"RADAR II"

INSTALLATION AND USER MANUAL

FAMILY CODE **101-050**

Codice fascicolo:997-101-50320 Rev:AD
Data: Lunedì 29 otobre 2012
Codice foglio:997-101-50316 Rev:AC

O.M.F.B. S.p.A. Hydraulic Components

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1. GENERAL COMMENTS

1.1 OMFB RADAR II Radio remote control systems

OMFB radio remote control systems have been developed specifically for use on automotive vehicles, thus taking into consideration the specific problems of automotive applications.

Special care was taken with the following factors:

- defining the type of housing to use;
- configuration of the manual commands always available in case of radio transmission failure;
- radio channel engineering to ensure the proper capacity in terms of distance and transmitting conditions.

The OMFB RADAR II radio remote control system essentially consists of the following components:

- 3 receivers:
  1. 2-channel receiver (2 CH)
  2. 2-channel receiver, trailer configuration (2CH RIM)
  3. 4-channel receiver (4 CH)

- 2 transmitters:
  1. RADAR II Midi transmitter (to control 2- and 4-channel systems)
  2. RADAR TXF transmitter (to control 2- to 12-channel systems)

The OMFB RADAR II system is completely modular, and up to 10 different configurations may be obtained by combining the above components appropriately.

Each paragraph of this section describes the individual system components of the RADAR II radio remote control system.

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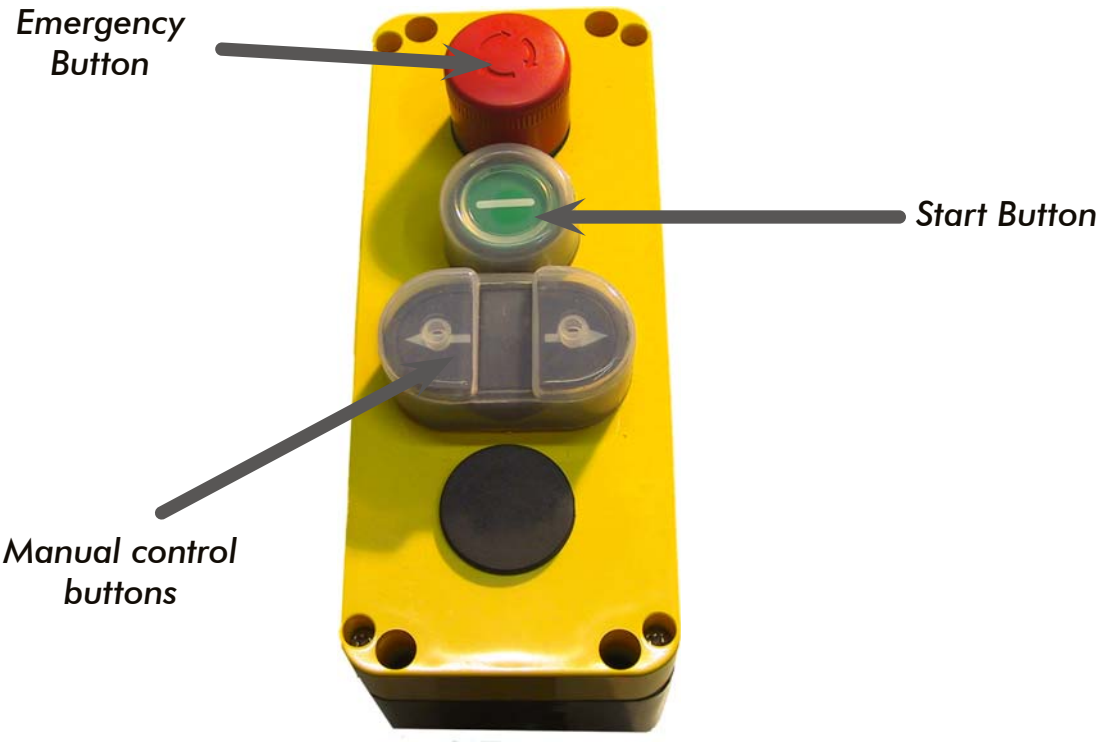
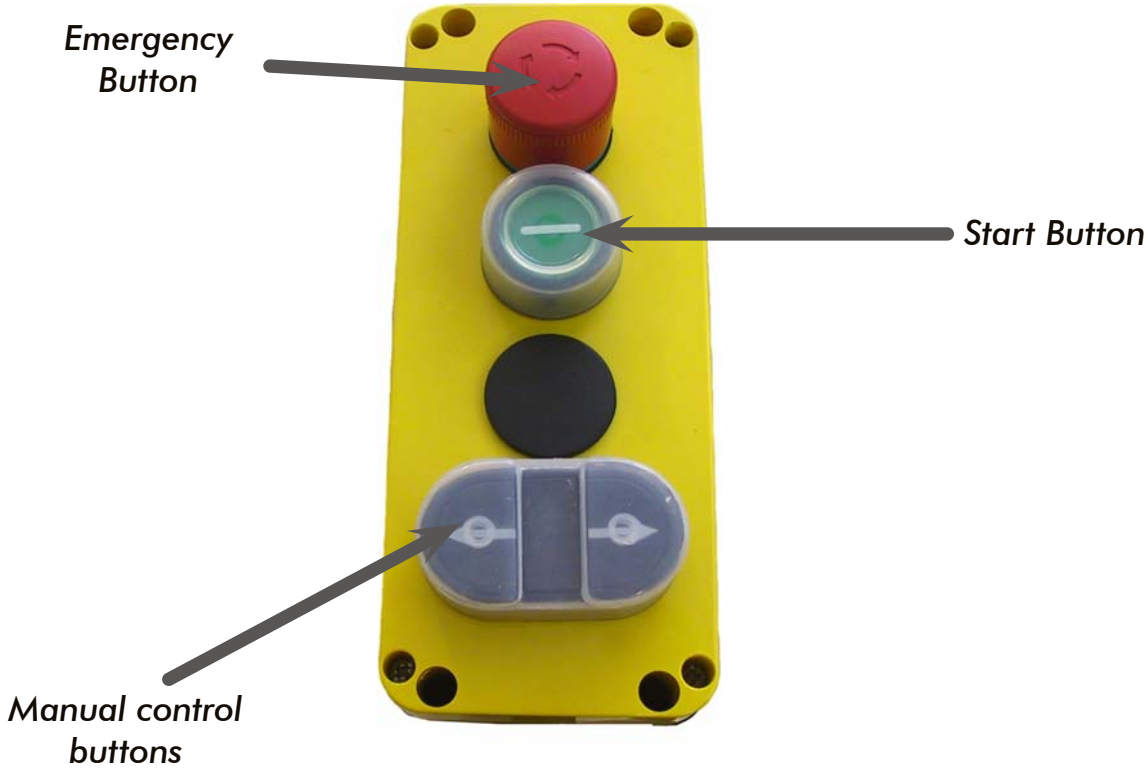
1.2 RADAR II 2-channel receiver



1.3 RADAR II 2-channel receiver, trailer configuration



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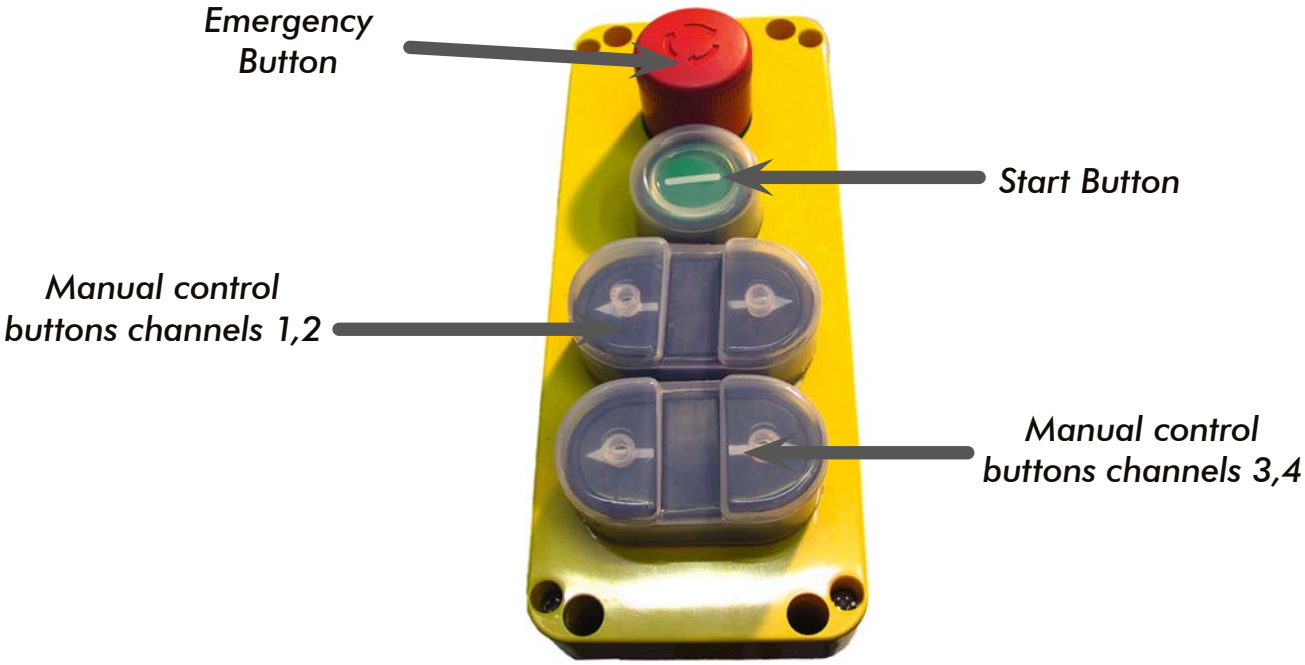
1.4 RADAR II 4-channel receiver



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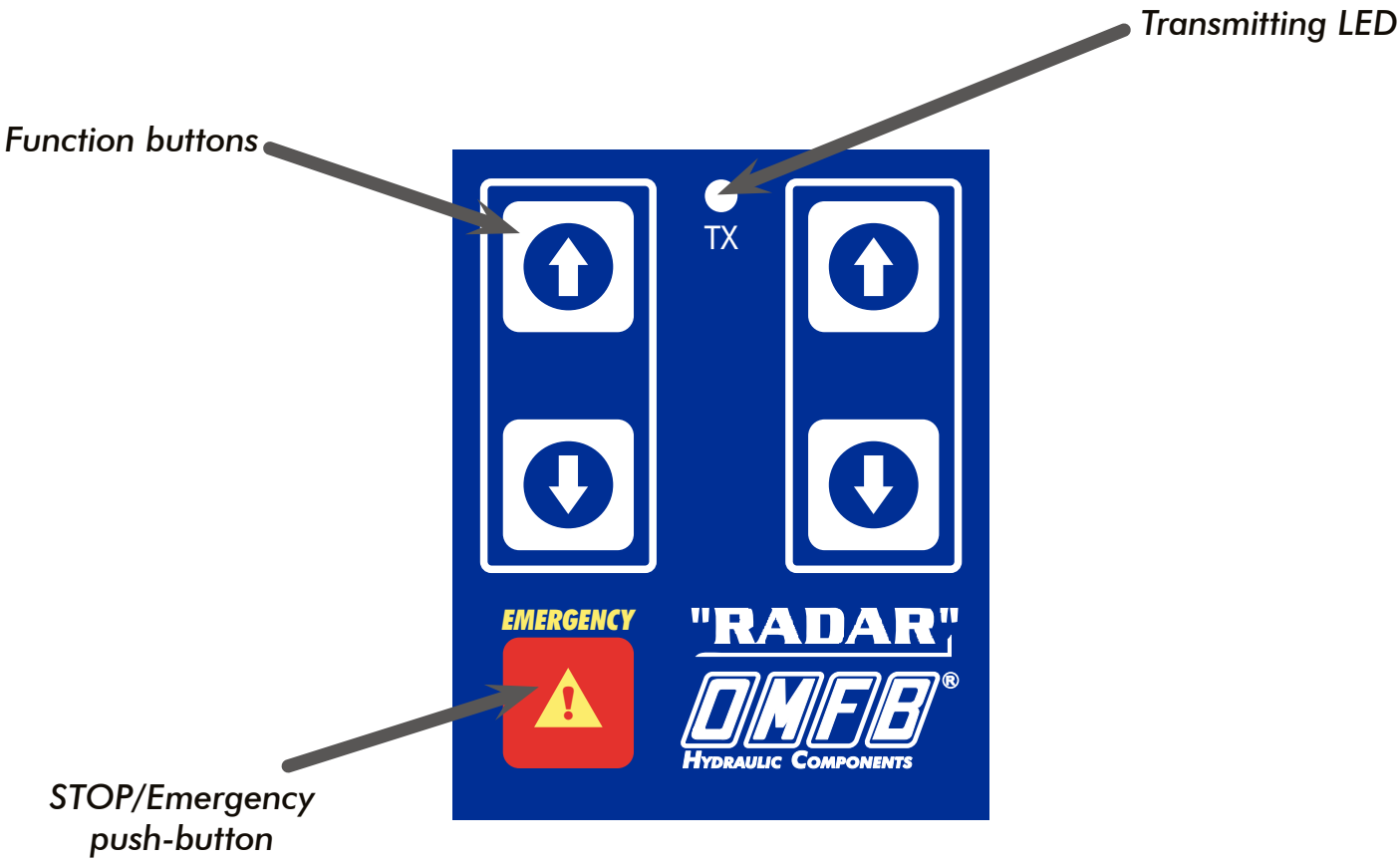
1.5 RADAR II Midi transmitter

To control configurations with 2, 2+2, or 4 channels.



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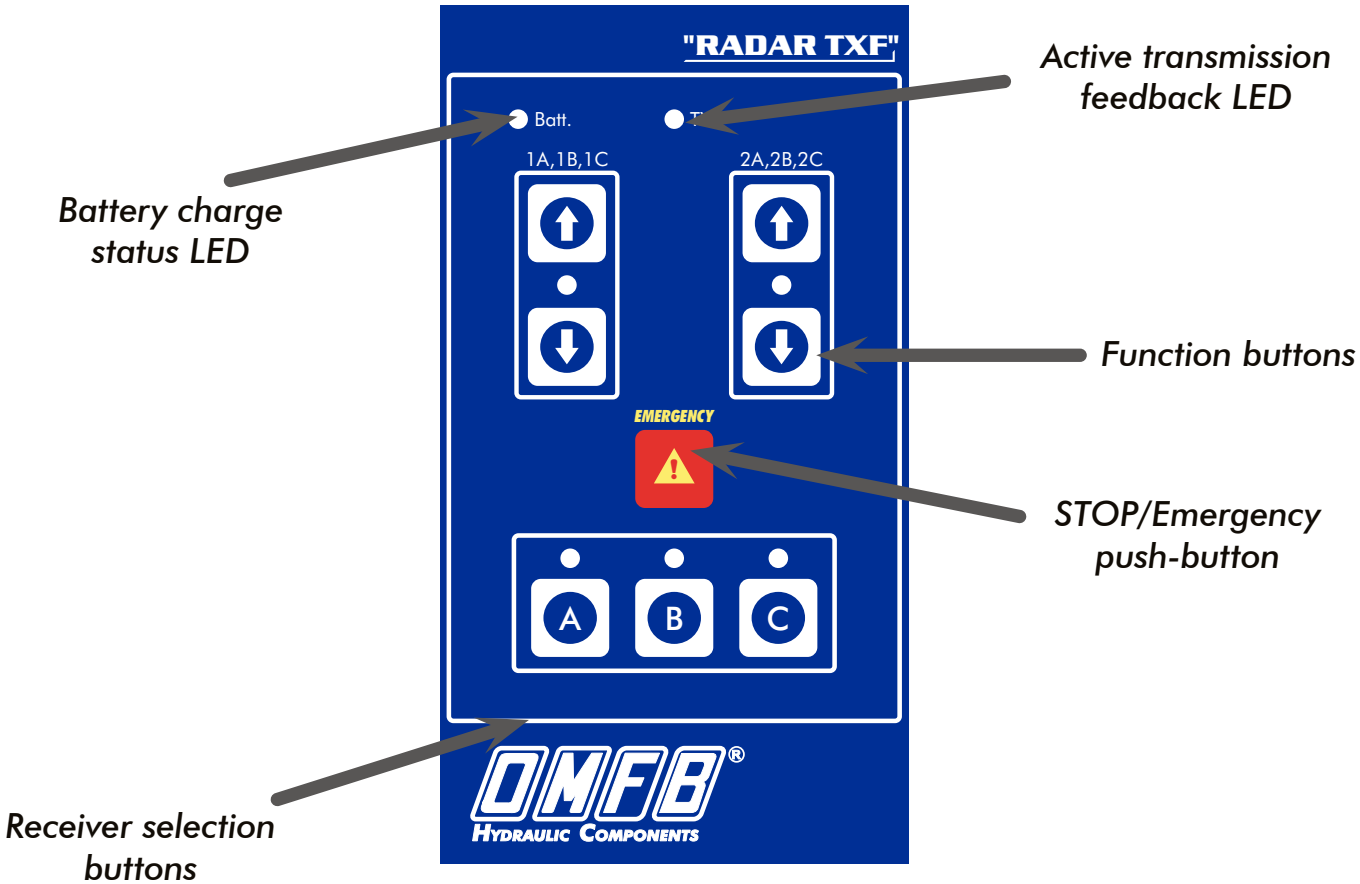
1.6 RADAR TXF transmitter

To control configurations with 2, 2+2, 4, 6, 8, 10, and 12 channels.
For more information see the RADAR TXF transmitter manual.



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1.7 Product Markings and certification

RADAR II radio remote controls meets the rules set forth in the following harmonised technical standards:

- **EN 300 220 - 3:2000** for Effective Use of Spectrum;
- **EN 301 489 - 3:2000** for Electromagnetic Compatibility;
- **EN 60930:2000 (3rd EDITION)** for the Protection of the health and the safety of the user.

Compliance with the above technical standards, certified by test reports issued by the competent European body Prima Ricerca & Sviluppo (via Campagna, 58 - 22020 Gaggino Faloppio (CO)), grants the presumption of conformity to RADAR II radio remote controls with the essential requirements and other provisions set forth in European Directives:

- **RTTE n° 99/05/CE,** D. Lgs. n° 269 del 09/05/01
- **EMC n° 89/336/CE**, articles 4, 10.1 and 10.2, annexes I and II
- **Bassa Tensione n° 73/23/CE**, article 2, annexes I, III part 8 and IV and subsequent modifications.

Compliance with pertinent directives is certified by the presence of the **CE Marking** on the product:

CE

The compliance of **RADAR II** radio remote controls with essential requirements of Directive 99/05/EC **allows them to be placed on the market, put into service and have the right to be connected in every European country,** as well as all countries belonging to CEPT, **without the need for homologation by the relevant Postal and Telecommunications Administration.**

According to an indicative and non-exhaustive list of equipment that falls within the classification established by **European Commission Decision 2000/299/EC, RADAR II** radio remote controls are not subject to any restrictions for installation and connection, since they belong to a class of S.R.D. (Short Range Devices) without specific uses and operating within a radio frequency band (433.050 – 434.790 MHz) harmonized within the European Community.

The **RADAR II** radio remote control **receiver** also **complies with the essential requirements and other provisions set forth in European Directive 2006/28/CE and in ECE/ONU** Regulation No 10 Addendum 2, relating to "Suppression of radio interference (Electromagnetic Compatibility) produced by spark-ignition engines fitted to motor vehicles".

Concerning to **Electromagnetic Compatibility 2006/28/CE** is the reference directive for every electrical/electronic system included in road vehicles because it constitutes a "specific directive" for the purposes of Article 2, par. 2, of Council Directive 89/336/EC.

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The provisions of **2006/28/CE** must be satisfied, concerning Electromagnetic Compatibility, by all vehicles as defined in Directive **70/156/EC** relating to the **type-approval of motor vehicles and their trailers**, as emended by 92/53/EC, as well as their **components or separate technical units** that are exempt from the compliance with the rules of 89/336/EC.

Conformity tests prescribed by Directive **2006/28/CE** and ECE/ONU Reg. No 10 Add. 9 were carried out at the laboratory **PRIMA RICERCA & SVILUPPO** (via Campagna, 58 - 22020 Gaggino Faloppio (CO)).

Compliance of RADAR II radio remote controls with Dir. **2006/28/CE** requirements is certified by the Notified Body NSAI by releasing the approval number for the product marking:

e24*72/245*2006/28*1732*00

Compliance is shown by product marking:

Compliance of RADAR II radio remote controls with the ECE/ONU Reg. No 10 Add. 9 requirements is certified by the Notified Body NSAI4 by releasing the approval number for the product marking:

E24 10R-020012.

Compliance is shown by product marking:

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2. ORDERING CODES FOR RADIO REMOTE CONTROLS AND SPARE PARTS

2.1 Ordering codes

The **"RADAR II"** Radio Remote Control may be supplied in the following models:

- With **RADAR II Midi transmitter:**

  - **101.050.50050:** 2 channel radio remote control
  - **101.050.50069:** 2+2-channel radio remote control
  - **101.050.50078:** 4-channel radio remote control

- With **RADAR TXF transmitter:**

  - **101.050.40052:** 2-channel radio remote control with TXF transmitter
  - **101.050.40061:** 2+2-channel radio remote control with TXF transmitter
  - **101.050.40070:** 4-channel radio remote control with TXF transmitter
  - **101.050.40089:** 6-channel radio remote control with TXF transmitter
  - **101.050.40098:** 8-channel radio remote control with TXF transmitter
  - **101.050.40105:** 10-channel radio remote control with TXF transmitter
  - **101.050.40114:** 12-channel radio remote control with TXF transmitter

2.2 Spare parts codes

- **101.051.40006:** complete RADAR II TXF transmitter (with battery charger)
- **101.051.40060:** RADAR TXF transmitter (without battery charger)
- **101.051.40079:** battery charge for RADAR TXF
- **101.051.40104:** RADAR II Midi transmitter

- **101.051.40033:** 2CH receiver for RADAR II
- **101.051.40042:** 4CH receiver for RADAR II
- **101.051.40051:** RIM 2CH receiver for RADAR II

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3. TECHNICAL SPECIFICATIONS

3.1 RADAR II Midi transmitter apparatus

(Regarding the RADAR TXF transmitter, consult the enclosed manual)

POWER SUPPLY	*Battery type 6LR61 9 V*
ABSORBED CURRENT	*Max 12-15 mA*
SPURIOUS EMISSIONS (vs. BASIC)	*-50 dB*
WORKING FREQUENCY	*433,920 MHz*
TRANSMISSION POWER (E.R.P.)	*<10 mW*
MODULATION	*AM*
TRANSMISSION ENCODING	*13 bit Digital*
OPERATING TEMPERATURE	*- 30 / + 55 °C*

3.2.1 Battery Use

The transmitter is standard-equipped with a power supply battery type 6LR61 9 V already inserted in the compartment provided.

3.3.1 Replacing the Battery

When light of the transmitter LED is weakened, or the command reception capacity degraded, it is necessary to replace the power battery.

To replace, open the rear cover of the transmitter, remove the used battery and insert the new one. Finally, close the battery compartment cover, taking care not to damage the power supply wires.

Warning:

- Remove the battery before disposing of the radio remote control;
- The used battery should be disposed of according to current regulations, by using the special containers available for this purpose;
- If fluid is leaking from the battery, replace it immediately, making sure to clean the battery compartment and wash your hands thoroughly in case of contact with the leaking fluid. Do not allow eyes to come into contact with these substances.

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3.2 RADAR II Receiver apparatus

SUPPLY VOLTAGE	*min 9 V, max 28 V*
MAXIMUM CURRENT CONSUMPTION	*370 mA a 10 V* *563 mA a 28 V*
MAXIMUM SWITCHABLE CURRENT	*8 A*
WORKING FREQUENCY	*433,920 MHz*
RF SENSITIVITY	*- 100 dBm*
PASS-BAND	*600kHz a - 3dB*
INTERFERENCE REJECTION	*- 120 dB*
RF EMISSION TO ANTENNA	*- 80 dBm*
REACTION TIME	*2,5 seconds*
OUTPUTS	*N° 3 unstable relay type*
CURRENT CARRYING CAPACITY	*max 8 A*
TEMPERATURA DI FUNZIONAMENTO	*- 30 / + 80 °C*

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4. *ELECTRICAL SPECIFICATIONS*

4.1 Power supply

RADAR II radio remote controls may be powered with a **voltage between 10V and 28V in direct current.**

The power supply line (+12/24V batt and ground) should lead to the receiver directly from the main source (battery or stabilized power source), with cables adequately sized for the load to be carried (cross-section of at least 1 mm^2), also using a **safety fuse**.
The power supply line to the receiver must be kept **locked, or under a switch dedicated** specifically to the radio remote control system, or under an appropriately sized **battery disconnector.**

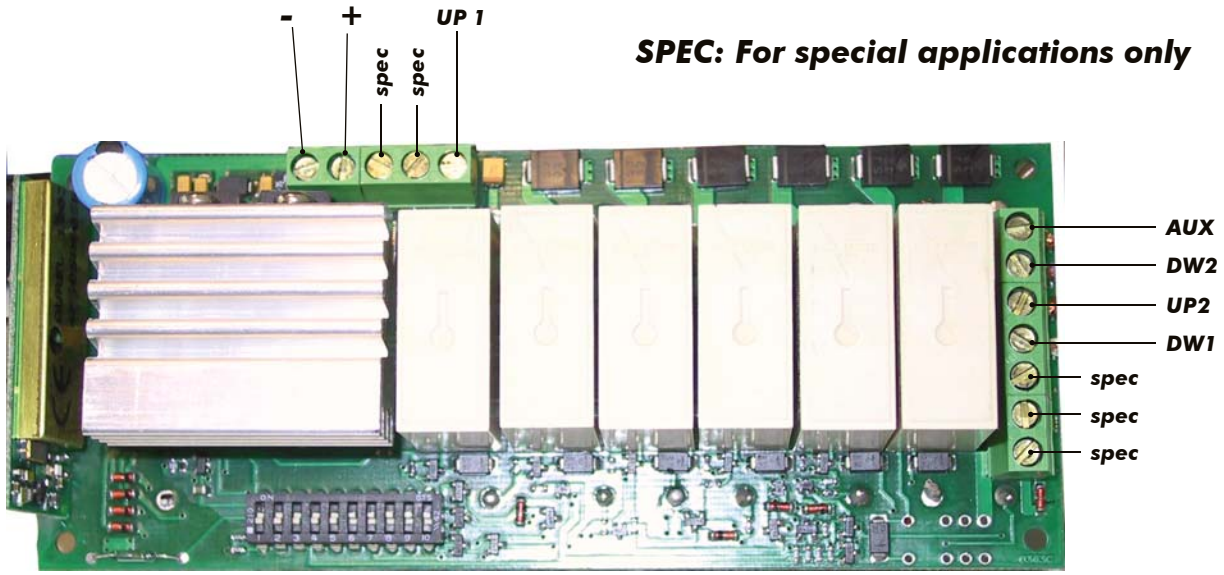
It is essential that the radio remote control system never be powered while the vehicle is running: the installer is responsible for informing the system end user of this fact.

4.2 Connecting devices to the receiver

A terminal board is used to connect devices (solenoid valves, remote switches) to the electronic board of the receiver.
In standard versions the radio remote controls are supplied with 1 m of cable, mounting one or two 5-pin connectors that are described in the next paragraph: the cables used in the standard versions have a cross-section of 1 mm ^ 2, and the function/color pairing is as follows:

POSITIVE POWER SUPPLY	*"+"*	*Red*
NEGATIVE POWER SUPPLY	*"-"*	*Yellow/Green*
UP 1	*"UP1"*	*Black*
DOWN 1	*"DW1"*	*White*
UP 2	*"UP2"*	*Brown*
DOWN 2	*"DW2"*	*Purple*
AUXILIARY	*"AUX"*	*Light blue*

Should it be necessary to make any changes to the connections on the board, or even to perform simple tests, the connection diagram is shown here below: however, since the receiver housing must be opened in order to perform this operation, it MUST be agreed upon by phone with OMFB staff.



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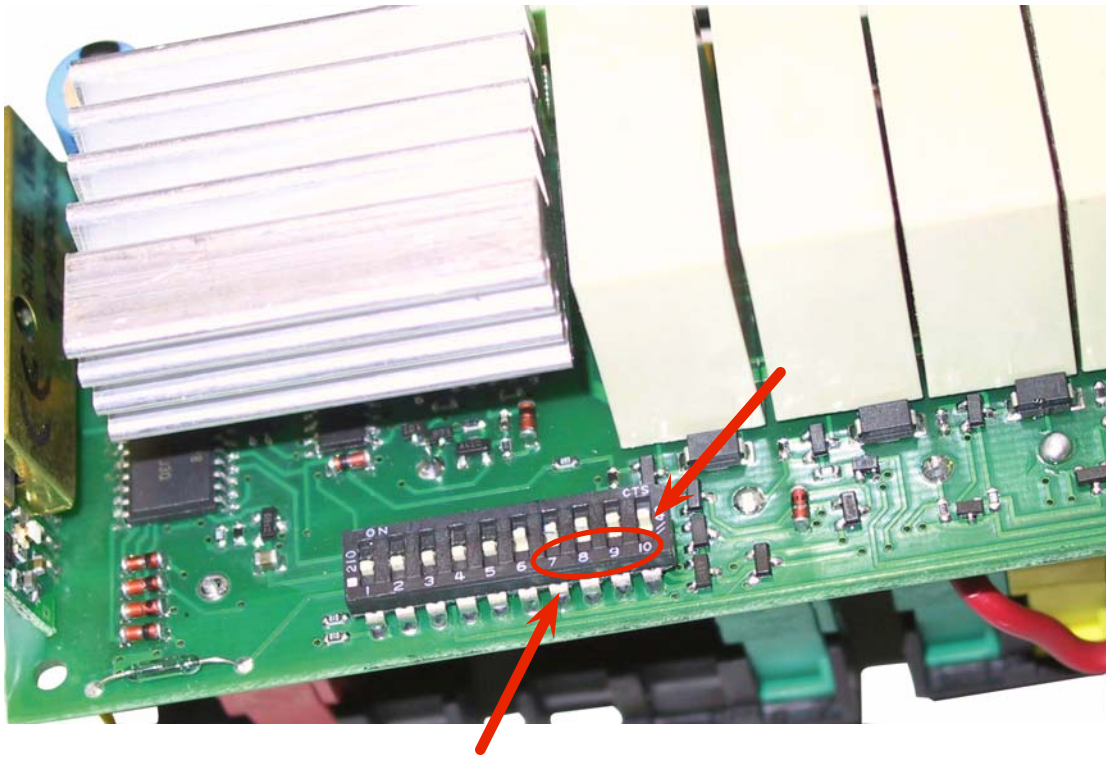
4.3 Setting the output type (Single-/Double-Acting)

The typical device configuration of OMFB radio remote controls is to control systems made up of electric pumps and solenoid valves.
The OMFB Radar II receiver is equipped with a series of 4 microswitches, shown in the figure: each microswitch allows the installer to set, for each individual output, the function as double-acting or single-acting, thus it allows the installer to define whether or not the AUX output must be enabled parallel with each individual output.
In the case of configuration with electric pump, if the microswitch for a given output is set to OFF (away from the board), the electric pump will not be enabled parallel to this output; if instead the microswitch is set to ON (thus facing the board), the electric pump will be enabled parallel to this output.



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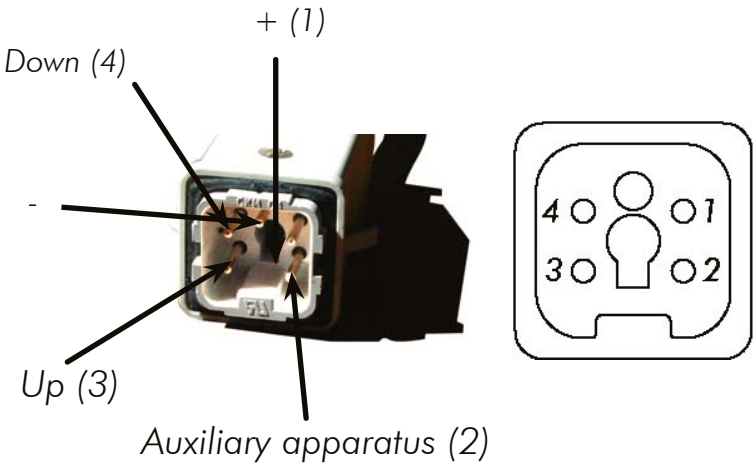
4.4 Output connectors

The 3 versions of receivers have the following low-voltage outputs (unstable relay type, "deadman" activation):

Radar II 2 CH Receiver

• *2 outputs to activate electrical devices (such as solenoid valves or relays), with a maximum absorption of 8 A each. The two outputs are enabled by the UP and DOWN functions of channel 1, respectively, and are not clean contacts, but reflect the supply voltage of the device (9 ÷ 28V);*

• *1 AUX output (see 4.3 for more information) with a maximum absorption of 8 A.*



Radar II 2 CH RIM Receiver

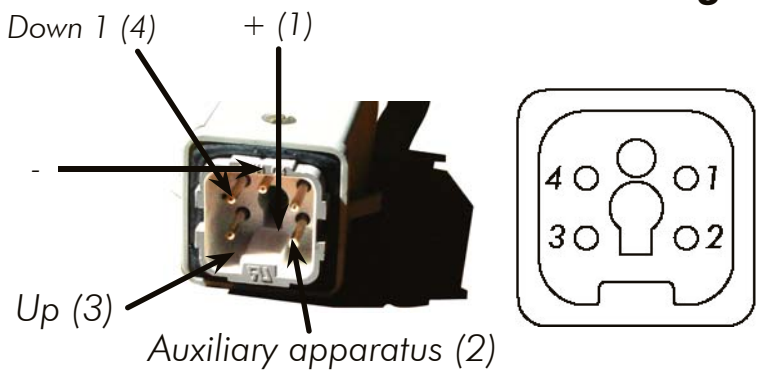
• *2 outputs to activate electrical devices (such as solenoid valves or relays), with a maximum absorption of 8 A each. The two outputs are enabled by the UP and DOWN functions of channel 2, respectively, and are not clean contacts, but reflect the supply voltage of the device (9 ÷ 28V);*

• *1 AUX output (see 4.3 for more information) with a maximum absorption of 8 A.*

Radar II 4 CH Receiver

• *4 outputs to activate electrical devices (such as solenoid valves or relays), with a maximum absorption of 8 A each. The 4 outputs are enabled by the functions UP and DOWN of channel 1 and channel 2, respectively, and are not clean contacts, but reflect the supply voltage of the device (9 ÷ 28V);*

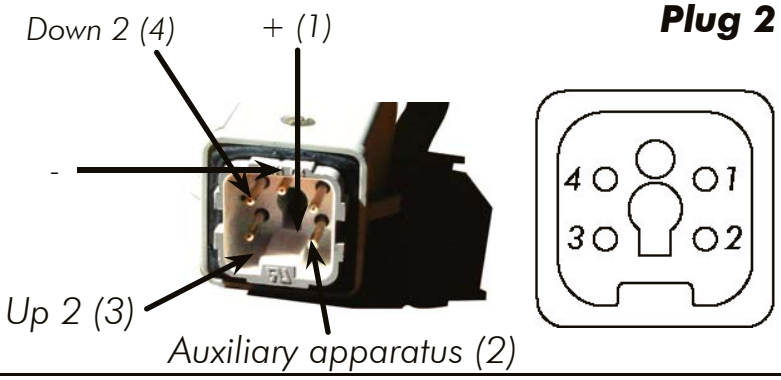
Plug 1



• *1 AUX output (see 4.3 for more information) with a maximum absorption of 8 A.*

WARNING: In the versions with 6 CH, 8 CH, 10 CH, 12 CH, the 2 or 3 receivers have the same technical specifications as the 4CH.

Plug 2



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4.5 Electrical specifications of the admissible loads

The output stage of OMFB radio remote controls uses unstable relays.
The systems are sized for a **maximum load of 8 A+ 8 A inductive** simultaneously on two outputs (8 A on one output and 8 A on the AUX output).
Where the loads are actually close to this limit, we suggest checking with the OMFB staff to determine whether the **type of load** may create problems: the information to report includes: type of load (coil, solenoid valve, remote switch, etc.), **electrical specifications of the load** (generally shown on the labels of the load itself: absorbed power, i.e., 30W, supply voltage, i.e.,12V, absorbed current, i.e. 4 A), **temporary activation cycle** of the load (1 minute of consecutive activation, 3 minutes of rest, etc.).
The more accurate the information the lower the risk that problems may arise due to neglected factors.
The relays are sized to 16 A so as to reduce to a minimum the risk that the relay will stick: in any case, the mushroom-head emergency control, or from the transmitter, cuts off power to the outputs and thus ensures the absolute safety of the system.

4.6 Use and maintenance of the TXF transmitter rechargeable battery

The RADAR TXF transmitter is equipped with Ni-Mh rechargeable battery, rated 7.2V and 170 mAh.

When the transmitter is first supplied, the battery should be considered dead and thus be subjected to an initial charging cycle.

The battery must be recharged solely and strictly using the cigarette lighter battery charger supplied as standard.

Battery specifications:

- **Average recharging time 2 hours**
- **Average duration in continuous transmisison 6 hours**
- **Duration in stand-by 1 month**

The cigarette lighter battery charger supplied as standard is an “intelligent” battery charger and may be used on vehicles with a supply voltage of either 12V or 24V.

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Battery recharging--and thus connection to the battery charger--must take place solely when requested by the device itself, since the RADAR TXF transmitter is equipped with a battery charge status diagnostic system that, as mentioned previously, determines the battery charge status and indicates to the operator when to charge:

- Batt. LED off: "Battery charged";
- Batt. LED flashing: "Use allowed", but suggests recharging once the user session is complete;
- Batt. LED flashes twice and then off "Battery dead": if the battery charger is inserted, you may use the transmitter immediately to complete any operations in progress.

RADAR II radio remote control systems with 6, 8, 10 and 12CH are made by coupling together 2 or 3 receivers with 2 or 4 channels.
With the TXF transmitter to activate the devices connected to the first receiver, press button "C" on the transmitter to select "Receiver A"; to control the devices connected to the second receiver press button "B" to select "Receiver B"; and finally, to control the devices connected to the third receiver, press button "C" to select "Receiver C".

NOTE: The receivers are perfectly identical to one another, and completely interchangeable. It is the operator or installer who defines which are the first, second and third receivers, respectively, during the programming stage described below.

5. INSTALLATION AND MECHANICAL FASTENING OF THE RECEIVER

5.1 General comments

The receiver **must be installed using the 4 through-holes already present on the receiver,** and **must not be opened or drilled** for any reason.

For applications involving strong vibrations, it is recommended to insert the appropriate anti-vibration material between the external housing of the receiver and the support to which it is fastened.

Any opening, drilling or similar operations on the receiver not previously agreed upon with OMFB will void the product warranty.

The following factors must be taken into consideration when choosing the receiver position on the vehicle:

- The red mushroom-head Emergency Stop button must be easily accessible;

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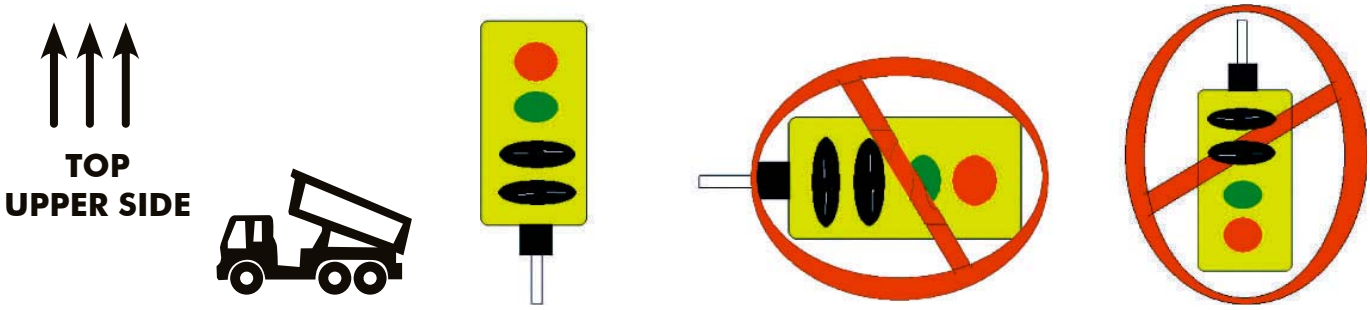
• The best reception capacity is obtained by placing the receiver as high as possible off the ground;
• Whenever possible, the receiver should be clearly visible from the transmitter work area.
• The field radiates concentrically from the antenna; in the case of receivers without external antenna, the latter is aligned with the receiver box.

As already mentioned in the previous paragraph:

The power supply line (+12/24V batt and ground) should lead to the receiver directly from the main source (battery or stabilized power source), with cables adequately sized for the load to be carried (cross-section of at least 1 mm^2), also using a **safety fuse.**
The power supply line to the receiver must be kept **locked, or under a switch dedicated** specifically to the radio remote control system, or under an appropriately sized battery disconnector.
It is essential that the radio remote control system never be powered while the vehicle is running: the installer is responsible for informing the system end user of this fact.

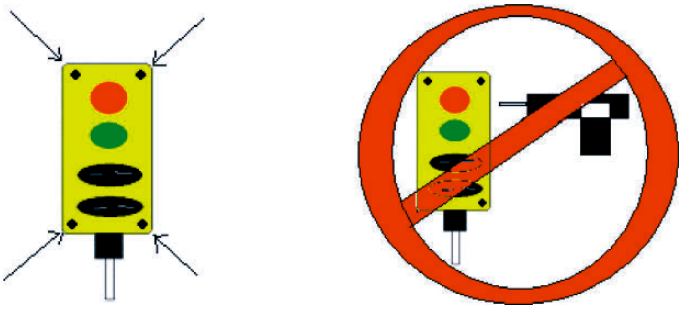
5.2 Positioning the receiver

Install the receiver with the cable input facing **down**, never upwards.



5.3 Fastening the receiver

To fasten the receiver you must take advantage of the studs already present on the receiver box. **Do not drill any holes in the box, under penalty of voiding the product warranty.**



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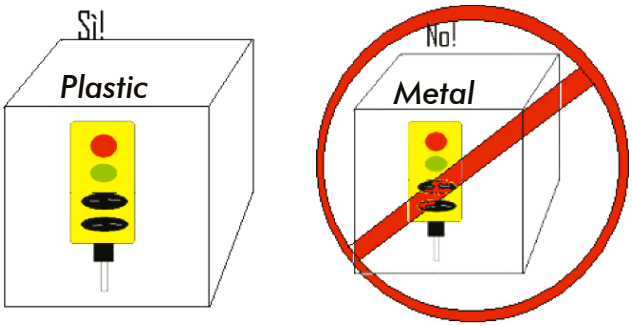
5.4 Insertion in additional housings

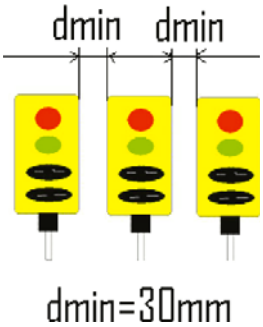
The receiver may be inserted in an additional housing **as long as it is made of plastic and not metal.**



Insertion in a metal housing must absolutely be agreed upon and assessed with OMFB staff to avoid unpleasant malfunctions.

5.5 Installing multiple side-by-side receivers

In the RADAR II 2CH+2CH, 6 CH, 8 CH, 10 CH and 12 CH configurations, which involve multiple receivers installed side by side, these must be installed at a minimum distance of 30 mm from one another.



6. *EMERGENCY STOP*

6.1 Emergency Stop engaged by the Transmitter

(Regarding the RADAR TXF transmitter, see the corresponding manual)

The emergency stop command predominates over all other conditions, and thus may be activated even if the key for another transmitter function is inserted due to a breakdown or carelessness.

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To deactivate the Emergency Stop function (indicated by a continuous buzzer sound emitted by the receiver) and restore system operation, press the green Reset button.

6.2 Emergency Stop engaged by the Receiver

To activate the Emergency Stop function from the receiver press the mushroom-head STOP button (the buzzer inside the receiver emits a continuous sound).

To restore system operation, release the push-button by turning it clockwise and press the green Start button.

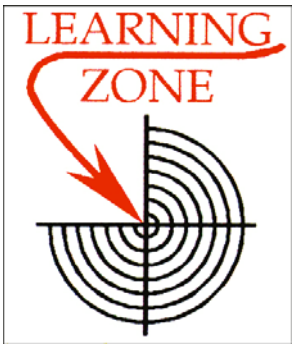
7. PROGRAMMING PROCEDURES

7.1 Programming

The programming procedure depends on the type of receiver with which the transmitter must be associated.
In particular, there are 2 types of receivers OMFB RADAR II systems:

1. Receivers with REED programming (recently introduced on all RADAR II systems);
2. Receivers with STD Programming;

The two receivers are differentiated because on the right-hand side of the REED-type receivers is a label indicating the "Learning Zone" shown in the figure.



Paragraphs 5.2 and 5.3 describe the two programming procedures to follow.
Warning: the two differ solely in point 4.
Warning: If 10 seconds elapse after the programming procedure begins without learning a valid code, the system returns to normal operation with the previous saved code.

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7.2 Resetting saved codes

Each receiver can store a maximum of 5 separate transmitter codes. When the memory is full the receiver signals it at point 4 of the programming procedure, by emitting an intermittent high-frequency sound.
To reset the memory, proceed as for the programming. Once you reach step 4, keep the transmitter next to the receiver for 10 seconds of REED programming, and keep the manual up button pressed for STD programming.

7.3 REED Programming

The REED programming procedure is to be used with both the TXF transmitter and with the RADAR II MIDI transmitter: in the case of the MIDI transmitter, there is no need to press the push-buttons "A", "B" or "C" which are not included since it is able to control only up to 4 channels.

1. Power up the receiver (insert the battery disconnector and any other switch that may be installed in series with the receiver power supply)
2. On the TXF transmitter: press the button "A" to select the "Transmission receiver A" and make sure that the corresponding LED flashes
3. On the receiver: press the red emergency mushroom-head button: the buzzer inside begins to emit a continuous sound;
4. **On the receiver: as shown in the figure, place the central part of the left-hand side of the TXF transmitter near the "Learning Zone": the buzzer inside the receiver emits an intermittent sound;**
5. On the transmitter: press one of the function buttons (Raise/Lower channel 1 or Raise/Lower channel 2);
6. On the receiver: the sound issued by the buzzer returns;
7. On the receiver: release by turning the red emergency mushroom-head button;
8. On the receiver: press the green start button;
9. Make sure all functions connected to the radio remote control system are correctly activated

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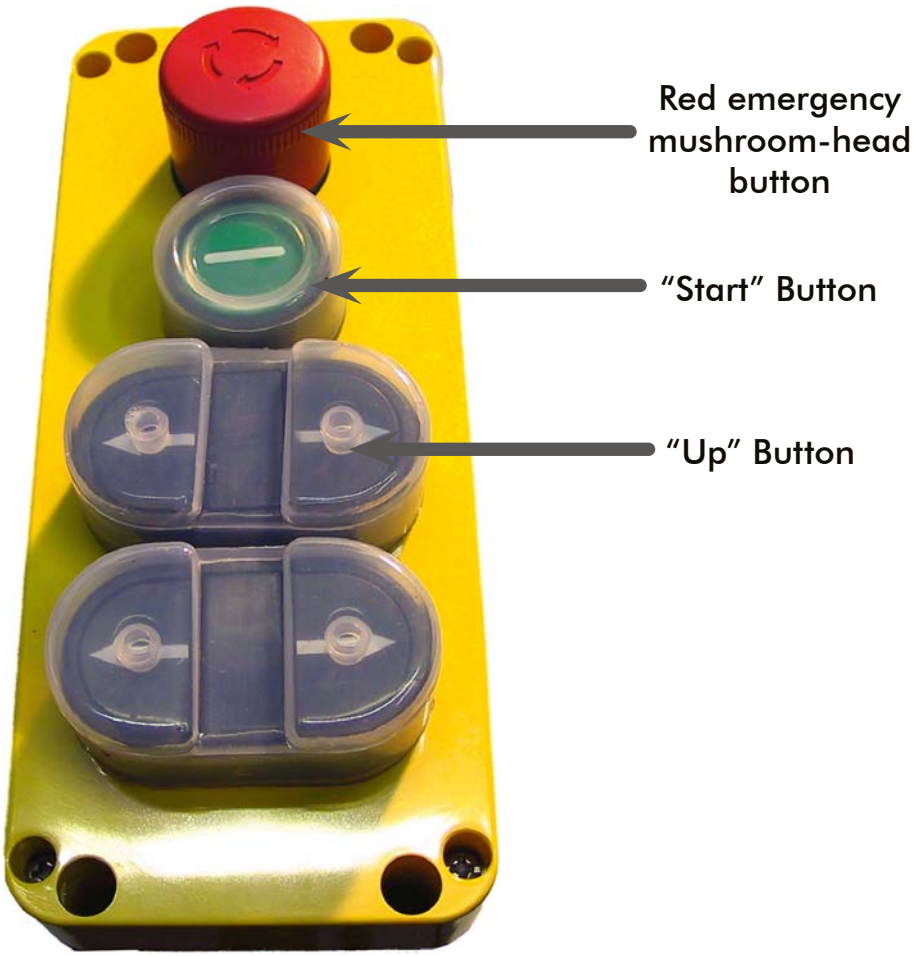
7.4 STD Programming

1. Power up the receiver (insert the battery disconnector and any other switch that may be installed in series with the receiver power supply);
2. On the TXF transmitter: press the button "A" to select the "Transmission receiver A" and make sure that the corresponding LED flashes
3. On the receiver: press the red emergency mushroom-head button: the buzzer inside begins to emit a continuous sound;
4. On the receiver: press the "Up" button for channel 1 shown in the figure. The buzzer inside the receiver emits an intermittent sound;
5. On the transmitter: press one of the function buttons (Raise/Lower channel 1 or Raise/Lower channel 2);
6. On the receiver: the sound issued by the buzzer returns;
7. On the receiver: release by turning the red emergency mushroom-head button;
8. On the receiver: press the green start button;
9. Make sure all functions connected to the radio remote control system are correctly activated.



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8. FUNCTIONAL TESTING PROCEDURES

8.1 General comments

This section gives the block diagrams of the procedures to follow in case you encounter operating problems with RADAR II radio remote control systems: **these procedures should be applied whenever problems occur and before contacting OMFB staff.**

Since malfunctions encountered in systems equipped with radio remote control often may not be malfunctions caused by the remote control itself but by the overall system, applying these procedures can significantly reduce the time needed to identify and solve problems. We therefore strongly recommend that you apply them whenever you are faced with any problem on OMFB radio systems or systems equipped with OMFB radio remote control.

The following procedures are described:

- Functional testing of the receiver unit
- Functional testing of the TXF transmitter
- Testing the STD Programming
- Testing the REED programming
- Testing of the power outputs

Starting from the blocks labeled "Start" and following the block diagram step-by-step for each part to be checked, you should eventually manage to solve the most common problems or in any case identify the specific type of problem.
"Diamond"-shaped blocks are "decision blocks", which ask a question and lead in a given direction based on the answer (Yes, No).
A block in one procedure may lead to another procedure. In this case, you must begin at the start block of the procedure indicated.

You may come to a block recommending that you "Request a return". In this case, the return request must also indicate the contents of the block itself, thus for example "Indicating possible problems on the power supply line" or other: this information must be reported along with the return request, since it may significantly reduce the time needed to solve the problem and, especially, may assist OMFB staff in identifying problems not caused by OMFB radio remote controls but by other vehicle systems.

Should you arrive at a block labeled "Request a return," in order to understand the cause of the problem it may be very helpful to photocopy the procedure followed and mark the path taken through the block diagram leading to the return request, and fax this copy to the OMFB staff.

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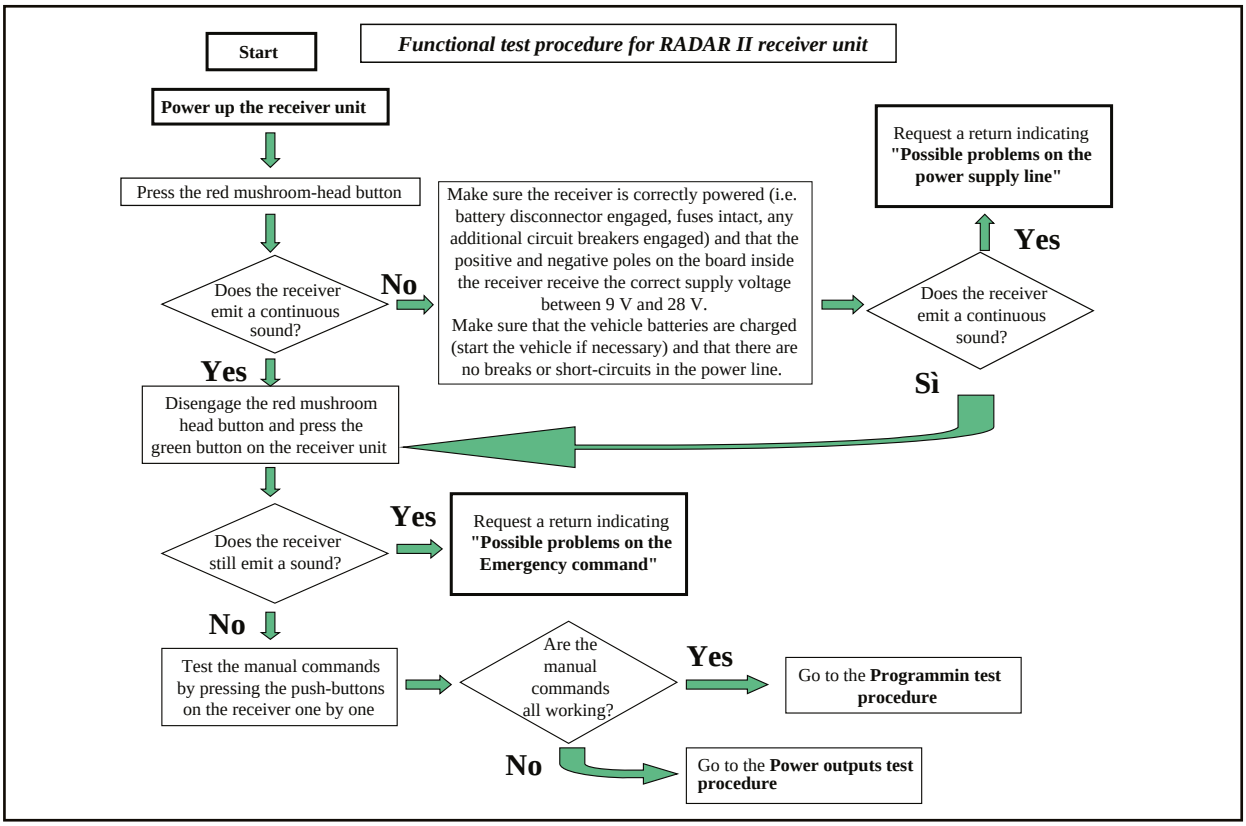
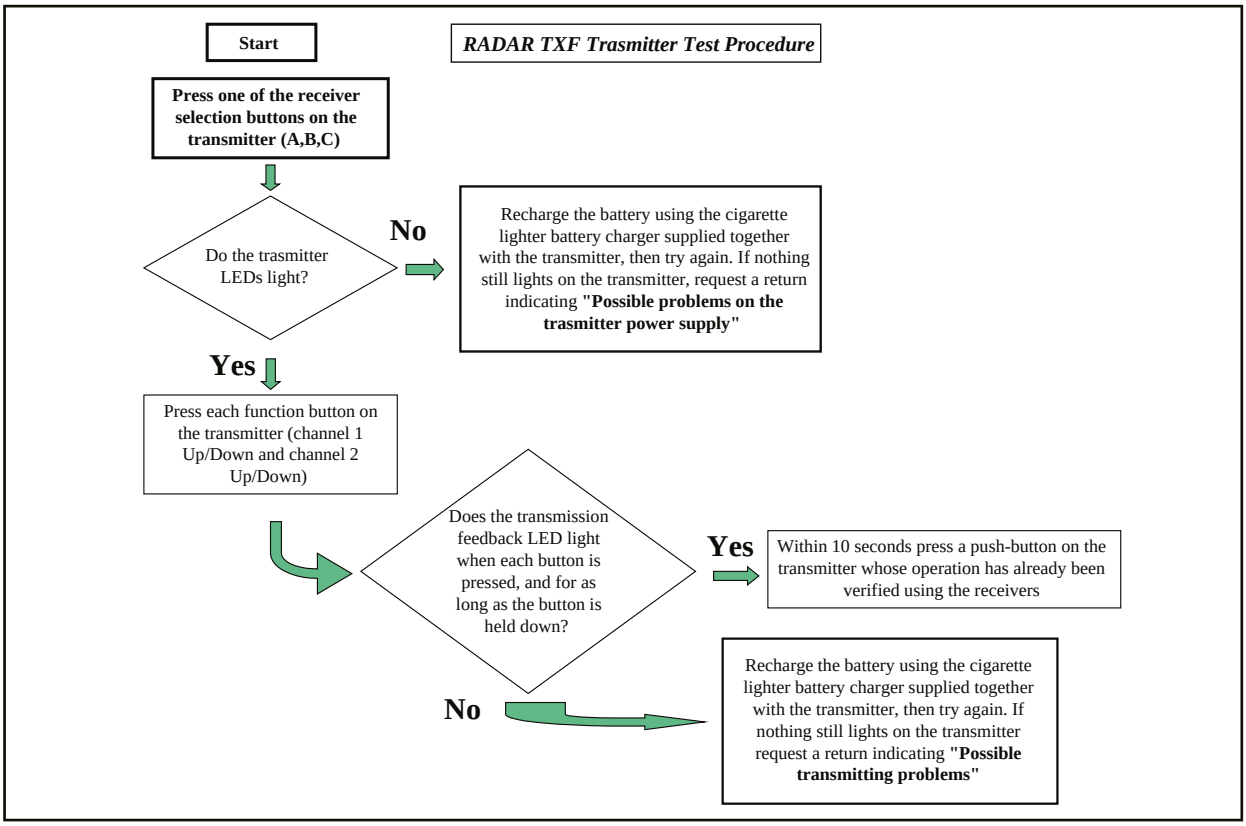
8.2 Functional testing procedure of the RADAR II receiver unit



8.3 Functional testing procedure of the TXF transmitter



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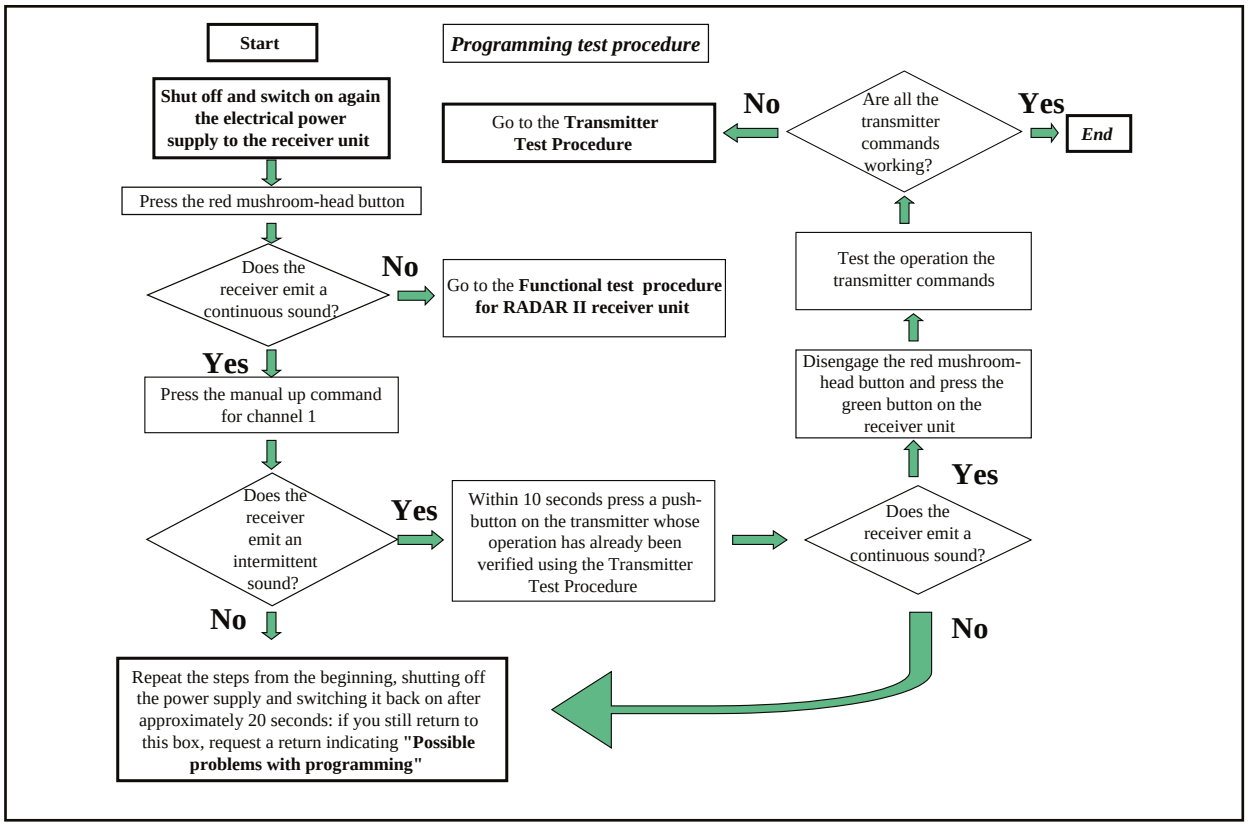
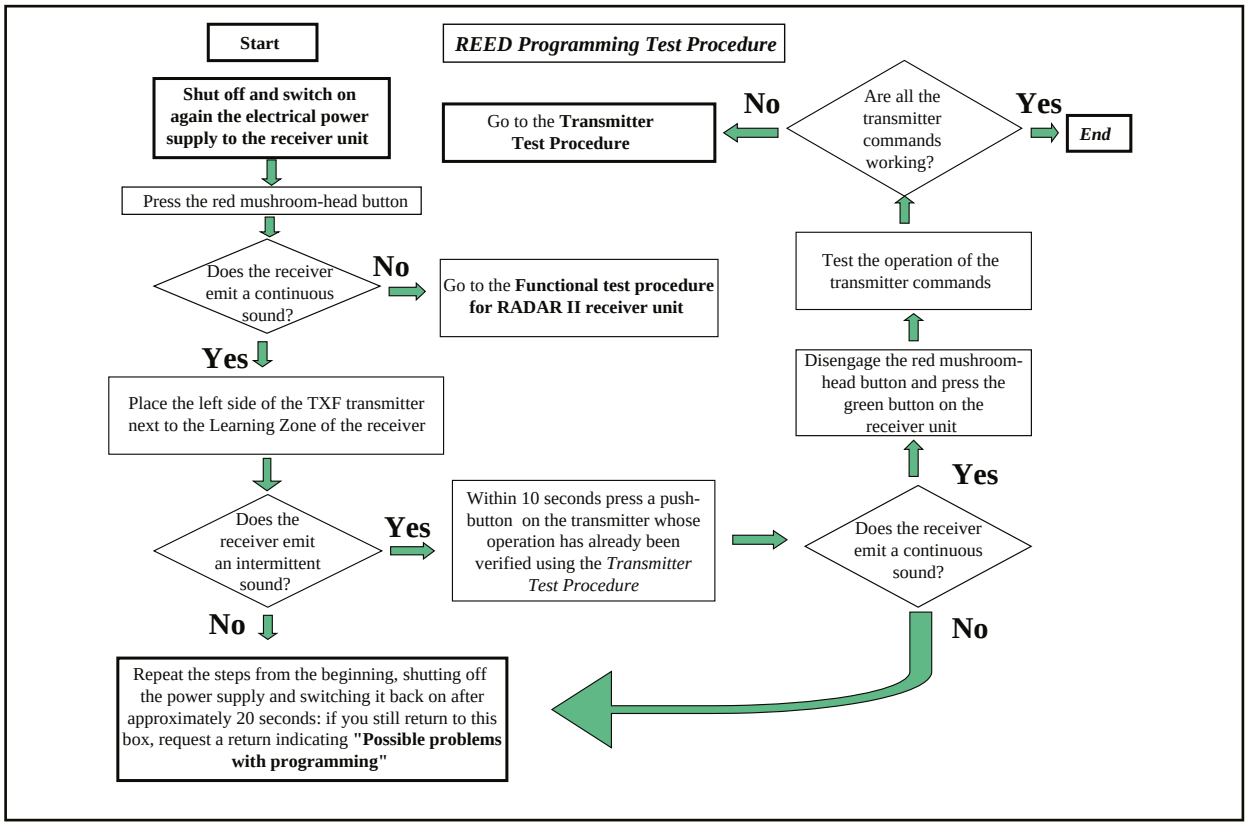
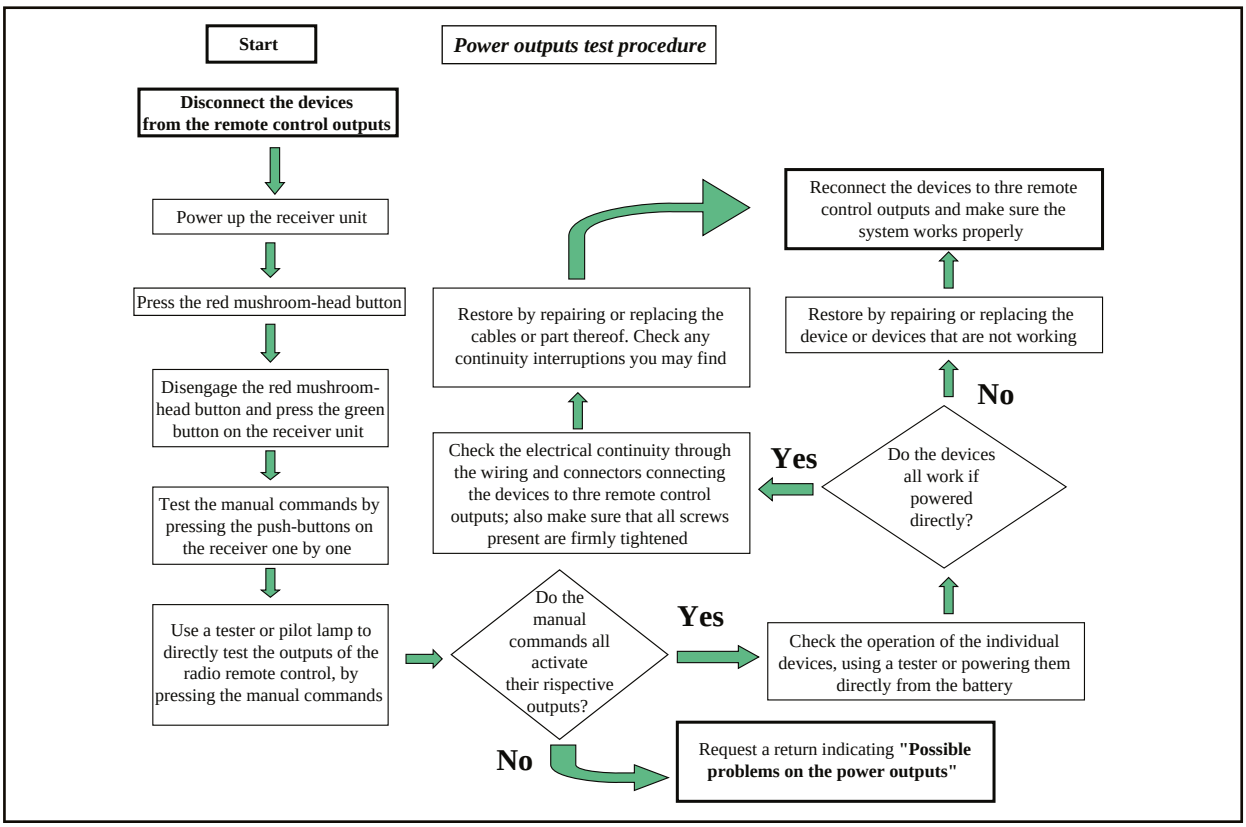
8.4 STD programming testing procedure



8.5 REED programming testing procedure



8.6 Power outputs testing procedure



9. *Frequently Asked Questions*

The Transmitter is not working, or works only at a short distance from the Receiver.

Make sure that:

- The receiver power supply is correct both in terms of voltage (9 - 28 V) and polarity;
- The red emergency button of the receiver is not pressed, and that you have pressed the green reset button;
- The receiver is not installed in a metal housing;
- The LED on the transmitter lights when any of the commands is pressed. If not, make sure that the battery is present and charged, and replace it if necessary.
- The receiver has been programmed correctly. To be certain, repeat the steps described in the section PROGRAMMING PROCEDURES;
- The controlled devices function correctly if powered directly, cutting out the radio remote control, and if they have no short-circuits;

The Transmitter was dropped and now it doesn't work.

Make sure that:

- The transmitter battery is still in its compartment;
- The battery connection is intact and ensures electrical contact;

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IS IT POSSIBLE TO DISABLE THE AUXILIARY SIGNAL WHEN ONE OF THE TWO OR FOUR OUTPUTS IS ACTIVATED?

Yes, but this operation may be carried out only by the engineers of OMFB SpA Hydraulic Components, by placing the request directly together with the order, or as a subsequent alteration, referring to “Single-acting”.

IS THERE A VERSION OF THE RADIO REMOTE CONTROL THAT CAN INSTALL AN EXTERNAL ANTENNA?

No, we did not deem it necessary to develop a product with external antenna, since the selectivity of the RF module installed on the receiver is high enough to ensure operation even in critical conditions, near considerable ferrous masses..

IS IT POSSIBLE TO OBTAIN CLEAN CONTACTS IN PLACE OF THOSE THAT REFLECT THE SUPPLY VOLTAGE?

No, you must use additional controlled relays at the supply voltage, and take the desired clean contact from these.

ONE OF THE LATEX SAFETY HOODS IS TORN.

Send the receiver to OMFB SpA Hydraulic Components to replace and repair it, since the absence of these protections reduces the IP protection rating of the apparatus.

DOES THE RADAR II RADIO REMOTE CONTROL REQUIRE ANY MAINTENANCE?

The **RADAR II** radio remote control requires no maintenance aside from replacing the transmitter battery. However, it is recommended to keep the receiver clean, especially removing any deposits of mud or other material that could degrade its performance in the long run. Do not use hydraulic cleaners.

IS IT POSSIBLE TO INSERT THE RECEIVER INTO AN ADDITIONAL PLASTIC HOUSING?

Yes, this is not subject to any particular limitations, as long as you are certain that the plastic of the housing into which the receiver is inserted has a minimal (or no) lead content.
If the problem persists, contact OMFB SpA Hydraulic Components.

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