



TM

# SANTI

## HEATING *System*

ENG

User  
Manual

Diving  
Equipment

SANTI™ DIVING EQUIPMENT [SANTIDIVING.COM](http://SANTIDIVING.COM)  
EXTEND YOUR LIMITS



Our prime goal at SANTI is to keep the divers dry, warm and comfortable in their diving equipment. SANTI heated range was created to extend your diving time limits with the most innovative approach of keeping the warmth comfort at moderate level: not to overheat you while diving but to keep your body temperature comfortable and safe for longer. You will feel the difference while wearing it. With SANTI heated range underneath your drysuit your diving can be longer and deeper than you could ever imagine, without being cold.

Thank you for choosing SANTI Heating system.  
These products provide better comfort for your diving.  
Extend your limits & Stay Dry!

<b>General informations</b>	<b>1.01</b>
<b>Warnings</b>	<b>1.03</b>
<b>Warranty</b>	<b>1.04</b>
<b>Complaints</b>	<b>1.05</b>
<b>SANTI BZ400 Heated Undersuit</b>	<b>2.01</b>
Product specification	2.02
Size table	2.04
<b>SANTI Heated Undersuit Flex 2.0</b>	<b>3.01</b>
Product specification	3.02
Size table	3.04
<b>SANTI Heated Vest Flex 2.0</b>	<b>4.01</b>
Product specification	4.02
Size table	4.04
<b>SANTI Heated Gloves 2.0</b>	<b>5.01</b>
Product specification	5.02
Size table	5.04
Instruction for use	5.05
<b>SANTI 24Ah battery</b>	<b>6.01</b>
Product specification	6.02
<b>SANTI 6Ah battery</b>	<b>7.01</b>
Product specification	7.02
<b>SANTI Connector and Double Connector</b>	<b>8.01</b>
Product specification	8.02
Instruction for use	8.03
<b>SANTI Thermovalve</b>	<b>9.01</b>
Product specification	9.02
Instruction for use	9.05

Please read the following manual carefully before using any product from the heated range and keep it for future reference. The usage of diving equipment by untrained person may cause health damage and even life danger. Along with an increase of depth, the thickness of the insulating material may decrease due to hydrostatic pressure. The product should not be cleaned with solvents or strong detergents. If any information or warning needs further explanation, we are always available to help you with any question, so please do not hesitate to contact our customer service department.

**SANTI** | 

**SANTI Sp. z o.o.**  
**ul. Tadeusza Wendy 7/9**  
**81-341 Gdynia POLAND**  
**[www.santidiving.com](http://www.santidiving.com)**

Made in Poland

### **Thermal protection**

The user is responsible for own thermal protection. Isolation depends on the right undersuit and thermal underwear selection. Lack of adequate thermal protection might cause thermoregulatory disorders. The user must be aware of the risks of hyperthermia and hypothermia.

### **Thermal isolation and depth**

Thermal isolation is reduced due to hydrostatic pressure, which is increasing with depth. The user must be aware that thermal capacity of the product might be reduced.

### **Allergic reaction**

Every synthetic material might cause allergic reactions. Before using the product, please be aware of the potential risk of experiencing allergy towards the materials used in the construction of the product.

### **Fitting**

Correct fitting of the heated underwear gives much more comfort and satisfaction during use. Fitting should be carried out when wearing suitable underwear and an appropriate undersuit. Size should be based on the size chart. We recommend using our authorised SANTI dealer.

- Read and follow the manual before use.
- Products from Heating System range are dedicated only for drysuit divers.
- Use with appropriate battery source. Batteries should not exceed 12 Volts!
- Charge with supplied charger only!
- Protect the plug before washing heating undergarment (washing machine allowed).
- The power must be switched off when out of the water.
- Switch off immediately when drysuit is flooded or when malfunction is suspected.
- Do not disassemble or modify the product.
- Do not combine with other heating system products if they are not compatible with the product.
- Be careful not to cross the cables against each other, make sure they are not banded or folded while using.
- The cables need to be well stretched under your suit.
- Before each dive inspect thoroughly all electrical cords and connections. If you notice any mechanical break or cut, do not use the product for diving, as this might cause serious injury. Once you notice any damage to the cables, contact SANTI service for repair or replacement of the broken parts.
- The product is equipped with the necessary wiring to allow the connection to the external power supply through valve connector or thermo valve.

### Limited Warranty for SANTI heating system products

With this limited warranty certificate SANTI declares that the product is free from defects in fabrics, components and craftsmanship at the time of the purchase. Please read all warnings and safety instructions before use and keep the original sales proof. This must be shown when repair should be covered by warranty. The product needs to be claimed by the dealer where it was purchased.

SANTI heated products come with 12-month guarantee against defects in materials and workmanship. The warranty does not cover damage due to: abuse, neglect, improper usage, lack of maintenance or normal wear and tear, especially mechanical cut of the cables, any change or modification made by the user or by the third parties, use of incompatible accessories that are not part of SANTI product range.

SANTI shall not be responsible in any case for incidental or consequential damages (without any limitation whatsoever to one or more persons) resulting from non-fulfillment of the obligations arising from this warranty when it comes to SANTI products.

If any defect covered by this limited warranty appears within 12 months from the date of purchase SANTI will repair, exchange parts or replace the defective product. Warranty repair can only be done at SANTI HQ service department. Any changes or technical intrusion results in warranty loss.

**This warranty is valid only if the enclosed warranty form is fully filled out with following information: product name, name of the authorized dealer, product serial number, product purchase date. Serial number is stated on the inside label.**

SANTI reserves the right not to carry out repairs under warranty if any original information is removed or modified on the product after the original date of purchase of the product from a dealer.

### Procedure of forwarding the claims:

- To forward a claim covered by this warranty, the buyer has to directly notify the dealer where the product was purchased with regards to the defect, presenting at the same time the defective product, a copy of the sales receipt and the Warranty registration form, duly filled out as instructed above.
- Prior to contacting the dealer, we recommend that you carefully read the user manual enclosed with the product. After 12 months from the date of purchase, this limited warranty is void for all effects and purposes.
- Repairs or maintenance under warranty do not extend the period of the warranty itself. Therefore, in case the product or one of its components is replaced, this does not initiate a new warranty period, as the purchase date of the original product shall be taken into account for warranty purposes.
- SANTI reserves at any time the right to modify the product characteristics or functions of this product without advance notice.
- In care of electric components warranty repair, SANTI grants 90 days of additional warranty for the performed service. If this period exceeds the 12 month original warranty, additional warranty will be honored.
- This warranty does not affect the consumers rights provided by the law or the rights to which the buyer is entitled to, and which are expressly provided for by Directive 1999/44/CE.
- The cost of shipping to SANTI Service department is on the dealer/client side. After warranty repair confirmation all other costs are on SANTI side.
- Warranty card available on cover page.

# ATTENTION!

**Diving is a potentially hazardous sport. Before using any diving equipment you should be properly trained in the use of the equipment by a recognized club or organization.**

Before each dive inspect thoroughly all the electrical cords and cables and make sure they are not damaged, cut or broken in any place. If you notice any mechanical break or cut, do not use the product for diving, as this might cause serious problems and injury. Once you notice any damage to the cables, contact SANTI service department for repair or replacement of the broken parts as soon as possible.

## SANTI BZ400 Heated Undersuit

2.01



## Product specification

2.02

The innovative SANTI BZ400 Heating undersuit is designed as a part of the complex heating system consisting of at least an undersuit, thermovalve/connector and an external battery canister. This configuration allows a diver to wear the undersuit under the drysuit without additional valve and dangers associated with internal batteries.

The heating undersuit outer shell is made of abrasion and tear resistant polyester Thinsulate™ 3M BZ 400 layer and micro fleece layer inside. The Heating undersuit is designed to be worn on top of thin form fitting thermal wear. It is not recommended to wear on in the naked body. In this configuration the majority of the heat output is transferred directly on diver's torso, back and thighs.

Breathable Thinsulate fabric allows comfortable body heating and redirection of body sweat to the outside. Undersuit has high thermal properties if it is switched off.

### Available sizes:

- XS, S, SL, M, ML, MLL, LS, L, LL, LLL, XLS, XL, XLL, XXLS, XXL, XXXL,
- Made To Measure option available.

**Technical info:**

- maximum heating temperature 45°C,
- maximum heating power: 110 W,
- works with batteries:  
24Ah battery: ~2h30min - 3h of heating,
- works only with batteries of maximum voltage of 12V,
- safety switch preventing from overheating and too strong current,
- made of Thinsulate™ BZ400 (420g/m2),
- made of fully breathable materials,
- keeps you warm even when switched off,
- regularly distributed heating wiring that allows you a free movement,
- warms up the whole torso, thighs and arms,
- extra pocket for the wire ends,
- waterproof plug, compatible with other SANTI products, flexible and overheating resistant wires, additional. Wires integrated to plug in the heating gloves in standard,
- P-valve holes on both legs in standard,
- napoleon pocket,
- water-resistant cuffs,
- tapes, which supply air to the dry gloves,
- two-way zip protected with a flap.

**ATTENTION!**

*Works only with SANTI thermo valve and SANTI connector.*

**Washing instruction:**

Machine-wash in cold water at short cycle at the temp. of 40°C. Hand washing is not recommended since it is difficult to work the water into and through the undersuit to flush away dirt and to remove the water manually without damaging the insulation and cables inside. The undersuit should be washed separately to maximize the cleaning and rinsing process.

**Warning:** Whirling is not recommended. Cover and protect the plug while washing. The plugs are water resistant. To dry, place the product flat or tumble dry using a delicate cycle (very low temperature) or air only.

**Size table**

SIZE	XS	S	SL	M	ML	MLL	LS	L	LL	LLL	XLS	XL	XLL	XXLS	XXL	XXXL
HEIGHT	162	168	174	172	176	182	172	180	184	190	174	184	192	176	190	192
	166	172	178	176	180	186	176	184	188	194	178	188	196	182	194	196
CHEST	84	90	90	96	96	100	106	106	106	110	112	112	112	118	118	130
	88	94	94	100	100	104	110	110	110	114	116	116	116	122	122	134
ARM	51	52	53	53	55	57	52	54	56	58	54	56	58	55	57	58
BICEP	28	29	30	32	32	33	35	35	36	37	38	37	38	40	40	42
FORE-ARM	26	27	27	28	29	29	30	29	30	30	31	30	30	31	31	32
WAIST	70	76	78	82	82	84	92	92	92	98	100	100	100	108	108	116
	74	80	82	86	86	88	96	96	96	102	104	104	104	112	112	120
HIPS	84	90	92	96	96	100	106	106	106	110	112	112	112	118	118	130
	88	94	96	100	100	104	110	110	110	114	116	116	116	122	122	134
INNER LEG	74	76	80	79	84	88	79	83	86	89	80	85	89	80	84	86
THIGH	50	52	52	55	55	55	32	60	61	61	65	65	65	68	68	72
CALF	34	36	38	39	40	40	43	41	42	42	44	44	44	46	46	47
BODY TRUNK	155	160	165	165	170	175	165	170	175	180	170	175	180	175	185	195

## SANTI Heated Undersuit Flex 2.0

3.01



## Product specification

3.02

The Flex 2.0 heating undersuit is designed as part of complex Santi heating system which consists of such items as heated undersuit or heated vest, valve thermoconnector or thermovalve and external battery. This configuration allows a diver to use the heating system without necessity of using any additional valves and without any dangers associated with internal battery canisters.

While using the same inner heating technology as in BZ400 heated model, this undersuit is light and flexible, which improves divers flexibility and bulk comfort under a drysuit. Made of high quality Climashield Contour fabric with weight of 180g/m<sup>2</sup>, allows for full flexibility of fabric in every direction, which leads to unique mobility and less bulk when compared with BZ400 Thinsulate insulation. The undersuit contains very efficient heating wires that provide optimal thermal comfort during long and cold dives. In this configuration, most of the generated heat is passed on directly on the diver's body. We highly recommend this undersuit to those, who look for thinner alternative for a heating undersuit, plan shorter dives in cold waters or long demanding dives in warmer waters.

The newest version of Santi heating undersuit, thanks to new, non-quilted fabric quality provides more warmth towards the body. This generates better thermal feeling and keeps the heat trapped closer to the body for longer.

It is advised to wear the undersuit on top of thin thermal or wool base underwear. In this configuration the temperature is directed straight to a diver's body. The Undersuit should not be worn directly on naked skin due to safety and hygienic reasons.

### Available sizes:

- XS, S, SL, M, ML, MLL, LS, L, LL, LLL, XLS, XL, XLL, XXLS, XXL, XXXL,
- Made To Measure option available.



## Features:

- handy pocket on waist for power cord,
- p-valve hose opening,
- non - soaking net cuffs with rubber loops for thumbs,
- elastic gussets under the armpits,
- two side pockets,
- elastic waist belt,
- two - way entry zipper,
- foot straps that hold the feet while dressing,
- maximum heating temperature: 45°C,
- maximum heating power: 110W,
- works with batteries:  
24Ah battery: ~ 2h30min - 3h,
- Climashield Contour 180g/m2 thermal insulation,
- safety switch preventing from overheating and too strong current,
- heating wire covered with ultra-soft, silicone isolation resistant to breaking,
- innovative, synthetic power cable resistant to high temperatures and cuts hidden in a handy pocket,
- ergonomic nesting and wires layout inside,
- built in heating glove wires,
- special undersuit bag,
- available for ladies in "Made to Measure" option.

### ATTENTION!

*Works only with SANTI thermovalve and SANTI connector.*

## Washing instruction:

Machine-wash in cold water at short cycle at the temp. of 40°C. Hand washing is not recommended since it is difficult to work the water into and through the undersuit to flush away dirt and to remove the water manually without damaging the insulation and cables inside. The undersuit should be washed separately to maximize the cleaning and rising process.

**Warning:** Whirling is not recommended. Cover and protect the plug while washing. The plugs are water resistant. To dry, place the product flat or tumble dry using a delicate cycle (very low temperature) or air only.

3.03

## Size table

3.04

SIZE	XS	S	SL	M	ML	MLL	LS	L	LL	LLL	XLS	XL	XLL	XXLS	XXL	XXXL
HEIGHT	162	168	174	172	176	182	172	180	184	190	174	184	192	176	190	192
	166	172	178	176	180	186	176	184	188	194	178	188	196	182	194	196
CHEST	84	90	90	96	96	100	106	106	106	110	112	112	112	118	118	130
	88	94	94	100	100	104	110	110	110	114	116	116	116	122	122	134
ARM	51	52	53	53	55	57	52	54	56	58	54	56	58	55	57	58
BICEP	28	29	30	32	32	33	35	35	36	37	38	37	38	40	40	42
FORE-ARM	26	27	27	28	29	29	30	29	30	30	31	30	30	31	31	32
WAIST	70	76	78	82	82	84	92	92	92	98	100	100	100	108	108	116
	74	80	82	86	86	88	96	96	96	102	104	104	104	112	112	120
HIPS	84	90	92	96	96	100	106	106	106	110	112	112	112	118	118	130
	88	94	96	100	100	104	110	110	110	114	116	116	116	122	122	134
INNER LEG	74	76	80	79	84	88	79	83	86	89	80	85	89	80	84	86
THIGH	50	52	52	55	55	55	32	60	61	61	65	65	65	68	68	72
CALF	34	36	38	39	40	40	43	41	42	42	44	44	44	46	46	47
BODY TRUNK	155	160	165	165	170	175	165	170	175	180	170	175	180	175	185	195

## SANTI Heated Vest Flex 2.0

4.01



## Product specification

4.02

Santi heating vest is a product for those who seek the highest level of comfort during long and cold dives.

New Flex 2.0 heating vest, designed as part of Santi heating system which consists of such items as heated undersuit or heated vest, valve thermoconnector or thermostatic valve and external battery.

This configuration allows a diver to use the heating system without necessity of using any additional valves and without any dangers associated with internal battery system.

The vest was designed to provide the highest functionality and safety. Thanks to fabrics used, the vest provides thermal comfort even after your battery is drained.

Made of very flexible Climashield insulation fabric with weight of 180g/m<sup>2</sup> it consists of three layers – breathable Climashield Contour insulation covered with two protective layers made of polyester from the inside and outside. The external layer has also windproof properties.

The newest version of Santi heating vest, thanks to new, non-quilted fabric quality provides more warmth towards the body. It generates better thermal properties and keeps the heat trapped closer to the body for longer.

### Available sizes:

XS, S, M, L, XL, 2XL, 3XL

**Features:**

- Climashield Contour fabric – stretchable threads properties, resistant to wear and tear,
- weight 180g/m<sup>2</sup>, isolation: 0.96 CLO,
- side and crotch adjustable, rubber bands to allow best circumference and length adjustment,
- handy pocket for power cord,
- p-valve hose opening,
- maximum heating temperature: 45°C,
- maximum heating power: 55W,
- battery running time:  
SANTI 6Ah: ~ 1h30min of heating,  
SANTI 24Ah: ~ 5 - 6h of heating,
- safety switch preventing from overheating and too strong current,
- new generation of heating wire covered with ultra-soft, silicone isolation resistant to breaking,
- innovative, synthetic power cable resistant to high temperatures and cuts, hidden in a handy pocket,
- ergonomic nesting and wires layout inside,
- special vest bag included.

**ATTENTION!**

*Works only with SANTI thermovalve and SANTI connector.*

**Washing instruction:**

Machine-wash in cold water at short cycle at the temp. of 40°C. Hand washing is not recommended since it is difficult to work the water into and through the undersuit to flush away dirt and to remove the water manually without damaging the insulation and cables inside. The undersuit should be washed separately to maximize the cleaning and rinsing process.

**Warning:** Whirling is not recommended. Cover and protect the plug while washing. The plugs are water resistant. To dry, place the product flat or tumble dry using a delicate cycle (very low temperature) or air only.

**Size table**

SIZE	XS	S	M	ML	L	LL	XL	XXL	XXXL
LENGTH	68	70	71	73	73	75	74	75	77
CHEST	93	87	101	101	105	105	109	113	119

## SANTI Heated Gloves 2.0

5.01



## Product specification

5.02

The Heating Gloves are designed as a part of the complex heating system consisting of the gloves, thermo valve/connector and an external battery canister. This configuration allows a diver to wear the gloves under the dry gloves without additional valve and dangers associated with internal batteries.

### **Available sizes:**

XS, S, M, L, XL, 2XL

**Features:**

- maximum heating temperature: 45°C,
- 36 W power (per pair),
- run time with SANTI battery:  
battery 6Ah: ~ 2h of heating,  
battery 24Ah: ~ 9h of heating,
- keeps you warm even when the heating is off,
- evenly distributed heating wiring that allows for freedom of movements in palms,
- wires on fingers and outer side of palm,
- waterproof plug, compatible with other SANTI products,
- works with power supply no higher than 12V.

**ATTENTION!**

*Works only with SANTI thermovalve and SANTI connector.*

**Washing instruction:**

Machine-wash in cold water at short cycle at the temp. of 40°C. Hand washing is not recommended since it is difficult to work the water into and through the undersuit to flush away dirt and to remove the water manually without damaging the insulation and cables inside. The undersuit should be washed separately to maximize the cleaning and rinsing process.

**Warning:** Whirling is not recommended. Cover and protect the plug while washing. The plugs are water resistant. To dry, place the product flat or tumble dry using a delicate cycle (very low temperature) or air only.

SIZE	XS	S	M	L	XL	XXL
PALM SIZE	6.5 - 7.0	8	8.5	9	9.5	10



- Connect the supplied wire to valve cable and put the gloves connecting cables into the sleeves.



- Let the wire ends out through the wrist seals.



- Conduct the cables of the gloves against your arms and to the connector and then connect the gloves.

- Put your dry gloves on the heating gloves.
- Switch on the battery while in water.
- Make sure you note and follow all the warnings stated above.

## SANTI 24Ah battery

6.01



## Product specification

6.02

SANTI battery is developed based on modern Li-Ion cells, with high current efficiency. Battery is designed to supply power to SANTI heated apparel (undersuit, vest, gloves). However, it may be also used with diving lights.

Total power of connected devices must not exceed 200W. Those devices must be designed to be powered with 10.8-12V input.

### Calculated operating time when equipment is in use:

- heated undersuit (110W): 2h30min ~ 3h
- heated vest (55W): 5h ~ 6h
- heated gloves (36W): 9h ~ 10h
- undersuit with gloves: 2h ~ 2h15min
- vest with gloves: 3h15min ~ 3h45min

The battery is equipped with a number of safeguards to protect against excessive discharge, excessive charging, overload and short circuit. On the top section of the canister there are an E/O cord connector, piezo switch, overpressure valve. There is also a belt loop (no need for clamps) on the side of the housing.

One touch is enough to turn battery on, which is indicated by built-in blue LED on the E/O cord connector. After each switch-on power status is presented. Number of flashes emitted by blue LED informs about the charge level.

**Maintenance-free battery, do not open.  
Opening the housing results in loss of warranty.**

### Battery level indicator:

Number of flashes emitted by blue LED informs about the charge level.

- 3 flashes of LED stand for 60%-100%
- 2 flashes of LED stand for 30-60%
- 1 flash of LED stands for < 30%
- No light emitted by LED - fully discharged

After power level check battery resumes standard mode, what is indicated by constant LED light.

### Technical parameters:

- capacity: 24 Ah,
- operating voltage: 11,1 V,
- cells type: Li-Ion,
- height: 270 mm,
- diameter: 74 mm,
- milled space for silicone band placement,
- E/O cord length: 60cm,
- housing material: polyacetal / POM / Delrin®,
- charging time: 14h,
- max depth: 100m,
- weight: 1,8kg.

#### **ATTENTION!**

*Works only with SANTI thermovalve and SANTI connector.*

### Operating recommendations:

Battery should be connected to heated apparel with use of SANTI connector or SANTI thermovalve by the E/O cord connector. If battery is not in use, battery should be switched off and dummy plug (delivered) put on E/O cord.

The chipset controls the state of charge of the battery consumes a small amount of energy, therefore, after a long break, connect the battery to the charger in order to check the state of charge and, if necessary, recharge the battery. It is also recommended not leave battery discharged for more than 6 months.

Due to electrolysis process, it is suggested that battery should not remain in water when any power consuming equipment is not connected.

### Travelling:

During transportation it must be switched off and dummy plug must be on E/O cord connector. This battery holds UN/DOT 38.3 Transportation Testing certificate which is Required for Lithium Battery. Certificate may be downloaded from SANTI website [santidiving.com](http://santidiving.com). Despite this certification, battery may be considered as dangerous item, that is why airline may refuse this unit to be carried in the aircraft.

SANTI DIVING is not responsible for that instances. Always check all applicable local, national, and international regulations before transporting a Lithium-Ion battery. Transporting an end-of-life, damaged, or recalled battery may, in certain cases, be specifically limited or prohibited.



### Charging:

Charge the battery using the supplied battery charger using E/O cord connection cable. Plug the charger to a power source 100-240V. LCD screen lights up in blue showing 12,6V as the value of the charging voltage. Next, connect the battery to the charger, through the connector E/O cord. Display at the charger turns red showing the percentage of the battery charge. When the battery is fully charged, the LCD backlight will turn blue indicating a value of 100%. After the charging process is finished, disconnect the battery and power source.

The charger has also a USB output for charging other portable devices such as a phone/tablet (1A).

### Charger parameters:

- charger is designed for Li-Ion 10,8 - 11,1V batteries charging,
- after full charge, battery is disconnect automatically by the charger,
- supply voltage range: 100-265V AC 50-60Hz,
- input current: 1,8A,
- output voltage: 12,6VDC,
- output current: 3A,
- USB output: 5VDC 1A,
- output power: 90W,
- dimensions: 132mm x 58mm x 30mm,
- weight: 365g.

### Key factors for the safety and lifetime of the battery and charger:

Battery has a number of safeguards to protect against damage, even though you should meet the following precautions:

- never allow the battery to be discharged below 8V,
- do not open the battery or charger or modify their design,
- do not short-circuit the external contacts of the battery or charger,
- do not connect the battery to batteries of other manufacturers or with different capacities,
- do not throw the battery or charger,
- do not put the battery or the charger to the fire,
- indoor charging is recommended while protecting from unexpected weather conditions,
- use this charger only with the Li-Ion battery packs. Never use with NiMH batteries, NiCd or lead-acid, it may lead to damage or even injury to any person directly exposed,
- provide adequate ventilation during the charging process and avoid using any heat emitting or interfering devices nearby,
- disconnect the battery charger and contact SANTI Service Department whenever there is a damaged power cord or plug, liquid enters inside, the housing is destroyed or any other than described in the manual incorrect operation of the unit is noticed,
- the battery should be stored only when charged to minimum of 70% in a dry place,
- store the battery at temperatures between 2 °C and 40 °C (36 °F and 104 °F),
- never charge frozen battery or at freezing temperature. It may become a cause of damages. If battery was in low temperature for a long time, it should be left in a warm temperature for several hours before use or charging,
- check the battery level every half a year, never store battery which is fully discharged,
- keep the battery away from children,
- using the battery or charger violating their intended purpose may result in damage to either the battery or the charger or devices connected to them, and cause loss of life or health,
- SANTI DIVING is not responsible for any damage or loss which are result of inappropriate use of the battery or charger, especially against above recommendations.

## SANTI 6Ah battery

7.01



## Product specification

7.02

It is based on advanced Li-Ion cells with high discharge current, so that it is possible to connect elements with a total power of up to 100W. The set is enclosed in an ergonomic case, with the E/O cord connection cable and piezo switch fitted through the upper lid of the container. The battery is switched on by touching the flat switch on the lid and the operation is signaled by a blue backlight placed on the E/O cord connector. The container is equipped with a special opening, designed to secure the battery pack on the belt.

The battery is designed to work with a vest and gloves from the SANTI heating system range. There is also the possibility to use the battery with any torch if its power does not exceed 100W.

Operating time (heating) with the components of the SANTI heating systems:

heating gloves:	1h45min ~ 2h,
heating vest:	1h15min ~ 1h30min,
vest with gloves:	30 ~ 45min.

The battery should be connected to the chosen heating element to the SANTI drysuit valve connector or SANTI Thermo valve by using the E/O cord connector. When storing, the battery should remain turned off. It is recommended not to leave the battery discharged for more than 6 months.

To avoid the electrolysis process, the battery should not be switched on in water while the E/O cord is not connected to any receiving device.

**Maintenance-free battery, do not open.  
Opening the housing results in loss of warranty.**

**Details:**

- light, small and ergonomic container,
- E/O cord connector with unique led illumination,
- trouble-free piezoelectric switch,
- belt loop (no need for clamps),
- charging through E/O cord connector,
- the possibility of using for both the SANTI heating system and lights.

**Technical parameters:**

- capacity: 6Ah,
- operating voltage,
- cells type: Li-Ion,
- height: 115mm,
- diameter: 74mm,
- milled space for silicone band placement,
- E/O cord length: 60cm,
- material: Poliacetal / POM / Delrin@,
- charging time: 4-5h,
- operation depth: 100m,
- weight: 0,68kg.

**ATTENTION!**

*Works only with SANTI thermovalve and SANTI connector.*

**Transport:**

The battery should remain switched off while transported. The E/O cord should be covered with the dummy plug attached. The battery is certified according to the UN Test for the security of transport procedures.

**Charging:**

Charge the battery using the supplied battery charger and the E/O cord plug. We recommend charging in dry conditions. The battery should not be switched on during the charging process. Connecting the charger to fully or partially discharged battery is indicated by a red LED light on the charger. When the battery is fully charged, the LED light on the charger will turn to green. During the whole charging process the E/O cord blue backlight will be flashing. After charging, unplug the charger from the power source. Battery for transport is charged to half. After unpacking a new battery connected to a charger.

*Power supply needed for charging the battery is 100-240V, 50/60 Hz.*

**Charger specification:**

- input voltage rating: 100-240 VAC 50/60Hz,
- input current rating: 0,3A,
- maximum input power: 40W,
- output voltage: 12,6VDC,
- output current: 1,8A,
- maximum output power: 30W,
- intended for: Li-Ion 11,1V,
- the efficiency of the device: >80%,
- operating temperature: -10°C to +40°C,
- weight: 310g,
- dimensions: 118mm x 60mm x 37mm.

## Charger operators manual:

### WARNINGS

- The charger should only be used for Li-ion battery packs, working with voltage 11.1 - 12.6V. If the charger is connected to other types of batteries with different nominal voltage, it can be damaged.
- Never use with NiMH, NiCd or lead - acid batteries, as this can lead to damage or even injury of the people nearby.
- The charger is designed for operation in confined spaces. Protect against adverse weather conditions.
- Do not open the charger, due to the high voltage supply.
- In case of damage to the power cord or plug, any liquid entering the housing, damage to the housing, or incorrect operation of the unit other than described in the manual, disconnect the charger from the power supply and contact the SANTI service department for advice.
- During the charging process make sure that the charger and battery have good ventilation and avoid placement near other devices generating heat. Failure may result in damage to the battery or charger.

## Key factors for the safety and lifetime of the battery and charger:

Battery has a number of safeguards to protect against damage, even though you should meet the following precautions:

- never allow the battery to be discharged below 8V,
- do not open the battery or charger or modify their design,
- do not short-circuit the external contacts of the battery or charger,
- do not connect the battery to batteries of other manufacturers or with different capacities,
- do not throw the battery or charger,
- do not put the battery or the charger to the fire,
- indoor charging is recommended while protecting from unexpected weather conditions,
- use this charger only with the Li-ion battery packs. Never use with NiMH batteries, NiCd or lead-acid, it may lead to damage or even injury to any person directly exposed,
- provide adequate ventilation during the charging process and avoid using any heat emitting or interfering devices nearby,
- disconnect the battery charger and contact SANTI Service Department whenever there is a damaged power cord or plug, liquid enters inside, the housing is destroyed or any other than described in the manual incorrect operation of the unit is noticed,
- the battery should be stored only when charged to minimum of 70% in a dry place,
- store the battery at temperatures between 2 °C and 40 °C (36 °F and 104 °F),
- never charge frozen battery or at freezing temperature. It may become a cause of damages. If battery was in low temperature for a long time, it should be left in a warm temperature for several hours before use or charging,
- check the battery level every half a year, never store battery which is fully discharged,
- keep the battery away from children,
- using the battery or charger violating their intended purpose may result in damage to either the battery or the charger or devices connected to them, and cause loss of life or health,
- SANTI DIVING is not responsible for any damage or loss which are result of inappropriate use of the battery or charger, especially against above recommendations.

## SANTI Connector and Double Connector

8.01

## Product specification

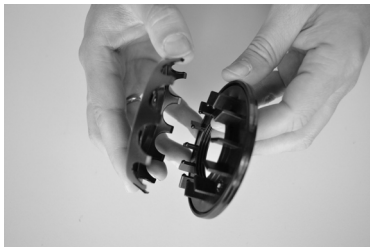
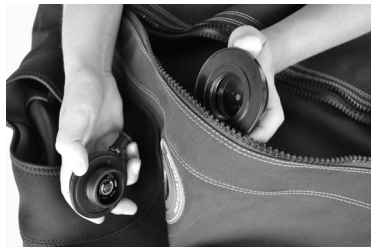
8.02



Inlet valve connector with 12V battery integration function.

Inlet valve connector is designed as part of SANTI Heating System. Connector carries E/O cord through standard inlet valve allowing to run connection from external battery to Heating System components under the drysuit.

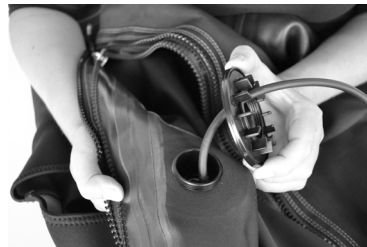
- contains two electrical connectors on opposite sides of the cable - a battery connector adapted to work in water (standard E/O cord) and a water resistant connector for SANTI Heating System components,
- product dedicated to work with battery power not higher than 12V,
- total cable length with plugs - approx. 55cm,
- height (without thread): 19mm,
- available with APEKS or SI-TECH screw size.



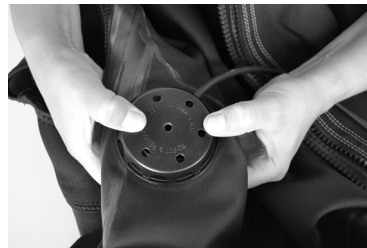
- Prepare all separate parts that are included in the box. Detach your inlet valve and disconnect the cover lid from the valve nut.



- Twist the valve into the connector and put the connection cable and connector through the hole for the valve to the inside of the suit.



- Turn the suit so the inside part is visible and put the connection cable through the nut that will hold the valve. Twist the nut onto the valve until strong resistance, to make sure it will not leak.



- Put the cover lid onto the nut and press to connect it again.



### **Drysuit inflation valve with integrated 12V connector.**

- Available with APEKS or SI-TECH screw size.
- 90° moveable head equipped with medium pressure connection.
- Moveable head provides freedom in optimal and convenient arrangement of the E/O cord and the hose.
- Made of two opposing cords - used to connect with battery, adapted to operate under water and to connect with SANTI Heating System garment.
- Works with power supply no higher than 12V.
- Total length of the cables including plugs - about 55cm.

**Valve placement:**

It is not critical to the operation of the valve where it is fitted on the suit, but generally the inflation valve should be fitted on the chest area, where it can be easily reached. The place of fitting the valve needs to be of the right size and the rubber backing patch should be bonded to the outside of the suit with a suitable adhesive. When positioning the valve try to ensure that it won't be covered by other pieces of diving equipment, affecting access to the valve.

**Hose connection:**

To mount the inflation valve to the hose, the coupling needs to have the collar to be pulled back while pushing it onto the valve connection.

**Valve operation:**

Before each dive it is advisable to check the tightness of the suit valves to ensure leak free diving. Do not dive amount of weighted. Choose a safe, shallow place to test your buoyancy. Once in the water, on the surface blow sufficient air into your suit by pressing the button on the suit inflation valve to provide strong positive buoyancy.

**Care And Maintenance:**

SANTI Thermo valve works as any inflation valve but since it is additionally equipped with the integrated, waterproof voltage connection it enables to connect heated underwear to the power supply outside your dry suit.

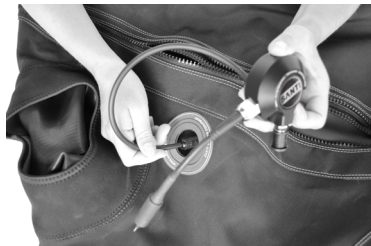
*Cleaning of the valve:*

The inflation valve should be rinsed in fresh water after use, it should then be connected to the air supply and blown through to clear any residual water. The valve should be cleaned and the O-rings changed annually to guarantee trouble free operation. You should check the correct operation of the valve before each diving. Any damage ought to be reported to a producer and service carried at by a competent service technician, approved by the producer. Any intrusion into the valve construction may cause mechanical damage which the producer will not take the responsibility for.

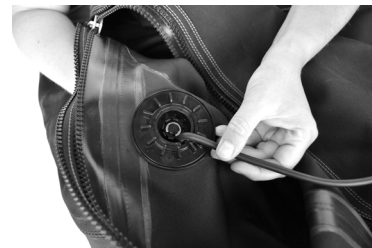
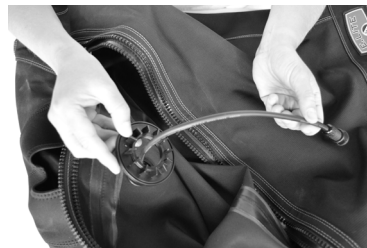




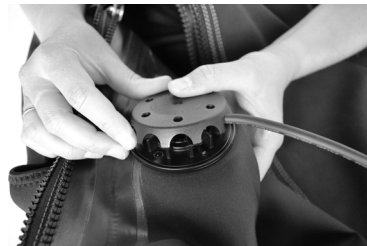
- Prepare all separate parts that are included in the box. Turn off your inlet valve and disconnect the cover lid from the valve nut.



- Twist the valve into the connector and put the connection cable and connector through the hole for the valve to the inside of the suit.



- Turn the suit so the inside part is visible and put the connection cable through the nut that will hold the valve. Twist the nut onto the valve until strong resistance, to make sure it will not leak.



- Put the cover lid onto the nut and press to connect it again.