# Swimming 5



## For The System 5 Sports Timer Software User Guide

Colorado TIME SYSTEMS.

*Federal Communications Commission*
*R.F. Interference Statement*

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

CAUTION TO USER:

Changes or modifications to the equipment not expressly approved by Colorado Time Systems, llc. could void the FCC compliance and the user's authority to operate the equipment.

INSTRUCTION TO USER:

To determine if this equipment is interfering with radio or television reception, turn it on and off while observing the radio or television receiver. If interference is observed, try to correct it with one or more of the following measures:

-Reorient the receiving antenna.
-Move the equipment away from the receiver.
-Plug the equipment into a different electrical outlet so that the equipment and receiver are on different branch circuits.
-Ensure that card mounting screws, attachment connector screws, and ground wires are tightly secured.
-Ensure that card slot covers are in place on any system unit used with the equipment.

If necessary, consult your dealer service representative for additional suggestions.

Colorado Time Systems

Corporate Office
1551 East 11th Street
Loveland, CO 80537 USA

Sales : 800-279-0111 or +1 970-667-1000

Service: 1-800-287-0653 x256 or +1 970-667-1000 x256
Service Fax: 970-667-1032

Web: www.coloradotime.com
Shop online: http://secure.coloradotime.com
Email: customerservice@coloradotime.com

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# Introduction

## Dear Customer

Congratulations on the purchase of your new System 5 Sports Timer! You have chosen the most advanced aquatics timer available, the latest in the line of revolutionary timers designed and produced by Colorado Time Systems. Each new timer in the series has used the latest technology and has introduced new features to the aquatic sports community.

In the early 1970s, Colorado Time Systems offered the first practical display timing and scoreboard system to the American marketplace. It featured easy-to-read final time displays plus the first "split time" display available on a swim timer. Our Printing Timer system, which incorporated a built-in paper strip printer, appeared a few years later. The Printing Timer provided an affordable, instantly printed split and final times at the end of each heat. It also included three buttons per lane backup timing with automatic comparison of touchpad and backup times. An optional standby battery system provided protection against loss of data in the event of an electrical power failure.

In the early 1980s, Colorado Time Systems introduced the third generation timing system which revolutionized the industry with innovative features --the Swimming III timing system. New features included race memory to store previous race results, thereby speeding meet operation, a relay judging system and the use of a membrane keyboard with overlays to replace obsolete button keyboards. The Swimming III timer quickly and easily converted to other aquatic sports simply by loading a different program cassette and changing the keyboard overlay. The Swimming III timer earned recognition as the performance standard of the industry from 1981 through 1989.

In the late 1980s, Colorado Time Systems introduced the next generation sports timer. The System 4000 included the industry's first full-sized printer and meet management computer. A full range of sports timing programs were available on programmable cards. Installing a new program became as simple as inserting a new card into the slot on the
System 4000 rear panel. The System 4000 set the pace in the sports timing industry--until now.

The System 5 Sports Timer continues Colorado Time Systems' tradition of using advanced technology to provide beneficial new features. A large LCD screen with contrast control enables the operator to see at a glance the entire race situation, including the status of each lane. The ease of operation built into the System 4000 has been further advanced in the System 5.  Most keyboard operations require only a single keystroke. The System 5 also incorporates output for meet management software and expanded race memory with enough space to store the entire meet's results--all important innovations in swim timing. Meet efficiency benefits since a race can be started as soon as the previous race is completed. All race information can be printed in many different formats at the operator's convenience with an economical, full sized $8^{1/2}$ by 11 inch line printer.

The System 5 Sports Timer incorporates a self-diagnostic system which

checks the timer's internal circuitry and components. The diagnostics program also runs circuitry checks on the cable harness, touchpads, pushbuttons and scoreboard cable when these items are properly connected.

New programs for other sports are provided on diskette and downloaded from your computer to the System 5's internal memory. Once downloaded, the new programs remain in your System 5, ready to be used at a single keystroke. New programs and program updates are easily incorporated using this innovative system.

This full range of features built in to your new System 5 Sports Timer mean that it will be the industry leader for years to come.

# Getting To Know Your System 5

**I/O Panel**

After removing the System 5 from its shipping container and carrying case, take a few minutes to familiarize yourself with it. In particular, examine the areas discussed below.

A variety of output connectors are mounted on the I/O panel. Notice in particular those described below.

Inputs to the System 5 include:

❒ An external DC power supply
❒ Near-end cable harness(es)
❒ Far-end cable harness for 50 meter splits and far-end finishes
❒ Diving I/O expansion port
❒ Computer input for loading new software on your System 5

Outputs from the System 5 include:

❒ Scoreboards
❒ Computer running meet management software
❒ Printer

**Liquid Crystal Display (LCD) Screen**

Turn on your System 5 and load the Swimming program (refer to Chapter 4 for loading instructions). The full-sized display screen provides you with a wide range of display information to help run your swim meets.
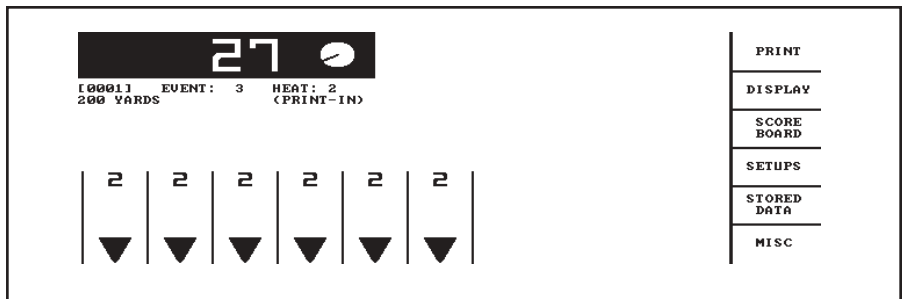


*Figure 1-A  Swimming LCD Screen*

The screen always displays current race information including running time, the status of the race, event and heat numbers and more. The Swimming software keeps you in full control of the race situation at all times.

**Battery Compartment**

The battery compartment on the underside of the System 5 holds eight(8) standard alkaline D cell batteries.

**Note:**

*Do not use rechargeable batteries in your System 5. The battery life gauge cannot accurately display the remaining life of rechargeable*

*batteries* .

**Softkeys**

The softkeys located to the right of the display screen let you select from a variety of options.  You can:

❒   Select the kind and format of printed race information.

❒   Print a sponsor's message

❒   Display detailed race information including backup button input and relay judging information.

❒   Access special scoreboard control features.

❒   Customize the Swimming software to meet your individual needs. All setup information can be stored in memory for future races.

❒   Program standard or special event sequences.

❒   Store and retrieve meet information for approximately 500 races.

❒   Control voltage delivered to the touchpads to help control contact corrosion.

❒   Upload all swimming setups, including Event Sequences, to your meet management computer.

**Operating Modes**

The Swimming software provides three operating modes for tracking race information:

❒   **Write-in** mode requires that you write the event and heat number on the race printout.

❒   **Print-in** mode prints the event and heat numbers entered before each race on the race printout and stores this information in race memory.

❒   **Title** mode prints the event and heat numbers and the race description on the race printout. This information is also stored in race memory. Race descriptions can either be programmed into an event sequence and automatically displayed when the event counter is advanced, or entered from the keyboard before each race.

Each operating mode has its advantages. For more information, refer to Chapter 4.

**Keyboard Insert**

The keyboard insert helps you run meets efficiently. You can:

❒   Turn lanes on and off quickly with a single keystroke.
❒   Quickly recover from missed or inadvertent touchpad hits.
❒   Store and print race information with a single keystroke.
❒   Edit times and enter DQ information.
❒   Change the length of an event quickly and easily.
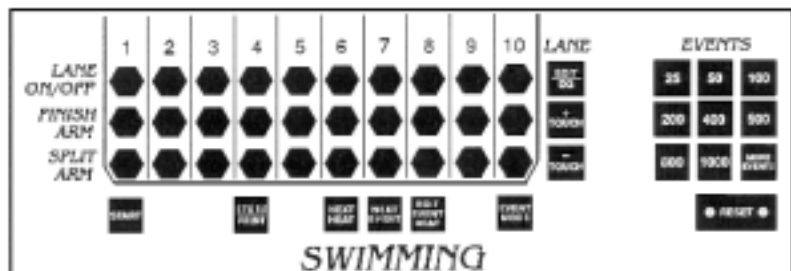


*Figure 1-B  Swimming Keyboard Insert*

Now that you are familiar with your System 5 Sports Timer and Swimming software we encourage you to continue reading this manual at your convenience. You will discover many additional features that make this the most exciting and revolutionary swim timing system ever introduced.

**Scope Of This Manual**

This manual is intended to address all issues related to the normal operation of the System 5 with the Swimming software. It is written with the beginning timer operator in mind, but it also contains detailed information on advanced operations which are of interest to the experienced operator. Use the index to locate specific information quickly.

A complete Maintenance section covers the most common problems that are user correctable. For any repairs or problems not found in the manual, call Colorado Time Systems' Customer Service Department at, ext. 256, 800-287-0653 (U.S. and Canada) or 970-667-1000 (International).

# Contents

# System 5 Specifications

## Environmental

**Temperature: 0°C - 45°C**
**Humidity: 90% (non-condensing)**
**Altitude: 0 to 3000 m**

## Electrical

**DC Supply: 12 VDC @ 750mA**
**Batteries:**
**Type: 8 "D" Cell Alkaline, Non-rechargeable**
**Operating Time: 35 hours of normal use**

## Input and Output Connections

**Primary/Backup/Far End: Input - 5V @3.5mA**
**COM Ports 1 and 2: Input/Output - RS-232, ±12V**
**Judges I/O Port: Input/Output - RS-232, ±12V, 12 VDC @ 0.5A**
**Printer Port/Computer Port 3: Input/Output - 5 VDC**
**SCBD Port: Output - RS-232, ±12V**
**External Power: Input - 12 VDC @ 750mA**

## Installation/Maintenance

**This product is intended to be used in an indoor or outdoor swimming pool environment.  When the timer is operated in the US it must be used in accordance with the National Electric Code. When the timer is operated elsewhere it must be used in accordance with all appropriate national and local electrical codes and regulations for the country of installation.  When the System 5 is used in a location where it can get wet during use it should only be powered by the batteries.  The AC power adapter should never be used in a location where it can get wet.**

**The System 5 AC Power adapter must be used with a grounded outlet. This equipment is intended to be connected to a circuit protected by a ground-fault circuit interrupter when used outdoors or near a pool. This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact a qualified electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.**

**Replacing of fuses or similar servicing shall be performed only while the unit is disconnected from the source of supply. Using the System 5 Timer in a manner not specified by Colorado Time Systems may cause the protection provided by the equipment to be impaired.**

**Other than routine cleaning and replacement of batteries, as described in the System 5 user manual, there are no user serviceable parts on the System 5 Timer.**

## Symbols

| Direct Current | ━ ━ ━ | On (Supply) | I |
|---|---|---|---|
| Caution (refer to accompanying documents) | ⚠ | Off (Supply) | ○ |

# System 5 Spezifikationen

### Umgebung
**Temperatur: 0°C - 50°C**
**Luftfeuchtigkeit: 90% (nicht-kondensierend)**
**Höhe: 0 bis 3000 m**

### Elektrizität
**DC Verorgung: 12 VDC @ 750mA**
**Batterien:**
**Typ: 8 "D" Zell Alkali, nicht-wiederaufladbar**
**Funktion: 35 Stunden bei normalem Gebrauch**

### Eingänge und Ausgänge
**Primär/Backup/Wendeseite: Eingang - 5V @3,5mA**
**COM Ausgänge 1 und 2: Eingang und Ausgang - RS-232, ±12V**
**Kampfrichter I/O Ausgäng: Eingang und Ausgang - RS-232, ±12V, 12 VDC @ 0,5A**
**Drucker Ausgang /Computer Ausgang 3: Eingang und Ausgang - 5 VDC**
**Anzeigetafelausgang: Ausgang - RS-232, ±12V**
**Extern: Eingang - 12 VDC @ 750mA**

### Installation/Wartung
**Dieses Produkt ist für die Benutzung in Swimming Pools für innen und außen bestimmt. Die Installation des System 5 Zeitmeßgerätes muß nach den landesüblichen Vorschriften erfolgen.**

**Das AC Stromversorgungskabel sollte geschütst und während des Betriebes nicht zugänglich sein.**

**Wenn das System 5 Zeitmeßgerät nicht so installiert wird wie von CTS spezifiziert, kann die Funktion beeinträchtigt werden.**

**Es gibt keine weiteren notwendigen Service-Wartungsarbeiten für den System 5 Timer als die routinemäßigen Reinigungsarbeiten und den Batteriewechsel wie es im System 5 Handbuch beschrieben wird.**

### Symbols

| Gleichspannung | ⎓ | Ein (Spannung) | I |
|---|---|---|---|
| Achtung (siehe beiliegende Dokumentation) | ⚠ | Aus (Spannung) | ○ |
| | | Doppelt isoliert | ▣ |

# Swimming System Hardware Setup

The first part of this chapter describes in general terms the assembly of the various hardware components that make up the swimming system. The second part explains scoreboard module configuration in detail.

## General Guidelines

The following instructions provide a general, step-by-step check list for setting up you swimming system. The large number of possible accessory combinations make it impossible to provide detailed installation instructions here. These instructions assume that your scoreboard, touchpad mounting brackets and other permanent equipment are installed as specified in the appropriate instruction manuals.

### Start Systems

The most common start systems are button, loudspeaker and start pistol transducer.
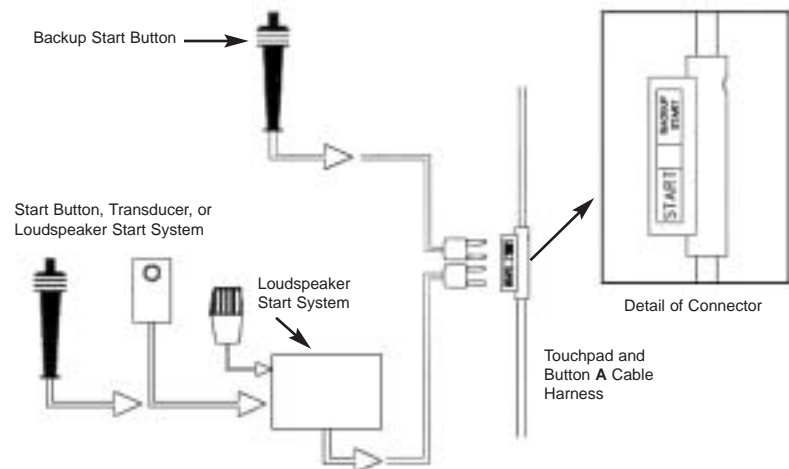


*Figure 2-A  Start System Connections*

**Note:** *The Loudspeaker Start System model SS2 is the standard start system supplied with swimming packages. Other start systems are shipped only by request.*

**1)** To set up a loudspeaker start system, place the start console a safe distance from the pool and plug in the microphone. Route the loud speaker cable harness along the edge of the pool and connect the speaker(s) to the harness, as shown in Figure 2-G

**2)** Connect the cable from the button, start pistol transducer or loudspeaker start system to the start connection on the touchpad and button A cable harness as shown in Figure 2-A, or to the start connector on your in-deck wiring system.

**3)** If you are using a backup start button, plug it into the connector marked backup start on the touchpad and button A cable harness. Refer to Figure A.

# Finish Systems

## Touchpad Finish

**1)** Place your touchpads in the water, making sure that they are securely in place on their brackets.

**2)** Route the input cable harness(es) along the pool deck as shown in Figure 2-E. Plug the touchpad connectors into the prime connectors on the touchpad and button A cable harness as shown in Figure 2-B. If you have in-deck connector plates, plug the touchpad connectors into the touchpad slot.
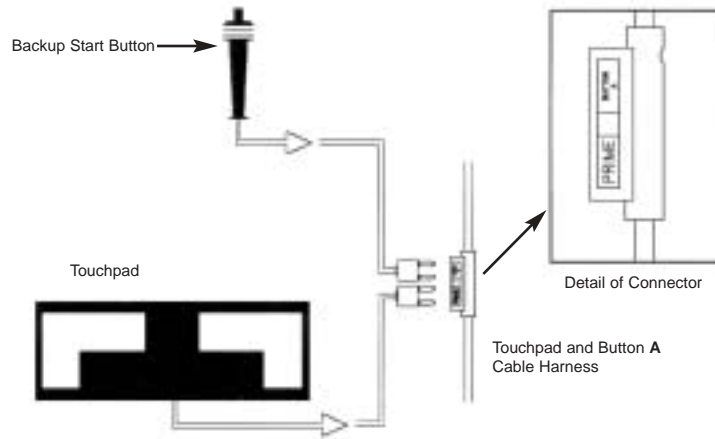


*Figure 2-B  Touchpad/1-Button Backup Finish*

**3)** If you are using backup button(s), plug the backup button A connectors into the button A connectors on the touchpad and button A cable harness or in-deck wiring system as shown 2-B.

**4)** Connect the touchpad and button A cable harness or in-deck wiring system cable to the primary input connector on the I/O panel of your System 5. Figure 2-E shows a complete pad finish and one-button back-up system.

## Button Finish

**One Button:** Route the input cable harness along the pool deck as shown in Figure 2-F. Plug the finish buttons into the prime connectors on the touchpad and backup button A cable harness. If you have in-deck connector plates, plug the finish button into the touchpad connector.
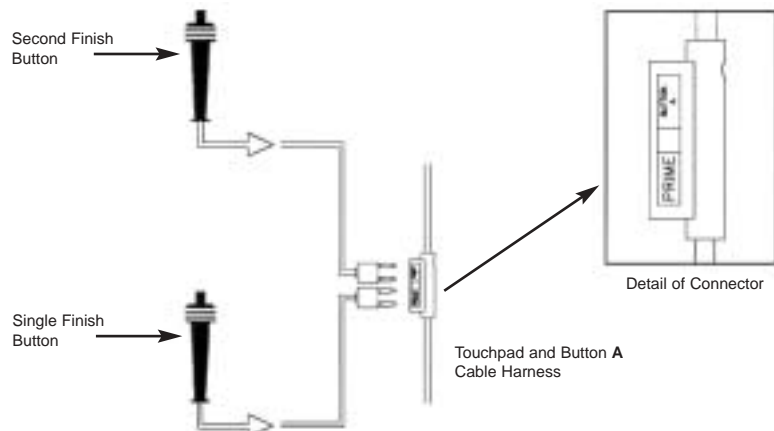


*Figure 2-C  Button Finish Connections*

**Two Buttons:** If you are using 2 finish buttons, plus the second buttons into the A connectors on the touchpad and button A cable harness as shown in Figure 2-C. If a 2 button finish is used, the finish time is the average of the two button times recorded.

**Three Buttons:** If you are using 3 finish buttons, first route the B and C backup button cable harness along the pool deck. Then plug the third button into the B connectors on the cable harness.

**B & C Backup Buttons**

1) Route the B and C backup button cable harness along the pool deck. Connect the B and C backup button to the correspondingly labeled connections on the cable harness or in-deck plates, as shown in figures 2-d and 2-G.

2) Connect the B and C backup cable harness or in-deck cable to the backup input connector on the I/O panel of your System 5.



Backup Button C

Detail of Connector

Backup Button B

B and C Backup Button Cable Harness
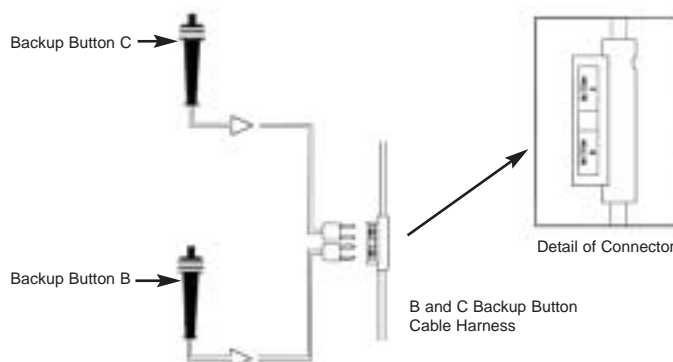
*Figure 2-D  Backup Buttons B & C*

# System Layout Diagrams

The following three figures show sample layouts of standard swim timing systems. Use them as general references when putting together your swimming system.

**Touchpad Finish/ 1 Button Backup**

This diagram shows an electronic start system (model SS2) and pad finish with 1 button backup. On this type of system, the start software setup should be set to automatic and the finish/buttons software setup should be set to pad prime finish and one backup finish button. Refer to Chapter 4 for more information on software setups.



System 5 Sports Timer

1 Backup Button per Lane

Touchpad and Button **A** Cable Harness
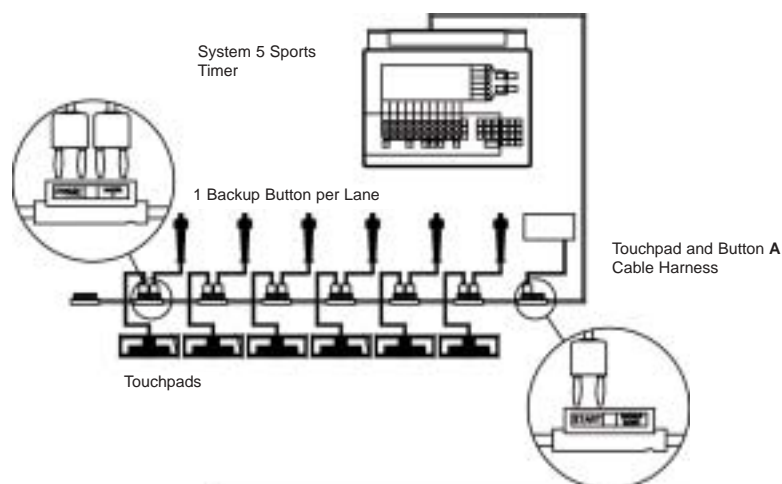
Touchpads

*Figure 2-E  Touchpad Finish/1-Button Backup*
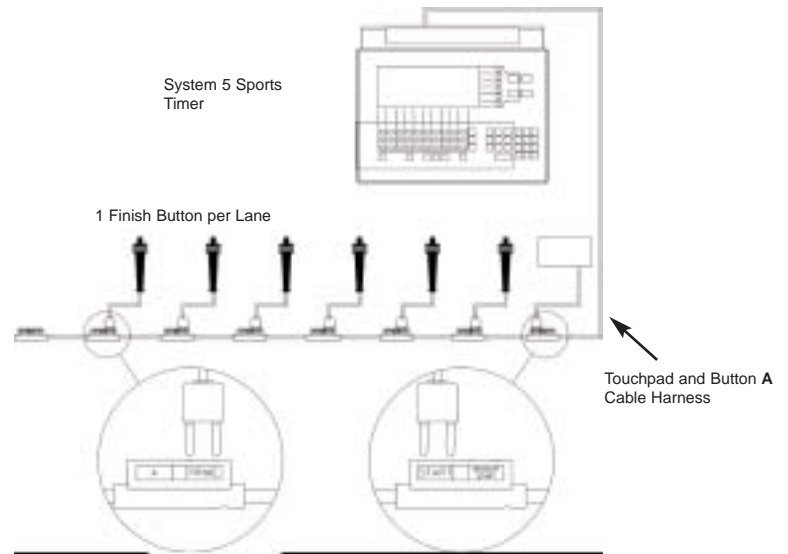
*Figure 2-F  Single Button Finish*

**Single Button Finish**

This diagram shows an electronic start system and a single button finish without backup buttons. On this type of system, the start software setup should be set to automatic and the finish/buttons software setup should be set to one button prime finish. Refer to Chapter 4 for more information on software setups.
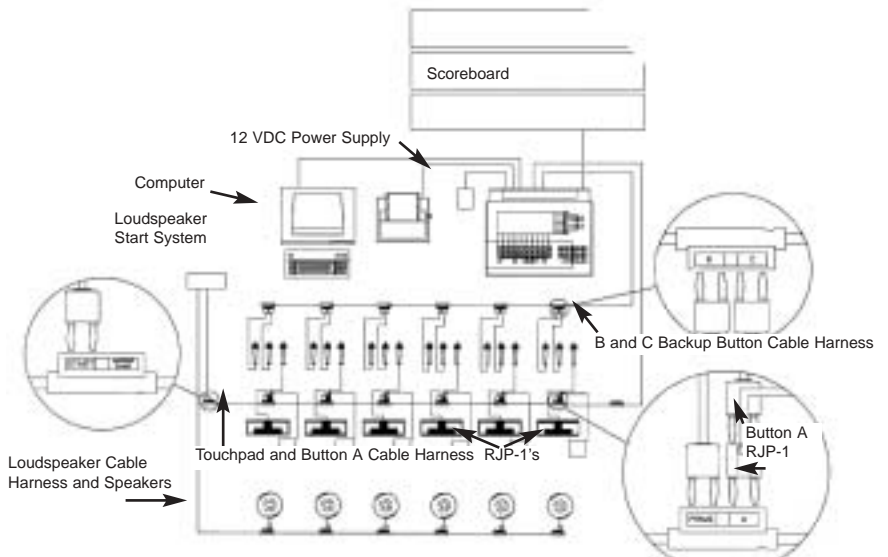


*Figure 2-G  Full System*

**Full System**

This diagram shows a loudspeaker start system, RJP-1 relay judging platforms, touchpad finish with 3 backup buttons per lane, a printer, a computer running meet management software, a 12VDC power supply for the System 5 and a scoreboard. On this type of system, the start software setup should be set to pad prime finish and three backup finish buttons. Refer to Chapter 4 for more information on software setups.

# System 5 I/O Panel

The System 5 I/O panel houses all Input and Output (I/O) connectors. This section describes the I/O panel connectors in order from left to right as viewed from the bottom. Refer to Figure 2-H for the locations of the items described below.

*Note:*     *Turn power off before connecting or disconnecting any cables from the System 5 I/O panel. If you turn your System 5 over to connect the cables*

*to the I/O panel, prevent damage to the LCD window by protecting it with a towel or other padding.*
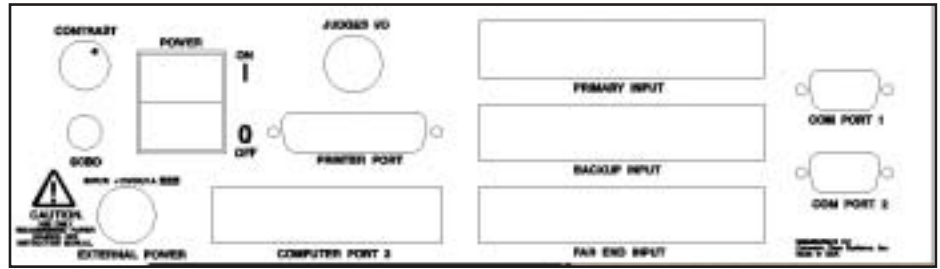


*Figure 2-H  System 5 I/O Panel*

**Contrast**
This adjustment controls the contrast of the System 5 LCD screen. Adjust for comfortable viewing.

*Note:*
*If there is no display on the System 5 LCD, rotate the Contrast knob clockwise to increase contrast. If the contrast is turned all the way down, there will be no visible display on the System 5 LCD.*

**Scbd**
Connect the cable from your scoreboard here. Push the quarter-inch jack into the socket until it snaps firmly into place.

**Power**
This is the main power on/off switch for the System 5. **Do no turn off power to your System 5 while timing a race.**

**External Power**
Connect the DIN connector form the approved 12 volt power supply here. **Use only the recommended power supply!** Use of any other power supply may cause serious damage to your system.

*Note:*
*Make sure the power supply is plugged into a working AC outlet to avoid unintentionally discharging the System 5's internal batteries.*

**Judges I/O**
This DIN connector accepts input from the Judging expansion hardware.  It is also available for other expansion input/output devices for other sports made available by Colorado Time Systems.

**Printer Port**
This is a standard IBM PC parallel port. Attach the cable from your printer to this connector. Make sure the cable connector is firmly seated and tighten the screws to make a secure connection.

**Computer Port 3**
This connector is used to download new or updated sports programs to your System 5 Refer to Appendix B for instructions on downloading new or updated sports programs. Attach a standard parallel printer from your personal computer to Computer Port 3 before downloading.

**Primary Input**
Connect the cable from the near-end touchpads, start system and A backup button here. Snap the wire bails into place on the cable connector to ensure a secure connection.

**Backup Input**
Connect the cable from the near-end B and C backup buttons here if using 2-or 3-button backup. Snap the wire bails into place on the cable connector to ensure a secure connection.

**Far End Input**
Connect the cable from the touchpads and backup buttons at the far end of the pool here. Snap the wire bails into place on the cable connector to ensure a secure connection.

| | |
|---|---|
| **Com Port 1** | This 9-pin connector is a standard serial communication port which allows the System 5 to communicate with a computer running swim meet management software. |
| **Com Port 2** | This is also a 9-pin serial communications port, but it is used for special operations only. |

# Scoreboard Configuration

## Introduction

Colorado Time Systems' scoreboards offer great flexibility. We offer both a light-reflective display and a full-matrix LED display. Both options offer a good alternative to the hassle of light bulbs. The scoreboards themselves are manufactured to withstand the rigors of the swimming pool environment and give years of trouble-free service. No routine maintenance is necessary.

The modular design of both the light reflective and LED displays allow your scoreboard to grow with your program and to be easily arranged to accommodate new sports. Adding new lines of to the display presents no difficulty. Once the new lines are mounted, simply use the included cables to chain the scoreboards together. The examples in this chapter show many common and very useful digits arrangements for the light reflective display and the templates for the LED displays.

Once you have the physical layout of your scoreboard in place, you can set the electronic configuration to display the desired information. Each scoreboard line makes up a complete display module to which the Swimming software sends specific information. You determine what information is displayed by setting the switches in each scoreboard line to the channel on which those data are transmitted. For example, the Swimming software sends race information for lane 1 on channel 01. To display that information on the first scoreboard line, as shown in the example on page 2-8, set the switches in your first scoreboard line channel 01. All other channels work the same way. Your scoreboard manual contains detailed information on setting the channel switches. Refer to the figures later in this chapter for example displays from each channel.

You can also redirect data from one channel to another using the Swimming software **scoreboard setup** feature. Information that is ordinarily carried on one channel can be carried on another. For example, record splits information is received on channel 0B at the scoreboard. That information can be redirected to any channel, such as channel 09 which is the scoreboard module used to display race information for lane 9. Your options are not limited. Any scoreboard information can be sent to any scoreboard module. This feature allows you to customize your scoreboard display for special events or requirements. Refer to **Setups** in Chapter 4 for complete.

## Single-Line Scoreboard

All race information can be displayed on a single-line scoreboard. The Swimming software sequences race information as shown in Figure 2-I. You can set the exact sequence used before the meet begins. Refer to Chapter 4 for more information on single-line scoreboard sequencing.
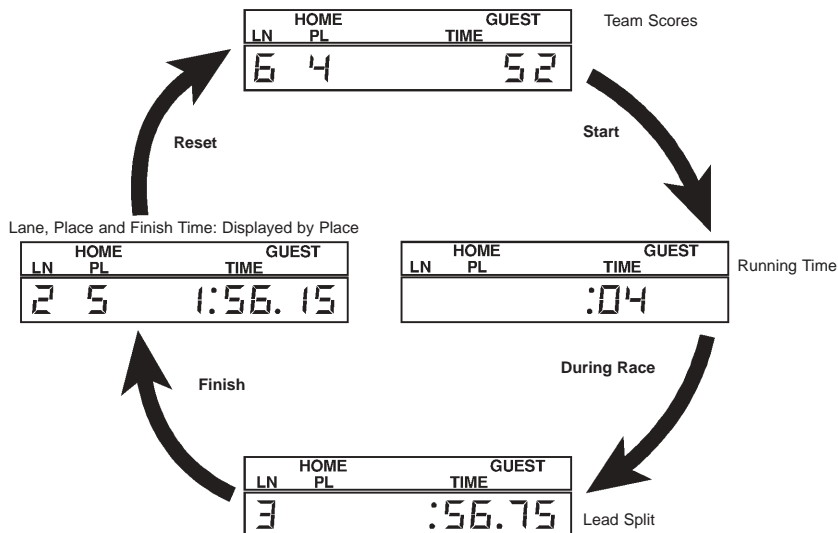
*Figure 2-I  Single-line Scoreboard Display Sequence*

To use a single-line scoreboard display properly, the channel switch inside the scoreboard module must be set to channel 0F. Recommended arrangement of the scoreboard digits and placement of signage is shown in Figure 2-J. No special actions are required to display race information on a single-line scoreboard.



*Figure 2-J  Single-line Scoreboard Digits/Signage*

## Multi-Line Scoreboard

To display race results and other information, your scoreboard must be properly configured. Scoreboard configuration is a two-part process. First, the scoreboard must be installed and the digits and signage arranged to meet your needs. Refer to the figures in this section for examples of proper scoreboard arrangement and refer to your scoreboard manual for instructions on moving digits and installing signage. Once the scoreboard is installed, the channel switches in each scoreboard module must be set to agree with the channel setting in the Swimming software. For example, channel 01 in the Swimming software sends information to the scoreboard module set to channel 01, channel 02 in software sends information to the scoreboard module  set to channel 02, and so on. The Swimming software uses each channel to transmit specific race information. For example, channel 01 sends the place and time information for Lane 1, channel 0C sends the event and heat information for the current race. To function properly, the switches in each scoreboard module must be set to receive the proper information.

The Swimming software provides the option to redefine a scoreboard module by sending information from one channel to another. For example, you could redefine scoreboard module 0B, which ordinarily receives record time information, to receive data from channel 06 which carries place and time information for lane 6. Refer to Chapter 4 under Setups for more details.

### Channel Selection

This section shows sample scoreboard module displays and the corre-

sponding channel selections to produce them. Set the switches inside each scoreboard module to agree with the channel number listed beside it as shown in Figure 2-K. No Swimming software configuration changes are necessary.

Note that channel 03 also displays the time of day when you press the *Time of Day* softkey on the Scoreboard softkey menu.



*Figure 2-K  Scoreboard Displays/Channel Numbers*

*Channel 11 is a multi-purpose channel that displays time and place information for lane 1 (channel 01) during the race. Following *reset*, team scores (channel 0D) are automatically displayed on the same scoreboard module.

**Channel 12 is a special purpose channel which is very useful for televised broadcasts. It displays the running time, lead split time and winning finish time. Unlike channel 0F, this channel does not cycle through all finish times, but displays only winning time until its reset.

**Display Modules**

When you are done setting the channel switches in your scoreboard, check the configuration. Press *2-Show definitions on scoreboard* in the Scoreboard Setup menu to display the module definitions on the scoreboard as shown in Figure 2-L. Refer to page 4-22 for more information.

| HOME | GUEST |
|---|---|
| 0d | 0d |
| EVENT | HEAT |
| 0E | 0E |
| LENGTHS | RECORD |
| 0b | 0b |

| LN | PL | TIME |
|---|---|---|
| 0 | 1 | 01 |
| 0 | 2 | 02 |
| 0 | 3 | 03 |
| 0 | 4 | 04 |
| 0 | 5 | 05 |
| 0 | 6 | 06 |

*Figure 2-L  Scoreboard Displaying Module Definitions*

# System Test

Before the first race of the meet begins, test all accessories for proper operation. Ensure that all System 5 self diagnostics check out properly when you turn on your timer. You should also use the Test/Programming menu to test your touchpads, pushbuttons, start system and scoreboard before the meet begins. Refer to Appendix B for instructions on running these tests. Test the start system to ensure that the Swimming race timer starts as expected. Check all touchpads and backup buttons for proper operation. Do not forget to check the System 5's battery level before beginning the meet.

# Tutorial

This chapter provides step-by-step instructions for timing a race using the Swimming software with your System 5 Sports Timer. The purpose of this chapter is to provide a basic understanding of the operation of the Swimming software under race conditions. Various aspects of the user interface are addressed as are some commonly required operator inputs. Although the race described her is hypothetical, the circumstances covered are not uncommon in an actual race. Is is important to note also that many possible occurrences are beyond the scope of this tutorial. Use this chapter only as an introduction to swim timing with the Swimming software.

## Some Assumptions

This tutorial assumes that all hardware, including touchpads, start system, scoreboard and printer are already installed and properly connected to your System 5 Sports Timer. All of these operations are described in the preceding chapter.

Our hypothetical race is a 200 yard freestyle relay event number 3, heat 2. The hypothetical pool is a 10-lane, 25 yard pool. This race, however, uses only 6 lanes. The hardware configuration consists of an electronic horn start system, near-end touchpads, 1 backup button per lane, a scoreboard and a printer.

## Before The Race

Before starting the race, turn on your System 5 and printer. Make sure your printer is loaded with paper and is ready to print on a new page.

To load the Swimming software, press the softkey labeled *Swimming/Diving* from the Sports Menu. Swimming loads and is ready to operate in **write**-**in** event mode. Press the *event mode* key and select *print-in* from the softkey menu. The race printout will include the event and heat numbers, but you must enter the race distance, event and heat numbers with the keyboard before the race begins. For more information on event modes, refer to Chapter 4. Locate the *events* keypad and press the key labeled *200*. Press the *next event* key 3 times and the *next heat* key twice to enter the correct event and heat numbers. To help you locate these keys, a Swimming keyboard insert is shown on page 4-6.

Notice that each time you press a key the System 5 beeps. If you press a key but do not hear a beep, the System 5 did not receive the keystroke and you must press the key again.
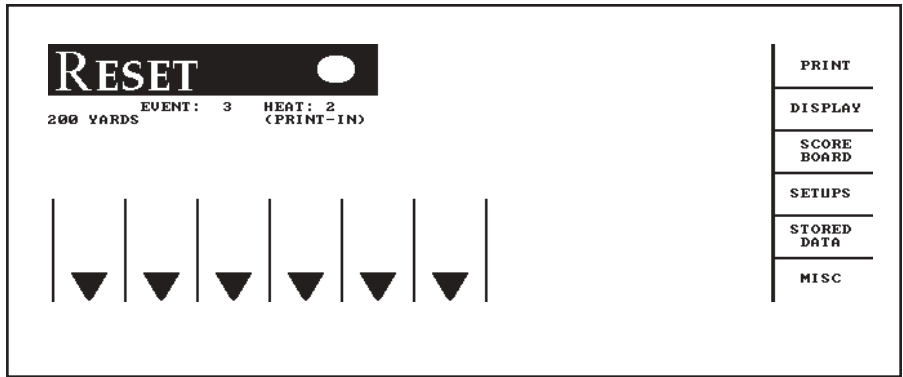
*Figure 3-A  Display Screen Before the Race Begins*

Since we are only using **6 of 10 lanes** in the pool for this race, press
***lane on/off*** keys for lanes 7 through 10. The active lane indicator disap-
pears in each of the lanes turned off.

The display screen is updated to reflect the data entered. Figure 3-A
shows a Swimming display when properly setup for this tutorial.

# Starting The Race

The Swimming software is in **reset** state and is ready to begin timing a
race. The horn sounds, the timer starts simultaneously and the swim-
mers are in the pool. **Do not** press the ***start*** key on the Swimming key-
board unless the timer did not start. All 6 touchpads are inactive for 3
seconds after the start, a feature which allows backstroke starts with-
out interfering with race timing. As soon as the touchpads are ready to
receive a touch, the pad status display indicates armed.

The swimmers have made their turn at the far end of the pool and come
in to touch at the near end. The swimmer in lane 3 touches first. When
the Swimming software receives the touch pulse, it beeps and displays
the number of complete lengths completed in that lan, in this case 2.
The pad status indicator in lane 3 goes blank for 15 seconds to indicate
the pad split delay time. During this time, the pad will not accept a
touch. The System 5 beeps as each swimmer touches a pad.

## Using The
## +*Touch* Key

As the operator, you notice that the second swimmer in lane 2 has start-
ed, but the Swimming display does not indicate that the first swimmer
in that lane touched the pad. Notice that there is no length display in
lane 2 as in other lanes. Figure 3-B illustrates this situation as it
appears on the display screen.
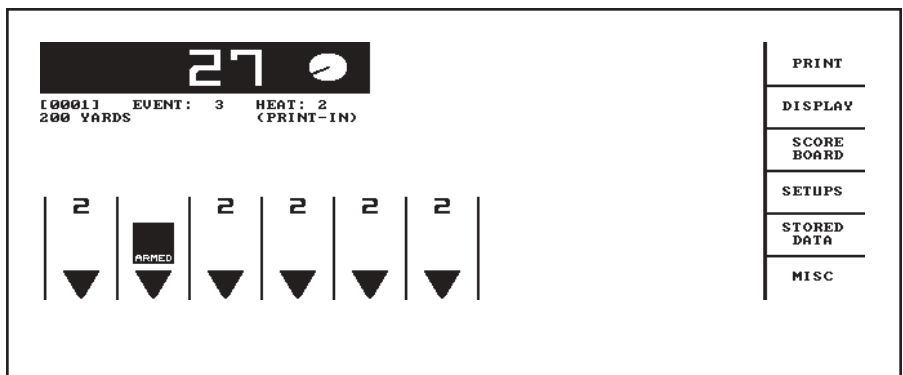


*Figure 3-B  Lane 2 Pad Touch Missed*

As sometimes happens, the first swimmer touched the wall beside the pad, which is a legal touch under swimming rules, but the Swimming software cannot register this as a touch.

To correct the missed pad touch, press the *+touch* key. The small window shown in Figure 3-C appears on the display screen prompting you to enter the lane number to which the touch should be added. Use the numeric keypad to type *2* and press *enter*.

```
+ TOUCH
           LANE:  █2█


         Enter lane number
        with numeric keypad
```

*Figure 3-C  Using the +Touch Key*

The display screen, Figure 3-D, now shows that 2 lengths have been completed in lane 2. The split time is not accurate, but all following split times, the finish time and place pick will be correct. Notice that it is not possible to finish a race using the *+touch* key. Races must be finished from the touchpads or backup buttons.



*Figure 3-D  Updated Lane Display*

## Using *Split Arm*



The next situation that arises involves the second swimmer in lane 1. This swimmer is slow getting out of the pool and steps on the touchpad after its split delay time of 15 seconds is up. The pad is armed at that point and when the swimmer stands on it, a touch pulse is sent to the System 5. The display screen, Figure 3-E, now shows lane 1 having completed 6 lengths and on the finish lap.



*Figure 3-E  Invalid Pad Touch in Lane 1*

To correct this situation, you must press **split arm** while the pad is still in its split delay, that is, while it still displays the message, **on finish lap**. Notice that the pad status display in lane 1 returns to **armed** status and the lengths completed is revised to indicate the accurate number, in this case 4. Figure 3-F illustrates the corrected situation.
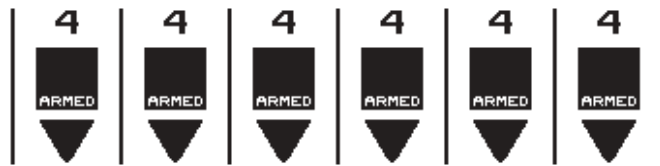
*Figure 3-F  Lane 1 Reset to 4 Lengths Completed*

## Using *Finish Arm*

FINISH
ARM ◆ ◆

All swimmers touch at the end of the third leg  of this race and the final leg swimmers are in the pool. As the swimmers turn at the far end of the pool, you notice that lane 5 did not register a pad touch. Its length count shows 4, its pad display is not **F Armed** and the warning message **Length** is flashing over the lane indicator. Figure 3-G illustrates this situation.



*Figure 3-G  Lane 5 Pad Touch Missed*

To prepare the lane for the upcoming finish touch, press the *finish arm* key in lane 5. The length counter now displays 6 and the pad status display indicates that the pad is **F Armed**, as shown in Figure 3-H. The final split time is not accurate, but as demonstrated with the pad touch missed earlier in the race, the finish time and place pick will be accurate.



*Figure 3-H  Updated Lane Display*

# Finishing The Race

All swimmers touch their pads successfully at the finish. The System 5 beeps as each swimmer finishes and displays the place picks in high-lighted numbers  above each lane as shown in Figure 3-I. As soon as the race is over, press the *store/print* key. As its name indicates, this key stores the race results in memory. A message appears on the display screen confirming that the results have been stored and printing of results begins immediately. If your printer does not respond within 1 second of pressing the *store/print* key, make sure it is turned on and that it is on-line. Notice when timing races, in *print-in* or *title* event **mode** that the **event** and **heat** numbers are printed on the results printout.
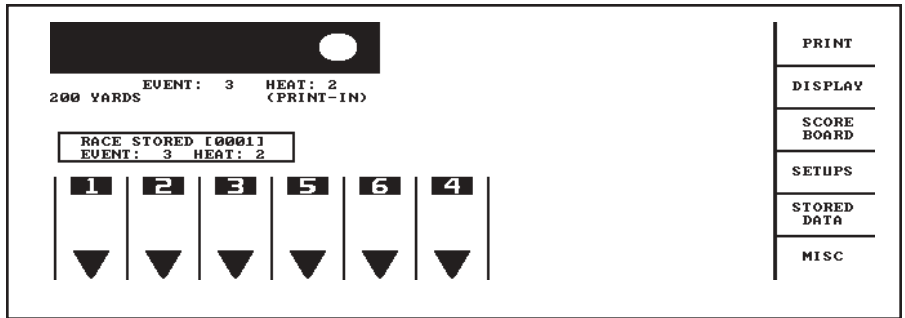
*Figure 3-I  Display at the End of the Race*

Finally, press **reset** to prepare for the next race. After pressing reset, you can enter the race distance, event and heat numbers for the next race. Any other sequence of entering race data may not produce the results intended.

# Reference

This chapter describes in detail the operation of the System 5 Sports Timer and Swimming software, the function of each key on the Swimming keyboard insert and all softkey functions.

This chapter is not meant to be read from beginning to end. It is designed to be used as a reference for specific features and functions of the Swimming software. When used in conjunction with the index at the end of this manual,  this chapter provides quick access to specific, detailed information.

While it is not necessary to read the entire chapter, quickly skimming the first 18 pages will provide you with a good overview of the operation of the Swimming software, the function of the keyboard and the meaning of various items appearing on the display screen. More information on using the Swimming software appears in Chapter 3 which includes a complete race tutorial.

# Basic Operation

This section describes the basic operation of the System 5 Sports Timer and Swimming software. The different modes of operation and a basic explanation of the behavior of the timing system are included.

## Self-Test/Loading Swimming

**Summary**

The Self-Test screen is the first screen you see when you turn on your System 5. After the self-test is complete, you can load any of the sports programs installed on your System 5.

**Operation**

When you turn on your System 5 it performs a series of self-tests. If any of these tests fail, the Test/Programming menu is displayed along with an indication of which test failed. Follow the instructions on the screen to conduct further tests and troubleshooting. Refer to Appendix B for complete instructions on using the Test/Programming menu. If a test fails after you have tried all the recommended remedies, call Colorado Time Systems' Customer Service Department at 800-287-0653 (U.S. and Canada) or (970)667-1000 (international).

```
                    Sports Menu                      SWIMMING/
                                                      DIVING
    ┌─────────────────────┐  ┌─────────────────────┐ ┌──────────┐
    │ Available from Colorado│  │  Currently Installed │ │  TEST/   │
    │ 1. Swimming/Diving   │  │ 1. Swimming/Diving   │ │ PROGRAM  │
    │ 2. Pace Clock        │  │                      │ └──────────┘
    │ 3. Synchronized Swimming│  │                      │
    │ 4. Water Polo        │  │                      │
    │                      │  │                      │
    │                      │  │                      │
    │ Call Our Sales Department│  │                      │
    │ For Our Latest Offerings:│  │                      │
    │      1-800-279-0111  │  │                      │
    └─────────────────────┘  └─────────────────────┘
```
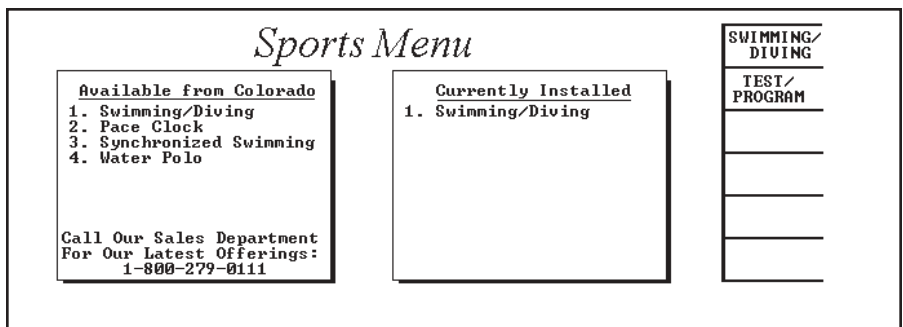
*Figure 4-A  System 5 Sports Menu*

After the self-tests are completed, the Sports Menu appears. The Sports Menu displays the sports software available from Colorado Time Systems and the sports programs currently installed in your System 5. Press the ***Swimming/Diving*** softkey. Swimming loads and is ready to use in ***write-in*** mode.

# User Interface

**Summary**

The System 5 Sports Timer/Swimming software user interface consists of a full-size Liquid Crystal Display(LCD) and a membrane keyboard with removable insert.

**Operation**

The Swimming program uses the LCD screen to communicate a wide range of information to you. The status of the current race is displayed at all times. Other important information displayed includes the **running time**, the **race number**, whether the timer has been **reset**, **event** and **heat** numbers, the current operating **mode**, **race distance** and **type**, **lane status**, **battery level**, and **softkey functions** available. The locations of all these displayed items are indicated on the display example, Figure 4-B.
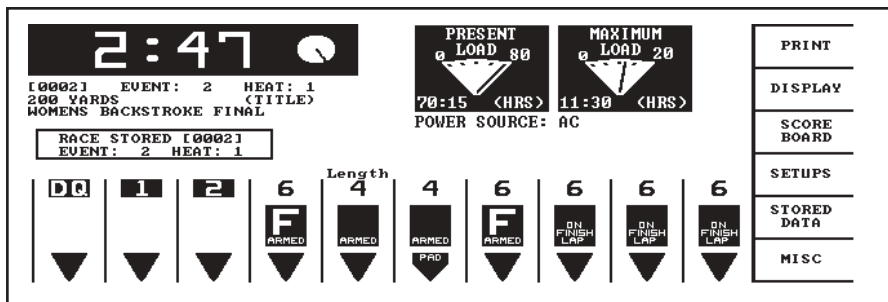


4-B. *Figure 4-B  Swimming Display Screen*

| | | |
|---|---|---|
| A. Running Time Display | G. Place at Finish | M. Pad Armed: Finish/Split |
| B. Battery Life Gauges | H. Mode of Operation | N. Pad Shorted Warning |
| C. Softkeys | I. Stored Race Information | O. Pad Inactive After Touch |
| D. Race #, Event, Heat | J. Warning Message | (On Finish Lap) |
| E. Race Description | K. Power Source in Use | |
| F. Lane Disqualification | L. Lengths Completed | |

# Warning Messages

**Summary**

Two important warning messages can appear on the display screen, indicating a potential timing problem.

**Operation**
**Pad**



This message flashes continuously in the lane display whenever the touchpad in that lane is closed. If no one is standing on the touchpad, this may indicate a shorted touchpad.

**Length**



When this message flashes in the lane display, it indicates that Swimming is expecting a pad touch in that lane. This message continues to flash until either a pad touch is received or you press ***+touch*** to add a missed pad hit.

# Timing Problems

If timing problems are encountered during a race, such as touchpad and backup button times that do not compare properly, the screen shown in Figure 4-C is displayed when you press ***store/print***. Carefully check the result(s) displayed in the highlighted lane(s). To use the backup time for a problem lane, press the softkey labeled ***Use_lnX Backup*** with "X" replaced by the specific lane number as shown in Figure 4-B. Press the ***Edit/DQ*** softkey to edit the time(s) in question. Refer to the description

of the *Edit/DQ* key later in this chapter for complete instructions. When you are satisfied that the results are accurate, press the *OK to Print* softkey to store the results and continue the meet.
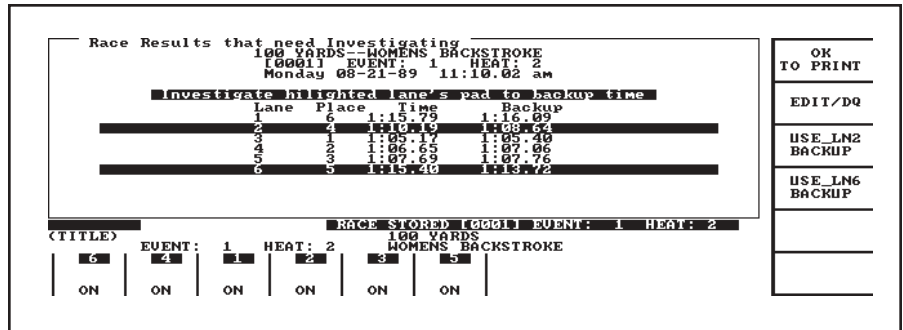


*Figure 4-C  Timing Problems Display and Softkey Menu*

# Modes of Operation

**Summary**

Your Swimming software provides three methods of keeping track of race information. Each method has advantages and is suited to certain types of meets and operator experience levels. *Write-in* mode requires you to keep track of all race-type information. *Print-in* mode prompts you to enter the event and heat numbers which are printed on the display screen and on the race printout. *Title* mode, with a programmed event sequence, automatically updates all race information when you press the *next event* key

**Operation**

**Write-in Mode**

When you first load the Swimming software, it is ready to operate in *write-in* mode. You must enter race distance manually from the keyboard. The event and heat numbers, even if entered on the display screen, are not printed on the race printout, nor are they stored in memory. You must write in the event and heat numbers on the race printout. All other race timing functions operate as usual.

**Some reasons to use write-in mode:**
*Write-in* mode is well suited to the inexperienced timer operator. Simply turn on the System 5 and enter race distance to begin timing. When the race is done, write in the heat and event numbers on the race printout. When not in using meet management software or posting race results, *write-in* mode is completely adequate.

**Print-in Mode**

*Print in* mode prompts you to enter unique event and heat numbers before each race. You must also set the race distance manually from the keyboard. *Print-in* mode prints the event and heat numbers on the race printout and stores them in memory. If at the start of the race, the event and heat numbers duplicate those of a stored race in the same meet, the event and heat display flashes you to remind you to enter unique event and heat numbers. The event and heat numbers must be unique for the current meet in order to avoid confusion when tabulating results.

**Some reasons to use print-in mode:**
*Print-in* mode requires a more experienced timer operator. It produces very professional looking race printouts and allows you to recall heat and event printouts from memory.

**Title Mode**

*Title* mode is most useful when you have programmed an event

sequence in Setups. When you press ***next event***, the race distance and description change to match the information you entered for that race in the event sequence. All race information  is printed on race printouts. You do not need to write anything on the printouts. To change the race description, press any race distance key and build the new race description by pressing the appropriate softkeys. Press ***enter*** when done. The new race information appears on the race printout, but the programmed event sequence is not altered. Refer to Setups for event sequence programming instructions.

You can take advantage of ***title*** mode's  versatility without a programmed event sequence. To set the race distance and description, press any race distance key. The prompt box allows you to enter the race description. Press the softkeys corresponding to the appropriate race type and press ***enter*** when the description is complete. All information entered appears on the race printout and is stored in memory.

**Some reasons to use title mode:**
***Title*** mode requires an experienced timer operator familiar with the process of programming an event sequence., but once the meet begins, this mode is easiest to use. Simply pressing ***next event*** updates all race information. Races can be run in rapid succession without stressing the timer operator.

# Timing Corrections

### Summary

The Swimming software is designed to correct timing inaccuracies introduced  when automatic and manual timing methods are combined.

A start is considered **manual** when a person presses the start button to start the timer when the strobe flashes or the starting gun or horn sounds. In this case, human reaction time is a factor. If the same person fires the starting gun or strobe light **and** presses the start button, there is no human reaction time to compensate for. This last start type is essentially an automatic start. Keep this distinction in mind when configuring the Swimming software.

A start is considered **automatic** is the start systems sends an electronic pulse  to the System 5 at the start of the race. A loudspeaker start system (e.g. model INFINITY) is an example of an automatic start system.

### Operation

If you are using manual start and touchpad finish, or automatic start and button finish, Swimming compensates for the timing discrepancy incurred by human reaction time. Manual starts are corrected by adding 0.15 seconds to the recorded start time. Manual finishes are corrected by subtracting 0.15 seconds from the recorded time.

The 0.15 second human factor has been determined to be the statistical median delay incurred by manual start and finish timing . When both start and finish are manually determined, no correction factor is required because the late start is compensated for by the late finish as compared to actual time. For a complete discussion of swim timing and the statistical data and methods used to arrive at the standard correction factor, refer to J. Killpatrick, *Timing Accuracies for Swimming* ( ©1975 J. Killpatrick, Minneapolis, MN) and *Timing and Judging Accuracies for Swimming* (© 1976 J. Killpatrick, Minneapolis, MN).

Refer to Start under Setups in this chapter for complete information on configuring the Swimming software for your start system.

# Relay Judging

Relay judging is a built-in Swimming feature. Relay judging is accomplished automatically using model RJP relay judging platforms for each lane.

## Automatic Relay Judging

To use Swimming's automatic relay judging feature, you must first install and connect one model RJP for each lane. Refer to your RJP Installation Guide for complete installation instructions. Refer to Figure 2-G in chapter 2 for a full system diagram. After the relay judging platforms are installed and cabled, enable relay judging in the Swimming software by following these steps.

1) Press the *Setups* softkey. Press the *Up* or *Down* softkey until the selected setup is **Printer** as shown in Figure 4-D.

2) Press 3 on the numeric keypad to select **Store/Print Format**.

```
    SETUPS              CHOICE    OPTIONS
    Start                  1      Default printer
    Finish/Buttons         2      User Defined printer control codes
    Hardware Setup         3      Store/Print format
    Splits                 4      View/edit sponsor's messages
    Timing                 5      Print Setup Options
    Pool               ►   6      Pica      (Type Size)
    Scoreboard             7      Elite     (Type Size)
 ►  Printer                8      Condensed (Type Size)
    Event Sequence         9      Print 8 lines per inch
    Time/date          ►   0      Always Print on Store/Print Key

    Setups = Softkeys             Options = Numeric Key Pad
```

*Figure 4-D  Printer Setups Window*

3) Press the *Left* or *Right* softkey to position the cursor at the point in the printout sequence where you want the relay information to appear. press the *Up* or *Down* softkey until the selected item is **Relay Judging Exchanges**. Press *enter*. Repeat the process to select **Relay Exchange Summary**. The completed setup is shown in Figure 4-E.

```
    STORE/PRINT PRINT FORMAT

        Race Summary
        Summary by lane
        Summary by place
        Splits/Summary
        With Names, by Place
    ──► With Names, by Lane
        Relay Judging Exchanges
        ↓more↓

        Print Format:  Race Summary; Splits Summary;
        Relay Judging Exchanges; Relay Exchange Summary; Form Feed; █
```

*Figure 4-E  Store/Print Format*

4) Press *quit*, and then press the *Record Setups* and *Yes* softkeys to save the new print setup. Press *quit* to exit Setups.

Refer to the Setups section in this chapter for complete information on Swimming setups.

# Keyboard

**Summary**

This section describes the action of the keys on the Swimming keyboard insert. The keys are described in order as they appear from left to right on the keyboard. Refer to the Index at the end of this manual to locate a specific key description quickly. References to keyboard keys appear lower case **bold italic** type in this manual.
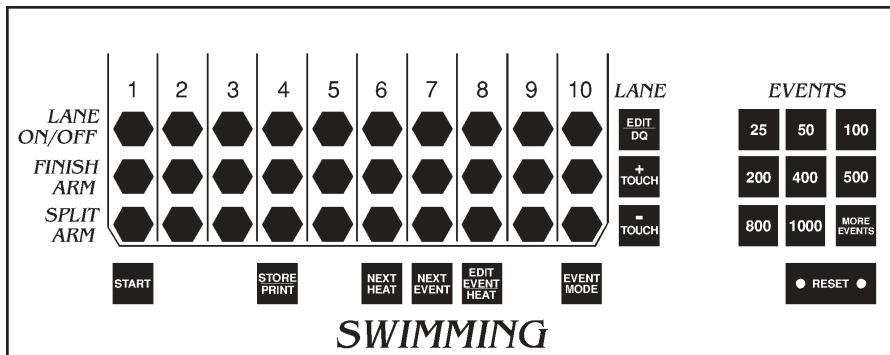
*Figure 4-F  Swimming Keyboard Insert*

## Lane On-Off



**Function**

The **lane on-off** keys are located directly under the lane numbers on the Swimming keyboard. These keys toggle output to the scoreboard and display screen from each lane **on** or **off** depending on current status.

**Operation**

If lane 10 is currently **off**, pressing the **on-off** key for lane 10 will tune the lane **on**. Data are still collected from a lane when it is turned off, including running time, splits and finish time. The data collected are not sent to the scoreboard unless the lane is turned on. When a lane is turned off, its number and its status are not displayed on the Swimming screen.

## Finish Arm



**Function**

Press **finish arm** to arm the touchpad in the selected lane for a finish touch. Use this key to arm a lane for a finish touch when the swimmer missed a split touch.

**Operation**

When you press this key, the Swimming display changes the lane status to waiting for a finish touch. The display also updates the number of lengths to indicate the final lap. If pressed by mistake, you must press the **-touch** key to return the lane to its prior state.

## Split Arm



**Function**

This key allows you to rearm a touchpad for a split touch after an invalid touch has occurred.

**Operation**

For example, in a relay race, the relay swimmer stands on the pad before taking his or her mark. The pad registers a touch that is invalid. To rearm the pad for the proper split touch before the swimmer in the pool touches, press **split arm** immediately after the invalid pad touch,

during the pad split delay time. After a touch, the pad remains inactive for a user-definable period, normally 15 seconds.

## Start

**START**

**Function**

This key is used **as the final backup start** in case the primary and secondary systems fail.

**Operation**

Do not press this key before the primary start system has sounded (horn, start pistol transducer, etc.) The *start* key also allows the timing operator to start swimmers when no other start system is used.

## Store/Print

**STORE PRINT**

**Function**

Stores the results of the race just completed in memory and prints the results. Indicates that the race is over.

**Operation**

Press this key at the end of each race to tell the Swimming software that the race is completed. The results of the current race are stored in memory and printed according to the print setup.

If you press this key before all lanes have finished, or if a swimmer missed a finish touch, the display screen informs you that not all lanes have received a finish touch, If there was no swimmer in an unfinished lane, turn that lane off and press *store/print*. If there was a swimmer in an unfinished lane, turn that lane off, press *store/print* and then enter the last split or backup time for that lane using the *edit/DQ* key.

If a timing problem occurs, a window appears on the display screen as indicated on page 4-3 which indicates the problem lane(s). The lane(s) in question is displayed in reverse video. Press *edit/DQ* to edit the time in a highlighted lane. Enter the lane number and select the correct time from the softkey menu or enter a stopwatch time with the numeric key-pad. Refer to Setups to select the kinds of timing discrepancies the Swimming software is to check.

## Next Heat

**NEXT HEAT**

**Function**

Advances the Heat counter by one (1).

**Operation**

Press this key before starting the next heat of an event. The heat number displayed on the screen advances by one (1). The heat number is only stored and printed when the Swimming software is operated in *print-in* or *title* mode.

## Next Event

**NEXT EVENT**

**Function**

Advances Event counter by one (1). When operating the Swimming software in *title* mode with a programmed event sequence, the race description corresponding to the new event number is automatically displayed.

**Operation**

Press this key before starting the next event on the meet schedule. The event number displayed on the screen advances by one (1). The event number is only printed when the Swimming software is operated in *print-in* or *title* mode. When using *title* mode with a programmed event sequence, the race distance and type are displayed on the screen. In *write-in* mode, you are neither required or reminded to update the event number. The event number is neither printed nor stored in memo-

ry when operating in *write-in* mode. Be sure to set the correct race distance before starting the next race.

## Edit Event/Heat

**Function**

This key allows you to edit the currently displayed event and heat numbers.

**Operation**

Press this key, type the desired event number with the numeric keypad and press *enter*.  Then type the desired heat number and press *enter*. If the last **stored race** was a false start, press the softkey labeled *False Start* and confirm the false start by pressing the softkey labeled *Yes*. The current race is invalidated in memory, allowing you to maintain unique event and heat numbers.

## Event Mode

**Function**

This key allows you to select the mode of operation.

**Operation**

Press this key to display the modes of operation softkey menu. Select one of the three modes available. Refer to the discussion of modes of operation earlier in this chapter for details.

## Edit/DQ

**Function**

Allows you to edit times or disqualify swimmers from the last stored race.

**Operation**

This key is only valid after pressing the *store/print* or *reset*. To edit times, press this key and then press the *Edit Time* softkey. Type the lane number you want to edit and press *enter*. The window on the screen displays the lane number and the recorded time. The softkeys display the backup times and the last recorded split time. The top softkey is labeled with the median time for 3-button backup systems or with the average for 2-button backup systems. Press the softkey corresponding to the time you want to attach to that lane or press *c/e* and type the stopwatch time. Press *enter* when done. The Swimming software calculates any changes in finish order based on the new time.

To disqualify a swimmer from the last stored race, press *edit/DQ* and then press the *DQ* softkey. Type the lane number to *DQ* using the numeric keypad and press *enter* to disqualify the swimmer in that lane. Repeat the procedure to **un**-**DQ** a disqualified swimmer.

## +Touch

**Function**

This key allows you to add a pad touch when the swimmer in a given lane missed a touch.

**Operation**

To add a pad touch to a selected lane, press this key, type the lane number using the numeric keypad and press *enter*. The display is immediately updated to indicate the added touch

**Note:**

*A race cannot be finished from the keyboard. Therefore, this key is invalid on the finish lap.*

# -Touch

**-TOUCH**

## Function

This key allows you to subtract a pad touch from the total in a given lane. Used when an invalid pad touch is recorded. For example, when a swimmer on the pool deck steps on the lip of a touchpad, triggering an invalid touch.

## Operation

To remove a pad touch from a selected lane, press this key, type the lane number using the numeric keypad and press *enter*. The display screen is immediately updates to reflect the removed touch.

*EVENTS*

| 25 | 50 | 100 |
| 200 | 400 | 500 |
| 800 | 1000 | MORE EVENTS |

# Events

## Function

These keys allow you to enter the race distance.

## Operation

Use the numbered keys in this category to set the race distance, either in yards or meters as defined in Setups. Press the key corresponding to the distance desired. The race distance displayed changes to match the new distance and the race status display is updated. Press *more events* to display more event lengths in yards or meters on the softkey menu then press the softkey next to the desired race distance.

# Reset

**● RESET ●**

## Function

This key clears the Swimming display and prepares it for the start of the next race.

## Operation

The *reset* key is composed of two keys placed side-by-side. Both keys must be pressed simultaneously to reset the Swimming race display. Pressing these keys indicates that the race is over. The display is cleared and ready for the start of the next race. *Do not press reset during a valid race.*

Whenever you press *reset*, the race is over even if a swimmer has not finished. The race is stored showing results only for the lanes that were finished before *reset* was pressed.

If you press *reset* within 10 seconds of a start, the Swimming software assumes that there was a false start and no data is stored.

# Numeric Keypad

**Function**

This key allows you to enter numbers in response to a variety of prompts. The numeric keypad is located to the right of the keyboard insert on the System 5 lower console.

*KEYPAD*

| 1 | 2 | 3 |
| 4 | 5 | 6 |
| 7 | 8 | 9 |
| C/E | 0 | ENTER |

**Operation**

There are many instances during the operation of the Swimming software when it is necessary to enter numbers. Whenever a numeric entry is required, use the keypad to make the desired entry.

## Enter

ENTER

**Function**

This key enters the numeric or other keyboard enter into the Swimming software.

**Operation**

After a keyboard entry, press *enter* to accept the entry.

## C/E

C/E

**Function**

This key allows you to clear an existing entry or clear an entry made in error.

**Operation**

Press *c/e* to clear all data from a prompt line on the screen.

# Console Keys

The console keys are located to the right of the LCD screen. The console keys are shown in Figure 4-G
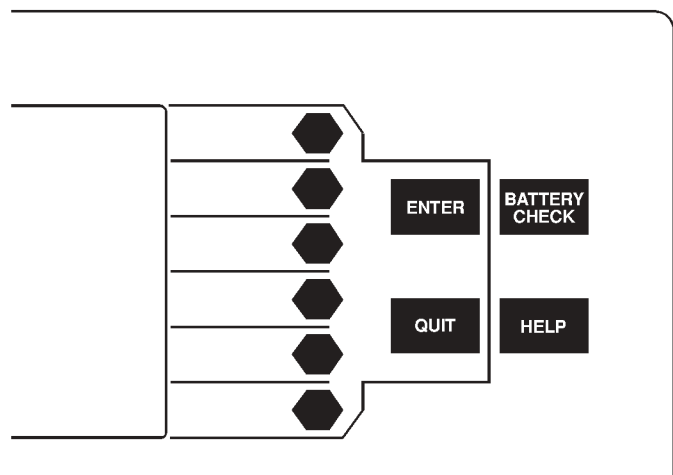
*Figure 4-G  Console Keys*

# Enter

**ENTER**

**Function**

This key enters a numeric or other keyboard entry into the Swimming software.

**Operation**

After typing information on the keyboard or numeric keypad, press *enter* to accept the data. This key functions exactly the same as the *enter* key on the numeric keypad.

# Quit

**QUIT**

**Function**

This key allows you to leave a function without saving data entered or to exit the current prompt when *enter* does not do so.

**Operation**

Press this key to exit a prompt after information has been entered. This key also allows you to cancel an operation that requires an entry without changing the current settings. No information is entered if you press *quit* before pressing *enter*.

# Battery Check

**BATTERY CHECK**

**Function**

This key displays the estimated operating time of the batteries in your System 5.

**Operation**

Press this key to display the graphic battery life gauge for the batteries. The power source currently in use is also displayed. The battery life remaining at present and maximum load is approximate. A low reading on this gauge indicates that the batteries must be replaced. Use only alkaline batteries to obtain the most accurate battery gauge indications.

*Caution:*

*If the Present Load gauge reads two (2) hours or less, replace the batteries at the first opportunity. Do not take a chance on losing the time for a race should the batteries go completely dead.*

# Help

**HELP**

**Function**

Your Swimming software included context sensitive help information which is available at any time.

**Operation**

Press this key to display useful information on the screen. The help text covers the currently active operation. Use *help* as a reminder for using a Swimming feature not as a replacement for this manual. The information available in *help* is not intended to replace the manual.

# Softkeys

**Summary**
This section describes the operation of the Swimming softkeys. The softkeys are the column of six unlabeled keys immediately to the right of the display screen. The function of each key changes depending on the option selected. The screen displays the function currently available directly to the left of each softkey. If no label appears next to the softkey, that key is inactive. In this manual, softkey names appear capitalized and in **_Bold-Italic_** type. See figure 4-H for an example of the main softkey menu.
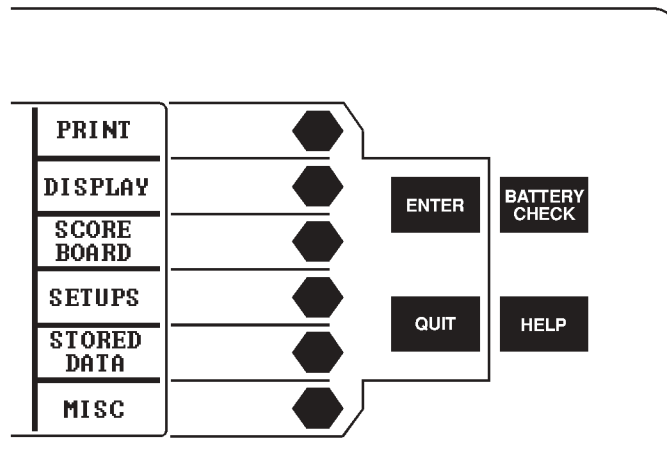


*Figure 4-H  Main Softkey Menu*

**Operation**
Each softkey's functions are organized in layers or levels. The first level consists of the six softkeys displayed when you first load Swimming software. When you press one of these softkeys, a second level providing more specific choices is displayed. In general, pressing a second level softkey executes an action or prompts you for entry of data.

If you press a softkey by mistake, or want to return to race timing mode when done using a softkey, press **_quit_**. If you have not pressed **_enter_** after making an entry, pressing **_quit_** exits without saving that entry.

## Print



**Summary**
The Print softkey allows you to print additional printouts from the last stored race organized in a variety of ways. Each item is printed in the order in which you press the softkeys. Make sure your printer is on-line and loaded with paper before beginning. Print samples appear later in this chapter.

**Operation**
After pressing store/print, press the Print softkey to access the print menus. The softkeys that make up the first print menu are shown in Figure 4-I. You may press any combination of keys available. Printing begins immediately.
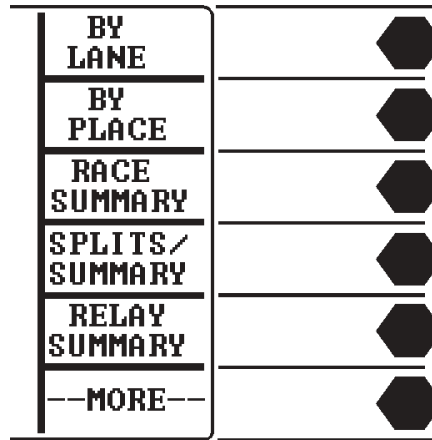
*Figure 4-I  Print Softkey Menu 1*

**By Lane**

**Function**

Prints an additional copy of race results stored by lane.

**By Place**

**Function**

Prints an additional copy of race results stored by place.

**Race Summary**

**Function**

Prints an additional copy of results sorted by lane **and** by place.

**Splits/Summary**

**Function**

Prints the splits from the last stored race.

**Relay Summary**

**Function**

Prints a summary of the relay exchanges from the last stored race.

**More**

**Function**

Toggles between the two *Print* softkey menus.

**Operation**

Press this softkey to display the other *Print* softkey menu. The second *Print* softkey menu is shown in Figure 4-J.
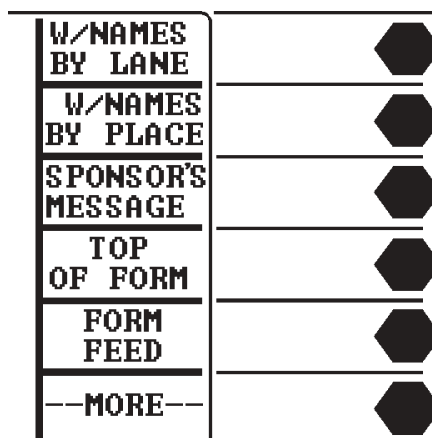


*Figure 4-J  Print Softkey Menu 2*

## W/Names By Lane

**Function**  Prints an additional copy of race results sorted by lane with a line for you to write in the swimmers' name.

## W/Names By Place

**Function**  Prints an additional copy of race results sorted by place with a line for you to write in the swimmers' names.

## Sponsor's Message

**Function**  Prints the Sponsor's Message on the race printout. Refer to Setups for instructions on building a sponsor's message.

## Top Of Form

**Function**  Press this softkey when you have reset the paper in your printer to the top of a new page. Swimming 5 needs to know that the printer is set at the top of a new page to keep the printouts properly organized.

## Form Feed

**Function**  Advances the paper to the top of the next page. Provides page breaks between pages of race information.

**Operation**  Press this softkey at the point in the print sequence where you want to end a page. Any information printed after a form feed begins at the top of the next page.

**More**  Press this softkey to display the other *Print* softkey menu.

# Display

DISPLAY

**Summary**  The *Display* softkey provides access to features that are displayed on the Swimming display screen. The *Display* softkey menu is shown in Figure 4-L.

**Operation**  Press this softkey to display race information on-screen including the last split or finish time for each active lane, the place or last length completed, the backup buttons pressed and early relay exchanges as shown in Figure 4-K. Backup times are not displayed in this window.

```
DISPLAY MENU
LN  PL/LEN     TIME      A  B  C   RJ
 1       3    1:12.27    ▲  ▲  ▲
 2       2    1:10.46    ▲  ▲  ▲
 3       7    1:20.51    ▲  ▲  ▲
 4       8    1:21.44    ▲  ▲  ▲
 5       1    1:07.77    ▲  ▲  ▲
 6       6      49.81                 —
 7       6      49.59                 —
 8       9    1:17.87    ▲  ▲  ▲
 9       5    1:16.72    ▲  ▲  ▲
10       4    1:15.62    ▲  ▲  ▲
```

*Figure 4-K  Lane Information Display Window*

*Figure 4-L   Display Softkey Menu*

## Time Of Day

**Function**      Displays the time, day and date from the System 5's internal clock.

**Operation**      Press this softkey to display the time, day and date. Refer to Setups section later in this chapter for instructions on setting the time, day and date.

## Display Lanes

**Function**      Displays current race information on-screen including the last split or finish time for each active lane, the place or last length completed, the backup buttons pressed and early relay exchanges are shown in Figure 4-K. Backup times are not displayed in this window.

**Operation**      Press this softkey to display current race information on-screen.

## Warning Messages On/Off

**Function**      Toggles the warning messages that flash above the lane displays on or off for the current race. These warnings, including **Length**, are described earlier in this chapter.

## Software Version

**Function**      Displays the version of the Swimming 5 software currently loaded and the version of firmware installed in your System 5 Sports Timer.

# Scoreboard



**Summary**      This softkey provides access to special scoreboard control and display features.

**Operation**      Press this softkey to display the Scoreboard softkey menu.



*Figure 4-M   Scoreboard Softkey Menu*

## Step Data
### Function
Sequences again through the results of the last race. This key is active only if you are using a single-line scoreboard.

## Clear Lanes
### Function
Clears the place and time area on each lane module. The next start returns the scoreboard to normal display status.

### Operation
Press this softkey to clear the time and place from all active lanes on multi-line scoreboards. The lane number display is not cleared. This allows you to edit time and place in the event of an invalid pad hit, etc. Pressing **Scbd On** or the next start returns the scoreboard to normal display status.

## Scorebrd Blank
### Function
Pressed once, this softkey blanks the scoreboard and displays the time-of-day. Pressed twice in a row, this key blanks the entire scoreboard.

### Operation
Press this softkey to blank the scoreboard and display the time-of-day. Press again immediately to blank all lines of the scoreboard. The entire scoreboard should be blanked when turning off the System 5. Press the **Scorebrd On** softkey to return the scoreboard to normal display status.

## Scorebrd On
### Function
Returns the scoreboard to normal display status.

### Operation
Press this softkey to return the scoreboard to normal display status after pressing the **Clear Lanes** or **Scorebrd Blank** softkeys

### Note:
*If you have selected the **Three-, Four-,** or **Five-Line Scoreboard** option in Scoreboard Setups, this softkey changes to **Scorebrd On/Blank,** combining the features of these two softkeys. The second softkey on the Scoreboard softkey menu now allows you to display race results for the alternate set of lanes.*

## Team Scores
### Function
Allows entry of up to four teams' scores to display point totals on the scoreboard.

### Operation
Press the softkey labeled with the appropriate team type and enter the current score. Teams available are Home, Guest 1, Guest 2 and Guest 3. You must keep track of team scores manually. Type the appropriate score(s) as shown in Figure 4-N and press **enter**. The team scores are immediately displayed on the scoreboard. Press **quit** instead of **enter** only if you do not want to display new team scores.
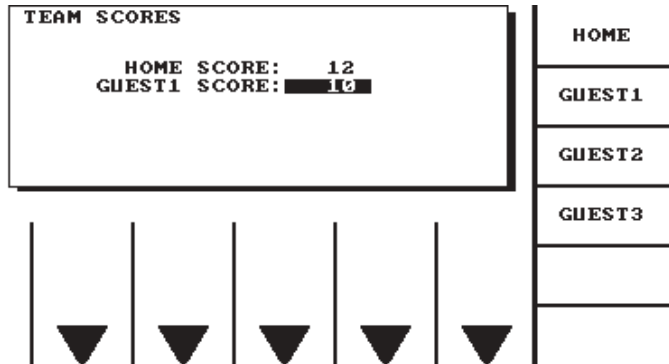


*Figure 4-N Team Scores Prompt*

## Record Time

Allows entry of the record time for the event.

```
RACE RECORD

        RECORD:▮1:28.34▮


      Enter record time
     with numeric keypad
```
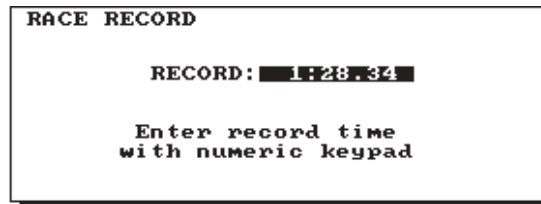
*Figure 4-O  Record Time Prompt*

**Operation**

Press this softkey, type the record time for the current event using the numeric keypad as shown in Figure 4-O, and press *enter*. The time entered is displayed on the optional Record Time scoreboard module (0B). Press *quit* to exit without displaying a new record time.

## Setups

```
SETUPS              ⬡
```

**Summary**

The *Setups* softkey provides access to features that allow you to customize the Swimming software. With the exception of *Time/Date*, setup changes are made permanent only if you press the *Record Setups* softkey after making changes. Otherwise, setup changes apply to the current session only and are lost when you turn off your System 5. Notice the race information displayed in condensed form at the bottom of the display screen. Pressing *Setups* does not interfere with race timing, but as a general rule, setup changes should only be made when the Swimming software is in **reset** state. Press *quit* to leave Setups.

## Setups Softkey Menu

**Summary**

The three softkeys shown in Figure 4-P are active from the main Setups display screen. Press the *Up* or *Down* softkey to move the arrow pointer to the desired setup option. If you want setup changes to be permanent, press the *Record Setups* softkey and then press the *Yes* softkey to save. Use the numeric keypad to select a specific setup option.

```
UP                  ⬡

DOWN                ⬡

                    ⬡

RECORD
SETUPS              ⬡

                    ⬡

                    ⬡
```
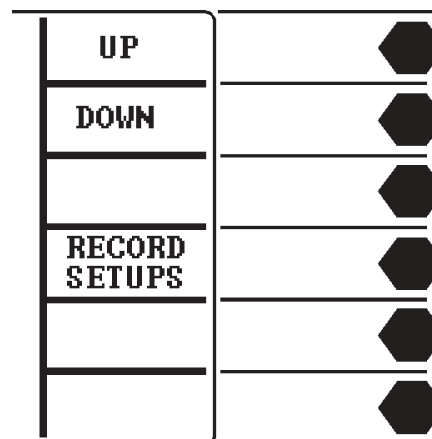
*Figure 4-P  Setups Softkey Menu*

## Start

**Function**

There are three ways to start the Swimming 5 race timer. The most accurate method is to use an automatic (electronic) electronic start sys-

4-17

tem such as a horn start or start pistol transducer. Manual button start is much less accurate. Refer to the discussion of Timing Corrections in this chapter for more information. The final start method, which should only be used if all other start systems fail, is to press the *start* key on the Swimming keyboard.

```
┌─────────────────────────────────────────────────────────────────┐
│   ┌──────────────────┐                                           │
│   │ SETUPS           │   CHOICE  OPTIONS                         │
│ ──┼─► Start          │   ► 1     Automatic                       │
│   │   Finish/Buttons │     2     Manual                          │
│   │   Hardware Setup │                                           │
│   │   Splits         │                                           │
│   │   Timing         │                                           │
│   │   Pool           │                                           │
│   │   Scoreboard     │                                           │
│   │   Printer        │                                           │
│   │   Event Sequence │                                           │
│   │   Time/date      │                                           │
│   └──────────────────┘                                           │
│     Setups = Softkeys          Options = Numeric Key Pad         │
└─────────────────────────────────────────────────────────────────┘
```
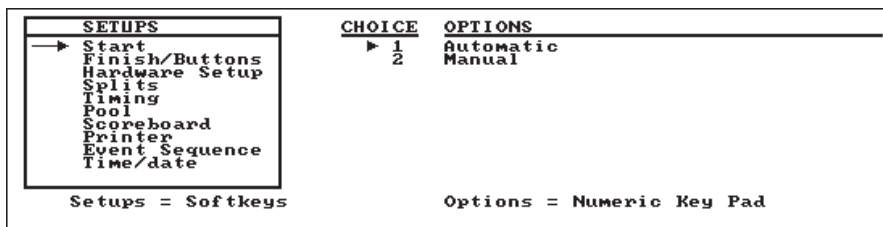
*Figure 4-Q  Start Setups Window*

**Operation**     Press 1 to select **automatic** start as the primary start method. Press 2 to select a **manual** start button as the primary start method.

**Note:**     *The Start setups affect automatic adjustments. If not set to agree with your hardware configuration, inaccurate race timing could result.*

## Finish/Buttons
### Function

This feature allows you to configure finish parameters to match your hardware setup. The Swimming system uses either touchpads or buttons for primary finish. The times produced by touchpad finish are extremely accurate. Alternatively, each lane can have up to three finish buttons. If three buttons are used, the finish time is the median of the three. If two two buttons are used, the finish time is the average of the two. Button finish times are less accurate because of human reaction time. Refer to the discussion of Timing Corrections earlier in this chapter for more information on human reaction time.

```
┌─────────────────────────────────────────────────────────────────┐
│   ┌──────────────────┐                                           │
│   │ SETUPS           │   CHOICE  OPTIONS                         │
│   │   Start          │   ► 1     Pad              (Prime Finish) │
│ ──┼─► Finish/Buttons │     2     One Button       (Prime Finish) │
│   │   Hardware Setup │     3     Two Buttons      (Prime Finish) │
│   │   Splits         │     4     Three Buttons    (Prime Finish) │
│   │   Timing         │   ► 5     One Button       (Backup Finish)│
│   │   Pool           │     6     Two Buttons      (Backup Finish)│
│   │   Scoreboard     │     7     Three Buttons    (Backup Finish)│
│   │   Printer        │   ► 8     Compare Button Early to Pad     │
│   │   Event Sequence │     9     Compare Pad-Button difference   │
│   │   Time/date      │                                           │
│   └──────────────────┘                                           │
│     Setups = Softkeys          Options = Numeric Key Pad         │
└─────────────────────────────────────────────────────────────────┘
```

*Figure 4-R  Finish/Buttons Window*

If touchpads are the primary finish system, up to three buttons per lane can be used to provide backup finish times. If you select option 8, Swimming 5 alerts you when the backup buttons are pushed more than 0.3 seconds before the pad touch. Option 9 alerts you when the backup and pad times are not within 0.3 seconds of each other.

**Operation**     Options *1-4* allow you to select the prime finish type. If you select options *2*, *3* or *4*, press *0* to select  the input for the selected button prime finish. Options *5-7* let you set the number of backup buttons you are using. Option *8* alerts you on the race printout is a backup button is pressed before the pad is touched. Option *9* compares the pad and back-up button times. Note that **pad** must be selected as the prime finish type to use automatic time comparison.

**Note:**     *Any setup changes you make are stored in permanent memory only if you*

*press the **Record Setups** softkey and then press the **Yes** softkey to save. If you do not press **Record Setups**, setup changes are lost when you turn off your System 5.*

## Hardware Setup

### Function

Allows you to configure your System 5 internal speaker volume, Swimming touchpad voltage, whether or not to allow Setup information to be downloaded from a PC and allows you to select the relay judging method. The speaker volume should be set to an audible level. The touchpad voltage can be lowered to help fight pad connector corrosion. Running a swim meet with I/O voltage set to **low** may help reduce corrosion, but if you touchpad/backup button cable is long, for example, do not use this option.

```
SETUPS              CHOICE   OPTIONS
Start                 1      Speaker volume (0 to 3) = 1
Finish/Buttons        2      Low swimming i/o voltage
Hardware Setup        3      Allow Remote Setup
Splits                4      Relay Judging Using Platforms
Timing
Pool
Scoreboard
Printer
Event Sequence
Time/date                    Speaker volume (0=low...3=high)?
                                         1
Setups = Softkeys
```
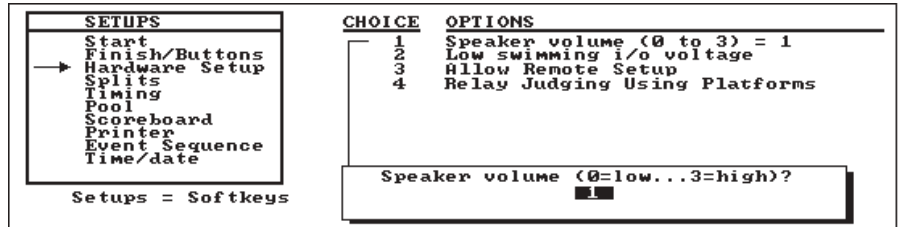
*Figure 4-S  Hardware Setup Window*

It is very important that you set the proper relay judging method. If you select **Relay Judging Using Buttons**, Swimming 5 compensates for human reaction time by subtracting 0.15 seconds from the button judging time. No timing correction is applied to relay judging platform.

### Operation

Press **1** to set the System 5 internal speaker volume. Type **0** to turn the speaker off, **1** for low volume, **2** for medium volume or **3** for highest volume in the prompt box and press **enter**.  Press **2** to select low voltage delivered to the touchpads. Press **3** to enable the Allow Remote Setup option. When enabled, this option allows you to edit all setup information on a PC using meet management software and then upload that information to your System 5 through com port 1. This is especially useful for setting up event sequences. Press **4** to select relay judging using either Buttons or Platforms.

## Splits
### Function

Controls split printing format. Splits printed by lap produce the running time of the lap just completed only. Cumulative splits print the total running time of the race to that point.

```
SETUPS              CHOICE   OPTIONS
Start               ▶ 1      Print Cumulative Splits
Finish/Buttons      ▶ 2      Print Splits by lap
Hardware Setup
Splits
Timing
Pool
Scoreboard
Printer
Event Sequence
Time/date
Setups = Softkeys            Options = Numeric Key Pad
```
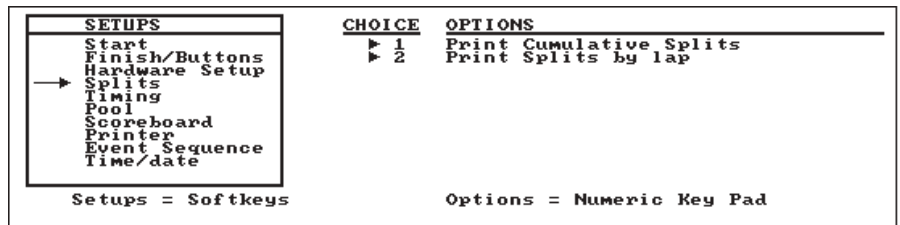
*Figure 4-T  Splits Setup Window*

### Operation

Press **1** to print cumulative splits, or press **2** to print splits by lap. You can select both options.

## Timing
### Function

Controls variable timing functions. The timing accuracy option selects the number of decimal places to which results are printed. Pad split delay time allows you to set the length of time the touchpads are inoperative after a touch, allowing relay swimmers to get out to of the pool without triggering a pad touch. The recommended delay time for both near- and far-end pads is 15 seconds. When time warning messages are enabled, the Swimming software predicts how long a swimmer should take to complete a lap based on the previous lap's time. If the predicted lap time is exceeded, the Swimming software assumes that the swimmer missed a pad touch and posts a warning message on the display screen. You can then press *+touch* to update the race information if a pad touch was indeed missed. If the swimmers in a meet are erratic in their lap times, disable this function to cancel the warning message. The pad delay at start time allows you to set the time all pads are inoperative after the start of a race. The last two options allow you to set the scoreboard or System 5 screen to count *down* the number of lengths in a race.

```
SETUPS                      CHOICE   OPTIONS
  Start                     ▶  1     Timing Accuracy = .01 seconds
  Finish/Buttons               2     Timing Accuracy = .001 seconds
  Hardware Setup               3     Near-End Pad Split Delay = 15 sec.
  Splits                       4     Far-End Pad Split Delay =  8 sec.
→ Timing                    ▶  5     Display Time Warning messages
  Pool                         6     Pad Delay At Start =  3 sec.
  Scoreboard                   7     Scoreboard Length Count Down
  Printer                      8     Screen Length Count Down
  Event Sequence
  Time/Date
                               Near end pad split delay (1-99)?
  Setups = Softkeys                       15
```

*Figure 4-U  Timing Setups Window*

### Operation

Press *1* or *2* to set the timing accuracy to .01 seconds or .001 seconds respectively. Options *3* and *4* allow you to set the pad split delay time. Use the numeric keypad to type a new delay time and press *enter*. Option *5* toggles the time warning messages on and off. Press *6* to set the pad delay at start time . Use the numeric keypad to type a new delay time and press *enter*. Options *7* and *8* set length count down mode for the scoreboard and System 5 screen.

### Note:

*Any setup changes you make are stored in permanent memory only if you press the **Record Setups** softkey and then press the **Yes** softkey to save. If you do not press **Record Setups** , setup changes are lost when you turn off your System 5.*

## Pool
### Function

Controls the setup configuration information for your pool. In most installations, the touchpad/backup button cables are set up with lane 1 closest to the timer. If, however, lane 1 is at the far end of the cable, reverse the lane order with this setup to properly configure the Swimming software. If you have touchpads installed at the far end of the pool, enable far-end splits. Notice that if you enable far-end splits and set the race distance to 1 length, the finish touch comes from the far-end touchpad. If far-end splits  are disabled, a 1-length race must finish at the near-end touchpads. This setup also allows you to enter the number of lanes in the pool, either 6,8 or 10.

Proper timer configuration requires that you enter the pool length on this setup. For example, a 100 yard race in a 25 yard pool is 4 lengths, or 2 pad touches at the near end. A 100 meter race in a 50 meter pool is

2 lengths, or one touch at the near end to finish. Indicate also the unit of measurement, either yards or meters.

```
 SETUPS              CHOICE   OPTIONS
 Start                 ▶ 1    Lanes Normal (ex: 1 - 10)
 Finish/Buttons          2    Lanes Reversed (ex: 10 - 1)
 Hardware Setup          3    Lanes In Pool = 10
 Splits                  4    Far-End Splits
 Timing                ▶ 5    Short Course Pool
→Pool                  ▶ 6    Long Course Pool
 Scoreboard            ▶ 7    Race Distance Units - Yards
 Printer                 8    Race Distance Units - Meters
 Event Sequence
 Time/Date
                              Number of lanes in pool?
                                       10
 Setups = Softkeys
```

*Figure 4-V  Pool Setups Window*

**Operation**
- Press *1* to select normal lane order-lane 1 nearest the timer.
- Press *2* to reverse the order of the lanes.
- Press *3*, type the number of lanes in the pool with the numeric keypad and press *enter*. Only 6, 8 and 10 lanes are valid.
- Press *4* to enable touchpads at both ends of the pool.
- Press *5* to indicate that the pool is 25 yards or meters in length.
- Press *6* to indicate that the pool is 50 yards or meters.
- Press *7* to indicate that the pool's length is measured in yards.
- Press *8* to indicate that the pool's length is measured in meters.

## Scoreboard
### Function

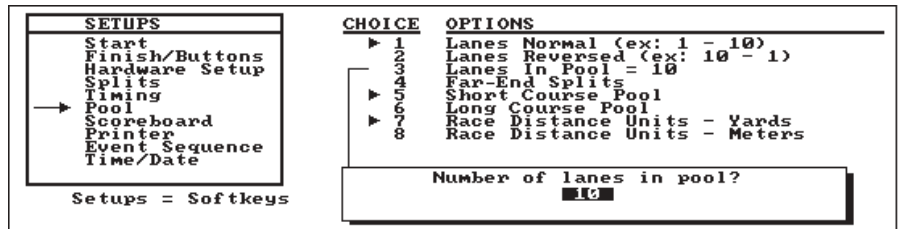Controls the parameters that affect your scoreboard. The data transmission rate must be matched to the communication rate of your scoreboard. Set either at high(9600 baud) or low at (2400 baud) speed. See your scoreboard manual for the communication rate of your scoreboard. Figure 4-W shows a sample Scoreboard Setup display window.

Self-tests checks all scoreboard digit segments by running a test pattern on the scoreboard for 1 minute. The blank scoreboard module feature allows you to blank unused scoreboard modules.

Scoreboard Setups also allow you to define scoreboard modules. **Scoreboard module definition is a complex operation which should not be attempted by an inexperienced operator.** Carefully read the Scoreboard section in chapter 2 before attempting to redefine any scoreboard modules. In the Swimming software all scoreboard module logical addresses default to the physical addresses. For example, the physical of the scoreboard module displaying data for lane 1 is 01, so the logical address is also 01. If you want the lane 1 (01) scoreboard module to display line 10's data set its logical address in this setup to 0A. On the module definition window, as shown in Figure 4-X, the physical addresses appear on the left, the redefined logical addresses on the right.

```
 SETUPS              CHOICE   OPTIONS
 Start                 ▶ 1    High Speed  (Data Transmission)
 Finish/Buttons          2    Self Test
 Hardware Setup          3    Define Module(s)
 Splits                  4    Blank Module(s)
 Timing                  5    Five-Line Scoreboard
 Pool                    6    Times To Step One-Line Scb = 1
→Scoreboard              7    One-Line Scb Sequence Time = 5
 Printer                 8    One-Line Scb Sequence List
 Event Sequence        ▶ 9    Display Results In Lane Order
 Time/Date               0    Display Results In Place Order

 Setups = Softkeys            Options = Numeric Key Pad
```
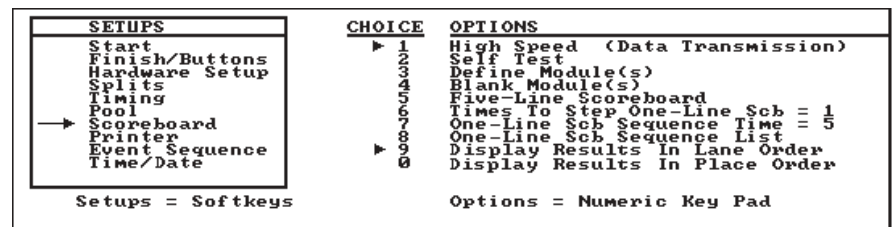
*Figure 4-W  Scoreboard Setups Window*

Option *5* allows you to display results from two lanes on one scoreboard line. The number of scoreboard lines available for this option is equal to

half the number of active lanes in your pool. For example, if you have a 10-lane pool, this option allows you to display all race results on a 5-line scoreboard. At the end of a race, your scoreboard automatically displays the results for lane 1 through 5. To display lanes 6 through 10, press the **Scoreboard** softkey and then the **Display 6-10** softkey.

Options **6, 7** and **8** apply only to single-line scoreboards. Ordinarily, a single-line scoreboard displays the race results by place at the end of the race and then displays the programmed sequence. This feature allows you to set the number of times this information is displayed. The sequence time for each item also applies to the single-line scoreboard.

Select the time in seconds each item in the sequence is displayed. This setup also sets the minimum time that each result is displayed as the swimmers finish.

Options **9** and **0** allow you to choose the way race results sent to the scoreboard are sorted, either by lane order or by place order.

**Operation**  Press **1** to toggle between high speed-9600 baud and low speed-2400 baud. See your scoreboard manual for communication rate of your scoreboard.

Press **2** to self-test scoreboard modules. Press **3** to display or change scoreboard module definitions, press the **Up** or **Down** softkey until the arrow points at the desired physical address as shown in Figure 4-X, then press **1** and type the two-digit logical address in the prompt box with the numeric keypad (and with the softkey menu if a letter is required, as in 0A). Press **2** to display module definitions on the scoreboard. Press **2** again to clear definitions on the scoreboard.



```
  DEFINE SCB MODULES
  00   cannot define        1    Define scoreboard module
→ 01   0A                   2    Show definitions on scoreboard
  02
  03
  04
  05
  06
  07
  08
  09
  0A
  0B
  0C
  ↓more↓
```
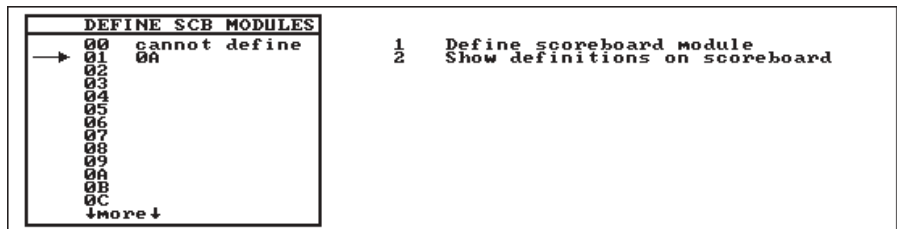
*Figure 4-X  Scoreboard Module Definition Window*

*Note:*  *Scoreboard module numbers and sample displays appear in Chapter 2.*

Press **4** to select **Blank Module(s)**. Press the **Up** or **Down** softkey until the arrow points at the desired module and press **1** to blank, as shown in Figure 4-Y. Repeat the procedure to un-blank a blanked module.



```
  BLANK SCB MODULE
  00   cannot blank         1    Blank/unblank scoreboard module
  01
  02
  03
  04
  05
→ 06   blanked
  07
  08
  09
  0A
  0B
  0C
  ↓more↓
```

*Figure 4-Y  Blank Scoreboard Module Window*

Press **5** to display the results from two lanes on one scoreboard line. The number of scoreboard lines available for this option is equal to half

the number of active lanes in your pool. For example, if you have a 10-lane pool, this options allows you to display all race results on a 5-line scoreboard. At the end of a race, your scoreboard automatically displays the results for lanes 1 through 5. To display lines 6 through 10, press the **Scoreboard** softkey and then the **Display 6-10** softkey.

Press **6** to enter the number of times a single-line scoreboard is to step through the results of the last race--type the desired number and press **enter**. Press **7** to display the single-line scoreboard sequence time prompt box. Type the time in seconds that each item is to be displayed on a single-line scoreboard and press **enter**.

Press **8** to define a single-line scoreboard sequence list, as shown in Figure 4-Z. Choose items to be added to the default **by place** sequence on a single-line scoreboard. Press the **Up** or **Down** softkey until the arrow points at the desired item and press **enter** to add the selection to the list. Press **quit** to exit this window.

```
┌─ ONE LINE SCOREBOARD SEQUENCE LIST ──────────────────┐
│   ┌──────────────────────────────────┐               │
│   │ (0B)  Record                     │               │
│   │ (0C)  Event/heat                 │               │
│ ─→│ (0D)  Team scores                │               │
│   │ (0E)  Place pick                 │               │
│   │ (13)  Team scores                │               │
│   │ (14)  Team scores                │               │
│   │ (15)  Team scores                │               │
│   │ (16)  Time of day                │               │
│   └──────────────────────────────────┘               │
│                                                       │
│     Sequence List:  (0C) Event/heat, (0B) Record splits, │
│   (0E) Place pick, (0D) Team scores, ■                │
└───────────────────────────────────────────────────────┘
```
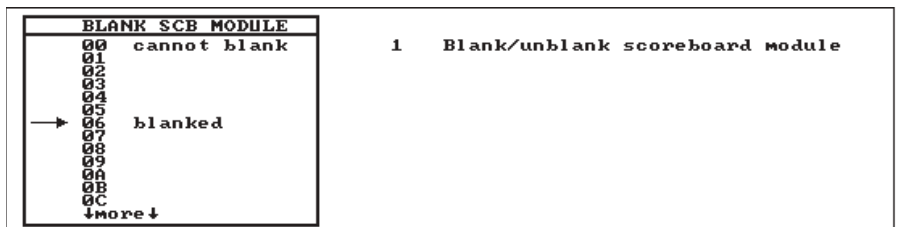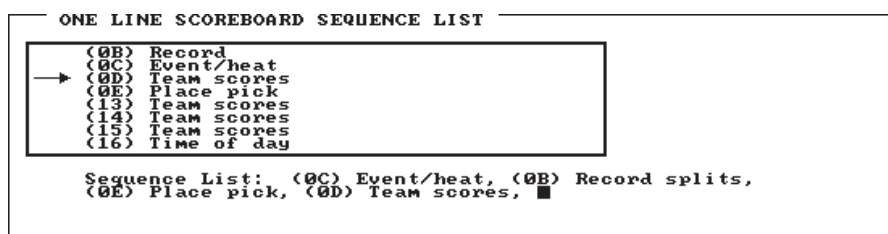
*Figure 4-Z  Single-Line Scoreboard Sequence Window*

Press **9** to display race results on the scoreboard in lane, place and time order. This is the typical sequence at U.S. pools. The signage on the scoreboard must be placed as shown on page 2-8 for results sorted by lane (LN, PL, TIME).

Press **0** to display race results on the scoreboard in place, lane and time order. This is the typical sequence at European pools where place order is more popular than lane order. Note that the signage on the score-board must be placed in place, lane and time order (PL, LN, TIME).

Refer to Figure 4-W on page 4-21 for an example of the main Scoreboard setups screen.

*Note:*    *Any setup changes you make are stored in permanent memory only if you press the* ***Record Setups*** *softkey and then press the* ***Yes*** *softkey to save. If you do not press* ***Record Setups*** *, setup changes are lost when you turn off your System 5.*

## Printer
### Function

The Swimming system can use any printer that has a standard parallel interface and can print a minimum of 80 characters per line. Printer setups include the standard definitions for printers listed in the scroll box. Be sure to select the printer you have from the list of printers in the **default printer** scroll box. If your printer is **not listed**, you must select the **user defined** printer and enter the printer control codes for pica, elite and condensed print as listed in your printer's manual.

```
 ┌─────────────────────────────────────────────────────────┐
 │   ┌──────────────────┐   CHOICE   OPTIONS                │
 │   │ SETUPS           │   ──────   ───────                │
 │   │ Start            │     1      Default printer        │
 │   │ Finish/Buttons   │     2      User Defined printer control codes │
 │   │ Hardware Setup   │     3      Store/Print format      │
 │   │ Splits           │     4      View/edit sponsor's messages │
 │   │ Timing           │     5      Print Setup Options     │
 │   │ Pool             │   ► 6      Pica      (Type Size)   │
 │   │ Scoreboard       │     7      Elite     (Type Size)   │
 │→  │ Printer          │     8      Condensed (Type Size)   │
 │   │ Event Sequence   │     9      Print 8 lines per inch  │
 │   │ Time/date        │   ► 0      Always Print on Store/Print Key │
 │   └──────────────────┘                                   │
 │                                                          │
 │     Setups = Softkeys          Options = Numeric Key Pad │
 └─────────────────────────────────────────────────────────┘
```

*Figure 4-AA Printer Setups Display Window*

This setup also allows you to customize the sequence of information printed when you press ***store/print***. One of the items you can print on each page of the race printout is a sponsor's message. Enter your school's name, meet name, team name or a sponsor's advertising message. One line of print is available for your sponsor's message.

You can also print the setups that affect race timing, including type of finish, backup compare options, etc. using the ***Print Setups*** softkey. The last four options on this setup menu allow you to set the page length for your printer and select the number of characters per inch (CPI) you want on your race printouts.  Pica type prints 10 CPI, elite prints 12 CPI and condensed 17 CPI. It is best to use the largest type size possible for the number of lanes in use. For 6-lane pools, select pica type. For 8-lane pools, select elite type and for 10-lane pools, select condensed type. If your printout is not properly formatted, with type wrapping from the previous line to the next line, select the next smaller type size. You can select 8 lines of type per inch for use with condensed type. The last option on this setup allows you to have Swimming print race results immediately when you press ***store/print*** even if there are timing problems. You can then mark  the corrections on the printout. Refer to page 4-4 for more information on timing problems.

**Operation**

Press ***1*** to select your printer from the preprogrammed selections. If your printer **does not** appear on the list, check your printer manual to see if it can be made to emulate either an Epson® or IBM® printer. In most cases, a printer will emulate one of these two printer types. If your printer does so, select the appropriate emulation on both the System 5 and your printer. Press the ***Record Setups*** softkey after selecting  the correct printer type.

If your printer does not emulate one of the available printer types, you must select the **user defined** printer and enter the printer control codes for various print operations. Press ***2*** to define printer control codes for the user defined printer. Refer to your printer's manual for the specific codes required. To enter printer control codes, have your printer manual open to the page(s) that show the control codes for pica, elite and condensed print modes. Move the arrow pointer with the ***Up*** or ***Down*** softkey to the printer functions you want to define and press ***enter*** as shown  in Figure 4-AB.

```
 ┌─────────────────────────────────────────────────────────┐
 │ ┌─ SELECT USER PRINTER'S CONTROL CODES ─────────────┐    │
 │ │                                                    │    │
 │ │   Pica Start of print job                          │    │
 │ │   Pica End of print job                            │    │
 │ │→  Elite Start of print job                         │    │
 │ │   Elite End of print job                           │    │
 │ │   Condensed Start of print job                     │    │
 │ │   Condensed End of print job                       │    │
 │ └────────────────────────────────────────────────────┘    │
 │                                                          │
 │                                                          │
 │     Last Selected control code:  Pica Start of print job │
 └─────────────────────────────────────────────────────────┘
```

*Figure 4-AB  Print Size Definition Window*

On the next screen, shown in Figure 4-AC, move the arrow pointer to the control character you want to use and press *enter*. Build the control code list exactly as it is shown in your printer's manual . For example, if you want to define elite print mode, 12 CPI, press the ***Down*** softkey until the arrow points at **elite print** and press *enter*. The scrolling list of control characters then appears in the prompt box. Your printer manual defines elite print as ESC (16), so press the ***Down*** softkey until the arrow points at **ESC** and press *enter*. Press the ***Down*** softkey again until the arrow points at (**16**), and press *enter*. Use the ***Left***, ***Right*** and ***Delete*** softkeys to edit the control code sequence. Press ***quit*** and you are done. The same procedure is used to enter any combination of printer control codes.
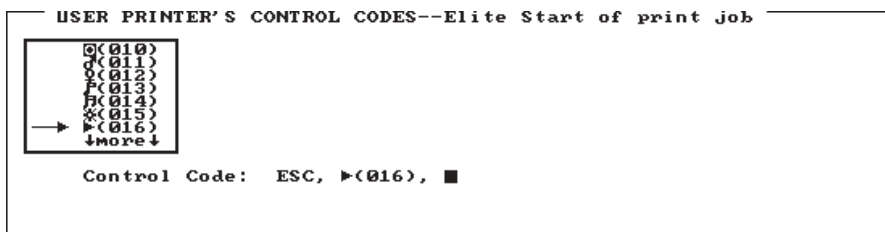
```
┌─ USER PRINTER'S CONTROL CODES--Elite Start of print job ──────────┐
│   ┌─────────────┐                                                  │
│   │ ◙(010)      │                                                  │
│   │ ♂(011)      │                                                  │
│   │ ♀(012)      │                                                  │
│   │ ♪(013)      │                                                  │
│   │ ♫(014)      │                                                  │
│   │ ☼(015)      │                                                  │
│ ──►│ ►(016)     │                                                  │
│   │ ↓more↓      │                                                  │
│   └─────────────┘                                                  │
│                                                                    │
│      Control Code:  ESC, ►(016), ■                                 │
│                                                                    │
└────────────────────────────────────────────────────────────────────┘
```

*Figure 4-AC  Printer Control Codes Definition Window*

Press ***3*** to define the print sequence for the ***store/print*** key, as shown in Figure 4-AD. Move the arrow pointer to the desired print item and press ***enter*** to add that item to the list. Press ***quit*** to leave this screen. The best way to organize the print format is to end it with a **form feed:** after each printout is complete, the paper advances to the top of the next page.
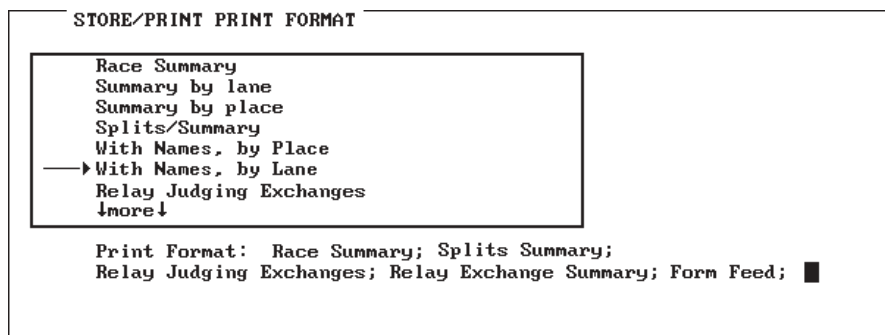
```
┌─ STORE/PRINT PRINT FORMAT ───────────────────────────────────────┐
│   ┌────────────────────────────┐                                 │
│   │   Race Summary             │                                 │
│   │   Summary by lane          │                                 │
│   │   Summary by place         │                                 │
│   │   Splits/Summary           │                                 │
│   │   With Names, by Place     │                                 │
│ ──►│  With Names, by Lane      │                                 │
│   │   Relay Judging Exchanges  │                                 │
│   │   ↓more↓                   │                                 │
│   └────────────────────────────┘                                 │
│                                                                  │
│      Print Format:  Race Summary; Splits Summary;                │
│      Relay Judging Exchanges; Relay Exchange Summary; Form Feed; ■│
│                                                                  │
└──────────────────────────────────────────────────────────────────┘
```

*Figure 4-AD  **Store/Print** Format Window*

Press ***4*** to view or enter the sponsor's message, Figure 4-AE. To clear the existing message, press ***c/e***. Create the sponsor's message by moving the arrow pointer to the desired letter or special character with the ***Up*** or ***Down*** softkey and pressing ***enter*** to select it. Repeat the process until the message is complete. The ***Jump Forward*** softkey displays the next page of characters. Use the ***Left***, ***Right*** and ***Delete*** softkeys to edit the sponsor's message. Press ***quit*** to exit.
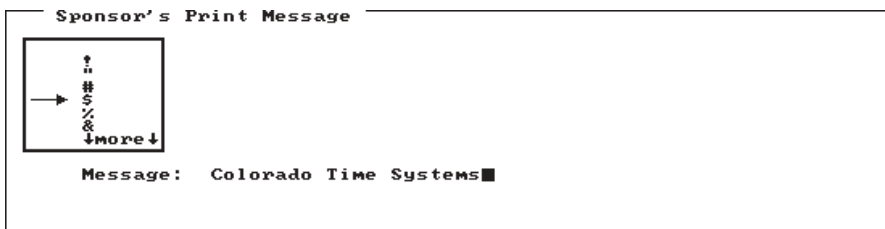
*Figure 4-AE  Sponsor's Print Message Window*

Press **5** to set the page length for your printer. Select the desired page length with the softkeys. Press **6** pica, **7** elite or **8** condensed to select the number of characters per inch(CPI) you want on your race print-outs. Press **9** to select 8 lines of type per vertical inch. This option is only recommended when using condensed type. Press **0** to print race results immediately when you press **store/print** even if there are timing problems. You can then mark the corrections on the printout. This is the default selection. Refer to page 4-2 for more information on timing problems.

**Note:** *Any setup changes you make are stored in permanent memory only if you press the **Record Setups** softkey and then press the **Yes** softkey to save. If you do not press **Record Setups** , setup changes are lost when you turn off your System 5.*

**Sample Printouts**  These sample printouts show some of the possible print combinations, including results by lane and place, lap splits, cumulative splits, finish information and relay judging information.

```
=====> RACE SUMMARY <=======================================> Race 0008 <=====
                                               Wednesday 10-20-95  12:24.14 pm


                             Colorado Time Systems


                         200 YARDS WOMENS MEDLEY RELAY
                              EVENT:  1      HEAT: 8


       ----- By Lane -----                        ----- By Place -----
       Lane  Place   Time                          Place  Lane    Time
         1     1    1:31.81                           1     1    1:31.81
         2     2    1:32.49                           2     2    1:32.49
         3     3    1:33.21                           3     3    1:33.21
         4     4    1:33.79                           4     4    1:33.79
         5     5    1:34.38                           5     5    1:34.38
         6     6    1:35.03                           6     6    1:35.03


=========================================================> Colorado Time Systems
```

*Figure 4-AF  Race Results by Lane and Place*

```
=====> SPLITS/SUMMARY <====================================> Race 0008 <=====
                                               Wednesday 10-20-95  12:24.14 pm


   200 YARDS WOMENS MEDLEY RELAY
      EVENT:  1      HEAT: 8

              Lane 1    Lane 2    Lane 3    Lane 4    Lane 5    Lane 6
   50 yds      15.77     16.97     18.23     19.63     20.46     21.76
  100 yds      21.64     23.05     23.96     25.71     27.48     29.33
  150 yds      28.41     30.04     30.85     30.97     30.47     31.81
  200 yds      25.99     22.43     20.17     17.80     15.97     12.13

   50 yds      15.77     16.97     18.23     19.63     20.46     21.76
  100 yds      37.41     40.02     42.19     45.07     47.94     51.09
  150 yds    1:05.82   1:10.06   1:13.04   1:15.99   1:18.41   1:22.90
  200 yds    1:31.81   1:32.49   1:33.21   1:33.79   1:34.38   1:35.03

  Place       < 1 >     < 2 >     < 3 >     < 4 >     < 5 >     < 6 >
  Finish     1:31.81   1:32.49   1:33.21   1:33.79   1:34.38   1:35.03


=========================================================> Colorado Time Systems
```

*Figure 4-AG  Splits Summary Printout*

4-26

```
=====> RELAY JUDGING EXCHANGES <=============================> Race 0008 <=====
                                              Wednesday 10-20-95  12:24.14 pm


200 YARDS WOMENS MEDLEY RELAY
   EVENT:  1      HEAT: 8

        Lane 1    Lane 2    Lane 3    Lane 4    Lane 5    Lane 6
        EARLY     EARLY      OK       EARLY     EARLY     EARLY


=========================================================> Colorado Time Systems




   =====> RELAY EXCHANGE SUMMARY <=============================> Race 0008 <=====
                                              Wednesday 10-20-95  12:24.14 pm


200 YARDS WOMENS MEDLEY RELAY
   EVENT:  1      HEAT: 8

          Lane 1    Lane 2    Lane 3    Lane 4    Lane 5    Lane 6
50 yds    + .09     + .04     + .00     + .09     + .09     + .10
100 yds   - .01     + .06     + .06     + .09     - .03     - .11
150 yds   - .26     - .18     + .09     - .17     - .17     - .13

Place     < 1 >     < 2 >     < 3 >     < 4 >     < 5 >     < 6 >
Finish    1:31.81   1:32.49   1:33.21   1:33.79   1:34.38   1:35.03
Xchange   EARLY     EARLY      OK       EARLY     EARLY     EARLY

=========================================================> Colorado Time Systems




    =====> RACE HISTORY <=====================================> Race 0008 <=====
                                              Wednesday 10-20-95  12:24.14 pm

200 YARDS WOMENS MEDLEY RELAY
   EVENT:  1      HEAT: 8

|---------< Lane Number
|  |------< Lengths
|  |  |---< Time
1) 02 15.77    1) LATE  .09    2) 02 16.97    2) LATE  .04    3) 02 18.23
3) RELAY OK    4) 02 19.63    4) LATE  .09    5) 02 20.46    5) LATE  .09
6) 02 21.76    6) LATE  .10    1) 04 37.41    1) EARLY .01    2) 04 40.02
3) 04 42.19    3) LATE  .06    4) 04 45.07    4) LATE  .09    5) 04 47.94
5) EARLY .03    6) 04 51.09    6) EARLY .11    1) 06 1:05.82    1) EARLY .26
2) 06 1:10.06    2) EARLY .18    3) 06 1:13.04    3) LATE  .09    4) 06 1:15.99
4) EARLY .17    5) 06 1:18.41    5) EARLY .17    6) 06 1:22.90    6) EARLY .13
1) 08 1:31.81    2) 08 1:32.49    3) 08 1:33.21    4) 08 1:33.79    5) 08 1:34.38
6) 08 1:35.03


        Lane 1    Lane 2    Lane 3    Lane 4    Lane 5    Lane 6
BACKUP  1:31.65   1:32.35   1:33.18   1:33.76   1:34.31   1:34.98

=========================================================> Colorado Time Systems
```

*Figure 4-AH  Relay Judging Exch/Summary/Race History*

## Event Sequence Function

This setup allows you to program a sequence of swimming events for up to six different types of meets, as shown in Figure 4-AI. The race type and distance are attached to the event number so that each time you press *next event* in *title* mode the race type and distance are updated. Select option *1 (None)* to enter race information manually at the start of each race. Varying numbers of events can be entered in each meet type. The **User Defined** meets allow you to enter event numbers between 1 and 500. However, you cannot actually program 500 events because of memory limitations. After programming, select the desired meet type to sequence events automatically. Notice that events 2-7 already have a programmed event sequence. You can use these sequences as is or reprogram your own sequences for any of these events. Use the softkeys to edit, print, or delete event sequences.

```
 ┌──────────────────────────────────────────────────────────────┐
 │  SETUPS                   CHOICE   OPTIONS                     │
 │  Start                       1     None                       │
 │  Finish/Buttons              2     Boys High School            │
 │  Hardware Setup              3     Girls High School           │
 │  Splits                      4     Boys/Girls H.S.             │
 │  Timing                      5     NCAA 13 Event Prog.         │
 │  Pool                        6     NCAA 15 Event Prog.         │
 │  Scoreboard                  7     NCAA 16 Event Prog.         │
 │  Printer                   ▶ 8     User Defined 1              │
 │▶ Event Sequence              9     User Defined 2              │
 │  Time/Date                   0     View/Edit Selected Sequence │
 │                                                                │
 │    Setups = Softkeys               Options = Numeric Key Pad   │
 └──────────────────────────────────────────────────────────────┘
```

*Figure 4-AI  Event Sequence Window*

**Operation**   The Event Sequence softkey menu allows you to edit a sequence title,
print, or delete an entire event sequence, as shown in Figure 4-AJ.
Before printing, make sure your printer is connected, is online and is
loaded with paper. If you choose to delete an event sequence, be sure to
select the sequence you want to delete before pressing the ***Delete
Sequence*** softkey. A confirmation box prompts you to delete the select-
ed event sequence. Press the ***Yes*** softkey to delete. Press the ***No*** softkey
to leave the sequence intact.

```
 ┌──────────────┬──────────┐
 │     UP       │    ◆     │
 ├──────────────┼──────────┤
 │    DOWN      │    ◆     │
 ├──────────────┼──────────┤
 │    EDIT      │    ◆     │
 │    TITLE     │          │
 ├──────────────┼──────────┤
 │   RECORD     │    ◆     │
 │   SETUPS     │          │
 ├──────────────┼──────────┤
 │    PRINT     │    ◆     │
 │  SEQUENCE    │          │
 ├──────────────┼──────────┤
 │   DELETE     │    ◆     │
 │  SEQUENCE    │          │
 └──────────────┴──────────┘
```

*Figure 4-AJ  Event Sequence Softkey Menu*

To program an event sequence, press the number corresponding to the
desired meet type, then press ***0*** to view or edit the selected sequence.
The Event Sequence Definition window shown in Figure 4-AK displays
the events already defined, if any, and allows you to edit or add events.

```
 ┌──────────────────────────────────────────────────────────────┐
 │   EVT  YRD  SEQUENCE: User Defined 1                          │
 │    1   150  WOMENS  FREESTYLE  RELAY                          │
 │    2   100  MENS  BUTTERFLY  FINAL                            │
 │    3   400  MENS  FREESTYLE                                   │
 │ ▶  4   ▓200▓                                                  │
 │    5                                                          │
 │    6                                                          │
 │    7                                                          │
 │    8                                                          │
 │    9                                                          │
 │   10                                                          │
 │  ↓more↓                                                       │
 └──────────────────────────────────────────────────────────────┘
```

*Figure 4-AK  Event Sequence Definition Window*

The Define Event softkey menu, shown in Figure 4-AL, allows you to
select the event number to edit or add. Press the ***Up*** or ***Down*** softkey
until the arrow points at the event number you want to program, then
type the event length using the Events keys and press ***enter***. The
remaining softkeys on this menu allow you to page up and down
through the list of events, insert a blank event at the arrow, or delete
the selected event.

*Figure 4-AL  Define Event Softkey Menu*

**Press the appropriate softkeys to build the race description, as shown in Figures 4-AM and 4-AN. Each (softkey) category contains a scrolling box from which you can select the desired item, as  shown in Figure 4-AN. To select the desired within a category, press the *Up* or *Down* softkeys until the arrow points at the desired item and press *enter*. The *Edit* softkey allows you to edit the item description, using the standard text editing screen as shown in Figure 4-AE under Sponsor's Message. The *Delete* softkey allows you to delete an item.**



*Figure 4-AM  Event Type Softkey Menu*



*Figure 4-AN  Race Description Window and Softkey Menu*

**Note:**   *Be careful when using the **Edit** or **Delete** softkeys  on the Define Event Softkey menu. All editing changes or deletions you make are global--editing changes to, or deletions of, an item affect that item everywhere it appears in the Swimming program. For example, if you edit the swimmer type Mens, changing it to Seniors, every race description which contained Mens will now read Seniors. If you delete, Mens, it will be deleted from every race description in which it appeared.*

**The available categories from which to build a race description are Swimmer Type, Age Group, Event Type and Bracket. Press the *Delete***

softkey to delete the item to the left of the cursor on a description line. Press the *Copy/Opp Gender* softkey to copy the currently selected event and description to the next line.

When finished entering the race description, press *enter* to complete the entry. Press the *Up* or *Down* softkey to select the next event number to program and repeat the process. To delete an event, position the cursor on the desired line using the *Up* or *Down* softkey and press the *Delete Event* softkey. To insert a new event between events already defined, position the cursor on the event number you want to add and press the *Insert Event* softkey. All lines below the selected event are pushed down one position. The selected event line is blank and ready to be programmed.

When done programming events, press *quit*. Press the *Record Setups* and *Yes* softkeys to save the changes just made in permanent memory. If you want to use the new event sequence for the current timing session only, do not press *Record Setups*. When you turn off your System 5, the changes will be lost and the standard event sequence will appear the next you use Swimming.

To run a meet using a programmed event sequence, press the number corresponding to the desired meet type. To operate the Swimming software in *title* mode without an event sequence, press *1* which selects no event sequence.

## Time/Date Function

The System 5 has an internal clock which it uses to stamp the time and date on races and meets. Check the time and date before each meet and set them using this setup as necessary. The time and date are stored in permanent memory as soon as you press *enter*. It is not necessary to press *Record Setups* to save a new time and date. This setup also allows you to select the time display format: 12-hour or 24-hour.
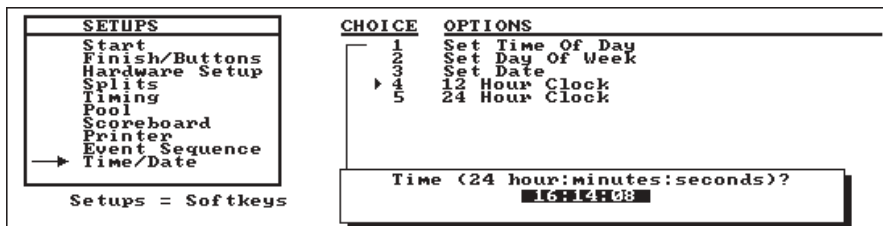


*Figure 4-AO  Time/Date Setups Window*

## Operation

Press *1* to set the time of day. Type the correct time in the prompt box using the numeric keypad and press *enter*. Follow the same procedure to set the day of the week and date. Press *4* to select 12-hour time display format. Press *5* to select 24-hour time display format.

# Stored Data



## Summary

The *Stored Data* softkey provides access to race data from current and previous meets. Swimming's memory capacity is approximately 500 races. Storage is not selective. When you press *store/print* after a race, that race is added to the top of the list of races in memory. If the capacity of memory has been reached, the oldest race in memory is automatically deleted to make room for the new race. For the purposes of Stored Data, a "meet" begins when the timer is turned off. A three-day meet would therefore appear as three separate meets in Stored Data if the System 5 is turned off at the end of each day's racing.

Pressing the *Stored Data* softkey displays the results of the last race saved. The race distance and type, race number, event and heat numbers, race date and time, race print status, lane, place, pad and backup times, calculated backup times, and early relay starts (if RJP's are installed) are displayed on the screen. The Event and Heat numbers are displayed if the race was run in *print-in* and *title* mode, other wise, these two items are left blank.



*Figure 4-AP  Stored Data Window and Softkey Menu*

### Next Race
#### Function

Displays the results of the next race number in the current meet. When the most recently stored race is displayed, pressing the softkey resets the display to the bottom of the list, displaying the oldest race in the current meet.

### Previous Race
#### Function

Displays the results of the previous race number in the current meet. When the oldest race in the meet is displayed, pressing this softkey resets the display to the top of the list, displaying results from the most recently stored race.

### Next Event
#### Function

Displays the results of the next event number in the current meet when that race was run in *print-in* or *title* mode. If a meet was run in *write-in* mode, this softkey functions exactly like *Next Race*.

### Previous Event
#### Function

Displays the results of the previous event number in the current meet when that race was run in *print-in* or *title mode*. If a meet was run in write-in mode, this softkey functions exactly like *Previous Race*.

### Print Race
#### Function

Allows you to print the results of the race currently displayed.

#### Operation

Press this key to display the *Print* softkey menu. Press the appropriate softkeys to build a printout format. Printing begins immediately. Refer to the discussion of the Print softkey earlier in this chapter for more detailed instructions.

### More
#### Function

Displays the additional softkey functions available on this menu. The new key functions are explained below.
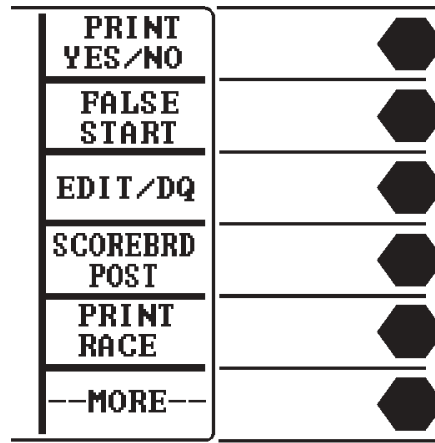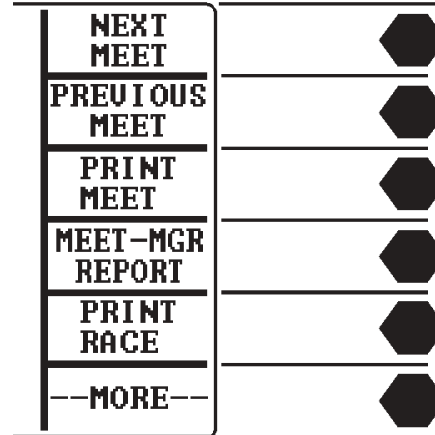
*Figure 4-AQ  Stored Data Softkey Menu 2*

## Print Yes/No
### Function

Used in conjunction with the ***Print Meet*** softkey. Each race in memory is automatically set to print when you press ***Print Meet***, but it is sometimes desirable not to print every race in a meet. For example, if a race was used to test the touchpads then stored, it should not be printed.

### Operation

To prevent the results of a given race from being printed, display that race on the screen and press the ***Print Yes/No*** softkey. The print status of the displayed race is now set to off. This softkey acts as a toggle switch.

## False Start
### Function

Allows you to label a race in memory a false start. False start races are not printed on any printout.

### Operation

Display the desired race on the screen and press this softkey to mark it as a false start.

## Edit/DQ
### Function

Allows you to edit the results of the races stored in memory.

### Operation

Display the desired race on the screen and press this softkey to access the editing features. Press the ***Edit Time*** softkey and type the lane number you want to edit. Select the correct backup time from the softkey menu or press ***c/e*** and type a stopwatch time. The Swimming software calculates any changes in finish order based on the new time.

To disqualify a swimmer, display the desired race on the screen and press the ***Edit/DQ*** softkey. Press the ***DQ*** softkey , type the appropriate lane number and press ***enter***. Repeat the procedure to ***un-DQ*** a disqualified swimmer.

## Scorebrd Post
### Function

Allows you to post the results of the currently selected race.

### Operation

Press this softkey and select the desired options from the softkey menu to post the results of the currently selected race. The softkeys allow you to display results by lane, by place, with or without lane numbers and to display two race results on each scoreboard line if this option is enabled in Scoreboard Setups.

### Print Race

**Function**

Allows you to print the results of the race currently displayed.

**Operation**

Press this softkey to display the *Print* softkey menu. Press the appropriate softkeys to build a printout format. Printing begins immediately. Refer to the discussion of the *Print* softkey earlier in this chapter for more detailed instructions.

### More

**Function**

Displays the additional softkey functions available on this menu. The new key functions are explained below.



*Figure 4-AR  Stored Data Softkey Menu 3*

### Next Meet

**Function**

Allows you to select the next meet stored in memory.

**Operation**

Remember that a "meet" as defined here begins when you turn on your System 5 and ends when you turn it off. As a result, a three-day meet appears in Stored Data as three separate meets. When the most recently stored meet is displayed, pressing this softkey resets the display to the bottom of the list, displaying the oldest race in memory.

### Previous Meet

**Function**

Allows you to select the previous meet in the sequence in memory. When the oldest meet in memory is displayed, pressing this softkey resets the display to the top of the list, displaying results from the most recently stored meet. See *Next Meet* above for a definition of "meet".

### Print Meet

**Function**

Prints the results of all races in the current "meet" beginning with the race displayed on the screen to the end of the meet. Races with a print status of *no* are not printed.

**Operation**

To print an entire meet, press the *Next Race* or *Next Event* softkey until the first valid race in the meet is displayed on the screen, then press the *Print Meet* softkey. Pressing this softkey displays the *Print* softkey menu. All races are printed in the format that you enter from the menu. Press the appropriate softkeys to build a printout format. Printing begins immediately. Refer to the discussion of the *Print* softkey earlier in this chapter for more detailed instructions.

## Meet-Mgr Report

**Function**

This option allows you to test the data transfer connection between your System 5 and meet management computer.

**Operation**

Press this softkey to display a window that shows the results of meet management data transfers. All information was successfully transferred if the Invalid Packets field displays "0"(zero). If any other number appears in this field, there were problems in the data transfer process. Check the cable connection between your meet management computer and System 5 and attempt to transfer the data again. If you continue to receive "Invalid Packets", call Colorado Time Systems' Customer Service Department.

## Print Race

**Function**

Prints the results of the race currently displayed.

**Operation**

Press this softkey to display the *Print* softkey menu. Press the appropriate softkeys to build a print format. Printing begins immediately. Refer to the discussion of the *Print* softkey earlier in this chapter for more detailed instructions.

## More

**Function**

Displays the first softkey menu again.

## Misc



**Summary**

This softkey provides access to features that are not easily categorized. Currently, there are only two active features on this softkey menu.

## Pad Power On/Off

**Function**

Turns off power to the pads until the next **start** is received. This feature is used to reduce connector corrosion between Swimming system test and the start of the first race of the meet.

**Operation**

Press this softkey to turn off power to the touchpads until the next start is received. All touchpads return to their normal state after the first start.
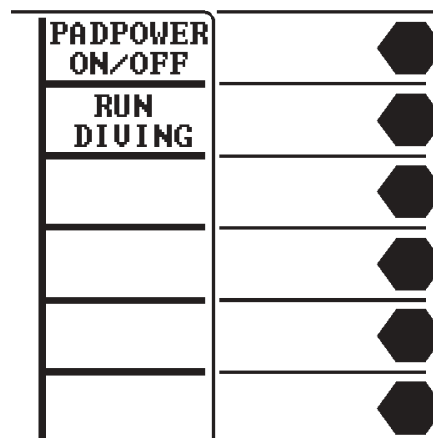


*Figure 4-AS  Misc Softkey Menu*

## Run Diving

**Function**

Runs the Diving program is you have purchased and downloaded it to your System 5.

**Operation**

Press this softkey to run the Diving program. A prompt box asks you to confirm that you want to run the Diving program. Press the *Yes* softkey to run Diving or press the *No* softkey to remain in Swimming.

# Appendix A

# Maintenance

This appendix contains information to help you identify and correct problems in your Swimming system without calling customer service or returning equipment to the factory unnecessarily. To use this appendix effectively, read the first six pages and perform any routine maintenance as necessary.

If a problem persists, identify the system that is not functioning properly, for example start system, finish system, scoreboard, printer, etc. Then refer to the Troubleshooting section, find the problem you are experiencing and perform the suggested remedy and/or refer to the page reference for further instructions. Try the suggested remedies **exactly as given, one at a time and in the order listed**. Be sure to record the remedies tried and their results for future reference.

## Customer Service

If the problem you are experiencing is not described in this chapter, or a problem defies solution, please call the Colorado Time Systems' Customer Service Department, ext. 256, toll-free in the US and Canada at 800-287-0653 or at 970-667-1000 from all other countries.

*Caution:* *The System 5 uses low-current CMOS components which make battery operation possible. Low current CMOS is* **extremely** *susceptible to static electricity. Therefore, do not remove the System 5 case. Refer all internal servicing to the factory. Improper servicing could seriously damage* **all** *of the sensitive components!*

# Factory Maintenance

Return the System 5 to the factory every 5 to 7 years for the following calibration and testing:

1) The accuracy of the timing circuitry can vary with age. The System 5 contains a high-quality crystal oscillator that is guaranteed to be accurate for five years. After five years of service, the oscillator could drift out of tolerance. To ensure accurate race timing, your System 5 should be tested at the factory every five years.

2) The battery mounted on the main circuit board that powers the System 5's continuous memory has a manufacturer-specified life span of 10 years. To ensure the integrity of stored data, the battery should be replaced every 5 to 7 years. Replacement of this battery **must** be performed at the factory.

3) The rear-panel connectors need to be inspected for corrosion and damage and replaced if necessary.

# Routine Maintenance

## System 5

**Batteries**

Install new batteries once each year or as needed. Inspect the System 5 battery contacts for rust and corrosion. Install new batteries after inspection ensuring proper polarity. Use only **alkaline** batteries to ensure accurate battery life display. Refer to Figure A-1 to replace batteries.
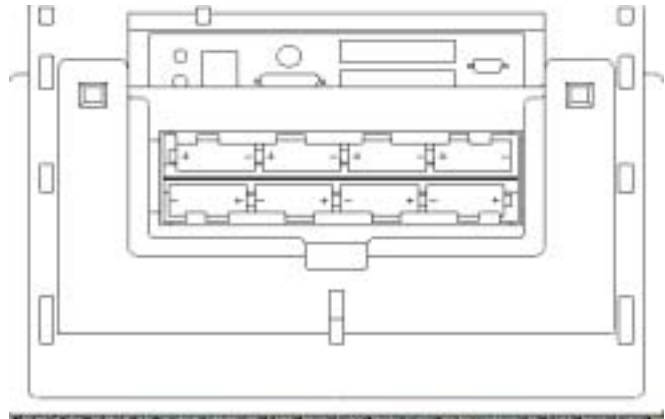


*Figure A-1  Install Batteries as Shown*

**1)** Place a towel or other protective material on the LCD window of your System 5.

**2)** Turn your System 5 over to expose the battery cover. Remove battery cover.

**3)** Remove and dispose of old batteries properly.

**4)** Install the new batteries into the battery compartment, observing the polarity as marked on the battery compartment.

**5)** Replace battery cover.

**Connectors**

Inspect the cable connectors on the System 5 I/O panel every time your plug the cable harness(es) into the connector(s). Clean as necessary.

To clean cable connectors, put two or three drops of alcohol on a cotton swab and insert the swab into the connector. **Pull the swab straight out.** Move the swab to the next section of the connector and repeat. **Do not slide the cotton swab along the inside of the connector.** Damage to the contacts could result. Rinse the connectors with a damp cotton swab, and then dry with a dry swab using the motion. **Never use steel wool to clean these connectors!** See Figure A-2
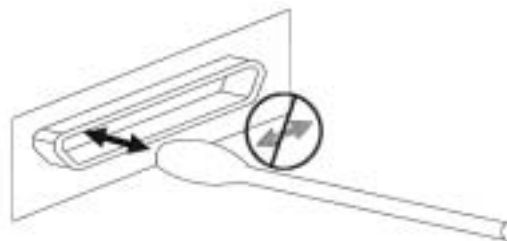


*Figure A-2  Clean Data Connectors as Shown*

**LCD Window**

The LCD window is made of non-glare, scratch resistant plastic. Clean regularly with any good cleaner made for clear plastic and a soft cloth. **Do not** use any cleaning products that contain ammonia. **Do not under any circumstances wipe the LCD window with a dry cloth.**

**Case**

The System 5 case is made of high-impact plastic. Use any neutral detergent to clean the case. Do not use alcohol, thinner or other solvents. These products can change the color or otherwise damage the case.

**Keyboard Inserts**

The keyboard insert cover and upper overlay should be cleaned with a mild detergent and water solution and wiped dry with a soft cloth as needed. Install the keyboard insert carefully. Guide it into the keyboard pocket as straight as possible.

# Cables

**Cleaning**

Inspect all cable and in-deck connectors for corrosion before use. All connectors must be corrosion-free if your timing system is to operate properly.

To clean cable or in-deck connectors you need Lime-A-Way®, silicone grease and cotton swabs. Follow the instructions below and refer to Figure A-3 for reference.
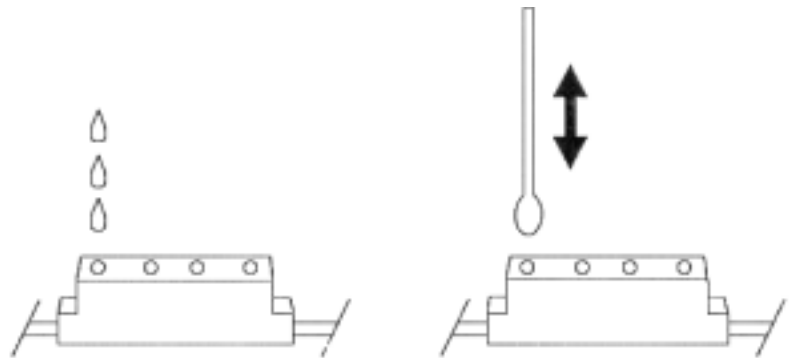


*Figure A-3  Clean Cable Connectors as Shown*

**1)** Pour a few drops of Lime-A-Way® into the cable or deck plate jacks and let it sit for several minutes to dissolve corrosion.

**2)** Insert a cotton swab into the jack and use a plunging motion to clean the jack. If the jack is not free of corrosion, repeat steps 1) and 2) as necessary.

**3)** Rinse the jack with a damp cloth swab and dry it with a dry swab.

**4)** Apply a small amount of silicone grease to a clean cotton swab and insert into the jack.

**Touchpads and Buttons**

Make sure all connectors fit snugly into the cable harness. Connectors with broken prongs do not fit properly. Refer to Figure 4-A. Check connector prongs for corrosion and clean or replace connectors as necessary. Refer to the Touchpad maintenance section in this chapter for detailed care instructions.
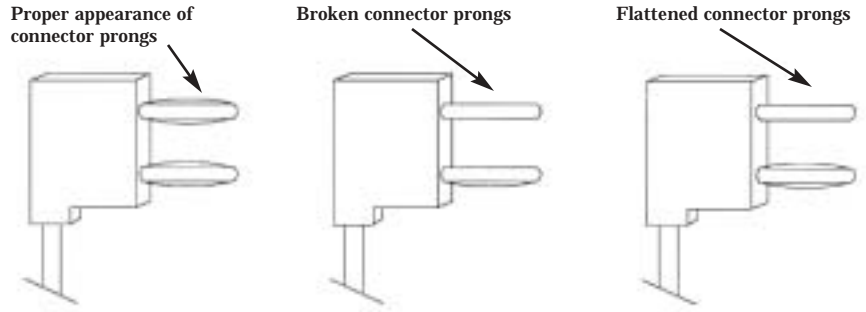
*Figure A-4  Inspect Touchpad and Button Connectors*

## Start Systems

Make sure all connectors fit snugly into the cable. Connector prongs that are broken fit loosely. Refer to Figure A-4. Check connector prongs for corrosion and clean or replace connectors as necessary. Always charge the battery for 12 hours before using and turn the power switch **off** after use.

## Scoreboard

Colorado Time Systems' electromagnetic scoreboards require no periodic maintenance. Do inspect the scoreboard data cable connectors for corrosion and broken or frayed wires. Clean or replace as necessary.

## Printer

Inspect the printer cable connectors for corrosion and broken or bent pins. Clean or replace as necessary. Consult your printer manual for instructions on caring for your printer.

# Troubleshooting

### Theory Of Operation

The Swimming system is made up of three component systems: input, output and the System 5. All three systems must be working properly to make a functioning Swimming system. The input system includes a start system, relay judging, input computer and a finish system. The start system provides input data to the System 5 which tells the Swimming software to begin timing a race. The relay judging input provides relay start information. The input computer is used to download new/updated sports program to the System 5. The finish system provides input data to the System 5 which tells the Swimming software to record a given split or finish time.
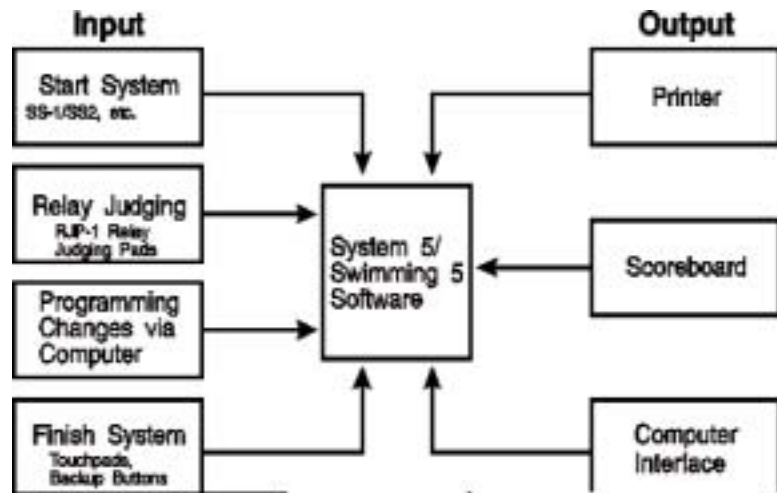


*Figure A-5  Swimming System Block Diagram*

The System 5 Sports Timer with Swimming software is the heart of the system. It receives and interprets input data and provides output in various forms to a variety of output devices.

The output system receives interpreted data from the System 5/Swimming software and provides these data in visual format. The basic output system consists of a line printer to provide a hard copy of race results and a scoreboard to display the results to spectators. A more advanced output system also includes a computer running Meet Management software and a video output.

# Trouble Shooting Chart
## System 5/Swimming 5 Software

Find the problem you are experiencing on the left and follow the remedy instructions in and notes to the right

| Problem | Remedy | Notes |
|---|---|---|
| No display at all when power is turned on. | 1) Rotate Contrast knob on I/O panel. | If Contrast is all the way off, there will be no display. |
| | 2) Check the batteries, replace if necessary. | Refer to page A-2 for battery replacement instructions |
| | 3) Check power adapter cable and wall outlet. | Only if you are using AC power. |
| A Swimming feature does not function as expected. | Refer to Chapter 4 for a complete explanation of the feature in question. | If it still seems wrong, call CTS Customer Service. |
| Swimming race timer does not start. | 1) Make sure start system cable is properly and securely attached. | Refer to Chapter 2 or your start system manual for instructions. |
| | 2) Clean connectors. | Refer to pages A-2 - A-4 |
| | 3) Check cabling. | Refer to page A-11 |
| | 4) Check start system. | Refer to page A-9 or start system manual. |
| Swimming software does not register pad or finish button/backup button. | 1) The timer must be ready for a pad hit. Ensure that the pad armed indicator is displayed in the appropriate lane(s). | Refer to Chapter 4 for complete instructions. |
| | 2) Make sure touchpad and button cables are properly and securely connected. | Refer to Chapter 2. |
| | 3) Clean connectors. | Refer to pages A-2 - A-4. |
| | 4) Check cabling. | Refer to page A-11 |
| | 5) Check touchpad(s) or button(s). | Refer to page A-10 |

## Trouble Shooting Chart
### Input System

This section addresses input system problems only.

| Problem | Remedy | Notes |
|---|---|---|
| Start system does not start race timer. | 1) Make sure start system cable is properly and securely attached.<br><br>2) Clean connectors.<br><br>3) Check cabling.<br><br>4) Check start system. | Refer to Chapter 2 or start system manual for instructions.<br><br>Refer to pages A-2 - A-4<br><br>Refer to page A-11<br><br>Refer to page A-9 or start system manual. |
| Finish system pad or finish button/backup button hits are not registered on the Swimming display screen. | 1) Swimming software must be ready for a pad hit. Ensure that the pad arm indicator is displayed in the appropriate lane(s).<br><br>2) Make sure touchpad and button cables are properly and securely connected.<br><br>3) Clean connectors.<br><br>4) Check cabling.<br><br>5) Check touchpad(s)  or button(s). | Refer to Chapter 4 for a complete explanation.<br><br>Refer to Chapter 2 for cabling instructions.<br><br>Refer to pages A-2 - A-4.<br><br>Refer to page A-11<br><br>Refer to page A-9 |
| Early and late relay departures are not indicated on chatter splits printout. | 1) Ensure that the RJP interface cable in connected to the RJP and to the Button A connector on the touchpad cable harness. | Refer to Chapter 2 or RJP manual for cabling instructions. |
| Button A backup times not indicated on display screen or printed on race printout. | 1) Ensure that backup buttons are connected to the combination banana plug on the cable harness end of the RJP cable. | Refer to Chapter 2 or RJP manual for cabling instructions. |
| No Relay Judging Exchange or Summary printout. | 1) Ensure that the desired printout options are listed in the print format setup. | Refer to Chapter 4 under Setups for complete instructions. |

# Trouble Shooting Chart
## Output System

This section addresses output system problems only.

| Problem | Remedy | Notes |
|---------|--------|-------|
| Printer does not print. | 1) Make sure printer is set **On-Line** and is loaded with paper.<br><br>2) Make sure cable connections are secure.<br><br>3) Clean printer cable connectors. | <br><br>Refer to Chapter 2.<br><br>Refer to pages A-2 - A-4. |
| Scoreboard not working at all. | 1) Make sure scoreboard has power and is turned.<br><br>2) Make sure scoreboard is not blanked.<br><br>3) Make sure scoreboard cable is properly connected.<br><br>4) Check scoreboard cable connectors for corrosion and clean or replace as necessary. | Refer to scoreboard manual.<br><br>Refer to the **Scoreboard** softkey and scoreboard Setups sections in Chapter 4.<br><br>Refer to Chapter 2. |
| Scoreboard not showing expected results. | 1) Make sure scoreboard cable is properly connected.<br><br>2) Check scoreboard cable connectors for corrosion and clean or replace as necessary.<br><br>3) Ensure that scoreboard DIP switches for each module are set to the proper physical address.<br><br>4) Check logical addresses in the Swimming software. | Refer to scoreboard manual.<br><br><br>Refer to Chapter 2 and/or scoreboard manual for complete instructions.<br><br>Refer to Setups in Chapter 4 or call Colorado Time Systems' Customer Service Department. |
| Event Sequence Download does not work. | 1) Make sure **Allow Remote Setup** is enabled in Setups \| Hardware Setup.<br><br>2) Exit **Setups**--you cannot download and event sequence if Swimming 5 is in Setup mode.<br><br>3) Make sure meet management cable is connected to Com Port 1 on your System 5 I/O Panel.<br><br>4) Refer to your meet management program manuals. | Refer to page 4-19 in this User Guide.<br><br><br><br>Refer to pages 2-4 - 2-6 in this User Guide. |

# References

## Start System

There are two types of start systems, the start pistol transducer Model ST-15 and electronic start systems, Model SS-1, SS2 and LS systems. Refer to the discussion of your start System below.

### System 5 Diagnostics

Many start system problems can be isolated using System 5 diagnostic test software. Refer to pages B-3 and B-4 for an overview of how to use these test features. Use the following discussion of start system along with the System 5 diagnostic tests to help you isolate and repair specific start system problems.

### ST-15 Transducer

The ST-15 transducer fits on the end of a start pistol. Firing the pistol causes the transducer to start the timer.

If the ST-15 transducer does not start the Swimming race timer, replace it with a pushbutton that you know works. If the race timer starts, return the ST-15 to Colorado Time Systems for service. If the race timer does not start using the pushbutton, refer to the Wiring Systems section on page A-11.

### Electronic Start Systems

An electronic system sounds a start blast for the swimmers over a speaker and starts the Swimming race timer. Colorado Time Systems makes three kinds of electronic start systems: SS-1, SS2 and LS systems.

There are four possible problem areas:

**1)** The start system does not start the timer. The start blast and the PA both function.

This problem is usually the result of a faulty cable connection. Plug a working pushbutton into the **touchpad and button A cable harness** connector labeled **start** and press the button. If the Swimming race timer does not start, refer to the Wiring section beginning on page A-XX. If the timer does start, check the cable that goes to the start system. The cable plugs should fit tightly into the jacks and should be free of corrosion. Clean or replace as necessary and repeat process. If the cable and plugs are okay, plug the start system cable into the **touchpad and button A cable harness** and jumper the connector that normally plugs into the start system with a paper clip. If the Swimming race timer starts, the start system is defective and should be returned for service.

**2)** No start blast but the PA works.

This is usually a problem with the microphone. Plug a working pushbutton into the button start jack on the start system and press the button. If the start blast sounds, the microphone is defective and should be returned for service. If no start blast sounds, the control board inside the start system is defective and must be returned for service.

**3)** No start blast or PA but the Swimming race timer starts properly.

This is usually a bad speaker or speaker cable harness. Plug the speaker directly into the speaker output to eliminate the cable. If you do not use a speaker cable, use an ohm meter to check the speaker. If it does not register 8 ohms, the speaker is defective.

**4)** No start blast, PA or start timer.
This usually indicates a low battery, blown fuse or a bad control board. the battery can be checked with a volt meter, the fuse can be checked with an ohmmeter. If the battery and fuse are okay, return the control board to the factory for repair.

### RJP Judging Platforms

Your RJP platforms are very durable and are designed to last without requiring routine maintenance. The only maintenance procedure that may necessary is cleaning the cable connector on each RJP with Lime-A-Way® and a cotton swab if corrosion builds up, as described earlier in this appendix.  For Troubleshooting information, refer to your RJP Installation and Operation manual, P/N F507. To obtain a replacement manual, call Colorado Time Systems' Customer Service Department.

# Finish System

There are two types of finish systems: touchpads (TP-60, TP-60G, TP-78, TP-78G, etc.) and pushbuttons (PB-6). Both are simply momentary switches. Touchpads are large switches that are mounted on the pool wall while pushbuttons are used by judges standing next to the pool. Both types use a cable to connect to the Swimming race timer.

When either a touchpad or pushbutton switch closes, a split or finish time is recorded by the Swimming race timer. If a split or finish time is not recorded, the finish system has failed. There are three potential problems areas in a finish system: the touchpad or button, the in-deck cable or wiring harness, and finally, the System 5 itself. Start by checking the pad or button and then the cable. Check the System 5 only as a last resort.

### System 5 Diagnostics

Many finish system problems can be isolated using the System 5 diagnostic test software. Refer to pages B-2 and B-3 for an overview of how to use these test features. Use the following discussion of finish systems along with the System 5 diagnostic tests to help you isolate and repair specific finish system problems.

### Touchpads and Buttons

These items can be checked easily with the touchpad button/tester (Model TPM-D) or ohm meter. Follow these steps:

**1)** Inspect the plugs for damage and corrosion. Clean or replace as necessary.

**2)** Plug the pad or button into the tester or attach one ohmmeter test lead to each connector pin on the pad or button cable.

**3)** Without touching the pad, the tester reads 0 to 20 or infinite resistance on an ohmmeter if the pad is good. Defective pads read 40 to 50 or show measurable resistance on an ohmmeter. Touchpads that read between 20 and 40 on the touchpad tester or show measurable resistance on an ohmmeter should not be trusted. We recommend that they be sent in for evaluation and possible replacement. Defective buttons can generally be repaired at the factory.

**4)** Touch the pad. If the pad is working properly, the tester reads full scale or an ohmmeter reads less than 100 ohms. Be sure the battery in your touchpad or ohmmeter is properly charged. A weak battery yields inaccurate readings.

### Touchpad Pressure

A touchpad is essentially a switch in a waterproof container. To prevent the pad from floating, most of the air is removed at the factory. Three general rules for touchpad inflation apply:

**1)** Touchpads should not be over inflated because they will float away from the edge of the pool. A punctured touchpad allows air to enter during storage and must be returned to the factory for service.

**2)** Touchpads should not be under inflated. A properly inflated pad has a slight air bubble inside the pad at the water line.

**3)** Pad inflation should need to be adjusted only very rarely.

Colorado Time Systems use two types of wiring systems: cable harness and in-deck wiring. Refer to the appropriate section below for your type of wiring system.

## Wiring Systems

### System 5 Diagnostics

Many wiring system problems can be isolated using the System 5 diagnostic test software. Refer to pages B-2 and B-3 for an overview of how to use these test features. Use the following discussion of wiring systems along with the System 5 diagnostic tests to help you isolate and repair specific wiring problems.

### Cables Harness

The cable harness is simply a multi-conductor cable that runs across the pool deck. The most common problems with cables are corroded connectors. Cleaning solves most problems. Refer to the connector cleaning instructions earlier in this chapter.

If suspected cable problems persist after cleaning the connectors, use a voltmeter to test the cable. Plug the suspect cable into the System 5 as described in chapter 2 and turn on your System 5. Insert the voltmeter test leads into each touchpad and button position on the cable, taking care to observe the polarity of each connector. The voltmeter should read 5 volts. Note that if the **low pad voltage** setup option is selected, the voltmeter will read 3 volts. If all cable connectors are okay, the touchpad or button is defective. Refer to the Finish System section for more information.

### In-Deck Cables

Check an in-deck wiring system using the same procedure as outlined above for cable harnesses. Most in-deck wiring system problems are found at the wall plate connectors. Inspect the connectors and clean or replace as necessary.

# Appendix B

# Test/Programming Menu

This appendix provides a complete reference to your System 5 internal testing and program downloading features. The internal test features allow you to check your System 5 for problems in a variety of areas, including the LCD screen, memory, communications and keyboard. The program downloading feature allows you to install new or updated sports software on your System 5.

If your System 5 fails any internal test, call Colorado Time Systems' Customer Service Department, ext. 256, at 800-287-0653 (U.S. and Canada) or 970-667-1000 (international).

# Accessing the Test/Programming Menu

There are two ways reach the Test/Programming menu. The first occurs automatically if any of the initial power-on self-tests fail. A description of the failure is displayed along with instructions for running further tests and troubleshooting. Follow all instructions carefully before calling Customer Service.
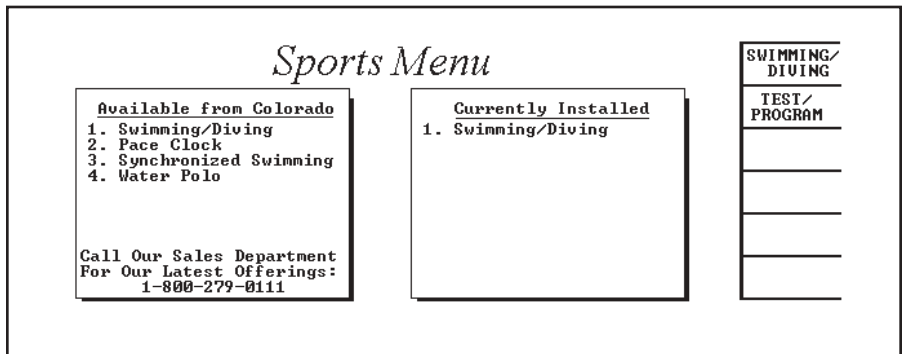


*Figure B-1  System 5 Sports Menu*

The second way to access the Test/Programming menu is to press the *Test/Program* softkey from the Sports Menu as shown in Figure B-1. The Test/Programming menu appears as shown in Figure B-2.
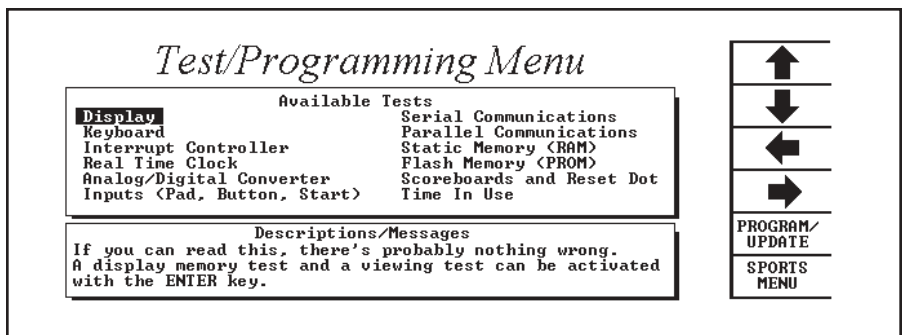


*Figure B-2  System 5 Test/Programming Menu*

The available test allow you to initiate thorough checks of the following items:

- ❑ Display
- ❑ Keyboard
- ❑ Interrupt Controller
- ❑ Real Time Clock
- ❑ Analog/Digital Converter
- ❑ Inputs (Pads, Button, Start)
- ❑ Serial Communications
- ❑ Parallel Communications
- ❑ Static Memory
- ❑ Flash Memory
- ❑ Scoreboards and Reset Dot
- ❑ Time in Use

# Running Tests

To run a test, press the arrow softkeys to highlight the desired test and press *enter*. The screen displays test information while the test is running and a summary of the results when the test is completed.

When you are finished running tests, press the *Sports Menu* softkey to return to the Sports Menu.

## Test Descriptions

This section briefly describes each test, including any user input necessary to complete the test.

**Display**

Checks the display for defective pixels and tests all display memory.

**Keyboard**

Checks for shorted or inoperative keys. The test prompts you to press every key on the keyboard to test for key closure. If a key is shorted or pressed for more than five seconds, the test fails and indicates the location of the shorted key.

**Interrupt Controller**

Checks all System 5 interrupts. If an interrupt fails, an explanation of the failure appears on the screen along with a list of the sports which will not operate correctly without the failed interrupts.

**Real Time Clock**

Checks the real time and date and asks you to reset these items if necessary. Also checks the Real Time Clock memory area and battery.

**Analog/Digital Converter**

Checks the voltage or current levels at all inputs to the Analog Digital converter. Reports any out-of-range readings.

**Inputs (Pad, Button, Start)**

Checks all inputs and reports is any are shorted or intermittent. Messages indicate any problem inputs and include instructions for isolating the defective item.

**Serial Communication**

Checks the Scoreboard, Judging I/O, Com Port 1 and Com Port 2 for communications failures. Additional special tests should only be performed at the factory.

**Parallel Communications**

Checks the printer port for communications failures. If a printer is connected, turned on and is online, you can run a test printout.

**Static Memory (RAM)**

Checks the portion of static RAM used to store program data such as meet results, etc.

| | |
|---|---|
| **Flash Memory (Prom)** | Checks the program memory for programs installed and viability of this memory area. This test takes from one to three minutes to complete. |
| **Scoreboard and Reset Dot** | Checks the scoreboard and reset dot for 30 seconds. Watch your scoreboard to ensure that all scoreboard definitions are correct and all segments are operating properly. |
| **Time In Use** | Displays the cumulative amount of time your System 5 been turned on. This item is intended for use by factory service personnel. |

# Program/Update

This feature allows you to download new or updated sports software from the Colorado Time Systems distribution disk to your System 5. Each program need only be downloaded once.

## Loading New Programs

To download a new or updated sports program to your System 5, follow these instructions carefully.

**Note:** *Make sure both your computer and System 5 are turned off before proceeding.*

**1)** With your computer and System 5 turned off, attach your parallel printer cable to the parallel port on your computer and to Computer Port 3 on your System 5 I/O Panel.

**Note:** *As an alternative, you can attach a serial cable to either COM1 or COM2 on your computer and then Com Port 1 on your System 5.*

**2)** Turn on your computer and System 5.

**3)** Press the *Test /Program* softkey from the Sports menu on your System 5.

**4)** Press the *Program/Update* softkey from the Test/Programming menu on your System 5.

**5)** Insert the Colorado Time Systems distribution disk in to the disk drive on your computer.

**6)** Type *A:* at the DOS prompt (or *B:* if you inserted the disk into the B: drive on your computer) and press enter.

**7)** Type *loader* at the A:> prompt and press *enter*.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────┐  │
│  │ ▐Install Programs    Select Port    Available Products    Quit │  │
│  └───────────────────────────────────────────────────────┘  │
│                                                             │
│                                                             │
│                                                             │
│              ┌─────────────────────────────┐                │
│              │     Colorado Time Systems    │                │
│              │          SYSTEM 5            │                │
│              │   Sport Program Installation │                │
│              └─────────────────────────────┘                │
│                                                             │
│                                                             │
│  Install the Sports Programs.                               │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```
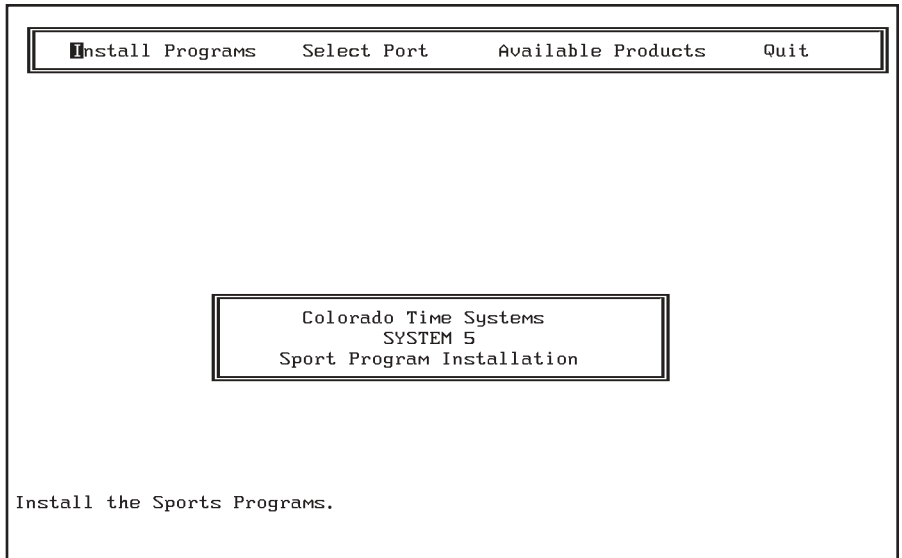
*Figure B-3  Loader Main Menu*

**8)** When the loader software is ready, press any key to begin. The screen shown in Figure B-3 appears.

```
┌─────────────────────────────────────────────────────────────┐
│  ┌───────────────────────────────────────────────────────┐  │
│  │  Install Programs    Select Port    Available Products    Quit │  │
│  └───────────────────────────────────────────────────────┘  │
│         ┌──────────────────────────┐                        │
│         │ Serial:    COM1          │                        │
│         │            COM2          │                        │
│         │ Parallel:  ▐LPT1▌        │                        │
│         │            LPT2          │                        │
│         └──────────────────────────┘                        │
│              ┌─────────────────────────────┐                │
│              │     Colorado Time Systems    │                │
│              │          SYSTEM 5            │                │
│              │   Sport Program Installation │                │
│              └─────────────────────────────┘                │
│                                                             │
│  Select the Port to use for Program Transfer                │
│                                                             │
└─────────────────────────────────────────────────────────────┘
```
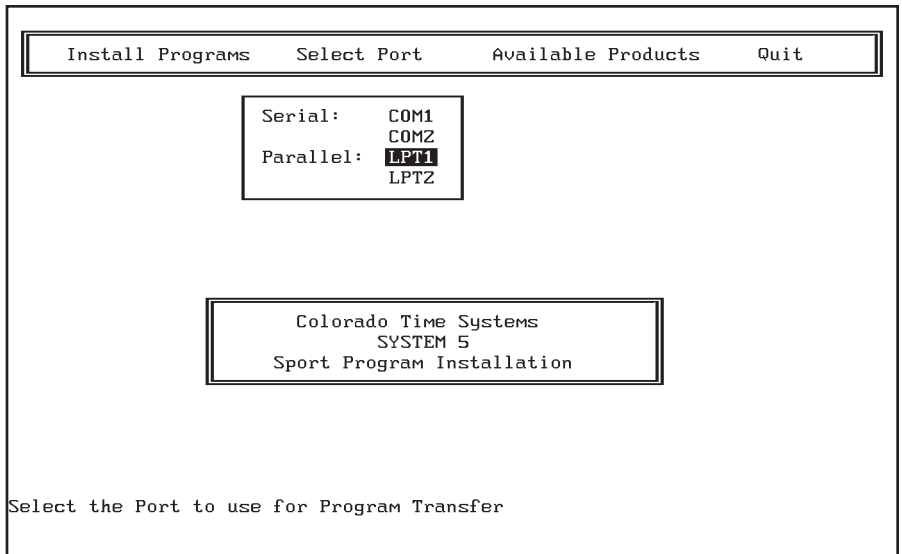
*Figure B-4  Loader Main Menu*

**9)** Press *S* or use the *right* or l*eft arrow* key on your computer keyboard to highlight **Select Port**. Use the *up*- or *down-arrow* key to highlight the desired communications port for downloading, usually **LPT1** as shown in Figure B-4. Press *enter* when done selecting the communications port to be used.

**B-4**

**10)** Press *I* or use the *left*- or *right-arrow* key to highlight **Install Programs** and press *enter* to begin.

```
Before continuing make sure that
 you have checked the following:

1) You have 1 disks marked with the
    following serial number:
         XXXXXX

2) You have selected the PROGRAM/UPDATE
    option from the TEST/PROGRAMMING menu
    on the System 5 Sports Timer.

   PRESS the ENTER key when ready
          ( Q - to Quit )
```

*Figure B-5  Reminder Window*

**11)** A window appears on the screen which reminds you to be sure you have the appropriate number of disks labeled with the displayed serial number and to select *Program/Update* from the Test/Programming menu on your System 5 if you have not already done so before proceeding. Press *enter* to continue or *Q* to quit.

*Note:*    *The serial number of your System 5 Sports Timer must match the first six numbers in the Version number on the distribution disk. If it does not, you will not be able to load the new or updated programs on the disk. If you received disks with the wrong Version number, call Colorado Time Systems' Customer Service Department.*

**12)** A window on the computer and System 5 screens keeps you informed of the progress of the installation.

```
        INSTALLATION IN PROGRESS

   Erasing Program Memory
              ....... Please Wait
```

*Figure B-6  Installation Progress Window*

**13)** When the desired programs have been installed on your System 5, exit the loader program by pressing *Q* and remove the Colorado Time Systems distribution disk from your computer's disk drive. Turn off both your computer and System 5 before detaching the downloading cable. Your new sports program is ready to use.

# Glossary

## Introduction

This Glossary contains definitions of all specialized terms used in this instruction manual. Terms are arranged alphabetically.

**Channel**

The hexadecimal code used in the Swimming software to direct information to a specific scoreboard destination or the hexadecimal code used in the scoreboard which tells a given scoreboard module what information to display. The physical address is determined by the switch settings in each scoreboard line. Often used interchangeably for both *logical address* and *physical address*. Channel is a less precise term which must be taken in the context used to determine if it refers to the logical address, physical address, or both.

**Hardware**

The physical equipment used to process information as opposed to the software or programs, that perform specific tasks. The System 5 Sports Timer is a hardware device that can run many different software programs. Swimming is a software program.

**Inverse Video**

Light characters displayed against a dark background. Normal video displays dark characters against a light background. Used interchangeably with *reverse video*.

**Liquid Crystal Display (LCD)**

A solid-state, low-current device used for computer displays when space and power consumption are at a premium. In this case, the System 5 Sports Timer display screen.

**Logical Address**

The hexadecimal code used in the Swimming software to direct information to a specific scoreboard destination. A logical address can be directed to any physical address except 0F, which is reserved for single-line scoreboards.

**Meet**

For Swimming, a "Meet" begins when the System 5 Sports Timer is turned on, and ends when it is presently off. Meets are stored in this way in Stored Data.

**Physical Address**

The hexadecimal code used in the scoreboard which tells a given scoreboard module what information to display. The physical address is determined by DIP switch settings in each scoreboard line.

**Prompt Box**

Appears on the Swimming display screen when the entry of information is required.

**Race**

For the Swimming software, a race begins when a start is received and continues until the next start is received. When **store/print** or **reset** is pressed, the race timing is completed, but the race just completed is still considered the current race.

**Reset State**

Reset state indicates that all swimmers have finished and that the current race is over. When you press **reset**, the Swimming software remains in reset state until the next start. The Swimming software is in reset

start when you first load it.

**Reverse Video**

Light characters displayed against a dark background. Normal video displays dark characters against a light background. Used interchangeably with *inverse video*.

**Scoreboard Module**

A scoreboard line set up to display specific information with DIP (Dual Inline Pin) switches mounted in the module. This term is often used interchangeably with *physical address*.

**Signage**

The labels placed on the scoreboard that indicate what type of information a given digit or series of digits displays.

**Software**

A computer program designed to perform specific tasks. Swimming is an example of software. Also known as *program* or *software program*.

**Toggle**

Like a light switch, a software toggle turns a given function on if it is presently off, or off if it is presently

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