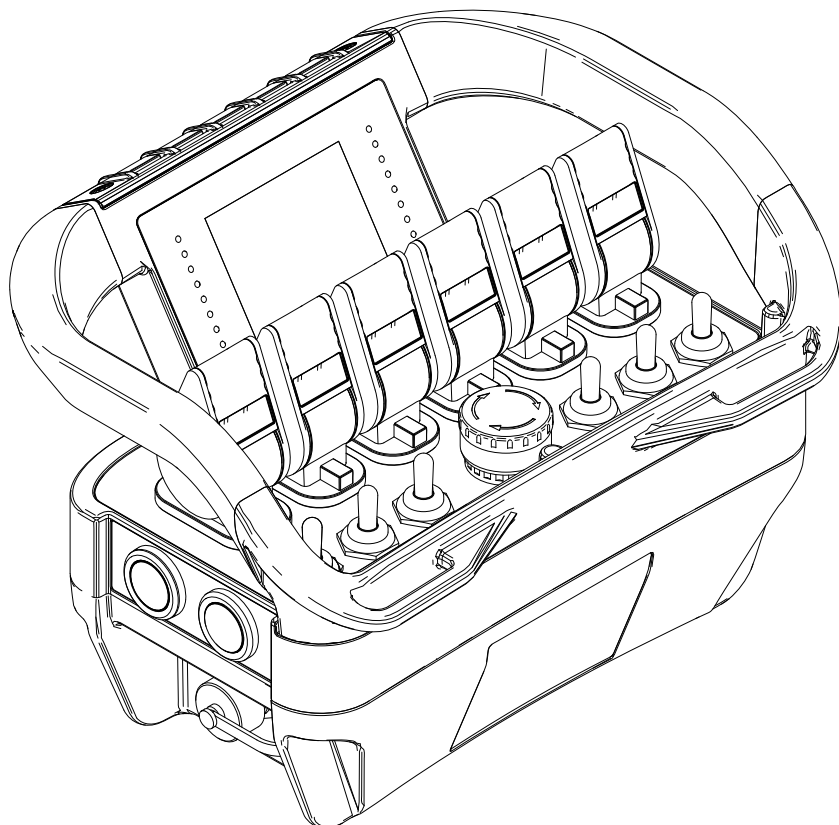


Instruction Manual for the use and the maintenance of the Radio Remote Control

Original instructions



Part C: FJN Transmitting Unit

**DYNAMIC (2400-2483.5MHZ)
SERIES**

WARNING

THIS PART OF THE MANUAL CONSISTS OF: Part C - Information, instructions and warnings for the FJN (Model J2F) Transmitting Unit. The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit, Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

THE AUTEC RADIO REMOTE CONTROL IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- ON WHICH AND WHERE THE USE OF A RADIO REMOTE CONTROL IS APPROPRIATE,
- THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER ON WHICH THE AUTEC RADIO REMOTE CONTROL IS INTENDED TO BE INSTALLED, to perform an in-depth and accurate risk assessment to determine if the Autec Radio Remote Control is suitable for operating a Machine in conditions of safety and operational effectiveness, taking into account the conditions of use, the intended uses and the reasonably foreseeable incorrect ones, so that the installation, maintenance and use of the Autec Radio Remote Control, and all its components, are performed only and entirely in compliance with this Manual and in accordance with all local regulations, safety standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the USA market the Laws, Regulations and Standards include all safety rules and regulations of the Occupational Safety & Health Administration (OSHA) (<http://www.osha.gov>), all federal, state and local laws, regulations and building and electrical codes, and all applicable standards, including but not limited to ANSI Standards.

It is also the responsibility of the Manufacturer and of the design professionals of the Machine on which the Autec Radio Remote Control is to be installed and used to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, that the installation, maintenance and operation of the Autec Radio Remote Control and all of its components are done solely and completely in accordance with this Manual, and with all applicable Laws, Regulations and Standards, even local. It is also the responsibility of the Manufacturer of the Machine on which the Autec Radio Remote Control is to be installed and used, and their design professionals, to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO OPERATE OR USE THE AUTEC RADIO REMOTE CONTROL AND THE MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL. ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO BE IN THE VICINITY OF MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO PROPERLY INSTALL, OPERATE, MAINTAIN AND SERVICE THE AUTEC RADIO REMOTE CONTROL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE. Refer to this Manual and each of its Parts for further assistance or contact Autec. Autec is not responsible for and shall not be held liable for any installation of the Autec Radio Remote Control not performed by Autec or for any use of the Autec Radio Remote Control not in complete compliance with, and/or not maintained in complete compliance with, all Autec instructions and warnings and all applicable Laws, Regulations and Standards, even local.

Autec is not responsible for and shall not be held liable for any alteration or modification of the Autec Radio Remote Control, or the use of non-Autec components or products used with or incorporated into the Autec Radio Remote Control.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, to be certain that the Autec Radio Remote Control is properly maintained and serviced at all times in compliance with all Autec instructions and warnings, and with all applicable Laws, Regulations and Standards, even local.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that all Users of the Autec Radio Remote Control and that all Persons who are or will be working with or near the Machine operated by or through the Autec Radio Remote Control are fully and properly educated and trained by qualified Personnel in the proper and safe use of the Autec Radio Remote Control and of the Machine, including without limitation complete familiarity with and understanding of Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and that such Users and other Persons do in fact at all times operate or work with the Autec Radio Remote Control safely and ONLY in compliance with Autec instructions and warnings and with all applicable Laws, Regulations and Standards, even local. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that the areas in which the Machine operated by or through the Autec Radio Remote Control is located and operates are clearly delineated and marked in accordance with all Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and otherwise sufficient to alert and warn ALL PERSONS that the Machine is operated by or through a Radio Remote Control, and prohibiting any unauthorized access thereto. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

FAILURE TO OPERATE THE AUTEC RADIO REMOTE CONTROL SAFELY AND IN COMPLIANCE WITH AUTEC INSTRUCTIONS AND WARNINGS AND WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL, AND/OR PERMITTING USERS OR OTHER PERSONS NOT PROPERLY TRAINED IN THE SAFE AND PROPER USE OF THE SYSTEM, OR THE MACHINE ON WHICH IT IS INSTALLED, CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

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1 Information on the use of instructions



Before reading this part of the Manual, you must read and understand the general part (Part A) of the Manual provided with the Radio Remote Control.

1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec Radio Remote Controls consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the Radio Remote Control's Owner, User and by all those Persons that, for any reasons, may operate with the Radio Remote Control or with the Machine where it is installed. The following table describes the structure of the Instruction Manual for the use and the maintenance of the Radio Remote Control.

Part	Title	Contents
A	General part	- General information regarding the series, - directions for risk assessment of the "Machine+Radio Remote Control" system, - warnings for installation of the Radio Remote Control, - warnings for use and maintenance of the Radio Remote Control, - instructions for correct transportation and storage of Radio Remote Control.
B	Conformity and frequencies	- Operating frequency bands of the Radio Remote Control, - conformity and law references of the Radio Remote Control.
C	Transmitting Unit	Description and instructions concerning the Transmitting Unit, including: - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Receiving Unit	Description and instructions concerning the Receiving Unit, including: - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the Radio Remote Control's Technical Data Sheet, that:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec Radio Remote Control and of the Machine, system, device or Machinery system where the Radio Remote Control is installed.

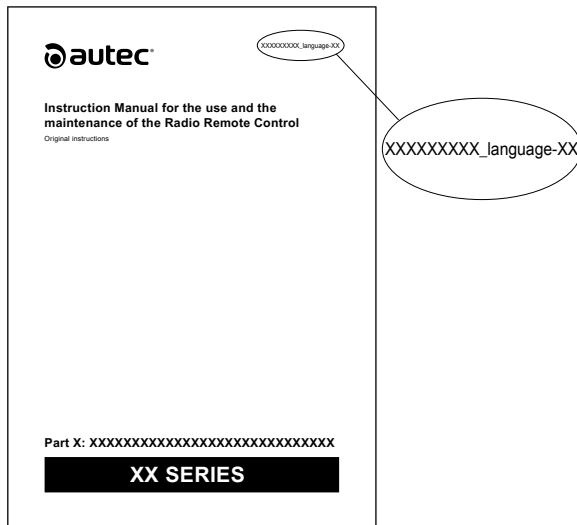
The Manufacturer of the Machine on which the Autec Radio Remote Control is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.



The CD attached to each Instruction Manual includes the translations of the Manual.

Act as follows to identify the single Manual parts in the relevant language in the CD:

- Choose the desired language
- Select the single parts of the Manual: refer to the code name provided on the cover of each part.



1.2 Caption and terminology



Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable.

In this part of the Manual, the terms listed below have the same meaning explained in the corresponding paragraph of the general part (Part A):

- **Unit**
- **Radio Remote Control**
- **Transmitting Unit**
- **Receiving Unit**
- **Radio link**
- **Active stop**
- **Automatic stop**
- **Manual stop**
- **Passive stop**
- **Machine**
- **Manufacturer**
- **Installer**
- **User**
- **Maintenance Technician**
- **Manual or Instruction Manual**
- **Installation manual**
- **Person**
- **Owner**

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols



This symbol identifies the parts of text in the Manual that must be read with special attention.



This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them or in complying with them may cause hazards for People and/or property.

1.4 To whom the instructions are addressed

Addressees of instructions are listed in the paragraph with the same title in the general part: please refer to that part.

1.5 Instruction storage

Regulation for the storage of instructions are described in the paragraph with the same title in the general part: please refer to that part.

1.6 Intellectual property

Restrictions connected to intellectual property are described in the paragraph with the same title in the general part: please refer to that part.

2 Brief product presentation

2.1 Series, Radio Remote Control and Unit

The object of this part of the Manual is the FJN (Model J2F) Transmitting Unit of an Autec Dynamic (2400-2483.5MHz) series' Radio Remote Control.

Autec Dynamic (2400-2483.5MHz) series' Radio Remote Controls are designed to be used on Machines and provide a command interface to their command and control system, to be used from an appropriate distance and position.

2.2 Conformity with standards

The conformity of Radio Remote Controls with standards and with working requirements and conditions in the single Countries is provided in the related specific part "Conformity and frequencies" (Part B) of the Manual.

2.3 Contacts and useful addresses

The Radio Remote Controls are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

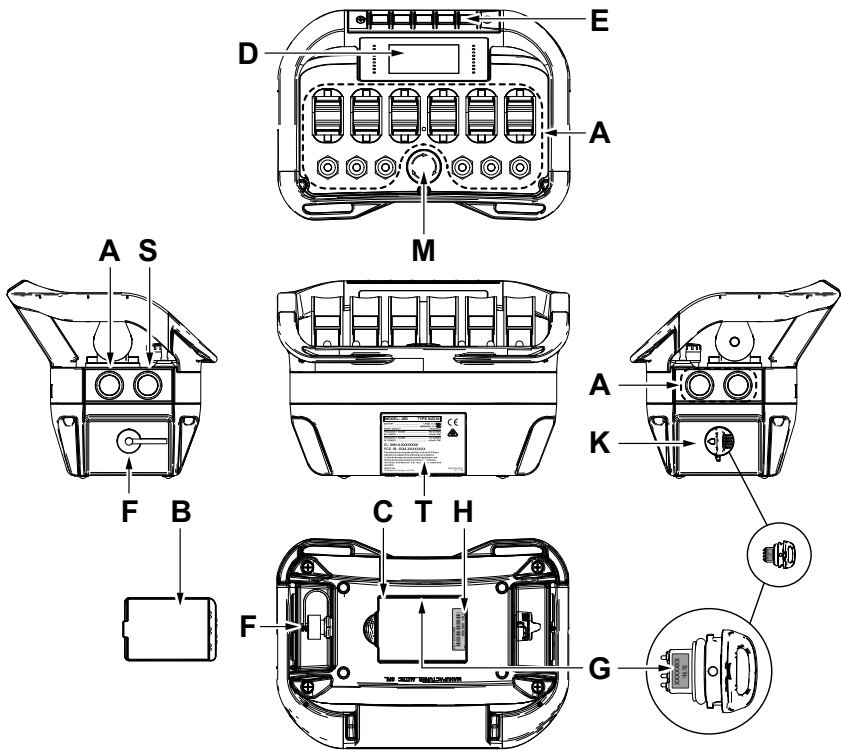
General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

When applying for technical service to Autec, its distributors, dealers and authorized service centres, the Radio Remote Control's serial number is required; you can find it on the identification plate on the Transmitting Unit and/or on the Receiving Unit.

3 Description of the Transmitting Unit



A	Actuators (joysticks, selectors, pushbuttons)
B	Battery
C	Battery housing
D	Display and/or LED (if any)
E	Pushbuttons for display/LEDs (if any)
F	Connector for cable control (if present)
G	Radio Remote Control identification plate

H	Transmitting Unit identification plate
K	Power keyswitch
M	GSS or EMS pushbutton
S	START pushbutton
T	Technical data plate

4 **Technical data**

Power supply	batteryLPM02
	batteryMBM06MH
Antenna	integrated
Housing material	PA 6 (20%fg)
Protection degree	IP65 (NEMA 4)
Dimensions	243x163x175mm (9.6x6.4x6.8in)
Weight	1.75kg (3.8lb)
Run time at 20°C (68°F) with LPM02 battery	18.5h
Run time at 20°C (68°F) with LPM02 battery and 2.8" colour display	9h
Run time at 20°C (68°F) with MBM06MH battery	11h

5 **Technical Data Sheet**

The Radio Remote Control 's Technical Data Sheet:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

The Technical Data Sheet must be filled in, checked and signed by the Installer, who is responsible for correct wiring.

A Technical Data Sheet must always be kept together with this Manual: if you need to use the Technical Data Sheet for administrative purposes (tests, check, etc.), make a copy of it.

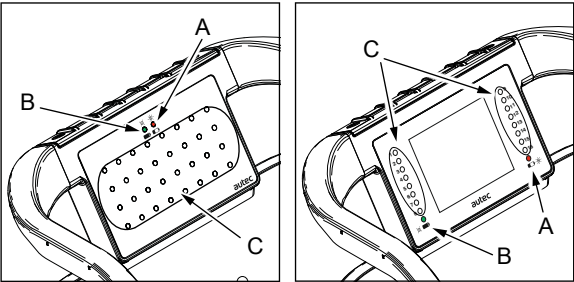
 WARNING	The wiring of the Receiving Unit's outputs must always reflect the wiring indicated in the Technical Data Sheet.
--	--

6 Plates

Plate	Position	Content
Radio Remote Control identification plate	Key ID 0-1 (if present)	Radio Remote Control serial number (S/N)
	Battery housing (if the ID internal tx memory is present)	Radio Remote Control serial number (S/N), QR code and manufacturing year.
Transmitting Unit identification plate	Battery housing	Manufacturing year, a QR code and the Transmitting Unit identification number (TU ID)
Technical data plate	Back side of the Transmitting Unit	Model, Type and main Transmitting Unit technical data, marking and possible Radio Remote Control marks

7 Light and acoustic warning signals

7.1 Light signals



A	Red LED
B	Green LED
C	LEDs for Data Feedback function

The Transmitting Unit always has a green LED [B] and a red LED [A] that provide information regarding the Radio Remote Control.

Symbol	Meaning
	This symbol identifies the red LED [A]
	This symbol identifies the green LED [B]

The meaning of signals provided by the LEDs identified with “C” are explained in the Data Feedback function part (see paragraph 8.14). The meaning of LEDs related to the Data Feedback function are decided and established by the Machine Manufacturer depending on the Machine's functions for which he wants to receive information.

Signals provided by the red LED [A] indicate a Radio Remote Control malfunction. The meaning of such signals and possible actions to perform are described in chapter 11.

The meaning of signals provided by the green LED [B], when the red LED [A] is off, are described in the following table.

Signals	Meaning
The green LED is off. The red LED is off.	The Transmitting Unit is off.
The green LED blinks fast. The red LED is off.	The Transmitting and Receiving Unit do not communicate.
The green LED blinks slowly. The red LED is off.	The radio remote control is started and the Units communicate with one another.

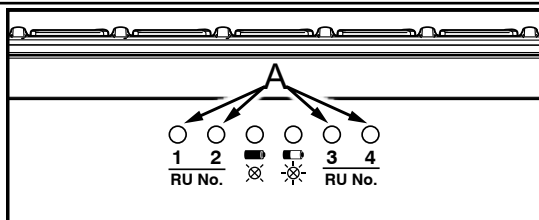


The meaning of the green [B] and red [A] LED signals cannot be modified.

7.2 Additional light signals for Multi Units and Take & Release Radio Remote Controls

Signals	Meaning
The green LED repeats the sequence: a blink and a pause. The red LED is off.	The Transmitting Unit has engaged one or more Receiving Units.
The green LED repeats the sequence: two blinks and a pause. The red LED is off.	The Receiving Unit is engaged by another Transmitting Unit, that is currently off.

7.3 Additional light signals for Multi Units and Multi Receiver Radio Remote Controls



A White LEDs

Multi Units and Multi Receiver Radio Remote Controls may have up to 4 white LEDs [A] that provide information regarding the Radio Remote Control's Receiving Units. Each LED corresponds to a Receiving Unit (LED 1 corresponds to Receiving Unit RU No.1, LED 2 corresponds to Receiving Unit RU No.2, etc.). The meaning of signals provided by the white LEDs is described in the following paragraphs.



The meaning of the white LEDs' signals cannot be modified.

7.3.1 Multi Units

Signals	Meaning
The LED is off.	The Receiving Unit corresponding to the LED: - Does not communicate with the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. THE STOP OUTPUTS OF THE RECEIVING UNIT RELATED TO THE LED MAY BE ACTIVE: another Transmitting Unit may have performed the start up procedure with the Receiving Unit.
The LED blinks fast.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - It is engaged by the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are not active.
The LED blinks slowly.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - It is engaged by the Transmitting Unit - It is not chosen by the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are active.
The LED is lit with a steady light.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - It is engaged by the Transmitting Unit - It is chosen by the Transmitting Unit - It performs commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are active.
The LED repeats the sequence: two blinks and a pause.	The Receiving Unit is engaged by another Transmitting Unit, that is currently off. The STOP outputs in the Receiving Unit corresponding to the LED are not active.

7.3.2 Multi Receiver

Signals	Meaning
The LED is off.	The Receiving Unit corresponding to the LED: - Does not communicate with the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are not active.
The LED blinks fast.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are not active.
The LED blinks slowly.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - It is not chosen by the Transmitting Unit - Does not perform commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are active.
The LED is lit with a steady light.	The Receiving Unit corresponding to the LED: - It communicates with the Transmitting Unit - It is chosen by the Transmitting Unit - It performs commands sent by the Transmitting Unit. The STOP outputs in the Receiving Unit corresponding to the LED are active.

7.4 Acoustic signals

The Transmitting Unit has an acoustic signal device that activates when:

- The battery is nearly flat.
- The Transmitting Unit has been on for twenty-four hours.
- The Transmitting Unit does not work correctly.
- During the Radio Remote Control start-up, the GSS or the EMS pushbutton is pressed or damaged.
- During the Radio Remote Control start-up, the SAFETY command is activated (see Technical Data Sheet).
- During the Radio Remote Control start-up, one of the commands D2-D20 is activated (see Technical Data Sheet).
- During the Radio Remote Control start-up, one of the commands A1-A8 is activated (see Technical Data Sheet).
- During the Radio Remote Control start-up, one of the commands H1-H8 is activated (see Technical Data Sheet).
- During the Radio Remote Control start-up, one of the commands L1-L8 is activated (see Technical Data Sheet).
- During the Radio Remote Control start-up, the battery is flat.

The acoustic signal device activates whenever the red LED [A] illuminates. The meaning of the red LED [A] lighting up and of the activation of the acoustic signal and possible actions to perform are described in chapter 11.



The meaning of the acoustic signals cannot be modified.

8 General operating instructions

8.1 Power keyswitch

The Transmitting Unit have a power keyswitch. It can either one of the following:

- Mechanical key (see paragraph 8.1.1).
- Key ID 0-1 (see paragraph 8.1.2).

The Radio Remote Control cannot work if the power keyswitch is not inserted in the Transmitting Unit.

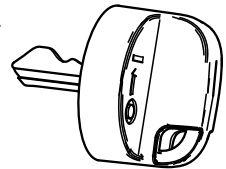
8.1.1 Mechanical key

The mechanical key makes it possible to power the Transmitting Unit.

Inserting the mechanical key

Do the following to insert the mechanical key:

1. Insert the mechanical key into its receptacle.
2. Turn the mechanical key clockwise.



Removing the mechanical key

Do the following to remove the mechanical key:

1. Turn the mechanical key anticlockwise.
2. Pull the mechanical key to remove it from its receptacle.

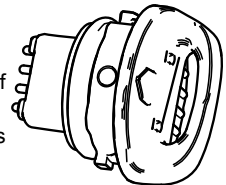
8.1.2 Key ID 0-1

The Key ID 0-1 makes it possible to power the Transmitting Unit.

It stores the Radio Remote Control's address.

Therefore, the Key ID 0-1 can only be used in the Transmitting Unit of the Radio Remote Control to which it belongs.

As the Radio Remote Control's address is stored in the Key ID 0-1, this must be used with very strict care.



Only use the Key ID 0-1 for the Transmitting Unit with which it was provided.

8.1.3 Inserting the Key ID 0-1

To insert the Key ID 0-1, do as follows:

1. Insert the Key ID 0-1 in its housing.
2. Turn the Key ID 0-1 clockwise.

8.1.4 Removing the Key ID 0-1

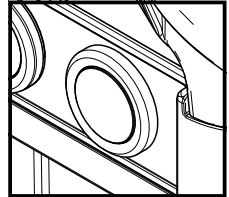
To remove the Key ID 0-1, do as follows:

1. Turn the Key ID 0-1 anti-clockwise.
2. Pull the Key ID 0-1 to remove it from its housing.

8.2 START pushbutton

The START pushbutton is used to:

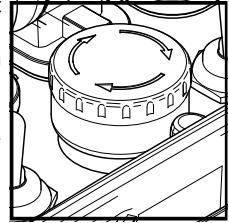
- start the Radio Remote Control (see paragraph 8.9)
- activate the horn when the Radio Remote Control is started.



8.3 GSS pushbutton

When the GSS pushbutton (if any) is activated, the Transmitting Unit switches off and the Machine stops. To start the Radio Remote Control again and enable it to control the Machine after the GSS pushbutton has been pressed, you need to:

- Make sure that the working and usage conditions are safe.
- Pull or turn the GSS pushbutton in the arrow direction (shown on the button) to unlock it.
- Start the Radio Remote Control following the procedure described in paragraph 8.9).



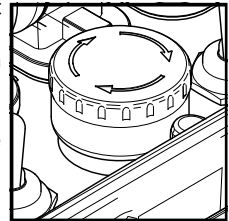
The GSS pushbutton should be pressed when it is necessary to stop the Machine immediately whenever a dangerous condition occurs.

The Machine Manufacturer and/or the Installer must provide the User with the instructions and warnings concerning possible risks that may originate from the Machine stop (by way of example: movement inertia, swinging load...).

8.4 EMS pushbutton

When the EMS pushbutton (if any) is activated, the Transmitting Unit switches off and the Machine stops. To start the Radio Remote Control again and enable it to control the Machine after the EMS pushbutton has been pressed, you need to:

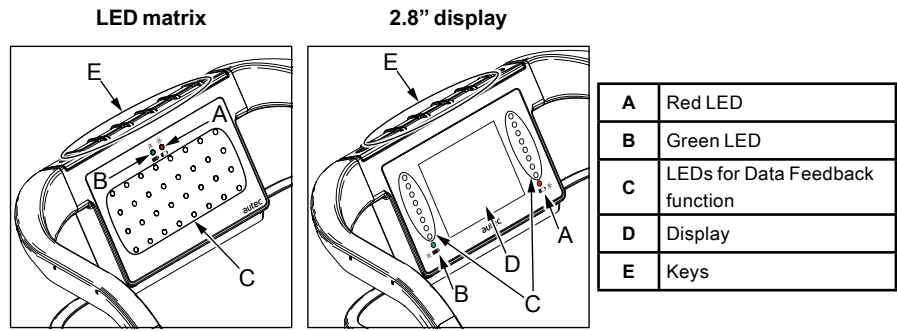
- Make sure that the working and usage conditions are safe.
- Pull or turn the EMS pushbutton in the arrow direction (shown on the button) to unlock it.
- Start the Radio Remote Control following the procedure described in paragraph 8.9).



The EMS pushbutton should be pressed when it is necessary to stop the Machine immediately whenever a dangerous condition occurs.

The Machine Manufacturer and/or the Installer must provide the User with the instructions and warnings concerning possible risks that may originate from the Machine stop (by way of example: movement inertia, swinging load...).

8.5 Pushbuttons for display/LED



The pushbuttons [E] on the Transmitting Unit are used to interact with the display [D] and the LEDs for Data Feedback function [C].

Functions performed by the pushbuttons [E] are configurable and are decided by the Machine Manufacturer: the User must be properly trained in this respect.

No operation or movement of the Machine shall be connected to the use of the pushbuttons [E].

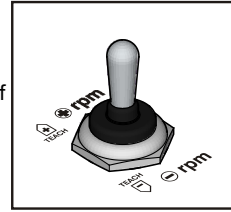
8.6 Command meaning

Commands on the Unit are specified according to the Machine's operations and functions. Their presence and functions are decided and defined by the Machine Manufacturer, who chooses the symbol conventions too.

The control devices described below, when present, perform the following functions (usually the symbol conventions are as in the images).

8.6.1 RPM+/- switch (during normal operation)

This switch increases (rpm +) or decreases (rpm -) the number of revolutions of a Machine's engine.

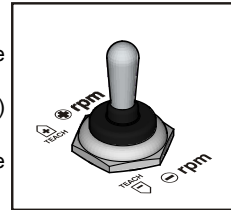


Symbol	Meaning
 rpm	This symbol identifies the command that increases the number of revolutions of a Machine's engine.
 rpm	This symbol identifies the command that decreases the number of revolutions of a Machine's engine.

8.6.2 TEACH switch (during REMOTE SETUP)

This switch is used to:

- Set maximum and minimum values of proportional outputs (see "Part D" in the Instruction Manual).
- Set values related to the rest position of proportional outputs (offset) (see "Part D" in the Instruction Manual).
- Invert the movement direction of the joystick's axis (see the Installation Manual).



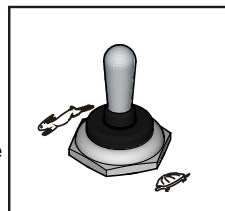
Symbol	Meaning
 TEACH	This symbol identifies the TEACH+ command.
 TEACH	This symbol identifies the TEACH- command.

8.6.3 MOVEMENT SPEED SELECTOR

This switch is used to modify the speed of the Machine movements.
Depending on the configuration:

- It sets two or three speed levels.
- It increases or decreases speed.

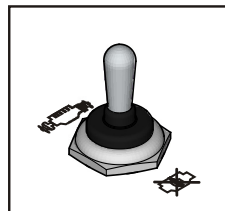
The levels and the speed increase and decrease are chosen by the Machine Manufacturer.



Symbol	Meaning
	Depending on the configuration, this symbol indicates: - the normal speed of the Machine movements or - the increase of speed of the Machine movements.
	Depending on the configuration, this symbol indicates: - the reduced speed of the Machine movements or - the decrease of speed of the Machine movements.
	If this symbol is present, it indicates that the speed of the Machine movements is further reduced.

8.6.4 Engine on/off switch

This switch is used to switch on and off a Machine's engine.



Symbol	Meaning
	This symbol indicates the power on command of a Machine's engine.
	This symbol indicates the switch off command of a Machine's engine.

8.6.5 Command TAKE

The TAKE command may be present in the Transmitting Units of a Take & Release Radio Remote Control. The TAKE command enables to take control of the corresponding Receiving Unit, if it is free.

8.6.6 Command CATCH

The CATCH command may be present in the Transmitting Units of a Multi Units Radio Remote Control.

The CATCH command enables to take control of the corresponding Receiving Unit, if it is free.

8.6.7 Command SELECT

The SELECT command may be present in the Transmitting Units of a Multi Units Radio Remote Control.

The SELECT command enables at the same time to take control of and choose the corresponding Receiving Unit, if it is free.

8.6.8 Command RELEASE

The RELEASE command is available in all the Transmitting Units of Take & Release Radio Remote Controls and of Multi Units Radio Remote Controls. The RELEASE command enables to release the corresponding Receiving Unit, if it is engaged.



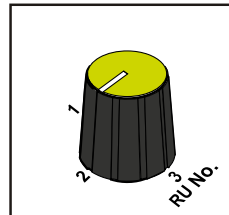
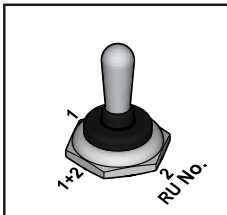
By releasing one or more Receiving Units, the User gives an explicit consent to the other Users, thus enabling them to take control of the Receiving Unit just released.

8.6.9 Command RU No.

The RU No. command may be present in the Transmitting Units of a Multi Receiver and of a Multi Units Radio Remote Control.

The RU No. command in a Multi Receiver Radio Remote Control enables to choose the Receiving Unit/s with which you want to work.

The RU No. command in a Multi Units Radio Remote Control enables to choose the Receiving Unit/s with which you want to work, amongst the already engaged ones.



8.7 Battery



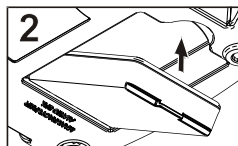
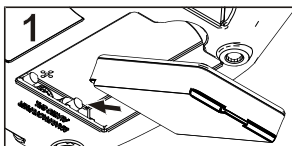
The Dynamic (2400-2483.5MHz) series' Transmitting Units can only be powered by Autec rechargeable batteries.

For any warnings and instructions regarding the battery, see "Part E" in the Instruction Manual.

8.7.1 Battery insertion

To insert the battery, proceed as follows:

1. Push the battery towards the contacts of the Transmitting Unit.
2. Insert the battery in its housing.

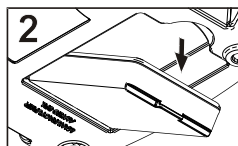
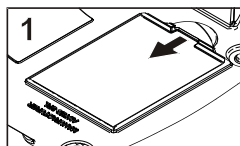


The battery slides easily into place and ensures that the positive (+) and negative (-) poles are correctly connected only if it is inserted with the plate facing its housing, so that the battery's contacts match the Transmitting Unit's contacts.

8.7.2 Battery removal

To remove the battery, proceed as follows:

1. Push the battery towards the contacts of the Transmitting Unit.
2. Remove the battery from its housing.



When the Transmitting Unit is not in use, remove the battery if possible.

8.8 ID internal tx memory

The ID internal tx memory is a key containing the address that is used to code messages exchanged between the Transmitting Unit and the Receiving Unit.

This key, if present, is inside the Transmitting Unit.

The ID internal tx memory is present in the Transmitting Unit when this has a mechanical key, and not the Key ID 0-1, as a power keyswitch (see paragraph 8.1).

8.9 Starting up the Radio Remote Control

Starting up the Radio Remote Control means enabling it to send commands and operate the Machine.



The Radio Remote Control start up is protected by a power keyswitch to prevent unauthorised use of the Machine.

To activate the Radio Remote Control it is necessary to insert the power keyswitch as described in the following procedure.



The start up procedure for the Take & Release, Multi Units or Multi Receiver Radio Remote Controls is provided in the TOD (Technical and Operational Description) document attached to the Instruction Manual.

To start a Radio Remote Control consisting of a Transmitting Unit and of a Receiving Unit, perform the following procedure:

1. Power on the Receiving Unit respecting the voltage limits provided in the technical data (see "Part D" of the Manual). The POWER LED illuminates.
2. Insert a fully charged battery in the Transmitting Unit (see paragraph 8.7.1).
3. Insert the power keyswitch in the Transmitting Unit (see paragraph 8.1).
4. Press the START pushbutton and hold it down until the green LED blinks slowly. If the red LED illuminates, refer to chapter 11.

When the green LED illuminates and blinks slowly, the Radio Remote Control is active and it can send commands and activate the Machine.

8.9.1 Monitored commands

When the START pushbutton is pressed during the Radio Remote Control start up, the Transmitting Unit monitors the status of commands D2-D20, A1-A8, H1-H8 and L1-L8 and signals via the LEDs and the display if any command is active. In this case, the Transmitting Unit automatically switches off when the signal ends. If none of the monitored commands is active, the Radio Remote Control starts.



Commands monitored by the Transmitting Unit during start up are chosen by the Machine Manufacturer according to the risk assessment. If this assessment was positive, the Manufacturer can ask Autec to modify the behaviour of commands D2-D20, A1-A8, H1-H8 and L1-L8 during start up. Look up for monitored and non-monitored commands in the Technical Data Sheet.

Commands D21-D48 and A9-A12 can not be monitored during start up.

When the START pushbutton is pressed to start the Radio Remote Control, the commands that are not monitored during start up, if active, immediately activate the Machine functions that are associated with them.

8.10 Command activation

When the Radio Remote Control is started, it is possible to activate movements, functions and commands on the Machine by acting on the related joysticks, switches or pushbuttons, whose functions and symbols are decided by the Manufacturer and/or the Installer.

To identify the relation between the actuators and the corresponding Machine movements, the Machine Manufacturer and/or the Installer shall provide relevant instructions and the User shall be properly trained.

8.11 Interruption of the radio link

When the radio link is incorrect or interrupted for a certain period of time ("Passive Stop" indicated in the Technical Data Sheet), the automatic stop function activates (see paragraph "Control devices" in "Part A" of the Manual).

The green LED on the Transmitting Unit blinks fast.

The POWER LED on the Receiving Unit illuminates steadily.

To start the Radio Remote Control, press the START pushbutton and hold it down until the green LED blinks slowly. If the red LED illuminates, refer to chapter 11.

When the green LED blinks slowly, the Radio Remote Control is active and it can send commands and activate the Machine.

8.12 Transmitting Unit automatic switch off

Automatic switch off of the Transmitting Unit occurs in the following cases.

- When the battery is flat (see paragraph 8.12.1).
- When the Radio Remote Control is not used for a certain time (see paragraph 8.12.2).
- When the transmitting unit is powered and never switched off for twenty-four hours non-stop (see paragraph 8.12.3).

The green LED on the Transmitting Unit switches off.

The POWER LED on the Receiving Unit illuminates steadily.

To start the Radio Remote Control, press the START pushbutton and hold it down until the green LED blinks slowly. If the red LED illuminates, refer to chapter 11.

When the green LED blinks slowly, the Radio Remote Control is active and it can send commands and activate the Machine.

8.12.1 Low battery

The Transmitting Unit indicates if the battery is not sufficiently charged (the red LED blinks and an acoustic signal sounds).

The Transmitting Unit automatically switches off after 3.5 minutes after the onset of the signal. It is necessary to bring the Machine to a safe state and replace the battery with a charged one (see paragraph 8.7).



The battery run time signalled by the Transmitting Unit is reduced by the following factors:

- Battery ageing
- Increasing number of battery charge-discharge cycles
- Battery usage outside the range provided in paragraph "Operational usage" in "Part A" of the Manual.
- Battery storage in disregard of the indications given in paragraph "Storage" in the instruction manual for the use and maintenance of the battery and battery charger.

8.12.2 When the Transmitting Unit is not used

If the Transmitting Unit remains started for a certain time while none of these commands are enabled: SAFETY, D2-D10, H1-H8 or L1-L8, then it automatically switches off. This time frame is specified in the Technical Data Sheet (Automatic Switch Off).



Setting or removal of the automatic switch off time (Automatic Switch Off) is done by Autec and decided by the Machine Manufacturer, according to his risk assessment and to the operation and functions he needs on the Machine.

8.12.3 Non-stop use

The Transmitting Unit indicates if it has been on for twenty-four hours non-stop (the red LED blinks and an acoustic signal sounds).

The Transmitting Unit automatically switches off after 3.5 minutes after the onset of the signal. Bring the Machine to a safe state before the Transmitting Unit automatically switches off.

8.13 Switching off the Transmitting Unit

 WARNING	Switch off the Transmitting Unit when not actively using the Radio Remote Control to operate the Machine, or when work is otherwise interrupted, even for short periods. Do not leave the load hanging or the Machine in dangerous conditions (even when charging the Unit or changing the battery). FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.
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Voluntary switch off of the Transmitting Unit occurs in the following cases.

- when the power keyswitch is turned anti-clockwise or removed.
- When the battery is removed (see paragraph 8.7.2).

8.14 Data Feedback Function

The User receives information and/or signals concerning some specific situations and the movements of the controlled Machine by means of the Data Feedback function.

The Data Feedback function acts through the LED array and/or the display.

 WARNING	Any information shown and signalled on the display and/or through the LEDs for Data Feedback function can never be considered or used as a safety signal or for legal metrology. When operating the Machine, remember that the Radio Remote Control does not cut in autonomously when potential hazardous situations are shown and signalled.
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During normal Radio Remote Control operation, pay particular attention to the indications displayed and signalled by the display and/or through the LEDs: they can be helpful to evaluate the Machine working status.

8.14.1 Operation with display

If the Transmitting Unit has a display, it is possible to show warning icons, the measurements collected from the Machine and their description.

The Machine Manufacturer chooses which information are displayed and the way they are displayed (icons and/or measurements and/or descriptions).

In addition, the battery level and the quality of the radio link are always indicated.

8.14.2 Operation with LED

If the Transmitting Unit has an LED array for the Data Feedback function, specific Machine conditions are signalled if they are illuminated (by way of example: load limits, limit switch). The signalled conditions depend on the settings chosen by the Machine Manufacturer.

8.15 Cable control

The cable control is used:

- in particular working conditions, established by the Machine Manufacturer
- when it is not possible to establish a radio link between the Radio Remote Control Units,
- when working in environments where using radio frequencies is not allowed or is dangerous,
- when a fully charged battery is not available.



ATTENTION: The use of the cable control entails risk of electric shock when working near overhead or underground power line's cables.

8.15.1 Description

The cable control connects the Transmitting Unit to the Receiving Unit through a cable that replaces the radio link. The cable shall be plugged in the suitable connectors, one on the Transmitting Unit and the other on the Receiving Unit (or placed where established by the Machine Manufacturer).

When using the cable control, the working features (e.g. the meaning of actuators and the Data Feedback function) do not change.

8.15.2 Operation

 WARNING	Before starting to work, make sure that the cable and the corresponding connectors are intact. Work organisation, Machines' position, passages, etc. shall be planned so as to avoid that the cable control 's cable may be damaged by moving trolleys or by the ongoing operations. Do not use the cable control's cable to lift the Transmitting Unit. Lay the cable control's cable in such a way as to avoid that it is squashed or strained by People or objects. Avoid contact with sharp or cutting objects that can cut the cable's protective sheath. The cable control cannot be used if the Radio Remote Control is installed on a Machine that controls loads that are not isolated from an AC power supply or from a DC power supply higher than 30V$\overline{=}$. Using the cable control at the same time as the waist belt or the shoulder harness means that there is a physical connection between the User and the Machine: therefore, the User must constantly check that the Machine's movements, especially in case of loss of control (by way of example: risk of overturning, of cable dragging by other Machinery), do not cause hazards. In such situations, the User must pull out the belt or open it by unfastening its buckle(s).
	The cable control must only be connected and disconnected when the Transmitting Unit is off. When you finish working with the cable control, disconnect the cable from the Transmitting Unit and from the Machine, and protect the connectors with their caps.

Follow this procedure to control the Machine with the cable control:

1. Power on the Receiving Unit respecting the voltage limits provided in the technical data (see "Part D" of the Manual). The POWER LED illuminates.

2. Make sure that the battery is inside the Transmitting Unit and leave it there even though the power supply comes from the Receiving Unit via the cable control. The battery is not, in any case, recharged through the cable control: it can only be recharged through its appropriate battery charger provided together with the system.
3. Connect the cable control to its connector in the Receiving Unit (or where arranged by the Machine Manufacturer).
4. Connect the cable control to its connector on the Transmitting Unit.
5. Insert the power keyswitch in the Transmitting Unit (see paragraph 8.1).
6. Take control of the Receiving Unit using the TAKE, CATCH or SELECT command (if any).
7. If a command for the selection of the Receiving Units with which you need to work is available, select the Receiving Unit where the cable control has been connected.
8. Press the START pushbutton and hold it down until the green LED blinks slowly. If the red LED illuminates, refer to chapter 11.

When the green LED illuminates and blinks slowly, the Radio Remote Control is active and it can send commands and activate the Machine.

When working with the cable control, the radio link is cut off:

As a consequence, a Transmitting Unit belonging to Multi Units or Multi Receiver Radio Remote Controls can never control more than one Receiving Unit simultaneously via the cable control.

8.16 BACK-UP UNIT

If the Transmitting Unit cannot be used, it can be replaced with a Transmitting Unit called BACK-UP UNIT; you need to ask for it from Autec.

It is identical to the Unit that cannot be used any more; the only difference is the presence of the plate "BACK-UP UNIT" on the battery housing.



Insert the Key ID 0-1 or the ID internal tx memory of the Transmitting Unit to be replaced into the BACK-UP UNIT, then perform the address storage procedure (see paragraph 8.16.1).

As required by standard IEC 60204-32, each Radio Remote Control is uniquely identified through a serial number (S/N). Therefore, upon replacement of the Unit, the serial number of the Transmitting Unit to be replaced must be written on the BACK-UP UNIT, so that all the Units belonging to the Radio Remote Control show the same serial number.

The identification plate carrying the Radio Remote Control serial number is moved from the Transmitting Unit to be replaced to the BACK-UP UNIT by moving the Key ID 0-1. On the contrary, if the ID internal tx memory is present, you need to stick the identification plate (ask Autec for it) over the "BACK-UP UNIT" label.

Autec cannot be held responsible if the serial number of the Transmitting Unit to be replaced has not been marked on BACK-UP UNIT.

8.16.1 Address storage

Perform the following procedure with fully charged battery and power keyswitch inserted in the BACK-UP UNIT:

1. Press the GSS or EMS pushbutton.
2. Press the START pushbutton and hold it pressed:
 - a. The green LED turns on and blinks fast.
 - b. The red LED turns on with steady light and an acoustic signal sounds.
 - c. The Transmitting Unit automatically switches off.
 Hold the START pushbutton pressed until the Transmitting Unit switches off.
3. Unlock the GSS or the EMS pushbutton.
4. Disconnect power supply from the all the Radio Remote Control's Receiving Units.
5. Power on only the Receiving Units that will be controlled by the BACK-UP UNIT, press the START pushbutton within one minute and hold it pressed until the green LED starts blinking slowly.
6. The green LED switches from slow blink to repeating two blinks and a pause, then the red LED turns on with steady light and an acoustic signal sounds, then the Transmitting Unit automatically switches off.

It is now possible to start the Radio Remote Control and to control the Machine with the BACK-UP UNIT Transmitting Unit.

9 Instructions for the User

The chapter "Instructions for the User" in "Part A" of the Instruction Manual contains the warnings for the use that add to those provided in this chapter. Therefore, please refer to that part of the Manual.

The following instructions are general, they refer to general usage situations for the Transmitting Unit, and indicate how people should or should not behave when using the unit: these do not cover any possible risk situation and/or drawback that may depend on specific applications of Autec Radio Remote Controls.

However, instructions given in the following paragraphs do not replace nor complete the instructions that must be provided to the User by the Manufacturer of the Machine where an Autec Radio Remote Control (to which the FJN Transmitting Unit belongs) is installed.

9.1 Usage restrictions

 WARNING	If the Radio Remote Control User wears electronic devices (by way of example: pacemaker, implantable cardiac defibrillator, hearing aids), the Transmitting Unit must be kept at least 15 cm away from those devices when in use.
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9.2 User behaviour

Besides the instructions contained in the General Part (Part A) of the Instruction Manual, when using the Transmitting Unit, the User must:

- Observe and comply with all instructions and warnings provided by the Machine Manufacturer.
- Observe and comply with all instructions and warnings provided by the Installer.
- Observe and comply with all instructions and warnings provided by the Person responsible for the Machine commissioning or making the Machine available for work.
- Observe and comply with all instructions and warnings provided in the Radio Remote Control Manual.
- Observe and comply with all applicable Laws, Regulations and Standards, even local.
- Follow and put into practice the working instructions he/she received, and/or those he/she must be aware of because of his/her work and his/her tasks.

- Avoid using the Radio Remote Control if he has not been properly trained and prepared, and if he has not been qualified for its use by the Person responsible for the work.
- Make sure that the Transmitting Unit and the Receiving Unit are whole and work perfectly.
- Make sure that the Machine reacts correctly to the commands activated by the Autec Radio Remote Control.
- Not perform any operation if the tests mentioned in the previous two points did not give positive results.
- Make sure that the Radio Remote Control operation and the consequent Machine movement occur in safety conditions, to prevent hazards to people and/or property.
- Adopt the necessary caution to avoid that the Machine operation causes dangerous situations of any type; to this end, the User's physical and health status shall be taken into account too.
- Avoid leaving the Transmitting Unit unattended or in such a condition that it may be damaged, tampered with, operated by people who are not qualified or by the movement of people and/or objects (by way of example due to: fall, movement, contact).
- Operate the Transmitting Unit by holding it correctly in his hands, so that he can activate the Machine movements correctly and in safe conditions and monitor its light signals.
- Keep at a safe distance from any risk situations originating from the use of the Machine where the Autec Radio Remote Control is installed.
- Avoid doing anything else while using the Radio Remote Control, such as, by way of example, operate other Machines and/or other devices, eat and/or drink, use communication devices (phone, radio phone, etc.), keyboards, computers, IT devices or AV equipment, or carry out any other action that may pose the User in the situation not to be able to correctly control the Transmitting Unit and/or the Machine.
- Activate immediately the stop devices available on the Transmitting Unit and/or on the Machine, in case dangerous situations occur, even if they do not depend on the use of the Machine.
- Use the Transmitting Unit in such a way as to avoid contact with objects and/or People, fall and loss of control.
- Use the transmitting unit with supports such as belts and the like, which are provided with the Radio Remote Control.
- Not modify or tamper with the Transmitting Unit, its components and/or its commands; not modify the indications and/or meaning and/or abbreviations and/or symbols and/or original stickers on the Transmitting Unit's panel.

9.3 Belt or harness

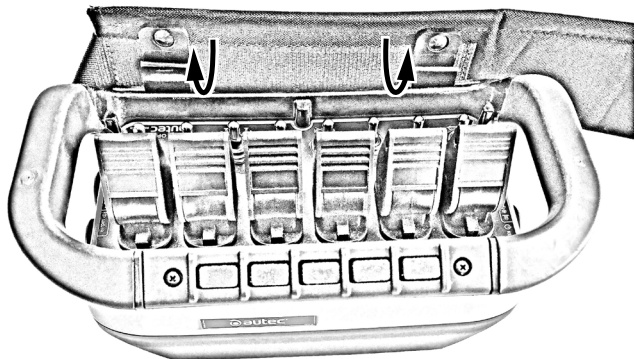
The Unit always comes with a waist belt or a shoulder harness: the User must mount the belt or the harness on the Transmitting Unit and use it as described in paragraph 9.3.1 or 9.3.2.



Replace the belt or harness if it is damaged or worn.

9.3.1 Waist belt

Assembly



Use

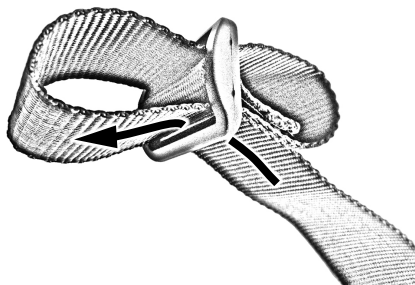
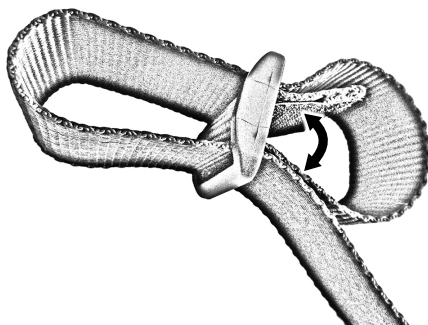
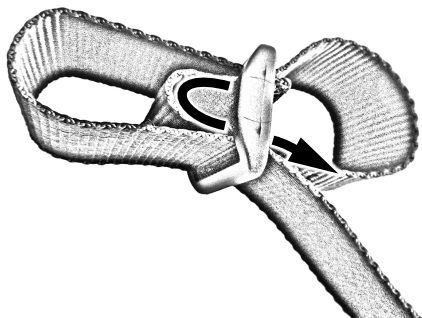
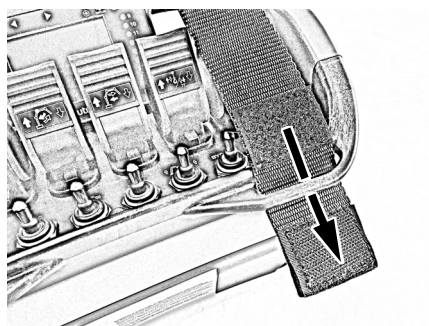
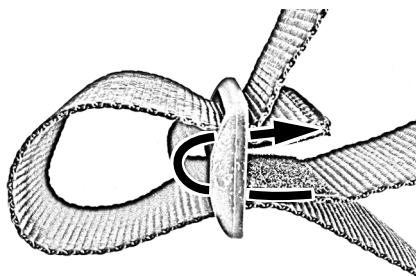
The User must wear the Radio Remote Control with the belt as shown in the photo below, to avoid its fall, loss, loss of control, accidental contact and improper use.

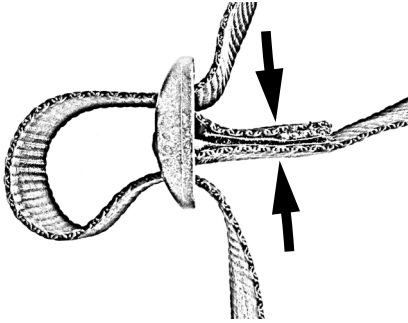


If the Transmitting Unit and the belt are used in a different way from the one described in the above mentioned figure, this constitutes improper use and may lead to damage to the Transmitting Unit, to the User, to people and/or property.

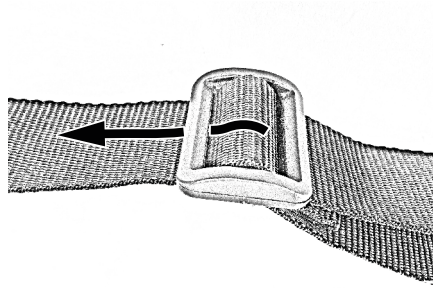
9.3.2 Shoulder harness

Assembly

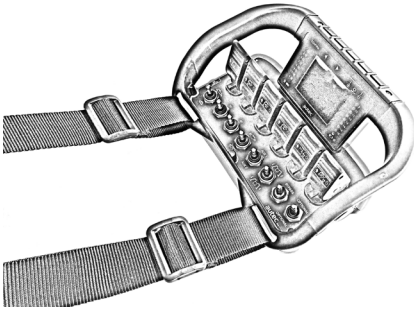
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8



9

Use

The User must wear the Radio Remote Control with the belt as shown in the photo below, to avoid its fall, loss, loss of control, accidental contact and improper use.



If the Transmitting Unit and the belt are used in a different way from the one described in the above mentioned figure, this constitutes improper use and may lead to damage to the Transmitting Unit, to the User, to people and/or property.

10 Maintenance

Instructions for correct Radio Remote Control maintenance are described in the chapter "Maintenance" included in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.

11 Malfunction signalled by the Transmitting Unit

The table below lists malfunctions that are signalled by LEDs on the Transmitting Unit and the solution to those malfunctions.

If the problem persists after attempting the suggested solution, contact the support service of the Machine Manufacturer.

Signals	Possible reasons	Solutions
The green LED blinks fast. The red LED blinks for 3.5 minutes.	The battery is not charged enough or the Transmitting Unit has been on for twenty-four hours.	It is necessary to replace the battery with a charged one (see paragraph 8.7) or it is necessary to switch off the Transmitting Unit and to re-start the Radio Remote Control.
The green LED blinks slowly. The red LED blinks for 3.5 minutes.		
The green LED is off. The red LED emits one very long blink.	The Transmitting Unit does not work correctly.	Perform the address storage procedure (see paragraph 8.16.1).
At Radio Remote Control start up, the green LED is off and the red LED emits one long blink.	The GSS or the EMS pushbutton is pressed.	Unlock the GSS or the EMS pushbutton.
At Radio Remote Control start up, the green LED is off and the red LED emits two long blinks.	At least one of the actuators corresponding to commands D2-D20 and SAFETY is activated.	Bring the actuators to the rest position.
At Radio Remote Control start up, the green LED is off and the red LED emits three long blinks.	The battery is very low.	It is necessary to replace the battery with a charged one (see paragraph 8.7).
At Radio Remote Control start up, the green LED is off and the red LED emits four long blinks.	At least one of the actuators corresponding to commands A1-A8, H1-H8 and L1-L8 is activated.	Bring the actuators to the rest position.



Whenever the red LED illuminates, the acoustic signal device activates.

At the end of each signal, the Transmitting Unit switches off.

12 Decommissioning and disposal

Instructions for correct decommissioning and disposal of Radio Remote Controls are described in chapter "Decommissioning and disposal" in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.

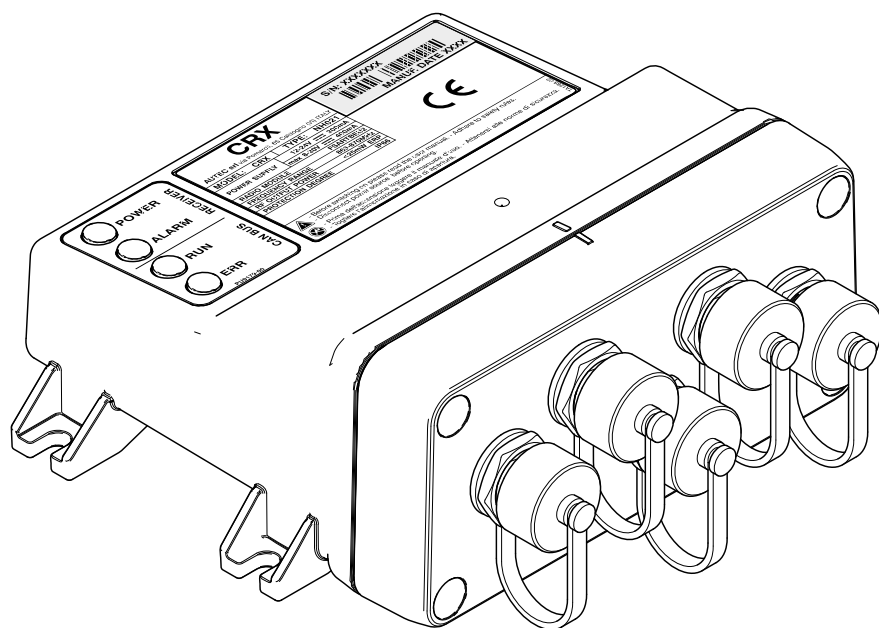


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MADE IN ITALY

Instruction Manual for the use and the maintenance of the Radio Remote Control

Original instructions



Part D: CRX Receiving Unit

DYNAMIC SERIES

WARNING

THIS PART OF THE MANUAL CONSISTS OF Part D - Information, instructions and warnings for the CRX Receiving Unit. The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit, Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

THE AUTEC RADIO REMOTE CONTROL IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- **ON WHICH AND WHERE THE USE OF A RADIO REMOTE CONTROL IS APPROPRIATE,**
- **THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.**

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER ON WHICH THE AUTEC RADIO REMOTE CONTROL IS INTENDED TO BE INSTALLED, to perform an in-depth and accurate risk assessment to determine if the Autec Radio Remote Control is suitable for operating a Machine in conditions of safety and operational effectiveness, taking into account the conditions of use, the intended uses and the reasonably foreseeable incorrect ones, so that the installation, maintenance and use of the Autec Radio Remote Control, and all its components, are performed only and entirely in compliance with this Manual and in accordance with all local regulations, safety standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the USA market the Laws, Regulations and Standards include all safety rules and regulations of the Occupational Safety & Health Administration (OSHA) (<http://www.osha.gov>), all federal, state and local laws, regulations and building and electrical codes, and all applicable standards, including but not limited to ANSI Standards.

It is also the responsibility of the Manufacturer and of the design professionals of the Machine on which the Autec Radio Remote Control is to be installed and used to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, that the installation, maintenance and operation of the Autec Radio Remote Control and all of its components are done solely and completely in accordance with this Manual, and with all applicable Laws, Regulations and Standards, even local. It is also the responsibility of the Manufacturer of the Machine on which the Autec Radio Remote Control is to be installed and used, and their design professionals, to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

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FAILURE TO PROPERLY INSTALL, OPERATE, MAINTAIN AND SERVICE THE AUTEC RADIO REMOTE CONTROL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE. Refer to this Manual and each of its Parts for further assistance or contact Autec. Autec is not responsible for and shall not be held liable for any installation of the Autec Radio Remote Control not performed by Autec or for any use of the Autec Radio Remote Control not in complete compliance with, and/or not maintained in complete compliance with, all Autec instructions and warnings and all applicable Laws, Regulations and Standards, even local.

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1 Information on the use of instructions



Before reading this part of the Manual, you must read and understand the general part (Part A) of the Manual provided with the Radio Remote Control.

1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec Radio Remote Controls consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the Radio Remote Control's Owner, User and by all those Persons that, for any reasons, may operate with the Radio Remote Control or with the Machine where it is installed. The following table describes the structure of the Instruction Manual for the use and the maintenance of the Radio Remote Control.

Part	Title	Contents
A	General part	- General information regarding the series, - directions for risk assessment of the "Machine+Radio Remote Control" system, - warnings for installation of the Radio Remote Control, - warnings for use and maintenance of the Radio Remote Control, - instructions for correct transportation and storage of Radio Remote Control.
B	Conformity and frequencies	- Operating frequency bands of the Radio Remote Control, - conformity and law references of the Radio Remote Control.
C	Transmitting Unit	Description and instructions concerning the Transmitting Unit, including: - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Receiving Unit	Description and instructions concerning the Receiving Unit, including: - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the Radio Remote Control's Technical Data Sheet, that:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec Radio Remote Control and of the Machine, system, device or Machinery system where the Radio Remote Control is installed.

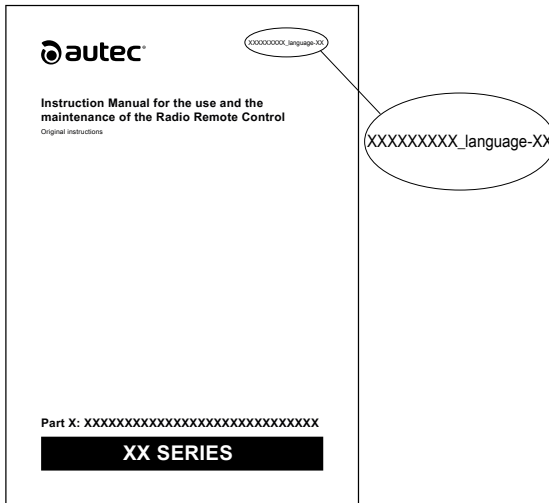
The Manufacturer of the Machine on which the Autec Radio Remote Control is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.



The CD attached to each Instruction Manual includes the translations of the Manual.

Act as follows to identify the single Manual parts in the relevant language in the CD:

- Choose the desired language
- Select the single parts of the Manual: refer to the code name provided on the cover of each part.



1.2 Caption and terminology



Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable, or if you have doubts or questions.

In this part of the Manual, the terms listed below have the same meaning explained in the corresponding paragraph of the general part (Part A):

- **Unit**
- **Radio Remote Control**
- **Transmitting Unit**
- **Receiving Unit**
- **Radio link**
- **Active stop**
- **Automatic stop**
- **Manual stop**
- **Passive stop**
- **Machine**
- **Manufacturer**
- **Installer**
- **User**
- **Maintenance Technician**
- **Manual or Instruction Manual**
- **Installation manual**
- **Person**
- **Owner**

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols



This symbol identifies the parts of text in the Manual that must be read with special attention.



This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them may cause hazards for People and/or property.

1.4 To whom the instructions are addressed

Addressees of instructions are listed in the paragraph with the same title in the general part: please refer to that part.

1.5 Instruction storage

Regulation for the storage of instructions are described in the paragraph with the same title in the general part: please refer to that part.

1.6 Intellectual property

Restrictions connected to intellectual property are described in the paragraph with the same title in the general part: please refer to that part.

2 Brief product presentation

2.1 Series, Radio Remote Control and Unit

The object of this part of the Manual is the CRX Receiving Unit of an Autec Dynamic series' Radio Remote Control.

Autec Dynamic series' Radio Remote Controls are designed to be used on Machines and provide a command interface to their command and control system, to be used from an appropriate distance and position.

2.2 Conformity with standards

The conformity of Radio Remote Controls with standards and with working requirements and conditions in the single Countries is provided in the related specific part "Conformity and frequencies" (Part B) of the Manual.

2.3 Contacts and useful addresses

The Radio Remote Controls are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

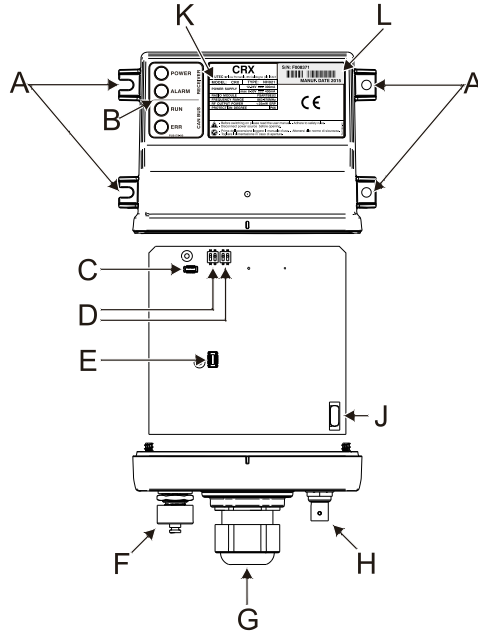
When applying for technical service to Autec, its distributors, dealers and authorized service centres, the Radio Remote Control's serial number is required; you can find it on the identification plate on the Transmitting Unit and/or on the Receiving Unit.

3 Description of the Receiving Unit

The CRX Receiving Unit interfaces with the Machine through digital outputs or over CANopen® communication protocol, that allows communication in a CAN bus network.

Two STOP or SAFETY outputs are some of the Receiving Unit's digital outputs.

The STOP or SAFETY outputs are identified with SO_1 and SO_2 in the Technical Data Sheet (see paragraph 3.1).



A	Mounting holes
B	LEDs
C	IDK connector (for address key)
D	DIP switches
E	DTK connector (for memory card)
F	Connector for cable control
G	Plug or cable gland
H	Connector for external antenna kit (optional)
J	Fuse F1
K	Technical data plate
L	Radio Remote Control identification plate

3.1 Receiving Unit safety functions

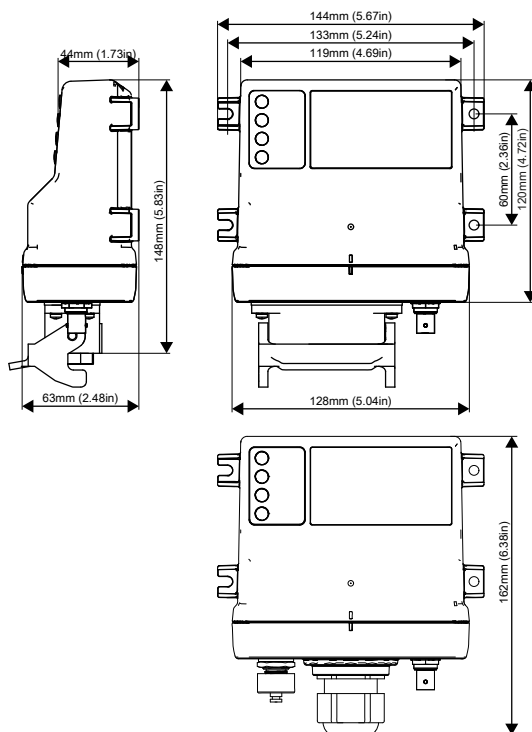
The SO_1 and SO_2 outputs may be either STOP (stop function) or SAFETY outputs (UMFS function), according to the configuration of the Receiving Unit (see Technical Data Sheet).

If they are configured as STOP outputs the UMFS safety function is not available.

If they are configured as SAFETY outputs both the UMFS and stop safety functions are available.

4 Technical data

Power supply voltage	8-30V $\overline{=}$ (0.4A)
Internal antenna	integrated
External antenna	dedicated
Rated current of SO_1 and SO_2 outputs	2A (30V $\overline{=}$)
Rated current of digital outputs	
Protection of power supply	1.35A (30V $\overline{=}$, restorable)
Protection of outputs (fuse F1)	10A (32V $\overline{=}$, autofuse)
UMFS intervention time	1s
Housing material	PA6 (20% fg)
Protection degree	IP65 (NEMA 4)
Weight	0.65kg (1.43lb)



5 Technical Data Sheet

The Radio Remote Control 's Technical Data Sheet:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

The Technical Data Sheet must be filled in, checked and signed by the Installer, who is responsible for correct wiring.

A Technical Data Sheet must always be kept together with this Manual: if you need to use the Technical Data Sheet for administrative purposes (tests, check, etc.), make a copy of it.

 WARNING	The wiring of the Receiving Unit's outputs must always reflect the wiring indicated in the Technical Data Sheet.
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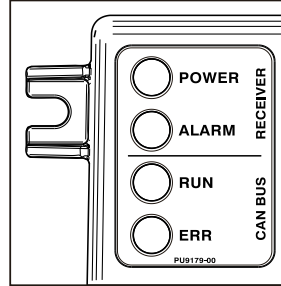
6 Plates

Plate	Position	Content
Radio Remote Control identification plate	Receiving Unit housing	Radio Remote Control serial number (S/N), QR code and manufacturing year.
Technical data plate	Receiving Unit housing	MODEL, TYPE and main Receiving Unit technical data, marking and possible Radio Remote Control marks.

7 Light signals

The CRX Receiving Unit has four LEDs:

- POWER
- ALARM
- RUN
- ERR



The meaning of light signals illumination is described in the following paragraphs; possible actions to perform are given in chapter 10.

7.1 POWER LED

The POWER LED indicates the status of the Receiving Unit and of the radio link.

Signals	Meaning
The POWER LED is off.	The Receiving Unit is off.
The POWER LED is on.	The Receiving Unit is powered and radio link is missing.
The POWER LED blinks.	The Receiving Unit is powered and the radio link has been established.

7.2 ALARM LED

The ALARM LED warns about Receiving Unit malfunctions.

Signals	Meaning
The ALARM LED is off.	The Receiving Unit works correctly.
The ALARM LED blinks once.	Error on the SO1 and SO2 outputs when configured as STOP outputs.
The ALARM LED blinks twice.	Error on the SO1 and SO2 outputs when configured as SAFETY outputs.
The ALARM LED blinks three times.	Error on the outputs corresponding to direction commands.
The ALARM LED is on.	Configuration error on the SO1 and SO2 outputs.

7.3 RUN LED

The RUN LED indicates the status of the communication between the Receiving Unit and the CAN network Master node.

Signals	Meaning
The RUN LED is off.	The Receiving Unit does not work as a CAN network node.
The RUN LED blinks.	The Receiving Unit does not send commands in the CAN network.
The RUN LED is on.	The Receiving Unit is working correctly as a node in the CAN network.

RUN LED signals reflect the guidelines of the CANopen® standard, CiA recommendation 303-3.

7.4 ERR LED

The ERR LED indicates the status of the CAN communication.

Signals	Meaning
The ERR LED is off.	The CAN communication is working correctly.
The ERR LED blinks.	The CAN communication does not work correctly.
The ERR LED is on.	No CAN communication.

ERR LED signals reflect the guidelines of the CANopen® standard, CiA recommendation 303-3.

8 Installing the Receiving Unit

The chapter "Installation" in "Part A" of the Instruction Manual contains the warnings for the installation that add to those provided in this chapter. Therefore, please refer to that part of the Manual.

8.1 Warnings for the Installer

The Installer must:

- Observe and comply with all instructions and warnings provided by the Machine Manufacturer.
- Observe and comply with all instructions and warnings provided by the Person responsible for the Machine commissioning or making the Machine available for work.
- Observe and comply with all instructions and warnings provided in the Radio Remote Control Manual.
- Observe and comply with all applicable Laws, Regulations and Standards, even local.
- Operate the Autec Radio Remote Control only in accordance with this Manual and all of its Parts, and with all Autec warnings and instructions, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only in accordance with the Machine Manufacturer's instructions and warnings, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only when he is in a safe condition and can perfectly see the whole Machine's working area.
- Immediately inform his supervisors and/or the people in charge for the working place and/or for the Machine about any possible failure, damage, loosening, anomalous wear, detachment and/or any other anomaly that may cause malfunction to the Radio Remote Control and/or to the Machine, or that may cause damage to people and/or property.
- Keep the Transmitting Unit secure and out of reach of unauthorized and unqualified Personnel.



ADDITIONAL WARNINGS AND INSTRUCTIONS THAT ARE CONTAINED IN THE OTHER PARTS OF THIS MANUAL MUST BE FOLLOWED.

8.2 Wiring



Wiring inside the Receiving Unit shall be made with electrical wires resistant to at least 125°C usage temperature.

Group all cabling wires so that they are far from the radio module, in order to avoid interference and danger related to electrical safety.

Currents flowing in SO_1 and SO_2 are interrupted at regular intervals for approx. 1 ms every 50 ms. Risk assessment must consider this interruption. If outputs SO_1 and SO_2 are used to power electronic devices, check that they are compatible with this recurring interruption (use suitable filters if necessary).

When failure is detected in the SAFETY or STOP circuit, the SO_1 and SO_2 outputs are automatically disabled within 200 ms. Risk assessment must consider this delay.

Outputs SO_1 and SO_2 are designed to drive power loads and are protected by means of fuse, transil and reverse recovery diodes, to ensure long lifetime in most applications. If these outputs are connected to inductive loads (e.g. solenoid valves, relays), it is recommended to connect a reverse recovery diode close to the load, to further reduce the effects of demagnetisation currents.

8.3 At end of installation



Correctly close the Receiving Unit in order to maintain the protection from dust, contaminants and water:

- Make sure that the gasket is intact and correctly seated.
- Check that the housing parts correctly fit so that they overlap.
- Tighten the existing screws with a 145N·cm (12.8lbf·in) tightening torque.

9 Maintenance

Instructions for correct Radio Remote Control maintenance are described in the chapter "Maintenance" included in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.

10 Malfunction signalled by the Receiving Unit

The table below lists malfunctions that are signalled by LEDs on the Receiving Unit and the solution to those malfunctions.

If the problem persists after attempting the suggested solution, contact the support service of the Machine Manufacturer.

Signals	Possible reasons	Solutions
The POWER LED is off.	The Receiving Unit is off.	Disconnect the power supply and restore it after 5 minutes to make sure that a restorable thermal fuse integrated in the Receiving Unit has not been activated. Correctly plug in the connecting plug and power on the Receiving Unit.
The POWER LED is on.	No radio link.	Bring the Transmitting Unit closer to the Receiving Unit.
The ALARM LED blinks once.	Error on the SO1 and SO2 outputs when configured as STOP outputs.	Make sure that fuse F1 is intact. Correctly plug in the connecting plug. Make sure that the STOP outputs are wired correctly.
The ALARM LED blinks twice.	Error on the SO1 and SO2 outputs when configured as SAFETY outputs.	Make sure that fuse F1 is intact. Correctly plug in the connecting plug. Make sure that the SAFETY outputs are wired correctly.
The ALARM LED blinks three times.	Error on the outputs corresponding to direction commands.	Contact the support service of the Machine Manufacturer. Make sure that the outputs of direction commands are wired correctly.

Signals	Possible reasons	Solutions
The ALARM LED is on.	Configuration error on the SO1 and SO2 outputs.	Make sure that the DIP switches are set as on the technical data sheet. If this signal persists, contact the support service of the Machine Manufacturer.
The RUN LED blinks.	The Receiving Unit does not send commands in the CAN network.	Contact the support service of the Machine Manufacturer.
The ERR LED blinks.	CAN communication error.	

11 Decommissioning and disposal

Instructions for correct decommissioning and disposal of Radio Remote Controls are described in chapter "Decommissioning and disposal" in "Part A" of the Instruction Manual. Therefore, please refer to that part of the Manual.

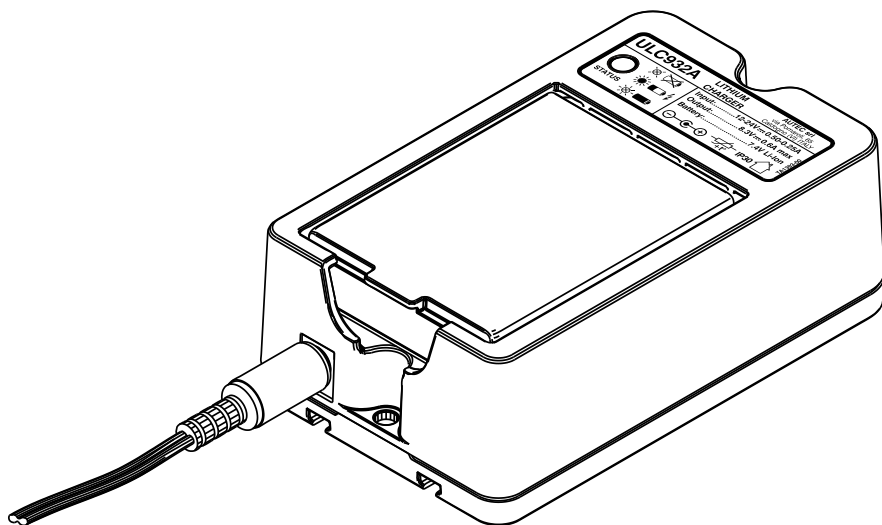


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MADE IN ITALY

Instruction Manual for the use and the maintenance of battery and battery charger

Original instructions



Part E: LPM02 rechargeable battery ULC932A battery charger

WARNING

THIS PART OF THE MANUAL CONSISTS OF: Part E - Information, instructions and warnings for the LPM02 rechargeable battery and for the ULC932A battery charger. The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit and Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

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1 Information on the use of instructions

	Before reading this part of the Manual, you must read and understand the general part (Part A) of the Manual provided with the Radio Remote Control.
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1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec Radio Remote Controls consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the Radio Remote Control's Owner, User and by all those Persons that, for any reasons, may operate with the Radio Remote Control or with the Machine where it is installed. The following table describes the structure of the Instruction Manual for the use and the maintenance of the Radio Remote Control.

Part	Title	Contents
A	General part	- General information regarding the series, - directions for risk assessment of the "Machine+Radio Remote Control" system, - warnings for installation of the Radio Remote Control, - warnings for use and maintenance of the Radio Remote Control, - instructions for correct transportation and storage of Radio Remote Control.
B	Conformity and frequencies	- Operating frequency bands of the Radio Remote Control, - conformity and law references of the Radio Remote Control.
C	Transmitting Unit	Description and instructions concerning the Transmitting Unit, including: - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Receiving Unit	Description and instructions concerning the Receiving Unit, including: - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the Radio Remote Control's Technical Data Sheet, that:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec Radio Remote Control and of the Machine, system, device or Machinery system where the Radio Remote Control is installed.

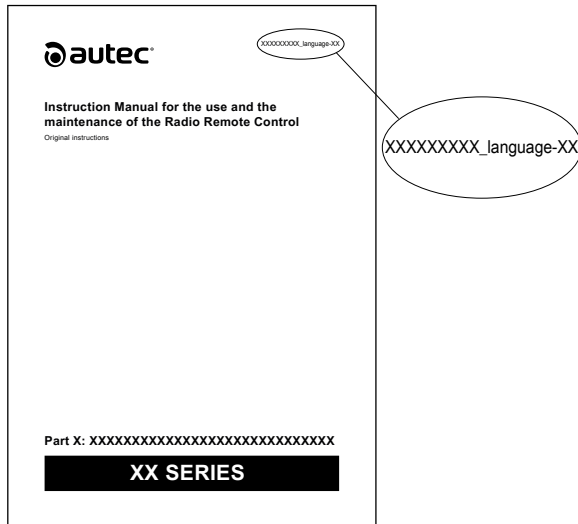
The Manufacturer of the Machine on which the Autec Radio Remote Control is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.



The CD attached to each Instruction Manual includes the translations of the Manual.

Act as follows to identify the single Manual parts in the relevant language in the CD:

- Identify the correct section depending on the Radio Remote Control serial number
- Choose the desired language
- Select the single parts of the Manual: refer to the code name provided on the cover of each part.



1.2 Caption and terminology

	Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable.
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In this part of the Manual, the terms listed below have the same meaning explained in the corresponding paragraph of the general part (Part A):

- **Unit**
- **Radio Remote Control**
- **Transmitting Unit**
- **Receiving Unit**
- **Machine**
- **Manufacturer**
- **Installer**
- **User**
- **Maintenance Technician**
- **Manual or Instruction Manual**
- **Installation manual**
- **Person**
- **Owner**

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols

	This symbol identifies the parts of text in the Manual that must be read with special attention.
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	This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them or in complying with them may cause hazards for People and/or property.
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1.4 To whom the instructions are addressed

Addressees of instructions are listed in the paragraph with the same title in the general part: please refer to that part.

1.5 Instruction storage

Regulation for the storage of instructions are described in the paragraph with the same title in the general part: please refer to that part.

1.6 Intellectual property

Restrictions connected to intellectual property are described in the paragraph with the same title in the general part: please refer to that part.

2 Brief product presentation

2.1 Battery and battery charger

The object of this part of the Manual is the LPM02 battery, that is meant to be used inside an Autec Radio Remote Control's Transmitting Unit, and the corresponding ULC932A battery charger, that is needed to recharge it.

2.2 Conformity with standards

2.2.1 Conformity of LPM02 battery



The LPM02 rechargeable battery complies with the EMC Directive (2014/30/EU) and with the following harmonised standards: EN 61000-6-2 and EN 61000-6-3.



The LPM02 rechargeable battery complies with the Electromagnetic Compatibility Regulations 2016 and with the following standards: EN 61000-6-2 and EN 61000-6-3.

2.2.2 Conformity of ULC932A battery charger



The ULC932A battery charger complies with the EMC Directive (2014/30/EU) and with the following harmonised standards: EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 61000-6-2 and EN 61000-6-3.



The ULC932A battery charger complies with the Electromagnetic Compatibility Regulations 2016 and with the following standards: EN 55014-1, EN 55014-2, EN 61000-3-2, EN 61000-3-3, EN 62233, EN 60335-1, EN 60335-2-29.



The ULC932A battery charger complies with the ECE R10-05 regulation, approval number E49 10R-050055.

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.

2.3 Contacts and useful addresses

The Radio Remote Controls are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

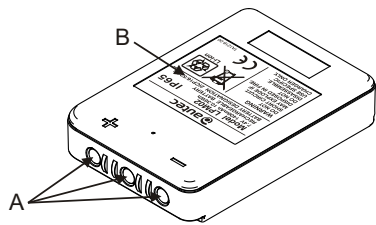
General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

3 LPM02 rechargeable battery

The LPM02 rechargeable battery is used to provide power to Autec Transmitting Units with compatible battery housing (please check this in "Part C" of the Instruction Manual).



A	Contacts
B	Technical data plate

3.1 Technical data

Type	Li-ion
Voltage	7.4V
Capacity	1400mAh
Typical recharge time (with battery charger ULC932A)	2h 40min
Max. recharge time	4h
Recharge temperature	from +5°C to +45°C (from +41°F to +113°F)
Usage temperature	from -20°C to +55°C (from -4°F to +131°F)
Protection degree	IP65

3.2 Plate

A plate is stuck on the battery, showing battery's identification, main technical data, marking and marks (if any).

	The plate must not be removed from its position; removal will immediately void the warranty. The plate must not be altered or damaged: contact Autec for replacement.
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3.3 Warnings for use



Only use original Autec batteries and only recharge batteries with battery chargers and/or power supply units provided by Autec.

Never use damaged batteries (e.g. crushed, punctured, swollen or leaking batteries).

Never use batteries if they have been dropped even just once, as their internal components may have been damaged, even though this cannot be seen from the outside.

Improper use of batteries may pose the hazard of fire, explosion, overheating or other hazards. In particular, avoid the following:

- short-circuiting battery contacts;
- disassembling, cutting, opening, pressing, deforming, drilling, modifying, tampering with batteries or attempting to repair them in any way;
- trying to insert objects in the battery;
- immersing or exposing batteries in/to water or other liquids;
- placing the battery inside or on heating devices (e.g. ovens, heaters, radiators);
- placing the battery within high pressure containers;
- exposing the battery to impacts and drops;
- mouthing batteries (e.g. bite, suck it).

Do not carry loose batteries in a pocket or purse together with metal objects (like keys, coins, paper clips). This can short-circuit the battery, leading to high heat and causing burns.

Do not charge, use or store the battery at temperatures exceeding the limits provided in paragraphs 3.1 and 3.6.

The LPM02 battery cannot be used by People with reduced physical, sensory or mental capabilities, and by children.

Do not leave the battery under charge if the charge cycle does not end within the "Max. recharge time" (see paragraph 3.1).

Do not expose the battery to heat sources or fire. For example, do not expose it to direct sunlight for a long time, and pay special attention to high temperatures that may be reached inside unshaded vehicles.

 WARNING	Do not attempt to repair damaged or faulty batteries. Keep the battery clean and dry. Pay special attention to the battery's contacts: if they get dirty, clean them with a non-abrasive cloth or brush, and a cleaner for electrical contacts. It is forbidden to recharge the battery in explosion-risk areas where gases and/or dusts are present. The battery must be charged in the "SAFE AREA", i.e. without explosion-risk gases and/or dusts.
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Autec cannot be held responsible for any use that does not comply with the provisions and directions provided in the Manual, and for any damage that may result from improper, incorrect or irrational use of the battery.

3.4 First aid

 WARNING	If the battery or part of it is swallowed, immediately seek medical advice. If a Person comes into contact with material leaking from a damaged battery, immediately wash the affected part with soap and water for at least 15 minutes and seek immediate medical advice.
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3.5 Instructions for use



Charge the battery before first use.

The use of altered batteries or batteries that are not the original ones will void any warranty both of the battery and of the Transmitting Unit.

In order to ensure the maximum battery life over time, please respect the following preventive measures:

- Do not use or recharge the battery at temperatures exceeding the limits provided in paragraph 3.1.
- Follow the storage instructions provided in paragraph 3.6.
- Do not expose the battery to heat sources.

Batteries may be recharged and discharged several times, but progressive reduction of the maximum capacity, and therefore shorter run time of the battery normally occur with prolonged use.

Partial charging/discharging does not damage the battery.

3.6 Storage

Please note that if a battery is not used, it will self-discharge over time; long-lasting storage may also lead to the complete and permanent loss of capacity, thus making the battery unusable. If you expect not to use the battery for a long time, it is recommended to store it in a cool and dry place, in order to ensure its maximum lifetime.

Do not store batteries at too low charge levels. In this case, self-discharge may drop the battery to such a low charge level that it will no more be possible to recharge it.

The following table shows the residual battery capacity in comparison to its nominal value, depending on the storage temperature and period.

Temperature range	Period	Residual capacity
from 45 to 60°C (from 113 to 140°F)	1 month	75%
from 25 to 45°C (from 77 to 113°F)	3 months	70%
from -20 to 25°C (from -4 to 77°F)	1 year	80%

This table refers to a battery stored at half charge (voltage between 7.5V and 7.7V), which is the ideal condition for storage. Batteries stored at half charge will last at least three times more than batteries stored at full charge.

For example, if storing at a temperature from -20 to 25°C (from -4 to 77°F), it is recommended to run a charge-discharge cycle of the battery every 90 days. After each charge-discharge cycle, bring the battery back to the ideal half charge condition before storing it again.

To obtain the half-charge condition, you can perform the following procedure:

1. Discharge the battery by means of the Transmitting Unit until it indicates that the battery is flat (see "Light signals" in "Part C" of the Instruction Manual): in such conditions the open circuit voltage measured at the battery poles will be about 7 V.
2. Insert the battery in a powered battery charger.
3. Remove the battery after about 65min.
4. Make sure that the battery voltage is within 7.5V and 7.7V.



Do not expose the battery to direct sunlight for a long time.

Do not store fully charged or completely flat batteries for a long time.



After long idle periods, it may be needed to carry out several battery discharge/charge cycles to achieve the best performance.

3.7 Shipping and transportation



Refer to standards UN 3480 and UN 3481 to ship and transport Li-ion batteries.

3.8 Battery disposal

	Do not dispose of batteries with domestic trash and do not burn them as they may explode.
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Batteries may contaminate the environment due to toxic or harmful substances that can be dangerous for humans, animals and the vegetation. For this reason, they must not be disposed of as unsorted household waste. They must be brought to the appropriate collection point for the collection, recycling and treatment of batteries.

Users participation in the collection and recycling of batteries is important to reduce to the minimum any potential impacts of substances used in these components on the environment and on human health.

3.8.1 Directive 2006/66/EC and amendments

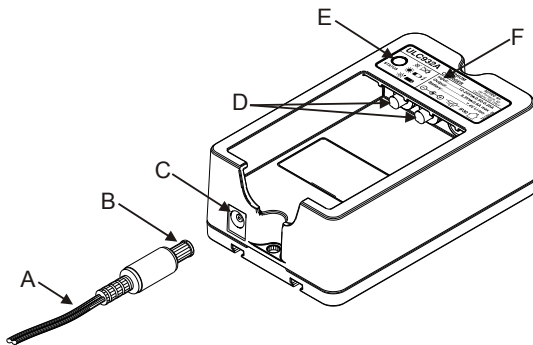
Different collection and recycling schemes for batteries are established across the European Union. For any information on the schemes valid in your area, please contact the relevant local authorities in your territory.

The crossed-out wheeled bin marked on batteries indicates that they must be disposed of separately from household waste, in conformity with the EU Directive 2006/66/EC and its amendments, and with local regulations.



4 ULC932A battery charger

The ULC932A battery charger is used to charge the LPM02 rechargeable battery used in Autec Radio Remote Controls.



A	Power supply cable
B	Jack plug
C	Socket
D	Contacts
E	LEDs
F	Technical data plate

4.1 Technical data

Power supply voltage	12-24V $\overline{\text{---}}$
Absorbed current	0.5-0.25A
Output voltage	8.3V
Max. output current	0.6A
Resettable fuse	1.1A
Typical recharge time	see paragraph 3.1
Max. recharge time	see paragraph 3.1
Recharge temperature	see paragraph 3.1
Protection degree	IP30
Dimensions	70x113.5x39.5mm (2.76x4.47x1.56in)

4.2 Plates

Technical and identification data of battery charger ULC932A are provided in the plate on the front of the device, where the signalling LED is; approval data are provided in the plate stuck on the back.

	Plates must not be removed from their position: removal immediately voids the warranty. Plates must not be altered or damaged, contact Autec for replacement.
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4.3 Electrical connection

The ULC932A battery charger can be powered by a 12/24V battery, with a power supply unit equipped with safety isolating transformer or with the mains adapter provided by Autec.

 WARNING	Never use the battery charger and/or the mains adapter if they are damaged. The mains adapter that comes with the battery charger is protected against short circuit. If power supply is provided by a 12/24V battery or by a power supply unit equipped with safety isolating transformer, make sure that they are protected against short circuit. Check that the battery charger power supply voltage is within the limits given in the "Technical data". Place the battery charger in a position that allows to easily reach and remove the supply cable (jack plug).
	It is good practice to connect the battery charger to the power source only when recharging the battery. Once the charging has been completed, disconnect the battery charger from the power supply.

4.4 Positioning



Place the battery charger in an indoor and dry place, far from liquids, dust and heat sources.

Do not place the battery charger in explosion-risk areas where gases and/or dusts are present.

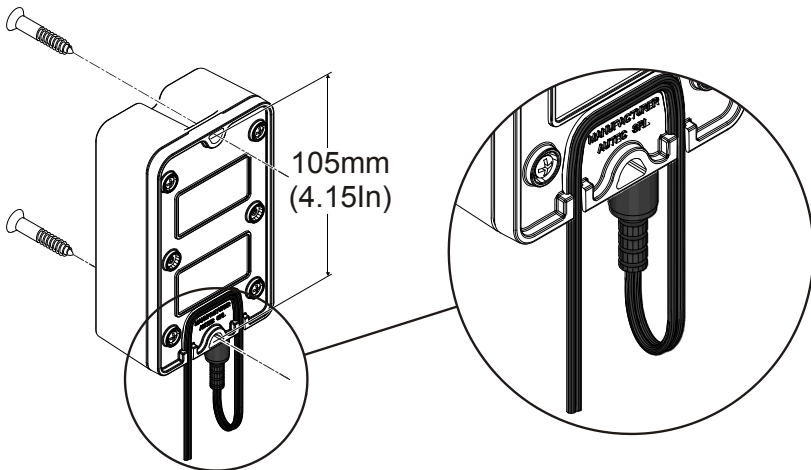
The battery charger must be placed in the "SAFE AREA", i.e. without explosion-risk gases and/or dusts.

Leave at least 5cm (1.97In) room above and around the battery charger.

Do not set any objects on the battery charger when it is connected to the mains.

Do not in any case perforate, modify or tamper with the battery charger.

Battery charger ULC932A is generally used horizontally, but it can also be mounted vertically by using the appropriate holes on its case and fixing it with screws (max. 4mm/0.16In diameter). It is also possible to fix the power supply cable so that it will not be torn: when fixing the device, place the cable as shown in the figure.



4.5 Warnings for use

Users of battery chargers must respect the following behavioural rules and preventive measures.



This equipment cannot be used by people with reduced physical, sensory or mental capabilities and by children.

This equipment is for professional use only, and cannot be used by unskilled people, unless they are supervised and have received instructions on the use of this device by a Person in charge for their safety.

Do not handle the battery charger and/or the mains adapter with wet or damp hands or feet or using objects, tools and/or implements that conduct electricity, are not insulated or are not protected from the risk of electrical conduction; do not in any case use damaged or wet objects and/or tools.

Disconnect power supply, disconnect the jack plug and remove the battery (if present) before any cleaning or maintenance operation.

Check that the contacts are intact and clean before inserting the battery in the battery charger. If necessary, clean them with a non-abrasive cloth or brush and a generic electrical contact cleaner.

The ULC932A battery charger can only recharge Autec original LPM02 rechargeable batteries: any different use is considered improper and therefore dangerous.

Improper use of battery chargers and/or mains adapters may cause fire, explosion, overheating or other hazards.

Use of the device with a battery other than an original one may jeopardise its function and safety.

In case of breakage due to fall, squashing or other events, do not attempt to repair the battery charger: please contact the support service of the Machine Manufacturer.

Avoid the deposit of materials (such as concrete, sand, lime, conductive dust...) on the battery charger, because they can jeopardise its use and safety.

Autec cannot be held responsible for any use that does not comply with the provisions and directions provided in the Manual, and for any damage that may result from improper, incorrect or irrational use of the battery charger and/or of the mains adapter.

4.6 Instructions for use

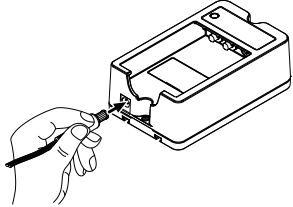
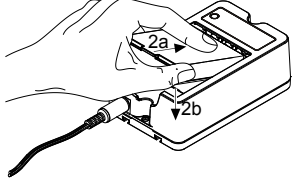
4.6.1 Light signals

The status of battery charger ULC932A is indicated by the white STATUS LED. The meaning of light signals is indicated by symbols on the battery charger's technical data plate, near the LED.

Signals	Meaning
The STATUS LED blinks slowly.	The battery charger is powered. The battery is not inserted.
The STATUS LED is lit with a steady light.	The battery is being recharged.
The STATUS LED blinks fast.	The battery is charged.

4.6.2 Recharge procedure

Follow this procedure to recharge batteries.

1. Power the battery charger by plugging the jack plug in the battery charger's socket (LED blinks slowly).	
2. Push the battery towards the battery charger's contacts (2a) and insert it inside the housing (2b). Charging starts, and this is signalled by the LED lit with a steady light (see paragraph 3.1 "Typical charge time"). NOTE: do not force insertion. The battery slides easily into place and ensures that the positive (+) and negative (-) poles are correctly connected only if it is inserted with the plate facing the compartment, so that the battery's contacts match the battery charger 's contacts.	

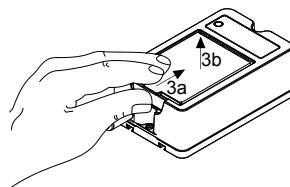
The battery is fully charged when the LED blinks quickly.

3. Remove the battery: push the battery towards the battery charger's contacts (3a) and lift the battery (3b).

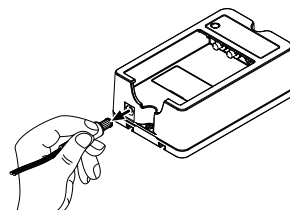
If necessary, it is possible to remove and use the battery even if it is partially charged (see paragraph 3.5).

If you leave the battery in the Battery Charger after charging has been completed, the charger may start charging for a brief period: a steady on LED will alternate to a fast blinking LED. This balances the charging level of the cells contained in the battery and/or compensates self-discharge (if any).

Do not, in any case, leave the battery under charge for prolonged time when it is not in use.



4. Disconnect power supply from the battery charger (the LED will go off).



4.7 Disposal

When disposing of a battery charger, its components must be managed as separate waste.

When disposing of a battery charger, please comply with the provisions and/or the regulations in force in the country where it is used.

5 Malfunctions

Damages to the battery charger or to the battery may be signalled when:

- one of the signals listed in the following table appears, or
- the LED signals does not reflect any of the cases listed in the table in paragraph 4.6.1 (check if the malfunction occurs with both the batteries provided: if the same result is obtained with both, you can assume that the battery charger is damaged; otherwise, the damage concerns one of the two batteries).

Signals	Possible reasons	Solutions
STATUS LED does not illuminate.	Resettable thermal fuse inside the battery has been triggered.	Disconnect power supply and connect again after 5 minutes.
	Battery charger is not powered correctly.	Make sure that the battery charger power supply is within the voltage limits indicated in the technical data (see paragraph 4.1). Make sure that the power supply protection against short circuit has not cut in. Correctly insert the power supply cable's jack plug into the battery charger's socket.
The STATUS LED blinks slowly with battery inserted.	Dirty contacts on the battery and/or on the battery charger.	Clean the contacts on the battery and on the battery charger with a non-abrasive cloth or brush and a generic electrical contact cleaner. Then charge the battery.
	The battery temperature is not within the "Charge temperature" range provided in paragraph 3.1.	Move the battery to a place whose temperature is within the "Charge temperature" range and allow it to stabilize. Then charge the battery.

Signals	Possible reasons	Solutions
The STATUS LED blinks slowly with battery inserted.	Check if the malfunction occurs with both the batteries provided: if the same result is obtained with both, it may be assumed that the battery charger is damaged; otherwise the damage concerns one of the two batteries.	Replace the battery charger or the battery.
The STATUS LED switches from slow blinking to fast blinking when the battery is inserted.	If this problem occurs when a flat battery is inserted, it may be assumed that the battery charger is damaged.	Replace the battery charger.
A charge cycle that does not end within the "Max. recharge time" (see paragraph 3.1).	Dirty contacts on the battery and/or on the battery charger.	Clean the contacts on the battery and on the battery charger with a non-abrasive cloth or brush and a generic electrical contact cleaner. Then charge the battery.
	The battery temperature is not within the "Charge temperature" range provided in paragraph 3.1.	Move the battery to a place whose temperature is within the "Charge temperature" range and allow it to stabilize. Then charge the battery.
	Check if the malfunction occurs with both the batteries provided: if the same result is obtained with both, it may be assumed that the battery charger is damaged; otherwise the damage concerns one of the two batteries.	Replace the battery charger or the battery.
Battery run time is significantly shorter than normal.	Dirty contacts on the battery and/or on the Transmitting Unit.	Clean the contacts on the battery and on the Transmitting Unit with a non-abrasive cloth or brush and a generic electrical contact cleaner. Then charge the battery.

Signals	Possible reasons	Solutions
Battery run time is significantly shorter than normal.	Check if the malfunction occurs with both the batteries provided: if the same result is obtained with both, it may be assumed that the battery charger is damaged; otherwise the damage concerns one of the two batteries.	Replace the battery charger or the battery.

If the problem persists after attempting the suggested solution, contact the support service of the Machine Manufacturer.



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info@autecsafety.com - www.autecsafety.com

MADE IN ITALY

Instruction Manual for the use and the maintenance of the Radio Remote Control

Original instructions

**Part A: Information, instructions and general
warnings**

**DYNAMIC SERIES
(2400-2483.5MHZ)**

WARNING

THIS PART OF THE MANUAL CONSISTS OF Part A - Information, instructions and general warnings for the Autec Dynamic Series Radio Remote Control. The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit and Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEK RADIO REMOTE CONTROL.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

THE AUTEK RADIO REMOTE CONTROL IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- **ON WHICH AND WHERE THE USE OF A RADIO REMOTE CONTROL IS APPROPRIATE,**
- **THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.**

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER ON WHICH THE AUTEK RADIO REMOTE CONTROL IS INTENDED TO BE INSTALLED, to perform an in-depth and accurate risk assessment to determine if the Autec Radio Remote Control is suitable for operating a Machine in conditions of safety and operational effectiveness, taking into account the conditions of use, the intended uses and the reasonably foreseeable incorrect ones, so that the installation, maintenance and use of the Autec Radio Remote Control, and all its components, are performed only and entirely in compliance with this Manual and in accordance with all local regulations, safety standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the USA market the Laws, Regulations and Standards include all safety rules and regulations of the Occupational Safety & Health Administration (OSHA) (<http://www.osha.gov>), all federal, state and local laws, regulations and building and electrical codes, and all applicable standards, including but not limited to ANSI Standards.

It is also the responsibility of the Manufacturer and of the design professionals of the Machine on which the Autec Radio Remote Control is to be installed and used to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, that the installation, maintenance and operation of the Autec Radio Remote Control and all of its components are done solely and completely in accordance with this Manual, and with all applicable Laws, Regulations and Standards, even local. It is also the responsibility of the Manufacturer of the Machine on which the Autec Radio Remote Control is to be installed and used, and their design professionals, to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO OPERATE OR USE THE AUTEC RADIO REMOTE CONTROL AND THE MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL. ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO BE IN THE VICINITY OF MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO PROPERLY INSTALL, OPERATE, MAINTAIN AND SERVICE THE AUTEC RADIO REMOTE CONTROL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE. Refer to this Manual and each of its Parts for further assistance or contact Autec. Autec is not responsible for and shall not be held liable for any installation of the Autec Radio Remote Control not performed by Autec or for any use of the Autec Radio Remote Control not in complete compliance with, and/or not maintained in complete compliance with, all Autec instructions and warnings and all applicable Laws, Regulations and Standards, even local.

Autec is not responsible for and shall not be held liable for any alteration or modification of the Autec Radio Remote Control, or the use of non-Autec components or products used with or incorporated into the Autec Radio Remote Control.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, to be certain that the Autec Radio Remote Control is properly maintained and serviced at all times in compliance with all Autec instructions and warnings, and with all applicable Laws, Regulations and Standards, even local.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that all Users of the Autec Radio Remote Control and that all Persons who are or will be working with or near the Machine operated by or through the Autec Radio Remote Control are fully and properly educated and trained by qualified Personnel in the proper and safe use of the Autec Radio Remote Control and of the Machine, including without limitation complete familiarity with and understanding of Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and that such Users and other Persons do in fact at all times operate or work with the Autec Radio Remote Control safely and ONLY in compliance with Autec instructions and warnings and with all applicable Laws, Regulations and Standards, even local. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that the areas in which the Machine operated by or through the Autec Radio Remote Control is located and operates are clearly delineated and marked in accordance with all Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and otherwise sufficient to alert and warn ALL PERSONS that the Machine is operated by or through a Radio Remote Control, and prohibiting any unauthorized access thereto. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

FAILURE TO OPERATE THE AUTEC RADIO REMOTE CONTROL SAFELY AND IN COMPLIANCE WITH AUTEC INSTRUCTIONS AND WARNINGS AND WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL, AND/OR PERMITTING USERS OR OTHER PERSONS NOT PROPERLY TRAINED IN THE SAFE AND PROPER USE OF THE SYSTEM, OR THE MACHINE ON WHICH IT IS INSTALLED, CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

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1 Information on the use of instructions

1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec Radio Remote Controls consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the Radio Remote Control's Owner, User and by all those Persons that, for any reasons, may operate with the Radio Remote Control or with the Machine where it is installed. The following table describes the structure of the Instruction Manual for the use and the maintenance of the Radio Remote Control.

Part	Title	Contents
A	General part	- General information regarding the series, - directions for risk assessment of the "Machine+Radio Remote Control" system, - warnings for installation of the Radio Remote Control, - warnings for use and maintenance of the Radio Remote Control, - instructions for correct transportation and storage of Radio Remote Control.
B	Conformity and frequencies	- Operating frequency bands of the Radio Remote Control, - conformity and law references of the Radio Remote Control.
C	Transmitting Unit	Description and instructions concerning the Transmitting Unit, including: - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Receiving Unit	Description and instructions concerning the Receiving Unit, including: - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the Radio Remote Control's Technical Data Sheet, that:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

INSTRUCTIONS FOR THE GENERAL PART: The instructions contained in this general part of the Instruction Manual refer to all Autec Dynamic series' Radio remote controls and to their single components and Units, and must be read and understood by their addressees before reading the instructions contained in the manuals of the single Units.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec Radio Remote Control and of the Machine, system, device or Machinery system where the Radio Remote Control is installed.

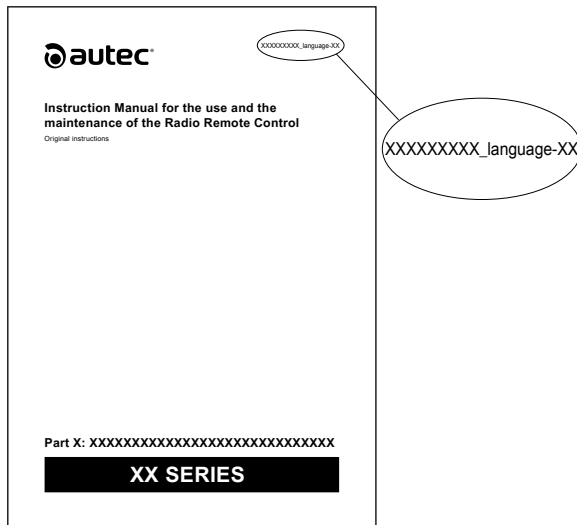
The Manufacturer of the Machine on which the Autec Radio Remote Control is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.



The CD attached to each Instruction Manual includes the translations of the Manual.

Act as follows to identify the single Manual parts in the relevant language in the CD:

- Choose the desired language
- Select the single parts of the Manual: refer to the code name provided on the cover of each part.



1.2 Caption and terminology



Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable, or if you have doubts or questions.

The terms listed here below have the stated meaning throughout the entire Manual, including all of its parts:

- **Unit:** the single (Transmitting or Receiving) Units that comprise the Autec Radio Remote Control.
- **Radio Remote Control:** Cableless Control System (CCS) made up of one or several Transmitting Units and one or several Receiving Units that communicate with each other through a radio link.
- **Transmitting Unit:** portable component (remote station) through which the User interfaces with the Radio Remote Control.
- **Receiving Unit:** component fixed permanently on the Machine (base station); it constitutes an interface between the Radio Remote Control and the other Machine's parts.
- **Radio link:** (cableless control) uninterrupted communication between a Transmitting Unit and a Receiving Unit without physical connection.
- **Active stop:** stop generated by the transmission of a command from the Transmitting Unit to the Receiving Unit.
- **Automatic stop:** safety stop initiated without manual activation of a device by a User.
- **Manual stop:** stop initiated with the manual activation of a device by a User.
- **Passive stop:** safety stop originated by the absence of radio link between the Transmitting Unit and the Receiving Unit.
- **Machine:** the Machine, as defined in the Directive 2006/42/EC and in any other local regulations, and any other device, Machinery, equipment, Machinery system, application etc., where the Autec Radio Remote Control is installed, or that is controlled by it.
- **Manufacturer:** the Person who plans and/or manufactures a Machine, an appliance, a device or a Machinery system and decides to install a Radio Remote Control on it to control the Machine.
- **Installer:** the Person, qualified technician, who plans and/or performs the installation of an Autec Radio Remote Control on a Machine to act on its commands.
- **User:** the Person who actually uses an Autec Radio Remote Control to act on the commands of a Machine.
- **Maintenance Technician:** the Person, qualified technician, who carries out routine or special maintenance on an Autec Radio Remote Control, to keep it whole and effective.
- **Manual or Instruction Manual:** document consisting of: Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit and Part E – Battery and Battery Charger, plus the Technical Data Sheet.
- **Installation Manual:** the specific manual containing specific instructions for the installation of the Radio Remote Control on the Machine: the Installation Manual is specifically addressed to the Installer.
- **Person:** individual, natural or legal person and/or any entity, however it is considered
- **Owner:** the owner of the Radio Remote Control.

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols

	This symbol identifies the parts of text in the Manual that must be read with special attention.
	This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them may cause hazards for People and/or property.

1.4 To whom the instructions are addressed

The Instruction Manual for the use and the maintenance of the Radio Remote Control is addressed to Manufacturers, design engineers, Installers, assemblers, mechanics, electricians, Users, operators, drivers, workers, people responsible for productive activities, Maintenance Technicians and to all the people who, in any capacity and for any reason, work with an Autec Radio Remote Control or with the Machine where it is installed.

The Manual must be read carefully, understood and applied in all its parts by:

- The Owner and/or Person responsible for the Machine and/or for the Autec Radio Remote Control and/or for their operation
- The Machine Manufacturer, who decides to equip it with a Radio Remote Control
- The Radio Remote Control Installer or the Person who assembles it on a Machine, device, Machinery system, etc., and/or who has the responsibility for that operation
- The Person responsible for safety in the workplace where the Radio Remote Control is used
- Users, that is to say, those who actually, and in any capacity, are qualified/authorised/appointed for the use of a Radio Remote Control, or who work with it
- Maintenance Technicians
- Those who, in any capacity, work with the Radio Remote Control and/or with the Machine, system, device and/or Machinery system where an Autec Radio Remote Control is installed, or that are controlled by an Autec Radio Remote Control.



The instructions concerning the installation and maintenance of the Radio Remote Control are addressed to qualified Personnel; their implementation requires qualified professional expertise: none of the operation for which qualified Personnel is required can be carried out by Persons or companies that do not have the required specific professional expertise.

1.5 Instruction storage

The Instruction Manual must be stored and made available to all its addressees, Users and technicians, for the whole life time of the Radio Remote Control, in any moment it may need to be consulted.

No part of the Manual shall be altered, modified or damaged.

If the Manual is damaged, a written request of replacement shall be sent to Autec; replacement is at the applicant's expense.

When applying for it, the Radio Remote Control's serial number is required.

1.6 Intellectual property

The Manual, its structure and contents, the images and photos, the drawings, the instructions and all intellectual property rights included in the Manual are and remain exclusive property of Autec Srl.

They cannot be reproduced and/or disseminated in any form or by any means (including the internet and photocopying) without authorisation and written consent by Autec.

2 Brief product presentation

2.1 Series, Radio Remote Control and Unit

The object of this part of the Manual is the Autec Dynamic series Radio Remote Control (see chapter 4).

Autec Dynamic series' Radio Remote Controls are designed to be used on Machines and provide a command interface to their command and control system, to be used from an appropriate distance and position.

Dynamic series' Radio Remote Controls may be made of one or several Transmitting Units and one or several Receiving Units: the single Units, their commands and their features are illustrated in the specific parts in the Manual and in the Technical Data Sheet.

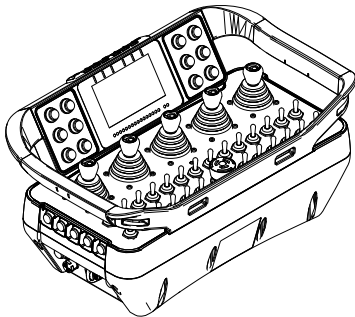
A Radio Remote Control is usually made of one Transmitting Unit and one Receiving Unit.

A "Take & Release" Radio Remote Control is made of several Transmitting Units and one Receiving Unit.

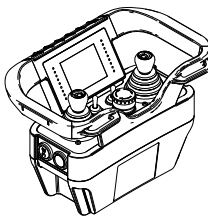
A "Multi Receiver" Radio Remote Control is made of one Transmitting Unit and several Receiving Units.

A "Multi Units" Radio Remote Control is made of several Transmitting Units and several Receiving Units.

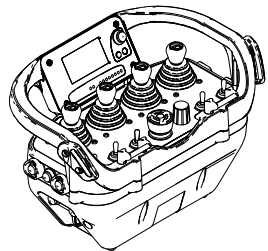
The Dynamic series (2400-2483.5MHz) consists of six Transmitting Units (FJB, FJC, FJM, FJN, FJQ and FJR) and five Receiving Units (ARM, ARS, ARX, CRS and CRX).



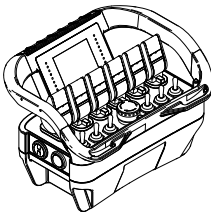
FJB



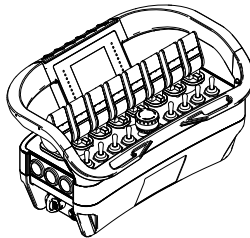
FJC



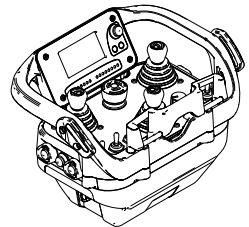
FJM



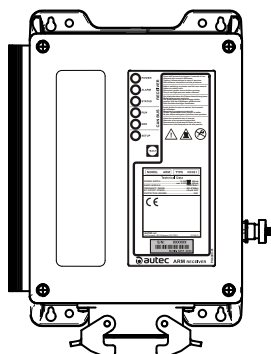
FJN



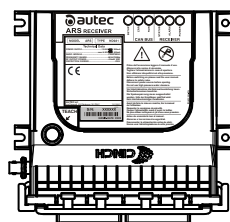
FJQ



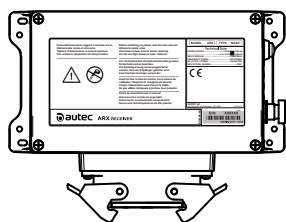
FJR



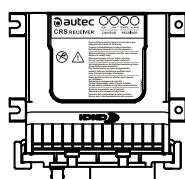
ARM



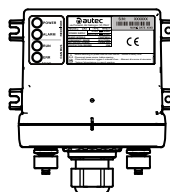
ARS



ARX



CRS



CRX

2.2 Conformity with standards

The conformity of Radio Remote Controls with standards and with working requirements and conditions in the single Countries is provided in the related specific part "Conformity and frequencies" (Part B) of the Manual.

2.3 Contacts and useful addresses

The Radio Remote Controls are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

When applying for technical service to Autec, its distributors, dealers and authorized service centres, the Radio Remote Control's serial number is required; you can find it on the identification plate on the Transmitting Unit and/or on the Receiving Unit.

3 General safety warnings

	All the warnings and instructions provided in this chapter are safety-relevant. Failure to follow the instructions contained in the Manual provided by Autec, as well as all applicable safety-related legislations, even local ones, regulations and standards may generate serious damage to people and property. The Machine Manufacturer and/or designer, the Installer, the Maintenance Technician and the people responsible for the use of the Machine and for the working place are responsible to ensure that the installation, maintenance and use of the Autec Radio Remote Control and all its components are carried out in complete accordance with the instructions provided by Autec and in compliance with all the applicable safety-related standards and regulations in force in the countries where the Machine and the Radio Remote Control are used. The Machine Manufacturer takes on the responsibility for the installation and use of the Radio Remote Control on any application.
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The Manufacturer or those who want to use or install an Autec Radio Remote Control on a Machine must first:

- Assess whether the Machine where they want to install the Radio Remote Control can be used with a Radio Remote Control safely and effectively.
- Carry out an in-depth, accurate risk assessment, taking into account the Machine's manufacturing, functional and/or performance features and characteristics, purpose of the Machine, the location and environment in which the Machine is to be used, the facility in which the Machine is to be or is installed, the interaction between the Machine and other equipment and Personnel, the safety conditions during operation of the Machine, the actual and potential different usage conditions, the conditions that may arise following the installation and use of a Radio Remote Control, and the features and limitations of the Autec Radio Remote Control.

For this purpose, by way of example and by no way of limitation, refer to standards ISO 12100 and ISO 14121, that prescribe the conditions for a correct risk assessment, which includes risk analysis and the adoption of the necessary protection and safeguarding actions.

Without limitation on the Laws, Regulations and Standards it is forbidden to use an Autec Radio Remote Control if the Manufacturer or those who want to install it on the Machine are not able to or do not:

- Carry out an appropriate and comprehensive risk assessment in relation to the safety of the Machine, concerning the Radio Remote Control adoption and installation.
- Ensure the required professional experience and/or technical competence to carry out the risk assessment correctly.
- Ensure the correct installation of the Radio Remote Control in accordance with this Manual and all applicable Laws, Regulations and Standards, even local.
- Implement all safety conditions, so that the radio remote controlled Machine can be used without creating dangerous situations.
- Adopt the appropriate technical solutions and informative actions to create the conditions for the User and the Maintenance Technician to safely operate the radio remote controlled Machine.
- Implement all necessary and appropriate action and procedures to remove or reduce risks that may originate from the use of the radio remote controlled Machine.



ONLY IF THE COMPREHENSIVE RISK ASSESSMENT SUPPORTS THE INSTALLATION OF THE AUTEC RADIO REMOTE CONTROL AS APPROPRIATE, EFFECTIVE AND SAFE FOR THE OPERATION OF THE MACHINE AND THE USE OF THE RADIO REMOTE CONTROL ON THE MACHINE IS PERMITTED BY AND IS IN COMPLIANCE WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL, AND THIS MANUAL, MAY THE AUTEC RADIO REMOTE CONTROL SYSTEM BE INSTALLED AND USED ON SUCH MACHINE.

THE MACHINE MANUFACTURER OR ALL THOSE WHO DECIDE TO INSTALL THE AUTEC RADIO REMOTE CONTROL ON A MACHINE IS HELD COMPLETELY RESPONSIBLE FOR:

- **THE RISK ASSESSMENT**
- **THE DETERMINATION TO USE THE AUTEC RADIO REMOTE CONTROL ON THE MACHINE**
- **TAKING ALL ACTIONS NECESSARY OR ADVISABLE TO REDUCE OR REMOVE RISKS OCCASIONED BY THE MACHINE AND, WITHOUT LIMITATION, THE USE OF A RADIO REMOTE CONTROL TO OPERATE THE MACHINE**
- **THE OBSERVANCE OF STANDARDS AND REGULATIONS AIMING AT PRESERVING SAFETY.**



THE AUTEC RADIO REMOTE CONTROL IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- **ON WHICH AND WHERE THE USE OF A RADIO REMOTE CONTROL IS APPROPRIATE**
- **THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.**

AUTEC IS NOT RESPONSIBLE FOR AND SHALL NOT BE HELD LIABLE FOR THE COMPATIBILITY OF THE RADIO REMOTE CONTROL WITH THE MACHINE OR DESIRED APPLICATION, EVEN IF IT IS AMONG THE PERMITTED APPLICATIONS, OR FOR ANY ISSUE RELATING TO THE SUITABILITY OF THE MACHINE AND ITS CONTROL SYSTEM TO BE RADIO REMOTE CONTROLLED.

SIMILARLY, AUTEC IS NOT RESPONSIBLE FOR AND SHALL NOT BE HELD LIABLE FOR THE RISK ASSESSMENT THAT MUST BE CARRIED OUT WHEN CONSIDERING A RADIO REMOTE CONTROL GENERALLY OR THIS AUTEC RADIO REMOTE CONTROL SPECIFICALLY, OR THE SUITABILITY OF OPERATING A MACHINE BY A RADIO REMOTE CONTROL GENERALLY OR THIS AUTEC RADIO REMOTE CONTROL SPECIFICALLY, WHETHER WITH REGARD TO THE MACHINE, THE FACILITY IN WHICH THE MACHINE IS TO BE USED OR IS USED, OR THE ENVIRONMENTAL AND/OR WORKING CONDITIONS IN WHICH THE MACHINE WILL BE OR IS USED.

Without limitation on the foregoing, Autec is not responsible for and shall not be held liable for:

- Installation that is faulty or in any way not in conformity with this Manual and any other instructions provided by Autec, and with all applicable Laws, Regulations and Standards, even local
- Installation on Machines, appliances, devices, equipment and/or Machinery systems on which the use of a Radio Remote Control is not allowed by its Manufacturer or under applicable Laws, Regulations and Standards, even local, or on which the installation and/or the use of a Radio Remote Control may generate safety issues or other risk situations that cannot be adequately removed and/or reduced, in conformity with applicable Laws, Regulations and Standards, even local
- Use of the Autec Radio Remote Control system that is in any way not in conformity with this Manual and any other instructions provided by Autec, and with all applicable Laws, Regulations and Standards, even local

- Use of the Radio Remote Control in facilities or environments, or in weather and/or climate conditions, in which the use of the Radio Remote Control is not permitted or advisable under applicable Laws, Regulations and Standards, even local, not permitted according to the instructions contained in this Manual, or that may pose the risk of damage and/or incorrect operation of the Radio Remote Control (by way of example: temperature exceeding the limits indicated in paragraph 8.3, situations where the risk of explosion exists, risk of contact with liquids or fluids);
- Use of the Radio Remote Control in working conditions that do not allow the User to maintain full and continuous observation of the movements of the Machine and, if applicable, of the load
- Use of the Radio Remote Control in a different way or for different purposes from the permitted ones, and/or use not in complete compliance with the instructions for use and the maintenance contained in this Manual
- Inadequate or missing maintenance of the Radio Remote Control, referring to both routine and special maintenance, or failure to repair any damage to, wearing out or malfunction of the Autec Radio Remote Control
- Damage to and/or deterioration of any component or feature of the Autec Radio Remote Control
- Failure to take the Autec Radio Remote Control out of service if there is any damage to or malfunction of the Radio Remote Control or any component thereof
- Use of parts or components in the Autec Radio Remote Control that are not manufactured or supplied by Autec
- Service of the Autec Radio Remote Control system by anyone other than Autec or an Autec authorized service provider.

4 Radio Remote Control features

Dynamic series' Radio Remote Controls are used to control Machines from a distance, without physical connection (by way of example: wires or connecting cables) between the Transmitting Unit handled by the User and the Receiving Unit installed on the Machine, hence between the User and the Machine.

They usually consist of a portable Transmitting Unit, from which the User can remotely control a Machine, and a Receiving Unit installed on board the Machine itself.

Images of the single Units belonging to the Radio Remote Control can be found in the specific manual that refers to each Unit.



The relation between the commands sent by the Transmitting Unit and those available in the Receiving Unit is decided by the Installer of the Radio Remote Control on the Machine.

4.1 Description of radio link

The Transmitting Unit communicates with the Receiving Unit through a radio link. Such link must be continuous to promote safety in the use of the Machine. Every time this link is incorrect or interrupted, the Receiving Unit stops the commands and orders the Machine to stop.



The Machine stops only if the wiring between the Receiving Unit and the Machine itself is correct.

The Units in a Radio Remote Control code their messages through an address that is unique (produced by Autec only once and non repeatable for other Radio Remote Controls) and univocal (specific for each Radio Remote Control and associated to it).

Each Unit can only decode messages coming from the Unit with the same address.

This prevents messages from other radio equipment from activating any "Machine+Radio Remote Control" system function.

The radio link is interrupted in the following cases:

- Stop (see paragraph 4.3)
- Low battery
- Automatic switch off
- No power supply in the Receiving Unit
- Working range exceeded (see paragraph 4.5)
- Presence of metal obstructions.

 WARNING	WARNING: The operating working range may be significantly and unpredictably reduced compared to the value indicated in the technical data (see paragraph 4.5) when special conditions occur in the working environment (by way of example: temporary presence of electromagnetic interference and/or metal obstructions). WARNING: The operating working range may be extended up to ten times compared to the value indicated in the technical data (see paragraph 4.5) when there are no interference elements in the working environment (by way of example: no electromagnetic interference and/or metal obstacles).
--	--

When a radio link is interrupted:

- All outputs of the Receiving Unit are disabled
- It is not possible to enable or disable the Machine commands through the Transmitting Unit until the Radio Remote Control is started up again.

 WARNING	When the START pushbutton is pressed to re-start the Radio Remote Control, the commands that are not monitored during start up (see Technical Data Sheet), if active, immediately activate the Machine functions that are associated with them. The Machine's Manufacturer or those who integrate the Radio Remote Control in the Machine must take this Radio Remote Control behaviour into account when carrying out the risk assessment. The Machine Manufacturer or those who integrate the Radio Remote Control on the Machine must inform the User if they believe that the reactivation of such Machine functions may entail hazardous situations that cannot be reduced by reasonable technical measures implemented on the Machine itself.
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4.2 Control devices

4.2.1 Start up and switch off

Start up and switch off functions are described in chapter "General instructions for operation" included in "Part C" of the Instruction Manual. Therefore, please refer to that part of the Manual.

4.3 Radio Remote Control stop functions

The Radio Remote Control has two stop functions that bring the Machine to a safe state every time it is necessary to stop it due to a potentially hazardous situation:

- Automatic stop function (ATS): this function is activated automatically (see chapter 4.3.3).
- Manual stop function: this stop function may be a General Safe Stop (GSS, see paragraph 4.3.1) or an EMERGENCY Stop (EMS, see paragraph 4.3.2).

The automatic stop function (ATS) and the manual stop function are both safety functions (see paragraph 4.5).



The GSS function and the EMS function are never present simultaneously in a Radio Remote Control. The Machine Manufacturer and/or the Installer have the responsibility to decide which one is the correct/suitable one for the radio remote controlled Machine in accordance with the requirements for such function.

THE USER MUST AT ALL TIMES PAY FULL ATTENTION TO THE SAFE AND PROPER OPERATION OF THE MACHINE IN ACCORDANCE WITH THE INSTRUCTIONS AND WARNINGS PROVIDED IN THIS MANUAL AND WITH THE MANUAL, INSTRUCTIONS AND WARNINGS FOR THE MACHINE AND WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL.

ACTIVATING THE PUSHBUTTON RELATED TO THE STOP FUNCTION (GSS or EMS) MAY NOT RESULT IN AN IMMEDIATE STOP OF THE MACHINE.

THE ACTIVATION OF THE PUSHBUTTON RELATED TO THE STOP FUNCTION (GSS OR EMS) CONTROLS THE MACHINE'S STOP FUNCTION, BUT THE TIME AND DISTANCE WITHIN WHICH THE LATTER WILL BE BROUGHT TO A SAFE STATE MAY VARY FROM MACHINE TO MACHINE, FOR EXAMPLE DUE TO THE PRESENCE OR ABSENCE OF A BRAKE. THE USER MUST BE FULLY AWARE OF THE MACHINE'S MOVEMENTS AND OPERATING ZONES AND MUST ALLOW FOR SUFFICIENT SAFE FUNCTIONING OF THE MACHINE, INCLUDING SUCH RESPONSE TIMES AND STOPPING DISTANCES.

FAILURE TO DO SO CONTINUOUSLY AND CORRECTLY MAY RESULT IN SEVERE INJURY OR DEATH, OR PROPERTY DAMAGE.

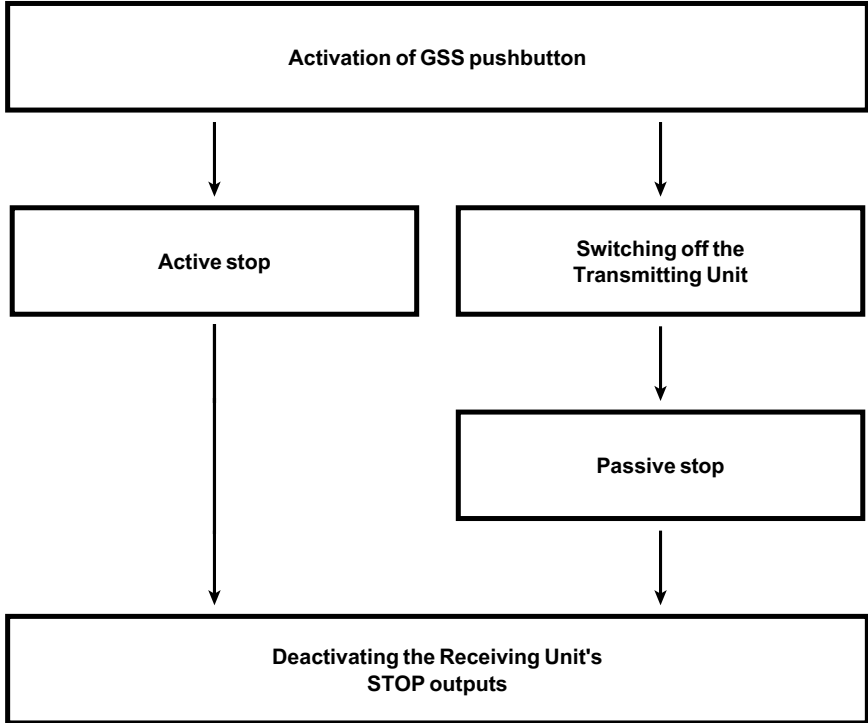


Depending on the Machine's risk assessment, it may be necessary to arrange, on the Machine or nearby, an additional restore device to be used after the GSS or the EMS function has been activated by the Transmitting Unit. This device must be placed in a fixed position in such a way as to enable the User to perfectly see the whole Machine's working area.

4.3.1 General Safe Stop function (GSS)

The User activates the GSS function by using the pushbutton identified with GSS or General Safe Stop in the Transmitting Unit.

This manual stop first generates an active stop and then it switches off the Transmitting Unit. This working logic implicates that the Receiving Unit brings the Machine to a safe state when it receives the command generated by the active stop. If this does not happen due to interference causing incorrect or broken radio link, the passive stop will activate the automatic stop function in the Receiving Unit.



The GSS function is available if and only if the Radio Remote Control is started (see paragraph "Radio Remote Control start up" in "Part C" of the Manual).

In "Take & Release" and "Multi Units" Radio Remote Controls, the GSS function is available only on the Transmitting Unit that controls the Machine when the Radio Remote Control is started (see "Radio Remote Control start up" in "Part C" of the Manual).



Never leave the Transmitting Unit unguarded to avoid uncertainty about the availability or unavailability of the GSS function.

The “mission time” of the GSS function, as defined in international standards and requirements, is 20 years. In any case, the Radio Remote Control must be replaced within this period. The “mission time” must not be considered as a warranty period.

After the activation of the GSS or General Safe Stop pushbutton on the Transmitting Unit, the Machine is not controlled by the Radio Remote Control any more. Any possible risks that may arise from the activation of the stop function must be taken into account by the Installer of the Radio Remote Control, and by the Manufacturer and the Owner of the Machine where the Radio Remote Control is installed. The Radio Remote Control User must be properly trained about this.

4.3.2 EMergency Stop (EMS) function



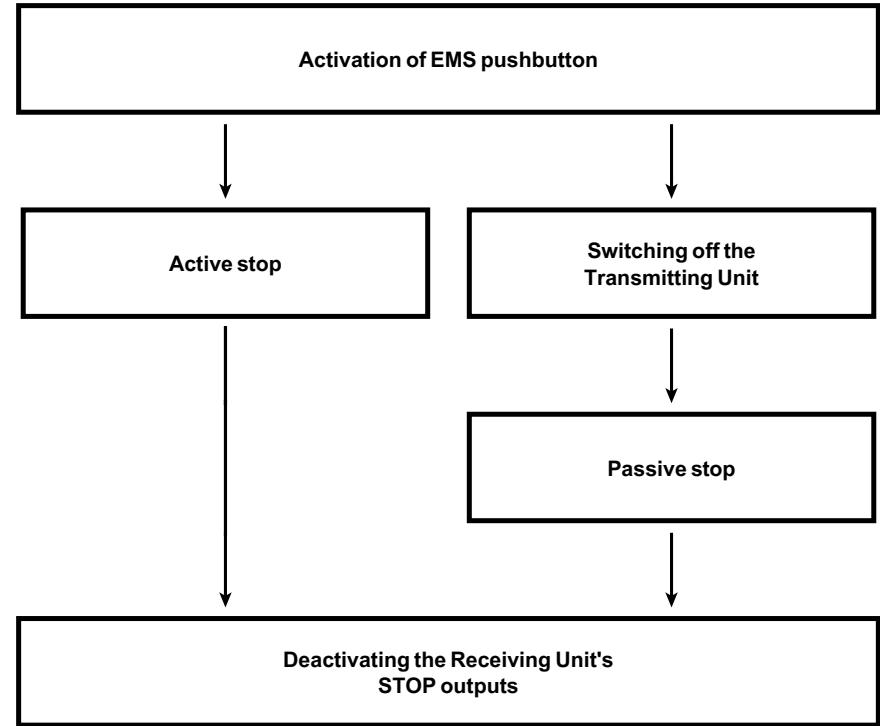
The EMS function is never available in "Take&Release" and "Multi Units" Radio Remote Controls.

The User activates EMS function by using the red pushbutton on a yellow background identified with EMS in the Transmitting Unit.

This manual stop first generates an active stop and then it switches off the Transmitting Unit. This working logic implicates that the Receiving Unit brings the Machine to a safe state when it receives the command generated by the active stop. If this does not happen due to interference causing incorrect or broken radio link, the passive stop will activate the automatic stop function in the Receiving Unit.

The red pushbutton in use complies with the IEC 60204-1 and with the IEC 60947-5-5.

The EMS function complies with the ISO 13850.





The EMS function is available if and only if the Radio Remote Control is started (see paragraph "Radio Remote Control start up" in "Part C" of the Manual).



The Radio Remote Control's stop function can be considered EMS only if:

- It belongs to a Machine's emergency stop function compliant with the requirements of the Machinery Directive 2006/42/EC and of the ISO 13850 standard
- It belongs to a Machine's emergency stop function that is always available and operational, independently from the Machine's working mode
- The Transmitting Unit is the only control station of the Machine. If, on the other hand, there is another non-remote control station, the EMS function present in the Radio Remote Control must always be made available and operational.

The red pushbutton on the Transmitting Unit must not be the only means to initiate the emergency stop function in the radio remote controlled Machine.

Never leave the Transmitting Unit unguarded to avoid uncertainty about the availability or unavailability of the EMS function.

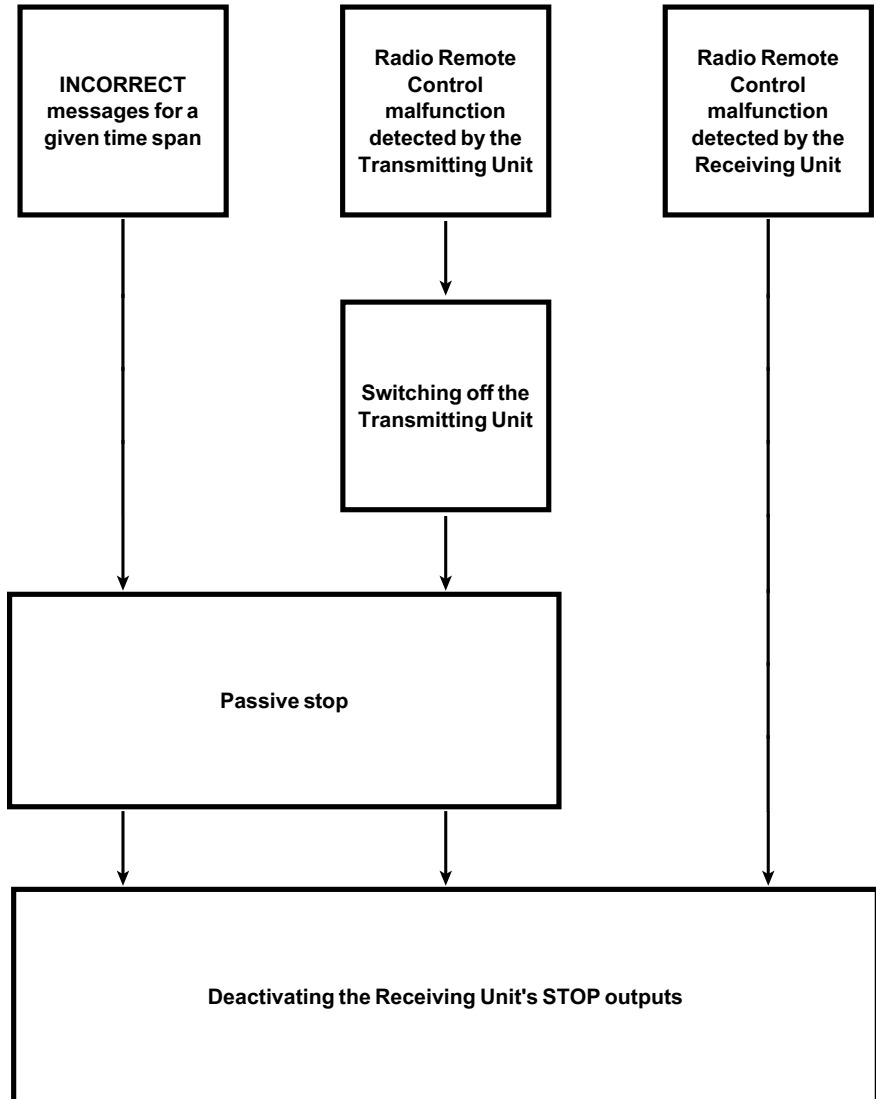
The "mission time" of the EMS function, as defined in international standards and requirements, is 20 years. In any case, the Radio Remote Control must be replaced within this period. The "mission time" must not be considered as a warranty period.

After the activation of the red pushbutton on the Transmitting Unit, the Machine is not controlled by the Radio Remote Control any more. Any possible risks that may arise from the activation of the stop function must be taken into account by the Installer of the Radio Remote Control, and by the Manufacturer and the Owner of the Machine where the Radio Remote Control is installed. The Radio Remote Control User must be properly trained about this.

4.3.3 Automatic stop function (ATS)

The automatic stop function (ATS) prevents hazardous operation of the radio remote controlled Machine and brings it to a safe state. This function is activated automatically:

- By the Receiving Unit due to passive stop, when the Receiving Unit does not receive correct messages in a given time span (see paragraph 4.1).
- When a Radio Remote Control malfunction is detected.



4.4 Protection against unintended movements from the standstill position UMFS



Unintended movements of the Machine, that is Machine movements that are not activated by movements of the actuators, may occur due to electrical or mechanical failure or malfunction that may affect the Radio Remote Control.

The rest position of the actuators on the Transmitting Unit is the neutral position. When all the actuators related to commands protected by the UMFS function (such commands are indicated in the Technical Data Sheet as COMMAND+SAFETY) are in the neutral position, the Radio Remote Control keeps the Receiving Unit's SAFETY outputs deactivate, regardless of the status of all the outputs related to the commands.

When all the actuators of commands protected by the UMFS function are in their neutral position, the UMFS function reduces the risk of accidentally activating Machine's movements in case of electrical failure in the Radio Remote Control.



During the Radio Remote Control start up, if all actuators related to commands protected by the UMFS function are in their neutral position, possible movement commands due to electrical failure do not activate the SAFETY outputs.

If all actuators related to the commands protected by UMFS function are released, SAFETY outputs are deactivated after about 1 second (for the ADD Receiving Unit only, such delay cannot occur: see "SAFETY delay time" in the Installation Manual).

The UMFS function prevents the Radio Remote Control from starting if an electrical failure of movement commands is detected.



THE UMFS FUNCTION WORKS CORRECTLY IF AND ONLY IF "SAFETY" OUTPUTS ARE CONNECTED CORRECTLY (SEE INSTALLATION MANUAL).



MOVEMENT OF THE MACHINE MAY OCCUR WHENEVER AN ACTUATOR RELATED TO MOVEMENT COMMANDS IN THE TRANSMITTING UNIT IS MOVED FROM ITS NEUTRAL POSITION. EVEN INADVERTENT ACTIVATION OF COMMANDS MAY CAUSE MACHINE MOVEMENTS (SEE PARAGRAPH 7.3). EVEN THOUGH THIS RADIO REMOTE CONTROL IS EQUIPPED WITH ALL THE REASONABLE MEASURES TO PREVENT ACCIDENTAL ACTIVATION, IT CANNOT DETECT IF THE ACTUATOR HAS BEEN MOVED INTENTIONALLY OR ACCIDENTALLY.

THE UMFS FUNCTION MUST NOT BE INTENDED AS A PROTECTION AGAINST ACCIDENTAL ACTIVATION OF ACTUATORS, BUT IT HAS BEEN DESIGNED TO PREVENT UNINTENDED ACTIVATION OF MOVEMENTS IN CASE OF ELECTRICAL FAILURE OF COMMANDS PROTECTED BY THE UMFS FUNCTION.

THE UMFS FUNCTION IS NOT A SUBSTITUTE WHATSOEVER FOR THE PROPER USE AND PROTECTION OF THE TRANSMITTING UNIT IN ACCORDANCE WITH THE INSTRUCTIONS CONTAINED IN THIS MANUAL (INCLUDING ALL OF ITS PARTS); THE USER MUST AT ALL TIMES PAY FULL ATTENTION TO THE SAFE AND PROPER OPERATION OF THE MACHINE IN ACCORDANCE WITH THE INSTRUCTIONS AND WARNINGS PROVIDED IN THIS MANUAL AND IN THE MANUAL FOR THE MACHINE AND WITH ALL APPLICABLE LAWS AND STANDARDS, EVEN LOCAL.

4.5 Technical data

Performance of the automatic stop function (ATS)	SIL 3 / PL e ; cat.4 (4-wire wiring)
	SIL 2 / PL d ; cat.3 (2-wire wiring)
Performance of the General Safe Stop (GSS) function	SIL 3 / PL e ; cat.4 (4-wire wiring)
	SIL 2 / PL d ; cat.3 (2-wire wiring)
Performance of the Emergency Stop (EMS) function	SIL 3 / PL e ; cat.4 (4-wire wiring)
	SIL 2 / PL d ; cat.3 (2-wire wiring)
Performance of the UMFS function	SIL 2 / PL d ; cat.3
Cut in time of the automatic stop function (ATS)	0.5s
Cut in time of the manual active stop function (GSS or EMS)	<130ms
Cut in time of the manual passive stop function (GSS or EMS)	0.5s
Hamming distance	≥15
Probability of undetected error	<10 ⁻¹⁵
(Typical) working range	50m (165ft)
Command response time	80-130ms



If a Transmitting Unit is working simultaneously with several Receiving Units, 30ms per Receiving Unit will add up to the above mentioned "Command response time" (by way of example: if a Transmitting Unit is working simultaneously with three Receiving Units, the "Command response time" turns out to be 170-220ms).

If a Transmitting Unit is working simultaneously with several Receiving Units, 30ms per Receiving Unit will add up to the above mentioned "Cut-in time of the manual active stop function (GSS or EMS)" (by way of example: if a Transmitting Unit is working simultaneously with three Receiving Units, the "Cut in time for the manual active stop function (GSS or EMS) turns out to be 220ms).

If a Transmitting Unit is working simultaneously with several Receiving Units, the "Cut-in time of the manual active stop function (GSS or EMS)" is 400ms.

The technical data related to the single Units belonging to the Dynamic series are provided in the specific parts of the Manual and in their Technical Data Sheets.

4.6 Identifying the Radio Remote Control

A serial number (S/N) univocally identifies each Radio Remote Control.

The serial number is provided in the identification plate on each Radio Remote Control Unit. This is the only reference to be used for maintenance operations and for any other situation when you need to precisely identify the Radio Remote Control.

The serial number must be mentioned in any communication with Autec, its dealers, Installers, Maintenance Technicians of the Radio Remote Control and with the people who, in any capacity, need information, spare parts or technical data concerning the Radio Remote Control.



Plates must not be removed from their position: removal immediately voids the warranty.

Plates must not be altered or damaged, contact Autec for replacement.



The Machine Manufacturer, the Installer, the Maintenance Technician and the People in charge of the usage of the Machine and of the working place are responsible for making sure that the Radio Remote Control's identification plate is a sufficient means to explain the correspondence between the Transmitting Unit and the Receiving Unit. If that were the case, it is necessary to provide additional, more visible identification.

4.7 Additional features of the "Take & Release" Radio Remote Control

It consists of several Transmitting Units, from which several Users can remotely control a single Machine, and of a Receiving Unit installed on board the Machine itself. The Receiving Unit can be controlled by a single Transmitting Unit independently (of other Transmitting Units) and exclusively (the Receiving Unit cannot be controlled by two or more different Transmitting Units at the same time), so as to avoid command overlap.

The "Take & Release" Radio Remote Control may consist of two to seven Transmitting Units; they are named respectively "TU No. 1", "TU No. 2", up to "TU No. 7".

The number and name of the Transmitting Units belonging to a "Take & Release" Radio Remote Control are provided in the Technical Data Sheet, on the panel of each Transmitting Unit and on the label attached to the "Key ID 0-1" (if any) with a metal ring.

Refer to the specific TOD (Technical and Operational Description) attached to the Instruction Manual to know about the operational features of a specific "Take & Release" Radio Remote Control.

4.7.1 Description of radio link

The Receiving Unit can decode only the messages coming from the Transmitting Units of the "Take & Release" Radio Remote Control to which it belongs.

Each Transmitting Unit can decode only the messages coming from the Receiving Unit of the "Take & Release" Radio Remote Control to which it belongs.

4.7.2 Receiving Unit statuses

The Receiving Unit of a "Take & Release" Radio Remote Control can have two different statuses:

- Free: the Receiving Unit is not controlled by any Transmitting Unit.
- Engaged: the Receiving Unit is controlled by one of the Transmitting Units and cannot be controlled by another Unit until it is released.

The Receiving Unit switches from the engaged to the free status in the following cases:

- if it is disconnected from its power source for at least one second,
- if it is released by the Transmitting Unit that was controlling it.

Only when the Receiving Unit is free, it can be engaged by the first Transmitting Unit that performs such operation by acting on the TAKE command or by performing the start up procedure (see TOD).



When a Transmitting Unit is switched off without prior release of the Receiving Unit (see TOD), the latter remains in "engaged" status.

4.8 Additional features of the "Multi Receiver" Radio Remote Control

It consists of a Transmitting Unit, from which the User may remotely control one or several Machines, and of several Receiving Units installed on board the Machines.

The amount of Receiving Units in a "Multi Receiver" Radio Remote Control depends on the application you want to implement; it is possible to have two to seven Receiving Units. There are two different types of "Multi Receiver" Radio Remote Controls, depending on the radio link:

- "LINE UP link": it consists of two to four Receiving Units (see paragraph 4.8.2).
- "ONE TO ONE link": it consists of two to seven Receiving Units (see paragraph 4.8.3).

The different Receiving Units are named "RU No.1", "RU No.2", "RU No.3" etc.

The number and names of the Receiving Units belonging to the Radio Remote Control are provided in the Technical Data Sheet.

Refer to the specific TOD (Technical and Operational Description) attached to the Instruction Manual to know about the operational features of a specific "Multi Receiver" Radio Remote Control.

4.8.1 Description of radio link

Each Receiving Unit can decode only the messages coming from the Transmitting Unit of the "Multi Receiver" Radio Remote Control to which it belongs.

The Transmitting Unit can decode only the messages coming from the Receiving Units of the "Multi Receiver" Radio Remote Control to which it belongs.

Please remember that the Transmitting Unit can lose the radio link with one or several Receiving Units due to radio interference, power outage and power failure.

4.8.2 LINE UP link

A "Multi Receiver LINE UP link" Radio Remote Control has one Transmitting Unit and two to four Receiving Units.

The Transmitting Unit of a "Multi Receiver LINE UP link" Radio Remote Control can control one or several Receiving Units at a time (see TOD).

The Transmitting Unit of a "Multi Receiver LINE UP link" Radio Remote Control constantly monitors radio links with all the Receiving Units with which the start up procedure described in the TOD has been performed. When the radio link between the Transmitting Unit and even just one of the Receiving Units is interrupted, the Transmitting Unit automatically interrupts the radio link with the other Receiving Units within a further amount of time equal to the "Cut-in time of the manual active stop function (ATS)" (see paragraph 4.5).



However, the monitoring of the radio links performed by the Transmitting Unit cannot be considered a safety function according to the current Standards (by way of example: ISO13849-1, IEC62061). As a consequence, if the risk assessment related to the application requires a guaranteed safety level and response time for the de-activation of outputs in the Receiving Units after the de-activation of the first one, this must be obtained by implementing measures external to the Radio Remote Control.

The Radio Remote Control cannot ensure the alignment and/or synchronization of several radio remote controlled Machines or of different functions of a radio remote controlled Machine. If the specific application requires it, a system for the control of the alignment among the different radio remote controlled Machines or among the different functions of a radio remote controlled Machine is needed (e.g. mechanical, optical system).

The User must be properly informed and trained to be able to correctly manage the possible loss of alignment, as it may generate hazards for People and/or property. In this case, the User must immediately implement the procedures and operations that are set up by the Machine Manufacturer and are described in the Machine's instructions for use and maintenance.

4.8.3 ONE TO ONE link

A "Multi Receiver ONE TO ONE link" Radio Remote Control has a Transmitting Unit and two to seven Receiving Units.

In a "Multi Receiver ONE TO ONE link" Radio Remote Control, the Transmitting Unit can control one single Receiving Unit at a time: therefore, the Transmitting Unit constantly communicates with just one single Receiving Unit via radio link.

The Transmitting Unit of a "Multi Receiver ONE TO ONE link" Radio Remote Control always has a command used to choose the Receiving Unit to be linked for operation (see TOD).



"Multi Receiver ONE TO ONE link" Radio Remote Controls cannot be installed on machinery requiring a system for the control of the alignment and/or synchronization amongst the different radio remote controlled Machines or amongst different functions of a radio remote controlled Machine.

4.9 Additional features of the "Multi Units" Radio Remote Control

The Radio Remote Control is designed and made so that all its Units must always work in the same working application and for a specific function.

It consists of several Transmitting Units, with which different Users can remotely control one or more Machines, and of several Receiving Units installed on the Machines. The Receiving Units can be controlled by a single Transmitting Unit independently (of other Transmitting Units) and exclusively (a Receiving Unit cannot be controlled by two or more different Transmitting Units at the same time), so as to avoid command overlap.

"Multi Units" Radio remote controls may have two to four Transmitting Units; they are named respectively "TU No.1", "TU No.2", "TU No.3" and "TU No.4".

"Multi Units" Radio remote controls may have two to four Receiving Units; they are named respectively "RU No.1", "RU No.2", "RU No.3" and "RU No.4".

The number and names of the Units belonging to the "Multi Units" Radio Remote Control are provided in the Technical Data Sheet.

The name is also provided on the panel of each Transmitting Unit and on the label attached to the "Key ID 0-1" (if present) with a metal ring.

Refer to the specific TOD (Technical and Operational Description) attached to the Instruction Manual to know about the operational features of a specific "Multi Units" Radio Remote Control.

4.10 Operation restrictions



It is forbidden to separate or split the Units belonging to the "Multi Units" Radio Remote Control into different Radio remote controls, in order to avoid that they may affect the operation of Machines that must not be controlled.

4.10.1 Description of radio link

Each Receiving Unit can decode only the messages coming from the Transmitting Units of the "Multi Units" Radio Remote Control that are enabled to control that specific Receiving Unit. Each Transmitting Unit can decode only the messages coming from the Receiving Units of the "Multi Units" Radio Remote Control that are enabled to be controlled by that specific Transmitting Unit.

Please remember that the Transmitting Unit can lose the radio link with one or several Receiving Units due to radio interference, power outage and power failure.

The Transmitting Unit of a "Multi Units" Radio Remote Control constantly monitors radio links with all the Receiving Units with which the start up procedure described in the TOD has been performed. When the radio link between the Transmitting Unit and even just one of the Receiving Units is interrupted, the Transmitting Unit automatically interrupts the radio link with the other Receiving Units within a further amount of time equal to the "Cut-in time of the manual active stop function (ATS)" (see paragraph 4.5).



However, the monitoring of the radio links performed by the Transmitting Unit cannot be considered a safety function according to the current Standards (by way of example: ISO13849-1, IEC62061). As a consequence, if the risk assessment related to the application requires a guaranteed safety level and response time for the de-activation of outputs in the Receiving Units after the de-activation of the first one, this must be obtained by implementing measures external to the Radio Remote Control.

The Radio Remote Control cannot ensure the alignment and/or synchronization of several radio remote controlled Machines or of different functions of a radio remote controlled Machine. If the specific application requires it, a system for the control of the alignment among the different radio remote controlled Machines or among the different functions of a radio remote controlled Machine is needed (e.g. mechanical, optical system).

The User must be properly informed and trained to be able to correctly manage the possible loss of alignment, as it may generate hazards for People and/or property. In this case, the User must immediately implement the procedures and operations that are set up by the Machine Manufacturer and are described in the Machine's instructions for use and maintenance.

4.11 Receiving Unit statuses

A Receiving Unit in a "Multi Units" Radio Remote Control that can be controlled by at least two Transmitting Units (sharing the Receiving Unit) can have two different statuses:

- Free: the Receiving Unit is not controlled by any Transmitting Unit.
- Engaged: the Receiving Unit is controlled by one of the Transmitting Units and cannot be controlled by another Unit until it is released.

The Receiving Unit switches from the engaged to the free status in the following cases:

- if it is disconnected from its power source for at least one second,
- if it is released by the Transmitting Unit that was controlling it.

Only when the Receiving Unit is free, it can be engaged by the first Transmitting Unit that performs such operation by acting on the CATCH, SELECT commands or by performing the start up procedure (see TOD).



When a Transmitting Unit is switched off without prior release of the Receiving Unit (see TOD), the latter remains in "engaged" status.

5 Radio Remote Control storage before installation or after removal

Radio Remote Controls must always be transported and stored inside their packing until they are installed on the Machine.

The Radio Remote Control system and all components are to be shipped and maintained according to the following environmental parameters and conditions:

	Temperature	Relative Humidity	Air pressure
Transportation	from -40 to +70°C (from -40 to +158°F)	95%	from 70 to 106kPa
Storage	from -40 to +85°C (from -40 to +185°F)	from 5 to 95%	from 70 to 106kPa

In the previous table:

- Temperature, relative humidity and air pressure during transportation refer to Class 2K4 of standard EN 50178.
- Temperature and air pressure during storage refer to Class 1K5 of standard EN 50178.
- Relative humidity during storage refers to Class 1K3 of standard EN 50178.

6 Installation

The chapter "Installing the Receiving Unit" in "Part D" of the Instruction Manual contains the warnings for the installation that add to those provided in this chapter. Therefore, please refer to that part of the Manual.

6.1 Applications

An Autec Dynamic series Radio Remote Control can be used for several applications: the Manufacturer must establish if the Radio Remote Control is suitable for each different application, especially with regards to safety. The Dynamic series is used most frequently for the following types of Machines:

- Machines for lifting and moving materials, objects, general loads (by way of example: hydraulic cranes, concrete pumps)
- Machines for raising and moving people (by way of example: elevated work platforms, telehandlers)
- Drilling Machines.



Make sure that the application's requirements are compatible with the value "(Typical) Working range" (see paragraph 4.5).

Be aware that such value may vary (see paragraph 4.1).



The Autec Radio Remote Control may not be installed on Machines where it is used for applications or functions not permitted under this Manual and applicable Laws, Regulations and Standards, even local. INSTALLATION OF AN AUTEK RADIO REMOTE CONTROL ON OTHER MACHINE OR FOR OTHER FUNCTIONS MAY CAUSE SERIOUS INJURY OR DEATH OR PROPERTY DAMAGE.

Autec is not and cannot be held responsible if the Radio Remote Control is used in unsafe or poor safety conditions. Assessment shall be made by the Machine Manufacturer to establish possible additional protection measures for the actuators (by way of example: commands requiring two-hand operation, "dead-man" function) if particular environments, equipment and working modes could cause accidental bumps to the actuators.

"Multi Units" Radio Remote Controls are not suitable to be used in Machines requiring simultaneous consent from different Transmitting Units (that must communicate with the same Receiving Unit) to start the Machine itself or to perform operations.

"Take & Release" Radio Remote Controls are not suitable to be used in Machines requiring simultaneous consent from different Transmitting Units to start the Machine itself or to perform operations.



In addition to the above, Dynamic series' Radio Remote Controls cannot be installed:

- On Machines that are intended for the use in environments requiring explosion-proof features or in any Radio Remote Control usage situation that may pose the risk of explosion
- On machines where the receiving unit power supply does not come from a battery or from a power supply unit with safety isolating transformer
- On Machines that control loads that are not isolated from alternating current (AC) power supply (if applicable)
- On Machines that create or can create dangerous situations if they stop due to the loss of radio link
- On Machines that do not allow a risk-free installation of a Radio Remote Control, due to their functions or features and/or to the risks related to their use
- On any kind of lifting accessory (by way of example: magnets, grippers, suction cups) whenever the loss of radio link or the deactivation of commands may cause the release of the load, resulting in the risk of damage to People and/or property. The Machine Manufacturer may allow the installation and use of the Radio Remote Control for such applications under their own responsibility
- If the applicable safety-related laws in the country where the Machine is used, regulations and standards (even local ones), even concerning safety in the workplace, do not allow the use of Radio Remote Controls to control the Machines.

INSTALLATION OF AN AUTEC RADIO REMOTE CONTROL ON MACHINES AND IN THE ABOVE-MENTIONED SITUATIONS MAY CAUSE SERIOUS INJURY OR DEATH OR PROPERTY DAMAGE.

6.2 Staff training: installation and maintenance

All installation and maintenance operations relating to the Autec Radio Remote Control system must be carried out **ONLY** by qualified technicians. Without limitation on the foregoing, such technicians must be trained and qualified with respect to:

- The activity to perform
- Warnings resulting from the risk assessment, concerning the Radio Remote Control installation and/or maintenance
- All applicable Laws, Regulations and Standards, even local, including also safety rules
- Operations and requirements of the Machine on which the Radio Remote Control is to be installed
- Instructions and warnings provided in the Manual and any other documents related to the Radio Remote Control and to the radio remote controlled Machine
- Directions by the Machine Manufacturer and by the Person in charge for safety in the workplace where the system "Machine + Radio Remote Control" is used.

General instructions for installation and maintenance are provided in chapter 6 and in chapter 9 respectively.

Instructions for the different Units are described in the specific Manual's parts related to the Units.

Therefore, please refer to that parts of the Instruction Manual.

6.3 Classification of commands

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

6.3.1 Command type: analogue, digital or direction command

Commands sent by the Transmitting Unit can either be analogue, digital or direction commands. Analogue commands generate proportional outputs as a function of the position of the corresponding actuator.

Digital commands switch the status of their corresponding output, according to the position of the related actuator. This status can either be on or off.

Direction commands are digital commands paired with analogue commands, and are used to enable the movement in a specific direction.

6.3.2 Name of commands

All commands activated by the Transmitting Unit are identified with abbreviations such D1, D2, H1, L1, etc.

Those abbreviations are provided in the Technical Data Sheet that must be used when installing the system, and in particular:

- In the drawing of the Transmitting Unit, where commands and their layout are indicated
- In the wiring diagram of the Receiving Unit.

This is helpful to highlight the relation between the commands sent by the Transmitting Unit and those available on the Receiving Unit.

6.4 Warnings for installation

The Installer of the Radio Remote Control must always read, understand and follow all the instructions and warnings contained in this Manual. These instructions and warnings are not exhaustive. In addition, for a correct installation, the Installer must abide and comply with all Laws, Regulations and Standards, even local, including all the technical specifications and standards applicable to the Autec Radio Remote Control to which this Manual applies (by way of example: IEC 60204-1, IEC 60204-32). The Installer of the Radio Remote Control must also observe all the instructions, provisions and technical directions provided by the Machine Manufacturer.



Instructions and warnings provided in this chapter 6 are general. Specific instructions for the installation of the Radio Remote Control are provided in the Installation Manual: please refer to it for this information. The Installer must use and comply with that Installation Manual to complete the tasks for which he is appointed.

6.4.1 General warnings for installation

 WARNING	Always follow the instructions provided in the Technical Data Sheet and respect values given in the technical data to carry out correct installation. The electrical connection of the Receiving Unit must meet the requirements set by clause 9.1 of standard IEC 60204-1 and/or standard IEC 60204-32. ONLY QUALIFIED PERSONNEL MAY INSTALL THE RADIO REMOTE CONTROL. SUCH PERSONNEL MUST HAVE MASTERED THE TECHNICAL KNOWLEDGE REQUIRED TO CARRY OUT THESE PROCEDURES CORRECTLY AND SAFELY AND BE QUALIFIED ACCORDING TO THE APPLICABLE LAWS AND REGULATIONS AND HAVE ALL NECESSARY CERTIFICATIONS. FAILURE TO INSTALL THE AUTEC RADIO REMOTE CONTROL CORRECTLY MAY RESULT IN PERSONAL INJURY OR DEATH, OR PROPERTY DAMAGE.
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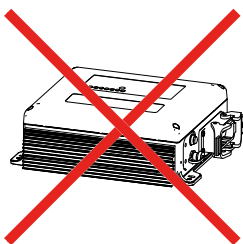
6.4.2 Mounting and fastening the Receiving Unit in the best position

Place the Receiving Unit so as to avoid damage due to incidental contact.

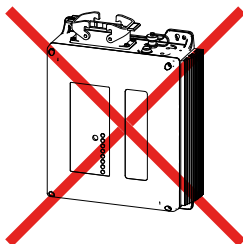
Place the Receiving Unit so that it can be easily reached in case of need.

Place the Receiving Unit so that it can be easily reached, and far from heat sources (e.g. exhaust pipes, heat exchangers, radiators).

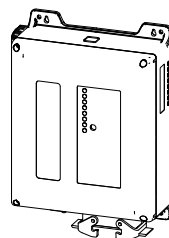
Place the Receiving Unit vertically, with the cable gland or the plug facing down.



NO



NO



YES

Fix the Receiving Unit in four points, using the specific holes in the housing.

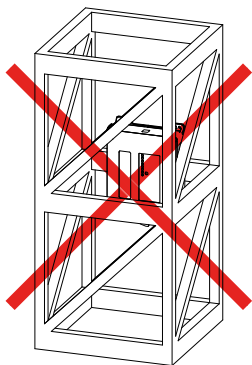
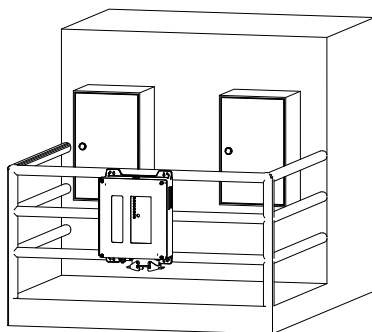
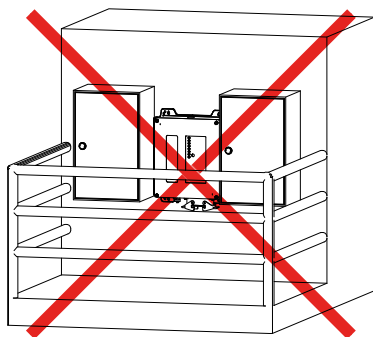
Do not perforate the Receiving Unit in any case.

When installing on Machines that are subject to intense mechanical stress (by way of example: vibrations, rough paths, sudden movements), it is recommended to fix the Receiving Unit to the Machine with the appropriate vibration dampers.

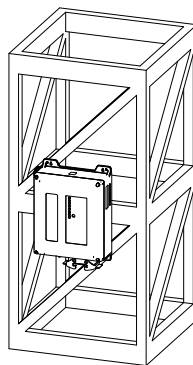
6.4.3 Positioning the antenna

The Receiving Unit may be configured with internal antenna or external antenna (see Technical Data Sheet). If the antenna is external, it cannot be mounted directly on the Receiving Unit's casing, but it must be installed with the antenna cable-extension kit.

If the antenna is inside the Receiving Unit, install the Receiving Unit in a free and easily accessible area of the Machine: protections, panels, parts, surfaces or anything else should not be present, so that shields, structures or materials do not obstruct the radio link. In particular, the Receiving Unit must be placed at least 50 cm far from metal objects in its surroundings and must never be placed inside closed metal containers.

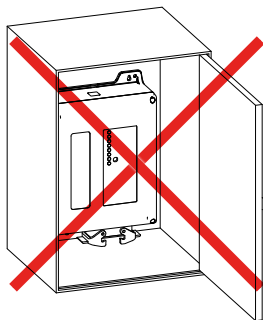
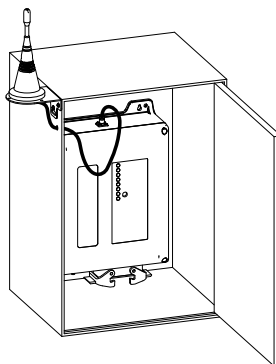


NO



YES

If the antenna is external to the Receiving Unit, install the antenna vertically as far as possible from the Receiving Unit and from other electrical and electronic devices. The antenna must not be placed inside closed metal containers. Install the antenna at least 50 cm far from metal objects in the surroundings, in a free area of the Machine; protections, panels, parts, surfaces or anything else should not be present, so that shields, structures or materials do not obstruct the radio link.

**NO****YES**

6.4.4 Wiring

Wiring is understood as the electrical cable connections that can be found:

- Inside the Receiving Unit
- Between the Receiving Unit and the Machine.



ALL ELECTRICAL CONNECTIONS MUST BE PERFORMED AND MADE IN COMPLIANCE WITH THE NATIONAL ELECTRIC CODE AND ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL. IF INSTRUCTIONS PROVIDED BY AUTEC ARE INCONSISTENT WITH SUCH APPLICABLE LAWS, REGULATIONS OR STANDARDS, DO NOT INSTALL THE AUTEC RADIO REMOTE CONTROL WITHOUT CONSULTATION WITH AUTEC. AUTEC IS NOT RESPONSIBLE FOR AND SHALL NOT BE HELD LIABLE FOR ANY MALFUNCTIONS OR ACCIDENTS THAT MAY OCCUR DUE TO ANY IMPROPER INSTALLATION OR INCONSISTENCY BETWEEN ITS INSTRUCTIONS AND SUCH LAWS, REGULATIONS OR STANDARDS.

FAILURE TO INSTALL THE AUTEC RADIO REMOTE CONTROL CORRECTLY MAY RESULT IN PERSONAL INJURY OR DEATH, OR PROPERTY DAMAGE.

The power supply of the Receiving Unit must have a switch that allows power supply disconnection during installation, wiring and/or maintenance operations. Connect the Receiving Unit immediately downstream of the Machine main switch or of the electrical panel main switch (see the Installation Manual).

The Receiving Unit's power supply must be protected against short circuit by means of an external device (by way of example: fuse, thermal magnetic circuit breaker). Such device must be able to interrupt the maximum fault current (including the short circuit current) allowed in the circuit.

Make sure that the Receiving Unit's power supply is protected against short circuits and is supplied either by a battery or by a power supply unit with safety isolating transformer. Limits provided in the technical data must be observed (see chapter "Technical Data" in "Part D" of the Instruction Manual).

Never connect power supply positive or negative pole to the outputs. Such connections damage the outputs and make ineffective the UMFS and STOP safety functions. In this case the Machine may be in a dangerous condition, out of the User's control.



The Installer must avoid that a power supply positive or negative pole is connected to the outputs.

If a Receiving Unit's output is connected to a direct current inductive load (by way of example: solenoid valves, relays), it is advisable to connect a freewheeling diode in anti-parallel with the driven load, to reduce the effects of demagnetizing currents.

A 12 or 24 V $\overline{--}$ voltage must always be applied to the power supply input of solid state outputs.

Common wire related to diodes of solid state outputs must be connected with the common of all the Machine's freewheeling diodes. If that is not possible, connect it to the Receiving Unit's power supply negative.

Pay special attention to the currents flowing in the STOP and SAFETY outputs: they shall not exceed the maximum permitted values (see rated current of STOP and SAFETY outputs in chapter "Technical Data" in "Part D" of the Instruction Manual) .

Wiring of STOP outputs is crucial to define the safety level for the STOP function (see the Installation Manual).

Wiring of SAFETY outputs is crucial to define the safety level for the UMFS protection function (see the Installation Manual).

Single-insulation wiring cables shall be placed inside the Receiving Unit, in such a way that they do not jeopardize the insulation amongst the circuits.

The Installer is in any case responsible for carrying out wiring in such a way as to ensure the safety level required according to the risk analysis; in particular, the connection of power supply's positive or negative pole to the STOP outputs must be avoided.

In compliance with article 9.2.7.4 of IEC Standard 60204-1 and of article 9.2.7.5 of IEC 60204-32, as far as "Take & Release" or "Multi Units" Radio Remote Controls are concerned, one or more signals (lamps or sirens) shall be installed; dedicated outputs on the Receiving Unit shall be used for that purpose. Such signalling devices indicate which Transmitting Unit is controlling the Receiving Unit.

 WARNING	In a Radio Remote Control with several Receiving Units, wiring is fundamental for the "Machine+Radio Remote Control" system to work correctly and safely. In some cases, wiring can even be the only means to implement risk reduction measures. Wiring shall therefore be made in such a way as to ensure the required safety level and the correct operation, also taking into account if the Receiving Units are installed on a single Machine or on several Machines. It is up to the Installer to carry out and/or check that the wiring enables the function required by all the Machines as a whole. Since the "Take & Release", "Multi Units" and "Multi Receiver" Radio Remote Controls are made of several Transmitting Units and/or several Receiving Units, the Installer must carefully assess the risks generated by the presence of multiple Units, and adopt the necessary risk reduction measures.
---	--

6.4.5 At the end of installation

 WARNING	Make sure that during installation the protection measures on the Radio Remote Control and/or in the Machine have not been made ineffective by improper installation works. Look up in the Technical Data Sheet and check that the frequency band set in the Radio Remote Control is permitted in the country of use. Correctly close the Receiving Unit as indicated in "Part D" of the Instruction Manual.
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6.4.6 Testing

	The Installer must check and fill in the Technical Data Sheet in all its parts, adding the date in which the radio remote controlled Machine has been put into service, their stamp and signature.
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After installing and wiring the Receiving Unit, test the Machine controlled by the Radio Remote Control and verify that the operations carried out correspond exactly to the commands sent, including in particular but not limited to the functionality of the STOP command.

Make sure that the SAFETY outputs (of UMFS function) only activate after the Radio Remote Control has started, and when at least one movement command is sent to the Machine. Also make sure that the SAFETY outputs disable when all the movement commands are released. The UMFS safety function may be not available for the ARX and CRX receivers only (see chapter "description" in "Part D" of the Instruction Manual).

In case of malfunction, disable the system "Machine+Radio Remote Control" until the problem has been completely solved and the installation and functionality is confirmed to be correct..

7 Safety

7.1 Risk assessment for radio remote controlled Machines

The Manufacturer of the Machine on which the Radio Remote Control is to be installed shall make a full and proper risk assessment to determine whether the use and installation of the Autec Radio Remote Control is appropriate for the safe and effective operation of the Machine by a Radio Remote Control in the facility and for the purposes intended, also taking into account the reasonably foreseeable misuse, so that the installation, maintenance and operation of the Autec Radio Remote Control and all of its components are done solely and completely in accordance with this Manual, and with all local applicable laws, safety rules and standards (all of the foregoing referred to herein as "Laws, Regulations and Standards").

When carrying out the risk assessment to determine whether the Radio Remote Control may be installed on a Machine, the Manufacturer and/or Installer of the Radio Remote Control must comply with all Laws, Regulations and Standards, even local, regarding safety of the Machine and/or the installation, as well as the following warnings:

- Some Machines cannot be operated with a Radio Remote Control, such as set forth in paragraph 6.1).
- The radio link between the Units might be interrupted (see paragraph 4.1).
- All warnings regarding the installation, use and maintenance provided by Autec (see chapters 6, 8 and 9) must be considered.
- The "Take & Release" Radio Remote Control consists of several Transmitting Units.
- The "Multi Units" Radio Remote Control consists of several Transmitting Units and several Receiving Units.
- The "Multi Receiver" Radio Remote Control consists of several Receiving Units.
- There is a delay between the release of a command in the Transmitting Unit and the deactivation of the corresponding output in the Receiving Unit (see paragraph 7.2).
- There is a delay between the activation of a command in the Transmitting Unit and the activation of the corresponding output in the Receiving Unit (see paragraph 7.2).
- Additional protection measures for the actuators may be necessary (see paragraph 7.3).
- It is possible that a command be enabled or disabled due to electrical and/or mechanical failure (see paragraph 7.4).
- The Machine may be subject to stresses that might generate dangerous situations (by way of example: inertia, swinging load...) if, when a movement is performed, a joystick is released very fast, or the stop function is enabled.



WARNING

If modifying the choice of Receiving Units to work with entails a modification in the Machine operating mode, you need to stop the Machine first. The Machine Manufacturer and/or Installer is responsible for the following:

- Taking this aspect into consideration in the risk assessment.
- Adopting the necessary measures to stop the Machine whenever it changes its operating mode. Upon request, Autec can set the Radio Remote Control to activate the automatic stop function (ATS) when a change of selection of the working Receiving Units occurs (see paragraph "Meaning of commands" in "Part C" of the Instruction Manual).
- Informing the User about how to check the selected operating mode before using the Machine.

7.2 Delay in command response time



WARNING

Under normal conditions, the delay between the activation/deactivation of a command in the Transmitting Unit and the activation/deactivation of the corresponding output in the Receiving Unit requires the "Command response time" indicated in the Technical Data (see paragraph 4.5). With poor radio link (by way of example: EM interference, exceeded working range) this delay may protract up to the "Cut in time of the automatic stop function (ATS)" indicated in the Technical Data (see paragraph 4.5). For the SAFETY outputs only, a further delay of at least 1 second adds to that time.

The Manufacturer, the Installer, the Owner, the User and/or the Maintenance Technician, must make sure that these delays never lead to a dangerous situation in the specific uses.

7.3 Inadvertent activation of commands

The User shall operate with the Transmitting Unit in a correct manner, in accordance with the instructions for use and maintenance.



If the Unit is used correctly, accidental contact with the User's body parts or with external bodies does not cause inadvertent activation of the actuators.

Any action carried out on the Transmitting Unit, or on part of it, aiming at activating the actuators in a different way from the one indicated in the instructions for use constitutes an improper use of the Radio Remote Control.

The User must use the Radio Remote Control in conformity with the instruction for use and maintenance and with all the Laws, the Regulations and the Standards, even local, in force in the country where the Radio Remote Control and the Machine are used; moreover, the User must always have the control of the Radio Remote Control and remain in the usage position, as described in the relevant specific part concerning the Transmitting Unit.

The Machine Manufacturer and/or the Installer must assess and adopt possible additional protection measures for the actuators (by way of example: commands requiring two-hand operation, "dead-man" function) if particular environments, equipment and working modes could generate risk situations, and if Laws, Regulations and Standards in force in the country where the Radio Remote Control and the Machine are used should require it.

7.4 Activation and/or deactivation of commands due to failure



It is possible that a command be activated or deactivated due to electrical and/or mechanical failure, that may affect the Radio Remote Control and/or the Machine.

The Machine Manufacturer and/or the Installer of the Radio Remote Control must carefully evaluate the possible consequences of such malfunction. If required by the risk assessment, implement protection measures to prevent, reduce and report potential hazardous situations.



For further information see paragraph 4.4.

If a command is activated and/or deactivated due to failure, carry out the following procedure:

1. Press the GSS or EMS pushbutton to bring the Machine to a safe state.
2. Disable the Radio Remote Control and stop using the system "Machine+Radio Remote Control" until the problem has been solved by implementing the necessary technical operations.

7.5 Latching functions



Latching functions possibly available on the Radio Remote Control cannot be used for Machine's hazardous functions because they are never safety functions.

These latching functions are available on the Radio Remote Control only upon request by the Machine Manufacturer and/or Installer, who has/have the responsibility to check if they are appropriate for a safe use of the Machine.

8 Instructions for the User

The chapter "Instructions for the User" in "Parts C" of the Instruction Manual contains the warnings and instructions for the use that add to those provided in this chapter. Therefore, please refer to that part of the Manual.

FAILURE TO READ, UNDERSTAND AND FOLLOW ALL INSTRUCTIONS AND WARNINGS CONTAINED IN ALL PARTS OF THIS MANUAL FOR THE AUTEC RADIO REMOTE CONTROL MAY RESULT IN PERSONAL INJURY OR DEATH, OR PROPERTY DAMAGE.

8.1 Staff training: use and working conditions

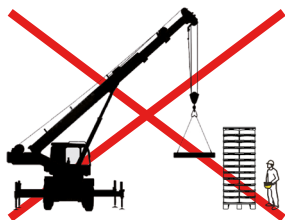
To ensure the correct use of a Radio Remote Control, the following must always be observed:

- Instructions and warnings provided in the Manual and any other documents related to the Radio Remote Control and to the radio remote controlled Machine
- All current provisions on safety at work and on work accident prevention
- All applicable Laws, Regulations and Standards, even local.

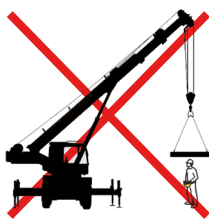


When the Radio Remote Control is installed on Machines on board vehicles, switch off the Receiving Unit while the vehicle is travelling.

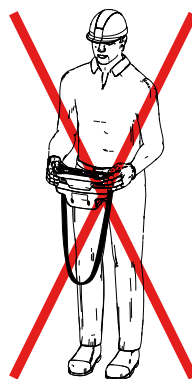
Some drawings illustrating an incorrect use of a Radio Remote Control are provided here, by way of example and by no way of limitation. Those images do not cover all possible dangerous situations or incorrect use of a Radio Remote Control that must be considered and avoided by the Machine Manufacturer and the User.



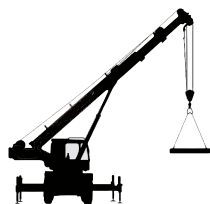
NO



NO



NO



YES



YES



YES

8.2 Warnings for the User

The User must:

- Observe and comply with all instructions and warnings provided by the Machine Manufacturer.
- Observe and comply with all instructions and warnings provided by the Installer.
- Observe and comply with all instructions and warnings provided by the Person responsible for the Machine commissioning or making the Machine available for work.
- Observe and comply with all instructions and warnings provided in the Radio Remote Control Manual.
- Observe and comply with all applicable Laws, Regulations and Standards, even local.
- Operate the Autec Radio Remote Control only in accordance with this Manual and all of its Parts, and with all Autec warnings and instructions, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only in accordance with the Machine Manufacturer's instructions and warnings, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only when he is in a safe condition and can perfectly see the whole Machine's working area.
- Immediately inform his supervisors and/or the people in charge for the working place and/or for the Machine about any possible failure, damage, loosening, anomalous wear, detachment and/or any other anomaly that may cause malfunction to the Radio Remote Control and/or to the Machine, or that may cause damage to people and/or property.
- Keep the Transmitting Unit secure and out of reach of unauthorized and unqualified Personnel.

The User must not:

- Use the radio remote control without receiving prior complete training by qualified personnel, and if he does not completely master the instructions and warnings regarding the radio remote control usage
- Use the Radio Remote Control if he suspects malfunction on the Radio Remote Control, the Machine, or one of their components
- Use the Radio Remote Control if the warnings and labels on the Machine or the symbols on the Radio Remote Control cannot be read, are worn or dirty
- Allow the use of the Radio Remote Control to unauthorised and/or untrained Personnel.



ADDITIONAL WARNINGS AND INSTRUCTIONS THAT ARE CONTAINED IN THE OTHER PARTS OF THIS MANUAL MUST BE FOLLOWED.



If the Radio Remote Control User wears electronic devices (by way of example: pacemaker, implantable cardiac defibrillator, hearing aids), the Transmitting Unit must be kept at least 15 cm away from those devices when in use.

8.2.1 Before starting to work

Before starting the Radio Remote Control to work, the User must be positioned in a place that allows him:

- The direct control of the radio remote controlled Machine and of the load movements, and, at the same time
- A safe position with regard to the operation of the radio remote controlled Machine and/or the load movement, and with regard to other operations and/or activities and/or processes taking place in the working place.

In addition to the above, when the cable control is used, the User must position themselves in a place that prevents them from stumbling on the cable control's cable and from being trapped/blocked by it.

Always check that the mechanical operation of the GSS or EMS pushbutton is correct. If it is impossible or difficult to press this pushbutton, do not use the Radio Remote Control.



Never start up or use the Transmitting Unit if the working conditions pose the risk of losing balance or of tripping.

Start up the Transmitting Unit only to use it according to its intended use or for operational needs (by way of example: maintenance, checks): improper use may cause dangerous situations.

Never start up or use the Transmitting Unit in closed spaces, with no or poor visibility, or outside the Radio Remote Control working range: in such cases it is still possible to establish a radio link between the Transmitting Unit and the Receiving Unit, thus causing the risk that unwanted commands be carried out by the radio remote controlled Machine.

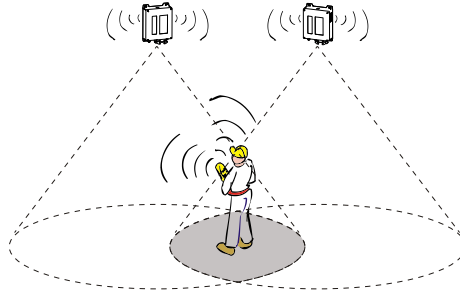
Get familiar with the relation between the actuators and the Machine's movements (this is indicated in the attached Technical Data Sheet) and learn symbols on the Transmitting Unit's panel (the used symbols are defined by the Machine Manufacturer and/or by the Installer depending on the effectiveness and the functions the Machine requires).

8.2.2 During normal operation

 WARNING	Pay attention to the entire work area. Immediately press the GSS or EMS pushbutton when a hazardous situation occurs. Visually and directly follow all movements of the Machine and its load and remain inside the Radio Remote Control working range. Pay particular attention to warnings and visual and acoustic signals, and take all measurements and steps to avoid that movements of the remote controlled Machine may lead to hazardous situations for people and/or property. In case of malfunction, switch off the Transmitting Unit and disconnect power supply from the Receiving Unit: this way, the system "Machine+Radio Remote Control" is disabled; it must not be used until the problem has been solved by implementing the necessary technical operations. Pay attention to low battery signals: all dangerous operations (by way of example: hanging load) must be concluded before the battery is completely flat. Use the Transmitting Unit with the complements provided with the Radio Remote Control (by way of example: pouch, waist belt, shoulder harness) to avoid that it accidentally falls, or that actuators come into contact with external bodies, or that the Unit is used improperly. When "Multi Units" or "Take & Release" Radio Remote Controls are used, by releasing a Machine the User gives an explicit consent to the other Users, thus enabling them to take control of the Machine itself. Therefore, when a User releases a Machine or part of it, they must pay highest attention to possible Machine's movements, as it is no more under their control.
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As far as "Multi Units" or "Multi Receiver" Radio Remote Controls are concerned, when two or more Machines are controlled simultaneously, always position yourself within the working range of all the corresponding Receiving Units and make sure you are controlling them.



8.2.3 After using the Radio Remote Control



Switch off the Transmitting Unit when not using the remote control to control the Machine, or when work is otherwise interrupted, even for short periods. Do not leave a load hanging or the Machine in dangerous conditions (even when charging the Unit or changing the battery).

Never leave the Transmitting Unit unguarded in order to prevent unauthorised or non supervised use.

If the Transmitting Unit has a "Key ID 0-1", always store it in a safe place each time it is removed. If this key is lost, the Radio Remote Control cannot work, since the Transmitting Unit needs the address stored in the key to work with its Receiving Unit.

FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

8.3 Operational use

The use of Radio Remote Controls is strictly limited to properly trained Personnel. All instructions for correct use are given in "Part C" of the Manual (related to the Transmitting Unit).

	When the Radio Remote Control is installed on Machines on board vehicles, switch off the Receiving Unit while the vehicle is travelling.
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Environmental working conditions are given in the following table.

	Temperature	Relative Humidity	Air pressure
Transmitting Unit usage	from -25 to +55°C (from -13 to +130°F)	from 5 to 95%	from 70 to 106kPa
Receiving Unit usage	from -25 to +70°C (from -13 to +158°F)	from 5 to 95%	from 70 to 106kPa

In the previous table:

- Temperature of the Transmitting Unit refers to Class 5K4H of the standard EN 50178.
- Temperature, relative humidity and air pressure during of the Receiving Unit refer to Class 5K2 of standard EN 50178.
- The Receiving Unit can work at 70°C (185°F) only if the sum of currents corresponding to the loads simultaneously activated by digital and analogue outputs does not exceed 10A.

9 Maintenance

9.1 Radio Remote Control maintenance - general directions

The Maintenance Technician must:

- Observe and comply with all instructions and warnings provided by the Machine Manufacturer.
- Observe and comply with all instructions and warnings provided by the Installer.
- Observe and comply with all instructions and warnings provided by the Person responsible for the Machine commissioning or making the Machine available for work.
- Observe and comply with all instructions and warnings provided in the Radio Remote Control Manual.
- Observe and comply with all applicable Laws, Regulations and Standards, even local.
- Operate the Autec Radio Remote Control only in accordance with this Manual and all of its Parts, and with all Autec warnings and instructions, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only in accordance with the Machine Manufacturer's instructions and warnings, and with applicable Laws, Regulations and Standards, even local.
- Operate the Machine operated by or through the Autec Radio Remote Control only when he is in a safe condition and can perfectly see the whole Machine's working area.
- Immediately inform his supervisors and/or the people in charge for the working place and/or for the Machine about any possible failure, damage, loosening, anomalous wear, detachment and/or any other anomaly that may cause malfunction to the Radio Remote Control and/or to the Machine, or that may cause damage to people and/or property.
- Keep the Transmitting Unit secure and out of reach of unauthorized and unqualified Personnel.



ADDITIONAL WARNINGS AND INSTRUCTIONS THAT ARE CONTAINED IN THE OTHER PARTS OF THIS MANUAL MUST BE FOLLOWED.

All fine-tuning, checking and maintenance actions carried out on the Radio Remote Control shall be verified and recorded by the Person in charge of carrying out maintenance on the Machine.

 WARNING	Before any maintenance operation, disconnect the Receiving Unit from the power supply, using the devices and instructions provided by the Machine Manufacturer and by the Installer. After each maintenance operation, always make sure that all commands sent by the Transmitting Unit activate only the corresponding expected operations. In case of malfunction, switch off the Transmitting Unit and disconnect power supply from the Receiving Unit: this way, the system "Machine+Radio Remote Control" is disabled; it must not be used until the problem has been solved by implementing the necessary technical operations. After each maintenance operation, if a Unit has been opened, close it correctly, in order to maintain the protection degree from dust, contaminants and water: - Make sure that the gasket is intact and correctly seated. - Check that the housing parts correctly fit so that they overlap. - Tighten the screws.
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9.2 Routine maintenance

Routine maintenance consists of operations needed to preserve the Radio Remote Control normal usage conditions, thus implementing fine-tuning, checks, planned replacement actions that necessarily arise from the normal use of the product.

All given instructions must be followed correctly at each commissioning, that is:

- Whenever the Radio Remote Control and/or the Machine is installed or assembled
- Whenever the Machine location/placing changes
- After special maintenance.

Routine maintenance carried out as described in this Manual is fundamental for using the Radio Remote Control safely.

Special applications may require more specific routine maintenance actions to be carried out at different periods (by way of example: if the working environment is particularly dirty, or temperature is very high or very low (see limits provided in paragraph 8.3), or in case of heavy application, or if it is used very frequently, some maintenance actions may be required more frequently depending on the instructions provided by the Machine Manufacturer and/or by the Installer).

 WARNING	When carrying out maintenance on the Machine, always disconnect power supply from the Receiving Unit. In the event of necessary maintenance on the Machine (by way of example: welding), disconnect all the electrical connections of the Receiving Unit.
--	---

9.2.1 Daily routine maintenance

Before starting to work:

- Make sure that the symbols on panel on the Transmitting Unit and on the Receiving Unit are clearly visible and replace the panel if necessary.
- Make sure that the plates on the Transmitting Unit and on the Receiving Unit are readable and intact (refer to the specific part in the Manual concerning the Transmitting Unit and the Receiving Unit).
- Make sure that the mechanical operation of the GSS or EMS pushbutton is correct.
- Make sure that the Transmitting Unit and the Receiving Unit are undamaged in all their parts.
- Check the Receiving Unit status and remove any material from it (dust, remnants, object, etc.): never use solvents or flammable/corrosive materials for cleaning, and do not use high-pressure water cleaners or steam cleaners.
- Check that the wiring of the Receiving Unit is intact and connected.

During normal operation:

- Do not damage the Transmitting Unit (avoid falls, bumps, contact with water, fluids or liquids, etc.).
- Pay attention not to let materials (by way of example: concrete, sand, grease, dirt, lime, dust, etc.) deposit on the Transmitting Unit because they can compromise its use and safety.

After using the Radio Remote Control:

- Clean the Transmitting Unit: never use solvents or flammable/corrosive materials and do not use water jet cleaners, or air pressure or steam pressure cleaners.
- Store the Transmitting Unit in clean and dry places.

9.2.2 Three-month routine maintenance

At least every three months:

- Check the correct correspondence between the commands that are sent and the manoeuvres that are carried out by the Machine.
- Make sure that the SAFETY outputs (of UMFS function) only activate after the Radio Remote Control has started, and when at least one movement command is sent to the Machine. Also make sure that the SAFETY outputs disable when all the movement commands are released. This is safety critical maintenance: it is necessary to keep a record (date, signature, comments) showing that this check has been regularly carried out. Keep the record together with other installation documents.
- Make sure that all the outputs in the Receiving Unit operate correctly, and check that each output activates when the corresponding operation is enabled and deactivates when the operation is disabled.
- Start up the Radio Remote Control and check in the Receiving Unit that the STOP outputs activate. Then press the GSS or the EMS pushbutton and check in the Receiving Unit that the STOP outputs deactivate.



Before testing the STOP outputs, make sure that no dangerous situations may arise due to the activation of the STOP outputs in the Receiving Unit.

9.3 Special maintenance

Special maintenance consists of repairs needed due to Radio Remote Control failure, damage or malfunction, and their aim is to restore the original usage and working conditions.

 WARNING	Special maintenance may be performed only by qualified Maintenance Technicians, that is to say, by skilled technical Personnel with specific competence and knowledge of Autec Radio Remote Control, belonging to the Autec's service network, or explicitly authorised by Autec. When performing special maintenance operations, the Instruction Manual for the use and maintenance of the Autec Radio Remote Control must be available and undamaged in all its parts. Only original Autec spare parts and materials provided by Autec shall be used for the replacement of parts and/or for special maintenance operations.
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When seeking assistance or replacement parts from Autec or its authorized distributors or service centres, the following must be provided:

- Radio Remote Control serial number
- Purchase date
- Description of the problem found
- Address and telephone number of the place where the Radio Remote Control is being used (with the name of the Person to contact)
- Local Radio Remote Control supplier.

9.4 Additional maintenance operations in environments with corrosive agents

If the Radio Remote Control is used in environments where corrosive agents are present (by way of example: sea water, salt fog, salt...), apply grease to the electrical connections to protect them.

	Only use electrically non-conductive, polyalphaolefin and silicate-based grease for electrical contacts. Do not use polyether-, polyoilester- and polyphenyl ether-based grease.
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One possible grease to be used is Electric Grease CN 4070 (Macon Research).
Check and replace grease as frequently as shown in the following table:

Type of connection	Grease check frequency	Re-greasing frequency
Connector for external antenna	every 4-6 months	If dirt and impurities are found
Receiving Unit's plug	every 4-6 months	If dirt and impurities are found
Connectors for cable control of Transmitting Unit and of Receiving Unit	1 month	If dirt and impurities are found, and once a year anyway
Contacts of Transmitting Unit, battery charger and battery	weekly	If dirt and impurities are found, and once every three months anyway
Key ID 0-1	weekly	If dirt and impurities are found, and once every three months anyway

	It is recommended to disconnect the cable control cable and to store it in a protected place when it is not in use.
--	--

When carrying out this kind of maintenance operations, follow these recommendations:

- Make sure that the surface of electrical connections is covered with a layer of grease and add it if necessary.
- Contact the support service of the Machine Manufacturer if evident oxidation is detected.

9.5 Preventive replacement of the Radio Remote Control's electromechanical components

9.5.1 Actuators (joysticks, pushbuttons and switches)

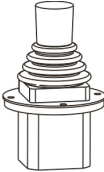
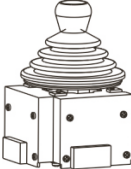
As provided by the Manufacturer of each actuator in the corresponding technical specification, each actuator of the Transmitting Unit can be used for a defined “maximum number of operations”, as shown in the table below. The “maximum number of operations” must not be considered as a warranty period.

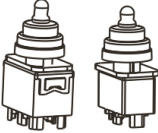


WARNING

The Maintenance Technician must replace joysticks, pushbuttons and selectors on the Transmitting Unit before they reach the maximum number of operations, even though they are still working.

This replacement prevents possible failure and dangerous situations (by way of example: inadvertent activation and/or deactivation of the command activated by the actuator).

Actuator	Max. operations	Actuator	Max. operations
	5x10 ⁶		5x10 ⁶
	5x10 ⁶		10 ⁶
	3x10 ⁶		6x10 ⁶

Actuator	Max. operations
	5×10^4
	10^5

Actuator	Max. operations
	10^6

10 Troubleshooting

If the Radio Remote Control does not work correctly, carry out the following preliminary checks:

1. Move all other Transmitting Units in the working area away from the Autec Transmitting Unit in use to avoid possible radio interference.
2. Bring the Autec Transmitting Unit closer to the matching Autec Receiving Unit to avoid possible radio interference, always positioning yourself in a safe place and with full view of the Machine, its operational area and the load, if any. In a "Take & Release" or "Multi Units" Radio Remote Control, if you cannot take control of the Receiving Unit, even from a short distance, make sure that it is not already controlled by another Transmitting Unit.
3. Determine if the problem lies with the Radio Remote Control or with the Machine: to that purpose, you need to try to control the Machine with another control station (if any), different from the Radio Remote Control. If the problem persists after this attempt, you need to fix the Machine: follow the instructions provided by the Machine Manufacturer. Otherwise, the problem lies with the Autec Radio Remote Control, so you need to carry out further checks (see paragraph 10.3).

10.1 Radio Remote Controls with "Data Feedback" function

It is still possible that the Transmitting Unit sends commands to control the Machine even if the Data Feedback function does not work properly (refer to "Data Feedback function" in "Part C" of the Manual), or if there is no information and/or signals coming from it.



When the display or the LED array does not work, please contact the support service of the Machine Manufacturer, even if none of the problems indicated in paragraph 10.3 has been detected.

10.2 Radio Remote Controls with cable control

Possibly use the wire control to check if radio interference occurs.

On the contrary, if you want to check that the wire control works properly:

1. Connect the cable to the Transmitting Unit and to the Receiving Unit.
2. Check that the movement carried out by the Machine correspond to the commands sent by the Transmitting Unit.

10.3 Solutions in case of malfunction

Look up in "Part C" and/or in "Part D" of the Manual to identify the Radio Remote Control malfunction signalled by light signals on the Units.

If the problem persists after attempting the suggested solution, contact the support service of the Machine Manufacturer.

11 Decommissioning and disposal

11.1 Decommissioning

If you want to remove the Receiving Unit from the Machine:

- Make sure that the Receiving Unit and the Machine are not powered.
- Remove all electrical connections between the Receiving Unit and the Machine.

If the Radio Remote Control needs to be stored after it has been decommissioned, follow the directions provided in chapter 5.

If the Radio Remote Control needs to be dismantled after it has been decommissioned, follow the directions provided in paragraph 11.2.

11.2 Disposal

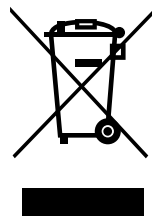
When disposing of a Radio Remote Control, its components must be managed as separate waste. When disposing of a Radio Remote Control, please comply with the provisions and/or the regulations in force in the country where it is used.

11.2.1 Waste disposal in the European Union: Directive 2012/19/EU

In the European Union, all electrical and electronic equipment (EEE) such as radio remote controls must be correctly managed to reduce their environmental impact and protect human health. Therefore, different collection and recycling systems are set out for such equipment.

The symbol consisting of a crossed-out wheeled bin indicates that such EEE must be disposed of in conformity with Directive 2012/19/EU.

The symbol with a crossed-out bin provided on the radio remote control indicates that this product must be separately collected from other waste at the end of its life cycle. Separate collection of end-of-life radio remote controls is set up and managed by the manufacturer.



Users who want to dispose of radio remote controls need to contact their manufacturer to receive directions about the separate collection system chosen for end-of-life products.

As an alternative, it is possible to bring any equipment with no dimension more than 25 cm to retail shops with sales areas relating to EEE of at least 400 m², free of charge and with no obligation to buy any new equivalent equipment.

Proper separate collection of end-of-life Radio remote controls and their subsequent recycling, treatment and environmentally sound disposal contributes to preventing possible negative impacts on the environment and on human health, and fosters the reuse and/or recycling of materials radio remote controls are made of.



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info@autecsafety.com - www.autecsafety.com

MADE IN ITALY

Instruction Manual for the use and the maintenance of the Radio Remote Control

Original instructions

**Part B: Conformity and frequencies
(2400-2483.5MHz)**

DYNAMIC SERIES

WARNING

THIS PART OF THE MANUAL CONSISTS OF Part B - Information, instructions and warnings for the Conformity and frequencies (2400-2483.5MHz). The Manual consists of Part A – General, Part B – Conformity and Frequencies, Part C – Transmitting Unit, Part D – Receiving Unit, Part E – Battery and Battery Charger, plus the Technical Data Sheet.

THIS MANUAL, INCLUDING ALL PARTS THEREOF, AND ALL INSTRUCTIONS CONTAINED HEREIN, MUST BE READ CAREFULLY AND UNDERSTOOD BEFORE INSTALLING, USING, MAINTAINING OR REPAIRING THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO READ AND COMPLY WITH ALL APPLICABLE WARNINGS AND INSTRUCTIONS OR ANY ONE OF THE LIMITATIONS NOTED IN THIS MANUAL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH, AND/OR PROPERTY DAMAGE.

THE AUTEC RADIO REMOTE CONTROL IS NOT A STANDALONE PRODUCT AND IS INTENDED ONLY AS A COMPONENT ON A MACHINE:

- ON WHICH AND WHERE THE USE OF A RADIO REMOTE CONTROL IS APPROPRIATE,
- THAT CAN BE OPERATED SAFELY AND IN ACCORDANCE WITH ALL APPLICABLE LAWS, REGULATIONS AND STANDARDS BY SUCH REMOTE CONTROL.

ACCORDINGLY, IT IS THE RESPONSIBILITY OF THE MACHINE MANUFACTURER ON WHICH THE AUTEC RADIO REMOTE CONTROL IS INTENDED TO BE INSTALLED, to perform an in-depth and accurate risk assessment to determine if the Autec Radio Remote Control is suitable for operating a Machine in conditions of safety and operational effectiveness, taking into account the conditions of use, the intended uses and the reasonably foreseeable incorrect ones, so that the installation, maintenance and use of the Autec Radio Remote Control, and all its components, are performed only and entirely in compliance with this Manual and in accordance with all local regulations, safety standards and regulations (referred to herein as "Laws, Regulations and Standards").

With reference to the USA market the Laws, Regulations and Standards include all safety rules and regulations of the Occupational Safety & Health Administration (OSHA) (<http://www.osha.gov>), all federal, state and local laws, regulations and building and electrical codes, and all applicable standards, including but not limited to ANSI Standards.

It is also the responsibility of the Manufacturer and of the design professionals of the Machine on which the Autec Radio Remote Control is to be installed and used to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, that the installation, maintenance and operation of the Autec Radio Remote Control and all of its components are done solely and completely in accordance with this Manual, and with all applicable Laws, Regulations and Standards, even local. It is also the responsibility of the Manufacturer of the Machine on which the Autec Radio Remote Control is to be installed and used, and their design professionals, to be certain that the structure, condition, organization and markings of the Machine as installed at the facility is appropriate for and will allow for the safe and reliable use and control of the Machine through the Autec Radio Remote Control interface.

ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO OPERATE OR USE THE AUTEC RADIO REMOTE CONTROL AND THE MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL. ONLY QUALIFIED AND PROPERLY TRAINED PERSONNEL SHOULD BE PERMITTED TO BE IN THE VICINITY OF MACHINE OPERATED BY OR THROUGH THE AUTEC RADIO REMOTE CONTROL.

FAILURE TO PROPERLY INSTALL, OPERATE, MAINTAIN AND SERVICE THE AUTEC RADIO REMOTE CONTROL CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE. Refer to this Manual and each of its Parts for further assistance or contact Autec. Autec is not responsible for and shall not be held liable for any installation of the Autec Radio Remote Control not performed by Autec or for any use of the Autec Radio Remote Control not in complete compliance with, and/or not maintained in complete compliance with, all Autec instructions and warnings and all applicable Laws, Regulations and Standards, even local.

Autec is not responsible for and shall not be held liable for any alteration or modification of the Autec Radio Remote Control, or the use of non-Autec components or products used with or incorporated into the Autec Radio Remote Control.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR DESIGN PROFESSIONALS, to be certain that the Autec Radio Remote Control is properly maintained and serviced at all times in compliance with all Autec instructions and warnings, and with all applicable Laws, Regulations and Standards, even local.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that all Users of the Autec Radio Remote Control and that all Persons who are or will be working with or near the Machine operated by or through the Autec Radio Remote Control are fully and properly educated and trained by qualified Personnel in the proper and safe use of the Autec Radio Remote Control and of the Machine, including without limitation complete familiarity with and understanding of Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and that such Users and other Persons do in fact at all times operate or work with the Autec Radio Remote Control safely and ONLY in compliance with Autec instructions and warnings and with all applicable Laws, Regulations and Standards, even local. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

IT IS THE RESPONSIBILITY OF THE OWNER AND FACILITY OPERATOR, AND THEIR OFFICERS, MANAGERS AND SUPERVISORS, to be certain that the areas in which the Machine operated by or through the Autec Radio Remote Control is located and operates are clearly delineated and marked in accordance with all Autec warnings and instructions, and all applicable Laws, Regulations and Standards, even local, and otherwise sufficient to alert and warn ALL PERSONS that the Machine is operated by or through a Radio Remote Control, and prohibiting any unauthorized access thereto. FAILURE TO DO SO CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

FAILURE TO OPERATE THE AUTEC RADIO REMOTE CONTROL SAFELY AND IN COMPLIANCE WITH AUTEC INSTRUCTIONS AND WARNINGS AND WITH APPLICABLE LAWS, REGULATIONS AND STANDARDS, EVEN LOCAL, AND/OR PERMITTING USERS OR OTHER PERSONS NOT PROPERLY TRAINED IN THE SAFE AND PROPER USE OF THE SYSTEM, OR THE MACHINE ON WHICH IT IS INSTALLED, CAN RESULT IN SERIOUS BODILY INJURY OR DEATH AND/OR PROPERTY DAMAGE.

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1 Information on the use of instructions



Before reading this part of the Manual, you must read and understand the general part (Part A) of the Manual provided with the Radio Remote Control.

1.1 Structure of the Instruction Manual

The Manual for the use and maintenance of Autec Radio Remote Controls consists of different parts, that altogether form the Manual; the Manual must be read carefully, understood and applied by the Radio Remote Control's Owner, User and by all those Persons that, for any reasons, may operate with the Radio Remote Control or with the Machine where it is installed. The following table describes the structure of the Instruction Manual for the use and the maintenance of the Radio Remote Control.

Part	Title	Contents
A	General part	- General information regarding the series, - directions for risk assessment of the "Machine+Radio Remote Control" system, - warnings for installation of the Radio Remote Control, - warnings for use and maintenance of the Radio Remote Control, - instructions for correct transportation and storage of Radio Remote Control.
B	Conformity and frequencies	- Operating frequency bands of the Radio Remote Control, - conformity and law references of the Radio Remote Control.
C	Transmitting Unit	Description and instructions concerning the Transmitting Unit, including: - description of operation, - commands, - light signals, - malfunctions, - additional instructions to the general part.
D	Receiving Unit	Description and instructions concerning the Receiving Unit, including: - description of operation, - light signals, - malfunctions, - additional instructions to the general part.
E	Battery and battery charger	Description, warnings and instructions concerning batteries and battery chargers, including: - description of operation, - light signals, - malfunctions, - instructions for the User.

Usage and maintenance instructions are supplemented by the Radio Remote Control's Technical Data Sheet, that:

- Describes the Transmitting Unit's configuration
- Indicates the relation between commands sent by the Transmitting Unit and those available on the Receiving Unit.

Usage and maintenance instruction as a whole are to be considered as an integral part both of the Autec Radio Remote Control and of the Machine, system, device or Machinery system where the Radio Remote Control is installed.

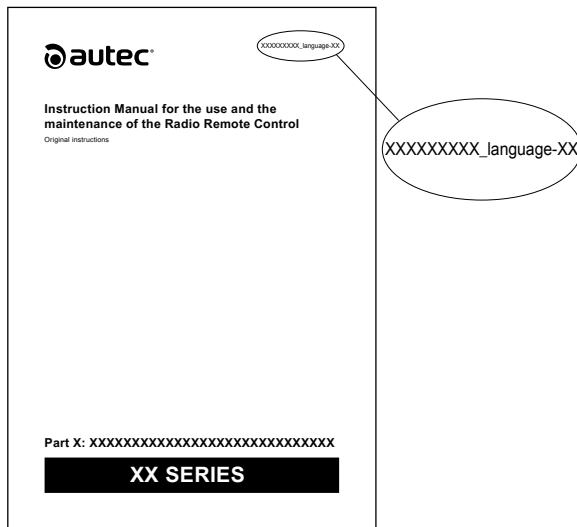
The Manufacturer of the Machine on which the Autec Radio Remote Control is installed, and the Owner and User of the Machine, must make sure that the Instruction Manual and all of its parts are included in the Instruction Manual of the Machine.



The CD attached to each Instruction Manual includes the translations of the Manual.

Act as follows to identify the single Manual parts in the relevant language in the CD:

- Choose the desired language
- Select the single parts of the Manual: refer to the code name provided on the cover of each part.



1.2 Caption and terminology



Contact Autec if any of the instructions, symbols, warnings or images are not clear and understandable.

In this part of the Manual, the terms listed below have the same meaning explained in the corresponding paragraph of the general part (Part A):

- **Unit**
- **Radio Remote Control**
- **Transmitting Unit**
- **Receiving Unit**
- **Radio link**
- **Active stop**
- **Automatic stop**
- **Manual stop**
- **Passive stop**
- **Machine**
- **Manufacturer**
- **Installer**
- **User**
- **Maintenance Technician**
- **Manual or Instruction Manual**
- **Installation manual**
- **Person**
- **Owner**

Functions indicated for the Manufacturer, the Installer, the User and the Maintenance Technician may be performed by a single Person, if he/she has the needed competence and undertakes the resulting responsibilities. Each Person must be aware of the instructions contained in the Manual, depending on the activity they carry out.

For example, if a Manufacturer is also the Installer, and/or Maintenance Technician, he/she must also know and follow the instructions specifically addressed to those Persons. The same applies, for example, if a User is also the Manufacturer and/or the Installer.

1.3 Symbols



This symbol identifies the parts of text in the Manual that must be read with special attention.



This symbol identifies the parts of text in the Manual containing warnings, information and/or instructions that are particularly relevant with regards to safety; failure in understanding them or in complying with them may cause hazards for People and/or property.

1.4 To whom the instructions are addressed

Addressees of instructions are listed in the paragraph with the same title in the general part: please refer to that part.

1.5 Instruction storage

Regulation for the storage of instructions are described in the paragraph with the same title in the general part: please refer to that part.

1.6 Intellectual property

Restrictions connected to intellectual property are described in the paragraph with the same title in the general part: please refer to that part.

2 Brief product presentation

2.1 Series, Radio Remote Control and Unit

Autec Dynamic series' Radio Remote Controls are designed to be used on Machines and provide a command interface to their command and control system, to be used from an appropriate distance and position.

2.2 Conformity with standards

This part of the Manual describes:

- the Dynamic series' Radio Remote Control compliance with the standards, the requirements and conditions of use in each Country and
- the different frequency bands, in which the Radio Remote Control is able to operate.

2.3 Contacts and useful addresses

The Radio Remote Controls are produced by Autec Srl – Via Pomaroli, 65 - 36030 Caldogno (VI) - Italy.

You can find contacts for Autec, its distributors, dealers and authorized service centres on the website www.autecsafety.com.

2.4 Warranty

General warranty conditions are indicated both in the relevant sheet provided together with this documentation, and in the specific page on the website www.autecsafety.com.

2.5 Technical assistance and spare parts

If you need technical services and/or spare parts, please refer to contacts provided in the website www.autecsafety.com.

When applying for technical service to Autec, its distributors, dealers and authorized service centres, the Radio Remote Control's serial number is required; you can find it on the identification plate on the Transmitting Unit and/or on the Receiving Unit.

3 Conformity

Addressees of instructions must:

- Make sure that the Radio Remote Control works within the frequency band permitted in the country where it is used.
- Make sure that the Radio Remote Control works correctly, in compliance with the applicable standards in the relevant country.
- Not modify the Radio Remote Control conformity, by performing modifications or technical operations that change its operation.

During training on or usage of Autec Radio Remote Controls, local provisions imposing the conservation of product conformity with local standards must be respected, as well as specific standards related to safety in the use of Radio Remote Controls or electrical devices, both in the working environment or outside of it.

3.1 EC conformity

According to the regulations in force in the European Union, one of the requirements for a Radio Remote Control to be compliant with the EC conformity is to work at one of the permitted frequencies. If it does not, the Radio Remote Control cannot be considered compliant.

Each Dynamic series Radio Remote Control operating in the 2400-2483.5MHz frequency band complies with the following Directives: RED Directive (2014/53/EU, Annex II), all the relevant provisions of the Machinery Directive (2006/42/EC), RoHS Directive (2011/65/EU) and, when a cable control is available in the cableless control system, the EMC Directive (2014/30/EU) too.

Each Radio Remote Control also complies with the harmonised standards listed in the EU Declaration of Conformity, that are in force and applicable when the Radio Remote Control is put on the market.

The EU Declaration of Conformity of Autec Radio Remote Controls is provided in English as an attachment with the Radio Remote Control. Contact Autec if you need this declaration in one of the other languages of the European Union.



3.2 UK conformity

According to the regulations in force in the United Kingdom, one of the requirements for a Radio Remote Control to be compliant with the UKCA conformity is to work at one of the permitted frequencies. If it does not, the Radio Remote Control cannot be considered compliant.

Each Dynamic series Radio Remote Control operating in the 2400-2483.5MHz frequency band complies with the following Directives: 2017 Radio Equipment Regulations, all the relevant provisions of the 2008 Supply of Machinery (Safety) Regulations, 2012 Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations and, when a cable control is available in the cableless control system, the 2016 Electromagnetic Compatibility Regulations too.

Each Radio Remote Control also complies with the harmonised standards listed in the UK Declaration of Conformity, that are in force and applicable when the Radio Remote Control is put on the market.

Autec Radio Remote Control's UK Declaration of Conformity is provided as an attachment with the Radio Remote Control.

The logo consists of the letters 'UK' stacked above the letters 'CA' in a bold, black, sans-serif font.

3.3 FCC conformity

A Dynamic series' Radio Remote Control working in the 2400-2483.5MHz frequency band, whose Units are listed in the following table, complies with the requirements of the standards FCC (Federal Communication Commission) Part 15.

Unit		FCC ID
FJB Transmitting Unit	Model FJB Type NZ446	Contains FCC ID: QOQWT41u
FJC Transmitting Unit	Model J2F Type NZ346	Contains FCC ID: QOQWT41u
FJM Transmitting Unit	Model FJM Type NZG46	Contains FCC ID: QOQWT41u
FJN Transmitting Unit	Model J2F Type NZ346	Contains FCC ID: QOQWT41u
FJQ Transmitting Unit	Model J2F Type NZ346	Contains FCC ID: QOQWT41u
FJQ Transmitting Unit	Model J2F Type NZ246	Contains FCC ID: QOQWT41u
FJR Transmitting Unit	Model FJR Type NZG46	Contains FCC ID: QOQWT41u
ARM Receiving Unit	Model ARM Type NC046	Contains FCC ID: QOQWT41u
ARS Receiving Unit	Model ARS Type ND046	Contains FCC ID: QOQWT41u
ARX Receiving Unit	Model ARX Type NG046	Contains FCC ID: QOQWT41u
CRS Receiving Unit	Model CRS Type NA046	Contains FCC ID: QOQWT41u
CRX Receiving Unit	Model CRX Type NH046	Contains FCC ID: QOQWT41u



The antenna of the Unit must always be positioned in such a way as to guarantee a distance of at least 5cm with all Persons that may be present in the working area. For the Transmitting Unit this is ensured by using the Unit as described in Part C of the Manual by wearing the intended belts. For the Receiving Unit it is necessary to install the antenna of the Unit in a place that respects the indicated distance.

Read carefully the section of the Manual where the antenna position is described, both in the general part and in the specific part referring to the Receiving Unit.



Autec allows you to use only the dedicated antenna supplied either with the remote control or as original spare part. The use of any other type of antenna is prohibited and will invalidate the warranty.

As required by standard FCC Part 15, the following indication is valid for all the Units listed in the previous table.

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.

3.4 IC conformity

A Dynamic series' Radio Remote Control working in the 2400-2483.5MHz frequency band, whose Units are listed in the following table, complies with the requirements of the standards IC (Industry Canada) RSS-247.

Unit		IC
FJB Transmitting Unit	Model FJB Type NZ446	Contains IC: 5123A-WT41u
FJC Transmitting Unit	Model J2F Type NZ346	Contains IC: 5123A-WT41u
FJM Transmitting Unit	Model FJM Type NZG46	Contains IC: 5123A-WT41u
FJN Transmitting Unit	Model J2F Type NZ346	Contains IC: 5123A-WT41u
FJQ Transmitting Unit	Model J2F Type NZ346	Contains IC: 5123A-WT41u
FJQ Transmitting Unit	Model J2F Type NZ246	Contains IC: 5123A-WT41u
FJR Transmitting Unit	Model FJR Type NZG46	Contains IC: 5123A-WT41u
ARM Receiving Unit	Model ARM Type NC046	Contains IC: 5123A-WT41u
ARS Receiving Unit	Model ARS Type ND046	Contains IC: 5123A-WT41u
ARX Receiving Unit	Model ARX Type NG046	Contains IC: 5123A-WT41u
CRS Receiving Unit	Model CRS Type NA046	Contains IC: 5123A-WT41u
CRX Receiving Unit	Model CRX Type NH046	Contains IC: 5123A-WT41u



The antenna of the Unit must always be positioned in such a way as to guarantee a distance of at least 5cm with all Persons that may be present in the working area. For the Transmitting Unit this is ensured by using the Unit as described in Part C of the Manual by wearing the intended belts. For the Receiving Unit it is necessary to install the antenna of the Unit in a place that respects the indicated distance.

Read carefully the section of the Manual where the antenna position is described, both in the general part and in the specific part referring to the Receiving Unit.



Autec allows you to use only the dedicated antenna supplied either with the remote control or as original spare part. The use of any other type of antenna is prohibited and will invalidate the warranty.

As required by the document "RSS-Gen — General Requirements and Information for the Certification of Radio Apparatus", the following indication is valid for all the Units listed in the previous table.

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

- (1) This device may not cause interference; and
- (2) This device must accept any interference, including interference that may cause undesired operation of the device.

3.5 GITEKI (MIC) conformity

Each Dynamic series- Radio Remote Control working in the 2400-2483.5MHz frequency band, whose Units are listed in the following table, complies with the requirements of Article 38-24 Paragraph 1 of the Japanese Radio Law.

Unit		Certification number
FJB Transmitting Unit	Model FJB Type NZ446	R 209-J00451
FJC Transmitting Unit	Model J2F Type NZ346	R 209-J00451
FJM Transmitting Unit	Model FJM Type NZG46	R 209-J00451
FJN Transmitting Unit	Model J2F Type NZ346	R 209-J00451
FJQ Transmitting Unit	Model J2F Type NZ346	R 209-J00451
FJQ Transmitting Unit	Model J2F Type NZ246	R 209-J00451
FJR Transmitting Unit	Model FJR Type NZG46	R 209-J00451
CRS Receiving Unit	Model CRS Type NA046	R 209-J00295
CRX Receiving Unit	Model CRX Type NH046	R 209-J00296

3.6 KCC conformity

A Dynamic series' Radio Remote Control working in the 2400-2483.5MHz frequency band, whose Units are listed in the following table, is certified according to clause 2, article 58-2 of the Republic of Korea Radio Waves Act.

Unit		Certification number
FJM Transmitting Unit	Model FJM Type NZG46	R-RMM-auT-FJM
ARX Receiving Unit	Model ARX Type NG046	R-RMM-auT-ARX
CRS Receiving Unit	Model CRS Type NA046	R-RMM-auT-CRS
CRX Receiving Unit	Model CRX Type NH046	R-RMM-auT-CRX

3.7 SRRC conformity

Each Dynamic series- Radio Remote Control working in the 2400-2483.5MHz frequency band, whose Units are listed in the following table, complies with the Chinese SRRC (State Radio Regulatory Commission).

Unit		CMIIT ID
FJB Transmitting Unit	Model FJB	2019DJ8883
FJC Transmitting Unit	Model J2F	2019DJ9554
FJM Transmitting Unit	Model FJM	2019DJ9553
FJN Transmitting Unit	Model J2F	2019DJ9554
FJQ Transmitting Unit	Model J2F	2019DJ9554
FJR Transmitting Unit	Model FJR	2019DJ9546
ARM Receiving Unit	Model ARM	2019DJ8882
ARX Receiving Unit	Model ARX	2019DJ8884
CRS Receiving Unit	Model CRS	2019DJ9545
CRX Receiving Unit	Model CRX	2019DJ9544

3.8 Bluetooth end product listing

Dynamic series' Radio Remote Controls working in the frequency band 2400-2483.5MHz are included in the "End product listing" available in the BTSIG consortium website (www.bluetooth.com):

- Declaration ID D036835
- Referenced Qualified Design ID(s): 88818

4 Frequencies

Dynamic series' Radio Remote Controls can work in the 2400-2483.5MHz frequency band.

	The Radio Remote Controls' working frequency is defined by market-specific laws and standards. In order for the system "Machine+Radio Remote Control" to be compliant and therefore to be used, these laws and standards must be respected: if they are not, the Radio Remote Control cannot and must not be used. Autec cannot be held responsible if the Radio Remote Control is set with frequencies that are forbidden in the country of use.
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4.1 Frequency band 2400-2483.5MHz

4.1.1 Frequencies

The radio link between the Units of Autec Dynamic series' Radio Remote Controls is established at one of the frequencies permitted by the European standards in force when the system is put on the market.

Radio interface standard	Bluetooth 2.1
Frequency band	2400-2483.5
RF power	60mW (class 1)
Frequencies used	Up to 83 in FHSS
Channel spacing	1MHz

The Units communicate with one another in dynamic mode, that is:

- They use a working frequency in the 2400-2483.5MHz band
- They check that the frequency is free before using it
- They continuously change the working frequency in order to guarantee the radio link even in the presence of interference.

4.1.2 CE marking: countries of usage

Dynamic series' Radio Remote Controls working in the frequency band 2400-2483.5MHz and that are CE marked can be used within the EU (European Union) and the EFTA (European Free Trade Association).

Check the presence of the CE marking on the technical data plate of the Units.

4.1.3 FCC approval: countries of usage

Dynamic series' Radio Remote Controls working in the frequency band 2400-2483.5MHz and that are FCC approved can be used in the US and Australian markets.

Check the presence of the FCC approval on the technical data plate of the Units.

4.1.4 IC approval: countries of usage

Dynamic series' Radio Remote Controls working in the frequency band 2400-2483.5MHz and that are IC approved can be used in the Canadian market.

Check the presence of the IC approval on the technical data plate of the Units.

4.1.5 KCC marking: countries of usage

Dynamic series' Radio remote controls working in the 2400-2483.5MHz frequency band and KCC marked can be used in the market of the Republic of Korea.

Check the presence of the KCC marking on the technical data plate of the Units.

4.1.6 GITEKI (MIC) marking: countries of usage

Dynamic series' Radio remote controls working in the 2400-2483.5MHz frequency band and MIC marked can be used in the Japanese market.

Check the presence of the MIC marking on the technical data plate of the Units.

4.1.7 SRRC approval: countries of usage

Dynamic series' Radio remote controls working in the 2400-2483.5MHz frequency band and SRRC approved can be used in the Chinese market.

Check for the CMIIT ID in the Unit's technical data plate.



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