



Owner's Handbook
CX-Series MP Control Console for
Line-Score Baseball
Software Version 4.0.2

Type
LINESCORE5

Options
0C00

Version
CXvF / CX_402_v1.HEX

The above information
should match the label
on the bottom of your
control console.



The purpose of this handbook is to explain how to use and maintain the Electro-Mech MP-Style scoreboard control console for line-score baseball. The explanations and examples are based on the CX-Series console driver hardware loaded with software version 4.0.2. Earlier versions of our hardware and software behave similarly, but not identically in all situations.

Scoreboards supported by this combination of hardware and software include these Electro-Mech models:

1520	1713	1740	1780
1530	1717	1741	1781
1550	1720	1742	1782
1580	1730	1743	1783
1700	1731	1750	MP-150
1710	1732	1751	MP-158
1711	1733	1752	
1712	1737	1753	

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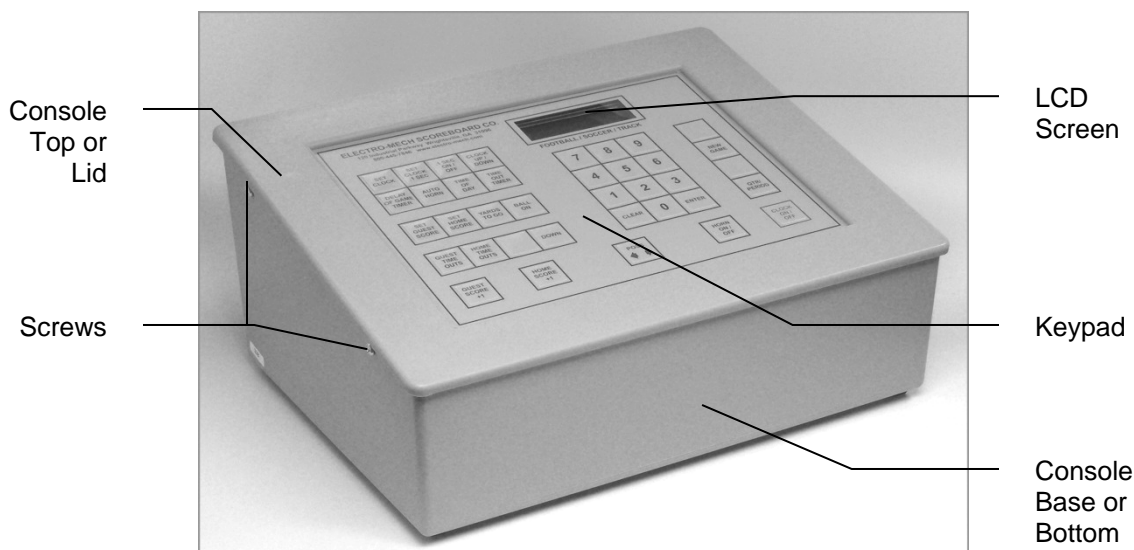
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Seven Ways to Stay Safe and Make Your Console Last Longer

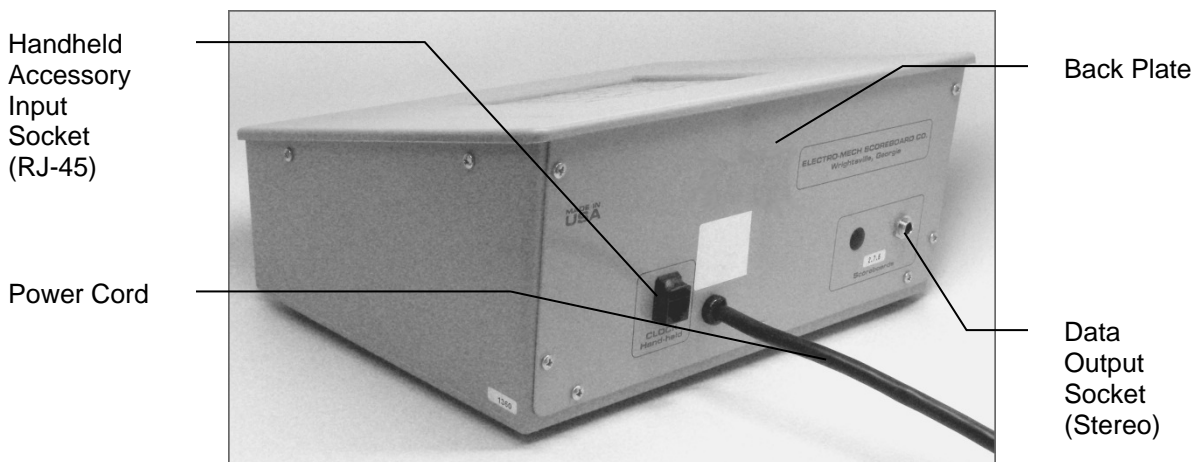
- 1 - Don't remove the grounding pin from the power cord.** It's there to help keep you from getting shocked. If your receptacle only handles two-pronged power cords then your wiring was probably installed sometime before President Hoover left office. It's time to upgrade.
- 2 - Keep your console dry.** We've designed our consoles with outdoor activities in mind, but find some shelter if it is raining. The box is not waterproof. Drinks spilled over the keypad can lead to trouble too.
- 3 - Unplug both the power and data cables when you are not using the console.** Noise over these cables -- either from lightning, glitches in the power line, or some other accident -- can damage the console. Leaving the console connected 24-7 just increases your risk of getting it fried.
- 4 - Store the console in a clean, dry, secure area.** Leave it where somebody can kick it, drop it, pile stuff on top of it, or steal it, and you can expect your console will get kicked, dropped, piled on, and stolen. See also the "keep your console dry" tip above. Neither sprinkler systems nor natural sources of precipitation are beneficial to your control console.
- 5 - If you must open the console box, unplug the power and data cables.** Yes, it is possible to get shocked if you go poking around inside the console.
- 6 - Don't plug something into the console that doesn't belong there.** The stereo connector in the back plate of the console is the same kind used by audio equipment. The RJ-45 connector for the hand-held clock switch is the same type you often see in wired computer networks. Accidentally plugging an audio amplifier or Ethernet access point into your scoreboard control console can cause problems - both to your console and to your audio and networking equipment. A common mistake we see our customers make is to accidentally plug public address equipment into the junction box that leads to the scoreboard. This often fries components in the scoreboard.
- 7 - Check out your equipment before game day.** We're always happy to answer questions, walk you through solutions, repair damage, or send replacement parts. But if your game starts in ten minutes, there is often not much we can do to help you. Make sure your scoreboard is in good working order a few days before the game so that, however unlikely the chance of a problem, there will be time to solve it.

Console Parts and Accessories

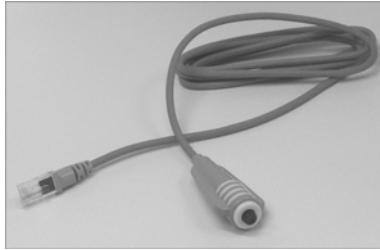
This is a generic set of photos identifying parts of the console and accessories. You should receive a packing slip or other paperwork with your order that tells specifically what parts you are supposed to have. Your configuration may be different.



Console Front View



Console Rear View



Handheld Clock
Start / Stop Switch



Stereo Data Cable



Junction Box (with coil of data cable)

Hooking Up and Powering Up the Console and Accessories

- 1 - Apply power to the scoreboard.
- 2 - Place the console on a sturdy desk or table so that you have a clear view of the game's action as well as the console's keypad and LCD screen. You may hold the console in your lap, if you find it comfortable that way.
- 3 - Attach hand-held devices. You may have an external switch to start and stop the Game Clock on the scoreboard. This corded switch plugs into the RJ-45 style socket on the back of the console.
- 4 - Attach one end of the stereo data cable to the data output connector on the back plate of the console.
- 5 - Attach the other end of the stereo data cable to the junction box. If you have the ScoreLink wireless RF system, refer to the ScoreLink owner's handbook for details.
- 6 - Plug in the console power cable to a standard electrical outlet.



About one out of every few hundred customers asks us the question, "How do you turn the console on and off?" There is no power button on the console. If it's plugged in, it's on. The logic here is that, for most installations, the scoreboard is not used very often. During the down time, the console needs to be disconnected from the scoreboard and from power to prevent damage from line noise and power surges. A power switch would discourage that good habit and provide a false sense of security.

Likewise, the scoreboard should be disconnected from power when not in use. Therefore the console has no means of turning the scoreboard on or off. However, a freshly powered on scoreboard will display no information until it receives a good signal from the control console. So in order to "turn on" the scoreboard display, you have to power up and connect the control console.

Control Console Initialization

Be quick. You only have about three seconds to see the splash screen when your console powers up. It should look like this:

ELECTRO-MECH 402
LINESCORE5 0C00

The splash screen is telling you four things:

- The software author -- ELECTRO-MECH
- The software version -- 402
- The selected scoreboard type -- LINESCORE5
- The selected option jumpers -- C = 2- or 3-Digit Game Clock

This information is important for diagnostics, and you can get back to this splash screen by pressing [NEW GAME] [1] [ENTER] on the keypad. If you see something different on your display, either this is the wrong owner's handbook for you or your console is not configured to the expected standard.

If your console has data from the previous game, you will be prompted to restore that data. Press [1] [ENTER] to reload the old Scores and other information. Press [0] [ENTER] to clear out memory and start over fresh. If you do not respond to this prompt, the console will restore the previous game data automatically after a few seconds.

RESTORE GAME?
1=YES 0=NO <1>

After the splash screen clears, you will see the main scoreboard information screen:

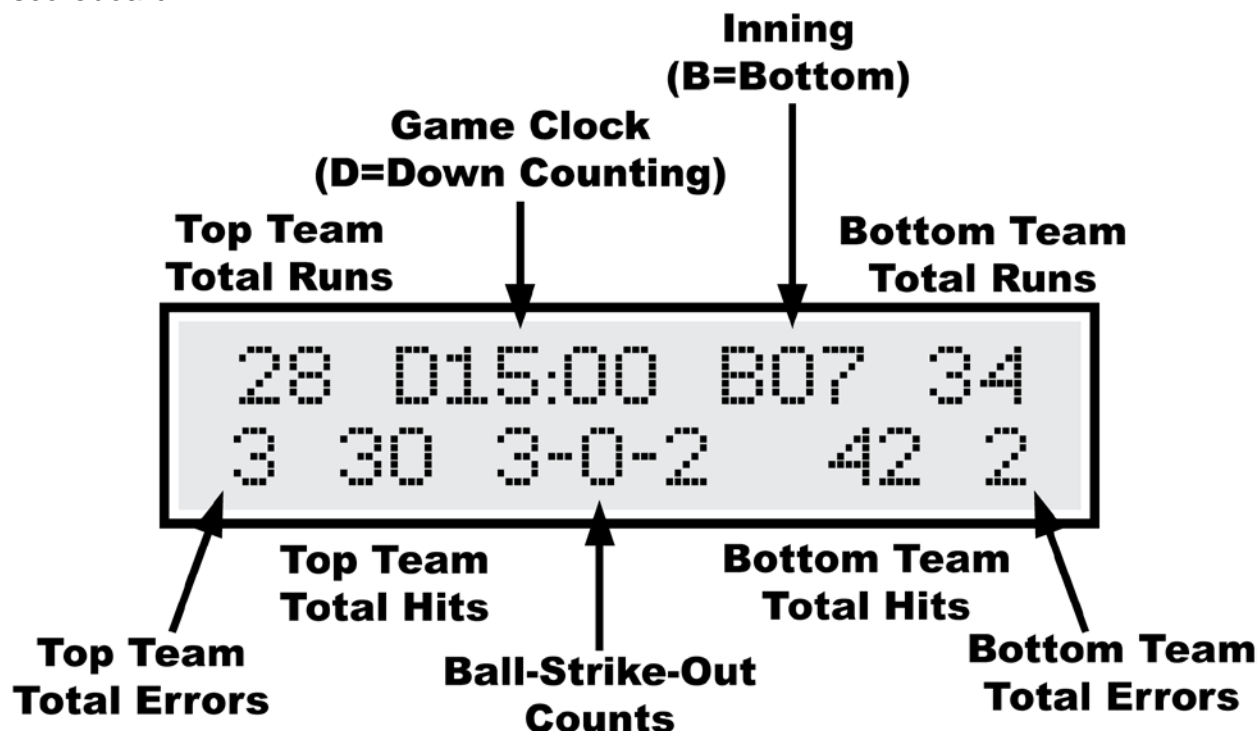
00	D12:00	B-	00
0	00	0-0-0	00 0

The scoreboard will display the following information (some scoreboard models do not displays all the functions listed):

- Top (Guest) Total Runs -- 0
- Top (Guest) Total Hits -- 0
- Top (Guest) Total Errors -- 0
- Top (Guest) Runs-By-Inning -- All Blank
- Bottom (Home) Total Runs -- 0
- Bottom (Home) Total Hits -- 0
- Bottom (Home) Total Errors -- 0
- Bottom (Home) Runs-By-Inning -- All Blank
- Inning -- Blank
- Batter Number -- 0
- Ball -- Blank
- Strike -- Blank
- Out -- Blank
- Hit Indicator -- Blank
- Error Indicator -- Blank
- Error Fielder Position -- Blank
- Pitch Count -- 0
- Game Clock -- 12 or 0:12 (minutes)

Control Console LCD Screen

The LCD screen primarily shows you the main scoreboard data screen. Information shown here corresponds closely (but not exactly) to information shown on the scoreboard.



Numbers that display as "0" on the LCD may display as blanks on the scoreboard. For instance, when the Strike Count reads "0" on the control console, the display on the scoreboard will be blank. Some scoreboard models do not include features like Total Errors or Time, so, of course, the scoreboard will not match all the information on the LCD in those cases.

The illustration above refers to "Top Team" and "Bottom Team" to be as generic as possible. Traditionally the Guest Team is assigned to be at bat during the Top Half of each Inning, so you may want to think of the "Top Team" as the Guest Team and the "Bottom Team" as the Home Team.

Key-By-Key Operation

This section will provide a key-by-key explanation of the console features. Use the [0] ... [9] buttons to respond to prompts, pressing [ENTER] to complete or confirm your response. The [CLEAR] button backs you out of a prompt without making changes.

[SET CLOCK] - Available only when the Game Clock is NOT running. This button allows the operator to edit the time shown on the Game Clock. Pressing the button brings up an input prompt on the second line of the LCD screen.

SET CLK<0:12:00>

To set the time to 5:30, press [SET CLOCK] [5] [3] [0] [ENTER]. The console rejects time entries with a Seconds part greater than 59.

This function prompts for Hours, Minutes, and Second. If you have a scoreboard with a 2-Digit Clock display, the Hours will not be displayed, and the Seconds will show only during the final minute of a countdown. If you have a scoreboard with a 3-Digit Clock display, you will see Hours and Minutes for times greater than or equal to one hour, and the Seconds will take over the Minutes position during the final minute of a countdown.

So that 2-Digit Clocks can show times up to 99:59, this prompt allows you to enter times with a Minutes part of up to 99. So you could set the Time to 99:99:59 and count down a Period of 10 hours, 39 minutes, and 59 seconds.

When the Clock is displaying one or more Hours, the LCD display shows Hours and Minutes -- dropping Seconds until the final hour (of a countdown). A blinking asterisk to the right of the Minutes on the LCD indicates a running Clock.

[SET CLOCK .1 SEC] - Not used for this configuration of the control console.

[.1 SEC ON / OFF] - Not used for this configuration of the control console.

[CLOCK UP / DOWN] - Available only when the Game Clock is NOT running. This button allows the operator to change the direction of the Game Clock. By default the Game Clock counts down until reaching 0:00. The operator may set the Game Clock to count up starting from any valid time. Pressing the button brings up a two-line prompt on the LCD screen.

COUNT UP OR DOWN
1=UP 0=DOWN <0>

To count up, press [CLOCK UP / DOWN] [1] [ENTER]. The Game Clock on the LCD screen will show a "U" prefix to indicate Up Counting Mode. A "D" is for Down Counting Mode.

In up-counting mode, the Hours part of the Clock is ignored, so after 99:59, the Time cycles to 0:00.

[ASSIGN ERROR] - Indicates the Position of the Fielder who commits and Error.

Pressing the button brings up a prompt on the second line of the LCD:

ERR POSITION <0>

Press [ASSIGN ERROR] [2] [ENTER] to indicate an Error committed by the person in Position 2. This causes a few things to happen. On the scoreboard, the "E" character (or other Error bullet) will flash four times. If your scoreboard has an Error Fielder Number display, it will flash (in this case, the number "2") along with the Error indicator. Also the console will automatically increment the Total Errors for the Team NOT currently At Bat. So, if it is currently the Top of the 5th Inning, the Bottom/Home Team Total Errors will increase by 1.

Here's a quick reference for the numbers associated with Fielder Positions:

- 1 = Pitcher
- 2 = Catcher
- 3 = First Base
- 4 = Second Base
- 5 = Third Base
- 6 = Short Stop
- 7 = Left Field
- 8 = Center Field
- 9 = Right Field

[AUTO HORN] - Allows the operator to set the behavior of the Horn. By default, the Main Horn attached to the scoreboard is activated for about four seconds at the end of each Period. That is, when the Game Clock counts down to 0:00, the Horn blows. You can turn off this feature by using the [AUTO HORN] button. Pressing it brings up this prompt:

AT END OF PERIOD
1=AUTO 0=OFF <1>

To turn off the Automatic Horn at the End of Period, press [0] [ENTER] at this prompt. Of course, baseball scoreboards do not generally include Horns, so this feature is there only to accommodate the odd circumstance of a Horn added to a baseball scoreboard.

[TIME OF DAY] - Not used for this configuration of the control console.**[SET PITCH COUNTS]** - Allows the operator to directly set or edit the Pitch Counts for both Teams. At the first prompt you may change the Pitch Count for the Team at bat during the Top Half of the Inning.

TOP PITCHES<000>

At the second prompt you may change the Pitch Count for the Team at bat during the Bottom Half of the Inning.

BOT PITCHES<000>

[SET BATTER] - Allows the operator to set or edit the Player Number of person at bat. Pressing the button brings up an input prompt on the second line of the LCD screen.

BATTER NUM <00>

To set the Batter Number to 35, press [SET BATTER] [3] [5] [ENTER].

[SET TOTAL RUNS] - Allows the operator to directly set or edit the Total Runs for each Team. Pressing the button brings up an input prompt on the second line of the LCD screen.

TOT RUNS TOP<00>

The first prompt is for the Team that is at bat during the Top Half of each Inning. At the second prompt you may change the Total Runs for the Team at bat during the Bottom Half of each Inning

TOT RUNS TOP<00>

For scoreboards with Runs-By-Innings displays, it is possible change the Total Runs so that sum of the Runs-By-Innings is not equal to the Total. In general it is better to track the Runs as they happen using the [RUNS +1] button rather than relying on the [SET TOTAL RUNS] button. The primary purpose of this feature is to help you recover from accidentally logging an extra Run.

[SET TOTAL HITS] - Allows the operator to directly set or edit the Total Hits for each Team. Pressing the button brings up an input prompt on the second line of the LCD screen.

TOT HITS TOP<00>

The first prompt is for the Team that is at bat during the Top Half of each Inning. At the second prompt you may change the Total Hits for the Team at bat during the Bottom Half of each Inning

TOT HITS TOP<00>

In general it is better to track the Hits as they happen using the [HITS +1] button rather than relying on the [SET TOTAL HITS] button. The primary purpose of this feature is to help you recover from accidentally logging an extra Hit.

[SET TOTAL ERRORS] - Allows the operator to directly set or edit the Total Errors for each Team. Pressing the button brings up an input prompt on the second line of the LCD screen.

TOT ERRS TOP<00>

The first prompt is for the Team that is at bat during the Top Half of each Inning. At the second prompt you may change the Total Runs for the Team at bat during the Bottom Half of each Inning

TOT ERRS TOP<00>

In general it is better to track the Errors as they happen using the [ERRORS +1] button rather than relying on the [SET TOTAL ERRORS] button. The primary purpose of this feature is to help you recover from accidentally logging an extra Error.

[INC. INNING TOP / BOT] - Increments the Half Inning. Initially the Inning display on the scoreboard (if you have one) is blank and the LCD shows "B-". The first time you press this button, the Inning display on the scoreboard shows "1" and the LCD shows "T01" -- indicating the Top of the First Inning. The second time you press the button, the Inning display on the scoreboard remains at "1" while the LCD changes to "B01" -- indicating the Bottom of the First Inning. The next stop is, of course, "2" on the scoreboard and "T02" on the LCD.

Many other functions of the control console are affected by this button. For instance, [RUNS +1] acts on the Team currently at bat. So pressing [RUNS +1] increments the Team on the Top line of the scoreboard during the Top Half of an Inning. Pressing [INC. INNING TOP / BOT] will take you to the Bottom Half, thus changing the Team affected by [RUNS +1].

[RUNS + 1] - Increments the Runs for the Team currently at bat. If you have a scoreboard with Runs-By-Inning, the display for the current Inning will be updated along with the Total Runs display.

[HITS + 1] - Increments the Total Hits for the Team currently at bat. The Hit Indicator will flash four times when you press this button.

[ERRORS + 1] - Increments the Total Errors for the Team currently NOT at bat. The Error Indicator will flash four times when you press this button.

[BALL + 1] - Increments the Ball Count by one.

[STRIKE + 1] - Increments the Strike Count by one.

[OUT + 1] - Increments the Out Count by one.

[HORN] - Sounds the Horn for a two-second burst.

[CLOCK ON / OFF] - Starts and stops the Game Clock.

[CLEAR / FLASH HIT] - Flashes the Hit Indicator four times, but does NOT affect the Total Hits for either Team. This button is also used while entering numerical data to exit the function without change.

[ENTER / FLASH ERROR] - Flashes the Error Indicator four times, but does NOT affect the Total Errors for either Team. This button is also used while entering numerical data to confirm the entry and continue.

[SET INNING TOP / BOT] - Allows the operator to directly set the current Inning and Half. Pressing the button brings up an input prompt on the second line of the LCD screen.

```
SET INNING <02>
```

At this prompt you could press [5] [ENTER] to tell the console you are in the 5th Inning. The next prompt requires the operator to identify the Top or Bottom Half of the Inning

```
1=BOT 0=TOP <0>
```

At this prompt press [1] [ENTER] to indicate the Bottom Half. All functions that depend on the particular Half Inning will now work according to the new setting you have provided.

[SET RUNS / INNING] - Allows the operator to directly edit or set the Runs-By-Inning displays (if present on the scoreboard). Pressing the button brings up an input prompt on the second line of the LCD screen.

```
EDIT INNING <02>
```

At this prompt you could press [6] [ENTER] to change the Runs in the 6th Inning. The next prompt asks you to update the Runs for the Top Half of the Inning:

```
SET RUNS TOP <3>
```

You may edit the current number of Runs or press [ENTER] to accept the current number and skip to the Bottom Half.

```
SET RUNS BOT <2>
```

[PITCHES + 1] - Increments the Pitch Count for the Team currently NOT at bat.

[NEW GAME] - Available only when the Game Clock is NOT running. This button is the doorway to one fairly obvious feature and a few other hidden features. Pressing it brings up the following display:

RESET SCOREBOARD		
1=YES	0=NO	<0>

Press [1] [ENTER] to reset all information to default values. For instance, Guest and Home Scores will be reset to 0.

In addition to this memory-clearing function, [NEW GAME] allows the operator to access other functions by entering other numbers at the prompt. These are listed below.

[NEW GAME] [4] - This sub-function turns off all the scoreboard displays and shows the following message on the LCD screen:

BLANK TEST
NEWGAME=EXIT

Blank Test Mode is a diagnostic feature that allows you to check for display circuits that are damaged in a way that prevents them from being turned off. If anything remains lit on the scoreboard when the console is in this mode, there is a hardware problem that should be resolved by contacting technical support.

Exit this mode by pressing [NEW GAME] again.

This is also a handy trick for blanking the scoreboard between games or whenever it is convenient. Just remember that the scoreboard is not truly off in this state. The electronic components are still energized.

[NEW GAME] [5] - This sub-function turns on all the scoreboard displays and shows the following message on the LCD screen:

LAMP TEST
NEWGAME=EXIT

Lamp Test Mode is a diagnostic feature that allows you to check for display circuits that are damaged in a way that prevents them from being turned on. If anything is blank on the scoreboard when the console is in this mode, there is a hardware problem that should be resolved by contacting technical support. Horns are not supposed to sound in Lamp Test mode.

Exit this mode by pressing [NEW GAME] again.

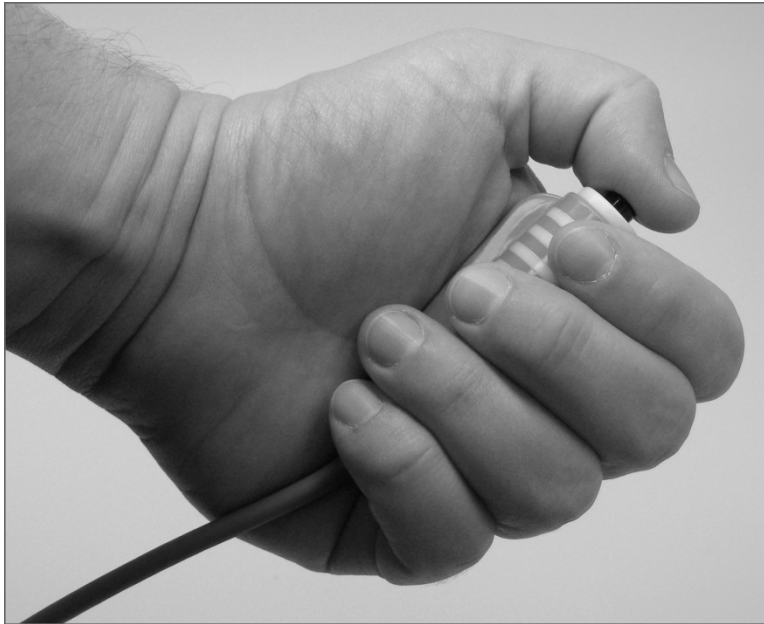
[NEW GAME] [8] - This sub-function configures the console to work with timing equipment provided by Precision Time Systems, Inc. You have to confirm entry into this mode by typing **[1] [ENTER]** in response to this prompt:

PRECISION TIME?		
1=YES	0=NO	<0>

The practical results of being in Precision Time Mode are 1) the [CLOCK ON / OFF] button is disabled, and 2) the Game Clock only runs when the console hardware reads a switch closure from an external clock switch. You can simulate the behavior of the Precision Time equipment by plugging an Electro-Mech Hand-Held Clock Start/Stop Switch into one of the connectors on the back of the console and holding down the button on the handheld device to start the Clock. The Clock on the LCD screen will have a "P" prefix to indicate Precision Time Mode.

To exit Precision Time Mode, press **[NEW GAME] [8] [0] [ENTER]**.

Handheld Clock Start / Stop Switch



Unlike football and basketball, baseball rules don't require (as far as we know) a separate person to operate the Game Clock. But the feature is available if you want it. So you can purchase a handheld pendant-style switch that plugs into the back of the control console and allows a separate operator the ability to start and stop the Game Clock. The RJ-45 style connector at one end of the handheld unit's cable can plug into the matching socket on the back of the console. The pendant end fits nicely in your hand so that your thumb rests on the switch. Press the switch once to start the Clock. Press the switch again to stop the Clock.

Control Console Power Down and Storage

There is no "OFF" switch on the control console; nor is there a function on the console that turns the scoreboard off. The scoreboard should be disconnected from power when not in use. Electro-Mech recommends installing a disconnect switch for all permanently mounted scoreboards. You may simply unplug a portable scoreboard model and store it between games.

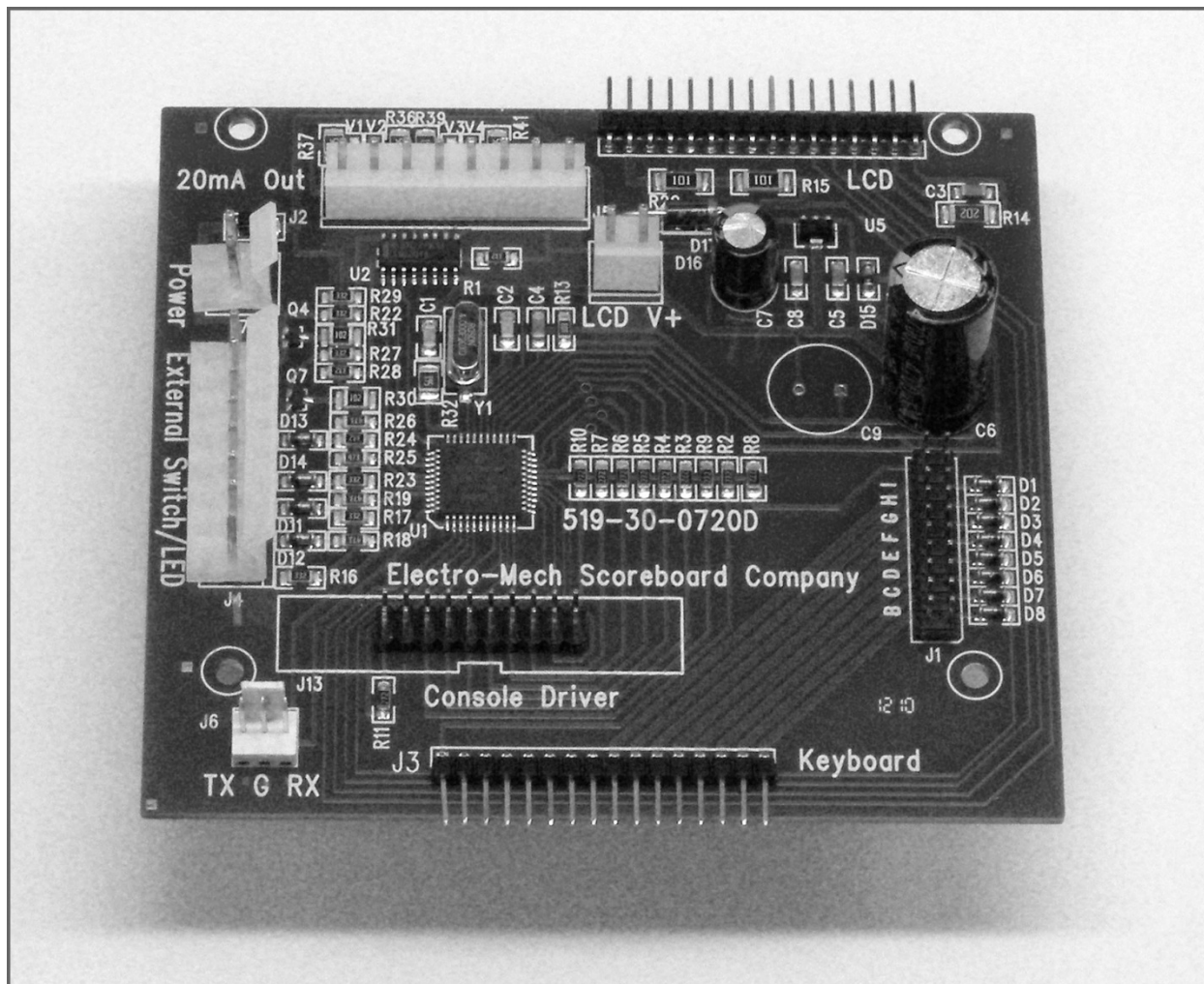
You should unplug your control console both from its power receptacle and from its data cable when you are not using it. Electro-Mech offers a carrying case that provides a convenient way to store and transport the console along with various cables and other accessories. Whether you have a case or not, you should store the console in a safe, dry location between games.

If the console loses connection with the scoreboard while the scoreboard is powered, the scoreboard will freeze up -- showing the last good Time, Score, and other information it received from the console. The scoreboard will synchronize with the console again as soon as you reestablish the connection.

If the scoreboard loses power with the console still connected and powered, nothing will happen other than the scoreboard display going blank. Again, the scoreboard will synchronize with the console as soon as it receives power.

If the console loses power -- either because you intentionally unplug it or because of something unexpected -- it will save the current game information to flash memory. When you next apply power to the console, the LCD will prompt you to restore the previous game. If you fail to respond to the prompt, the game data will restore automatically after a few seconds.

Jumper Settings



CX Driver

***** Important: If you plan to open up the console and do work inside the box, make sure the power cable is disconnected from the receptacle! *****

The PCB that is the heart of the CX console is called the CX driver. This driver contains a set of jumper pins that can be used to tell the software how to behave. By installing shunts across a pair of pins, you are, in essence, closing a switch that tells the program to do something. On some CX drivers these pins are labeled B through I, A through I, or A through J. On other drivers the A, B, C,... labels are missing, but you will find a corresponding diode next to pins B through I (A and J are not for jumpers). The diodes are labeled D8 through D1 (D8 = B, D7 = C, etc.).

Jumper pins A and J are used for attaching a programming cable to the CX driver and don't really do anything in this context. Pins F, G, H, and I are the "Board Type Jumpers" that determine the sport. So, for instance, by removing the shut across the H pins, you can make your console think it is operating an Electro-Mech baseball scoreboard rather than a football scoreboard. This table summarizes the jumper settings for the Board Type Jumpers:

Board Type	F	G	H	I	Models / Comments
BASEBALL_3					10xx, 12xx, 134x, MM-10x, MM-12x
BASEBALL_4				X	1360, MM-136
FOOTBALL_4			X		1360, 3150, MM-136 MM-335, MM-338
BASEBALL_1			X	X	10xx, 11xx, 12xx, 134x, MM-10x, MM-12x
BASEBALL_2		X			Not used
SOCCER_LX		X		X	Not a part of CX_402 Software
SOCCER		X	X		Not a part of CX_402 Software
HOCKEY		X	X	X	Not a part of CX_402 Software
LINESCORE4	X				1440, 1480
LINESCORE5	X			X	15xx, 17xx
FOOTBALL_1	X		X		3xxx (except 3150), 7xxx (except 72xx, 73xx, and 79xx), MP-3xx
BASKETBALL	X		X	X	2xxx (except Player Stats), 72xx, MP-2xx
MP-14X	X	X			MP-140, MP-144, MP-148
MP-15X	X	X		X	MP-15x
MULTISPORT	X	X	X		137x, 1390
HOCKEY_LX	X	X	X	X	Not a part of CX_402 Software

Pins B, C, D, and E are the "Option Jumpers". Each one typically controls one of four options for a given Board Type. This document discusses the options for the LINESCORE5 Board Type only. You'll have to look at the Owner's Handbooks for consoles configured for the other Board Types if you are curious about their Option Jumpers.

Jumper B = Pitch Speed (Install this jumper to use a radar gun -- disables Batter Num)
 Jumper C = 2-D/3-D Clock (Remove this to indicate H:MM:SS or MM:SS Game Clock)
 Jumper D = Double Pitch Count (Install this for separate Top/Bottom PC displays)
 Jumper E = B-S-O to 4-3-3 (Install this jumper for Balls to 4, Strikes & Outs to 3)

Removing Jumper C indicates a MM:SS or H:MM:SS Game Clock as found in Models 1714, 1734, 1744, 1754, and 1784. This would create an incompatibility with Models 1711, 1712, 1731, 1732, 1741, 1742, 1751, 1752, 1781, and 1782. Other Models would be unaffected by this change.

Adding Jumper D would allow the console to operate a Pitch Count display that shows one set of digits for the Top/Guest Pitch Count and another set of digits for the Bottom/Home Pitch Count. This would create an incompatibility with Models 1713, 1733, 1743, 1753, and 1783.

Any model listed on the front page of this document can be made to show the Ball, Strike, and Out Counts to 4, 3, and 3 when E Jumper is added to this console.