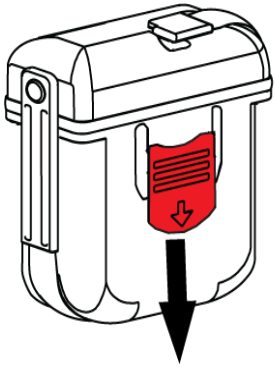
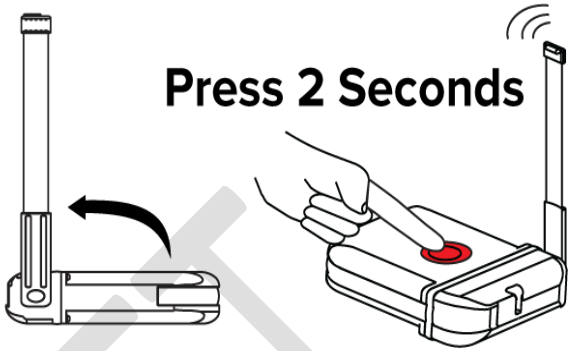
Tron SA20 PLB

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!

To maximize performance:

- Put the PLB down on a flat surface with the antenna pointing to 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 (ship construction etc.) that may limit the satellite coverage.
- Do not submerge the antenna.

Transmissions can be stopped by holding the black TEST / PLB off button for 4 seconds.

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2 General

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.

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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.

To maximize performance:

- 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 (ship construction etc.) that may limit the satellite coverage.
- Do not submerge the antenna.

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3.2 Deactivation

If the PLB has been accidentally activated or you need to deactivate it after use, press and hold the black Test / PLB off button for approximately 4 seconds. All three indicators will light up when the button is pressed. Keep pressing until all lights are turned off.

3.3 Indicator descriptions

The following tables describe the status of the different indicator lights when the Tron SA20 PLB is operating normally.

Indicator light descriptions		
Off	The LED is off	●
On	The LED is on	○
Triple flash	The LED flashes fast in sequences of 3 consecutive flashes	○○○ ○○○ ○○○
Steady flash	The LED flashes periodically with a long flash	○ ○ ○
Multiple short off periods	The LED is turned off for short periods, creating a blink effect. (Negative blink, occulting blink)	●●●●
Multiple flashes	The LED flashes multiple times	○○○

3.3.1 Strobe light

When the Tron SA20 PLB is activated the strobe light will start flashing steadily with approximately 21 flashes per minute.

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

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

	 Strobe light
PLB active	Steady flashes
406 MHz signal transmitted	Triple flashes

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3.3.2 Position indicator (GNSS)

	Position indicator
Waiting for position	Triple flashes
Position achieved	Steady flashes

3.3.3 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

3.3.4 Test indicator

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

3.4 Operating scenarios

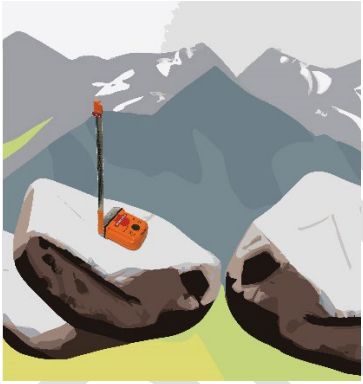
The Tron SA20 PLB is most effective when placed in a clear and if possible elevated area. Metal objects or people in the immediate vicinity of the PLB may distort the radiation pattern of the radio signal. It is therefore desirable to have the transmitting PLB a few meters clear of such objects.

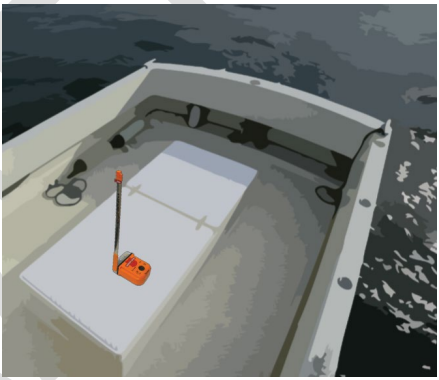
If possible, avoid operating the PLB inside an aircraft, vehicle, buildings, vessel cabin and other enclosed areas or under cover / canopy.

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.
- The PLB is waterproof to 10 meters for 5 minutes.
- 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.

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





3.5 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.

3.5.1 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 1 second.

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 module, the test indicator LED will start flashing red at the end of the test. For fault codes see the table in chapter 3.5.3.

A more detailed failure description can be read on the NFC tag.

Test sequence	Position indicator	RLS indicator	Test indicator
Self-test started	-	-	On
Signals transmitted	-	-	Two short off periods
RLS enabled *	-	On for 1 second	-
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 3.5.3 for on failure indications.

3.5.2 Extended self-test

The extended self-test includes a GNSS 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 GNSS indicator lights up.

The green GNSS 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 GNSS indicator LED will remain lit for approximately 1 second 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 module, the test indicator LED will start flashing red at the end of the test. For fault codes see the table in chapter 3.5.3.

A more detailed failure description can be read on the NFC tag.

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”.

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Test sequence	Position indicator	RLS indicator	Test indicator
Extended self-test started	-	-	On
Waiting for position	Triple flashes	-	-
Position achieved	On for 1 second	-	-
Self-test started	-	-	On
Signals transmitted	-	-	Two short off periods
RLS enabled *	-	On for 1 second	-
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 3.5.3 for on failure indications.

3.5.3 Test failure indications

If one of the sequences in the extended or normal self-test is unsuccessful the test indicator will flash the number of times described in the table below to indicate the occurred failure.

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	Wrong programming

3.5.4 Test failure descriptions and corrective actions

3.5.4.1 Battery failure

This indicates that the battery capacity is too low, or another critical battery error has been detected. Correct operation cannot be guaranteed anymore. Replace your PLB.

3.5.4.2 Transmitter failure

This indicates that the RF-signal transmitted from the Tron SA20 PLB is not good and is most probably because the antenna is too close to conductive material, like the bulkhead or railing, or you are holding your hand around the antenna. Place the Tron SA20 PLB in an open space (minimum 30 cm) and try again. Contact your service partner if this does not help.

3.5.4.3 No position

The GNSS 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. Place the PLB in a place with free space around (minimum 30 cm) and with a free view of the sky and try again. Contact your service partner if this does not help.

3.5.4.4 Maximum number of extended self-tests exceeded

The extended self-test uses a lot of current and is therefore 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-test. However, verification of the GNSS receiver in the Tron SA20 PLB is not possible until the battery is replaced. Contact your service partner for battery replacement.

3.5.4.5 Wrong programming

The programming of the PLB is not correct. Contact your service partner to solve this issue.

The PLB is delivered from the factory with a default programming that is not meant for costumer use. With the default factory programming the Tron SA20 PLB will give this failure indication during the self-test.

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3.6 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.

3.7 False alerts

Important! False alerts are a serious problem for the rescue service. Nearly 90% of the initiated distress alerts turn out to be false alarms.

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

Take the following precautions to prevent inadvertent activation:

- Keep the PLB away from strong magnetic fields.
- Do not remove the red protective cover when performing self-tests.

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 PLB, or your nearest SAR authority[1].

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).

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

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 of the ship in distress 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.

It has been developed to meet the regulations and rules for use on vessels and life rafts in the maritime service. 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.

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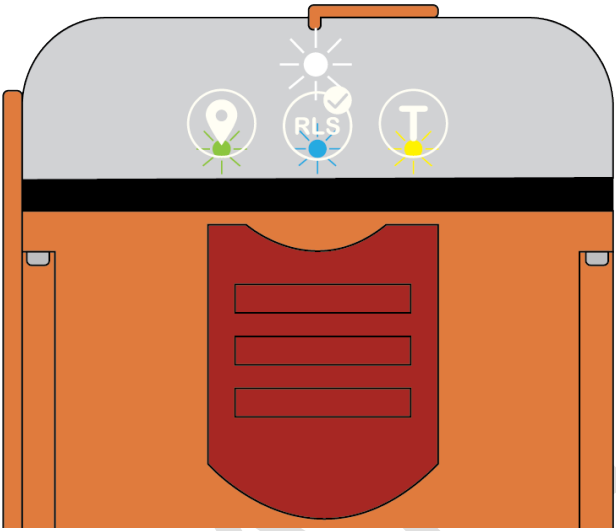
4.2 Indicator lights



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	GNSS (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 and battery expiry

Two labels with all the ID information shall be located on the back side of the PLB. The label containing information about the battery expiry date and PLB serial number is filled out from the factory. The other label showing the TAC number, and all the other ID information shall be created by the dealer or supplier and mounted as shown. It shall then be covered by the blank protection label included in the box.[2]

[2] The TAC number on the PLB can deviate from the number shown in the figure.

4.5 RLS information

This PLB has RLS capability. For more information about RLS see chapter 7.10

If the PLB has the RLS protocol enabled the text RLS will appear as shown in this figure.

If the PLB does not have the RLS protocol enabled the text RLS will be masked.

4.6 Return Link Service (RLS)

This PLB has the capability to use the RLS feature, which is available in 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 8.10 for a more detailed description.

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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.

You should 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.

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5.2 Change of ownership

If the ownership of the PLB is transferred, the PLB must be re-coded and re-registered on the new owner in accordance with local rules.

6 Testing and maintenance

To ensure reliability and to minimize the risk of false distress alerting it is important that the PLB must undergo testing and maintenance as described in this chapter.

6.1 Every month

- Perform self-test (see chapter 3.5.1)
- Visual inspection:
  - Check for defects on the PLB.
  - Check the expiry date of the battery. See chapter 6.3 for details.

Note! To reduce traffic on the emergency channels self-tests should be performed during the first 5 minutes of the hour.

6.2 Every 3 months

- Perform an extended self-test instead of the monthly normal self-test. See chapter 3.5.2.

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6.3 Battery expiry date

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

The Tron SA20 PLB is fitted with special lithium batteries, and it is not possible to replace the batteries. The PLB must be replaced when the battery expiry date has passed.

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 – Designed for use on land.
PLB Group:	Group 1 - Includes 406 transmitter and 121.5 homing transmitter
IP rating	IP-x7
Housing material:	ABS, PC
Width:	66 mm
Depth:	32 mm
Height:	89 mm
Weight:	150 g
Compass safe distance:	1 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

7.3 Cospas-Sarsat transmitter

Cospas-Sarsat 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 GNSS 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:	10 years *

*) Exact date is printed on the battery expiry label. See chapter 6.3

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.

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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 quoted 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.

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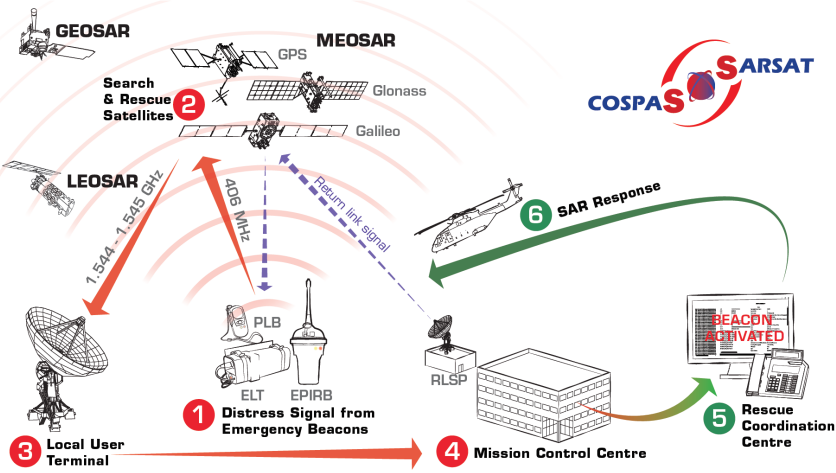
7.7 Cospas-Sarsat system

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 next passing satellite (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 to identify the ship in distress. 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 GNSS 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/

7.8 121.5 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.

7.9 Position receiver (GNSS)

Jotron PLBs have a built in 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 each 5 minutes and is reflected in the next transmission.

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7.10 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. The PLB receives this acknowledge signal through its GNSS module. 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. 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

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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.

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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.

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9 Abbrevations and definitions

COMSAR	Committee on Radiocommunications and Search and Rescue
COSPAS	COsmichskaya Sistyema Poiska Avariynich Sudov (Space System for the Search of Vessels in Distress)
PLB	Emergency Position Indicating Radio Beacon
GEOSAR	Geostationary Search and Rescue
GMDSS	Global Maritime Distress and Safety System
GNSS	Global Navigation Satellite Systems
IBRD	International Beacon Registration Database
IEC	International Electrotechnical Commission
IMO	International Maritime Organization
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
NOAA	National Oceanic and Atmospheric Administration (USA)
RCC	Rescue Coordination Centre
RLS	Return Link Service
SAR	Search and Rescue
SARSAT	Search and Rescue Satellite Aided Tracking System
SBM	Shore Based Maintenance
SOLAS	Safety of Life at Sea (An international maritime safety treaty)

10 Ammendment records

Rev	Date	Reason for Issue	Author
P01	13.03.23	Draft release	EJ
P02	05.07.23	New photos and template	EJ
P03	13.10.23	Updated according to C/S comments	EJ

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