

4 Use

To ensure correct use of the equipment, follow the instructions below:

- Make sure the transmitter you are going to use is the correct one, identifying the machine on the identification label.
- Attach the strap to the transmitter unit. Its use is recommended to prevent the equipment from falling.
- Install a charged battery, turn the key-switch and activate the transmitter.
- To activate the system, you must first pull out the STOP button (1), the transmitter LED should then give a yellow-green pulse; then press the START button (9). If you find that the STOP button has already been pulled out, it is necessary to push it in and then pull it out again, as this sequence will allow the checking of the STOP circuit. If the unit has experienced a time-out auto-disconnection, it is not necessary to repeat the STOP button procedure, simply push the START button for 1 second.
- The transmitter LED should light up in green, indicating that the transmitter has started transmitting. From now on, if any of the transmitter's command buttons are pressed, the corresponding motion will be activated.
- To be able to start up the transmitter, all the command pushbuttons must be in the neutral position (not activated). This is not the case for the Hoist Selection functions.
- When 4 minutes have passed and no active motion command have been activated, the transmitter automatically switch OFF. To start it up once more, press the START button (9).
- The transmitter is equipped with a circuit for monitoring the battery level. When this level drops below a pre-established limit, the transmitter LED starts to flash in red; 5 minutes later the transmitter switches off, and the machine's main contactor is deactivated. During this time, the load has to be located in a safe position.
- The LCD display of the RAD-TF (**RaCon II Plus**) transmitter also shows the battery level of charge: Three dots for charge bigger than 50%, two dots when 50% or less, one dot when 10% or less, none when 5% or less.
- To switch OFF the transmitter, press the STOP button or turn OFF the key -switch



Remember that you are going to control remotely a moving piece of machinery. The safety instructions described in chapter 3 of this manual must be strictly adhered to.

4.1 Receiver



Make sure that the crane is stopped for the entire duration of the installation process, keep the work area free and wear protective clothing.

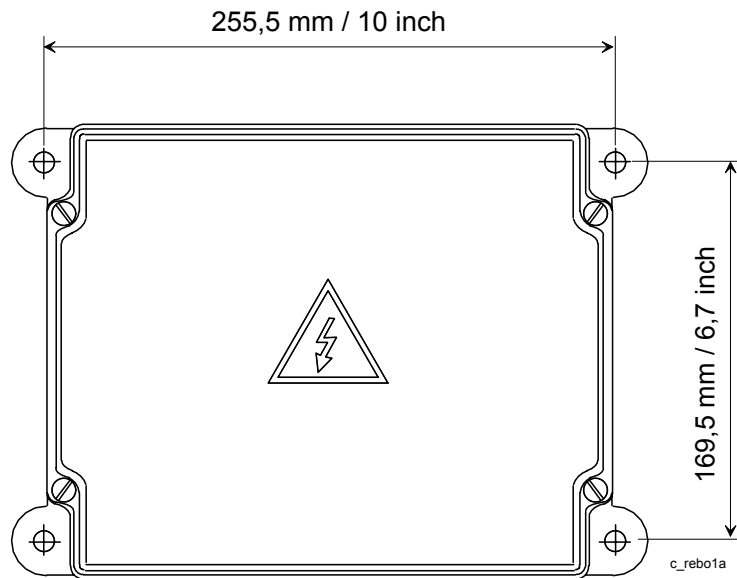


Park the crane and position at end stop, (if these are not available use appropriate signs), at a suitable distance so that other cranes do not hit it on the same runway.



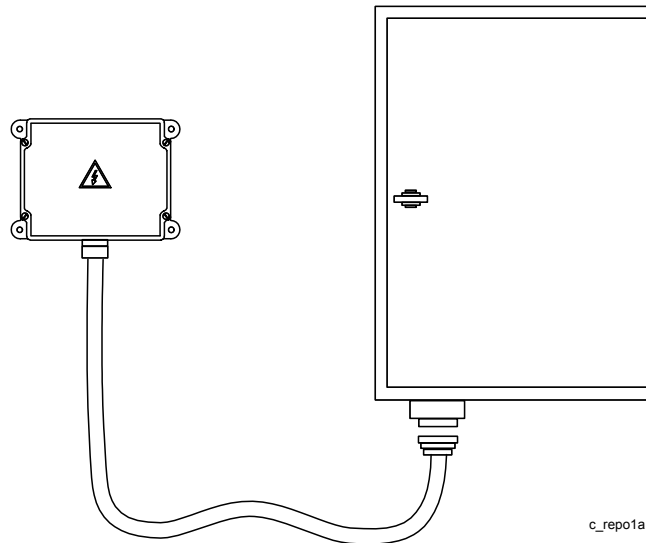
Check the power-supply voltage and turn off the main switch.

Find a suitable location for the receiver, away from any intense radioelectric disturbance sources and install the receiver using the 4 elastic rubber absorbers, (M8) supplied with the set.



The receiver must be placed free of shielding. Metal parts that could obstruct reception of the radio signal must be avoided.

The best way to connect the receiver box to the crane's electrical installations is using a cable with a terminal multiple-pole connector:



The contacts of KSTOP1 and KSTOP2 (KSTOP1+KSTOP2=STOP) relays are in series and must be connected to the main contactor coil circuit.

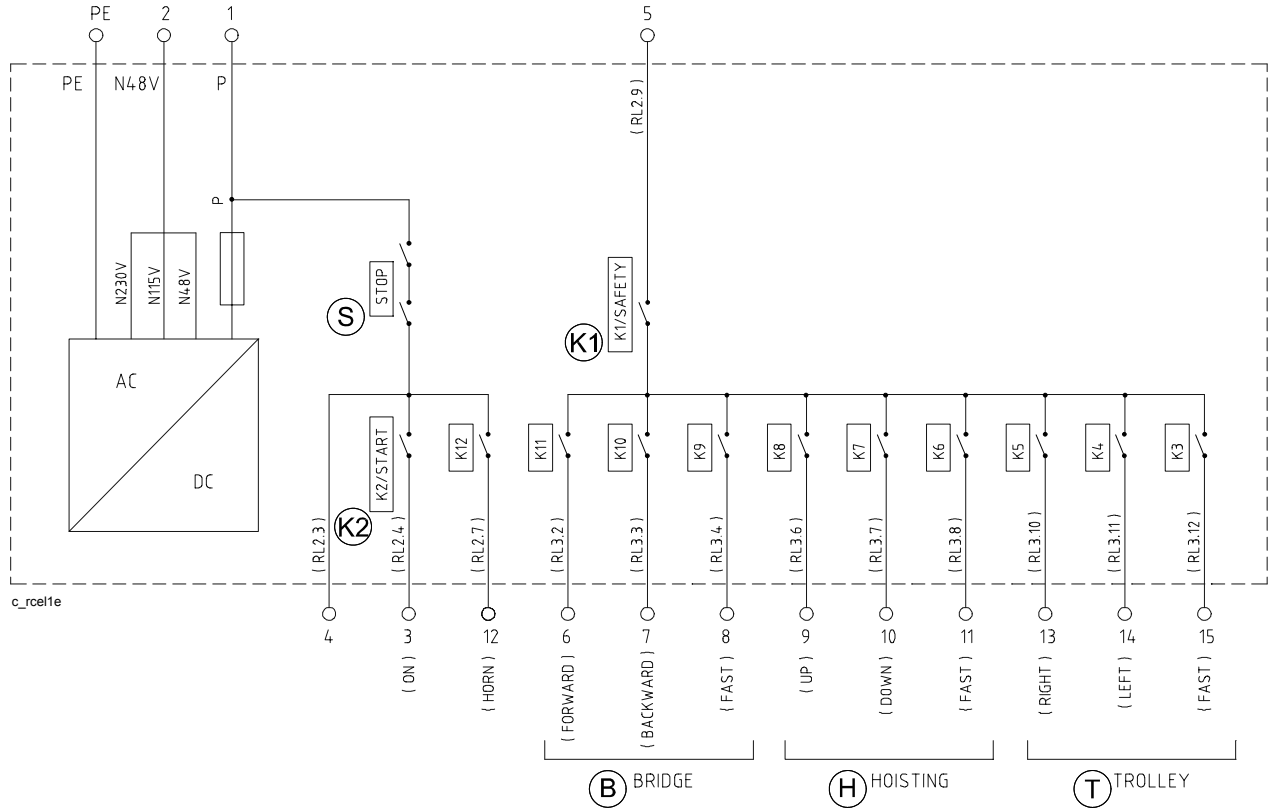
The K2/START is activated once the start-up command is held down.

The K1/SAFETY is a security relay which is activated when any of the other function control relay are activated.

The receiver is a class II device, according EN50178, containing a functional earth connection. A (in Europe green-yellow) ground cable is not recommended for this earth connection.

The power supply and relays must be protected against current overload with convenient electric devices, limiting the maximum input/ output current to their limits: 1A fuse is provided in the receiver circuit board for power supply. 8A fuse(s) has to be provided in the crane control panel for the for the output relays.

4.2 Receiver's RAD-RS outputs



- S. Stop
- K1. Safety
- K2. Start
- B. Bridge
- H. Hoisting
- T. Trolley



Remember to connect the ground cable.

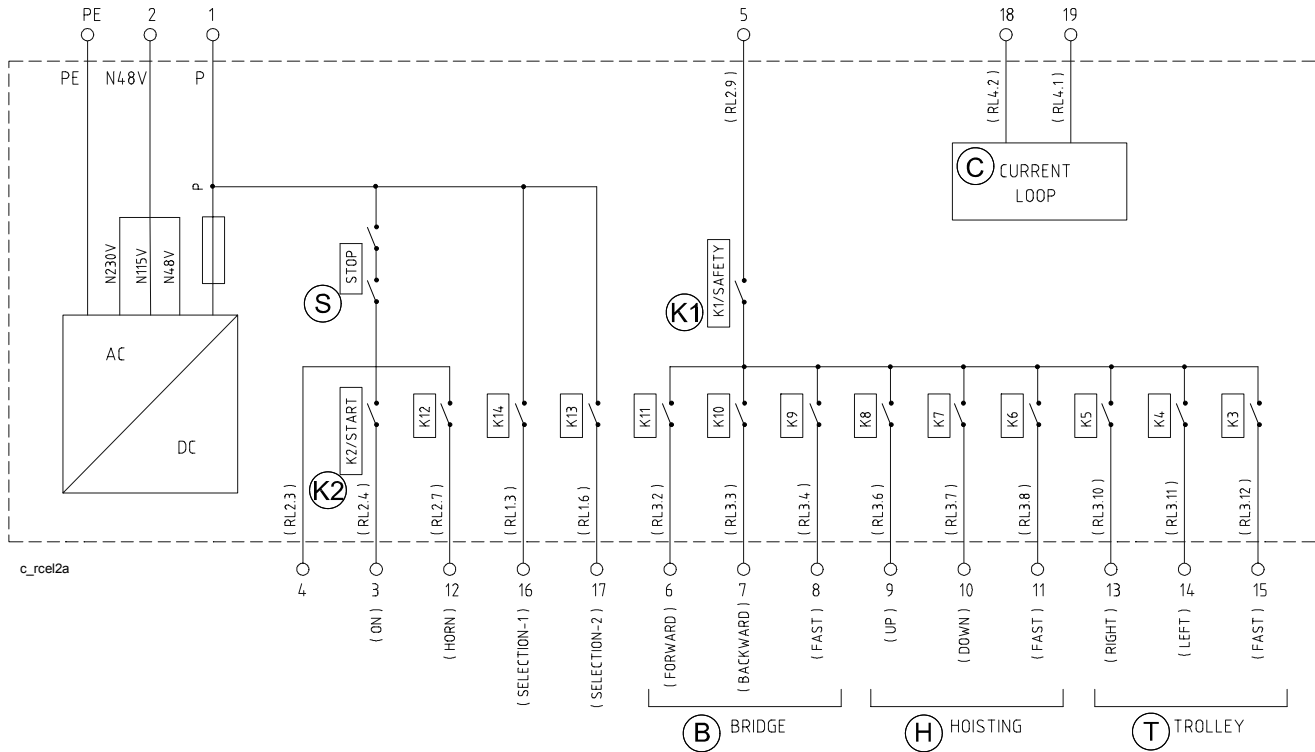


Use only the approved cables.



Select the appropriate voltage on the receiver, (115 or 48 Vac). (See above picture from pin number 2 to the circuit board AC connection.)

4.3 Receiver's RAD-RF outputs



- C. Current Loop
- S. Stop
- K1. Safety
- K2. Start
- B. Bridge
- H. Hoisting
- T. Trolley



Remember to connect the ground cable.



Use only the approved cables.



Select the appropriate voltage on the receiver, (115 or 48 Vac). (See above picture from pin number 2 to the circuit board AC connection.)



4.4 Starting-up



Proceed with caution; Incorrect connections may lead to unforeseeable movements on starting-up.



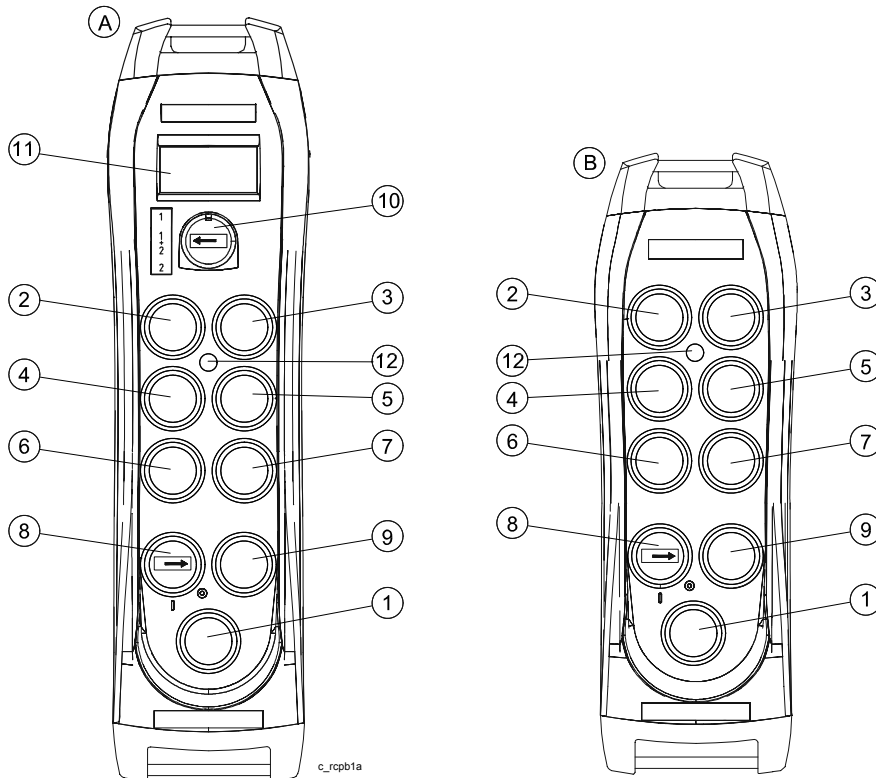
Remember that the receiver has several voltage-powered circuits. Even when the receiver's power supply has been cut off, there is still a risk of electrical shocks.

Once the receiver has been connected, disconnect the power supply to the motors (if possible), for example, by removing the fuses and power on the receiver. The receiver will enter into the SCANNING mode while the transmitter is off. The following receiver LEDs should now light up:

POWER	ON, indicating that the power supply is correct.
HARDOK	ON, indicating the absence of defects on the board.
SIGNAL	OFF if all radio channels in the band are free. Flashing ON if the receiver is finding channels with RF signals.
DATA	OFF if none of the radio channels contains signals belonging to a RADF13 or RADS11 radio remote control system in the area. Flashing ON if some do.
ID	OFF.

On receiving a signal from the transmitter, the receiver will enter into the WORKING mode. The following LEDs will light up on the receiver:

POWER	ON, indicating that the power supply is correct.
HARDOK	ON, indicating the absence of defects on the board.
SIGNAL	Flashing ON, indicate that it is receiving a RF signal at the working frequency.
DATA	Flashing ON each time a good frame is received without caring about ID. This means that the data received has a correct format.
ID	Flashing ON (quickly) each time a good frame is received with ID correct. This means that the receiver has recognised the transmitter's identification code



- A. Rad – Tf (**RaCon II Plus**)
 B. Rad – Ts (**RaCon II**)
 1. Stop
 2. Down
 3. Up
 4. Left
 5. Right
 6. Reverse
 7. Forward
 8. Key
 9. Start/Horn
 10. Hoist Selector
 11. Display (optional)

To enter into Normal Working mode follow the sequence:

1. Put a charged battery in the transmitter.
2. Turn on the key-switch
3. Push down STOP pushbutton (1) (if the button was in up position)
4. Pull up STOP (1) pushbutton. The transmitter LED should flash yellow-green for a second.
5. Press START (9) The transmitter LED should light up green indicating that the transmitter is transmitting.

After pushing the START button (9), STOP relays will be activated. K2/START and K12/HORN relays are activated only when the start button is pushed.

Relays K13 and K14 on RADF13 system will be activated to the corresponding state of the Hoist Selector.



Push any of the transmitter's motion buttons and its corresponding relay should be activated. The safety relay K1/SEC will also be activated.

Check to make sure all other motions work in this way.

Turn OFF the transmitter using the STOP (1) button, and make sure the relays are deactivated and the DATA, ID and SIGNAL LEDs light corresponding to the SCANNING mode.

Reconnect the power supply to the motors, move to the usual work position and check to see if all the motions and the STOP (1) button are functioning correctly.

4.5 Spurious Disturbance

The receiver has designed to become blocked if there is intense spurious disturbance arising from galvanic, inductive, or capacitive coupling, thus preventing unwanted movement.

As a precautionary measure, it is recommended that spurious-preventing devices (diodes, capacitors, RC circuits) be fitted at the source of the disturbance. These devices should be connected directly to the contactor coil terminals, etc. and can be obtained from the usual contactor suppliers.

If the equipment is installed on a crane with a friction power supply, where electric arcs are produced as a result of defective contact, an RC circuit should be fitted between each phase and earth.