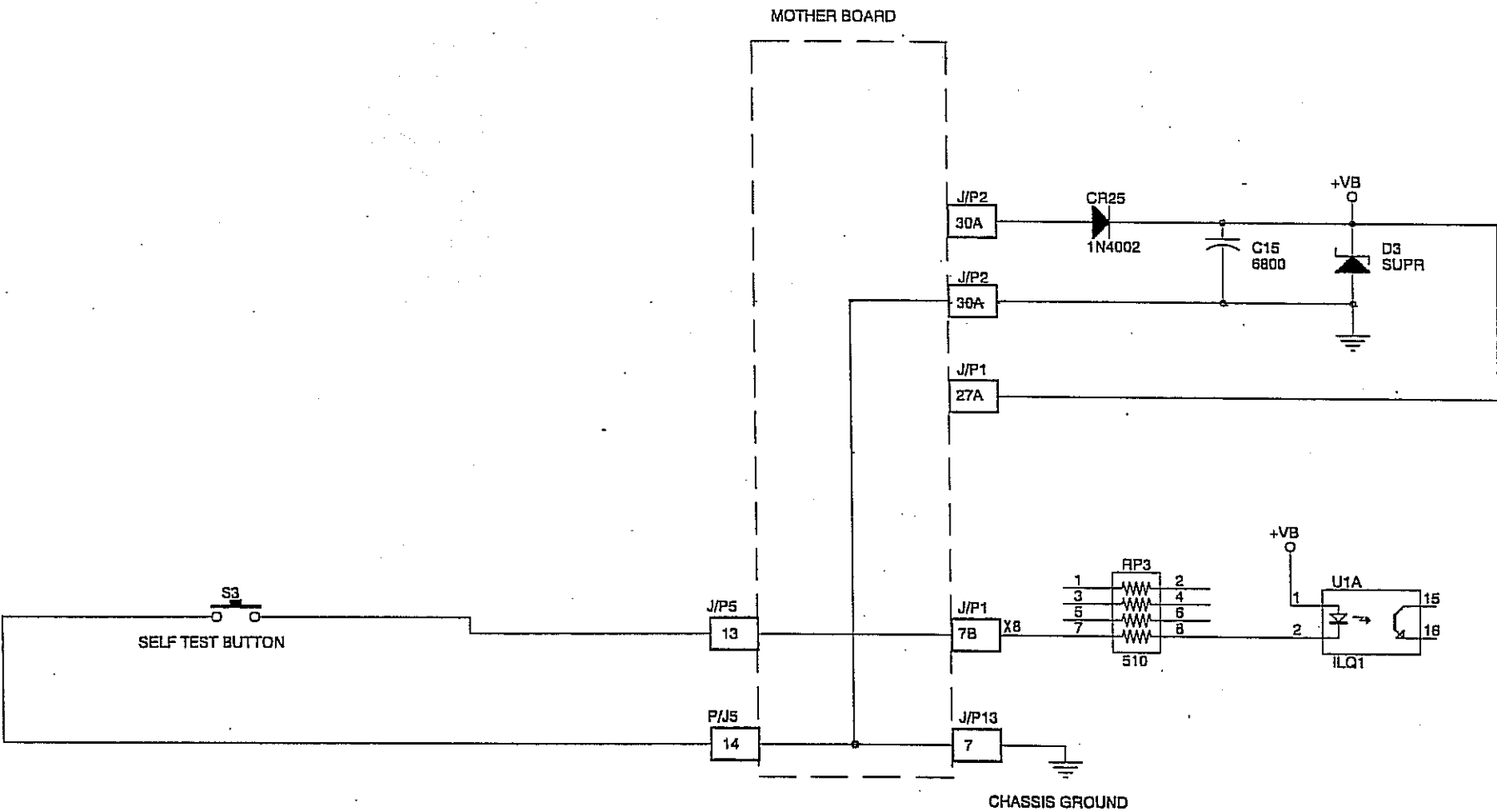


Problem: Self Test Switch is Nonfunctional (Can't Enter Self Test Mode)



Before removing the processor board, check the following areas:

- ✓ Check wires and connectors for defects
- ✓ Check for ~8 to 10 VDC across 2 leads of the self test switch
- ✓ Press the self test switch- measure the voltage (voltage should be 0 VDC)
- ✓ Replace the self test switch, and test

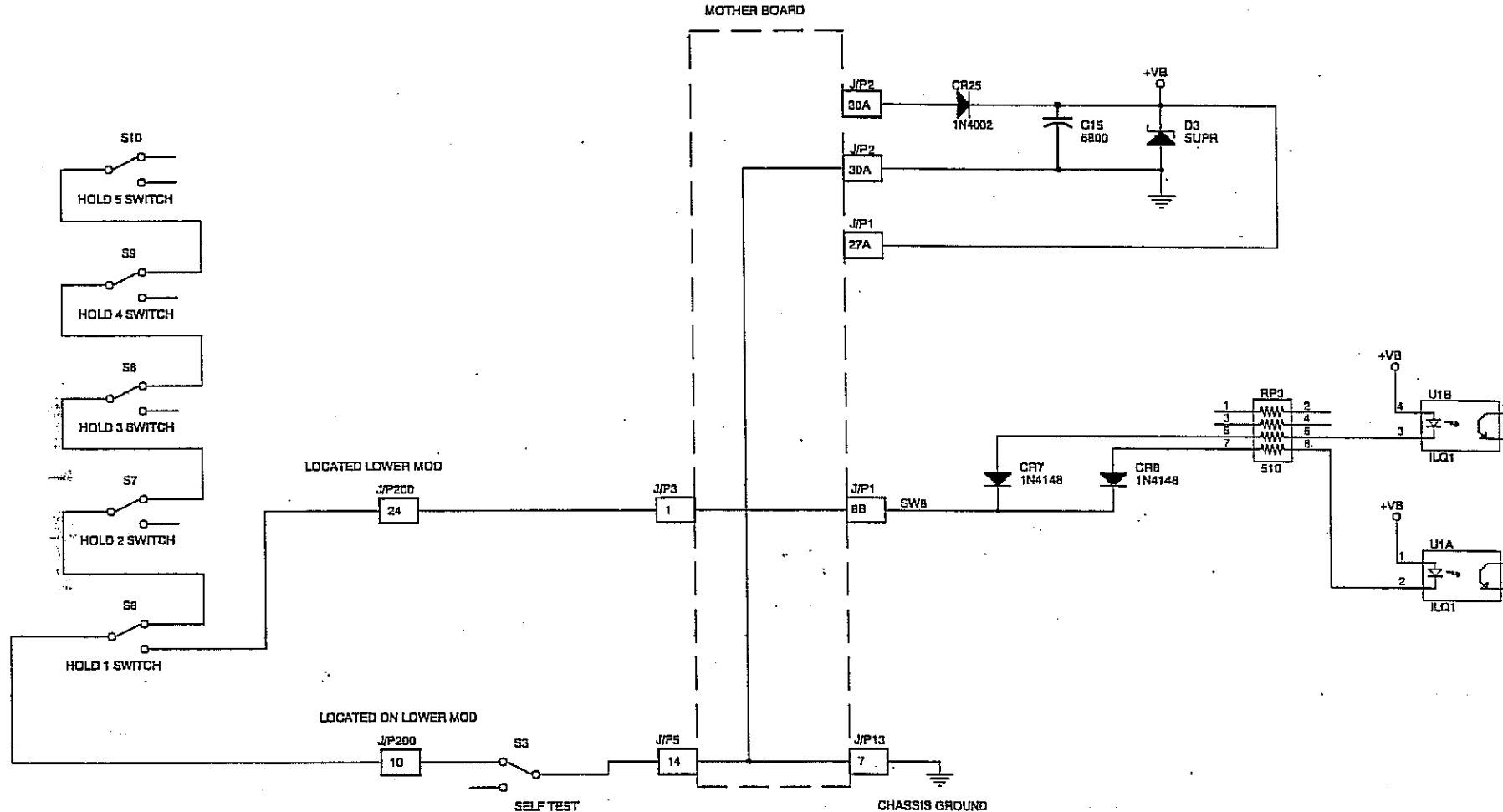
If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
Ground lead to J/P5-14
Normally open lead to J/P5-13

MOTHER BOARD CONTINUITY TEST
J/P5-14 to J/P13-7 & J/P2-30A
J/P5-13 to J/P1-7B

PROCESSOR BOARD TEST
Check Vb at U1 (negative lead on B ground use positive lead to check pin 1 for Vb (~8-9VDC))
Test U1 - if problem continues, then replace.
Test RP3 - if problem continues, then replace.



WIRE CONTINUITY TEST
Common lead to J/P5-14
Normally open lead to J/P3-1

MOTHER BOARD CONTINUITY TEST
J/P5-14 to J/P13-7
J/P3-1 to J/P1-8B

PROCESSOR BOARD TEST
Check Vb at U10 (negative lead on B ground, use positive lead to check pin 1 & 4 for Vb (~8-9VDC))
Check Vb at U2 (negative lead on Bgnd, positive lead on pin 1)
Test CR7 & CR8 (1N4148's)
Test RP3 - if problem continues, then replace.

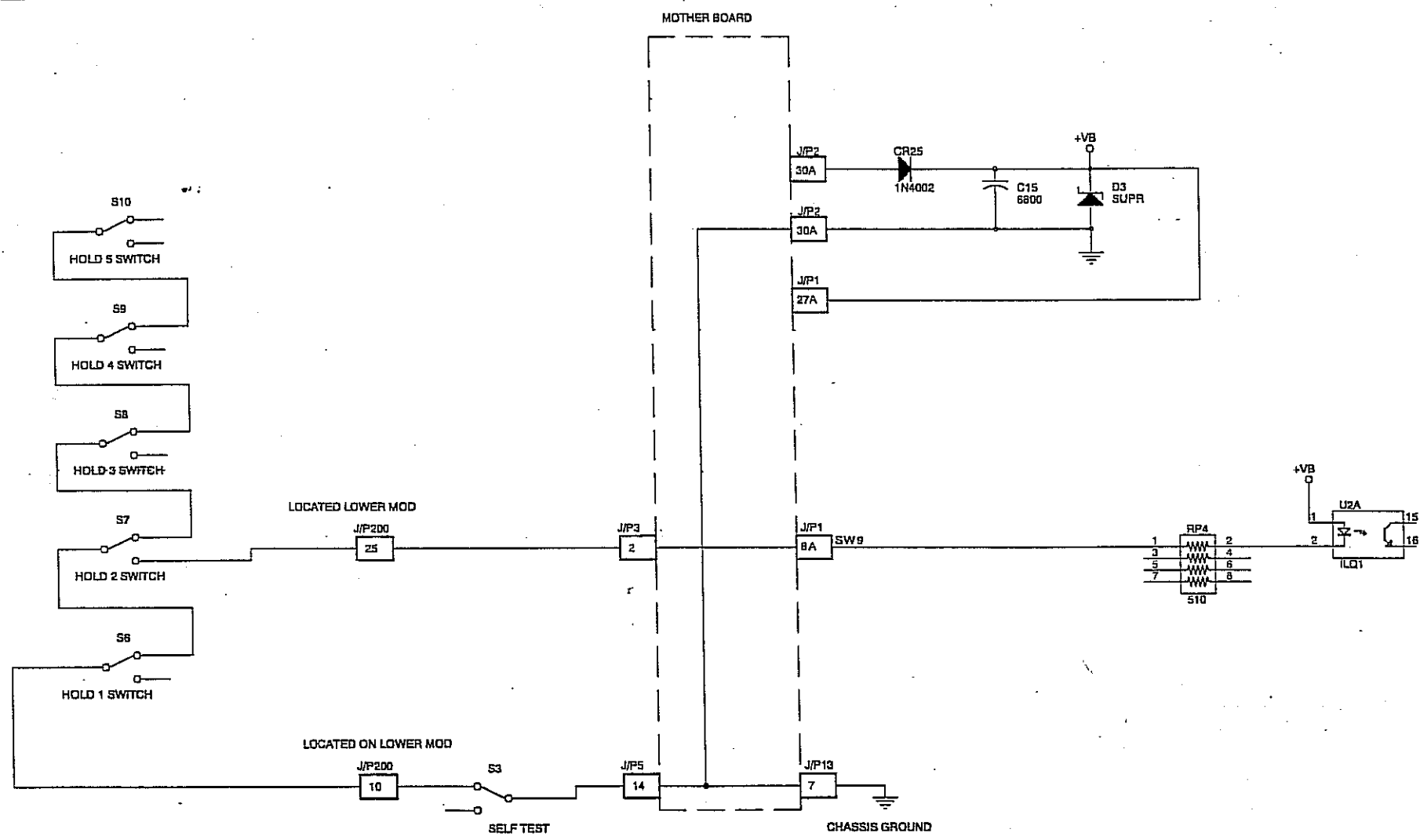
Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the inputs test in the self test mode
- ✓ Check to see if the button assembly is clean, and has no broken or missing parts
- ✓ If there is a faulty microswitch, replace it
- ✓ If all the hold switches are nonfunctional, replace the self test switch
- ✓ If the microswitch is wired incorrectly, reconnect by checking another machine of the same type
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from H/C1 common to the normally closed leg of H/C5
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Hold 2 Switch is Nonfunctional



WIRE CONTINUITY TEST
Common lead to J/P5-14
Normally open lead to J/P3-2

MOTHER BOARD CONTINUITY TEST
J/P5-14 to J/P13-7
J/P3-2 to J/P1-8A

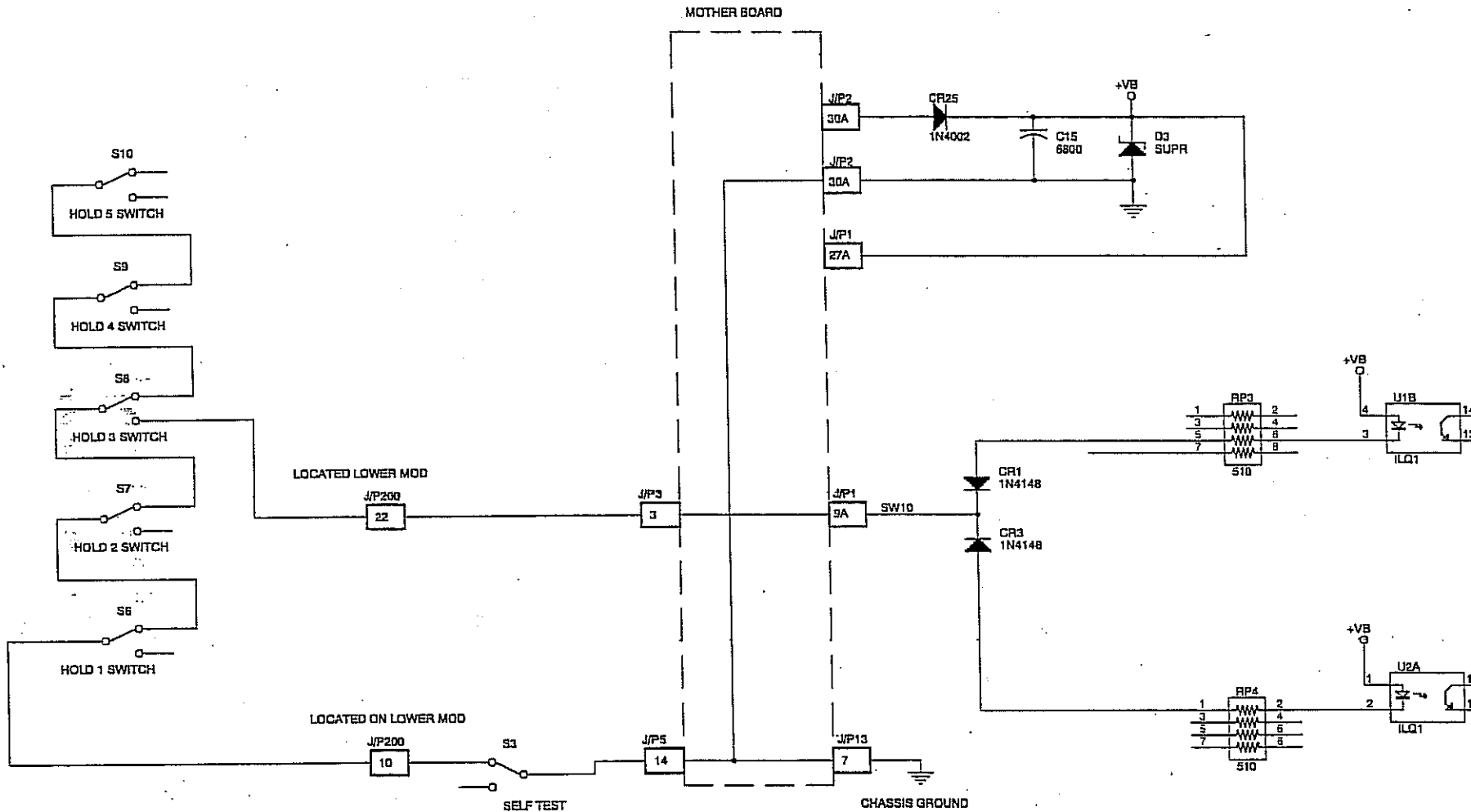
PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground
use positive lead to check pin 1 (U2) for Vb
(~8-9VDC))
Test U2
Test RP4 - if problem continues, then replace.

Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and has no broken or missing parts
- ✓ If there is a faulty microswitch, replace it
- ✓ If hold switches 2 through 5 are nonfunctional, replace hold switch one first
- ✓ If the microswitch is wired incorrectly, reconnect by checking another machine of the same type.
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from H/C2 common to the normally closed leg of H/C5
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



WIRE CONTINUITY TEST
Common lead to J/P5-14
Normally open lead to J/P3-3

MOTHER BOARD CONTINUITY TEST
J/P5-14 to J/P13-7
J/P3-3 to J/P1-9A

PROCESSOR BOARD TEST
Check Vb at U1 (negative lead on B ground use positive lead to check pin 1, 2, 4 for Vb (-8-9VDC))
Check Vb at U2 (negative lead on B gnd and positive lead on pin 1)
Test U1 & U2
Test CR1 & CR3
Test RP3 or RP4 - if problem continues, then replace.

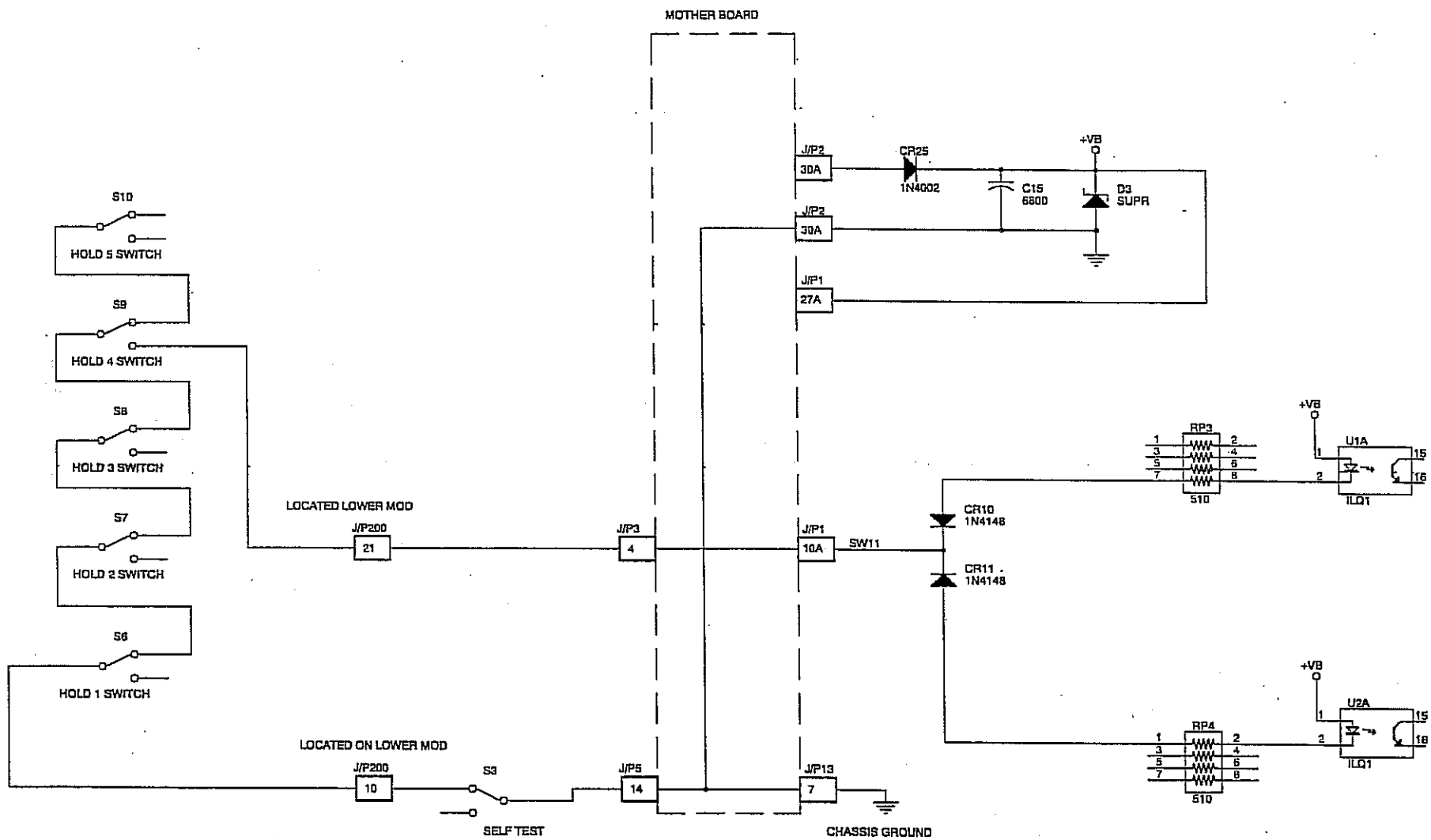
Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and has no broken or missing parts
- ✓ If there is a faulty microswitch, replace it
- ✓ If hold switches 3 through 5 are nonfunctional, replace hold switch 2 first
- ✓ If the microswitch is wired incorrectly, reconnect by checking another machine of the same type
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for -8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from H/C3 common to the normally closed leg of H/C5
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Hold 4 Switch is Nonfunctional



WIRE CONTINUITY TEST
Common lead to J/P5-14
Normally open lead to J/P3-4

MOTHER BOARD CONTINUITY TEST
J/P5-14 to J/P13-7
J/P3-4 to J/P1-10A

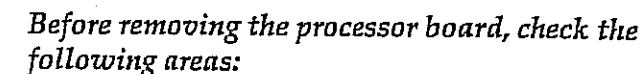
PROCESSOR BOARD TEST
Check Vb at U1 & 2 (negative lead on B ground use, positive lead to check pins 1 & 2 for Vb (~8-9VDC))
Test U1 & U2
Test CR10 & CR11
Test RP3 or RP4, if problem continues, then replace.

Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and has no broken or missing parts
- ✓ If there is a faulty microswitch, replace it
- ✓ If hold switches 4 and 5 are nonfunctional, replace hold switch 3 first
- ✓ If the microswitch is wired incorrectly, reconnect by checking another machine of the same type
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground. (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts.
- ✓ Test for continuity from H/C4 common to the normally closed leg of H/C5

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and has no broken or missing parts
- ✓ If there is a faulty microswitch, replace it
- ✓ If hold switch 5 is nonfunctional, replace hold switch 4 first
- ✓ If the microswitch is wired incorrectly, reconnect by checking another machine of the same type
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ If voltage is missing, use this diagram to test for wire continuity

If that doesn't work, try the following steps:

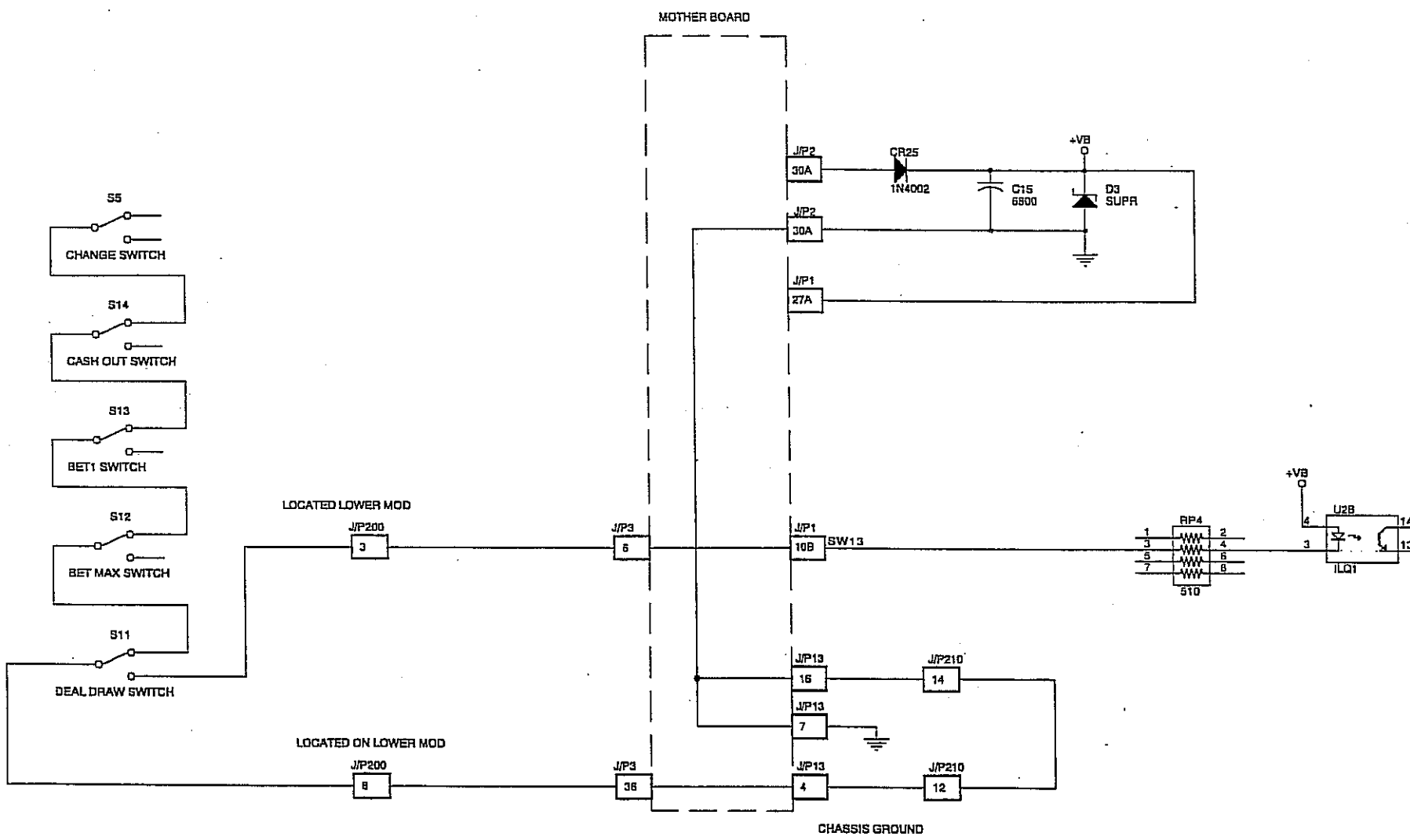
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Common lead to J/P5-14
Normally open lead to J/P3-5

J/P5-14 to J/P13-7
J/P3-5 to J/P1-9B

Check Vb at U1 & 2 (negative lead on B ground use positive lead to check pin 1 & 4 for Vb (-8-9VDC))
Check Vb at U2 (negative lead on B gnd and positive lead on pin 1)
Test U1 & U2
Test CR's 2, 4, and 9 (1N4148's)
Test RP3 or RP4 - if problem continues, then replace.

Problem: Deal/Draw Switch is Nonfunctional



WIRE CONTINUITY TEST
Common lead to J/P3-36
Normally open lead to J/P3-6

MOTHER BOARD CONTINUITY TEST
J/P3-36 to J/P2-30A (note intermediate connections)
J/P3-6 to J/P1-10B

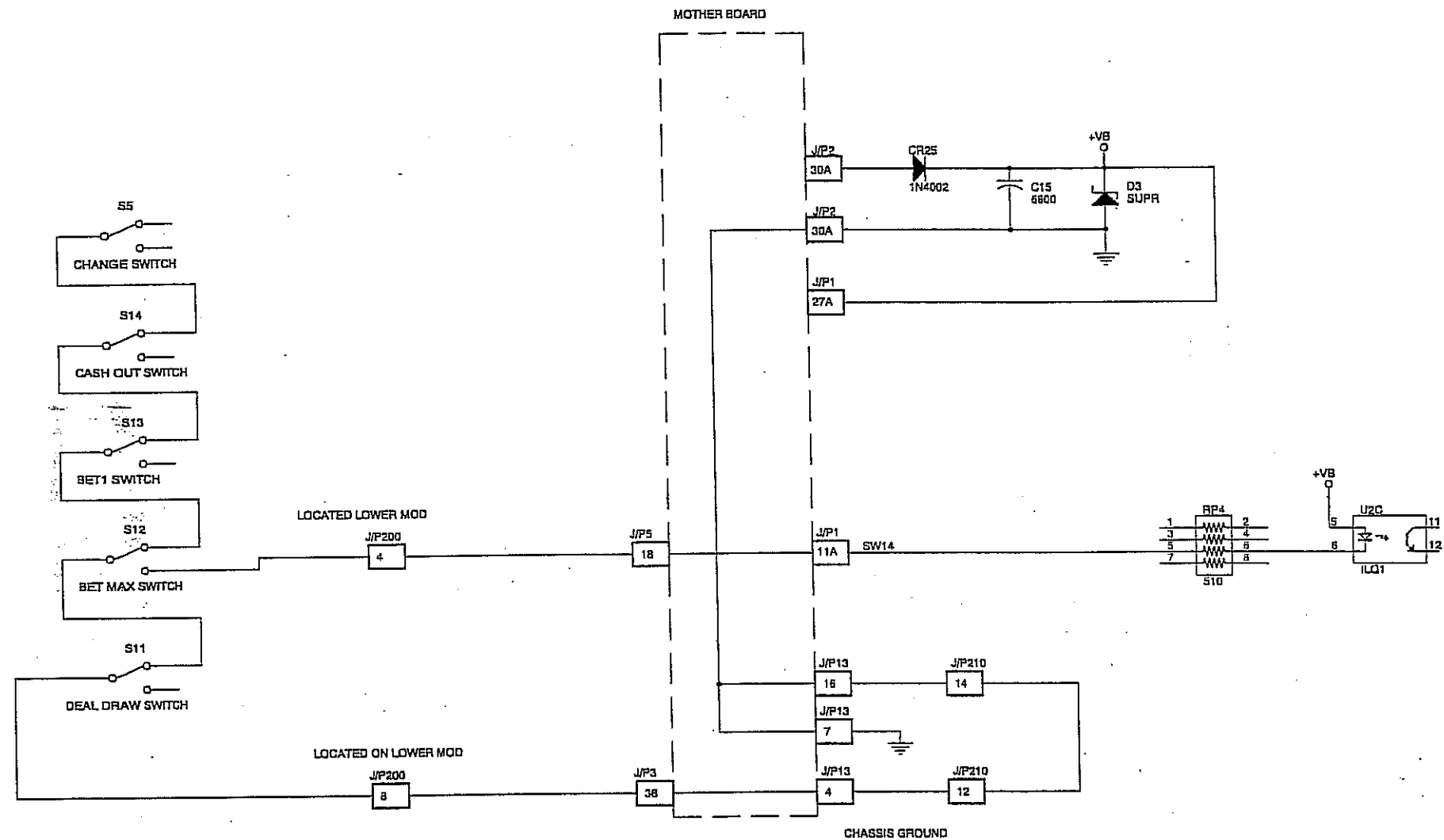
PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground
use positive lead to check pin 4 for Vb
(~8-9VDC))
Test U2
Test RP4 - if problem continues, then replace.

Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and has no broken or missing parts
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from Deal/Draw switch common to the normally closed leg of the Change switch
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured
- ✓ If the voltage seems bad, then use this diagram to test for wire continuity.

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



WIRE CONTINUITY TEST
Common lead to J/P3-36
Normally open lead to J/P5-18

MOTHER BOARD CONTINUITY TEST
J/P3-36 to J/P2-30A (note intermediate connections)
J/P5-18 to J/P1-11A

PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground
use positive lead to check pin 4 for Vb
(~8-9VDC))
Test U2
Test RP4 - if problem continues, then replace.

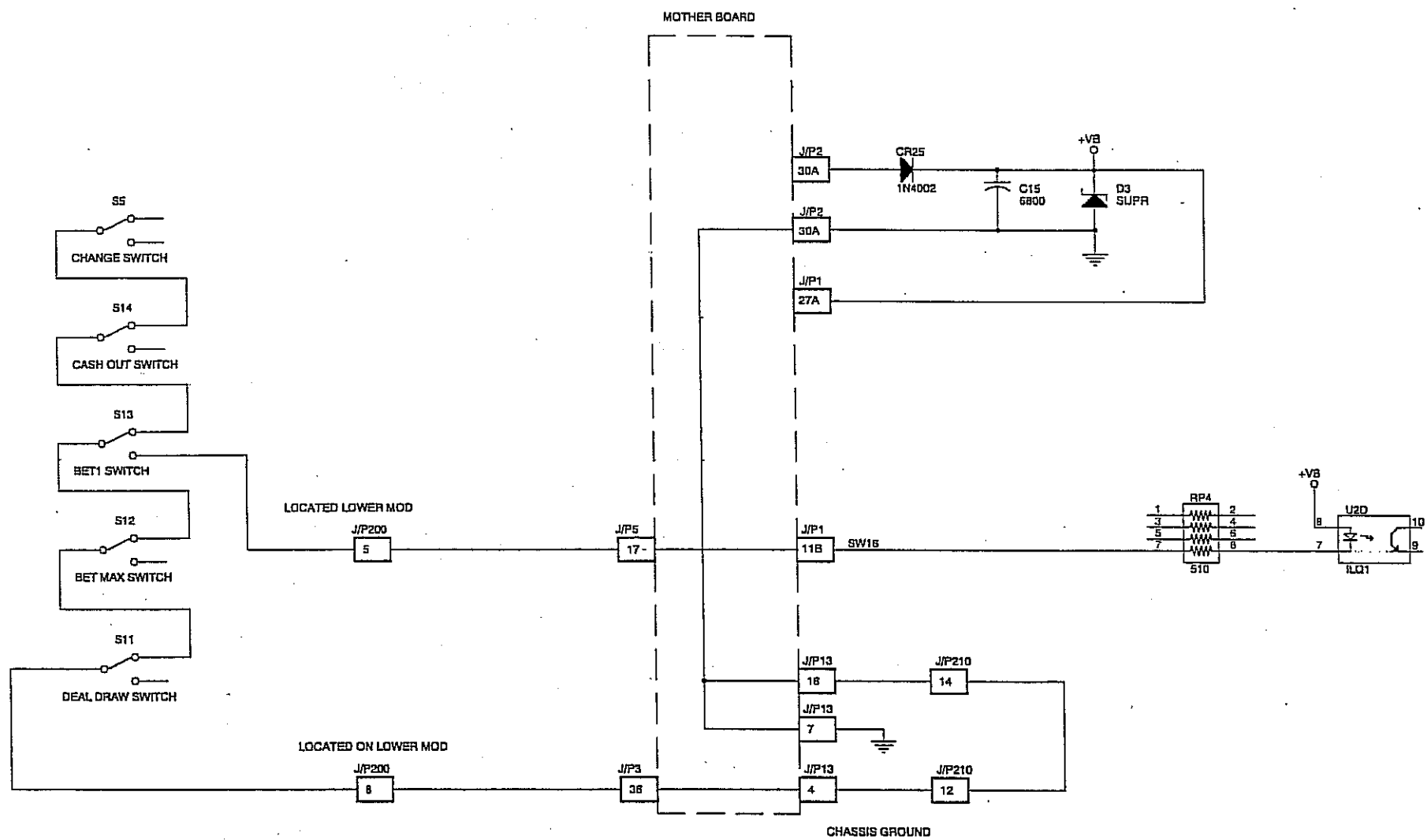
Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ If the other switches are nonfunctional, replace the Deal/Draw switch first
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from Bet Max switch common to the normally closed leg of the Change switch
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured
- ✓ If the voltage seems bad, then use this diagram to test for wire continuity

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Bet 1 Switch is Nonfunctional



WIRE CONTINUITY TEST
Common lead to J/P3-36
Normally open lead to J/P5-17

MOTHER BOARD CONTINUITY TEST
J/P3-36 to J/P2-30A (note intermediate connections)
J/P5-17 to J/P1-11B

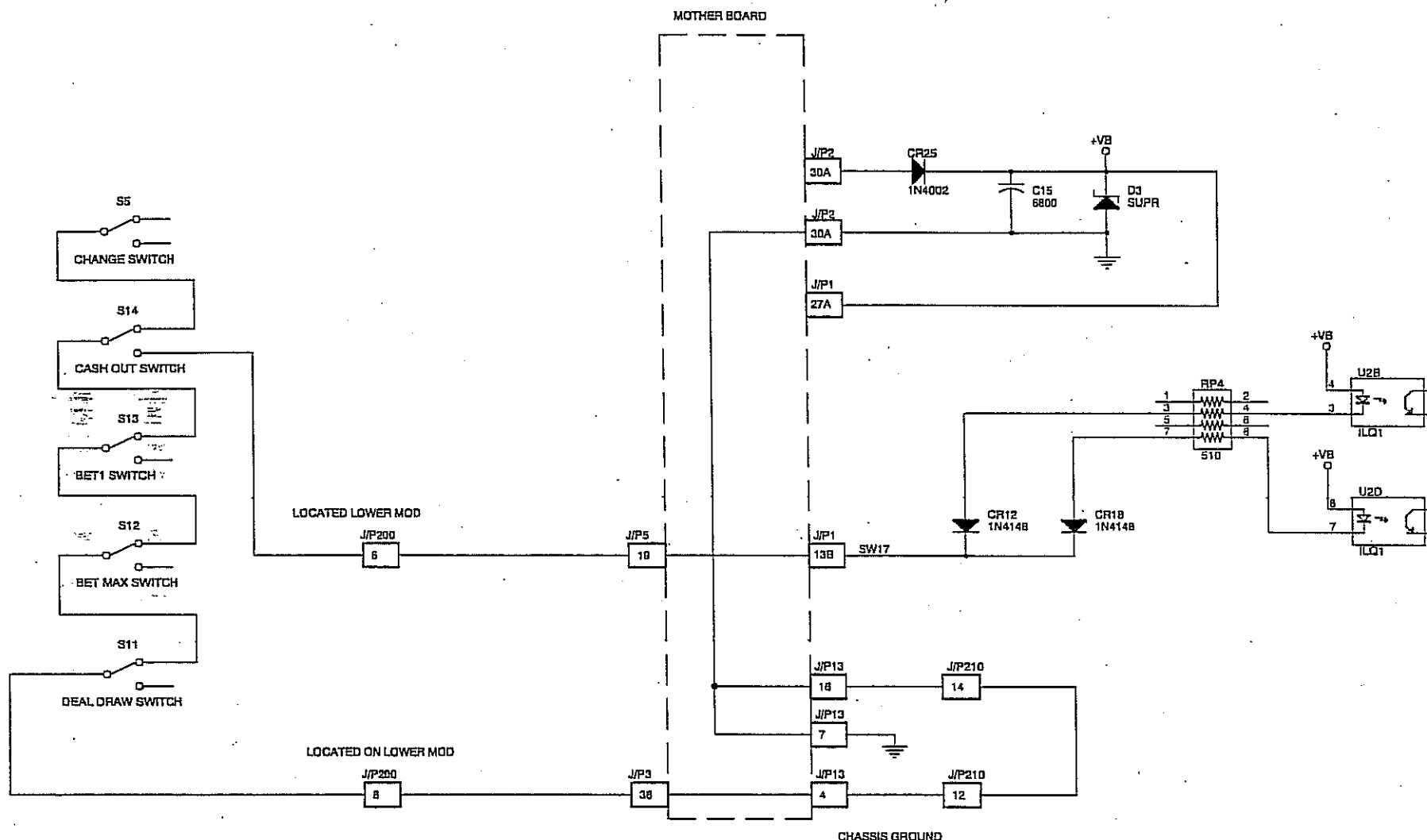
PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground
use positive lead to check pin 8 for Vb
(~8-9VDC))
Test U2
Test RP4 - if problem continues, then replace

Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean with no broken or missing parts
- ✓ If the other switches are nonfunctional, replace the Bet Max switch first
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from Bet One switch common to the normally closed leg of the Change switch
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



WIRE CONTINUITY TEST
Common lead to J/P3-36
Normally open lead to J/P5-19

MOTHER BOARD CONTINUITY TEST
J/P3-36 to J/P2-30A (note intermediate connections)
J/P5-19 to J/P1-13B

PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground use positive lead to check pin 4 & 8 for Vb (~8-9VDC))
Test U2
Test CR12 & CR18 (1N4148)
Test RP4 - if problem continues, then replace

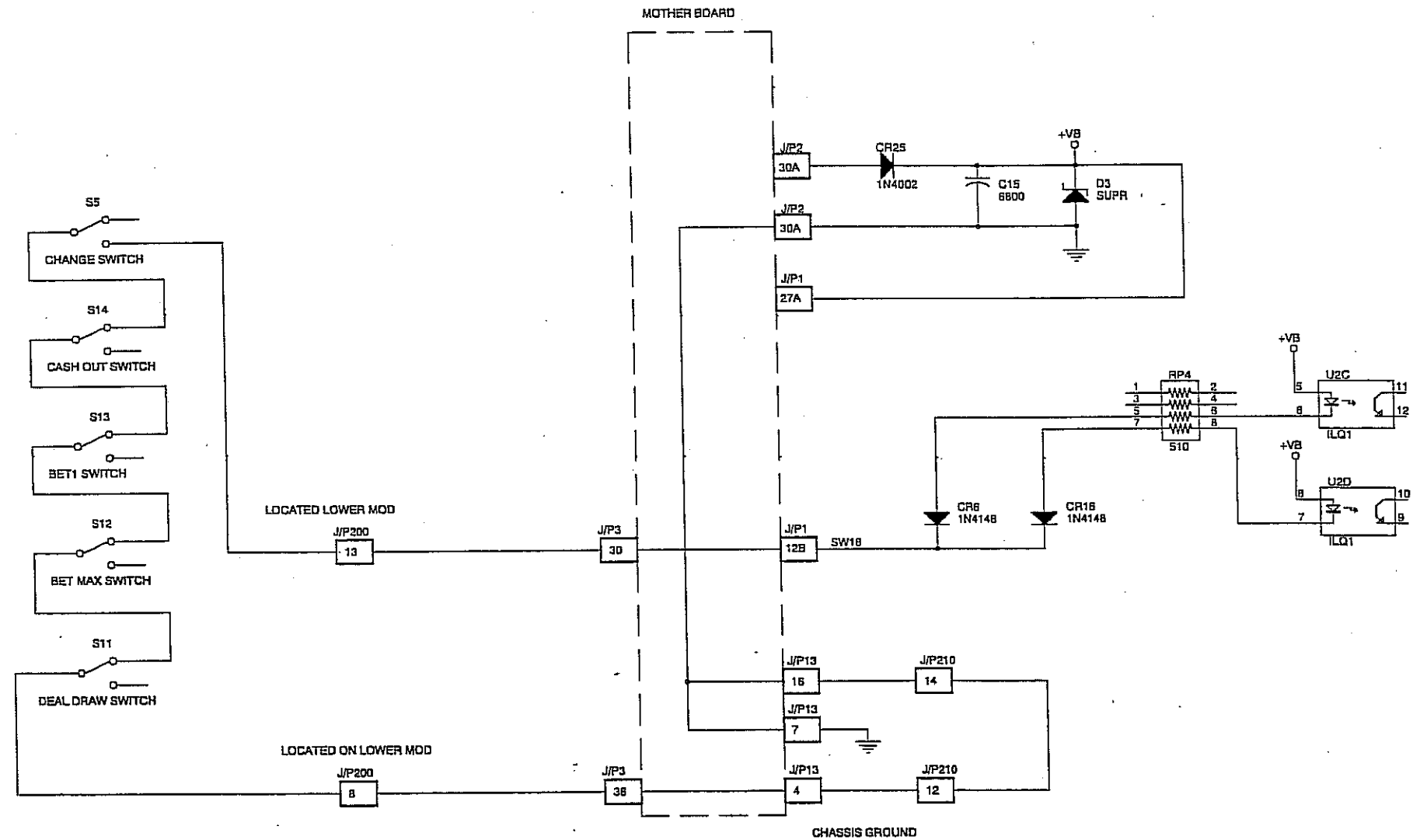
Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in the self test mode
- ✓ Check to see if the button assembly is clean and with no broken or missing parts
- ✓ If the other switches are nonfunctional, replace the Bet One switch first
- ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
- ✓ Activate the switch- the voltage should drop to zero volts
- ✓ Test for continuity from Cash Out switch common to the normally closed leg of the Change switch.
- ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured.

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Change Switch is Nonfunctional



WIRE CONTINUITY TEST
Common lead to J/P3-36
Normally open lead to J/P3-30

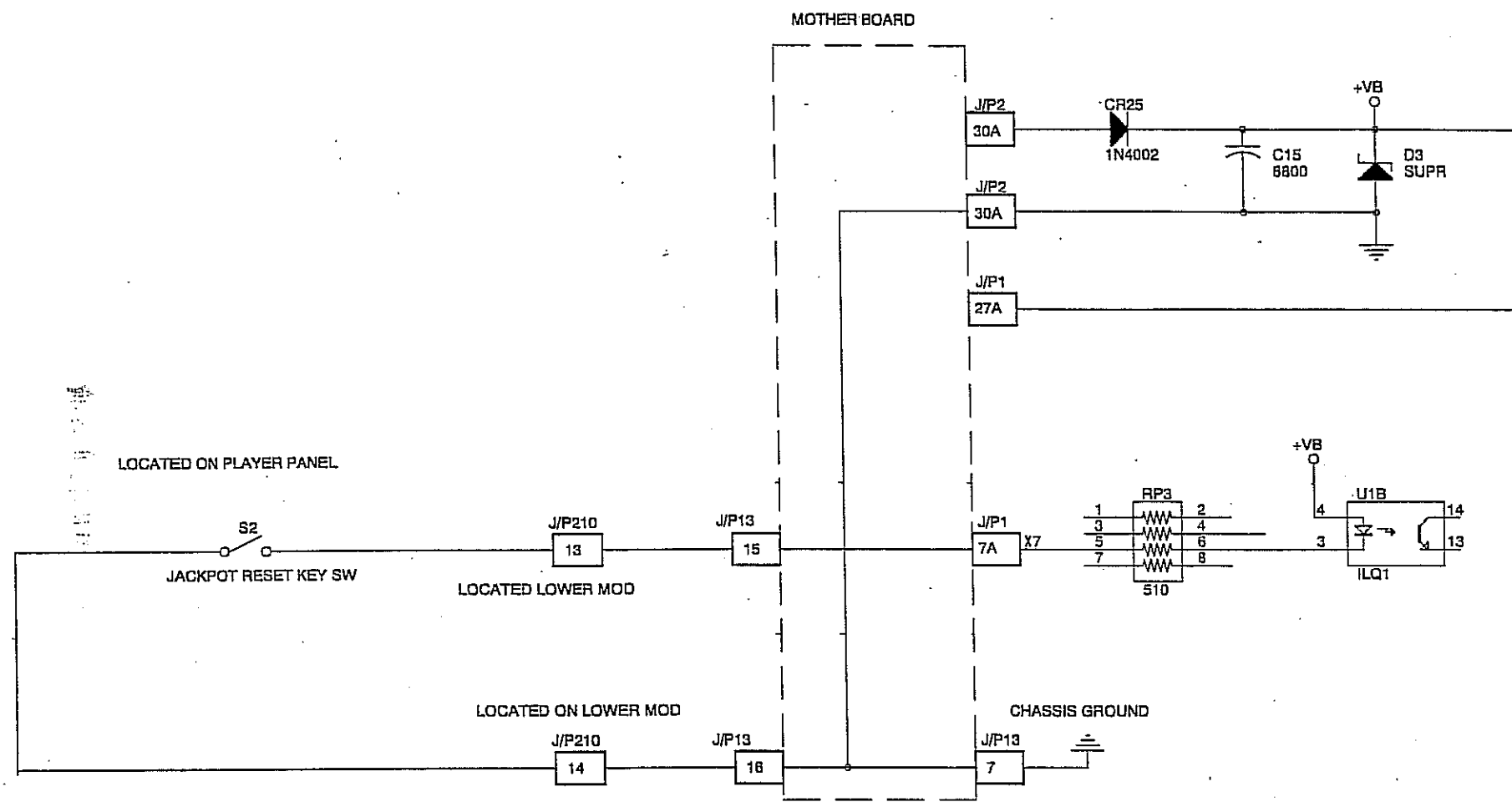
MOTHER BOARD CONTINUITY TEST
J/P3-36 to J/P2-30A (note intermediate connections)
J/P3-30 to J/P1-12B

PROCESSOR BOARD TEST
Check Vb at U2 (negative lead on B ground
use positive lead to check pin 5 & 8 for Vb
(~8-9VDC))
Test U2
Test CR6 & CR16 (1N4148)
Test RP4 - If problem continues, then replace

- Before removing the processor board, check the following areas:*
- ✓ Verify the problem by checking the input test in the self test mode
 - ✓ Check to see if the button assembly is clean and has no broken or missing parts
 - ✓ If the other switches are nonfunctional, replace the Cashout switch first
 - ✓ Connect one meter lead to the normally open leg of the switch and connect the other meter lead to the chassis ground (B gnd), then measure for ~8 to 10 VDC
 - ✓ Activate the switch- the voltage should drop to zero volts
 - ✓ If the switch measures open, then measure the next switch inward until a low resistance is measured.
 - ✓ If the voltage seems bad, then use this diagram to test for wire continuity

- If that doesn't work, try the following steps:*
- ⇒ Replace the processor board with a "known good" one
 - ⇒ If the processor board seems bad, verify in the tester
 - ⇒ If the processor board is good, then replace the mother board
 - ⇒ To repair the mother board, use this diagram to isolate the bad trace
 - ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Jackpot Reset Key is Nonfunctional (Can't Reset a Jackpot or Access Soft Meters)



Before removing the processor board, check the following areas:

- ✓ Verify the problem in the input test
- ✓ Check wire and connectors for defects
- ✓ Check for ~8 to 10 VDC across 2 leads to the jackpot reset key
- ✓ Replace jackpot reset key, and test

If that doesn't work, try the following steps:

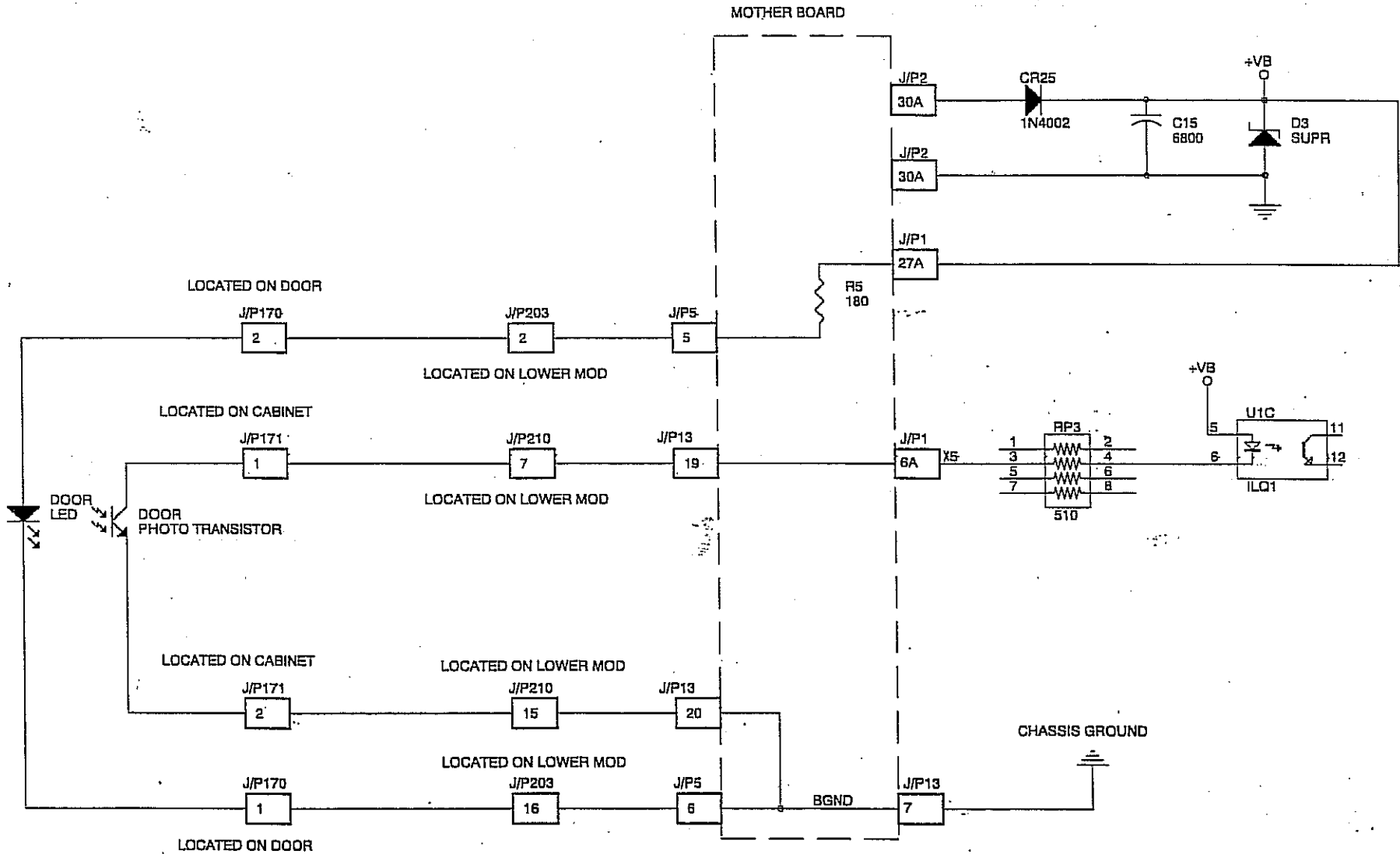
- ⇒ If there is no voltage, use this diagram below to test for wire continuity
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P19-7 to J/P13-6
No side to J/P13-15
Common side to J/P13-16

MOTHER BOARD CONTINUITY TEST
J/P13-15 to J/P1-7A
J/P13-16 to J/P13-7 & J/P2-30A

PROCESSOR BOARD TEST
Check Vb at U1 (negative lead on B ground use positive lead to check pin 4 for Vb (~8-9VDC))
Test U1 - if problem continues, then replace.
Test RP3 - if problem continues, then replace.

Problem: Constant "Door Open" State (Suspect Bad LED)



Before removing the processor board, check the following areas:

- ✓ Check self test inputs to verify problem (door open)
- ✓ Check the bill acceptor for a door open signal
- ✓ Check optic alignment (door LED to phototransistor on chassis)
- ✓ Visually inspect wires and connectors
- ✓ Use a flashlight to activate the phototransistor, if it works replace the LED
- ✓ If the phototransistor is not activated by the flashlight, then replace it
- ✓ Disconnect door LED at J/P170 and test for ~5VDC
- ✓ Disconnect the phototransistor chassis at J/P171 and test for ~8 to 9VDC

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST

J/P171-1 to J/P13-9
J/P171-2 to J/P13-20
J/P170-1 to J/P5-6
J/P170-2 to J/P5-5

MOTHER BOARD CONTINUITY TEST

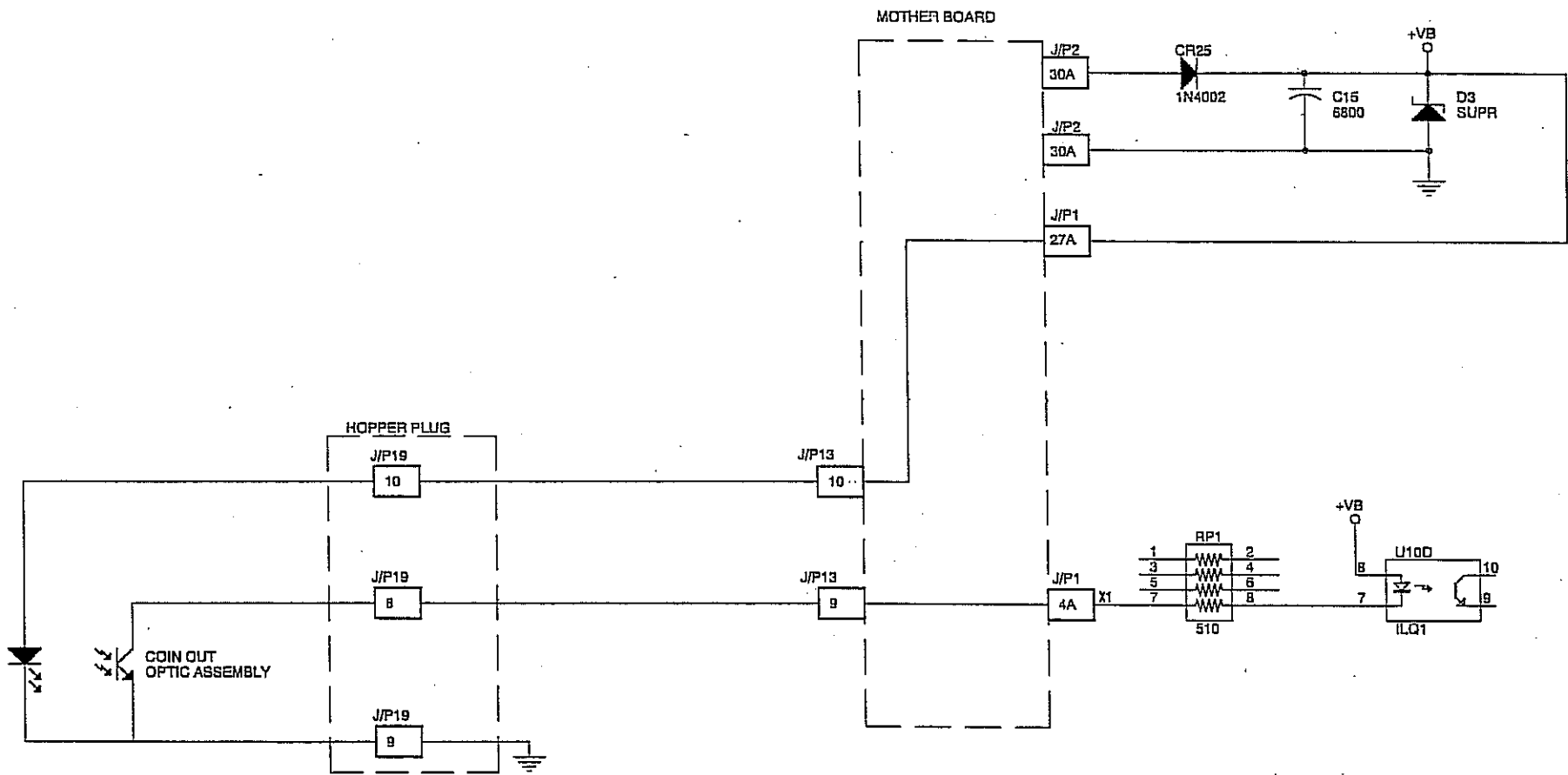
J/P5-5 to R5 (test R5)
R5 to J/P1-27A
J/P13-19 to J/P1-5A
J/P13-20 to J/P5-6 & J/P13-7

PROCESSOR BOARD TEST

Check Vb at U10 (negative lead on B ground use positive lead to check pin 5 for Vb (~8-9VDC))
Test U1 - if problem continues, then replace.
Test RP3 - if problem continues, then replace.



Problem: Coin-Out Timeout (Coin-Out Optics Blocked for Over .7 sec)



WIRE CONTINUITY TEST
(B ground should be at J/P19-9)
LED Side: J/P19-10 to J/P13-10
DET Side: J/P19-8 to J/P13-9

MOTHER BOARD CONTINUITY TEST
J/P13-9 to J/P1-4A
J/P13-10 to J/P1-27A

PROCESSOR BOARD TEST
Check Vb at U10 (negative lead on B ground use positive lead to check pin 8 for Vb (~8-9VDC))
Test U10 - if problem continues, then replace.
Test RP1 - if problem continues, then replace.

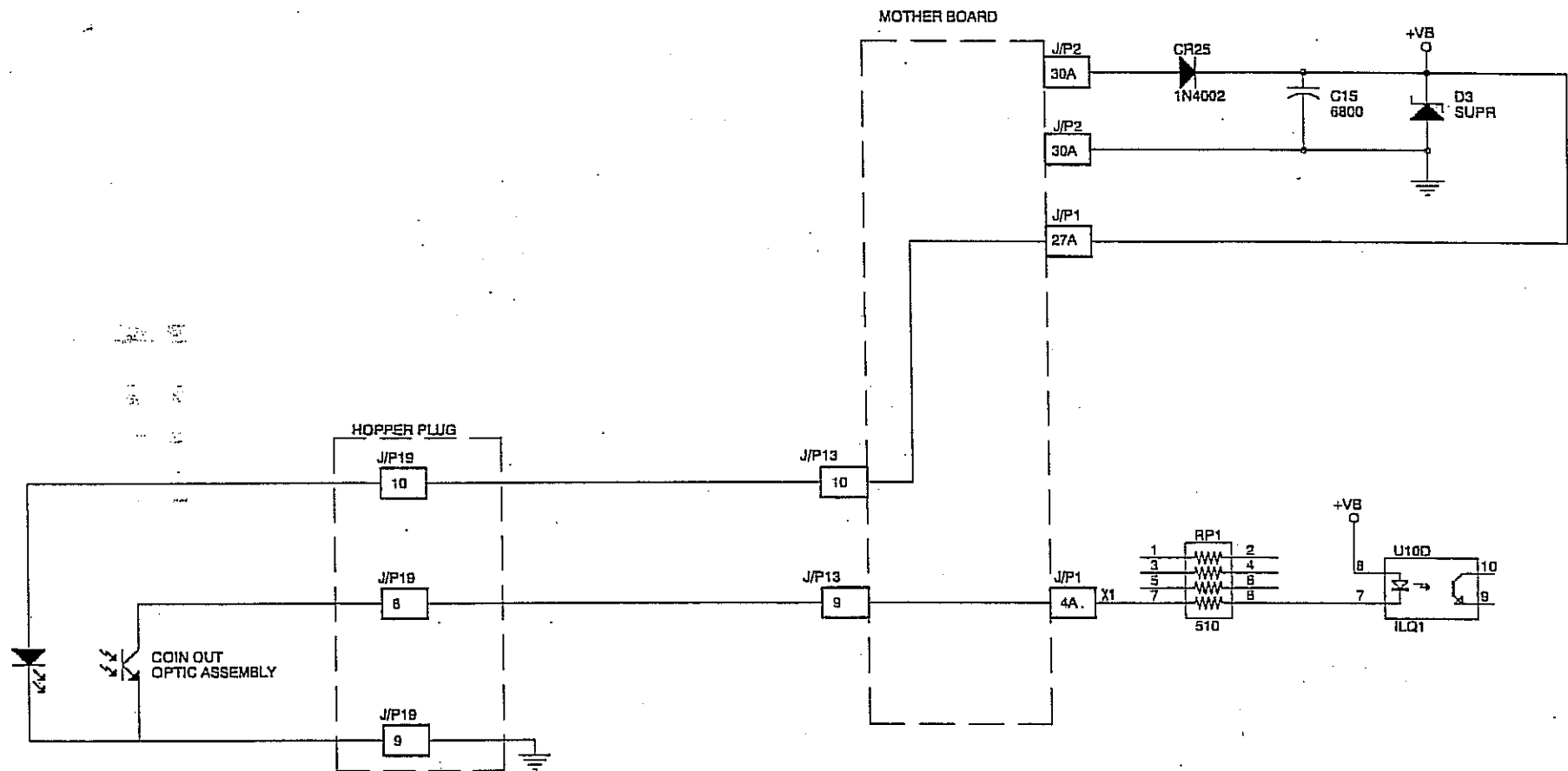
Before removing the processor board, check the following areas:

- ✓ Check the self test inputs to verify the problem (coin-out)
- ✓ Check for obstructions, misalignments, or any physical reason for the coins to pass slowly through the optics
- ✓ Check optics and optic wires for damage
- ✓ With escalator hopper, coin out optics and mechanical flag may need adjustment or spring may need replacement
- ✓ Verify ground lead is secure to chassis and the hopper beau plug is seated firmly
- ✓ Visually inspect the wires and connectors
- ✓ Perform the hopper self test; if problem recurs replace the optics
- ✓ Check hopper plug for ~8 to 9 VDC at J/P19-8 and J/P19-10 to J/P19-9

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Extra Coin Paid Out (Optic Senses Extra Coin or Payout)



- Before removing the processor board, check the following areas:
- ✓ Perform hopper test in self test mode, if problem recurs replace optics
 - ✓ Check hopper brake and brake spring
 - ✓ With the escalator hopper, check the coin-out optics and mechanical flag to see if adjustment or spring may need replacement
 - ✓ Check hopper pinwheel and wiper for smooth operation
 - ✓ Check optic and optic wires for damage
 - ✓ Verify optic ground lead is secured to chassis and hopper bean plug is seated firmly

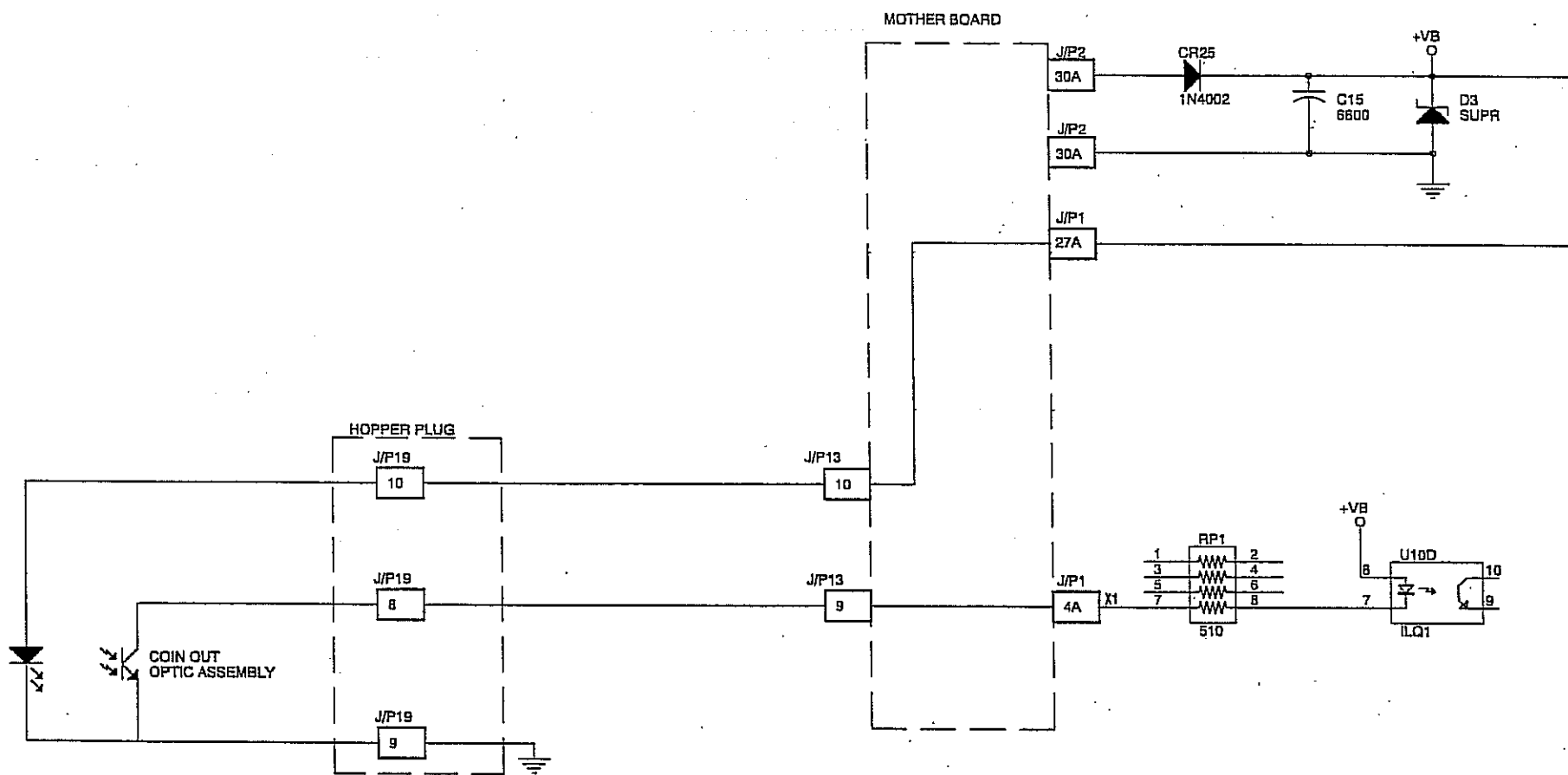
- If that doesn't work, try the following steps:
- ⇒ Check hopper plug for ~8 to 9 VDC at J/P19-8 and J/P19-10 to J/P19-9
 - ⇒ Replace the processor board with a "known good" one
 - ⇒ If the processor board seems bad, verify in the tester
 - ⇒ If the processor board is good, then replace the mother board
 - ⇒ To repair the mother board, use this diagram to isolate the bad trace
 - ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
(B ground should be at J/P19-9
LED Side: J/P19-10 to J/P13-10
DET Side: J/P19-8 to J/P13-9

MOTHER BOARD CONTINUITY TEST
J/P13-9 to J/P1-4A
J/P13-10 to J/P1-27A

PROCESSOR BOARD TEST
Check Vb at U10 (negative lead on B ground use positive lead to check pin 8 for Vb (~8 to 9VDC)).
Test U10 - if problem continues, then replace.
Test RP1 - if problem continues, then replace.

Problem: Empty Hopper Message (Hopper Optic Doesn't Recognize a Coin For 7-8 sec)



WIRE CONTINUITY TEST
(B ground should be at J/P19-9)
LED Side: J/P19-10 to J/P13-10
DET Side: J/P19-8 to J/P13-9

MOTHER BOARD CONTINUITY TEST
J/P13-9 to J/P1-4A
J/P13-10 to J/P1-27A

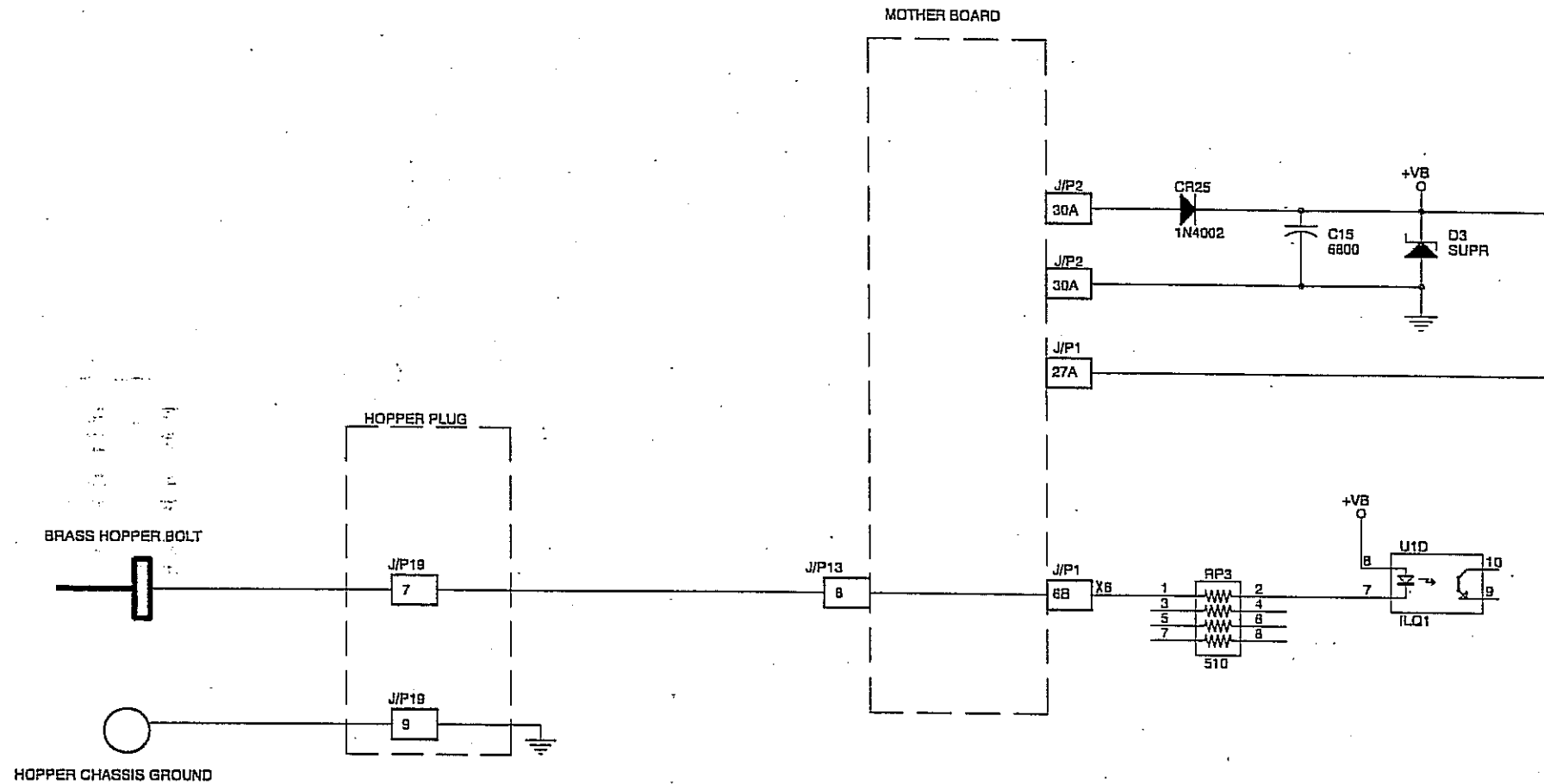
PROCESSOR BOARD TEST
Check Vb at U10 (negative lead on B ground use positive lead to check pin 8 for Vb (~8-9VDC))
Test U10 - if problem continues, then replace.
Test RP1 - if problem continues, then replace.

Before removing the processor board, check the following areas:

- ✓ Check for empty or low hopper
- ✓ Check to see if hopper is jammed
- ✓ Check hopper motor, gearbox, and roll pin
- ✓ Visually inspect wires and connectors to hopper plug
- ✓ If coins are jammed in the escalator hopper, remove the bent coin(s)
- ✓ If coins are doubled-up consider replacing the pinwheel, entry plate and/or pinwheel shims
- ✓ Perform the hopper test in the self test mode, observe hopper action to isolate problem
- ✓ Verify that coins are going through the hopper optics to the coin tray, and counted correctly

If that doesn't work, try the following steps:

- ⇒ Check the Vb at the hopper plug J/P19-8 and J/P19-10 to J/P19-9
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



WIRE CONTINUITY TEST
J/P19-7 to J/P13-8

MOTHER BOARD CONTINUITY TEST
J/P13-8 to J/P1-6B

PROCESSOR BOARD TEST
Check Vb at U1 (negative lead on B ground use positive lead to check pin 8 for Vb (~8-9VDC))
Test U1 - if problem continues, then replace.
Test RP3 - if problem continues, then replace.

Before removing the processor board, check the following areas:

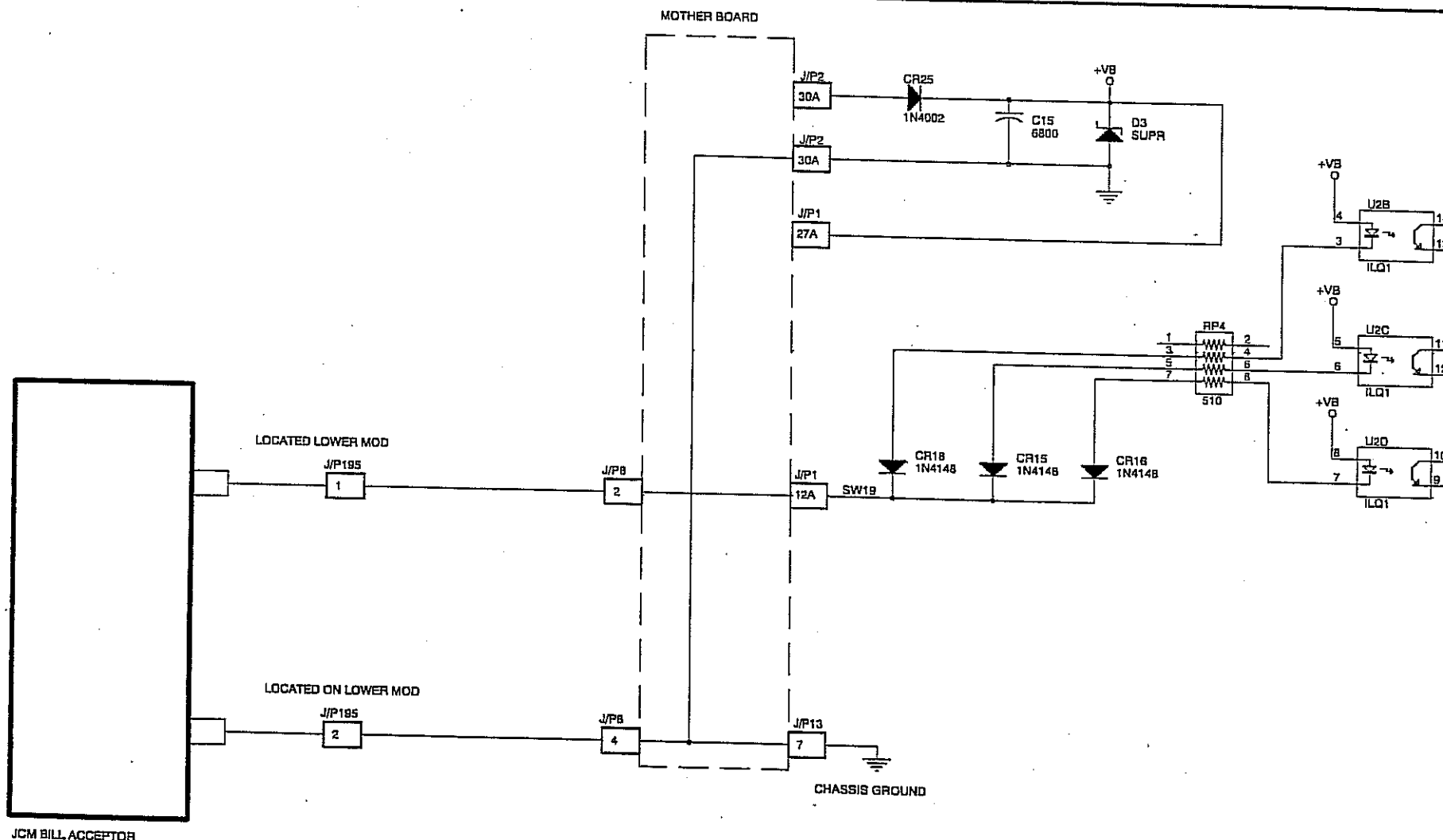
- ✓ Check the hopper probe function in the self test inputs to verify the problem
- ✓ Check for coins bridging the hopper probe
- ✓ Check the diverter function in the output test
- ✓ Check wire and connectors for defects
- ✓ use this diagram to test for wire continuity

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Bill Validator Won't Accept Bills (No Vend Signal)

Player's Edge-Plus Inputs



Before removing the processor board, check the following areas:

- ✓ Verify the problem by checking the input test in self test mode
- ✓ Visually inspect wires and connectors
- ✓ Verify that the validator is enabled – see output test

If that doesn't work, try the following steps:

- ⇒ Replace the validator with a "known good" one
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST

J/P195-1 to J/P8-2
J/P195-2 to J/P8-4

MOTHER BOARD CONTINUITY TEST

J/P8-2 to J/P1-12A
J/P8-4 to J/P13-7 & J/P2-30A

PROCESSOR BOARD TEST

Check Vb at U2 (negative lead on B ground use positive lead to check pin 4, 5, 8 for Vb (-8-9VDC))
Test U2
Test CR15, CR16, & CR18 (1N4148)
Test RP4 - if problem continues, then replace

Start With the Problem

The simplest means of treating machine and board repairs is to start with the obvious problem and then try to isolate the cause. Treat each potential output problem individually, and trace it from the exterior of the machine to one of the processor boards, through the point of opto-isolation. Opto-isolation is a defense against static electricity, noise, or any unwanted electrical feedback.

The technician should verify each problem in the output test. The technician can then reference each output in question in this manual.

When using the diagram provided with each output problem, the following items should be kept in mind:

- Each output can be activated by a signal through the wiring and connectors from the mother board.
- The mother board connects the signal from the processor board (processor board connects to the mother board at J/P1 and J/P2).
- The processor board typically has a driver (e.g. triac) that connects to an output pin on the parallel side of the shift register.

Outputs Section of the Processor Board

The outputs section contains four 8-bit output latches (U33, U35, U37, and U39). Each output latch requires a steady low on its pin 1 and a clock pulse on pin 11. With these two conditions satisfied, the output latches can update the outputs from the data-bus.

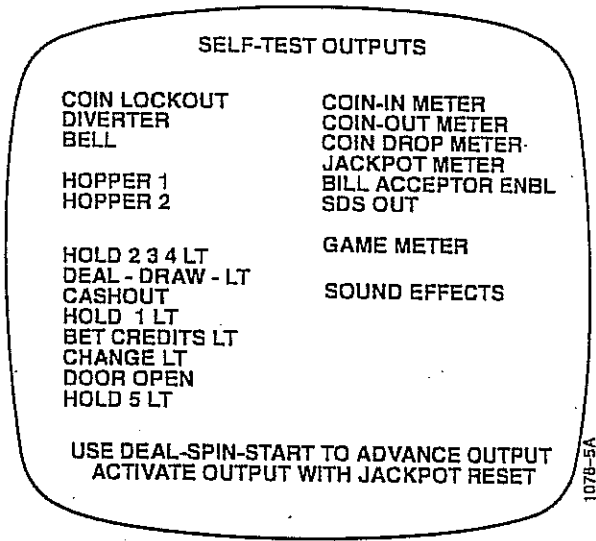
The output side of the output latches is a buffer and current limiting register for each output bit and then opto-isolation. From the point of opto-isolation on, is the driver area (the area most susceptible to damage). The majority of drivers are triacs (AC switches). Two output drivers are NPN transistors and digital switches (jackpot out and door open).

Outputs Test

The message SELF-TEST OUTPUTS appears at the top of the video screen. Below it are the names of the available outputs. An arrow-shaped cursor, located to the immediate left of the output names, indicates which output is under test.

Consult the on-screen instructions and press the indicated switch on the player panel to move the cursor from one output to the next.

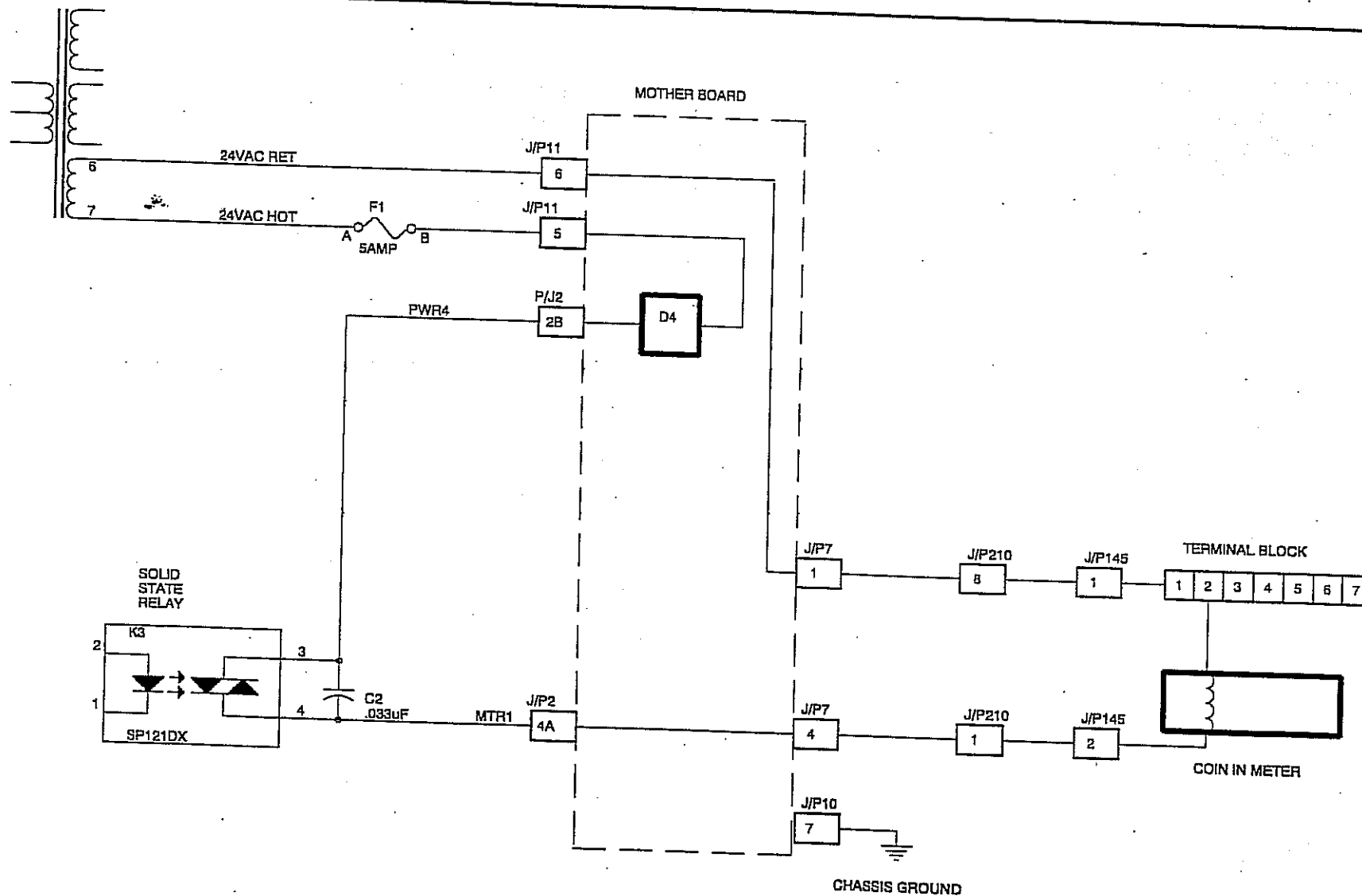
Turn the reset key to activate most outputs. Most tests illuminate one or more player panel switches to advance the cursor. The lockout test activates the LED indicator on the coin comparator and the sound effects test produces a tone from the speaker. To activate the bill acceptor, insert a dollar bill.



Typical Outputs Test.

Problem: Coin-In Meter is Nonfunctional

Player's Edge-Plus Output



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Check wires and connectors for defects
- ✓ Verify meter lead is seated in position #2 of terminal block
- ✓ Replace meter, and test

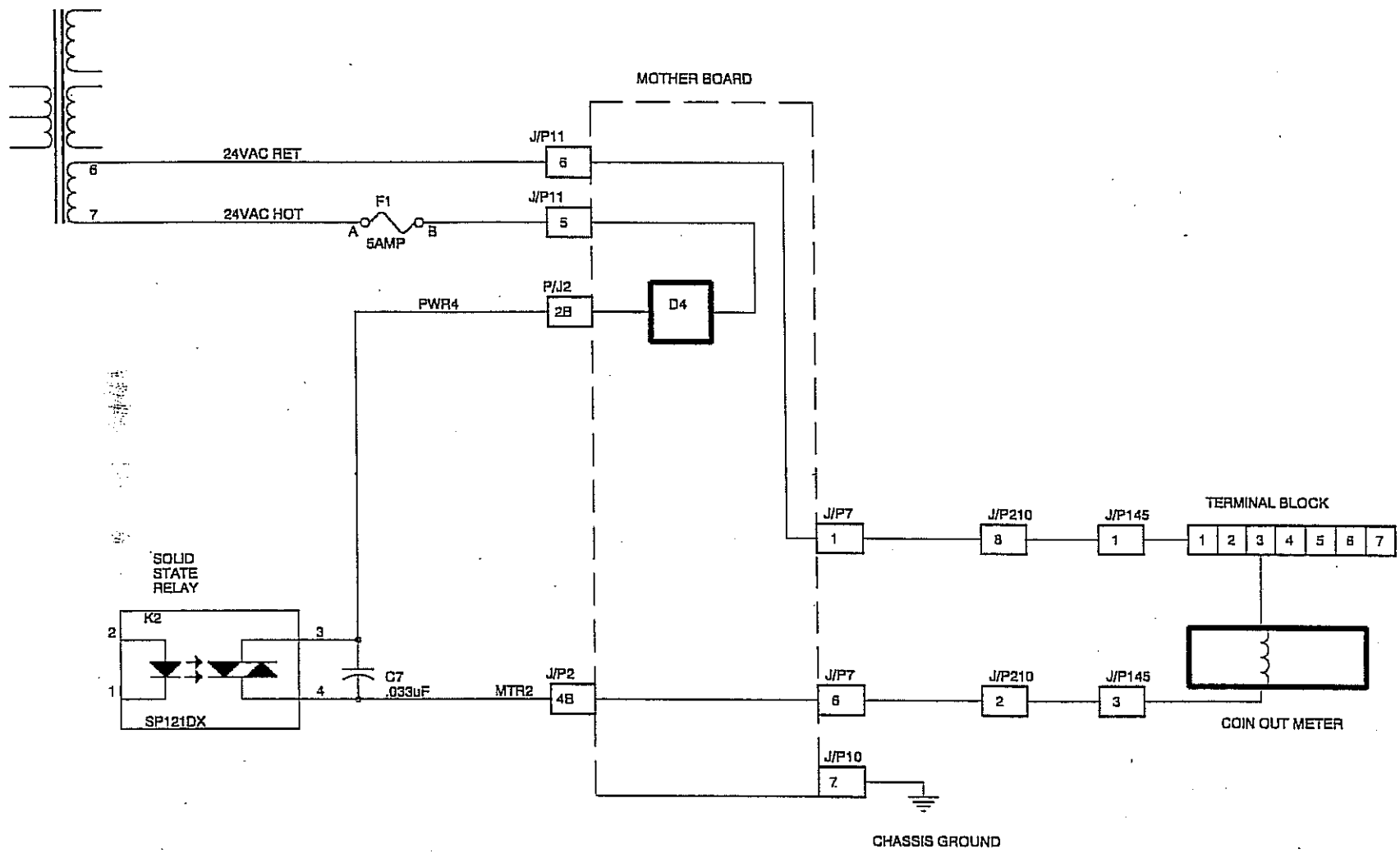
If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P145-2 to J/P7-4
J/P145-1 to J/P7-1

MOTHER BOARD CONTINUITY TEST
J/P7-4 to J/P2-4A
J/P7-1 to J/P11-6
J/P11-5 to J/P2-2B

PROCESSOR BOARD TEST
Check from K3 to edge for burned trace
Test K3 (SP121DX) - if problem continues, then replace.
Test C2 - if driver ever turns on by itself



- Before removing the processor board, check the following areas:
- ✓ Use output test to verify the problem
 - ✓ Check wires and connectors for defects
 - ✓ Verify meter lead is seated in position #3 of terminal block
 - ✓ Replace meter, and test

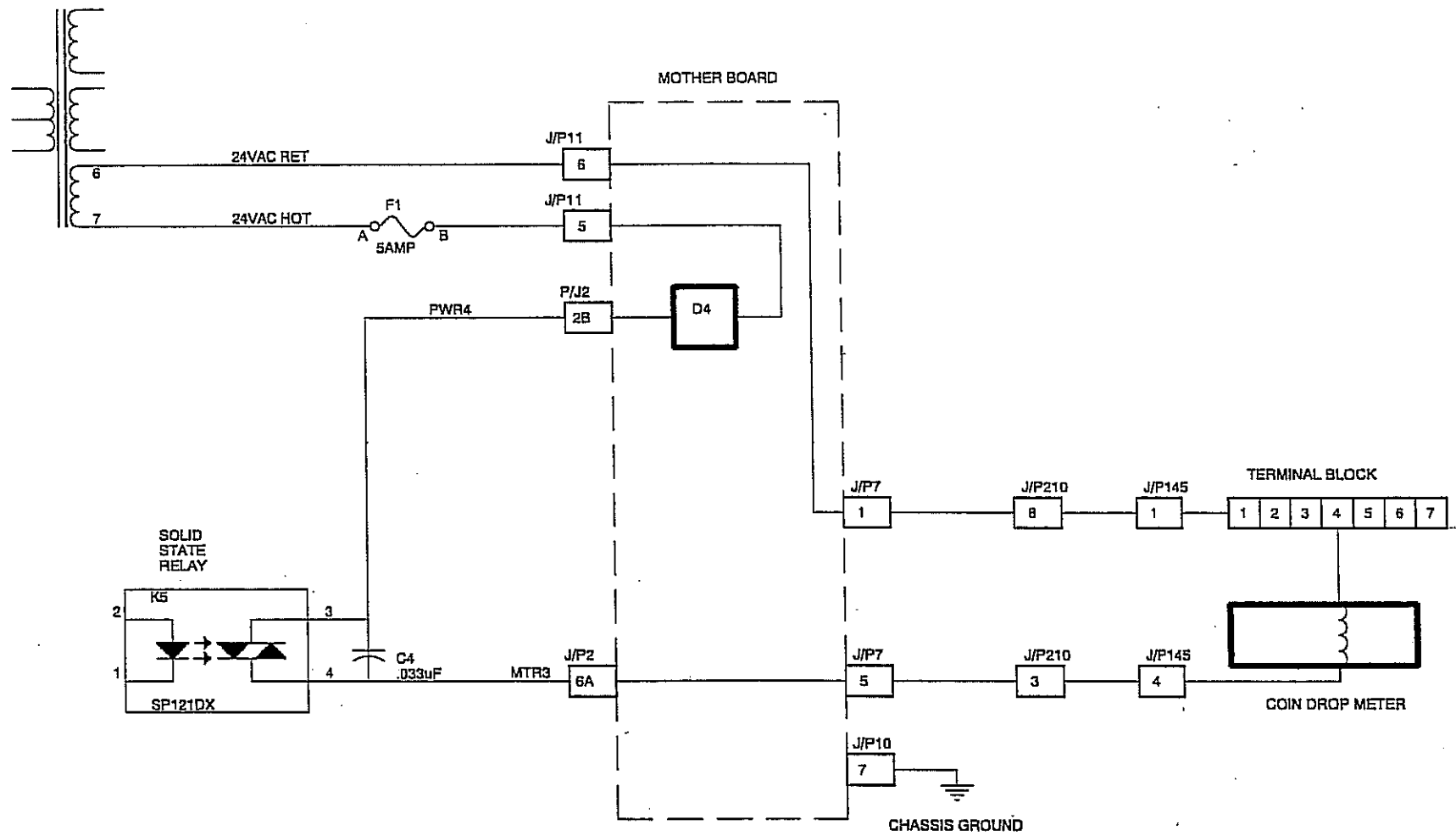
- If that doesn't work, try the following steps:
- ⇒ Replace the processor board with a "known good" one
 - ⇒ If the processor board seems bad, verify in the tester
 - ⇒ If the processor board is good, then replace the mother board
 - ⇒ To repair the mother board, use this diagram to isolate the bad trace
 - ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P145-3 to J/P7-6
J/P145-1 to J/P7-1

MOTHER BOARD CONTINUITY TEST
J/P7-6 to J/P2-4B
J/P7-1 to J/P11-6

PROCESSOR BOARD TEST
Check from K2 to edge for burned trace
Test K2 (SP121DX) - if problem continues, then replace
Test C7 - if driver ever turns on by itself

Problem: Coin-Drop Meter is Nonfunctional



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Check wires and connectors for defects
- ✓ Verify meter lead is seated in position #4 of terminal block
- ✓ Replace meter, and retest

If that doesn't work, try the following steps:

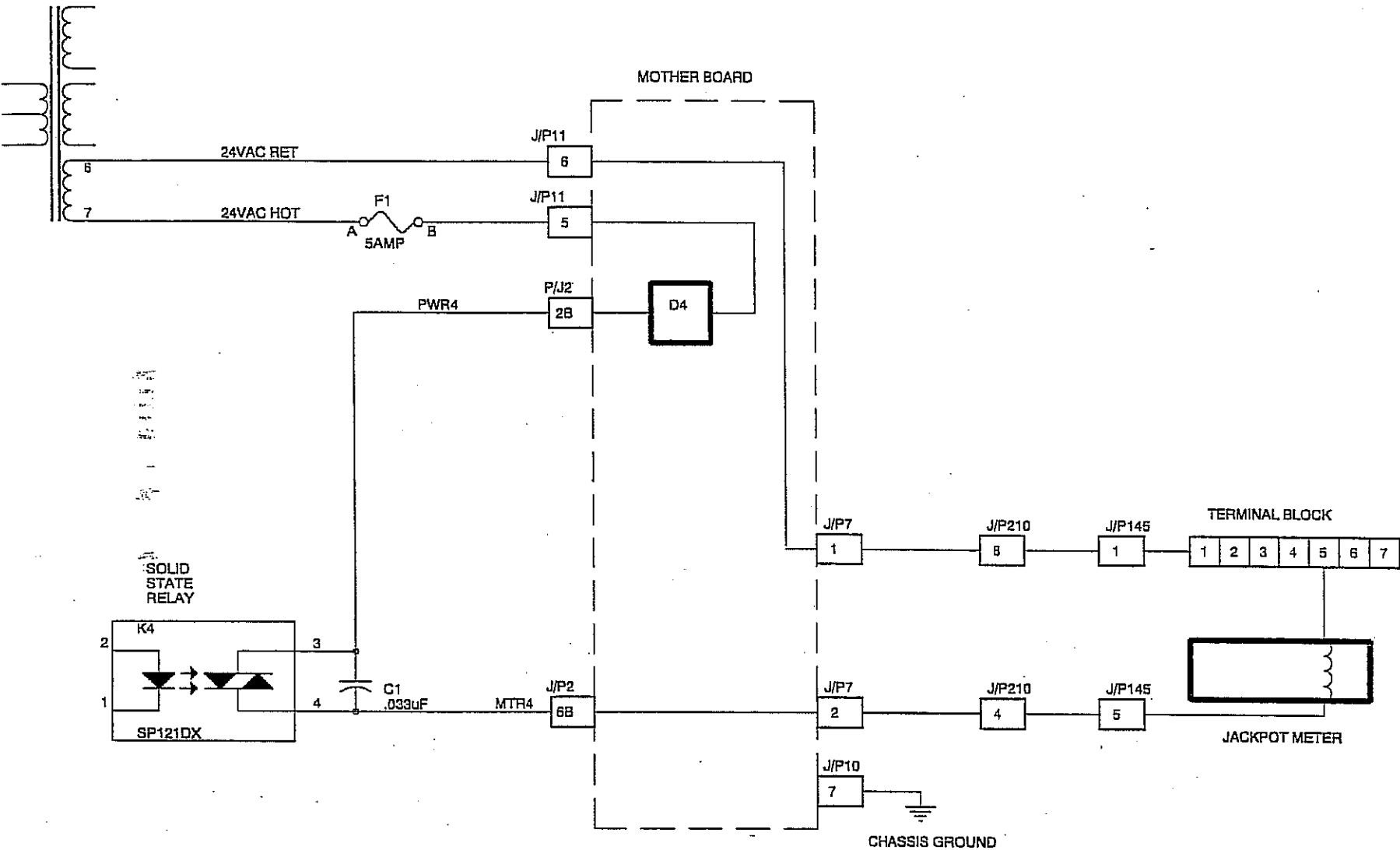
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P145-4 to J/P7-5
J/P145-1 to J/P7-1

MOTHER BOARD CONTINUITY TEST
J/P7-5 to J/P2-6A
J/P7-1 to J/P11-6

PROCESSOR BOARD TEST
Check from K5 to edge for burned trace
Test K5 (SP121DX) - If problem continues, then replace.
Test C4 - If driver ever turns on by itself

Problem: Jackpot Meter is Nonfunctional



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Check wires and connectors for defects
- ✓ Verify meter lead is seated in position #5 of terminal block
- ✓ Replace meter, and test

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

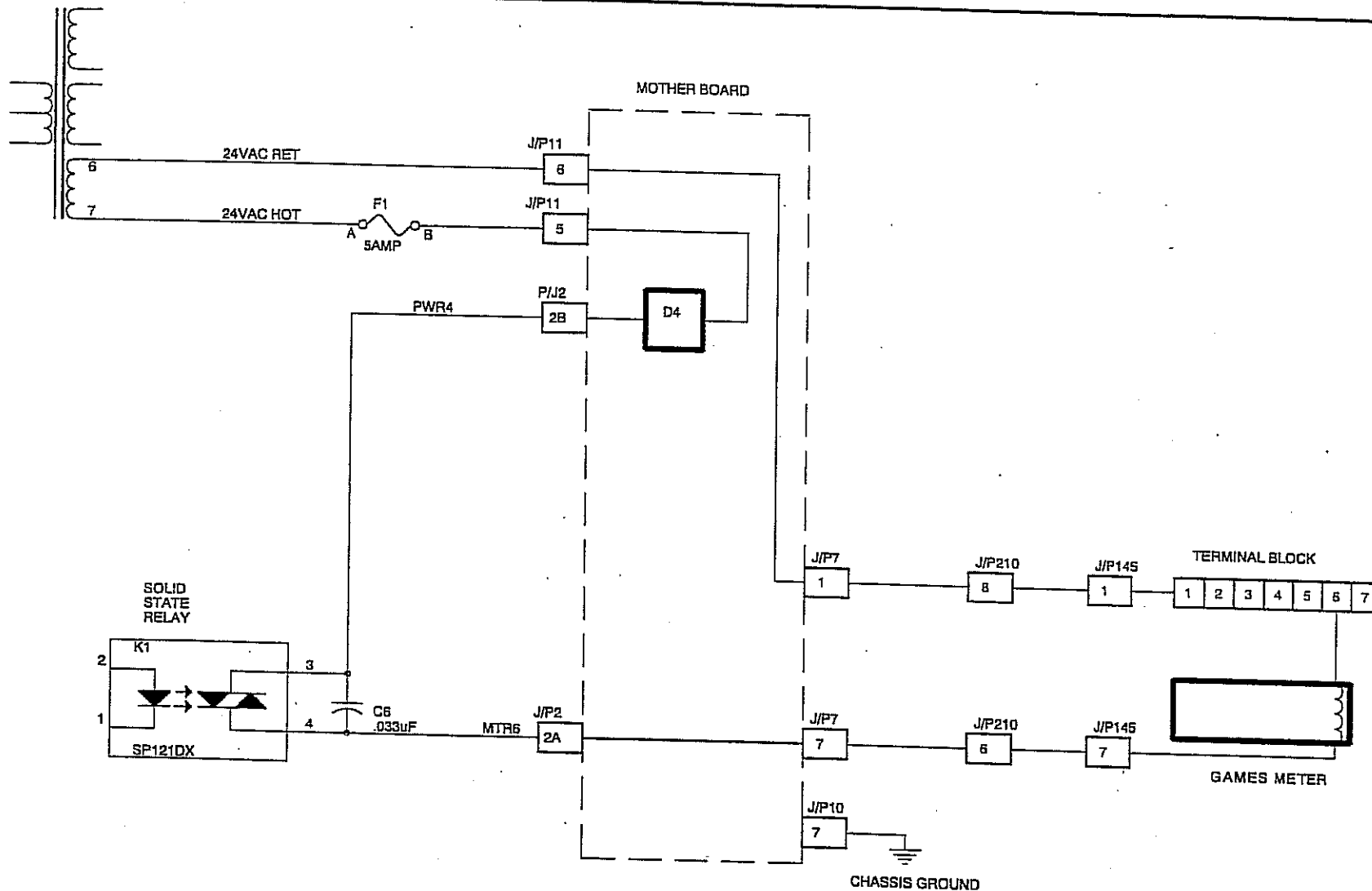
WIRE CONTINUITY TEST
J/P145-5 to J/P7-2
J/P145-1 to J/P7-1

MOTHER BOARD CONTINUITY TEST
J/P7-2 to J/P2-6B
J/P7-1 to J/P11-6

PROCESSOR BOARD TEST
Check from K4 to edge for burned trace
Test K4 (SP121DX) - if problem continues, then replace.
Test C1 - if driver ever turns on by itself

Problem: Game Meter is Nonfunctional

Player's Edge-Plus Outputs



Before removing the processor board, check the following areas:

- ✓ Use the output test to verify the problem
- ✓ Verify meter lead is seated in position #6 of in terminal block
- ✓ Check wires and connectors for defects
- ✓ Replace the meter, and test

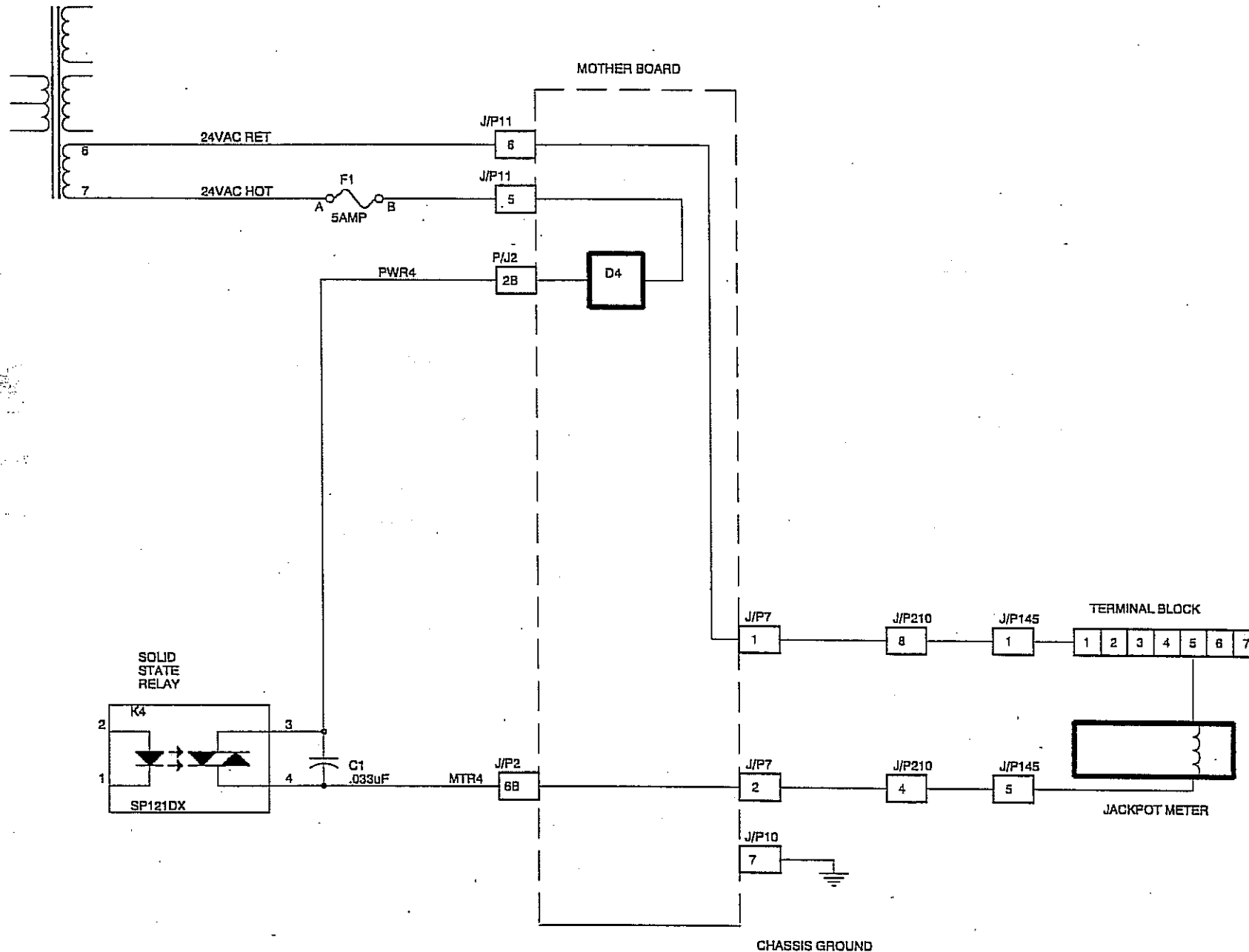
If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P145-7 to J/P7-7

MOTHER BOARD CONTINUITY TEST
J/P7-7 TO J/P2-2A

PROCESSOR BOARD CONTINUITY TEST
Check from K1 to edge for burned trace
Test K1 (SP121DX) - If problem continues then replace
Test C6 - (If driver ever turns on by itself) if problem continues then replace



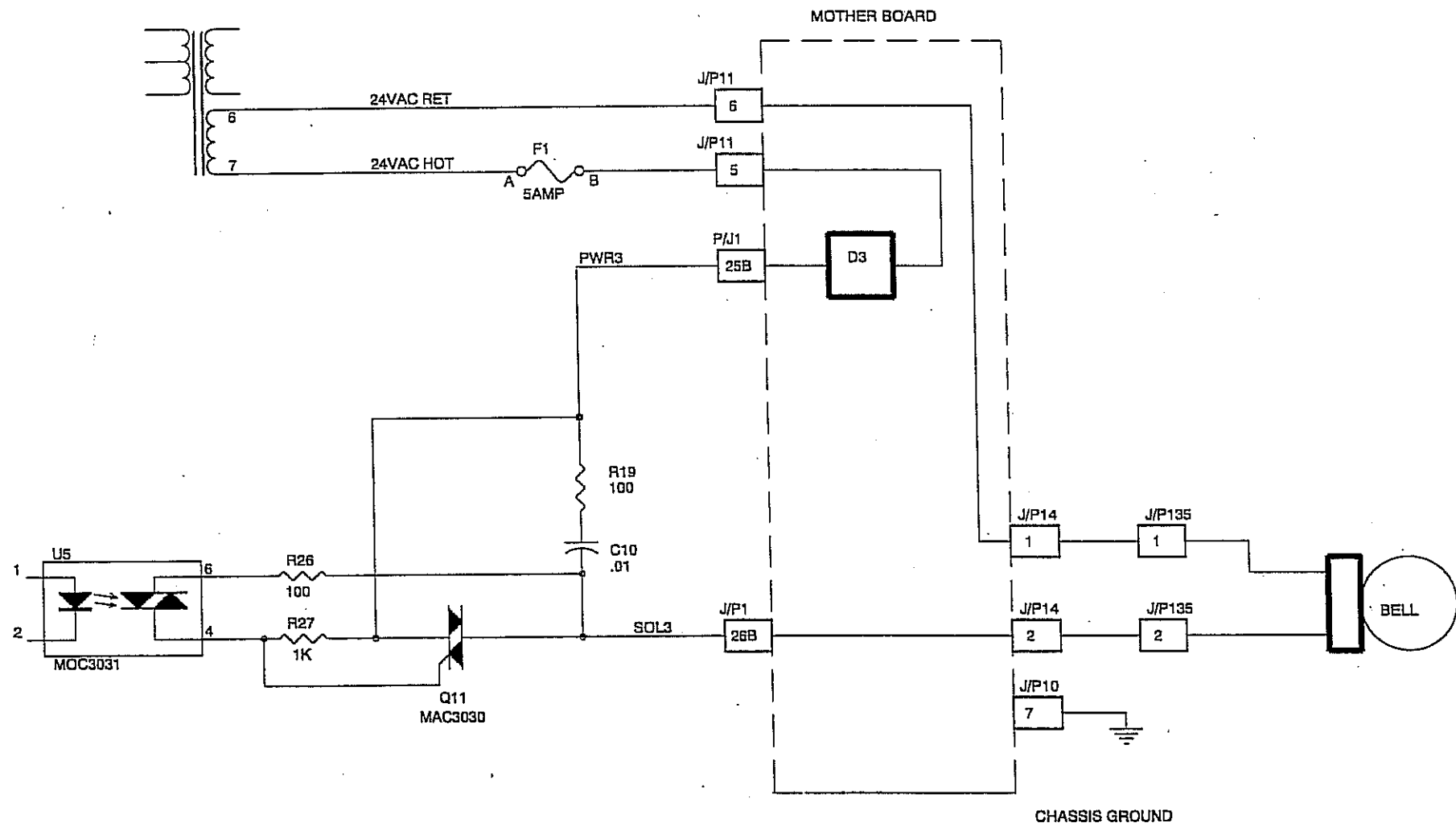
Before removing the processor board, check the following areas:

- ✓ Check 24V 5A fuse
- ✓ Check terminal block to see if #1 wire is seated firmly in place
- ✓ Check connector and wire from J/P145-1 to J/P7-1

If that doesn't work, try the following steps:

- ⇒ Remove mother board, and test J/P7-1 to J/P11-6 and J/P11-5 to J/P2-2B
- ⇒ If D4 stays "open", replace it (current suppressor 1.65A, RXE110)

Problem: Bell is Nonfunctional



Before removing the processor board, check the following areas:

- ✓ Use output test to verify problem
- ✓ Check wires and connectors for defects
- ✓ Verify that J/P14 is connected at the rear of the mother board
- ✓ Replace the bell, and test

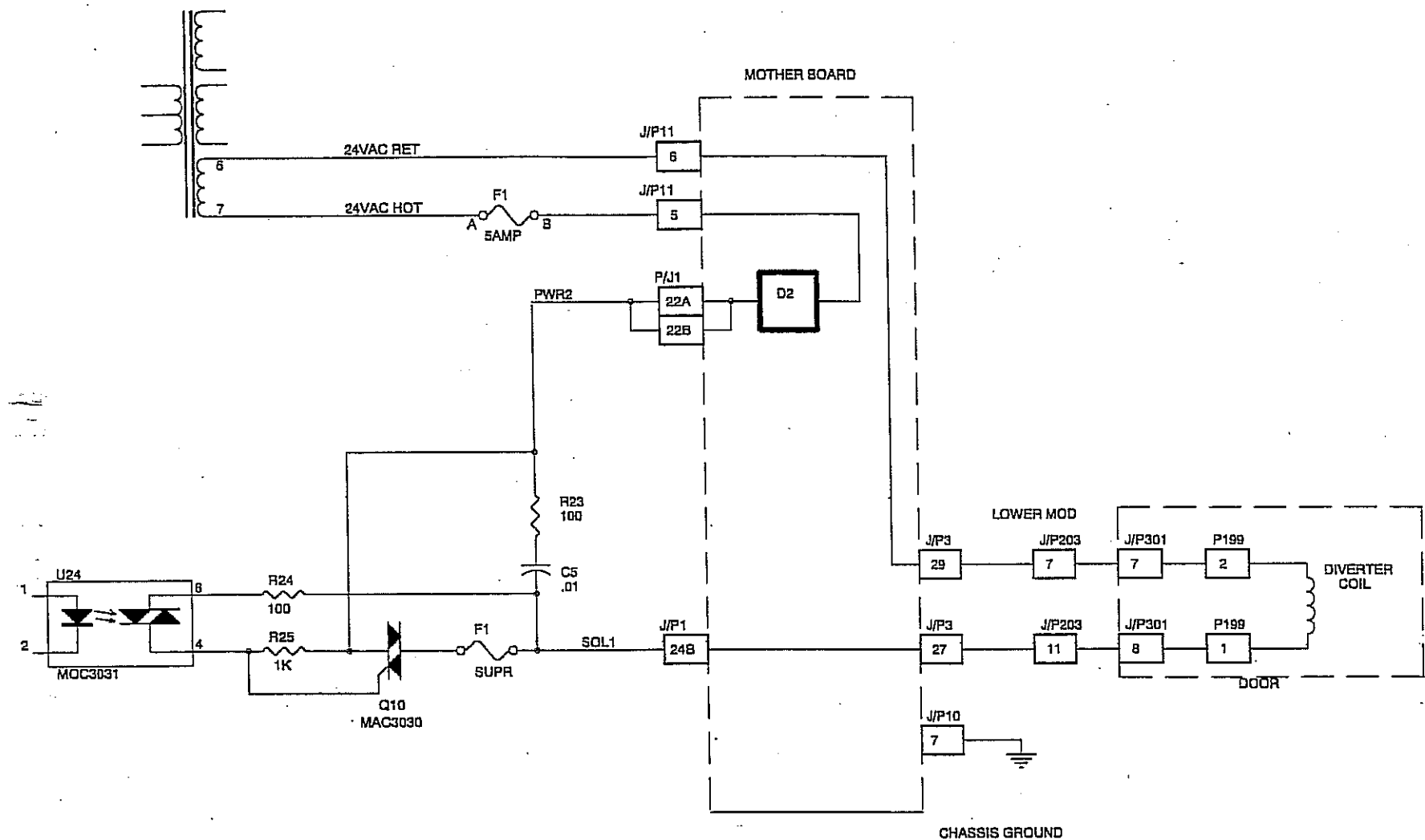
If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
 J/P135-1 to J/P14-1
 J/P135-2 to J/P14-2

MOTHER BOARD CONTINUITY TEST
 J/P14-2 to J/P1-26B
 J/P14-1 to J/P11-6
 J/P11-5 to J/P1-25B
 Replace D3 if it stays "open"
 D3 is a current suppressor, 1.65A RXE

PROCESSOR BOARD TEST
 Check from Q11 to edge for burned trace
 Test Q11 (MAC3030), and test
 Test U5 (MOC3031), and test
 R19 and C10 constitute a "snubber circuit" protecting Q11 from false triggering



Before removing the processor board, check the following areas:

- ✓ Use output test to verify problem
- ✓ Check the 24 VAC fuse
- ✓ Replace the diverter coil, and test

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST

J/P199-2 to J/P3-29
J/P199-1 to J/P3-27

MOTHER BOARD CONTINUITY TEST

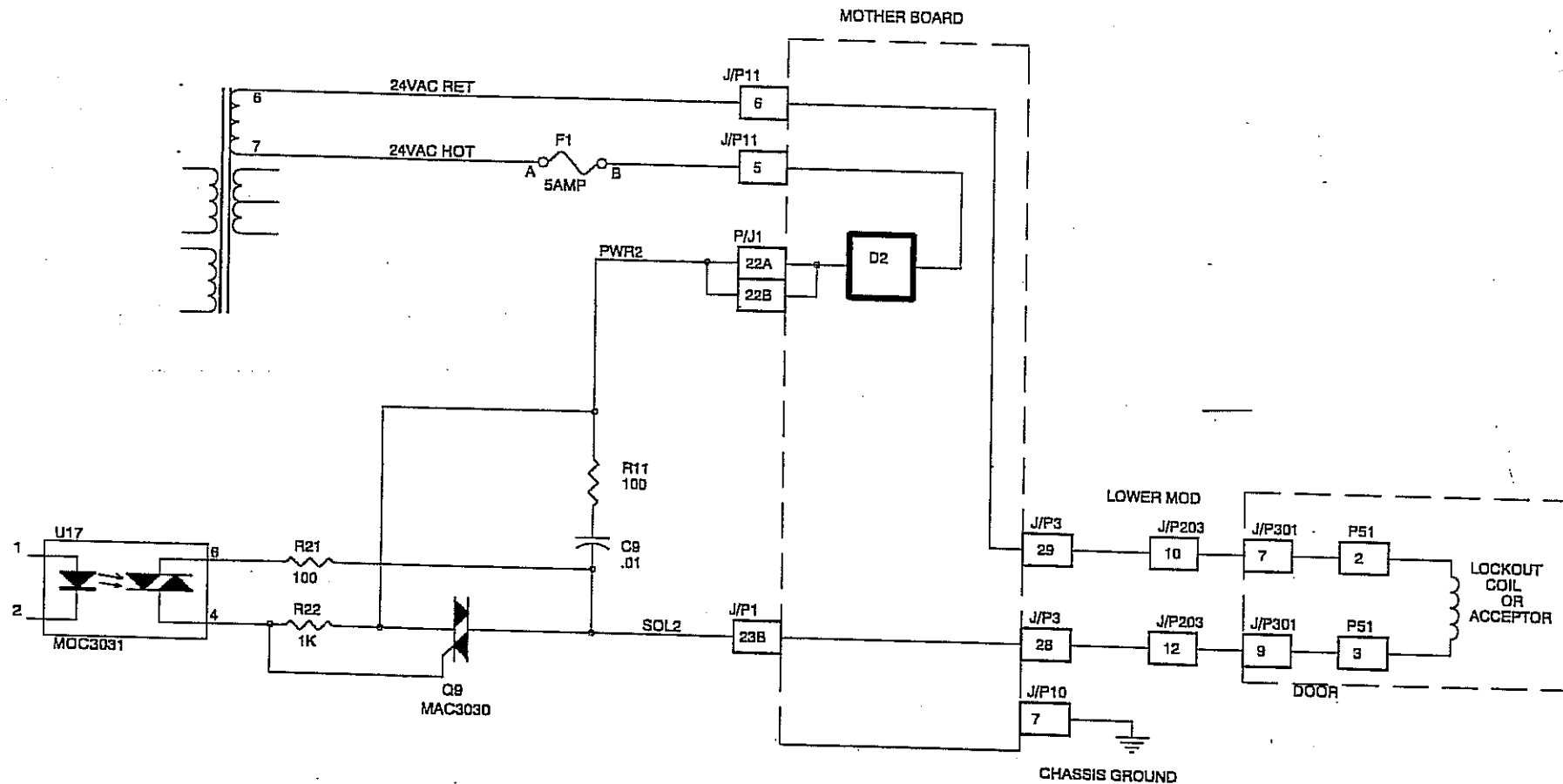
J/P3-27 to J/P1-24B
J/P3-29 to J/P11-6
J/P11-5 to J/P1-22A & 22B
Replace D2 if it "stays" open
(D2 is a current suppressor 1.65A RXE)

PROCESSOR BOARD TEST

Check from Q10 to edge (J/P2-15B & J/P2-17B) for burned trace
Test Q10(MAC3030) - if problem continues, then replace.
Test U24(MOC3031) - if problem continues, then replace.
Test F1, current suppressor .075A (RXE 050)
Test R23, R24 & R25

Problem: Lockout On Comparitor is Nonfunctional

Player's Edge-Plus Outputs



Before removing the processor board, check the following areas:

- ✓ Use output test to verify problem
- ✓ Check the 24VAC fuse
- ✓ Replace the comparitor, and test

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST

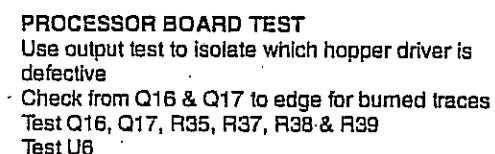
J/P51-2 to J/P3-29
J/P51-3 to J/P3-28

MOTHER BOARD CONTINUITY TEST

J/P3-28 to J/P1-23B
J/P3-29 to J/P11-6
J/P11-5 to J/P1-22A & 22B
Remove and replace D2 if it stays "open"
D2 is a current suppressor (1.65A RXE)

PROCESSOR BOARD TEST

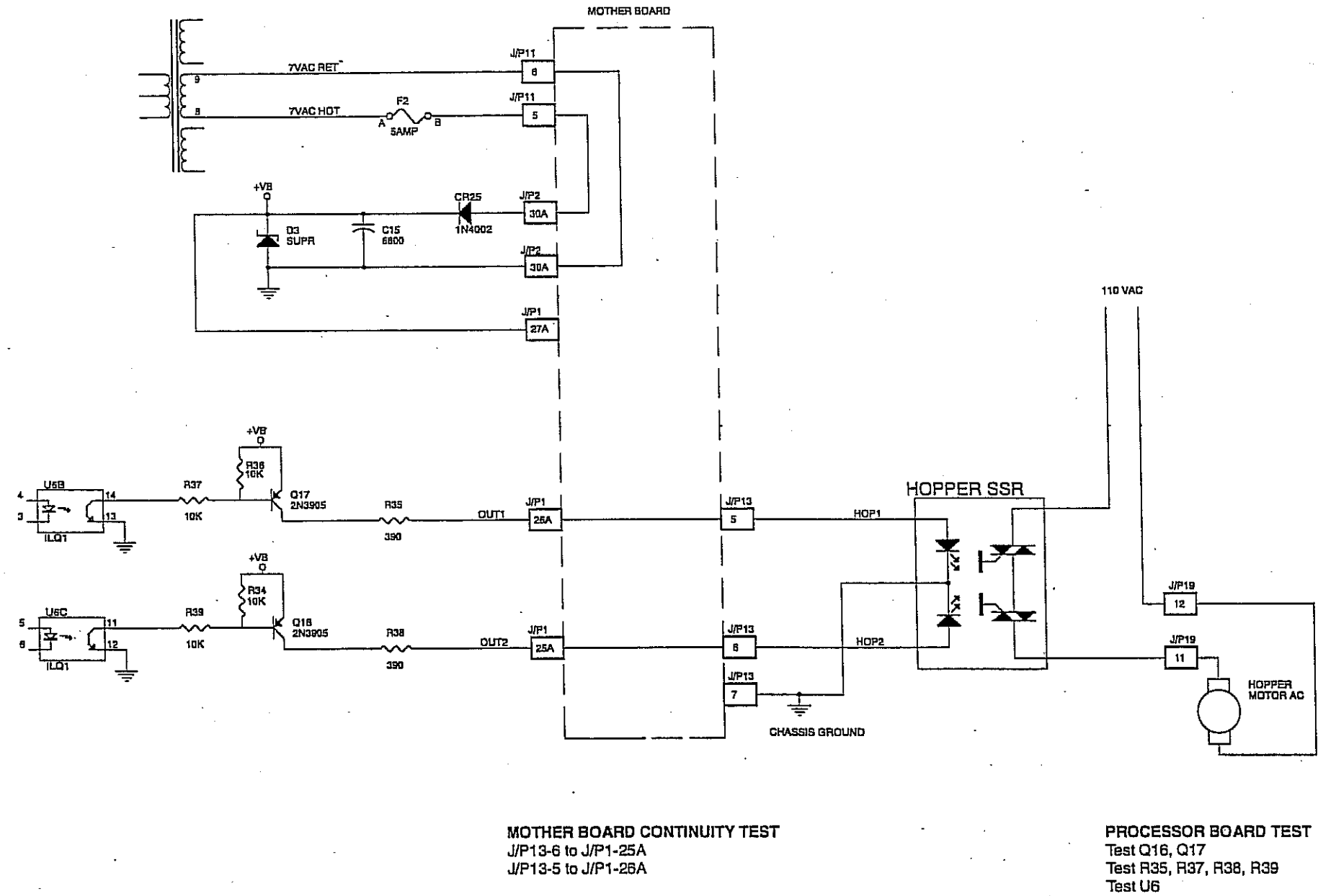
Check from Q9 to edge (J/P2-15B & J/P2-17B) for burned trace
Replace Q9(MAC3030) - if problem continues, then replace.
Replace U17(MOC3013) - if problem continues, then replace.
R11 and C9 constitute a "snubber circuit" protecting Q11 from false triggering.
Test R21 & R22.



- ✓ Verify that the wires to the hopper motor are connected
- ✓ Verify that the roll-pin is good
- ✓ Test for 110VAC across J/P19-11 & 12
- ✓ If 110VAC is missing, then trace back for a broken connection
- ✓ If 110VAC is good, then replace the hopper SSR and test
- ✓ Check for obstructions in the hopper
- ✓ Use another hopper to determine if the motor seems bad

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Runaway Hopper



Before removing the processor board, check the following areas:

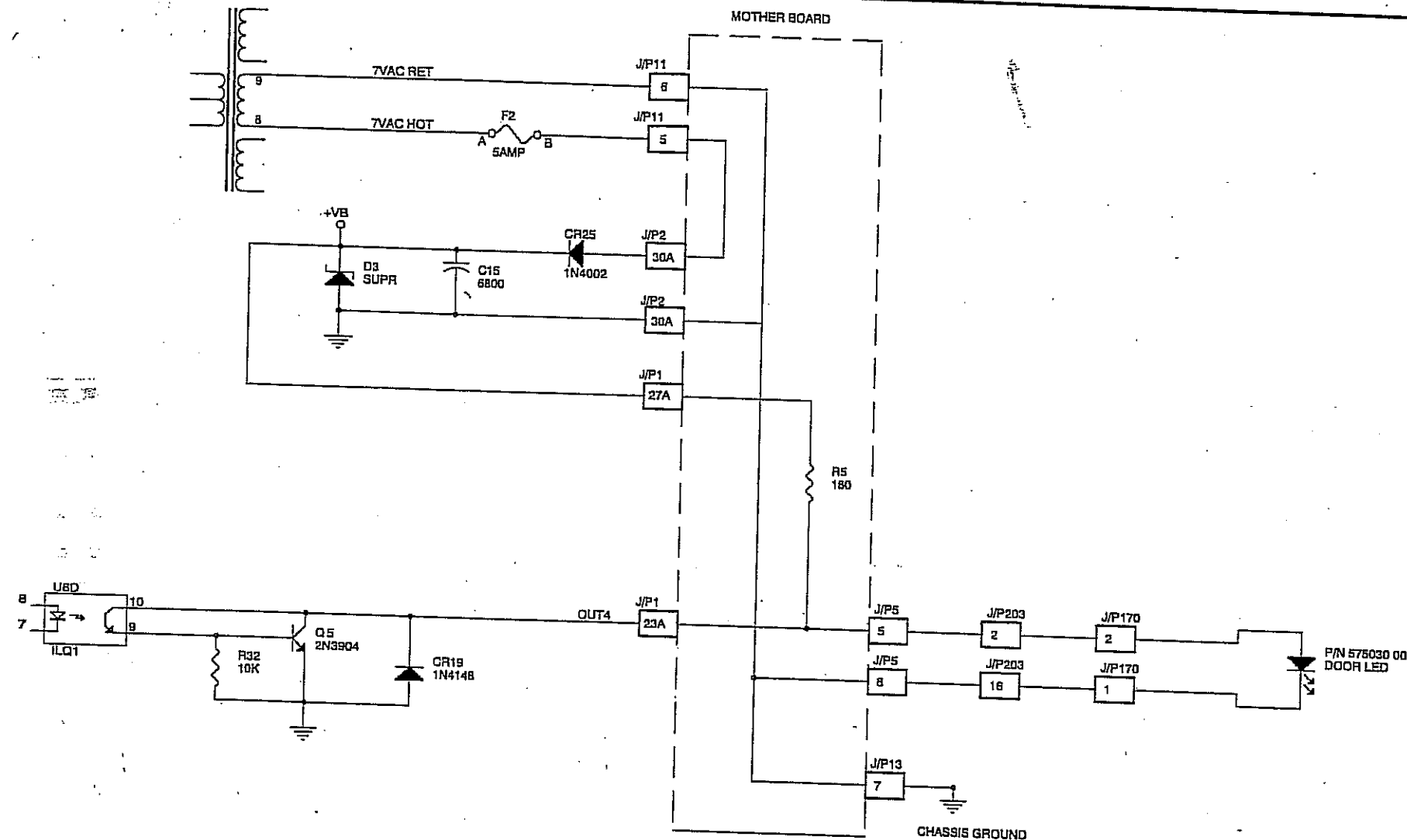
- ✓ If the machine is operating correctly, verify the operation of the hopper in the outputs test
- ✓ Remove the processor board while activating the hopper
- ✓ If the hopper stops, replace the processor board
- ✓ If hopper continues to run without the processor board, replace SSR

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace

Item: Constant Door Open Message (Suspect Bad LED)

Player's Edge-Plus Outputs



Before removing the processor board, check the following areas:

- ✓ Verify optic alignment
- ✓ Use input test to verify if the phototransistor is good (use a flashlight to simulate a LED)
- ✓ Verify that the bill validator door switch is closed
- ✓ Test for ~8 to 10 VDC across J/P170
- ✓ If the door LED is nonfunctional, then remove and replace LED

If that doesn't work, try the following steps:

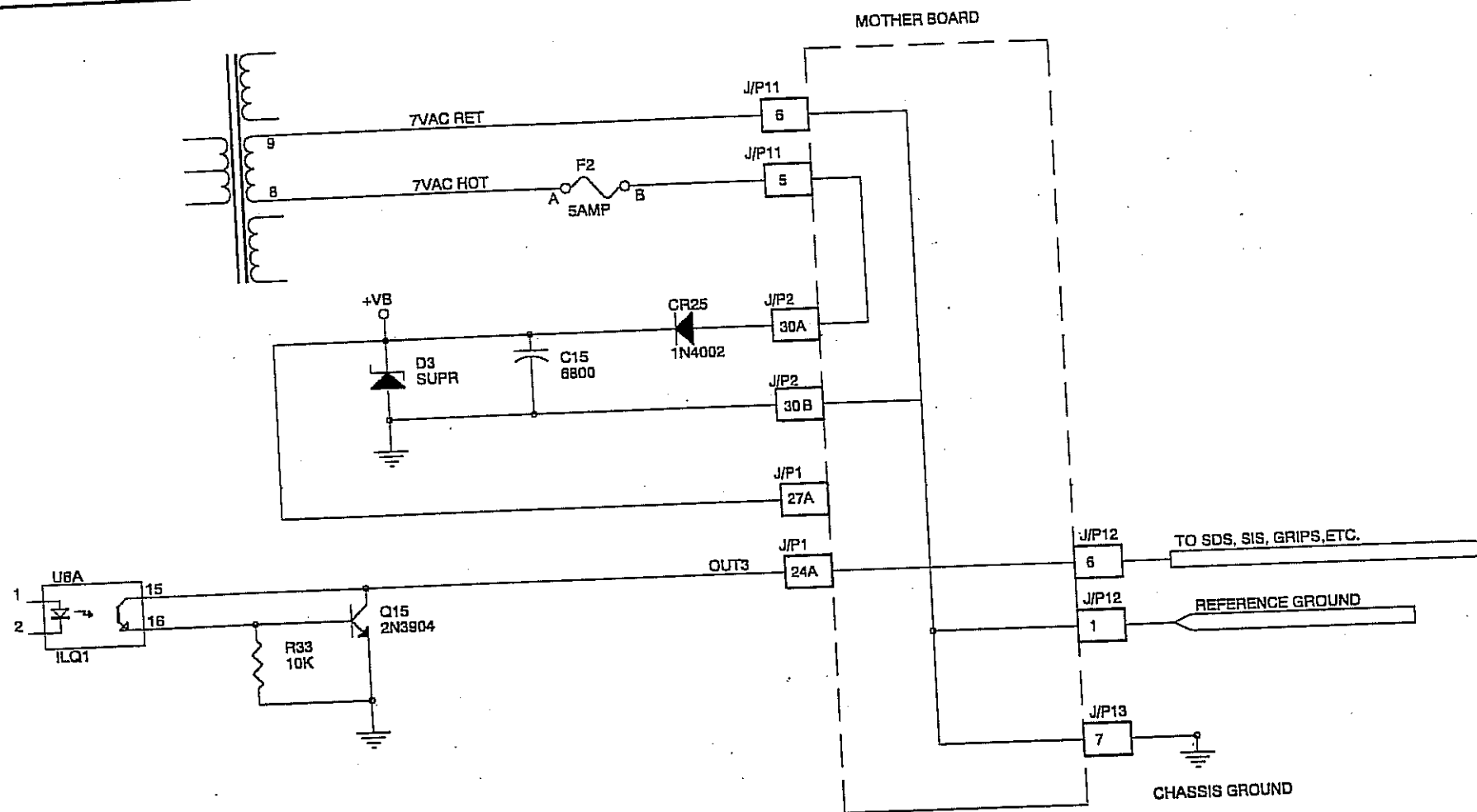
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P170-1 to J/P5-5
J/P170-2 to J/P5-6

MOTHER BOARD CONTINUITY TEST
J/P5-6 to J/P11-6, J/P13-7 & J/P2-30A
J/P5-5 to J/P2-23A & J/P2-27A
J/P11-5 to J/P2-30A

PROCESSOR BOARD TEST
Measure Vb at anode of CR19
Test Q5(2N3904) and check R32(10K Ohm),
if problem continues, then replace.
Check CR19
Test U6, if problem continues, then replace.

Problem: SDS Not Receiving Jackpot Signals



Before removing the processor board, check the following areas:

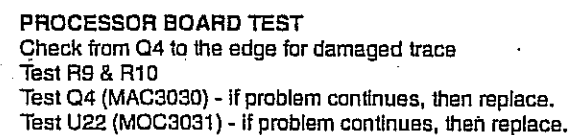
- ✓ Use output test to verify the problem

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

MOTHER BOARD CONTINUITY TEST
 J/P12-6 to J/P1-24A
 J/P12-1 to J/P11-6, J/P2-30A, J/P2-30B, J/P13-7
 J/P11-5 to J/P2-30A

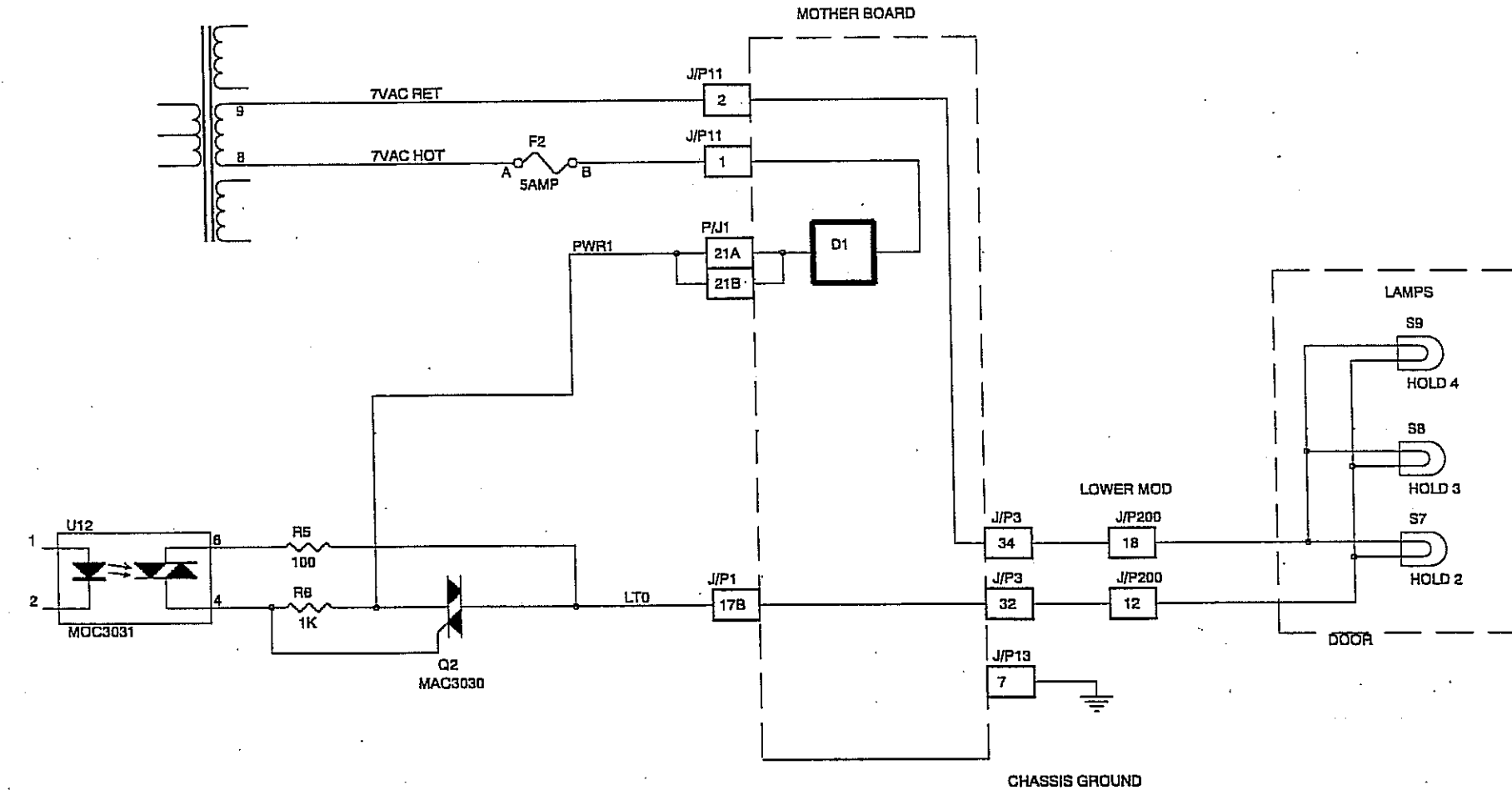
PROCESSOR BOARD TEST
 Test Q15
 Test U6, R33



- ✓ Use output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

- ⇒ Replace the processor board with a “known good” one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Problem: Hold Lamps 2, 3, & 4 are Nonfunctional



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Verify that the lamps are firmly placed in their sockets
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P3-34 to J/P3-32

MOTHER BOARD CONTINUITY TEST
J/P3-32 to J/P1-17B
J/P3-34 to J/P11-2

PROCESSOR BOARD TEST
Check from Q2 to the edge for damaged trace
Test R5 & R6
Test Q2 (MAC3030), if problem continues, then replace.
Test U12 (MOC3031), if problem continues, then replace.



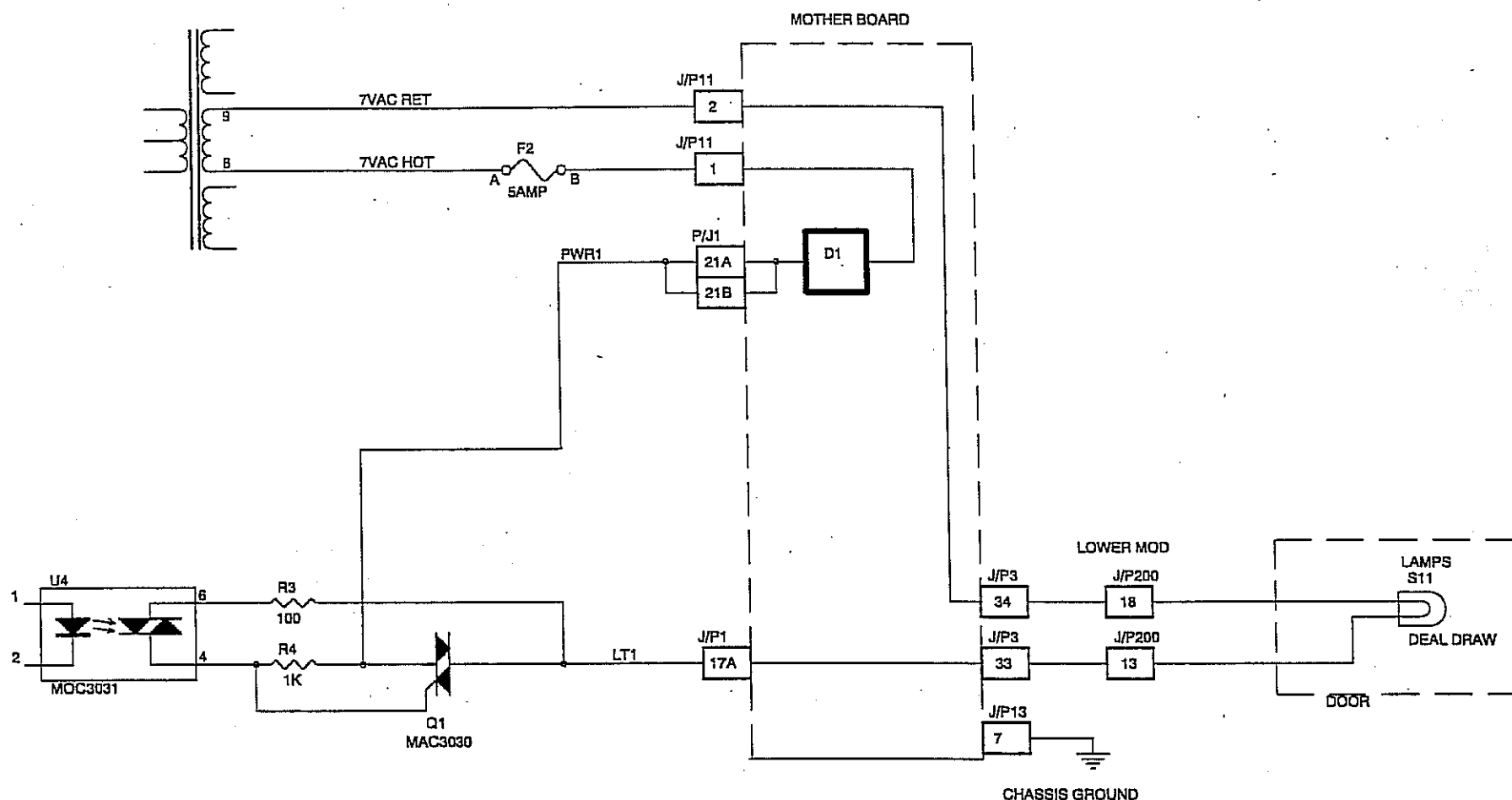
Problem: Deal/Draw Lamp is Nonfunctional

Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

If that doesn't work, try the following steps:

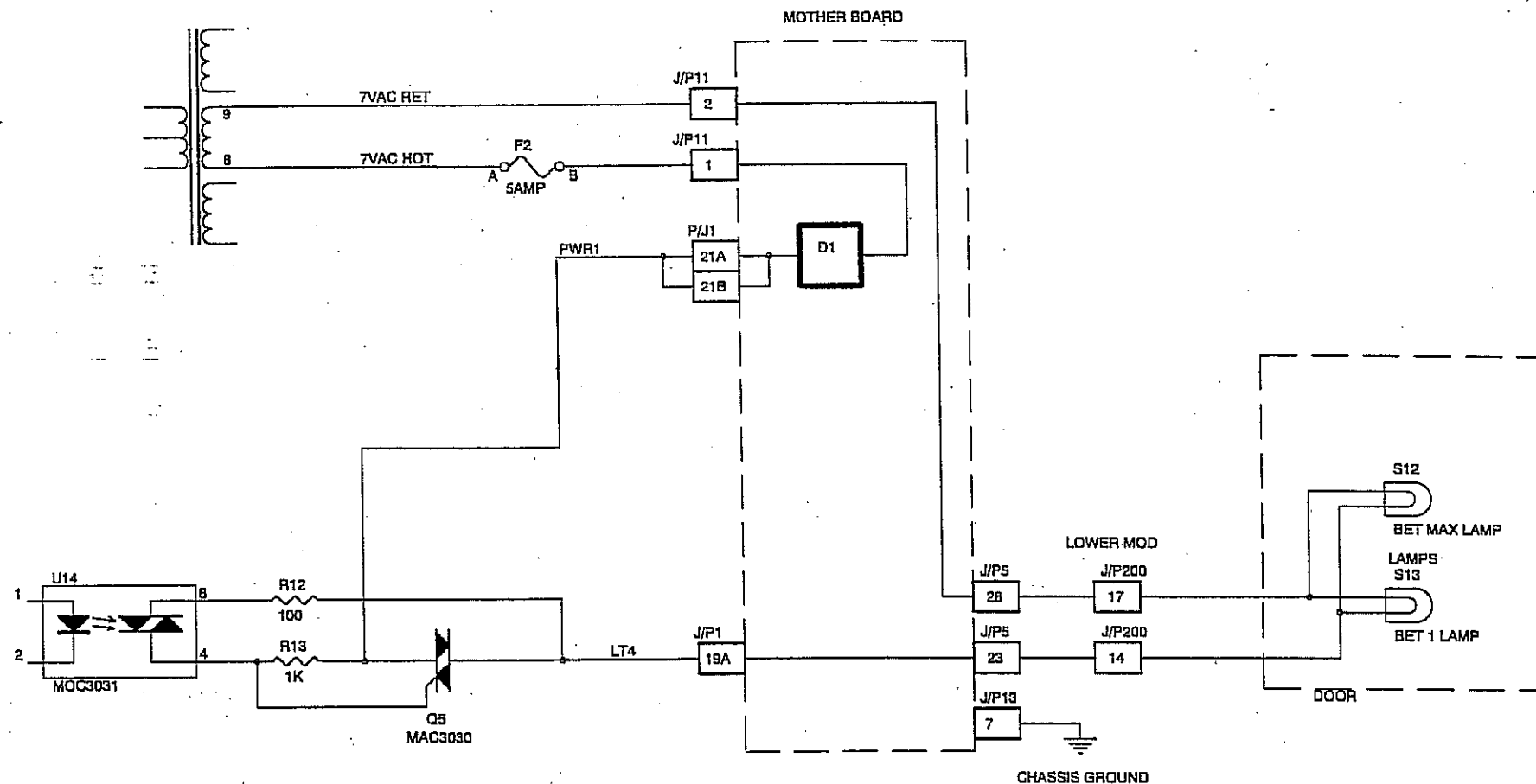
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



WIRE CONTINUITY TEST
J/P3-34 to J/P3-33

MOTHER BOARD CONTINUITY TEST
J/P3-33 to J/P1-17A
J/P3-34 to J/P11-2

PROCESSOR BOARD TEST
Check from Q1 to the edge for a damaged trace
Test R3 & R4
Test Q1 (MAC3030) - if problem continues, then replace.
Test U4 (MOC3031) - if problem continues, then replace.



WIRE CONTINUITY TEST
J/P5-28 to J/P5-23

MOTHER BOARD CONTINUITY TEST
J/P5-23 to J/P1-19A
J/P5-28 to J/P11-2

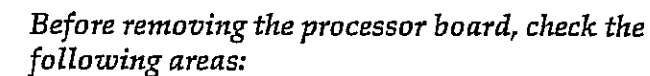
PROCESSOR BOARD TEST
Check from Q5 to the edge for damaged trace
Test R12 & R13
Test Q5 (MAC3030) - if problem continues, then replace.
Test U14 (MOC3031) - if problem continues, then replace.

Before removing the processor board, check the following areas:

- ✓ Use the output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity



- ✓ Use output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a “known good” one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

J/P5-28 to J/P5-24

J/P5-24 to J/P1-18A

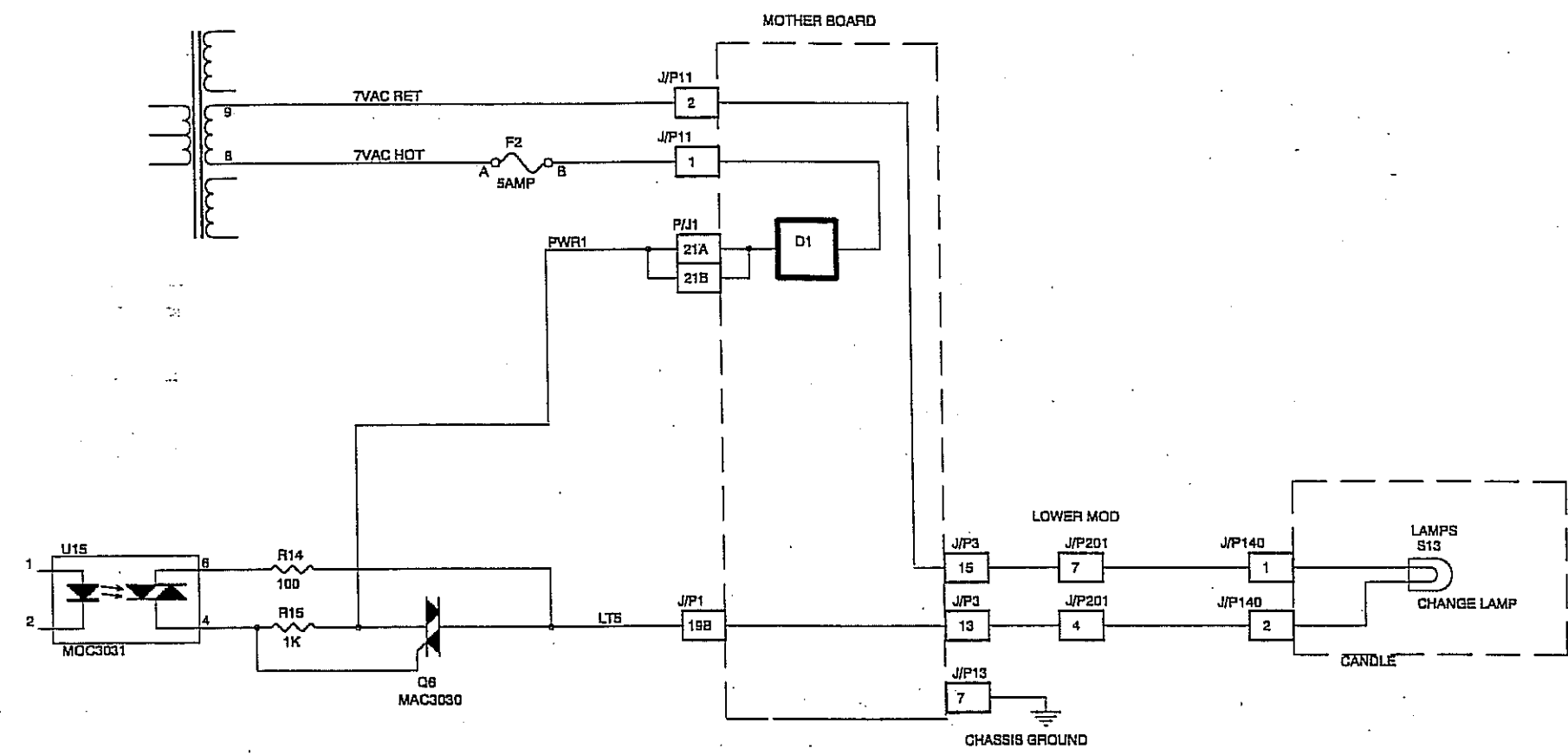
J/P5-28 to J/P11-2

Check from Q3 to the edge for damaged trace

Test R7 & R8

Test Q3 (MAC3030) - if problem continues, then replace.

Test U13 (MOC3031) - if problem continues, then replace.



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

If that doesn't work, try the following steps:

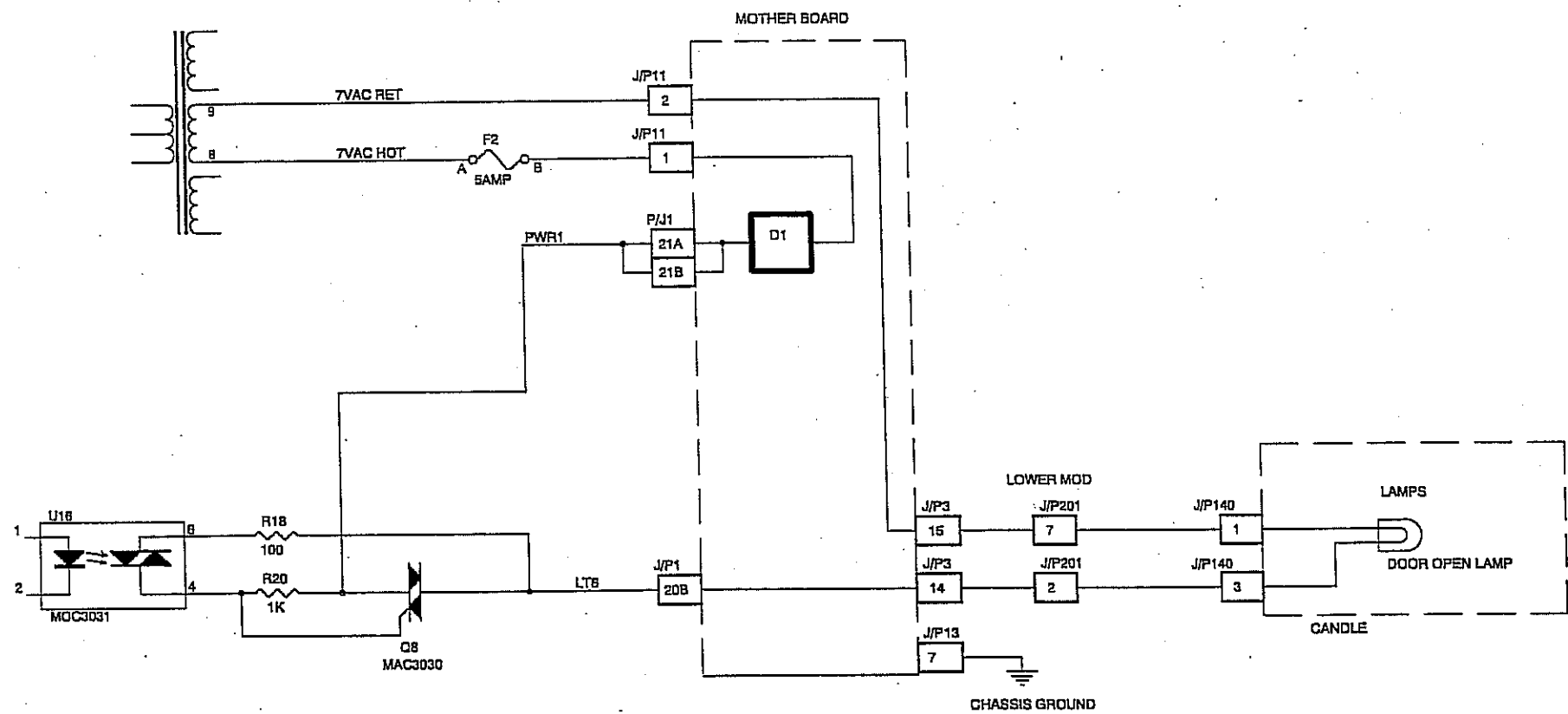
- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P3-15 to J/P3-13

MOTHER BOARD CONTINUITY TEST
J/P3-13 to J/P1-19B
J/P3-15 to J/P11-2

PROCESSOR BOARD TEST
Check from Q6 to the edge for damaged trace
Test R14 & R15
Test Q6 (MAC3030) - If problem continues, then replace.
Test U15 (MOC3031) - If problem continues, then replace.

Problem: Door Open Lamp is Nonfunctional



Before removing the processor board, check the following areas:

- ✓ Use output test to verify the problem
- ✓ Verify that the lamp is seated firmly in the socket
- ✓ Replace the lamp, and test
- ✓ Check wires and connectors for defects

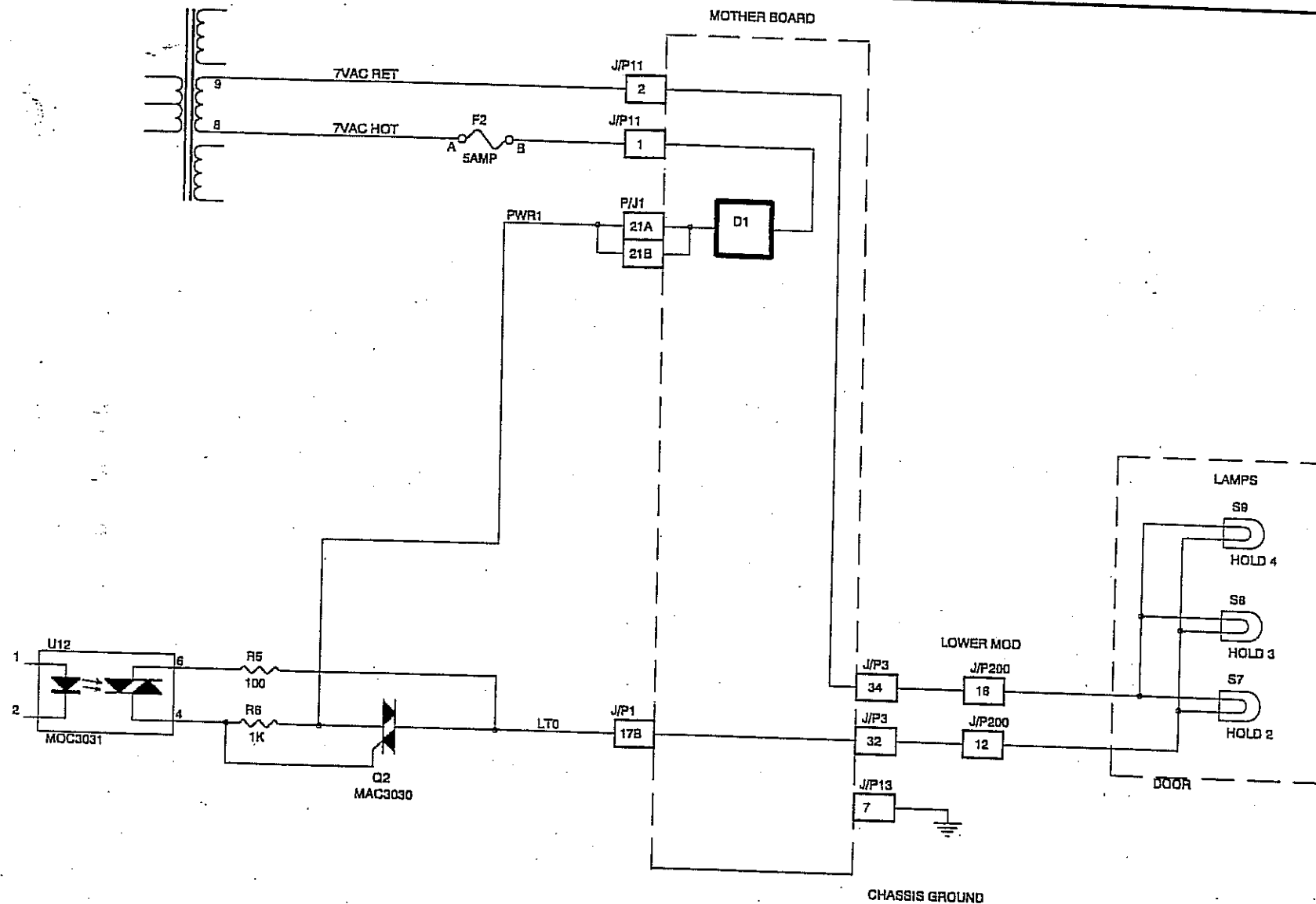
If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

WIRE CONTINUITY TEST
J/P3-15 to J/P3-14

MOTHER BOARD CONTINUITY TEST
J/P3-14 to J/P1-20B
J/P3-15 to J/P11-2

PROCESSOR BOARD TEST
Check from Q8 to the edge for damaged trace
Test R18 & R20
Test Q8 (MAC3030) - if problem continues, then replace.
Test U16 (MOC3031) - if problem continues, then replace.



Before removing the processor board, check the following areas:

- ✓ Check the 7VAC, 5A fuse
- ✓ Use this diagram to isolate mother board traces (J/P11-1 to J/P1-21A & 21B)

If that doesn't work, try the following steps:

- ⇒ Test D1: if "open" replace it (current suppressor 2.8A), and test

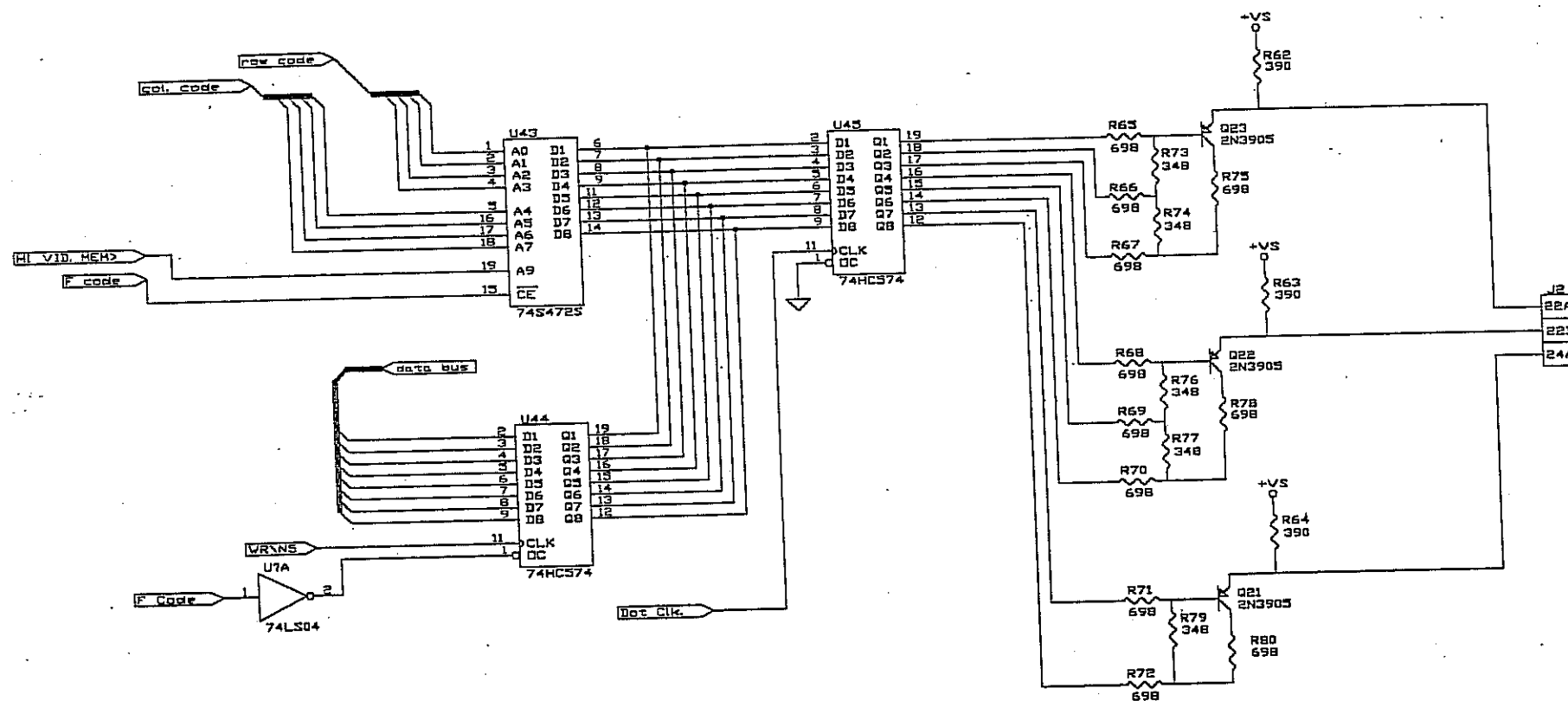
Problem: Color is Over or Under Driven

Before removing the processor board, check the following areas:

- ✓ Adjust the video from the dials behind the monitor

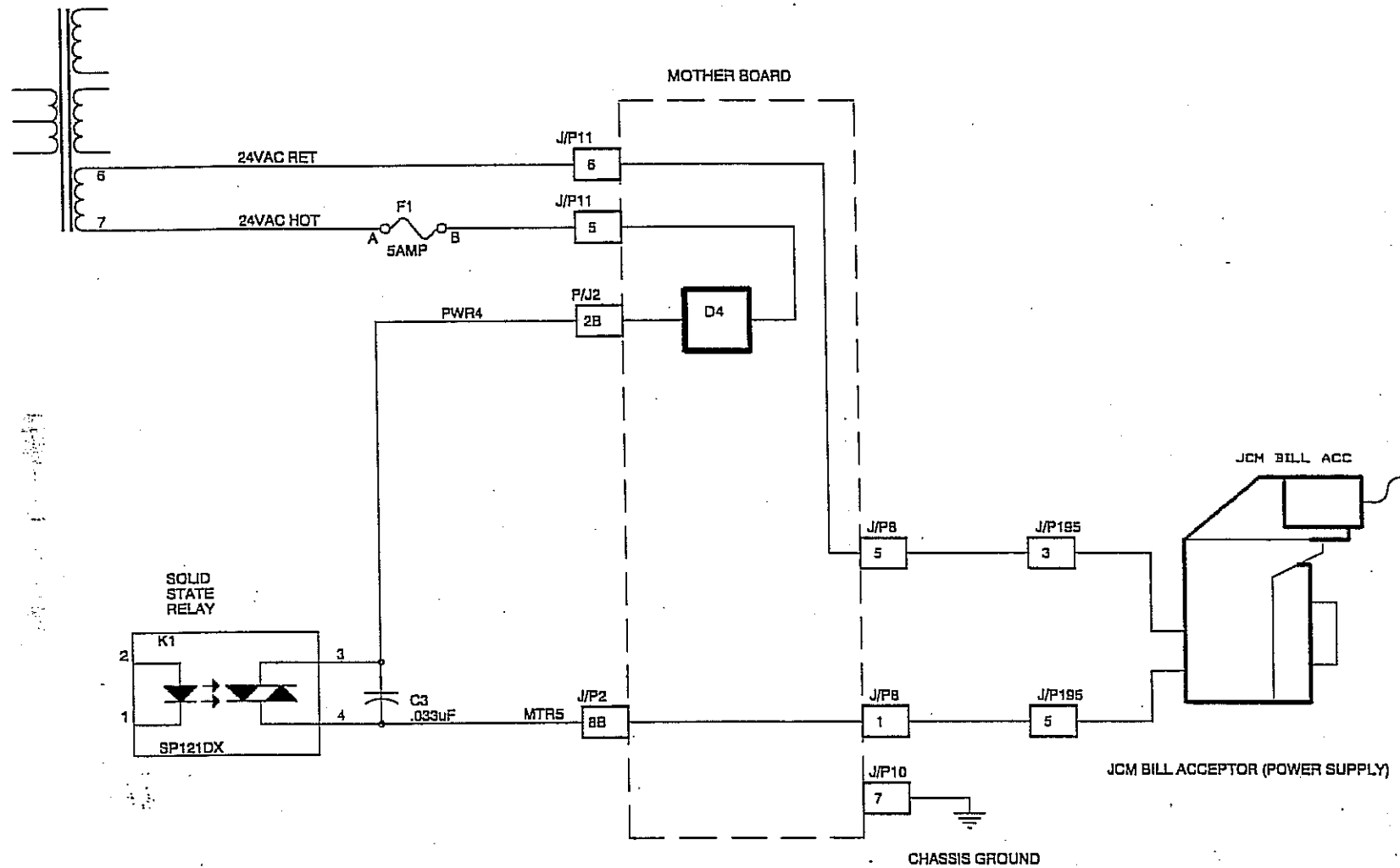
If that doesn't work, try the following steps:

- ⇒ Replace the monitor with a known "good one"
- ⇒ If the problem is on the processor board, replace the driver in question (red is Q23, green is Q22, blue is Q21, all three are 2N3905s)



Problem: Bill Acceptor is Missing 24 VAC Output Signal

Player's Edge-Plus Outputs



Before removing the processor board, check the following areas:

- ✓ Use output test 27 to verify the problem
- ✓ Check 24V, 5A fuse
- ✓ Check wires and connectors for defects
- ✓ See note below

If that doesn't work, try the following steps:

- ⇒ Replace the processor board with a "known good" one
- ⇒ If the processor board seems bad, verify in the tester
- ⇒ If the processor board is good, then replace the mother board
- ⇒ To repair the mother board, use this diagram to isolate the bad trace
- ⇒ If the mother board and processor board are good, then use this diagram to test for wire continuity

Note:

Denomination must be set to a value other than 0. In credit mode, the number of credits accumulated must be less than maximum coin-in unless software permits programming level.

WIRE CONTINUITY TEST

J/P195-3 to J/P8-5
J/P195-5 to J/P8-1

MOTHER BOARD CONTINUITY TEST

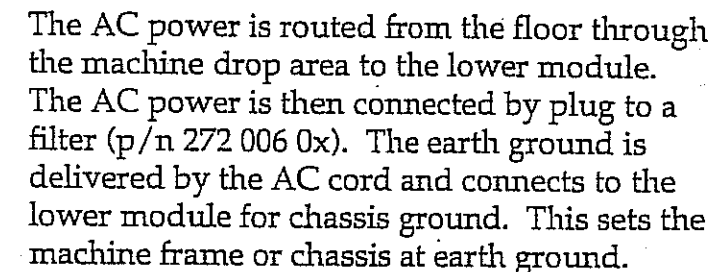
J/P8-5 to J/P11-6
J/P8-1 to J/P2-8B
J/P11-5 to J/P2-2B

PROCESSOR BOARD TEST

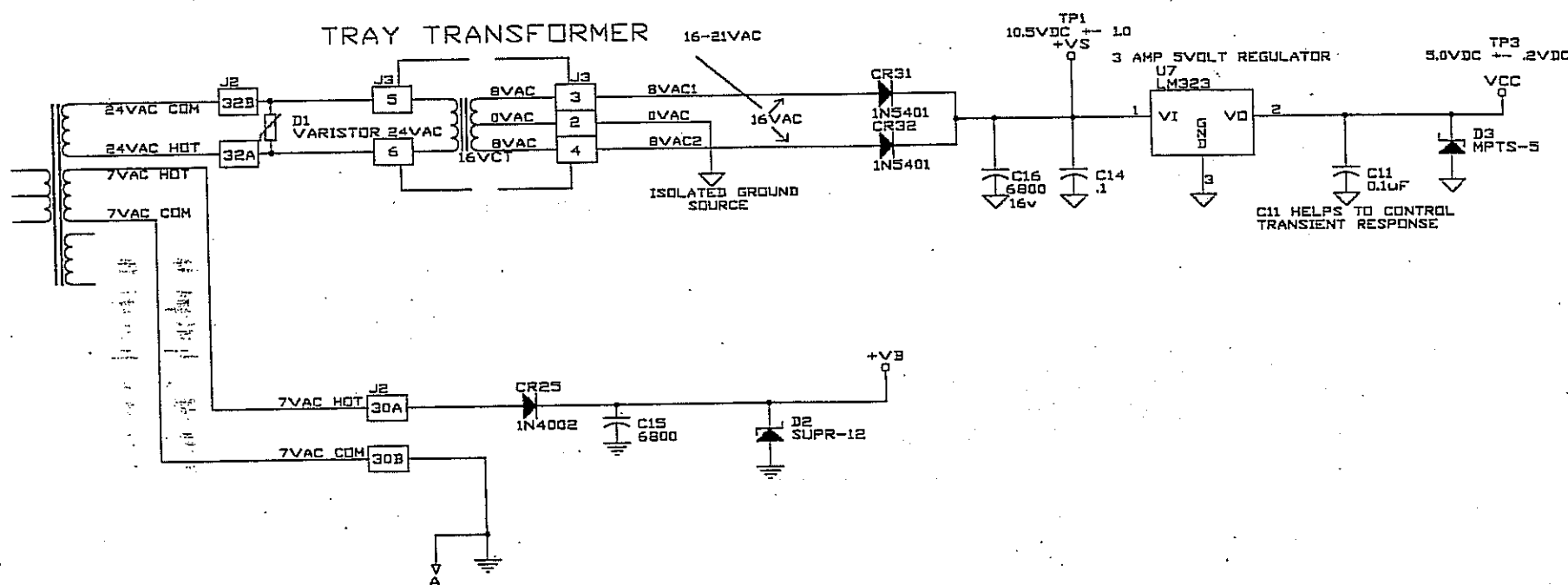
Check from K6 to edge for burned trace
Test K6 (SP121DX) - if problem continues, then replace.
Test C3 - If driver ever turns on by itself
Test D4 (current suppressor 1.65A) RXE110

Problem: Power Supply – Common Problems

1. "Hot" machine (players get electrical shock) – Check from house outlet to power strip to machine with "outlet polarity checker" for incorrect wiring.
2. Machine "blacked out" (no functions)
 - a. If 110VAC 6A fuse keeps blowing, disconnect the hopper SSR and J/P208 (fluorescent connection) to isolate to main transformer and back.
 - b. Replace the fuse (always use fast blow fuses with the correct rating).
 - c. If the fuse does not blow, reconnect J/P208. This will indicate whether the problem is in the fluorescent circuit or in the SSR.
3. 24VAC fuse or 7VAC fuse constantly blows
 - a. Remove the processor board and disconnect all mother board connections, then reseal the processor board.
 - b. Replace the fuse (always use fast-blow fuses with the correct rating).
 - c. If the fuse does not blow, then remove and replace the processor board to determine if the processor board or mother board is bad.
 - d. If the original processor board and mother board did not cause the fuse to blow, then reconnect each connector one by one until the fuse blows.
 - e. Trace the harnessing from the last connector to its input or output.
 - f. Replace the device, first then check wiring insulation for breaks.
4. Be aware that wires must be fully seated in the terminal block (commoning blocks).
5. Be aware that a bad power strip or a bad power cord will result in power problems.
6. To ensure proper current and voltage for each machine, connect no more than five machines per 20 Amp circuit breaker.
7. A potential hazard exists when a circuit is overloaded. From ground to neutral (at the outlet or across two machines) should not exceed 3VAC.
8. A device connected to the accessory outlet that draws over 2 amps can degrade the filter.

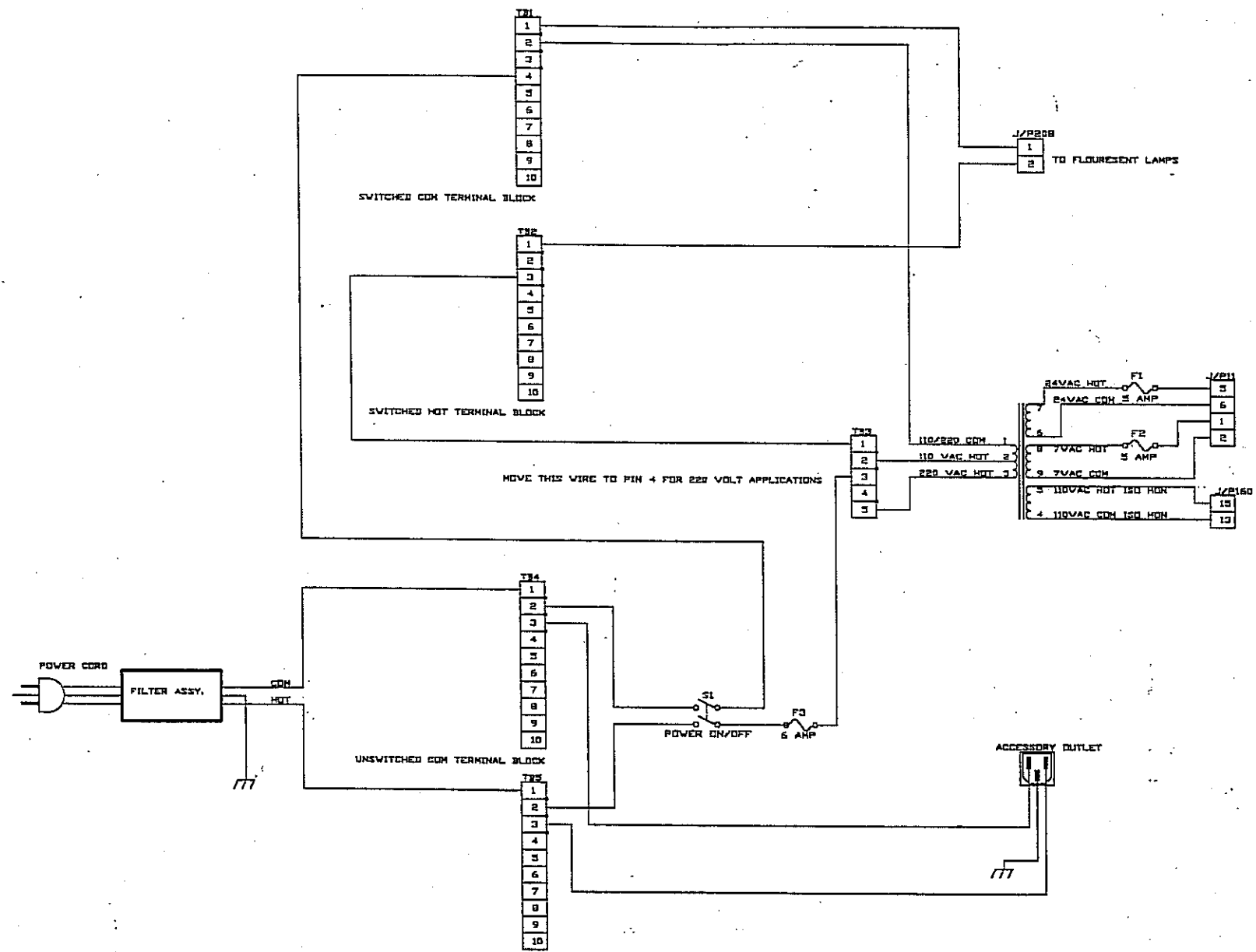


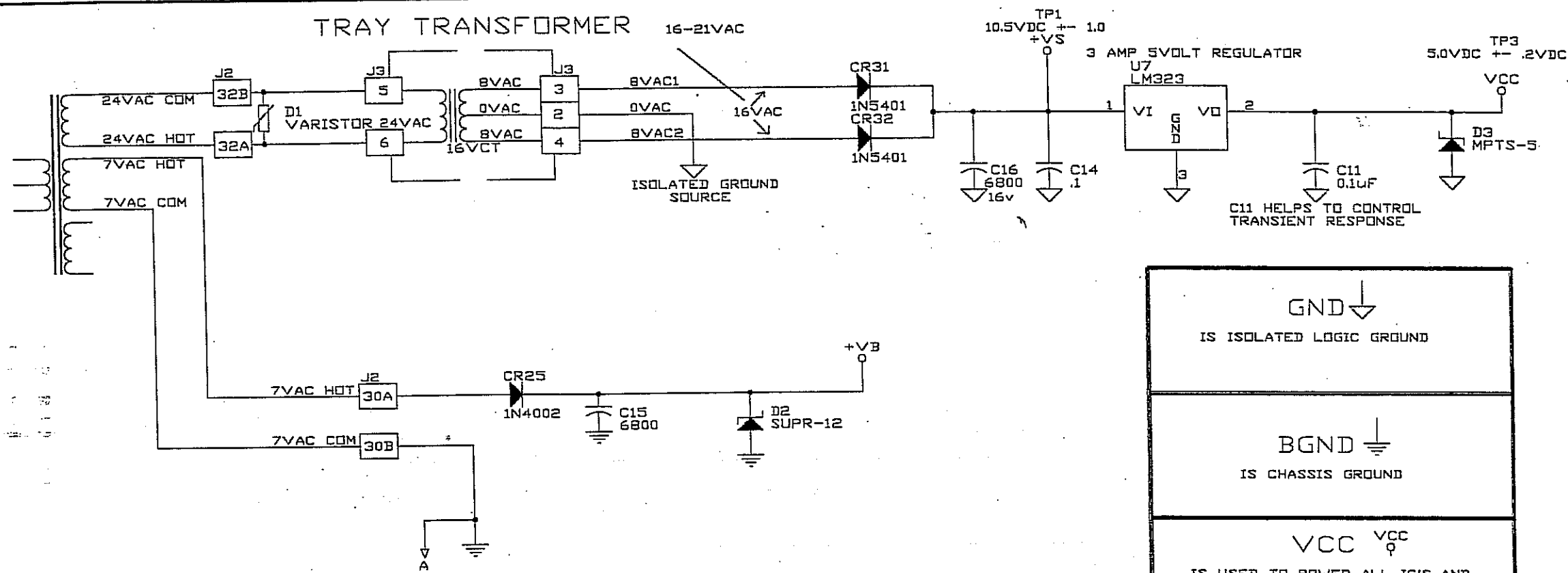
The secondary of the main transformer will provide: 24VAC for the processor board tray transformer, 7VAC for incandescent lamps, and 110 VAC for the video monitor.



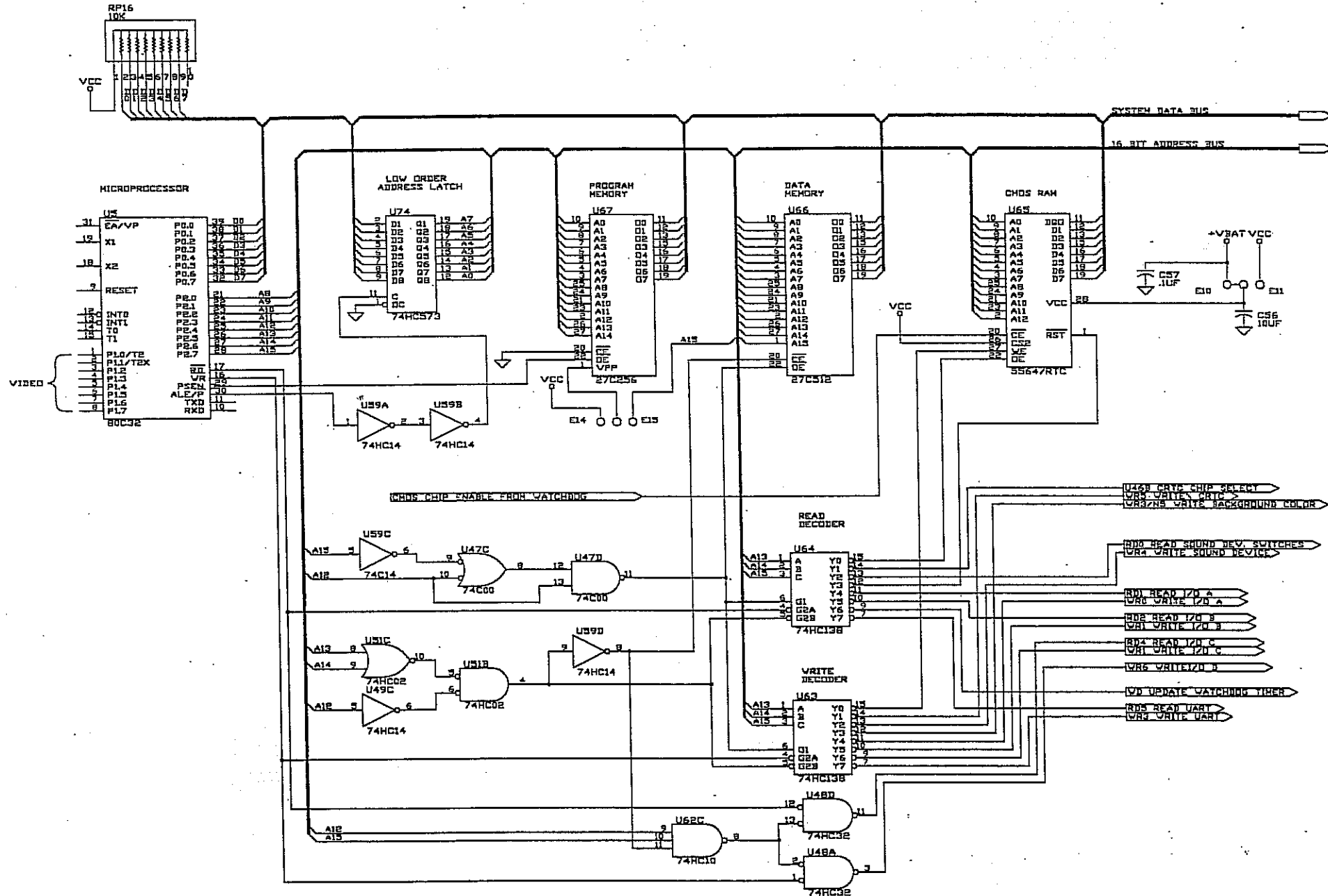
- ✓ Tray transformer: 24VAC - 16VAC center tapped secondary
- ✓ Center tap is the source for logic ground
- ✓ Three important logic ground voltages are the sequentially developed: V_{un} (10.5-11.5VDC), and 5.6VDC (RAM)
- ✓ V_B is developed from the 7VAC secondary tap of the main transformer
- ✓ V_B becomes a half wave rectified, unregulated DC voltage for I/O drive

- ⇒ Check to see if the rectifier diode is passing VAC or not passing VDC
- ⇒ Check the filter capacitor to see if there is too much VAC (ripple voltage)
- ⇒ Check the continuity of Vb and +5V

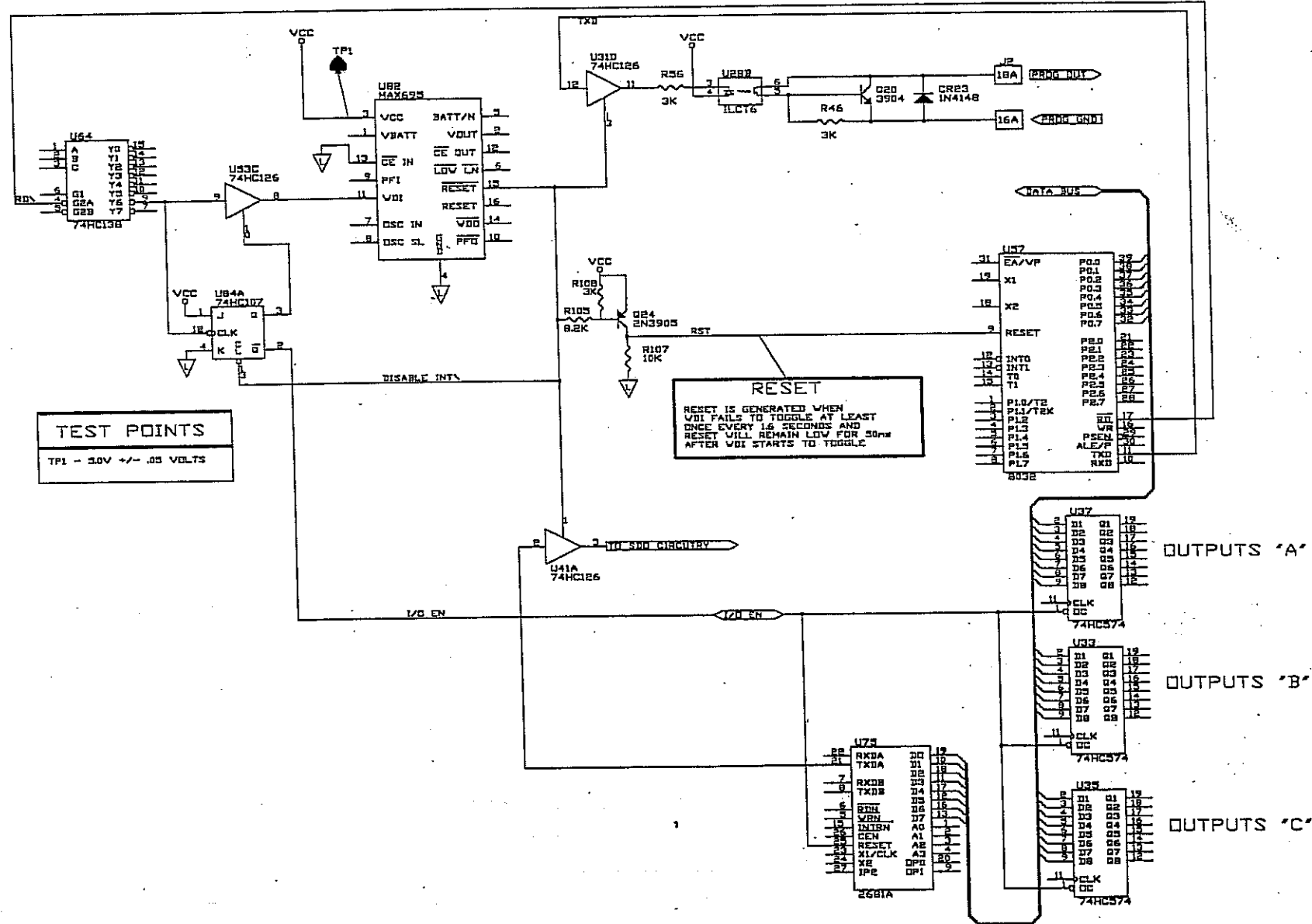


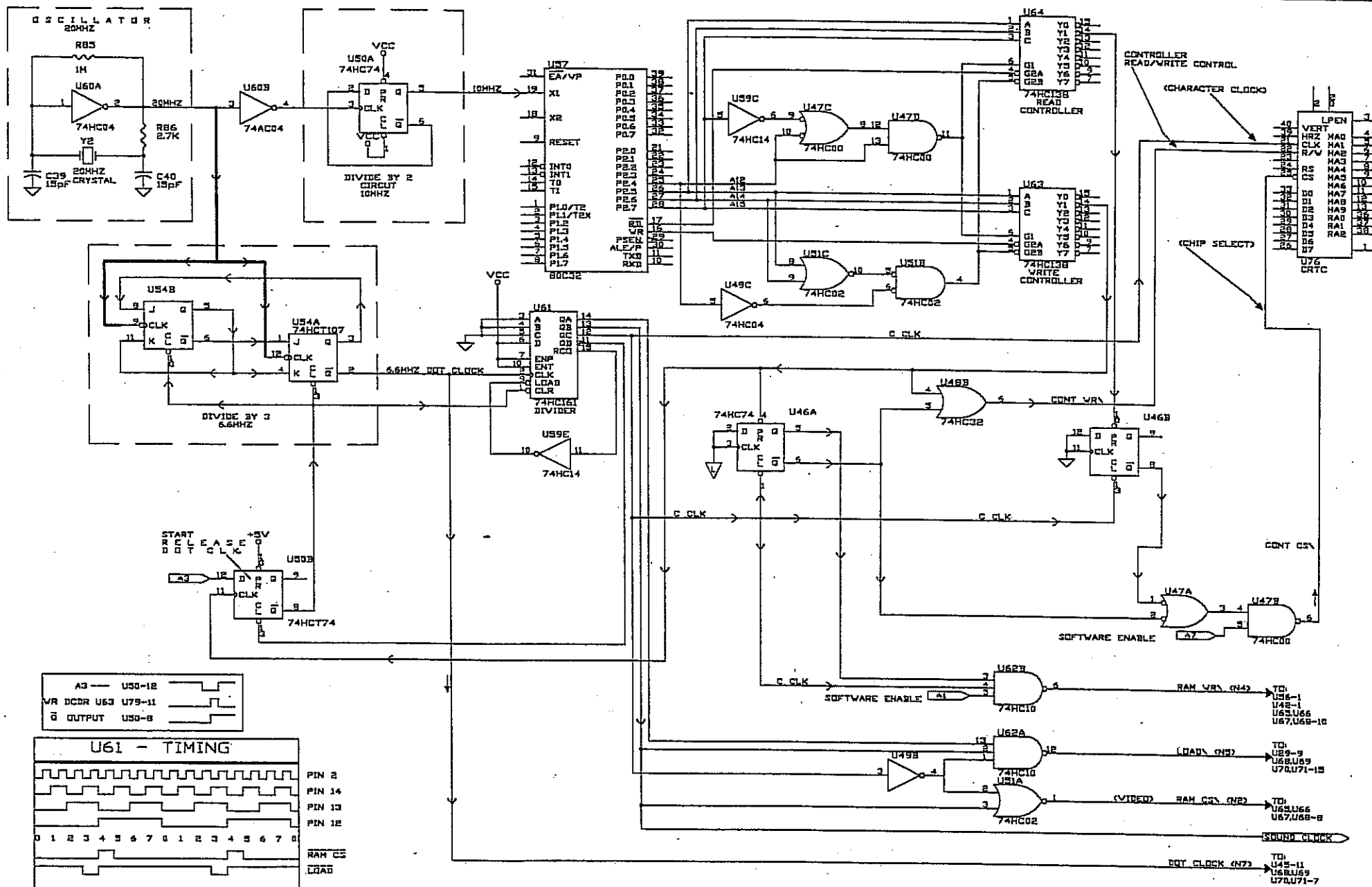


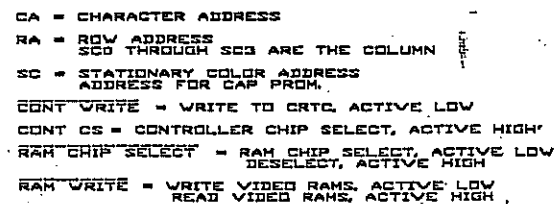
<p>GND</p> <p>IS ISOLATED LOGIC GROUND</p>
<p>BGND</p> <p>IS CHASSIS GROUND</p>
<p>VCC</p> <p>IS USED TO POWER ALL IC'S AND OTHER DEVICES INSIDE THE OPTO ISOLATION</p>
<p>+VB</p> <p>IS USED TO POWER THE OPTOS AND OTHER DEVICES OUTSIDE THE OPTO ISOLATION</p>
<p>+VS</p> <p>IS UNREGULATED VOLTAGE AND IS USED TO POWER VARIOUS OPTOS AND THE SOUND AMPLIFIER WHERE A HIGHER VOLTAGE IS REQUIRED</p>

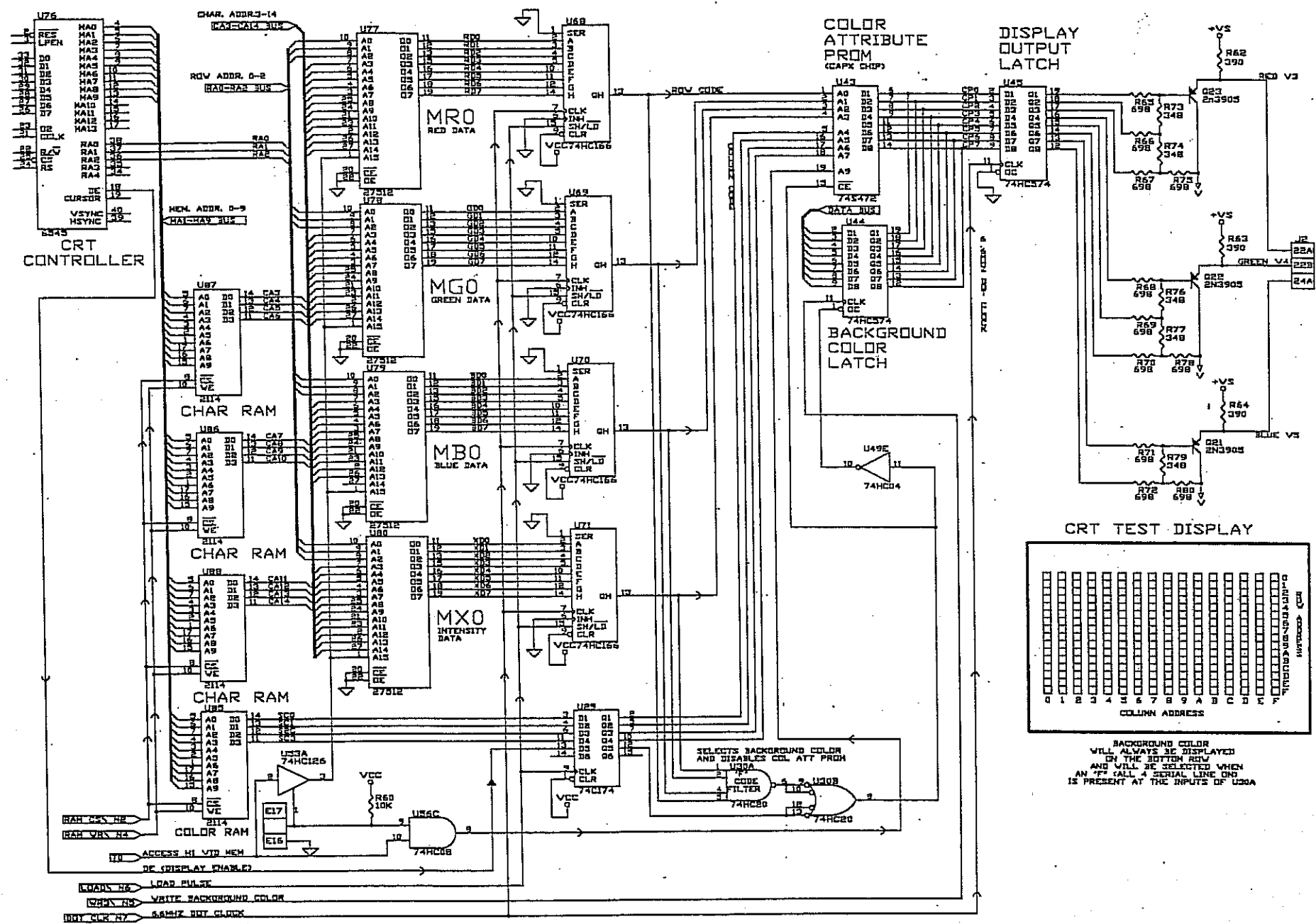


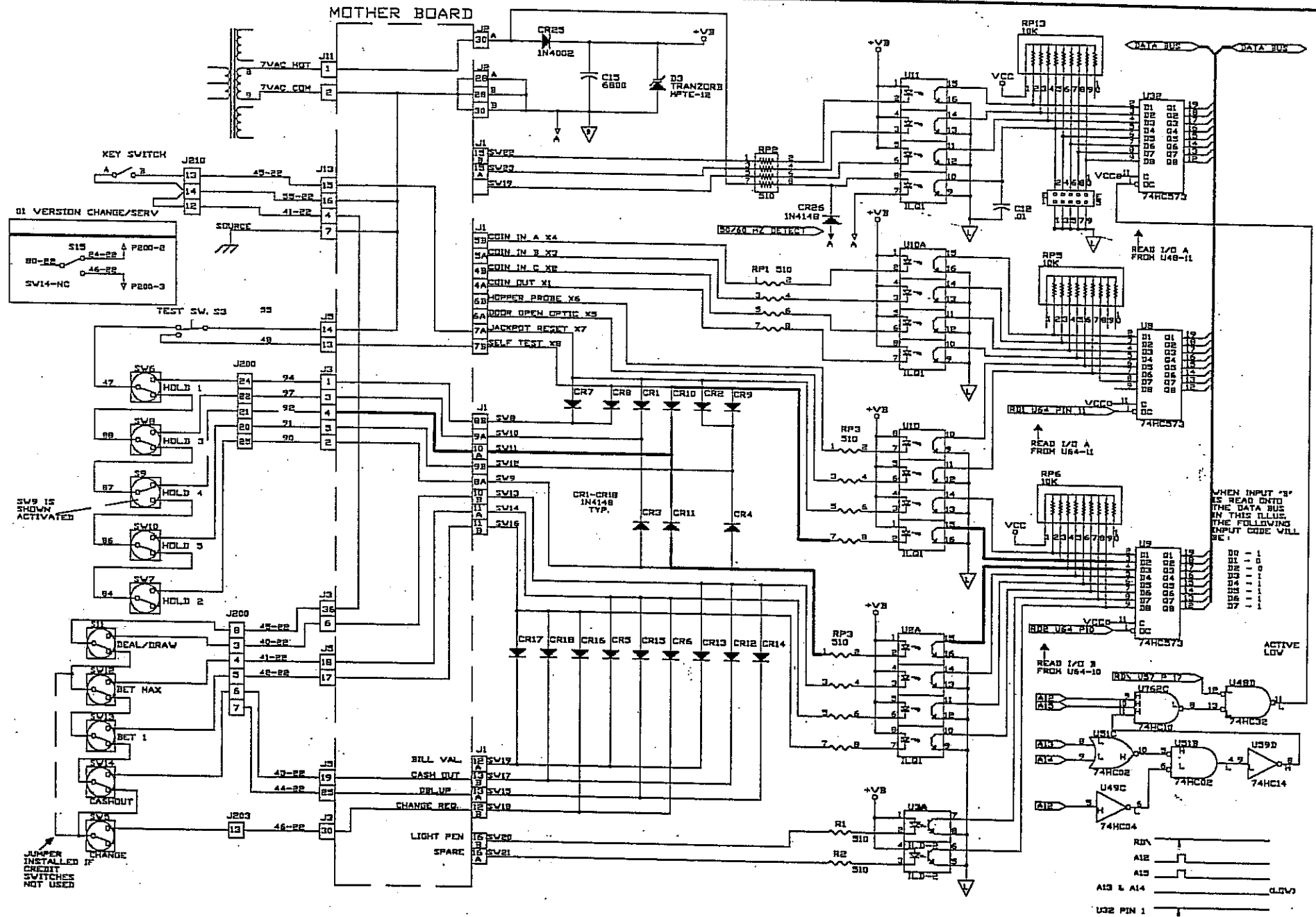


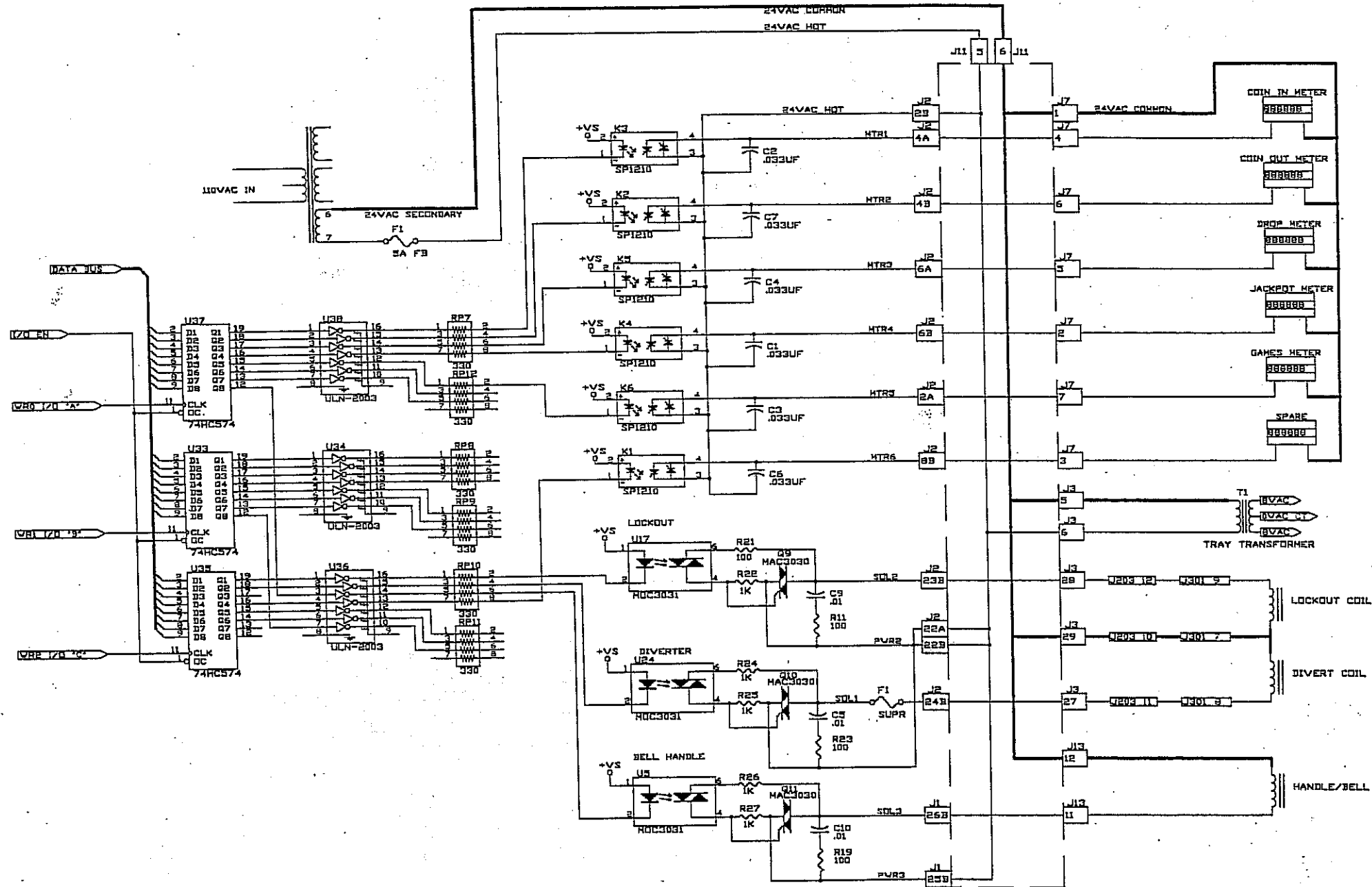


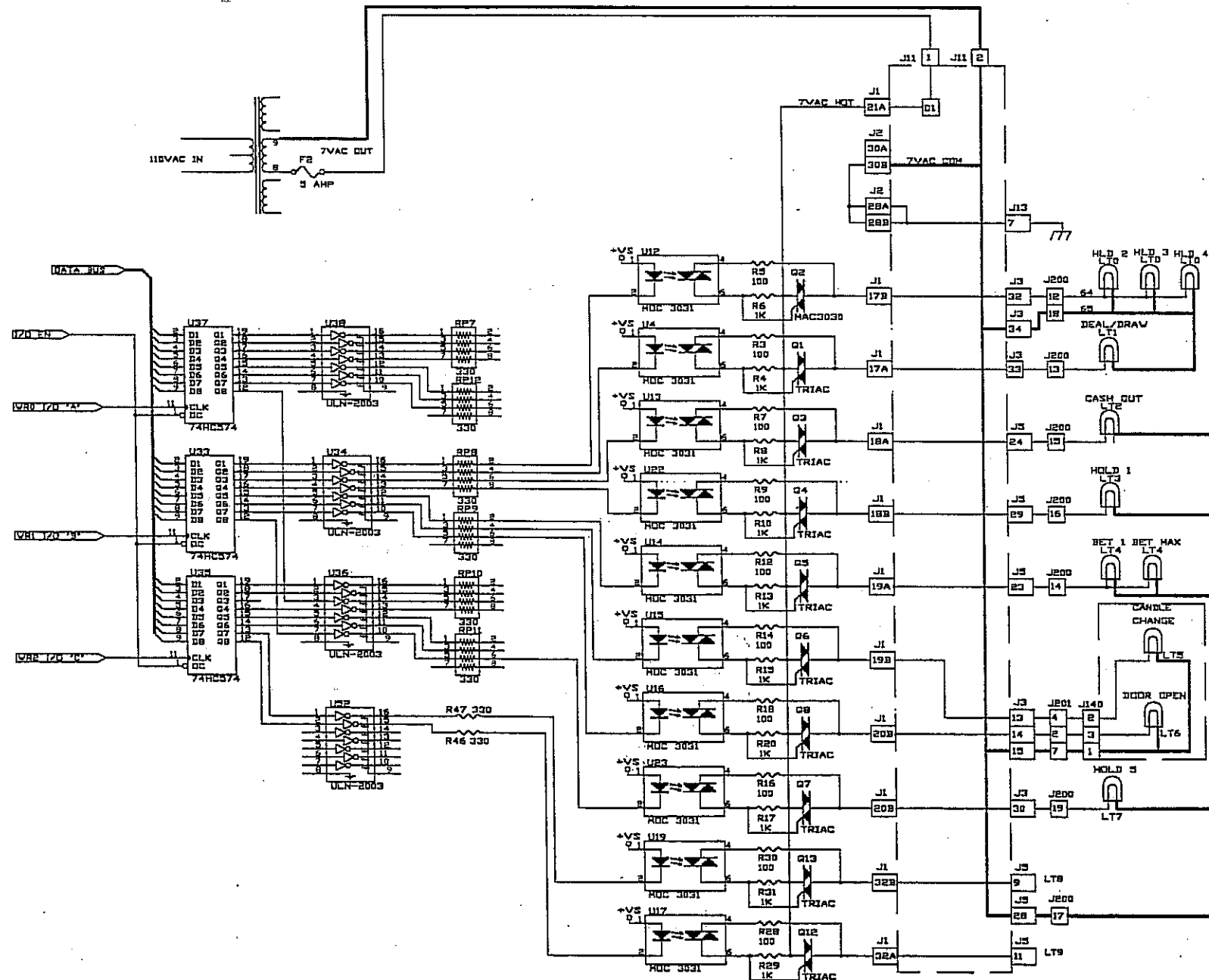












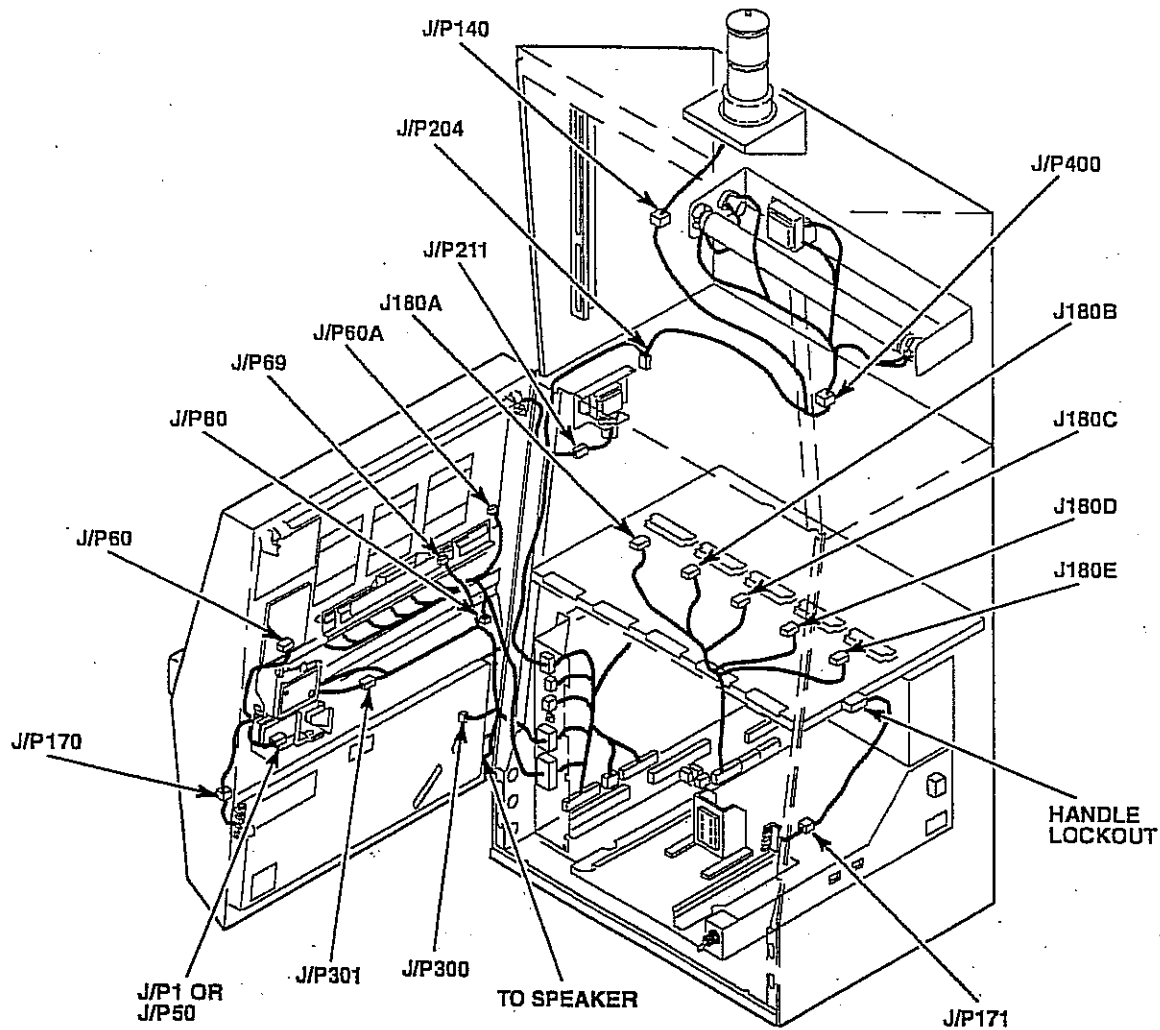
Schematics/Harnessing/Connectors

This section is an example of the type of information provided in IGT field service manuals. Different machine models (upright, drop-in-bar, slant-top) will have specific differences which include the mother board, wire harnessing and connectors.

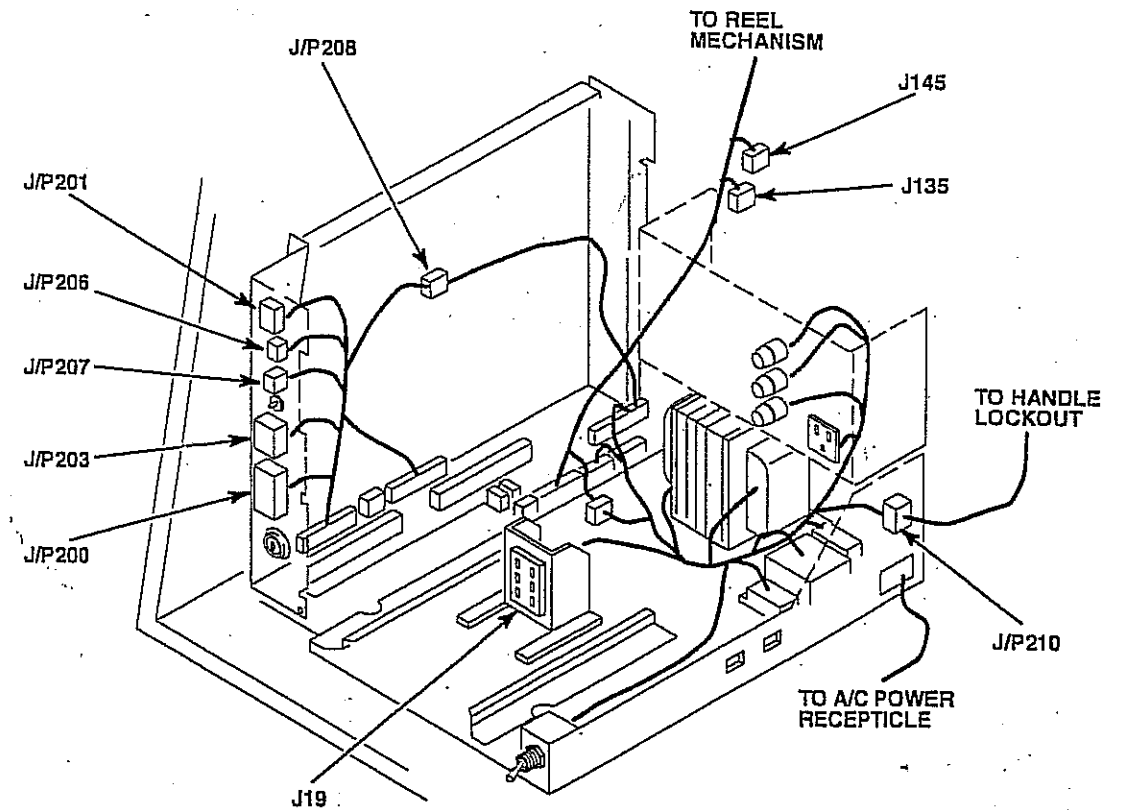
S-Plus and Player's Edge-Plus upright machine models are discussed in this section for instructional purposes. Refer to the appropriate IGT field service manual for particular model information.

S-Plus Connector Overview – Example of S-Plus Upright

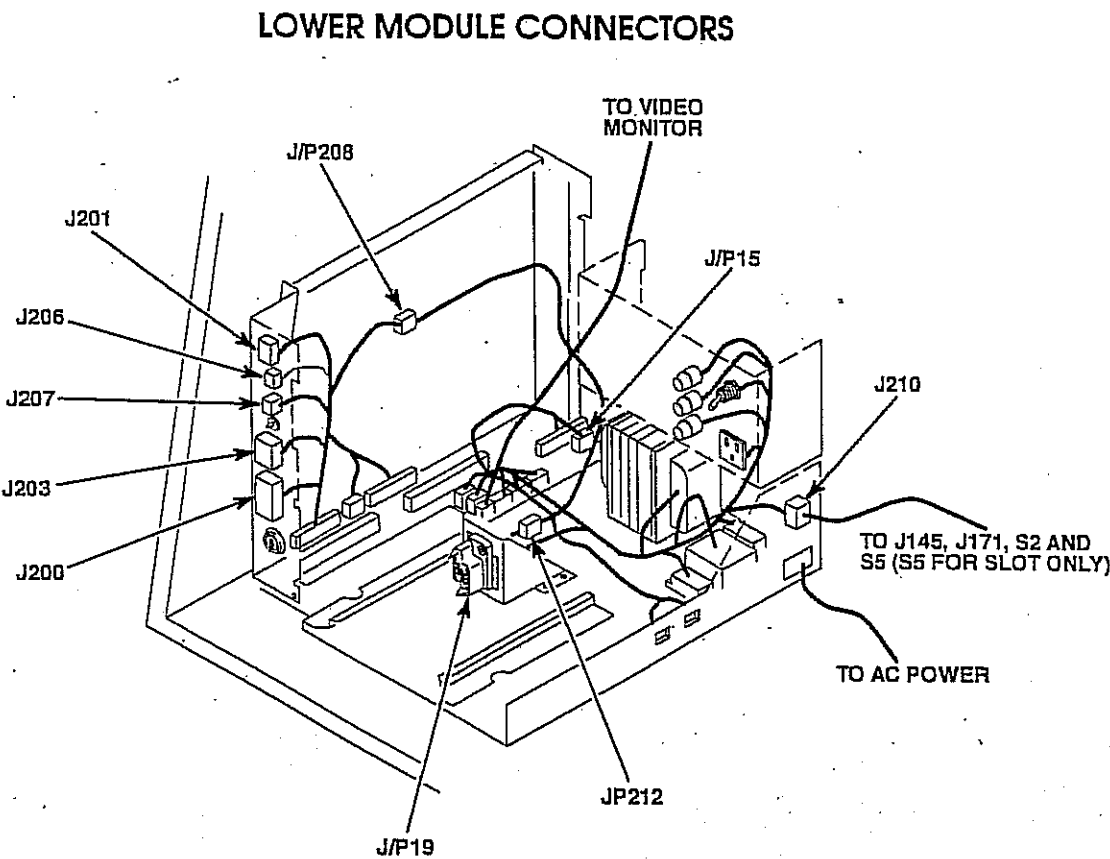
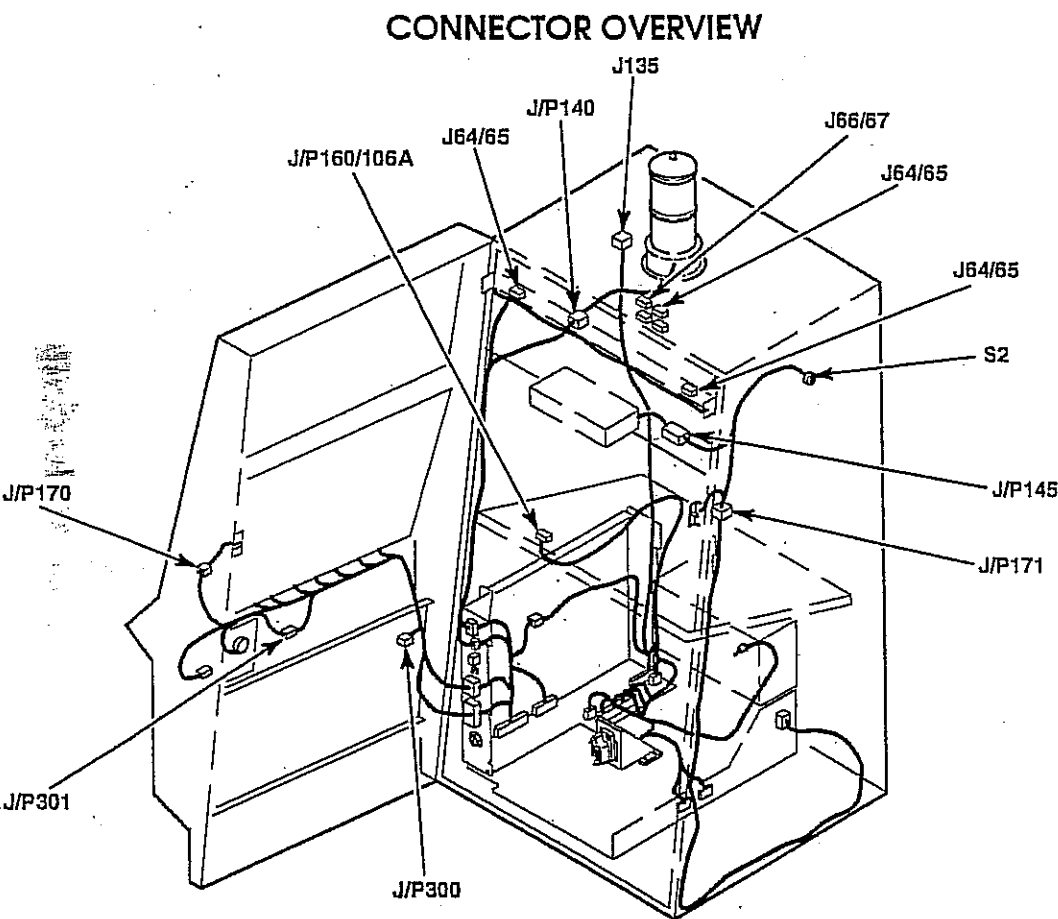
CONNECTOR OVERVIEW



LOWER MODULE CONNECTORS



Player's Edge-Plus Connector Overview – Example of Player's Edge-Plus Upright



Connectors J/P1 and J/P2 for S-Plus Machines

P1			
GND (U-1)	1A	1B	(U1-8) +5V
SDA (U1-5)	2A	2B	(U1-6) SCL
SW 19 (J3-26)	3A	3B	(J1-36) SW20
OPTIC RETURN (J7-33 & 34)	4A	4B	(J7-33 & 34) OPTIC RETURN
REEL 1 LED (J7-32)	5A	5B	(J7-31) REEL 1 DET
REEL 2 LED (J7-30)	6A	6B	(J7-29) REEL 2 DET
REEL 3 LED (J7-28)	7A	7B	(J7-27) REEL 3 DET
REEL 4 LED (J7-26)	8A	8B	(J7-25) REEL 4 DET
REEL 5 LED (J7-24)	9A	9B	(J7-23) REEL 5 DET
REEL 4 L4-2 (J7-10)	10A	10B	(J7-9) REEL 4 L4-1
SPEAKER + (J3-30 & J10-17)	11A	11B	(J3-20 & J10-18) SPEAKER -
I.R. DET M+ SER/CHG S+ (J1-37)	12A	12B	(J2-5) CARD CAGE DET
BILL ACCEPT IN (J6-2)	13A	13B	(J9-7 & J10-9) COIN-OUT SW
COIN-IN C (J1-22)	14A	14B	(J10-19) DOOR OPTIC DET
COIN-IN A (J1-20)	15A	15B	(J1-21) COIN-IN B
REEL MECH LOOP (J7-7)	16A	16B	(J10-3) PANEL DET
SER/CHANGE M+ TX PRINT (J3-25 & J13-4)	17A	17B	(J3-27 & J13-3) SPARE IN DIV/DET M+, GND PRINT
CHANGE SW (J1-30)	18A	18B	(J13-1) SPARE IN, RX PRINT
SPIN SW (J3-15 & J10-13)	19A	19B	(J3-13) SELF TEST SW
PLAY CREDIT SW (J3-17)	20A	20B	(J10-8) HOPPER FULL PROBE
CASH OUT SW (J3-19)	21A	21B	(J3-18) BET MAX SW
DCLK (J1-11, J3-3 & J14-5)	22A	22B	(J10-15) JACKPOT RESET SW
STB 1 (J3-4)	23A	23B	(J1-10, J3-2 & J14-4) DDO
STB 3 (J3-29 & J14-6)	24A	24B	(J1-12) STB 2
CASH OUT LT (J3-24)	25A	25B	(J3-23) BET MAX LT
SPARE LT DRV. (J1-38)	26A	26B	(J13-6) +V PRINT
INSERT COIN LT (J1-33)	27A	27B	(J1-32) COIN ACCEPT LT
SPIN SW LT (J3-21)	28A	28B	(J1-14) DOOR OPEN LT
CHANGE LT (J1-13)	29A	29B	(J3-22) CREDIT SW LT
DIV/DET S+ (J1-39)	30A	30B	(J7-36) REEL 1 L1-1
7-8 VAC COM (*1)	31A	31B	(J14-3) HI/LOW
7-8 VAC COM (*1)	32A	32B	(*1) 7-8 VAC COM

P2			
POLL (J4-9)	1A	1B	(J4-7) +V (DCS)
GND (J4-2)	2A	2B	(J4-5) SDO
PAYLINE 5 (J1-6 & J3-11)	3A	3B	(J1-5 & J3-10) PAYLINE 4
PAYLINE 6 (J1-7)	4A	4B	(J1-4 & J3-9) PAYLINE 3
PAYLINE 2 (J1-3 & J3-8)	5A	5B	(J1-2 & J3-7) PAYLINE 1
MTR 5 (J5-7)	6A	6B	(J5-6 & J9-12) COIN-OUT METER + MTR2
MTR 3 (J5-5 & J9-14)	7A	7B	(J5-4 & J9-13) COIN-IN METER + MTR1
SPARE (J5-3)	8A	8B	(J6-1) BILL ACCEPT OUT
PROGRESSIVE IN (J12-2)	9A	9B	(J1-18 & 19) DISPLAY OUT
HOPPER 2 (J10-6)	10A	10B	(J9-8 & J10-5) HOPPER 1
REEL 1 L1-2 (J7-8)	11A	11B	(J9-6) JACKPOT OUT
PROGRESSIVE OUT (J12-4)	12A	12B	(J9-10 & J12-3) PROGRESSIVE RET
REEL 4 L4-4 (J7-3)	13A	13B	(J5-2 & J9-5) JPX10 METER + MTR4
HANDLE RELEASE (D3 to J10-11)	14A	14B	(D3 to J10-11) HANDLE RELEASE
REEL 4 L4-3 (J7-37)	15A	15B	(D2 to J1-27) DIVERTER
PANEL LED (R4 & J10-1)	16A	16B	(R1 & J2-6) CARD CAGE LED
REEL 1 L1-3 (J3-28 & J7-1)	17A	17B	(*2) 24 VAC RET
LOCKOUT (D1 to J1-28 & J9-15)	18A	18B	(J11-2) BELL
REEL 2 L2-1 (J7-21)	19A	19B	(J7-22) REEL 1 L1-4
REEL 2 L2-4 (J7-19)	20A	20B	(J7-20) REEL 2 L2-2
REEL 3 L3-1 (J7-17)	21A	21B	(J7-18) REEL 2 L2-3
REEL 3 L3-3 (J7-15)	22A	22B	(J7-16) REEL 3 L3-2
REEL 5 L5-1 (J7-13)	23A	23B	(J7-14) REEL 3 L3-4
REEL 5 L5-2 (J7-4)	24A	24B	(*3) +Vb
REEL 5 L5-4 (J7-11 & 12)	25A	25B	(J7-11 & 12) REEL 5 L5-4
+Vb (*3)	26A	26B	(*3) +Vb
REEL 5 L5-3 (J7-35)	27A	27B	(*5) B GND
8 VAC HOT (J8-4)	28A	28B	(J8-4) 8 VAC HOT
7-8 VAC COM (*1)	29A	29B	(*1) 7-8 VAC COM
24 VAC HOT (*4)	30A	30B	(*4) 24 VAC HOT
24 VAC RET (*2)	31A	31B	(*4) 24 VAC HOT
24 VAC RET (*2)	32A	32B	(*2) 24 VAC RET

Connectors J/P1 and J/P2 for Player's Edge-Plus Machines

P1			
+5V	1A	1B	GND
SDA	2A	2B	SCL
SPEAKER +	3A	3B	SPEAKER -
COIN OUT	4A	4B	COIN IN C
COIN IN B	5A	5B	COIN IN A
DOOR OPTIC DET	6A	6B	HOPPER FULL
JACKPOT RST	7A	7B	(SW7) TEST
(SW 9) HOLD 2	8A	8B	(SW 8) HOLD 1
(SW 10) HOLD 3	9A	9B	(SW 12) HOLD 5
(SW 11) HOLD 4	10A	10B	(SW 13) DEAL/DRAW
(SW 14) MAX BET	11A	11B	(SW 16) BET 1
(SW 19)	12A	12B	(SW 18) CHANGE
(SW 15)	13A	13B	(SW 17) CASH OUT
+VB	14A	14B	+VB
(SW 23)	15A	15B	(SW 22)
(SW 21) CARD CAGE LED	16A	16B	(SW 20) LIGHT PEN
(LT 1) DEAL/DRAW	17A	17B	(LTO) HOLD LAMPS
(LT 2) CASH OUT	18A	18B	(LT 3)
(LT 4) BET 1/MAX	19A	19B	CHANGE LT
(LT 7)	20A	20B	DOOR OPEN LT
7 VAC HOT	21A	21B	7 VAC HOT
24 VAC HOT	22A	22B	24 VAC HOT
DOOR OPEN LED	23A	23B	LOCKOUT
JACKPOT OUT	24A	24B	DIVERTER
HP2	25A	25B	24 VAC HOT
HP1	26A	26B	BELL
+VB	27A	27B	+VB
B GND	28A	28B	B GND
LIGHT PEN +	29A	29B	B GND
DDO	30A	30B	DCLK
STB1	31A	31B	STB2
(LT 9)	32A	32B	(LT 8)

P2			
N.C.	1A	1B	N.C.
(MTR 5 / BILL ACCEP)	2A	2B	24 VAC HOT
N.C.	3A	3B	N.C.
(MTR 1) COIN IN MTR	4A	4B	(MTR 2) COIN IN MTR
N.C.	5A	5B	N.C.
(MTR 3) DROP MTR	6A	6B	(MTR 4) JPX10 MTR
N.C.	7A	7B	N.C.
POLL	8A	8B	GAME MTR
N.C.	9A	9B	N.C.
SDO	10A	10B	(DCS) GND
N.C.	11A	11B	N.C.
+ V (PRT)	12A	12B	(DCS) +V
N.C.	13A	13B	N.C.
GND (PRT)	14A	14B	RX PRT
N.C.	15A	15B	N.C.
PROG RET	16A	16B	TX PRT
N.C.	17A	17B	N.C.
PROG OUT	18A	18B	PROG IN
N.C.	19A	19B	N.C.
HORIZ SYNC	20A	20B	VERT SYNC
N.C.	21A	21B	N.C.
RED	22A	22B	GREEN
N.C.	23A	23B	N.C.
BLUE	24A	24B	VIDEO GND
N.C.	25A	25B	N.C.
+ VB	26A	26B	+VB
N.C.	27A	27B	N.C.
B GND	28A	28B	B GND
N.C.	29A	29B	N.C.
7 VAC HOT (J11-1)	30A	30B	7 VAC COM
N.C.	31A	31B	N.C.
24 VAC HOT	32A	32B	24 VAC COM

S-Plus Wiring Diagram (820-133-00, Rev. EA, Pages 2 of 3)

FOR P204, P207, P210 & P201 REFERENCE SHIT. 1.

SDS

FUTURE OPTION

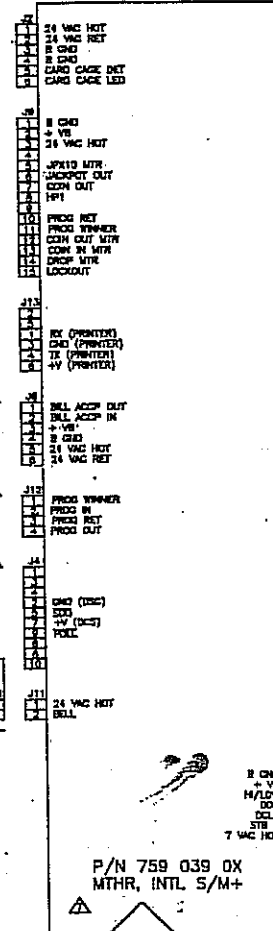
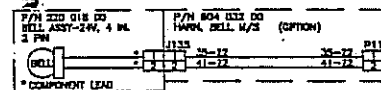
FOR J6 REFERENCE BILL ACCEPTOR WIRING DIAGRAM

DATA COLLECTION

REFERENCE FIBER OPTICS INTERFACE WIRING DIAGRAM

FOR MOTHER BOARD FEATURES/OPTIONS REFERENCE SHIT. 1 & 3.

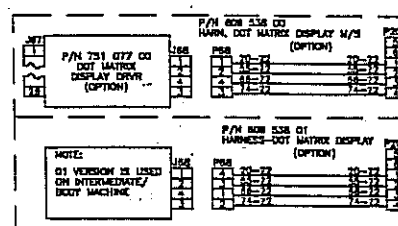
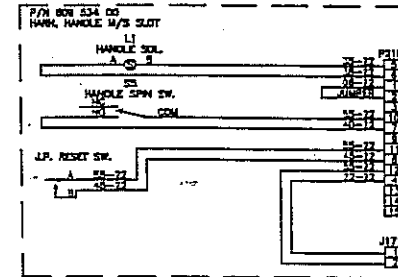
CARD CASE SECURITY



P/N 503 033 00
HARN. TOP CABINET
W/C CABLE 2+

P/N 751 078 00
DOT MATRIX
DISPLAY DRIVER
(OPTION)

P/N 503 090 00
HARN. 24V 25P CBL.
(OPTION)

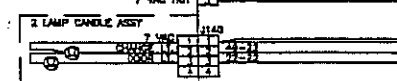
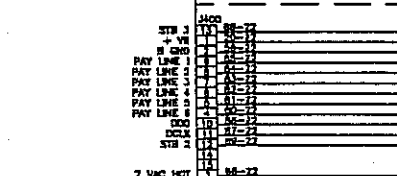
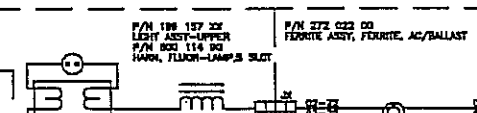


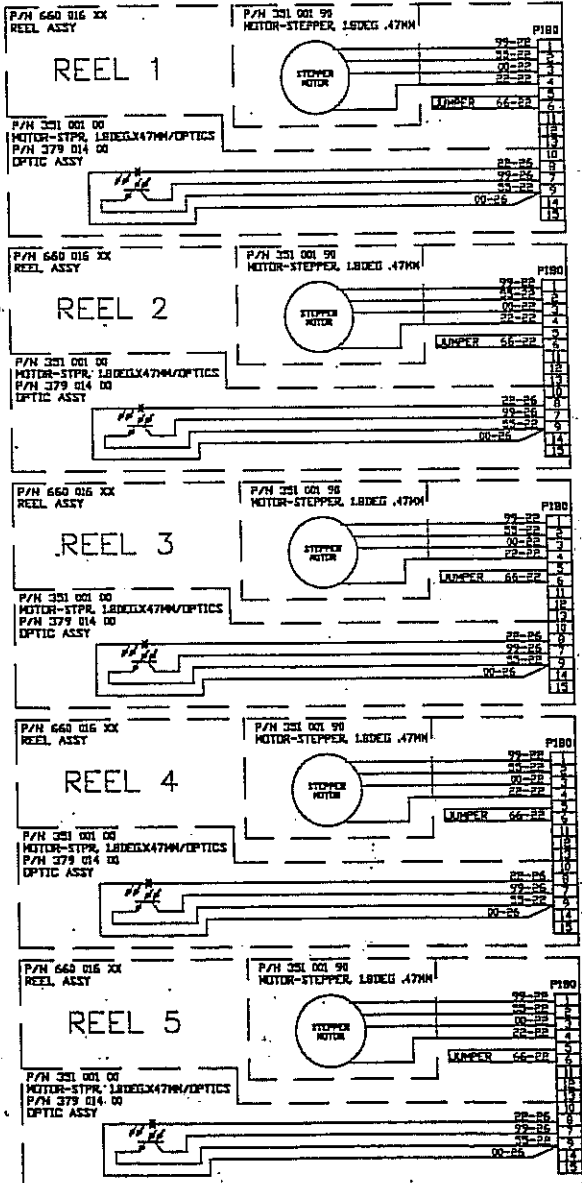
P/N 272 022 00
FERRITE ASSY, FERRITE, AC/BALLAST

P/N 195 043 00
BALLAST/STARTER ASSY 50/60 HZ

P/N 443 142 00
CLAMP ASSY-RELEASE

- OPTIONS:
- FEATURE - STEPPER
- P/N 508 495 01 HARN. 3-1/2" C.C. TBOX S.S. M+
 - P/N 508 496 01 HARN. 1-6 CON MULT. 7/8 S.S. M+S
 - P/N 508 497 01 HARN. 2 CON MULT. 7/8 S.S. M+S
 - P/N 508 498 01 HARN. 3-1/2" SUT. TOP BOX S.S. M+S
 - P/N 508 499 01 HARN. 3-1/2" CON TOP BOX S.S. M+S
 - P/N 508 500 01 HARN. 1-6 CON MULT. CONT. 7/8 M+
- FEATURE - CABINET WIDE S+
- P/N 508 510 00 HARN. FLUX. AC. CONTL 7/8 M+
 - P/N 508 511 00 HARN. CABLE EXTENSION

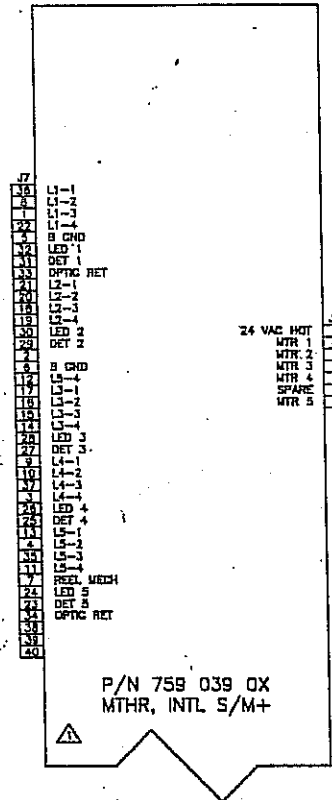
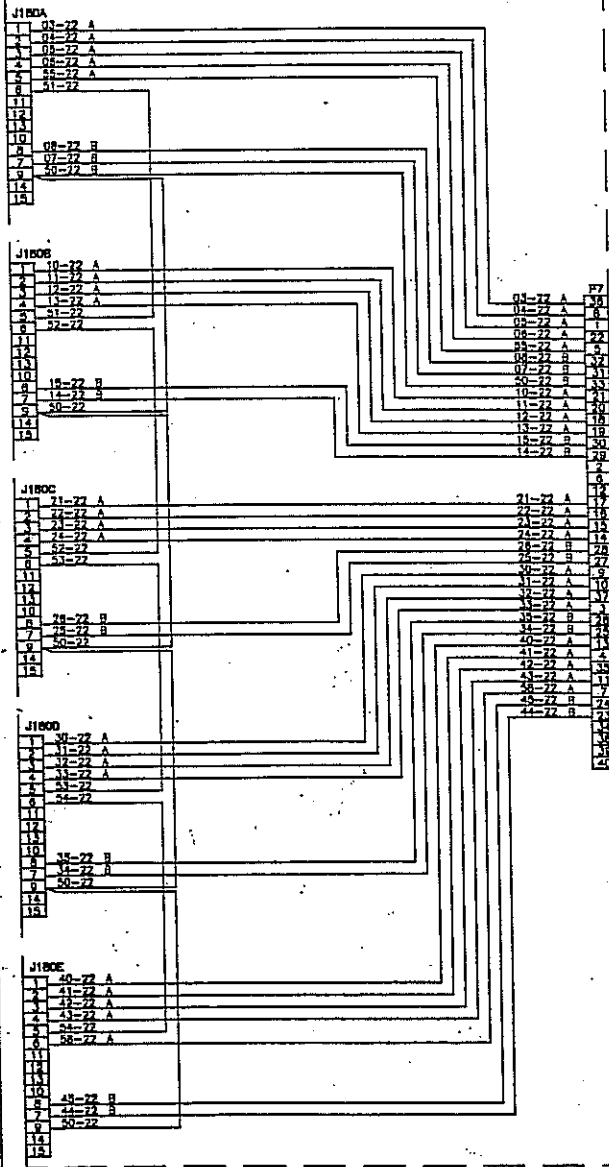




P/N 609 399 00
HARN, 4/5 REEL MECH. INTL S-PLUS

P/N 609 388 00 (NOT SHOWN)
HARN, 3 REEL MECH. INTL S-PLUS

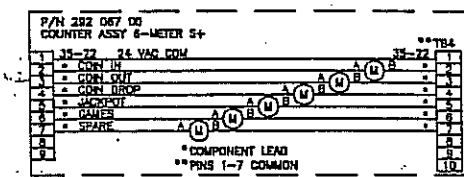
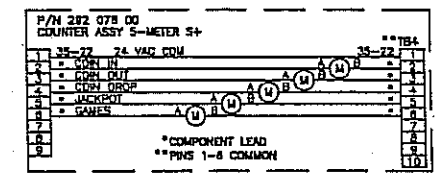
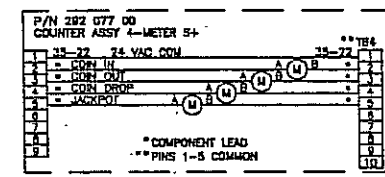
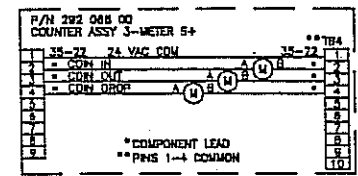
P/N 609 341 00 (NOT SHOWN)
HARN, JNPR-PLUG 4 REEL S-SLOT



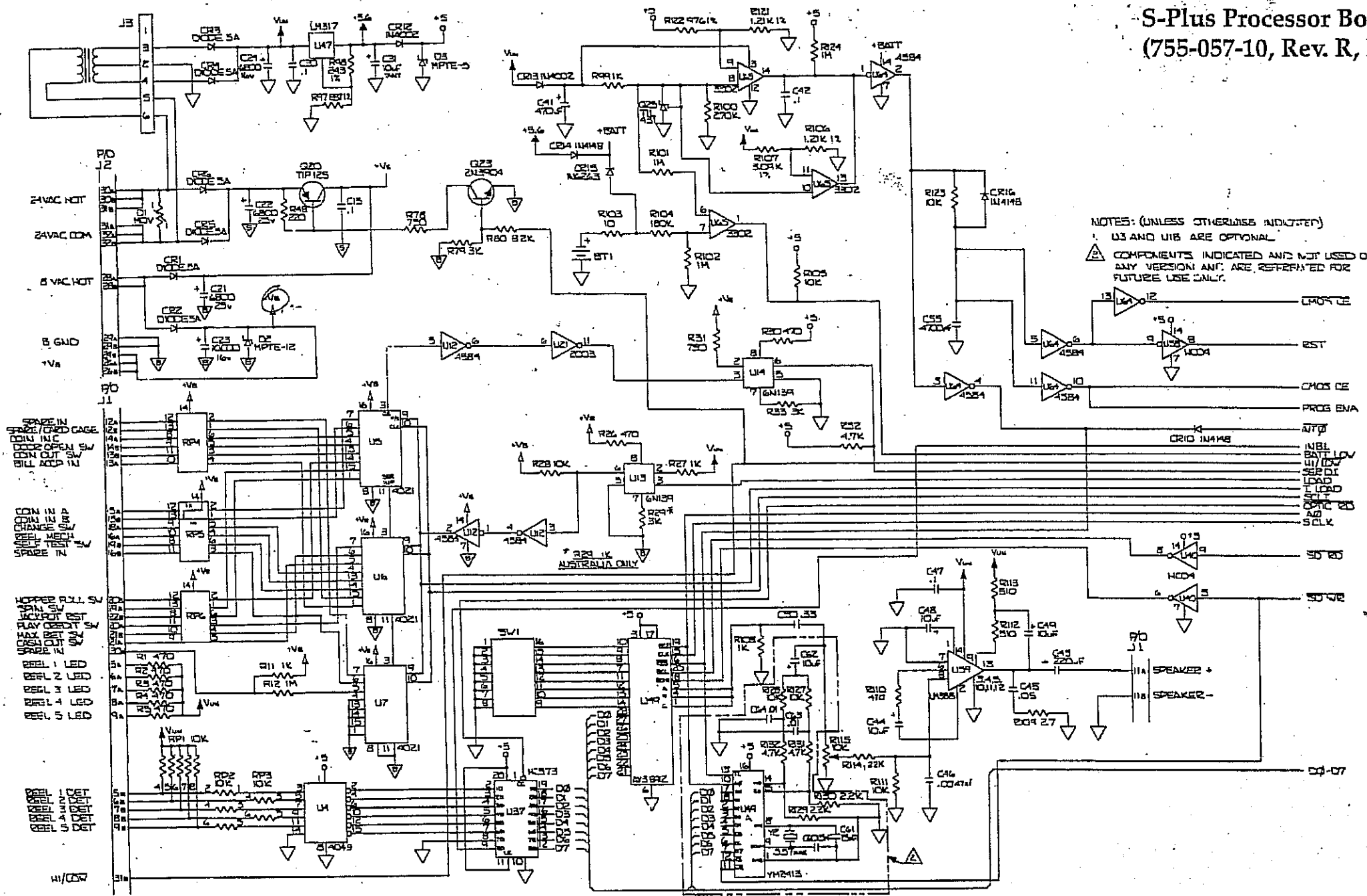
P/N 609 038 00
HARN, METERS M+/S+

PIN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
24 VAC HOT	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WTR 1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WTR 2	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WTR 3	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WTR 4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
SPARE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
WTR 5	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

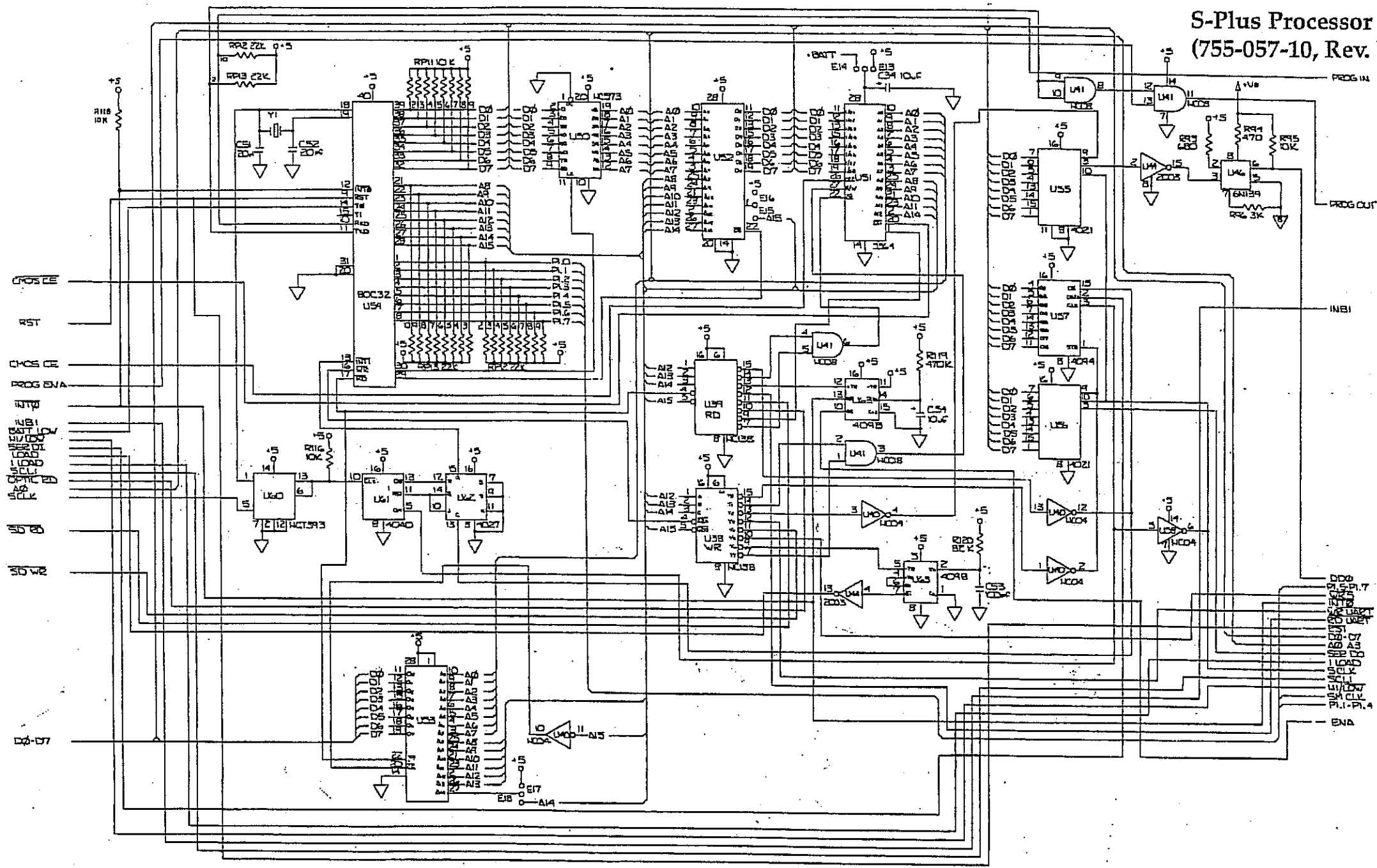
S-Plus Wiring Diagram (820-133-00, Rev. EA, Pages 3 of 3)



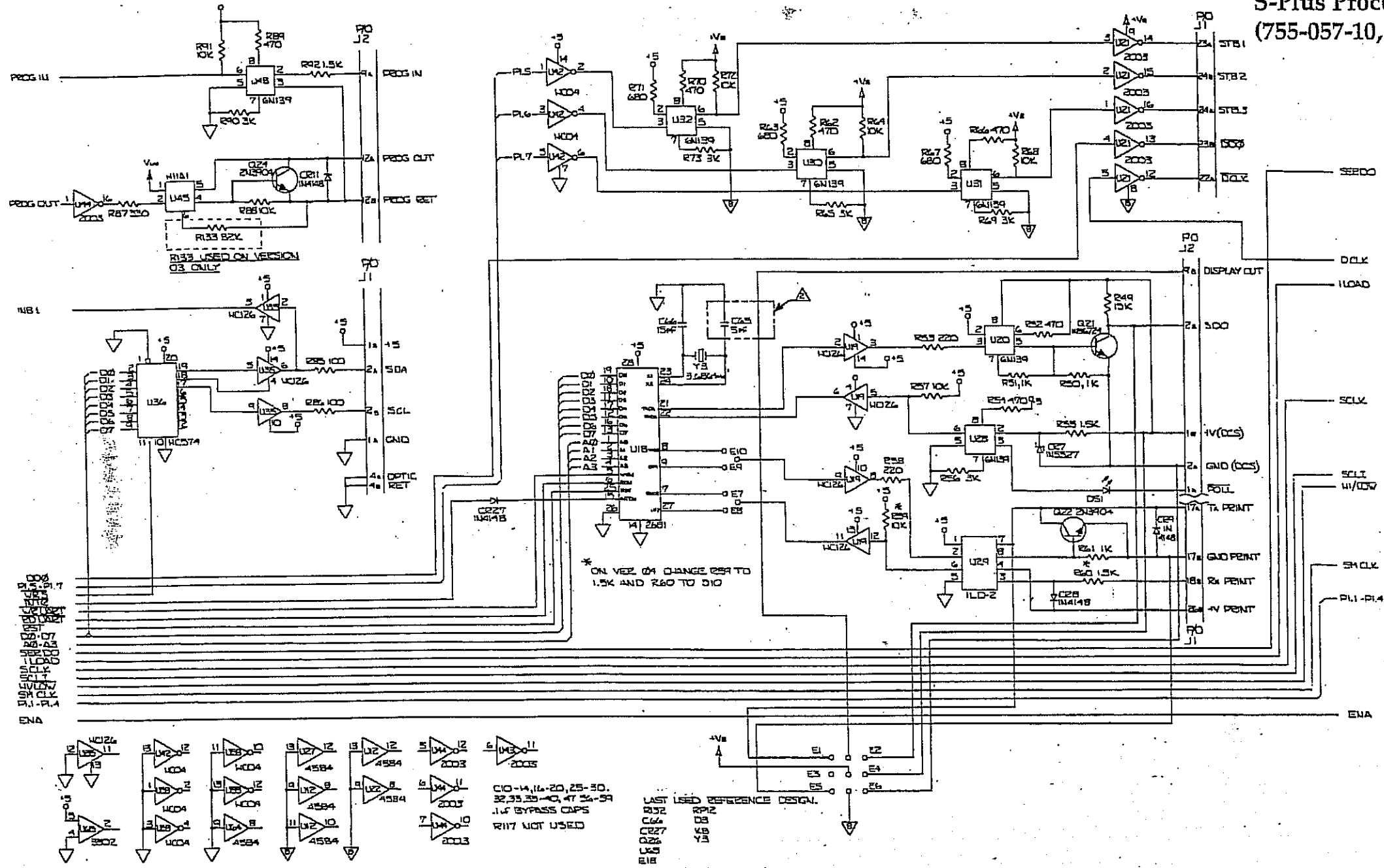
S-Plus Processor Board Schematic (755-057-10, Rev. R, Page 1 of 4)



NOTES: (UNLESS OTHERWISE INDICATED)
 U3 AND U18 ARE OPTIONAL
 COMPONENTS INDICATED AND NOT USED ON ANY VERSION AND ARE REFERRED FOR FUTURE USE ONLY.

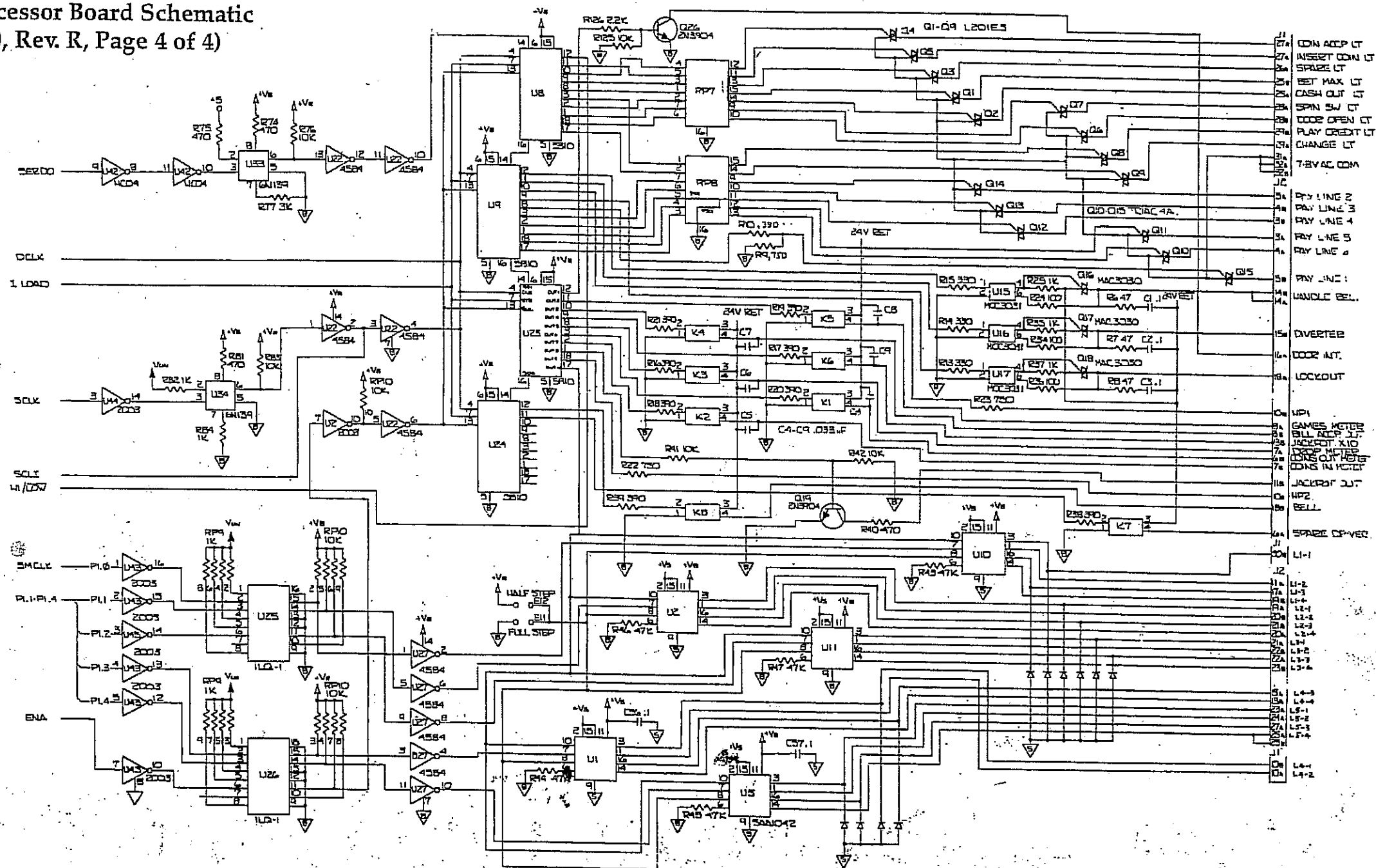


S-Plus Processor Board Schematic (755-057-10, Rev. R, Page 3 of 4)



5-Plus Processor Board Schematic 755-057-10, Rev. R, Page 4 of 4)

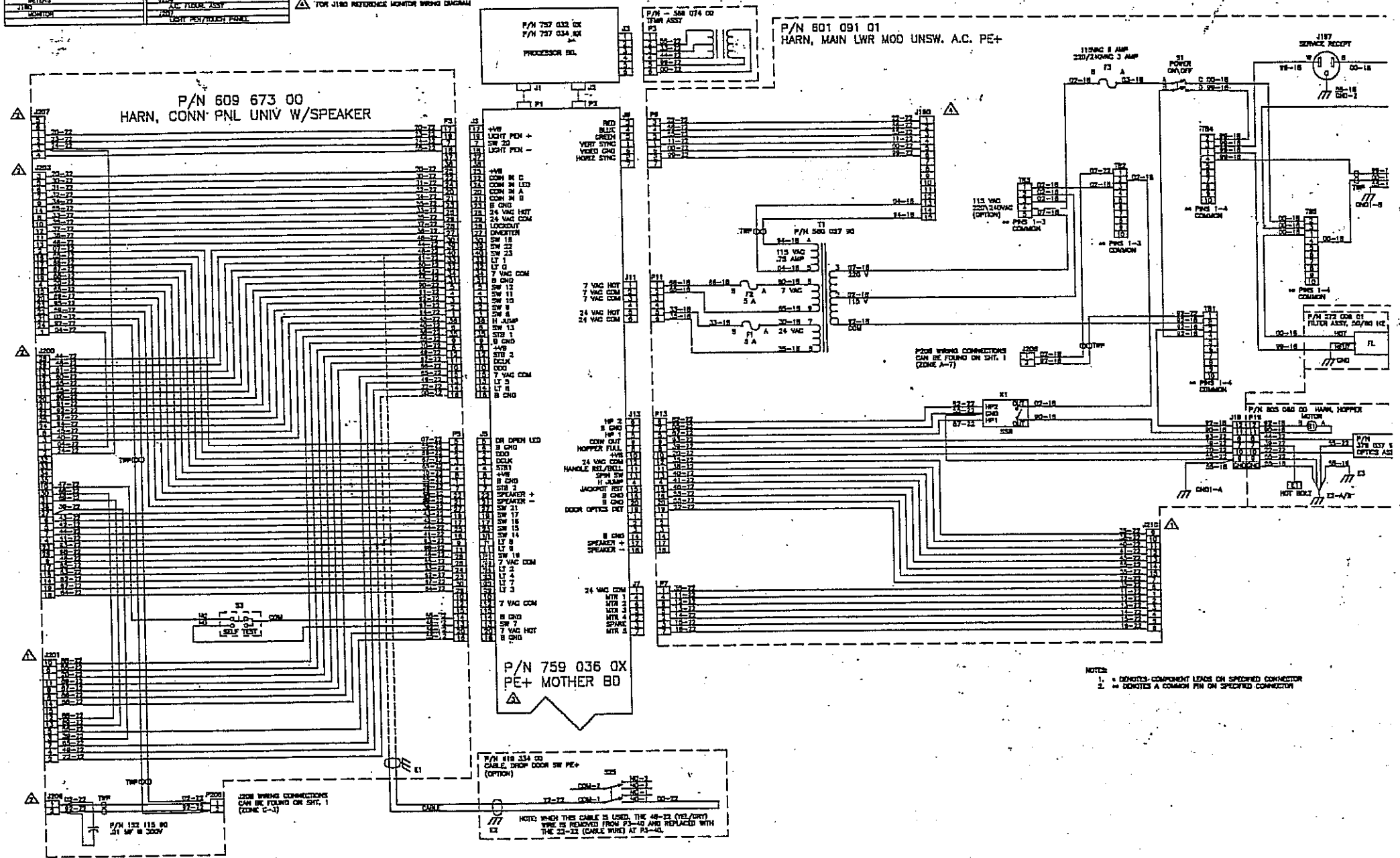
CD 40106 = MC14580



Player's Edge-Plus Wiring Diagram (820-151-00, Rev. A, Page 1 of 2)

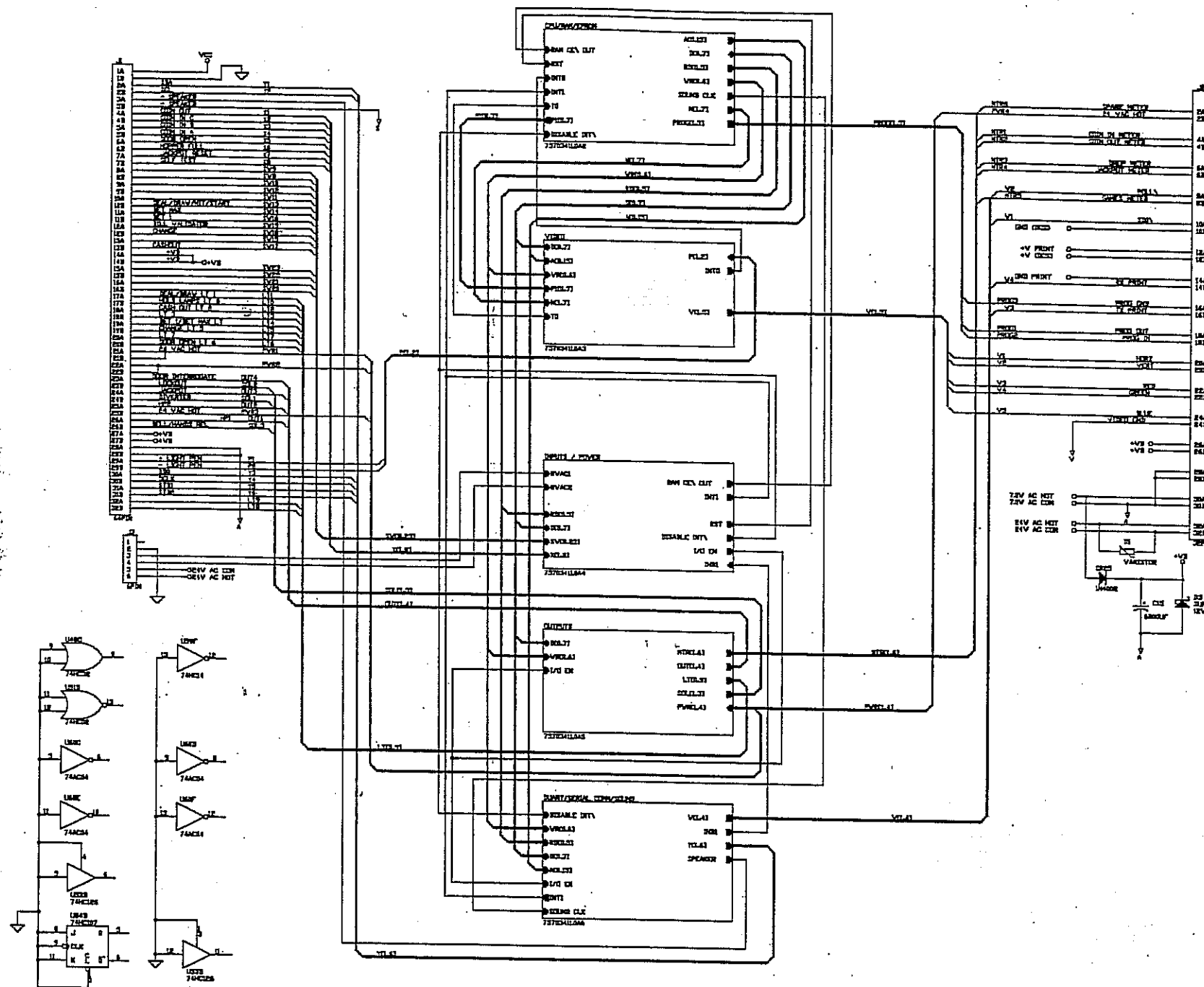
P/C RETURN	
2101	2101
2102	2102
2103	2103
2104	2104
2105	2105
2106	2106
2107	2107
2108	2108
2109	2109
2110	2110
2111	2111
2112	2112
2113	2113
2114	2114
2115	2115
2116	2116
2117	2117
2118	2118
2119	2119
2120	2120
2121	2121
2122	2122
2123	2123
2124	2124
2125	2125
2126	2126
2127	2127
2128	2128
2129	2129
2130	2130
2131	2131
2132	2132
2133	2133
2134	2134
2135	2135
2136	2136
2137	2137
2138	2138
2139	2139
2140	2140
2141	2141
2142	2142
2143	2143
2144	2144
2145	2145
2146	2146
2147	2147
2148	2148
2149	2149
2150	2150
2151	2151
2152	2152
2153	2153
2154	2154
2155	2155
2156	2156
2157	2157
2158	2158
2159	2159
2160	2160
2161	2161
2162	2162
2163	2163
2164	2164
2165	2165
2166	2166
2167	2167
2168	2168
2169	2169
2170	2170
2171	2171
2172	2172
2173	2173
2174	2174
2175	2175
2176	2176
2177	2177
2178	2178
2179	2179
2180	2180
2181	2181
2182	2182
2183	2183
2184	2184
2185	2185
2186	2186
2187	2187
2188	2188
2189	2189
2190	2190
2191	2191
2192	2192
2193	2193
2194	2194
2195	2195
2196	2196
2197	2197
2198	2198
2199	2199
2200	2200

- △ FOR J201, J210 REFERENCE SH. 2.
- △ FOR J202, J203, J204, & J207 REFERENCE PLAYER SWITCH PANEL WIRING DIAGRAM
- △ FOR MOTHER BOARD OPTIONS REFERENCE SH. 2.
- △ FOR J180 REFERENCE MONITOR WIRING DIAGRAM

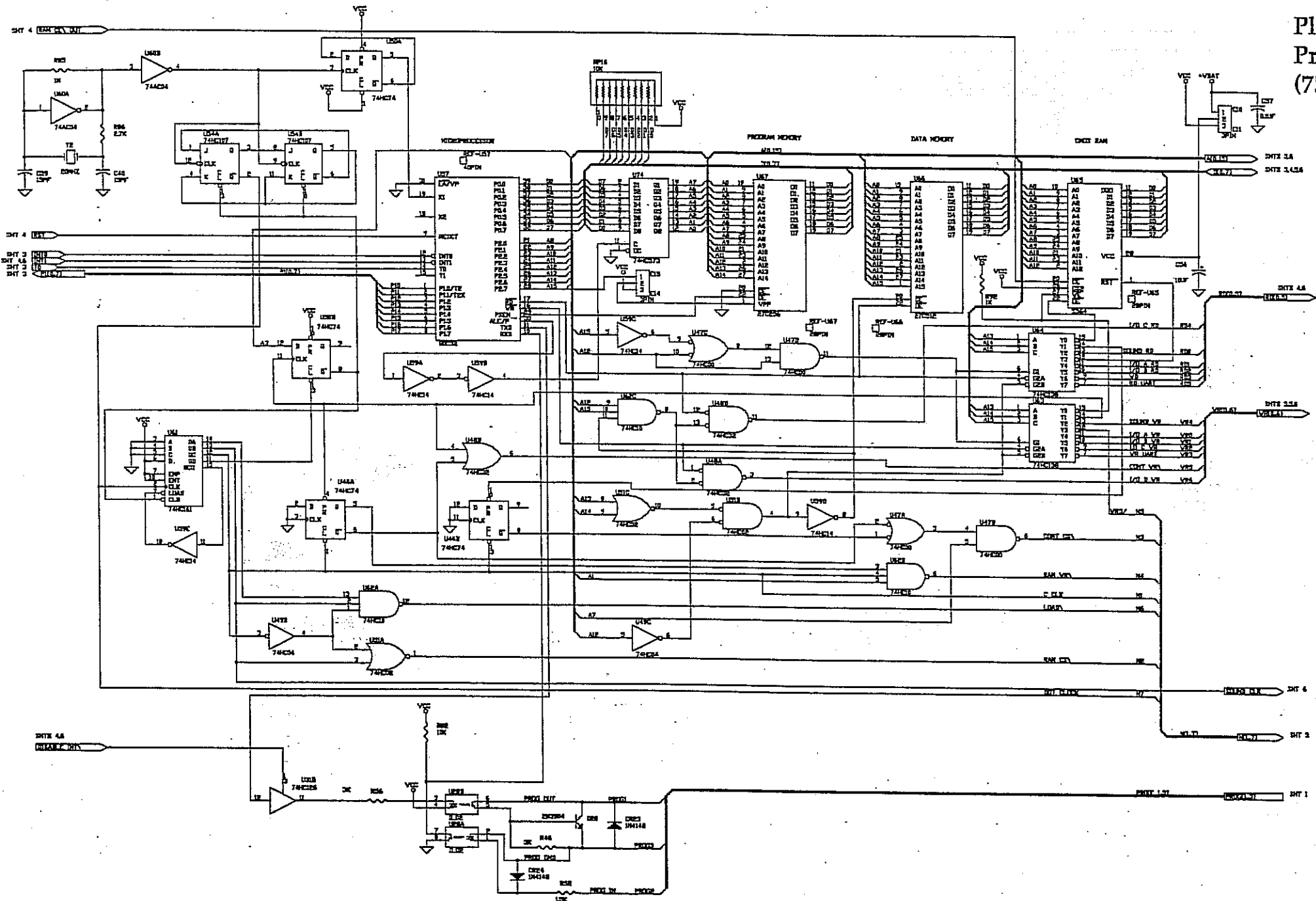


- NOTES:
- 1. * DENOTES COMPONENT LEADS ON SPECIFIED CONNECTOR
- 2. ** DENOTES A COMMON PIN ON SPECIFIED CONNECTOR

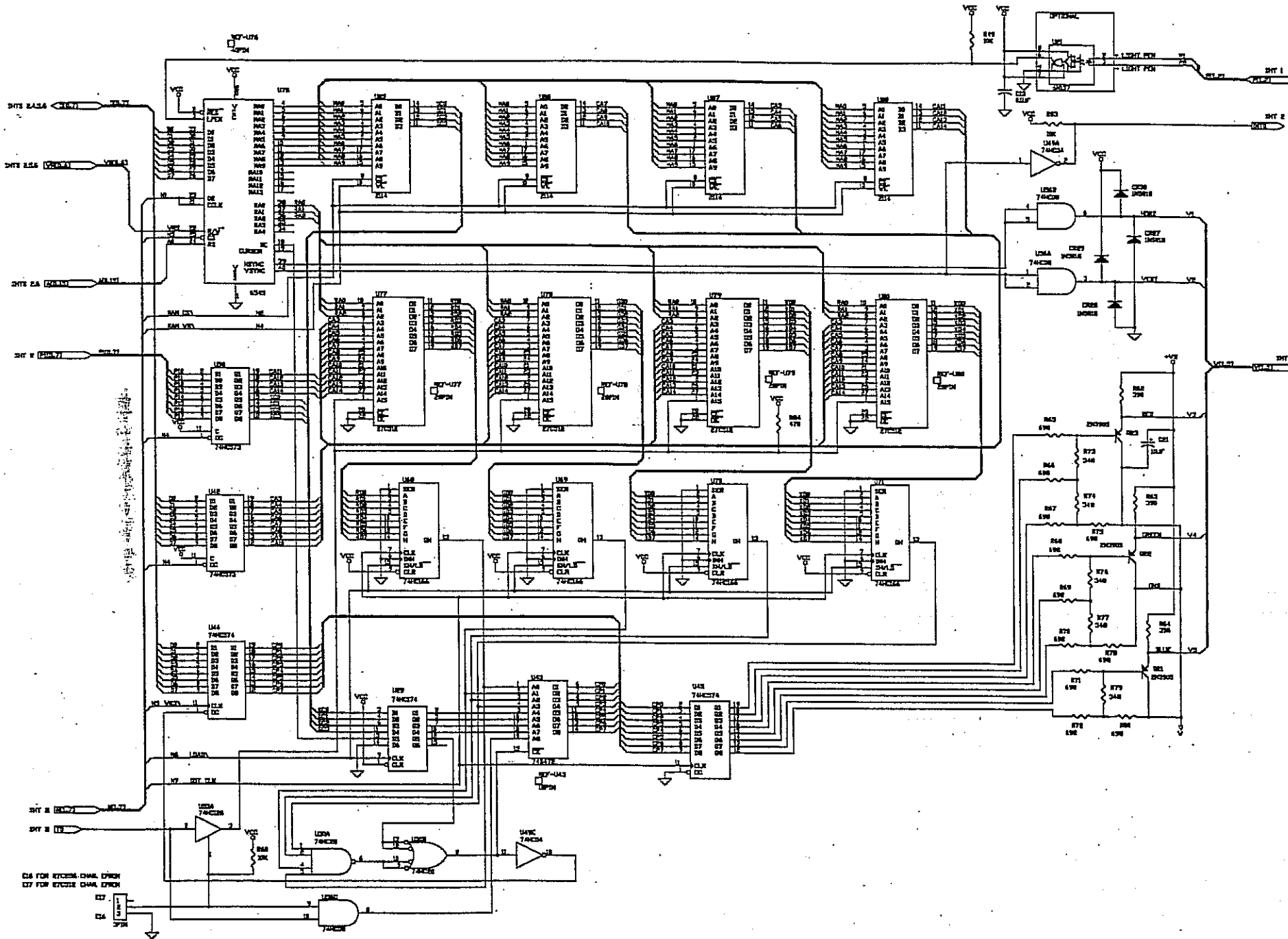
Player's Edge-Plus Processor Board Schematic (757-034-11, Rev. C, Pages 1 to 6)



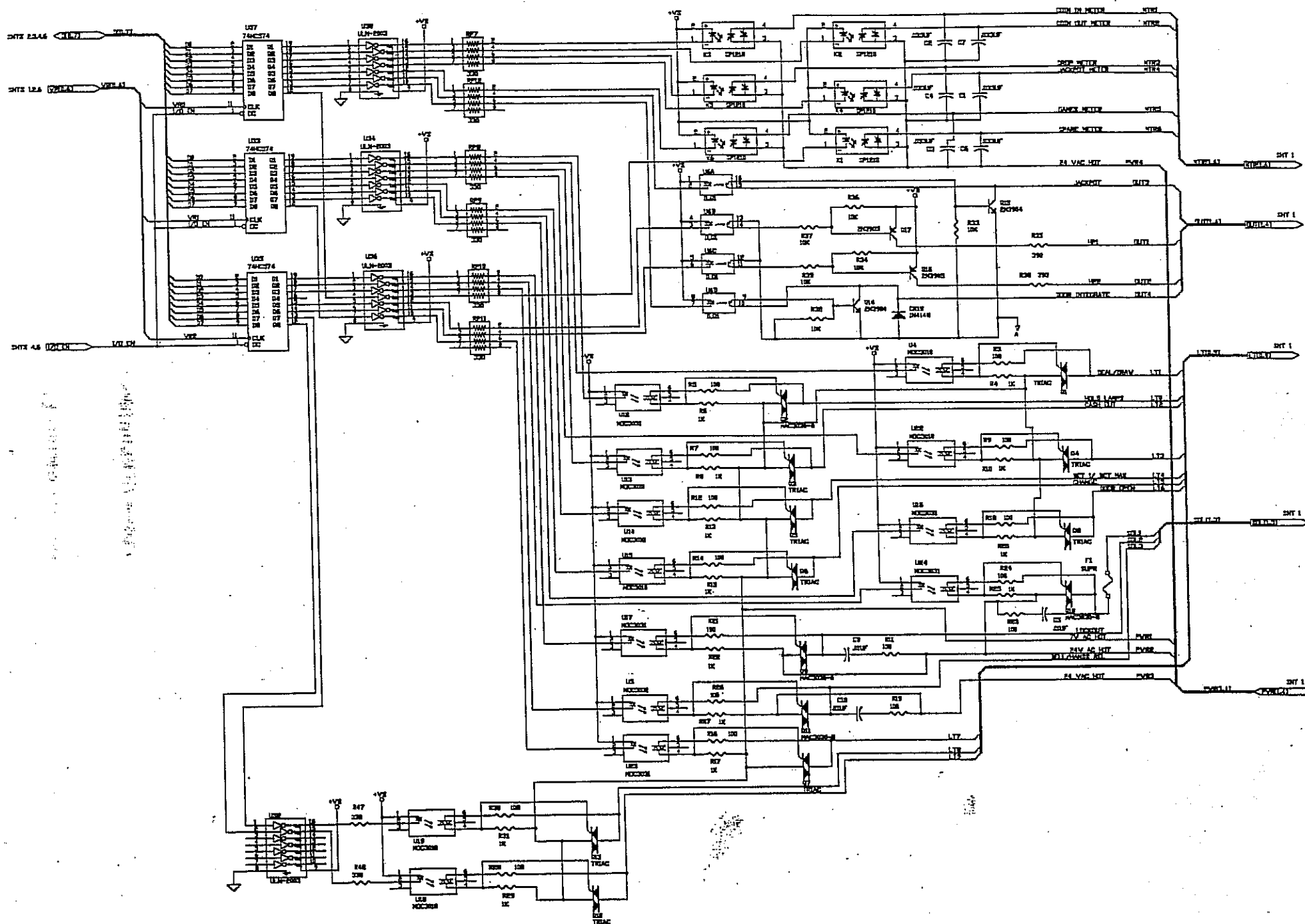
Player's Edge-Plus
Processor Board Schematic
(757-034-11, Rev. C, Pages 2 to 6)



**Player's Edge-Plus
Processor Board Schematic
(757-034-11, Rev. C, Pages 3 to 6)**



Player's Edge-Plus
Processor Board Schematic
(757-034-11, Rev. C, Pages 5 to 6)



ABC Optic Board

