

OWNER'S MANUAL
SWING SPEED RADAR®
with TEMPO TIMER

MODEL NO. SSRTT364



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Congratulations on purchasing your Swing Speed Radar® with Tempo Timer. If used and cared-for as described in this Manual, you should enjoy many hours of fun and constructive use. **Please read the INSTRUCTIONS section of this Manual carefully to realize the full potential of the Swing Speed Radar® with Tempo Timer.**

FEATURES & BENEFITS

The Swing Speed Radar® with Tempo Timer is a small, inexpensive microwave Doppler radar velocity sensor that provides the swing speed and tempo rhythm for golfers of all ages and skill levels. It assists players in developing/optimizing their swing by measuring ACTUAL TEMPO TIME from club takeaway to ball impact at the climax of their forward swing, as well as the SWING SPEED of the clubhead as it approaches the ball. The Swing Speed Radar® with Tempo Timer, featuring simple one-button operation, provides unmatched utility in a single, affordable device.

Clubhead speed and tempo are two significant characteristics of a golfer's swing that must be optimized and controlled if the golfer is to consistently achieve his/her best ball-striking results. Expensive launch monitors costing thousands of dollars, primarily used by well-funded clubmakers, instructors, or pro golfers, generally include these two vital parameters in their measurement systems. However, less expensive devices for use by most instructors, clubmakers, and by the golfing public are limited in utility. Prior swing speed meters can be inconsistent, unreliable, and complicated to use. Some even require attachments to the club that can change the club swing dynamics. Metronome-type devices can provide tempo time models for the golfer to try to emulate, but the resulting tempo time can only be estimated by comparisons with the model.

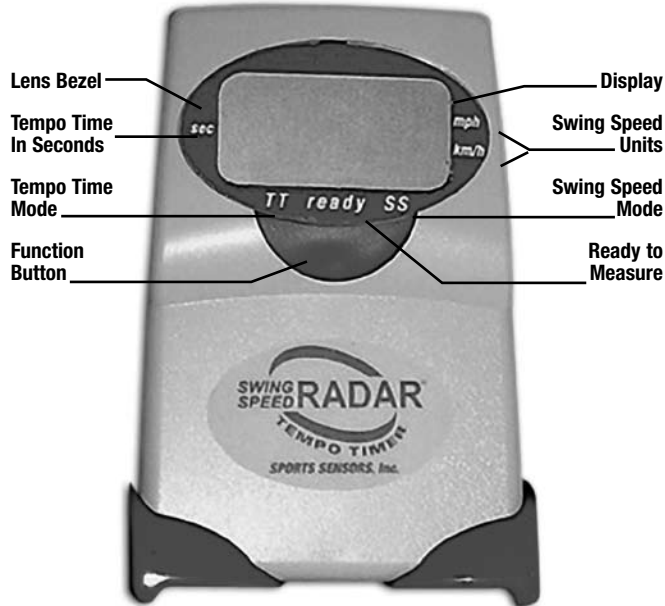
Inexpensively priced, the Swing Speed Radar® with Tempo Timer is the practical choice of clubmakers and instructors who want the flexibility and convenience of use in the field as well as at their home-based hitting stations. It can be used by golfers of all ages and skill levels, at home or at their practice facilities, as they strive to optimize their swing mechanics and rhythm for their best distance, control, consistency and accuracy.

USING THE SWING SPEED RADAR® with TEMPO TIMER

DESCRIPTION

Figure 1 depicts the front view of the SSRTT. The major features of interest are the Display that shows the measurements data; the Lens Bezel with pertinent symbols that relate to the Display and indicates modes of operation and units of measure; and the Function Button by which the user turns the unit on and off and selects the operating mode and units of measure.

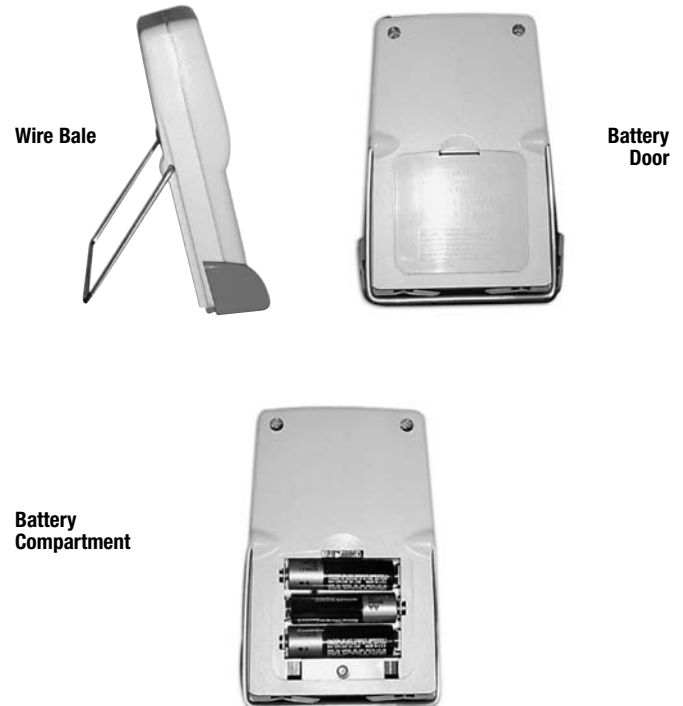
Figure 1 – Front Case View



DESCRIPTION (CONT'D)

Figure 2 depicts the side and rear views of the SSRTT. The major feature of interest in the side view is the Wire Bale that provides the support against which the SSRTT rests when placed on a horizontal surface, such as the ground, hitting mat, etc. The rear view shows the Battery Cover that is easily removed to access the compartment for the three AA size batteries, also shown. Inscriptions on the Battery Cover include the applicable Government Certification numbers and FCC Part 15 Rules synopsis.

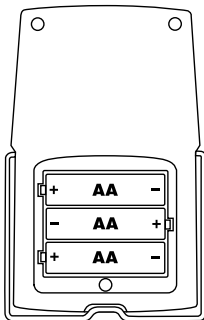
Figure 2 – Side and Rear Views



INSTALLING BATTERIES

Install the three AA size batteries with the polarities shown in the sketch of Figure 3. When the SSRTT is not in use, particularly for extended periods, it is wise to remove the batteries to prevent possible corrosive damage to the internal electronics.

Figure 3 – Polarity of AA Batteries



INSTRUCTIONS FOR USE

PLEASE READ THESE INSTRUCTIONS CAREFULLY TO REALIZE THE FULL POTENTIAL OF YOUR SWING SPEED RADAR® WITH TEMPO TIMER.

Your Swing Speed Radar® with Tempo Timer (SSRTT) has three modes of operation:

1. Clubhead Swing Speed (SS) displayed in miles per hour (mph) or kilometers per hour (km/h).
2. Swing Tempo Time (TT) displayed in seconds, to the nearest hundredth of a second.
3. Dual Mode Display of Swing Speed (SS) and Tempo Time (TT) whereby the Display toggles (alternates) between TT and SS units.

The modes and units of measure are selected by the pressure-activated function switch within the unit by pressing the Function Button on the Front Case, immediately below the Display window, as shown previously in Figure 1.

The function switch is designed to require firm finger pressure on the Function Button to avoid inadvertent switch operation resulting from the rigorous handling and usage environments normally associated with sports applications.

CLUBHEAD SWING SPEED (SS) MODE

This is the default mode in which the SSRTT automatically turns-on after batteries have been removed and reinserted or replaced. The SS mode is indicated by the small square Mode Icon adjacent to the SS symbol on the Display Lens Bezel, as illustrated in Figure 4.

Figure 4 — Display Indication of SS Mode—mph units



Note that the small square Units Icon to the right of the Display is adjacent to mph on the Lens Bezel, indicating that the Swing Speed units of measure are miles-per-hour. By depressing the Function Button once, the Units Icon will move downward next to km/h indicating that the units of Swing Speed measure are kilometers per hour, as shown in Figure 5. The Swing Speed Display of 93 mph shown in example of Figure 4 is now 149 km/h, as shown in Figure 5. Speed measurements in the SS mode can range from a low of 40 mph (64 km/h) to over 200 mph (320 km/h).

Figure 5 — Display Indication of SS Mode—km/h units



In both Figures 4 and 5, the long horizontal Ready Icon adjacent to the word “ready” on the lower center of the Lens Bezel indicates that the SSRTT **is ready to make the next measurement**. You can swing repeatedly without the need to interface with the SSRTT or its Function Button. After each swing, the previous Swing Speed Display reading is replaced by the new Swing Speed value. The Ready Icon is momentarily removed during the calculation of the new speed, immediately re-appearing to indicate that the SSRTT is ready to make the next Swing Speed measurement.

If a lull of 5 minutes occurs without a new swing measurement in any mode, the SSRTT will automatically turn itself off to preserve battery life. You can also manually turn the SSRTT off by pressing and holding the Function Button until the Display is extinguished. When it is again powered by pressing the Function Button, it will turn on in the same mode that it was in at turn-off. If the batteries are disconnected for several minutes, removed and/or replaced, then the SSRTT will turn-on in the default SS mode.

SWING TEMPO TIME (TT) MODE

The TT mode can be activated by pressing the Function Button twice when in the SS mode, mph units, as evidenced by the movement of the Mode Icon from SS to TT (or by pressing the Function Button once if in the SS mode, km/h units). The small square Mode Icon symbol will be adjacent to TT on the Lens Bezel, as shown in Figure 6, the Units Icon will be removed, and the Ready Icon will be present to indicate that the SSRTT is ready for the next measurement.

Figure 6—Display Indication of TT Mode



The SSRTT measures the time from the clubhead takeaway start of the backswing to the return of the clubhead at ball impact. The TT measurement is displayed in seconds, from 0.50 seconds up to 4.00 seconds maximum, with tenths and hundredths of a second shown by the 3-digit Display. The Mode Icon represents the decimal point when in the TT mode. Figure 6 illustrates a Tempo Time of 1.25 seconds

Presence of the Ready Icon indicates that the SSRTT is ready to make a Tempo Time measurement. **Upon clubhead takeaway, the TT Display will show 0.00 and the Ready Icon will be removed, indicating that the Tempo Time measurement has been started** as shown in Figure 7. When a return of the clubhead has been detected, the Display will show the measured time interval, from a minimum Tempo Time of 0.50 seconds up to 4.00 seconds.

Figure 7 — Display at the Start of a Tempo Time Measurement



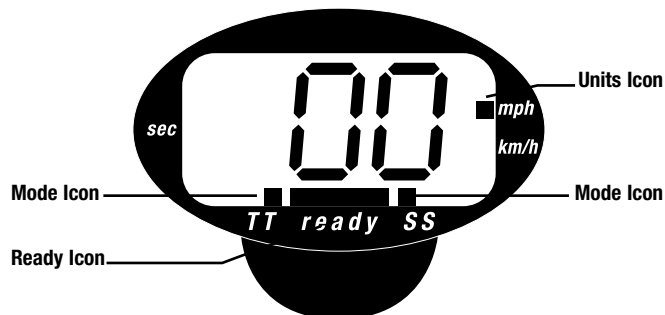
Tempo Time measurements require the SSRTT to respond to relatively slow takeaway speeds while ignoring “waggles” and preparatory clubhead movements in the vicinity of the SSRTT before the actual takeaway backswing. **If a preliminary clubhead movement starts the Tempo Time measurement prematurely, as evidenced by the appearance of 0.00 and the absence of the Ready Icon, you must wait momentarily until the Ready Icon re-appears (accompanied by the previous Tempo Time display) before starting the actual backswing takeaway.**

If the above instructions are followed, you will obtain reliable Tempo Time data that will help you establish an effective rhythm for consistent swing results.

DUAL MODE DISPLAY OF SWING SPEED (SS) AND TEMPO TIME (TT)

The Dual Mode Display of Swing Speed (SS) and Tempo Time (TT) can be accessed by pressing the Function Button once after the SSRTT is in the TT Mode. A Mode Icon will appear adjacent to the SS symbol on the Lens Bezel and another Mode Icon will be evident next to the TT symbol on the Lens Bezel. The Units Icon will denote mph, and can be switched to km/h by pressing the Function Button again. The long horizontal Ready Icon indicates that the SSRTT is ready for a swing measurement. Initially, the Display will show two zeros, as illustrated in Figure 8.

Figure 8 — Display at the Start of Dual Mode Measurement



Once a swing is experienced, the Display will toggle (alternate) from Tempo Time to Swing Speed, as previously illustrated in Figures 6 and Figures 4 or 5, depending on the units chosen. However, the TT Mode Icon is the Decimal Point in the TT Mode, and the SS Mode Icon does not appear when toggling into the SS Mode.

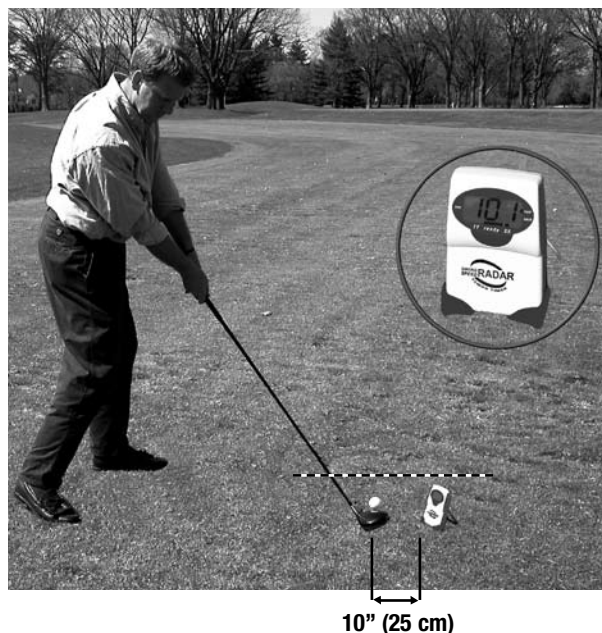
The same procedure and precautions described for measuring Tempo Time also apply in the Dual Mode—that is: **If a preliminary clubhead movement starts the Tempo Time measurement prematurely, as evidenced by the appearance of 00 and the absence of the Ready Icon, you must wait momentarily until the Ready Icon re-appears (accompanied by the previous Tempo Time display) before starting the actual back-swing takeaway.**

If the above instructions are followed, you will obtain reliable Tempo Time and Swing Speed data that will be invaluable in helping you monitor, optimize, and control your swing for your best, repeatable ball striking results.

POSITIONING THE SSRTT FOR SWING SPEED AND TEMPO MEASUREMENTS

Place the Swing Speed Radar® with Tempo Timer about 8-10 inches (20-25 cm) away from the ball, directly in line with the golfer and the ball, as shown in Figure 9. Orient the SSRTT so that it is facing toward the direction from which the clubhead is coming, at about a 45 degree angle relative to the clubhead swing path. In this position, the SSRTT Display can be conveniently seen by the golfer in the address position. Be sure that the SSRTT is not so close to the ball that it might be hit by the club. To prevent the SSRTT from being hit by a mis-hit of the ball off of the clubhead toe, be sure that the SSRTT is not forward of the ball.

Figure 9 — SSRTT Position for Swing Measurements



An alternate SSRTT location for irons is facing the ball, about 4 feet (1.2 m) behind the ball and about 1 foot (.3 m) off the ball flight line, toward the club swing path. Divots from irons will not "splash" the SSRTT. Early club release speed can also be measured in the rear location. However, the forward SSRTT location is generally preferred for most measurements.

SPECIFICATIONS

The specifications of the Swing Speed Radar® with Tempo Timer are summarized as:

Size: 3 3/4" w (9.5 cm w); 5 1/2" lg (14 cm lg); 1 5/16" th (3.3 cm th)

Weight: 11 oz. (312 g)

Display Type: 3 Segment LCD

Speed Units: Miles-Per-Hour (mph) and

Kilometers-Per-Hour (km/h) selectable

Speed Range: 40-200 mph, 64-320 kmh, in SS mode;

10-200 mph, 16-320 km/h in Dual mode

Speed Accuracy: Nominally within 1%

Tempo Time Units: Seconds, tenths and hundredths of a second.

Tempo Time Range: 0.5 seconds to 4 seconds

Time Accuracy: Nominally within 5 hundredths of a second

Batteries: Three AA batteries, (not included)

Operating Temperature: 40-110 degrees F (4.4-43 degrees C)

Storage Temperature: 32-120 degrees F (0-49 degrees C)

Related Patents:

U.S.: 5,864,061; 6,079,269; 6,378,367; 6,666,089; 6,898,971 B2

Canada: 2,248,114

Japan: 3,237,857

EMISSION AND SAFETY STANDARDS

The Swing Speed Radar® has been tested and certified to meet requirements established by the Euro Union, Industrie Canada and the Federal Communications Commission. The FCC ID is NVE 364. "This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation." The Swing Speed Radar® meets the requirements of the Common European Market (CE), and it has also been certified by Industrie Canada, IC 3543A-364. RoHS and CE compliant.

The Swing Speed Radar® complies with current standards established for safety levels of human exposure to radio frequency energy, including the requirements of C95.1-1992.2 defined by the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE); and those of the Canadian Department of Health and Welfare, Safety Code 6.

Use of the Swing Speed Radar®, or any other radiating device, may create problems when in close proximity to electronic medical devices, such as heart monitoring equipment or pacemakers/regulators. Avoid such use.

CARE OF YOUR SWING SPEED RADAR® WITH TEMPO TIMER

The Swing Speed Radar® with Tempo Timer is a unique electronics product intended for training and practice situations. Although the rugged design will withstand the rigors of normal use, it should be protected from golf club and ball impacts; should not be dropped or thrown; or exposed to precipitation, or immersed in water or other liquids. Do not use or leave outdoors during inclement weather. Store the Swing Speed Radar® with Tempo Timer in typical in-house environments, avoiding excessive temperature extremes, humidity, dust and dirt. The accompanying nylon pouch will afford modest protection from scratches, nicks and defacement from normal handling activities.

Remove the three AA batteries if the unit will not be used for extended periods. Replace the batteries when low power is indicated.

The Swing Speed Radar® with Tempo Timer can be cleaned with a slightly damp, soft cloth. Do not use alcohol, solvents, or chemical cleaners which can cause permanent damage.

With proper care, the Swing Speed Radar® with Tempo Timer will provide many hours of service and fun for the users.

PROBLEMS/TROUBLESHOOTING

The Swing Speed Radar® with Tempo Timer is designed to provide trouble-free performance when used properly, and given proper care. Battery replacement is the primary corrective action that can be taken by the user. Symptoms of low or dead batteries are no display, a dim display, or an erratic display after the Function Button has been pressed. Other abnormal operating characteristics can also be caused by weak or loose batteries. Nearby sources that are "electrically noisy", such as fluorescent lights, electric motors, cell phones, or high power transmission lines, for example, can cause the spontaneous display of anomalous speed or tempo readings. Avoid close proximity to such sources when using the Swing Speed Radar® with Tempo Timer.

Please carefully follow the Instructions for Use in this Manual to avoid unwanted measurements from "waggles" that can occur in the Tempo or Dual modes if the Ready Icon is not displayed when the actual takeaway backswing begins.

WARRANTY & SERVICE

What is covered? – This limited warranty covers all defects in workmanship or materials in your Swing Speed Radar® with Tempo Timer that is purchased directly from Sports Sensors, Inc. or from an authorized reseller. This warranty applies only to defects that occur while your Swing Speed Radar® with Tempo Timer is being used in the normal manner described herein. This warranty does not apply to any defects that are caused by misuse, abuse, neglect or improper storage, handling or maintenance, or any modifications or repairs performed by anyone other than Sports Sensors, Inc. Except as expressly stated in this warranty, Sports Sensors Inc. makes no implied warranties, whether of merchantability or fitness for a particular purpose or use or otherwise with respect to the Swing Speed Radar® with Tempo Timer, for more than one year from the purchase date.

How long is the coverage period?--This limited warranty runs for one year from the date that you buy the Swing Speed Radar® with Tempo Timer, as shown on your purchase receipt.

What will Sports Sensors Inc. do?--If your Swing Speed Radar® with Tempo Timer fails during the warranty period and you return it before the end of this period, Sports Sensors Inc. will, at its discretion, and at no additional charge, repair or replace the defective unit. In no event shall Sports Sensors Inc. be liable for, or pay, any indirect, special, incidental or consequential damages in connection with your Swing Speed Radar® with Tempo Timer.

How can you get service?--You must send the Swing Speed Radar® , appropriately protected and packaged, shipping charges prepaid, to Sports Sensors, Inc., c/o Electronics Development Corp., 9055F Guilford Rd., Columbia, MD 21046, USA. Evidence of date and place of purchase, such as a copy of your sales receipt or other “proof of purchase”, must accompany the returned unit. Please describe the nature of the problem or reason for return.

How does state law apply?--This warranty gives you specific legal rights which vary from state to state. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty is governed by the State of Ohio, USA.

For technical support or service information, call, toll-free: (800) 394-6650 or (888) 542-9246. For ordering information, or to relate usage experience, please call toll-free: (888) 542-9246. Visit our Web Site for the latest information about the Swing Speed Radar® with Tempo Timer, or other new products, at: www.sportsensors.com

**ENJOY YOUR SWING SPEED RADAR® WITH TEMPO TIMER,
AND CONTINUE TO IMPROVE YOUR GAME!!**

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