

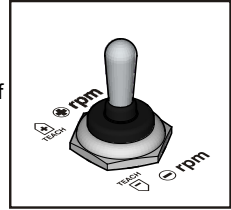
8.6 Command meaning

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.

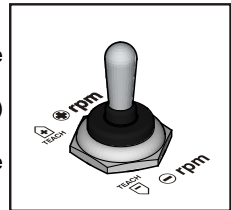


Symbol	Meaning
 rpm	This symbol identifies the command that increases the number of revolutions of a Machine's engine.
 rpm	This symbol identifies the command that decreases the number of revolutions of a Machine's engine.

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).



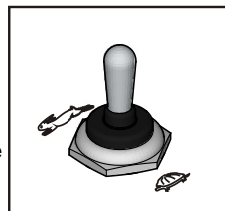
Symbol	Meaning
 TEACH	This symbol identifies the TEACH+ command.
 TEACH	This symbol identifies the TEACH- command.

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.

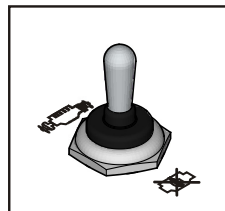
The levels and the speed increase and decrease are chosen by the Machine Manufacturer.



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 Receiving Unit, if it is free.

8.6.6 Command RELEASE

The RELEASE command is present in all the Transmitting Units of a Take & Release Radio Remote Control. The RELEASE command enables to release the Receiving Unit, if it is engaged.



By releasing the Receiving Unit of a Take & Release Radio Remote Control, the User gives an explicit consent to the other User, thus enabling him/her to take control of the Receiving Unit that has just been released.

8.7 Battery



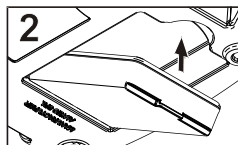
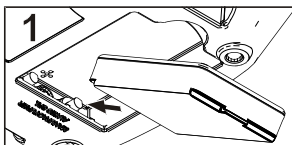
The Dynamic+P series' Transmitting Units can only be powered by Autec rechargeable batteries.

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.

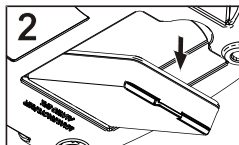
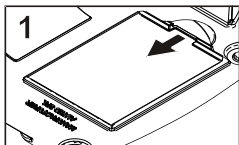


The battery slides easily into place and ensures that the positive (+) and negative (-) poles are correctly connected only if it is inserted with the plate facing its housing, so that the battery's contacts match the Transmitting Unit's contacts.

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 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.

Perform the following procedure to start the Radio Remote 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. 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. In a Take & Release Radio Remote Control, activate the TAKE command and hold it active until the Receiving Unit's seven-segment displays show the following signal: "---1" or "---2".
5. Press the START pushbutton and hold it down until the green LED repeats one of the following sequences: one or two blinks and a pause. If the red LED illuminates, refer to chapter 11.

When the green LED repeats one of the following sequences: one or two blinks and a pause, the Radio Remote Control is active and it can send commands and activate the Machine.

8.8.1 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. If any command is active, the Unit shows which command is active through the LEDs and the display. In this case, to keep this signal active, hold the START pushbutton pressed until the Transmitting Unit automatically switches off (otherwise the signal will be interrupted). 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.

8.9 How to take control of the Receiving Unit in a Take & Release Radio Remote Control

To take control of the Receiving Unit, activate the TAKE command and hold it active until in the Receiving Unit's seven-segment display appears "---1" or "---2".

8.10 How to release the Receiving Unit in a Take & Release Radio Remote Control

To release the Receiving Unit, activate the RELEASE command. Depending on the Transmitting Unit's configuration, this command may be associated with one or two actuators.

If the RELEASE command is associated to one actuator, to release the Receiving Unit you need to activate the actuator and hold it active until in the Receiving Unit's seven-segment display appears "---F".

If the RELEASE command is associated to two actuators, to release the Receiving Unit you need to activate the two actuators simultaneously and hold them active until in the Receiving Unit's seven-segment display appears "---F".



Autec can set the RELEASE command to be activated in a different way than the above mentioned ones, only upon request by either the Machine Manufacturer or the Installer: the User must be properly trained in the matter.

By releasing the Receiving Unit of a Take & Release Radio Remote Control, the User gives an explicit consent to the other Users, thus enabling them to take control of the Receiving Unit just released.

8.11 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.

8.12 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 repeats one or two blinks and a pause. If the red LED illuminates, refer to chapter 11.

When the green LED repeats one of the following sequences: one or two blinks and a pause, the Radio Remote Control is active and it can send commands and activate the Machine.

8.13 Transmitting Unit automatic switch off

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

- When the battery is flat (see paragraph 8.13.1).
- When the Radio Remote Control is not used for a certain time (see paragraph 8.13.2).
- When the transmitting unit is powered and never switched off for twenty-four hours non-stop (see paragraph 8.13.3).

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 repeats one or two blinks and a pause. If the red LED illuminates, refer to chapter 11.

When the green LED repeats one of the following sequences: one or two blinks and a pause, the Radio Remote Control is active and it can send commands and activate the Machine.

8.13.1 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.

8.13.2 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.

8.13.3 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.

8.14 Switching off the Transmitting Unit



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.

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).

8.15 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 of the Radio Remote Control and of the Take & Release Radio Remote Control (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---. 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. In a Take & Release Radio Remote Control, activate the TAKE command and hold it active until the Receiving Unit's seven-segment displays show the following signal: "---1" or "---2".
7. Press the START pushbutton and hold it down until the green LED repeats the sequence: three blinks and a pause. If the red LED illuminates, refer to chapter 11.

When the green LED repeats the sequence: three blinks and a pause, 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:

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.



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.

Autec cannot be held responsible if the serial number of the Transmitting Unit to be replaced has not been marked on BACK-UP 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 PJM 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. Do not expose the Transmitting Unit to strong magnetic fields, as they may affect the correct operation of the Unit (its immunity level is provided in chapter 4).
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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 instructions and warnings provided in the Manual of the cameras
- Observe and comply with all instructions and warnings provided in the Manual of the access point.
- Observe and comply with all instructions and warnings provided in the Manual of the PAU.
- 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, the Receiving Unit and the PAU are whole and work perfectly
- Make sure that the display shows the images filmed by the cameras correctly.
- 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

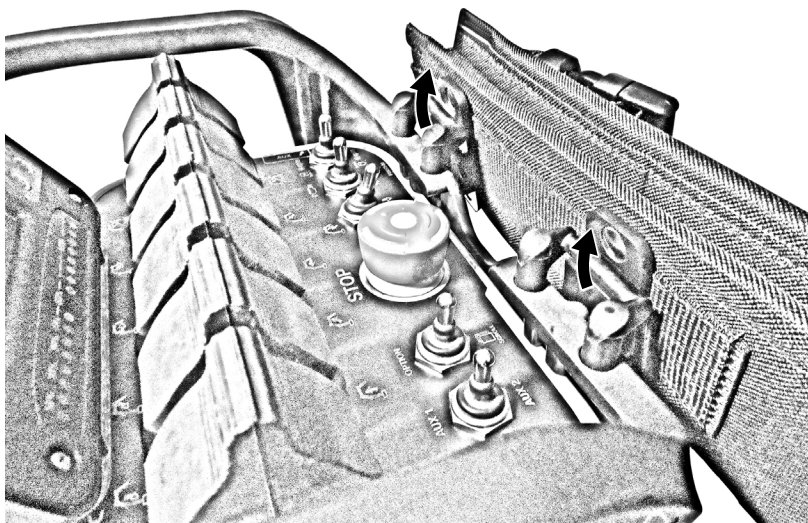
The Unit always comes with a waist belt or a shoulder harness: the User must mount the belt or the harness on the Transmitting Unit and use it as described in paragraph 9.3.1 or 9.3.2.



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

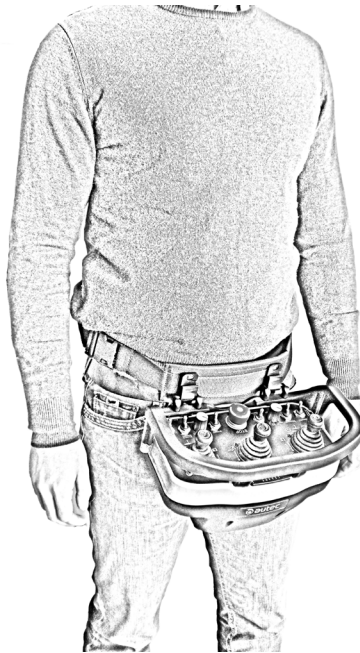
9.3.1 Waist belt

Assembly



Use

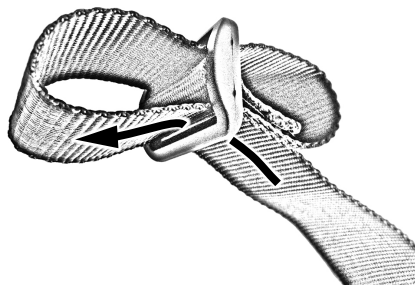
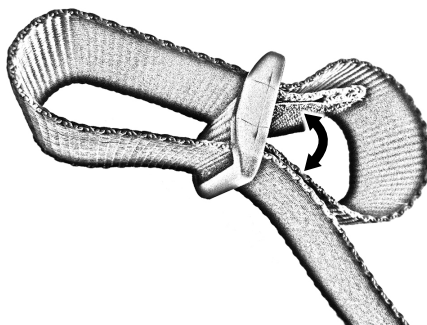
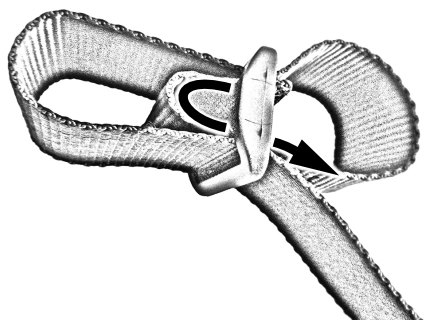
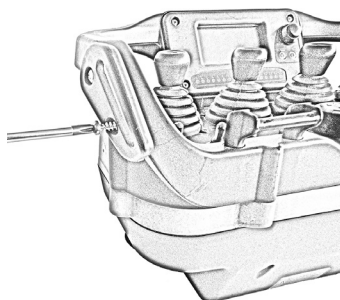
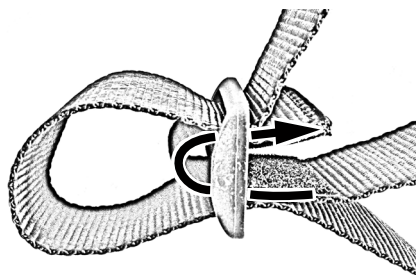
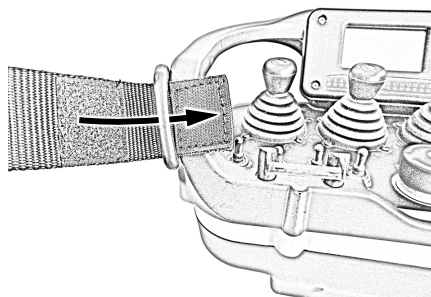
The User must wear the Radio Remote Control with the belt as shown in the photo below, to avoid its fall, loss, loss of control, accidental contact and improper use.



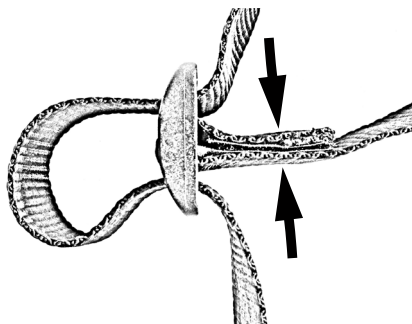
If the Transmitting Unit and the belt are used in a different way from the one described in the above mentioned figure, this constitutes improper use and may lead to damage to the Transmitting Unit, to the User, to people and/or property.

9.3.2 Shoulder harness

Assembly

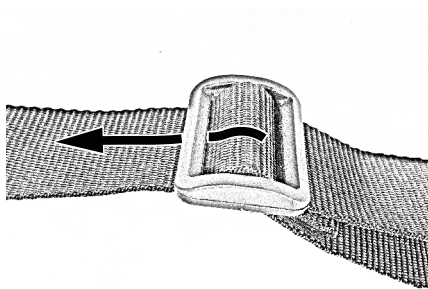
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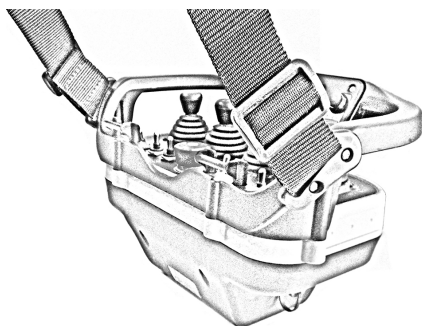


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9

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

11.1 Red LED and green LED

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 repeats one of the following sequences: one or two blinks and a pause The red LED blinks for 3.5 minutes.		
The green LED repeats the sequence: three blinks and a pause. The red LED blinks for 3.5 minutes.	The Transmitting Unit has been on for twenty-four hours.	It is necessary to switch off the Transmitting Unit and start the Radio Remote Control again.
The green LED is off. The red LED emits one very long blink.	The Transmitting Unit does not work correctly.	Contact the support service of the Machine Manufacturer.
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.	The Transmitting Unit does not work correctly.	Contact the support service of the Machine Manufacturer.
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.	The SAFETY command is activated (see Technical Data Sheet).	Bring the actuators to the rest position.

Signals	Possible reasons	Solutions
At Radio Remote Control start up, the green LED is on and the red LED emits one long blink and some short blinks.	At least one of the actuators corresponding to digital commands D2-D20 is activated.	Bring the actuators to the rest position. If necessary, it is possible to identify the activated command looking up the table in paragraph 11.2.
At Radio Remote Control start up, the green LED is on and the red LED emits two long blinks and some short blinks.	At least one of the actuators corresponding to analogue commands A1-A8 is activated.	
At Radio Remote Control start up, the green LED is on and the red LED emits three long blinks and some short blinks.	At least one of the actuators corresponding to direction commands H1-H8 is activated.	
At Radio Remote Control start up, the green LED is on and the red LED emits four long blinks and some short blinks.	At least one of the actuators corresponding to direction commands L1-L8 is activated.	

	Whenever the red LED illuminates, the acoustic signal device activates. At the end of each signal, the Transmitting Unit switches off. To correctly view signals displayed at the Radio Remote Control start up, press the START pushbutton and hold it pressed until the Transmitting Unit switches off.
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11.2 Identifying the activated command

If the green LED is illuminated, at least one of the commands A1-A8, D2-D20, H1-H8 and L1-L8 is activated during the Radio Remote Control start up.

You can identify the activated command by observing the long blinks followed by short blinks emitted by the red LED, as described in the table below.

Green LED	Red LED		Activated command
	Number of long blinks	Number of short blinks	
On	1	2	D2
On	1	3	D3
On	1	4	D4
On	1	5	D5
On	1	6	D6
On	1	7	D7
On	1	8	D8
On	1	9	D9
On	1	10	D10
On	1	11	D11
On	1	12	D12
On	1	13	D13
On	1	14	D14
On	1	15	D15
On	1	16	D16
On	1	17	D17
On	1	18	D18
On	1	19	D19
On	1	20	D20
On	2	1	A1
On	2	2	A2
On	2	3	A3
On	2	4	A4
On	2	5	A5
On	2	6	A6
On	2	7	A7
On	2	8	A8
On	3	1	H1

Green LED	Red LED		Activated command
	Number of long blinks	Number of short blinks	
On	3	2	H2
On	3	3	H3
On	3	4	H4
On	3	5	H5
On	3	6	H6
On	3	7	H7
On	3	8	H8
On	4	1	L1
On	4	2	L2
On	4	3	L3
On	4	4	L4
On	4	5	L5
On	4	6	L6
On	4	7	L7
On	4	8	L8



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

The active command can even be identified through the display, if this feature has been arranged by the Machine Manufacturer and or by the Installer.

Examples

If the red LED emits one long blink and twelve short blinks, the Transmitting Unit detected that command D12 is activated.

If the red LED emits two long blinks and five short blinks, the Transmitting Unit detected that command A5 is activated.

If the red LED emits three long blinks and two short blinks, the Transmitting Unit detected that command H2 is activated.

If the red LED emits four long blinks and one short blink, the Transmitting Unit detected that command L1 is activated.

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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