



WiLo 900 LOW RIDER REMOTE CONTROL SYSTEM

BY Link M Technologies

# Owners Manual

Document 5.08.17-18  
Revision 2.0

# Introduction

---

Thank you for purchasing our product.

The WiLo 900 Low Rider Remote Control system was designed with the input of low rider enthusiasts whose past experiences with remote controls helped create a technical wireless system into a simple form that will be a fun and exciting addition to your pride and joy.

Link M Technologies  
527 North Azusa Avenue #243  
Covina, California 91722  
<http://www.linkmtechnologies.com>

---

# Table of Contents

<b>CHAPTER 1</b> .....	<b>1</b>
GETTING STARTED .....	1
<b>CHAPTER 2</b> .....	<b>2</b>
SYSTEM OVERVIEW .....	2
Receiver Front Panel Controls.....	2
Receiver Rear Panel .....	2
Interface Cable .....	3
Transmitter Controls .....	4
<b>CHAPTER 3</b> .....	<b>5</b>
INSTALLATION: QUICK .....	5
INSTALLATION: IN DEPTH.....	6
Suitable Location.....	6
Mounting .....	6
Connector Wiring List.....	7
Pump Example Wiring List.....	8
Dump Example Wiring List .....	9
<b>CHAPTER 4</b> .....	<b>10</b>
SYSTEM OPERATION: QUICK .....	10
SYSTEM OPERATION: IN DEPTH.....	11
Receiver Programming Setup.....	11
Receiver Timing Setup.....	11
Transmitter Operation.....	12
Choreography Mode.....	12
Antenna Orientation .....	13
Transmitter Battery Replacement.....	14
<b>CHAPTER 5</b> .....	<b>15</b>
TROUBLESHOOTING.....	15
<b>CHAPTER 6</b> .....	<b>16</b>
SPECIFICATIONS .....	16
LIMITED WARRANTY AND DISCLOSURE	
STATEMENT.....	17
FCC NOTICE TO USER .....	18
INDEX .....	19

---

# Getting Started

*Quick referenced with In Depth outlines.*

This manual is outlined in two formats following the **Overview** section; “Quick” and “In Depth”. The “Quick” format at the top of the chapter highlights the details of the section for two purposes:

1. To provide the anxious user just enough information to get started right away without having to glean the entire manual.
2. To refresh the memory of the one who has taken the time to read the entire manual.

The “In Depth” format provides all the operational details of the subject matter for the enquiry minds as well as the product installers who need to know how the system operates.

The **System Overview** section provides all the operating aspects of the transmitter and receiver to briefly familiarize the user with the product.

## Before You Begin

### Parts Checklist

Make sure your package includes the following items:

1. WiLo 900TX handheld transmitter with antenna, batteries included.
2. WiLo 900RX receiver with right angle antenna.
3. 7' Interface cable and assorted crimp terminals.
4. Two spare 3V size 2032 Lithium coin cell batteries.
5. Two spare mini blade 25 Amp fuses.

## System Overview

### Receiver Front Panel Controls



#### Power

Push button On/Off switch lights up in center to indicate power.

#### Front

This variable timing control regulates how long the Front pump/s will stay ON minimizing over extending the hydraulic cylinders. The pulse time can be adjusted from 35ms to 450ms.

#### Rear

Like the Front control, this variable timing control regulates how long the Rear pump/s will stay ON minimizing over extending the hydraulic cylinders. The pulse time can be adjusted from 35ms to 450ms.

#### Program

Momentary push button switch used to "Learn" transmitter ID allowing system activation. See Receiver Programming Setup for complete details.

### Receiver Rear Panel



#### Fuses

Each solenoid control output is protected with a 25 Amp fuse that is shared between a respective pump and dump pair.

#### Interface I/O connector

Output control signal and power input are provided via the interface connector.

# Interface Cable

The Interface cables length is sufficient to mount the receiver in the trunk or on the rear deck of the car.



Red 18AWG +12V input

Black 12AWG chassis GND

Red 10AWG +24V input

Brown Left Front Pump

Black Left Front Dump

Red Right Front Dump

Orange Right Front Pump

Yellow Left Rear Dump

Green Left Rear Pump

Violet Right Rear Pump

Blue Right Rear Dump

Figure 1: Interface cable length reduced for clarity.





## Installation: Quick

*Some pride in workmanship goes a long way for a clean and presentable installation to be proud of.*

**Important!** Test your system before installation, then after installing the Interface cable, then once more after connecting Interface cable to WiLo900RX. Troubleshooting will be easier if a problem were to occur.

- Choose a suitable grounded location and mount the WiLo 900RX close enough to the hydraulic control system so that the 7' interface cable is neatly routed between the two.
- Terminate the interface cable wires to power and the control solenoids as illustrated in Figure 1.
- Plug the interface cable into the WiLo 900RX.

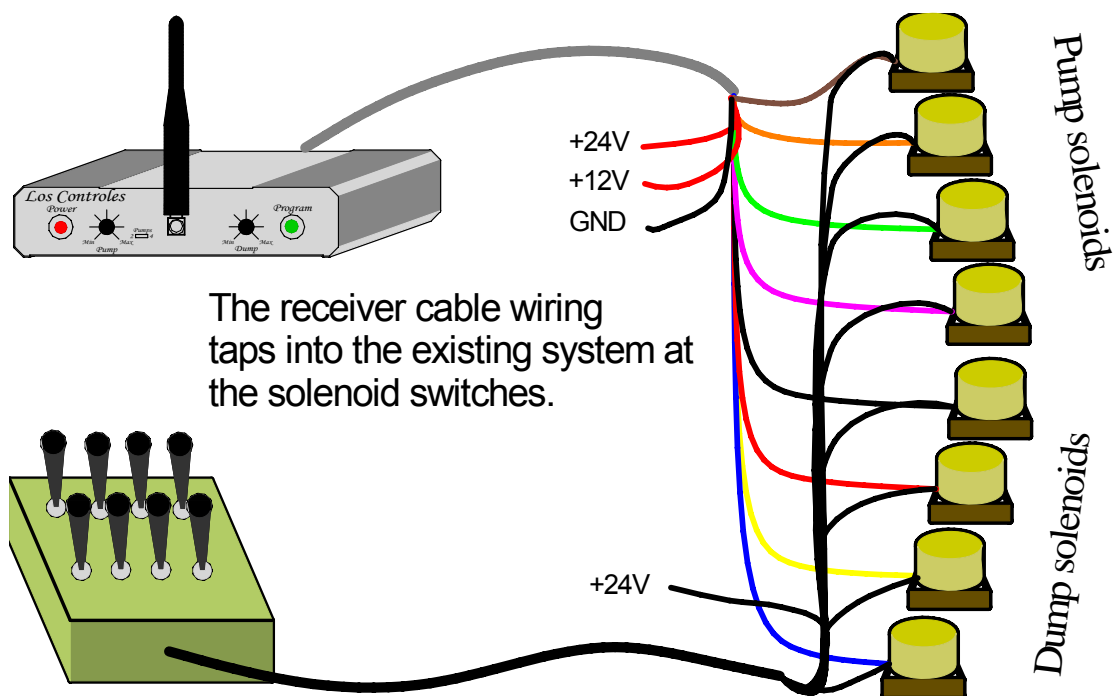


Figure 2 Sample wiring diagram



# Installation: In Depth

*The real nuts and bolts of installations...*

## Suitable Location

The WiLo 900RX can be installed on the rear deck inside of the car or in the trunk, but should be positioned such that:

- The interface cable neatly reaches the hydraulic control wiring or solenoids and power source with enough slack left over to remove receiver should servicing be needed.
- Mounting platform is grounded to vehicle chassis.
- The antenna is more than 6" horizontally from any metal such as batteries, pumps and car chassis.
- The user can easily reach the unit to access controls.

## Mounting

Always exercise caution and inspect underside trunk of a car checking for clearance to gas tank and fuel lines before drilling holes and driving screws.

1. Mark the two mounting holes using the tabs as a guide.
2. Center punch and drill 1/8" holes on the vehicle chassis or a suitable grounded platform.
3. Remove all metal shavings from holes before installing screws.
4. Position the receiver over the holes and drive one of the two supplied sheet metal screws and washer to the right mounting tab (facing front).
5. Position interface cable Black ground wire over left mounting tab and drive second screw and washer.



# Connector Wiring List



The 12 pin male connector provides power to the receiver and output control signals to the hydraulic control system via the 7' interface cable.

## Pin and Interface Cable wire list

Pin	Wire color and function	Pin	Wire color and function
1	<b>Red:</b> Right Front Dump	7	<b>Yellow:</b> Left Rear Dump
2	<b>Brown:</b> Left Front Pump	8	<b>Black 14AWG:</b> Ground
3	<b>Black:</b> Left Front Dump	9	<b>RED 10AWG:</b> 24 Volt input
4	<b>Orange:</b> Right Front Pump	10	<b>Green:</b> Left Rear Pump
5	<b>Red 18AWG:</b> 12 Volt input	11	<b>Blue:</b> Right Rear Dump
6	<b>RED 10AWG:</b> 24 Volt input	12	<b>Violet:</b> Right Rear Pump

Note: Even though this system has been designed for a four pump four dump system, controlling a single, double, or a three pump setup is just a matter of logical wiring.

See the Pump Example and Dump Example Wiring lists on the next two pages for various single pump, two pump, and three pump wiring. These lists cover the basic and most common setups because some systems are customized to the owners' request.

# Pump Example Wiring List

Single and Two pump example:

Connect the outputs (Brown and Orange) to the front pump solenoid bank and the outputs (Green and Violet) to the rear pump solenoid bank.

	Brown	Orange	Green	Violet
Left Front	X	X		
Right Front	X	X		
Left Rear			X	X
Right Rear			X	X

Three pump example:

Connections to respective pump solenoid banks.

This example assumes two pumps for front and one for the rear.

Connect the output (Brown) to the left front pump.  
 Connect the output (Orange) to the right front pump.  
 Connect the outputs (Green and Violet) to the rear pump.

	Brown	Orange	Green	Violet
Left Front	X			
Right Front		X		
Left Rear			X	X
Right Rear			X	X

Four pump example:

Connections to respective pump solenoid banks.

Connect the output (Brown) to the left front pump.  
 Connect the output (Orange) to the right front pump.  
 Connect the output (Green) to the rear left pump.  
 Connect the output (Violet) to the right rear pump.

	Brown	Orange	Green	Violet
Left Front	X			
Right Front		X		
Left Rear			X	
Right Rear				X

# Dump Example Wiring List

**Competition hopper example:**

This setup was encountered on a competition hopper where only two dumps were used.  
 Connect the outputs (Black and Red) to the front dump.  
 Connect the outputs (Yellow and Blue) to the rear dump.

	Black	Red	Yellow	Blue
Left Front	X	X		
Right Front	X	X		
Left Rear			X	X
Right Rear			X	X

**Hopper with rear 3 Wheel example:**

This setup had one dump for the front and two dumps for the rear.  
 Connect the outputs (Black and Red) to the front dump.  
 Connect the output (Yellow) to the left rear dump.  
 Connect the output (Blue) to the rear right dump.

	Black	Red	Yellow	Blue
Left Front	X	X		
Right Front	X	X		
Left Rear			X	
Right Rear				X

**Lay and Play four dump example:**

The most common setup here with four dumps.  
 Connect the output (Black) to the left front dump.  
 Connect the output (Red) to the right front dump.  
 Connect the output (Yellow) to the left rear dump.  
 Connect the output (Blue) to the right rear dump.

	Black	Red	Yellow	Blue
Left Front	X			
Right Front		X		
Left Rear			X	
Right Rear				X

# System Operation: Quick

## *Quick programming and switch functions*

- Turn the WiLo 900RX “ON” and ensure “Power” LED is lit.
- If using for first time:
  - a. Momentarily press the “Program” switch and ensure LED is blinking.
  - b. Using the WiLo 900TX, momentarily squeeze the red power button.
  - c. Momentarily press the “Program” switch again so the LED turns off.
- Point antenna UP on the WiLo 900TX and confirm the receiver Program LED lights up every time the red power button is squeezed.
- Tap or hold one switch at a time in a left or right direction depending on desired effect, refer to Table 1.

Mode A			Mode B		
‡ Front up	♥	Front down	Rear down	♥	‡ "One Tap" Hop (rear)
‡ Rear up	♣	Rear down	Left down	♣	Right down
Left 3 Wheel	♦	Right 3 Wheel	Front down	♦	‡ "One Tap" Hop (front)
‡ All up	♠	All down	‡ All up	♠	All down
Left		Right	Left		Right

Table 1: Switch Functions

‡ Pulsed output “ON” time controlled by front adjustments on WiLo 900RX.

# System Operation: In Depth

## *In Depth programming and switch functions*

### Receiver Programming Setup

The WiLo 900RX features forty memory locations. Clearing them out and programming only yours will ensure no other can access your system.

1. Push the POWER switch to turn the receiver ON, ensure the LED is lit.
2. **Clearing memory:** Press and hold the PROGRAM switch for more than ten (10) seconds or until the LED turns OFF. The LED will turn back ON for two (2) seconds after releasing to indicate that all memory locations are cleared.
3. **Learn transmitter:** Momentarily press the PROGRAM switch and ensure the LED is blinking. This will indicate receiver is in Learn mode only for the next 17 seconds.
4. Using the transmitter, momentarily press the side power button, this will cause it to transmit its unique ID to the receiver.
5. Momentarily push the PROGRAM switch again or wait the 17 second time out to exit the learn mode.
6. The PROGRAM LED will now light whenever that transmitter is activated.

### Receiver Timing Setup

This procedure will customize your receiver output ON time to your hydraulic system.

1. Adjust both Front and Rear controls to about the 10 o'clock position.
  2. Select mode A on the transmitter and tap the ♠ function switch right to dump all corners.
  3. **Adjusting the rear:** Lift the rear end by holding the ♣ to the left, don't worry, the output will time out. Take note of the height and tap the ♣ to the right to drop the rear and start over. Adjust REAR control up a little at a time until critical height is achieved without over extending the cylinders. Once you find your setting, the rear end can be tapped a little at a time or completely from the bottom by holding the switch.
  4. **Adjusting the front:** Raise the rear and now using the ♥, tap it to the right to drop the front end. Lift the front by holding the ♥ left, the output will time out. Again, take note of the height and drop the front end with the same switch. Make little adjustments to the FRONT control until critical height is reached. Now the front end can be tapped up in small amounts by tapping the switch or change to mode "B" and bounce it by holding the switch long enough to allow it to pump then dump, then hit it again when it lands to pump then dump in one motion.
-

## Transmitter Operation

It's as easy as 1, 2, 3.

After making sure that it is safe to move your ride, hold the transmitter with either your left or right hand and:

1. Select mode A or B on the bottom of the transmitter and point the antenna up.
2. Squeeze and hold the momentary Power button on the side of the transmitter.
3. Tap or hold one of the function switches to the left or right depending on desired effect. Example:
  - a. If hopping is your choice;
    - i. Select mode A
    - ii. Raise the rear end up by pushing the ♣ to the left multiple times. *This function is pulsed to act as a safety limiter.*
    - iii. Drop the front end by pushing the ♥ function switch to the right.
    - iv. **Auto Hop Method: Select mode B**, now hold the ♥ function switch to the left to make the system pump then dump. When the front end comes down, release and hold the switch again for the next bounce.
    - v. **Regular Hop Method: Select mode A**, then tap the ♥ function switch to the left to make the system pump then hold switch to the right to dump as you would normally do.
    - vi. Since timing the bounce is what you guys do best, instruction ends here.

## Choreography Mode

This function allows more than one vehicle with this system to be controlled with only one transmitter.

1. Push the POWER switch on all the units that will be controlled and ensure their LED is lit.
2. Now momentarily press the PROGRAM switch on all the units to be controlled and ensure their LED is blinking. **Note: All outputs are disabled while unit is in Learn mode.**
3. *Using only one transmitter*, squeeze the side power button.
4. Exit the Learn mode by pressing the PROGRAM switch on all the units again.

All vehicles are now ready to be controlled with that one transmitter. But since all systems are not created equal, some timing adjustments at the receivers may be needed to keep them moving in one accord.

When all the dancing is through, clear the receiver's memories by performing the **Receiver Programming Setup** on all the vehicles one at a time with its own transmitter to avoid programming unwanted transmitters' IDs and interference during the procedure.

---



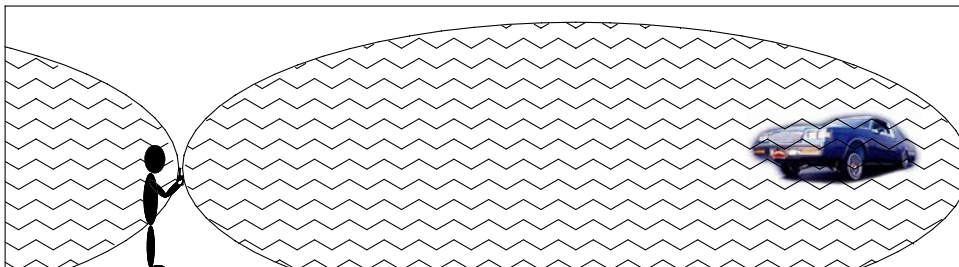
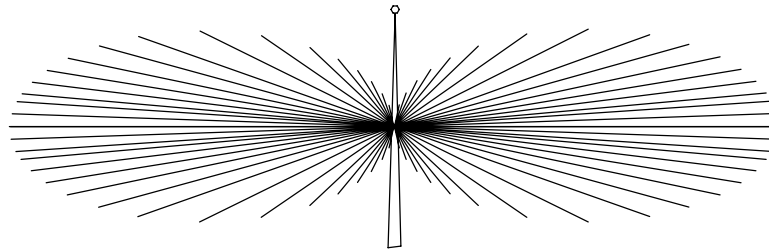
# Antenna Orientation

An education on why it's not good to point.

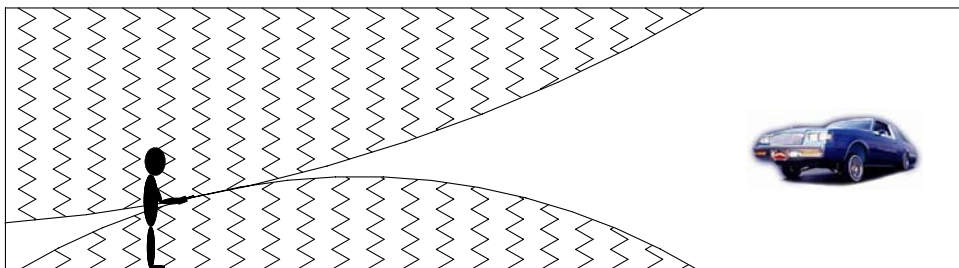
Antenna orientation is a very important subject that could mean the difference between an intermittent and short range of operation, to a more consistent and longer range of operation.

Contrary to popular belief, the signal does not radiate out the tip like lightning shooting from the end of a magic wand or need to be pointed like a T.V. remote control. But instead, its signal radiates in a circular direction out the sides of the antenna. In the same respect, the reception pattern is identical for the receiver antenna.

These simplified drawings illustrate a typical radiation pattern from a transmitting antenna. Its signal strength is strongest from the sides and gets weaker towards the ends. And since the receiver antenna also has the same reception pattern, it is beneficial to maintain the same vertical orientation on both antennas for maximum range.



Pointing antenna up provides proper radiation pattern and range.



Pointing antenna towards vehicle reduces range but still usable when close by.

---

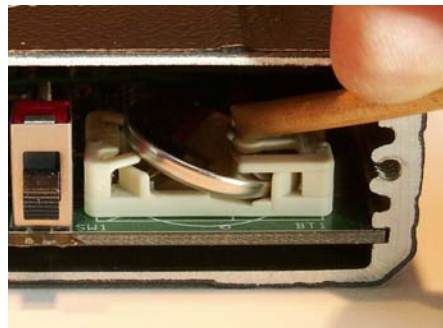
# Transmitter Battery Replacement

*When the juice runs out, give it some more.*

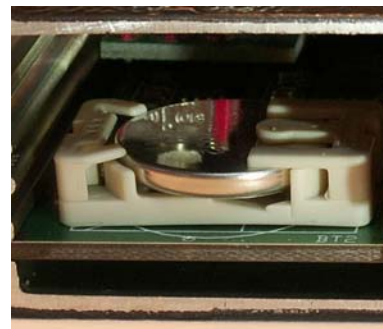
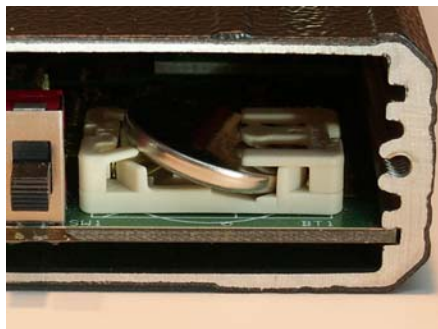
The 3 volt, size 2032, coin cell batteries in the transmitter can be replaced by removing the two screws holding the bottom cover.



While pushing down on the release tab of the battery holder, tip the bottom down so that the battery drops out when the battery ejects.



Position the replacement battery in the holder with Positive (+) side on top, then push down on left side until it snaps flat into place.



# Troubleshooting

*When things seem to go wrong, something probably has.*

Problem	Probabilities and solutions
The receiver doesn't respond to commands all the time.	<ol style="list-style-type: none"> <li>1. Receiver not powered on. Check Power switch and for +12V and ground to unit.</li> <li>2. Transmitter ID not recognized. Perform "Receiver Programming Setup".</li> </ol>
The receiver doesn't respond sometimes.	<ol style="list-style-type: none"> <li>1. Signal fades. Radio signals bouncing off objects can cancel out, try relocating your position.</li> <li>2. Unwanted radio interference. This is unfortunately one of technologies' limitations.</li> <li>3. Other user nearby. This system currently has only one channel to operate with so co-channel interference is possible.</li> </ol>
Short range.	<ol style="list-style-type: none"> <li>1. Receiver signal blocked. Make sure receiver antenna more than 6" from any metal.</li> <li>2. Antenna polarity. Make sure both antennas are vertical.</li> <li>3. Low transmitter battery power. Replace with fresh pair.</li> </ol>
A Pump or Dump function not working.	<ol style="list-style-type: none"> <li>1. Blown output fuse. Replace any blown fuses and check for defective solenoid if problem persist.</li> </ol>

Link M Technologies strives for a problem free product. But let's face it, we live in a fallen world where things beyond our control do break. So if after trying to resolve the problem it is found that part of the system has obviously failed, i.e., transmitter does not power up even with fresh batteries or the receiver does the same, then by all means return unit for repair or replacement per Link M Technologies' Warranty Agreement.

## Specifications

**WiLo 900 TX****WiLo 900 RX**

4"x 3.25"x 1.125"	<b>Dimensions (in)</b>	5"x 5" x 1.125"
8oz.	<b>Weight</b>	15oz.
916.40MHz	<b>TX/RX Frequency</b>	916.40MHz
-17dBm	<b>Power Output</b>	n/a
n/a	<b>Sensitivity</b>	-98dBm
±50 KHz FM	<b>Modulation Type</b>	±50 KHz FM
OJM-TR-916-SC	<b>FCC ID #</b>	OJM-TR-916-SC
3V 2032 Coin Cell Lithium Batteries	<b>Power Supply</b>	+12V
0mA/STBY, 11mA/TX	<b>Supply Current</b>	60mA max
n/a	<b>Output Capability</b>	8 outputs at 24VDC/25A ea.
>50ft	<b>Operating Range</b>	>50ft

## Limited Warranty and Disclosure Statement

### Limited Warranty

Link M Technologies warrants to the original purchaser that the WiLo 900 system be free from manufacturing defects and be operational to specifications for a period of one year from date of purchase. Product failures due to negligent handling or installation, unauthorized modifications, or uses other than designed for, acts of nature, such as but not limited to lightning damage and dead batteries, are not covered under the warranty. No other implied or statutory warranties of merchantability or fitness for particular purpose shall apply.

Product returns for repair should be shipped prepaid to manufacture with:

- Return address information.
- Email address (if available) for return shipping notification.
- Proof of purchase in the form of bill of sale or receipted invoice.
- Description of failure.

Repair or replacement of product shall be at Link M Technologies' own discretion after proper assessment. All repaired or replaced product shall be warranted for the remainder of the warranty period and be shipped prepaid back to customer in a timely manner.

Contact on the web: [www.linkmtechnologies.com/contact.htm](http://www.linkmtechnologies.com/contact.htm)

Email: [support@linkmtechnologies.com](mailto:support@linkmtechnologies.com)

Return to:

Link M Technologies  
Attention: Product Support  
527 North Azusa Avenue #243  
Covina, California 91722

### Disclosure Statement

Due to the nature of the sport of Lowrider hydraulic controlling, in no event shall Link M Technologies be liable for any incidental, consequential, special, indirect or exemplary damages incurred.

Please be safe and of sound mind when operating your hydraulics with or without wire controls.

---

## FCC Notice to User

This equipment contains an RF module that has been previously tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio energy frequency and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and the receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a Class B computing device, pursuant to FCC rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval the manufacture could void the user's authority to operate this equipment.

---

# Index

<b>A</b>	
Antenna Orientation.....	13
<b>B</b>	
Battery Replacement.....	14
Before You Begin.....	1
<b>C</b>	
Choreography Mode.....	12
Connector Wiring List.....	7
<b>D</b>	
Disclosure Statement.....	17
Dump Control.....	2
<b>F</b>	
FCC Notice.....	18
Function Switches.....	4
Fuses.....	2
<b>G</b>	
Getting Started.....	1
<b>H</b>	
Hopping	
Auto Hop Method.....	12
Regular Hop Method.....	12
<b>I</b>	
Installation	
Dump example wiring list.....	9
In Depth.....	6
Pump example wiring list.....	8
Quick.....	5
Interface Cable.....	3
Interface I/O Connector.....	2
Introduction.....	i
<b>L</b>	
Limited Warranty.....	17
<b>M</b>	
Mode Switch.....	4
Mounting.....	6
<b>P</b>	
Parts Checklist.....	1
Pin and Interface Cable Wire List.....	7
Problems.....	15
Program Switch.....	2
Programming and Switch Functions.....	11
<b>Q</b>	
Quick Programming and Switch Functions...	10
<b>R</b>	
Range.....	13
Receiver Power Switch.....	2
Receiver Programming Setup.....	11
Receiver Rear Panel.....	2
Receiver Timing Setup.....	11
<b>S</b>	
Specifications.....	16
Suitable Location.....	6
Switch function table.....	10
System Operation	
In Depth.....	11
Quick.....	10
System Overview.....	2
<b>T</b>	
Transmit LED.....	4
Transmitter Controls.....	4
Transmitter Operation.....	12
Transmitter Power Switch.....	4
Troubleshooting.....	15
Two Pump Example.....	8

---



\* NOTES \*

