Electronic Start System
Model SS2

Instruction Guide
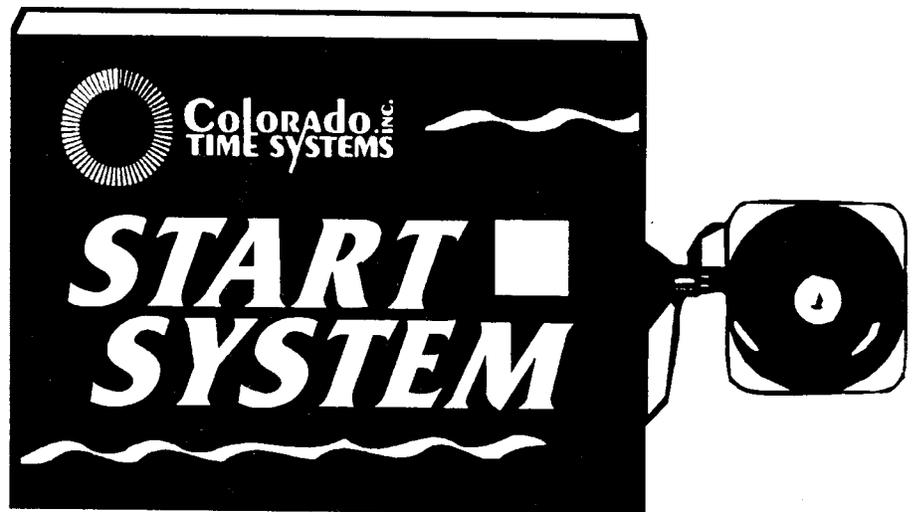
Colorado Time Systems, Inc.

For Information call:

Sales - U.S. and Canada: 1-800-279-0111
Service - U.S. and Canada: 1-800-CTS-0653
Sales and Service outside U.S. and Canada: 970-667-1000
Fax: 970-667-1032

or write:
Colorado Time Systems, Inc.
1551 East 11th Street
Loveland, CO 80537 USA

Table of Contents

1

Introduction

Dear Customer:

Thank you for purchasing Colorado Time Systems' electronic loudspeaker start system. Its multi-purpose design makes the SS2 perfect for use as an electronic start system or a limited public address system. Instructions for all of these applications are included in this manual.

Receiving Your Equipment

When you receive your Colorado Time Systems' equipment, follow these steps:

1) Open all shipping boxes.

Note: We recommend that you save all shipping boxes and packing material. You are responsible for damage to your equipment if an item is returned improperly packed.

2) Check all concealed damage immediately upon receipt of equipment. Report any damage directly to the freight carrier.

3) Use the Packing List included with the shipment to take an inventory of all items. If you believe one or more parts to be missing, contact our Customer Service Department immediately at 1-800-CTS-0653 in the U.S. and Canada, or at 970-667-1000.

4) Check the connectors on the SS2 module circuit board to make sure they have not shaken loose during shipment. Refer to Figure A for cable locations.

Scope of this Instruction Guide

This instruction guide addresses all issues related to the installation and normal operation of your new SS2 electronic start system. A complete maintenance and troubleshooting section covers the most common problems that are user correctable. For any repairs or problems not found in this instruction guide, call Colorado Time Systems' Customer Service Department toll-free at 1-800-CTS-0653 (U.S. and Canada) or 970-667-1000.

SS2 Features

Your new SS2 electronic start system contains a number of advanced features which make it versatile and easy to use. Each SS2 start system has a built-in 12 VDC rechargeable battery and external battery charger. An optional long-life external battery pack, Model BP-3, is also available to extend the SS2's operating time.

Note: Your SS2 can be operated only from battery power, keeping AC power away from the pool deck and eliminating the possibility of electric shock.

With its optional multiple speaker configurations and built-in strobe light, the SS2 is a powerful start system. Using speakers mounted under the starting blocks to start your swimmers saves you money be eliminating the need for costly start pistol ammunition and accustoms your swimmers to the kind of start system used at most championship meets. The SS2 also includes a recall signal feature.

SS2 also serves as a limited public address system, allowing you to make announcements to your swimmers at practice and to the swimmers and specatators at a meet. No need to run to the announcer's booth—with SS2 the microphone is always handy. The built-in microphone hanger keeps the microphone out of the way when you are not using it, protecting the microphone from accidental drops and potential damage.

Add to these features the peace of mind you get from knowing the Colorado Time Systems stands behind you with over twenty-five years of expertise in designing and building accurate, reliable and innovative products. Standard two-year and optional five-year warranties ensure long-term reliability. Ease of operation, low maintenance and superior customer service make SS2 the obvious choice.

Optional Equipment

The following optional equipment is available for use with your SS2 Start System. Call your Colorado Time Systems' sales representative at 1-800-279-0111 (U.S. and Canada) or Customer Service at 1-800-CTS-0653 (U.S. and Canada) or 970-667-1000 to place an order.

❒ TR-2 Tripod: disassembles easily for compact storage. Adjustable height. Portable.
❒ SP-125: 40-watt speaker with 125-foot cable for far lane speaker mounting.
❒ SMK-1: Speaker mounting kit for backstroke flag post.
❒ SP-200: 40-watt speaker with 200-foot cable.
❒ SP-4: 40-watt speaker with 6-foot cable.
❒ SP-6: 6-watt speaker with 6-foot cable.
❒ M-50: Extension microphone with 50-foot cable.
❒ M-100: Extension microphone with 100-foot cable.
❒ M-200: Extension microphone with 200-foot cable.
❒ LS40-6: Six-lane cable harness with speaker inputs.
❒ LS40-10: Ten-lane cable harness with speaker inputs.
❒ SJ-50M: 50 meter start jumper cable for electronic timer.
❒ SJ-25: 25-foot start jumper cable for electronic timer.
❒ BP-3: External battery pack.
❒ Carrying Strap.

Products Covered

This instruction guide is applicable to the following model numbers:

❒ Model SS2-1/ SS2-2 -- Start system with one or two 40-watt speakers.
❒ Model SS2-6 -- Start system with six 6-watt speakers.
❒ Model SS2-8 -- Start system with eight 6-watt speakers.
❒ Model SS2-10 -- Start system with ten 6-watt speakers.

SS2 Specifications

General

These specifications cover the following SS2 models:

Model SS2-1: Loudspeaker Start System consisting of a start module with built-in strobe, one 40-watt corrosion-resistant speaker, microphone with 25-foot cable, internal gel-cell battery, external battery charger and instruction guide.

Model SS2-2: Adds a second 40-watt speaker with 125-foot cable and backstroke flag pole mounting kit.

Model SS2-6: Adds to Model SS2-1, six 6-watt speakers and LS40-6 six-lane speaker cable harness.

Model SS2-8: Adds to Model SS2-1, eight 6-watt speakers and LS40-8 eight-lane speaker cable harness.

Model SS2-10: Adds to Model SS2-1, ten 6-watt speakers and LS40-10 ten-lane speaker cable harness.

Physical

Height:	13.25 inches (33 cm)
Width:	18 inches (45 cm)
Depth:	4 inches (10 cm)
Weight:	17 lbs (7.7 kg)

Mounting Options

Place SS2 module on tabletop or use standard 1/4—20 tripod mounting bracket. Tripod Module TR-2 is optional. Wall mounting kit is also available.

Functions

PA used to address swimmers and spectators. 0.5 second dual tone electornic blast with simultaneous strobe flash. False start recall: repeating dual tone.

Hand-Held Microphone

Single microphone used to address swimmers, start the race and recall in the event of a false start. Microphone rest is located on module back panel.

Speakers

Model SS2-1 includes one 40-watt, 8 ohm moisture and corrosion resistant reflex speaker. Additional speakers for portable applications are available. Due to the wide variety of starting block types and various applications, permanent installation of speakers is the customer's reponsibility.

Strobe Light

Camera strobe light automatically flashes simultaneously when horn sounds. Gives watch timers/officials a reliable start reference; gives fair starts to hearing-impaired athletes.

Battery Power	Safe, reliable internal gel-cell battery with external charger. SS2 will not operate while charging. Optional external battery pack, Model BP-3, is available to supplement the internal battery.
Expandable	For fairer starts, add an extra speaker with 125-foot cable for far lane starting—Model SP-125. Mount the SP-125 speaker to the backstroke flag using the optional SMK-1 mounting kit. You can also add speakers for each starting block up to a total of 20 speakers. Add up to two additional microphones for referee or far side of pool and officials at the timing table.
Practicality	Interfaces to all Colorado Time Systems' electronic timers using optional start jumper cable, Model SJ-25 (25-foot cable) or Model SJ-50M (50 meter cable).
Warranty	Two year limited warranty standard; optional five-year warranty available. Refer to the standard warranty terms beginning on page 5-1.

2

Setup

This chapter contains instructions for setting up your SS2 Electronic Start System. With the many options available for use with your SS2, you can build a start system which satisfies all your meet and practice requirements. The instructions in this chapter cover standard SS2 configurations. Your start system configuration may vary depending on specific requirements and optional equipment purchased.

General Guidelines

*Note: When you receive your new SS2 start system, slide the front polycarbonate cover to the left to expose the circuit board and ensure that all cables are properly connected. **The weather cover is secured to the frame with hook-and-loop straps.** Occasionally, cables become detached during shipment. Figure A on page 2-2 shows the proper location of all cable connections on the SS2 module circuit board. Note that some cables are optional equipment and will not be installed if you did not order an optional configuration. An optional wall mount kit is also available.*

Select an appropriate location for your start system module—usually the scorer's table. Using the optional TR-1 tripod gives you greater freedom to place your SS2 in the most convenient location.

If you have purchased a system which includes multiple speakers, the locations for the SS2 available to you will be limited by the location of the speaker cable harness.

Note: Attach only the standard speaker cable harness to the speaker connectors on your SS2 module circuit board. Attaching any other type of speakers to the SS2 can cause your start system to fail.

When using the internal strobe light, the start system module should be positioned so that officials and spectators can start their watches from the strobe, improving the accuracy of watch starts.

Important: When installing your start system in a pool area, additional precautions must be observed. Always place the start system module in a location where there is no chance that it could fall into the pool. Place the SS2 module a minimum of 10 feet (3 meters) from the pool edge.

Connect your speaker(s) to the SS2 module circuit board connectors shown in Figure A. Both speaker jacks on the module circuit board are identical and can be used interchangeably.
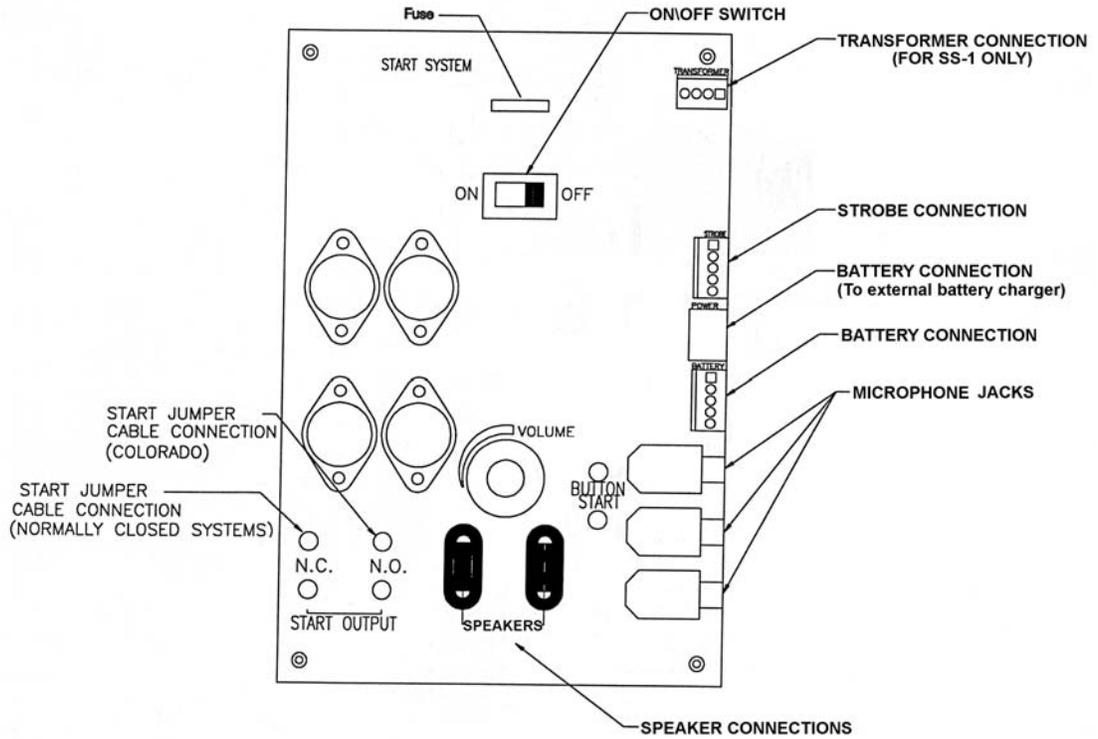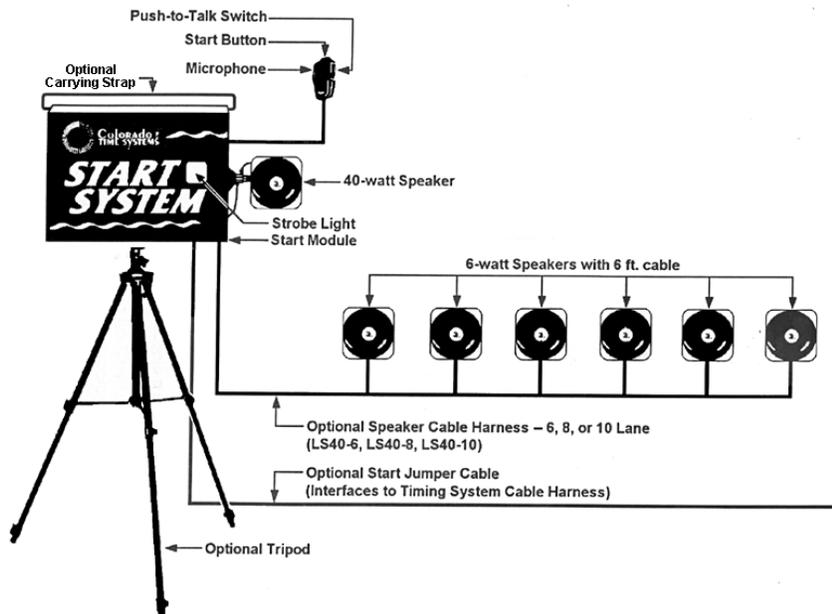
Figure A: SS2 Module Circuit Board

Figure B: Fully Assembled SS2 System

Using your SS2 with an Electronic Timer

If you are using your SS2 with an electronic sports timer, such as Colorado Time Systems' System 5 Sports Timer, connect the timer start cable from the cable harness of your electronic timer (or deck plate if you have in-deck wiring) to the output of the SS2 module circuit board. Two start outputs are available on the SS2 as shown in Figure A. Start output 1 is labeled Normally Open (N.O.) and is used for all Colorado Time Systems' electronic timers; start output 2 is labeled Normally Closed (N.C.) and may be used with other manufacturer's timers. Use the start output appropriate for your electronic timer.

Manual Pushbutton Start

An auxilary manual pushbutton start—available as an option—can be connected to the Button Start connector to provide a backup to the microphone start button.

Microphones

Three microphone jacks are provided on the SS2 module circuit board. All microphone inputs are identical and can be used interchangeably. This gives you the option of connecting the starter's microphone, backup starter's microphone and/or an announcer's microphone to your SS2.

Note: Your SS2 electronic start system is designed for use only with factory-supplied microphones. For reliable operation, do not connect any other devices to the microphone input terminals.

A fully-assembled SS2 Electronic Start System appears as shown in Figure B.

Connecting the BP-3 Optional External Battery Pack

Your new SS2 start system is designed to operate on its built-in 12 VDC power source and/or from the optional BP-3 external battery pack. When the battery is fully charged, typical operation is one to two days, depending on usage. **Using the microphone as a public address system substantially reduces battery life.**

Note: The BP-3 cannot be used to charge the internal battery of your SS2.

Battery Charging: Internal

If the start tone drops in volume or becomes longer, the battery is getting low and needs to be recharged. The external DC battery charger provided with your SS2 is safety-designed for use **only** as a battery charger and cannot be used to power the start system. When charging the battery, the start system will not function. It is therefore important that you **make sure the battery is fully charged before each day's swimming**. If you have especially heavy use requirements, purchase the optional external battery pack, Model BP-3, which is equal in life to the internal battery.

The best time to recharge the internal battery is immediately after each day's use. To recharge the internal battery, remove the SS2 from the pool area, plug the DC battery charger into a 115VAC grounded outlet. Under no circumstances should you attempt to circumvent the 3-prong grounding system built into the DC battery charger. Attach the cable from the DC battery charger to the Recharge connector on the SS2 module circuit board, shown in Figure A on page 2-2. Slide the power switch to the Off position to charge the battery. Keep the battery plugged in until the next use. **The battery will lose 20% of its power in two to three months if it is not left plugged in.** Note: Make sure the SS2 power swtich is in

the **Off** position. The battery will not charge if your SS2 is turned on.

Battery Charging: External

To recharge the optional external battery pack, remove it from the pool area, plug its AC power converter into a standard 115 VAC outlet and plug the BP-3 charging cable into the adapter on the charger cable. Allow the BP-3 to charge for 8-10 hours.

On/Off Switch

To turn on your SS2 start system, slide the power switch to the **On** position. The location of the power switch as shown in Figure A on page 2-2. Regardless of start or PA operation, SS2 consumes power whenever it is turned on. Therefore, it is very important that you remember to slide the power switch to the **Off** position when your SS2 is not in use. Failure to do so will result in a discharged battery after a few days. To prevent battery discharge, always remember to turn off the power switch and recharge the battery overnight as soon as possible after using your SS2. The charging circuit in the SS2 module prevents overcharging, allowing you to leave the DC battery charger plugged in for extended periods of time without damaging the battery or any other components. If you do not use your SS2 for two or more months, recharge the battery before use. It is normal for rechargeable batteries to discharge gradually when not in use.

Setting Volume Control

With your SS2 turned on, as explained above, rotate the volume control on the module circuit board clockwise to increase the volume. Rotate the volume control counter-clockwise to decrease the volume. Test the volume level by using the microphone. The volume control on your SS2 controls only the PA volume—start and recall tones always function at maximum volume.

Note: To avoid feedback noise, do not hold the microphone close to the speakers when testing the output volume.

Using Your SS2 Electronic Start System

This chapter explains how to use the many features your SS2 Electronic Start System offers.

Starter's Microphone

To use the starter's microphone for public address, press the push-to-talk switch on the side of the microphone and speak into the grille on the front of the microphone. To start a race, hold down the push-to-talk switch and press the start button on the top of the microphone. To recall a false start, hold down the push-to-talk switch and press the start button a second time. The recall must be made wihin five (5) seconds of the start pulse.

Note: The recall function will not work if more than one microphone is being used and both starters initiate the recall at the same time. Designate one starter to control recalls to avoid this situation. After five seconds, the SS2 module resets and is ready to accept another start.

Microphone Rest

A convenient microphone rest is built into the back panel of your SS2. When the microphone is not in use, make a habit of hanging the microphone on the rest as shown in Figure C. Using the microphone rest keeps the microphone out of the way and prevents accidental drops and potential damage.
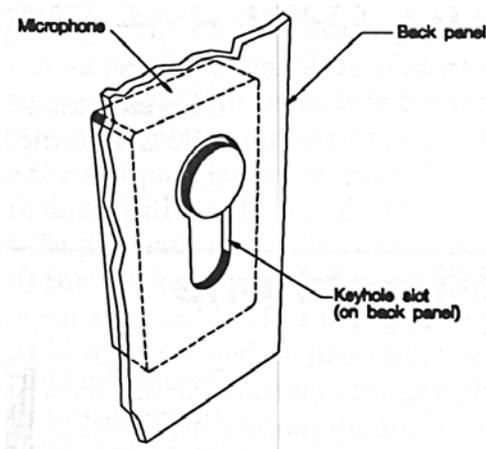

Figure C: Microphone Rest on Rear Panel of SS2

Strobe Light

The strobe light flashes automatically whenever the start system receives a start pulse. Allow 30 seconds between strobe flashes for the strobe circuit to recharge. If the strobe circuit has not had time to recharge fully when your SS2 receives another start pulse, the strobe light will not flash.

Timer Output

When properly connected to an electronic timing system, such as Colorado Time Systems' System 5 Sports Timer, the SS2 automatically sends a start pulse to the timer whenever the microphone start button or optional back-up start button is pressed. If your electronic timer does not start properly, check the start cable connections both at the timer cable harness and at your SS2. If both connections are secure, attach the start cable to the other timer output on the SS2 module circuit board. Many electronic timers, including all Colorado Time Systems' timers, require use of the Normally Open (N.O.) connector, while others require the use of Normally Closed (N.C.) connector.

Operating Notes

Using your SS2 electronic start system during training sessions is one of its most useful features. Swimmers will quickly become accustomed to electronic starting and will thereby improve their start reflexes.

The volume control on the SS2 module circuit board affects on the PA volume. The start and recall tones always operate at full volume. If the start tone drops in volume or becomes longer, the battery is getting low and needs to be recharged.

Strobe Light Usage

If coaches, parents and spectators attempt to start their stopwatches from the start tone, they will not get accurate starts. The relatively slow speed of sound, especially in the pool environment, generally results in late stopwatch starts for observers at any distance from the speakers. Educate your coaches, parents and spectators to use SS2's built-in strobe to trigger their stopwatch starts. The strobe flash is unaffected by poor acoustics and the fast speed of light ensures that all observers see the flash at the same time, resulting in more accurate stopwatch starts. The strobe also ensures fair starts for hearing-impaired athletes.

4

Maintenance and Troubleshooting

This chapter contains maintenance and troubleshooting information which helps you keep your SS2 in good working order and helps you solve common problems quickly and easily.

Maintenance

Your new SS2 electronic start system has been carefully designed to provide years of trouble-free service. No routine maintenance is necessary, but following a few simple steps will ensure that your SS2 delivers the trouble-free service for which it was designed.

Battery

You can extend the useable life of the internal battery by always keeping it fully charged—never allow the battery to discharge completely. Leave the SS2 plugged in when not in use and always make sure the power switch is in the Off position after every use. If the start tone volume drops or becomes longer, the battery is getting low and needs to be recharged.

Cable Harness

Do not allow your speakers, speaker connections, cable harness terminals and timer start cable connectors to remain wet constantly. Colorado Time Systems uses the finest quality materials available for these items, but the pool environment is very harsh. The corrosive action of chemically-treated pool water will eventually corrode any connector exposed to it for long periods. Proper care and handling of cables can prevent damage.

Once a year, clean all female connectors with a swab and silicone grease: use Compound III® by Down Corning® for best results. If connectors are badly corroded, clean them with Lime-A-Way®, which is available at most supermarkets, before applying a small amount of silicone grease to the connector.

Storage

It is best to store your SS2 in a cool, dry place after each use. Be sure to recharge the battery overnight before storing to make sure the SS2 is ready for the next time you need it. Do not store your SS2 in an area that becomes overly hot or cold. Try to keep it in a dry location that remains around 70-80 degrees F throughout the year.

In Case of Difficulty

Colorado Time Systems has taken great care to ensure that your SS2 electronic start system provides years of trouble-free service. If, however, you should experience difficulties with your SS2, first attempt to locate and solve the problem using the Troubleshooting guide. Locate the problem you are experiencing and follow the remedies one at a time in the order presented, checking your SS2 for proper operation between each recommended remedy.

Solving simple problems yourself will save you time and money. If the problem you are experiencing is not mentioned in the Troubleshooting guide or the recommended steps do not solve the problem, call Customer Service toll-free at 1-800-CTS-0653 (U.S. and Canada) or 970-667-1000 for assistance.

Troubleshooting

This section helps you solve common start system problems quickly. Locate the difficulty you are experiencing in the Symptom column and then follow the recommendations in the **Action** column one at a time, in the order they appear. If the problem you are experiencing is not listed or the recommended remedies do not have the desired effect, write a summary of the problem and all steps you have taken to correct it and call Colorado Time Systems' Customer Service Department toll-free at 1-800-CTS-0653 (U.S. and Canada) or 970-667-1000.

Symptom	Action	Notes
Nothing Works	1. Check power On/Off switch	If power switch is on, batter is discharged.
	2. Recharge battery	See instructions on page 2-3.
	3. Check all connections on SS2 module circuit board.	See Figure A for locations of these items.
	4. Check microphone and speaker connections on SS2 module circuit board.	See Figure A for locations of these items.
Battery will not charge	1. Check power AC outlet—use a lamp to check for power at outlet	
	2. Check battery connection on SS2 module circuit board.	See Figure A for location of this item.
	3. Check fuse on SS2 module circuit board—replace only with same type and rating.	**Type:** Automotive Blade **Rating**: 4 Amps

Symptom	Action	Notes
SS2 does not start electronic timer, start horn sounds properly.	1. Check cable connections at timer, cable harness and SS2.	See Figures A and B for locations of these items.
	2. Make sure the proper start output connector on the SS2 module circuit board is being used, (N.O. or N.C.).	See Figure A for location of this item.
No start or recall tones at speaker(s).	1. Make sure starter is holding down the push-to-talk switch when pressing the start button on the microphone.	See instructions on page 3-1.
	2. Check microphone connector on SS2 module circuit board.	See Figure A for location of this item.
	3. Check speaker connector(s) on cable harness and on SS2 module circuit board.	See Figures A and B for locations of these items.
	4. Microphone switch may be bad—substitute another microphone or attach backup push button on SS2 module circuit board and test start system.	
	5. Electronic timer failure—attempt to start timer manually.	
No public address output at speaker(s).	1. Check volume control level on SS2 module circuit board.	See Figure A for location of this item.
	2. Check speaker connector(s) on cable harness and on SS2 module circuit board.	See Figures A and B for locations of these items.
	3. Check microphone connection on SS2 module circuit board.	See Figure A for location of this item.
	4. Microphone may be bad—substitute a different microphone.	
Some speakers work, others do not	1. Check speaker connector(s) on cable harness and on SS2 module circuit board.	See Figures A and B for locations of these items.
Strobe does not flash	1. Allow 30 seconds between starts for strobe to recharge.	
	2. Check strobe connector on SS2 module circuit board.	See Figure A for location of this item.

Returning Your SS2 For Service

If you are experiencing a problem not found in the Troubleshooting guide or not corrected by the troubleshooting instructions, it may be necessary to send part or all of your SS2 to the factory for service. Depending on the problem, it may be necessary to return the entire start system. The following list contains the components which can be returned to the factory individually after removal from the SS2 module.

Warning: Before attempting to remove any components, make sure the SS2 power switch is in the Off position and the DC battery charger is unplugged.

SS2 Module Circuit Board

Detach all connectors from the circuit board. Remove the four (4) phillips-head screws securing the circuit board to the module frame. To replace the circuit board, perform these steps in reverse order. Refer to Figure A on page 2-2 for cable connection locations. Pack the circuit board carefully for shipment.

Speakers

Detach the individual speaker cable from the cable harness if you are using a multiple speaker configuration. If you are using a single speaker configuration, detach the speaker connector from the SS2 module circuit board. Return the defective speaker(s).

Cables

For any of the cables used, detach all connections and return the cable.

Strobe Light

Detach the strobe light cable from the SS2 module circuit board. Loosen the screws that attach the speaker to the end plate and slide the strobe assembly out from its mounting bracket. Strobes cannot be repaired, but new strobes can be ordered from the factory. To replace a strobe, perform the steps above in reverse order.

Battery

Detach the battery cable from the SS2 module circuit board. Remove the phillips screw from the battery holder. Remove the battery from the mounting bracket. New batteries can be ordered from the factory.

Front Panel

Do not return a broken or cracked front panel to the factory—it can not be repaired. Order a replacement front panel.

Additional items which can be ordered as replacement parts:

❒ Replacement speakers
❒ Cable harnesses (LS40-6 for SS2-6; LS40-8 for SS2-8; LS40-10 for SS2-10)
❒ Replacement microphone (M-50, M-100 and M-200)
❒ Replacement battery charger

Warranty

Swim Timing Equipment Two-Year Limited Warranty

COLORADO TIME SYSTEMS, INC. warrants the following products against any defects in materials and workmanship affecting electronic and mechanical performance for two years from the date of purchase from COLORADO TIME SYSTEMS, INC.

Model 4000A Sports Timer, Touchpads, 4009SB-MS Series Scoreboards, CH41-xx Series Cable Harness, Model SS-xx Series Start Systems Module, and Deckplates and Wallplates.

All other components associated with the above equipment including start transducers, pushbuttons, test meters, microphones, speakers, data cables, etc., will have a one year limited warranty.

COLORADO TIME SYSTEMS products, when properly installed, are warranted not to fail due to defects in materials and workmanship. This warranty is limited to the orginal purchaser of the product and is not transferable. No warranty claim will be honored unless at the time the claim is made you present proof of purchase.

COLORADO TIME SYTEMS, INC. will, at its option, repair or replace the defective products at no additional charge except as set forth below. Repaired components, parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of COLORADO TIME SYSTEMS, INC. This limited warranty does not include service to repair damage to the product as a result of modification of the product, misuse, abuse, neglect, negligence, vandalism, accident, or abnormal conditions including war, flood, accident, lightening, or other acts of God or damage caused by occurrences over which COLORADO TIME SYSTEMS, INC. has no control.

Limited Warranty service may be obtained by delivering the product or component part to COLORADO TIME SYSTEMS, INC. You agree to insure the product or assume the risk of loss or damage in transit, to pre-pay shipping charges to the service location and to use the original shipping container or equivalent. Repaired products will be returned to you by surface delivery at Colorado Time Systems' expense or by air freight at the

buyers' expense.

All expressed and implied warranties for these products including the warranties of merchantability and fitness for a particular purpose are limited in duration to a period of two years (or one year, as applicable) from the date of purchase, and no warranties, whether expressed or implied, will apply after this period. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

If this product is not in good working order as warranted above, your sole remedy shall be repair or replacement as provided above. In no such event will COLORADO TIME SYSTEMS, INC. be liable to you for any damages, including lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use such product, even if COLORADO TIME SYSTEMS, INC. has been advised of the possibility of such damages or for any claim by any other party.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which may vary from state to state.

Colorado
TIME SYSTEMS INC.

Colorado Time Systems, Inc.
1551 East 11th Street
Loveland, CO 80537 USA

Sales: U.S. and Canada: 1-800-279-0111
Service: U.S. and Canada: 1-800-CTS-0653
Sales and Service outside U.S. and Canada: 970-667-1000
Fax: 970-667-1032