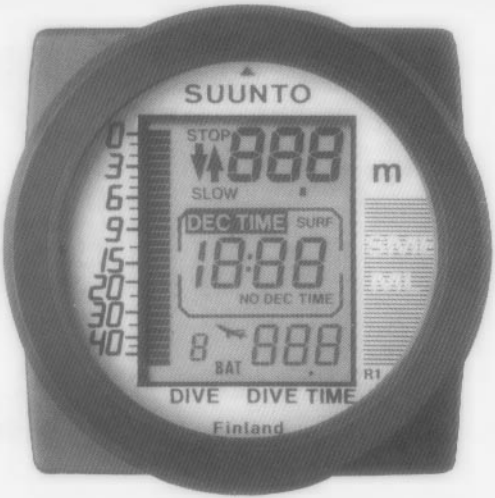


SUUNTO SME-ML
DIVE COMPUTER

SUUNTO

Diving Instruments

FIGURE 1 STARTUP

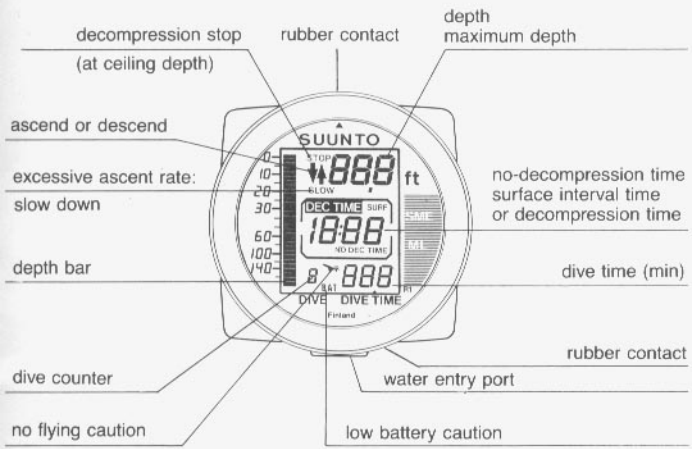
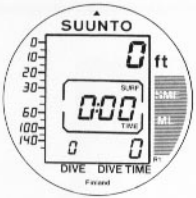
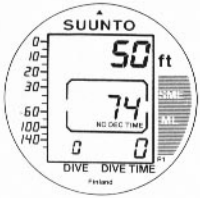


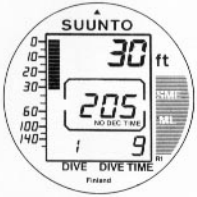
FIGURE 2



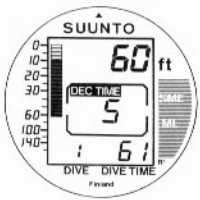
A READY



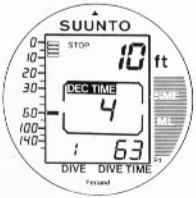
B DIVE PLANNING
Available no-decompression time 74 min at 50 ft. (Cyclic display).



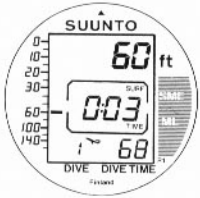
C DIVING
No-decompression dive.
Remaining
no-decompression time 205 min.



D DIVING
Decompression dive.
Ceiling Depth 10 ft.



E DIVING
Decompression stop at
10 ft. Remaining
decompression time 4 min.



F SURFACE
Max. depth attained 60 ft
and dive time 68 min.

INSTRUCTION MANUAL FOR THE SME-ML DIGITAL DIVE INSTRUMENT

CONTENTS

FOR YOUR SAFETY

Do not attempt to use the Suunto SME-ML without reading this entire Instruction Manual. If you have any questions about the Manual or the SME-ML, see your Suunto dealer before diving with the SME-ML. This Instruction Manual pertains only to the SME-ML. Suunto also manufactures a similar looking instrument, the SME-USN, which has different operating instructions. If you have an SME-USN, use only the SME-USN Manual.

The SME-ML is designed to assist fully trained, certified, sport divers in planning safe, no-decompression dives. It is NOT A SUBSTITUTE FOR PROPER INSTRUCTION or for understanding the principles of decompression. A diver using the SME-ML should also have access to a back-up depth gauge, watch or other underwater timepiece, and decompression tables on every dive.

THE SME-ML SHOULD NEVER BE TRADED OR SHARED BETWEEN USERS WHILE IT IS IN OPERATION. Its information will not apply to someone who has not been wearing it throughout a dive or sequence of repetitive dives. Its dive profiles must match that of the user. If it is left on the surface during any dive, it will give inaccurate information for subsequent dives.

WHEN USED PROPERLY THE SME-ML IS AN OUTSTANDING TOOL FOR ASSISTING PROPERLY TRAINED DIVERS IN PLANNING AND EXECUTING STANDARD AND MULTI-LEVEL SPORT DIVES WITHIN THE DESCRIBED NO-DECOMPRESSION LIMITS. In addition: if through carelessness or emergency a diver is forced to exceed the no-decompression limits on a dive, the SME-ML does have a provision for indicating decompression information. The SME-ML will then continue to provide subsequent interval, and repetitive dive information.

While the SME-ML is a "state of the art" dive computer the user/diver must realize that it is only a computer and cannot monitor the actual physiological functions of an individual diver.

All decompression schedules currently known to the authors, including the U.S. Navy Tables, are based on a theoretical mathemetical model which is intended to serve as a guide to minimize the probability of decompression sickness. The principles and procedures discussed within this text are believed to be conservative with respect to the mathematical model utilized in the U.S. Navy Tables. However the reader/diver should be forewarned that individual physiological differences, severe environmental conditions and predive activities, especially those which tend to increase dehydration, may increase the risk of decompression sickness.

The user should understand that all decompression devices (dive computers and/or decompression tables) are based on mathematical models and that many experts are currently concerned that, under certain conditions, these models may not adequately describe the physiological phenomena. These conditions are presently identified as dives which incorporate the following:

REVERSE PROFILES – where the diver spends the majority of the dive at shallow depths and then descends to the maximum depth shortly before surfacing.

CONSECUTIVE DEEP DIVES – where the diver repeatedly returns to approximately the same maximum depth with only short surface intervals between dives.

REPETITIVE DECOMPRESSION DIVES – where the diver makes a series of multiple dives that all exceed the stated no-decompression limits.

CAUTION: Dive practices which include the dive

profiles described above are believed to increase the risk of decompression sickness even if they conform to the mathematical model, AND THEREFORE SUUNTO RECOMMENDS THAT SUCH PRACTICES BE AVOIDED.

Throughout the history of diver training and education, divers have been taught to always include a margin of safety and conservatism in their diving procedures, that the maximum depth of a dive should be obtained early in the dive profile and that the remainder of the dive should be directed to the slow return to the surface. The amount of safety margin and conservatism exercised by the diver should increase as the repetitive dive series increases.

Further, the reader/diver is advised that any dive carries some risk of decompression sickness and neither the authors, nor Suunto Oy will assume any responsibility or liability for accidents or injuries which might occur for any reason.

GENERAL DESCRIPTION

The Suunto SME-ML is a multi-functional sport diving instrument which provides information on depths, times and decompression requirements. Its electronic microprocessor mathematically models the absorbtion and release of nitrogen during all phases of diving including ascents, surface intervals and repetitive dives.

The information it provides is displayed in a logical, simple fashion so that only essential data is shown at the appropriate time. While underwater the display will show present and maximum depth, elapsed dive time, remaining no-decompression time, or decompression information if required. Between dives, the display will show surface

interval, maximum depth and dive time for the last dive and available no-decompression times now available for planning the next dive. In addition you can recall detailed dive profiles for the most recent 10 hours of dive time.

The SME-ML is available in two versions: one which reads depths in feet of sea water, and another which reads depths in meters of sea water. The operation and maintenance of both versions is identical.

The no-decompressioin limits displayed by the SME-ML upon activation are slightly more conservative than those permitted by U.S. Navy tables for most dives to a single depth. These "low-bubble" no-decompression limits have been derived from recent research, and are believed to greatly reduce the chances of decompression sickness.

Unlike the US Navy tables the SME-ML does interpolate between depths, giving a diver "credit" for time spent in shallower water, rather than calculating no-decompression limits based on the maximum depth of a dive. As a result, no-decompression dive times permitted by the SME-ML are often much longer than those that would be allowed by the U.S. Navy tables. Further details of this multi-level diving technique are provided below in OPERATING PRINCIPLES.

The user should be aware that any dive, even ones within the "low-bubble" or US Navy limits, does carry some risk of decompression sickness. As a safety precaution, Suunto recommends that divers using the SME-ML should attempt to have at least 5 minutes of no-decompression time remaining at all times during the dive. This is especially important for divers in poor physical shape, or divers in cold water or under arduous conditions.

Suunto also recommends that divers take a "safety stop" of at least 3 minutes at a depth between 10'(2 m) and 30'(10 m) at the end of every dive if it is at all possible.

In addition, divers should not fly in an aircraft or otherwise travel to elevations above sea level until 12 hours have elapsed following a no-decompression dive, or until 24 hours have elapsed following a decompression dive.

OPERATING PRINCIPLES

THE SME-ML MUST BE ACTIVATED AND OPERATED CORRECTLY IN ORDER FOR IT TO PROVIDE ACCURATE INFORMATION.

When you dive with the SME-ML, it measures and displays depths and times as your dive progresses. It shows your available dive time – and any decompression required – based upon four factors: 1) your present depth; 2) excess nitrogen absorbed during earlier portions of the dive; 3) residual nitrogen remaining from previous dives; and 4) the no-decompression limits that apply to that depth. Back on the surface, it displays the no-decompression dive times available for various depths on the next dive. As surface intervals increase, so do available dive times for the next dive.

In order to perform these calculations, the SME-ML continuously models the absorption and release of excess nitrogen from theoretical "compartments". Each of the compartments absorbs and releases nitrogen at a different rate. Compartments that absorb and release nitrogen rapidly are believed to have a high tolerance for excess nitrogen, whereas compartments that absorb and release nitrogen more slowly are believed to be more sensitive.

The no-decompression limits in the U.S. Navy tables are based upon six compartments for single dives, and one compartment for surface intervals and repetitive

dives. If you are familiar with table theory, you may know that they are characterized by half times (i.e., time required for 50 % equilibration to a pressure change) ranging from 5 minutes to 120 minutes. The SME-ML includes the same six compartments, plus three additional compartments for an increased range of the mathematical model. Calculations are based upon all nine compartments for all phases of diving, including surface intervals and repetitive dives. The SME-ML's half times range from 2.5 to 480 minutes.

The SME-ML requires a minimum surface interval of 10 minutes between dives. If a surface interval is shorter than 10 minutes, the SME-ML's dive counter and dive timer treats the next dive as a continuation of the previous dive. It adds the dive times, and calculates no-decompression limits or decompression stops based on excess nitrogen absorbed on both dives. In this regard, it is similar to the U.S. Navy tables. Upon recall, the dive profile recorder will show all dive segments based on the times from when the meter switched on at depth of 5 feet (1.5 m) until the meter switched off again 5 feet (1.5 m).

If a diver bounces up and down switching the meter on and off, the dive profile recorder will show these as separate dive segments even though the dive counter treats them as a single dive.

Suunto strongly recommends that sport divers set their maximum depth to 130' (39 m). However, the SME-ML will calculate no-decompressioin times to 200' (60 m) to provide a wide margin of flexibility if, through carelessness or emergency, you are forced to exceed this recommended depth limit for a dive.

In several important aspects **the SME-ML is more conservative than the U.S. Navy tables.** For example:

1. **The SME-ML uses an ascent rate of 33' (10 m) per minute.** "It is intended to allow the gradual release

of nitrogen during ascent, and reduce the chance of 'bubbles' forming in the diver." If you exceed 33' (10 m) per minute, the SME-ML asks you to slow down.

2. **The SME-ML does not calculate bottom time; it calculates dive time.** Dive time includes all the time spent below a depth of 5' (1,5 m), including ascent time. The U.S. Navy tables compute bottom time from the moment that you leave the surface until you begin your ascent, and do not include ascent times.
3. **The SME-ML may be used only at altitudes up to 1,600' (500 m) above sea level.** The U.S. Navy tables may be used at altitudes up to 2,300' (700 m) with some minor corrections.
4. **The SME-ML continues to track residual nitrogen in compartments on the surface until they no longer affect no-decompression limits on subsequent dives.** This may take up to 48 hours if you have been diving heavily. The U.S. Navy tables, by comparison, assume that you are completely free of residual nitrogen 12 hours after your last dive.
5. **The SME-ML's "low-bubble" no-decompression limits are designed to allow less excess nitrogen to build up in compartments than the U.S. Navy tables permit.** For example, on a first dive descending directly to 60' (18 m), the U.S. Navy no-decompression limit is 60 minutes. The SME-ML's no-decompression limit for the same dive is 53 minutes.

USING THE SME-ML

This section contains instructions for operating the SME-ML, and for interpreting its displays. Each display has

been carefully designed to provide all the information you need for various diving situations: **STARTUP, READY, DIVE PLANNING, DIVING,** and **SURFACE.** The SME-ML also can produce an **ERROR** display if you have committed a serious error in its operation.

Each of these displays shows only the data that you need when you need it. For example, while you're on a dive, surface interval data is irrelevant, and therefore not shown. While you're on the surface after a dive, remaining no-decompression dive time for that dive is irrelevant, and therefore replaced with information about the times available on your next dive. You'll find that the SME-ML is very easy to use.

Activation

Activation means turning on the SME-ML properly. During activation, the SME-ML checks its fitness to dive. The SME-ML must be activated whenever the display is blank.

Activation is a two-step process: First, immerse the entire unit in water until all display elements turn on (Figure 1). The **STARTUP** display will appear in a few seconds. If the **STARTUP** display does not appear, the SME-ML cannot be used. After the **STARTUP** display is on, lift the SME-ML above the surface for 5–10 seconds. **The READY display (Figure 2A) must appear** after the **STARTUP** display disappears, confirming that activation is complete. All of the Depth Scale elements should turn off, the surface interval timer should be activated and the Digital Depth Indicator should read 0. The SME-ML is then ready to dive.

NOTE: The SME-ML may activate to the READY display without following the above instructions. Simply

holding the SME-ML in your hand may make an electrical connection across the two water contacts at either end of the unit. This will have the same effect as immersing the SME-ML in water and then lifting it out. In either case, if the SME-ML is not taken on a dive after activation, it will automatically turn off in one hour to conserve the batteries.

If any of the elements of the Depth Scale do not turn off, or if the Digital Depth Indicator does not read 0, or if "BAT" is displayed, the SME-ML should not be used. BAT indicates that the battery is too low to operate the SME-ML. The READY display will alternate about every 30 seconds with the **DIVE PLANNING** display described below. If you activate the SME-ML and do not check it right away, you may see the **DIVE PLANNING** display. To confirm activation, wait a few seconds until the **READY** display returns. It is not necessary to be in the water yourself during activation. You can immerse the SME-ML in a barrel of water on the boat, for example.

The SME-ML has a **DIVE PLANNING** feature (described below), and you may find it more convenient to discuss your first dive with your buddy before gearing up.

The SME-ML does not need to be reactivated for repetitive dives. It will remain active until it has calculated that all residual nitrogen has off gassed. This may take up to 48 hours, as described under OPERATION PRINCIPLES. However, if you activate it and then do not take it on its first dive within one hour, it will deactivate itself to save power. To reactivate it, follow the procedure described above.

CAUTION: The SME-ML must remain in the water while it is on a dive. If the unit is removed from the water, such as a diver surfacing inside of an underwater cave, the information will be biased and will no longer be accurate.

Dive Planning

Before your first dive, the DIVE PLANNING display (Figure 2B) will alternate with the READY display described above. The **DIVE PLANNING** display will cycle rapidly through the "low-bubble" no-decompression limits for various depths. Depths will appear in the Digital Depth Indicator, and times will be shown in the center window with the notation NO DEC TIME. It takes about 30 seconds to run through the cycle.

At the end of a dive, the SME-ML will return to the **DIVE PLANNING** display when you return to the surface, or are shallower than 5' (1.5 m). As you would expect each NO DEC TIME may be shortened to take residual nitrogen into account, but will increase as surface interval lengthens. The **DIVE PLANNING** display will alternate with the **SURFACE** display described below.

Non-Repetitive and Repetitive No-Decompression Dives

Any time you leave the surface and drop below 5' (1.5 m), you will see only the **DIVING** display (Figure 2C). The **DIVING** display will remain visible until you return to depths shallower than 5' (1.5 m). Available no-decompression dive time – based on the four factors listed under OPERATING PRINCIPLES – will be shown in minutes in the center window, with the notation NO DEC TIME. Elapsed time in minutes will also be indicated by the DIVE TIME indicator. The DIVE counter will show the number 1 for a first dive, or a higher number for a repetitive dive. Please note that the SME-ML's dive counter turns over at 9. Consequently the 10th dive of a repetitive series will read 0, and the 11th dive will read 1.

Your present depth will be shown numerically in the Digital Depth Indicator, as well as graphically on the Depth Scale. The bottom bar on the Depth Scale will serve as a reminder of maximum depth attained. As you descend, the Depth Scale will extend downward. When you ascend, the bottom bar will remain in place, showing how deep you have gone on that dive.

Surface Intervals

An ascent to any depth shallower than 5' (1.5 m) will cause the **DIVING** display to be replaced with the **SURFACE** display (Figure 2F). In the center of the **SURFACE** display, you will find your surface interval in hours:minutes with notation SURF TIME. The Digital Depth Indicator will read the maximum depth of the previous dive, and the DIVE TIME indicator will show elapsed time at depth. The DIVE counter will show the number of the last dive. The Depth Scale will have a single bar showing, marking the maximum depth attained on the dive.

Until SURF TIME reaches 10 minutes (0:10), the SME-ML doesn't "know" if you're going to make a repetitive dive or continue the first dive. If you descend below 5' (1.5 m) before 10 minutes have passed, the **DIVING** display will return. DIVE number will remain unchanged, and both DIVE TIME and NO DEC TIME **will begin where they left off.**

After SURF TIME reaches 10 minutes, subsequent dives are (by definition) repetitive, and the DIVE counter will progress to the next higher number if you make another dive. When residual nitrogen is no longer a factor affecting subsequent dives the SME-ML will automatically deactivate itself.

When the **SURFACE** display appears, you will notice a small blinking image of an airplane next to DIVE. **The airplane is a reminder that you should not fly or travel to altitudes above sea level until the airplane is no longer shown.** Research suggests that you should not fly for at least 12 hours after no-decompression dives, and for 24 hours after a decompression dive.

Decompression dives

Suunto does not recommend decompression diving for sport divers. However, if through carelessness or emergency, you are forced to exceed the no-decompression limits for any dive, the SME-ML does have a provision for indicating decompression information. Rather than requiring you to make stops at fixed depths, the SME-ML permits you to decompress within a range of depths.

If your dive time exceeds the NO DEC TIME indicated on the **DIVING** display, the display itself will change. NO DEC TIME will be replaced with the flashing notation DEC TIME (Figure 2D), which is the minimum number of minutes you will have to spend in decompression at the indicated "ceiling". The ceiling is the shallowest depth to which you can safely ascend.

The depth of your ceiling will be shown clearly on the Depth scale. All of the depth bars shallower your ceiling will blink. For example, if your ceiling is at 12' (36 m), all of the bars between 0 and 12' will flash (Figure 2D).

The depth of the ceiling will depend upon your dive profile. The ceiling will be fairly shallow when it first appears, but if you remain at depth the ceiling will move downward and DEC TIME will increase. Both of these factors will increase the amount of air and time required for

decompression. Therefore, **you should ascend and begin decompression promptly when the SME-ML shows you that decompression is required.**

When you reach the ceiling, the display will show you the word STOP. (Figure 2E). If you ascend above the ceiling, a downward-pointing arrow will appear, warning you to descend immediately to or below the ceiling. Suunto recommends staying 5' (1.5 m) below the ceiling to prevent the warning arrow from appearing. During decompression, DEC TIME will count down toward zero, and the ceiling may move upward. To achieve the fastest decompression, stay near the ceiling. You may surface only when DEC TIME reaches 0 and DEC TIME is replaced by NO DEC TIME.

Under some conditions – e.g. if the sea surface is rough – it may be more convenient to decompress below the ceiling. To determine when you are actually decompressing – rather than incurring additional decompression time – simply watch the DEC TIME display during your ascent. When it stops flashing, you have entered the decompression range, and are shallow enough to begin decompression. What ever depth you choose within the decompression range, do not ascend shallower than the indicated ceiling. Since it's often hard to maintain a constant depth near the surface, you will probably not want to decompress at less than 15' (4.5 m), even if the ceiling is shallower than that.

Remember, it will take **more time** (and **more air**) to decompress below the ceiling than at the ceiling. DEC TIME is the amount of time that it would take to decompress at the ceiling. If you are decompressing below the ceiling, DEC TIME will still count downward, but it will run more slowly than usual and take longer to reach 0 (and decompress) than at the ceiling.

Fast Ascents

If you ascend faster than 33' (10 m) per minute, the SLOW warning will blink on the **DIVING** display. You can slow down or stop coming up until the SLOW warning disappears, as long as you do not ascend shallower than 10' (3 m). If SLOW is still on by the time you reach 10' (3 m), you must stop there until it goes off. You should not surface with SLOW. If you do surface with the SLOW warning still flashing, it will continue to flash until you begin the next dive, or until the unit deactivates itself in the normal manner.

The Error Mode

The SME-ML is fairly forgiving of minor errors in its use, and provides adequate warnings of impending problems. If you do not respond to its warnings, it will revert to an Error Mode indicating a severe violation of its operating principles.

Any violation that puts the SME-ML in the Error Mode will greatly increase your chances of getting decompression sickness. Once in the Error Mode, the SME-ML can be used as a depth gauge and dive timer, and dive profile recorder, but it will not provide any information about decompression information until a surface interval that allows total off gassing of residual nitrogen has elapsed. Any dives made after the SME-ML has gone into the Error Mode will prolong the off gassing process.

If you omit required decompression, "Err" will blink in the center box. This is a warning to avoid putting the SME-ML into the Error Mode. If you do not take the appropriate action in either case, "Err" will cease to blink, and the SME-ML will lapse into the Error Mode. If you descend

immediately and perform the necessary decompression, "Err" will disappear.

It is possible to put the SME-ML into the Error Mode by exceeding its depth limit. If you go deeper than 200' (60 m), the SME-ML will go into the Error Mode **without any advance warning.** Also, if you go beyond the limits of the formulas built into the SME-ML, you will put it into an Error Mode. The SME-ML's formula covers all no-decompression dives, and all decompression dives requiring decompression times up to 30 minutes. A careful sport diver is unlikely ever to put the SME-ML in the Error Mode by either of these means.

DIVE PROFILE MEMORY

As you know, it's important to keep written track of each dive you make. The information you record may be necessary for planning subsequent dives, especially in the unlikely event of battery failure or other malfunction of the SME-ML between dives. The **SURFACE** and **DIVE PLANNING** displays provide all the data you need at the end of every dive: maximum depth, dive time, and NO DEC times at the intended depth(s) of your next dive. If you get into the habit of writing these down and recording what time you surface, you will always have an accurate account of your dives.

If you do not write down the necessary information immediately, but would like it later, the SME-ML can supply this information for you. This section describes how to interrogate the SME-ML for information on previous dives. The SME-ML can show you a surprisingly detailed record of your most recent dive profile, as well as the most recent 10 hours of dive time.

Preparing the SME-ML for Interrogation

Before interrogating the SME-ML, it must be in an activated condition with the **Dive Planning** display visible. This display alternates with the **Surface** display between dives which must be at least 10 minutes before interrogation. If the SME-ML has deactivated itself, it must be reactivated to obtain the **Dive Planning** display. Please review Activation, on page 9.

To prepare an activated or reactivated SME-ML for interrogation, you will need to access the two rubber contacts on its sides.

With the **Dive Planning** display visible, you must make electrical contact twice between the two contacts by wetting your thumb and forefinger and touching one to each contact simultaneously. Contact must be made in the right sequence. This sequence is to make contact for 3 seconds, break contact for 3 seconds, and then to make contact for 3 additional seconds.

One convenient way to measure these 3 second intervals is to use the cycling of the DIVE PLANNING display.

The **Dive Planning** display cycles through depths in 10' (3 m) increments: 30', 40', 50', 60', 70' and so forth. To access the memory, press the contacts when any one of the depths between 30'and 100' is showing, hold the contacts until the next depth increments is seen, release them until the fourth increment is seen, then release them and wait.

For example, press the contacts when 40' appears, and release them when 50' appears. Press them again when 60' appears, and release them when 70' appears. Wait for a few seconds. Two more depth increments will be displayed, and then the **Dive Planning** display will be replaced by the **Memory** display, denoted by the word STOP. If this doesn't happen, try again. Some practice is

required to produce the **Memory** display. The **Memory** display indicates that the SME-ML is prepared to retrieve your dive profiles.

Your Dive Profiles in Detail

When the **MEMORY** recall mode is activated, the display reports the maximum depth reached during the most recent dive, the duration of the dive and its sequential dive number.

About 4 seconds later, scrolling begins automatically (in reverse order) and the dive time is shown in descending increments of 3 minutes. Likewise, the maximum depths reached at each 3-minute recording interval are shown.

After the last depth figure (which actually relates to the first 3 minute segment) has been scrolled, the display shows the surface interval time between that and the preceding dive.

Next, the maximum depth, duration and the sequential dive numbers of the preceding dives are shown until approximately 10 hours of dive time have been displayed.

The dives have been separately numbered during each time of use. Therefore the memory will store dives with the same dive numbers as the dives that have been made during different repetitive series. The diver will need to keep a log as to the dates and locations of the separate files.

The dives have been stored in the memory using the so-called 10 minute rule: when the surface interval time is less than 10 minutes, the dive times are counted together and the dive profiles combined. When all the dives in memory have been displayed to you, "END" will be shown in the center of the display.

The memory follows the ring memory principle: the oldest data is deleted when new data is entered. The contents of the memory will remain until the batteries are changed.

Each segment will be shown for about 4 seconds. Most dives take less than one minute to scroll all the way through.

Several unique features of the **Profile** display should be noted:

Since the DIVE TIME indicator breaks each dive into 3 minute segments, the final number displayed should not be misinterpreted as total dive time. For example, a 10 minute dive would be broken into four segments, shown as 3, 6, 9 and 12.

QUESTIONS AND ANSWERS

1. Q: When is a dive not a dive?
   A: When it's to a depth shallower than 5' (1.5 m). The SME-ML does not tally dive times for dives less than 5' (1.5 m) deep.
2. Q: What do the three horizontal lines mean in the **DIVING** display (– – –)?
   A: The horizontal lines appear for shallow depths where no-decompression limits are not specified because the number would be so large.
3. Q: Why isn't the Depth Scale linear (the divisions become closer together with increasing depth), and why doesn't it extend down to 190' (57 m)?
   A: In order to keep the SME-ML compact, it was necessary to fit the Depth Scale into a space about 1–1/4" (3 cm) long. By comparison, a typi-

cal needle-type depth gauge can wrap its scale around a circumference of about 5–1/2" (14 cm). If the divisions of the Depth Scale were kept equal in size, or extended down to 190' (57 m), they would be much too close together to read.

Suunto engineers decided to emphasize the shallow end of the Depth Scale as an aid to making decompression stops. For accurate depth readings – especially below 30' (9 m) – use the Digital Depth Indicator instead.

4. Q: What happens if I go below 200' (60 m)?
   A: The SME-ML will go into the Error Mode, and become a depth gauge, timepiece and dive profile recorder only. As a depth gauge and dive profile recorder, it will read down to 230' (70 m).
5. Q: Do the ceilings shown by the SME-ML match US Navy decompression stop depths (e.g. 10', 20', 30'...)?
   A: The SME-ML offers you the flexibility of a decompression range, rather than fixed decompression stops. You may decompress at any depth within the decompression range. In most cases, the decompression range will lie between about 10' and 30'.
6. Q: Is time spent in decompression counted as part of dive time?
   A: Since the SME-ML tracks compartment nitrogen levels throughout your dive, it will count both "safety stops" and required decompression as part of dive time. It will show the total time spent below 5' (1.5 m) in the **DIVING** display as DIVE TIME.

   At the end of a dive, the nitrogen levels in most compartments will be decreasing while you are in water less than 20' (6 m) deep. Consequently,

NO DEC times for the next dive will show little (if any) reduction as a result of brief safety stops or required decompression. If you take a lengthy safety stop as an extra precaution, you may reduce your available dive time on subsequent dives slightly, but it is an excellent safety practice, especially after cold or hard-working dives.

7. Q: How long can the SME-ML remember my last dive profile?
   A: Even if the SME-ML has deactivated itself, its memory of your dive profiles (up to 10 hours of diving) remains intact as long as its batteries last.
8. Q: What does the SME-ML consider a repetitive dive?
   A: The SME-ML considers a repetitive dive to be any dive following a minimum surface interval of 10 minutes, on which residual nitrogen restricts NO DEC time. This may include dives up to 20 hours apart. Once your surface interval reaches 20 hours or the residual nitrogen in all compartments is so low that it can no longer affect subsequent dives, the SME-ML considers the sequence of repetitive dives finished, and deactivates itself.
9. Q: Can I get a shock from the SME-ML by touching the two electrical contacts to interrogate its memory?
   A: Don't worry. You cannot get a shock from the batteries in the SME-ML. The voltage at the contacts is too low to feel.
10. Q: Why do you have to touch the contacts twice to prepare the SME-ML for interrogation?
    A: If you made electrical contact only once, the SME-ML wouldn't know if it was on another dive, or being interrogated. By making contact again,

you're telling the SME-ML that you want it to show you your dive profile(s).

11. Q: If I have put the SME-ML into the Error Mode, can I still interrogate it to see my profiles?
    A: Yes. The SME-ML will show you your profiles in the normal fashion.
12. Q: Can the SME-ML display my previous dive profile while I'm underwater?
    A: No. The SME-ML can only be interrogated while it is on the surface. The electrical contacts must be dry when you interrogate it, so that it can sense your wet fingers making and breaking contact in the correct sequence.
13. Q: Why should I bother to record NO DEC times for my next dive as soon as I have surfaced from my previous dive?
    A: If you have been using the SME-ML for multi-level dive profiles, and if it malfunctions after your previous dive, you may not be able to dive again for up to 48 hours (the maximum surface interval tracked by the SME-ML). You won't know what the available NO DEC limits are for your next dive, since the SME-ML does not compute repetitive groups. Therefore, you cannot easily transfer decompression information from SME-ML multilevel profiles to the U.S. Navy tables.
14. Q: How long will the SME-ML track a surface interval?
    A: The SME-ML will track surface intervals as long as there is residual nitrogen in any of the nine compartments. If a diver has compietely saturated the slowest compartment this could be as long as 48 hours. The diver/user should note that the surface interval timer turns over at 20 hours. Consequently a surface interval of 21 hours would

read 1:00, and a surface interval of 39 hours would read 19:00.

IMPORTANT TECHNICAL BULLETIN

SME-ML CARE & MAINTENANCE

The Suunto SME-ML diving computer is a precision electronic instrument and as such requires proper care and maintenance.

Activation and Memory Recall will become extremely difficult, if not totally impossible if the rubber contacts used to activate the unit are not properly cleaned periodically. This is a simple and easily preformed task that will only take a couple of minutes of your time, and will insure that your unit will continue to operate correctly.

If left uncared for over an extended period of time a thin film (often invisible to the naked eye) will cover the unit. Much like the build up on the glass of an aquarium, this film is a result of organic contaminates found in both salt and fresh water. Sun tan oil, silicon spray or grease will speed up this process. As a result of this build up moisture will be trapped next to the contacts and will not allow your SME-ML to operate properly.

SYMPTOMS of trapped moisture/contaminate build up. The activation sequence goes from 10/15 seconds to 2 to 3 minutes. You have been successfully interrogating the memory for months and now you have extremely dif-

ficult time interrogating the unit. Sometimes you can't. Instead of shutting off automatically the start up screen of all 8's comes on. These are all definite signs of trapped moisture/contaminate build up.

The SME-ML should be **SOAKED**, then throroughly rinsed with fresh water after each dive. This is particularly important after use in salt water. If the unit is in a console boot, the entire console should be soaked in fresh water (much in the same manner as u/w photo gear) and then rinsed. Make sure that all salt crystals and sand particles have been flushed out of the console. At the end of a dive trip, the SME-ML should be rinsed thoroughly and then dried with a soft towel.

If your unit is in a console it will need to be periodically removed and cleaned before storage. However, this will not be required after every dive trip. You will only need to remove the unit to clean in extreme cases of film build-up. Most contaminates can be scrubbed away from the rubber contacts using a soft tooth brush. If sun tan oil or silicon spray are involved (or if the unit has been neglected for sometime) a mild detergent like dish washing soap may be needed.

- **Do not** use compressed air to blow water off the unit.
- **Do not** put anything into the Water Entry Port; it will damage the internal parts of the unit.
- **Do not** use solvents or other cleaning fluids that might cause damage.

MAINTENANCE

Annual Service and Battery Replacement

The SME-ML must be returned to an authorized Suunto dealer for service or battery replacement. Do not attempt to disassemble the SME-ML. Special tools and training are required for service.

The SME-ML should be serviced annually, or after 100 dives (whichever comes first). During servicing, the operation of the unit will be checked and its battery replaced. Since the battery has an expected lifetime of two years, annual servicing will greatly reduce the chances of battery failure during a dive trip.

The SME-ML will display BAT if there is not enough power left in the batteries (Figure 1). If BAT is on, the SME-ML should not be used.

TECHNICAL SPECIFICATIONS

Two versions: for wrist use and for console mounting. Consoles, in which the Suunto SME-ML can be integrated: Combo-42 and Combo-43.

Activation and Deactivation

- Activation sequence: Immerse the unit into water and raise it above the surface for at least 5 seconds.
- The unit is deactivated automatically within one hour if you do not dive after initial activation of the unit. After diving, the SME-ML deactivates when the last series of

dives has no effect on repetitive dives. However, the display continues counting until at least 4 hours have elapsed from the last surfacing.

Depth Gauge

- Temperature compensated pressure sensor
- Depth display range: 0 to 190' (57 m)
- Maximum permissible depth: 230' (70 m)
- Accuracy: +/– 1.5 % full scale
- Resolution: 1' (0.3 m)

Operating Conditions

- Normal altitude ranges 0 to 1,600' (500 m) above sea level
- Operating temperature: 32 to 104 degrees F (0 to 40 degrees C)
- Storage temperature: –4 to 122 degrees F (–20 to 50 degrees C) However, we recommend the unit to be stored in a dry place at room temperature
- Waterproof depth: 300' (100 m)

TWO YEAR LIMITED WARRANTY

Important: Service and repair warranty registration and validation information

The Suunto SME-ML is warranted against defects in workmanship and materials for a period of two years after

purchase to the original owner, subject to and in accordance with the terms and conditions set forth below:

This warranty does not cover damage to the product resulting from improper usage, improper maintenance, neglect of care, alteration or unauthorized repair. This warranty will automatically become void if proper preventive maintenance procedures have not been followed as outlined in the use and care instructions for this product.

Your SME-ML must be inspected annually and serviced as necessary by your Suunto Dealer of a qualified repair facility. The annual servicing shall be performed within six weeks before or after the one-year anniversary date or your purchase. The annual inspection/service charge will be paid by the SME-ML owner. The fee may include cost of shipping, labor, and replacement parts not covered under warranty. After the two year warranty period, the SME-ML may still be returned for annual servicing. Warranty after servicing will be valid for 30 days.

If a claim under this or any other warranty appears to be necessary, return the product, freight prepaid, to your Suunto Dealer or qualified repair facility. Include your name and address, proof of purchase and service registration card. The claim will be honored and the product repaired or replaced at no charge and returned in what your Suunto Dealer determines a reasonable amount of time, provided all necessary parts are in stock. All repairs made, not covered under the terms of this warranty, will be made at the owner's expense. This warranty is non-transferable from the original owner.

ALL IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED FROM DATE OF PURCHASE AND IN SCOPE TO THE WARRANTIES EXPRESSED HEREIN. SUUNTO/SEAQUEST SHALL NOT BE LIABLE

FOR LOSS OF USE OF THE PRODUCT OR OTHER INCIDENTAL OR CONSEQUENTIAL COSTS, EXPENSES OR DAMAGE INCURRED BY THE PURCHASE. ALL WARRANTIES NOT STATED HEREIN ARE EXPRESSLY DISCLAIMED.

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

This warranty does not cover any representation or warranty made by dealers or representatives beyond the provisions of this warranty. No dealer or representation is authorized to make any modifications to this warranty or to make any additional warranty.

For your records, please fill out the dealer information section on the next page. TO VALIDATE YOUR WARRANTY, PLEASE RETURN THE ATTACHED CARD WITHIN 15 DAYS.

This warranty and owner's manual should be kept with your SME-ML at all times.