

# LIANA

*User Manual*



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**SI TECH** <sup>®</sup>  
INNOVATIVE SAFETY SOLUTIONS – MADE IN SWEDEN

## LIANA - User manual

We want to congratulate you on the purchase of LIANA, a Dry Glove System developed and manufactured by SI TECH in Sweden. LIANA is a user friendly and versatile squeeze-on system. SLÄGGÖ Flex Ring works as attachment platform for LIANA.



Glove Ring assembly

Spanner Rings

LIANA Ring

### Components

The system itself consists of eleven components per arm:

- Connecting Ring
- Release Ring
- LIANA Ring
- O-ring (1 pc)
- O-rings for attachment to SLÄGGÖ Flex Ring (3 pcs)
- Black, blue, yellow and green Spanner Rings

\*SLÄGGÖ Flex Ring is a Modular Quick Change Solution designed to simplify change of broken or torn wrist seals on drysuits.

### Important information

- Always dive the LIANA with seals installed.
- The different Spanner Rings included in the package allows a variety of gloves to be fitted onto the LIANA. The different Spanner Rings are color coded which indicates various thickness. You simply choose the thickness best fitted for your the glove of your choice.

### Benefits

- Easy donning and doffing.
- Opportunity to use a variety of Dry Gloves.
- Connects to SLÄGGÖ Flex Ring\*.
- Heavy duty components.

## 1. Fitting onto SLÄGGÖ Flex Ring



**1.1** Three O-rings should be installed into each SLÄGGÖ Flex Ring, to secure the wrist seal and the Glove Ring.



**1.2** Pinch the O-ring and insert it from the top of the SLÄGGÖ Flex Ring.



**1.3** The O-ring shall be inserted all the way through, so that it is visible on both sides.



**1.4** Bend the O-ring and insert it (from the top) into the compartment next to the first.

**Tip!** Use a paper clip or similar to pull/push the O-ring through the opening.



**1.5** The O-ring should look like this when installed properly.

## 2. Attach glove



**1.6** Put the Glove Ring on top of the SLÄGGÖ Flex Ring to find out correct placement of the two remaining O-rings. Install the two remaining O-rings in the same way as the first one.



**1.7** Mount the seal onto the LIANA Ring as displayed in this image. Ensure that the flange of the seal is inserted into the groove of the LIANA Ring.



**1.8** Mount the LIANA Ring and seal assembly into the top groove of the SLÄGGÖ Flex Ring.



**1.9** Attach the O-ring around the notches on the LIANA Ring as displayed in these two images.



**2.1** When attaching gloves you will need the Glove Ring assembly, Spanner Rings and a pair of Dry Gloves. (Gloves are optional and are not included in the different LIANA packages.) The LIANA is delivered with blue, black, yellow and green Spanner Rings. These have different thicknesses, so that you can choose from different models of gloves.



**2.2** Put the Spanner Ring inside of the glove. Fold the glove collar and adjust it so that you avoid wrinkles. Position the Spanner Ring according to the armlength of your drysuit with the LIANA attachment platform mounted.

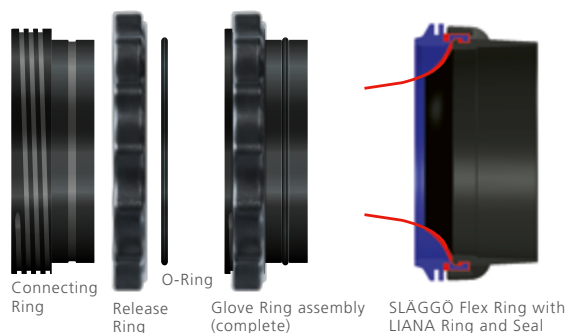


**2.3** Put the Glove Ring assembly onto a flat surface and press the Glove/Spanner Ring into the Connecting Ring. Use even force around the assembly and check for creases. Ensure that the Spanner Ring aligns in height with the top of the Connecting Ring.



**2.4** Check the strength of the assembly by pulling the glove away from the Rings. In case the assembly does not hold, you can try another Spanner Ring. Black is for extremely thick fabrics, yellow for thick fabrics, blue for medium fabrics and green for thin fabrics. If none of the Spanner Rings fits, you can use a thin layer of tape on the Spanner Ring.

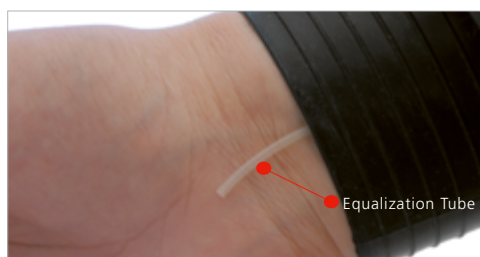
### 3. Donning



In this manual we have chosen to use illustrative cross sections of the SLÄGGÖ Flex Ring attachment platform to exemplify how to attach and detach the LIANA system before and after the dive. It is the same procedure when using Quick Glove with our other attachment platforms (Quick Clamp or Quick Cuff).



The Glove Ring assembly is connected by a thread which moves them laterally in opposite direction of each other allowing detachment of the system. When attaching the system, the Release Ring must be turned in to its distinct stop position on the leading edge of the Connecting Ring. **Note that the Release Ring is a release aid**, not to be used for locking or for attaching. When attaching the Glove Ring assembly to the attachment platform it is of greatest importance that you do this gently in several steps. Otherwise you might damage the O-ring or have the O-ring pressed out of its groove. Make sure the O-ring is free from lubricant that may attract dirt.



**3.1** Put your hand through the seal and fit the Equalization Tube between seal and wrist. Make sure the Equalization Tube reaches all the way through the seal.



**3.2** Put on the LIANA with glove and position the Glove Ring assembly so that the O-ring meets the LIANA Ring of the attachment platform.



**3.3** Press the system together step by step by applying gentle force on one side letting the O-ring travel inside of the attachment platform.



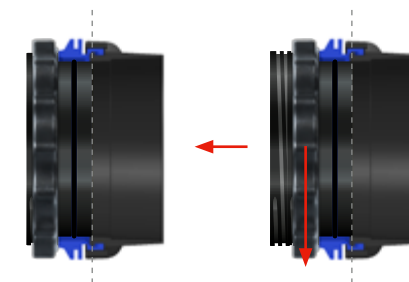
**3.4** Change grip and apply force on the opposite side of the ring so that the O-ring disappears bit by bit. Ensure that the Glove Ring assembly has bottomed in the attachment platform.



**3.5** Apply force to press the system together bit by bit. Ensure that the Glove Ring assembly has bottomed in the attachment platform.

### 4. Doffing

For detachment of the system you should rotate the outer ring as displayed by the vertical arrow. This will force the inner ring to travel out of the attachment platform until completely released.



### *These are suggested instructions only*

Whatever method chosen, be certain the wrist seal, be it latex or silicone, is properly treated. Always make a leakage and stress test on your drysuit seals before diving.

## Troubleshooting

The LIANA has a user friendly design but needs to be handled properly to perform as intended. Following explanations have been made using the SLÄGGÖ Flex Ring attachment platform. Some of the problems explained can occur, as well as be solved in the same ways, when using the Quick Cuff or Quick Clamp as an attachment platform for Quick Glove.



### Illustration no.1 is correct! The other examples are incorrect.

- 1**
  - The Release Ring of the Glove Ring assembly is threaded against its stop position on the leading edge of the Connecting Ring.
  - The Release Ring is in contact with the flange of the attachment platform.
  - The Spanner Ring is positioned so that the Glove Ring assembly can use full travel length into the compartment.
- 2** This scenario will most likely cause instability that can lead to leakage and in worst case cause the Glove Ring assembly to be fully released and fall off.
- 3** This scenario will most likely cause instability that can lead to leakage and in worst case cause the Glove Ring assembly to be fully released and fall off.

In all cases when you notice that something is wrong, we recommend you to detach the Glove Ring assembly from the attachment platform. Solve the issue that caused the problem and attach the system again.

## Maintenance and Storage

- Ensure that all components are clean and properly lubricated before diving the system.
- Disassemble and rinse all parts thoroughly in fresh water to remove sand and dirt.
- Make sure that the O-ring and the groove in the Connecting Ring is clean before re-fitting the O-Ring. **Note:** O-rings must be changed if damaged or contaminated by silicone lubricants.
- Disassemble the system when stored for longer periods.

## Spare Parts

### Item no. Item

#### LIANA

|          |  |
|----------|--|
| 60781    | LIANA Ring, large                                |
| 60231    | Connecting Ring                                  |
| 60232    | Release Ring                                     |
| 80185    | O-ring for LIANA/Quick Glove                     |
| 80057    | O-ring for attachment to SLÄGGÖ Flex Ring        |
| 61357-20 | Paraffin Wax                                     |
| 60211    | Spanner Ring, black: for extremely thick fabrics |
| 60214    | Spanner Ring, yellow: for thick fabrics          |
| 60212    | Spanner Ring, blue: for medium fabrics           |
| 60219    | Spanner Ring, green: for thin fabrics            |
| 60233    | Pressure Equalization Tube                       |

#### SLÄGGÖ Flex Ring

|       |                                 |
|-------|---------------------------------|
| 60710 | SLÄGGÖ Flex Ring, large (black) |
|-------|---------------------------------|

#### Seals

|       |   |
|-------|---|
| 61025 | Silicone Seal, Standard (wrist circumference 13,2-17 cm / 5,2-6,7") |
| 61026 | Silicone Seal, Small (wrist circumference 10,6-15 cm / 4,2-5,9")    |
| 61060 | Latex Seal, X-Small (wrist circumference 12,5-14 cm / 5,0-5,5")     |
| 61061 | Latex Seal, Small (wrist circumference 13,5-16 cm / 5,4-6,4")       |
| 61062 | Latex Seal, Medium (wrist circumference 15,5-18 cm / 6,2-7,4")      |
| 61063 | Latex Seal, Large (wrist circumference 18-21 cm / 7,2-8,4")         |

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*SI TECH is a Swedish company focusing on manufacturing and marketing of components for protective suits such as; drysuits, rescue suits and garments designed for diverse hostile environments. SI TECH is rooted in the diving industry which is still the company's core market. The company was founded in 1971 by the diving pioneer Stig Insulán.*

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*Core Market Areas*



