

SPACEY RACERS



OWNERS AND SERVICE MANUAL

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INTRODUCTION

GAME FEATURES

We are proud to present the new "Spacey Racers" redemption game. The new concept along with the spacey look, will keep the customers coming back for more.

This game features a unique cabinet design which incorporates wood and metal construction. The wood is a 7 layer premium plywood with sanded and sealed surfaces. The metal components are custom designed for this product with a powder coat finish. This finish is highly resistant to chipping and corrosion.

The moulded tricycles and characters are made with a durable ABS to insure longevity. The vacuum formed speaker horns and coin bezels are color coordinated with a base / clear coat. This finish is durable and cleans well.

All the graphics are laminated with a high strength polyester overlay for a rich look with scratch and chemical resistance.

The electronics are designed from reliable parts proven in years of service with other games. We have purposely used cost effective design to make these components easily serviced if necessary.

GAME PLAY

The game is activated when one or more players insert the proper coins to equal one credit. This game comes with lock out coils, which control the coin input while the players are waiting for the next race. The object is to complete the predetermined number of laps in the fastest time possible. This is achieved by rolling the track ball in any direction as fast as possible. A player may finish the race in first place but not win the bonus. To win the bonus a player must beat the fastest track time. The time to beat, the fastest track time, and number of tickets are displayed on the lunar bonus.

If the racers cross the finish line at the same time there will be a photo finish. The photo finish will be displayed on the lunar tron.

ASSEMBLY GUIDE

- 1) This game should be assembled in a semi permanent position. The size of this piece limits the places it can be put. The footprint is approximately 125" wide, 85" deep; and 9ft tall.
- 2) After completely removing the packaging from the unit, separate all the individual components. Then arrange the four quarters.
- 3) Then begin to assemble the quarters using the provided hardware. (See diagram 1)

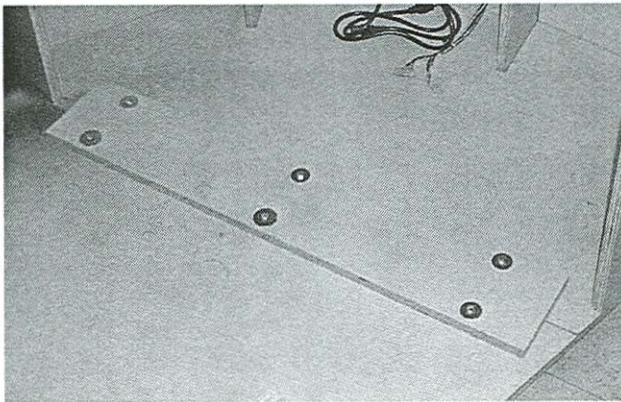


DIAGRAM 1

- 4) Be sure not to pinch any unconnected wires. (See diagram 2)



DIAGRAM 2

- 5) After both connecting plates are bolted in place, connect all upper wire harnesses together. Be sure to leave the side-fastening bracket loose at this time. (See diagram 3)

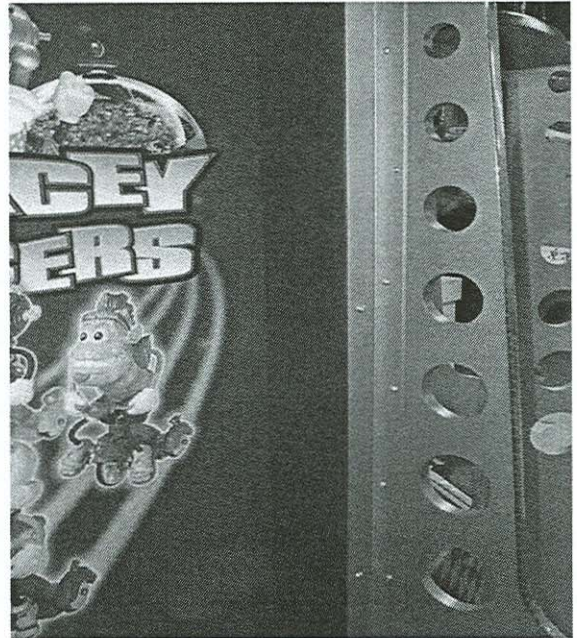


DIAGRAM 3

- 6) When both halves of the game are assembled it is time to put the roof panels on. (Be sure the halves are still separated.) When lifting the roof panels be sure to have adequate help to avoid injury. When placing the top in position be sure to feed all the wires above the speaker area through the hole in the roof panel. There is a 12-pin connector that is wired into the top panel. This is to remain on top of the game at this time. It will later be plugged into the marquee. Before latching the top panels, be sure that the lower portion is aligned properly with the top. (See diagram 4)



DIAGRAM 4

- 7) Then tighten the 5/32-allen, which secure the side brackets in place.

ASSEMBLY GUIDE

- 8) Now it is time to insert the track into the right side of the unit. Then gently place the play field over top of the track, maneuver until it locks in place. (See diagram 5)

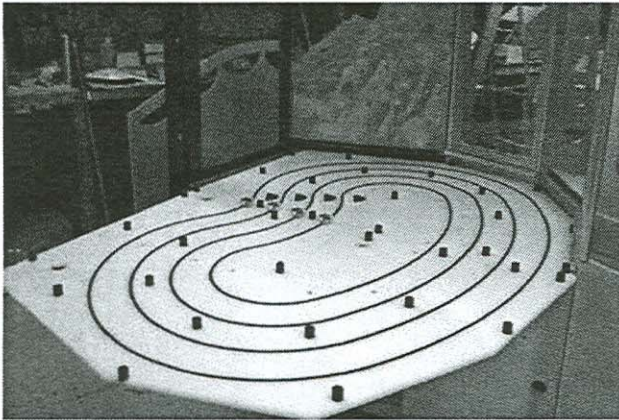


DIAGRAM 5

- 9) Slide the inner access panel into the left side of the unit. (See diagram 6)

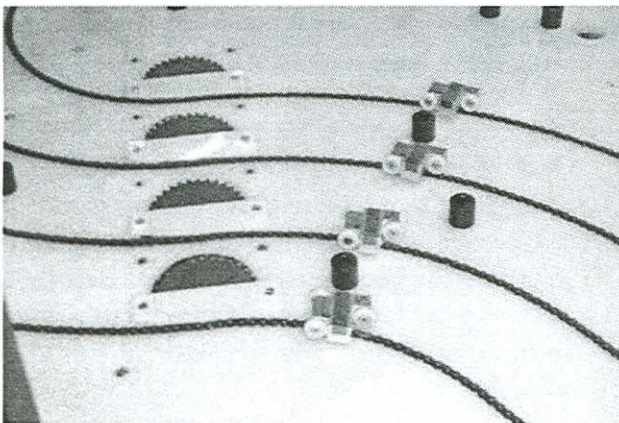


DIAGRAM 6

- 10) Begin to push the halves together aligning the tongue-and-groove. Be sure that all wires are free from pinch points. (See diagram 7)

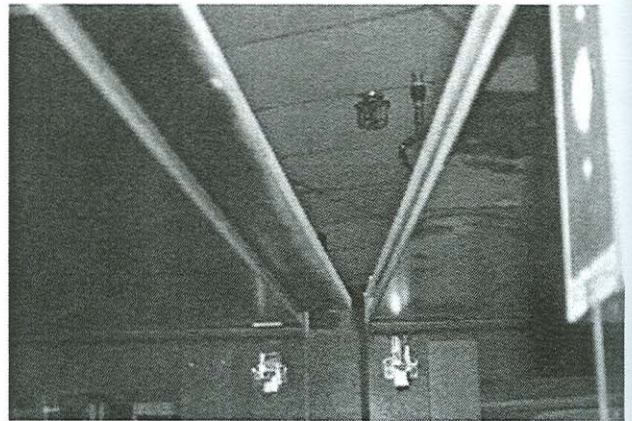


DIAGRAM 7

- 11) Begin to bolt the rear section of the unit together using the hardware supplied. Remove the third control panel (RETRO) and draw the front of the game together using the hardware supplied. Using the tool provided, secure the top panel. (See diagram 8)

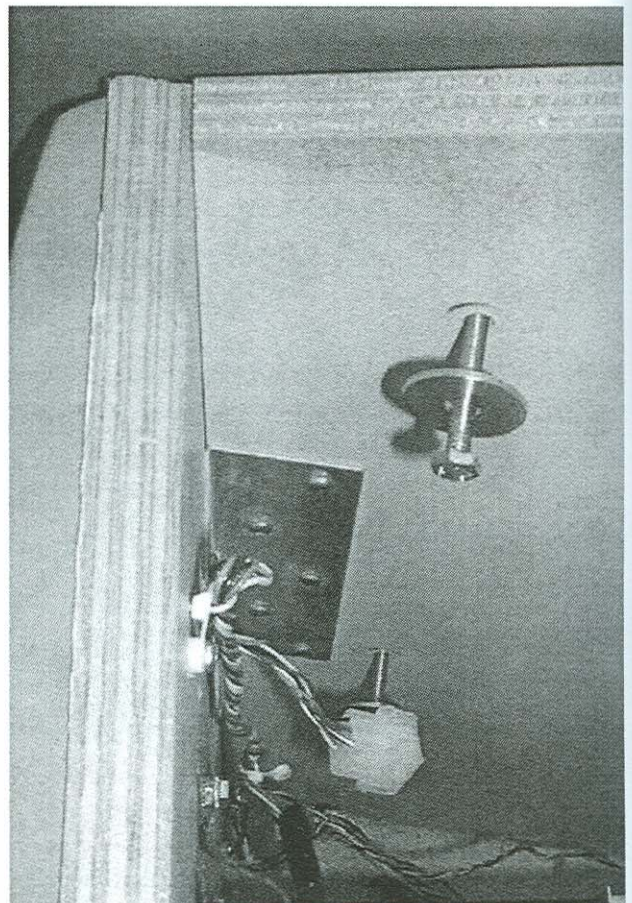


DIAGRAM 8

- 12) Slide the rear inner panels to assure movement. Install the display and tighten with lock

ASSEMBLY GUIDE

provided. (Note the lunar bonus is to be mounted on the right and the lunartron on the left. All the wires drop through the playfield.) Secure the robot tower in place as shown. Be sure the flat part of the base is facing the rear. (See diagrams 9A thru 9D)

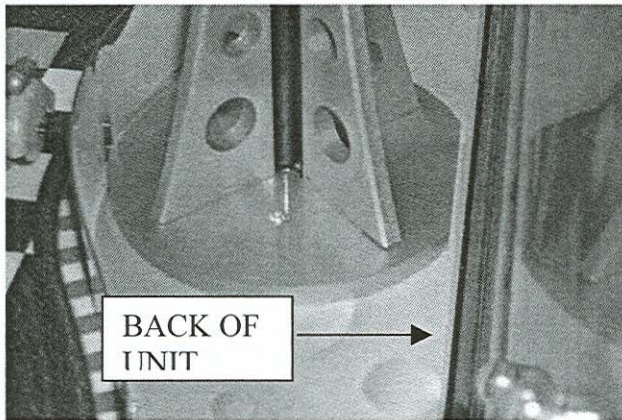


DIAGRAM 9A

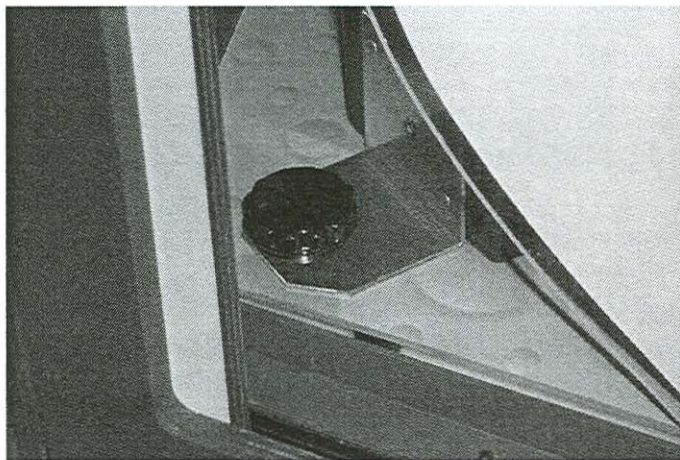


DIAGRAM 9B



DIAGRAM 9C

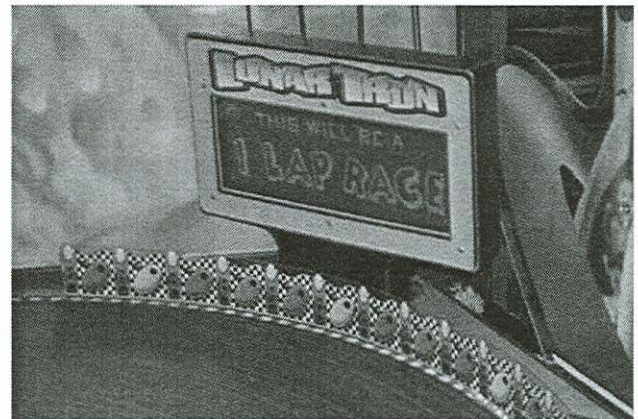


DIAGRAM 9D



DIAGRAM 10A

- 13) Slide the grandstand in through the rear access door; be sure to go behind the robot tower. Using the supplied hardware secure in place. (See diagrams 10A & 10B)
- 14) Remove the access panel on the marquee. Place the marquee on front part of the unit. Feed all the wires through the cut out in the bottom of the marquee. Connect the AC connector and plug the two 12 pin connectors in the board as marked.

ASSEMBLY GUIDE

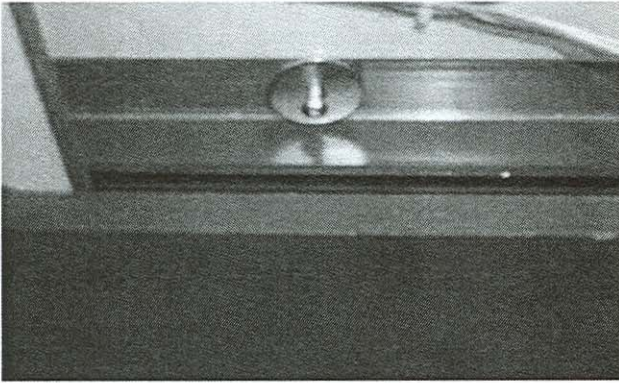


DIAGRAM 10B

- 15) Using the hardware provided fasten the marquee in position. Fasten the cover in place and remove any stretch wrap or tape from spotlights. (See diagram 11)

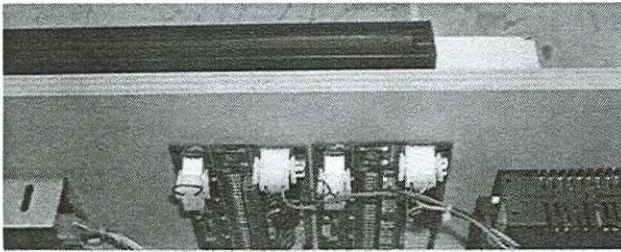


DIAGRAM 11

- 16) Remove both lower access panels and begin to connect all connectors by matching like numbers. (See diagrams 12A thru 12C) Be sure to connect displays, robot tower, control stations, AC power, speakers, and motor harness.

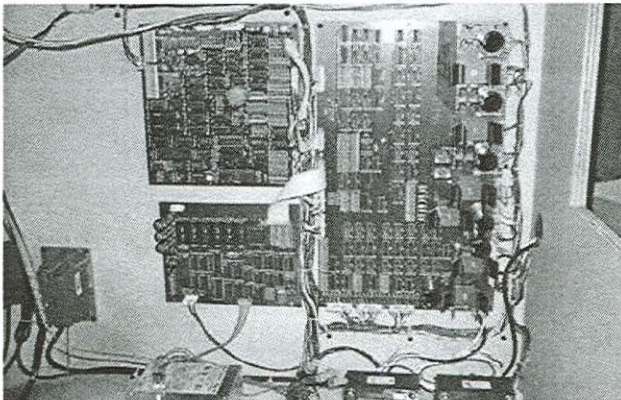


DIAGRAM 12A

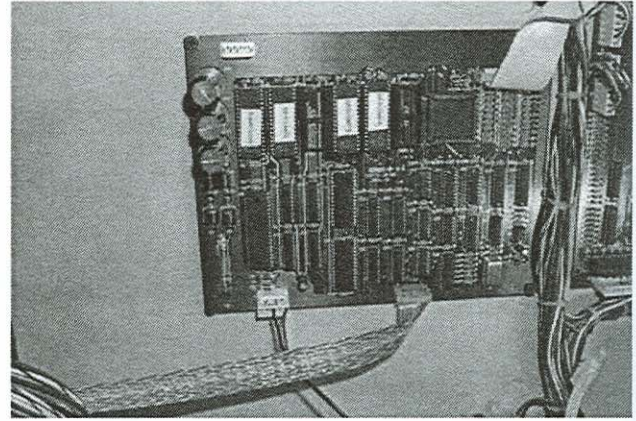


DIAGRAM 12B

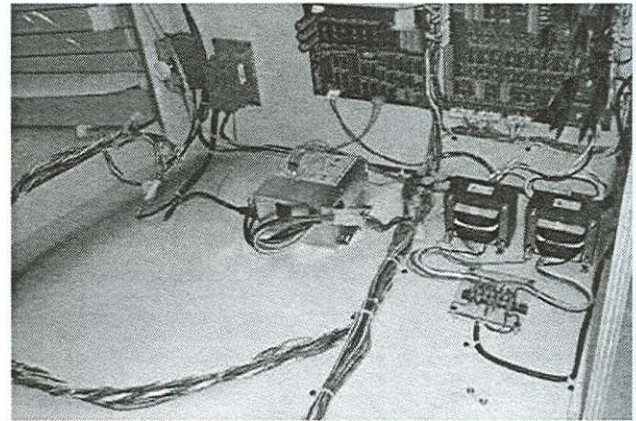


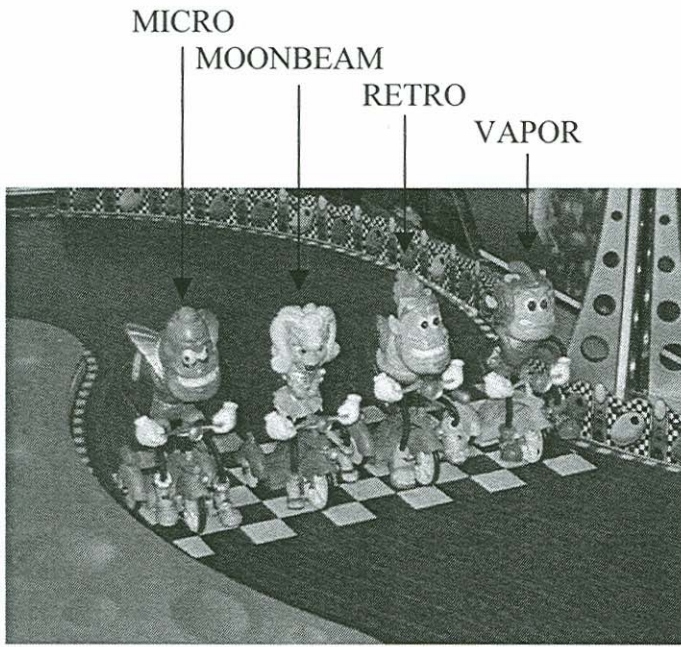
DIAGRAM 12C

Double-check all connections and verifying proper voltage, you are ready to turn on your game. If the voltage is not within the normal specifications for the game rating, please contact our service department before using this product. We will advise you on adjustments that can be made to assure safe and proper operation.

ASSEMBLY GUIDE

RACING CHARACTERS POSITIONING

The order and positioning of the "Spacey Racers" is very important to the function of this game. Please refer to diagram 13 shown below.



GAME VOLUME

There are 2 volume control pots; these are located on the main P.C. board. Adjust these to a suitable volume level. The top pot adjusts the left and the bottom adjusts the right.

PROGRAMMING ADJUSTMENTS

SPACEY RACERS AUDITS, ADJUSTMENT, TECHNICAL REFERENCE
SOFTWARE VERSION 1.0P

Updated: 4/7/00

Note: The software has been written to accommodate error conditions as comfortable as possible by

- 1) Announcing/displaying errors at appropriate times
- 2) Providing functional tests on all major components of the game
- 3) Allow the game to continue as long as possible despite error conditions:
As long as more than 1 bike is operational, the game will continue, bypassing error conditions.
- 4) Giving options to operator error handling.
- 5) If lockouts are used, upon home/motor errors, credits are "locked out" to prevent credit addition.
- 6) See detailed error section below.

Note: The player stations are referred to by numbers 1-4: 1=MICRO, 2=MOONBEAM, 3=RETRO, 4=VAPOR.

Power-up coin/credit switch wiring error display:

- 1) This is displayed after title/version display ONLY if error detected.
- 2) If this display occurs:
 - a) The game is inoperative, that is, it is locked in for coin/credit switch troubleshooting mode.
 - b) Means associated coin/credit switch is probably connected wrong OR possibly hung up/fatally defective.
Note: If fatally defective, restore game operation by replacing switch. As a temporary alternative, remove wire(s) from defective switch, mark associated coin mech "OUT OF ORDER" then use non-defective slot.
- c) The 8-digit 7 segment display is as follows:
"CERR "CERR (CREDIT ERROR) followed by the credit switch status of the 4 stations:

\\\ ___ 1 if station 1 has credit error, otherwise blank
\\ ___ 2 if station 2 has credit error, otherwise blank
 \ ___ 3 if station 3 has credit error, otherwise blank
 \ ___ 4 if station 4 has credit error, otherwise blank

- d) The plasma display reflects COIN/CREDIT SWITCH ERROR "STATUS", showing "CHECK COIN SWITCH" in the face positions that have errors.
- e) Use the displays as a troubleshooting tool to find the source of the problem:
 - 1) If dual coin mechs are used, remove connection from one while troubleshooting the other, then repeat with other coin switch. This is because switches are connected in parallel.
 - 2) If by toggling a coin/credit switch, an error indication clears, the switch is wired wrong. Change connections to switch from normally closed to normally open.
 - 3) If by toggling a coin/credit switch, the error does NOT clear, remove the wires from the switch:
 - i) If error clears after removing wires, correctly reconnect switch to normally open connections. If error reoccurs after reconnecting switch, replace the switch.
 - ii) If error does NOT clear by removing wires from switch, input circuitry may be faulty.

PROGRAMMING ADJUSTMENTS

(replace/repair CPU) or wiring is incorrect (check wiring).

f) This condition can only be cleared if:

1) All coin/credit errors are clear.

2) The game is reset by pressing the CPU reset switch SW1 or by turning the unit power OFF, then back ON.

MAIN MENU:

"LST- " AUDIT1 - access viewed selection
 AUDIT2 - view next selection
 AUDIT3 - view previous

"LST-PLAY" AUDIT1 - Return to gameplay

"LST- AUD" AUDIT1 - Enter Audit menu at 1st entry of menu

"LST-STAT" AUDIT1 - Enter Status display mode showing 1st player status

"LST- ADJ" AUDIT1 - Adjustment menu at 1st entry of menu

"LST-TEST" AUDIT1 - Test menu at 1st entry of menu

"LST- CAL" AUDIT1 - Calibration menu at 1st entry of menu

AUDIT MENU:

"AUD- " AUDIT1 - access viewed selection
 AUDIT2 - view next selection
 AUDIT3 - view previous

"AUD-LIST" AUDIT1 - return to main menu

"AUD- CLR" AUDIT1 - prompt for verification to clear audits

"SURE? NO" AUDIT1 - select and return to 1st selection in audit menu
 WITHOUT clearing audits
 AUDIT2/3 - view other selection

"SURE? YES" AUDIT1 - clear audits and return to 1st selection in audit menu
 AUDIT2/3 - view other selection

All audits:

AUDIT1 - exit current audit selection and return to AUDIT MENU at 1st entry of menu

3 Digit display shows audit selection:

"CIN" Total credits/coins-in for ALL stations

"PAY" (Ticket) payout total for ALL stations

"BON" Total number of times "fastest track time" was beat. (If bonus applicable, reflects number of bonus payouts.)

"GT-" Total number of individual games played

"RT-" Total number of races

PROGRAMMING ADJUSTMENTS

"1P-" Total number of 1 player races
"2P-" Total number of 2 player races
"3P-" Total number of 3 player races
"4P-" Total number of 4 player races

"C1-" Credits/coins-in for station 1 ONLY
"C2-" Credits/coins-in for station 2 ONLY
"C3-" Credits/coins-in for station 3 ONLY
"C4-" Credits/coins-in for station 4 ONLY

"P1-" Total payout for station 1 ONLY
"P2-" Total payout for station 2 ONLY
"P3-" Total payout for station 3 ONLY
"P4-" Total payout for station 4 ONLY

8 digit display:
"XXXXXXXX" Current audit total for entry

STATUS DISPLAY MODE:

AUDIT1 - Return to main menu
AUDIT2 - Select next player
AUDIT3 - Select previous player

"x-eeeTTT" If errors and/or tickets owed:
eee- error condition codes:
D- disconnected
O- motor/opto error
H- home error
TTT=unpaid tickets, if over 999 shows 999
"x- CLEAR" If there are no errors or tickets owed for player x.

ADJUSTMENTS:

"ADJ- " AUDIT1 - access viewed selection
AUDIT2 - view next selection
AUDIT3 - view previous
"ADJ-LIST" AUDIT1 - Return to main menu
"ADJ- FAC" AUDIT1 - prompt for verification to reset adjustments to factory defaults
"SURE? NO" AUDIT1 - return to 1st selection in audit menu WITHOUT resetting adjustments
AUDIT2/3 - view other selection
"SURE? YES" AUDIT1 - reset adjustments to factory settings and return to 1st selection in audit menu
AUDIT2/3 - view other selection

All following adjustments:

PROGRAMMING ADJUSTMENTS

AUDIT1 - accept setting and return to Adjustment menu at selected test entry

AUDIT2 - to view next selection

AUDIT3 - view previous selection

"ADJ- CIN" Credit size

NOTES:

1) For convenience, if continuous or free play when return to game with, credits>1, credits set to 1

2) If change TO FREE PLAY -or- FROM continuous, clears credits for consistency

"CIN-FREE" Free play (For push button play, no accumulation of plays)

"CIN-1 CN" 1 coin game

"CIN-2 CN" 2 coin game - DEFAULT, Use this setting if credit card mechs used

"CIN-3 CN" 3 coin game

"CIN-4 CN" 4 coin game

"CIN-CONT" Continuous game mode (for testing/demo)

"ADJ- CRT" Credit type (Ignore if free play)

"CRT-COIN" Coin - DEFAULT

"CRT-CARD" Credit card

"ADJ- PAY" Payout schedule selection (SEE ticket schedule below)

NOTE: DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).

"PAY- LO" Low table

"PAY- INT" Intermediate (medium) table

"PAY-HIGH" High table - DEFAULT

"ADJ- TS" Ticket size

NOTE: DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).

"TS-1 PNT" 1 point per ticket - DEFAULT

"TS-2 PNT" 2 points per ticket

NOTE: If any of next 4 adjustments are made (bonus/speed/diff/laps), game will restart as if fastest track time had been bettered: The "fastest track time" shown on display will be reset to initial fastest track time setting (see diff adjustment below).

"ADJ- BON" Bonus ticket payout setting - DEFAULT is 300

NOTE: DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).

"BON- xxx" xxx: 0 - 975 in steps of 25: If set to 0, bonus (3 digit) display will be blank. If this is the normal case, the "BONUS" related artwork on the display marquee should be covered with appropriate cover art

"ADJ - SPD" Relative game speed

"SPEED-HI" Game speed is high - DEFAULT

"SPEED - LO" Game speed is low (5 - 18% slower)

PROGRAMMING ADJUSTMENTS

- "ADJ- DIF" "Fastest track time" achievability difficulty
When fastest track time is made:
If bonus not 0 AND tickets enabled, game pays out bonus and runs
"fastest track time" victory lap.
If no bonus OR tickets disabled, runs special "fastest track time" victory
lap only
"DIF - EASY" Achievable in about 100 plays from previous fastest track time race.
"DIF - INT" Achievable in about 200 plays - DEFAULT
"DIF - HARD" Achievable in about 300 plays
- "ADJ - LAPS" Laps per race
"LAPS - 1" 1 lap per game - DEFAULT
"LAPS - 2" 2 laps per game
- "ADJ - BUY" Buy time in seconds - DEFAULT is 0
"BUY - xxx" xxx: 0 - 15
- "ADJ - ATTR" Attract time
"ATTR - OFF" Disabled
"ATTR - 30S" 30 seconds
"ATTR - 1" 1 minute
"ATTR - 90S" 90 seconds - DEFAULT
"ATTR - 2" 2 minutes
"ATTR - 3" 3 minutes
"ATTR - 4" 4 minutes
"ATTR - 5" 5 minutes
"ATTR - 10" 10 minutes
"ATTR - 20" 20 minutes
- "ADJ - ESS" Error status sound switch - Audible annunciation of errors during error
annunciation phase of game and attract modes
See error processing section below.
"ESS - OFF" Function is OFF (DISABLED)
"ESS - ON" Function is ON (ENABLED) - DEFAULT
- "ADJ - AIT" AI (computer player) type
"AIT - AES" All empty stations: Computer will play ALL stations NOT played by
live player(s) - DEFAULT
"AIT - 1PO" 1 player only: 1 random computer player plays only if 1 live player

PROGRAMMING ADJUSTMENTS

- DEFAULT is 0
"BUY- xxx" xxx: 0 - 15

"ADJ-ATTR" Attract time
"ATTR-OFF" Disabled
"ATTR-30S" 30 seconds
"ATTR- 1" 1 minute
"ATTR-90S" 90 seconds - DEFAULT
"ATTR- 2" 2 minutes
"ATTR- 3" 3 minutes
"ATTR- 4" 4 minutes
"ATTR- 5" 5 minutes
"ATTR- 10" 10 minutes
"ATTR- 20" 20 minutes

"ADJ- ESS" Error status sound switch - Audible annunciation of errors during error annunciation phase of game and attract modes. See error processing section below.
"ESS- OFF" Function is OFF (DISABLED)
"ESS- ON" Function is ON (ENABLED) - DEFAULT

"ADJ- AIT" AI (computer player) type
"AIT- AES" All empty stations: Computer will play ALL stations NOT played by live player(s) - DEFAULT
"AIT- 1PO" 1 player only: 1 random computer player plays only if only 1 live player

"ADJ- TICS" Ticket mech switch
"TICS-OFF" Ticket mech function is OFF (DISABLED)
"TICS- ON" Ticket mech function is ON (ENABLED) - DEFAULT

"ADJ- BEx" Bike enable switches,
"BEx- OFF" Bike function is OFF (DISCONNECTED)
"BEx- ON" Bike function is ON (ENABLED) - DEFAULT

TESTS MENU:

"TST- " AUDIT1 - access viewed selection
 AUDIT2 - view next selection
 AUDIT3 - view previous

"TST-LIST" AUDIT1 - Return to main menu

All tests:

AUDIT1 - When in test, exit test and return to TEST MENU at 1st entry of

PROGRAMMING ADJUSTMENTS

menu

- "TST- ANN" Announcer test:
Free running test with periodic center position pause for checking operation, repeatability and accuracy. At start of test, the announcer is homed, checking the integrity of the home switch.
- "ANN-xxx " xxx - Announcer position in 1.8 degree increments from initial position (home/failure detection).
|_____ This is 'H' at initial homing then EITHER blank (home switch detected operational) OR 'E' (home switch failure detected).
- "TST- TB" Trackball test:
"xyxyxyxy" xy - Each pair left to right reflect the relative trackball rate increasing from 0 (no movement) through 9 then A through F.
x- represents the horizontal (or 'X') movement rate
y- represents the vertical (or 'Y') rate.
- "TST-BTST" Bike test: Individual direct increment/decrement of motor controller output duty. Since there is no feedback mechanism during this test, if motor/opto error had been previously detected by system and the bike in question is seen to move during this test, it is probable that the error was caused by the motor's opto electronics, rather than a motor failure. See error processing for more details.
- AUDIT2 - increase motor output of selected bike
AUDIT3 - decrease motor output of selected bike
RESET1 - select next bike
- "PHSSTTTE" Display:
P - Bike selection: 1 to 4
H - Home detection: 'H' when home detected, 'E' means home error detection
SS- Motor controller output: 0 (OFF) -63 (FULL ON)
- TTTE- If bike not disabled TTTE = 1 complete lap time (NOT just START to FINISH line) in .1 Secs
OR if motor/opto error detected, TTT = lap time in secs and E = "E"
TROUBLESHOOTING HINT: If motor is full ON, there is bike movement and TTT is greater than 14 every lap, it is probable that the motor/track is out of minimum operating specs and the motor opto is OK.
OR TTTE = "DISC" if bike is disconnected (disabled).
- "TST- POS" Bike position test:
AUDIT2 - toggle selected bike ON(constant speed)/OFF
AUDIT3 - while pressing, jogs selected bike
RESET1 - select next bike

PROGRAMMING ADJUSTMENTS

- "PH XXXX" Display:
P - Bike selection: 1 to 4
H - Home detection: 'H' when home detected, 'E' means home error detection
XXXX- Bike position relative to home detector in opto increments
OR "DISC" if bike is disconnected (disabled).
OR " ERR" if motor/opto error detected.
- "TST-HTST" Bike home test:
AUDIT2 - trigger homing (all bikes)
AUDIT3 - toggle mode between continuous and single,
RESET1 - select next bike (position display ONLY)
- "PHSSXXXX" Display:
P - Bike selection: 1 to 4
H - Home detection: 'H' when home detected, 'E' means home error detection
SS- Motor controller output: 0 (OFF) -63 (FULL ON)
XXXX- Bike position relative to home detector, in opto increments
OR " ERR" if motor/opto error detected.
- "TST-FLAS" Flasher test:
AUDIT2 - select next flasher
AUDIT3 - select previous flasher
- "FLAS-xxx" Display: xxx reflects current flasher designator described below.
Upper (Win) lamp designations:
"UP1" Station 1 Win
"UP2" Station 2 Win
"UP3" Station 3 Win
"UP4" Station 4 Win

Trackball lamp designations:
"TB1" Station 1 Trackball
"TB2" Station 2 Trackball
"TB3" Station 3 Trackball
"TB4" Station 4 Trackball

Inside (background art) flasher designators:
"FL1" Flasher 1
"FL2" Flasher 2
"FL3" Flasher 3
"FL4" Flasher 4
"FL5" Flasher 5
"FL6" Flasher 6
"FL7" Flasher 7
"FL8" Flasher 8

PROGRAMMING ADJUSTMENTS

- "TST- RST" Reset switch test:
"RST- " Display:
 \\\|_____ 1 if RESET1 switch is closed (pressed) else blank
 \\\|_____ 2 if RESET2 switch is closed (pressed) else blank
 \\|_____ 3 if RESET3 switch is closed (pressed) else blank
 \|_____ 4 if RESET4 switch is closed (pressed) else blank
- "TST- SND" Sound test:
 AUDIT2 - selects and play next sample
 AUDIT3 - selects and play previous sample
 RESET1 - replay/restart sample
"SND- xx" xx - selected sound index
- "TST-DISP" Plasma display test: Starts up in bar test
 AUDIT2 - select next sequence
 AUDIT3 - select previous sequence
 RESET1 - plays sequence
"DISP- xx" xx - selected sequence index
- "TST-CCNT" Coin counter (meter) test
 AUDIT2 - increment meter and test count
 AUDIT3 - clear test count.
"CCNT-xxx" xxx - current test count.
- "TST-TCNT" Ticket counter (meter) test
 NOTE: DOES NOT APPLY IF TICKET METER OR TICKET MECHS ARE NOT
 PRESENT, OR IF TICKETS ARE DISABLED (See ADJ-TICS).
 AUDIT2 - increment meter and test count
 AUDIT3 - clear test count.
"TCNT-xxx" xxx - current test count.
- "TST-LOUT" Lockout tests: shows lockout status, toggles selected lockout
 NOTE: DOES NOT APPLY IF LOCKOUTS ARE NOT INSTALLED.
 RESET1_H2L- selects next station
 AUDIT2_H2L- toggle selected lockout (ON/OFF)
 AUDIT3_H2L- toggle selected lockout (ON/OFF)
 x - selected station
"Lx- ON" If associated lockout on/energized.
"Lx- OFF" If associated lockout off/deenergized.
- "TST- Cx" Credit tests for station "x"
 NOTE: ASSOCIATED LOCKOUT ACTIVATED (ALLOWING COINS)
 DURING CREDIT TEST
 AUDIT2 - increment credits (NOT partials)
 AUDIT3 - decrement credits.
 nnn= number of credits:

PROGRAMMING ADJUSTMENTS

"Cx-C nnn" If credit size is set for CONTINUOUS PLAY (test mode)
 "Cx-F nnn" If credit size is set for FREE PLAY
 "Cx-nnn p" If credit size is greater than 1: p = number of partial coins toward credit
 "Cx- nnn" If credit size is 1

"TST- Tx" Ticket tests for station "x"
 NOTE: DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).
 AUDIT2 - if ticket mech enabled add two tickets to ticket count (tickets to be dispensed),
 AUDIT3 - clear ticket count.
 "Cx-nnnnn" nnnnn - ticket count for station "x".

CALIBRATION MENU:

"CAL- " AUDIT1 - access viewed selection
 AUDIT2 - view next selection
 AUDIT3 - view previous selection

"CAL-LIST" AUDIT1 - Return to main menu

"CAL- FAC" AUDIT1 - prompt for verification to reset calibrations to factory defaults
 "SURE? NO " AUDIT1 - return to 1st selection in calibration menu WITHOUT resetting calibrations
 AUDIT2/3 - view other selection

"SURE? YES " AUDIT1 - reset calibrations to factory settings and return to 1st selection in calibration menu
 AUDIT2/3 - view other selection

All calibrations:

AUDIT1 - when in calibration, exit current calibration and return to CALIBRATION MENU at 1st entry of menu

"CAL- ACC" Announcer Center Calibration:
 AUDIT2 - increment (moves clockwise) robot center calibrated position
 AUDIT3 - decrement (moves counter clockwise) robot center calibrated position

"ACC-xxx " xxx - Announcer position in 1.8 degree increments from initial position (home/failure detection).
 _____ This is 'H' at initial homing then EITHER blank (home switch detected operational) OR 'E' (home switch failure detected).

"CAL- BSC" Bike Start (Home) Calibration:
 Warning: You must complete calibration (or reset cal to factory settings- see above) after pushing AUDIT1 or if AUDIT3 past maximum position.

PROGRAMMING ADJUSTMENTS

AUDIT2 - initiate rehome to minimum starting position
AUDIT3 - jog forward bike and calibrated starting position
RESET1 - select next bike

"PH XXXX"

Display:

P - Bike selection: 1 to 4

H - Home detection: 'H' when home detected, 'E' means home error detection

XXXX- Bike position relative to home detector in opto increments

OR "DISC" if bike is disconnected (disabled).

OR " ERR" if motor/opto error detected.

"CAL- CAL"

Bike Motor Calibration: obtains, processes and stores motor/controller characteristic data

Important: Since, this is the heart of game accuracy and repeatability, must be performed if motor or track repaired/replaced!

AUDIT1 - will terminate calibration prematurely, ignoring any data obtained

xx - 64 to 0: countdown showing relative motor output value currently processed

"CAL- xx"

2 digit 7 segment display "CAL-" blinks during this calibration

"MOTOR CALIBRATION: xx"

Plasma display during this calibration

ERROR PROCESSING

Notes: a)Gameplay mode is default mode OR normal operating mode, while menu mode is after AUDIT1 is pressed from gameplay mode, where status mode, audits, adjustments, calibrations and tests are run.

b)TICKET RELATED RELATED DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).

1) Error catagories -

There are basically 4 catagories of error conditions. These are as follows:

A) Disconnection - Software disconnect switches, see adjustments. Used in applications requiring defeating (Bike disabled) of drive AND non-resettable by RESET switches. Game actions will appropriately bypass disconnected station(s). Disconnected bikes will NOT move in any attract, game, calibration or test. Reset switch will not be active and the station's lockout will be normally deactivated to prevent crediting. Applications: If bike removed from station, drive mechanism binding. It is also recommended that when operator acknowledges home or motor error, that the bike(s) in error be disabled.

B) Home - home sensor

C) Motor - Bike motors, motor optos and motor drives.

PROGRAMMING ADJUSTMENTS

D) Ticket - Tickets are owed because station(s) ran out of tickets (normally) OR ticket mech/circuitry failure(s).

2) Error displays -

A) Plasma: (During gameplay mode error annunciation AND menu (non-game/audits-adjustment) mode ONLY.)

a) Disconnection - "CHECK BIKE"

b) Motor - "CHECK MOTOR"

c) Home - "CHECK HOME SENSOR"

d) Ticket - "TICKETS" and corresponding stations number of tickets owed (999 max)

B) Right hand display marquee

a) During status display mode (see status display mode section above).

b) During certain tests, error conditions are displayed (see test selection section above).

C) Corresponding station flashers: (During any menu mode BUT NOT during flasher tests)

a) Disconnection - No associated flasher action

b) Motor - Win

c) Home - Win

d) Ticket - Trackball

3) Error annunciation phase:

Phase occurring after victory lap of game or demo (attract) victory lap OR after attract 2 lap

ONLY IF either there is a ticket error OR enabled bike related unacknowledged home switch/motor related failures.

If error status sound is enabled (see ESS adjustment above),

If any station has a ticket error, "HEY" followed by an audible list of associated station character(s), followed by "OUT OF TICKETS", followed by "PLEASE, SOMEBODY CALL AN ATTENDANT" announcements.

In case of an unacknowledged home switch/motor failure, if there are no ticket errors "PLEASE, SOMEBODY CALL AN ATTENDANT" announcement is made. No additional announcements are made specific to the unacknowledged home switch/motor failure(s) if there are ticket error(s).

During this phase, appropriate plasma error display occurs.

The audible annunciation is also active when entering the menu mode from normal game play,

4) Error reset functions:

The general reset switch functions include the following:

A) Reset tickets errors -

Will attempt to continue ticket dispense until no more tickets are owed out.

B) Resets motor errors -

Will attempt to return to normal game operation, the corresponding station, by initializing bike start position homing.

C) Acknowledges motor/home switch errors -

Prevents further home/bike error conditions on the corresponding station from triggering the error annunciation phase (see 3 above), until game is turned OFF then back ON.

PROGRAMMING ADJUSTMENTS

Note: Reset functions are not available if bike is disabled OR during the following tests/calibration times

(Because RESET1 switch has other functions during these events):

- Bike test (BTST)
- Bike position test (POS)
- Bike home test (HTST)
- Bike start calibration (BSC)
- Plasma test (DISP)
- Sound test (SND)
- Lockout test (LOUT)

5) Error detection processing:

Motors of stations of detected home/motor errors generally will stop upon detection.

Exceptions:

- During bike test (to allow motor error evaluation).
- During bike motor calibration, motors will stop only if motor error detected (allows complete calibration when possible).

6) Fatal Error processing:

If more than 2 stations have disconnection, motor or home errors, the game enters a "Fatal Error" mode.

At this time, the game is unplayable while it cycles audible and plasma "PLEASE CALL ATTENDANT" sound/displays along with a status display.

7) Recommended operator "serious error" handling:

- A) When a home/motor error occurs or the bike/character is inoperative, the associated bike action should be disconnected (disabled) by software adjustments (see adjustments). Although the rest of game bypasses the erroneous station, the benefits are that the game can be turned off and on without disturbing the erroneous station, preventing further problems while disabling the announced errors (and error announcement phase if no other errors) for the disabled station.
- B) As an alternative to A above, if the associated reset switch is pressed, the station is acknowledged and prevents the error announcement phase due to the acknowledged station's error conditions. Warning: this action may also reset the error condition temporarily.
- C) The station be physically marked "out of order" and if lockout mechanisms are not used, credit mechanisms blocked off.
- D) If the bike/character is NOT the problem, move the bike to line the back of the bike to the finish line.
- E) Service the station at a time convenient to the operations of the game.

PROGRAMMING ADJUSTMENTS

TICKET SCHEDULE -

NOTES:

- 1) DOES NOT APPLY IF TICKETS ARE DISABLED (See ADJ-TICS).
- 2) If credits size is 2-4, multiply number in table by credit size.

LIVE PLAYERS	PLACE	PAYOUT SETTING			NUMBER OF TICKETS
		LOW	MED	HIGH	
4	1st	8	12	16	
4	2nd	6	6	8	
4	3rd	4	4	6	
4	4th	2	2	4	
3	1st	8	10	12	
3	2nd	4	6	8	
3	3rd	2	4	6	
3	4th	2	2	4	
2	1st	6	8	10	
2	2nd	4	4	6	
2	3rd	2	2	4	
2	4th	2	2	2	
1	1st	4	6	8	
1	2nd	2	4	4	
1	3rd	2	2	4	
1	4th	2	2	2	

MAINTENANCE

CLEANING

Cleaning is a necessary part of keeping this product looking new. I.C.E strongly recommends that the operator stay away from industrial strength cleaners. The traditional Windex or soapy water will do the job.

When you are done cleaning this product it is a good idea to wax the control panels with pledge / furniture polish.

When cleaning the playfield area DO NOT use furniture polish as a final step. This will seriously inhibit the performance of each character.

LUBRICATION

We recommend that every 6 months the operator take the time to lubricate the chain area. A Vaseline or light wheel bearing grease preferred. Do not use an excessive amount, for it is not needed.

We also recommend that you check all the tricycles to be sure that nothing has vibrated loose. Check the bottom of the tricycles to insure that it is free of any debris.

TROUBLESHOOTING & REPAIR

PROBLEM	CAUSE	SOLUTION
Game will not start:	<ul style="list-style-type: none"> No power to the game Main fuse is blown Bad coin switch Bad coin mechanism Bad main harness 	<ul style="list-style-type: none"> Check A.C. outlet for voltage Check or replace fuse Check or replace coin switch Adjust or replace coin mechanism Check & repair harnessing Repair or replace main P.C. board
No or low volume	<ul style="list-style-type: none"> Bad main P.C. board Volume turned down Bad speaker Bad speaker harness 	<ul style="list-style-type: none"> Repair or replace main P.C. Adjust both volume controls Repair speaker Replace harness
No display	<ul style="list-style-type: none"> Bad display Bad main board Harness is plugged in wrong Bad harness 	<ul style="list-style-type: none"> Repair or replace display unit Repair or replace main P.C. Repair or replace bad combo board Repair or replace harness
No tickets dispensing	<ul style="list-style-type: none"> No tickets in dispenser Bad ticket dispenser Bad harness Bad main P.C. board Ticket dispenser turned off Dispenser set improperly 	<ul style="list-style-type: none"> Add tickets to dispenser Repair or replace dispenser Repair ticket harness Repair or replace main PC Turn dispenser programming on Adjust dispenser programming
Characters do not move	<ul style="list-style-type: none"> Bad connection Motor harness plugged in wrong Bad motor Chain jammed 	<ul style="list-style-type: none"> Check connects for continuity Check connections Check or replace motor Replace chain guide
No marquee lighting	<ul style="list-style-type: none"> Bad ballast Bad bulb No A.C. 	<ul style="list-style-type: none"> Replace bulb assembly Check for proper voltage

TROUBLESHOOTING & REPAIR

WARNING

ALWAYS DISCONNECT POWER TO THE GAME BEFORE ATTEMPTING TO DO ANY SERVICE. FAILURE TO EGKNOWLEDGE THIS WARNING MAY RESULT IN SERIOUS INJURY.

OPERATIONAL BACKGROUND

To locate a possible problem in a game always start with the obvious first. See that the game is plugged in and that all the fuses are good. Sometimes during the shipping process a fuses wiggle loose.

Next check to see that all connections are firmly seated, and that no one wire has come unplugged. When troubleshooting a problem at one particular station, it may be helpful to swap components from another one to narrow down the problem. Use extreme caution when using a voltmeter if the game is plugged in.

MECHANICAL REPAIR

Under the play field area is a series of chain tracks, which are driven by a D.C. gear motor. There is a chain guide which prevents the chain from jamming, it is very important that this guide be reinstalled if removed. There is an aluminium follower which is located between the track and play field. When the play field is off, check to be sure there is not excessive wear in the bearings of the trike followers.

MOTOR REPLACEMENT

When replacing any of the four track motors it is important to have the game off position. There are for allen bolts, which hold the motors in place. After removing the Allen bolts cock the motor to allow the sprocket to disengage from the chain. (Do not tug on the motor) This procedure can be done from the bottom of the track. When installing the new motor be sure that the opto wheel can spin freely.

ELECTRICAL REPAIR

The following section will describe repair procedures and the trouble shooting tips.

WARNING: Exercise extreme caution whenever working with electronics. These components may be susceptible to damage from to damage from short-circuiting or physical abuse.

Use extreme caution when using a voltmeter to do circuit checks when the game has been left on.

Always remove any battery back up when working on a C.P.U. This is necessary as circuits are constantly under power for the battery.

TROUBLESHOOTING & REPAIR

WARNING

ALWAYS DISCONNECT POWER TO THE GAME BEFORE ATTEMPTING TO DO ANY SERVICE. FAILURE TO EGKNOWLEDGE THIS WARNING MAY RESULT IN SERIOUS INJURY.

CHANGING VOLTAGES

I.C.E. recommends that for a voltage change that the operator contact our service department. At that we will supply him with the proper components or information to perform the change. Failure to do this will void all warranty.

MAIN & COMBO BOARDS

The main & combo boards are located on the rear lower left side of the unit. Be sure to re-use any hardware to hold the boards in place. Access to these boards is readily available through the lower access door.

DISPLAY P.C. BOARDS

The display boards can be accessed through the rear access doors. After removing the rear doors, slide the inner door to get to the display you wish to service. There is a hand knob that holds the display secure. After removing the knob disconnect the harnessing and remove the display. Remove the screws in the front of the display to gain access to the boards.

PARTS LISTINGS

MECHANICAL PARTS

1050	KNOB
HD1052	CASTER 3"
HH5005	TICKET DISPENSER
WA1051	LATCH
SR1051	CHAIN SET
SR1052	SPROCKET
SR1053	MAGNET(8209698)
SR2038	OPTO ENCODER WHEEL
SR3006	CHAIN GUIDE
SR3033	CAM FOLLOWER
SR4001	CHARACTER (MICRO)
SR4002	CHARACTER (MOONBEAM)
SR4003	CHARACTER (RETRO)
SR4004	CHARACTER (VAPOR)
SR4005	CHARACTER (ROBOT)
SR4006	TRICYCLE RED
SR4007	TRICYCLE BLUE
SR4008	TRICYCLE GREEN
SR4009	TRICYCLE YELLOW

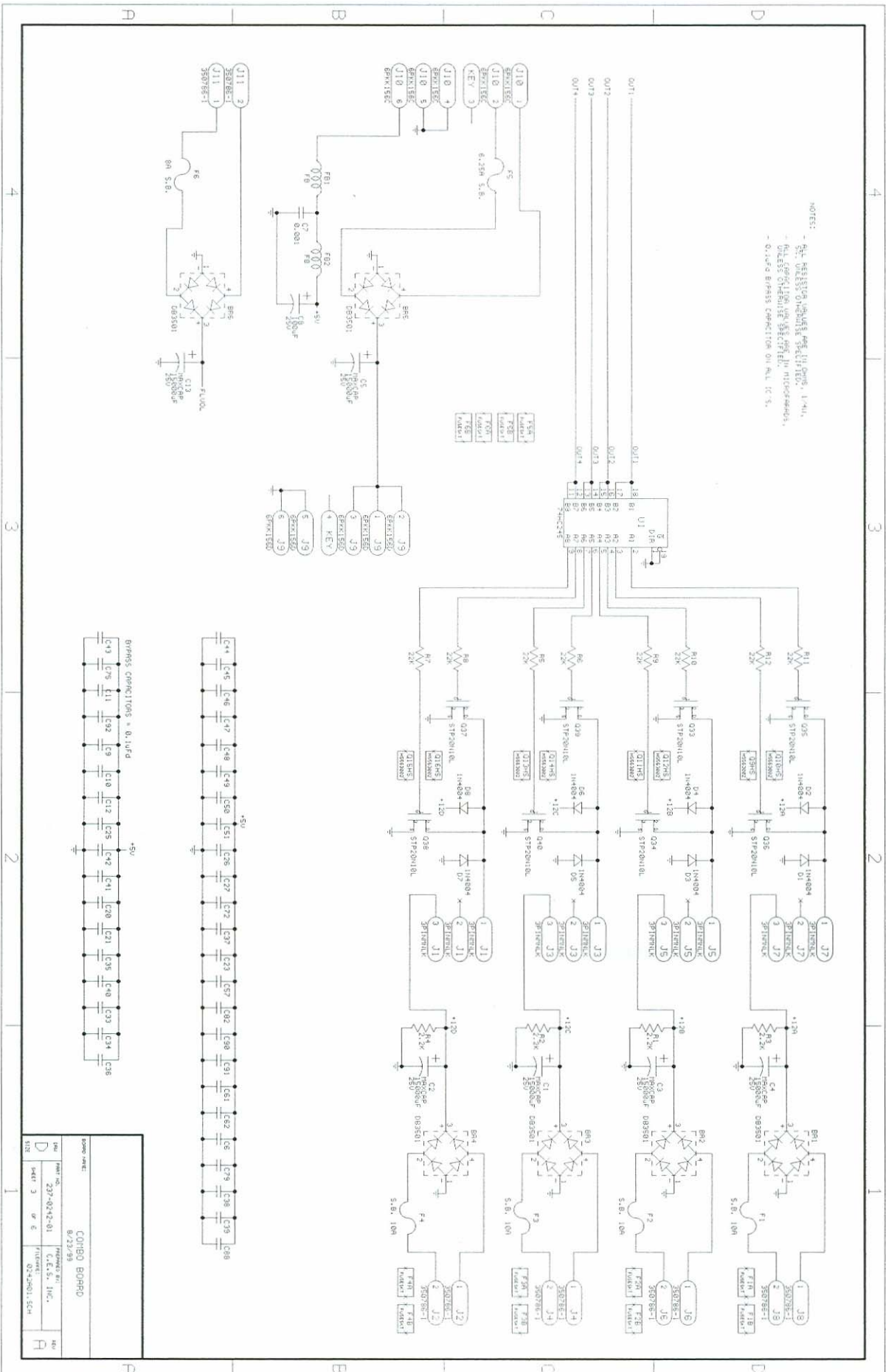
GRAPHICS & DECALS

SR7001	CONTROL PANEL (MIRCO)
SR7002	CONTROL PANEL (MOONBEAM)
SR7003	CONTROL PANEL (RETRO)
SR7004	CONTROL (VAPOR)
SR7008	DECAL (FLAG SET 4)
SR7015	DECAL VIEW STATION

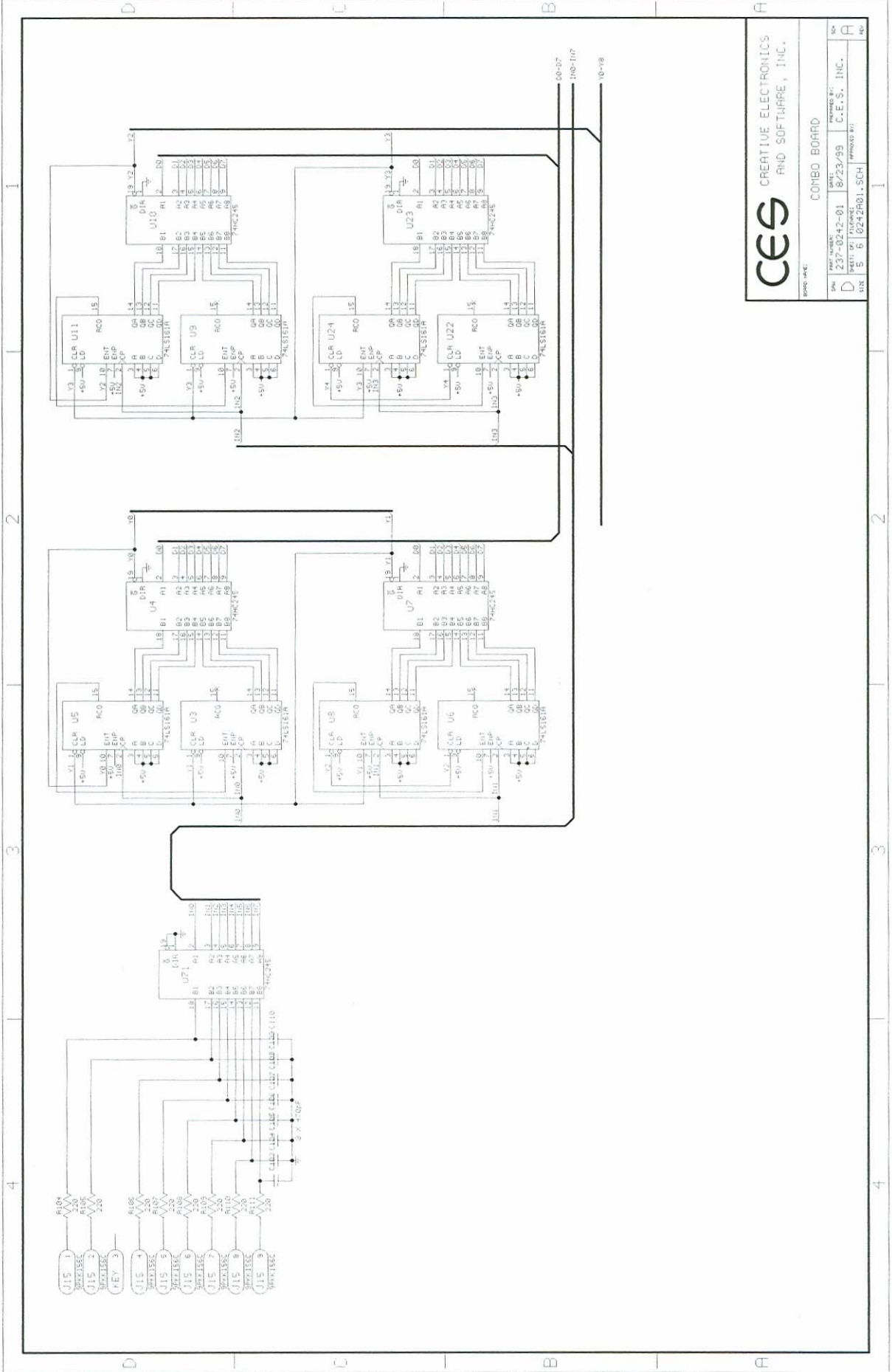
ELECTRICAL PARTS

1008	BULB #555
2005	BULB #906
FP2007	SPEAKER
SR2002A	TRANSFORMER 2-51-9961
SR2002B	TRANSFORMER 2-51-9962
SR2006	WIN LIGHT
2892	POWER MODULE
SR2008	MOTOR (EP 4994)
SR2035	OPTO ENCODER BOARD
SR2030X	PCBA COMBO 237-0242
SR2032X	PCBA (LUNAR DISPLAY)
SR2033X	PCBA (PLASMA CONTROLLER)
SR2034X	PCBA (1-4 MEG CPU)
SR2036X	PCBA (PLASMA DISPLAY)
PC2024	12 VOLT COUNTER
SR2054X	MAIN CABINET HARNESS
8238	BULB (MARQUEE)
8239	BULB SOCKET (MARQUEE)
8215	BLACK GIMBAL RING (TRACK LIGHT)
8216	BULB 50W
8249	BULB 35W
8237	BALLAST (MARQUEE)
8212	LED RED FLASHING
SR2011	MOTOR STEPPER

NOTES:
 - ALL CONNECTIONS SHOULD BE MADE IN ACCORDANCE WITH THE
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CONTR. BOARD
 8/23/99
 227-0012-01
 C.E.S., INC.
 53-2501, 5CM



CES CREATIVE ELECTRONICS AND SOFTWARE, INC.

BOARD NAME: COMBO BOARD

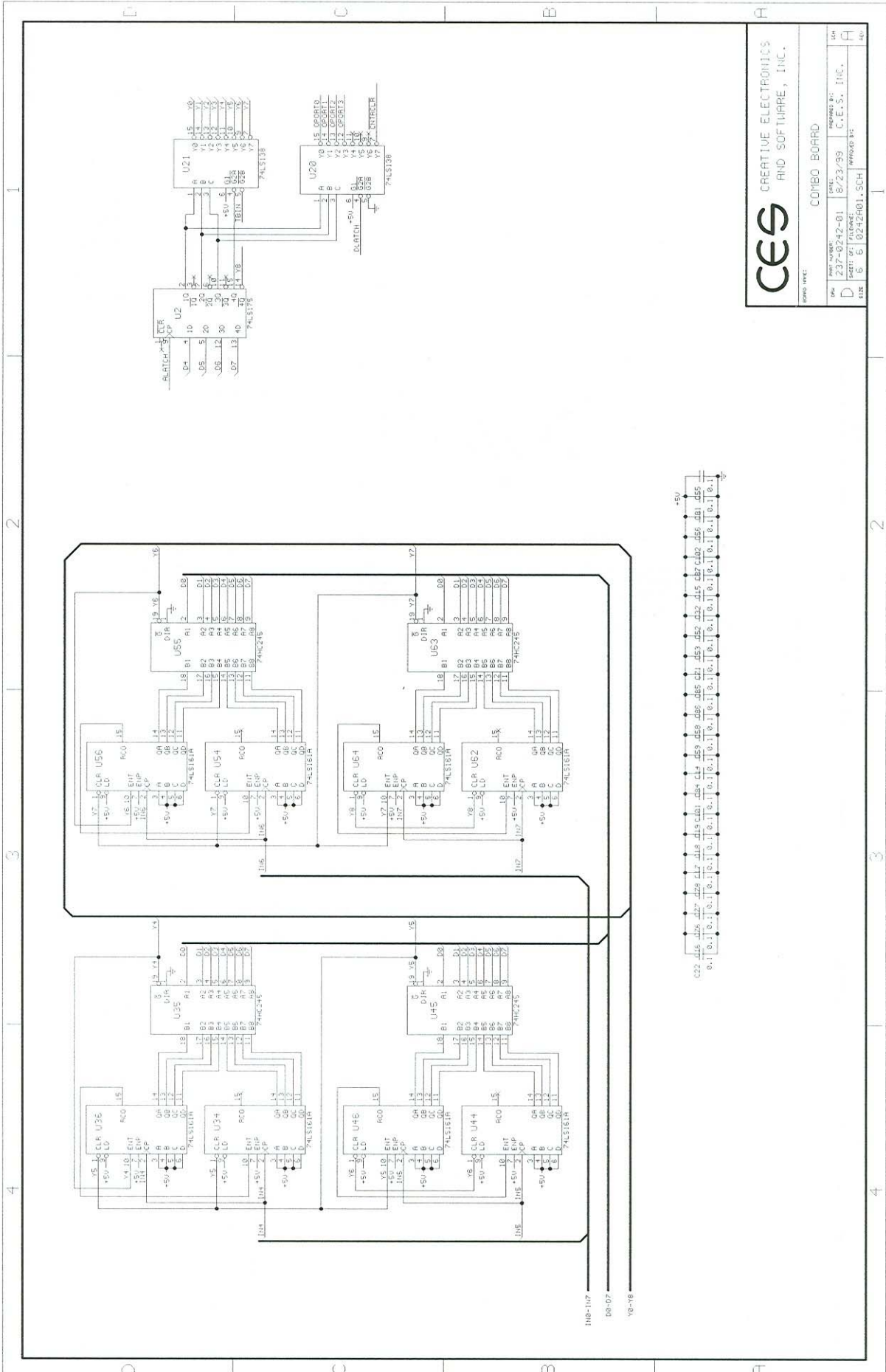
REV	DATE	BY	APP'D BY
D	2/27/82	2/23/89	C.E.S., INC.
SHEET NO. OF TOTAL SHEETS		APPROVED BY:	
5 OF 6		0242R01.SCH	

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D C B A

4 2 3 4

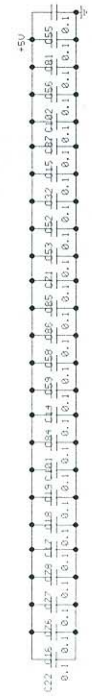
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10-118



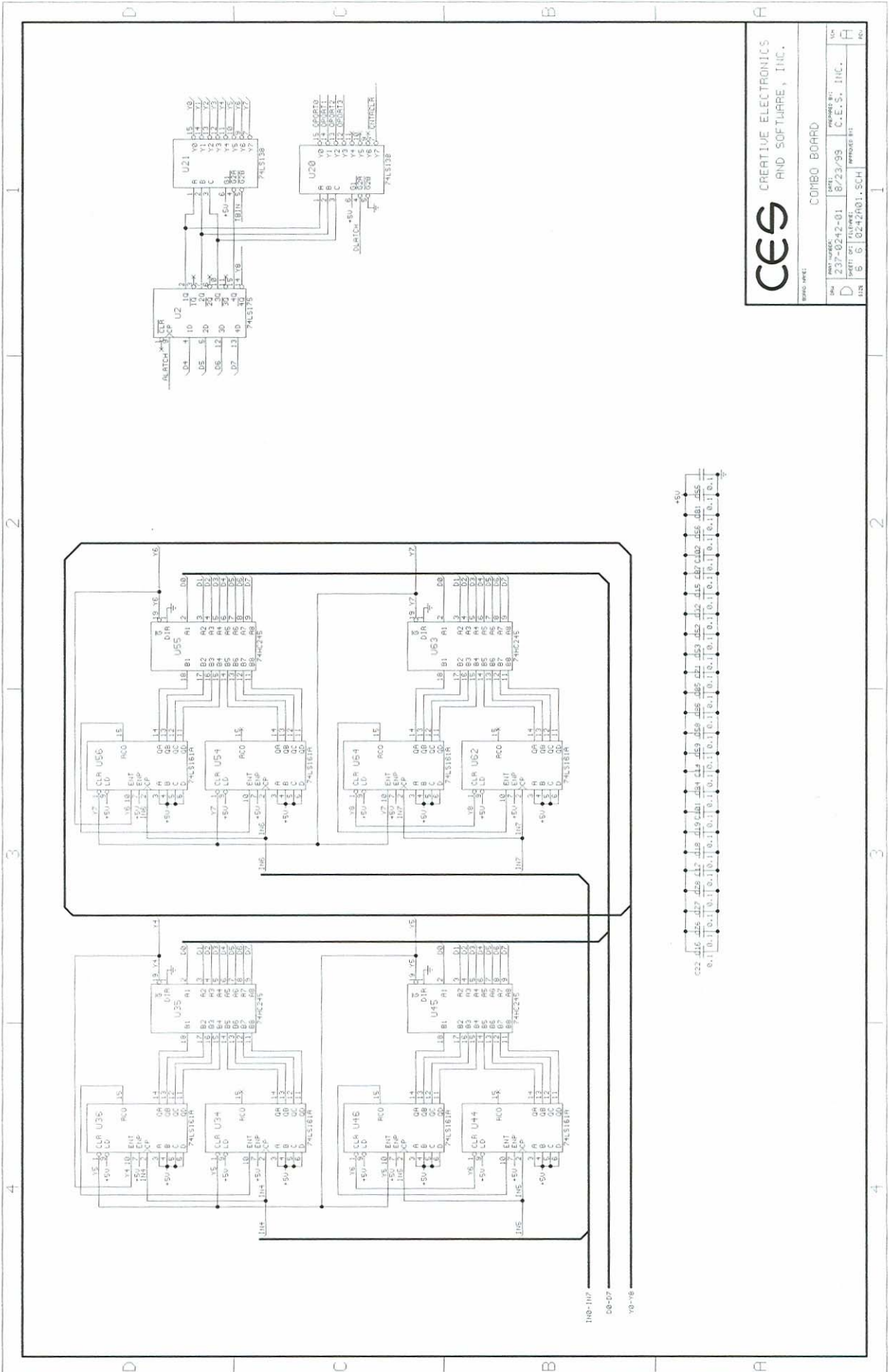
CES CREATIVE ELECTRONICS AND SOFTWARE, INC.

BOARD TYPE: COMBO BOARD

DATE:	8/23/99
DESIGNED BY:	C.E.S., INC.
CHECKED BY:	
DATE:	
DESIGNED BY:	
CHECKED BY:	



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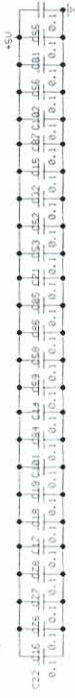


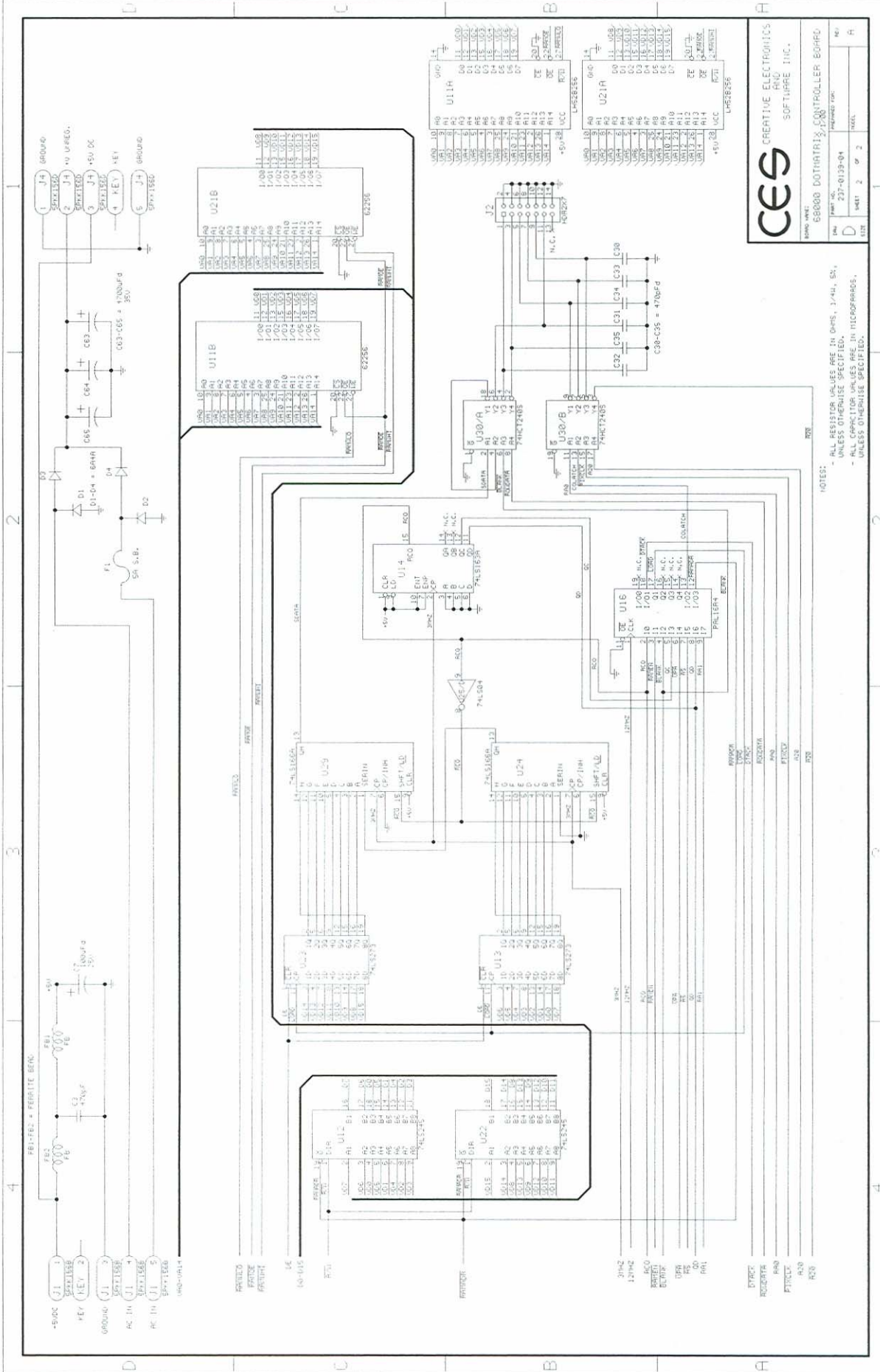
CES

CREATIVE ELECTRONICS
AND SOFTWARE, INC.

BOARD NAME			
REV	DATE	REVISED BY	BY
D	2/27/82	R/23/89	C.E.S.
PART NUMBER		REVISED BY	
105 6 0242A01.SCH		R/23/89	

COMBO BOARD

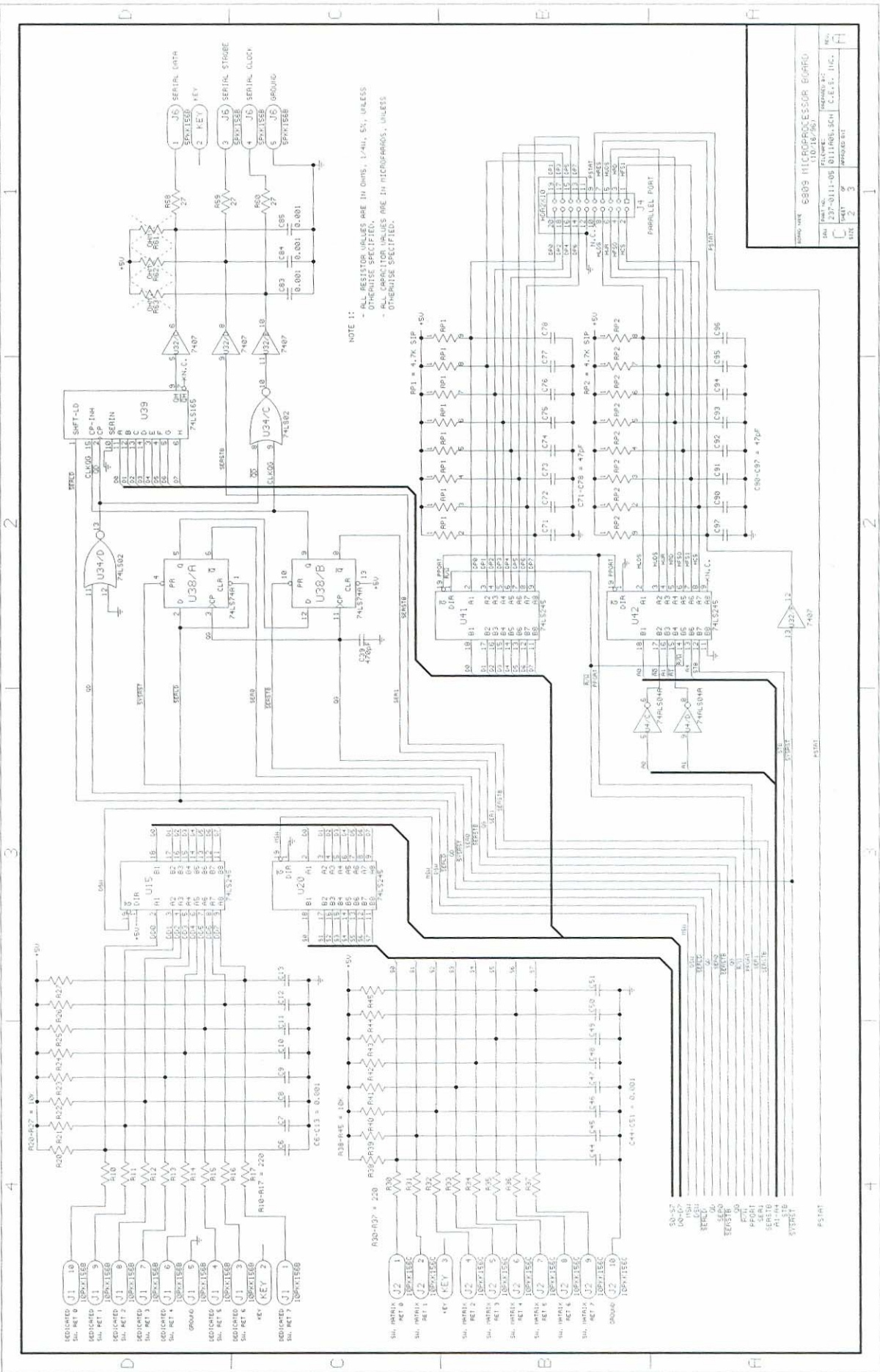




CES CREATIVE ELECTRONICS
SOFTWARE INC.

BOARD WKT: 68000 DOT MATRIX CONTROLLER BOARD
PART NO: 237-0139-04
REV: 1
SHEET 2 OF 2

NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%,
UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS,
UNLESS OTHERWISE SPECIFIED.



REVISED DATE		8803 MICROPROCESSOR BOARD	
DATE	BY	REVISED DATE	BY
237-011-05	0111AR6, SKH	10/18/76	0111AR6, SKH
DESIGNED BY	0111AR6, SKH	DESIGNED BY	0111AR6, SKH
CHECKED BY	0111AR6, SKH	CHECKED BY	0111AR6, SKH
DATE	BY	DATE	BY
11/18/76	0111AR6, SKH	11/18/76	0111AR6, SKH

NOTE 1:

- ALL RESISTOR VALUES ARE IN OHMS, 1/4W, 5%, UNLESS OTHERWISE SPECIFIED.
- ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.

2

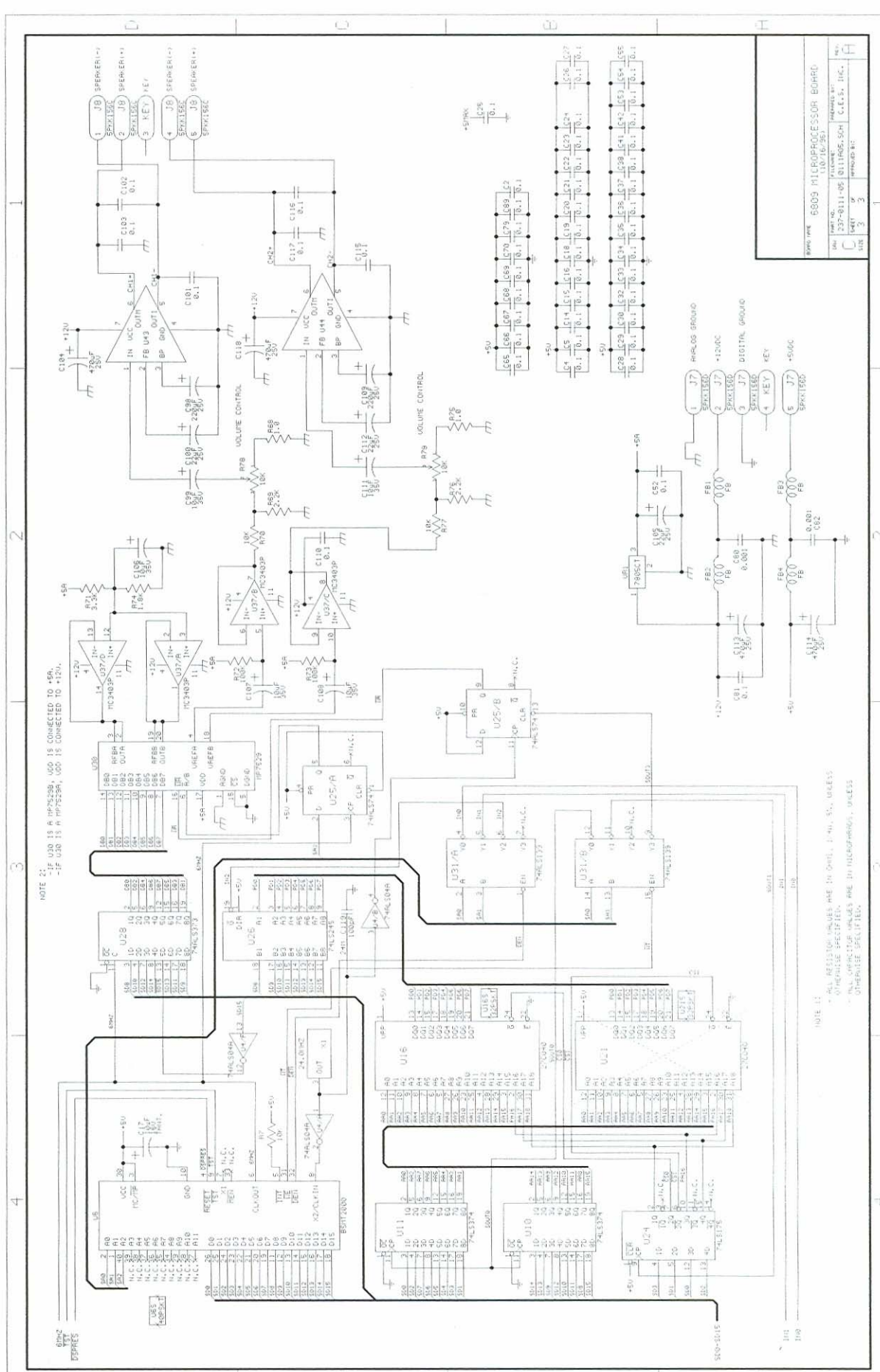
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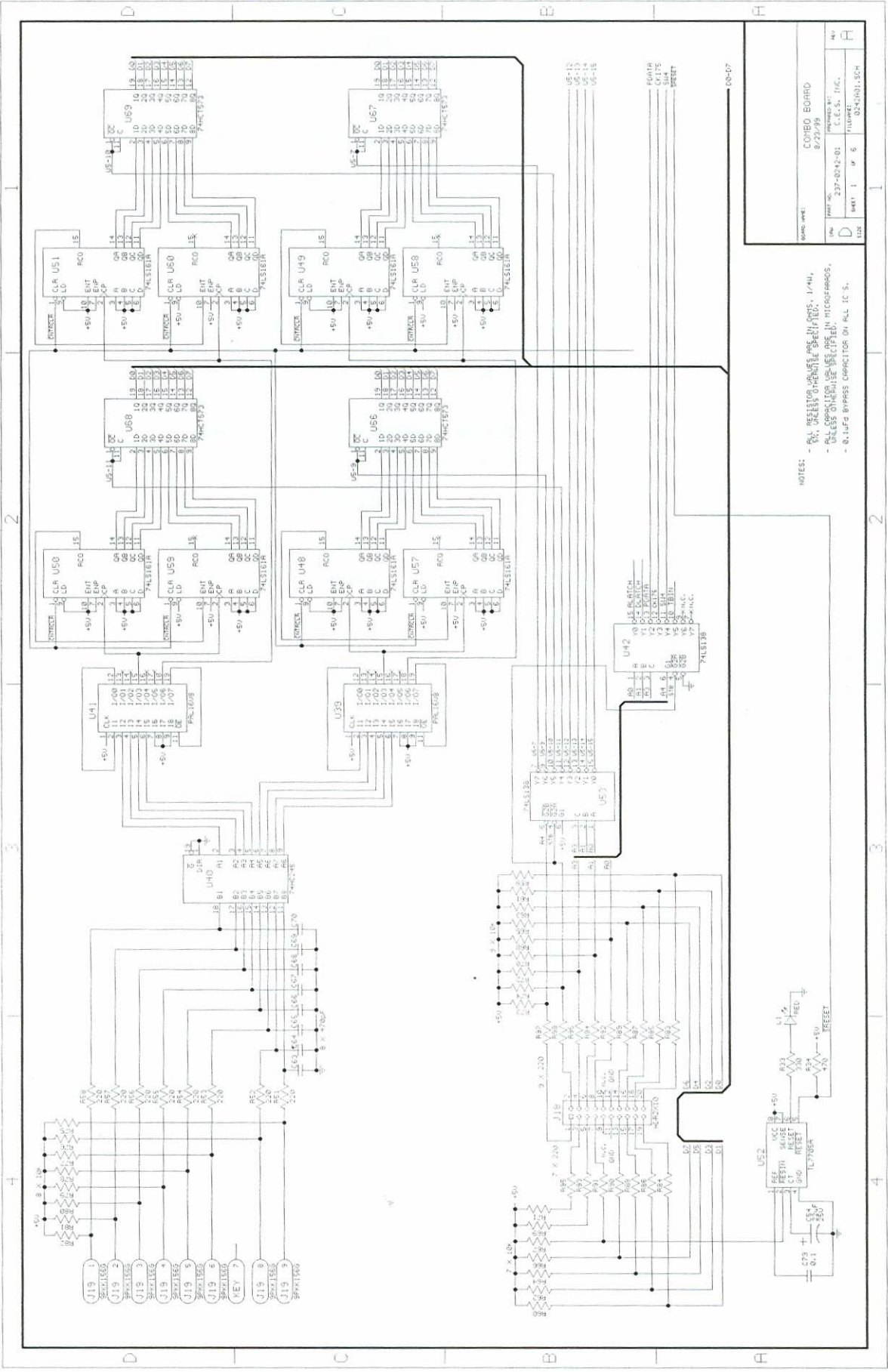
4



NOTE 2:
 -IF U30 IS A MPF228, U30 IS CONNECTED TO +5V.
 -IF U30 IS A MPF228A, U30 IS CONNECTED TO +12V.

NOTE 1:
 *ALL RESISTOR VALUES ARE IN OHMS, UNLESS OTHERWISE SPECIFIED.
 -ALL OPERATOR VALUES ARE IN MICROGRAMS, UNLESS OTHERWISE SPECIFIED.

BOARD TYPE	6809 MICROPROCESSOR BOARD
REV. NO.	1.0
DATE	12/27/81
DESIGNED BY	G.E.S., INC.
CHECKED BY	
APPROVED BY	
SHEET	3
OF	3



BOARD NAME:		COMBO BOARD	
DATE:	REV:	DESIGNED BY:	REV:
9/23/79		C.E.S., INC.	
SHEET 1 OF 6		FILENAME: 0243031.SCH	

- NOTES:
- ALL RESISTOR VALUES ARE IN OHMS, 1/4W.
 - ALL CAPACITOR VALUES ARE IN MICROFARADS.
 - 0.1µF BYPASS CAPACITORS ON ALL IC'S.

U42
 A 15 8 RICH
 B 16 24 BENCH
 C 17 12 PULL
 D 18 12 PULL
 E 19 12 PULL
 F 20 12 PULL
 G 21 12 PULL
 H 22 12 PULL
 I 23 12 PULL
 J 24 12 PULL
 K 25 12 PULL
 L 26 12 PULL
 M 27 12 PULL
 N 28 12 PULL
 O 29 12 PULL
 P 30 12 PULL
 Q 31 12 PULL
 R 32 12 PULL
 S 33 12 PULL
 T 34 12 PULL
 U 35 12 PULL
 V 36 12 PULL
 W 37 12 PULL
 X 38 12 PULL
 Y 39 12 PULL
 Z 40 12 PULL
 AA 41 12 PULL
 AB 42 12 PULL
 AC 43 12 PULL
 AD 44 12 PULL
 AE 45 12 PULL
 AF 46 12 PULL
 AG 47 12 PULL
 AH 48 12 PULL
 AI 49 12 PULL
 AJ 50 12 PULL
 AK 51 12 PULL
 AL 52 12 PULL
 AM 53 12 PULL
 AN 54 12 PULL
 AO 55 12 PULL
 AP 56 12 PULL
 AQ 57 12 PULL
 AR 58 12 PULL
 AS 59 12 PULL
 AT 60 12 PULL
 AU 61 12 PULL
 AV 62 12 PULL
 AW 63 12 PULL
 AX 64 12 PULL
 AY 65 12 PULL
 AZ 66 12 PULL
 BA 67 12 PULL
 BB 68 12 PULL
 BC 69 12 PULL
 BD 70 12 PULL
 BE 71 12 PULL
 BF 72 12 PULL
 BG 73 12 PULL
 BH 74 12 PULL
 BI 75 12 PULL
 BJ 76 12 PULL
 BK 77 12 PULL
 BL 78 12 PULL
 BM 79 12 PULL
 BN 80 12 PULL
 BO 81 12 PULL
 BP 82 12 PULL
 BQ 83 12 PULL
 BR 84 12 PULL
 BS 85 12 PULL
 BT 86 12 PULL
 BU 87 12 PULL
 BV 88 12 PULL
 BW 89 12 PULL
 BX 90 12 PULL
 BY 91 12 PULL
 BZ 92 12 PULL
 CA 93 12 PULL
 CB 94 12 PULL
 CC 95 12 PULL
 CD 96 12 PULL
 CE 97 12 PULL
 CF 98 12 PULL
 CG 99 12 PULL
 CH 100 12 PULL
 CI 101 12 PULL
 CJ 102 12 PULL
 CK 103 12 PULL
 CL 104 12 PULL
 CM 105 12 PULL
 CN 106 12 PULL
 CO 107 12 PULL
 CP 108 12 PULL
 CQ 109 12 PULL
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 DN 132 12 PULL
 DO 133 12 PULL
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 DQ 135 12 PULL
 DR 136 12 PULL
 DS 137 12 PULL
 DT 138 12 PULL
 DU 139 12 PULL
 DV 140 12 PULL
 DW 141 12 PULL
 DX 142 12 PULL
 DY 143 12 PULL
 DZ 144 12 PULL
 EA 145 12 PULL
 EB 146 12 PULL
 EC 147 12 PULL
 ED 148 12 PULL
 EE 149 12 PULL
 EF 150 12 PULL
 EG 151 12 PULL
 EH 152 12 PULL
 EI 153 12 PULL
 EJ 154 12 PULL
 EK 155 12 PULL
 EL 156 12 PULL
 EM 157 12 PULL
 EN 158 12 PULL
 EO 159 12 PULL
 EP 160 12 PULL
 EQ 161 12 PULL
 ER 162 12 PULL
 ES 163 12 PULL
 ET 164 12 PULL
 EU 165 12 PULL
 EV 166 12 PULL
 EW 167 12 PULL
 EX 168 12 PULL
 EY 169 12 PULL
 EZ 170 12 PULL
 FA 171 12 PULL
 FB 172 12 PULL
 FC 173 12 PULL
 FD 174 12 PULL
 FE 175 12 PULL
 FF 176 12 PULL
 FG 177 12 PULL
 FH 178 12 PULL
 FI 179 12 PULL
 FJ 180 12 PULL
 FK 181 12 PULL
 FL 182 12 PULL
 FM 183 12 PULL
 FN 184 12 PULL
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 FP 186 12 PULL
 FQ 187 12 PULL
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 FV 192 12 PULL
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 GT 216 12 PULL
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 GW 219 12 PULL
 GX 220 12 PULL
 GY 221 12 PULL
 GZ 222 12 PULL
 HA 223 12 PULL
 HB 224 12 PULL
 HC 225 12 PULL
 HD 226 12 PULL
 HE 227 12 PULL
 HF 228 12 PULL
 HG 229 12 PULL
 HH 230 12 PULL
 HI 231 12 PULL
 HJ 232 12 PULL
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 HW 244 12 PULL
 HX 245 12 PULL
 HY 246 12 PULL
 HZ 247 12 PULL
 IA 248 12 PULL
 IB 249 12 PULL
 IC 250 12 PULL
 ID 251 12 PULL
 IE 252 12 PULL
 IF 253 12 PULL
 IG 254 12 PULL
 IH 255 12 PULL
 II 256 12 PULL
 IJ 257 12 PULL
 IK 258 12 PULL
 IL 259 12 PULL
 IM 260 12 PULL
 IN 261 12 PULL
 IO 262 12 PULL
 IP 263 12 PULL
 IQ 264 12 PULL
 IR 265 12 PULL
 IS 266 12 PULL
 IT 267 12 PULL
 IU 268 12 PULL
 IV 269 12 PULL
 IW 270 12 PULL
 IX 271 12 PULL
 IY 272 12 PULL
 IZ 273 12 PULL
 JA 274 12 PULL
 JB 275 12 PULL
 JC 276 12 PULL
 JD 277 12 PULL
 JE 278 12 PULL
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 JM 286 12 PULL
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 JO 288 12 PULL
 JP 289 12 PULL
 JQ 290 12 PULL
 JR 291 12 PULL
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