$1 & half-dollar
Coins are optional

Coins Accepted ..... Quarters
Nickels and Dimes Optional

**TOTAL CREDIT ACCUMULATIONS** ..... 65535

**PRICING** ..... See Pricing, Section 2

## Sound System

### CD PLAYER

Type ..... Philips Industrial CDM-12
Frequency Response ..... 20 to 20,000 Hz.
Channel Separation ..... 90 db @ 1,000 Hz.
Output ..... 1 V (approx. depending on the disc)

### POWER AMPLIFIER

250 Watt Stereo
FTC Rating, 3 Ohm Loads @ .5% THD ..... 250 watts RMS
FTC Rating, 70 V Lines @ .5% THD ..... 126 watts RMS

### PREAMPLIFIER

AVC Control Range ..... 40 db
Tone control is accomplished through a 7 band equalizer (10 db/filter band)

**SELECTION SYSTEM CAPACITY** ..... 100 discs with 99 maximum selections per disc

## TRANSFORMER PACKAGE

Power Levels For Speakers ..... 1, 4, 16, 28, 64, 114 watts
(Provides low-voltage and 70-volt line for extension speakers)

**SYSTEM FREQUENCY RESPONSE** ..... 20 to 20,000 ±4 db

### SPEAKER SYSTEM

| | Woofer | Midrange | High Frequency |
|---|---|---|---|
| **Speaker Diameter** | 12 in. | 6 in. | 3 in. |
| **Voice Coil Diameter** | 1.5 in. | 1 in. | N/A |
| **Impedance** | 8 Ohms | 8 Ohms | 8 Ohms |

## DOOR LIGHTING

| Type | Specs |
|---|---|
| Fluorescent | 8 watt, 12 in. |
| Fluorescent | 18 watt, 30 in. |
| Fluorescent | 30 watt, 36 in. |
| Incandescent | Type 73, 1 watt, 14 volt |
| Incandescent | 40 watt, 120 volt |

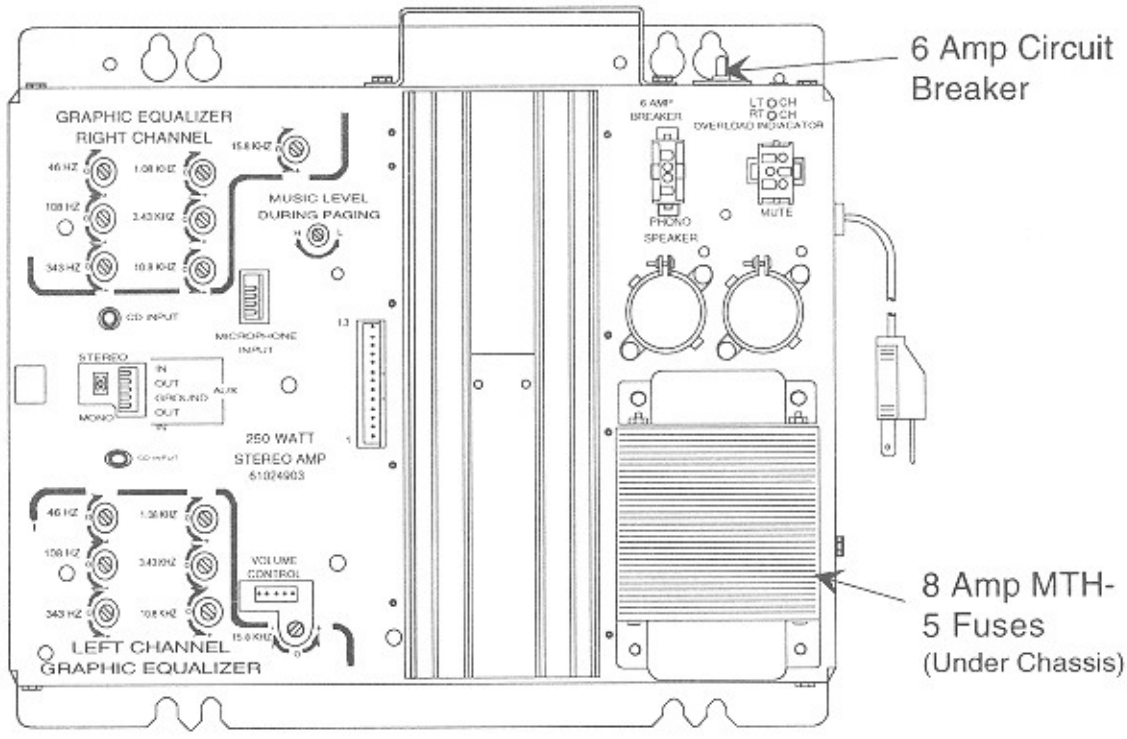
## FUSES AND CIRCUIT BREAKERS

### Main Power Supply

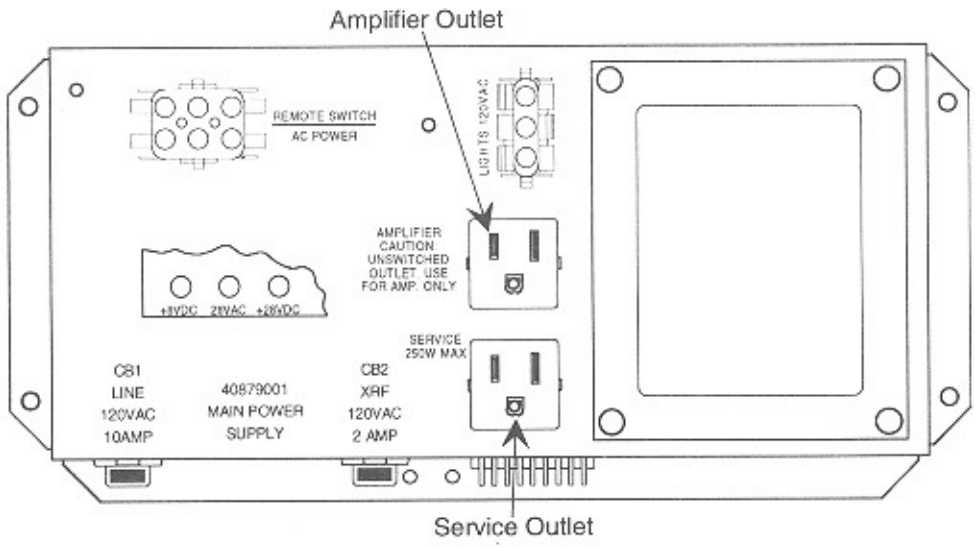
120 VAC (Transformer Primary Only) ..... 2 amp Circuit breaker
120 VAC ..... 10 amp Circuit breaker
+28 VDC ..... 8 amp fuse
+9 VDC ..... 8 amp fuse

### Amplifier

120 VAC ..... 6 amp Circuit breaker
40 VDC ..... 8 amp Fuse (4)

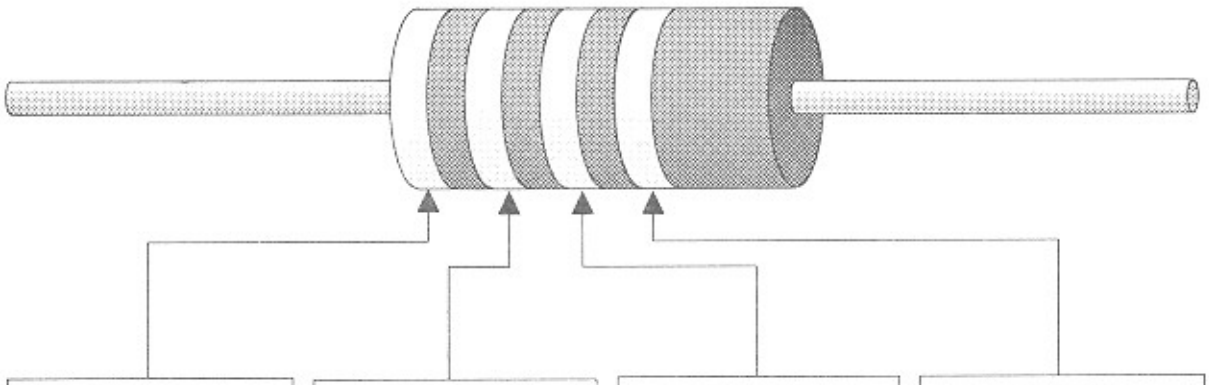



**250 WATT AMPLIFIER**




**MAIN POWER SUPPLY**

**Figure 7-1. Fuse and Circuit Breaker Locations**



| First Band 1st Digit | |
|---|---|
| Color | Digit |
| Black | 0 |
| Brown | 1 |
| Red | 2 |
| Orange | 3 |
| Yellow | 4 |
| Green | 5 |
| Blue | 6 |
| Violet | 7 |
| Gray | 8 |
| White | 9 |

| Second Band 2nd Digit | |
|---|---|
| Color | Digit |
| Black | 0 |
| Brown | 1 |
| Red | 2 |
| Orange | 3 |
| Yellow | 4 |
| Green | 5 |
| Blue | 6 |
| Violet | 7 |
| Gray | 8 |
| White | 9 |

| Third Band Multiplier | |
|---|---|
| Color | Multiplier |
| Black | 1 |
| Brown | 10 |
| Red | 100 |
| Orange | 1,000 |
| Yellow | 10,000 |
| Green | 100,000 |
| Blue | 1,000,000 |
| Silver | 0.01 |
| Gold | 0.1 |

| Fourth Band Resistance Tolerance | |
|---|---|
| Color | Tolerance |
| Silver | ±10% |
| Gold | ± 5% |
| No Band | ±20% |

**Figure 7-2. Resistor Color Code**

**Example:** You have a resistor with the colors Yellow, Violet, Red, and Gold on it. Place the resistor in front of you so that the end of the resistor with no colored bands is on your right. Now, use the color code chart to decode the colors: the Yellow band=4, the Violet band=7, the Red band means multiply by 100. So the resistor value is 47 x 100, or 4700 ohms. The Gold band indicates that the resistor can be 5% over or 5% under the 4700 value and still be considered to be the proper value.

## NOTE:

**Testing a resistor while both ends of the resistor are connected to the circuit can give a false LOW reading. If the resistor value is critical, disconnect one end of the resistor from the circuit and use an accurate digital VOM.**

# Section 8: Parts Catalog

| COUNTRY 1st & 2nd DIGIT | | |
|---|---|---|
| 01 = US | = | 6-10961-01 |
| 02 = Arg | = | 6-10961-02 |
| 03 = Australia | = | 6-10961-03 |
| 04 = Aus | = | 6-10961-04 |
| 05 = Bah | = | 6-10961-05 |
| 06 = Beig | = | 6-10961-06 |
| 07 = Canada | = | 6-10961-07 |
| 08 = Chile | = | 6-10961-08 |
| 09 = Col | = | 6-10961-09 |
| 10 = Costa R | = | 6-10961-10 |
| 11 = Neut. Stk | = | 6-10961-11 |
| 12 = Denmark | = | 6-10961-12 |
| 13 = Equador | = | 6-10961-13 |
| 14 = El Salv | = | 6-10961-14 |
| 15 = England | = | 6-10961-15 |
| 16 = Finland | = | 6-10961-16 |
| 17 = France | = | 6-10961-17 |
| 18 = Germany | = | 6-10961-18 |
| 19 = | | |
| 20 = Guat | = | 6-10961-20 |
| 21 = Holland | = | 6-10961-21 |
| 22 = Hon | = | 6-10961-22 |
| 23 = Italy | = | 6-10961-23 |
| 24 = Belize | = | 6-10961-24 |
| 25 = Japan | = | 6-10961-25 |
| 26 = Mexico | = | 6-10961-26 |
| 27 = Nic | = | 6-10961-27 |
| 28 = Norway | = | 6-10961-28 |
| 29 = Aruba | = | 6-10961-29 |
| 30 = Panama | = | 6-10961-30 |
| 31 = Curaco | = | 6-10961-31 |
| 32 = Spain | = | 6-10961-32 |
| 33 = Sweden | = | 6-10961-33 |
| 34 = Swiss Fr | = | 6-10961-34 |
| 35 = Swiss Ge | = | 6-10961-35 |
| 36 = Swiss It | = | 6-10961-36 |
| 37 = Trinidad | = | 6-10961-37 |
| 38 = Eng Video | = | 6-10961-38 |
| 39 = Venez | = | 6-10961-39 |
| 40 = Zambia | = | 6-10961-40 |
| 41 = Puerto R | = | 6-10961-41 |
| 42 = Guyana | = | 6-10961-42 |
| 43 = Brazil | = | 6-10961-43 |
| 44 = Barbados | = | 6-10961-44 |
| 45 = Surinam | = | 6-10961-45 |
| 46 = Yugo | = | 6-10961-46 |
| 47 = S. Africa | = | 6-10961-47 |
| 48 = US (220V) | = | 6-10961-48 |
| 49 = US (240V) | = | 6-10961-49 |
| 50 = Singapore | = | 6-10961-50 |
| 51 = Israel | = | 6-10961-51 |
| 52 = Korea | = | 6-10961-52 |
| 53 = Greece | = | 6-10961-53 |
| 54 = Portugal | = | 6-10961-54 |
| 55 = Hungary | = | 6-10961-55 |

| PACK 3rd DIGIT |
|---|
| 1 = DomPack = 2-21020-01 |

| EAGLE SUB-ASSEMBLY 4th & 5th & 6th DIGIT |
|---|
| 800 = Gold (60 HZ) = 6-10960-01 |
| 801 = Gold (50 HZ) = 6-10960-02 |
| 802 = Red (60 HZ) = 6-10960-03 |
| 803 = Red (50 HZ) = 6-10960-04 |

| AMPLIFIER 7th DIGIT |
|---|
| 0 = None |
| 1 = |
| 2 = |
| 3 = 3-06322-09 Remote Volume Control Assy. |
| 4 = |
| 5 = |
| 6 = 250W Amp. 6-10249-03 |
| 7 = 250W Amp 6-10249-03 with 3-06322-09 Remote Volume Control |

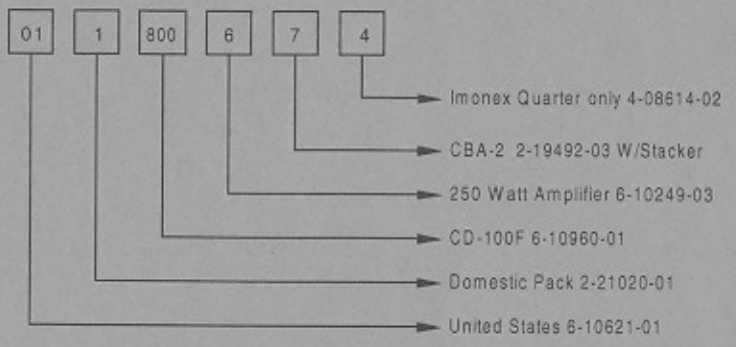
| BILL ACCEPTOR 8th DIGIT |
|---|
| 0 = None |
| 1 = 2-19801-02 RBA (Mexico) |
| 2 = 2-19801-03 RBA (Argentina) |
| 3 = |
| 4 = |
| 5 = |
| 6 = |
| 7 = CBA-2 2-19492-03 W/Stacker (45) |

| COIN ACCEPTOR 9th DIGIT | | |
|---|---|---|
| 0 = None* | | |
| 1 = | | |
| 2 = | | |
| 3 = | | |
| 4 = 25 4 Imonex 3 1/2 inch | = | 3-09831-01* |
| 5 = Kit-Coin Comparator (CC-40) | = | 2-21063-01 |
| 6 = Kit-Slug Rej. (Mars 330 3 1/2 in.) | = | 2-19944-07 |
| 7 = Kit-Slug Rej. (Coin Controls C120 3 1/2 in.) | = | 2-19944-08 |
| 8 = Kit-Slug Rej. (Microcoin 55 3 1/2 in.) | = | 2-19944-09 |

*Requires 2-19902-02

| SUB-ASSEMBLY CATEGORY |
|---|
| 800-849 CD-100F |

SAMPLE:




## CD-100F Codes

# INTRODUCTION

This parts catalog lists replacement parts for the phonograph. The purpose of this parts catalog is to locate and identify replaceable components and supply information on how to order them.

## Catalog Description

This catalog is divided into major sections labeled with figure numbers, which correspond to the illustrations used. Some assemblies require more than one illustration to identify the parts. Each page has a sheet number to identify the sheet as part of that assembly's parts list.

Replacing parts that are welded or riveted onto an assembly is normally impractical. Therefore, replacement parts are not listed for these items. The assembly containing the welded or riveted part should be replaced.

## Parts List Description

The parts list contains four columns:

- **Figure, Sheet, and Index Number** — The first entry in this column is the figure number of the corresponding illustration. An index number, when listed, corresponds to the index number appearing on the illustration. Index numbers are not used when items are listed for reference purposes only or when the item listed is an alternate part.
- **Rowe Part Number** — This column lists the part number to use when ordering replacement parts or making inquiries.
- **Description** — This column gives a word description of each part or assembly. Each item is indented to show its relationship to the next higher assembly.
- **Qty.** — This column contains the part quantity used in the assembly. When a figure describes more than one model of an assembly, the "Qty" column is divided to show each model.

## Ordering Replacement Parts

All replacement parts must be ordered directly from an authorized Rowe Distributor.

Once the replacement item has been determined, complete a Standard Parts Order Form (available from your Rowe Distributor at no charge). Very often parts orders are delayed because of inadequate or incomplete parts order forms. To enable prompt delivery, always specify the following information:

- Part Number and Description (indicate color, if applicable)
- Quantity required
- Machine Model and Serial Number
- Complete shipping address, including the ZIP code
- Shipping Instructions must be supplied. If the shipping method is Parcel Post, Air Parcel Post, United Parcel Service, or Air UPS, and the packages may exceed the size and weight limits of these services, indicate an alternate shipping method.

If the shipment must be delivered as fast as possible, specify "Fastest Way". Rowe will select the carrier for orders that justify shipment by truck.

## Figure 8-1. CD-100F Phonograph External View

Sheet 1

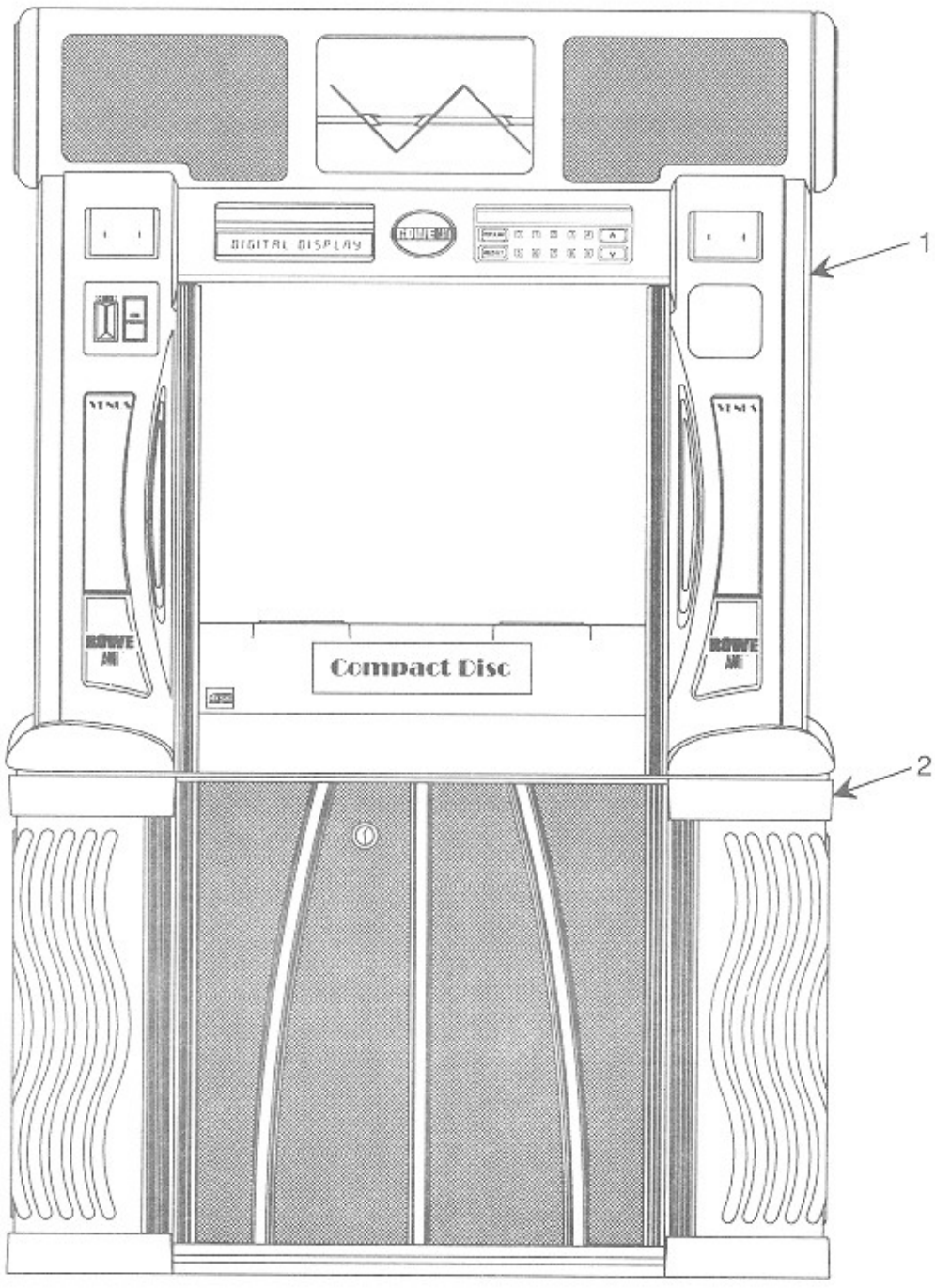



Figure 8-1. CD-100F Phonograph External View

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| 1 | 61098901/02 | Top Door Assembly *(See Figure 8-2)* | 1 |
| 2 | 61098501/04 | Front Door Assembly *(See Figure 8-3)* | 1 |

## Figure 8-1. CD-100F Phonograph External View
Sheet 2

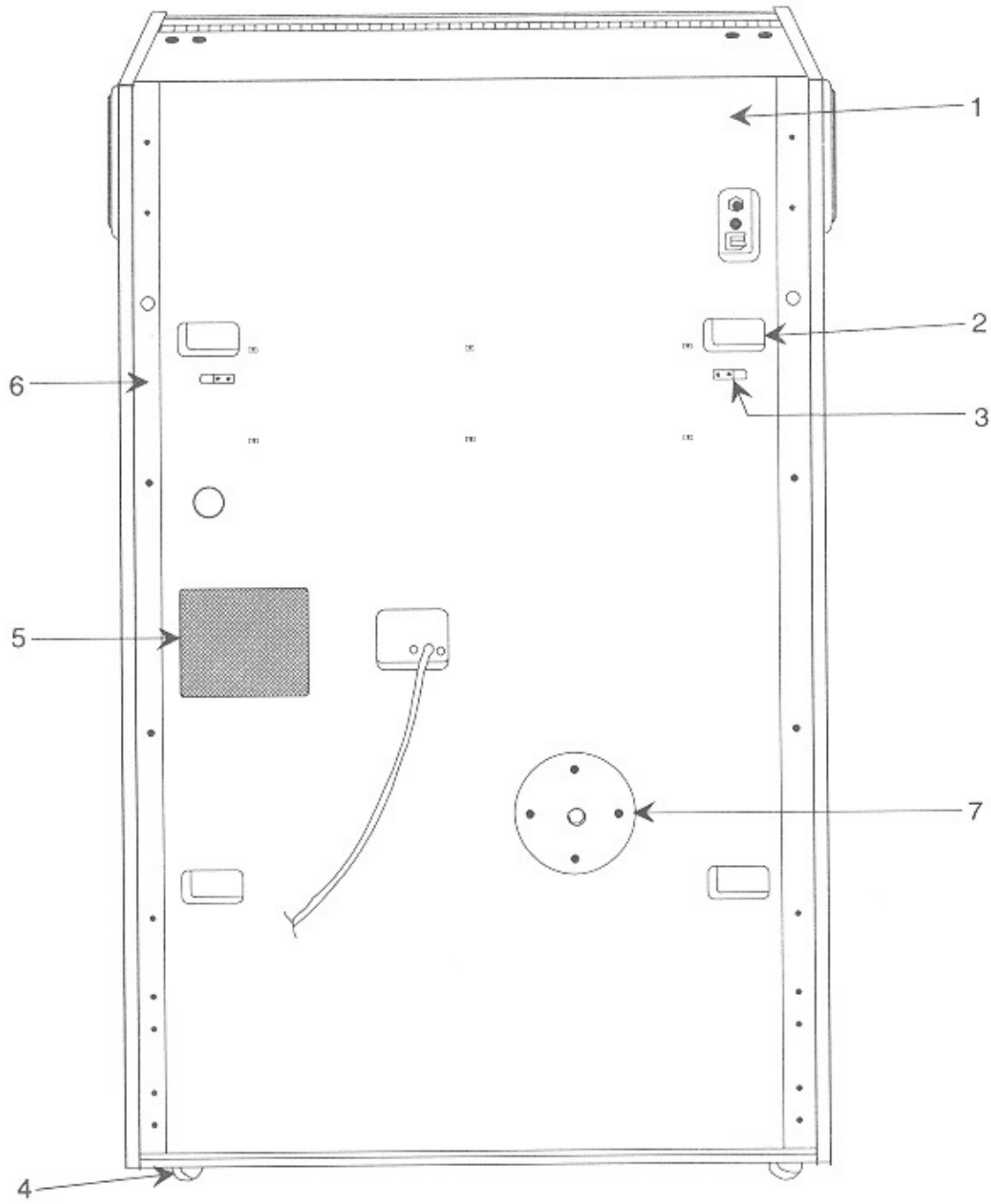
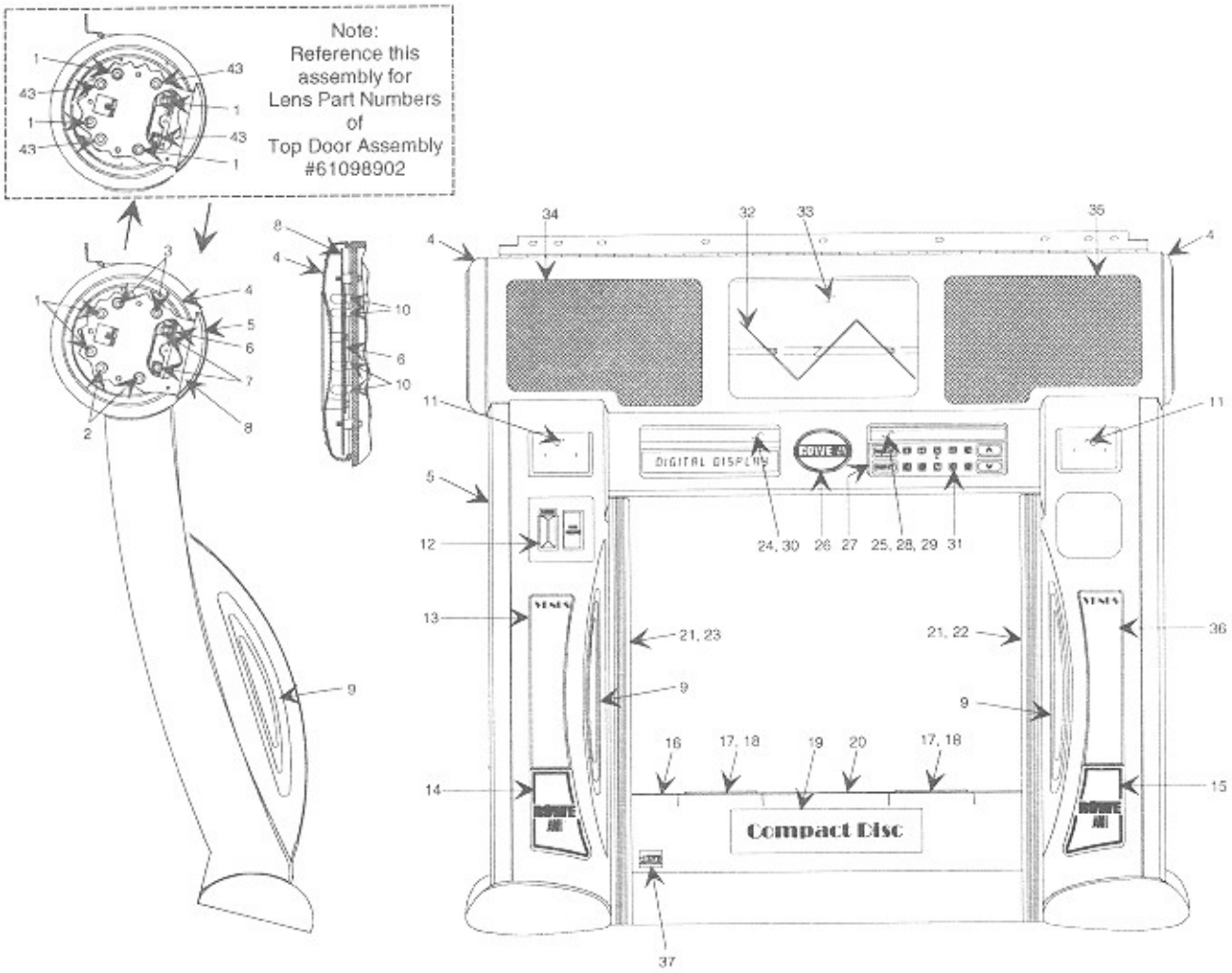



Figure 8-1. CD-100F Phonograph External View

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| 1 | 61097001 | Shell Assembly | 1 |
| 2 | 30625701 | Hand Hold Cover | 4 |
| 3 | 20879501 | Retainer Bracket (Power Cord) | 2 |
| 4 | 30973101 | Caster and Cup Assembly | 2 |
| 5 | 30868405 | Enclosure Screen | 1 |
| 6 | 40702813 | Skid Rail | 4 |
| 7 | 21265203 | Tie Down Plate Assembly | 1 |

## Figure 8-2. CD-100F Phonograph Top Door Assembly

Sheet 1




### Table 8-1. Price Card Part Numbers

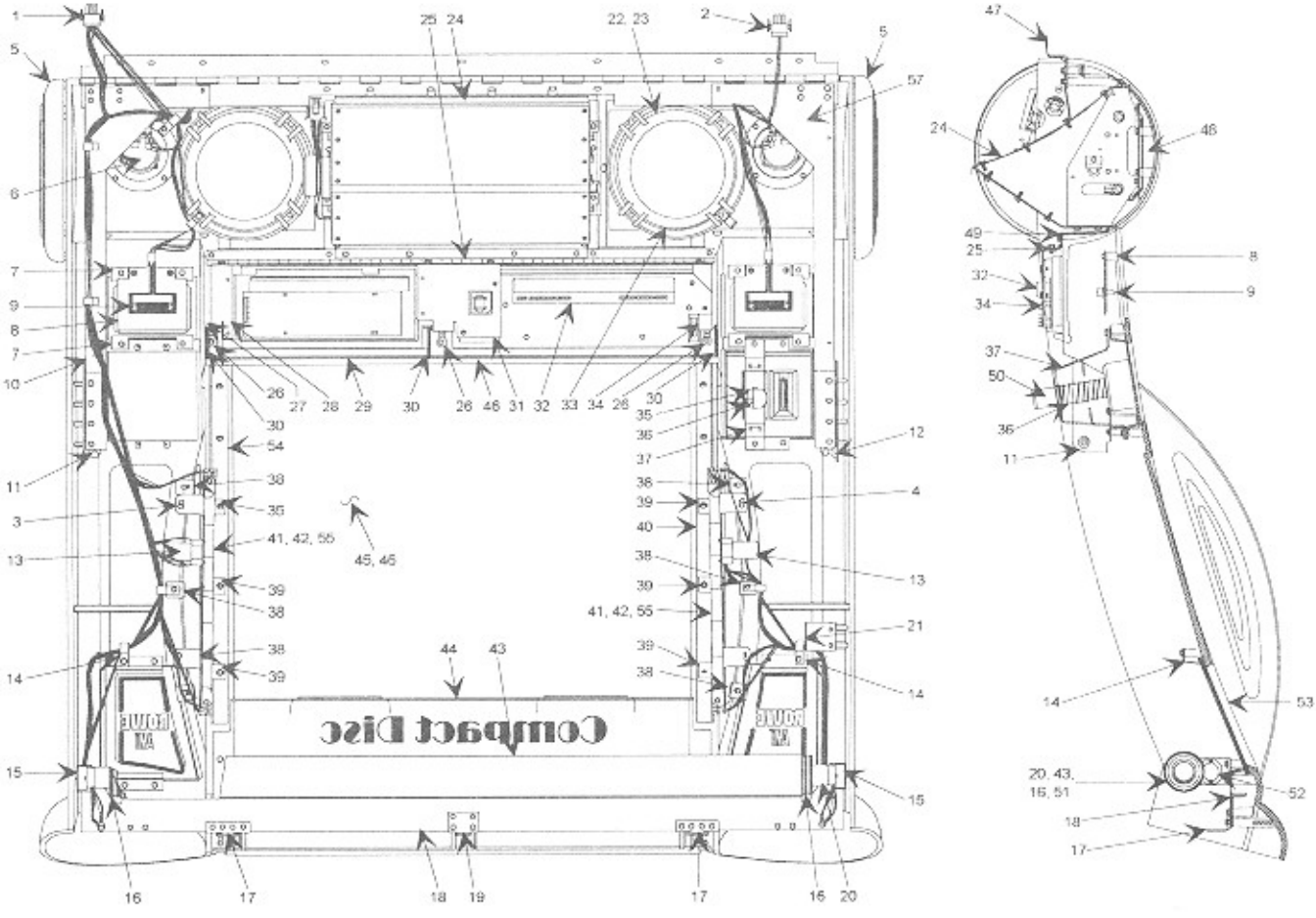
| Price Card Language | Price Card | Readout Card | Selector Graphics Card |
|---|---|---|---|
| Standard U.S. | 30931301 | 30982501 | 30944708 |
| Universal U.S. | 30931302 | 30982501 | 30944703 |
| Hungary | 30940506 | 30982510 | 30944710 |
| Spanish | 30940501 | 30982503 | 30944703 |
| German | 30940502 | 30982504 | 30944704 |
| French | 30940503 | 30982505 | 30944705 |
| Universal | 30940506 | | |
| Finland | 30940504 | 30982506 | 30944706 |
| Universal Price Sheet | 61031402 | | |

## Figure 8-2. CD-100F Top Door Assembly (Sheet 1)

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61098901 | CD-100F Top Door Assembly | Ref. |
| | *61098902 | CD-100F Top Door Assembly (Red) | Ref. |
| 1 | 30866504 | Lens - Magenta | 4 |
| | *30866504 | Lens - Magenta | 8 |
| 2 | 30866501 | Lens - Brown | 4 |
| 3 | 30866506 | Lens - Orange | 4 |
| 4 | 61099601 | End Cap | 2 |
| 5 | 61097101 | Door Frame | 1 |
| | *61097102 | Door Frame | 1 |
| 6 | 34002301 | PWB - End Cap | 2 |
| 7 | 30866505 | Lens - Red | 4 |
| 8 | 34002401 | Mounting Plate - End Cap | 2 |
| 9 | 61101601 | Title Rack Lens | 2 |
| 10 | 21862201 | Lamp & Socket Assembly | 20 |
| 11 | 21845613 | Window | 2 |
| 12 | 40880601 | Coin Inlet | 1 |
| 13 | 34002801 | Side Decal - Left | 1 |
| 14 | 34002601 | AMI Card - Left | 1 |
| 15 | 34002701 | AMI Card - Right | 1 |
| 16 | 25223101 | Label - Flag | 1 |
| 17 | 30921502 | License Frame - White | 2 |
| 18 | 21921001 | License Retainer | 2 |
| 19 | 34003001 | Decal - Compact Disc | 1 |
| 20 | 61102101 | Window Diffuser | 1 |
| 21 | 70225009 | Foam Rubber Extrusion | 1 |
| 22 | 40881201 | Window Trim - Right. | 1 |
| 23 | 40881101 | Window Trim - Left | 1 |
| 24 | 21845610 | Digital Display Window | 1 |
| 25 | 22103501 | Window Retainer - Digital Display | 2 |
| 26 | 34001801 | Decal - Rowe AMI | 1 |
| 27 | 61040802 | Keyboard Trim | 1 |
| 28 | 21845616 | Window | 1 |
| 29 | 22103301 | Window Retainer - Keyboard | 1 |
| 30 | 22103401 | Window Retainer - Keyboard | 1 |
| 31 | 40839406 | Keyboard Assembly | 1 |
| 32 | 61101501 | Animation Assembly | 1 |
| 33 | 61095201 | Animation Window | 1 |
| 34 | 61100801 | Upper Grill - Left | 1 |
| 35 | 61100901 | Upper Grill - Right | 1 |
| 36 | 34002901 | Side Decal - Right | 1 |
| 37 | 21922001 | Sticker - CD | 1 |

See *Table 8-1* opposite for Price Card and Graphics Card part numbers.

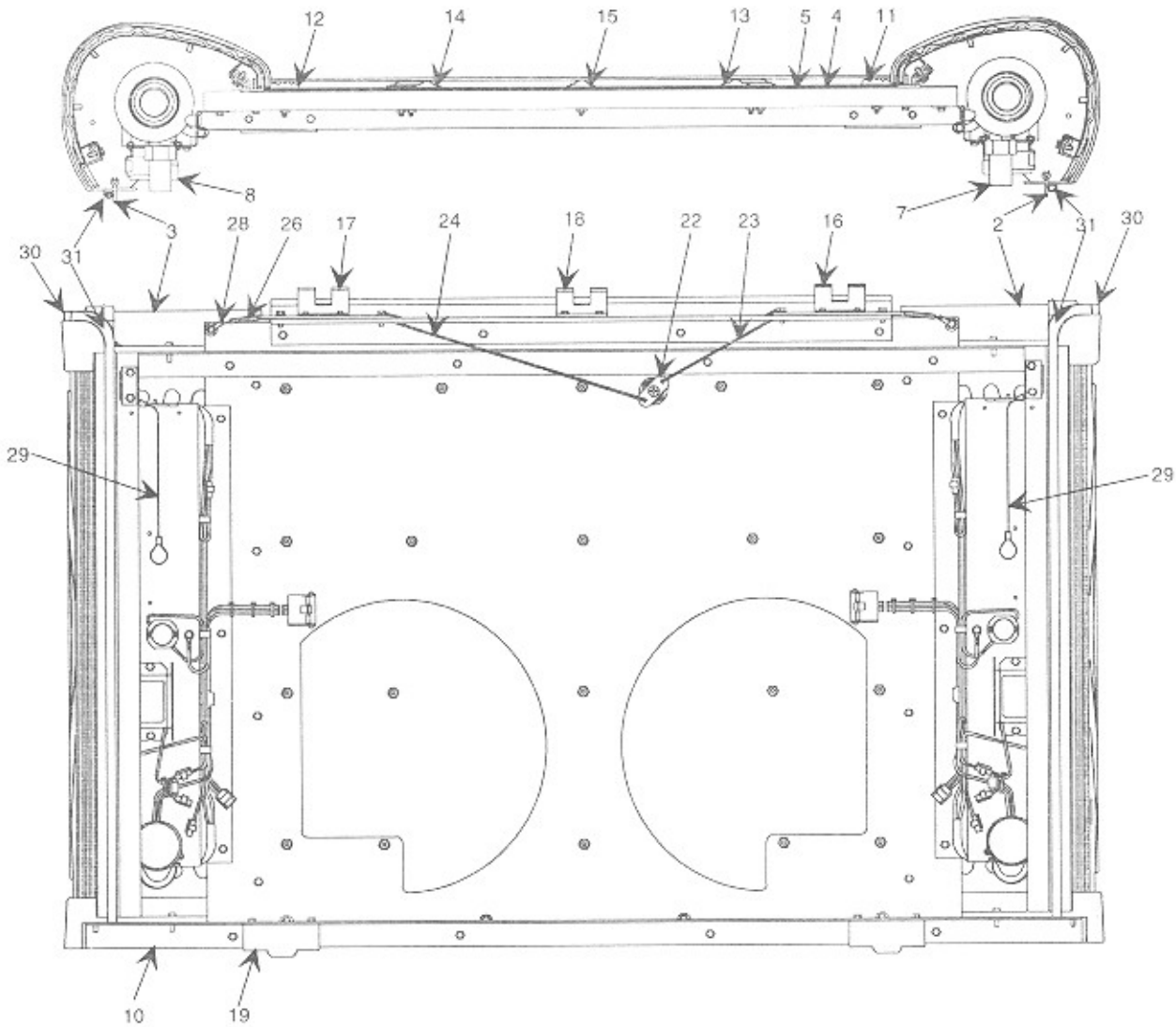
## Figure 8-2. CD-100F Phonograph Top Door Assembly
Sheet 2

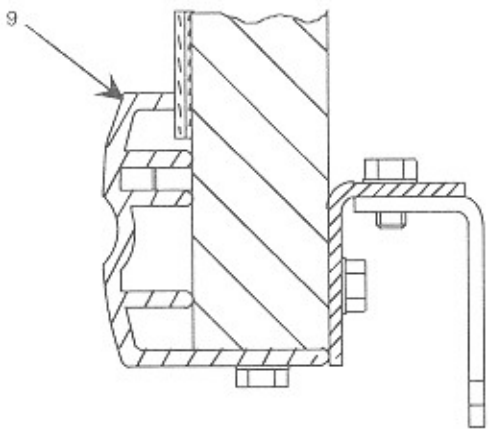


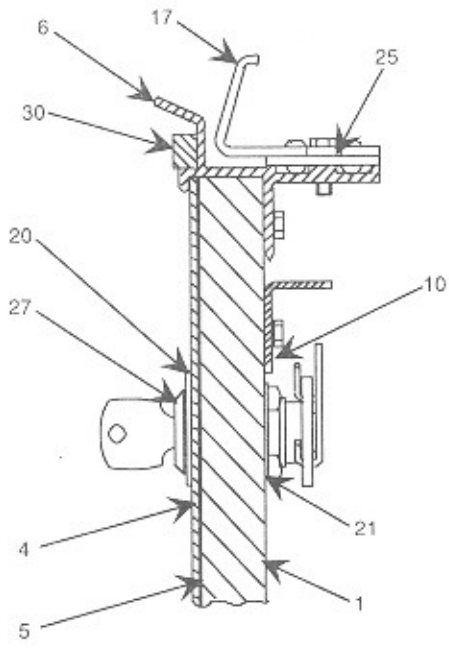
## Figure 8-2. CD-100F Top Door Assembly (Sheet 2)

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61098901 | CD-100F Top Door Assembly | Ref. |
| | *61098902 | CD-100F Top Door Assembly | Ref. |
| 1 | 61101401 | Harness Assembly Low Voltage | 1 |
| 2 | 40881601 | Harness Assembly - Top Door Light | 1 |
| 3 | 22105101 | Pocket Light Bracket - Right | 1 |
| 4 | 22105001 | Pocket Light Bracket - Left | 1 |
| 5 | 61099601 | End Cap | 2 |
| 6 | 40830901 | Speaker - Tweeter (3") | 2 |
| 7 | 22103101 | Price Card Bracket | 4 |
| 8 | 34002201 | PWB - Price Card | 2 |
| 9 | 21862201 | Lamp & Socket Assembly | 20 |
| 10 | 40884501 | Gusset - Right | 1 |
| 11 | 21979501 | Gas Spring Pivot Assembly - Right | 1 |
| 12 | 21979401 | Gas Spring Pivot Assembly - Left | 1 |
| 13 | 70080001 | Fluorescent Starter (FS-2) | 2 |
| 14 | 22103701 | Upper Card Retainer | 4 |
| 15 | 34005201 | Lamp Bracket | 2 |
| 16 | 30953901 | End Cap - Color Tube | 2 |
| 17 | 30963401 | Strike | 2 |
| 18 | 40884001 | Lower Stiffener | 1 |
| 19 | 21921101 | Guide | 1 |
| 20 | 70060112 | Fluorescent Lamp (30W T-8) | 1 |
| 21 | 34005801 | Reset Actuator | 1 |
| 22 | 40830803 | Speaker - Midrange (6") | 2 |
| 23 | 61094301 | Speaker Housing Assembly | 2 |
| 24 | 61101501 | Animation Assembly | 1 |
| 25 | 34002501 | Keyboard Hinge | 1 |
| 26 | 25156904 | Shoulder Washer | 3 |
| 27 | 34001601 | Upper Window Bracket | 1 |
| 28 | 34003901 | Right Bracket - Display | 1 |
| 29 | 40882501 | Display Latch | 1 |
| 30 | 21256201 | Tension Spring | 3 |
| 31 | 40882001 | Control Panel Mounting Bracket | 1 |
| 32 | 40855001 | PCB Assembly - Digital Display | 1 |
| 33 | 30935303 | Label - Speaker Harness | 1 |
| 34 | 34003801 | Left Bracket - Display | 1 |
| 35 | 21834801 | Channel | 2 |
| 36 | 21822901 | Compression Spring | 1 |
| 37 | 40881301 | Scavenge Bracket | 1 |
| 38 | 22102901 | Outer Lens Retainer | 6 |
| 39 | 22102801 | Inner Lens Retainer | 6 |
| 40 | 61101801 | Title Rack Diffuser - Left | 1 |
| 41 | 70060102 | Fluorescent Lamp | 2 |
| 42 | 30954202 | Color Tube | 2 |
| 43 | 30954201 | Color Tube | 1 |
| 44 | 61102101 | Window Diffuser | 1 |
| 45 | 61095301 | Top Door Glass | 1 |
| 46 | 70225008 | Foam Rubber Extrusion | 1 |
| 47 | 61101001 | Hinge | 1 |
| 48 | 22104101 | Glass Retainer - Side | 1 |
| 49 | 40882901 | Glass Retainer - Lower | 1 |
| 50 | 21742916 | Button & Shaft Assembly | 1 |
| 51 | 61101301 | Color Filter | 1 |
| | *61101302 | Color Filter | 2 |
| 52 | 70080004 | Fluorescent Starter (FS-4) | 1 |
| 53 | 22103801 | AMI Window | 1 |
| 54 | 61101901 | Title Rack Diffuser - Right | 1 |
| 55 | 40882101 | Color Filter | 2 |
| | *40882102 | Color Filter | 2 |
| 56 | 40883301 | Top Glass Retainer | 2 |
| 57 | 40884401 | Gusset - Left | 1 |

## Figure 8-3. CD-100F Phonograph Front Door Assembly



## Figure 8-3. CD-100F Phonograph Front Door Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61098501/04 | Front Door Assembly | Ref. |
| 1 | 61097801 | Front Door Panel | 1 |
| 2 | 61098301/02 | Column Assembly - Left | 1 |
| 3 | 61098401/02 | Column Assembly - Right | 1 |
| 4 | 61097601 | Grill | 1 |
| 5 | 61097901 | Scrim | 1 |
| 6 | 61097701 | Lockbar | 1 |
| 7 | 61098101/04 | Light Assembly - Left | 1 |
| 8 | 61098201/04 | Light Assembly - Right | 1 |
| 9 | 40878401/02 | Lower Trim | 1 |
| 10 | 34000901/02 | Brace | 2 |
| 11 | 40878001/02 | Trim - Left | 1 |
| 12 | 40878101/02 | Trim - Right | 1 |
| 13 | 40878201/02 | Trim - Center Left | 1 |
| 14 | 40878301/02 | Trim - Center Right | 1 |
| 15 | 40878501/02 | Trim - Center | 1 |
| 16 | 21965901 | Lockbar Assembly - Left | 1 |
| 17 | 21966001 | Lockbar Assembly - Right | 1 |
| 18 | 21965801 | Catch | 1 |
| 19 | 34000701 | Hinge Bracket | 2 |
| 20 | 21795305 | Lock Bezel | 1 |
| 21 | 21947501 | Indexing Washer | 1 |
| 22 | 21425601 | Lockbolt | 1 |
| 23 | 21865309 | Pivot Link | 1 |
| 24 | 21865310 | Pivot Link | 1 |
| 25 | 20922502 | Spacer | 4 |
| 26 | 21256201 | Tension Spring | 2 |
| 27 | 70163214 | Cylinder Lock Types - Common Keying | 1 |
| 28 | 70091702 | Solder Lug | 2 |
| 29 | 21572601 | Fall-Stop Cable | 2 |
| 30 | 70220331 | Foam Tape | 1 |
| 31 | 70225008 | Foam Rubber Extrusion | 2 |

**Trims:**

01 Gold
02 Silver

01 60 Hz Gold/Taupe
02 50 Hz Gold/Taupe
03 60 Hz Silver/Red
04 50 Hz Silver/Red

## Figure 8-4. Title Page Assembly

Sheet 1

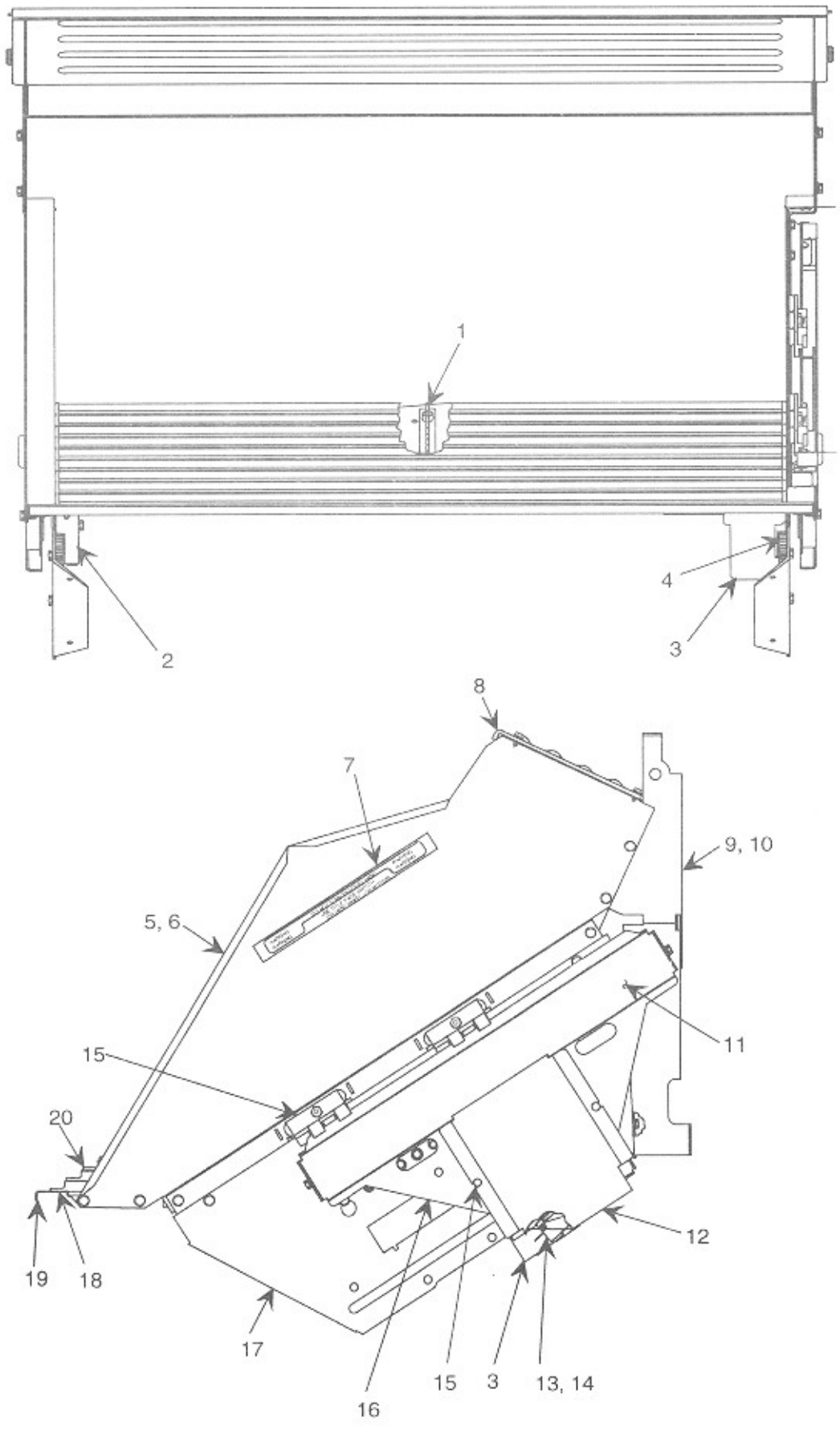


**Figure 8-4. Title Page Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61094101 | Title Page Assembly | Ref. |
| 1 | 40877301 | Bearing Support | 1 |
| 2 | 30999901 | Motor Bracket Assembly | 2 |
| 3 | 30999401 | Index Bracket - Home Switches | 1 |
| 4 | 22101601 | Gear Rack | 2 |
| 5 | 61100601 | Title Rack Side Trim - Left | 1 |
| 6 | 61100701 | Title Rack Side Trim - Right | 1 |
| 7 | 30940002 | Warning Label - Narrow | 2 |
| 8 | 61099501 | Diffuser - White Translucent | 1 |
| 9 | 40881401 | Pivot Bracket - Left | 1 |
| 10 | 40881501 | Pivot Bracket - Right | 1 |
| 11 | 40877001 | Light Cover | 2 |
| 12 | 30999701 | Title Lever Cover | 2 |
| 13 | 21073201 | Switch - N.C. | 2 |
| 14 | 21082901 | Switch Actuator | 2 |
| 15 | 30980001 | Slide-Rack Arm | 4 |
| 16 | 61093801 | Slide Carriage Bracket | 2 |
| 17 | 61093901 | End Plate | 2 |
| 18 | 61094001 | Horizontal Support | 1 |
| 19 | 70210518 | Protective Moulding | 1 |
| 20 | 61094201 | Title Page | 9 |

## Figure 8-4. Title Page Assembly

Sheet 2

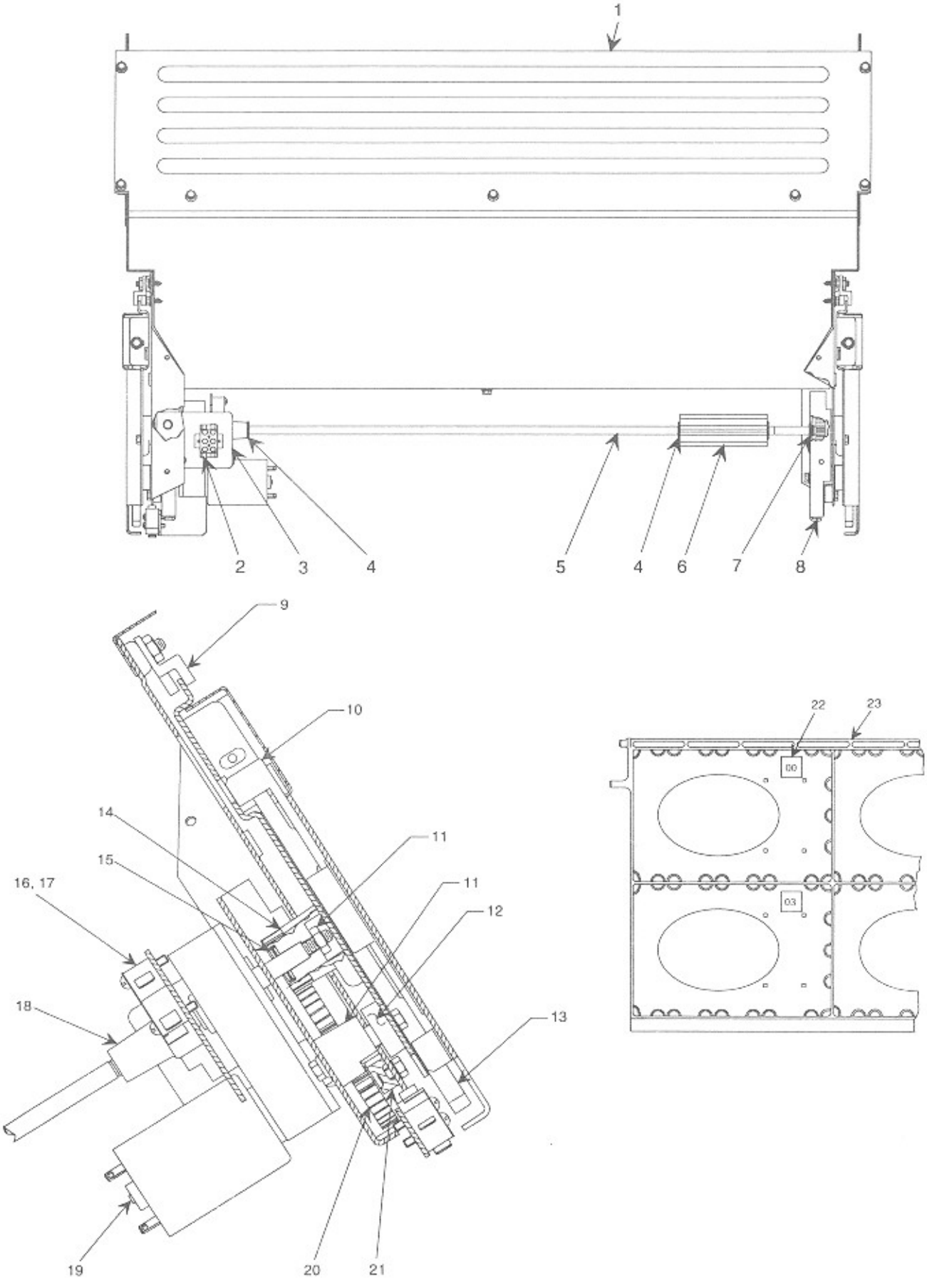
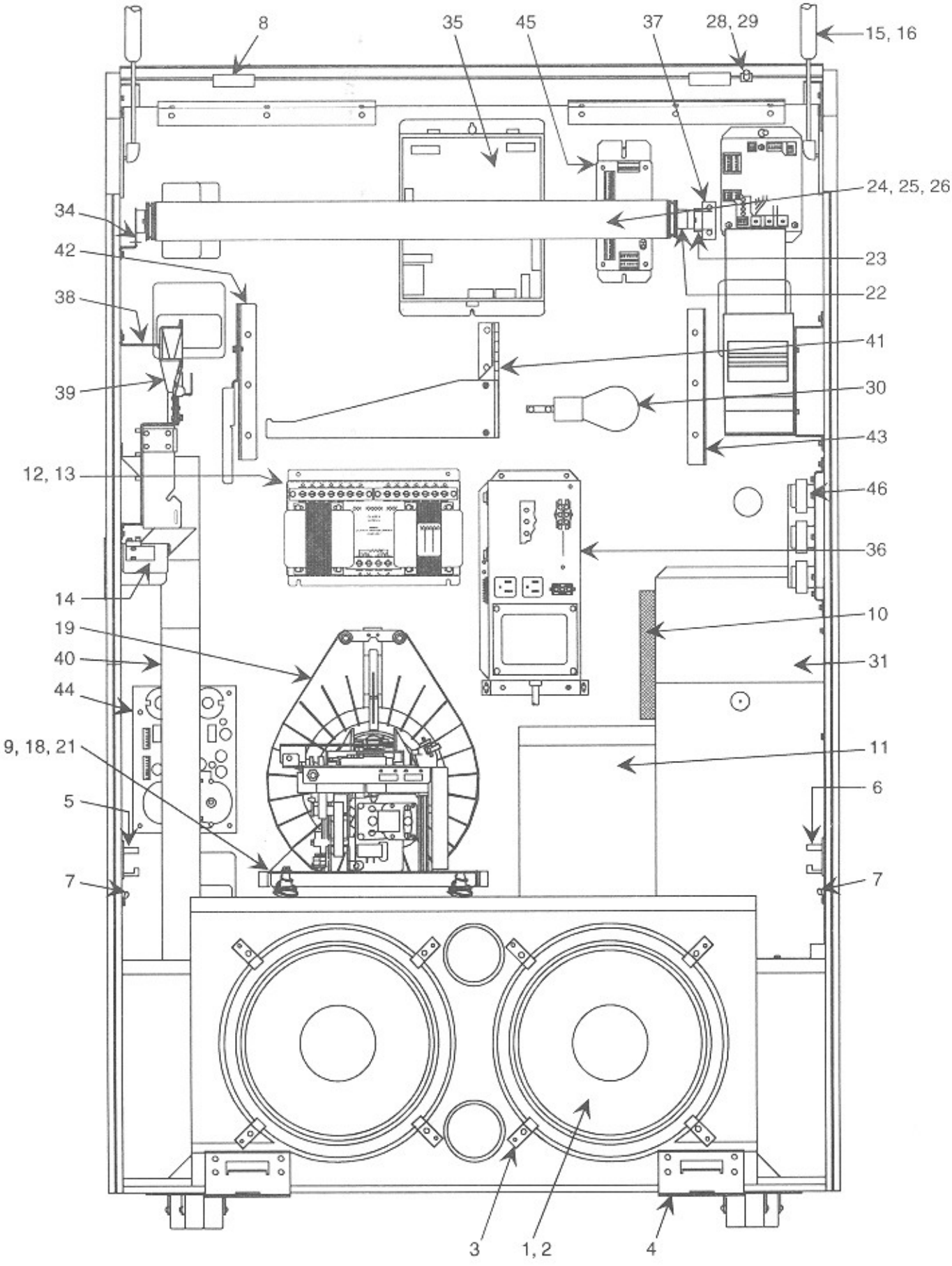


**Figure 8-4. Title Page Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61094101 | Title Page Assembly | Ref. |
| 1 | 61099501 | Diffuser - White Translucent | 1 |
| 2 | 61084701 | Title Rack Harness Assembly | 1 |
| 3 | 30938301 | Connector Plate | 1 |
| 4 | 70143004 | External Retaining Ring | 3 |
| 5 | 30999501 | Drive Shaft | 1 |
| 6 | 22100901 | Title Page Knob | 1 |
| 7 | 70146006 | Bearing | 1 |
| 8 | 30999701 | Title Lever Cover | 2 |
| 9 | 30980001 | Slide-Rack Arm | 4 |
| 10 | 40877401 | Slide-Trap | 2 |
| 11 | 22101101 | Bottom Slide Spacer | 4 |
| 12 | 22100701 | Slide Spacer | 4 |
| 13 | 22100801 | Title Page Lever | 2 |
| 14 | 30999601 | Gear Crank | 2 |
| 15 | 70113022 | Roll Pin | 3 |
| 16 | 21073201 | Switch - N.C. | 2 |
| 17 | 21082901 | Switch Actuator | 2 |
| 18 | 22101001 | Drive Shaft Cam | 2 |
| 19 | 40877101 | Title Rack Motor | 2 |
| 20 | 22101501 | Reduction/Drive Gear | 2 |
| 21 | 22101601 | Gear Rack | 2 |
| 22 | 30940002 | Warning Label - Narrow | 2 |
| 23 | 61094201 | Title Page | 9 |

## Figure 8-5. CD-100F Phonograph Internal View



## Figure 8-5. CD-100F Phonograph Internal View

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61096001/04 | CD-100F Phonograph Assembly (60 Hz / 50 Hz) | Ref |
| 1 | 21780612 | Acoustical Pad | 1 |
| 2 | 40731002 | Speaker - Low Frequency | 2 |
| 3 | 21780701 | Retainer Bracket | 8 |
| 4 | 40877901 | Door Mounting Bracket | 2 |
| 5 | 21712701B | Latch Assembly - Left | 1 |
| 6 | 21712801B | Latch Assembly - Right | 1 |
| 7 | 21730001 | Fall Stop Hook | 1 |
| 8 | 30936601 | Guide Bracket - Hinge | 2 |
| 9 | 30932101 | Mech Tie Down Bracket | 2 |
| 10 | 30868405 | Enclosure Screen | 1 |
| 11 | 40242601 | Amplifier Mount Assembly | 1 |
| 12 | 40832104B | Output Transformer Assembly | 1 |
| 13 | 40832004 | Audio Output Chassis | 1 |
| 14 | 61099101 | Harness & Switch Assembly | 1 |
| 15 | 40714910 | Pneumatic Spring | 2 |
| 16 | 30956301 | Door Support | 1 |
| 17 | 21759301 | Cord Hole Cover | 1 |
| 18 | 21153701 | Lower Spring Support | 4 |
| 19 | 61085701B | CDM-12 Mech Assembly | 1 |
| 20 | 30869801 | Handy Case | 1 |
| 21 | 30932202 | Mech Release Lever | 2 |
| 22 | 70060108 | Fluorescent Lamp (18W T8) | 1 |
| 23 | 70080003 | Fluorescent Starter (FS-25) | 1 |
| 24 | 30972301 | Color Tube | 1 |
| 25 | 61099301/02 | Color Filter | 1 |
| 26 | 30953901 | Color Tube End Cap | 2 |
| 27 | 22102401 | Pivot Plate Assembly | 1 |
| 28 | 30956201 | Switch Bracket | 1 |
| 29 | 25060401 | Momentary Pushbutton Switch | 1 |
| 30 | 70060423 | Global Lamp - Inside Frosted | 1 |
| 31 | 61099201 | Amplifier Chimney | 1 |
| 32 | 65093008 | CBA-2 Transport Assembly | 1 |
| 33 | 40880101 | Harness Assembly 110 V | 1 |
| 34 | 34004001 | Lamp Bracket - Left | 2 |
| 35 | 40832220 | Central Control Computer | 1 |
| 36 | 40879001 | Main Power Supply | 1 |
| 37 | 34005101 | Lamp Bracket - Right | 1 |
| 38 | 61100501 | Scavenge Assembly | 1 |
| 39 | 40880801 | Chute Assembly | 1 |
| 40 | 61100301 | Lower Coin Chute | 1 |
| 41 | 40881801 | Title Rack Support Assembly | 1 |
| 42 | 34002001 | Bracket Assembly - Title Page Assembly | 1 |
| 43 | 34004301 | Title Rack Hanger Bracket | 1 |
| 44 | 61052707 | PCB Assembly - Speaker Crossover | 1 |
| 45 | 40856101 | Title Rack/Keyboard Interface | 1 |
| 46 | 40880201 | Harness & Ballast Assembly - 60 Hz | 1 |
| | 40880202 | Harness & Ballast Assembly - 50 Hz | 1 |
| **NOT SHOWN:** | | | |
| | 40856101 | Interface - Title Rack | 1 |

## Figure 8-6. Animation Assembly

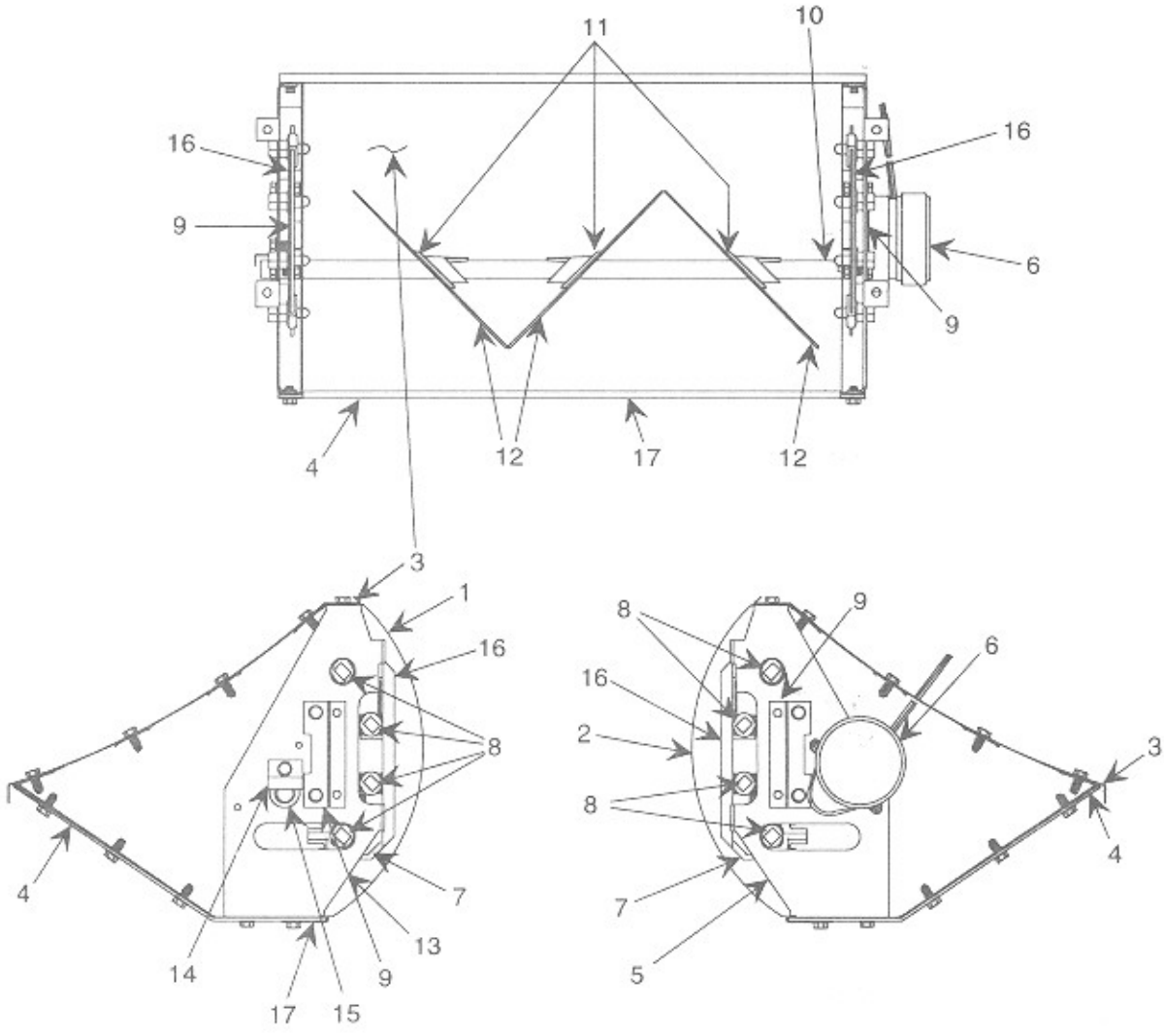



Figure 8-6. Animation Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61101501 | Animation Assembly | |
| 1 | 40883101 | Side Housing - Left | 1 |
| 2 | 40883201 | Side Housing - Right | 1 |
| 3 | 61102601 | Animation Wrapper - Top | 1 |
| 4 | 40883001 | Animation Diffuser | 1 |
| 5 | 40882701 | Mounting Bracket - Right | 1 |
| 6 | 40824303 | Motor & Harness Assembly | 1 |
| 7 | 40883501 | PWB - Animation | 2 |
| 8 | 21862201 | Lamp & Socket Assembly | 8 |
| 9 | 34005001 | PWB Bracket | 2 |
| 10 | 40882801 | Shaft | 1 |
| 11 | 34004901 | Disc Holder | 3 |
| 12 | 30926904 | Disc | 3 |
| 13 | 40882601 | Mounting Bracket - Left | 1 |
| 14 | 22103301 | Window Retainer - Keyboard | 1 |
| 15 | 70146021 | Nyliner Bearing | 1 |
| 16 | 70212218 | Closed Cell Sponge Rubber | 2 |
| 17 | 34006301 | Front Bracket | 1 |

## Figure 8-7A. Bill Acceptor Assembly

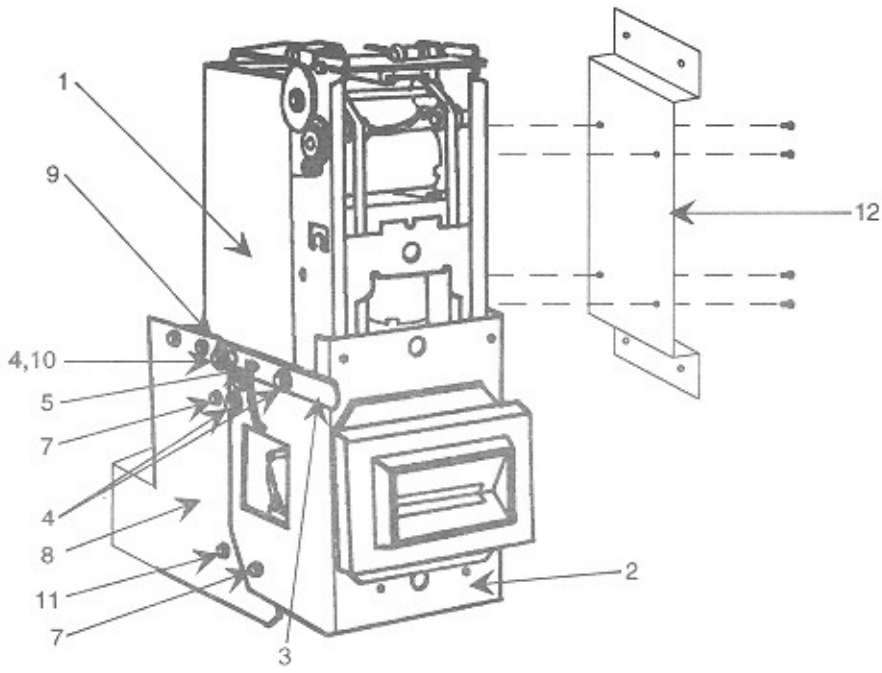



Figure 8-7A. Bill Acceptor

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61096001/04 | CD-100F Phonograph Assembly (60 Hz / 50 Hz) | Ref. |
| | 21949203 | CBA-2 Parts Group | Ref. |
| 1 | 65093008 | CBA-2 Transport | 1 |
| 2 | 30924702 | Mounting Bracket and Bezel Assembly | 1 |
| 3 | 30946301 | Bill Acceptor Latch | 1 |
| 4 | 25156904 | Shoulder Washer | 1 |
| 5 | 21256201 | Tension Spring | 1 |
| 6 | 21572601 | Fall Stop Cable (Not Shown) | 1 |
| 7 | 21948601 | Spacer | 1 |
| 8 | 61042202 | Hanger Bracket | 1 |
| 9 | 21948501 | Catch Adjust Plate | 1 |
| 10 | 25156910 | Shoulder Washer | 1 |
| 11 | 21948602 | Spacer | 2 |
| 12 | 30992002 | Metal Mounting Bracket | 1 |

## Figure 8-7B. Bill Acceptor Assembly

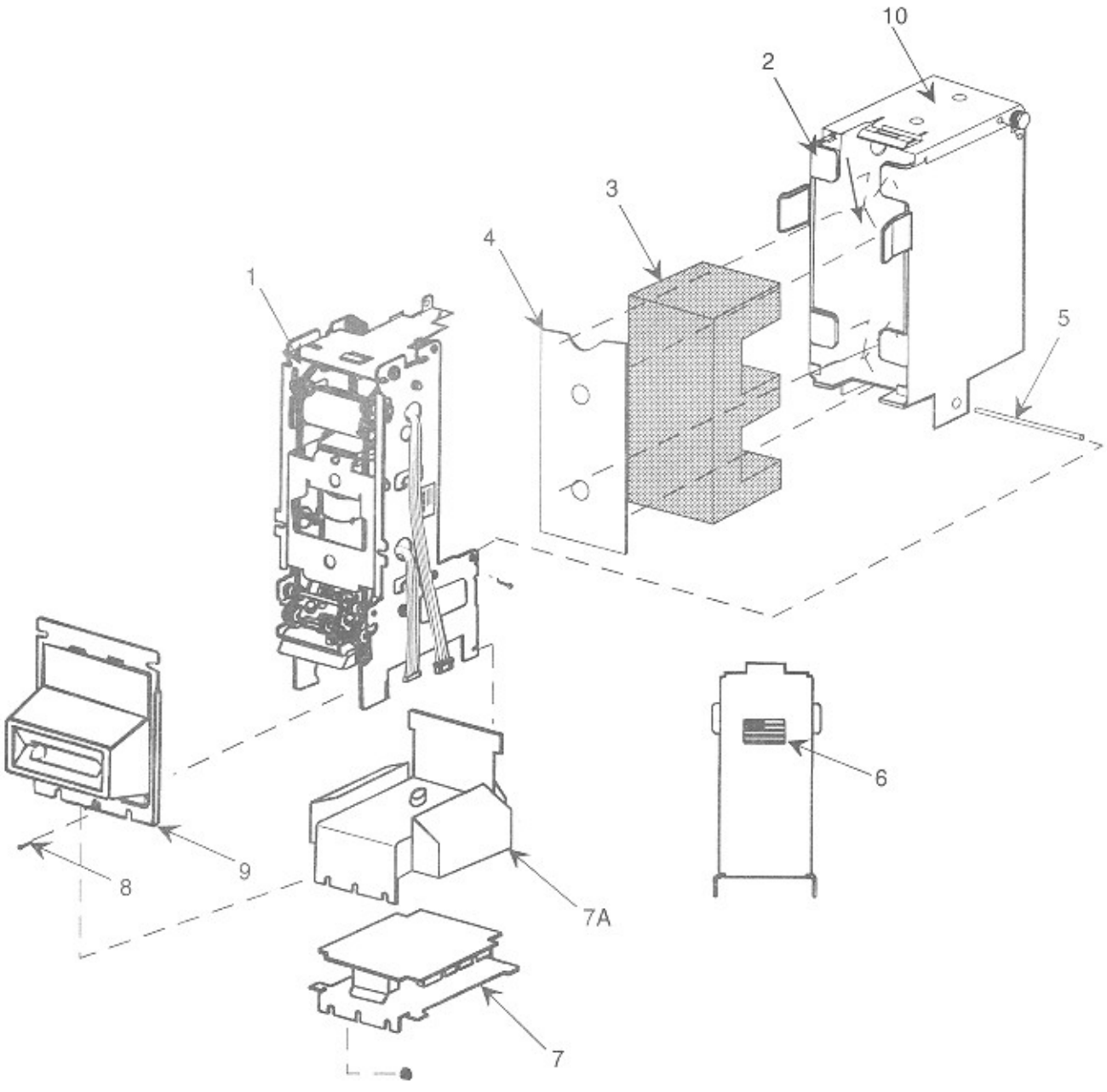


**Figure 8-7B. Bill Acceptor Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| 1 | 65093008 | • CBA-2 Transport Assembly | 1 |
| 2 | | • Bill Box | 1 |
| | B0030703 | • • 500 Locking Bill Box | |
| 3 | | • Foam Block | 1 |
| | B0030702 | • • Foam Block for 500 Bill | |
| 4 | B0031928 | • Pressure Plate | 1 |
| 5 | B0031942 | • Bill Box Spacer Shaft | 1 |
| 6 | 25223101 | • Flag Label | 1 |
| 7 | B0030853 | • Logic Board and Bracket Assembly ($1 & $5 Only) | 1 |
| 7A | B0030819 | • Water Shield | 1 |
| 8 | 70134127 | • Special Flat Head Screw | 1 |
| 9 | B0031953 | • CBA-2 Tapered Bill Inlet | 1 |
| 10 | 35117901 | • Bracket Assembly - Top | 1 |
| | 45074602 | • Cover - Bill Box | 1 |
| | 35117701 | • Spring - Torsion | 1 |
| | 20922502 | • Spacer | 1 |
| | 20925508 | • Spacer | 1 |

## Figure 8-8. CBA–2 Transport Assembly

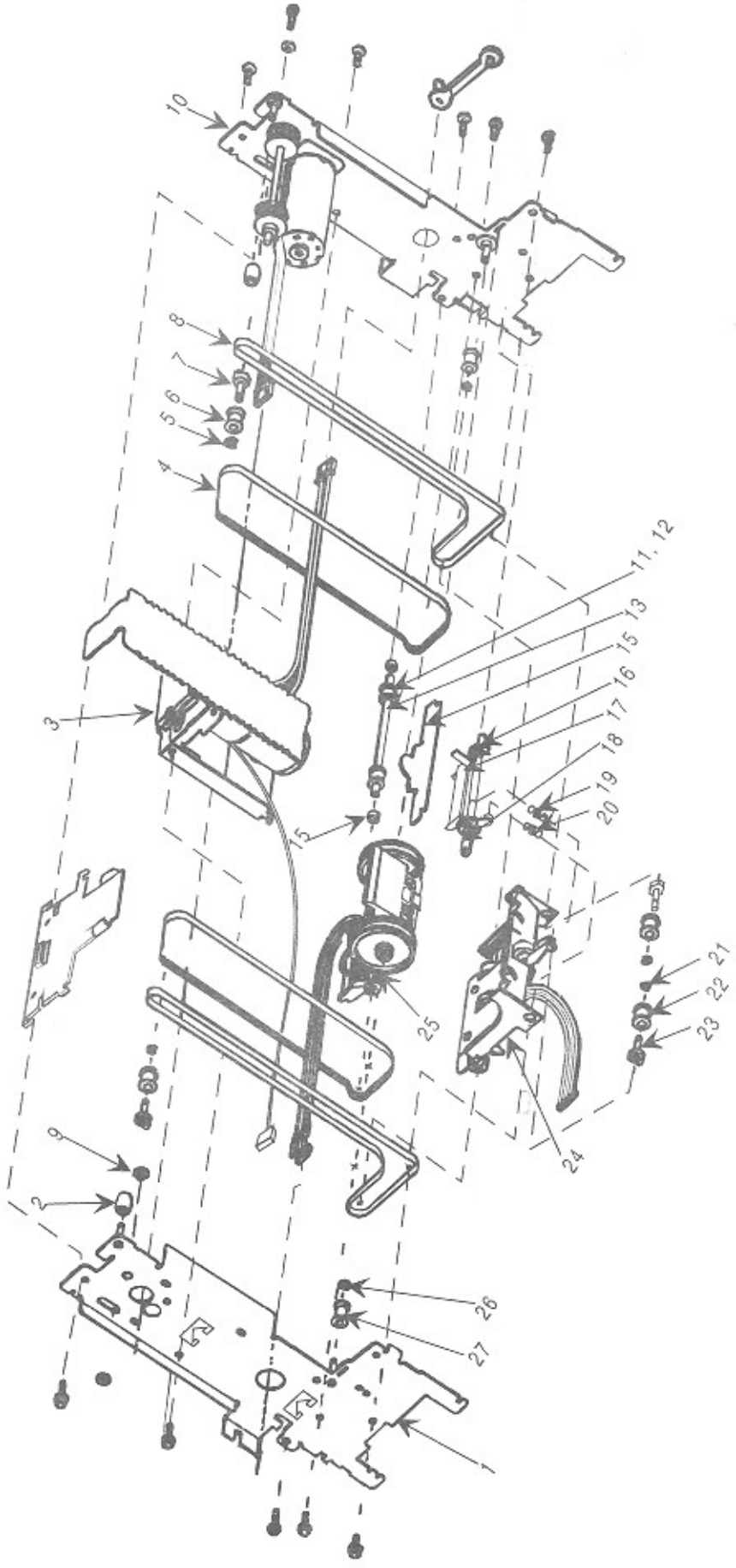


**Figure 8-8. CBA–2 Transport Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 65070802 | Generic CBA-2 | |
| 1 | 25245101 | • Right Hand Plate Assembly | 1 |
| 2 | 25225501 | • Crowned Roller | 2 |
| 3 | Ref. | • Stacker | |
| 4 | B0031946 | • Timing Belt | 2 |
| 5 | 70143003 | • External Retaining Ring | 2 |
| 6 | 35080302 | • Flat Roller | 2 |
| 7 | B0031937 | • Flat Roller Pin | 2 |
| 8 | B0031956 | • Drive Belt | 2 |
| 9 | 70146003 | • Nyliner Bearing | 1 |
| 10 | Ref. | • Motor and Gear Assembly | |
| 11 | 35080302 | • Flat Roller | 2 |
| 12 | 70143003 | • External Retaining Ring | 2 |
| 13 | B0031930 | • Flat Roller Shaft | 1 |
| 14 | B0030688 | • Spacer | 2 |
| 15 | B0031925 | • Bill Stop | 1 |
| 16 | 70143004 | • External Retaining Ring | 2 |
| 17 | 45065801 | • Anti-Cheat Lever | 1 |
| 18 | B0031941 | • Anti-Cheat Lever Shaft | 1 |
| 19 | 25223201 | • Tension Spring (Yellow) | 1 |
| 20 | 25223301 | • Tension Spring (Blue) | 1 |
| 21 | 70143003 | • External Retaining Ring | Ref. |
| 22 | 25193304 | • Crowned Roller | 2 |
| 23 | B0031929 | • Crowned Roller Pin | 2 |
| 24 | Ref. | • Lower Track | |
| 25 | Ref. | • Upper Track | |
| 26 | 70143005 | • External Retaining Ring | 2 |
| 27 | 25225301 | • Flanged Roller | 2 |
| 28 | 70093303 | • Clamp - Cable | 3 |

## Figure 8-9. Upper Track

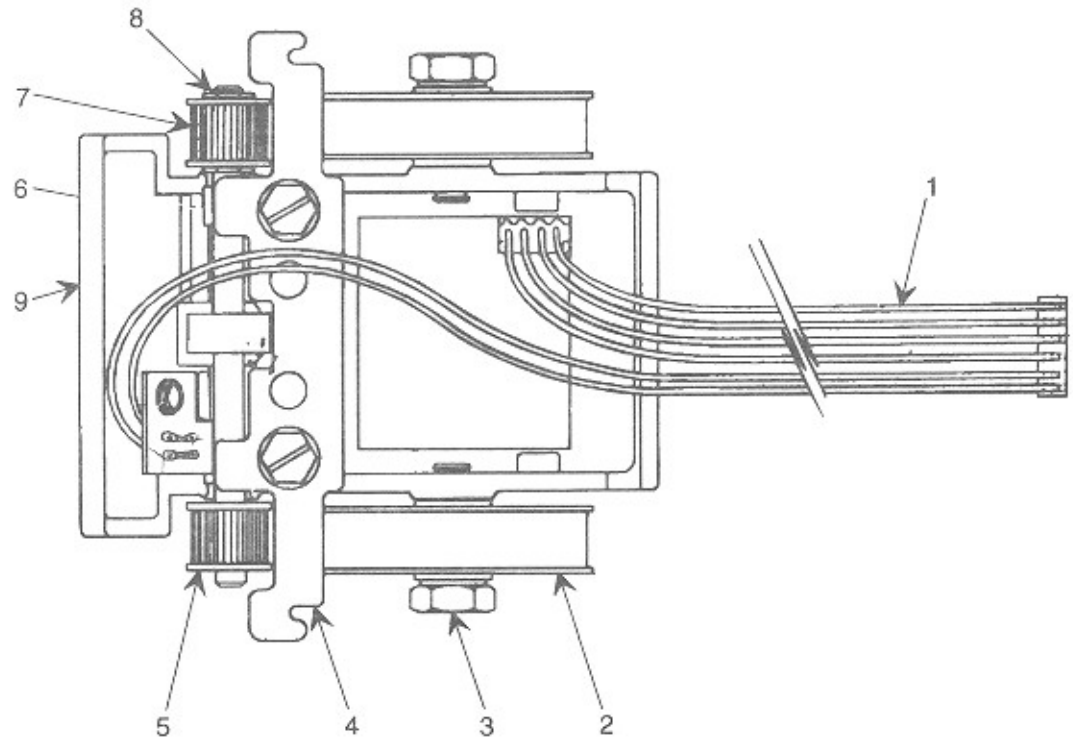



Figure 8-9. Upper Track

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | Ref. | Upper Track | |
| 1 | 45069002 | • Upper Harness and Cell Assembly | 1 |
| 2 | 35094601 | • Drum Pulley | 2 |
| 3 | B0031924 | • Pin | 2 |
| 4 | B0031922 | • Upper Track Bracket | 1 |
| 5 | 27038901 | • Shaft and Pulley Assembly | 1 |
| 6 | 25220401 | • Split Bearing | 1 |
| 7 | 35095102 | • 16 -Tooth Pulley | 1 |
| 8 | 70143005 | • External Retaining Ring | 2 |
| 9 | 65070704 | • Head and Track Assembly (Upper) | 1 |

## Figure 8-10. Lower Track

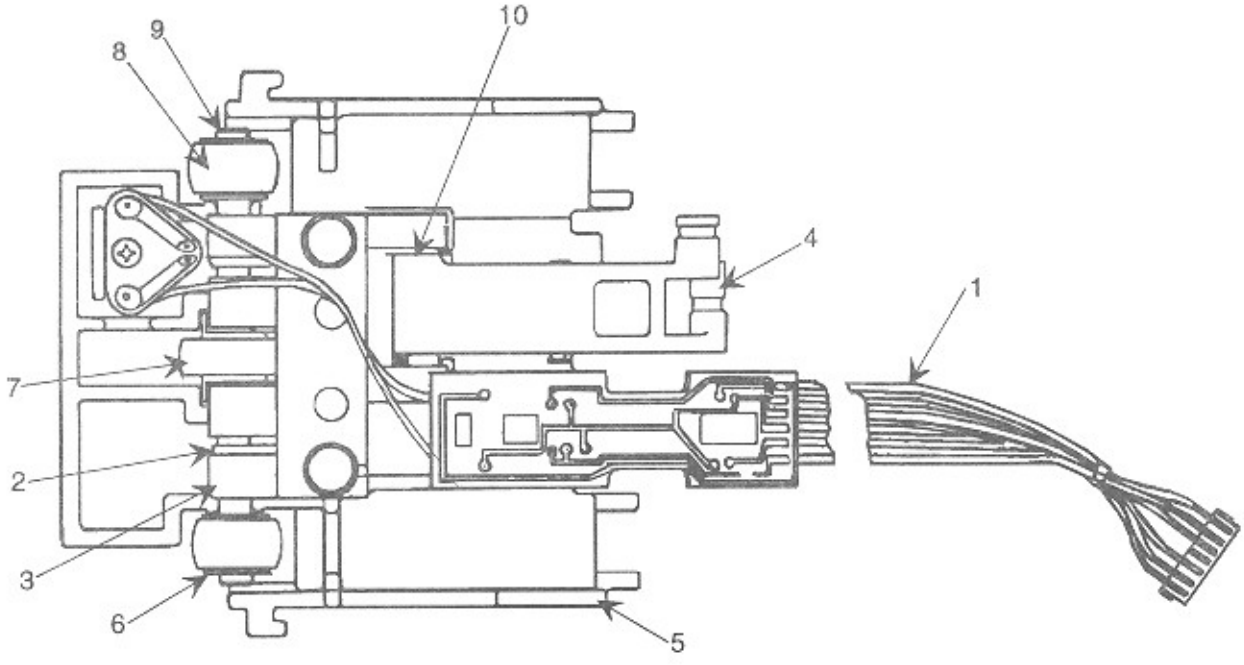



Figure 8-10. Lower Track

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | Ref. | Lower Track | |
| 1 | 45073505 | • Lower Harness and Cell Assembly | 1 |
| 2 | B0031927 | • Input Shaft Spring | 1 |
| 3 | 35111901 | • Input Shaft Bracket | 1 |
| 4 | 35117001 | • Roller and Holder Assembly | 1 |
| 5 | B0031955 | • Lower Track | 1 |
| 6 | 70143003 | • External Retaining Ring | 4 |
| 7 | 25220701 | • Input Roller | 1 |
| 8 | 25193302 | • Crown Roller | 2 |
| 9 | 25220901 | • Lower Input Shaft | 1 |
| 10 | B0031945 | • Holder Pin | 1 |

## Figure 8-11. Motor and Gear Assembly

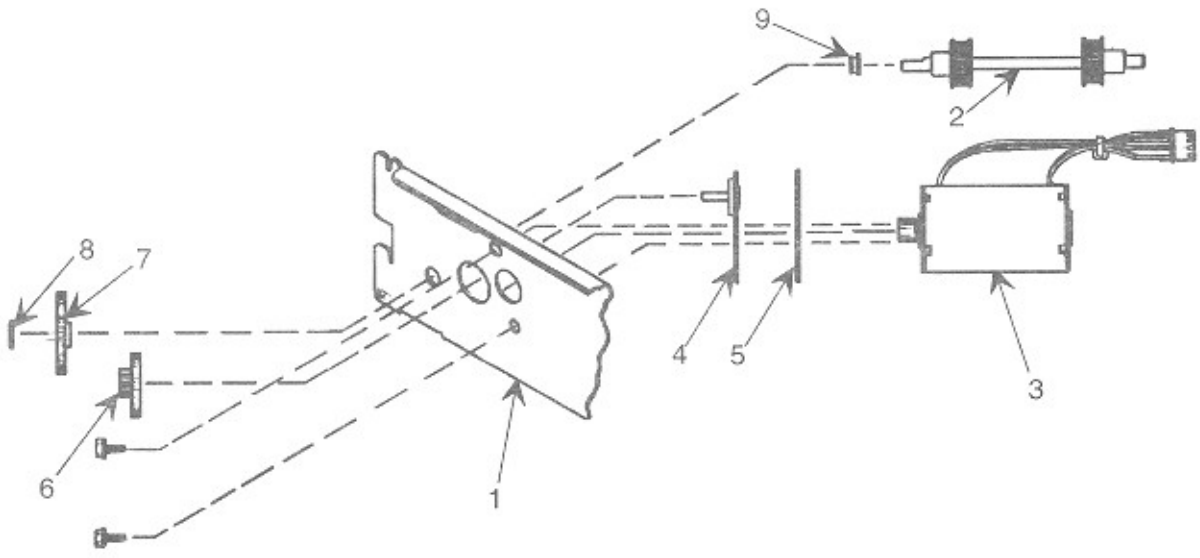



Figure 8-11. Motor and Gear Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | Ref. | Motor and Gear | |
| 1 | 25245102 | • Left Hand Plate Assembly | 1 |
| 2 | 25244101 | • Drive Shaft and Pulley Assembly | 1 |
| 3 | 45058607 | • Transport Motor Assembly | 1 |
| 4 | B0031974 | • Transport Plate and Pin Assembly | 1 |
| 5 | B0031932 | • Spacer Plate | 1 |
| 6 | B0031936 | • Reduction Gear | 1 |
| 7 | B0031933 | • Drive Gear | 1 |
| 8 | B0031944 | • Retaining Ring | 1 |
| 9 | 70146003 | • Nyliner Bearing | 1 |

## Figure 8-12. Stacker Assembly

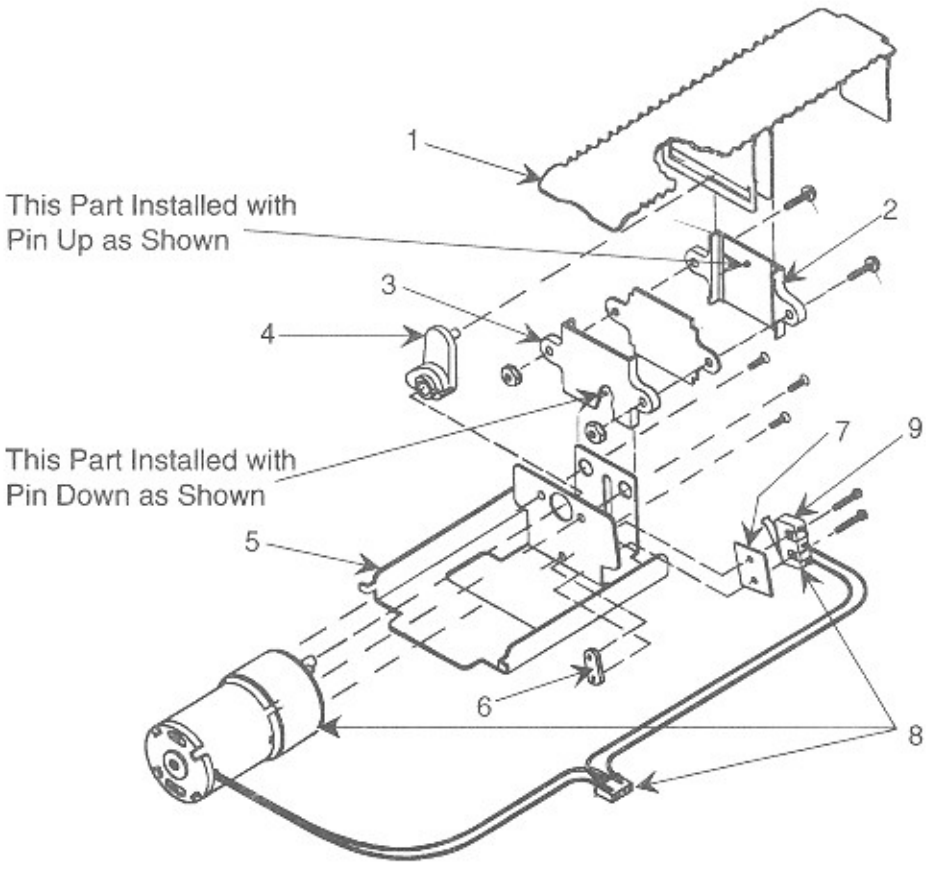
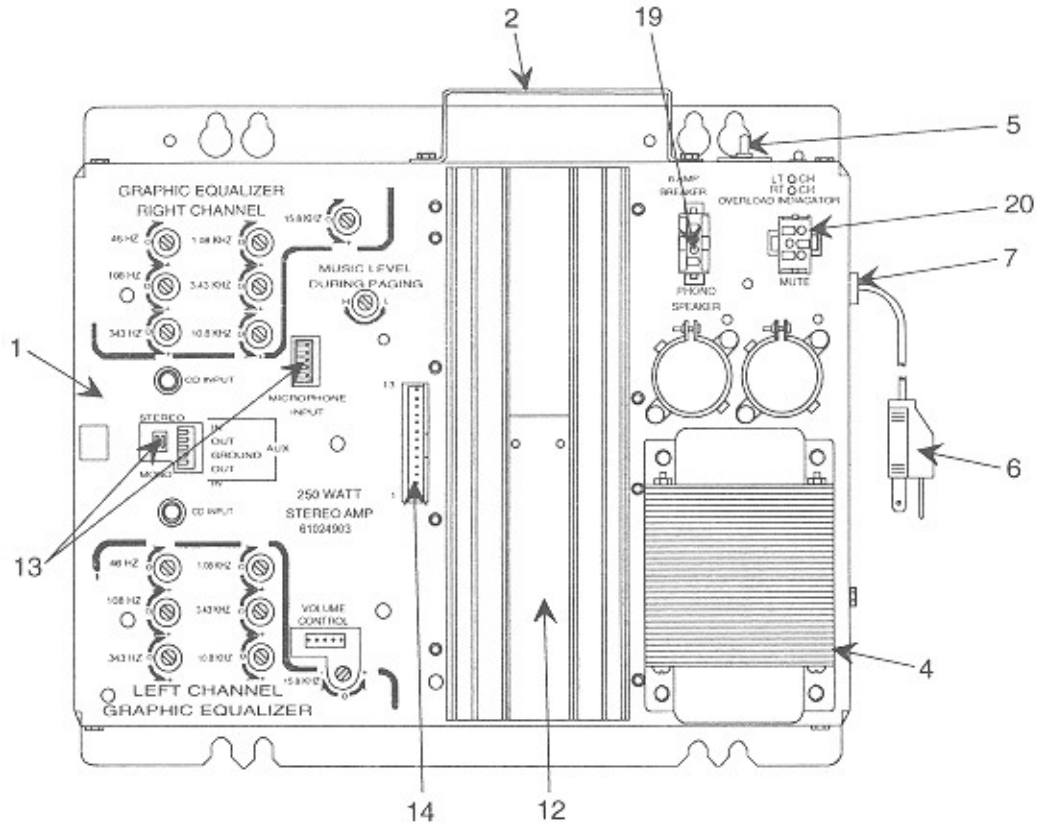



Figure 8-12. Stacker Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | Ref. | Stacker | |
| 1 | B0031973 | • Pusher Plate Assembly | 1 |
| 2 | B0031963 | • Stacker Guide | 2 |
| 3 | B0031962 | • Separator | 1 |
| 4 | B0031938 | • Stacker Cam | 1 |
| 5 | B0031959 | • Stacker Motor Bracket | 1 |
| 6 | B0030762 | • Twin Nut | 1 |
| 7 | 25222801 | • Switch Separator | 1 |
| 8 | 40791205 | • Stacker and Motor Assembly | 1 |
| 9 | 21630902 | • Miniature Switch | 1 |

## Figure 8-13. Stereo Amplifier Assembly



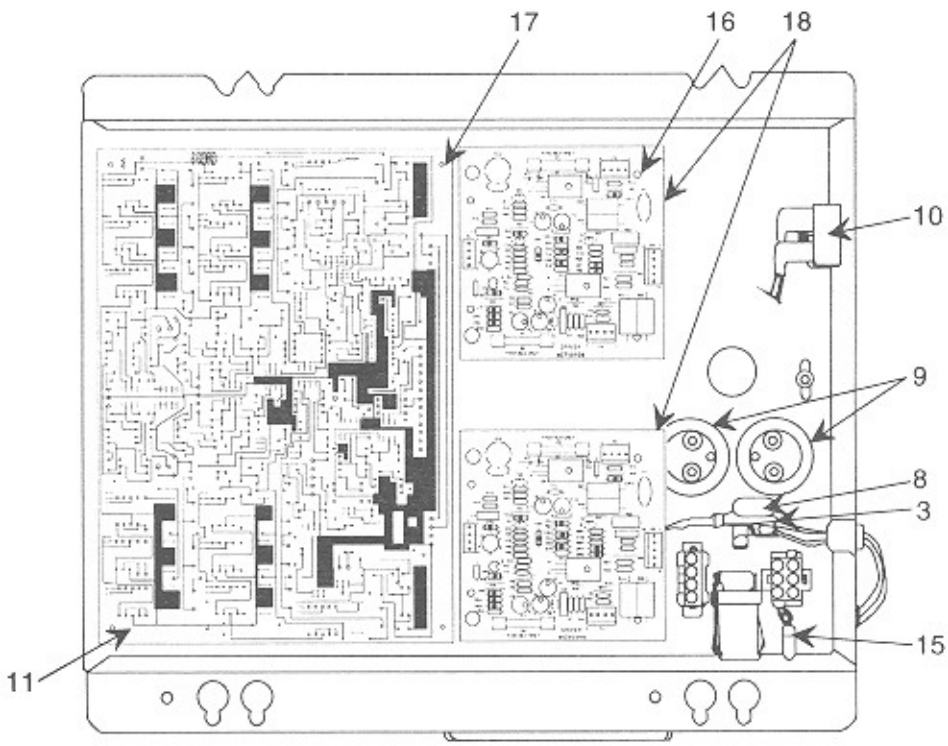



**Figure 8-13. Stereo Amplifier Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61024903 | Stereo Amplifier Assembly | Ref. |
| 1 | 61024603 | • Chassis Assembly | 1 |
| 2 | 21488101 | • Handle | 1 |
| 3 | 21724102 | • Terminal Strip | 1 |
| 4 | 40737812 | • Power Transformer | 1 |
| 5 | 70078956 | • Circuit Breaker | 1 |
| 6 | 25218603 | • 3 Conductor Cord and Plug | 1 |
| 7 | 70232205 | • Strain Relief | 1 |
| 8 | 70021305 | • Mylar Capacitor (.1 Mfd) | 1 |
| 9 | 21823102 | • Electrolytic Capacitor (10,000 Mfd) | 2 |
| 10 | 21822501 | • Bridge Rectifier | 1 |
| 11 | 61023703 | • Stereo Preamp. Assembly *(See Schematic for Parts List)* | 1 |
| 12 | 40710303 | • Heat Sink Detail | 1 |
| 13 | 70075505 | • Connector Housing (5 Circuit) | 2 |
| | 70075503 | • Connector Housing (3 Circuit) | 1 |
| 14 | 21620703 | • Amplifier Jumper Plug Assembly | 1 |
| 15 | 21893401 | • Speaker Overload Indicator (Left Channel) | 1 |
| | 21893402 | • Speaker Overload Indicator (Right Channel) | 1 |
| 16 | 70500006 | • Circuit Board Support | 8 |
| 17 | 70500018 | • Circuit Board Support | 5 |
| 18 | 40710104 | • Driver Circuit Board Assembly | 2 |
| | | *(See the Power Amplifier Schematic for Components List)* | |
| 19 | 30749003 | • Cap Housing (4 Circuit) | 1 |
| 20 | 30749004 | • Cap Housing (6 Circuit) | 1 |
| | 70097502 | • • Contacts | 6 |
| | 70099201 | • • Self - Stripping Terminal | 1 |
| | 21943301 | • • Capacitor Clamp | 2 |
| | 70091706 | • • Solder Lug | 1 |
| | 70075505 | • • Connector Housing (5 Circuit) | 2 |
| | 70075502 | • • Connector Housing (2 Circuit) | 2 |
| | 70800101 | • • Cable Tie | 4 |
| | 70075601 | • • Contact | 9 |
| | 70091308 | • • Terminal Lug - Slip On | 2 |

## Figure 8-14. Heat Sink Detail

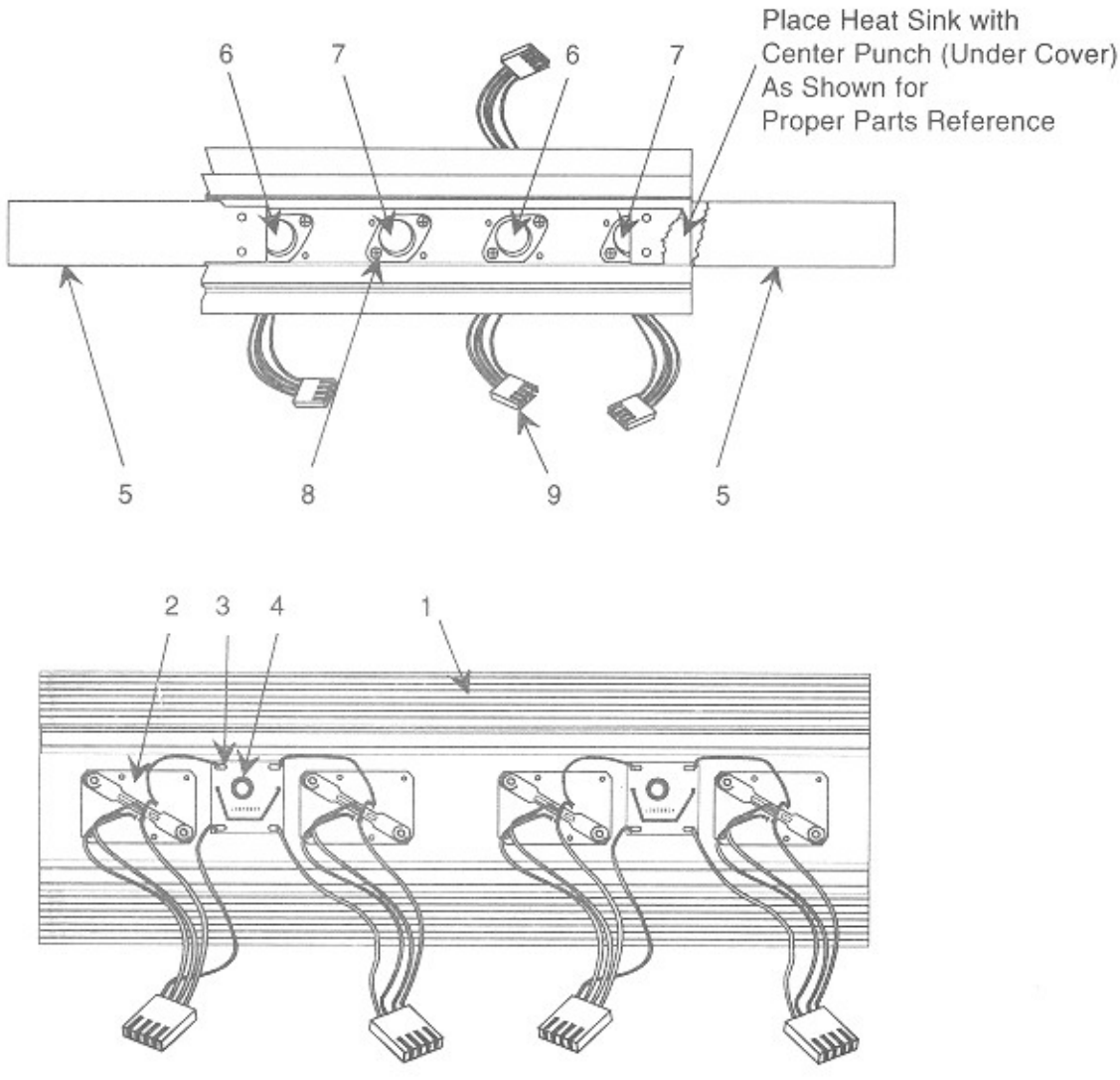



Figure 8-14. Heat Sink Detail

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | Ref. | Heat Sink Detail | |
| 1 | 40710303 | • Heat Sink | 1 |
| 2 | 21547301 | • Power Transistor Socket | 4 |
| 3 | 40863101 | • Circuit Board Assembly | 2 |
| 4 | 21840201 | • Compression Spring | 2 |
| | 80443020 | • #8-32 x 1¼ WRHMS (SF) | 2 |
| 5 | 21798001 | • Cover | 2 |
| 6 | 70030206 | • Transistor (Darlington Amp, RCA- 2N6284) (NPN, Q101, 2 places) | 2 |
| 7 | 70030207 | • Transistor (Darlington Amp, RCA-2N6287) (PNP, Q102, 2 places) | 2 |
| 8 | 21318902 | • Precoated-Insulator | 4 |
| 9 | 70075504 | • Connector Housing | 4 |

## Figure 8-15. Output Transformer Assembly

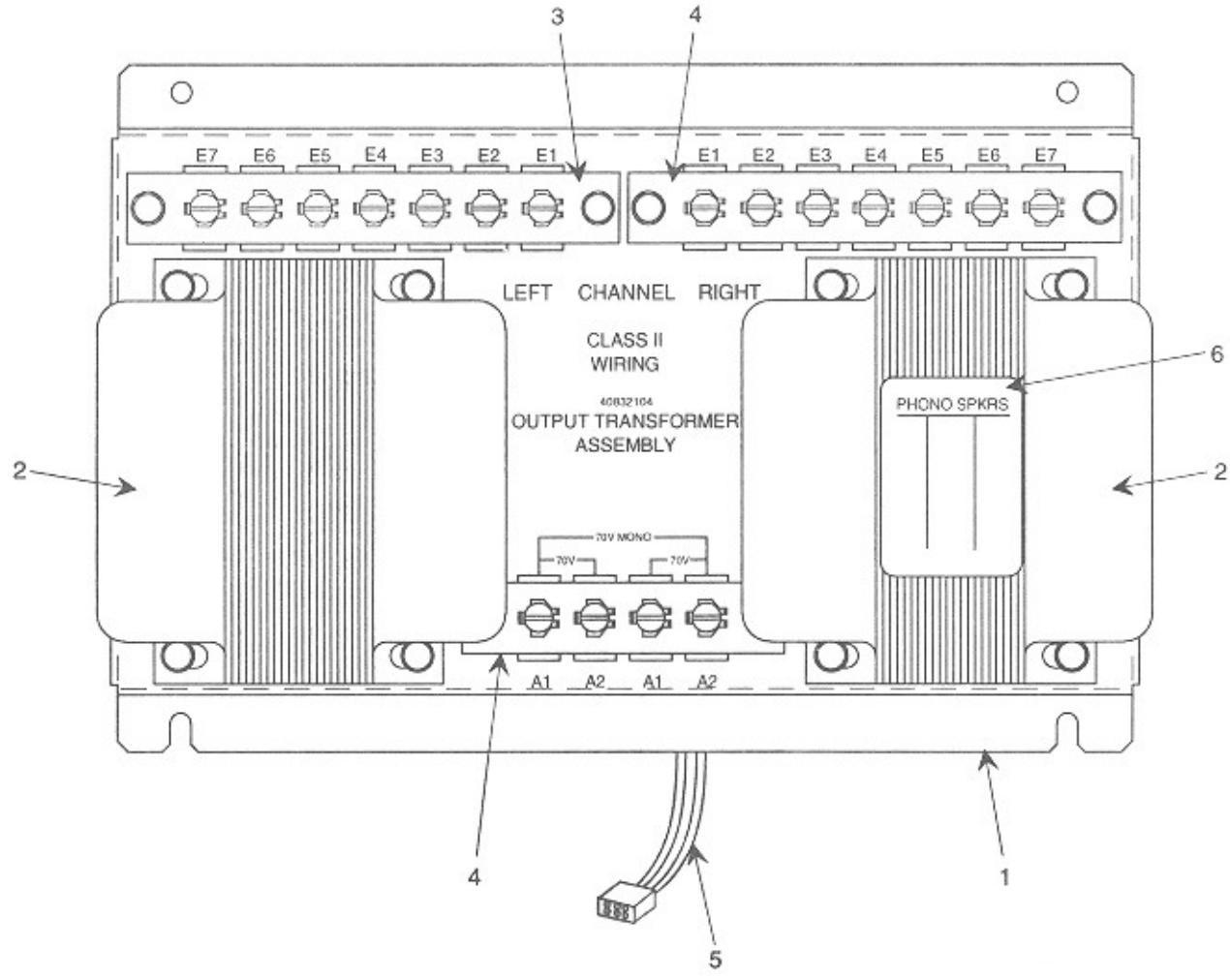
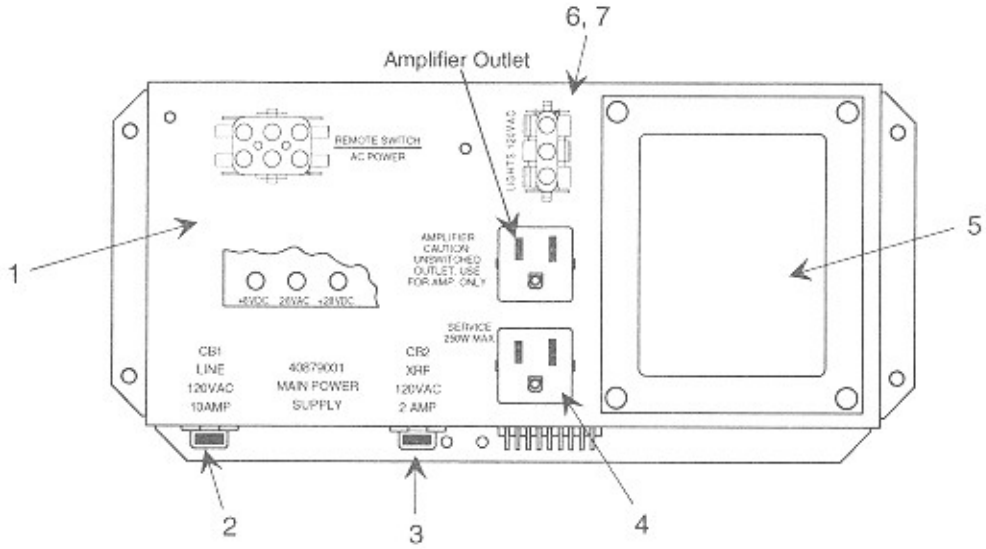



Figure 8-15. Output Transformer Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 40832104 | Transformer Assembly | |
| 1 | 40832004 | • Chassis with Lettering | 1 |
| 2 | 40633502 | • Output Transformer | 2 |
| 3 | 30426707 | • Terminal Strip | 1 |
| 4 | 30426706 | • Terminal Strip | 2 |
| 5 | 30985302 | • Harness Assembly | 1 |
| 6 | 21537401 | • Speaker Power Label | 1 |

## Figure 8-16. Main Power Supply
**(120 Volt, 60 Hz Model)**



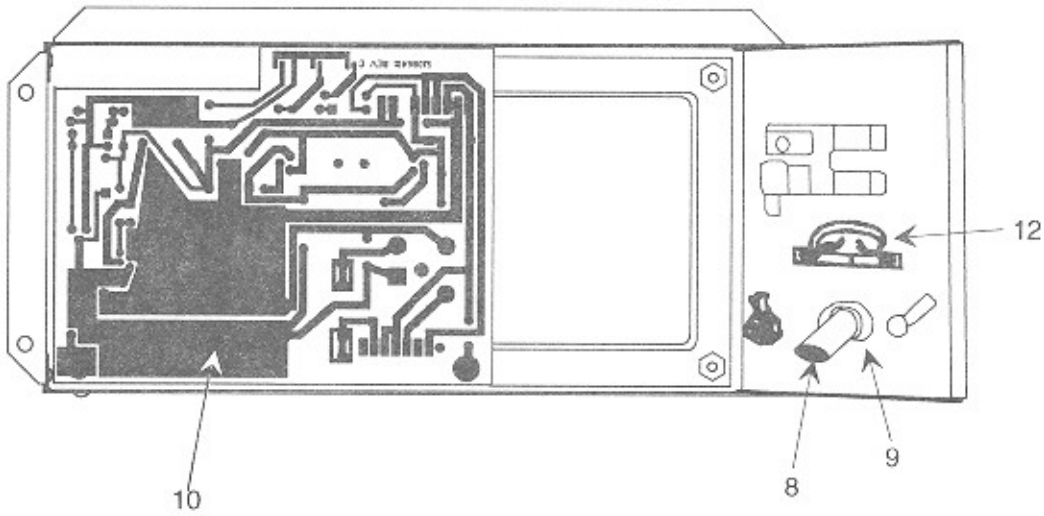



**Figure 8-16. Main Power Supply**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 40879001 | Main Power Supply (120 V) | Ref. |
| | 40879101 | Main Power Supply (100 V) | Ref. |
| | 40879102 | Main Power Supply (220 V) | Ref. |
| | 40879103 | Main Power Supply (240 V) | Ref. |
| 1 | 40771908 | • Chassis Assembly | 1 |
| 2 | 70073613 | • 10 Amp Circuit Breaker (120 V) | 1 |
| | 70073610 | • Breaker 100/220/240 V (7A) (Not Shown) | 2 |
| 3 | 70073605 | • 2 Amp Circuit Breaker (120 V) | 1 |
| | 70073608 | • Breaker 100/220/240 V (5A) (Not Shown) | 1 |
| 4 | 21375902 | • 3 Wire Convenience Outlet | 2 |
| 5 | 40772001 | • Power Transformer (120 V) | 1 |
| | 46509302 | • • Power Transformer (100/220/240 V) | 1 |
| | 70075601 | • • Post Contact (120 V) | 6 |
| | 70075601 | • • Post Contact (100/220/240 V) | 5 |
| | 70097504 | • • Contact | 1 |
| | 70091308 | • • Terminal Lug (120 V) | 1 |
| | 70091308 | • • Terminal Lug (100/220/240 V) | 4 |
| 6 | 30749002 | • Cap Housing | 1 |
| | 70097504 | • • Contact (100/220/240 V) | 3 |
| 7 | 70097504 | • Contact (120 V) | 2 |
| | 70091308 | • • Terminal Lug (120 V) | 2 |
| | 70091308 | • • Terminal Lug (100/220/240 V) | 4 |
| 8 | 30834509 | • Power Cord Assembly (120 V) | 1 |
| 9 | 70232104 | • Strain Relief | 1 |
| 10 | 61086501 | • Circuit Board Assembly - Main Power Supply | 1 |
| 11 | 21724101 | • Terminal Strip (100/220/240 V) (Not Shown) | 1 |
| 12 | 21943801 | • MOV Assembly (100/120 V) | 1 |
| | 21943701 | • MOV Assembly (220/240 V) | 1 |

## Figure 8-17. Central Control Computer

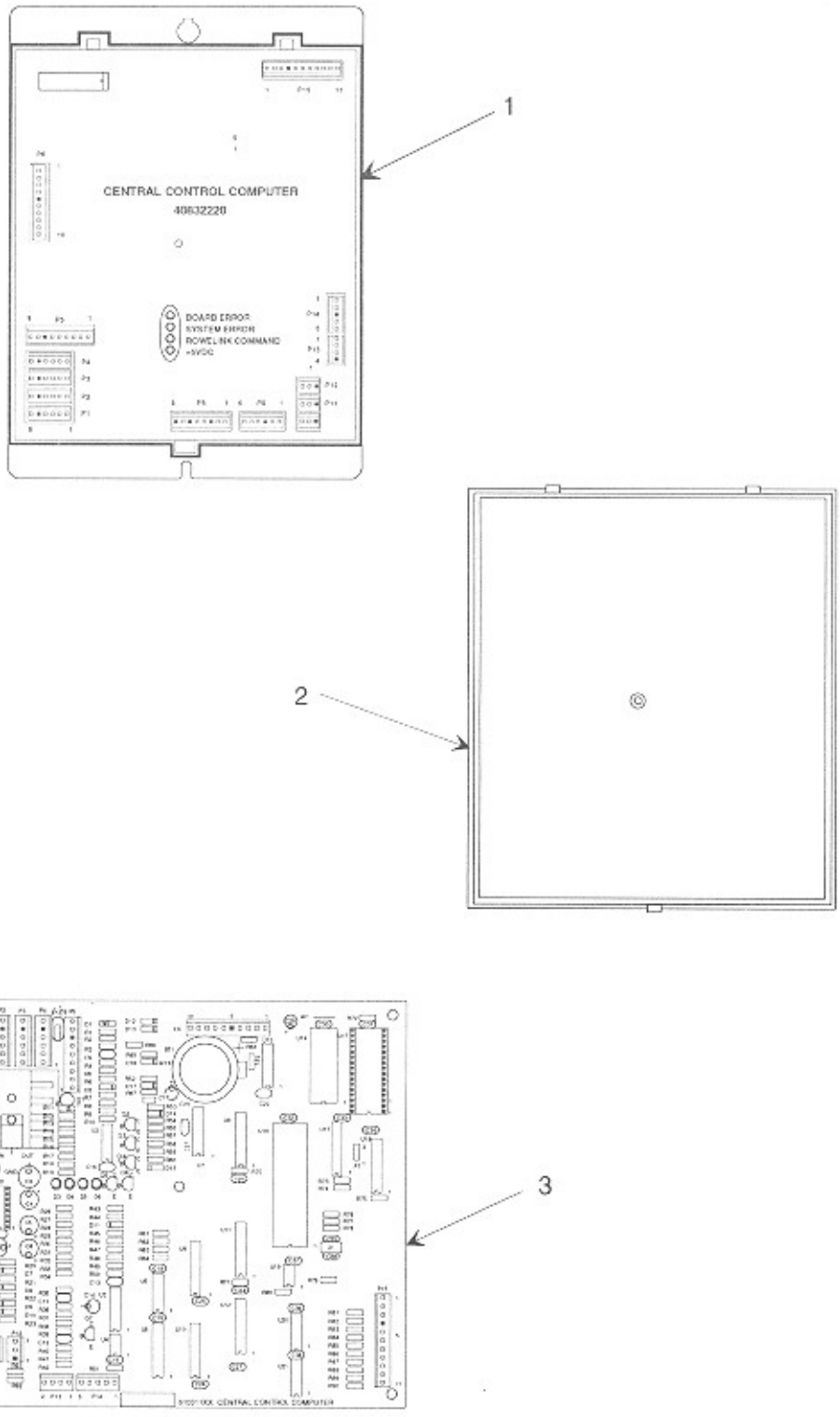


**Figure 8-17. Central Control Computer Assembly**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 40832220 | Central Control Computer Assembly | Ref. |
| 1 | 61031202 | • Central Control Computer Cover | 1 |
| 2 | 61031301 | • Central Control Computer Base | 1 |
| 3 | 61031120 | • Central Computer Circuit Board Assembly | 1 |

## Figure 8-18. Mechanism Assembly

**Sheet 1**

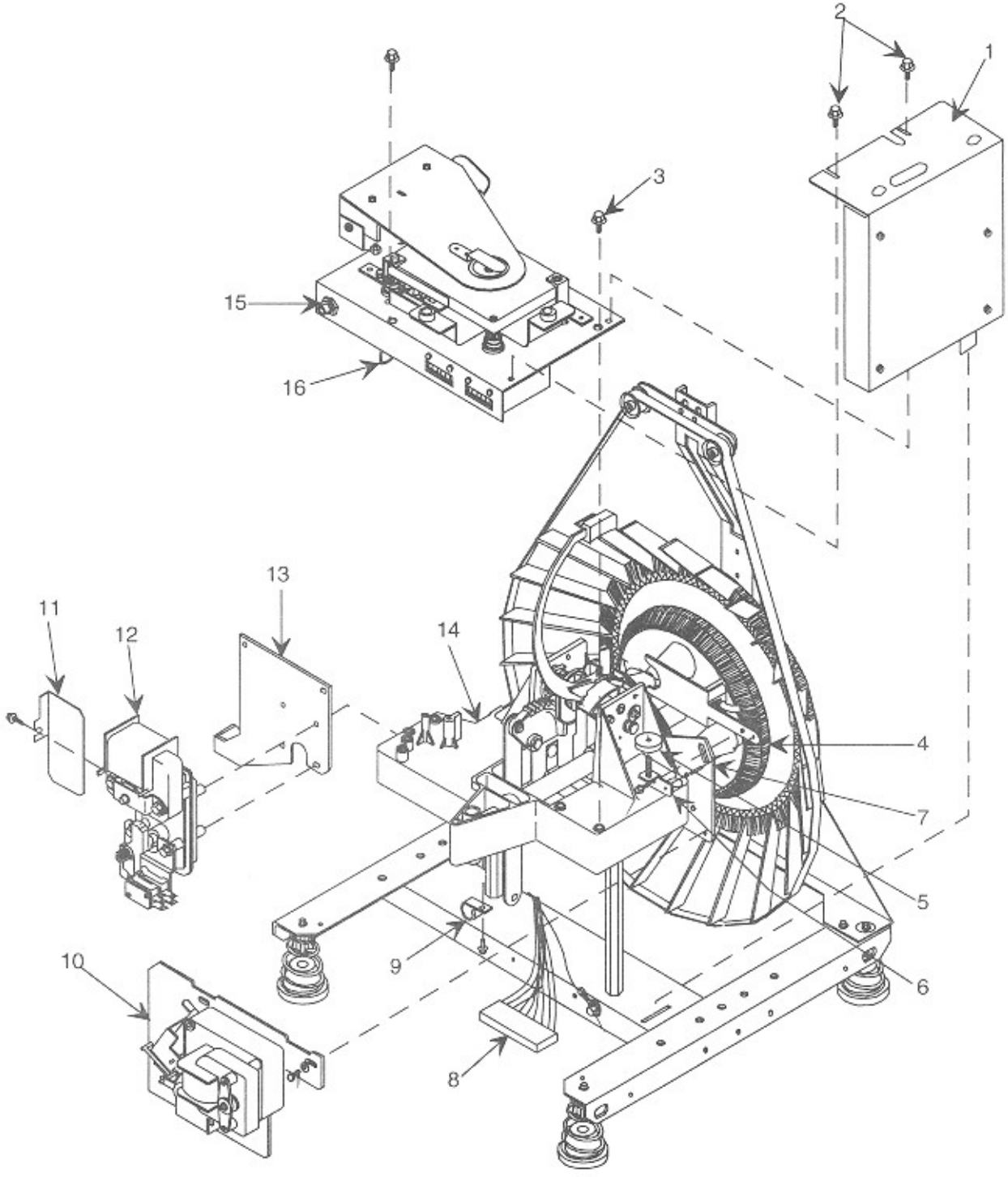


**Figure 8-18. Mechanism Assembly (Sheet 1)**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61085701 | CD Mechanism Assembly | Ref. |
| | 40871601 | Ribbon Harness (Not Shown) | 1 |
| 1 | 61086201 | • Mech Control Assembly | 1 |
| 2 | 80443004 | • 8-32 x 1/4" Hex Head Screws | 2 |
| 3 | 80743010 | • 8-32 x 5/8" Plate Mounting Screw | 1 |
| 4 | 30906801 | • Optical Switch Assembly | 1 |
| 5 | 21818401 | • Adjusting Knob | 1 |
| 6 | 21818601 | • Assembly Adjusting Bracket | 1 |
| 7 | 40721801 | • Mounting Plate (Intermediate) | 1 |
| 8 | 40830003 | • CD Harness Assembly | 1 |
| 9 | 70093401 | • Cable Clamp | 1 |
| 10 | 40721901 | • Sprag Assembly | 1 |
| 11 | 30946901 | • Oil Spray Shield | 1 |
| 12 | 40720802 | • Cam Switch & Motor Assembly | 1 |
| 13 | 30790701 | • Motor Mounting Plate | 1 |
| 14 | 60870703 | • Mechanism Base | 1 |
| 15 | 61092402 | • Plate & Player Assembly | 1 |
| 16 | 30967602 | • Mounting Plate Reinforcement Bracket | 1 |

## Figure 8-18. Mechanism Assembly
Sheet 2

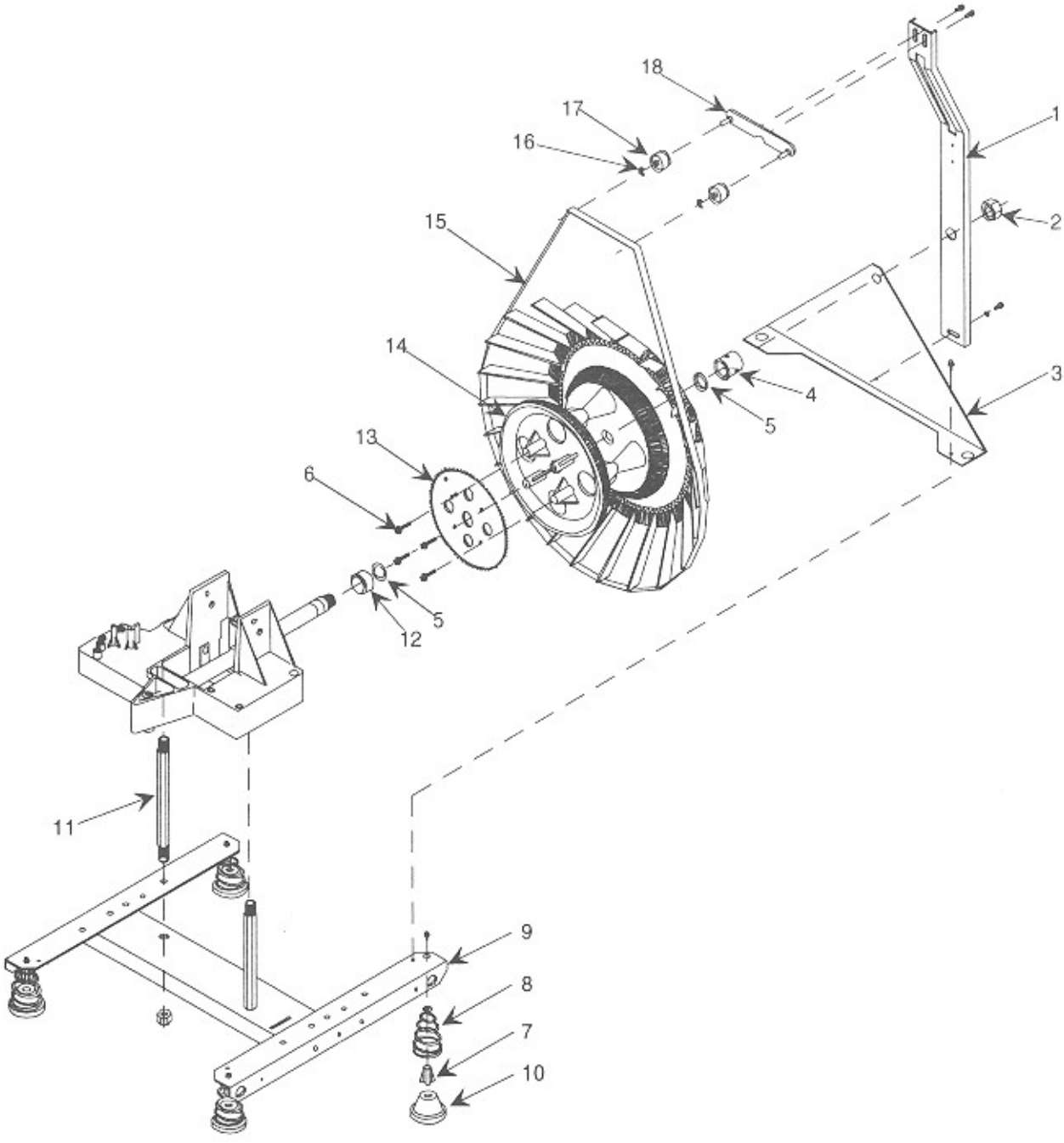


**Figure 8-18. Mechanism Assembly (Sheet 2)**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61085701 | CD Mechanism Assembly | Ref. |
| 1 | 40721303 | • Gripper Bow Guide Assembly | 1 |
| 2 | 70130109 | • 9/16-18 Jam Nut | 1 |
| 3 | 61052901 | • Rear Support | 1 |
| 4 | 21812601 | • Collar | 1 |
| 5 | 70146001 | • Nyliner Bearing | 2 |
| 6 | 86663612 | • #8-32 X 3/4 HWRHS Type 17 Screw | 4 |
| 7 | 20627202 | • Upper Support Spring | 4 |
| 8 | 20612804 | • Spring | 4 |
| 9 | 30791502 | • Mech Assembly Support | 1 |
| 10 | 21153701 | • Lower Support Spring | 4 |
| 11 | 21812501 | • Mechanism Support | 2 |
| 12 | 25156906 | • Shoulder Washer | 1 |
| 13 | 30790401 | • Magazine Gear | 1 |
| 14 | 61045801 | • CD Magazine Assembly | 1 |
| 15 | 21813802 | • Belt | 1 |
| 16 | 70143003 | • External Retaining Ring | 2 |
| 17 | 20384301 | • Belt Roller | 2 |
| 18 | 21089401 | • Roller Bracket Assembly | 1 |

## Figure 8-18. Mechanism Assembly

**Sheet 3**

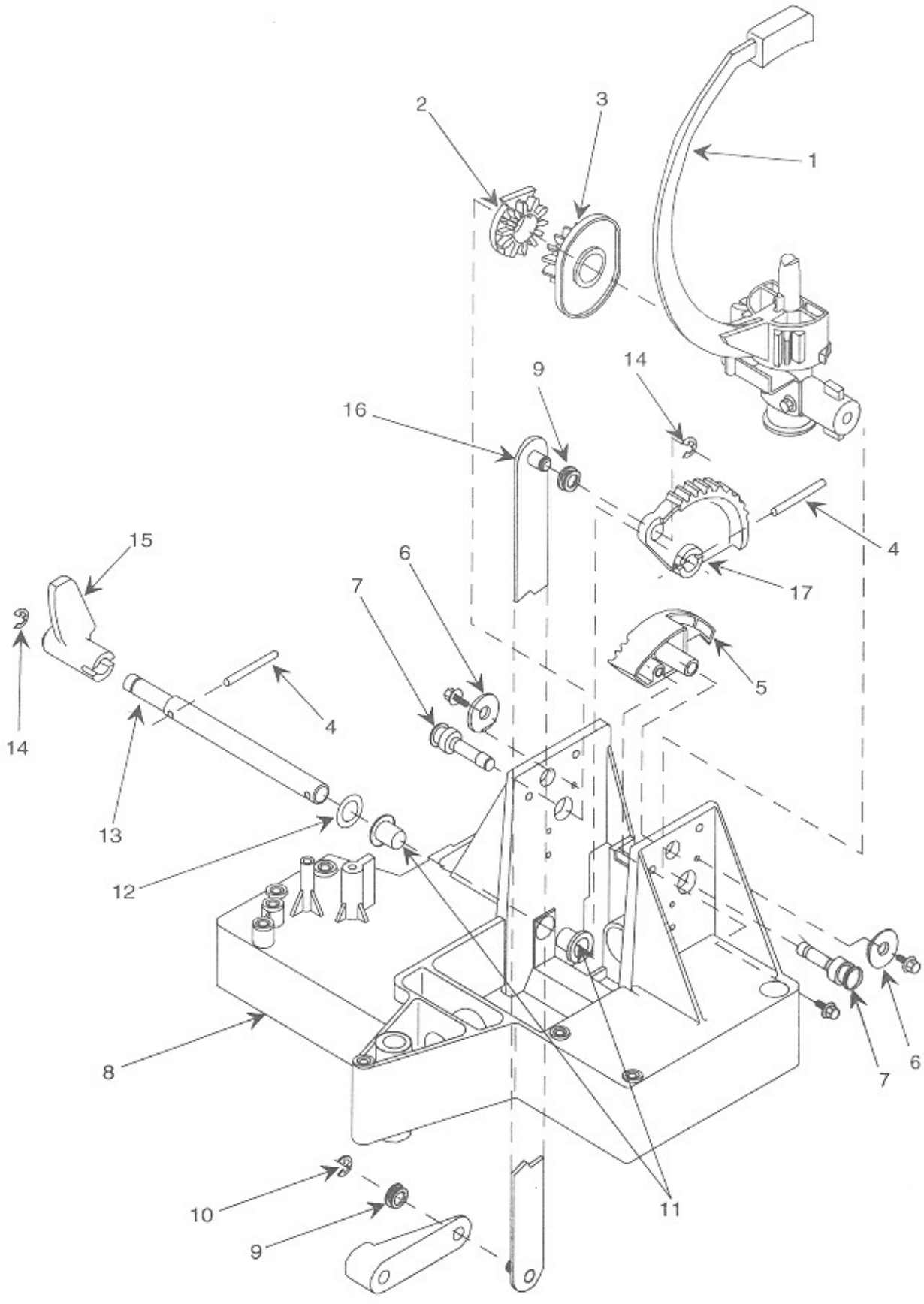


**Figure 8-18. Mechanism Assembly (Sheet 3)**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61085701 | CD Mechanism Assembly | |
| 1 | 40720703 | • Gripper Bow & Trunnion Assembly | 1 |
| 2 | 40720401 | • • Cam Gear | 1 |
| 3 | 40720601 | • • Trunnion Gear | 1 |
| 4 | 70113003 | • • Roll Pin | 2 |
| 5 | 30790603 | • Rotator Assembly | 1 |
| 6 | 70120010 | • Washer | 2 |
| 7 | 21079202 | • Trunnion Pin | 2 |
| 8 | 60870703 | • • Mechanism Base | 1 |
| 9 | 70146004 | • • Nyliner Bearing | 2 |
| 10 | 70143004 | • • External Retaining Ring | 2 |
| 11 | 70146005 | • • Nyliner Bearing | 2 |
| 12 | 70122533 | • • Bowed Washer | 1 |
| 13 | 21813202 | • • Cam Drive Shaft | 1 |
| 14 | 70143010 | • • External Retaining Ring | 1 |
| 15 | 30930002 | • • Hold Down Cam | 1 |
| 16 | 21810201 | • • Transfer Link Assembly | 1 |
| 17 | 40720502 | • • Sector Gear | 1 |

## Figure 8-18. Mechanism Assembly

Sheet 4

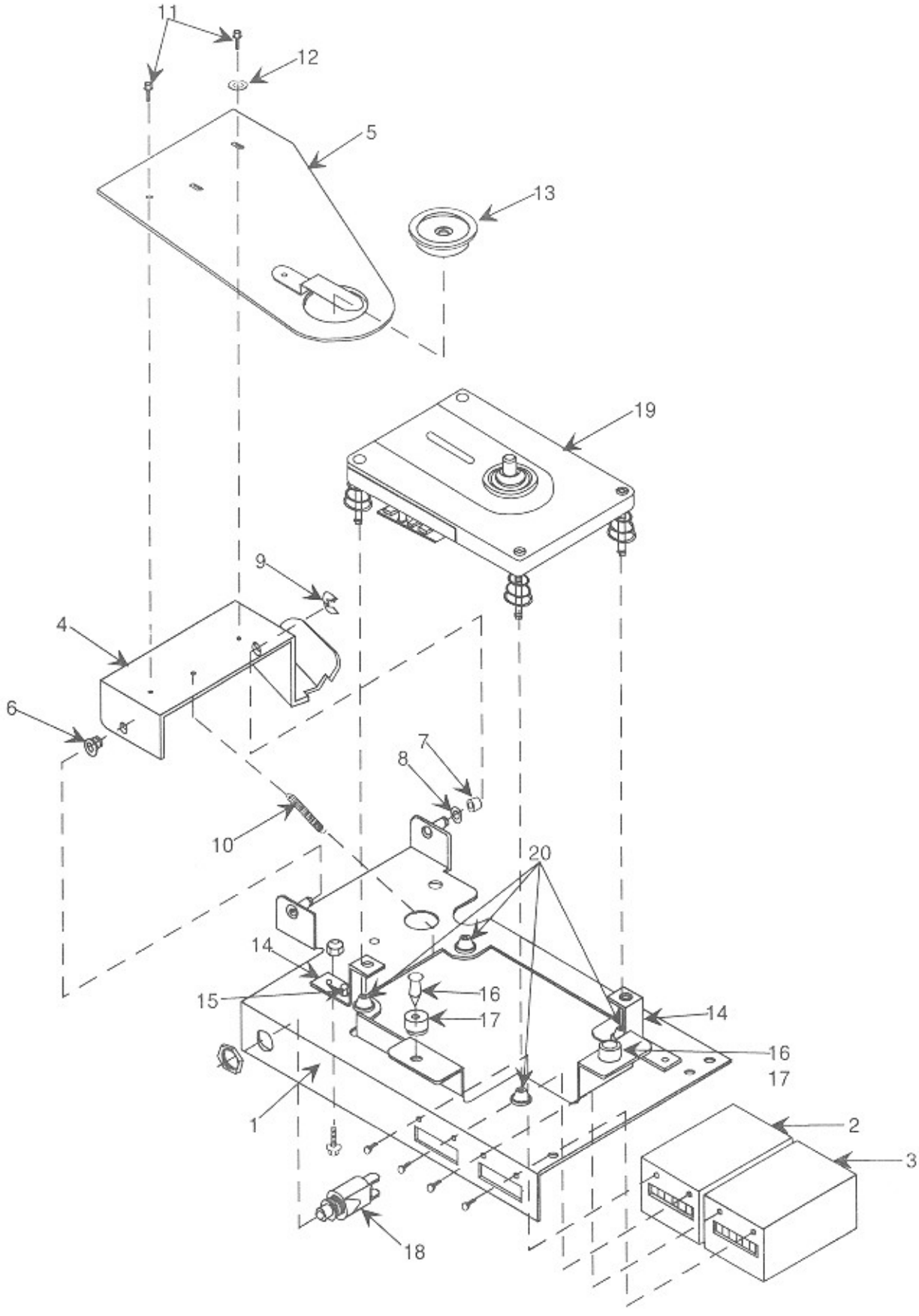


**Figure 8-18. Mechanism Assembly (Sheet 4)**

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 61085701 | CD Mechanism Assembly | |
| 1 | 61048004 | • Mounting Plate | 1 |
| 2 | 21538302 | • Money Counter | 1 |
| 3 | 21441802 | • Play Counter | 1 |
| 4 | 40847501 | • CD Hold Down Hinge | 1 |
| 5 | 30954701 | • Hold Down Plate Assembly | 1 |
| 6 | 70146004 | • Nyliner Bearing | 1 |
| 7 | 21996101 | • Hinge Bearing | 1 |
| 8 | 70120703 | • Nylon Washer | 1 |
| 9 | 701430041 | • External Retaining Ring | 1 |
| 10 | 21095501 | • Tension Spring | 1 |
| 11 | 80443005 | • 8-32 x 5/16" Hex Head Screws | 2 |
| 12 | 70120019 | • Washer | 1 |
| 13 | 30930402 | • Holddown Magnet | 1 |
| 14 | 21961202 | • Lockdown Bracket | 2 |
| 15 | 80443004 | • 8-32 x 1/4" Hex Head Screws | 2 |
| 16 | 20930007 | • Accordion Rivet | 2 |
| 17 | 21813901 | • Grommet | 2 |
| 18 | 21581801 | • Cancel Switch | 1 |
| 19 | 30995302 | • CDM-12 w/Centering Hub | 1 |
| 20 | 21940102 | • Grommet | 4 |

## Figure 8-19. Sprag Assembly

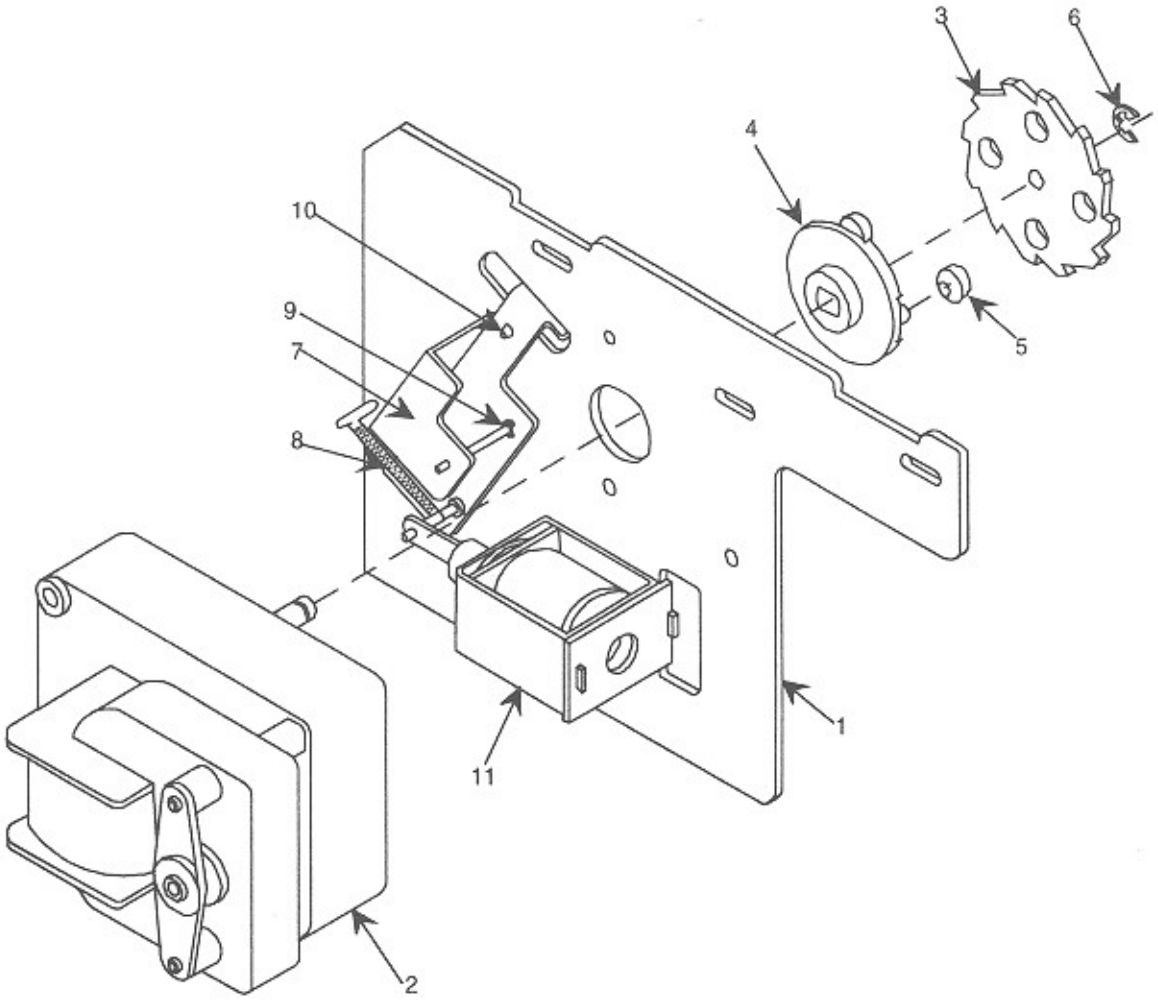



Figure 8-19. Sprag Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 40721901 | Sprag Assembly | Ref. |
| 1 | 30793901 | • Sprag Plate Assembly | 1 |
| 2 | 40722701 | • • Magazine Motor | 1 |
| 3 | 40722301 | • • Sprag Wheel | 1 |
| 4 | 30793301 | • • Sprag Wheel Hub | 1 |
| 5 | 21816103 | • Stem Bushing (Rubber) | 4 |
| 6 | 70143003 | • Retaining Ring | 1 |
| 7 | 21816001 | • Sprag Lever Assembly | 1 |
| 8 | 21256201 | • Tension Spring | 1 |
| 9 | 70143005 | • Retaining Ring | 1 |
| 10 | 25155901 | • Split Stem Bumper | 2 |
| 11 | 21150510 | • Solenoid Assembly | 1 |
| 12 | 21085701 | • Plunger Assembly | 1 |
| 13 | 21084902 | • Plunger Stop | 1 |

## Figure 8-20. Cam Switch and Motor Assembly

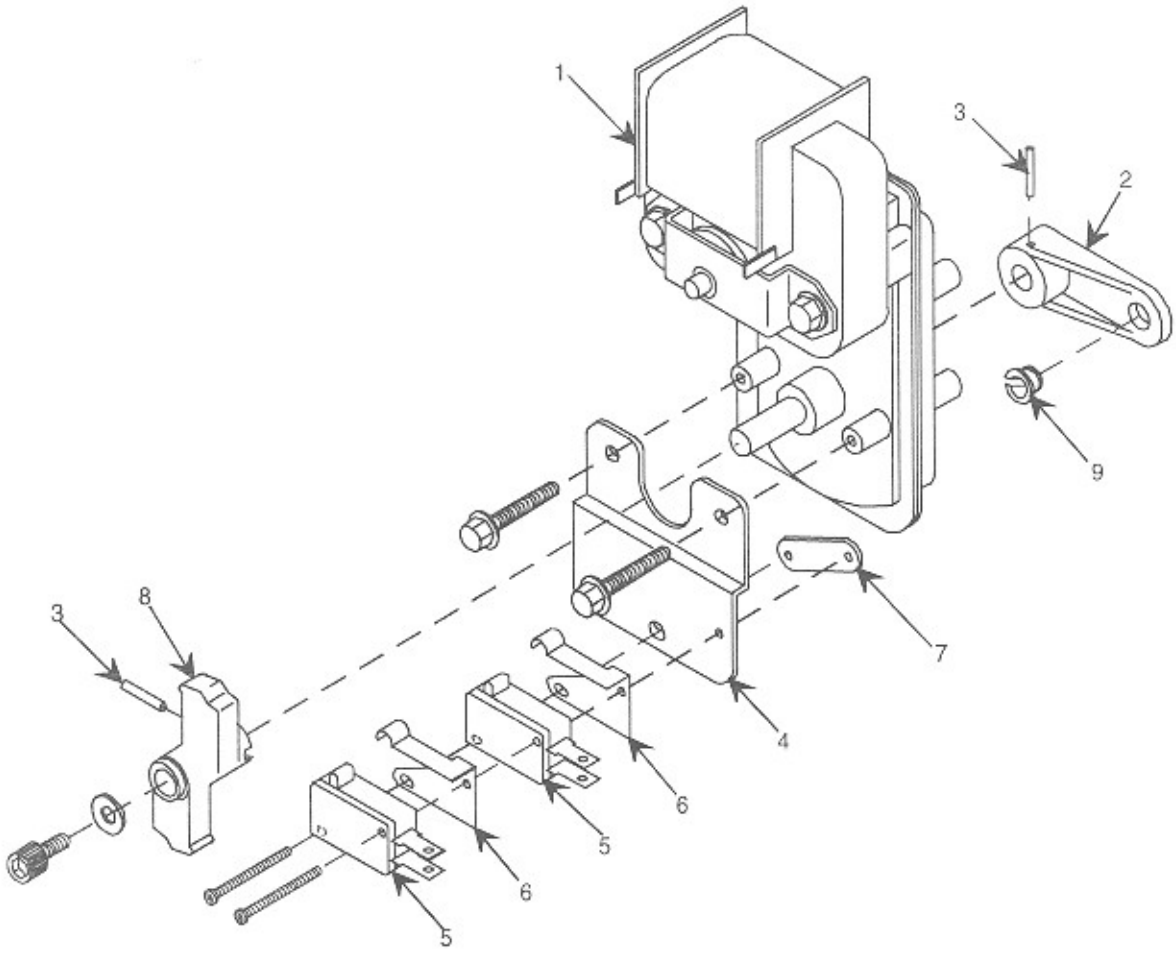



Figure 8-20. Cam Switch and Motor Assembly

| Ref. | Part No. | Description | Qty. |
|---|---|---|---|
| | 40720802 | Cam Switch and Motor Assembly | Ref. |
| 1 | 40720901 | • Cam Motor | 1 |
| 2 | 21810401 | • Trunnion Crank | 1 |
| 3 | 70113116 | • Roll Pin | 2 |
| 4 | 30790901 | • Switch Plate | 1 |
| 5 | 21073101 | • Switch | 2 |
| 6 | 21082901 | • Switch Actuator | 2 |
| 7 | 21083001 | • Twin Nut | 1 |
| 8 | 30793402 | • Switch Cam | 1 |
| 9 | 70146004 | • Bearing | 1 |

**Table 8-2. Accessory Equipment**

| Part No. | Description | Function |
|---|---|---|
| 26704401 | Phonograph paging system with tabletop microphone. | Paging system not affected by A.V.C. All plug-in unit, complete with microphone and 50 foot microphone cable. |
| 26704402 | Phonograph paging system with hand-held microphone. | Paging system not affected by A.V.C. All plug-in unit, complete with microphone and 50 foot microphone cable. |
| 26694703 | Amplifier Accessory Kit<br>NOTE: This kit will work with all 607925XX and 610237XX preamplifiers. | Provides access to auxiliary inputs and outputs of the preamplifier. Inputs wil accept signals from most background music sources, such as tape players and AM/FM radios. Outputs are available to drive slave amplifiers before or after volume control. |
| 21639701 | Background Music Kit | Allows the phonograph to play Autoplay and customer selected music at different levels. Music can be played at different volumes in two different rooms or music can be switched to different rooms during either Autoplay or customer selections. |
| 30632201 | Remote Volume and Cancel control | This remote strereo volume control includes a cancel button. This kit does not include cable. A 3-conductor cable is required. |
| 60898004 | Remote volume power switch and cancel control | In addition to volume and cancel functions, the phonograph can be turned OFF and ON from a remote position. The CD currently playing is automatically canceled when the phonograph is turned OFF. The amplifier remains OBN so that paging is possible. For domestic 120 volt phonographs only. Cable is not included. A four conductor cable is required. |
| 30632209 | Dual Remote Volume Control | Controls volume of each channel separately. Does not include cable. A four conductor cable is required. |
| 20819907 | Remote volume and cancel control cable | This 3-conductor 50 foot cable connects a remote volume control to a phonograph. |
| 20819908 | Remote volume and cancel control cable | This 4-conductor 50 foot cable connects a remote volume control to a phonograph. |
| 66505910 | Service Kit | Includes central computer, digital display, power supply board, optical switch, power supply heat sink, blank titles, micro switches, peanut lamps, and fuses. |
| 66505909 | Service Kit | Includes mechanism controller and decoder assembly, CDM-12 CD player with mounting accessories. |
| 26711401 | Amplifier Adapter Harness | Allows a 130 watt amplifier to be connected to a phonograph as a replacement amplifier (the total amplifier output will be limited to 130 watts in this configuration). |
| 26699503 | Security Bar Kit | Heavy steel bar locks in place over cash box door. A padlock is required (not supplied by Rowe). |
| 21945601 | Printer Interface Kit | Allows you to connect a serial RS-232 printer to the phonograph. The printer must be at least a 40-coumn printer (Citizen Model IDP-560 is recommended). |
| 21957502 | Laserstar Infrared Remote Control Kit | Wireless remote control of: volume, cancel, selections, and pause. Volume of each channel can be controlled separately, or both channels can be controlled at once. |
| 26714103 | Black Metallic Touch-Up Paint | |
| 26713501 | Dual Phonograph Kit | Connects two CD phonographs together for continuous music with no delay between selections. Provides selecting from 200 CD's and 500 watts RMS power. |

## Parts Included In The Handy Case

*(Refer to Figure 8-5, Item 10)*

| | | |
|---|---|---|
| 21730516 | • Accessories Bag Assembly | 1 |
| 21827201 | • • Bag - Zip Lock | 1 |
| 70097501 | • • • Contact - Universal Connector (Pin) | 6 |
| 70097502 | • • • Contact - Universal Connector (Socket) | 6 |
| 70075601 | • • • Contact - Post | 10 |
| 70091012 | • • • Terminal Lug - Spade | 10 |
| 70072002 | • • • Fuse Cartridge (8 amp.) | 2 |
| 70072106 | • • • Fuse Cartridge (5 amp.) | 2 |
| 26676802 | • • • Quality Card - Phonograph | 1 |
| 21957002 | • • Routine Service Guide | 1 |
| 30931304 | • • Alternate Price Card | 1 |
| 61031402 | • • Universal Price Sheet | 1 |
| 30935903 | • • Blank Title Strip With Numbers | 15 |
| 30940601 | • • Title Page Filler | 8 |
| 30935904 | • • Blank Title Strip (Without Numbers) | 15 |
| 21969501 | • • Errors Guide | 1 |
| 21822636 | • • Service Manual - Volume 1 | 1 |
| 21822637 | • • Service Manual - Volume 2 | 1 |
| 21627602 | • • Conductive Bag | 1 |
| 21945401 | • • Graphic Equalizer Instructions | 1 |
| 21951301 | • • CD Setup Instructions | 1 |
| 21961601 | • • CD Retainer Instructions | 1 |

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