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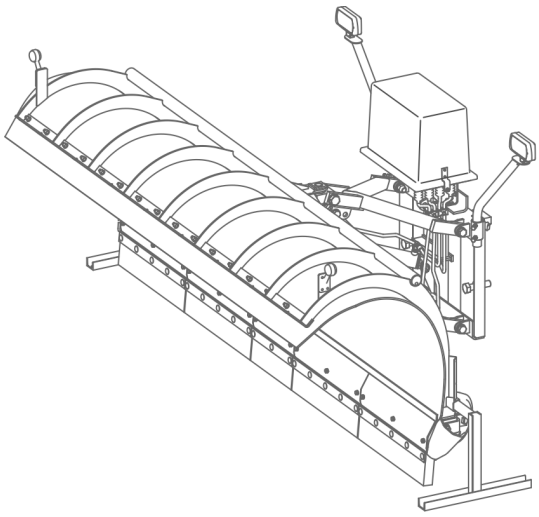
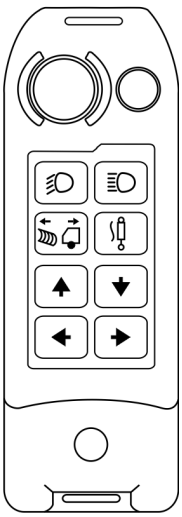
OPERATOR'S MANUAL

R25 RADIO REMOTE CONTROL SYSTEM

ADDITIONAL FITTINGS AND OPTIONAL EQUIPMENT FOR SNOW PLOUGHS PRONAR PU-S25H / PU-S32H / PU-S35H





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INTRODUCTION

This operator's manual supplements PRONAR snow plough operator's manual PU-S25H / PU-S32H / PU-S35H. Information contained herein is current at date of publication. As a result of improvements, some numerical values and illustrations contained in this publication may not correspond to the factual specification of the machine supplied to the user. The manufacturer reserves the right to introduce design changes in machines produced that facilitate operation and improve the quality of their work, without making minor amendments to this Operator's Manual.

This Operator's Manual is an integral part of the machine's documentation. Before using the machine, the user must carefully read this Operator's Manual and observe all recommendations. This guarantees safe operation and ensures malfunction free work of the machine.

This Operator's Manual describes the basic safety rules and operation of R25 radio remote control system. If the information contained in the Operator's Manual needs clarification then the user should refer for assistance to the sale point where the tractor was purchased or to the Manufacturer

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SYMBOLS APPEARING IN THIS OPERATOR'S MANUAL

Information, descriptions of danger and precautions and also recommendations and prohibitions associated with user safety instructions are marked:

and also preceded by the word **"DANGER”.** Failure to observe the instructions may endanger the machine operator's or other person's health or life.

Particularly important information and instructions, the observance of which is essential, are distinguished in the text by the sign:

and also preceded by the word **"ATTENTION".** Failure to observe the instructions may lead to damage to the machine as a result of improper operation, adjustment or use.

In order to focus the user's attention on the need to perform maintenance, the relevant section of the Operator's Manual is marked with the pictogram:

Additional tips and advice for machine operation are marked:

and also preceded by the word **„TIP”**.

DIRECTIONS USED IN THIS OPERATOR'S MANUAL

Left side – side to the left hand of the operator facing in the direction of machine's forward travel.
Right side – side to the right hand of the operator facing in the direction of machine's forward travel.

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1 PROPER USE

R25 control system is used for remote control of PRONAR PU-S25H / PU-S32H / PU-S35H snow ploughs. The transmitter controls the relays and optional analogue control systems located in the receiver.

Using it as intended involves all actions connected with the safe and proper operation and maintenance. Due to the above, the user is obliged to:

- carefully read the OPERATOR'S MANUAL and comply with its recommendations,
- understand the machine's operating principle and how to operate it safely and correctly,
- comply with general safety regulations while working,
- prevent accidents,

The machine may only be used by persons, who:

- are familiar with the contents of this publication and with the contents of the snow plough and carrying vehicle Operator's Manual,
- have been trained in machine operation and safe working conditions,
- have qualifications required for operating this type of devices

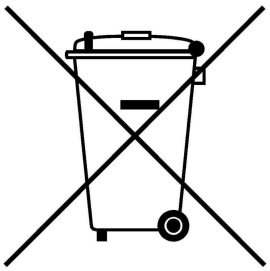
2 OPTIONAL EQUIPMENT

The equipment of the radio remote control system includes:

- Operator's Manual
- remote control transmitter;
- remote control receiver;
- two sets (2 x 3pcs) of R6 (AA) 1 900 mAh batteries
- battery charger
- transmitter mounting bracket

3 ENVIRONMENTAL HAZARDS

The device is in conformity with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) 2002/96/EC.



The product must be disposed of separately and should be delivered to the supplier for recycling. The product must not be disposed of with other waste. The system's transmitter contains rechargeable batteries. Replaced batteries should be disposed only into special containers for used batteries. In order to receive more information, contact local authorities responsible for waste management.

4 BASIC SAFETY RULES

- Before using the device, the user must carefully read this Operator's Manual. When operating the machine, the operator must comply with all the recommendations included in the operator's manual.
- Careless and improper use and operation of the device, and non-compliance with the recommendations given in this Operator's Manual is dangerous to your health.
- If the information contained in the Operator's Manual is difficult to understand, contact a seller, who runs an authorised technical service on behalf of the manufacturer, or contact the manufacturer directly.
- The device must never be used by unauthorised persons, including children, and people under the influence of alcohol, drugs or other abusive substances.
- After finishing operation, the user is obliged to switch off power supply of a controlled device and switch off the transmitter by removing the key and placing it in a place inaccessible for unauthorized persons.
- The transmitter should be stored in the place where its accidental use is impossible.

- Do not use the device during storm or in conditions of strong electrical interferences.
- Regularly inspect condition of the transmitter's batteries and check whether power supply of the receiver is correct.
- Installation and maintenance of the device may be carried out only if main power supply is switched off.
- Protect the transmitter from strong impacts and high pressure.
- When replacing the batteries, replace all 3 batteries with efficient ones. Do not use ordinary batteries because they have corrosive properties.
- Remove batteries from the transmitter if the device shall not be used for a long period of time.
- When using the device, adhere to all regulations concerning the use of radio remote control systems in a given country.

5 EMERGENCY SWITCH OFF OF THE CONTROL SYSTEM

The radio remote control system is equipped with the safeguard in the form of STOP push-button located on the transmitter's housing. When pressed, the push-button automatically switches off the control system. The control system will be also switched off automatically if an emergency condition is detected (e.g. loss of radio communication). In emergency, perform the following actions and notify the distributor's service.

1. Press mushroom STOP push-button (1) in the transmitter (FIG. 1)
2. Switch off power supply of the transmitter using the key. Remove the key from the transmitter.
3. Check the cause of the emergency.

6 GENERAL DESIGN

R25 radio remote control system consists of the transmitter (FIG. 1) and the receiver installed inside the housing of the snow plough control system.

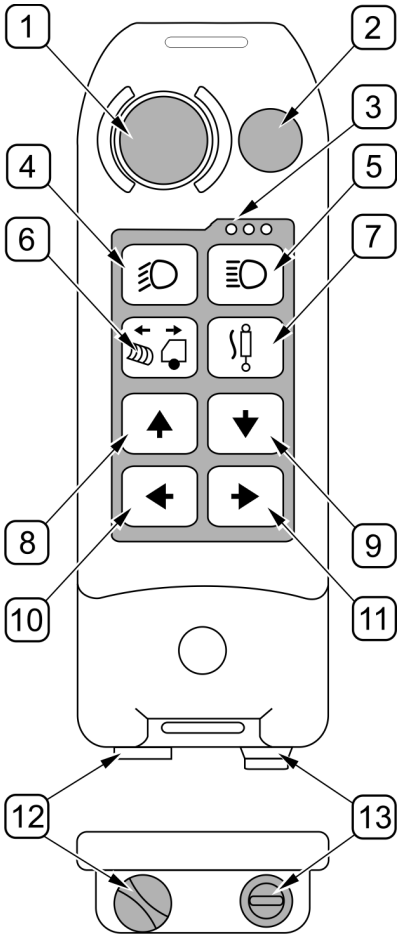


FIG. 1. General design of the radio remote control system's transmitter

(1) - emergency STOP push-button; (2) - transmitter START push-button; (3) - diode indicating condition of batteries and transmitter activation; (4) - dipped beam switch; (5) - high beam switch; (6) - linking function switch; (7) - floating function switch; (8) - snow plough lifting push-button; (9) - snow plough lowering push-button; (10) - push-button turning mouldboard to the left; (11) - push-button turning mouldboard to the right; (12) - battery cover; (13) - key switching on the transmitter's power supply.

7 PREPARING FOR WORK

7.1 SWITCHING THE TRANSMITTER ON

Before switching the transmitter on, make sure that emergency STOP push-button (2) is not pressed (FIG. 2). Otherwise, pull push-button (2). Turn key (1) 90^0 clockwise and press START push-button (3) . Start of the transmitter is indicated by blinking signalling diode (4) (green, red or yellow diode - depending on charging condition of batteries) (see *9.1 INDICATOR OF CHARGING CONDITION OF THE TRANSMITTER'S BATTERIES*)

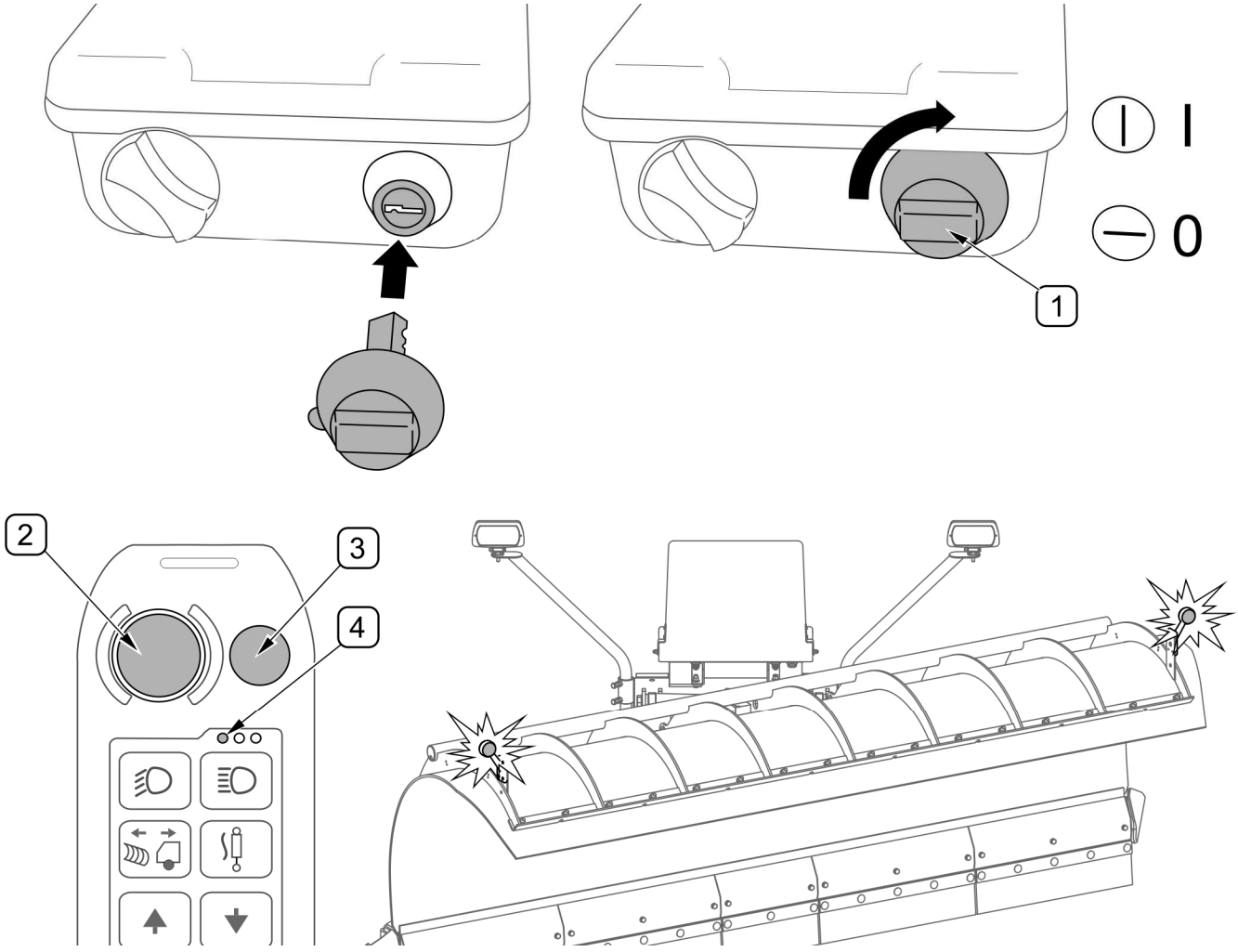


FIG. 2. Switching the transmitter on

(1) - key switching the transmitter's power supply on; (2) - emergency STOP push-button; (3) - transmitter START push-button; (4) - transmitter activation indicating diode; (I) - power supply ON; (0) - power supply OFF

When the transmitter's power supply is on, start the control system by pressing START push-button (3) for the second time; the receiver will automatically find a proper frequency and

activate the control system; green diode (4) will indicate activation of the system. Activation of the control system is indicated by the snow plough's clearance lights.

If emergency STOP push-button (2) is pressed, the transmitter's power supply is switched off or radio communication is lost, the snow plough's clearance lights are switched off. In order to reactivate the control system, press START push-button (3) (FIG. 2).

7.2 SWITCHING THE LIGHTS ON

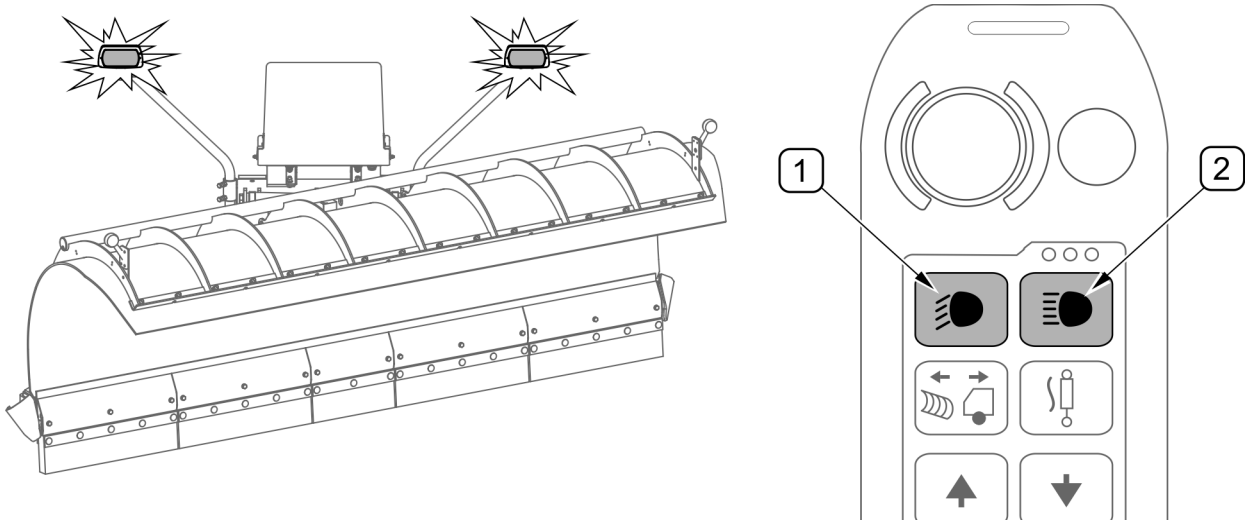


FIG. 3. Switching the lights on

(*1) - dipped beam switch; (2) - high beam switch;*

The snow plough's clearance lights are switched on automatically when the transmitter is switched on. Push-button (1) is used for switching on and off dipped beam. Push-button (2) is used for switching on and off high beam. When high beams are switched on the dipped beams are switched off and vice versa. Dipped beam and high beam are still on even if radio communication is lost or the transmitter is switched off.

7.3 CONTROLLING THE SNOW PLOUGH

Push-button (A) is used for turning the mouldboard to the right, while push-button (B) is used for turning the mouldboard to the left (FIG. 4). The mouldboard is lifted using push-button (C). The snow plough is lowered when push-button (D) is pressed.

In order to position the snow plough mouldboard in an intermediate position, release the push-button in a proper moment.

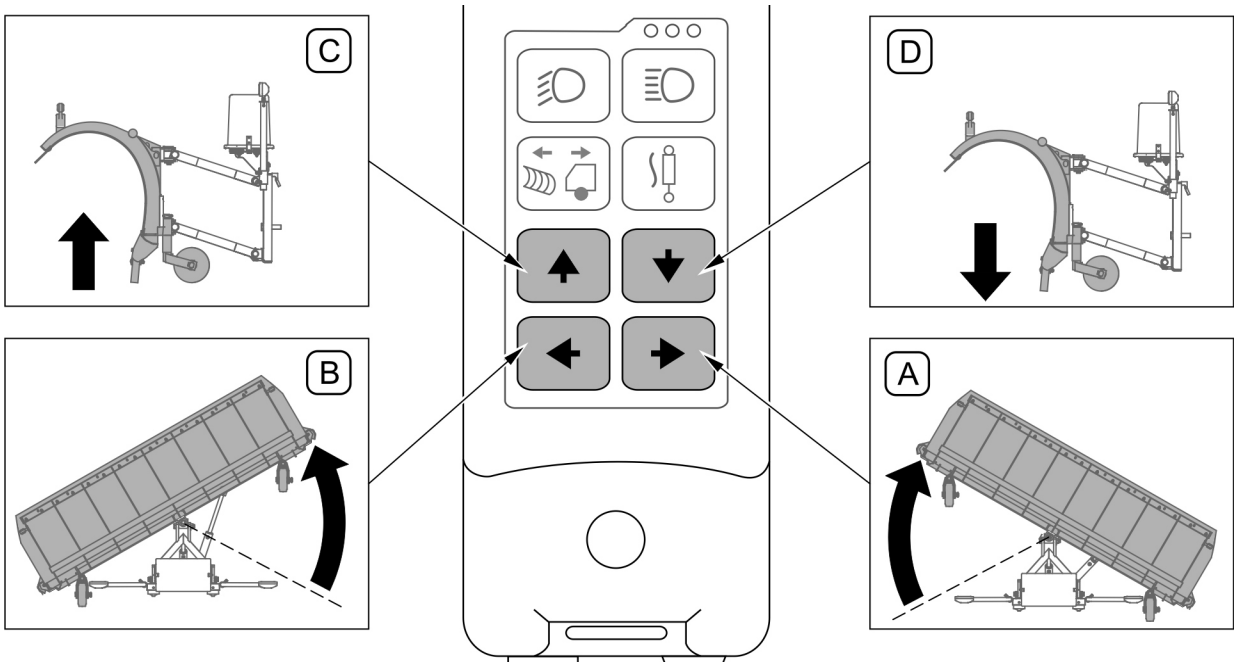


FIG. 4. Changing the snow plough's working position

(A) - turning the mouldboard to the left; (B) - turning the mouldboard to the right; (C) - lifting the snow plough; (D) - lowering the snow plough

7.4 LINKING THE PLOUGH

Linking function is used only during mounting and disconnecting the plough from the carrying vehicle. When push-button (FIGURE 5FIG. 5) is pressed, the linkage is locked at a previously set height. The linking function is switched off when the push-button is pressed again. When the linking function is switched on the floating position is switched off.

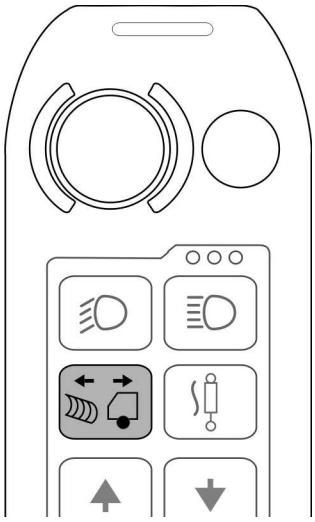


FIG. 5. Linking function switch

7.5 FLOATING FUNCTION

DANGER

After activation of floating function with the plough in lifted position, the plough mouldboard will lower until it is supported on the ground.

Floating function enables ground surface tracking during snow clearing i.e. the plough linkage system can adjust to uneven surface. Floating function protects the plough against damage during operation. The floating function is activated with push-button (FIGURE 6FIG. 6). The floating position is switched off when the plough is moved upwards or downwards or when the linking function is activated (FIG. 5).

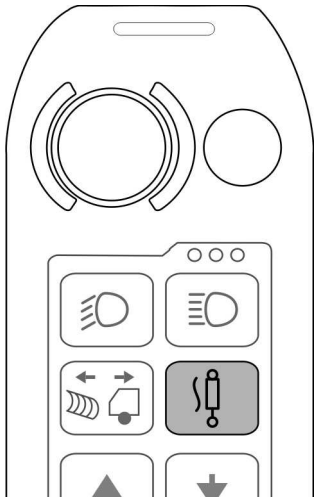


FIG. 6. floating function switch

IMPORTANT!

The use of floating function during snow clearing is recommended in order to protect the plough against damage. Vehicle weight must not be transferred to the plough.

IMPORTANT!

After 30 minutes of idling, the transmitter will switch off automatically in order to save the batteries. The snow plough's clearance lights as well as the floating function and linking function are switched off when the transmitter is switched off.

In order to switch the control system on, press START push-button (3) twice FIG. 2)

8 FINISHING WORK

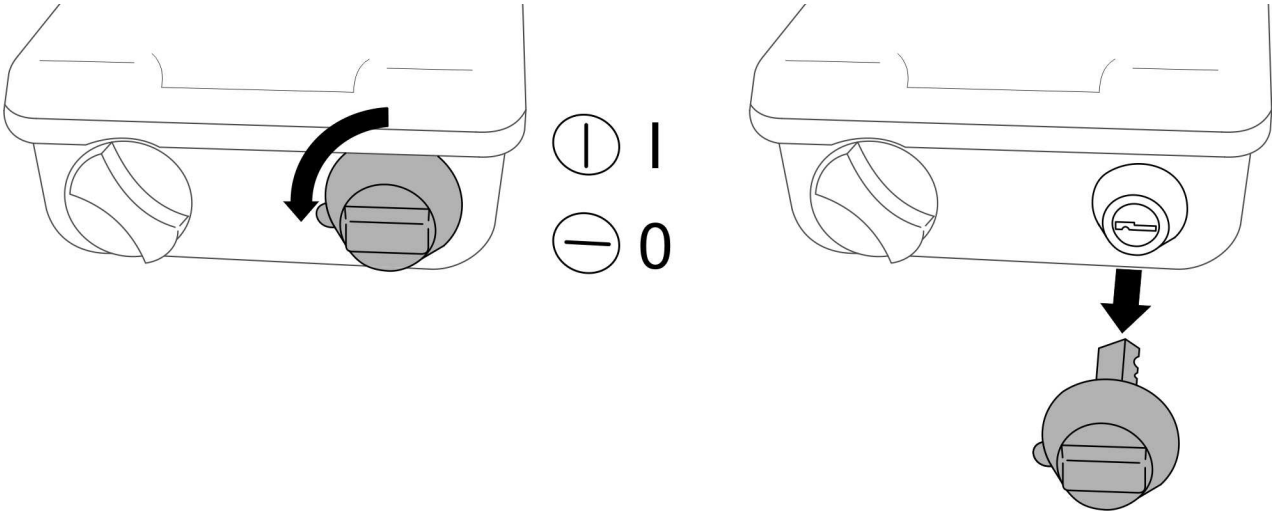


FIG. 7. Switching the transmitter's power supply off

After finishing work, lower the plough, switch off the lights, switch off the linking function and the floating position and switch off the transmitter's power supply by turning the key (FIG. 7) 90^{0} anticlockwise. Ensure that unauthorised persons do not have access to the key. Main power supply is recommended to be disconnected from the plough in order to avoid discharging the vehicle's battery.

9 MAINTENANCE

9.1 INDICATOR OF CHARGING CONDITION OF THE TRANSMITTER'S BATTERIES

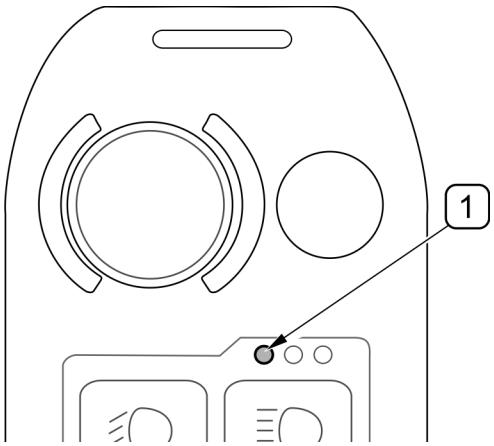


FIG. 8. Indicator of charging condition of the transmitter's batteries

(1) - LEDs of the indicator of the batteries charging condition

The transmitter is equipped with the indicator with LEDs in the following colours indicating battery charging condition: FIG. 8

- **Green** – the transmitter works correctly, batteries charging level is sufficient
- **Yellow** – (green and red simultaneously), batteries are close to discharged condition, replace or charge them.
- **Red** – batteries are discharged; operation of the device can be finished when the red diode is on but the batteries should be replaced or charged as soon as possible.

IMPORTANT!

Do not operate the device longer than for 15 minutes after activation of the red diode indicating batteries charging condition.

9.2 REPLACEMENT OF BATTERIES

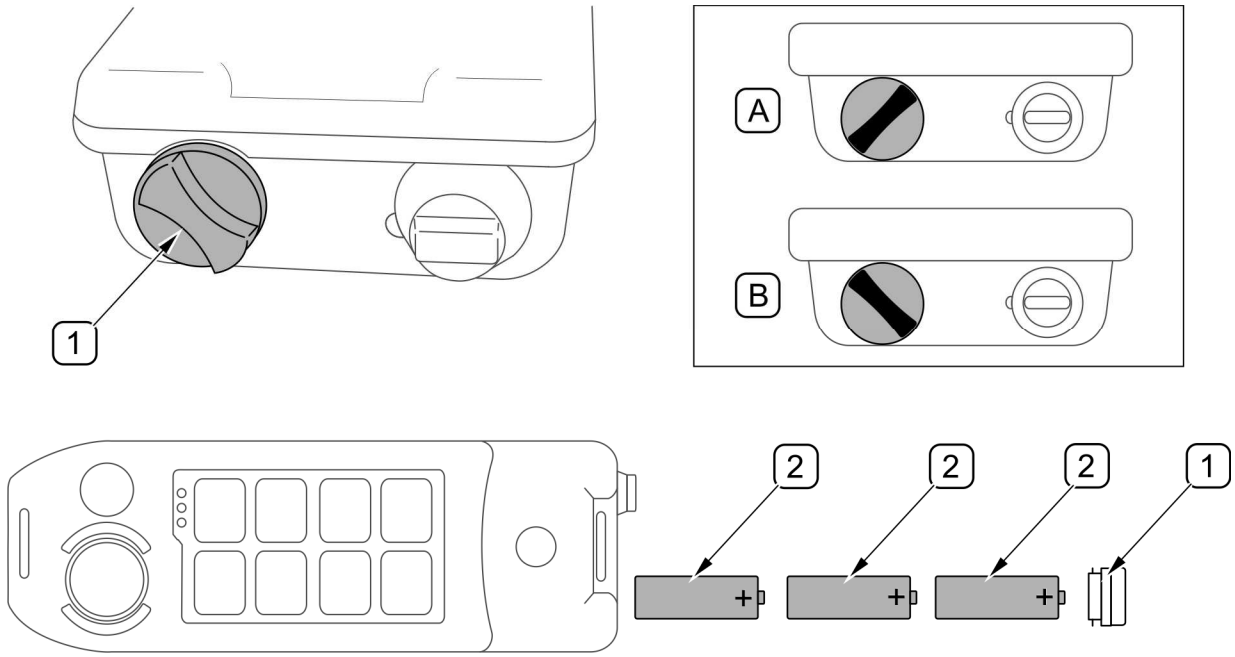


FIG. 9. Replacement of batteries

(1) - battery cover; (2) - batteries; (A) - opened cover; (B) - closed cover

In order to replace discharged batteries (FIGURE 9FIG. 9):

- Switch the transmitter off using the key.
- Turn battery cover (1) 90^0 anticlockwise. The spring will partially push the batteries to the outside.
- Tilt the transmitter and take out all (3 pcs) batteries (2)
- Insert charged batteries; all batteries should be positioned in the same direction according to the drawing on the bottom of the transmitter's housing („+" pole of battery should be directed towards the cover)
- Press the batteries with cover (1) and turn the cover 90^0 clockwise. Because of tightness of the housing, the battery cover rotates relatively tightly in the hole.
- Switch the transmitter on and check operation of the system.

TIP

The remote control transmitter is recommended to be supplied by three R6(AA) Ni-MH (Nickel Metal Hydride) batteries with capacity of 1 900 mAh.

Discharged batteries are recommended to be charged after removal from the transmitter in order to ensure that a charged set of batteries is always available.

9.3 CHARGING OF BATTERIES

The radio remote control system is delivered with a battery charger suitable for 24 V DC supply from cigarette lighter socket.

Because the charger has four independent channels, it can charge 1 – 4 pieces of R6/AA or R03/AAA batteries of any capacity.

On the charger housing there are four LEDs which indicate the battery charging process. The charger can charge Ni-MH (Nickel Metal Hydride) batteries as well as Ni-Cd (Nickel-Cadmium) batteries. Charging process is indicated by activation of a red diode of a suitable channel. When charging process is completed, the LEDs are switched off. For example, it takes about 14 hours to charge 3 batteries of capacity of 2 500 mAh. The charger is equipped with overcharge protection. When battery charging is completed, the charger is automatically switched to trickle charging mode in order to continuously maintain fully-charged condition of the batteries.

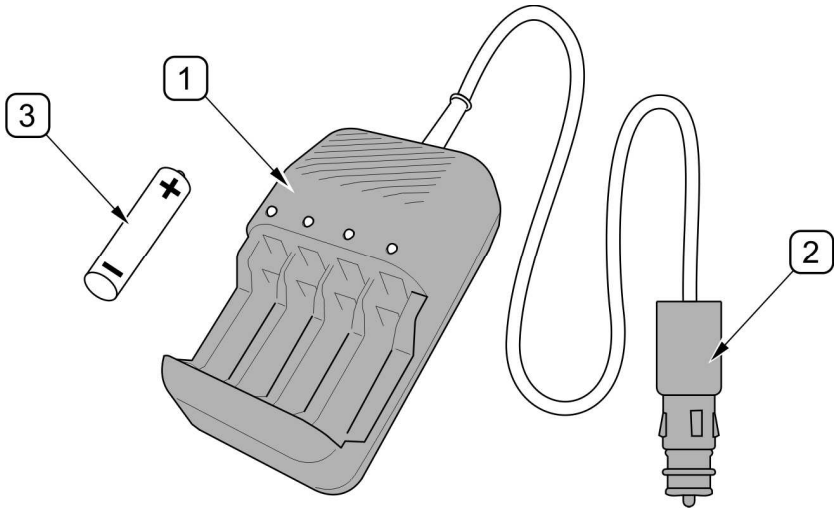


FIG. 10. Battery charger

(1) - battery charger; (2) - cigarette lighter plug; (3) - battery

Technical parameters of battery charger

Power supply of battery charger:	from cigarette lighter socket
Supply voltage:	24VDC
Current consumption:	200 mA (while charging)
Number of batteries:	1 – 4 pcs
Type of batteries:	R6(AA) or R03(AAA), Ni-MH or Ni-Cd
Working cycles:	charging, trickle charging

10 INSPECTION AND MAINTENANCE

R25 radio remote control system does not have to be periodically maintained and inspected by the authorized service. In order to ensure correct operation and safety the system should be inspected daily by the operator. Also, check condition of shields sealing the transmitter's switches and push-buttons.

Within the scope of daily inspection, check operation of all control functions, in particular, operation of emergency STOP switch. If operator has any doubts concerning correctness of operation, clarify the issue before starting work.

Operation of the radio remote control system should be checked daily by the operator.

DANGER

Do NOT use out of order control system.

Remove batteries from the transmitter if the device shall not be used for a long period of time.

NOTES