

USER MANUAL



Tron TR30



www.jotron.com

Table of contents

1	List of figures	6
2	Abbreviations	7
3	General	9
4	Standards	11
5	Product description	15
5.1	Product image	17
6	Emergency and test battery safety instructions	19
6.1	Hazards identification	20
6.2	First aid measures	21
6.3	Fire fighting measures	21
6.4	Accidental release measures	22
6.5	Handling and storage	22
6.5.1	Transportation	23
7	Rechargeable battery safety instructions	24
7.1	Hazards identification	25
7.2	First aid measures	26
7.3	Fire fighting measures	26
7.4	Accidental release measures	27
7.5	Handling and storage	28
7.5.1	Transportation	28
8	Functional description	29

8.1	Tron TR30 components	29
8.2	Battery charger components	31
8.3	Antenna	32
8.4	Emergency battery (GMDSS)	32
8.5	Battery endurance	33
8.5.1	Battery charger	34
9	Technical specifications	36
9.1	Product specification	36
10	Installation	38
10.1	Changing the battery	39
11	Operation instructions (GMDSS radio)	41
11.1	Emergency mode	41
11.2	Channel selection	42
11.3	Channel 16 button	42
11.4	Volume adjustment	43
11.5	Squelch adjustment	43
11.6	Lock and unlock	44
11.7	External accessories	45
11.8	Watch	45
11.8.1	Dual watch	46
11.9	Menus	46
12	Operation instructions (Maritime VHF radio)	51

12.1	Regular radio mode	51
12.2	Channel selection	51
12.3	Channel 16 button	52
12.4	Call channel	53
12.5	Custom channels	54
12.6	Volume adjustment	55
12.7	Squelch adjustment	55
12.8	Lock and unlock	56
12.9	External accessories	56
12.10	Watch	57
12.10.1	Dual watch	57
12.10.2	Triple watch	58
12.10.3	Scan	60
12.11	Menus	62
13	Maintenance	68
13.1	Taking care of a Tron TR30	68
13.2	Regular testing	69
13.3	Cleaning of dirt and oil	70
14	Test and maintenance records	71
15	Channels and frequencies	72
15.1	GMDSS	72
15.2	International	73

16	Warranty	74
16.1	Warranty claims	75
16.2	Service	75
16.3	Service agents	76
17	Optional accessories	77
18	Spare parts	78
19	Recycling and disposal	79
20	Emergency instructions	80

1 List of figures

Figure 1	Tron TR30	17
Figure 2	Tron TR30 in the battery charger	18
Figure 3	Tron TR30 components	29
Figure 4	Battery charger components	31
Figure 5	Emergency instructions overview	80

2 Abbreviations

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
CFR	The Code of Federal Regulations
DW	Dual Watch (Receiver altering between two different channels)
ECHA	European Chemical Agency
EMC	Electromagnetic compatibility
ESD	Electrostatic discharge
ETS	European Telecommunications Standard
ETSI	European Telecommunications Standards Institute
GMDSS	Global Maritime Distress and Safety System
HW	Hardware
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IEC	International Electrotechnical Commission
IMDG	International Maritime Dangerous Goods Code
MHz	MegaHertz
MSDS	Material Safety Data Sheet
OSHA	Occupational Safety and Health Admin
RES	Radio equipment and systems (technical committee of ETSI)
RID	Reglement concernant le transport International ferroviare des marchandises Dangereuses par chemin de fer (Transportation of Dangerous Goods by Train)
RMA	Return Material Authorization number

RSS	Radio Standards Specification
SDS	Safety Data Sheet
SMA	Sub miniature version A connector
SOLAS	Safety of Life at Sea (An international maritime safety treaty)
STCW	Standards of training, certification and watch keeping for seafarers
SW	Software
TW	Triple Watch
UN	United Nations
VAC	Volts, alternating current (AC)
VHF	Very High Frequency



3 General

Jotron manufactures safety equipment designed for the search and rescue of human life and property. For safety equipment to be effective according to the design parameters it is imperative that all products are handled, maintained, serviced and stowed in compliance with the manufacturer's instructions.

Copies of all Jotron documentation can be downloaded from our website: www.jotron.com.

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

The following four symbols are in use throughout this manual:

 NOTE	This symbol is used to highlight information.
 IMPORTANT	This symbol is used to draw attention to important details.



CAUTION

This symbol is used to highlight information that if not followed can result in damage to a product or equipment.



WARNING

This symbol is used to highlight information that if not followed can result in personal injury or bodily harm.



IMPORTANT

Jotron is not liable for consequential or special damages and cannot be held responsible for any damages or injury arising either directly or indirectly due to an error or omission of information, misuse of a product, breach of procedures, or for failure of any specific component or other part of the equipment.

4 Standards

The Tron TR30 (emergency mode - GMDSS) 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 Radio communication Apparatus (All Frequency Bands).
RSS-182, Issue 5: Jan. 2012	Maritime Radio Transmitters and Receivers in the Band 156-162.5 MHz.

Tron TR30 (regular mode - VHF) has been verified, tested and meets the following product standards:


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 301 178-1, 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


 <p>IMPORTANT</p>	Regulations for VHF radios varies from country to country. Prior to using this equipment check the national requirements for VHF radio operators and ensure that the radio conforms to all local regulations.
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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

 <p>IMPORTANT</p>	<p>This device complies with the GMDSS provision of part 80 of the FCC Rules.</p> <p>Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.</p>
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NOTE

This class 2 CE approved product is available for sale and purchase in the following countries:

Brazil, Canada, China, Europe, Korea, Russia and the United States of America.

The relevant CE marking of CE0168! is found on the product and the packaging.



NOTE

All statements of conformity are available at: www.jotron.com

5 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 resistant to oil, seawater and sunlight. 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 freshwater, battery included. The radio is designed with a self draining loudspeaker. The Tron TR30 is only completely waterproof when the antenna and jack cover are assembled on the radio correctly.

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

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

Part number: 83446 Tron TR30

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

- Tron TR30 radio
- Emergency GMDSS battery (orange)
- Rechargeable battery (black)

- Battery charger
- Antenna
- Belt clip
- Wrist strap

Part number: 87950 Tron TR30

5.1 Product image



Figure 1 Tron TR30



Figure 2 Tron TR30 in the battery charger

6 Emergency and test battery safety instructions

Under EC, European Chemical Agency (ECHA) and US, Occupational Safety and Health Admin (OSHA) legislation this product is classified as a manufactured article, which does not release or otherwise result in exposure to a hazardous chemical under the normal conditions of use. Therefore, this product is exempt from the requirement of a dedicated Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS).

The following information is included in this manual as guided safety instructions.


Product name:	Emergency battery
Type no.:	FR6
Lithium metal content:	2 x 1.96 gram lithium pr battery
Approximate weight:	100 grams
Chemical system:	Lithium Iron Disulphide
Designed for recharge:	No

Below are instructions for keeping the radio log and the radio operator's obligation according to national and international regulation:

1. The radio log shall be kept in accordance with requirements in the Radio Regulation, SOLAS Convention, national regulations regarding radio installations and the STCW Convention (STCW 95 including the STCW Code) including relevant regulation regarding watch keeping on board passenger and cargo ships.
2. 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 (STCW Code BVIII/2 No. 32).


Testing of radio equipment and reserve source of energy should occur:


 NOTE	The below safety information is extracted from EVE Energy SDS (sections 4, 5 & 6).
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6.1 Hazards identification

The lithium thionyl chloride batteries used in the Tron TR30 and described herein are sealed units.

Under normal conditions, the battery is hermetically sealed. These batteries are not hazardous when used as intended and recommended.

 WARNING	Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product, otherwise you risk fire or explosion.
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 CAUTION	<p>Ingestion: Swallowing a battery can be harmful.</p> <p>Inhalation: Contents of an open battery can cause respiratory irritation.</p> <p>Skin contact: Contents of an open battery can cause skin irritation.</p>
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	Eye contact:	Contents of an open battery can cause severe irritation.
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6.2 First aid measures

Ingestion:	Do not induce vomiting or consume food or drink. Seek medical attention immediately.
Inhalation:	Provide fresh air and seek medical attention.
Skin contact:	Remove contaminated clothing and shoes and wash skin with soap and water. Wash clothing and shoes prior to reuse. If irritation occurs, seek medical attention.
Eye contact:	Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

6.3 Fire fighting measures

In case of fire where lithium batteries are present, flood area with water or smother with a Class D fire extinguisher appropriate for lithium metal, such as Lith-X. Water may not extinguish burning batteries but will cool the adjacent batteries and control spreading fire. Burning batteries will burn themselves out.

Virtually all fires involving lithium batteries can be controlled by flooding with water, however, the contents of the battery will react with water and form hydrogen gas. In a confined space, hydrogen gas can form an explosive mixture. In this situation, a smothering agent is recommended. A smothering agent will extinguish burning lithium batteries.



CAUTION

Any person responding to such an emergency should wear a self-contained breathing apparatus.

Burning lithium iron disulphide batteries produces toxic and corrosive lithium hydroxide fumes and sulfur dioxide gas.

6.4 Accidental release measures

To clean up a leaking battery:

Ventilation requirements:	Room ventilation may be in areas where there are open or leaking batteries.
Respiratory protection:	Avoid exposure to electrolyte fumes from an open or leaking battery.
Eye protection:	Wear safety glasses with side shields if handling an open or leaking battery.
Gloves:	Use neoprene or natural rubber gloves when handling an open or leaking battery. Battery materials should be disposed of in a leak-proof container.

6.5 Handling and storage

The Tron TR30 should be stored in a cool and well ventilated area. Elevated temperatures can result in a reduction of battery life. In locations that handle large quantities of lithium batteries, such as a warehouse, lithium batteries should be isolated from unnecessary combustibles.



WARNING

A battery that is installed backwards, disassembled, charged or is exposed to water, fire or high temperatures can explode or leak causing burns.

6.5.1 Transportation



NOTE

Detailed support documentation regarding transportation regulations for batteries in accordance with ICAO/IATA, IMDG code and/or ADR/RID can be found at www.jotron.com, under Product Safety Information (PSI) and/or statement in accordance with UN test 38.3

7 Rechargeable battery safety instructions

Under EC, European Chemical Agency (ECHA) and US, Occupational Safety and Health Admin (OSHA) legislation this product is classified as a manufactured article, which does not release or otherwise result in exposure to a hazardous chemical under the normal conditions of use. Therefore, this product is exempt from the requirement of a dedicated Material Safety Data Sheet (MSDS) or Safety Data Sheet (SDS).

The following information is included in this manual as guided safety instructions.

Product name:	Rechargeable battery (LiPo 1550 mAh)
Type no.:	GEP653759
Lithium metal content:	0.9 gram lithium pr battery and 11.47 What-Hour rating(Kwh)
Approximate weight:	100 grams
Chemical system:	Lithium Polymer
Designed for recharge:	Yes


Below are instructions for keeping the radio log and the radio operator's obligation according to national and international regulation:

1. The radio log shall be kept in accordance with requirements in the Radio Regulation, SOLAS Convention, national regulations regarding radio installations and the STCW Convention (STCW 95 including the STCW Code) including relevant regulation regarding watch keeping on board passenger and cargo ships.

2. 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 (STCW Code BVIII/2 No. 32).

Testing of radio equipment and reserve source of energy should occur:


Monthly: Handheld VHF transceivers are to be tested using a test or rechargeable battery.


 <p>NOTE</p>	The below safety information is extracted from Green Energy Battery and MSDS info from Pony Test Lab's report (sections 4, 5 & 6).
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7.1 Hazards identification

The lithium thionyl chloride batteries used in the Tron TR30 and described herein are sealed units.

Under normal conditions, the battery is hermetically sealed. These batteries are not hazardous when used as intended and recommended.

 <p>WARNING</p>	Do not short circuit, recharge, puncture, incinerate, crush, immerse, force discharge or expose to temperatures above the declared operating temperature range of the product, otherwise you risk fire or explosion.
--	--

 <p>CAUTION</p>	Ingestion:	Swallowing a battery can be harmful.
	Inhalation:	Contents of an open battery can cause respiratory irritation.
	Skin contact:	Contents of an open battery can cause skin irritation.
	Eye contact:	Contents of an open battery can cause severe irritation.

7.2 First aid measures


Ingestion:	Do not induce vomiting or consume food or drink. Seek medical attention immediately.
Inhalation:	Provide fresh air and seek medical attention.
Skin contact:	Remove contaminated clothing and shoes and wash skin with soap and water. Wash clothing and shoes prior to reuse. If irritation occurs, seek medical attention.
Eye contact:	Immediately flush eyes thoroughly with water for at least 15 minutes, lifting upper and lower lids, until no evidence of the chemical remains. Seek medical attention.

7.3 Fire fighting measures

In case of fire where lithium batteries are present, use an extinguishing agent suitable for the location and surrounding environment, such as CO₂.

A battery may burst and release hazardous decomposition products when exposed to fire. Lithium ion batteries contain flammable electrolyte that may vent, ignite and

produce sparks when subjected to high temperatures (>150°C/302°F), when damaged or abused (e.g. mechanical damage or electrical overcharging), may burn rapidly with flare-burning effect; may ignite other batteries in close proximity.


 <p>CAUTION</p>	<p>Any person responding to such an emergency should wear a self-contained breathing apparatus.</p> <p>Burning lithium iron disulphide batteries produces toxic and corrosive lithium hydroxide fumes and sulfur dioxide gas.</p>
--	---

7.4 Accidental release measures


Personal precautions:	Wear the proper personal protective equipment. Keep unprotected individuals away. Ensure adequate ventilation.
Emergency procedures:	Remove ignition sources, evacuate the area. Sweep up using a method that does not generate dust. Collect as much of the spilled material as possible, place the spilled material into an appropriate disposal container. Keep spilled material out of sewers, ditches and bodies of water.
Environmental precautions:	Do not allow material to be released into the environment without proper governmental permits.
Methods and materials for containment and cleaning up:	All waste must refer to the United Nations, the national and local regulations for disposal.

7.5 Handling and storage

The Tron TR30 should be stored in a cool and well ventilated area. Elevated temperatures can result in a reduction of battery life. In locations that handle large quantities of lithium batteries, such as a warehouse, lithium batteries should be isolated from unnecessary combustibles.

 <p>WARNING</p>	<p>A battery that is installed backwards, disassembled, charged or is exposed to water, fire or high temperatures can explode or leak causing burns.</p>
--	--

7.5.1 Transportation

 <p>NOTE</p>	<p>Detailed support documentation regarding transportation regulations for batteries in accordance with ICAO/IATA, IMDG code and/or ADR/RID can be found at www.jotron.com, under Product Safety Information (PSI) and/or statement in accordance with UN test 38.3</p>
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8 Functional description

8.1 Tron TR30 components

An overview of the radio components.



Figure 3 Tron TR30 components

- 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 Hi/medium/low (transmitter power indicator)
- 12 Battery charge indicator
- 13 Volume control indicator
- 14 High/Low button
- 15 Scan/Enter
- 16 Instant access channel 16 and call channel
- 17 Transmit button
- 18 On/off button
- 19 Jack cover (black knob)/External handset connector (inside)

8.2 Battery charger components

An overview of the battery charger components.

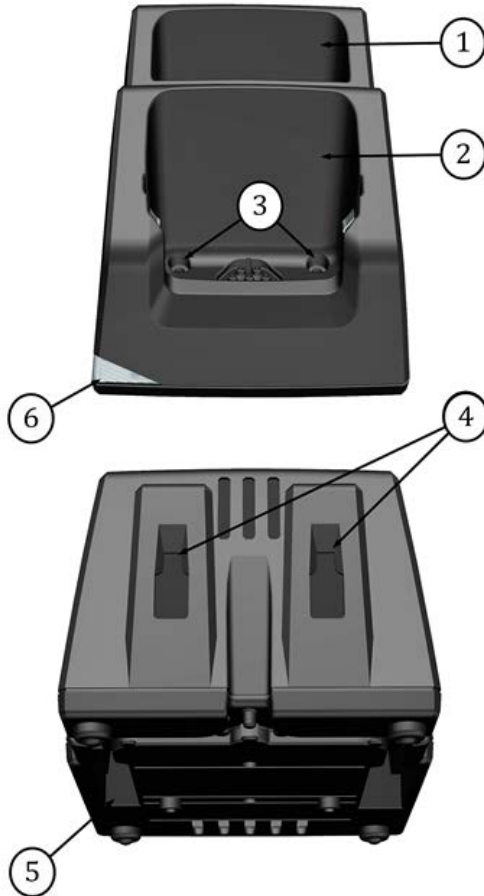



Figure 4 Battery charger components

1 Battery charger storage

- 2 Battery charger bay
- 3 Table mounting holes (42.7mm spacing)
- 4 Wall mounting holes (36.0mm spacing)
- 5 Power input
- 6 LED indicator


8.3 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.


 <p>CAUTION</p>	The Tron TR30 unit is not waterproof when the standard antenna is not attached or if the antenna is not assembled correctly.
--	--

8.4 Emergency battery (GMDSS)

The emergency battery unit is a lithium battery. This battery is specially designed for GMDSS emergency use, to preserve a long shelf and operating life, the battery cannot be recharged. For safety reasons the battery and battery charger are designed such that an emergency battery may be stored but not charged.


 <p>IMPORTANT</p>	The emergency battery is a single use item. You must replace the battery before the battery expiry date and/or if the protective seal on the battery is broken.
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 <p>NOTE</p>	<p>It is safe to store the emergency battery in the charger.</p> <p>Always bring a sealed emergency battery with the radio when boarding a lifeboat or raft.</p>
---	--


 <p>WARNING</p>	<p>Doing any of the following could result in sever burn hazard or fire explosion:</p> <ul style="list-style-type: none"> • Heating a lithium battery over 70 degrees celsius • Attempting to recharge the battery. • Crushing, disassembling or attempting to ignite or set flame to the battery.
--	---

8.5 Battery endurance

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


 <p>NOTE</p>	<p>It is recommended you use medium or low power when possible in order to maximize the operational time of the battery.</p>
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Battery type	Hours of usage*	
	Standby time	Multi-usage **
Emergency battery	70	12
Rechargeable battery	50	12

 <p>NOTE</p>	<p>* The hours indicated are based on 2W (tested at -20 degrees celsius).</p> <p>** Emergency battery multi-usage hours have been tested in accordance with 10:10:80 ratio (Send%:Listen%:Standby%).</p> <p>** Rechargeable battery multi-usage hours have been tested in accordance with 5:5:90 ratio (Send%:Listen%:Standby%).</p> <p>For more information refer to the ETS 300 225 standard.</p>
--	---

8.5.1 Battery charger

The RCH-30 battery charger can charge the radio and/or battery. In addition, the charger also has one extra storage area for an emergency battery.

 <p>IMPORTANT</p>	<p>The battery charger is not waterproof and must therefore be protected from elements.</p>
---	---

 <p>CAUTION</p>	<p>The charger will not charge a battery if the battery temperature is below 0°C or above 40°C.</p> <p>In either case, the rechargeable battery should be left in the charger. The charger automatically begins to charge when it reaches an appropriate cell temperature for charging.</p>
---	---



NOTE

To reduce the charging time it is recommended that the battery is changed at room temperature (15°C to 25°).

The battery charging indicator on the screen display shows the approximate status of the battery and indicates when recharging is necessary. Leaving the radio switch on will increase the charging time.


9 Technical specifications

9.1 Product specification


Overall:	
	Emergency mode (emergency battery)
Channel spacing	25 kHz
Operating temperature range	-20 to +55
Size (W/H/D)	61mm x 157mm x 40mm (Dept with belt clip 47mm)
Full buoyancy	Yes
Weight	Approximately 300 g

Receiver:	
	Emergency mode (emergency battery)
Frequency range	TX: 154-157.425MHz / RX: 156-162 MHz
Maximum usable sensitivity	< 1 μ V for 20dB SINAD
Adjacent channel rejection	> 70dB
Blocking	> 90dB
Spurious response	> 70dB
Harmonic distortion*	< 5%
Inter-modulation rejection	> 68dB
Channel monitoring	DW

Transmitter:	
	Emergency mode (emergency battery)
Frequency range	TX: 154-157.425MHz / RX: 156-162 MHz
Transmitter output power (fully charged battery)	Low: 1W, High: 2W
Harmonics and spurious	< 0.25 μ W
Frequency error	< +1.5 kHz
Adjacent channel power	< -70dB


 <p>NOTE</p>	The nominal viewing distance is 0.8m.
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10 Installation


 <p>IMPORTANT</p>	Connect the adapter to the charger prior to first time use.
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To install, do the following:


1. Connect the antenna.

 <p>CAUTION</p>	<p>When assembling the antenna to the radio, ensure you hold it at the base while turning it clockwise. When the antenna starts to resist turning, turn it another 90 degrees.</p> <p>Holding the antenna anywhere but at the base during assembly will damage it.</p>
---	--


2. Insert the radio or battery into the provided battery charger.

 <p>NOTE</p>	Do not force the battery, the battery only fits into the battery charger one way.
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3. Ensure that the battery or radio is sitting properly in the charger.
4. Plug in the charger.

 <p>NOTE</p>	<p>A yellow light indicates the unit is charging.</p> <p>A green light indicates the battery is fully charged.</p> <p>A red light indicates there is a fault.</p>
--	---

5. Place the radio in a location away from direct sea spray, chemicals, oil and vibration.

 <p>NOTE</p>	<p>The Tron TR30 must be easily accessible at all times for testing and maintenance.</p> <p>There are two screw holes available such that the charger can be securely mounted to a flat surface.</p>
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10.1 Changing the battery

To change the Tron TR30 battery, do the following:

1. Press the ON/OFF button to turn off the radio.
2. Press both the new battery release clips, to release the battery.
3. Gently pull the top of the battery backwards, away from the radio.
4. Put the lower end of the battery into the fixing track at the bottom of the radio.
5. Flip the battery into position, make sure the battery clips fully engage.



CAUTION


The radio is only watertight when the battery, antenna and jack cover correctly assembled.

Battery replacement must be done in a dry environment or under shelter.

11 Operation instructions (GMDSS radio)

11.1 Emergency mode

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

 <p>CAUTION</p>	<p>If the jack cover is removed, for example when using an accessory, the radio is no longer waterproof.</p> <p>The antenna and jack cover must be correctly assembled on the radio in order for it to be completely waterproof.</p>
--	--


Function:

Turning on a radio using an emergency battery. The circle in the top right corner appears when the radio is in the emergency mode.

Display screen:



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


 <p>NOTE</p>	<p>The radio loads the following settings:</p> <ul style="list-style-type: none">• Channel 16• Max power level (2W)• High volume• Low squelch
--	--


11.2 Channel selection

Function:

Channel selection

1. Press or press and hold the up/down arrow buttons to change the channel.

 <p>NOTE</p>	<p>When a emergency battery is connected, only GMDSS channels are available.</p>
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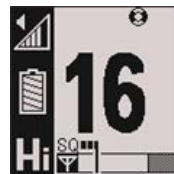
 <p>IMPORTANT</p>	<p>For information regarding available and active VHF marine radio channels and frequencies, please refer to ITU standards, with reference to the current World Radio Conference (WRC) agreement.</p> <p>For an overview, refer to the Navigation Center website (www.navcen.uscg.gov, under Maritime Information, Maritime Telecommunications)</p>
---	--

11.3 Channel 16 button


Function:

Channel 16

Display screen:



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

 <p>NOTE</p>	<p>The transmit power will always be set to Hi power when using the channel 16 button, even if you switch from another channel.</p>
--	---

11.4 Volume adjustment


Function:

Volume adjustment

Display screen:



1. Turn the knob to adjust the volume.

 <p>NOTE</p>	<p>The volume symbol in the display indicates the volume level.</p> <p>Ensure that you do not press the knob while adjusting the volume.</p>
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11.5 Squelch adjustment


Function:

Squelch adjustment

Display screen:



1. Press and turn the knob clockwise to reduce sensitivity.

 <p>NOTE</p>	<p>When the knob is pressed twice, it opens the squelch immediately.</p> <p>The squelch bar appears on the screen display indicating the current active sensitivity level. When adjusted fully to the left, the squelch is completely open, adjusting to the right lowers the sensitivity.</p> <p>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.</p>
--	--

11.6 Lock and unlock


Function:

Lock/Unlock

Display screen:



1. Press and hold the HI/LO button for 2 seconds to lock or unlock the radio.

 <p>NOTE</p>	<p>A key symbol appears when the radio is locked.</p>
--	---

11.7 External accessories

Function:


External accessories

Display screen:



The headphone symbol appears in the display screen when you connect an external accessory, such as a headphone, microphone or external PTT.

Connector type: 3,5mm 4 pole jack.

 <p>CAUTION</p>	<p>When using an accessory, the radio is no longer waterproof.</p> <p>The antenna and jack cover must be correctly assembled on the radio in order for it to be completely waterproof, it is therefore not recommended to use accessories while using the Tron TR30 in the emergency mode.</p>
--	--

11.8 Watch

When the radio is in the emergency mode, it can only check for signals or watch in one way:

1. Dual watch

DW listens to the working channel and channel 16.



IMPORTANT

The radio will continue to watch channel 16 while receiving on other channels.

11.8.1 Dual watch

Function:

Dual watch (DW)

The DW function allows the user to monitor channel 16 and one selected channel alternately.

Display screen:



To activate or deactivate DW, do the following:

1. Press Scan to activate dual watch.
2. Press the up/down buttons to watch a second channel.
3. Press Scan a second time to deactivate dual watch.

11.9 Menus

Menus:

Display screen:



Press the up/down arrow buttons at the same time to enter/exit the menu system.
Use the up/down arrow buttons to navigate and select using Scan/Enter.

Exit:

Display screen:

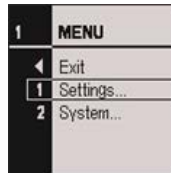


Settings:

Display screen:

Menu number:

Use this menu option to adjust the following settings:



1

- Key sound
- Key volume
- Backlight time
- Backlight level
- Contast
- Key lock time

Key sound:

Display screen:

Menu number:

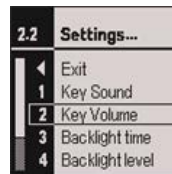


1

Key volume:

Display screen:

Menu number:

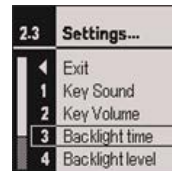


2

Backlight time:

Display screen:

Menu number:



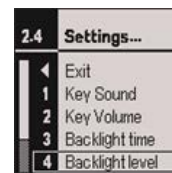
3

Backlight level:

- fff, low, high (0,1,2)

Display screen:

Menu number:



4

Contrast:

Display screen:

Menu number:



5

Key lock time:

Display screen:

Menu number:



6

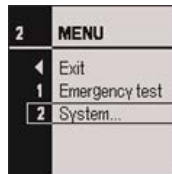
System:

Display screen:

Menu number:

Use this menu option to access the following information:

- Serial Number
- SW version
- HW version

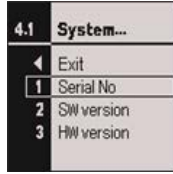


2

Serial Number:

Display screen:

Menu number:

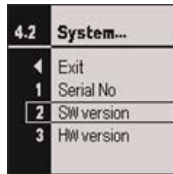


1

SW Version:

Display screen:

Menu number:

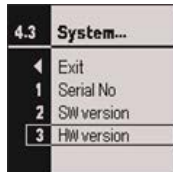


2

HW Version:

Display screen:

Menu number:



3

12 Operation instructions (Maritime VHF radio)

12.1 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 also available.

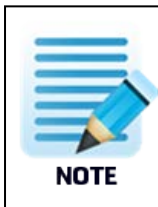
Function

Turning on a radio using a rechargeable battery.

Display screen:



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



NOTE


The radio loads settings based on previous usage.


12.2 Channel selection

Function:

Channel selection

1. Press or press and hold the up/down arrow buttons to change the channel.

 <p>NOTE</p>	<p>When a primary battery is connected, only GMDSS channels are available.</p>
--	--

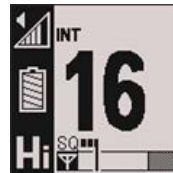
 <p>IMPORTANT</p>	<p>For information regarding available and active VHF marine radio channels and frequencies, please refer to ITU standards, with reference to the current World Radio Conference (WRC) agreement.</p> <p>For an overview, refer to the Navigation Center website (www.navcen.uscg.gov, under Maritime Information, Maritime Telecommunications)</p>
---	--

12.3 Channel 16 button


Function:

Channel 16

Display screen:



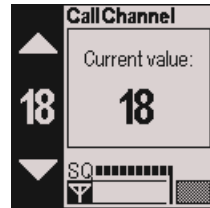
1. Press the 16 button to jump directly to channel 16.

 <p>NOTE</p>	<p>The transmit power will always be set to Hi power when using the channel 16 button, even if you switch from another channel.</p>
--	---

12.4 Call channel


Function:
Call channel

Display screen:




To program a call channel, do the following:


1. Enable triple watch (TW).
2. Press and hold the channel 16 button for 2 seconds to enter the call channel.

 <p>NOTE</p>	The radio will go to the default call channel (Channel 9).
--	--

3. Press and hold the channel 16 button again to change the call channel.
4. Press up/down arrow buttons to select the desired channel.
5. Press and hold Mem until you hear a beep to save the channel.

 <p>NOTE</p>	The current value updates within approximately 2 seconds. The desired call channel is marked with a C that appears on the radio display.
--	---

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

 <p>NOTE</p>	<p>To recall the desired channel, press the channel 16 button for 2 seconds.</p>
--	--

7. Scan to exit the programming mode.


12.5 Custom channels

In the regular radio mode the Tron TR30 is capable of storing up to 20 custom channels.

To view pre-programmed custom channels, select the Custom channel menu (menu option 4).

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

 <p>NOTE</p>	<p>The above custom channels must be programmed by your radio supplier.</p>
--	---

12.6 Volume adjustment


Function:

Volume adjustment

Display screen:



1. Turn the knob to adjust the volume.

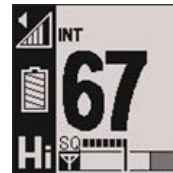
 <p>NOTE</p>	<p>The volume symbol in the display indicates the volume level.</p> <p>Ensure that you do not press the knob while adjusting the volume.</p>
--	--

12.7 Squelch adjustment


Function:

Squelch adjustment

Display screen:



1. Press and turn the knob clockwise to reduce sensitivity.

 <p>NOTE</p>	<p>When the knob is pressed twice, it opens the squelch immediately.</p> <p>The squelch bar appears on the screen display indicating the current active sensitivity level. When adjusted fully to the left, the squelch is completely open, adjusting to the right lowers the sensitivity.</p>
--	--

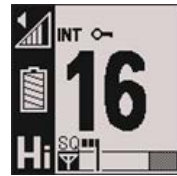
	<p>The signal strength of the current channel appears on the bar below the squelch bar. If the received signal is strong enough, the squelch opens and voice is received. This is indicated by the Rx symbol.</p>
--	---

12.8 Lock and unlock


Function:

Lock/Unlock

Display screen:



1. Press and hold the HI/LO button for 2 seconds to lock or unlock the radio.

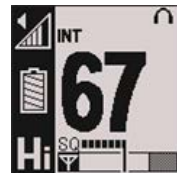
	<p>A key symbol appears when the radio is locked.</p>
---	---

12.9 External accessories

Function:


External accessories

Display screen:



The headphone symbol appears in the display screen when you connect an external accessory, such as a headphone, microphone or external PTT.


Connector type: 3,5mm 4 pole jack.

 <p>CAUTION</p>	<p>When using an accessory, the radio is no longer waterproof.</p> <p>The antenna and jack cover must be correctly assembled on the radio in order for it to be completely waterproof, it is therefore not recommended to use accessories while using the Tron TR30 in the emergency mode.</p>
--	--

12.10 Watch

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

1. Dual watch
2. Triple watch
3. Scan

 <p>IMPORTANT</p>	<p>The radio will continue to watch channel 16 while receiving on other channels.</p>
--	---

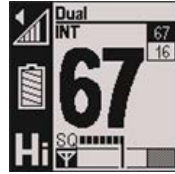
12.10.1 Dual watch

Function:

Display screen:

Dual watch (DW)

The DW function allows the user to monitor channel 16 and one selected channel alternately.



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

To select DW, do the following:

1. Press the up/down arrow buttons at the same time to enter the menu.
2. Using the arrow buttons, select Settings.
3. Using the arrow buttons, select DW/TW.
4. Using the arrow buttons, 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/down buttons to watch a second channel.
3. Press Scan a second time to deactivate dual watch.

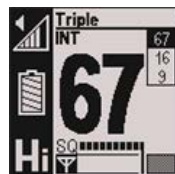
12.10.2 Triple watch

Function:

Triple watch

The TW function allows the user to monitor channel 16 and one selected channel alternately.

Display:



The channel search indicator is visible on the display,


however, the channels do not appear in real time.

To select TW, do the following:

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

To activate or deactivate TW, do the following:

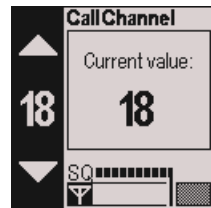
1. Press Scan to activate triple watch.
2. Press the up/down buttons to watch a second channel.
3. Press Scan a second time to deactivate triple watch.

 <p>NOTE</p>	After choosing TW, you can turn on/off triple watch by pressing Scan again.
--	---

Function:


Call channel programming

Display:



To program a call channel, do the following:

1. Press and hold 16 for 2 seconds to enter call channel.
2. Press and hold 16 again to enter the call channel programming screen.
3. Press up/down arrow buttons to select the desired channel.
4. Press and hold Mem until you hear a beep.

	<p>The current value updates within approximately 2 seconds.</p>
---	--

5. Press Scan to exit the programming mode.

12.10.3 Scan

Function:

Scan

All stored channels can be browsed by pressing the Mem button. Stored channels are displayed with an M.

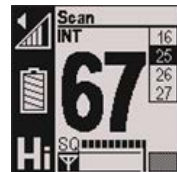
The channel search indicator is visible on the display, however, the channels do not appear in real time.


The radio watches a pre-programmed set of 12 channels maximum.

To activate or deactivate Scan, do the following:

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

Display screen:



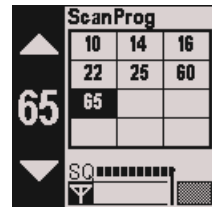
 <p>NOTE</p>	<p>When scan is active the scan program screen opens.</p>
--	---

Function:

Visual method

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

Display screen:



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. Press the Scan button to deactivate all Scan, DW or TW functions.
2. Navigate to the channel you want to store or delete from the memory.
3. Press and hold Mem 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 up/down arrow buttons to select the desired channel.
4. Press and hold Mem until you hear a beep to add or remove the current channel (wait approximately 2 seconds).
5. Press Scan to exit programming mode.
6. Press and hold Scan for 2 seconds to activate Scan.

12.11 Menus

Menus:

Display screen:



Press the up/down arrow buttons at the same time to enter/exit the menu system.
Use the up/down arrow buttons to navigate and select using Scan/Enter.

Exit:

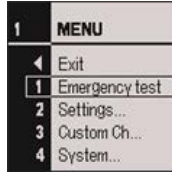
Display screen:



Emergency test:

Display screen:

Menu number:



1

Settings:

Display screen:

Menu number:

Use this menu option to adjust the following settings:

2

- Key sound
- Key volume
- DW/TW
- Backlight time
- Backlight level
- Contrast
- Key lock time
- Channel set

Key sound:

Display screen:

Menu number:

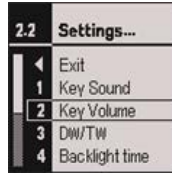


1

Key volume:

Display screen:

Menu
number:

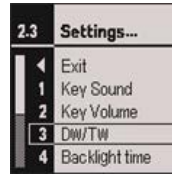


2

DW/TW:

Display screen:

Menu number:



3

Backlight time:

Display screen:

Menu number:



4

Backlight level:

Display screen:

Menu number:

- fff, low, high (0,1,2)

5

Contrast:

Display screen:

Menu number:



6

Key lock time:

Display screen:

Menu number:

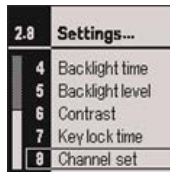


7

Channel set:

Display screen:

Menu number:

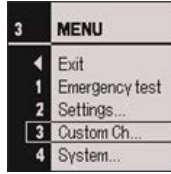


8

Custom channel:

Display screen:

Menu number:



3

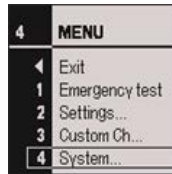
System:

Use this menu option to access the following information:

- Serial Number
- SW version
- HW version

Display screen:

Menu number:

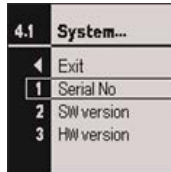


4

Serial Number:

Display screen:

Menu number:

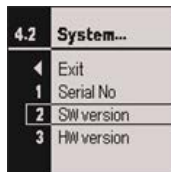


1

SW Version:

Display screen:

Menu number:

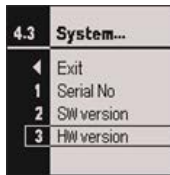


2

HW Version:

Display screen:


Menu number:



3

13 Maintenance

The following maintenance should be completed.


 <p>CAUTION</p>	<p>The Tron TR30 is a sealed waterproof radio, and does not contain any user serviceable parts inside.</p> <p>This radio must never be opened by anyone other than an authorized Jotron agent. Unauthorized disassembly will void your warranty.</p>
--	--

13.1 Taking care of a Tron TR30

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

Recommended inspection tips:

- Clean the radio (externally) in fresh water only if it has been immersed in sea water.

 <p>CAUTION</p>	<p>Ensure that the antenna and jack cover are assembled correctly, if not the radio is not waterproof.</p>
---	--

- Inspect the battery connection pins, the gasket and the lock/release device regularly .
- Inspect the housing for defects regularly. This is important as defects can affect water sealing.

13.2 Regular testing

It is important to perform regular testing of equipment to ensure proper operation, such that you know it is in good working order in case of a potential distress situation.

Testing is completed by using the emergency test mode functionality within the radio.

To activate or deactivate the emergency test mode, do the following:

1. Select Emergency test from the menu.
2. Select ON
3. Select SAVE
4. Exit the menu to enable the mode
5. Select OFF
6. Select SAVE
7. Exit the menu to disable the mode

Testing should occur monthly if the radio is used regularly and at least once yearly when stored on a lifeboat or raft.



IMPORTANT

Ensure you have an extra test battery available for use during testing to avoid using a sealed lithium battery.



NOTE

When testing the GMDSS radio, use the test battery included in your purchase.

When testing the combined GMDSS and VHF Maritime radio, use the rechargeable battery included in your purchase.

13.3 Cleaning of dirt and oil

To clean away dirt and oil from the radio wash it with warm water (no higher than 45 degrees celsius) and mild dish soap. Finish by rinsing with fresh water.

15 Channels and frequencies

15.1 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 1W

15.2 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 1W

16 Warranty

All Jotron products are warranted against factory defects in materials and/or workmanship.

The warranty period for the Tron TR30 radio is valid for 2 years from the date the product is shipped from Jotron.

During this warranty period Jotron will repair or when necessary replace a product at no cost, including the costs of labor, materials and return transportation from Jotron or a Jotron subsidiary (according to delivery terms: DAP Incoterms 2010 by regular freight to "place" (airport)).

Jotron reserves the right to decide whether a defective product falls within the terms and conditions of the warranty.

The warranty is only valid as long as service and battery replacement have been carried out by an authorized Jotron agent or distributor. In addition, the warranty will not apply in the instance that the product has been accidentally damaged, misused, tampered with and/or is dysfunctional as a result of services or modifications performed by an unauthorized person or in an unauthorized facility.

Jotron is not liable for consequential or special damages and cannot be held responsible for any damages caused due to incorrect usage of the equipment, breach of procedures, or the failure of any specific component or other part of the equipment.

For product support contact: support@jotron.com

For repair requirements contact: repair@jotron.com

16.1 Warranty claims

Warranty claims can be submitted during the warranty period, all claims will be appropriately handled according to the warranty agreement specified for this product.

Prior to returning your product for repair under a warranty claim, you must do the following:


- Submit a warranty claim in writing to Jotron. Send a claim to: repair@jotron.com.
- If you are required to return a defective product for repair, you must attain a return material authorization (RMA) number. Register to obtain a RMA number under Support/RMA request at: www.jotron.com.
- Return your defective product ,your RMA number must be included as a reference within the shipping documentation.


Service agent obligations during a warranty claim:


- Supply a replacement product from own stock, if available.
- When agreed, will return the defective product to Jotron.
- Ensure that all electronic products are shipped individually in an antistatic bag or is covered with a Jotron plastic cover.

16.2 Service

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

 <p>CAUTION</p>	Improper service or maintenance may destroy the functionality and/or performance of this product
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 <p>NOTE</p>	<p>Jotron does not accept any responsibility for the dismantling or reassembling of a Tron TR30 that occurs externally from a Jotron authorized facility and/or is handled by someone other than an authorized, trained and certified person.</p>
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 <p>IMPORTANT</p>	<p>Any costs related to the above mentioned services, including transportation connection with returning and man hours for repairing a product will not be assumed by Jotron and must be covered by the customer.</p>
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Jotron distributors and service agents stock the most commonly required spare parts.

16.3 Service agents

Jotron subsidiary companies:

<p>Jotron Asia Pte. Ltd. Changi Logistics Center 19 Loyang Way # 04-26 Singapore 508724 Tel: +65 65426350 Fax: +65 65429415 E-mail: sales@jotron.com</p>	<p>Jotron USA, Inc. 10645 Richmond Avenue, Suite 170 Houston, TX 77042 USA Tel: +1 713 268 1061 Fax: +1 713 268 1062 E-mail: sales@jotron.com</p>	<p>Jotron UK Ltd. Crosland Park Cramlington NE23 1LA United Kingdom Tel: +44 1670 712000 Fax: +44 1670 590265 E-mail: sales@jotron.com</p>
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17 Optional accessories

Below is a list of additional optional accessories available for the Tron TR30 , both the GMDSS and Maritime VHF radios.

Part Number:	Part Name:	83446	87950
81341	Speaker microphone	X	X
83426	Test battery (orange)	X	
89449	Carry case	X	X
31030	Headset	X	X

18 Spare parts

Keep the original packaging. If the Tron TR30 needs to be shipped for servicing, it is required to be shipped within the same packaging as when the product was first received.

Part Number:	Part Name:	83446	87950
83427	Antenna kit (including cover for jack plug)	X	X
83428	Belt clip and wrist strap kit	X	X
87685	RCH-30 Battery charger		X
87086	Emergency GMDSS battery (orange)	X	X
87087	Rechargeable LiPo 1550mAh battery (black)		X
89502	Switching power supply 100-240V/18V-0.83A		X



IMPORTANT

Ensure that all spare parts being fitted to the Tron TR30 are original spare parts manufactured or approved by Jotron.

Any use of counterfeit spare parts will deviate from the product type approval certificates.

19 Recycling and disposal

The Tron TR30 is not to 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.

20 Emergency instructions

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

www.jotron.com

TRON TR30

VHF GMDSS radio

1

Take emergency battery out of the charger

Take emergency battery out of the charger

2

Remove safety seal

Remove safety seal

3

Insert emergency battery

Insert emergency battery

A	Alfa
B	Bravo
C	Charlie
D	Delta
E	Echo
F	Foxtrot
G	Golf
H	Hotel
I	India
J	Juliett
K	Kilo
L	Lima
M	Mike
N	November
O	Oscar
P	Papa
Q	Quebec
R	Romeo
S	Sierra
T	Tango
U	Uniform
V	Victor
W	Whiskey
X	X-ray
Y	Yankee
Z	Zulu

F

Functions

On/off

Channel 16

Volume

Squelch

PTT

P

Emergency procedure

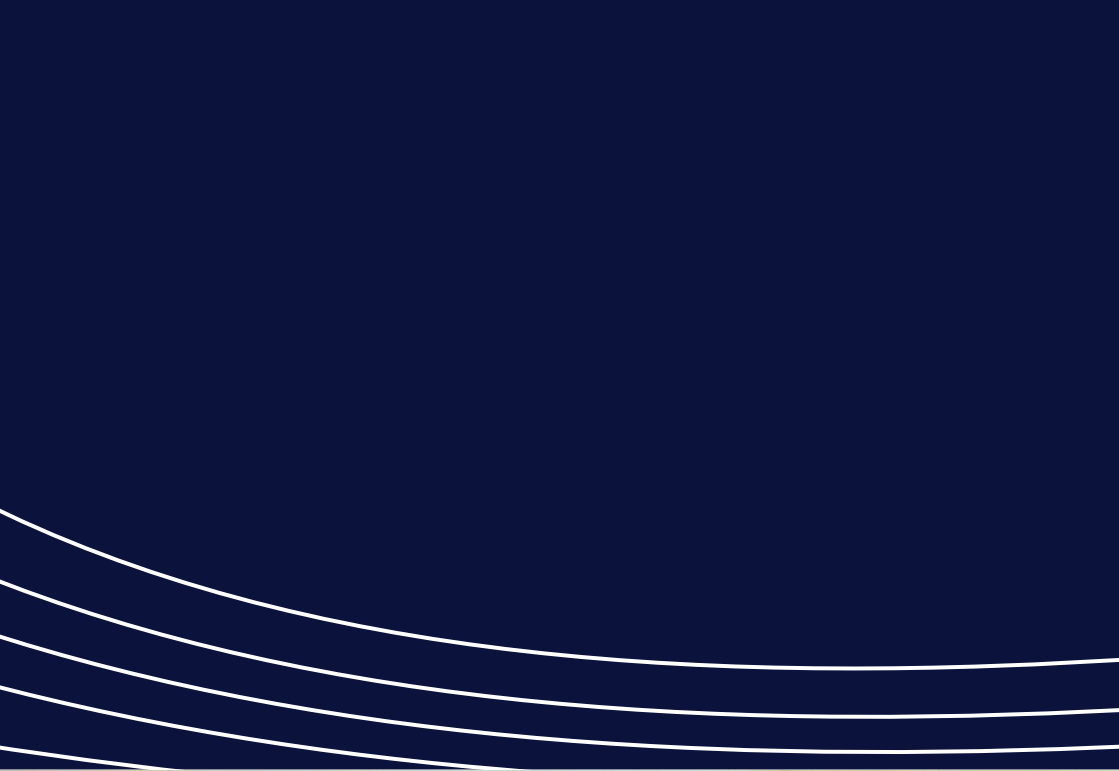
Select channel 16
Push To Talk (PTT):

"MAYDAY, MAYDAY, MAYDAY..."
 "This is [own ships name], [own ships name], [own ships name]"
 "Call sign: [own ships callsign], MMSI: [own ships MMSI]"
 "Over"

Continue emergency message with useful information for example:
 Position, Nature of distress, Nature of assistance required.

Own ship name: _____ Call sign: _____ MMSI: _____

Figure 5 Emergency instructions overview



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Tron TR30 - v.A