Tron TR30 AIR

Emergency VHF AM radio

User manual

JOTRON

Performance for Life

Table of Contents

1 General 5
2 Product description 6
2.1 Product image 7
3 Functional description 9
3.1 Tron TR30 components 9
3.2 Antenna 10
3.3 Emergency battery 11
3.4 Test battery 12
3.5 Battery endurance 12
3.6 RH-30 holder 13
3.6.1 RH-30 holder components 14
4 Installation 15
4.1 Upon receipt of the radio 15
4.2 Mounting the RH-30 holder 16
5 Operation instructions 17
5.1 In an emergency 17
5.1.1 Replacing the emergency battery 19
5.2 Turning on the radio 20
5.3 Channel selection 20
5.4 Frequency 121.5 MHz button 20
5.5 Volume adjustment 21
5.6 Squelch adjustment 21
5.7 Key lock and unlock 22
5.8 Menus 23
6 Maintenance 26
6.1 Regular inspection 26
6.2 Regular testing 27
7 Test and maintenance records 29
8 Battery safety instructions 30
8.1 TR30 Emergency battery (orange) 30
8.2 TR30 Test battery (black) 30
8.3 Handling and storage 31

8.3.1 Transportation 31
9 Technical specifications 32
9.1 Product specification 32
9.2 Receiver 32
9.3 Transmitter: 32
10 Optional accessories 33
11 Spare parts 33
11.1 Counterfeit spare parts 33
12 Recycling and disposal 33
13 Warranty 33
14 Service 34
14.1 Service agents 34
15 Standards 35
16 List of figures 39
17 List of tables 39
18 Abbrevations 40
19 Emergency instructions 43

1 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 damage 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.

2 Product description

The Tron TR30 AIR is a ruggedly designed radio made for easy operation. It is a portable emergency VHF radio for two-way communication between vessel and aircraft. The radio is possible to operate using one hand, even when wearing gloves. The high contrast graphical display including integrated back lighting of the display and keys are very effective for visibility and usage in low light conditions.

It is also water, oil and sunlight resistant. This radio is compact in size with smooth edges to avoid damage to clothing or a raft.

The Tron TR30 AIR radio is waterproof down to 1 meter and floats in water, battery included. The radio is designed with a self-draining loudspeaker.

The Tron TR30 AIR radio includes the following components:

- Tron TR30 AIR radio
- TR30 Emergency battery (orange)
- TR30 Test battery (black)
- RH-30 battery holder
- Antenna
- Belt clip
- Wrist strap

2.1 Product image

Figure 1 Tron TR30 AIR radio

Figure 2 Tron TR30 AIR in the RCH-30 battery charger

3 Functional description

3.1 Tron TR30 components

An overview of the radio components.

Item no.	Item
1	Antenna
2	Volume, squelch and monitor control
3	Loudspeaker
4	Up arrow button
5	Down arrow button
6	Backlight button
7	Emergency mode indicator
8	Frequency indicator
9	Microphone
10	Squelch and signal strength indicator
11	Transmitter power indicator
12	Battery status indicator
13	Volume control indicator
14	Key lock/unlock button
15	Enter button
16	Channel 121.5 button (instant access)
17	PTT transmit button
18	Power button
19	Jack cover (external accessories connector)

Table 1 List of components – Tron TR30 AIR radio

3.2 Antenna

The antenna for the Tron TR30 AIR is fitted with a standard SMA connector.

Important! Ensure you are using the correct antenna. The antenna must be marked with “JOTRON TR30 AIR” along the side.

Figure 3 Illustration: Tron TR30 AIR Jotron approved antenna

Important! The Tron TR30 AIR is not waterproof when the standard antenna is not attached or if the antenna is not assembled correctly.

3.3 Emergency battery

The emergency battery (orange) is a lithium metal battery.

Figure 4 Tron TR30 Emergency battery (orange)

This battery is specially designed for use in an emergency and cannot be recharged. Keep the emergency battery in the RH-30 battery holder (battery storage bay).

Always bring a sealed emergency battery with the radio when boarding a lifeboat or life raft.

Warning! The emergency battery is a single use item. You must replace the battery before the first battery expiry date occurs and/or if the protective seal on the battery is broken.

3.4 Test battery

The test battery (black) is designed to use for test and training.

Note! Ensure you check the battery for damage prior to use.

3.5 Battery endurance

Below is a list of the operation times of the battery and usage.

Battery type	Hours of usage*	
	Standby time (-20°C)	Multi-usage**(-20°C)
TR30 Emergency battery	70 hours	>20 hours
TR30 Test battery	60 hours	>20 hours

*The hours indicated are based on 2 W (tested at -20°C).

** Multi-usage hours have been tested in accordance with 10:10:80 ratio (Send:Listen:Standby).

For more information refer to the ETS 225 standard.

3.6 RH-30 holder

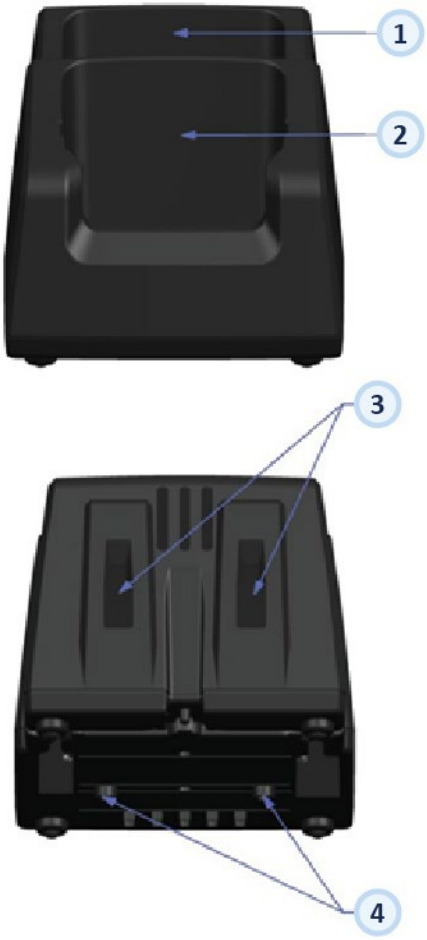
The RH-30 holder is without any electronics or charging capability. This holder has two storage bays, one to store a radio with or without an attached test battery and the second for storing an emergency battery.

Caution! It is recommended to keep the test battery attached to the radio and stored in the RH-30 holder when not in use. This will not drain the battery when the radio is turned off.

Figure 5 Tron TR30 AIR and emergency battery in storage bays

3.6.1 RH-30 holder components

An overview of the RCH-30 battery charger components.



Item no.	Item
1	Battery storage bay
2	Radio storage bay
3	Vertical mounting holes (36 mm spacing)
4	Horizontal mounting holes (43 mm spacing)

Figure 6 List of components - RH-30 battery holder

4 Installation

4.1 Upon receipt of the radio

Upon receipt of the radio, do the following:

1. Mount the RH-30 charger (refer to the RH-30 battery charger mounting section).
2. Connect the antenna to the radio.
   When assembling the antenna to the radio, ensure you hold it with two fingers at the base. Turn it clockwise. When the antenna starts to resist turning, turn it another ¼ turn (90 degrees).
   Holding the antenna anywhere but at the base during assembly will damage it.
3. Using the fixing track, attach the test battery onto the back of the Tron TR30 AIR radio.

Note! Do not force the battery. Ensure that you enter the bottom edge of the battery into the bottom edge of the radio.

4. Squeeze the black battery clips on either side of the battery to lock the battery into place.
5. Place both the radio and the emergency battery in RH-30 holder storage bays.

Important! The emergency seal sticker must not be removed from the battery unless an emergency occurs.

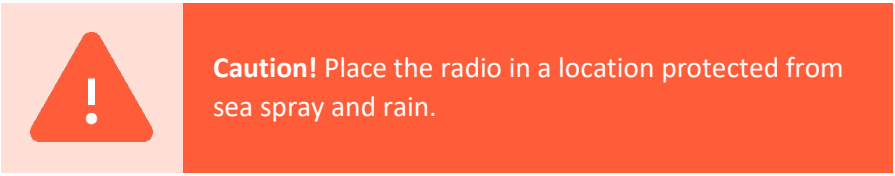
4.2 Mounting the RH-30 holder

The RH-30 holder can be securely mounted on a flat surface in one of two ways:

1. Horizontal mounting
2. Vertical mounting

To mount the RH-30 holder, do the following:

1. Use either the two horizontal or the two vertical mounting holes and screw the RH-30 holder to the desired surface.



Caution! Place the radio in a location protected from sea spray and rain.

5 Operation instructions

The Tron TR30 AIR shall only be used with a Jotron emergency or test battery. The emergency battery is only for use in an emergency. Use only a test battery for testing or training.

Caution! Ensure that the antenna and jack cover are assembled correctly, if not the radio is not waterproof.

5.1 In an emergency

Important! The emergency battery should only be installed on the Tron TR30 AIR radio in the event of an emergency.

To install the emergency battery on the Tron TR30 AIR radio, do the following:

1. Pull back and remove the emergency seal sticker on the battery. Peel the sticker off at the edge.

2. Use the fixing track to attach the emergency battery onto the back of the Tron TR30 AIR radio.

Note! Do not force the battery. Ensure the bottom edge of the battery is entered into the bottom edge of the radio.

3. Squeeze in the black battery clips on either side of the battery to lock the battery into place.

4. Press and hold the power button for approximately 3 seconds to turn the radio on.

5. Push the PTT button to transmit.

5.1.1 Replacing the emergency battery

If the emergency battery has expired or the battery has been used, it must be replaced with a new one. The emergency seal sticker must not be removed as only a sealed battery can be used in the case of an emergency. A new emergency battery and the radio should always be stored together.

5.2 Turning on the radio

Press and hold the power button for approximately 3 seconds to turn the radio on.

The radio loads the following settings:
Frequency 121.5 MHz, High volume and Low squelch.

5.3 Channel selection

Press the up or down arrow buttons to change the channel.

5.4 Frequency 121.5 MHz button

Press the 121.5 button to jump directly to the 121.5 MHz emergency frequency.

5.5 Volume adjustment

Turn the volume control clockwise to increase and anticlockwise to reduce the volume.

The volume symbol in the display indicates the volume level. Ensure that you do not press down the volume control while adjusting the volume.

5.6 Squelch adjustment

The squelch bar appears on the screen display indicating the current active sensitivity level. When the bar is adjusted fully to the left, the squelch is completely open. Adjusting the bar to the right lowers the receiver sensitivity. The signal strength of the current channel appears on the bar below the squelch bar. If the received signal is strong enough, the squelch opens and voice is received. This is indicated by the Rx symbol. When the squelch control is pressed twice, it opens the squelch immediately. Press twice to recall the previous squelch setting.

Press and turn the squelch control anticlockwise to increase receiver sensitivity.

When the receiver signal is too distorted (by radio noise) to be readable, the loudspeaker or speaker mic is automatically muted. This is indicated by the Noise Cancel (NC) symbol that appears in the display.

5.7 Key lock and unlock

Press and hold the key lock/unlock button for 2 seconds to lock or unlock the buttons on the front.

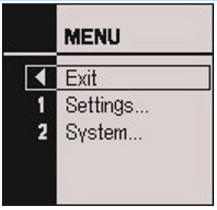
A key symbol appears when the radio is locked. PTT, instant access 121.5 MHz, volume and squelch are still available when the radio is locked.

5.8 Menus

1. Press the up and down arrow buttons at the same time to enter or exit the menu system.

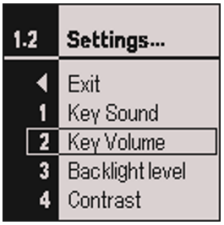
2. Use the up or down arrow buttons to navigate and use Enter to select.

Menus:

Exit:	**Display screen:**
Use this menu option to exit the menu system.	

Settings:	**Display screen:**
Use this menu option to adjust the following settings: • Key sound • Key volume • Backlight level • Contrast	

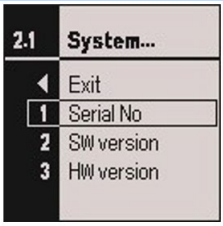
Key Sound:	**Display screen:**
Use this menu option to choose between four different tones. Using the arrow keys, select from 1–4.	

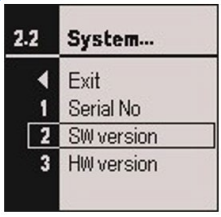
Key Volume:	**Display screen:**
Use this menu option to set the volume of the key sound. (Off=0, low to high= 1–6).	

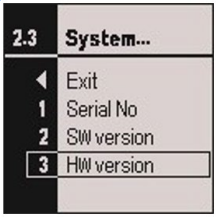
Backlight level:	**Display screen:**
Use this menu option to set the display backlight level. (Off=0, low=1 or high=2).	

Contrast:	**Display screen:**
Use this menu option to set the display contrast level. (Low=1, medium=3 or high=3).	

System:	Display screen:
Use this menu option to access the following information: • Serial number • SW version • HW version	

Serial number:	Display screen:
Use this menu option to find the serial number of the radio.	

SW version:	Display screen:
Use this menu option to find the software version of the radio.	

HW version:	Display screen:
Use this menu option to find the hardware version of the radio.	

6 Maintenance

The following maintenance should be completed.

Caution! This radio must never be disassembled. Unauthorized disassembly will void your warranty.

If the radio is immersed in seawater, rinse it promptly with fresh water. Wash away dirt and oil from the radio using warm water (no higher than 45°C) and mild dish soap. Finish by rinsing with fresh water and drying.

6.1 Regular inspection

The lifetime of any equipment depends on how well you take care of it. The Tron TR30 AIR radio is constructed to endure in rough maritime environments. Regular inspection is important to detect symptoms of error and prevent potentially serious problems.

To inspect, do the following:

1. Inspect the battery connection pins, the gasket and the lock/release mechanism.
2. Inspect the housing for defects regularly. Defects can affect water sealing.
3. Verify that the antenna and jack cover are assembled correctly. If not, the radio will not be waterproof.

6.2 Regular testing

It is important to perform regular testing of equipment to ensure proper operation. This also ensures the radio is in good working order and therefore, ready for use in a potential emergency.

Important! Ensure you have a test battery available for use during testing to avoid using a sealed lithium battery. Testing should occur according to the requirements indicated in the onboard radio log.

To test, do the following:

1. Use the test battery.
2. Turn the radio on and choose the 123.1 MHz channel. If you are using test equipment connected through the antenna connector, 121.5 MHz can be used.
3. Verify sending a transmission to another radio.
4. Verify receiving a transmission from another radio.
5. Turn off the radio.
6. If the antenna was off during testing, attach the antenna now.
7. Verify that the emergency battery is still valid.

Important! The expiry date is located on the top of the battery.

8. Verify that the emergency battery is still sealed.

Important! If the seal on the emergency battery is broken, replace the battery immediately.

7 Test and maintenance records

Below is an overview of all test and control details.

Date	B/N/T*	Signature	Inspector name

*B=New battery, N=New Tron TR30 AIR radio, T=Test

8 Battery safety instructions

8.1 TR30 Emergency battery (orange)

Type:	Primary lithium metal
Lithium metal content:	Below 1 gram lithium pr battery cell
Approximate weight:	100 grams
Chemical system:	Lithium iron disulfide
Designated for recharge:	No

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 jotron.com - product. https://jotron.com/product/tron-tr30-air-emergency-vhf-am-radio/.

8.2 TR30 Test battery (black)

Type:	Primary lithium metal
Lithium metal content:	Below 1 gram lithium pr battery cell
Approximate weight:	100 grams
Chemical system:	Lithium iron disulfide
Designated for recharge:	No

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 jotron.com - product. https://jotron.com/product/tron-tr30-air-emergency-vhf-am-radio/.

8.3 Handling and storage

This product should be stored in a cool and well-ventilated area. Elevated temperatures can result in a reduction of battery life. Locations that handle large quantities of lithium batteries must ensure the batteries are isolated from combustibles. A short circuit for a few seconds will not seriously affect the battery. A prolonged short circuit will cause the battery to lose energy, generate significant heat and can cause the safety release vent to open. The contents of an open battery, including a vented battery, when exposed to water, may result in a fire and/or explosion. Crushed or damaged batteries may result in a fire. A battery that is disassembled or exposed to water, fire or high temperatures can explode or leak causing burns.

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.
https://jotron.com/product/tron-tr30-air-emergency-vhf-am-radio/.

9 Technical specifications

9.1 Product specification

Battery type:	Lithium iron disulfide
Full buoyancy:	Yes
Unit dimensions (W/H/D):	61 mm x 157 mm x 40 mm (dept with belt clip: 47 mm)
Weight:	Approximately 300 g (incl. battery)
Temperature operating:	-20°C to +55°C (-4°F to +131°F)

9.2 Receiver

Frequency range, 2 channels:	121.5 MHz & 123.1 MHz
Modulation:	AM
Channel spacing:	25 kHz
Maximum usable sensitivity:	< 2 µV for 12 dB SINAD (Typ. 1 µV)
Adjacent channel rejection:	> 70 dB
Spurious response:	> 70 dB
Harmonic distortion:	< 5% (Typ. 2%)
Internal speaker output:	> 200 mW (Type. 350 mW)
Speaker mic output power:	15 mW (8 Ω)

9.3 Transmitter:

Frequency range, 2 channels:	121.5 MHz & 123.1 MHz
Channel spacing:	25 kHz
Transmitter output power:	0.25 W (DC), PEP<1 W
Modulation AM:	> 70%
Harmonics and spurious:	< 0.25 µV
Frequency error:	< +/-500 Hz

10 Optional accessories

For an overview of the available optional accessories for this product, refer to jotron.com.

11 Spare parts

For an overview of the available spare parts for this product, refer to jotron.com.

11.1 Counterfeit spare parts

Ensure that all spare parts being fitted to this product are only original spare parts manufactured or approved by Jotron.

Any use counterfeit parts will invalidate the product type-approval certificate.

12 Recycling and disposal

This product 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.

13 Warranty

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

Refer to the sales terms and conditions for specific warranty information regarding this product.

14 Service

All services such as testing, installation, programming, replacement, marking, and battery exchange 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.

14.1 Service agents

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

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

15 Standards

Jotron declares that this radio is compliant with Radio Equipment Directive 2014/53/EU.

A copy of the declaration of conformity can be downloaded from jotron.com.

The Tron TR30 AIR has been verified, tested and meets the following product standards:

EN/IEC 60945:2002 including Corr.1 (Category – Portable)	Maritime navigation and radio communication equipment and systems - General requirements - Methods of testing and required test results
ETSI EN 301 688 V1.2.1	Technical characteristics and methods of measurement for fixed and portable VHF equipment operating on 121,5 MHz and 123,1 MHz.
ETSI EN 301 489-22	Electromagnetic compatibility and Radio spectrum Matters (ERM); Electromagnetic Compatibility (EMC) standard for radio equipment and services. Part 22: Specific conditions for ground-based VHF aeronautical mobile and fixed radio equipment.
47 CFR 2: Mar. 2019	Electronic Code of Federal Regulations, Title 47, Telecommunications.
47 CFR 80 to End: Mar. 2019	Electronic Code of Federal Regulations, Title 47, Telecommunications.
47 CFR 2. 87	Aviation Services
47 CFR 2. 1093	Radiofrequency radiation exposure evaluation: portable devices.

	Part 2 - Frequency allocations and radio treaty matters; general rules and regulations
IEC 60529:1989	Degrees of protection provided by enclosures (IP Code).
IEC 62368-1:2018	Audio/video, information and communication technology equipment - Part 1: Safety requirements.
IEEE 1528 (2013)	Recommended Practice for Determining the Peak Spatial- Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
ANSI/IEEE Std. C95.1 (1999)	Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz
EN 50566:2017	Product standard to demonstrate the compliance of wireless communication devices with the basic restrictions and exposure limit values related to human exposure to electromagnetic fields in the frequency range from 30 MHz to 6 GHz: hand-held and body mounted.
EN/IEC 62209-1:2016	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Part 1: Devices used next to

	the ear (Frequency range of 300 MHz to 6 GHz).
EN/IEC 62209-2 Ed.1(2010)	Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz).
RSS-102 Issue 5 Safety Code (2015)	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

Table 2 GMDSS emergency mode - product standards

This device complies with the provision of part 80 of the FCC rules. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Note! Tron TR30 AIR is compliant for localized Specific Absorption Rate (SAR) for uncontrolled environment/general population limits as specified in ANSI/IEEE Std. C95.1-1999.

Important! Regulations for the use of VHF radios vary from country to country. Check the national radio requirements for VHF radio operators and ensure this radio conforms to all the local regulations prior to use. The channel frequencies listed in this manual reflect only as they are available and displayed on the radio.

The following instructions are in accordance with national and international regulations regarding obligations of any radio operator:

STCW 95 including the STCW code (including relevant regulation regarding watch keeping on board passenger and cargo ships)	The radio log shall be kept in accordance with requirements in the Radio Regulation, SOLAS Convention, national requirements regarding radio installations and the STCW Convention.
STCW Code BVIII/2 No. 32	Unauthorized transmissions and incidents harmful interference should, if possible, be identified, recorded in the radio log and brought to the attention of the Administration in compliance with the Radio Regulations, together with an appropriate extract from the radio log.

Table 3 National and international radio operator obligation regulations

16 List of figures

Figure 1 Tron TR30 AIR radio 7
Figure 2 Tron TR30 AIR in the RCH-30 battery charger 8
Figure 3 Illustration: Tron TR30 AIR Jotron approved antenna 10
Figure 4 Tron TR30 Emergency battery (orange) 11
Figure 5 Tron TR30 AIR and emergency battery in storage bays 13
Figure 6 List of components - RH-30 battery holder 14
Figure 7 Emergency instructions overview 43

17 List of tables

Table 1 List of components – Tron TR30 AIR radio 9
Table 2 GMDSS emergency mode - product standards 37
Table 3 National and international radio operator obligation regulations.. 38

18 Abbrevations

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AM	Amplitude Modulation
ANSI	American National Standards Institute
CE	European Commission
CFR	The Code of Federal Regulations
EMC	Electromagnetic compatibility
EN	European standards
ERM	Electromagnetic compatibility and Radio spectrum matters
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standards Institute
FCC	Federal Communications Commission
GHz	Gigahertz
GMDSS	Global Maritime Distress and Safety System
HW	Hardware
IATA	International Air Transport Association
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IMDG	International Maritime Dangerous Goods Code
IP code	International Protection Marking code
kHz	Kilohertz
MHz	Megahertz
NC	Noise cancelling
PEP	Peak Envelope Power
PTT	Push to talk
RF	Radio Frequency
RID	Reglement concernant le transport International ferroviare des merchandises Dangereuses par chemin de fer (Transportation of Dangerous Goods by Train)

RSS	Radio Standards Specification
SAR	Specific Absorption Rate
SINAD	Signal-to-Noise and Distortion ratio
SMA	Subminiature version A connector
SOLAS	Safety of Life at Sea
STCW	Standards of training, certification and watchkeeping for seafarers
SW	Software
VHF	Very High Frequency

Document revision log				
C	09.03.26	Updated to latest company profile. Updated addresses on back cover. Minor typo fixes.	KTH	JES
B	13.12.21	Updated content, revised text structure in a new documentation design and layout in accordance with new company profile.	WB	N/A
A	09.05.19	First version of the manual.	ØB	N/A
Rev	**Date**	**Reason for Issue**	**Author**	**Checked**

19 Emergency instructions

This is an overview of how to operate a Tron TR30 AIR radio during an emergency.

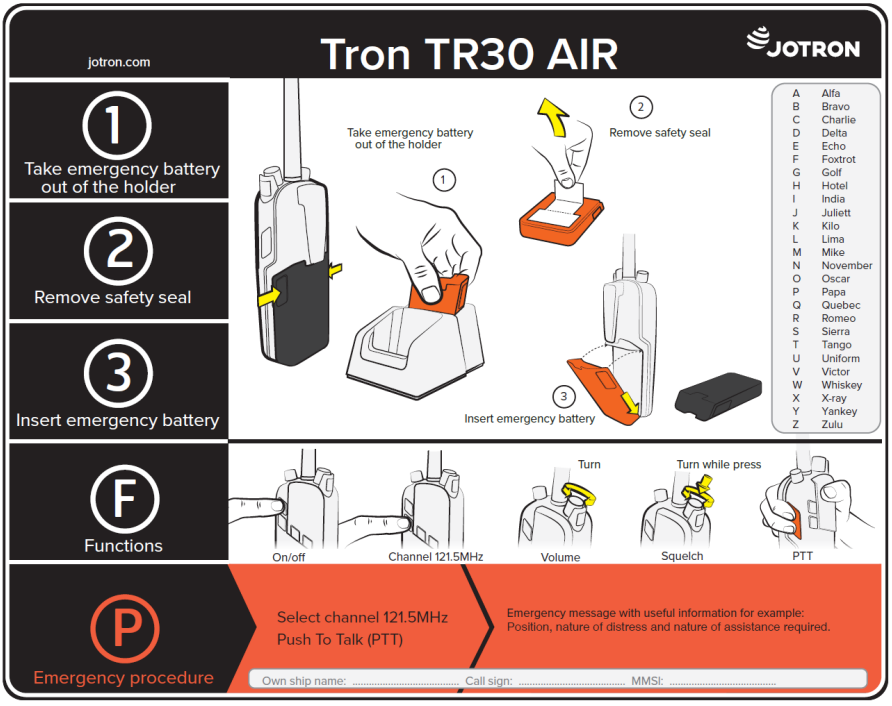


Figure 7 Emergency instructions overview

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