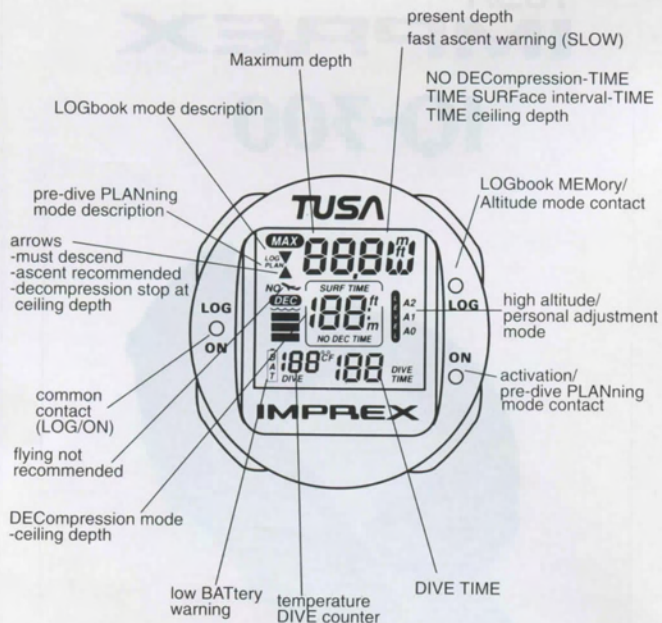


**TUSA**  
**IMPREX**

**IQ-300**



**OWNER'S INSTRUCTION MANUAL**



IQ-300 is equipped with three contacts:  
 common contact (LOG/ON)  
 activation contact (ON)  
 memory/mode contact (LOG)

**ACTIVATION:** touch ON- & common (LOG/ON)  
 -contacts

**PLANNING MODE:** touch ON- & common (LOG/ON)  
 -contacts once activated

**LOGBOOK MEMORY MODE:** touch LOG- & common (LOG/ON)  
 -contacts

**ALTITUDE MODE:** keep LOG- & common (LOG/ON)  
 -contacts touched for about 5 seconds

**RETURN FROM LOGBOOK AND ALTITUDE MODES:**  
 touch LOG- & ON- & common (LOG/ON)  
 -contacts all at the same time

**RETURN FROM PLANNING MODE:**  
 wait until planning cycle is completed  
 (approximately 60 seconds)

Table 1.

The correlation between entered altitude mode and corresponding maximum altitude

Entered altitude mode	Corresponding maximum altitude
A0 (sea-level)	700 m (2300 ft)
A1	1500 m (5000 ft)
A2	2400 m (8000 ft)

**▲ WARNING!**

When the diver plans to dive at high altitude, he should always make sure that the entered altitude mode, i.e. maximum altitude limit, of the IQ-300 exceed or is equal to the altitude of the dive site.

## **▲ WARNING!**

ALL DIVERS MUST UNDERSTAND THAT THERE IS NO PROCEDURE OR DIVE COMPUTER THAT WILL TOTALLY PREVENT THE POSSIBILITY OF DECOMPRESSION SICKNESS. E.G. DIVERS' METABOLISM VARIES FROM PERSON TO PERSON AND EVEN FROM DAY TO DAY.

CAREFULLY READ THIS INSTRUCTION MANUAL, ESPECIALLY CHAPTER "FOR YOUR SAFETY"

## **CAUTION**

The IQ-300 will indicate when flying is not recommended. However, Diver's Alert Network (DAN) recommends that in no case should flying take place within at least 12 hours after diving. After multiple dives for several days the surface interval before flying should be extended beyond 12 hours.

No dive computer can take into account dives made without the computer. Thus, diving activity 24 hours prior to initial use of the computer may give misleading information and must be avoided.

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**▲ WARNING !**

**NOT FOR PROFESSIONAL USE.**

TUSA Diving Computers are intended for recreational use only.

The demands of commercial or professional diving often expose the diver to diving profiles that increase the risk of decompression sickness, and therefore TUSA specifically recommends against using the IQ-300 for commercial or other severe diving activity.

**FOR YOUR SAFETY**

THE DIVER IS RESPONSIBLE FOR HIS OR HER OWN SAFETY.

Do not attempt to use the IQ-300 without reading this entire Instruction Manual. If you have any questions about the Manual or the IQ-300, contact your TUSA dealer before diving with the IQ-300. The IQ-300 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 IQ-300 SHOULD ALSO HAVE ACCESS TO A BACK-UP DEPTH GAUGE, WATCH OR OTHER UNDERWATER TIMEPIECE AND DECOMPRESSION TABLES ON EVERY DIVE.

**▲ WARNING !**

THE IQ-300 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.

**Altitude**

**▲ WARNING !**

WHEN DIVING AT HIGHER ALTITUDES (above 700 m {2300 ft}) IT IS ESSENTIAL THAT THE ENTERED ALTITUDE MODE, I.E. MAXIMUM ALTITUDE LIMIT, OF THE IQ-300 EXCEEDS OR IS EQUAL TO THE ALTITUDE OF THE DIVE SITE.

The altitude mode indicator must show either A1 or A2 depending on the altitude. Diving with a IQ-300 that has not been properly set for the correct altitude of the dive site GREATLY INCREASES THE RISK OF DECOMPRESSION SICKNESS. WHEN USED PROPERLY THE IQ-300 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:

## Decompression Required

In addition: if through carelessness or emergency a diver is forced to exceed the no-decompression limits on a dive, the IQ-300 does have a provision for indicating the ceiling depth above which the diver is not allowed to ascend.

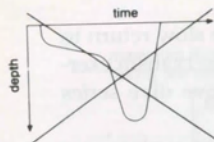
### CAUTION

The time needed to decompress or ascend to the surface is not provided. Therefore when the no-decompression limits have been exceeded the diver must ascend at once (not exceeding the maximum allowed ascent rate 10 m [33 ft] per minute) to the ceiling.

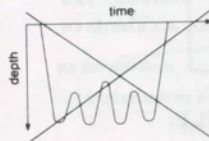
## RE: Mathematical Model

While the IQ-300 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 mathematical 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 pre-dive activities, especially those which tend to increase dehydration, may increase the risk of decompression sickness.

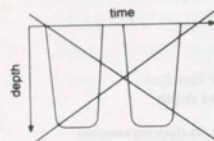
The user should understand that all decompression devices (dive computers and/or decompression tables) are based on mathematical models and that many experts are currently concerned that, under certain conditions, these models may not adequately describe the physiological phenomena. These conditions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



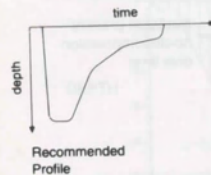
Reverse Profile



Sawtooth Profile  
Consecutive Deep Dives



Repetitive Decompression  
Dive



Recommended  
Profile

## UNSAFE DIVE PROFILES:

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

**SAWTOOTH PROFILES** -where the diver begins the dive at deeper depth, then ascends to shallower depths, and ends the dive by returning to deeper depths.

**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 mode, AND THEREFORE TUSA RECOMMENDS THAT SUCH PRACTICES BE AVOIDED.

## RECOMMENDED PROFILE:

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 TABATA will assume any responsibility or liability for accidents or injuries which might occur for any reason.

### INTRODUCTION; IQ-300 AT A GLANCE

From figure 9 you can see the profile of the dive presented in figures 3-8.

#### PRE-DIVE PLANNING SEQUENCE

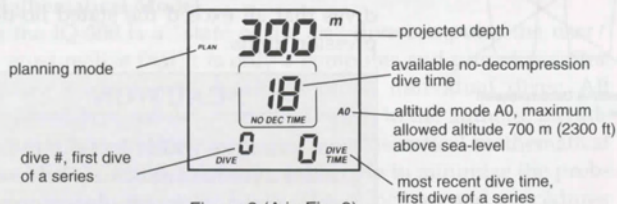


Figure 3 (A in Fig. 9)

#### NO-DECOMPRESSION DIVE

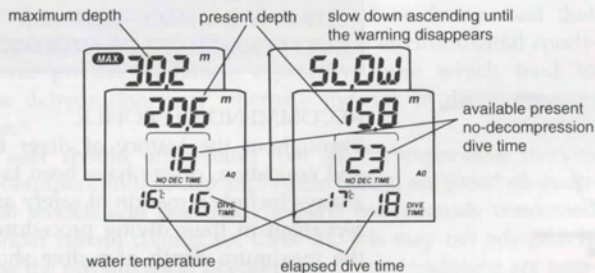


Figure 4 (B in Fig. 9)

Figure 5 (C in Fig. 9)

#### SURFACE AFTER A DIVE

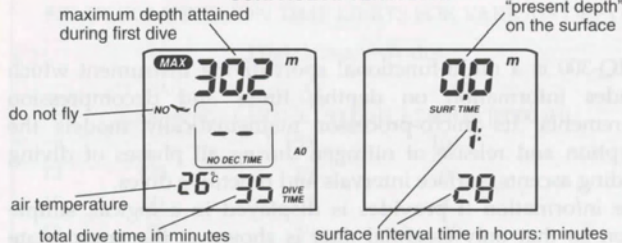


Figure 6. (D in Fig. 9)

Figure 7 (E in Fig. 9)

#### LOGBOOK MEMORY

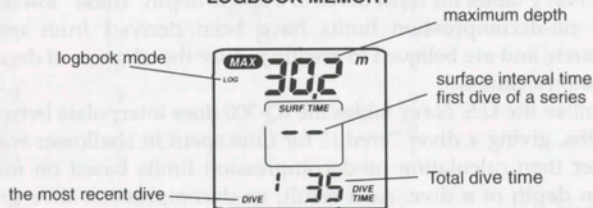


Figure 8. (F in Fig. 9)

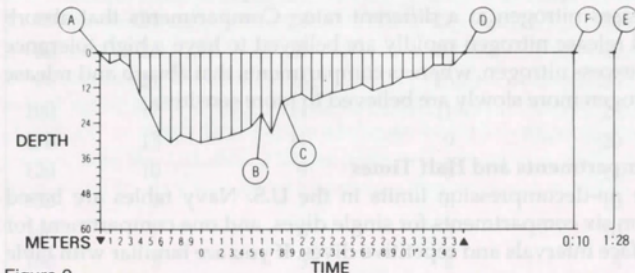


Figure 9.

## OPERATING PRINCIPLES

The IQ-300 is a multi-functional sport diving instrument which provides information on depths, times and decompression requirements. Its micro-processor mathematically models the absorption 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.

The no-decompression limits displayed by the IQ-300 upon activation are slightly more conservative than those permitted by the 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 U.S. Navy tables the IQ-300 does interpolate between depths, giving a diver "credit" for time spent in shallower water, rather than calculating no-decompression limits based on maximum depth of a dive. As a result, no-decompression dive times permitted by the IQ-300 are often much longer than those that would be allowed by the U.S. Navy tables.

In order to perform these calculations, the IQ-300 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 more sensitive.

### Compartments and Half Times

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

## NO-DECOMPRESSION TIME LIMITS FOR VARIOUS DEPTHS

High altitude modes				
	A0	A1	A2	
m	(sea level)	(-1500 m [5000ft])	(-2400 m [8000 ft])	
9		153	104	
12	125	89	66	
15	71	57	42	
18	52	39	30	
21	37	29	23	
24	28	23	18	
27	22	18	15	
30	18	14	11	
33	13	11	9	
36	10	9	8	
39	9	7	6	
42	7	6	5	
45	6	5	5	
ft				U.S. Navy
30		149	102	
40	120	86	65	200
50	69	56	41	100
60	51	38	29	60
70	35	28	22	50
80	28	23	19	40
90	21	18	15	30
100	17	14	11	25
110	13	11	9	20
120	10	9	8	15
130	9	7	6	10
140	7	6	5	10
150	5	5	4	5



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 IQ-300 includes the same six compartments, plus two additional compartments for an increased range of the mathematical mode. Calculations are based upon all eight compartments for all phases of diving, including surface intervals and repetitive dives. The IQ-300 half times range from 2.5 to 322 minutes.

### High Altitude Dives

The atmospheric pressure is lower at high altitudes than at sea level. After travelling to high altitude the diver has "additional" nitrogen in his body compared to the equilibrium situation at that altitude. (This "additional" nitrogen is released gradually in time and equilibrium is reached within a couple of days.)

Prior to making a high altitude dive, the IQ-300 must be set to high altitude diving mode to take this into account. The maximum partial pressures of nitrogen allowed by the mathematical model of the IQ-300 are reduced according to the lower ambient pressure. As a result the allowed no-decompression limits are considerably reduced (table 2).

### Surface Intervals

The IQ-300 requires a minimum surface interval of 10 minutes between dives. If a surface interval is shorter than 10 minutes, the IQ-300's dive counter and dive timer treat the next dive as a continuation of the previous dive. It adds 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.

### Depth Limits

#### CAUTION

**TUSA STRONGLY RECOMMENDS THAT SPORT DIVERS SET THEIR MAXIMUM DEPTH TO 40 m (130 ft).**

However, the IQ-300 will calculate below that depth 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 IQ-300 is more conservative than the U.S. Navy tables. For example:

1. **The IQ-300 uses an ascent rate of 10 m (33 ft) 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 10 m (33 ft) per minutes, the IQ-300 asks you to slow down.
2. **The IQ-300 does not calculate bottom time; it calculates dive time.** Dive time includes all the time spent below a depth of 1.8 m (6 ft) 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 IQ-300 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 36 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.
4. **The IQ-300'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 based on square profiles.** For example, on a first dive descending directly to 18 m (60 ft), the U.S.



Navy no-decompression limit is 60 minutes. The IQ-300's no-decompression limit for the same dive is 52 minutes (51 minutes for 60 ft).

### CAUTION

The user should be aware that any dive, even ones within the "low-bubble" or U.S. Navy limits, does carry some risk of decompression sickness. As a safety precaution, TUSA recommends that divers using the IQ-300 should have at least 5 minutes of no-decompression time remaining at all time during the dive. This is especially important for divers in poor physical shape, or divers in cold water under arduous conditions

TUSA also recommends that divers take a "safety stop" of at least 3 minutes at a depth between 3 m (10 ft) and 6 m (20 ft) at the end of every dive if it is at all possible.

THE IQ-300 MUST BE ACTIVATED AND OPERATED CORRECTLY IN ORDER FOR IT TO PROVIDE ACCURATE INFORMATION.

### USING THE IQ-300

This section contains instructions for operating the IQ-300, 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.** In addition to these the IQ-300 has a "logbook" memory.

Each of these displays shows only the data needed during that diving situation. For example, while you are on a dive, surface interval data is irrelevant, and therefore not shown. While you are

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 IQ-300 is easy to use.

### Using the Water Contacts

The IQ-300 is equipped with three contacts (Figure 1):

1. Common contact (LOG/ON)
2. Activation contact (ON)
3. Memory / mode contact (LOG)

Available control signals are (see Figure 10):

NOTE: IN ALL CONTACT SEQUENCES YOU WILL USE THE COMMON (LOG/ON) CONTACT.

*ACTIVATION:* touch ON- and LOG/ON-contacts.

*PLANNING MODE:* touch ON- and LOG/ON-contacts (The IQ-300 must be activated first.).

*LOG BOOK MEMORY MODE:* touch LOG-and LOG/ON -contacts.

*ALTITUDE MODE SELECTION:* keep LOG- and LOG/ON -contacts connected for about 5 seconds (see chapter: high altitude dives).

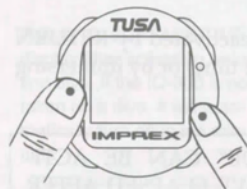


Figure 10 a.

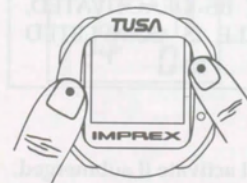


Figure 10 b.

RETURN FROM LOGBOOK MEMORY AND ALTITUDE MODE SELECTION: connect first together with your fingers LOG- and ON- and then LOG/ON -contacts.

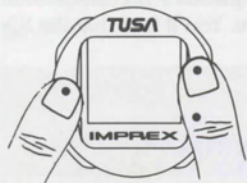


Figure 10 c.

As long as LOG- and LOG/ON are connected the IQ-300 alternates between LOG- and Alt-displays.

The desired function is selected by breaking contact when the symbol of the desired function appears on the display (LOG for logbook memory and Alt for Altitude mode entry).

Make sure that the contacts and the instrument itself are dry and clean before trying to use the water contacts.

“Logbook” and “Altitude mode” can be deactivated by RETURN signal (= connecting all contacts at the same time) or by immersing the IQ-300 in water.

“LOGBOOK” AND “ALTITUDE MODE” CAN BE ACTIVATED ONLY WHEN 10 MINUTES HAVE ELAPSED AFTER THE DIVE.

The “DIVE PLAN” MODE CAN NOT BE DEACTIVATED, YOU MUST WAIT UNTIL THE CYCLE IS COMPLETED (approximately 60 seconds).

### Activation

The IQ-300 is always ready for use and will activate if submerged, It is recommended to activate the IQ-300 before diving by touching ON- and LOG/ON -contacts using moistened fingertips. The

depth display of the IQ-300 is zeroed by measuring the ambient atmospheric pressure prior to diving. During startup you can check that all display segments are on and that the low battery warning is not on.

After activation all segments of the LCD-display are visible for a few seconds (figure 11). SURFACE interval TIME (figure 12) and READY-display (figure 13) which are shown next, confirm that the activation has been completed.

At the surface, SURFACE interval TIME-display (figure 12) alternates with READY-display (figure 13). See chapter “High Altitude dives”

### ▲ WARNING !

If you are diving at higher altitudes, make sure that the altitude mode has been set according to the altitude of your dive site.

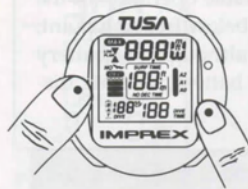


Figure 11 START UP, ALL segments on.

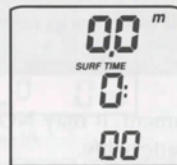


Figure 12. SURFACE TIME, display after activation before first dive. If the IQ-300 is not taken on a dive, it will automatically turn off in ten minutes.

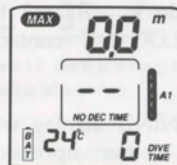


Figure 13. READY display before the first dive of a series. Altitude mode A1 = maximum allowed altitude 1500 m [5000 ft] above sea level. Low battery warning (BAT) indicates that the battery is too low to operate and the IQ-300 should not be used.



If "BAT" is displayed, the IQ-300 should not be used. BAT indicates that the battery is too low to ensure reliable operation of the IQ-300. If the IQ-300 is stored at temperature below freezing point, the low battery warning may be displayed although the battery has enough capacity. Make sure that the low battery warning disappears before diving.

**Note:** The IQ-300 may activate itself without following the above instructions. Simply holding it in your hand may make an electrical connection across the two contacts. This will have the same effect as immersing the IQ-300 in water and then lifting it out. In either case, if the IQ-300 is not taken on a dive after activation, it will automatically turn off in 10 minutes to conserve the batteries

If the IQ-300 is stored wet or in a wet environment, it may NOT deactivate until it is dry. This will shorten the battery life.

The IQ-300 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 36 hours.

### Dive Planning

Dive planning mode is activated by touching ON- and LOG/ON -contacts (figure 14).

The DIVE PLANNING display will cycle through the no-decompression limits for various depths. Depths will appear in the Depth Indicator, and times will be shown in the center window with the notation NO DEC TIME. It takes about 60 seconds to run through

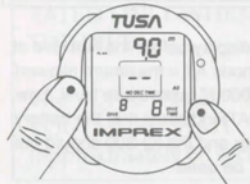


Figure 14. DIVE PLANNING: touch ON- and LOG/ON -contacts to activate the PRE DIVE PLANNING..



Figure 15. DIVE PLANNING.



Figure 16. Dive planning information after activation in A1 mode

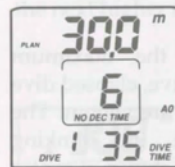
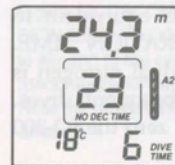


Figure 17 Dive planning after first dive of a series



the cycle. The cycle cannot be interrupted at the surface, but when diving deeper than 1.8 m (6 ft) it is automatically changed into the dive mode. After completing one cycle, the IQ-300 will automatically return to the "ready" display. The DIVE PLANNING display cycles through depths in 3 m (10 ft) increments: 9 m (30ft), 12 m (40ft), 15 m (50ft) ... 45 m (150 ft). See fig. 15.

The no-decompression limits for different altitude mode selections are shown on table 2 (see also fig. 16).

After diving the no-decompression times displayed in the DIVE PLANNING -mode are naturally shortened to take residual nitrogen into account, but will increase as surface interval lengths (fig. 17).

### No-Decompression Dives

Any time you leave the surface and drop below 1.8 m (6ft) you will see only the DIVING display (Figures 18 and 19).

The DIVING display will remain visible until you return to depths shallower than 1.8 m (6ft). Available no-decompression time 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.

Your present depth will be shown

Figure 18. DIVING, no-decompression dive

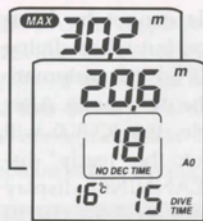


Figure 19. DIVING, no-decompression dive

Present water temperature is shown at the left lower corner of the display.

### Surface Intervals, Flying After Diving

An ascent to any depth shallower than 1.8 m (6ft) will cause the DIVING display to be replaced with the SURFACE display. READY-display (figure 20) is alternating with SURFACE interval TIME-display (figure 21).

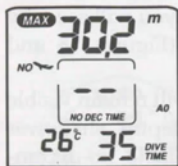


Figure 20. SURFACE, READY-display. The maximum depth of the most recent dive was 30.2 m and total dive time was 35 min. You are not allowed to fly (blinking image of airplane). Air temperature is 26 °C.

numerically in the Digital Depth Indicator. The maximum depth reached is also shown in the same display, with notation MAX, once in every 6 seconds for 1 second (figure 19).

**Note:** When too-fast-ascent warning is on, the Maximum depth is not shown, but the present depth display alternates with SLOW-warning.

In READY-display the maximum depth of the previous dive, elapsed dive time, and temperature are shown. The no-flying caution (i.e. the blinking image of an airplane) is shown at center section of the display.

The blinking image of an airplane is a reminder that you should not fly or travel to altitudes above sea level.

The no-flying time is equivalent to the so called DESATURATION TIME. After this time the residual nitrogen is no longer affecting subsequent dives. When this time reaches zero the IQ-300

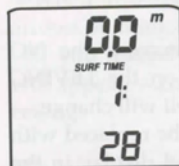


Figure 21. SURFACE TIME -display. Present depth is 0.0 m. Surface interval time shown is 1 h 28 min.

will automatically deactivate itself. This may take up to 36 hours after extensive diving. Research suggests that you should not fly for at least 12 hours after no-decompression dives, and for at least 24 hours (longer if possible) after a decompression dive. In the SURFACE-display (figure 21), you will find your surface interval in hours:minutes with the notation SURF TIME.

The IQ-300 **does not display not safe to fly time.**

Until SURFACE TIME reaches 10 minutes (0:10), the IQ-300 does not "know" if you are going to make a repetitive dive or continue the first dive. If you descend below 1.8 m (6 ft) before 10 minutes have passed, the DIVING display will return. DIVE number will remain unchanged, and DIVE TIME **will begin where it left off.**

After SURFACE 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.

### Decompression Dives

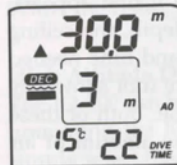


Figure 22. DECOMPRESSION DIVE. You should begin to ascend to the ceiling (decompression stop) at 3 m. Note the upward pointing arrow.

### CAUTION

Tusa does not recommend decompression diving for sport divers. The IQ-300 is not intended for decompression diving.

However, if through carelessness or emergency, you are forced to exceed the no-decompression limits for any dive, the IQ-300 does have a provision for



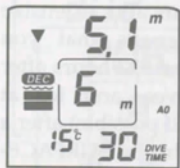


Figure 23. DECOMPRESION DIVE. Decompression stop at 6 m. Note the downward pointing arrow: You should descend immediately to or below the ceiling.

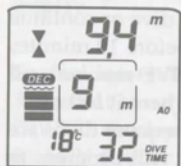


Figure 24. DECOMPRESION DIVE. Decompression stop at 9 m. Note the two arrows pointing to each other (hour-glass).

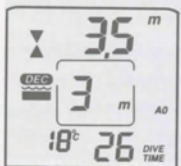


Figure 25. DECOMPRESION DIVE. Decompression stop at 3 m. Note the two arrows pointing to each other (hour-glass).

indicating some limited decompression information.

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 DEC-bar and the digital display in the center will now indicate the ceiling depth. The ceiling is the shallowest depth to which you can safely ascend. UPWARD POINTING ARROW INDICATES THAT YOU SHOULD IMMEDIATELY START YOUR ASCENT (fig. 22).

The ceiling is also shown on the DECompression depth scale below the DEC-symbol. One, two or three segments correspond respectively to 3 m (10 ft), 6 m (20 ft) or 9 m (30 ft) ceiling depths (figures 22-24). The IQ-300 does not display any decompression or ascent time.

The depth of the ceiling will depend upon your dive profile. The ceiling will be at 3 m (10ft), when it first appears, but if you remain at depth, the ceiling will move downward and time needed for ascent to the surface (not shown by the IQ-300) will increase. Both of these factors will increase the amount of air and time required for decompression or total ascent time.

Therefore, you should ascend and begin decompression promptly when the IQ-300 shows you that decompression is required. Note the upward pointing arrow.

When you reach the ceiling, the display will show you two arrows pointing to each other (hour-glass).

If you ascend above the ceiling, a downward-pointing arrow will appear, warning you to descend immediately to or below the ceiling.

The tolerance of the ceiling depth is  $-0.6 \text{ m (2 ft)} / =1.8 \text{ m (6 ft)}$ .

If you ascend 0.6 m (2 ft) or more above ceiling, even momentarily, the DEC-segment starts to blink after reaching the surface (and after the decompression time has counted down), and remains blinking during the following dives. This warning disappears only when the unit has deactivated itself.

Tusa recommends staying about 0.5 m (2 ft) below the ceiling to prevent the warning arrow and permanent DEC-warning from appearing.

Surfacing is allowed when the DEC-indicator and ceiling depth display have disappeared and have been replaced by NO DECompression display.

Under some conditions e.g. if the sea surface is rough it may be more convenient to decompress below the ceiling than exactly at the ceiling.

Remember, it will take more time (and more air) to decompress below the ceiling than at the ceiling.

### High Altitude Dives

The IQ-300 can be adjusted for diving at high altitude. When programming the IQ-300 for the correct altitude the diver needs to simply select the correct altitude more according to the table 3.

As a result the IQ-300 adjusts correspondingly its mathematical model according to the entered altitude mode (see also Operating Principles)

Table 3: The relationship between the altitude mode to be entered and the altitude of the dive site.

Altitude mode to be entered	Altitude
A0 (sea-level)	0 700 m (0 2300 ft)
A1	700 1500 m (2300 5000 ft)
A2	1500 2400 m (5000 8000 ft).

These limits are also engraved onto the back plate of the IQ-300.

### ▲ WARNING !

**WHEN THE DIVER PLANS TO DIVE AT HIGH ALTITUDE, HE SHOULD ALWAYS SEE THAT THE ENTERED ALTITUDE MODE, I.E. MAXIMUM ALTITUDE LIMIT, OF THE IQ-300 EXCEEDS OR IS EQUAL TO THE ALTITUDE OF THE DIVE SITE.**

The altitude mode is indicated both at the surface and during the dive by displaying A0, A1 (Fig 13) or A2 depending on the entered altitude mode. The diver can check the correctness of the altitude mode by comparing the displayed mode indicator and the altitude of the dive site using the Table 3 or checking from the back plate of the IQ-300.

If the mode is not correct the diver must enter new altitude mode (see Entering Altitude mode). You should notice that the no-decompression time limits for high altitude dives are much shorter than those for sea-level-dives.

### CAUTION

**Tusa does not recommend decompression diving for sport divers and decompression dives at high altitudes greatly increase the risk of decompression sickness. Do not plan decompression dives at high altitudes.**

It is recommendable to wait some time, e.g. a couple of hours, at high altitude before diving.

**Note:** If the diver wishes to have more conservative no-decompression limits, he can enter a higher altitude mode than is actually needed. E.g. the diver diving at sea level can enter altitude mode A1 or A2.

No-decompression limits are then shortened accordingly. The indicated mode must be greater than actually needed mode in order to add extra conservatism (e.g. mode indicator should read at least A1 when at sea level or A2 when A1 would be otherwise sufficient.)

### Entering Altitude Mode

First activate the computer normally by connecting LOG/ON- and ON-contacts if not activated. New value is entered in the following way. (Fig 26):

1. Connect LOG/ON- and LOG-contacts continuously (menu selection). First the IQ-300 proceeds to LOG mode (Fig. 26.1) and then into Alt-mode (Fig. 26.2) Release your fingers immediately at this point. Within a couple of seconds

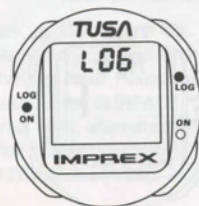


Figure 26/1



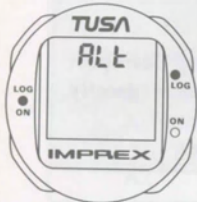


Figure 26/2.

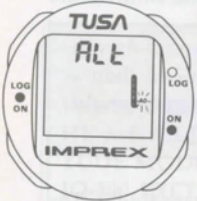


Figure 26/3.

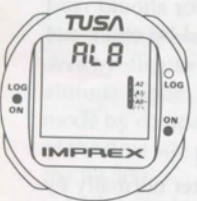


Figure 26/4.

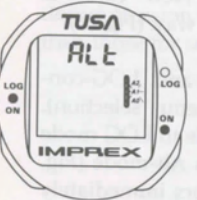


Figure 26/5.

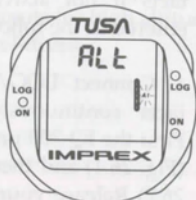


Figure 26/6.



Figure 26/7.

the altitude limit chosen with image of diver becomes visible (Fig. 26.3).

2. Connect LOG/ON- and ON-contacts until all three altitude modes appear. The mode chosen earlier is now blinking (Fig. 26.4).

Wait at least two seconds before next step but not more than four seconds.

3. Connect again continuously LOG/ON- and ON-contacts until blinking altitude mode scrolls (A0-A1-A2-A0-A1 etc) and desired mode starts to blink (Fig. 26.5), then release your fingers. Wait until the other mode indicators disappear before next step (Fig. 26.6).

4. Connect LOG/ON- and LOG-contacts to "choose" this new value (Fig. 26.7). The blinking will then stop.

5. The process is ended by "RETURN" signal (= by connecting all contacts at the same time):

First connect LOG- and ON-contacts together e.g. with your right hand thumb, while keeping LOG- and ON-contacts connected, complete the "return" signal by connecting the LOG/

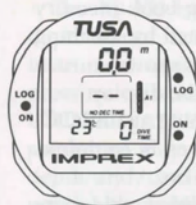


Figure 26/8.

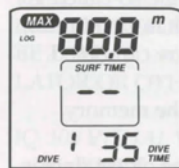


Figure 27 Contents of logbook memory, the most recent stored dive ("DIVE 1").

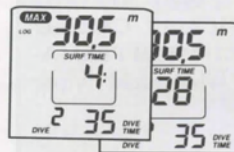


Figure 28. Contents of logbook memory, preceding dive ("DIVE 2"). Note: Hours and minutes of the SURFACE interval TIME alternate in the center display (four hours and 28 minutes [4:28]).

ON -contact. The IQ-300 now returns back to normal surface mode and the selected mode is stored into memory.

## CAUTION

**Remember always to check that the indicated mode is the one you wanted to enter!**

If something goes wrong during the procedure, go to step 5 and start again from the beginning (step 1).

All contacts must be made exactly as described. This is to ensure high degree of protection against accidental change of altitude mode.

## Logbook Memory

Logbook memory contains information about 5 most recent dives. Maximum depth, dive time and surface interval time are shown for each dive.

The data of the most recent dive is shown first with notation DIVE 1 (Fig. 27).

The dive numbering sequence for dives in *memory* does not relate to the dives displayed in the Dive Planning mode.

The data of the preceding dive is shown next (DIVE 2) (Fig. 28) and so on.

*Oldest dive* in the memory is shown with notation DIVE 5.

The IQ-300 MUST BE ACTIVATED before the log book memory can be recalled. Log book memory recall is activated by touching LOG- and LOG/ON-contacts until notation LOG is shown.

The data of the most recent dive is then shown in the display. The data of the preceding dive is recalled by touching again LOG- and LOG/ON-contacts. Once review of all 5 dives is complete, Dive 1 would be recalled again after Dive 5 and so on. Log book memory mode is deactivated by RETURN-signal (=connecting all contacts at the same time).

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 dives are combined.

Dives shorter than 2 minutes are not registered in the memory.

The memory follows the ring memory principle: the oldest data is deleted when new data is stored.

### Warnings

**DO NOT TAKE THE IQ-300 CLOSE TO ANY STRONG MAGNETIC FIELDS, WHICH ARE TYPICALLY CAUSED BY DEVICES OR APPLIANCES EQUIPPED WITH PERMANENT MAGNETS: e.g. loud speakers, windshield wiper motors, torches with magnetic holder etc.**

**DO NOT TAKE THE IQ-300 IN THE VICINITY OF WELDING ARC.**

When the IQ-300 is used in a console with the compass located on the reverse side, slight deviation of the compass may occur due to magnetic interference from the IQ-300's battery.

The IQ-300 is equipped with a highly accurate and sensitive depth sensor. It is IMPERATIVE that you never pressure test this instrument in an air environment. If placing the IQ-300 inside a pressure test chamber, BE SURE THAT UNIT IS COMPLETELY UNDER WATER WHILE BEING TESTED! Failure to follow this procedure may damage the depth sensor resulting in erroneous depth and/or dive time remaining readings while diving, plus voiding the warranty.

The temperature reading of IQ-300 reacts slowly to temperature changes. When moving from warm air into cold water or vice versa, the correct temperature will be shown only after 5-10 minutes. THEREFORE THE TEMPERATURE READING MUST NOT BE USED TO ASSESS THE RISK OF FREEZING OF THE REGULATOR OR OTHER EQUIPMENT.

### IQ-300 VISUAL WARNINGS

The IQ-300 gives a warning in the following situations:

- Not safe to fly: flashing airplane
- No-decompression limit has been exceeded: DEC-notation with upward pointing arrow
- You ascend shallower than the ceiling: downward pointing arrow
- Omitted decompression stop or you have ascended at least 0.6 m (2 ft) above the ceiling: blinking DEC-notation at surface (and during following dives)
- low battery warning: BAT-symbol is displayed
- high altitude mode has been entered: image of diver is shown
- Maximum ascent rate (10 m [33 ft] per minute) is exceeded: blinking SLOW in the depth display



If SLOW is still on by the time you reach 3 m (10 ft) you must stop there until it goes off. You should not surface with the SLOW on. If you do surface with 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.

**▲ WARNING !**

**IF YOU HAVE ASCENDED TOO FAST THE VALUES CALCULATED AND DISPLAYED BY THE IQ-300 MAY NO LONGER BE VALID FOR THE NEXT DIVE.**

### MAINTENANCE, SERVICE AND BATTERY REPLACEMENT

The IQ-300 diving computer is a precision instrument. 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 contaminants 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 IQ-300 to operate properly.

The IQ-300 should be SOAKED, then thoroughly 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 IQ-300 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.

The contacts can be cleaned e.g. with soft pencil eraser.

- \* Do not use compressed air to blow water off the unit
- \* Do not use solvents or other cleaning fluids that might cause damage
- \* Do not test or use the IQ-300 in pressurized air.

#### *Service and Battery Replacement*

The IQ-300 must be returned to an authorized TUSA dealer for service or battery replacement. Do not attempt to disassemble the IQ-300. Special tools and training are required for service.

The IQ-300 uses one long life Lithium battery.

Battery replacement is necessary sometime after the BAT warning is displayed on the LCD. An average diver should expect a number of years (approximately 5 years if he dives e.g. less than 50 dives a year) before battery replacement becomes necessary.

**Battery replacement must be performed by an authorized distributor**

### TECHNICAL SPECIFICATIONS

Measures:

-Diameter: 61.5 mm (2.42 in)

-Height: 29.0 mm (1.14 in)

Depth gauge:

-Temperature compensated pressure sensor

-Depth display range: 0 to 90 m, 0 to 295 ft

- Resolution: 0.1 m (1 ft)
- Salt water calibrated (in fresh water the readings are about 3 % smaller)

#### Temperature display:

- Resolution: 1 °C (1.5 °F)
- Display range: -19 °C ... 99 °C  
-19 °F ... 99 °F

(0 is displayed at 100 °F, 1 is displayed at 101 °F and so on)

#### Other displays:

- Dive time: 0 to 99 min  
(Displayed values start from 0 after 99 min. This doesn't affect the calculations.)
- Dive counter: 0 to 15
- No-decompression time: 0 to 199 min
- Ceiling depths: 3, 6 and 9 m  
10, 20 and 30 ft

#### Operating Conditions:

- 0 to 2400 m (8000 ft) above sea level
- Operating temperature: 0 to 40 °C (32 °F to 104 °F)
- Storage temperature: -20 °C to 50 °C (-4 °F to 122 °F)
- Tusa recommends the unit be stored in a dry place at room temperature
- Battery life: typically about 5000 operational hours  
(at 20 °C [68 °F])

It is possible to have your IQ-300 changed from meters and degrees Celsius to feet and degrees Fahrenheit and vice versa. This, however, must be done through a Tusa Distributor.

## WARRANTY

**Important:** Service and repair warranty registration and validation information.

The IQ-300 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.

If a claim under this or any other warranty appears to be necessary, return the product, freight prepaid, to your Tusa 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 Tusa 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. TUSA (in USA. TUSA, INC.) 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.

This warranty and owner's manual should be kept with your IQ-300 at all times.

### SERVICE RECORD - RETAIN WITH IQ-300

DATE PURCHASED \_\_\_\_\_

IQ-300 SERIAL NUMBER \_\_\_\_\_

WHERE PURCHASED \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_

STATE, ZIP \_\_\_\_\_

OTHER \_\_\_\_\_

INSP.DATE \_\_\_\_\_ DEALER NAME \_\_\_\_\_

INSP.DATE \_\_\_\_\_ DEALER NAME \_\_\_\_\_

INSP.DATE \_\_\_\_\_ DEALER NAME \_\_\_\_\_

INSP.DATE \_\_\_\_\_ DEALER NAME \_\_\_\_\_

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