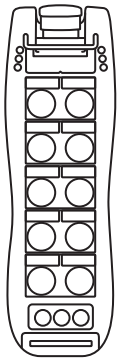
E2
AT E29-MIA



USER MANUAL

PART 1: TRANSMITTING UNIT

Instructions translated from the original

This manual, including all its parts, and all the instructions contained in it must be read carefully and understood before each installation, use, maintenance or reparation of the ELCA radio remote control.

OTHER LANGUAGES

https://qrcode.elcaradio.biz/man/b8caeac83c3dd34b9eb91ff788816026

E29_MIA_P1-00_EN

0408MA000460

WARNING

THIS PART OF THE MANUAL CONSISTS OF: Part 1 – Information, instructions and general warnings for the Transmitting Unit and its charging system. The manual consists of Part 1 "Transmitting Unit user manual", Part 2 "Receiving Unit user manual", Position of the controls and the Connection diagram.

THIS MANUAL, INCLUDING ALL ITS PARTS, AND ALL THE INSTRUCTIONS CONTAINED IN IT MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE EACH INSTALLATION, USE, MAINTENANCE OR REPARATION OF THE ELCA RADIO REMOTE CONTROL.

FAILURE TO READ THE MANUAL AND COMPLY WITH ALL THE APPLICABLE WARNINGS AND INSTRUCTIONS, OR ANY RESTRICTION PROVIDED IN THIS MANUAL CAN CAUSE SERIOUS PHYSICAL INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

THE ELCA RADIO REMOTE CONTROL IS NOT AN INDEPENDENT PRODUCT AND IS EXCLUSIVELY A COMPONENT OF A MACHINE THAT:

- PERMITS A RADIO REMOTE CONTROL TO BE USED IN AN APPROPRIATE MANNER,
- CAN BE OPERATED SAFELY AND IN COMPLIANCE WITH ALL LEGAL PROVISIONS, REGULATIONS AND STANDARDS APPLICABLE TO THIS RADIO REMOTE CONTROL.

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MANUFACTURER AND THE DESIGNERS OF THE MACHINE ON WHICH YOU INTEND TO INSTALL THE ELCA RADIO REMOTE CONTROL to carry out a careful and in-depth risk assessment to determine whether the Elca radio remote control is suitable for the safe and efficient use of the Machine, taking into account the conditions of use and the intended uses, and that the installation, maintenance and use of the Elca radio remote control and all its components are carried out only and entirely in accordance with this Manual and in compliance with all local safety rules, standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the US market, the Laws, regulations and Standards include all regulations and standards of the Occupational Safety & Health Administration (OSHA) (http://www.osha.gov), all federal, state and local laws and provisions, the construction and electric devices codes and all applicable standards, including, bit not only, ANSI standards.

It is the responsibility of the Manufacturer and the designers of the Machine on which you intends to install and use the Elca Radio Remote Control to make sure that the structure, condition, organisation and the markings of the Machine as well as how it is installed in its place of use are appropriate and allow the Machine to be used and controlled safely and reliably using the interface of the Elca Radio Remote Control.

IT IS THE RESPONSIBILITY OF THE USER OF THE SYSTEM AND THEIR DESIGNERS that the installation, maintenance and use of the Elca Radio Remote Control and all its components are carried out only and entirely in accordance with this Manual and in compliance with all applicable Laws, Regulations and Standards, also local. It is also the responsibility of the Owner, the system user and their designers to make sure that the structure, the condition, the organisation and the markings of the Machine and the place where the Elca Radio Remote Control is installed and used are appropriate and allow the Machine to be used and controlled safely and reliably using the interface of the Elca Radio Remote Control.

ONLY QUALIFIED AND SUITABLY TRAINED PERSONNEL ARE ALLOWED TO CONTROL AND USE THE ELCA RADIO REMOTE CONTROL AND THE MACHINE CONTROLLED BY THE ELCA RADIO REMOTE CONTROL.

ONLY QUALIFIED AND SUITABLY TRAINED PERSONNEL ARE ALLOWED ACCESS TO THE VICINITY OF THE MACHINE CONTROLLED BY THE ELCA RADIO REMOTE CONTROL.

INADEQUATE INSTALLATION, OPERATION, MAINTENANCE AND ASSISTANCE OPERATIONS ON THE ELCA RADIO REMOTE CONTROL CAN CAUSE SERIOUS PHYSICAL DAMAGE OR DEATH AND/OR DAMAGE TO PROPERTY. For further assistance refer to this Manual and all its parts, or else contact Elca. Elca is not responsible for and accepts no liability for any installation of the Elca Radio Remote Control carried out by Elca itself, or for any use or maintenance of the Elca Radio Remote Control that do not fully comply with all the instructions and warnings supplied by Elca and with all applicable Laws, Regulations and Standards, also local.

Elca is not responsible for and accepts no liability for any alterations or modifications of the Elca Radio Remote Control, or for the use of non-original Elca parts that are used together or incorporated inside the Radio Remote Control itself.

IT IS THE RESPONSIBILITY OF THE OWNER, AND USER OF THE SYSTEM AND ITS DESIGNERS to make sure that the Elca Radio Remote Control is always maintained and serviced in compliance with all the instructions and warnings provided by Elca, and in compliance with all applicable Laws, Regulations and Standards, also local.

IT IS THE RESPONSIBILITY OF THE OWNER, THE USER OF THE SYSTEM AND THEIR EMPLOYEES MANAGERS AND SUPERVISORS to make sure that all the Users of the Elca Radio Remote Control and all those that work or will work with or near the Machine operated by or through the Elca Radio Remote Control are completely and adequately instructed and trained by qualified persons on the correct and safe use of the Elca Radio Remote Control and the Machine, including without restrictions the complete familiarity with and understanding of the warnings and instructions provided by Elca, and all applicable Laws, Regulations and Standards, also local; it is equally also their responsibility to make sure that these Users or other Persons use or work always in a safe manner with the Elca Radio Remote Control and e ONLY in compliance with the instructions and warnings provided by Elca and in compliance with all applicable Laws, Regulations and Standards, also local. FAILURE TO COMPLY WITH THIS INSTRUCTION CAN CAUSE SERIOUS PHYSICAL INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

IT IS THE RESPONSIBILITY OF THE OWNER, THE USER OF THE SYSTEM AND THEIR EMPLOYEES MANAGERS AND SUPERVISORS to make sure that the area where the Machine is located and is operated by the Elca Radio Remote Control is clearly marked and indicated, in compliance with all the instructions and warnings provided by Elca, and in compliance with all applicable Laws, Regulations and Standards, also local, and that there are sufficient indications that notify EVERYONE that the machine is operated by or through a Radio Remote Control, and that prohibit any unauthorised access to the area. FAILURE TO COMPLY WITH THIS INSTRUCTION CAN CAUSE SERIOUS PHYSICAL INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

IF THE ELCA RADIO REMOTE CONTROL IS NOT USED SAFELY AND IN ADHERENCE TO THE INSTRUCTIONS AND WARNING PROVIDED BY ELCA, AND IN CONFORMITY WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, ALSO LOCAL, AND/OR IF USE OF THE RADIO REMOTE CONTROL IS PERMITTED TO USERS OR OTHER PERSONS THAT ARE NOT ADEQUATELY TRAINED TO USE THE SYSTEM OR THE MACHINE ON WHICH IT IS INSTALLED SAFELY AND CORRECTLY, CAN CAUSE SERIOUS INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

INDEX

1 Use and Maintenance Manual

1.1 Structure

The Instruction Manual for use and maintenance consists of two parts: together they constitute the Elca Radio Remote Control of the series E2.
The Manual should be read, understood and applied by the Owner of the Radio Remote Control, by the User and by all those who, for whatever reason, operate the Radio Remote Control or the Machine on which it is installed.
This part (called Part 1) deals with the Transmitting Unit and the charging system. Part 2 (to which reference is made) deals with the Receiving Unit.
The contents of the Instruction manual for use and maintenance is supplemented by the following documents:

- "Arrangement of Controls" that contains the configuration of the Transmitting Unit and the names of the commands sent to the Receiving Unit;
- "Connection diagram" that indicates the correspondence of the commands sent by the Transmitting Unit and those available in the Receiving Unit.

The Instruction manual for use and maintenance is an integral part of the Elca Radio Remote Control and therefore of the Machine that is equipped with the Radio Remote Control. It is the responsibility of the Manufacturer of the Machine or the system on which the Radio Remote Control is installed to ensure that the Instruction Manual is inserted in the instruction manual of the Machine.
Further information on the operation of the radio remote control system, particularly if made to the customer's own specifications, can be found in the documents attached to the manual that should be considered as an integral part of the Manual itself.

1.2 Definitions

Please contact ELCA if any instructions, symbols, warnings or images are not clear or understandable and in case of doubts or questions.
The "Manufacturer's identification" can be found on page 6 or with the QR Code here on the side.

The meanings of the terms in the entire Manual, including all its parts, are shown below:
Unit: the individual units, transmitting and receiving, that make up the Elca Radio Remote Control.
Radio Remote Control: wireless control system (CCS: Cableless Control System) composed of a Transmitting unit and a Receiving unit that communicate with each other via radio connection.
Transmitting unit: portable component (remote station) through which the user interfaces with the Radio Remote Control.
Receiving unit: component fixed stably to the Machine (base station) that constitutes an interface between the Radio Remote Control and the other parts of the machine.
Machine:the machine, as defined by Directive 2006/42/CE and by other local regulations, and every other device, machinery, equipment, system, application, etc., on which the Elca Radio Remote Control is installed or that is controlled by it.
Manufacturer: the entity that designs and/or constructs a Machine and that decides to install a Radio Remote Control in order to operate the Machine.
Installer: the entity, specialised technician, that plans and/or carries out the installation of the Elca Radio Remote Control on a Machine in order to operate its controls.
User: the entity that materially uses the Elca Radio Remote Control as a device for operating the controls of a Machine.
Maintenance technician: the entity, specialised technician, that carries out routine and extraordinary maintenance on the Elca Radio Remote Control, in order to keep it undamaged and running efficiently.
Manual or Instruction manual: document consisting of Part 1 (Transmitting unit and its charging system), Part 2 (Receiving unit), Position of the controls and the Connection diagram.
Person: individual, natural or legal person and/or every entity, however considered.
Owner: the owner of the Radio Remote Control.

The functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician can be carried out by a single entity, where these have the skills and assume the relative responsibilities. Each entity should be aware of the instructions in the Manual for the work that it carries out.
For example, if a Manufacturer also acts as an Installer, and/or Maintenance Specialist, it should understand and follow also the instructions specifically directed at these entities. The same criteria should be applied in the case where, for example, a User assumes the function of manufacturer and/or Installer.

1.3 Symbols

The parts of the Manual that are drawn attention to by this symbol should be read very carefully.

The parts of the Manual that are drawn attention to by this symbol contain warnings, information and/or instructions that are extremely important for safety issues: failure to understand these parts could be dangerous for Persons and/or property.

1.4 Who these instructions are for

The Instruction Manual is for the User, the Owner of the Radio Remote Control, the Installers, the Manufacturers and all those Persons who, for whatever reason, are operating the Radio Remote Control or the Machine on which it is installed.
The Manual should be read, understood and applied, in all its parts, by:

- the Owner and/or the person responsible for operating the Machine and/or the Elca Radio Remote Control;
- the Manufacturer of the Machine who decides to equip it with a Radio Remote Control;
- the Installer of the Radio Remote Control or the entity that takes care of its fitting on a Machine, on a device, on a system, etc., and/or that has the responsibility for its operation;
- the safety manager of the workplace where the Radio Remote Control is used;
- the Users, namely those who materially, and for any purpose, are enabled/authorised/entrusted with using the Radio Remote Control or simply find themselves in this situation;
- the Maintenance technician;
- Those who, for any reason, find themselves operating the Radio Remote Control and/or the Machine, the system, the device and/or the system on which the Elca Radio Remote Control is installed, or which is controlled by it.

The instructions concerning the installation and maintenance of the Radio Remote Control are for qualified personnel and for their application specialised professional expertise is required: none of the operations for which qualified personnel are required can be carried out by Persons or entities that do not have the specific professional skill required.

1.5 Storage of the instructions

The Instruction Manual should be taken good care of and should accompany the Radio Remote Control throughout its working life.
No part of the manual should be removed, torn or arbitrarily modified.
The Instruction Manual should be available for all those requiring it and at any moment it becomes necessary to consult it.
Another copy of the Manual should be requested if it deteriorates.
The copy will be supplied after communicating the serial number of the Radio Remote Control and at the expense of the person requesting it.

1.6 Updating the Manual

The contents of this manual are subject to change without prior notice, therefore the operator is required to verify (before using the radio remote control) that the information contained in this publication is consistent with the device in their possession.
Elca is solely responsible for the instructions compiled and validated by Elca itself (Original Instructions); in order to be able to check the accuracy of the translation, any translations should always accompany the Original Instructions.

Contact ELCA in the event there are instructions, warnings or indications which may prove to be unclear.

1.7 Intellectual property
This manual and any annexed documents are the property of ELCA and all rights are reserved. No part of this publication (for example the structure, the contents, the instructions, the figures, the diagrams, the photos) may be reproduced or transmitted (including photocopies and web) for any reason without the written authorisation of Elca.

2 Series, Radio Remote Control and Unit
The Manual concerns the Transmitting Unit of an Elca Radio Remote Control in the E2 series.
Elca Radio Remote Controls provide a control interface to e used on Machines to manage the command and control system.
The Radio Remote Controls have been designed to be used at a suitable distance and position.
The radio remote control in the series E2 consists of a transmitting unit and a receiving unit.

3 Conformity
It is the responsibility of the recipients of these instructions to:
- check the radio frequency band permitted in the country where it will be used;
- check that the Radio Remote Control operates inside this band;
- check the country's applicable standards;
- check that the Radio Remote Control operates correctly in conformity with them.

In no way can the conformity of the Radio Remote Control be modified, making changes to it or carrying out technical interventions that change the way it works.
For the instructions and use of the Elca Radio Remote Controls, local regulations must be respected.
These regulations obligate the protection of the conformity of the products with local regulations, and the specific standards regarding the safe use of the Radio Remote Controls or electric devices, both inside and outside the workplace.

3.1 FCC and IC Conformity statement
Each E2 series' radio remote control working in the frequency band 915.00 - 928.00 MHz complies with the essential requirements of the following regulations:
- FCC (Federal Communication Commission) Part 15
- IC (Industry Canada) RSS-102

Transmitting Unit
AT E29-MIA
FCC ID: 2ABS7-ATE29MIA
IC: 30220-ATE29MIA

3.1.1 Federal Communications Commission (FCC)
This device complies with part 15 of the FCC Rules.
Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.
Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

3.1.2 Industry Canada (IC)
This device complies with Industry Canada licence/exempt RSS standard(s).
Operation is subject to the following two condictions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

3.2 Countries of use
E2 series' radio remote controls working in the frequency band 915.00 - 928.00 MHz can be used in the US and Canadian markets.

4 Manufacturer's identification

Radio Remote Control Manufacturer	ELCA S.r.l.
Registered office	Via del Commercio, 7/b – 36065 Mussolente (VI) - ITALY
Telephone	+39 0424 578500
Fax	+39 0424 578520
E-mail	info@elcaradio.com
Site	www.elcaradio.com

5 Assistance and spare parts
For technical assistance and/or spare parts, please contact Elca.
When sending a request regarding an Elca Radio Remote Control the serial number (Serial Num.) of the Radio Remote Control itself must be provided. The serial number (Serial Num) can be found on the Unit's data plate (see paragraph 10.3).

6 Warranty
The general warranty conditions can be found in the dedicated section of the website www.elcaradio.com.

7 Safety warnings

7.1 General information

All the warnings and instructions contained in this chapter are relevant for safety purposes.

Failure to follow the instructions in the Manual supplied by Elca and applicable safety legal provisions, also local, regulations, norms and standards can cause serious injuries to Persons and damage to property.

It is the responsibility of the Manufacturer and/or the designer of the Machine, the Installer, the Maintenance Technician and the Persons responsible for the use of the Machine and the workplace, that the installation, maintenance and use of the Elca Radio Remote Control and all its components are done only and entirely in compliance with the instructions provided by Elca e and in conformity with all applicable safety standards and regulations in force in the countries where the Machine and Radio Remote Control are used.

The Manufacturer of the Machine bears responsibility for the installation and use of Radio Remote Control on any application.

The Manufacturer of the Machine or whoever intends to use or install an Elca Radio Remote Control on a Machine should first of all:
- check whether the Machine that you want to equip with a Radio Remote Control is suitable for being used with a Radio Remote Control safely and efficiently;
- carry out a comprehensive risk assessment taking into contact the construction, functional and/or performance characteristics of the Machine, the use of the Machine, the location and the environment where the Machine will be used, the structure where the Machine will be or is installed, the interaction between the Machine and the other equipment and the personnel, the safety conditions when the Machine is operating, the effective and potential different conditions of use, the conditions that can be created after the installation of a Radio Remote Control and the characteristics and limitations of the Elca Radio Remote Control.

To this end refer to, but not only, ISO 12100 and ISO 14121, that lay down the conditions through which a correct comprehensive risk analysis can be carried out as well as the adoption of the necessary safeguards.
Even without any legal or regulatory restrictions, a Radio Remote Control should never be used if the Manufacturer or those who intend to use or install a Radio Remote Control on a Machine cannot:

- carry out an appropriate and comprehensive analysis of the risks in relation to the safety of the Machine after the installation of the Radio Remote Control;
- provide adequate professional experience and/or technical expertise to properly carry out the risk analysis;
- correctly install the Radio Remote Control in accordance with this Manual and all the applicable Laws, Regulations and Standards, also local;
- implement all the safety provisions so that the machine fitted with the Radio Remote Control can be used safely without creating dangerous situations;
- adopt the appropriate technical remedies and actions from an information point of view to allow the User and Maintenance Technician of the Machine equipped with a Radio Remote Control to operate it safely;
- implement all procedures required and appropriate for eliminating or reducing the risks connected to using the Machine fitted with a Radio Remote Control.

THE INSTALLATION AND USE OF THE ELCA RADIO REMOTE CONTROL IS ONLY PERMITTED IF THE COMPREHENSIVE ASSESSMENT OF THE RISKS CONFIRMS THE INSTALLATION OF AN ELCA RADIO REMOTE CONTROL IS SUITABLE, EFFECTIVE AND SAFE FOR OPERATING THE MACHINE ITSELF, AND IF THE USE OF THE RADIO REMOTE CONTROL ON THE MACHINE IS PERMITTED BY AND IN CONFORMITY WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, ALSO LOCAL, AND WITH THIS MANUAL.

THE MANUFACTURER OF THE MACHINE OR THOSE WHO INTEND TO INSTALL AN ELCA RADIO REMOTE CONTROL ON A MACHINE IS RESPONSIBLE:

- FOR AN ASSESSMENT OF THE RISKS;
- FOR THE DECISION TO USE THE ELCA RADIO REMOTE CONTROL ON THE MACHINE;
- FOR IMPLEMENTING ALL THE NECESSARY OR ADVISABLE MEASURES FOR REDUCING OR ELIMINATING THE RISKS RESULTING FROM THE MACHINE AND, WITHOUT RESTRICTION, FROM THE USE OF THE RADIO REMOTE CONTROL FOR CONTROLLING THE MACHINE;
- FOR THE OBSERVANCE OF THE STANDARDS AND REGULATIONS AIMED AT MAINTAINING SAFETY.

THE ELCA RADIO REMOTE CONTROL IS NOT AN INDEPENDENT PRODUCT AND IS EXCLUSIVELY A COMPONENT OF A MACHINE THAT:

- PERMITS A RADIO REMOTE CONTROL TO BE USED IN AN APPROPRIATE MANNER,
- CAN BE OPERATED SAFELY AND IN COMPLIANCE WITH ALL LEGAL PROVISIONS, REGULATIONS AND STANDARDS APPLICABLE TO THIS RADIO REMOTE CONTROL.

ELCA IS NOT RESPONSIBLE FOR, AND DOES NOT ACCEPT ANY LIABILITY FOR, THE COMPATIBILITY BETWEEN THE RADIO REMOTE CONTROL AND THE MACHINE OR THE USE YOU WANT TO MAKE OF IT, IRRESPECTIVE OF WHETHER IT FALLS WITHIN THOSE ENVISAGED OR NOT, OR FOR ANY PROBLEM REGARDING THE SUITABILITY OF THE MACHINE AND ITS CONTROL SYSTEMS TO BE MANAGED USING THE RADIO REMOTE CONTROL.

IN THE SAME WAY ELCA IS NOT RESPONSIBLE FOR, AND DOES NOT ACCEPT ANY LIABILITY FOR, THE ASSESSMENT OF THE RISKS TO BE CARRIED OUT WHENEVER TAKING INTO ACCOUNT THE RADIO REMOTE CONTROL IN GENERAL, OR SPECIFICALLY THE ELCA RADIO REMOTE CONTROL, NOR FOR THE SUITABILITY OF OPERATING THE MACHINE WITH A RADIO REMOTE CONTROL IN GENERAL OR SPECIFICALLY THE ELCA RADIO REMOTE CONTROL, IN RELATION TO THE STRUCTURE WHERE THE MACHINE IS OR WILL BE USED, AS WELL AS THE ENVIRONMENTAL AND/OR OPERATING CONDITIONS IN WHICH THE MACHINE IS OR WILL BE USED.

Without limiting what was stated above, Elca is not responsible for, and does not accept any liability for:

- defective installation or installation not complying with this Manual, with any other instructions provided by Elca, and with all applicable Laws, Regulations and Standards, also local;
- installation carried out on Machines, appliances, devices, equipment and/or systems for which the use of a Radio Remote Control is not permitted by its Manufacturer or by applicable Laws, Regulations and Standards, also local, and for which the installation and/or use of a Radio Remote Control could cause safety issues or other hazardous situations that are not adequately eliminated and/or reduced, in respect of applicable Laws, Regulations and Standards, also local;
- the use of the Elca Radio Remote Control that does not comply with what is written in this Manual and in any other instructions supplied by Elca and with applicable Laws, Regulations and Standards, also local;
- the use of the Radio Remote Control in locations, climatic and/or weather conditions that are not permitted or not recommended by applicable Laws, Regulations and Standards, also local, forbidden by the instructions in this Manual, or in relation to which there are risks of damage and/or incorrect operation of the Radio Remote Control (for example: temperatures outside the limits indicated in the paragraph 9.3 , situations with a risk of explosion, contact with liquids or fluids);
- the use of the Radio Remote Control in work conditions that do not allow the User to maintain complete and continuous visual control of the movements of the Machine and the load, if present;
- the use of the Radio Remote Control in a manner different to, or for uses other than those permitted and/or not in complete conformity with the instructions for use and maintenance contained in this Manual;
- the lack of, or poor maintenance of the Radio Remote Control, both routine and special, or the failure to repair any damage, wear or malfunction of the Elca Radio Remote Control;
- damage and/or deterioration of any part or function of the Radio Remote Control;
- failure to take the Elca Radio Remote Control out of service in the case it or one of its components develops a fault or malfunctions;
- the use of non-original parts or components that were not supplied by Elca;
- technical assistance for the Elca Radio Remote Control carried out by a company other than Elca or that is not part of its assistance network.

7.2 Risk analysis for remote-controlled Machines

The Manufacturer of the Machine on which you intend to install the Radio Remote Control and its designers need to carry out a careful and in-depth risk assessment to determine whether the Elca radio remote control is suitable for the safe and efficient use of the Machine, taking into account the conditions of use and the intended uses, and that the installation, maintenance and use of the Elca radio remote control and all its components are carried out only and entirely in accordance with this Manual and in compliance with all local safety rules, standards and regulations (referred to herein as "Laws, Regulations and Standards").

In carrying out the risk analysis to establish whether the Radio Remote Control can be installed on a Machine, the Manufacturer of the Machine and/or the Installer of the Radio Remote Control must respect all Laws, Regulations and Standards, also local, regarding the assessment of the risks and the safety of the Machine and the following recommendations:

- some Machines cannot be fitted with a Radio Remote Control, as established in paragraph 8.6). Also all the other circumstances that might limit, impede or impose conditions for the use of a Radio Remote Control on the Machine, or which could effect it being used correctly and safely should be evaluated.
- The radio link between the two Units can be interrupted (see paragraph 8.2.3).
- all the information regarding the installation, use and maintenance supplied by Elca should be taken into consideration (see paragraph 8.6 , paragraph 9 and paragraph 14).
- there is a delay between the release of a command in the Transmitting Unit and the deactivation of the relative output in the Receiving Unit (see paragraph 7.3).
- there is a delay between the activation of a command in the Transmitting Unit and the activation of the relative output in the Receiving Unit (see paragraph 7.3).
- additional measures might be needed to protect the actuators (see paragraph 7.4).
- it is possible that a command is activated or deactivated because of electrical and/or mechanical faults.

7.3 Delay in the command response time

In normal conditions, the delay between the activation of a command in the Transmitting Unit and the activation of the relative output in the Receiving Unit requires a time equal to the "Command response time" (typical)" indicated in the Technical Data (see paragraph 8.3). In situations where there is a poor quality radio link (for example: interference, range of action reached) this delay can extend up to the "Maximum stop time" indicated in the Technical Data (see paragraph 8.3).

It should be remembered that due to the characteristics of the radio medium (for example: interference, range of action reached), the delay between the release of a command in the Transmitting Unit and the deactivation of the relative output in the Receiving Unit can extend up to the "Maximum stop time" indicated in the Technical Data (see paragraph 8.3).

The Manufacturer of the Machine, the Installer, the Owner, the User and the Maintenance Technician need to make sure that these delays can never lead to a situation of danger in the specific application.

7.4 Unintended activations of the commands

The User should operate the Radio Remote Control correctly, following the use and maintenance instructions.

If the Unit is used correctly, accidental contact with parts of the body of the User or with foreign objects, does not cause the unintended operation of the actuators.

Any action is carried out on the Transmitting Unit, or part of it, in order to operate the actuators in a way other than that indicated in the Manual is an incorrect use of the Radio Remote Control and cause serious damage to Persons and/or property.

The User should use the Radio Remote Control in compliance with the use and maintenance instructions and all applicable Laws, Regulations and Standards, also local, in the country where the Radio Remote Control and the Machine are used, always maintaining control of the Radio Remote Control and the position of use just as described in the specific part of the Transmitting Unit.

The Manufacturer of Machine and/or the Installer should assess and eventually adopt additional protective measures for the actuators (for example: two-hand controls, "dead-man" function) in the case where particular locations, equipment and working modes can create situations of risk and in the case this is required by the applicable Laws, Regulations and Standards in the country where the Radio Remote Control and the Machine are used.

It is possible that a command is activated or deactivated because of electrical and/or mechanical faults, which can affect the Radio Remote Control and/or the Machine.

The Manufacturer of the Machine and/or the Installer of the Radio Remote Control should carefully assess what the consequences of this malfunction are. If the risk analysis requires it, protective measures should be prepared that avert, reduce or signal situations of potential risk.

If a command is activated and/or deactivated because of electrical and/or mechanical faults:

- press the STOP button to put the machine in a safe state,
- disable the Radio Remote Control and cease using the "Machine+Radio Remote Control" system until the problem is solved by means of the required technical intervention.

8 Radio Remote Control of the Range

8.1 Characteristics

An Elca Radio Remote Control of the E2 series belongs to a family of industrial Radio Remote Controls, that can mainly be used, but not only, for controlling lifting and transportation apparatus.
With a Radio Remote Control it is possible to control the Machine from a remote position and without a physical connection using wifi or connection cables.
The User manages the machine from a distance using a Transmitting Unit (portable) that dialogues with a Receiving Unit (fixed) installed on the Machine itself.
This chapter contains images of the individual units that make up the Radio Remote Control, please look at the parts concerning each Unit.

8.2 Frequencies and radio link

8.2.1 Frequencies

The radio link between the units of Elca E2 series radio remote controls uses one of the frequencies permitted by the US and Canadian standards in force when the system is put on the market. The E2 range operates using the 915.00 - 928.00 MHz frequency band.

Depending on the specific market there are laws and regulations that establish the frequency with which a Radio Remote Control can operate.
If these laws and standards are not respected, the Radio Remote Control cannot and should not be used.
It is not the responsibility of Elca to check whether the Radio Remote Control is configured during installation and used with a frequency other than that permitted in the country where it is to be used.

The Radio Remote Control is made in such a way that when started it looks for a free frequency to use. The automatic search for a frequency allows a free frequency to be found free from interference. It also allows other apparatus in the vicinity not to be disturbed and vice-versa not to be disturbed by them.

8.2.2 Technical data of the frequency band

Data	Value
Frequencies used in the band	256
RF power	complies with FCC and IC requirements
Channel spacing used	50 kHz

8.2.3 Description of the radio link

The Transmitting Unit communicates with the Receiving Unit using a radio link.
The system uses electromagnetic waves to transport the control signals.
The Transmitting Unit and the Receiving Unit communicate through codified messages that contain a unique code.
Each unit can decode only the messages coming from the Unit that possess the same code. This is to exclude the possibility that another radio apparatus could send commands to the Machine on which the Radio Remote Control is installed.
Each Radio Remote Control operates within and not beyond a certain distance, beyond which the communication between the Units is lost. This distance is called “operating range”.

The radio link is sensitive to particular conditions in the environment, like for example the presence of metal obstacles or electromagnetic interference.

If the connection between the Transmitting Unit and the Receiving Unit is interrupted or is incorrect, the system provides that the Receiving Unit commands the Machine to stop.
There are various reasons for an interruption of the connection:

- programmed automatic shut-off;
- Transmitting Unit low battery;
- no power supply to the Transmitting Unit;
- STOP button pressed;
- automatic connection interruption;
- operating range exceeded;
- presence of metal obstacles.

For the Machine to stop, however, the wiring between the units must have been made correctly.
When the radio link is interrupted all the outputs of the Receiving Unit are disabled. To be able to activate/deactivate the controls of the Machine using the Transmitting Unit the Radio Remote Control must be switched on again.

8.2.4 Stop

The shut-down is a safety function that puts the Machine in a safe state each time it is necessary to stop it because of a potentially dangerous situation.
The stop function can activate:

- by the operator pressing the red STOP button on the Transmitting Unit (manual mode).
- automatically by the Receiving Unit if the radio link between the Units is incorrect or interrupted (automatic mode).

THE USER MUST ALWAYS PAY THE UTMOST ATTENTION TO THE SAFE AND CORRECT WORKING OF THE MACHINE IN ACCORDANCE WITH THE INSTRUCTIONS AND WARNINGS PROVIDED IN THIS MANUAL, THE INSTRUCTIONS AND WARNINGS IN THE MANUAL OF THE MACHINE AND IN COMPLIANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS, ALSO LOCAL.

THE ACTIVATION OF THE STOP BUTTON OR THE RETURN OF THE ACTUATORS TO THE REST POSITION MIGHT NOT CAUSE THE MACHINE TO STOP IMMEDIATELY.

THE STOP BUTTON MIGHT NOT ACTIVATE A BRAKE. MOREOVER, DIFFERENT MACHINES HAVE DIFFERENT RESPONSE TIMES AND STOPPING DISTANCES. EVEN IF THE STOP FUNCTION IS USEFUL, THE USER SHOULD BE FULLY AWARE OF THE MOVEMENTS AND WORKING AREAS OF THE MACHINE AND SHOULD PROVIDE FOR THE SAFE OPERATION OF THE MACHINE, TAKING INTO CONSIDERATION THESE RESPONSE TIMES AND STOPPING DISTANCES.

FAILURE TO COMPLY WITH THESE INSTRUCTIONS, EVEN TEMPORARILY, CAN CAUSE SERIOUS INJURIES OR DEATH OR DAMAGE TO PROPERTY.

The stop function using the Radio Remote Control is only available if the Radio Remote Control has been started.

Never leave the Transmitting Unit unattended so that there is no doubt about the availability of the stop function.

The “useful life”, as defined in international standards and requirements, of the stop function is 20 years. in any case, the Radio Remote Control should be replaced before then. The “useful life” cannot be understood as a warranty period.

After the STOP button is activated in the Transmitting Unit, the Machine is no longer controlled by the Radio Remote Control. The possible risks deriving from the activation of the stop function should be evaluated both by the Installer of the Radio Remote Control as well as by the Manufacturer and the Owner of the Machine on which the Radio Remote Control is installed. The User of the Radio Remote Control should be adequately trained in this regard.

8.3 Technical data of the range

Data	Value
Operating range	150 m
Command response time (typical)	<100 ms
Stop time (typical)	100 ms
Maximum stop time	0.5 s
Performance Level of the "stop protection" according to ISO 13849-1	Cat. 3 PL d

The technical data of the Receiving Unit of the E2 range is reported in Part 2 and in the relative connection diagram.

8.4 Identification of the Radio Remote Control

The serial number (Serial Num.) uniquely identifies the Radio Remote Control.
The serial number can be found on the data plate of the Radio Remote Control; each unit of the Radio Remote Control has its own data plate.
When sending a request regarding an Elca Radio Remote Control the serial number (Serial Num.) of the Radio Remote Control itself must be provided.
The Serial Num. should be reported in all communications with Elca or with Persons who require information, spare parts or technical data regarding the Radio Remote Control.

Do not remove the data plate on the Units from their position, since removing it will immediately void the warranty.
If the data plate has been altered or damaged, contact Elca for a replacement.

8.5 Transportation and/or storage

The Radio Remote Control and all its parts should be transported and stored according to the following parameters and environmental conditions:

Operation	Temperature
Transportation	from -25°C to +60°C
Storage	from -25°C to +60°C

The original packaging should be kept for the entire life of the product.
Use the original packaging for transporting and storing the Radio Remote Control in all the phases of its life, for example before installing and after its removal.

8.6 Applications

An Elca Radio Remote Control of the E2 range can be used for various applications: the suitability of the Radio Remote Control for each different application, especially for safety reasons, should be assessed by the Manufacturer of the Machine.
The E2 range is most often used on Machines for lifting and moving materials, objects, and loads in general (for example: overhead travelling crane, lifting crane, etc.) if permitted by the instructions in this Manual.

An Elca Radio Remote Control should not be installed on Machines whose application or function is not permitted by this Manual or by applicable Laws, Regulations and Standards, also local.

THE INSTALLATION OF AN ELCA RADIO REMOTE CONTROL ON OTHER MACHINES OR FOR OTHER FUNCTIONS CAN CAUSE SERIOUS INJURY OR DEATH OR DAMAGE TO PROPERTY.

Elca is not responsible for, and does not accept any liability for, applications of the Radio Remote Control in situations where safety conditions are poor or non-existent.

The Manufacturer of Machine should assess and eventually adopt additional protective measures for the actuators (for example: two-hand controls, "dead-man" function) where particular locations, equipment and working modes can cause accidental collisions.

In addition to the above, a E2 Radio Remote Control should not be installed:

- On Machines operating in environments that require explosion-proof equipment, or in all those situations that carry a risk of explosion.
- On Machines for moving, lifting and transporting Persons, where the characteristics of the Machine to be used for these functions and the risks connected to them and/or connected to the use of a Radio Remote Control do not allow the Manufacturer of the Machine to guarantee compliance with all safety requirements. These requirements should be taken into consideration when designing and manufacturing the Machine, also taking into account the use of the Radio Remote Control. The Manufacturer of the Machine can allow the installation and use of the Radio Remote Control on these applications under its own responsibility.
- On Machines that cause or might cause dangerous situations in the event of a stoppage due to the loss of the radio link.
- On Machines that, because of their functions or characteristics and/or risks connected to their use, do not allow the use of a Radio Remote Control in conditions where there are no risks.
- On any type of lifting equipment (for example: magnets, pliers, suction cups) when the loss of the radio link or the deactivation of the controls can cause the release of the load being held, with the risk of harming Persons and/or damaging property. The Manufacturer of the Machine can allow the installation and use of the Radio Remote Control for these applications under its own responsibility.
- If the applicable legislation in the country where the Machine is used, and also the local safety regulations and standards, also with reference to safety in the workplace, do not allow the use of Radio Remote Controls for commanding and/or controlling Machines.

THE INSTALLATION OF AN ELCA REMOTE RADIO CONTROL ON MACHINES AND IN SITUATIONS DESCRIBED ABOVE CAN CAUSE SERIOUS INJURIES OR DEATH OR DAMAGE TO PROPERTY.

8.7 Classification of the controls

This paragraph describes the classification of the controls in the Radio Remote Control: this information is useful during installation and maintenance.

Type of control: analogue or digital

The commands sent by the Transmitting Unit can be either analogue or digital.
An analogue command generates a proportional output depending on the position of the relative actuator.
A digital command switches the state of the relative output according to the position of the corresponding output. This state can be on or off.

Name of the commands

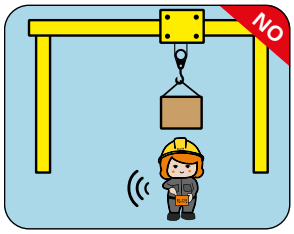
All the commands sent by the Transmitting Unit are identified with initials like K0, K1, K2 etc.
These initials are reported in the Position of the controls and in the Connection diagram to be used during installation.
These documents clarify the correspondence between the commands sent by the Transmitting Unit and those available in the Receiving Unit.

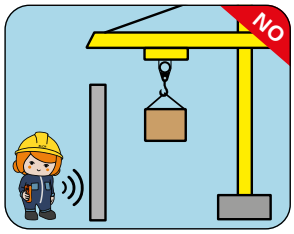
9 Instructions for the User

All the instructions and warnings of the Elca Radio Remote Control in this Manual should be read and understood. Failure to understand or follow them can cause serious injuries or death or damage to property.

9.1 Use of the Radio Remote Control and operating conditions

For the correct use of the Radio Remote Control all the warnings and instructions in the Manual must be respected. It is also necessary to comply with what is reported in the documentation of the Radio Remote Control and the Machine on which the Radio Remote Control is installed.
It is necessary to comply with all workplace safety and accident prevention regulations.
Finally, all applicable Laws, Regulations and Standards, also local, must be respected.
Below are some examples of behaviours to be avoided in using the Radio Remote Control.
These examples are given purely by way of example and do not cover all possible incorrect uses of the Radio Remote Control.
It is the responsibility of the Manufacturer of the machine and the User to evaluate and establish any measures for avoiding the possible incorrect use of the Radio Remote Control or the Machine.





9.2 General warnings for the User

The User should:

- check that the units of the Radio Remote Control are undamaged and operational;
- keep the Transmitting Unit safe so that it cannot be used by unauthorised or unqualified personnel;
- check that the STOP button is working correctly;
- check that the controls of the Machine are working correctly;
- immediately notify superiors and/or managers of the workplace and/or the Machine of any faults, subsidence, deterioration of any other fault that could cause the Radio Remote Control and/or the Machine to malfunction or that could injure Persons and/or damage property;
- not the Radio Remote Control if it is damaged or if the controls are not working correctly;
- use the Machine on which the Elca Radio Remote Control is installed only in safe conditions and only if it is possible to get a good view of the working area of the Machine;
- use the Machine on which the Elca Radio Remote Control is installed only in accordance with the measures and instructions provided by the Manufacturer of the Machine and in compliance all applicable Laws, Regulations and Standards, also local;

- turn off the Transmitting Unit whenever work is suspended, even momentarily;
- respect all the instructions and warnings provided by the Manufacturer of the Machine and/or the Installer;
- respect all the instructions and warnings provided by the person responsible for starting up the Machine for work;
- respect all the instructions and warnings contained in the Manual of the Radio Remote Control;
- use the Radio Remote Control only as described in this Manual, as explained in all the warnings and instructions provided by Elca and in any event not contrary to all the applicable Laws, Regulations and Standards, also local;
- be aware of its work application and as a consequence implement all the operating instructions received in relation to that;
- use the Radio Remote Control only if in a good mental and physical condition;
- use the Radio Remote Control to move the Machine correctly;
- use the Transmitting Unit gripping it with both hands or using support devices (belt, sheath etc.) for the Transmitting Unit supplied by Elca;
- use the stop devices of the Radio Remote Control or the Machine if any dangerous situation arises, also unrelated to the use of the Machine;
- use the transmitting Unit only if there is no risk of falling, loss of control or contact with Persons and/or objects;
- pay attention to the indicator lights of the Transmitting Unit;
- respect any safety distances connected to the use of the Machine in order to avoid potential and/or real situations of risk.

The User should not:

- use the Radio Remote Control if not fully aware of the instructions and warnings of the Radio Remote Control or if no suitable training has been received from qualified personnel;
- use the Radio Remote Control if you suspect a malfunction of the Radio Remote Control, the Machine or a component;
- use the Radio Remote Control if the labels, symbols and/or the warnings are dirty, worn or illegible;
- use the Radio Remote Control in conditions that do not allow the Transmitting Unit and/or the Machine to be controlled correctly;
- use the Radio Remote Control and carry out other operations, like for example using other Machines and/or other devices (telephone, computer, keyboards, information technology or audio-visual appliances, radio-telephone etc.);
- eat or drink when using the Radio Remote Control;
- tamper with the Transmitting Unit, including its components and controls;
- alter the labels, the warnings and everything on the Transmitting Unit panel;
- allow unauthorised persons and/or those who are not adequately trained to use the Radio Remote Control;
- leave the Transmitting Unit exposed to the possibility of being used, damaged or tampered with by unauthorised persons.

OBSERVE ALL FURTHER INFORMATION, INSTRUCTIONS OR WARNINGS CONTAINED IN THIS MANUAL.

9.3 Environmental conditions of use

The environmental conditions of use of the Elca Radio Remote Control are the following:

Unit	Temperature
Transmitting Unit	from -25°C to +60°C

9.4 Warnings before starting work

Before starting work with the Radio Remote Control the User should:

- get in a position that allows both direct control of the Machine and also the movement of the load;
- get in a safe position with respect to the load, the Machine and any other activity, operation of the workplace;
- move to a work position where there is no risk of losing balance or tripping;
- check that the STOP button mechanism is working correctly;
- use the Transmitting Unit only for its intended purpose or operating requirements;
- learn the correspondence between the actuators and the operations of the Machine.

The User should not:

- switch on or use the Radio Remote Control in enclosed spaces or places with poor visibility;
- use the Radio Remote Control if it is outside the operating range.

Failure to comply with the points above can lead to a connection between the Units of the Radio Remote Control that is not optimal, with the risk that the Machine carries out undesired commands.

The symbols on the Transmitting Unit panel have been chosen by the Manufacturer of the Machine and/or the Installer based on the use and purpose of the Machine.

9.5 Warnings during normal use

During normal use the User should:

- pay attention to the work area and any dangerous situations present;
- visually check all the movements of the Machine and the load;
- stay within the operating range of the Radio Remote Control;
- pay attention to the visual and acoustic signals of the Radio Remote Control;
- use the Radio Remote Control to move the Machine safely, to avoid creating dangerous situations for Persons and/or property;
- switch off the Transmitting Unit and disconnect the power supply to the Receiving Unit in the event of a malfunction;
- immediately notify superiors and/or managers of the workplace and/or the Machine of any malfunctions;
- use the Radio Remote Control only after solving and problems and/or malfunctions;
- use the Radio Remote Control only with a fully charged battery;
- end any dangerous operations as soon as possible in the event of a low battery;
- use any holster, belt for the Transmitting Unit to prevent the Unit falling or accidentally activating the actuators.

9.6 Warnings for after its use

Warnings for after its use

- avoid leaving the Machine in dangerous conditions (for example with a suspended load);
- prevent unauthorised or unsuitable trained persons from using the Radio Remote Control.

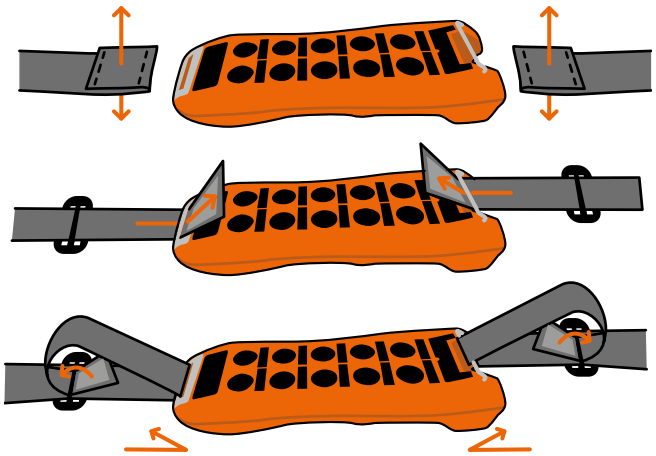
FAILURE TO COMPLY WITH THESE INSTRUCTION SCAN CAUSE SERIOUS INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

9.7 Belt

The transmitting unit is supplied with a belt.

Assembly

Before using the Radio Remote Control the User should connect the belt to the Transmitting Unit, as described in the following procedure.



Use

The User should use the belt with the Transmitting Unit attached to prevent it falling or actuators accidentally being activated.

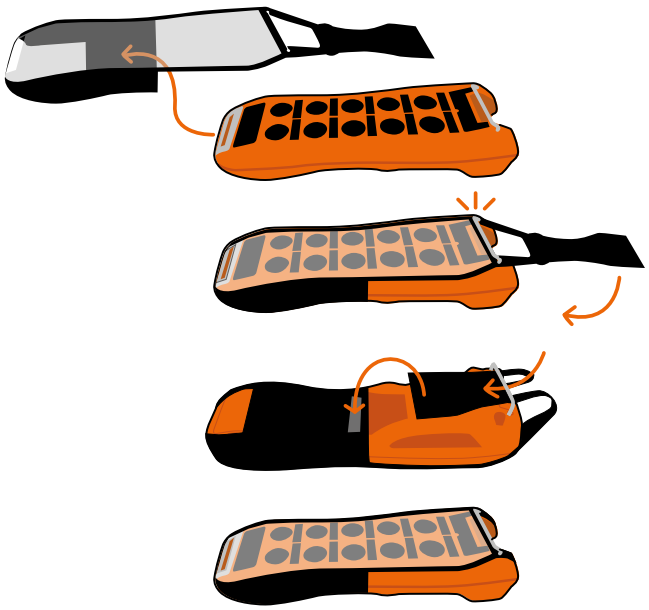
The belt should be replaced if it show signs of wear or damage.

A different use of the belt and/or holster constitutes an incorrect use of the radio remote control.

9.8 Holster

The transmitting unit can be inserted in a holster to keep it clean.
If the belt is attached to the Unit, the belt must be removed before fitting the holster.
To remove the belt, follow the instructions in paragraph 9.7 in reverse order.

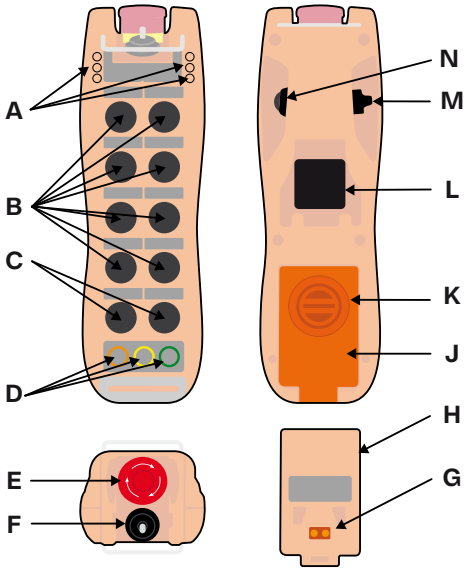
Assembly



After assembling the holster, fit the belt as described in paragraph 9.7 .

The holster and/or belt should be replaced if they show signs of wear or damage.

10 Description of the Transmitting Unit



	Full version	Base version
A	Control LED	Control LED
B	Command devices	Command devices
C	Command devices	K7 button - START button
D	K7 button - K21 button - START button	
E	STOP mushroom button	STOP mushroom button
F	Toggle switch (optional)	Toggle switch (optional)
G	Contacts for charging	Contacts for charging
H	Battery	Battery
J	Battery housing	Battery housing
K	Code card cover	Code card cover
L	Technical data plate and serial number	Technical data plate and serial number
M	Mechanical key (optional)	Mechanical key (optional)
N	Actuators	Actuators

10.1 Technical data

Radio transceiver module	MTE2
Antenna	incorporated
Power supply	Lì-po 3.7 V battery
Current draw	<45 mA
Absorbed power	<0.15 W
RF effective radiated power	complies with FCC and IC requirements
Minimum distance between antenna and human body (hands)	> 5 mm
Run time with fully charged battery at 20 °C (emissions power 10mW)	20 hours
Run time after first low battery warning	60 min
Run time after second low battery warning	5 min
Protection degree	IP65
Dimensions	72x235x60 mm
Weight	390 g

The radio Remote Control was evaluated for RF Exposure of portable devices under extremity exposure conditions.

10.2 The Position of the controls and Connection diagram
The documentation supplied with the Radio Remote Control consists of:
- "Arrangement of Controls" that contains the configuration of the Transmitting Unit and the names of the commands sent to the Receiving Unit;
- "Connection diagram" that indicates the correspondence of the commands sent by the Transmitting Unit and those available in the Receiving Unit.

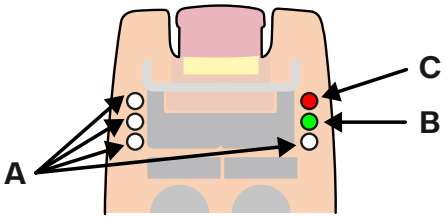
The Connection diagram should be checked, filled out and signed by the Installer who is responsible for carrying out the wiring correctly.
The Position of the controls and the Connection diagram should always remain attached to this Manual: if you have to use one or more of these documents for administrative purposes (controls, tests, etc.) a copy should be made.

The wiring of the outputs of the Receiving Unit should always correspond to what is indicated in the Position of the controls and the Connection diagram.

10.3 Transmitting Unit data plate
There is just one Data plate on the Transmitting Unit AT E29-MIA. Its position and the information contained in it can be found in the table below.

Table	Position	Information
Transmitting Unit data plate	Side of the Transmitting Unit	Serial number (Serial Num.), year of manufacture and the main technical information of the Transmitting Unit, the marking and any trademarks of the Radio Remote Control.

10.4 Indicator lights



A	White LED
B	Green LED
C	Red LED

10.4.1 White LED
The white LED [A], numbered from 1 to 4, can be used to have an indication of the status of the inputs set up for this purpose on the Receiving Unit.
The LED already prepared for the status indications of the K7 button cannot be used for this (see paragraph 11.4).

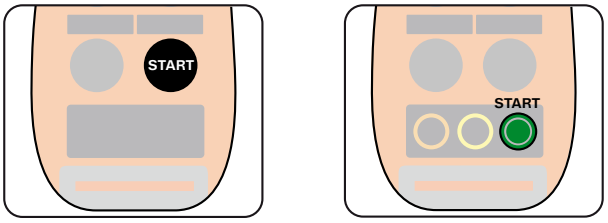
10.4.2 Green LED [B] and Red LED [C]
The green LED [B] and the red LED [C] provide information about the Radio Remote Control.
See the table below for the meaning of the switching on of the green LED [B] and the red LED [C].
For the action to be undertaken when the green and red indicator lights are present see the tables below or else the chapter 15 .
It is not possible to alter the meaning of the green and red LED signals.

SIGNAL	MEANING
The green LED is off.	The Transmitting Unit is off.
The green LED is on with a steady light for 5 seconds	The Transmitting Unit is waiting for the access code to be entered.
The green LED flashes slowly (1 flash/second).	The Radio Remote Control is operating correctly and the battery is charged.
The green LED remains on for 10 seconds then blinks twice every 2 seconds.	The Transmitting Unit was switched on and enabled but is not receiving signals from the Receiving Unit that might be off.

SIGNAL	MEANING
The red LED flashes slowly (1 blink/second).	The Radio Remote Control is working correctly but the battery is low (run time left less than 1 hour).
Red LED on for 1 second then the system shuts down.	The access sequence has been entered incorrectly.
The red LED is on and steady.	The Radio Remote Control indicates the presence of an error.
the red LED blinks rapidly.	Low battery (5 minutes of run time).

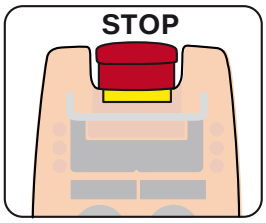
11 General operating instructions

11.1 START button
The START button performs different functions depending on the status of the Transmitting Unit.



The START button is used for:
- switching on the Transmitting Unit when it is off;
- activating the START function and the ALARM function when the Receiving Unit is active;
- displaying the charge status during the charging phase (see paragraph 12.7).

11.2 STOP button
The STOP button stops the Machine and switches off the Transmitting Unit.



To restart working after the STOP button was pressed, proceed as follows:
- check that the operating conditions are safe;
- turn the STOP button in the direction indicated to disengage it;
- carry out the procedure for starting the Radio Remote Control (see paragraph 11.8).

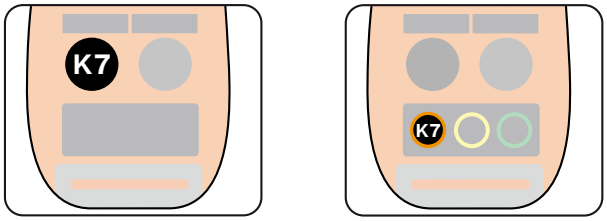
if a dangerous situation arises press the STOP button to immediately stop the Machine.

It is necessary to check that the Manufacturer of the Machine and/or the Installer provide suitable instructions and warnings in relation to any risks that derive from the stoppage of the Machine. These risks could, for example, come from inertial movements or from the swinging of the load.

11.3 Control buttons

The first step of these buttons is interlocked with respect to the command of the button on the side of the same line. Therefore the interlocked commands are K0 with K1, K2 with K3, K4 with K5.
For example, pressing button K0 and then button K1, only the command of the button pressed first is transmitted, in this case K0. The second step of the button on the same row can activate different commands. For example, the second step of buttons K0 and K1 activate K10 and K11 respectively. Refer to "Position of the commands" to better identify the commands activated by the buttons.

11.4 K7 button

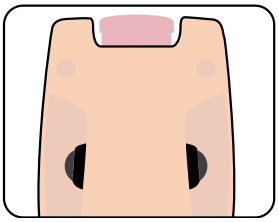


Button K7 can be configured by the manufacturer to have special functions. The description of the operation of the Machine combined with button K7 should be provided by the Manufacturer of the Machine or the Installer.

The User needs to be adequately trained regarding the functions related to the button K7.

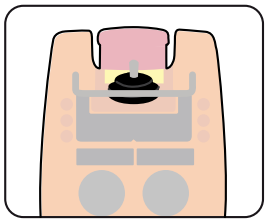
11.5 ENABLE button (optional)

The ENABLE button has three positions (OFF-ON-OFF). It enables the use of the transmitting unit in the central position only.



11.6 Toggle switch (optional)

Allows to select an operating characteristic of the radio remote control among those available.



11.7 Potentiometer (optional)

Allows to adjust the outputs of the proportional commands.

11.8 Starting the Radio Remote Control

Starting the Radio Remote Control consists of establishing the radio link between the Transmitting Unit and the Receiving Unit.

When the Radio Remote Control starts the entry of a PIN code is requested in order to use the Machine. The PIN code is needed to prevent the Radio Remote Control being used by unauthorised persons.

Some configurations may have either the mechanical starting keyswitch only (optional) or the mechanical starting keyswitch (optional) and the PIN code.

Refer to the procedures for the PIN code or the mechanical key described in the following paragraphs.

Also refer to the indications in paragraph 7.1 .

Turn off the transmitting unit when the radio remote control is not used to operate the machine, or when the work is interrupted in another way, even for short periods.

11.8.1 PIN code

In the versions of the transmitting unit in which it is present, the PIN code is given by the sequential activation of a series of Transmitting Unit buttons.
The radio remote control cannot operate without the PIN code being entered.

When the PIN is being entered the commands associated with the activated buttons are not sent to the Machine.

11.8.2 Start up using a PIN code

The Transmitting Unit leaves the factory with an access sequence composed of:

1. press the START button and keep it pressed until the green LED comes on;
2. press the K7 button;
3. press the START button and keep it pressed until the green LED starts flashing rapidly.

In the base version, the button must only be pressed on the first step of the button.

Each button should be pressed within 3 seconds from the release of the previous one.
If entered correctly, the green LED starts flashing rapidly, otherwise the Transmitting Unit switches off and the operation repeats.

In the access sequence the default PIN CODE is the K7 button, whereas when the first START button is pressed this is used to start the Transmitting Unit and the final START button is for enabling the controls.

Before starting up the Radio Remote Control check that the STOP button is released and that the Receiving Unit is powered up.

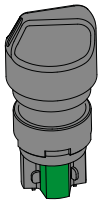
The PIN CODE of the Radio Remote Control can be customised is necessary by the User to restrict the use of the Radio Remote Control.
However, it is not possible to eliminate the PIN CODE which will always have to be entered to start the Radio Remote Control.
It is possible to increase the number of buttons that make up the PIN CODE up to a maximum of 3. The START button cannot be used as a button of the PIN CODE since it is used for starting and for enabling commands to be sent.
Below is an example of starting the Radio Remote Control with a PIN CODE composed of 3 buttons (K0, K2, K4):

- press the START button and keep it pressed until the green LED comes on;
- press button K0 (button 1 of the PIN);
- press button K2 (button 2 of the PIN);
- press button K4 (button 3 of the PIN);
- press the START button and keep it pressed until the green LED starts flashing rapidly.

11.8.3 Procedure for changing the PIN code
To use the Transmitting Unit the PIN CODE must be entered.
If necessary it is possible to change the PIN CODE to restrict the use of the Radio Remote Control.
This part of the Manual describes the procedure to be carried out on the Transmitting Unit for changing the PIN CODE.
Before changing the PIN CODE the Transmitting Unit must be switched off.
To change the PIN code carry out the following procedure with the Transmitting Unit off and the STOP button disengaged:
- simultaneously press the first step of the START and K7 buttons until the flashing red LED (2 flashes per second) switches to the flashing green LED (2 flashes per second).
- enter the access sequence (the pre-set one is the START button, K7 button, START button). The green LED continues flashing, but the white LED 1 signal is on and steady. After 10 seconds of inactivity or by pressing the STOP button the menu closes without saving the changes;
- press button K0 until the white LED 2 remains on and steady and the green LED flashes.
- press the K1 button to confirm. The white LED 1 flashes quickly and the green LED flashes 2 times per second;
- press the sequence of buttons you want to set as an enabling sequence. White LEDs 1, 2 and 3 light in sequence.
- confirm the programming by simultaneously pressing buttons K7, START and K1 for a few seconds.

If you want to define an enabling sequence for a single button, press the Start button as the first and third button of the sequence. If you want to define an enabling sequence for a two buttons, press the Start button as the first or the third button of the sequence.

11.8.4 Mechanical key (optional)



In transmitting unit versions in which the mechanical starting keyswitch is present, the radio remote control cannot operate if the key is not inserted in the transmitting unit.
Key introduction
To insert the mechanical key:
- introduce the key inside the relative seat;
- then turn the key clockwise.

Key removal
To remove the key:
- turn the key anti-clockwise.
- pull the key out of the seat.

Remove the mechanical key when the radio remote control is not used or the work is interrupted even for short periods.

11.9 Activating the controls
Once the Radio Remote Control has been started it is possible to start the buttons for the controls of the Machine.
It is the responsibility of the Installer and/or the Manufacturer of the Machine to choose the functions and the symbols of the buttons of the Transmitting Unit and it is always their duty to provide these instructions with the Machine so that the User is well informed on this matter.

11.10 Interruption of the radio link
If for any reason the radio link is incorrect or interrupted, use the automatic stop function (see paragraph 8.2.4).
The green LED of the Transmitting Unit passes from slow flashing to quick flashing, on with a steady light or repeats two flashes and a pause.

11.11 Automatic switching off of the Transmitting Unit
If the Radio Remote Control is not used for a certain period of time, the switch off function activates and the Radio Remote Control is switched off.
The automatic switch off intervenes even when the Unit battery is low.
To start the Radio Remote Control see paragraph 11.8 .

11.12 Charging the Transmitting Unit
The table below indicates the signals regarding the charge state of the Transmitting Unit.

SIGNAL	MEANING
The green LED flashes slowly (1 flash/second).	The Transmitting Unit is charged.
The red LED flashes slowly (1 blink/second).	The Transmitting Unit has a low battery (1 hour of run time).
the red LED blinks rapidly.	The Transmitting Unit has a low battery (5 minutes of run time).
The ALARM relay activates intermittently, activating an acoustic signal (optional).	The Transmitting Unit has a low battery (100 seconds of run time).

To charge the Transmitting Unit see chapter 12 .

11.12.1 When the Transmitting Unit is not used
If the Transmitting Unit stays on for a pre-set time without receiving any movement commands, the automatic switch-off intervenes. This time is shown in the Connection diagram (SWITCH-OFF).
The automatic switch-off is indicated on the Transmitting Unit by the LED; 30 seconds before the switch off, the red and green LED flash alternately.
Pressing any button on the Transmitting Unit the pre-set auto switch-off time is reset.
It remains the responsibility of the Manufacturer of the Machine or the Installer to decide the auto switch-off time or its eventual modification.
This setting should be established based on the operation and performance of the Machine.
The procedure for programming the auto switch-off is outlined below:
- simultaneously press the first step of the START and K7 buttons until the flashing red LED (2 flashes per second) switches to the flashing green LED (2 flashes per second).
- enter the access sequence (the pre-set one is the START button, K7 button, START button). The green LED continues flashing, but the white LED 1 signal is on and steady. After 10 seconds of inactivity or by pressing the STOP button the menu closes without saving the changes;
- press button K0 until the white LED 1 and 2 remain on and steady and the green LED flashes.
- press button K1 to access the menu. The white LEDs begin to flash indicating the current selection;
- now press button K0 to select the desired setting:
  - LED 1 flashing Auto Switch-Off Disabled;
  - LED 2 flashing Auto Switch-Off at 2 minutes;
  - LED 1 and 2 flashing Auto Switch-Off in 5 minutes;
  - LED 3 flashing Auto Switch-Off in 10 minutes (default value);
- simultaneously press buttons K7, START and K1 for a few seconds to confirm the programming.

11.13 Switching off of the Transmitting Unit
If you have to switch off the Transmitting Unit just press all the way and in sequence the START button and immediately after the K7 button until the red LED comes on, or else just use the STOP button.

If the Radio Remote Control is not used to control the Machine, the Transmitting Unit should be switched off. Switch off is necessary also when the work is interrupted also for brief periods.

Do not leave the load suspended or the Machine in a dangerous condition (also when charging the Unit or changing the battery).

FAILURE TO COMPLY WITH THESE INSTRUCTION SCAN CAUSE SERIOUS INJURIES OR DEATH AND/OR DAMAGE TO PROPERTY.

11.14 "Customised Signals" function

It is possible to customise the information for certain situations and movements of the Machine, helping the User top assess the operating situation of the Machine.
The signals depend on the settings chosen by the Installer for the Radio Remote Control on the Machine.
The signals occur through the coming on of the LED available on the Transmitting Unit during normal use of the Radio Remote Control.

The customised LED signals can never be considered nor used as a safety signal or for legal metrology.

The Radio Remote Control does not intervene automatically in the potentially dangerous situations signalled.

If the green LED repeats three flashes and a pause, there is no information and/or signals of the "Data Feedback" function. in this case, bring the Transmitting Unit closer to the Receiving Unit until the green LED starts flashing slowly.

11.15 Replacing the Transmitting Unit

If the Transmitting Unit is no longer usable, it can be replaced with a new identical Transmitting Unit, which can be requested from Elca.

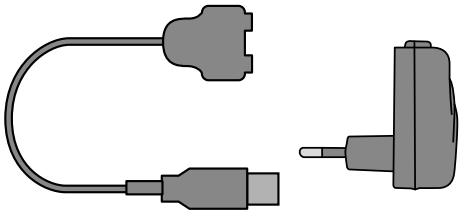
The replacement operations should only be carried out by qualified personnel and only in the maintenance phase with the machine stopped in safety conditions.

The replacement procedure allows you to uniquely connect a new Transmitting Unit with a Receiving Unit.
In compliance with IEC60204-1 and IEC60204-32 that establish that just one Transmitting Unit can control the machine at the same time, at the end of this procedure the Transmitting Unit that was previously connected to the Receiving Unit is no longer recognised. Therefore only the new Transmitting Unit will be able to control the Machine, taking the place of the previous one.
The user-programmable functions in the new transmitting unit are reset to the factory values.
If some functions have been previously modified, it is necessary to customize them again following the instructions in paragraphs 11.8 and 11.12 .
At the end of the COUPLING procedure always check that the new Unit is operating correctly, making sure that all the movements are executed correctly and in particular the STOP function.

Remove the data plate from the transmitter that is no longer used and fix it to the new one. If this is not possible because it is lost, destroyed or illegible, contact an ELCA Assistance Centre for a new one.
On the same Receiving Unit up to a maximum of 15 different Transmitting Units can be replaced.

12 Charging system of the Transmitting Unit

Inside the Transmitting Unit there is a rechargeable battery that cannot be removed from the Radio Remote Control.
To charge the battery, the charging device (Elca-Clip) supplied with the Elca Radio Remote Control must be used.



The Transmitting Unit should be charged in a place where the temperature is between 0°C and 40°C; this will provide the best performance in terms of battery capacity and useful life.

12.1 Instructions for use

Use only original Elca batteries and recharge them only with the Elca charging system.

Do not use batteries showing external damage.

Do not short circuit the battery contacts.

Do not tamper with or attempt to modify, open, perforate or repair the battery in any way.

Do not wet the battery with any liquid.

Do not put the battery in high pressure containers.

Do not knock or drop the battery.

Do not put the battery in your mouth.

Do not store the battery in bags or pockets containing metal objects that could cause short circuits with the risk of burns.

Do not expose the battery to long periods of heat or sunlight.

Pay attention to the high temperatures that may be generated inside vehicles exposed to the sun.

The charging system is for professional use, therefore it can only be used by competent personnel or by suitably trained persons.

The charging system cannot be used by a Person with limited physical, sensory and mental abilities and by children.

The charging system should not be used with wet or damp hands or feet. The use of the charging system does not require any special tools. In any case, do not for any reason use objects and/or tools that are not insulated since they could conduct electricity.

Before charging the Transmitting Unit always make sure it is undamaged and the contacts are clean both on the Unit and also on the charger.

If cleaning is required, the Transmitting Unit should be switched off and/or the charging system disconnected from the power supply.

Use a damp cloth with a cleaner for the electric contacts or a non-abrasive brush.

Protect the charging system from dust and material like lime, sand, concrete or other substances.

Be very careful when using the charging system, since it can be a source of fire, overheating and other dangers.

Elca declines all responsibility for any improper or unreasonable use of the battery or in any case that does not comply with this Manual.

12.2 First aid

Consult a doctor immediately if a battery or part of it has been ingested.

In the event that a Person comes in contact with material that has leaked from a damaged battery, immediately wash the affected area with soap and water for at least 15 minutes and consult a doctor as soon as possible.

12.3 Battery storage

Please note that a battery will self-discharge over time if not used; prolonged storage can also lead to a total and definitive loss of capacity, making the battery unusable.
In order to ensure maximum battery life over time, the battery should be stored in a cool and dry environment if a long period of non-use is expected.
The following table shows the residual capacity of the battery with respect to the nominal value, depending on the storage temperature and duration.

Temperature	Duration
from 45 to 60°C	1 month
from 25 to 45°C	3 months
from -20 to 25°C	8 months

The table is indicative in the case of a battery stored at half-charge, an ideal condition for storage.

Refer to the UN 3480 and UN 3481 regulations for the shipping and transportation of Li-ion batteries.

12.4 Charging indicator lights

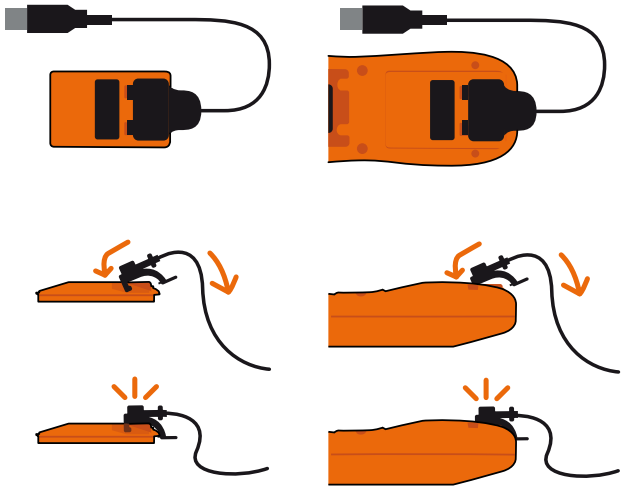
The indicator lights of the battery charger during charging are shown below:

SIGNAL	MEANING
The green LED is on.	The Transmitting Unit is charged.
The red LED is on.	The Transmitting Unit is charging.

The full charging process lasts about 4 hours.
The lithium polymer batteries allow a rapid charging process in the initial part of charging.
Two hours charging provides 75% of a full charge, the equivalent of about 15 hours run time, while a charge of just 20 minutes provides about 2 hours of run time.
It is advisable to always keep the batteries fully charged to be able to ensure full effectiveness.
Avoid leaving the batteries discharged for long periods.
Charge the batteries at least once a year.

12.5 Connecting the charging system

Check that the electrical connection poles are clean and dry before connecting the charging system.

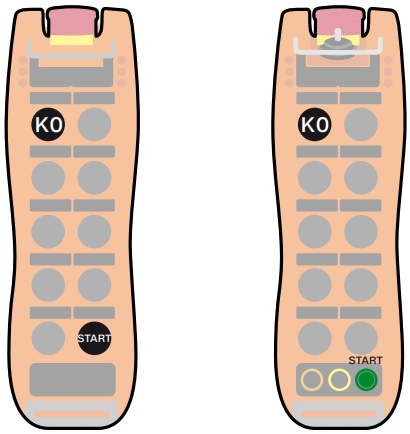


12.6 Removing the charging system

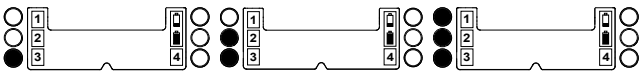
To remove the battery after charging, perform the procedure indicated in paragraph 12.5 in reverse order.

12.7 Charge level indicator of the Transmitting Unit

To check the charge level indicator of the Transmitting Unit, press and keep pressed the START + K0 buttons at the same time with the Transmitting Unit off.



The white LEDs 1, 2 and 3 come on progressively depending on the charge status of the battery; if only LED 3 is on it indicates that the battery is low, LED 1, 2 and 3 on indicate that the battery is fully charged.



12.8 Disposal of batteries

Do not throw the batteries into a fire as they may explode.
Do not dispose of batteries together with household waste.

Batteries may release toxic substances harmful to humans, animals and plants and contaminate the environment. They should be not disposed of with municipal solid waste but delivered to authorised collection centres for battery recycling and treatment.

The crossed-out wheeled bin symbol on the batteries means that the batteries must be disposed of separately from household waste in compliance with Directive 2006/66/EC and subsequent amendments and with local regulations.

13 Replacing the Transmitting Unit

The operations described below should only be carried out by qualified personnel and only in the maintenance phase with the machine stopped in safety conditions for the replacement of the transmitting unit no longer used.

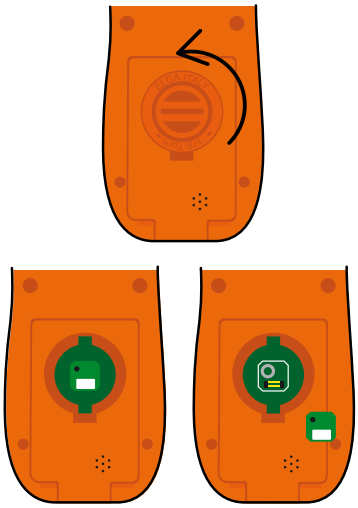
This procedure allows you to uniquely connect a new Transmitting Unit with a Receiving Unit.
In compliance with IEC60204-1 and IEC60204-32 that establish that just one Transmitting Unit can control the machine at the same time, at the end of this procedure the Transmitting Unit that was previously connected to the Receiving Unit is no longer recognised. Therefore only the new Transmitting Unit will be able to control the Machine, taking the place of the previous one.
At the end of the transmitting unit replacement procedure always check that the new Unit is operating correctly, making sure that all the movements are executed correctly and in particular the operation of the STOP button.

Remove the data plate from the transmitting unit that is no longer used and fix it to the new one.

13.1 Replacement of the matching code card

Open the hatch located under the battery compartment to access the card with the unique matching code.
After turning the cap 1/8 of a turn anticlockwise, lift the hatch, taking care not to lose the seal.

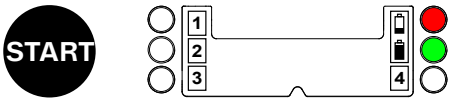
The replacement operations should only be carried out by qualified personnel and only in the maintenance phase with the machine stopped in safety conditions.



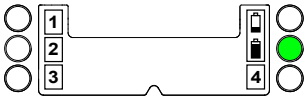
13.2 Acquisition of identification code

Each Unit, when replacing the card with the identification code, must be enabled for use by means of the identification code acquisition procedure.

When the transmitting unit is switched on for the first time, the red and green LEDs light up simultaneously for 3 seconds.



Then it waits for input commands with the green LED flashing slowly.



Enter the PIN CODE.
If the default PIN CODE has not been changed by the user, the sequence is formed by the START, K7, START buttons. The green LED lights for 1 second then turns off.

Enter the PIN CODE again.
The Transmitting Unit is now active.

14 Maintenance

14.1 Maintenance of the Radio Remote Control - general instructions

It is the responsibility of the Maintenance Technician:
- keep the Transmitting Unit safe so that it cannot be used by unauthorised or unqualified personnel;
- use the Machine on which the Elca Radio Remote Control is installed only in safe conditions and only if it is possible to get a good view of the working area of the Machine;
- use the Machine on which the Elca Radio Remote Control is installed only in accordance with the measures and instructions provided by the Manufacturer of the Machine and in compliance all applicable Laws, Regulations and Standards, also local;
- immediately notify superiors and/or managers of the workplace and/or the Machine of any faults, subsidence, deterioration of any other fault that could cause the Radio Remote Control and/or the Machine to malfunction or that could injure Persons and/or damage property;
- respect all the instructions and warnings provided by the Manufacturer of the Machine and/or the Installer;
- respect all the instructions and warnings provided by the person responsible for starting up the Machine for work;
- respect all the instructions and warnings contained in the Manual of the Radio Remote Control;
- all applicable Laws, Regulations and Standards, also local, must be respected;
- use the Radio Remote Control only as described in this Manual, as explained in all the warnings and instructions provided by Elca and in any event not contrary to all the applicable Laws, Regulations and Standards, also local.

All set up, control and maintenance operations of the Radio Remote Control must be recorded. The person responsible for the Maintenance of the Machine should record them.

Before carrying out any maintenance, it is necessary that:
- the Receiving Unit is NOT powered;
- the Transmitting Unit is off;
- the STOP button is pressed.

In the event of a malfunction the Transmitting Unit should be switched off and the Receiving Unit disconnected from the power supply. The Radio Remote Control must remain disabled until the problem is solved with the necessary technical interventions.

After each maintenance operation, it is necessary to:

- check that the gasket is undamaged and correctly positioned;
- check that the parts of the casing are properly connected so that they overlap;
- screw in the screws.

14.2 Routine maintenance

By routine maintenance is meant all those actions that have the single aim of maintaining the normal operating conditions of the Radio Remote Control.
Routine maintenance takes place through set up and control interventions, and the scheduled replacement of parts, required by a normal use of the product.
Each time that the Radio Remote Control is fitted or installed on the Machine, each time that the Machine is moved or placed in a new position or else after special maintenance, it is necessary to carry out all the instructions below.
The routine maintenance contained in this Manual is crucial for the safe operation of the Radio Remote Control.

In order for the Radio Remote Control to operate safely, the routine maintenance described in this Manual must be carried out.

Before carrying out any maintenance on the Machine, the Receiving Unit must be disconnected from the power supply.

14.2.1 Daily routine maintenance

What to do every day before using the Radio Remote Control:
- check that the STOP button is working correctly; the pressure exerted on the button must not be high and the reset must take place without friction or forcing;
- check that when the STOP button is pressed and the START button pressed, the red LED comes on;
- make sure that the plastic case of the Transmitting Unit is undamaged. It should not have cracks;
- check the integrity of the rubber of the keyboard buttons. It should not have cracks or holes;
- make sure that the data plates of the Transmitting Unit are undamaged and legible. They should be undamaged and legible.

What to do during normal use:
- prevent materials depositing on the Transmitting Unit that could compromise its safe use (for example: dust, grease, concrete, lime, sand, etc.);
- avoid any action that could damage the Transmitting Unit (contact with water, fluids and liquids, falls, bumps, etc.);
- protect the Transmitting Unit from jets of water or heavy rain.
- do not leave the Transmitting Unit unnecessarily exposed to direct sunlight or heat sources.

What to do after its use:
- clean the Transmitting Unit without using solvents or corrosive or flammable products. Do not use steam cleaners, pressure washers or high pressure appliances;
- put the Transmitting Unit in a clean and dry place, sheltered from rain, the sun and heat sources.

14.2.2 Monthly routine maintenance

At least once a month:
- clean the Transmitting Unit with a damp cloth and make sure it is undamaged.
- clean the battery contacts and the unit's power contacts;
- clean the contacts of the charging system's power supply.
- check that the symbols on the transmitting unit panel are undamaged. They should be clearly visible.

14.2.3 Quarterly routine maintenance

At least every three months:
- check that the commands sent and movements carried out by the Machine correspond;
- check that when no movement command is sent the contact of the SAFETY relay is open. After carrying out the maintenance the work must be recorded (date, signature, comments) as evidence that the control was duly carried out. Keep the record together with the other installation documents, since it is an important maintenance intervention concerning safety.

14.3 Special maintenance

By special maintenance is meant the operation and the entirety of repair operations that have to be carried out following breakages, faults or malfunctions of the Radio Remote Control.
Special maintenance beings the Radio Remote Control back to its original conditions of use and operation.

Special maintenance should only be carried out by a qualified Elca person.

The qualified Elca person is a specialised technician who has the specific skills and competences with regard to the Radio Remote Control.

No specialised technician can carry out special maintenance operations on the Radio Remote Control if he does not belong to the Elca assistance network or who is not expressly authorised by Elca.

For the special maintenance operations only original Elca parts and materials should be used.

The instructions and maintenance Manual should be available for the specialised technician entrusted with the special maintenance operations.

When requesting assistance and/or spare parts from Elca, you must provide the serial number of the Radio Remote Control, the date of purchase, and the problem encountered.
To enable the request to be met it is also helpful to know the address of the place where the Radio Remote Control is used, the name and telephone number of the person to contact, as well as the company supplying the Radio Remote Control.

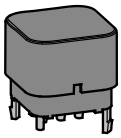
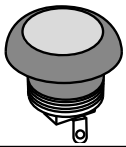
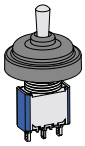
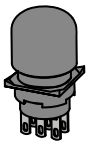
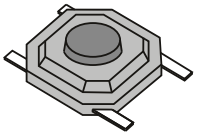
14.4 Keys, buttons and joystick

Each actuator of the Transmitting Unit has been constructed to support a maximum number of movements, beyond which it is not possible to guarantee it operates correctly.
This information is normally reported in the technical specifications of the Manufacturer of each actuator.
The “maximum number of movements” can in no way be understood as a warranty period.

The actuators of the Transmitting Unit (joystick, keys, buttons, selectors) must be replaced before reaching the “maximum number of movements”.

Replacement is necessary even when these are working.

This type of maintenance can prevent possible dangerous situations caused by faults with the actuators.

Actuator	Max. number of movements
	250.000
	500.000
	1.000.000
	100.000
	100.000
	500.000

15 Guide to solving problems

If the Radio Remote Control is not working correctly, carry out the following preliminary controls:

- move all the Transmitting Units in the work area away from the Elca Transmitting Unit used, in order to avoid possible radio disturbance and interference;
- move the Elca Transmitting Unit closer to the corresponding Elca Receiving Unit, in order to avoid possible radio disturbance and interference, positioning it always in a safe place with a complete view of the Machine, the work area and the load, if present;
- check to see if the problem is with the Radio Remote Control or the Machine: to this end, it is necessary to do a control test of the Machine using a different control station to the Radio Remote Control, if present. If the problem persists after this test, you need to work on the Machine following the Manufacturer's instructions. Otherwise the problem is with the Elca Radio Remote Control, so further controls will be needed.

15.1 Solutions in the event of malfunctions

The table below indicates the malfunctions that can be encountered when the LED in the Transmitting Unit come on and the relative remedies. If the problem persists after implementing the solution indicated, contact the assistance service of the Machine Manufacturer.

SIGNAL	POSSIBLE CAUSE	SUGGESTED REMEDY
The LED does not switch on when the START button is activated.	The battery is low.	Recharge the battery.
	The STOP button is pressed.	Release the STOP button.
The green LED is on and steady for 5 seconds and then the red LED is on for 1 second, then the Transmitting Unit switches off.	The access sequence has not been entered.	Insert the access sequence of the Transmitting Unit.
The red LED is on steady for 1 second, then the Transmitting Unit switches off.	The access sequence is incorrect.	Insert the correct access sequence of the Transmitting Unit.
The green LED is on steady for 10 seconds then flashes twice every 2 seconds.	The Radio Remote Control, is outside the operating range.	Make sure that the operating distance is within the work range and that the Radio Remote Control, has been installed correctly.
	The Receiving unit is off or not working.	Supply power to the Receiving Unit. Remember that switching off the Receiving Unit also causes the Transmitting Unit to switch off.
The green LED is flashing and then the LED turns red and on steady for 10 seconds, then the Transmitting Unit switches off.	The Transmitting Unit is not coupled with any Receiving Unit.	Carry out the coupling procedure for replacing the Transmitting Unit.
The green LED blinks rapidly.	The Radio Remote Control is subject to radio disturbance.	Ensure there are no other similar systems or sources of interference such as radio relay systems or transmitters. Switch off the Transmitting Unit and then switch it back on.
The green LED is on and steady, then turns red and blinks twice every 2 seconds.	The Receiving Unit is in error.	Switch the Transmitting Unit and Receiving Unit off and then switch them back on.
The green LED blinks rapidly.	There is radio disturbance.	Ensure there are no other similar systems or sources of interference such as radio relay systems or transmitters. Switch off the Transmitting Unit and then switch it back on.

SIGNAL	POSSIBLE CAUSE	SUGGESTED REMEDY
The green LED blinks rapidly.	The Receiving Unit is not installed correctly.	Check the system has been installed correctly (Receiving Unit position, metal obstacles, etc.).
	The external antenna (if present) is not working.	Check that position and the connection of the external antenna are correct.
No LED on.	The charging system is not working.	Clean the electric contacts of the Transmitting Unit and the charging system.
The red LED is on.	The battery is not charging.	Wait until fully charged.

OPERATING ERROR	POSSIBLE CAUSE	SUGGESTED REMEDY
One or more commands do not activate the corresponding movement.	A fuse is damaged.	Check the condition of the fuses inside the Receiving Unit.
	The command was not transmitted.	On the Receiving Unit check that the LED comes on of the relay corresponding to the command activated on the Transmitting Unit.
	The wiring is incorrect.	Check the wiring in the Receiving Unit

16 Decommissioning and disposal

16.1 Decommissioning
After its decommissioning the Radio Remote Control should be transported and kept in accordance to what is in paragraph 8.5 .

16.2 Disposal
If disposing of all the parts of the Transmitting Unit and its charging system, they all should be treated as separated waste. Disposal should comply with the legal provisions and regulations in force in the country of use.