FCC WARNING

This equipment generates, uses, and can radiate radio frequency energy and if not installed in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a class "A" computing device pursuant to subpart "J" of part 15 of the FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be responsible to correct the interference.

NON-LELAND REPLACEMENT PARTS NOTICE

The Leland Corporation recommends the use of only Leland Corp. parts when replacing any malfunctioning component or assembly in your video amusement machine. For safety and reliability, the Leland Corp. does not recommend or authorize any substitution parts or modifications of Leland Corp. equipment. Such alterations may adversely affect game play or cause serious injury, and will void your warranty. Unauthorized parts, modifications and non-Leland Corp. game conversion parts may also void FCC compliance.

OPTIMIZE YOUR PROFITS

Our research shows that a two minute quarter both satisfies the player and keeps the quarters flowing. This game is equipped with a very sophisticated diagnostics program. Refer to your Diagnostics Manual to set your game for maximum appeal and profit.

MACHINE INFORMATION: PURCHASE DATE: _____/_____/_____

DISTRIBUTOR: ________________________________

SERIAL NUMBERS:

PROGRAM (See lower left corner of attract screen): ____________________

MAIN (Lower) BOARD: _______________________

SUB (Upper) BOARD: _______________________

CABINET: _________________________________

Written and illustrated by: D.P.SABLE
# "John Elway's Team Quarterback"™
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<td></td>
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<tr>
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<td></td>
</tr>
</tbody>
</table>
THE LELAND CORPORATION WARRANTY

The Leland Corporation warrants that whenever the video display (monitor) and/or the power supply and/or the printed circuit boards and/or all parts contained therein are furnished with its product, that such part or parts will be free from all defects in materials and workmanship for a period of sixty (60) days from the date of shipment. The Leland Corporation's warranty of above parts is subject to the normal use and service of its product. No other products or parts thereof are warranted. If the products described in this manual fail to conform to this warranty, The Leland Corporation's sole liability shall be, as mutually agreed, to replace or repair such products which are returned to The Leland Corporation during stated warranty period, provided:

A. The Leland Corporation is notified in writing upon discovery by the buyer that said products are defective.
B. The defective product or part is returned pre-paid to The Leland Corporation's plant with a Leland Corp. Returned Merchandise Authorization (RMA) number clearly visible on the outside of the package.
C. The Leland Corporation's examination of the returned product(s) or part(s) determines, to our satisfaction, that the alleged defects existed and were not caused by accident, misuse, neglect, alteration, improper repair, installation, or testing.

The Leland Corporation is not responsible for bent pins on ICs not installed by our employees. In no event shall The Leland Corporation be liable for loss of profits, loss of use, or incidental or consequential damages.

EXCEPT FOR THIS WARRANTY, THE LELAND CORPORATION DISCLAIMS ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE LELAND CORPORATION'S BEHALF, AND IT NEITHER ASSUMES NOR AUTHORIZES ANY OTHER PERSON TO ASSUME FOR THE LELAND CORPORATION ANY OTHER LIABILITIES IN CONNECTION WITH THE SALE OF PRODUCTS MANUFACTURED BY THE LELAND CORPORATION.
GAME CONCEPT

"John Elway's TEAM QUARTERBACK" adds the advantage of "team" play to the hard-hitting football action of Leland's "Quarterback".

The action gets faster and the excitement more intense as the third and fourth players enter the arena. Six additional offensive plays and six added defensive alignments provide a greater variety of play calling options. These options are multiplied by the ability of the quarterback to "pitch and go" or the linebackers to "red dog".

The offensive arsenal now includes not only the run and the pass, but also the pitch, the option, and the "flea flikker". The halfback can choose speed (go after that long bomb), strength (pass block or open a hole in the line), or "hands" (receive a pitch or come down with the ball in a crowd).

Defensive strategy has expanded to include the all out blitz or double coverage on an especially good receiver. One linebacker selects the defensive alignment and the other may choose to be strong (ward off blockers and get through the line) or fast (cover the receiver).

As in the real thing, the wind is always a factor in the kicking game and the clock comes into play near the end of each half.

Like the original "Quarterback", Team Quarterback keeps track of over 15 categories of game play statistics for each player (completed pass percentage, rushing average, etc.). The top 50 players' names are listed on the high score screen along with their salaries. The player's salary is a reflection of his/her personal statistics and players compete for the top salary.

Unlike the original, Team Quarterback lends itself readily to tournament competition. Because of the variety and depth of the game, no two games are alike and no two teams have exactly the same strategy.
CABINET ASSEMBLY

MOUNTING PLATE

CABINET

CARRIAGE BOLT

BRACKET

NYLOC HEX NUT

5/16" WASHER

CONTROL PANEL

CABINET

NYLOC HEX NUT

PIVOT TUBE

5/16 HEX HEAD BOLT

1/2" WASHER

5/16" WASHER

NOTE: PLUG IN LAMP AND SPEAKERS BEFORE SECURING TOP BOX
THE TROUBLESHOOTIST'S SECTION

A NOTE ABOUT POWER

DC POWER
The computer board in this machine operates most efficiently when the power supply is providing a steady +5.15VDC (+0.1VDC). When checking DC power always put your leads across the power inputs on the main board and be sure that the +5 volt supply is between +5.15VDC and +5.20VDC. Also be sure that there is less than .005 volts AC riding on the +5 volt line. If you do find AC on the DC line, suspect the filter capacitor or the rectifier on the power supply. Low voltage or AC on the DC lines is the main cause of the following problems:

* "Garbage" on the screen.
* Computer "Freeze".
* Coin or Coin Meter malfunction.
* A variety of seemingly unrelated problems.

AC POWER
Connect this game only to a grounded three-wire outlet which provides between 108 and 132 volts AC. If you have only a two-wire outlet we recommend that you hire a licensed electrician to install a grounded outlet. The possibility exists that players may receive an electrical shock if this system is not properly grounded.

OUR SERVICE DEPARTMENT

For parts, service, and technical information first contact your authorized Leland Corporation distributor. For additional technical aid feel free to contact the Leland Corp. Customer Service Department at (619)562-7000 Monday through Friday from 8:00 AM to 5:00 PM Pacific Standard Time.

To provide you with the quickest possible response to your questions, please have the following information ready when you call:

1. Your game name and serial number.

2. Any reference materials and a list of observations.
DON'T TOUCH THAT SWITCH !!!

Before you reach for the power switch take a good look at the game. Open it up and check for loose wires, bad connections, or burned spots. Look for spilled drinks and signs of vandalism. Those quick checks will save you a lot of time.

After you've eliminated the obvious, start digging.

Never take anything for granted. This is easy to do if you are in a hurry --- You'll kick yourself every time for missing a broken wire or loose connector after spending hours looking in the wrong place - I have.
GENERAL SHOOTING

GARBAGE
Check: Power supply voltages.
Closed switches on the control panel or coin door.
Loose connections, loose IC's, or bent pins on the board.

NO SOUND
Check: Loose connections.
Low +12VDC supply.
Bad speaker or volume pot.

NO CONTROL OR FUNCTION SWITCHES (Includes coin switches)
Check: All Connections. (Especially ground)
Wire continuity between board and switch.
Closed or broken switches.
Input buffers. (See BUFFERS.)

MONITOR SHOOTING

NO PICTURE
Check: Power connection.
Monitor fuses.
Video connections. (Check continuity.)

SYNC PROBLEMS
Check: Sync and ground connections. (See WIRING DIAGRAM)
Sync polarity.
Video output buffer.

BUFFERS

An input or output (I/O) buffer is the component that connects the actual game computer to the outside world and, as such, is the part most likely to fail. Check the following list when attempting to isolate possible problems. First and second choices are given. (M=Main Board, I/O= Multi-Function Board.)

NOTE: ANY UNAUTHORIZED BOARD REPAIR OR ATTEMPTED REPAIR WILL VOID YOUR WARRANTY.
<table>
<thead>
<tr>
<th>PROBLEM AREA</th>
<th>COMPONENT</th>
<th>PCB LOCATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>VIDEO (Colors or Sync)</td>
<td>1st 7405 or 74505</td>
<td>M-U24</td>
</tr>
<tr>
<td></td>
<td>2nd 74LS374</td>
<td>M-U37</td>
</tr>
<tr>
<td>PLAYER CONTROLS and/or COIN CONTROLS</td>
<td>1st 150 ohm resistor pack.</td>
<td>See Wiring Diagram &amp;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Schematics for specific</td>
</tr>
<tr>
<td></td>
<td></td>
<td>switch.</td>
</tr>
<tr>
<td>AUDIO (Bad channel)</td>
<td>1st 7524</td>
<td>I/O-U35(ch5) through U40</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(ch0)</td>
</tr>
<tr>
<td></td>
<td>2nd 7533</td>
<td>I/O-U31</td>
</tr>
</tbody>
</table>

**ABOUT MECHANICAL COIN COUNTERS**

We have **not** installed a mechanical coin counter on this game for two reasons:

1. The bookkeeping program is extremely accurate and includes not only number of coins dropped and dollars earned but also the number of tests and coins in a given period. (See BOOKKEEPING in the DIAGNOSTICS section.)
2. These mechanical coin counters produce an inductive "kick" that will damage components on the circuit board. Checkerboard video is the most common problem. If this is, in fact, your problem - take a look at the "NMI not" signal on the master Z80 (pin 17). If a low output is observed, try replacing U114 (74LS08) and/or U119 (74LS157).

**NOTE:** If you must install a mechanical coin counter, please use the following diagram. (Diodes may be IN4001 to IN4004.)

![Diagram](image-url)
MAIN WIRING DIAGRAM (MAIN BOARD)

TO MONITOR

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>GRAY</td>
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</tr>
<tr>
<td>WHITE</td>
<td></td>
</tr>
<tr>
<td>BLACK</td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td></td>
</tr>
<tr>
<td>GREEN</td>
<td></td>
</tr>
<tr>
<td>BLUE</td>
<td></td>
</tr>
</tbody>
</table>

HORIZONTAL SYNC
VERTICLE SYNC
GROUND
BLUE
GREEN
RED

COIN DOOR VOL. CONTROL

WHITE
GRAY

NOTE: SYSTEM PIN-OUT
OPPOSITE OF PIN-OUT
MOLDED IN HARNESS
CONNECTORS.

TOP (MULTI-FUNCTION) PCB

<table>
<thead>
<tr>
<th>1</th>
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<tbody>
<tr>
<td>RED</td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td></td>
</tr>
<tr>
<td>RED</td>
<td></td>
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</table>

+5VDC
+5VDC
+5VDC

<table>
<thead>
<tr>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>GROUND</td>
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<td>GROUND</td>
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<tr>
<td>GROUND</td>
</tr>
<tr>
<td>GROUND</td>
</tr>
<tr>
<td>NOT USED</td>
</tr>
<tr>
<td>+12VDC</td>
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J7

<table>
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<th>10</th>
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</thead>
<tbody>
<tr>
<td>N/U</td>
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<tr>
<td>GRAY</td>
</tr>
<tr>
<td>ORANGE</td>
</tr>
<tr>
<td>YELLOW</td>
</tr>
<tr>
<td>BROWN</td>
</tr>
<tr>
<td>BLUE</td>
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</tbody>
</table>

(+5VDC)
GROUND (COIN HARNESS)
LEFT QB START (TO P51)
COIN MECH 2
SERVICE (INSIDE COIN DOOR)
LEFT HB START (TO P51)
COIN MECH 1

P3

<table>
<thead>
<tr>
<th>10</th>
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<tbody>
<tr>
<td>1</td>
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</table>

P4
MALE MOLEX CONNECTORS
TYPICAL PIN-OUT

SEE MAIN BOARD LAYOUT
FOR BOARD CONNECTOR
LOCATIONS.
NOT USED

SEE P7 ON MAIN BOARD WIRING DIAGRAM

FROM SWITCHING POWER SUPPLY

TYPICAL ANALOG SPRINGSTICK ASSY. (BOTTOM VIEW)
CABINET WIRING DIAGRAM

AC POWER
108 - 132 VAC
2.5A MAX

DC POWER
+5VDC @ 11A
+12VDC @ 2A
-5VDC @ 1A
BOOKKEEPING AND DIAGNOSTICS
SECTION

To enter the Bookkeeping and Diagnostics Section:

* Press and hold the left Quarterback Join button.
* Press the test button. (Located inside the front door.)
* Release both buttons.

Upon entering the program the Main Menu will appear. Follow the instructions on this menu to select and enter the desired function.

MAIN MENU

LEFT QB BACK JOIN - SELECTS FUNCTION
LEFT HB BACK JOIN - ENTERS FUNCTION

BOOKKEEPING
DIAGNOSTICS
GAME SET-UP
GAME STATISTICS

RESTART GAME
CANCEL CHANGES AND RESTART GAME

NOTE THE PROGRAM SERIAL NUMBER.

SN = XXXXXXXXX
**BOOKKEEPING**

The Bookkeeping function is your game accountant. It records the lifetime earnings of your game and allows you, through the use of resettable "PERIOD" totals to keep track of weekly, monthly, or location earnings.

**NOTE:** The "SET COINS/TOKENS PER DOLLAR" category must be set to the location standard to maintain accurate accounting data. (i.e. 6 COINS/TOKENS PER DOLLAR.)

This function does NOT affect the number of coins per credit. (See "GAME SET-UP" SECTION FOR THIS INFORMATION.)

**DIAGNOSTICS MENU**

Invoking the DIAGNOSTICS function will open a very complete and easy to use set of tests designed to take the grumbling and hair pulling out of adjusting, troubleshooting, and servicing your machine.

You will notice that the diagnostics section has a sub-menu of its own.
PRESS THE FOLLOWING BUTTONS:
- QUARTERBACK 1 JOIN
- HALFBACK 1 JOIN
- QUARTERBACK 2 JOIN
- HALFBACK 2 JOIN
- COIN MECH 1
- COIN MECH 2
- SERVICE SWITCH
- QUARTERBACK 1 ACTION
- HALFBACK 1 ACTION
- QUARTERBACK 2 ACTION
- HALFBACK 2 ACTION
- QUARTERBACK 1 JOYSTICK
  - UP
  - LEFT
  - DOWN
- HALFBACK 1 JOYSTICK
  - UP
  - LEFT
  - DOWN
- QUARTERBACK 2 JOYSTICK
  - UP
  - LEFT
  - DOWN
- HALFBACK 2 JOYSTICK
  - UP
  - LEFT
  - DOWN
- LEFT SPRINGSTICK HORIZONTAL
- OTH
- LEFT SPRINGSTICK VERTICAL
- OTH
- RIGHT SPRINGSTICK HORIZONTAL
- OTH
- RIGHT SPRINGSTICK VERTICAL
- OTH

PRESS HALFBACK 1 JOIN BUTTON OR SERVICE BUTTON TWICE TO EXIT.

BUTTONS AND CONTROLS TEST

This test provides a quick examination of the state of all buttons and controls as well as an easy range setting format for the analog inputs (springsticks).

Minimum and maximum settings are shown in italics on the screen to the left. To reset the pots, break melt points or loosen screws (depending on joystick type), align each pot using this screen, and reseal the pot to the mounting assembly with a hot soldering pencil or retighten screws.

PROCESSOR MEMORY TEST

The Erasable Programmable Read Only Memory (EPROM) and Random Access Memory (RAM) IC's are storage areas for the actual game guidelines and are accessed by the Microprocessor section. The percentage of field failures in these areas is very low but when problems do arise they can be a bear to track down. This test samples the action of the processor section and notes any incongruities.

WARNING: Read your warranty before attempting any printed circuit board repairs.
VIDEO ALIGNMENT SCREENS

The picture on the screen is the most important and most neglected part of the game. It is a proven fact that a dirty, misaligned, or unfocused screen will cause a player to walk away even if the game is his/her favorite piece. A little elbow grease and a couple of minutes taken to go through these adjustment screens will make a big difference in the cashbox. Use all three screens to adjust your picture and then go to the BACKGROUND SCREENS section to make the game look "rich".

THE CROSS-HATCH SCREEN Used to adjust focus, alignment, size (note x's in corners) and contrast. Wavy horizontal lines (see inset) denote bad contrast. The background should be black and the lines solid white.

RED AND GREEN TEST

RED AND GREEN SCREEN ↑ Adjust screen control so green color bar shows faintly on the 1 level and use red cutoff control to adjust red to the same intensity.

BLUE AND MISC. SCREEN Use blue cutoff control to make gray color bar look gray. Adjust red and green drive controls slightly, if necessary to make the white color bar white.
BACKGROUND SCREENS

In this test the background screens are shown while the EPROMS which contain the information for these screens are displayed at the top of the screen. The test is not only helpful when looking for those “glitches” one sometimes encounters but may also be viewed as a visual test of the colors and picture clarity after the VIDEO ALIGNMENT test has been completed.

AUDIO SUBSYSTEMS TEST

The sounds are the second most important feature of any game and in a game like "TEAM QUARTERBACK" ™ are essential to the feel of the game. The volume of sound is, for the most part, dictated by the location and thus a "given" but the quality of sound is a function of the program. This test will be of help in your quest to find those “odd” sounds or to remedy the lack of certain sounds.

AUDIO SUBSYSTEMS TEST
PRESS LEFT HALFBACK JOIN TO END

AUDIO PROMS OK
AUDIO RAM OK

COMMUNICATIONS TEST PASSES

8 BIT DAC TEST (FADING TONES) COMPLETE (CHANNELS 0 THROUGH 5)
10 BIT DAC TEST (READY!) COMPLETE (CHANNELS 0 THROUGH 5)
DAC INTERACTION TEST (6 TONE PULSES) COMPLETE (CHANNELS 0 THROUGH 5)
MUSIC TEST (CHARGE TUNE)
GAME SET-UP

This section is vital to the condition of your cashbox. When used in conjunction with the BOOKKEEPING section of the diagnostics package, the GAME SET-UP function will keep your game on your list of top earners for many seasons. The coins per credit settings range from 1 coin/1 credit to 20 coins/20 credits. You might even set the two mechs differently, say 1 coin/1credit and 4 coins/5credits. Sometimes a little tinkering pays off. The PLAY TIME PER CREDIT function sets the time in 30 second increments.

GAME STATISTICS

This section is your REPORT CARD. It lets you know how well you've done in setting your game for MAXIMUM EARNING POWER. You will notice that nowhere in this booklet is the word difficulty mentioned. The reason for this is that the game is set up to sense the ability of the player and respond accordingly. The way it works is - the players salary increases as his percentages increase (i.e. passing percentage) and the computer knows it must play harder - simple huh?

GAME STATISTICS

LEFT QBACK JOIN - SELECTS FUNCTION
LEFT HBACK JOIN - ENTERS FUNCTION

<table>
<thead>
<tr>
<th></th>
<th>1PL</th>
<th>2PL</th>
<th>3PL</th>
<th>4PL</th>
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<tbody>
<tr>
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<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<table>
<thead>
<tr>
<th></th>
<th>STARTED</th>
<th>JOINED</th>
<th>CONT'D</th>
<th>COMP'D</th>
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</thead>
<tbody>
<tr>
<td>LEFT QB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>LEFT HB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RIGHT QB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RIGHT HB</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

ERASE HALL OF FAME ON EXIT - NO CLEAR GAME STATISTICS

RETURN TO MAIN MENU