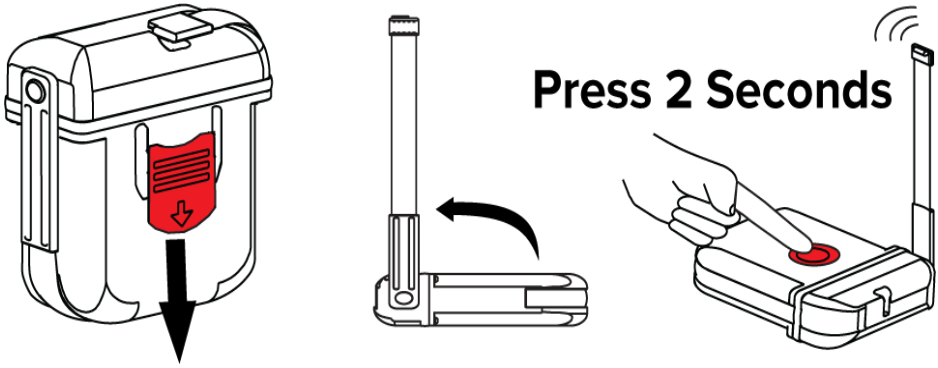
Tron SA20 PLB

Operation manual

JOTRON

Performance for Life

1 PLB activation



1. Slide the red cover downwards.
2. Unfold and tilt the antenna to vertical position.
3. Press and hold the red button for 2 seconds.

Warning! For emergency use only!

See chapter 3 for more details on deactivation and how to optimize performance.

Table of Contents

2 General

Congratulation as a user of a trusted Jotron product, Tron SA20 PLB. We sincerely appreciate your decision to choose this safety product.

This user manual is designed to guide you through the seamless operation of your SA20 PLB, ensuring that you maximize its potential and enjoy a smooth experience.

Thank you for choosing Jotron. Have a Safe Journey!

2.1 Introduction

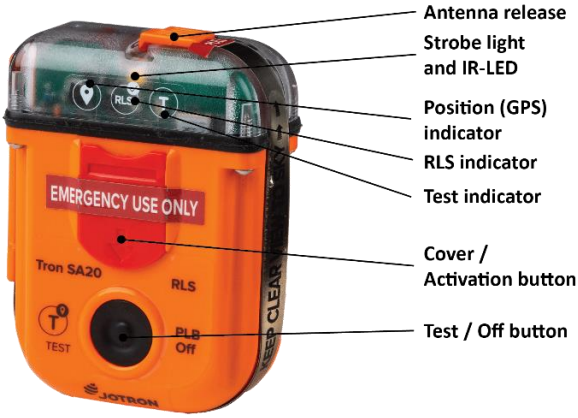
Jotron manufactures safety products designed for search and rescue of human lives and property. For this product to be effective according to the design parameters, it is imperative that it is handled, maintained, serviced, and stowed in accordance with this manual.

All information contained within this manual has been verified and is to Jotron's knowledge correct. Jotron reserves the right to make changes to any product(s) or module(s) described herein to improve design, function, or reliability without further notice.

Important! Jotron is not liable and cannot be held responsible for any injury or damages caused directly or indirectly by an error or omission of information, incorrect or misuse, breach of procedures or failure of any specific component or part of this product.

Jotron documentation can be downloaded from jotron.com.

3 Operating instructions



3.1 Activation

To activate the PLB follow these steps:

1. Slide the red cover downwards.
2. Unfold and tilt the antenna to vertical position.
3. Press and hold the red button for 2 seconds.

Warning! For emergency use only!
Misuse of the PLB may be subjected to a fine.

The following measures can be made to enhance the distress signal strength.

- Lay the PLB down on a flat surface with the antenna pointing towards the sky.
- Keep the angle between the antenna and the PLB 90°.
- Provide a clear view to the sky.
- If possible, keep the PLB in an open area, away from any metal objects that may limit the satellite coverage.
- Do not submerge the antenna.

Important! Make sure the antenna is unfolded and directed towards the sky. Do not touch the antenna when the PLB is activated.

3.2 Deactivation of the PLB

If the PLB has been accidentally activated or if you want to deactivate it after use, press and hold the PLB Off button for 4 seconds. All three indicators will light up when the button is pressed. Keep pressing until all lights are turned off. Perform a self-test afterwards to verify that the battery has sufficient power.

3.3 Operating scenarios

The Tron SA20 PLB is most effective when placed in an open and elevated area. Make sure to unfold the antenna and keep the angle between the PLB and the antenna 90°. Place the unit on a flat surface.

Avoid operating the PLB inside a vehicle, buildings, vessel cabin and other enclosed areas or under cover. This may block signal transmissions and GPS/RLS reception.

Make sure to unfold the antenna before activation

Place the PLB on a flat surface

Ensure a free view to the sky

A useful carrying case protecting your PLB

Warning!

- The PLB will float but does not have sufficient buoyancy to meet the category 1 requirements. This is a category 2 PLB and by definition this PLB will not float.[1]
- The PLB is not designed to float and transmit a distress signal at the same time.
- The PLB may not be substituted for a required EPIRB on a vessel.

[1] The Tron SA20 PLB is a category 1 PLB in Australia and New Zealand.

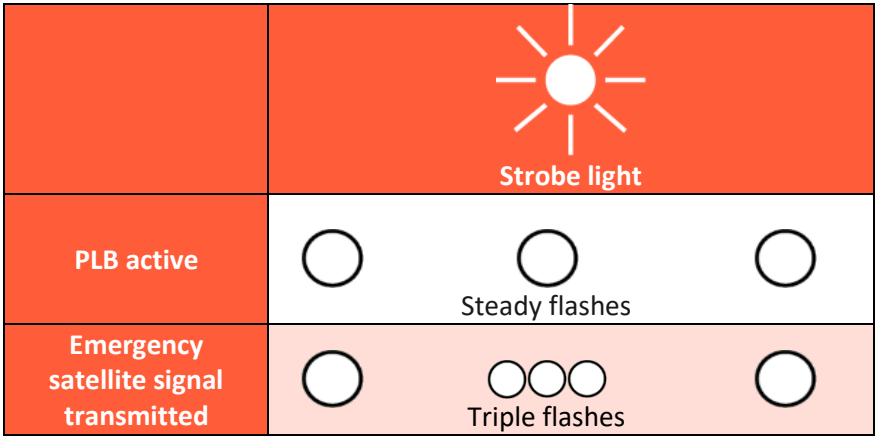
3.4 Indicators when activated

3.4.1 Strobe light

When the Tron SA20 PLB is activated the strobe light will start flashing steadily with approximately 20 flashes per minute.

The first emergency satellite signal (406 MHz) will be transmitted approximately 50 seconds after activation. These transmissions are indicated with triple flashes.

After approximately 4.5 minutes the first 121.5 MHz homing signal is transmitted.



3.4.2 Position (GPS) indicator

	 Position indicator
Waiting for position	 Triple flashes
Position achieved	 Steady flashes

3.4.3 RLS indicator (if enabled)

Confirmation that the distress signal has been detected and received.

	 RLS indicator
Waiting for RLS	 Triple flashes
RLS acknowledged	 Steady flashes
RLS disabled (PLB is not equipped with RLS protocol)	 No light

3.4.4 Test indicator

The test indicator is not active during normal activation of the Tron SA20.

3.5 Signal mirror

Your signal mirror with a sight hole is located in the PLB soft carrying case pocket. It can be used to signal for help several kilometers away.

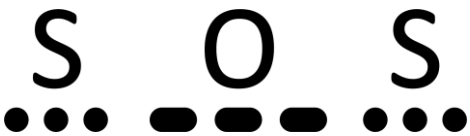
Instructions for use:

- Reflect the sunlight on the surface of your hand.
- Look at the reflected spot through the sight hole.
- Slowly tilt the mirror and move your hand to aim the reflected spot at your target.

3.6 Emergency whistle

Your emergency whistle is located on the neck band clip.

Use the SOS signal to call for help:



- 3 short blasts.
- 3 long blasts.
- 3 short blasts.
- Repeat after a short delay.

3.7 Self-test

Self-tests shall be performed regularly to verify that the Tron SA20 PLB is working correctly. Jotron recommends performing one self-test every month, and one extended self-test instead of the normal self-test every third month. Performing self-tests more often will affect battery life.

3.7.1 Normal self-test

- To start the self-test, press and hold the black test button for approximately 2 seconds until the test indicator lights up.

During the normal self-test, the main functionality of the Tron SA20 PLB is tested. A test signal is transmitted on both frequencies (121.5 MHz and 406 MHz). While transmitting the test signals the battery and the transmitted signals are tested. The test indicator will give a short dark period every time a signal is transmitted.

If the RLS protocol is enabled the blue RLS indicator light will light up for approximately 0.5 seconds.

The test indicator will light up with green light for 3 seconds if the self-test is successful.

If the self-test detects a fault in the PLB, the test indicator LED will start flashing red at the end of the test. For failure indication codes see the table in chapter 3.7.3.

Test sequence	Position indicator	RLS indicator	Test indicator
Self-test started	-	-	On
Signals transmitted	-	-	Two short off periods[2]
RLS enabled *	-	On for 0.5 seconds	-
Extended self-test successful	-	-	On for 3 seconds
If one of the above tests are unsuccessful, the remaining test sequences will not be performed, and the test indicator will indicate self-test failure.			
Self-test failure			Multiple red flashes**

*For PLBs with RLS disabled the RLS indicator will remain off.
**See table in chapter 3.7.3 for on failure indications.

[2] The LED is turned off for short periods, creating a blink effect (Negative blink, occulting blink)

3.7.2 Extended self-test

The extended self-test includes a GPS test in addition to the normal self-test.

To start the extended self-test press and hold the black test button for a minimum of 7 seconds. Keep holding until both the yellow test indicator and the green position indicator light up.

The green position indicator will flash in a sequence of 3 fast flashes. This indicates that the PLB is searching for a validated position.

When a valid position is found the green indicator LED will remain lit for approximately 2 seconds and a normal self-test will continue.

The test indicator will light up with green light for 3 seconds if the self-test is successful.

If the self-test detects a fault in the PLB, the test indicator LED will start flashing red at the end of the test. For failure indication codes see the table in chapter 3.7.3.

Note that the extended self-test can only be performed 60 times. After that the self-test will indicate “Maximum number of extended self-tests exceeded”.

Test sequence	Position indicator	RLS indicator	Test indicator
Extended self-test started	-	-	On
Waiting for position	Triple flashes	-	-
Position achieved	On for 2 seconds	-	-
Self-test started	-	-	On
Signals transmitted	-	-	Two short off periods
RLS enabled *	-	On for 0.5 seconds	-
Extended self-test successful	-	-	On for 3 seconds
If one of the above tests are unsuccessful, the remaining test sequences will not be performed, and the test indicator will indicate self-test failure.			
Self-test failure			Multiple red flashes**

*For PLBs with RLS disabled the RLS indicator will remain off.
**See table in chapter 3.7.3 for on failure indications.

3.7.3 Test failure indications

If a sequence in the self-test fails, the test indicator will flash a specific number of times, signalling the type of failure. Refer to the table below for a detailed description of these failure codes.

 Number of flashes	Failure indication
2	Battery failure
3	Transmitter failure
4	-
5	No position
6	-
7	Maximum number of extended self-tests exceeded
8	-
9	-
10	Incorrect programming

3.7.4 Test failure descriptions and corrective actions

3.7.4.1 Battery failure

This indicates that the battery capacity is too low, or another critical battery error has been detected. This failure code may also occur due to the battery's characteristics in cold temperatures. Wait until the battery reaches room temperature and try again. Make sure to hold the unit in your hand as described in chapter 3.7.1. If the test still fails, correct operation cannot be guaranteed, and you need to replace your PLB.

3.7.4.2 Transmitter failure

This indicates that the RF-signal transmitted from the Tron SA20 PLB is not good. This is most likely because the unit is not tested as described in chapter 3.7.1. Make sure to hold the unit in your hand as described and re-test. Contact your service partner if this does not help.

3.7.4.3 No position

The GPS receiver in the Tron SA20 PLB needs a free view of the sky to get a position within the time limit. Windows and canopies will also reduce the signals from the satellites. Make sure to hold the unit in your hand as described in chapter 3.7.1, and perform the test again in an open area with a free view to the sky. Contact your service partner if this does not help.

3.7.4.4 Maximum number of extended self-tests exceeded

To conserve battery capacity the extended self-test is limited to a total of 60 tests. After this the Tron SA20 PLB will continue to operate as normal in emergency mode and you can still perform normal self-tests. However, verification of the GPS receiver in the Tron SA20 PLB is no longer possible.

3.7.4.5 Incorrect programming

The programming of the PLB is not performed. Contact your dealer to solve this issue.

3.8 False alerts

If your PLB is activated in a non-distress situation, or a distress situation which has been resolved and you no longer require assistance, deactivate your PLB and call the number printed on the back side of your PLB, or your nearest SAR authority[3]. The figure above is meant for illustration purposes only. Always use the number stated on your PLB.

Provide them with the following information:

- PLB 15 hex ID. See chapter 4.4.
- Date, time, and position at time of activation. (Time zone)
- Date, time, and position at time of deactivation. (Time zone)
- PLB make and model.
- Circumstances/cause of activation (if known).

[3] In the U.S. use telephone 1-800-851-3051

The PLB shall only be used in emergency situations. Misuse may be subjected to a fine.

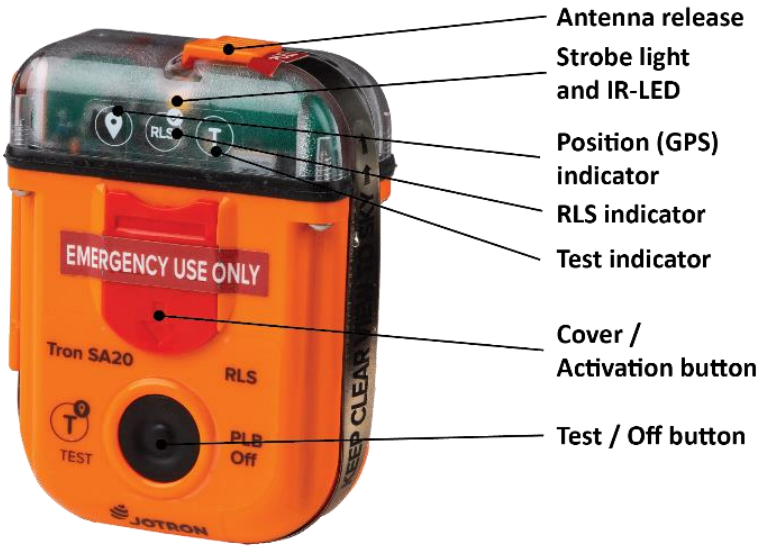
To prevent accidental activation, you must never remove the red protective cover other than in emergency situations.

Important! False alerts are a serious problem for the rescue service. 98% of the initiated distress alerts turn out to be false alarms.

4 Product description

The main purpose of the Tron SA20 PLB is to alarm the SAR authorities in a distress situation. When activated the PLB will transmit a signal, which includes the ID and the position of the PLB. The strobe light will start flashing in both visible and infrared light. See chapter 7.7 for more details on the Cospas-Sarsat system.

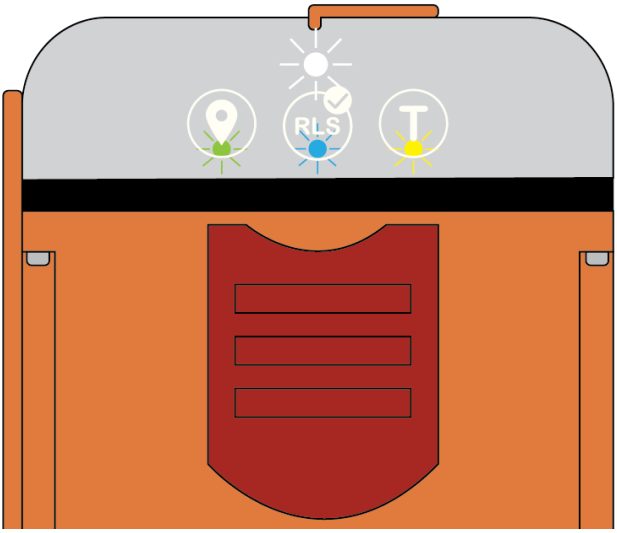
This PLB meets all regulations for Personal Locator Beacons. See the Declaration of Conformity document at jotron.com for information on applicable standards.



4.1 Controls

The Tron SA20 PLB is equipped with two buttons. A red activation button that is hidden behind a tamper proof cover, and a black button that is used to start self-tests and to turn the Tron SA20 PLB off after activation.

4.2 Indicator lights



The Tron SA20 PLB is equipped with a white strobe light and 3 colored LED indicator lights with associated icons. See the tables below for descriptions and possible statuses.

Indicator lights icons			
Icons			
Description	Position (GPS) (Green)	RLS (Blue)	Test (Yellow, green or red)

Note! The blue RLS indicator will only be active if the PLB has enabled the RLS protocol.

4.3 Infrared (IR) light

To enhance visibility for SAR teams using night vision goggles and systems, the PLB is equipped with an infrared (IR) light in addition to the visible strobe light. The IR light is located at the top of the PLB, next to the strobe light, and will start flashing automatically when the PLB is activated. The strobe light and the IR light will flash synchronously.

4.4 PLB ID information

The HEX ID and checksum can be found on the white label on the back side of the PLB. The HEX ID is the first 15 digits. The last 5 is the checksum.

On the top of the unit, you will find a label that shows the serial number and the battery expiry date.

4.5 Return Link Service (RLS)

This PLB has the capability to use the RLS feature, which is provided by the Galileo navigation satellite system.

The RLS feature is an indication that confirms to the user that the distress signal has been received and is being sent to the responsible search-and-rescue (SAR) authorities. It does NOT mean that a rescue has yet been organized/launched, only that the distress alert has been received and routed to the appropriate government agencies. See 7.8 for a more detailed description.

For more information about RLS see chapter 7.8

The text “RLS” will be shown on the front of the PLB if your PLB has the RLS function enabled.

The text will be blinded with an orange sticker if your PLB does not have the RLS function enabled.

5 Registration

5.1 Registration of the PLB

Your PLB must be registered before use. This allows the SAR authorities to retrieve information about you and your emergency contacts in an emergency. Which again enables them to contact you to determine if the distress signal from the PLB is a false alarm, and an expensive rescue operation can be avoided.

An info card with information on how to register the PLB in your country is for some countries provided in the box. The figure below shows an example of this card. It is meant for illustration only, and you should always follow the instructions on the card provided in your box.

You shall register your PLB with the national authority associated with the country code in the hexadecimal identification (15 Hex ID) of your PLB. If your country does not provide a registration facility, and has allowed direct registration, you can register your PLB online with the Cospas-Sarsat IBRD: www.406registration.com

For information about your country's registration requirements please consult the list of Beacon Registration Contacts on www.406registration.com

5.1.1 Registration in USA

For registration of the PLB in USA, use this link:

http://www.beaconregistration.noaa.gov

The preferred and easiest way to register is to use the web page. However, if this is not possible, a filled in registration form can be emailed to:

beacon.registration@noaa.gov

The registration form is available at the US beacon registration website.

The Emergency contact information must be accurate, especially the telephone number, as this will be used to validate the distress signal.

The SAR team will only launch an immediate rescue if the approximate location and PLB registration details can be confirmed. Otherwise, there will be a delay whilst further signals from the same source are received and verified.

5.2 Change of ownership

If the ownership of the PLB is transferred, the PLB must be re-registered on the new owner in accordance with national rules, and in some cases re-programmed. Contact your dealer if re-programming is required.

6 Testing and maintenance

To ensure reliability and to minimize the risk of false distress alerting it is important that your PLB is tested and maintained as described in this chapter. Keep your PLB clean and dirt-free and use a clean cloth for cleaning if necessary. Use the provided carrying case for storage and avoid storing the PLB at temperatures above normal room temperature.

Before use you should always check for visual defects and check the expiry date of the battery.

6.1 Occasional use

If you use the PLB occasionally, always perform a self-test before using it. If it has not been used for over three months, perform an extended self-test. If it has been between one and three months, a regular self-test is sufficient. Remember, do not perform self-tests more than once a month.

6.2 Daily or weekly use

If the unit is in use on a daily or weekly basis you should perform a normal self-test every month and perform an extended self-test instead of the normal self-test every third month.

6.3 Battery expiry date

The battery expiry date can be found on a label located on the transparent top of the PLB.

The Tron SA20 PLB is fitted with special lithium batteries that cannot be replaced. The PLB must be replaced when the battery has reached its expiry date.

Jotron recommends replacing the PLB if it has been activated.

7 Technical information

7.1 General

Tron SA20 PLB:	
PLB Class:	Class 2
- Operating temperature:	-20° C to 55° C (-4° F to 131° F)
- Stowage temperature:	-30° C to 70° C (-22° F to 158° F)
PLB Category:	Category 2 (see footnote 4)
PLB Group:	Group 1 - Includes 406 transmitter and 121.5 homing transmitter
IP rating	IP-x7 (max. depth 1 meter for 1 hour)
Housing material:	ABS, PC
Width:	65 mm
Depth:	30 mm
Height:	90 mm
Weight:	150 g
Compass safe distance:	0.3 m
Battery operating time:	More than 24 hours at -20° C

7.2 Strobe light

Infrared (IR) light	
Wavelength:	770-890 nm
Intensity:	More than 2.5 mW/sr
Flash rate:	21 flashes per minute

Visible light	
Color:	White
Intensity:	More than 0.75 cd
Flash rate:	21 flashes per minute

[4] The SA20 PLB will float but does not have sufficient buoyancy to meet the category 1 requirements. In Australia and New Zealand, the PLB is category 1.

7.3 Satellite signal transmitter

Satellite signal transmitter	
Frequency:	406.031 MHz
Output power:	5W
Protocols:	Standard Location, National Location, RLS Location
Modulation	Phase modulation
Data encoding	Bi Phase L
Short term stability	Less than $2x10^{-9}$
Medium term stability	Less than 10^{-9}
Residual noise:	Less than $3x10^{-9}$
Bit rate:	400 b/s
Antenna:	Omni directional

7.4 Position receiver

Navigation device	
Supported GNSS constellations:	GPS, GLONASS, Galileo
Antenna polarization:	PCB inverted-F antenna

7.5 Homing transmitter

Homing transmitter	
Frequency:	121.500 MHz
Output power:	Up to 100 mW
Modulation:	AM sweep tone Emissions designator: 3K20A3X
Stability:	10 ppm over temperature range
Antenna:	Omni directional

7.6 Battery information

Capacity:	6 V / 3.4 Ah
Lithium metal content:	Below 1 gram per cell
Approximate weight:	15 g per cell
Chemical system:	Lithium metal
Battery life:	11 years *

*) Exact date is printed on the battery expiry label. See chapter 0

7.6.1 Battery safety

Due to risk of fire or explosion the batteries shall not be short-circuited, recharged, punctured, incinerated, crushed, immersed, forcibly discharged or exposed to temperatures above the declared operating temperature range of the product. The batteries in this PLB are sealed units which are not hazardous when used according to the recommendations of the manufacturer. Under normal conditions of use, the batteries are hermetically sealed.

For information regarding the physical and chemical properties, the potential health and safety measures and the environmental effects of the battery used with this product, refer to the manufacturer's safety information documentation.

The safety information is available for download at:

http://jotron.com/product/tron-SA20-PLB

The product described in this manual is subject to follow special packing instructions and/or transportation regulations. See chapter 8.3.1 for details.

7.6.2 Handling and storage

Store in a cool, well-ventilated area.

Warning! If this PLB is kept above room temperature for prolonged periods of time the battery capacity will be degraded. The PLB should then be replaced earlier than the date stated on the battery expiry label. If not the stated 24-hour operating life of the PLB may be reduced. The effect is more pronounced as the temperature increases.

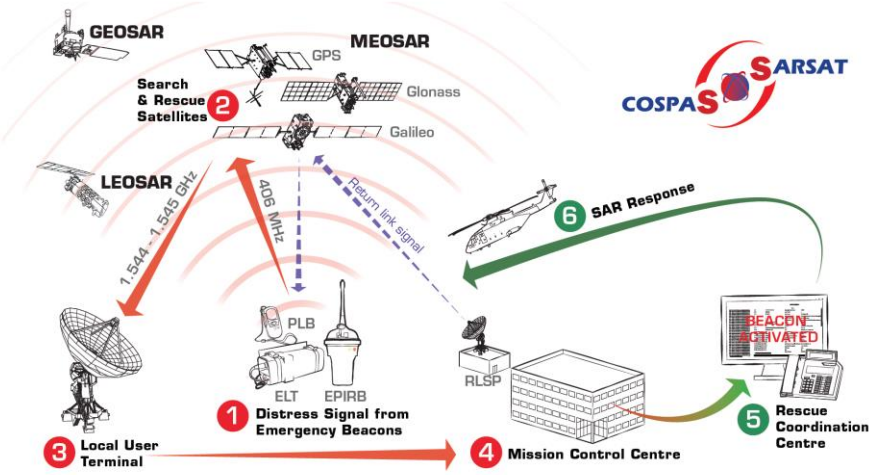
In locations that handle large quantities of lithium batteries, such as a warehouse, lithium batteries should be isolated from unnecessary combustibles.

Warning! The battery can explode or leak and cause burns if it is disassembled, charged, installed with reversed polarity, or exposed to water, fire, or high temperatures.

7.7 Cospas-Sarsat system

The Cospas-Sarsat system was created to detect and locate emergency beacons activated by aircrafts, ships, and people in remote areas.

The system was introduced in 1982 as a worldwide search and rescue system with the help of satellites covering the earth's surface. Since the introduction of the system tens of thousands of people have been rescued.



When the Tron SA20 PLB is activated (1), the satellites (2) will detect the transmitted signal and relay it to an antenna at a LUT (3). The signal will be routed from the LUT to an MCC (4). The MCC will then relay the signal to the appropriate rescue coordination center (5) that will organize the rescue operation (6).

The system consists of:

- Satellites in low-altitude earth orbit (LEOSAR), geostationary orbit (GEOSAR) and medium latitude earth orbit (MEOSAR), that process and/or relay signals transmitted by beacons.
- Local user terminals (LUT) that receives and processes the signals from the satellites.

- Mission control centers (MCC) that distributes the signals to the appropriate search and rescue authorities.

Each PLB must be programmed with its own unique code in the system for identification. It is important that the PLB is registered in the database for the applicable country. See chapter 5 for more details.

The LEOSAR system has good coverage worldwide, including polar regions, and calculates the location of an activated PLB using Doppler processing techniques.

The GEOSAR system has good coverage worldwide, except for polar regions and can identify an activated PLB within a very short time. The system cannot calculate the location of the PLB but can use the PLBs GPS receiver to provide a position.

The MEOSAR system provides very good coverage worldwide. The position is calculated using the time delay between when the signal is sent from the PLB to it is received by the satellites, and the distance between them.

For more information see: https://www.cospas-sarsat.int/en/

7.8 RLS system

This PLB sends a Return Link Service status together with the distress signal on 406 MHz when it is activated. When this message is received by the ground station, an acknowledge signal is returned to the PLB through the Galileo position system. This is shown in the figure in chapter 7.7. The PLB receives this acknowledge signal through its GPS receiver. In this way the user can be informed that the distress signal has been received and localized.

To enable the RLS feature the PLB needs to be configured with a Cospas-Sarsat RLS protocol. You can check your 15 HEX code on this webpage http://www.cospas-sarsat.int/en/pro and look for the link “Beacon Message Decode Program” to check if you have an RLS protocol coded in your PLB.

The RLS feature is designed to send an acknowledgment to the user in less than 30 minutes from PLB activation. Often within 5 minutes. Alerting of the distress to SAR authorities is independent of (and may occur before)

the RLS acknowledgment indication on the PLB. This specification is described in the Galileo SAR Service Definition Document:

https://www.gsc-europa.eu/sites/default/files/sites/all/files/Galileo-SAR-SDD.pdf

RLS is an optional function and may not be permitted in all countries or for all PLB types. You may visit the web page “Countries Allowing RLS Beacons” to learn the most recent information about national support for RLS:

https://cospas-sarsat.int/en/beacon-ownership/rls-enabled-beacon-purchase

7.9 121.5 MHz homing signal

The PLB transmits a sweep tone homing signal on 121.5 MHz that can be detected by overflying airplanes and the SAR vessels.

7.10 Position receiver (GPS)

Jotron PLBs have a built in Global Navigation Satellite Systems (GNSS) receiver capable of receiving position signals from GPS, GLONASS and Galileo satellite systems. The position is encoded by the message generator of the PLB and transmitted to the Cospas-Sarsat satellites. The GNSS position and the position calculated by the Cospas-Sarsat system itself will together give a precise indication of the actual position.

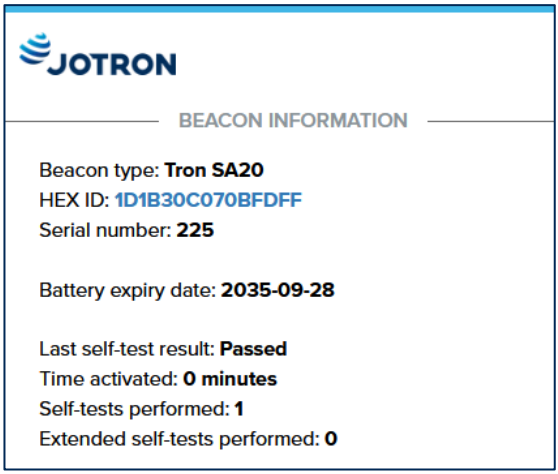
The position fix is updated approximately every 5 minutes and is reflected in the next transmission.

7.11 NFC

An NFC antenna is located at the bottom right corner of the PLB.

The user can scan it with a smartphone or a similar device; no app is needed. The NFC tag can be used to read the HEX ID, serial number and battery expiry date that has been programmed onto the PLB. In addition, information on number of self-tests that has been performed and the result of the latest test. If the last self-test was not successful, the failure code will show. Refer to chapter 3.7.4 for detailed information about the failure codes.

The information will appear like the following figure.



8 Spare parts, warranty and disposal

8.1 Accessories and spare parts

For an overview of the available spare parts for this product, refer to the product information page on jotron.com or contact your sales partner.

8.2 Counterfeit spare parts

Jotron is aware of extended counterfeit spare parts being marketed and sold to fit GMDSS safety products. It is of extreme importance that any spare parts being fitted to this product are original spare parts, manufactured or approved by Jotron. Any use of counterfeit spare parts will invalidate the product type-approval certificates and warranty will not apply.

8.3 Warranty

All Jotron products are warranted against factory defects in materials and/or workmanship during the warranty period.

Note that if the SA20 has been opened, the warranty will be considered null and void. For further details on the warranty terms and conditions, we refer to the sales agreement provided with your purchase.

Warning! Use of any counterfeit spare parts will invalidate your warranty and may compromise your safety.

For product support contact: support@jotron.com

Note! Keep the original packing material as it is required if the PLB is shipped for service. Special hazardous goods requirements apply for packaging and labelling when shipping batteries.

8.3.1 Transportation

The product described in this manual is subject to follow special packing instructions and/or transportation regulations. Information regarding these regulations (in accordance with ICAO/IATA, IMDG code and/or ADR/RID) is included in the product safety information (PSI) and/or in the test summary report (TSR) (in accordance with UN test 38.3.5) and available for download at jotron.com - product.

http://jotron.com/product/tron-SA20-plb/

8.4 Service

All services such as testing, installation, programming, replacement and marking are provided by an authorized Jotron service agent.

Improper service or maintenance may destroy the functionality and/or performance of this product.

Jotron does not accept any responsibility for the dismantling or reassembling of any Jotron product that occurs externally from a Jotron authorized facility and/or is handled by someone other than an authorized, training, and certified person. This can void the user's authority to operate the equipment.

8.4.1 Service agents

Refer to jotron.com for an overview of Jotron partners and distributors.

https://jotron.com/partners-and-distributors/

8.5 Disposal

To prevent false alarms, it is important that the battery is removed from the PLB when it has reached the end of its life.

All parts of the PLB should be disposed of in a way that is not harmful for the environment. It should not be disposed as normal waste and must be handled in accordance with the applicable federal, state, and local waste disposal regulations in the country where the equipment is used.

See jotron.com for updated instructions on disposal.

9 Abbrevations and definitions

ADR	Agreement concerning the International Carriage of Dangerous Goods by Road
COSPAS	COsmichskaya Sistyema Poiska Avariynich Sudov (Space System for the Search of Vessels in Distress)
GEOSAR	Geostationary Search and Rescue
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite Systems
GPS	Global Positioning System
IATA	International Air Transport Association
IBRD	International Beacon Registration Database
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
LED	Light Emitting Diode
LEOSAR	Low Earth Orbiting Search and Rescue
LUT	Local User Terminal (Ground Station)
MCC	Mission Control Centre
MEOSAR	Medium Earth Orbiting Search and Rescue
MHz	Megahertz
NFC	Near Field Communication
NOAA	National Oceanic and Atmospheric Administration (USA)
PLB	Personal Locator Beacon
RLS	Return Link Service
RID	Règlement International concernant le transport des marchandises Dangereuses par chemin de fer
SA	Safety Alert
SAR	Search and Rescue
SARSAT	Search and Rescue Satellite Aided Tracking System

10 Ammendment records

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