BASE ENGINEERING INC.

INDUSTRIAL WIRELESS CONTROLS

# INSTALLATION AND OPERATION PROCEDURES

## RANGER II HANDHELD

1 TO 21 FUNCTION RADIO REMOTE CONTROL

Revision 2.2


**THIS MANUAL SHOULD BE KEPT IN THE TRUCK ALL THE TIME**



**Thank you for purchasing this product.**

**BASE Engineering Inc.** strives to continuously improve its products and services. Customer feedback is an important part of this process. If you have suggestions for the improvement of this product, this document or the services we provide, we would like to hear from you. Please contact us at the numbers listed below:

Steve A. Belyea - President

1-800-924-1010

1-506-635-2280

1-506-635-2281 fax

sales@baseng.com

**WARNING: The receiver/relay enclosure unit is NOT approved for use in hazardous locations. Installation must be carried out by a qualified electrician in a non-hazardous zone well removed from any explosive or dangerous gas supply, piping, hoses or valve fittings.**

**FCC Rules and Compliance**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference by one or more of the following methods:

1) Reorient or relocate the receiving antenna.
2) Increase the separation between the equipment and receiver.
3) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
4) Consult the dealer or an experienced radio/TV technician for help.

FCC Part 15.105



**Innovation, Science and Economic Development Canada and Compliance**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1) This device may not cause interference.
2) This device must accept any interference, including interference that may cause undesired operation of the device.

CAN ICES-3(A)/NMB-3(A)

**Health Canada RF Exposure Warning**

This device complies with Health Canada's Safety Code. The installer of this device should ensure that RF radiation is not emitted in excess of Health Canada's requirement. Information can be obtained at

*http://www.hc-sc.gc.ca/ewh-semt/pubs/radiation/radio_guide-lignes_direct/index-eng.php*

# PRODUCT WARNINGS

## PLEASE READ BEFORE OPERATING OR INSTALLING ANY *BASE* SYSTEM

Air solenoids used to control the tank internal valves should be connected to the same air supply for the DOT required MANUAL Emergency Stop switch(es). Following activation of the radio remote Emergency Stop feature, the operator MUST first close the manual internal valve switch prior to resetting the ***BASE*** system. Failure to do this may result in the internal valve(s) automatically and unintentionally reopening with system reset.

Systems wired 'hot' to power when the vehicle is in motion have ALL remote functions still operable. A driver (or passenger) may accidentally activate the remote control, unintentionally causing the Emergency Stop feature to activate and the truck's engine to stop instantly. Systems must be properly interlocked to prevent unintended use.

**AN UNINTENTIONAL ENGINE SHUT DOWN WHILE THE VEHICLE IS IN MOTION MAY RESULT IN SERIOUS INJURY OR DEATH.**

**Never attempt to perform PTO repairs from under chassis while engine is running or while wearing radio remote control device.**

All open valves must be closed prior to system reset to prevent the valve from automatically and unintentionally reopening with Emergency Stop reset.

DO NOT CONNECT CHASSIS GROUND TO EITHER OF THE HOSE REEL MOTOR ELECTRICAL LEADS WHEN USING A REMOTE CONTROL POLARITY REVERSE CIRCUIT. BOTH LEADS MUST BE CONNECTED DIRECTLY TO THE CONTROLLER AS SHOWN IN THE SUPPLIED SYSTEM DRAWINGS.



# PRODUCT WARNINGS CONT'D

NEVER GO UNDER A TRUCK WITH THE ENGINE RUNNING AND NEVER USE THE REMOTE CONTROL DEVICE TO ACTIVATE THE PTO WHEN WORKING ON OR SERVICING THE PTO FROM UNDER THE TRUCK. THE REMOTE CONTROL DEVICE IS INTENDED TO BE USED ONLY WHEN THE OPERATOR IS NOT AT RISK OF BEING INJURED BY THE MACHINE.

**AN UNINTENTIONAL USE OF REMOTE WHILE WORKING ON THE TRUCK MAY RESULT IN SERIOUS INJURY OR DEATH.**

Do not mix different brands of batteries or used and new batteries.

Unauthorized modifications to any ***BASE*** system or any unintended uses of ***BASE*** systems may void the manufacturer's warranty for the product. This may include, but is not limited to, drilling holes in ***BASE*** product enclosures, adding auxiliary or bypass switches, changes to installation procedures, modifications to antennae configurations, or changes to the electronic or mechanical workings of the system.

# TABLE OF CONTENTS





# RANGER II HANDHELD COMPONENTS

Please check that your package includes the following:

- Custom Ranger II transmitter
- Charger cradle for in-cab or office use
- Cable to supply power to charging cradle

# RANGER II HANDHELD OVERVIEW

The Wireless Control System is comprised of two major components; the handheld device (Ranger II) and the receiver unit. The handheld device is the portable unit which the operator keeps by his side and uses to send wireless commands back to the receiver to make the desired operational changes.

The handheld unit is designed to IP66 standards for a robust, custom designed ergonomic unit. It uses large buttons which provide positive tactile feedback when operated. Two (2) LED indicators are used to give the operator confirmation of signal transmission during button presses and also to warn of low batteries. An audible 'beep' alarm will also indicate a low battery condition. The handheld is powered by a rechargeable lithium battery. Each system ordered includes a charging cradle to securely hold the handheld while the vehicle is in motion, and provide necessary charging to the handheld.


The Ranger II handheld can be equipped with different radio technologies depending on your application requirements. Currently, only one radio technology is available: Amplitude Shift Keying (ASK). The operating frequency along with other characteristics of this radio technology is outlined in the following table.

| Radio | Frequency | Advantages |
|---|---|---|
| ASK | 433Mhz | Simple, low cost, excellent battery life, reliable solution. Has built-in ID codes to ensure the receiver only operates with the programmed |



The handheld and receiver are pre-programmed to operate as a paired system unless otherwise requested. Replacement handhelds can be quickly field programmed by following the instructions in the section of this manual entitled **System Pairing/Dedication** (page 11).

The handheld will wake up when any key is pressed and will go back to sleep mode as soon as the button is released.

# BRAKE INTERLOCK ALARM

There is an optional alarm in the charging cradle that will sound when the user drives away with the handheld undocked. To do this, the charging cradle must be interconnected with a brake-line pressure sensor and with the signal from the truck's "Ignition ON/RUN" power connection (please see the wiring diagram in the next page).

When the wiring is accomplished, the cradle will issue an alarm *only* under the following conditions:

- The handheld is undocked from the cradle AND
- The Ignition is on AND
- The brakes are released.

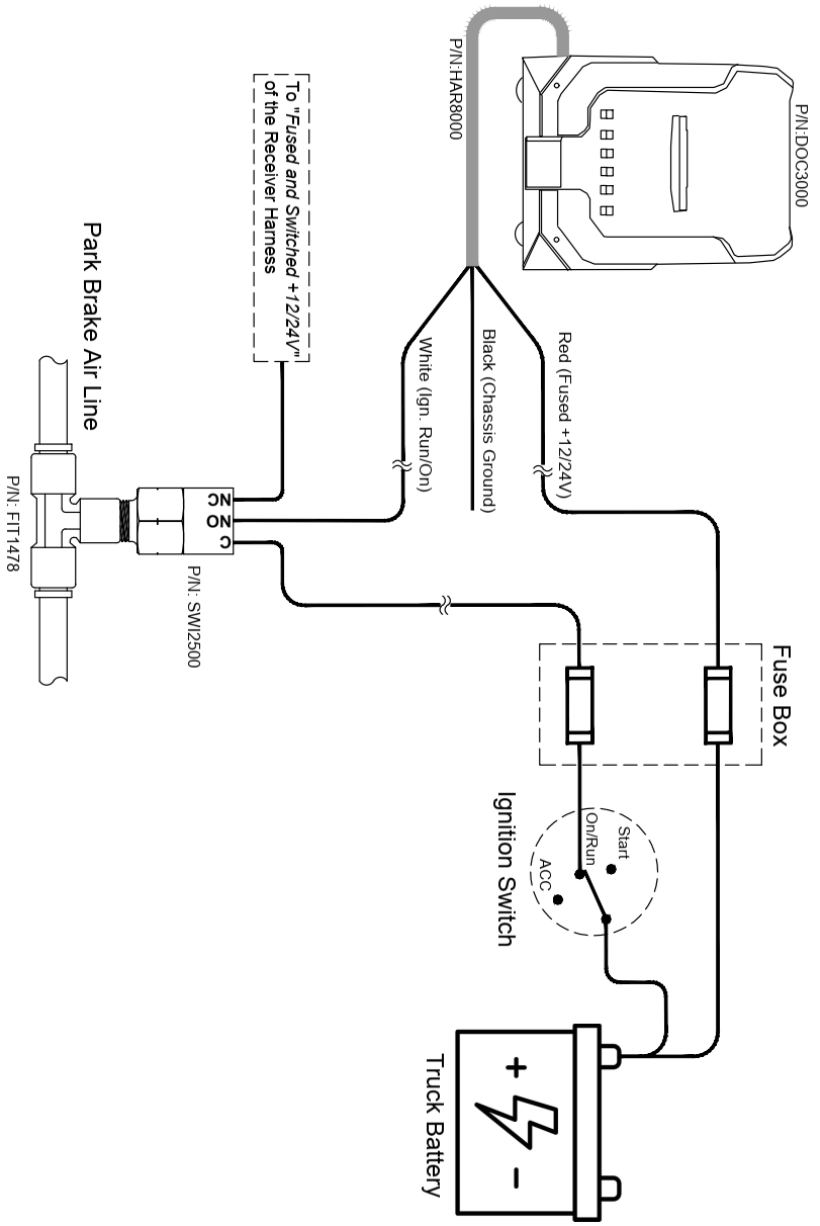
To stop the alarm sounding, either replace the handheld in the cradle, apply the brakes, or turn off the ignition.

# CHARGING CRADLE SPECIFICATIONS

| Parameter | Value |
|---|---|
| Supply Voltage | 10V to 28V |
| Supply Current | 2A |
| Current into Ignition Sense | <10mA |
| Current into Brake Interlock | <10mA |
| Alarm Sound Pressure Level (minimum @10 cm) | 90dB |
| Mounting screw type | #6-32 UNC |



# WIRING OF CRADLE FOR BRAKE ALARM



# SYSTEM PAIRING/DEDICATION

The Wireless Control System is supplied from the factory fully programmed and ready for use, however, the following procedure can be used to re-program/dedicate a replacement handheld or receiver unit in the field. It is recommended that the handheld unit be charged before it is put into operation.

**NOTE: The user should ensure that there are no other operational handheld units within range of the system as they could interfere with the dedication process.**

1. Make sure the receiver is powered on.
2. Make sure the external antenna is connected, if applicable.
3. Press the green ***SETUP*** button on the receiver five (5) times rapidly. The blue power/activity LED should flash five (5) times.
4. Press the ***SETUP*** button one (1) or two (2) times, depending on the transmitter that is to be dedicated (once for first transmitter, twice for a second/spare transmitter).
5. If the handheld has system ***ON/OFF*** buttons, press and hold the green ***ON*** button. If it does not have system ***ON/OFF*** functionality, press and hold any button on the transmitter.
6. If the receiver learns the transmitter ID correctly, the blue power activity LED on the receiver will blink eight (8) times. If it does not learn the ID correctly, the blue LED will blink two (2) times. If the two (2) blinks occur, go back to step three (3) and repeat instructions.
7. This completes the learning process. The ID of this transmitter is now stored in the receiver's memory and will not be lost when the receiver is powered off. These instructions can be repeated whenever a transmitter or receiver is replaced.



# SYSTEM OPERATION

**It is required that any radio control system be powered only when the equipment is parked and ready to work. A park-brake interlock switch for all air-brake truck applications is available from BASE Engineering at the time of order.**

**AN UNINTENTIONAL ENGINE SHUT DOWN WHILE THE VEHICLE IS IN MOTION MAY RESULT IN SERIOUS INJURY OR DEATH.**

Pressing any button in the handheld will cause the unit to wake up and send a command. The blue LED should blink rapidly while the button is pressed. Once the button is released, the LED will turn off.

If the battery in the handheld becomes drained to a preset point, the red indicator will also flash every 4 seconds during button presses. An audible alarm will also sound at this point. This is to warn the operator that the handheld will need recharging soon.

The user has approximately one hour of continuous operation time left before the unit shuts down. The actual amount of operational time will depend upon the actual usage of the handheld.

## HANDHELD BATTERY CHARGING

If the red LED and beeper indicate that the handheld system charge is getting low, the unit should be recharged as soon as possible.

To charge the battery, place the handheld into the charging cradle. The green LED will illuminate on the charging cradle, indicating that the connection is secure. Ensure that 12/24VDC power is available to the charging cradle at all times. Be aware that in some vehicles the power to the receptacle is cut off when the ignition is off.

While the handheld is charging, the red LED will flash once per second. When the unit is fully charged, the red LED will remain lit continuously. It will take up to six hours to charge the batteries from a fully depleted state.

The handheld will remain operational while charging, allowing the operator to continue operations while the unit is charging.

**NOTE: It is not recommended to charge the handheld in a cold environment such as overnight in the vehicle. This will severely limit the lifespan of the batteries.**

## WARNING

**Do not charge the batteries unless the LOW BATTERY indicator is active. This will shorten the useful life of the batteries. The handheld is designed to provide a long operation with each charge, therefore continuous recharging is not needed.**

**Do not charge the handheld unit with any device other than the supplied BASE charger or damage to the unit may occur.**

**DO NOT CHARGE IN A HAZARADOUS AREA.**



## SYSTEM MAINTENANCE

1. Regularly check the condition of the handheld.
2. Check the transmitter battery condition by verifying that the blue LED flashes properly when pressing a function button or the ***ON*** button.
3. Ensure communication is functioning properly between the handheld and the truck.

- If one of the system check fails, contact the factory and we will troubleshoot your handheld unit.

- Handheld repairs or modifications must be done at the factory to maintain your warranty or certification.

## WARNING

**NEVER GO UNDER A TRUCK WITH THE ENGINE RUNNING AND NEVER USE THE REMOTE CONTROL DEVICE TO ACTIVATE THE PTO WHEN WORKING ON OR SERVICING THE PTO FROM UNDER THE TRUCK. THE REMOTE CONTROL DEVICE IS INTENDED TO BE USED ONLY WHEN THE OPERATOR IS NOT AT RISK OF BEING INJURED BY THE MACHINE.**

**AN UNINTENTIONAL USE OF REMOTE WHILE WORKING ON THE TRUCK MAY RESULT IN SERIOUS INJURY OR DEATH.**

# TROUBLESHOOTING

**System will not operate when button pressed**

- Check that the ***ON*** button, if included, was pressed and the LED is blinking.

- If the LED is not blinking when a button is pressed, the battery might be beyond its maximum time and require charging. In this case:

  - Slide handheld into charging cradle.

  - Ensure the blue LED on the handheld starts blinking.

  - If handheld does not turn on, call BASE Technical Support.

**When handheld is docked in the cradle, it does not charge**

- Check to see if the red power light or the green active light on the charging cradle is lit.
- If all lights are off, check all connections.
- If red power light is on, remove handheld from the charging cradle and reinsert into it.

**Handheld is not communicating with the receiver**

- Pair handheld to the receiver using the instructions outlined in the "System Pairing/Dedication" section of this document.

**When sliding the handheld into charging cradle the blue LED lights up solid but does not flash.**

- This is normal if the battery is still fully charged. Allow the battery to run down through normal operation and attempt to charge again.



# WARRANTY AND RETURN PROCEDURES

**Limited Warranty Policy**

This **BASE Engineering Inc**. radio remote control system is sold with a limited warranty to be free from defects in material and workmanship for a period of **four (4) years from the date of manufacture**. This warranty covers only repair or replacement parts/components. Labor to diagnose, remove, or replace failed components is not covered under this warranty. Lithium batteries and leather cases have a warranty of one (1) year.

Replacement parts will be shipped within 24 hours when possible. All defective components must be returned to the factory clearly marked with a RGA (Returned Goods Authorization) number for identification purposes. Returning an item without an authorized RGA number will result in substantial processing delays.

**Warranty Claims**

**BASE Engineering Inc.** will make a good faith effort for prompt correction or other adjustment with respect to any product which proves to be defective within the warranty period. Before any warranty repairs are attempted or before returning any product to the factory **BASE Engineering** must be contacted. ***BASE*** Engineering staff will require the model number and the serial number of the system.

**BASE Engineering** is not liable for material, labor or contingent liabilities arising out of the improper use or function of any product. Warranty shall become void if the product is improperly installed, modified, damaged, abused, or used for applications other than intended use.

# TECHNICAL SUPPORT

Product technical support is available by contacting BASE Engineering Inc. at 1.800.924.1010 or 506-635-2280 between 7:00am and 5:00pm Eastern Standard Time (USA). After hours technical support can be reached at this same phone number.


**BASE ENGINEERING INC.**

**600 ROTHESAY**

**SAINT JOHN, NEW BRUNSWICK**

**CANADA E2H 2H1**

| | |
|---|---|
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