Tron TR30

GMDSS and maritime VHF radio

User manual

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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 is a ruggedly designed radio made for easy operation. It is a portable survival craft two-way VHF radio which 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 highly visible orange housing is made from glass reinforced polycarbonate.

The Tron TR30 GMDSS (emergency mode) 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 (GMDSS - emergency mode) radio includes the following components:

- Tron TR30 radio
- TR30 Emergency battery (orange)
- Antenna
- Belt clip
- Wrist strap

The Tron TR30 GMDSS Maritime VHF radio (regular mode) includes the following components:

- Tron TR30 radio
- TR30 Emergency battery (orange)
- TR30 Rechargeable battery (black)
- RCH-30 battery charger
- Antenna
- Belt clip
- Wrist strap

2.1 Product image

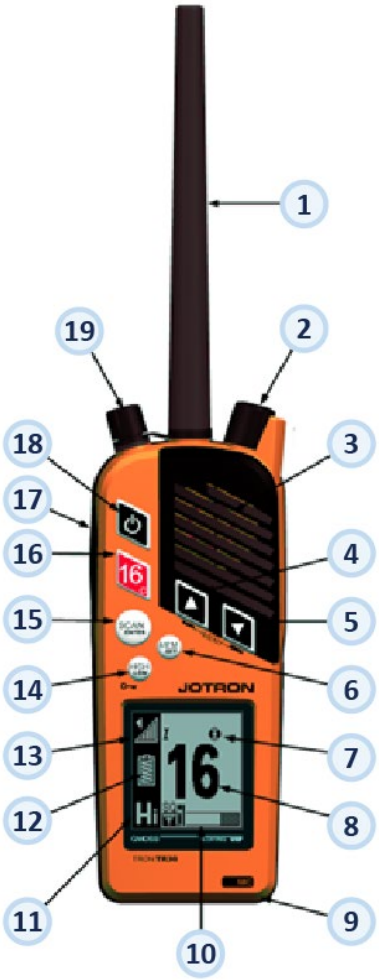
Figure 1 Tron TR30 radio

Figure 2 Tron TR30 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	Mem Set (memory button)
7	Emergency mode indicator
8	Channel designator
9	Microphone
10	Squelch and signal strength indicator
11	Transmitter power indicator (Hi/medium/low)
12	Battery status indicator
13	Volume control indicator
14	Transmitter power adjustment
15	Scan/Enter button
16	Channel 16/Call channel button (instant access)
17	PTT Transmit button
18	Power button
19	Jack cover (external accessories connector)

Table 1 List of components – Tron TR30 radio

3.2 Antenna

The antenna for the Tron TR30 is fitted with a standard SMA connector. You can also connect a remote antenna for a fixed application.

Important! The Tron TR30 unit 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 3 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 RCH-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.

3.3.1 Battery labelling

According to IMO MSC. 515(105), implemented in the 2024 version of SOLAS, the battery label must indicate:

1. Replace the battery if the date has expired, or the seal is broken.
2. Battery expiry date information. Please note that it is the earliest expiry date which decide when to replace the emergency battery, refer to section 8.2.

3.4 Rechargeable battery

The Tron TR30 can also be delivered with a rechargeable lithium polymer battery (black). When using the rechargeable battery, additional functionality intended for regular radio usage is enabled. This battery can be recharged either while attached to the radio or while standing alone in the RCH-30 battery charger.

Ensure you check the battery for damage prior to use.

This battery must be charged prior to use. Charge a discharged battery within 1 week, as the life of a battery diminishes greatly when stored in a discharged state.

Always use the Jotron RCH-30 battery charger to recharge this battery.

3.5 Battery endurance

Below is a list of the battery's operation times and usage. To maximize the operational time of the battery, use medium or low power when possible.

Battery type	Hours of usage*	
	Standby time (-20°C)	Multi-usage**(-20°C)
Emergency battery	70 hours	12 hours
Rechargeable battery	50 hours	12 hours

*The hours indicated are based on 2 W (tested at -20°C).
** Emergency battery multi-usage hours have been tested in accordance with 10:10:80 ratio (Send:Listen:Standby).
** Rechargeable battery multi-usage hours have been tested in accordance with 5:5:90 ratio (Send:Listen:Standby).
For more information, refer to the ETS 33 225 standard.

3.6 RCH-30 battery charger

The RCH-30 battery charger can charge either a single rechargeable battery or a Tron TR30 with a rechargeable battery. In addition, this charger has one extra battery storage bay for storing an emergency battery.

The charger will not charge a battery if the battery temperature is below 0°C or above 40°C. However, charging will automatically occur when the temperature is within the correct range.

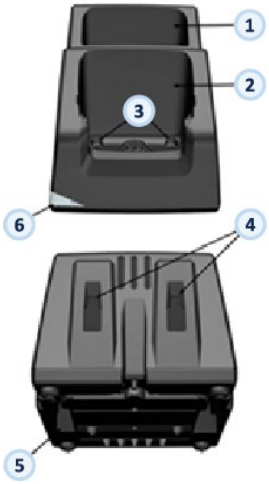
Figure 4 RCH-30 battery charger - side view and top view

Figure 5 Tron TR30 radio in the charging bay

Figure 6 Emergency battery in the storage bay

3.6.1 RCH-30 battery charger components

An overview of the RCH-30 battery charger components.

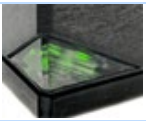


Item no.	Item
1	Battery storage bay
2	Battery charger bay
3	Vertical mounting holes (36mm spacing)
4	Horizontal mounting holes (43mm spacing)
5	Power input
6	LED indicator

Table 2 List of components - RCH-30 battery charger

3.6.2 LED indicator

The LED indicator on the RCH-30 battery charger displays the current battery status.

Indicator colour:	Status:	Colour:
Green*	The battery is fully charged	
Yellow	The battery is charging	
Red	There is a fault with charging	

** A green light combined with a yellow blinking light also indicates the battery is fully charged.*

4 Installation

Since the Tron TR30 can be supplied either as a GMDSS radio or as both a GMDSS and Maritime VHF radio, and each radio uses a different battery, ensure the batteries are installed appropriately.

Follow the applicable installation process based on the type of battery you are using: emergency, rechargeable, or test battery.

4.1 Upon receipt of the radio

Upon receipt of the radio, do the following:

1. Mount the RCH-30 battery charger (refer to the RCH-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. Use the fixing track to attach the test battery onto the back of the Tron TR30 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.

4.2 Mounting the RCH-30 battery charger

The RCH-30 battery charger can be securely mounted on a flat surface in one of two ways:

- Horizontal mounting
- Vertical mounting

The battery charger is not waterproof and therefore must be protected from elements.

To mount the RCH-30 battery charger, use either the two horizontal or the two vertical mounting holes and screw the RCH-30 battery charger to the desired surface in an easily accessible area. For an overview of the component placement, including mounting hole locations, see section 4.6.1.

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

4.3 Installing the rechargeable battery

To install the rechargeable battery on the Tron TR30 (Maritime VHF) radio, do the following:

1. Use the fixing track to attach the rechargeable battery onto the back of the Tron TR30 radio.
2. Squeeze in the black battery clips on either side of the battery to lock the battery into place.
3. Insert the wall adapter cable into the power input located on the underside of the charger.
4. Plug in the wall adapter.
5. Insert the radio into the RCH-30 battery charger.
6. Ensure the radio is sitting properly in the RCH-30 battery charger. Do not force the radio into position in the charging bay.

4.4 Changing the rechargeable battery

Note! Changing the battery should be done in a dry environment or under shelter.

To change the rechargeable battery on the Tron TR30 (Maritime VHF) radio, do the following:

1. Press the power button to turn off the radio.
2. Squeeze in the black battery clips to release the battery.
3. Gently pull the top of the battery backwards and away from the radio.
4. Put the lower end of the new battery into the fixing track at the bottom of the radio.
5. Make sure the black battery clips are both fully engaged.

5 Operation instructions (GMDSS radio)

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

5.1 In an emergency

To install the emergency battery on the Tron TR30 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 (GMDSS) battery onto the back of the Tron TR30 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.

5.1.1 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. The battery and radio should always be stored together.

5.2 Emergency mode

When the emergency battery is connected, the radio automatically starts in the emergency mode. Only basic functionality is available to the user in this mode. This battery is for use in an emergency.

The radio loads the following settings: Channel 16, Max power level (2 W), High volume and Low squelch.

To use the radio in emergency mode, do the following:

1. Install the emergency battery.
2. Press and hold the power button for approximately 3 seconds to turn the radio on.

A circle (lifebuoy ring) appears in the top right corner of the display, indicating it is in emergency mode.

5.3 Channel selection

To change the channel, press or press and hold the up or down arrow buttons.

When an emergency battery is connected, only GMDSS channels are available.

For information regarding available and active VHF marine radio channels and frequencies, please check your local channel plan.

5.4 Channel 16 button

To jump directly to channel 16, press the **16** button to jump.

The transmit power will always be set to Hi power when using the channel 16 button.

5.5 Volume adjustment

To adjust the volume, turn the volume control.

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.

To increase receiver sensitivity, press and turn the squelch control anticlockwise.

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 **High/Low** button for 2 seconds to lock or unlock the buttons on the front.

A key symbol appears when the radio is locked. PTT, Channel 16, volume and squelch are still available when the radio is locked.

5.8 Watch

When the radio is in emergency mode, it can only check for signals or watch in one way; Dual watch (DW).

DW listens to the active channel and channel 16. The radio will continue to watch channel 16 while receiving on the other channels.

When PTT is pressed, the radio will transmit on the active channel. In addition, the watch function will be deactivated.

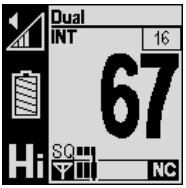
5.8.1 Dual watch (DW)

The DW function allows the user to monitor channel 16 and the active channel in alternation.

To activate or deactivate DW, do the following:

1. Press **Scan** to activate dual watch.

2. Press the up and down buttons to watch a second channel.



3. Press **Scan** a second time to deactivate dual watch.

5.9 Menus

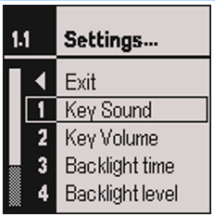
1. Press the up and down arrow buttons at the same time to enter or exit the menu system.

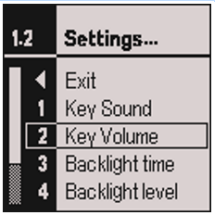
2. Use the up and down arrow buttons to navigate and select using **Scan/Enter**.

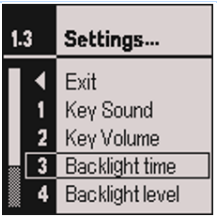
Menus:

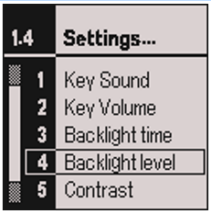
Exit:	**Display screen:**
Use this menu option to exit the menu system	

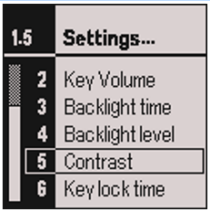
Settings:	**Display screen:**
Use this menu option to adjust the following settings: • Key sound • Key volume • Backlight time • Backlight level • Contrast • Key lock time	

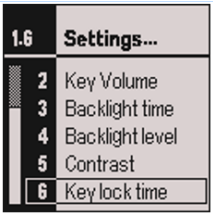
Key Sound:	**Display screen:**
Use this menu option to choose between four different tones. Use the arrow keys to select from 1–4.	

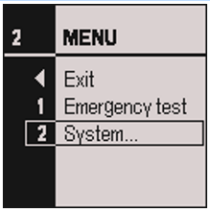
Key Volume:	**Display screen:**
Use this menu option to set the volume of the key sound. (Off=0, low to high=1–6).	

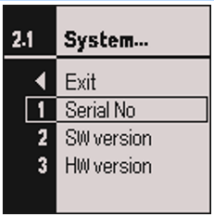
Backlight time:	**Display screen:**
Use this menu option to adjust how long the backlight stays on (1-10 seconds). The backlight will go off automatically.	

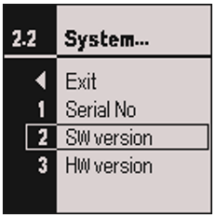
Backlight level:	**Display screen:**
Use this menu option to set the display backlight level. (Off=0, low=1 or high=2).	

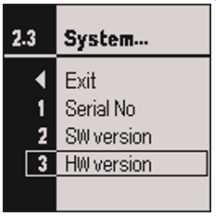
Contrast:	**Display screen:**
Use this menu option to set the display contrast level. (Low=1, medium=3 or high=3).	

Key lock time:	**Display screen:**
Use this menu option to set the time before the key lock automatically turns on. This can be adjusted from 5–60 (in increments of five seconds). (0=keylock time turned off).	

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 Operation instructions (Maritime VHF radio)

6.1 Regular radio mode

When the rechargeable battery is connected, additional functionality is available. All VHF channels are available with triple watch and custom channel scan. In addition, three transmit power levels are available.

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

The radio loads settings based on the previous usage.

6.2 Channel selection

To change the channel, press or press and hold the up and down arrow buttons.

When a rechargeable battery is connected, all VHF maritime channels are available.

For information regarding available and active VHF marine radio channels and frequencies, please check your local channel plan.

6.3 Channel 16 button

Press the **16** button to jump directly to channel 16.

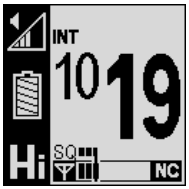
The transmit power will always be set to Hi power when using the channel 16 button.

6.4 Channel display

When the radio is in the regular VHF mode, there are 3 new channel lists available, which contain the new 4-digit channels:

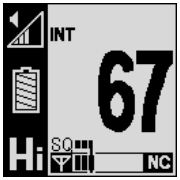
6.4.1 4-digit channel view

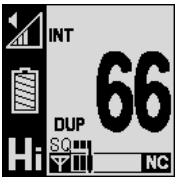
The new 4-digit channels will be displayed as shown below.



6.4.2 2-digit channel view

The normal 2-digit channels will be displayed as shown below.





The signal strength of the selected channel appears on the signal strength bar.

6.5 Call channel

To program a call channel, do the following:

1. Press and hold the channel 16 button for 2 seconds to enter the call channel.

The radio will go to the programmed call channel. The default call channel is Channel 9.

2. Press and hold the channel 16 button again to change the call channel.

3. Press the up and down arrow buttons to select the desired channel.

4. Press and hold in Mem Set for 2 seconds to save the channel.

The current value updates within approximately 2 seconds. The desired call channel is marked with a C that appears on the radio display.

5. Press the channel 16 button to close the menu.

To recall the desired channel, press the channel 16 button for 2 seconds. You can also press Scan to exit the programming mode.

6.6 Custom channels

In the regular radio mode, the Tron TR30 radio can store up to 20 custom channels, which must be programmed by a radio supplier.

To view the pre-programmed custom channels, select the Customer channel menu (Refer to the Menus section under the operation instructions for the maritime VHF radio).

All custom channels are identified by a letter followed by a number. The letters can be any of the following:

Channel letter	Channel ID	Channel type
F	"F"	Fishing channel
L	"L"	Leisure channel
M	"M"	Yacht and leisure channels (UK only)
P	"P"	Private channel
W	"W"	Weather channel

6.7 Volume adjustment

Turn the volume control to adjust 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.

6.8 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.

Figure 7 Noise cancel (NC) symbol on VHF screen (bottom right)

6.9 Key lock and unlock

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

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

6.10 Watch

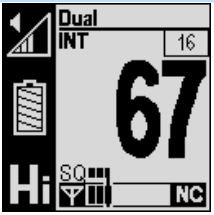
When the radio is in the regular VHF mode, it can check for signals or watch in three ways:

1. Dual watch (DW)
2. Triple watch (TW)
3. Scan

In Dual watch, Triple watch and Scan, the channels will rotate in the display search indicator area. The radio will continue to watch channel 16 while receiving on the other channels.

When PTT is pressed, the radio will transmit on the active channel. In addition, the current watch function (DW, TW or Scan) will be deactivated.

6.10.1 Dual watch

Function:	Display screen:
Dual watch (DW). The DW function allows the user to monitor channel 16 and the active channel alternately. The channel search indicator is visible on the display; however, the channels do not appear in real time.	

To select DW setup, do the following:

1. Press the up and down arrow buttons at the same time to enter the menu.
2. Using the arrow button, select **Settings**.
3. Using the arrow button, select **DW/TW**.
4. Using the arrow button, select **DW**.
5. If the radio is not already set to DW, then select **Save**.

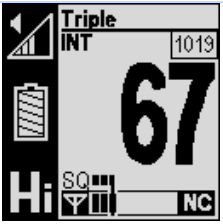
To activate or deactivate DW, do the following:

1. Press **Scan** to activate dual watch.

2. Press the up and down arrow buttons to watch a second channel.

3. Press **Scan** a second time to deactivate dual watch.

6.10.2 Triple watch

Function:	Display screen:
Triple watch (TW). The TW function allows the user to monitor channel 16, the chosen call channel and the active channel alternately. The channel search indicator is visible on the display; however, the channels do not appear in real time.	

To select TW setup, do the following:

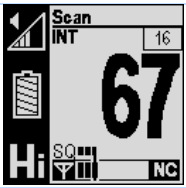
1. Press the up and down arrow buttons at the same time to enter the menu.
2. Using the arrow button, select **Settings**.
3. Using the arrow button, select **DW/TW**.
4. Using the arrow button, select **TW**.
5. If the radio is not already set to TW, then select **Save**.

To activate or deactivate TW, do the following:

1. Press **Scan** to activate triple watch.
2. Press the buttons to watch a third channel.

3. Press **Scan** a second time to deactivate triple watch.

6.10.3 Scan

Function:	Display screen:
The scan function allows the radio to scan up to 12 memory channels (Channel 16 and the active channel are automatically included).	

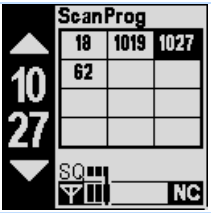
The radio is supplied without any pre-programmed channels, so at least one channel must be added to memory before scanning is possible. In this case, when you press **Scan**, you will automatically go directly to the Scan Prog screen. All stored channels can be browsed by pressing the **Mem** button. Stored channels are displayed with an M.

To activate or deactivate Scan, do the following:

Press and hold **Scan** for 2 seconds to activate, and short click to deactivate.

The scan indicator is visible on the display; however, the channels do not appear in real time.

6.10.3.1 Scan Prog

Function:	Display screen:
Scan Prog. You can store and delete memory channels for scanning in two ways, do one of the following: • Quick method, to be done when scan is not active. • Visual method, to be done when scan is active.	

Quick method:

1. Navigate to the channel you want to store or delete from the memory.
2. Press and hold **Mem Set** for 2 seconds to store or delete the selected channel from memory.

Visual method:

1. Press and hold the **Scan** button for 2 seconds to activate Scan.
2. Press and hold the **Scan** button for 2 seconds again to enter the scan program screen.

3. Use the arrow buttons to select the desired channel.

4. Press and hold **Mem Set** for 2 seconds to add or remove the current channel.

5. Press **Scan** to exit Scan Prog.

6.11 Menus

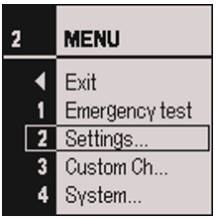
1. Press the up and down arrow buttons at the same time to enter or exit the menu system.

2. Use the up and down arrow buttons to navigate and select using Scan/Enter.

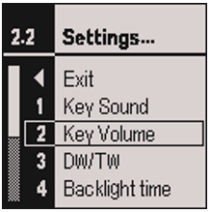
Menus:

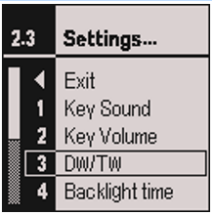
Exit:	**Display screen:**
Use this menu option to exit the menu system.	

Emergency test:	**Display screen:**
Use this menu option for drills/testing or when you want the radio to behave like a GMDSS radio.	

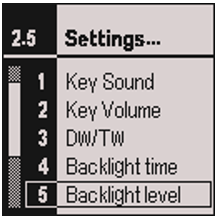
Settings:	Display screen:
Use this menu option to adjust the following settings: • Key sound • Key volume • DW/TW • Backlight time • Backlight level • Contrast • Key lock time • Channel set • Speaker/Mic	

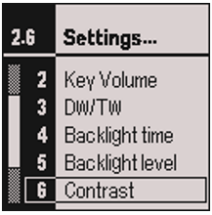
Key Sound:	Display screen:
Use this menu option to choose audio tone. You can choose between four different tones. Using the arrow keys, select from 1–4.	

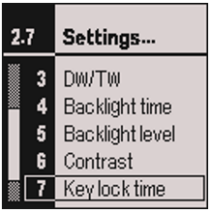
Key Volume:	Display screen:
Use this menu option to set the volume of the key sound. (Off=0, low to high=1–6).	

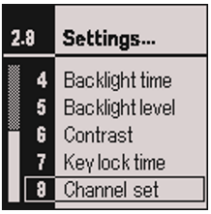
DW/TW:	**Display screen:**
Use this menu option to choose if you want to use dual watch or triple watch. Use the arrow keys, select either DW or TW.	

Backlight time:	**Display screen:**
Use this menu option to adjust how long the backlight stays on (1–10 seconds). The backlight will go off automatically.	

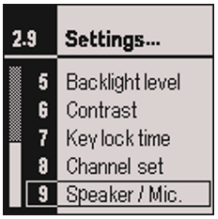
Backlight level:	**Display screen:**
Use this menu option to set the display backlight level. (Off=0, low=1 or high=2).	

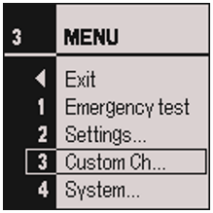
Contrast:	**Display screen:**
Use this menu option to set the display contrast level. (Low=1, medium=3 or high=3).	

Key lock time:	**Display screen:**
Use this menu option to set the time before the key lock automatically turns on. This can be adjusted from 5–60 (in increments of five seconds). (0=keylock time turned off).	

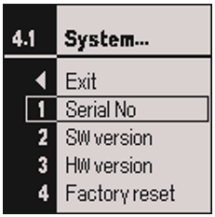
Channel set:	**Display screen:**
Use this menu option to change the channel set according to the region where the radio will be in use.	

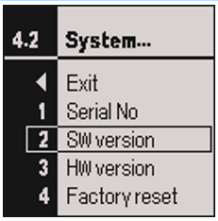
Channel set sub menu:	**Display screen:**
3 new channel lists can be chosen which includes the new implemented 4-digit channels acc with ITU Radio Regulation Appendix 18 revision 2020.	

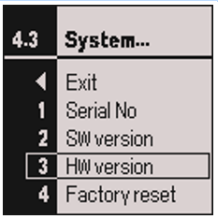
Speaker/Mic:	**Display screen:**
Use this menu option when connecting an external speaker/mic. • You need to restart the radio after you configure it for the changes to take effect. • Mic. Only: The sound comes from the internal loudspeaker of the radio when the microphone in the speaker/mic is in use. • Loudsp. + mic.: The sound comes from the external speaker mic.	

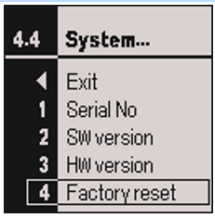
Custom channel:	**Display screen:**
Use this menu option to view the pre-programmed custom channel. To view transmitting and receiving frequencies press enter on the selected custom channel.	

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

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.	

Factory reset:	**Display screen:**
Use this menu option to reset all user settings.	

6.12 External accessories

Function:	Display screen:
External accessories	

The headphone symbol appears in the display screen when you connect an external accessory, such as a headphone, microphone, or external PTT. It is also possible to choose the internal loudspeaker when using an external speaker mic.

Connector type: 3.5 mm 4 pole jack.

Important! When using an accessory, the radio will no longer be waterproof. The antenna and jack cover must be correctly assembled on the radio for it to be completely waterproof. Accessories should not be used when the Tron TR30 radio is in emergency mode.

7 Maintenance

The following maintenance should be completed.

Caution! This radio must never be opened by anyone other than an authorized Jotron agent. 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.

7.1 Regular inspection

The lifetime of any equipment depends on how well you take care of it. The Tron TR30 radio is constructed to endure 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.

7.2 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! Do not use the GMDSS-battery for testing.

To test, do the following:

1. Use the rechargeable battery or test battery.
2. Turn the radio on and choose an appropriate channel. Avoid using Channel 16.
3. Verify sending a transmission to another radio.
4. Verify receiving a transmission from another radio.
5. Turn off the radio.
6. Verify that the emergency battery is still valid.

Important! The expiry date is located on the top of the battery. The orange expiry date label indicates when the emergency battery must be replaced.

7. Verify that the emergency battery is still sealed.

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

8 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 30 radio, T=Test

9 Battery safety instructions

9.1 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. Under the product TR30 radio, scroll to download and choose the dangerous goods category.

9.2 TR30 Rechargeable battery (black)

Type:	Li-Polymer Rechargeable battery
Watt-hour rating:	11.47 watt-hour rating (Wh)
Approximate weight:	100 grams
Chemical system:	Lithium polymer
Designated for recharge:	Yes

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. Under the product TR30 radio, scroll to download and choose the dangerous goods category.

9.3 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-gmdss/.

9.4 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.

9.4.1 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 on Jotron web, under the product TR30 radio, scroll to download and chose category dangerous goods.

10 Technical specifications

10.1 Product specification

Overall:	Emergency mode (emergency battery)	Regular mode (rechargeable battery)
Operating temperature range	-20°C to +55°C	-20°C to +55°C
Size (W/H/D)	61 mm x 157 mm x 40 mm (dept with belt clip 47 mm)	61 mm x 157 mm x 40 mm (dept with belt clip 47 mm)
Full buoyancy	Yes	Yes
Weight	Approximately 300 g	Approximately 295 g
Nominal viewing distance	0.8 m	0.8 m

10.2 Receiver

Receiver:	Emergency mode (emergency battery)	Regular mode (rechargeable battery)
Frequency range	154–157.425 MHz	154–162 MHz
Channel spacing	25 kHz	25 kHz
Maximum usable sensitivity	< 1 µV for 20 dB SINAD	< 1 µV for 20 dB SINAD
Adjacent channel rejection	> 70 dB	> 70 dB
Blocking	> 90dB	> 90 dB
Spurious response	> 70 dB	> 70 dB
Harmonic distortion*	< 5%	< 5%
Intern-modulation rejection	> 68dB	> 68dB
Channel monitoring	DW	DW/TW/Scan

10.3 Transmitter

Transmitter:	Emergency mode (emergency battery)	Regular mode (rechargeable battery)
Frequency range	154–157.425 MHz	154–161.875 MHz
Channel spacing	25 kHz	25 kHz
Transmitter output power (fully charged battery)	Low: 1 W, High: 2 W	Low: 1 W, Medium: 2 W (default), High: 4 W
Harmonics and spurious	< 0.25 µW	< 0.25 µW
Frequency error	< +1.5 kHz	< +1.5 kHz
Adjacent channel power	< -70 dB	< -70 dB

10.4 Charger

Charger:	Emergency mode (emergency battery)	Regular mode (rechargeable battery)
Power source	Not applicable	12–24 VDC
Wall adapter	Not applicable	115–240 VAC
Mounting options	Not applicable	Table or wall mount

11 Channels and frequencies

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.

11.1 GMDSS

Channel Number	TX/RX (MHz)	Channel Number	TX/RX (MHz)	Channel Number	TX/RX (MHz)
6	156.300	14	156.700	71	156.575
8	156.400	15	156.750*	72	156.625
9	156.450	16	156.800	73	156.675
10	156.500*	17	156.850*	74	156.725
11	156.550*	67	156.375	77	156.875
12	156.600	68	156.425	87	157.375
13	156.650	69	156.475	88	157.425

*Low power mode with TX transmit power limited to 1 W

11.2 Canada

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1	156.050	160.650	20	157.000 *	161.600	67	156.375	156.375
2	156.100	160.700	21B	**	161.650	68	156.425	156.425
3	156.150	160.750	23	157.150	161.750	69	156.475	156.475
4A	156.200	156.200	23B	**	161.750	71	156.575	156.575
5A	156.250	156.250	24	157.200	161.800	72	156.625	156.625
6	156.300	156.300	25	157.250	161.850	73	156.675	156.675
7A	156.350	156.350	25B	**	161.850	74	156.725	156.725
8	156.400	156.400	26	157.300	161.900	75	156.775 *	156.775
9	156.450	156.450	27	157.350	161.950	76	156.825 *	156.825
10	156.500 *	156.500	28	157.400	162.000	77	156.875	156.875
11	156.550 *	156.550	28B	**	162.000	78A	156.925	156.925
12	156.600	156.600	60	156.025	.625	79A	156.975	156.975
13	156.650	156.650	61A	156.075	156.075	80A	157.025	157.025
14	156.700	156.700	62A	156.125	156.125	83B	**	161.775
15	156.750 *	156.750	63A	156.175	156.175	84	157.225	161.825
16	156.800	156.800	64	156.225	160.825	85	157.275	161.875
17	156.850 *	156.850	64A	156.225	156.225	86	157.325	161.925
18A	156.900	156.900	65A	156.275	156.275	87	157.375	157.375
19A	156.950	156.950	66A	156.325	156.325	88	157.425	157.425

*Low power mode with TX transmit power limited to 1 W

**RX only

11.3 International

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1	156.050	160.650	19	156.950	161.550	68	156.425	156.425
2	156.100	160.700	20	157.000	161.600	69	156.475	156.475
3	156.150	160.750	21	157.050	161.650	71	156.575	156.575
4	156.200	160.800	22	157.100	161.700	72	156.625	156.625
5	156.250	160.850	23	157.150	161.750	73	156.675	156.675
6	156.300	156.300	24	157.200	161.800	74	156.725	156.725
7	156.350	160.950	25	157.250	161.850	77	156.875	156.875
8	156.400	156.400	26	157.300	161.900	78	156.925	161.525
9	156.450	156.450	27	157.350	161.950	79	156.975	161.575
10	156.500 *	156.500	28	157.400	162.000	80	157.025	161.625
11	156.550 *	156.550	60	156.025	160.625	81	157.075	161.675
12	156.600	156.600	61	156.075	160.675	82	157.125	161.675
13	156.650	156.650	62	156.125	160.725	83	157.175	161.775
14	156.700	156.700	63	156.175	160.775	84	157.225	161.825
15	156.750 *	156.750	64	156.225	160.825	85	157.275	161.875
16	156.800	156.800	65	156.275	160.975	86	157.325	161.925
17	156.850 *	156.850	66	156.325	160.925	87	157.375	157.375
18	156.900	161.500	67	156.375	156.375	88	157.425	157.425

*Low power mode with TX transmit power limited to 1 W

11.4 USA

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1A	156.050	156.050	19A	156.950	156.950	71	156.575	156.575
5A	156.250	156.250	20	157.000	161.600	72	156.625	156.625
6	156.300	156.300	20A	157.000	157.000	73	156.675	156.675
7A	156.350	156.350	22A	**	157.100	74	156.725	156.725
8	156.400	156.400	24	157.200	161.800	75	156.775 *	156.775
9	156.450	156.450	25	157.250	161.850	76	156.825 *	156.825
10	156.500 *	156.500	26	157.300	161.900	77	156.875	156.875
11	156.550 *	156.550	27	157.350	161.950	78A	156.925	156.925
12	156.600	156.600	28	157.400	162.000	79A	156.975	156.975
13	156.650	156.650	63A	156.175	156.175	80A	157.025	157.025
14	156.700	156.700	65A	156.275	156.275	84	157.225	161.825
15	**	156.750	66A	156.325	156.325	85	157.275	161.875
16	156.800	156.800	67	156.375	156.375	86	157.325	161.925
17	156.850 *	156.850	68	156.425	156.425	87	157.375	157.375
18A	156.900	156.900	69	156.475	156.475	88	157.425	157.425

*Low power mode with TX transmit power limited to 1 W

**RX only

11.5 Canada (4-digit)

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1	156.050	160.650	20	157.000 *	161.600	67	156.375	156.375
2	156.100	160.700	2021	**	161.650	68	156.425	156.425
3	156.150	160.750	23	157.150	161.750	69	156.475	156.475
1004	156.200	156.200	2023	**	161.750	71	156.575	156.575
1005	156.250	156.250	24	157.200	161.800	72	156.625	156.625
6	156.300	156.300	25	157.250	161.850	73	156.675	156.675
1007	156.350	156.350	2025	**	161.850	74	156.725	156.725
8	156.400	156.400	26	157.300	161.900	75	156.775 *	156.775
9	156.450	156.450	27	157.350	161.950	76	156.825 *	156.825
10	156.500 *	156.500	28	157.400	162.000	77	156.875	156.875
11	156.550 *	156.550	2028	**	162.000	1078	156.925	156.925
12	156.600	156.600	60	156.025	.625	1079	156.975	156.975
13	156.650	156.650	1061	156.075	156.075	1080	157.025	157.025
14	156.700	156.700	1062	156.125	156.125	2083	**	161.775
15	156.750 *	156.750	1063	156.175	156.175	84	157.225	161.825
16	156.800	156.800	64	156.225	160.825	85	157.275	161.875
17	156.850 *	156.850	1064	156.225	156.225	86	157.325	161.925
1018	156.900	156.900	1065	156.275	156.275	87	157.375	157.375
1019	156.950	156.950	1066	156.325	156.325	88	157.425	157.425

*Low power mode with TX transmit power limited to 1 W

**RX only

11.6 International (4-digit)

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1	156.050	160.650	19	156.950	161.550	73	156.675	156.675
2	156.100	160.700	1019	156.950	156.950	74	156.725	156.725
3	156.150	160.750	20	157.000	161.600	77	156.875	156.875
4	156.200	160.800	1020	157.100	157.000	78	156.925	156.925
5	156.250	160.850	1027	157.350	157.350	1078	156.925	156.925
6	156.300	156.300	1028	157.400	157.400	79	156.975	156.975
7	156.350	160.950	60	160.625	160.625	1079	156.975	156.975
8	156.400	156.400	61	156.075	160.675	87	157.375	157.375
9	156.450	156.450	62	156.125	160.725	88	157.425	157.425
10	156.500 *	156.500	63	156.175	160.775			
11	156.550 *	156.550	64	156.225	160.825			
12	156.600	156.600	65	156.275	160.875			
13	156.650	156.650	66	156.325	160.925			
14	156.700	156.700	67	156.375	156.375			
15	156.750 *	156.750	68	156.425	156.425			
16	156.800	156.800	69	156.475	156.475			
17	156.850 *	156.850	71	156.575	156.575			
18	156.900	161.500	72	156.625	156.625			

*Low power mode with TX transmit power limited to 1 W

11.7 USA (4-digit)

Channel Number	TX (MHz)	RX (MHz)	Channel Number	TX (MHz)	RX (MHz)	Channel number	TX (MHz)	RX (MHz)
1001	156.050	156.050	20	157.000	157.000	73	156.675	156.675
1005	156.250	156.250	1020	157.000	157.600	74	156.725	156.725
6	156.300	156.300	1022	**	157.100	75	156.775 *	156.775
1007	156.350	156.350	24	157.200	161.800	76	156.825 *	156.825
8	156.400	156.400	25	157.250	161.850	77	156.875	156.875
9	156.450	156.450	26	157.300	161.900	1078	156.925	156.925
10	156.500 *	156.500	27	157.350	161.950	1079	156.975	156.975
11	156.550 *	156.550	28	157.400	162.000	1080	157.025	157.025
12	156.600	156.600	1063	156.175	156.175	84	157.225	161.825
13	156.650	156.650	1065	156.275	156.275	85	157.275	161.875
14	156.700	156.700	1066	156.325	156.325	86	157.325	161.925
15	**	156.750	67	156.375	156.375	87	157.375	157.375
16	156.800	156.800	68	156.425	156.425	88	157.425	157.425
17	156.850 *	156.850	69	156.475	156.475			
1018	156.900	156.900	71	156.575	156.575			
1019	156.950	156.950	72	156.625	156.625			

*Low power mode with TX transmit power limited to 1 W

**RX only

12 Optional accessories

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

13 Spare parts

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

13.1 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.

14 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.

15 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.

16 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.

16.1 Service agents

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

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

17 Standards

A copy of the declaration of conformity and valid certificates can be downloaded from Jotron.com.

The Tron TR30 (GMDSS – emergency mode) 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 300 225, V1.4.1 (2004-12)	Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics and methods of measurement for survival craft portable VHF radiotelephone apparatus
ETSI EN 301 843-1, V1.2.1 (2004-06)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 843-2, V1.2.1 (2004-06)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 2: Specific conditions for VHF radiotelephone transmitters and receivers
IEC 61097-12: 1996	Global maritime distress and safety system (GMDSS) - Part 12: Survival craft portable two-way VHF radiotelephone apparatus - Operational and performance requirements, methods of testing and required test results

RSS-102, Issue 5: Mar. 2015	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
RSS-182, Issue 5: Jan. 2012	Maritime Radio Transmitters and Receivers in the Band 156-162.5 MHz

Table 3 GMDSS emergency mode - product standards

Tron TR30 (VHF mode) has been verified, tested, and meets the following product standards incl ITU Radio Regulation Appendix 18 rev 2020:

EN 62479: 2010	Assessment of the compliance of low power electronic and electrical equipment with the basic restrictions related to human exposure to electromagnetic fields (10 MHz to 300 GHz)
ETSI EN 301 178, V2.2.2 (2017-04)	ETSI EN 301 178 V2.2.2 (2017-04) Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands (for non-GMDSS applications only); Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU
ETSI EN 301 178-1, V1.3.1: 2007-02	Electromagnetic compatibility and Radio spectrum Matters (ERM); Portable Very High Frequency (VHF) radiotelephone equipment for the maritime mobile service operating in the VHF bands (for non-GMDSS applications only); Part 1: Technical characteristics and methods of measurement
ETSI EN 301 178-2, V1.2.2: 2007-02	Electromagnetic compatibility and Radio spectrum Matters (ERM); Portable Very High Frequency (VHF) radiotelephone equipment

	for the maritime mobile service operating in the VHF bands (for non-GMDSS applications only); Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
ETSI EN 301 843-1, V1.2.1 (2012-08)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 1: Common technical requirements
ETSI EN 301 843-2, V1.2.1 (2004-06)	Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for marine radio equipment and services; Part 2: Specific conditions for VHF radiotelephone transmitters and receivers
IEC 62209-1:2005	Human exposure to radio frequency fields from hand- held and body-mounted wireless communication devices - Human models, instrumentation, and procedures - Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
IEC 62209-2: 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)
IEC 62368-1:2014	Audio/video, information, and communication technology equipment - Part 1: Safety requirements
47 CFR 2.1093: Oct. 2013	Radio frequency radiation exposure evaluation: portable devices
47 CFR 80 to End: Oct. 2015	Electronic Code of Federal regulations, Title 47, Telecommunications

Table 4 VHF mode - product standards

The use of Tron TR30 radio with the rechargeable LiPo battery may be subject to an operator certificate in accordance with RED 2014/52/EU, Article 10.10. Prior to using this equipment, please check with your local national radio license authority.

This device complies with the GMDSS 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.

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 5 National and international radio operator obligation regulations

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20 Abbrevations

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CE	European Commission
CFR	The Code of Federal Regulations
DW	Dual Watch (Receiver altering between two different channels)
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
IMDG	International Maritime Dangerous Goods Code
ITU	International Telecommunication Union
kHz	Kilohertz
LED	Light Emitting Diode
MHz	Megahertz
NC	Noise cancelling
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
TW	Triple Watch
VAC	Volts, alternative current (AC)
VDC	Volts, direct current (DC)
VHF	Very High Frequency

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Rev	**Date**	**Reason for Issue**	**Author**	**Checked**

21 Emergency instructions

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

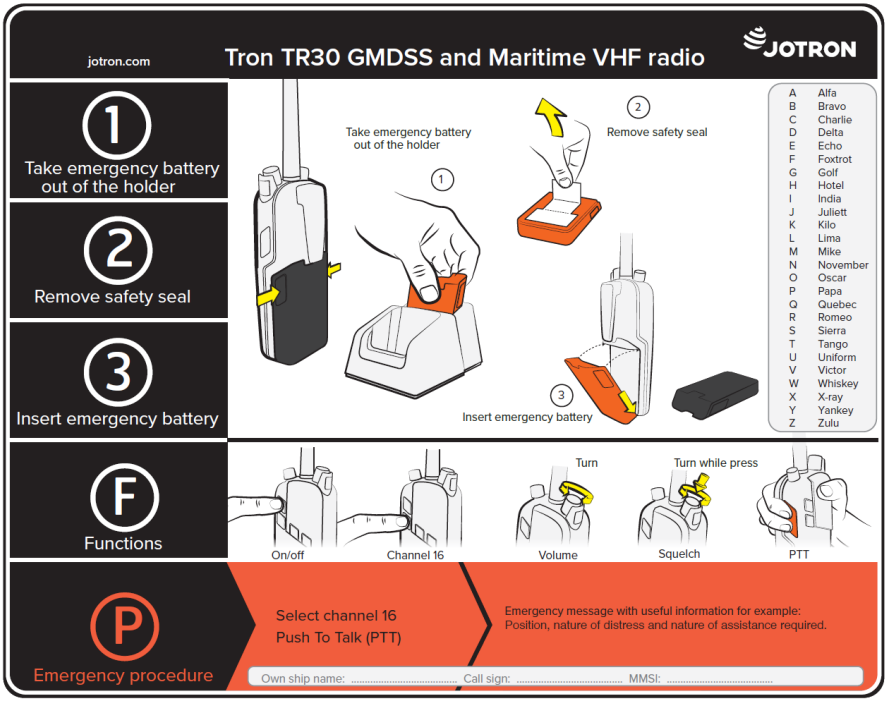

Figure 8 Emergency instructions overview

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